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COBS ENGINEERING GROUP INC.

RONMENTAL SYSTEMS DIVISION

.6 LOOP CENTRAL DRIVE • HOUSTON, TEXAS 77081 • (713) 669-2200

April 12, 1989

Mr. Gerardo R. Amador
U.S. Environmental Protection Agency, Region III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

Re: Letter Report Review and Comment on Phase II, RI-Raw Data, DuPont Newport Site, WA No. C02001

Dear Mr. Amador:

Enclosed are comments on the review of Phase II, RI-Raw Data. This report incorporates EPA comments on Jacobs draft letter report dated March 23, 1989 and discussions at the meeting on March 27, 1989 in Philadelphia, Pennsylvania, EPA Region III office between Mr. Gerry Amador (EPM), Randy Sturgeon (EPM) and Paul Fikac (JEG).

The recommendations addressed in the report are made on the basis of all available data received to date and previous reports.

I trust this meets your requirements.

If you have any specific questions, please call me at 713/669-2248.

Very truly yours,

Paul J. Fikac

Paul J. Fikac
Work Assignment Manager

PJF/mjo

cc: C. Loftus (JEG Washington)
L. Chapman (JEG Dallas, letter only)
File

REVIEW AND COMMENTS
PHASE II, RI-RAW DATA
DUPONT NEWPORT SITE
WA. NO. C02001

I. INTRODUCTION AND SITE HISTORY.

This report covers the review and comments on the analytical results for Phase II of the Remedial Investigation. Phase II was initiated to fill the data gaps in establishing the limits of contaminantion migration. This report also incorporates EPA comments on the draft letter report at the meeting on March 27, 1989.

The DuPont Newport Landfill is located at the site of the Holly Run (or Newport) Plant of the E.I. du Pont de Nemours and Company in Newport, Delaware (Figure 1). The landfill consists of two separate areas separated by the Christina River which flows through New Castle County, Delaware. The portion of the landfill which occurs north of the Christina River is a seven acre parcel bounded on its southeast side by the Christina River. The southern most part of the land is a fifteen acre parcel bounded by the Christina River on the northwest. The former is referred to herein as the North Disposal site, and the latter is referred as the South Disposal site.

Presently, both disposal areas of the DuPont Newport Landfill are inactive. The North Disposal site ceased as an active landfill in 1974. The South Disposal site ceased receiving plant-generated waste in 1953. It was briefly reactivated in 1973 when the State of Delaware, Department of Highways, disposed of highway construction spoils at the site. Presently, the North landfill is capped with two feet of clay, and the South landfill is capped by three feet of soil disposed by the Delaware Department of Highways.

Some hazardous substances disposed in the site were inorganically and organically bonded metals, radioactive residues, plant pigments and pigment sludges, organic pigments, magnetic tapes, and inert miscellaneous wastes. The major concern is high levels of heavy metals and some organic which were detected beneath the site.

In 1987, E.I. du Pont de Nemours & Co., Inc., herein referred to as Dupont, tasked Woodward-Clyde Consultants (WCC) to conduct a Remedial Investigation (Phase I) as part of the Proposed Work Plan for RI/FS dated July 20, 1987 (Attachment 1). In July 1988, a revised RI/FS work plan was issued to present the findings of the previous RI (Phase I) and to further address the objectives of the RI/FS contained in the consent order. Specific data gaps and areas of concern were identified in the Phase I data review and additional RI (Phase II) tasks were identified in the revised workplan. DuPont concluded the RI Phase II tasks in December 1988. The Phase II analytical data was submitted for EPA review in March 1989. EPA Region III submitted the interim analytical data to Jacobs Engineering Group (Jacobs), EPA's oversight contractor, assisted in the review and comment. On March 27, 1989, EPA Region III and Jacobs met at the EPA Philadelphia office to discuss the Jacobs (draft) letter report on the review and comments of the Phase II Data and to discuss any other potential data gaps.

II. SUMMARY OF PROJECT FINDINGS.

The Phase II data, from the new monitor wells, indicates that metals contamination source exists to the Northeast of the North Disposal area. In addition, the contamination migration limits to the north of the South Disposal Site have not been established. This is shown by the elevated groundwater concentrations for barium in MW-16A and 17A (Attachment 4-1, Figure 5) and for zinc, cadmium and chromium in MW-17B (Attachment 4-1, Figure 6). Elevated levels of chromium are also noted in MW-18A, MW-18B, MW-19A, and MW-19B.

To the southwest, SM-4 continues to show elevated levels of zinc and cadmium (Attachment 4-1, Figure 5). These values are not supported by the non-detects in samples from MW-3A and SM-3; however, from the very high levels of zinc and cadmium found in coring sample S-3, SBND-5 (Attachment 6-1, page 3 of 5), it can be assumed that some of these contaminants are leaching into the groundwater from the southwest portion of the North Disposal Site. Observations, during a field trip on March 2, 1989, show water is also seeping from this area into the drainage to the west.

The low area to the west of SM-4 was also apparently filled, because buried railroad ties were found in the area. The surface soil and stream sediment samples taken from this location also show a high level of metal contaminants (see attachment 5-1, 7-1, and 7-3). Further investigation is needed to determine if this is part of the North Disposal Site activities.

III. DETAILED COMMENTS ON PHASE II RI RAW DATA

The detailed review of the Phase II data is per your letter dated March 8, 1989 and discussions at EPA Region III office on March 27 thru 29, 1989. The comments are directed in sequence to the tasking addressed in your letter.

A. Comparison of the RI/FS Phase II Raw Analytical Data and the Oversight Split Sample Results

This comparison comprises of split sampling conducted on October 10, 1988 (Case #10578), November 9, 1988 (Case #10823) and December 19, 1988 (Case #11145).

1. Groundwater and surface soil sampling on 881109; MW-16A, R-4, R-5. (see Attachment #2-1, Case 10578).

   a. For the element aluminum, a difference by an order of magnitude of 1 is noted for the water samples MW-16A, R4 & R5 and by 50% for the soil sample vicinity of MW-3 cluster (SGS-5).

   b. For the element iron; MW-16A, 2640 ppb, versus 695 ppb.

   c. For the element chromium; soil vic MW-3 cluster (SGS-5), 18 ppm versus 10 ppm.

   d. No volatiles or BNA's of significance are found in either the DuPont samples or the split samples.

e. In discussion of the split sampling, some variation must be expected since no averaging could be done over a single split sampling. The large difference in the aluminum concentration in the water sample may be attributable to the HNO_3 preservatives.

2. North Disposal Site coring sampling on 881010; SBND-2 & SBND-3 (see Attachment #2-2, Case 10578).

a For the element barium; SBND-3, 48100 ppm (split) versus 7720 ppm (DuPont).

b .For the element lead; SBND-3, 404 ppm (split) versus 516 ppm (DuPont).

c. For the element cadmium; SBND-3, 12 ppm (split) versus 9.0 (DuPont).

d. For the element sodium; SBND-2, 1600 ppm (split) versus 448 (DuPont).

e. For the element zinc; SBND-2, 604 ppm (split) versus 463 ppm (DuPont) and SBND-3, 1310 ppm (split) versus 920 (DuPont).

f. For the volatiles; Chloroform was found in the split samples but not in the DuPont samples. Chlorobenzene was found in SBND-2, 4 ppb (J) (split) versus 13 ppb (DuPont).

g. For the BNA's; three compounds were noted in SBND-2 split sample <u>only</u> with a J code so the accuracy is doubtful.

h. PCB's were found in SBND-2; AROCLOR-1260, 290,000 (J) ppb (split) versus 59,000 ppb (DuPont).

i. The difference noted in the North Disposal Site soil samples cannot be explained. These were composite samples and preservation of split samples was in accordance with CLP requirements. The lumpy nature of the landfill material may have some significance in these differences. The significant difference is the Barium in SBND-3 (S-3), which has the split sample showing almost seven times the concentration of the DuPont sample 48,100 ppm versus 7720 ppm and the discovery of significant concentration of PCB's in sample SBND-2 (S-1). The PCB's are located at a depth of 7.5' to 12.0' and are in the vadose zone. The 290(J) ppm concentration should be given consideration for added remediation or protection if other work is to be done. Continued conduct of split sampling will provide emphasis for good sampling procedures and laboratory quality control.

3. Groundwater Sampling on 881219; MW-1A, 4B, 13, 17A and 18A. (see attachment 2-3, Case 11145).

a. For the element Barium significant differences in concentration are noted for samples MW-17A; 65200 ug/l (DuPont) VERSUS 22500 ug/l (Split) and MW-18A, 70600 (DuPont VERSUS 55700 (Split). In consideration of total metals concentrations, the DuPont analysis are exceptionally high. However, if the DuPont dissolved metals concentrations are used; MW-17A, 28000 ug/l and MW-18A, 58600 ug/l, the

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results are more comparable. The split sample ITR requested analysis for total metals. The preservative was HNO_3 until pH <2.0.

b. For the element cadmium, DuPont analysis show detected values in MW-18A at 9.1 ug/l, MW-17A at 13 ug/l and MW-13 at 13 ug/l. The split sample analysis shows only one detection in MW-17A at [4.5]K ug/l which indicates that "[]" the analyte is present, near IDL and is not accurate and "K" biased high.

c. For the element zinc, the concentrations are fairly comparable in samples for MW-1A, MW-4B and possible MW-14. However, a significant difference is noted between samples for MW-17A, 2630 ug/l (DuPont) versus 783(J) ug/l (split sample) and MW-18A, 1010 ug/l (DuPont) Versus [18.1] (J) ug/l (split sample, with "J" indicating analyte present not accurate and "[]" indicating Analyte present near IDL not accurate.

d. DuPont analyzed for organic compounds in the new wells only. The only organic compound found in MW-18A is identified in the split sample as bis(2-Ethylhexyl)phthalate at 13 ug/l. This is very low and is normally associated with production of or new PVC pipe. MW-17A shows Total-1,2-Dichlorethene at 5 ug/l for both DuPont and the split sample and Chlorobenzene at 140 ug/l (split sample) and 120 ug/l (DuPont), 1,4-Dichlorobenze at 22 ug/l and bis(2-Ethylhexyl)phtalate at 13 ug/l were identified in the split sample only.

e. The noted organic compounds concentrations are acceptable with respect to the split sample.

f. The inorganic compounds differences between the split sample and the DuPont sample are not acceptable. However, the concentrations noted as the lower of the comparison would not change the noted recommendations in this review. It should be noted that the 881109 split sampling was much more comparable for groundwater. To minimize possible differences, future groundwater split sampling for metal must be conducted in an exact parallel procedure with DuPont and include using the same HNO_3 preservative source.

B. <u>Contaminants of Concern</u>

1. The contaminants of concern to humans and the environment found at the DuPont Newport site will be most dangerous by ingestion of the surface or ground waters. The most apparent problem is the leaching of contaminants into the groundwater. A target compound list is included in attachment #3-1. Concentration limits have been added where available.

2. In discussion on contaminants of concern, DuPont's premises of using trichloroethylene (TCE), Tetrachloroethylene (PCE), barium, cadmium and zinc as tracking or indicator compounds are sufficient to establishing the migration of contaminants. However, the final risk analysis and the feasibility study must be established against the complete listing of compounds after the background levels have been identified. DuPont should prepare a background listing of all naturally occurring metals and substances that cannot be attributable to the site. Specific concern to be given to the effects of leaching into the groundwater and the surface water.

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C. Extent of Contamination in Groundwater

The results of contamination in the groundwater as addressed in the Phase II sampling has been added to Figures 2 thru 22 (Attachment 4-1) from the previous chemistry report. The new wells have been added and are identified by zone, and compound concentration as appropriate. The groundwater sampled in offsite residential and commercial wells are shown on Figure 1-14 and Table 1-7 (Attachment #4-2).

1. Per a telephone conversation with Roger Gresch of Woodward-Clyde Consultants, there is a problem with the ETC Analysis Summary. Therefore, the higher concentration of dissolved or total parameters was used.

2. The ETC summary did not have any new analysis for organic compounds on existing wells. The new wells indicated TCE and PCE in the shallow well MW-19A at 14 ppb and 23 ppb, respectively (Figure 10) and in the intermediate well MW-17B for PCE at 29 ppb only (Figure 11). My understanding was that WCC would do a full HSL analysis on all samples.

3. For barium, in the shallow zone, the 100,000 ppb and 10,000 ppb contours have been extended to N-NE as a result of MW-17A with 65,200 ppb. MW-16A with 438,000 ppb, MW-18A with 70,600 ppb and a corresponding increase in MW-4A, MW-14 and MW-15 (Figure 13). There was no increase in barium in the intermediate zone as a result of the new wells (Figure 14).

4. The metal zinc, in the shallow zone, shows an extension increase of the plume to the N-NE as a result of MW-17A with 2630 ppb and MW-18A with 1010 ppb (Figure 15). The plume in the intermediate zone shows an exceptional increase to the NE as a result of the new wells MW-17B with 698,000 ppb, MW-18B with 384 ppb, and a corresponding increase in MW-2B, and DM-8 (Figure 16).

5. The metal cadmium, in the shallow zone, does not show any significant change in plume as a result of the new wells, however, the new round of tests increased MW-9 from 63 ppb to 169 ppb and MW-6A from 8.9 ppb to 130 ppb (Figure 17). The intermediate zone shows an exceptional change in the plume to the NE as a result of the high reading in MW-17B with 6380 ppb (Figure 18).

6. The groundwater was also sampled in offsite residential and commercial wells and are identified as R1, R2, R4, R5, R7, R8, R13, R15, R18, and R19. The parameters analyzed were Target Compound List VOA's, BNA's, pesticides/PCB's, total metals and cyanide. All of these samples met the SDWA MCL's or the WQC except for R19 which had 30 ug/l (ppb) of Trichloroethylene (TCE).

7. The discussion on groundwater contamination is addressed by aquifer.

a. Shallow Aquifer (zone)

The groundwater contaminant limits in the shallow aquifer relative to TCE and PCE have been established to the northeast of the site with no detection in MW-16A, 17A and 18A. To the south of the site, MW-19A continues the premise of an offsite source. Organics were not analyzed

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during this sampling of the existing wells and any changes cannot be identified.

The inorganic sampling results generally maintained the previous limits of concentration to the south of the site. However, the high concentrations of zinc and cadmium in SM-4 warrant further investigation to determine migration limits to the southwest.

A dramatic increase in concentration for barium in the new shallow wells indicates that the migration limit to the northeast has not been defined and there is a significant change in the plume size and direction as earlier established. Further investigation of the plume migration should be done.

b. Intermediate Aquifer (zone).

The limits of TCE and PCE in the intermediate aquifer have been established to the east, south and west of the site. PCE found in MW-17B may be down gradient migration from DM-8 to the west. If this is so, than it is questionable that the north disposal site is the only source for PCE contaminants into the intermediate zone. Further investigation is needed to determine the source of PCE and contamination limits to the north.

TCE was also found in resident well R-19 with 30 ppb. The depth of this well is 65 feet. This is the approximate depth of the intermediate aquifer. However, there is not a continuity of contamination from the site and should not be attributed to the site.

The limits of barium, zinc and cadmium contamination in the intermediate aquifer are apparently established to east, south and west. However, the concentration for zinc and cadmium have significantly increased in MW-17B. Further investigation must be conducted to identify the source and establish the limits of the zinc and cadmium contamination to the north - northeast.

Chromium was found at 81 ppb in MW-19B. The source of this chromium should be further investigated. Chromium was also found at significant levels in MW-17B and 18B. Chromium should be included in determining migration limits.

c. Deep Aquifer (zone)

No new deep wells were installed. The sampling results show no relative change in concentrations except for well DM-7L which had an increase in barium and a detection of cadmium which was not previously noted. It should be noted that, except for MW-2C, the wells in the deep aquifer meet the SDWA CL's for the noted compounds. In view of the high zinc and cadmium concentrations in MW-17B, further deep aquifer investigation may be argued to the northeast of the site.

D. <u>Extent of Contamination in the Surface Waters (Wetland)</u>

1. The surface water samples for the wetlands have been plotted on Figure 2x, (Attachment 5-1 and 5- 2).

2. Six organic compounds have been identified in the Wetlands surface waters. These are 2,4,6 Tribromophenol, 2-Fluorobiphynel, 2-Fluorophenol, Nitrobenzene-D5, Phenol-D-6, and Terphenyl-D14. These same organics are found in the Wetlands and river sediment samples.

3. The metals in the Wetlands surface waters were within the relative SDWA MCL except for sample AWO3, where barium-1040>1000 ppb and lead-126>50 ppb and for sample AWO5 where lead-89>50 ppb. These higher concentrations in water do not parallel a relative increase in sediment concentrations. However, the sample location for AWO3 and AWO5 are both adjacent to a roadway.

4. In comparing the surface water from the north site and south site, the concentration of aluminum and barium increases are paralleled by a corresponding calcium concentration decrease for the south disposal site.

E. Contamination in Soils

1. The contaminants in the North Disposal Site (NDS) have been plotted on a vertical plot by coring (see attachment 6-1).

a. There was no data for location SBND-1.

b. The highest concentration for barium is found at the top half of coring SBND-3.

c. A significant high reading of cadmium was found at the bottom of SBND-5 and SBND-6.

d. The highest concentration for lead is found at the bottom of SBND-6 followed by the top of SBND-5.

e. Several BNA compounds have been identified and appear to be concentrated in the upper part of SBND-5.

f. Several volatile compounds are noted in SBND-2, 4, 6 & 5. However, these are in the low concentrations.

g. Heptachlor epoxide and ARCLOR are identified in SBND-2 and 3. The highest level for ARCLOR 1260 is in SBND-3 at 59,000 ppb or 59 ppm.

2. The discussion of the coring in the North Disposal Site covers several areas.

a. The presumption that the high PCE concentrations in MW-1A & 2A and SM-5 are due to PCE migration from the North Disposal Site during drawdown by pumping from WW-11 and WW-13 is not supported by the analysis from the coring samples. Only sample SNDS-6 indicates a presence of PCE. HNU readings during coring support the presence of this volatile with a reading of 0.3 to 0.8 ppm above background. HNU readings were slightly above background in SBND-4 but only chlorobenzene and ethylbenzene were identified at this location. SBND-5 also had an HNU reading above background, however, except for Dichloroethane, the other

contaminants were BNA's. The source of PCE and TCE contamination in MW-2A requires further source investigation.

b. The high concentration of ARCLOR 1260 at SBND-2 indicates a source location of PCB's.

c. The attempt to identify the location of the drums with thoriated nickel was not achieved. During coring, the radiac meter did not show any above background readings during the coring event. DuPont should consider other means for locating the drums. A discriminating metal detector is capable of identifying objects the size of a loaf of bread at a depth of 20 feet. A ground penetrating radar may also meet the requirements. In terms of safety, excavation prior to remediation should be minimized. The drums of waste chromium dioxide should also be located.

d. During the coring event at the North Disposal Site, the indicated clay cap material was not evident. SBND-3 was the only coring that had any clay in the top 2 feet of material. The remainder of site has fine silt to coarse sandy material for a cap. The permeability of the silty soils will have to be addressed by laboratory methods.

F. <u>Extent of Contamination in Surface Soils and River and Wetlands Sediments</u>

The review of contaminants is separated into the separate areas.

1. Surface Soil

a. The location of the surface soil samples (SGS) have been plotted to the topographic map (reference attachment #5-1)

b. In comparing the results of the surface soil samples; there is enough variation between the samples to determine a surface soil background (see attachment #7-1). However, the high zinc concentration in SGS-5 and higher metal concentrations in SGS-6 must be the result of a specific source versus the natural background levels.

2. River Sediments

a. The locations of the river sediments are shown on attachment #7-2.

b. Five organic compounds 2,4,6-Tribromophenol, 2-Fluorobiphenyl, 2-Fluorophenol, Nitrobenzene-D5 and Phenol-D6 were found in four of the six samples. These same organic compounds were also found in the wetlands surface water and sediments. The compounds were addressed by WCC at the meeting on March 29, 1989 as normal spike compounds added to wetlands samples to assist in analysis.

c. The metals, barium, chromium copper, lead and zinc significantly increase in concentration down river from the site. This parallels the findings in the shallow aquifer water samples. This implies that the site is the most probable source of these contaminants. Further river sediment sampling should not be required.

3. Wetlands Sediments

a. The wetlands sediment sample locations are plotted on attachment #5-1.

b. The five organic compounds addressed in the river sediments are also present in the wetlands samples (see attachment #7-3).

c. The metals arsenic and lead show a very high concentration in samples AS01 through AS303 and AS06 thru AS09. This appears to be associated with the drainage paths from both of the disposal sites.

d.The metals barium, zinc, cadmium and chromium are identified as part of the landfill materials associated with both of the disposal sites.

e. There should be no need for further wetland sediments sampling.

IV. RECOMMENDATIONS:

The following recommendations are based on the review of the Phase II-RI Raw Data and all other available data from Phase I.

A. Split Sampling should continue during future sampling events and the EPA split sample results be provided to DuPont for Quality Control purposes.

B. DuPont should provide, for EPA approval, a listing of background concentrations for the natural source contaminants found at the Newport Site.

C. Additional monitor wells are required to the north - northeast of the site to establish the limits of migration for barium in the shallow zone for zinc, chromium and cadmium in the intermediate zone and for the possible breakthrough of contaminants into the deep zone. An additional monitor well is required to the southwest of SM-4 to determine the limits of zinc and cadmium contamination. A total of seven new monitor wells are recommended:

1. Shallow Zone Wells

   1-NE of MW-17A for high barium
   1-NE of MW-16A for high barium
   1-E of MW-18A for high barium and chromium
   1-SW of SM-4 for high zinc and cadmium

2. Intermediate Zone Wells

   1-NE of MW-17B for very high zinc and cadmium and moderate chromium
   1-NE of MW-16A for very high zinc and cadmium and moderate chromium

3. Deep Zone Well

   1-NE of site for possible breakthrough from the intermediate zone.

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D. Additional groundwater sampling should be conducted for organics, TCE/PCE.

1. Existing Wells (resample)

For selected HSL and indicator parameters*

SM-3
MW-3A
MW-8
MW-19A
SM-5

For Full HSL.

MW-4B
MW-5A

2. New Proposed Wells (2 samples)

For Sampling to be for Full HSL.

Shallow Well SW of SM-4
Shallow Well NE of 17A
Intermediate Well NE of 17A

* Indicator parameters to be constituents found in the landfills.

E. The historical aerial photographs should be further analyzed to determine a more definitive estimate of the South Disposal Site limits and quantity.

F. The wetlands investigation should be expedited to provide for inclusion in the FS for the landfills.

G. The drums containing the thoriated nickel and chromium wastes in the North Disposal Site must be located. Discriminating metal detectors or ground penetrating radar should be used to the extent possible to prevent premature rupture or destruction of drums.

H. There should be no further need for additional surface soil, surface water or sediment sampling at this time.

AR308542

Attachment #2

DATA SUMMARY FORM: VOLATILES 1

Site Name: DuPont Newport Site

Case #: 10578 Sampling Date: 10/10/88 - 10/11/88

SOIL SAMPLES (ug/Kg) PPb

(DuPont 881010 DUPont 881010)

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((100-% moisture)/100)

SPLIT samples

	Sample No.	CQ137		CQ138				BG9084		BG9096									
	Dilution Factor	1		1															
	% Moisture	26		48															
	Location	SBND-2 (5'-7') (1)		SBND-3 (5'-17') (2)				SBND-2 (S-1) 7.5'-12' (1)		SBND-3 (S-3) 15.0'-19.5' (2)									
CRQL	COMPOUND																		
10	Chloromethane																		
10	Bromomethane	–	UJ	–	UJ			–		–									
10	Vinyl Chloride																		
10	Chloroethane																		
5	Methylene Chloride	15	B	30	B			–		–									
10	Acetone	76	B	150	B			47		–									
5	Carbon Disulfide																		
5	1,1-Dichloroethene	2	J					–		–									
5	1,1-Dichloroethane																		
5	Total-1,2-Dichloroethene	4	B	5	B			–		–									
5	Chloroform	10		14				–		–									
5	1,2-Dichloroethane																		
10	2-Butanone		R		R														
5	1,1,1-Trichloroethane																		
5	Carbon Tetrachloride																		
10	Vinyl Acetate		UJ		UJ														
5	Bromodichloromethane																		

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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Attachment # 2-

AR308543

DATA SUMMARY FORM: VOLATILES 2

Site Name: Dupont Newport

Case #: 10578 Sampling Date: 10/10/88 - 10/11/88

SOIL SAMPLES (ug/Kg) PPb

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((100-% moisture)/100)

split samples

CRQL	COMPOUND																		
	Sample No.	CQ137		CQ138				Dupont 881010 BG9084		Dupont 881010 BG9096									
	Dilution Factor	1		1															
	% Moisture	26		48															
	Location	SBND-2 (5'-7') 1		SBND3 (15'-17') 2				SBND-2 (S-1) 7.5'-12' 1		SBND-3 (S-3) 15.0'-17.5' 2									
5	1,2-Dichloropropane																		
5	Cis-1,3-Dichloropropene																		
5	Trichloroethene																		
5	Dibromochloromethane																		
5	1,1,2-Trichloroethane																		
5	Benzene																		
5	Trans-1,3-Dichloropropene																		
5	Bromoform	—	UJ	—	UJ			—		—									
10	4-Methyl-2-pentanone	—	R	—	R			—		—									
10	2-Hexanone	—	UJ	—	UJ			—		—									
5	Tetrachloroethene	—																	
5	1,1,2,2-Tetrachloroethane	—	UJ	—	UJ			—		—									
5	Toluene																		
5	Chlorobenzene	4	J	—				13		—									
5	Ethylbenzene																		
5	Styrene	—	UJ	—	UJ			—		—									
5	Total Xylenes	—	UJ	—	UJ			—		—									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

ORIGINAL (Red)

AR308544

Attachment # 2-1

DATA SUMMARY FORM: B N A S 1

Site Name: Du Pont Newport

SOIL SAMPLES (ug/Kg) PPb

Case #: 10578 Sampling Date: 10/10/82-10/11/82

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((100-% moisture)/100)

		(SPLIT SAMPLE)			(Du Pont SAMPLE) 881010	881010				
	Sample No.	CQ137	CQ138		BG9084	BG9096				
	Dilution Factor	5	5							
	% Moisture	26	48							
	Location	SBND-2 composite 7.5' to 12' (1)	SBND-3 [illegible] to 19.5' (2)		SBND-2 (S-1) 7.5' to 12' (1)	SBND-3 (S-3) 15.0' to 19.5' (2)				
CRQL	COMPOUND									
330	Phenol				None	None				
330	bis(2-Chloroethyl)ether									
330	2-Chlorophenol									
330	1,3-Dichlorobenzene									
330	1,4-Dichlorobenzene									
330	Benzyl Alcohol									
330	1,2-Dichlorobenzene									
330	2-Methylphenol									
330	bis(2-Chloroisopropyl)ether									
330	4-Methylphenol									
330	N-Nitroso-di-n-propylamine									
330	Hexachloroethane									
330	Nitrobenzene									
330	Isophorone									
330	2-Nitrophenol									
330	2,4-Dimethylphenol									
1600	Benzoic Acid									
330	bis(2-Chloroethoxy)methane									
330	2,4-Dichlorophenol									
330	1,2,4-Trichlorobenzene									
330	Naphthalene									
330	4-Chloroaniline									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

DATA SUMMARY FORM: B N A S 2

Attachment #2

Site Name: Du Pont Newport

Case #: 10578 Sampling Date: 10/10/88-10/11/88

SOIL SAMPLES (ug/Kg) (PPb)

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((100-% moisture)/100)

	Sample No.	CQ137		CQ138				BG 9084		BG 9096									
		SPLIT SAMPLE						(DuPont 881010)		(DuPont 881010)									
	Dilution Factor	1		1															
	% Moisture	26		48															
	Location	SBND-2 Composite 7.5' to 12' (1)		SBND-3 15.0' to 19.5' (2)				SBND-2 (S-1) 7.5' to 12' (1)		SBND-3 S-2 15' to 19.5' (2)									
CRQL	COMPOUND																		
330	Hexachlorobutadiene																		
330	4-Chloro-3-methylphenol																		
330	2-Methylnaphthalene																		
330	Hexachlorocyclopentadiene																		
330	2,4,6-Trichlorophenol																		
1600	2,4,5-Trichlorophenol																		
330	2-Chloronaphthalene																		
1600	2-Nitroaniline																		
330	Dimethyl phthalate																		
330	Acenaphthylene																		
330	2,6 Dinitrotoluene																		
1600	3-Nitroaniline																		
330	Acenaphthene																		
1600	2,4-Dinitrophenol	—	UJ	—	UJ					—									
1600	4-Nitrophenol																		
330	Dibenzofuran	350	J	—						—									
330	2,4 Dinitrotoluene																		
330	Diethylphthalate																		
330	4-Chlorophenyl phenylether																		
330	Fluorene																		
1600	4 Nitroaniline																		
1600	4,6 Dinitro-2 methylphenol																		

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

AR308545

ORIGINAL (Red)

AR308546

Attachment #2

DATA SUMMARY FORM: B N A S 3

Site Name: Dupont Newport

Case #: 10578 Sampling Date: 10/10/88. 10/11/88

SOIL SAMPLES (ug/Kg) ppb

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((100-% moisture)/100)

CRDL	COMPOUND	SPLIT SAMPLE						Dupont 881010		Dupont 881010									
	Sample No.	CQ137		CQ138				BG9084		BG9096									
	Dilution Factor	1		1															
	% Moisture	26		48															
	Location	SBND-2 Composite 7.5' to 12' (1)		SBND-3 17.5' to 19.5' (2)				SBND-2 (S-1) 7.5' to 12' (1)		SBND-3 (S-3) 15'-19.5' (2)									
330	N-Nitrosodiphenylamine	330	d	–				–		–									
330	4-Bromophenyl phenylether																		
330	Hexachlorobenzene																		
1600	Pentachlorophenol																		
330	Phenanthrene																		
330	Anthracene	500	d	–				–		–									
330	Di-n-butylphthalate																		
330	Fluoranthene																		
330	Pyrene																		
330	Butylbenzylphthalate																		
1600	3,3-Dichlorobenzidine																		
330	Benzo(a)anthracene																		
330	Chrysene																		
330	bis(2-Ethylhexyl)phthalate	420	d	–				–		–									
330	Di-n-octyl phthalate																		
330	Benzo(b)fluoranthene																		
330	Benzo(k)fluoranthene																		
330	Benzo(a)pyrene																		
330	Indeno(1,2,3-cd)pyrene																		
330	Dibenz(a,h)anthracene																		
330	Benzo(g,h,i)perylene																		

CRQL = CYANIDE Contract Required Quantitation Limit

0.5

SEE NARRATIVE FOR CODE DEFINITIONS

DATA SUMMARY FORM: PESTICIDES AND PCBS

Attachment # 2

AR308547

Site Name: Dupont Newport

SOIL SAMPLES (ug/Kg)

Case #: 10578 Sampling Date: 10/10/82-10/11/82

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((100-% moisture)/100)

CRQL	COMPOUND																		
	Sample No.	CQ137		CQ138				881010 BG9084											
	Dilution Factor	100		10															
	% Moisture	26		48															
	Location	SBND-2 Composite 7.5' to 12' (1)		SBND-3 17.5' to 19.5 (2)				SBND-2 (S-1) 7.5' to 12' (1)		SBND-3 (S-3) 15' to 19.5' (2)									
0	alpha-BHC							None		None									
0	beta-BHC																		
0	delta-BHC																		
0	Gamma-BHC (Lindane)																		
0	Heptachlor																		
0	Aldrin																		
0	Heptachlor Epoxide																		
0	Endosulfan I																		
16	Dieldrin																		
16	4,4'-DDE																		
16	Endrin	—	UJ	—	UJ			—		—									
16	Endosulfan II																		
16	4,4'-DDD																		
16	Endosulfan Sulfate																		
16	4,4'-DDT																		
80	Methoxychlor																		
16	Endrin ketone																		
80	Alpha-Chlordane																		
80	Gamma-Chlordane																		
160	Toxaphene																		
80	Aroclor-1016																		
80	Aroclor-1221																		
80	Aroclor-1232																		
80	Aroclor-1242																		
80	Aroclor-1248																		
160	Aroclor-1254																		
160	Aroclor-1260	210,000	J	—				59000		—									

■ Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE [illegible]NITIONS

TABLE 3

Page 1 of 1

DATA SUMMARY FORM: INORGANICS

Attachment #2-1

Site Name: Dupont Newport

SOIL SAMPLES (mg/Kg) ppm

Case #: 10578 Sampling Date: 10/10/88

*Due to dilution, sample quantitation limit is a
See dilution table for specifics.

	Sample No.	MC9176		MC9177						BG9084		BG9096								
	Dilution Factor	1		1						TOTAL		TOTAL								
	% Solids	78.1		67.6																
	Location	SBND-2 7.5'-12'		SBND-3 15'-19.5						SBND-2 (S-1) 7.5'-12'		SBND-3 (S-3) 15.0'-19.5'								
CRDL	ANALYTE	(1)		(2)						(1)		(2)								
40	Aluminum	4720		13800						5160		13100								
12	Antimony	[8.6]	L	20	L					—		—								
2	Arsenic	5.5	L	50	L					3.7		31								
40	Barium	147		48100						1010		7720								
1	Beryllium											0.3								
1	Cadmium	5.5		12						4.3		9.0								
1000	Calcium	2390		12800						2280		11000								
2	Chromium	13		20						13		22								
10	Cobalt	174	J	37	J					13.2		36								
5	Copper	65		576						102		849								
20	Iron	6090		55300						6460		53600								
1	*Lead	366		404						410		516								
1000	Magnesium	[742]		1330						855		1100								
3	Manganese	133		922						120		1280								
0.2	Mercury	0.17	K							0.2		—								
8	Nickel	20		31						15		35								
1000	Potassium	[287]		[178]						312		194								
1	Selenium	1.5	L		R															
2	Silver																			
1000	Sodium	1600		[235]						448		186								
2	Thallium		UL		UL															
10	Vanadium	11	J	31	J					12		33								
4	Zinc	604		1310						463		920								
2	Cyanide		Q		Q															

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITI

Note: Compare Split (1) with Dupont (1) etc.

revised

AR308548

Table 3

DATA SUMMARY FORM: I N O R G A N I C S

Attachment # 2-2

Site Name: DuPont Newport Site

WATER SAMPLES (ug/L) PPb

Case #: 10823 **Sampling Date(s):** 11/9/89

☆ Split samples

☆ Dupont

Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

SDWA MCL mg/l	CRDL	ANALYTE	MCQ178		MCQ179		MCQ192						BH 1590	BH 1607	BH 1682		
		Dilution Factor	1		1		1						TOTAL	TOTAL	TOTAL		
		Location	MW 16 A		NE CASTRO R-4		RED CLAY CSI R-5						MW 16A	R4	R5		
			①		②		③						①	②	③		
	200	Aluminum	832	J	2870	J	71.7	J					89	993	–		
	60	Antimony															
0.05	10	*Arsenic						UL					1.9				
1.0	200	Barium	306000		[17.4]		[44.0]						336000	77	44		
	5	Beryllium															
0.01	5	*Cadmium															
	5000	Calcium	20200		43200		9360						18200	36000	9440		
0.05	10	*Chromium															
	50	Cobalt	79.5		[36.7]								66	5.0			
	25	Copper			167								18	47	<2.2		
	100	Iron	2640	J	4850	J	11800	J					695	2270	11900		
.05	5	*Lead	5.0	J	55.7	J	[3.0]	J					1.4	34	<1.0		
	5000	Magnesium	5060		19800		[2630]						4710	19200	3080		
	15	Manganese	797		6510		34.5						550	589	35		
.002	0.2	Mercury															
	40	*Nickel											34				
	5000	Potassium	38200		[4100]		[1370]						38400	3530	1720		
0.01	5	Selenium				UL											
0.05	10	Silver											4.0				
	5000	Sodium	48700		40100		7120						49800	37300	7590		
	10	Thallium		UL													
	50	Vanadium															
5.0	20	Zinc	49.7		496								39	207	<1.5		
	10	*Cyanide		Ø		Ø		Ø									

AR308549

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

☆ No[redacted] Compare split ① t[redacted] Dupont ① for Comparis[redacted]

Table 3

Attachment #2-2

DATA SUMMARY FORM: I N O R G A N I C S

Site Name: Dupont NewPort Site

SOIL SAMPLES (mg/Kg) PPM

Case #: 10723 Sampling Date(s): 11/9/89

*Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

	Sample No.	MCP193		BH16:20 (split sample Dupont)
	Dilution Factor	1		
	% Solids	81.4		
	Location	VIC MW3 Soil		SGS-5
CRDL	ANALYTE	4		4
40	Aluminum	8290		4630
12	Antimony	[11.7]		
2	Arsenic	2.6	L	1.3
40	Barium	426		411
1	Beryllium	1.8	B	0.2
1	Cadmium			1.5
1000	Calcium	[166]		141
2	Chromium	18.0		10
10	Cobalt	[4.4]		2.1
5	Copper	31.0		20
20	Iron	9420		7380
1	*Lead	91.6	J	58
1000	Magnesium	[1010]		805
3	Manganese	86.2		60
0.2	Mercury			
8	Nickel	[6.2]		4.2
1000	Potassium	[374]		246
1	Selenium	[0.33]		
2	Silver			
1000	Sodium			64
2	Thallium	[1.3]	L	
10	Vanadium	22.2		16
4	Zinc	6570		7340
2	Cyanide		Φ	

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308550

DATA SUMMARY FORM: VOLATILES 1

Attachment # 2-2

Site Name: Dupont Newport Site

WATER SAMPLES (ug/L) ppb

Case #: 10823 Sampling Date(s): 11-9-88

(Split Samples)

(— Dupont —)

To calculate sample quantitation limit: (CRQL * Dilution Factor)

	Sample No.	CQ139		CQ140		CQ141				BH 1690		BH 1607/1680		BA-1609/1682					
	Dilution Factor	1.0		1.0		1.0													
	Location	MW16A		Necastro R-4		Red Clay SD R-5				MW-16A		R4		R5					
										881109/1219		881109		881109					
CRQL	COMPOUND																		
10	Chloromethane									None		None		None					
10	Bromomethane																		
10	*Vinyl Chloride																		
10	Chloroethane																		
5	*Methylene Chloride	4	B																
10	Acetone																		
5	Carbon Disulfide																		
5	*1,1-Dichloroethene																		
5	1,1-Dichloroethane																		
5	*Total-1,2-Dichloroethene																		
5	Chloroform																		
5	*1,2-Dichloroethane																		
10	*2-Butanone		R		R		R												
5	*1,1,1-Trichloroethane																		
5	*Carbon Tetrachloride																		
10	Vinyl Acetate																		
5	Bromodichloromethane																		

CRQL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308855

ORIGINAL (Red)

DATA SUMMARY FORM: V O L A T I L E S 2

Attachment #2-2

Site Name: Dupont Newport Site

WATER SAMPLES (ug/L)

Case #: 10823 Sampling Date(s): 11-9-88

To calculate sample quantitation limit: (CRQL * Dilution Factor)

		(Split Sample)				(Dupont 881109/1219	881109	881109)		
	Sample No.	CQ139	CQ140	CQ141						
	Dilution Factor	1.0	1.0	1.0						
	Location	MW16A	Necastro	Red Clay SD		MW-16A	R-4	R-5		
CRQL	COMPOUND									
5	*1,2-Dichloropropane					None	None	None		
5	Cis-1,3-Dichloropropene									
5	Trichloroethene									
5	Dibromochloromethane									
5	1,1,2-Trichloroethane									
5	*Benzene									
5	Trans-1,3-Dichloropropene									
5	Bromoform									
10	4-Methyl-2-pentanone									
10	2-Hexanone									
5	*Tetrachloroethene									
5	1,1,2,2-Tetrachloroethane									
5	*Toluene									
5	*Chlorobenzene									
5	*Ethylbenzene									
5	*Styrene									
5	*Total Xylenes									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308552

ORIGINAL (Red)

AR308553

DATA SUMMARY FORM: B N A S 1

Attachment # 2-2

Site Name: Dupont Newport Site

WATER SAMPLES (ug/L)

Case #: 10823 Sampling Date(s): 11-9-88

(Split Sample)

← Dupont → To calculate sample quantitation limit: (CRQL * Dilution Factor)

CRQL	COMPOUND	CQ139	CQ140	CQ141		881109/1219	881109	881109		
	Sample No.	CQ139	CQ140	CQ141						
	Dilution Factor	1.0	1.0	1.0						
	Location	MW16A	Necastro	Red Clay SD		MW-16A	R-4	R5		
10	Phenol					None	None	None		
10	bis(2-Chloroethyl)ether									
10	2-Chlorophenol									
10	*1,3-Dichlorobenzene									
10	*1,4-Dichlorobenzene									
10	Benzyl Alcohol				VJ					
10	1,2-Dichlorobenzene									
10	2-Methylphenol									
10	bis(2-Chloroisopropyl)ether									
10	4-Methylphenol									
10	N-Nitroso-di-n-propylamine									
10	Hexachloroethane									
10	Nitrobenzene									
10	Isophorone									
10	2-Nitrophenol									
10	2,4-Dimethylphenol									
50	Benzoic Acid		VJ	VJ	VJ					
10	bis(2-Chloroethoxy)methane									
10	2,4-Dichlorophenol									
10	1,2,4-Trichlorobenzene									
10	Naphthalene									
10	4-Chloroaniline									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

ORIGINAL (Red)

DATA SUMMARY FORM: B N A S 2

Attachment # 2-2

Site Name: Dupont Newport Site

WATER SAMPLES (ug/L)

Case #: 10823 Sampling Date(s): 11-9-88 (Split Sample)

← Dupont

To calculate sample quantitation limit: (CRQL * Dilution Factor)

CRQL	COMPOUND	CQ139		CQ140		CQ141				881109/1219		881109		881109					
	Sample No.	CQ139		CQ140		CQ141													
	Dilution Factor	1.0		1.0		40													
	Location	MW16A		Necastro		Red Clay 50				MW-16A		R4		R5					
10	Hexachlorobutadiene									None		None		None					
10	4-Chloro-3-methylphenol																		
10	2-Methylnaphthalene																		
10	Hexachlorocyclopentadiene																		
10	2,4,6-Trichlorophenol																		
50	2,4,5-Trichlorophenol																		
10	2-Chloronaphthalene																		
50	2-Nitroaniline																		
10	Dimethylphthalate																		
10	Acenaphthylene																		
10	2,6-Dinitrotoluene																		
50	3-Nitroaniline																		
10	Acenaphthene																		
50	2,4-Dinitrophenol		UJ		UJ		UJ												
50	4-Nitrophenol																		
10	Dibenzofuran																		
10	2,4-Dinitrotoluene																		
10	Diethylphthalate																		
10	4-Chlorophenyl phenylether																		
10	Fluorene																		
50	4-Nitroaniline		UJ		UJ		UJ												
50	4,6-Dinitro-2-methylphenol																		

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308554

ORIGINAL (Red)

DATA SUMMARY FORM: B N A S 3

Site Name: Dupont Newport Site

WATER SAMPLES (ug/L)

Attachment # 2-2

Case #: 10823 Sampling Date(s): 11-9-88 (Split Sample)

Dupont 881109/1219 881109

To calculate sample quantitation limit: (CRDL * Dilution Factor) 881109

CRDL	COMPOUND	CQ139	CQ140	CQ141		MW-16A	R4	R5			
	Dilution Factor	1.0	1.0	1.0							
	Location	MW16A	Necastro	Red Clay SD		MW-16A	R4	R5			
10	N-Nitrosodiphenylamine					None	None	None			
10	4-Bromophenyl-phenylether										
10	*Hexachlorobenzene										
50	*Pentachlorophenol										
10	Phenanthrene										
10	Anthracene										
10	Di-n-butylphthalate										
10	Fluoranthene										
10	Pyrene										
10	Butylbenzylphthalate										
20	3,3-Dichlorobenzidine				UJ						
10	Benzo(a)anthracene										
10	Chrysene										
10	bis(2-Ethylhexyl)phthalate		3 J								
10	Di-n-octylphthalate										
10	Benzo(b)fluoranthene										
10	Benzo(k)fluoranthene										
10	Benzo(a)pyrene										
10	Indeno(1,2,3-cd)pyrene										
10	Dibenz(a,h)anthracene										
10	Benzo(g,h,i)perylene										

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308555

ORIGINAL (Red)

DATA SUMMARY FORM: PESTICIDES AND PCBS

Site Name: Dupont Newport Site

Attachment #2-

Case #: 10823 Sampling Date(s): 11-9-88

WATER SAMPLES (ug/L)

To calculate sample quantitation limit: (CRQL * Dilution Factor)

CRQL	COMPOUND	Split sample				← Dupont 881109/1219	881109	881109		
	Sample No.	CQ139	CQ140	CQ141						
	Dilution Factor	1.0	1.0	1.0						
	Location	MW16A	Necastro	Red Clay SD		MW-16A	RW-4	RW-5		
0.05	alpha-BHC					None	None	None		
0.05	beta-BHC									
0.05	delta-BHC									
0.05	*Gamma-BHC (Lindane)									
0.05	*Heptachlor									
0.05	Aldrin									
0.05	Heptachlor Epoxide									
0.05	Endosulfan I									
0.10	Dieldrin									
0.10	4,4'-DDE									
0.10	*Endrin									
0.10	Endosulfan II									
0.10	4,4'-DDD									
0.10	Endosulfan Sulfate									
0.10	4,4'-DDT									
0.5	*Methoxychlor									
0.10	Endrin ketone									
0.5	*Alpha-Chlordane									
0.5	*Gamma-Chlordane									
1.0	*Toxaphene									
0.5	*Aroclor-1016									
0.5	*Aroclor-1221									
0.5	*Aroclor-1232									
0.5	*Aroclor-1242									
0.5	*Aroclor-1248									
1.0	*Aroclor-1254									
1.0	*Aroclor-1260									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

ORIGINAL (Red)

AR308556 AR308558

AR308557

DATA SUMMARY FORM: B N A S 1

Attachment #2

Site Name: Dupont Newport Site

SOIL SAMPLES (ug/Kg)

Case #: 10823 Sampling Date(s): 11-9-88 (Dupont)

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

	Sample No.	split CQ142		BH1620																			
	Dilution Factor	1.0																					
	% Moisture	16																					
	Location	MW3 cluster soil		SGS-5																			
CRQL	COMPOUND																						
330	Phenol		US	None																			
330	bis(2-Chloroethyl)ether																						
330	2-Chlorophenol																						
330	1,3-Dichlorobenzene																						
330	1,4-Dichlorobenzene																						
330	Benzyl Alcohol																						
330	1,2-Dichlorobenzene																						
330	2-Methylphenol																						
330	bis(2-Chloroisopropyl)ether																						
330	4-Methylphenol																						
330	N-Nitroso-di-n-propylamine																						
330	Hexachloroethane																						
330	Nitrobenzene																						
330	Isophorone																						
330	2-Nitrophenol																						
330	2,4-Dimethylphenol																						
1600	Benzoic Acid																						
330	bis(2-Chloroethoxy)methane																						
330	2,4-Dichlorophenol																						
330	1,2,4-Trichlorobenzene																						
330	Naphthalene																						
330	4-Chloroaniline																						

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308558

DATA SUMMARY FORM: B N A S 2

Attachment 2-2

Site Name: Dupont Newport Site

SOIL SAMPLES (ug/Kg)

Case #: 10823 Sampling Date(s): 11-9-88

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

		Split		Dupont 881109															
	Sample No.	CQ142		BH-1620															
	Dilution Factor	1.0																	
	% Moisture	16																	
	Location	MW3		SGS-5															
RQL	COMPOUND																		
330	Hexachlorobutadiene		UJ	None															
330	4-Chloro-3-methylphenol																		
[illegible]	2-Methylnaphthalene																		
[illegible]	Hexachlorocyclopentadiene																		
330	2,4,6-Trichlorophenol																		
1600	2,4,5-Trichlorophenol																		
330	2-Chloronaphthalene																		
1600	2-Nitroaniline																		
330	Dimethylphthalate																		
330	Acenaphthylene																		
330	2,6-Dinitrotoluene																		
1600	3-Nitroaniline																		
330	Acenaphthene																		
1600	2,4-Dinitrophenol																		
1600	4-Nitrophenol																		
330	Dibenzofuran																		
[illegible]	2,4-Dinitrotoluene																		
330	Diethylphthalate																		
330	4-Chlorophenyl-phenylether																		
330	Fluorene																		
1600	4-Nitroaniline																		
1600	4,6-Dinitro-2-methylphenol																		

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

ORIGINAL (Red)

DATA SUMMARY FORM: B N A S 3

Attachment #2-

Site Name: Dupont Newport Site

SOIL SAMPLES (ug/Kg)

Case #: 10823 Sampling Date(s): 11-9-88

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

	Sample No.	CQ142		BH 1620															
	Dilution Factor	1.0																	
	% Moisture	16																	
	Location	MW 3 VIC.		SGS-5															
CRQL	COMPOUND																		
330	N-Nitrosodiphenylamine		UJ	None															
330	4-Bromophenyl-phenylether																		
330	Hexachlorobenzene																		
1600	Pentachlorophenol																		
330	Phenanthrene																		
330	Anthracene																		
330	Di-n-butylphthalate																		
330	Fluoranthene																		
330	Pyrene																		
330	Butylbenzylphthalate																		
1600	3,3-Dichlorobenzidine																		
330	Benzo(a)anthracene																		
330	Chrysene																		
330	bis(2-Ethylhexyl)phthalate																		
330	Di-n-octylphthalate																		
330	Benzo(b)fluoranthene																		
330	Benzo(k)fluoranthene																		
330	Benzo(a)pyrene																		
330	Indeno(1,2,3-cd)pyrene																		
330	Dibenz(a,h)anthracene																		
330	Benzo(g,h,i)perylene																		

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

ORIGINAL (Red)

AR308559

AR308560

DATA SUMMARY FORM: PESTICIDES AND PCBS

Site Name: Dupont Newport Site

SOIL SAMPLES (ug/Kg)

Attachment # 2

Case #: 10823 Sampling Date(s): 11-9-88

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

	Sample No.	CQ142		Dupont 881109 BH1620															
	Dilution Factor	16																	
	% Moisture	1.0																	
	Location	MW3 VIC.		SGS-5															
CRQL	COMPOUND																		
8	alpha-BHC		VJ	None															
8	beta-BHC																		
8	delta-BHC																		
8	Gamma-BHC (Lindane)																		
8	Heptachlor																		
8	Aldrin																		
8	Heptachlor Epoxide																		
8	Endosulfan I																		
16	Dieldrin																		
16	4,4'-DDE																		
16	Endrin																		
16	Endosulfan II																		
16	4,4'-DDD																		
16	Endosulfan Sulfate																		
16	4,4'-DDT																		
80	Methoxychlor																		
16	Endrin ketone																		
80	Alpha-Chlordane																		
80	Gamma-Chlordane																		
160	Toxaphene																		
80	Aroclor-1016																		
80	Aroclor-1221																		
80	Aroclor-1232																		
80	Aroclor-1242																		
80	Aroclor-1248																		
160	Aroclor-1254																		
160	Aroclor-1260																		

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

Table 3

DATA SUMMARY FORM: INORGANICS

WATER SAMPLES (ug/L)

Attachment 2-3

Site Name: Dupont Newport Site

Case #: 11145 Sampling Date(s): PPK 12/19/88

*Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

CRDL	ANALYTE	MCQ194		MCQ195		MCQ196		MCQ197		MCQ198		MCQ199		BH5684		BH5727	
	Dilution Factor	1		1		1		1		1		1					
	Location	MW-1A		Dup MW-1A		MW-4B		MW-18A		MW-17A		MW-13		MW-17A Dupont Data 2/19/88		MW 13	
200	Aluminum	10800		11000		1860		4310		203		3430					
60	Antimony																
10	*Arsenic																
200	Barium	[88.4]		[88.3]		342		55700		22500		1180		65200		1300	
5	Beryllium	[0.4]	J	[0.5]	J	[0.4]	J	[0.1]	J		UJ	[0.4]	J				
5	*Cadmium									[4.5]	K			13		12	
5000	Calcium	21900		21600		48400		5360		82400		39200					
10	*Chromium	16.5	L	16.5	L	52.1	L	[8.4]	L		UL	11.8	L				
50	Cobalt	[8.4]		[9.7]		[14.0]		[35.9]		[36.7]		[13.8]					
25	Copper			[2.9]		[5.5]											
100	Iron	8690		8670		6550		6030		10700		31000					
5	*Lead					12.1		[2.5]	K		UL	6.5					
5000	Magnesium	30600		30000		17700		[985]		24200		18400					
15	Manganese	498		480		59.4		1010		430		3680					
0.2	Mercury																
40	*Nickel	[26.8]		[33.5]		72.5											
5000	Potassium	[1290]	B	[1650]	B	[3930]		22000		6770		[3120]	B				
5	Selenium		R		R		R		R		R		R				
10	Silver																
5000	Sodium	40700		41300		24300		24300		114000		33700					
10	Thallium										UL						
50	Vanadium	[25.3]		[25.0]		[21.6]		[10.1]				[22.2]					
20	Zinc	87.3	J	104	J	84.8	J	[18.1]	J	783	J	29.7	J	2630		43	
10	*Cyanide		Q		Q		Q		Q		Q		Q				

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 8

AR308561

ORIGINAL (Red)

Table 3

Attachment 2

AR308562

DATA SUMMARY FORM: I N O R G A N I C S

WATER SAMPLES (ug/L)

Site Name: Dupont Newport Site

Case #: 11145 Sampling Date(s): ~~12/20/88~~ 12/19

*Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

CRDL	ANALYTE	MCQ194		MCQ195		MCQ196		MCQ197		MCQ198		MCQ199		BH5730		BH5718		BH5676		
	Dilution Factor	1		1		1		1		1		1								
	Location	MW-1A		Dup MW-1A		MW-4B		MW-18A		MW-17A		MW-13		MW-1A 12/19/88		MW-4B DUPONT 12/19/88		MW-18A DATA →		
200	Aluminum	10800		11000		1860		4310		203		3430								
60	Antimony																			
10	*Arsenic																			
200	Barium	[88.4]		[88.3]		342		55700		22500		1180		128		391		70600		
5	Beryllium	[0.4]	J	[0.5]	J	[0.4]	J	[0.1]	J		UJ	[0.4]	J							
5	*Cadmium									[4.5]	K							9.1		
5000	Calcium	21900		21600		48400		5360		82400		39200								
10	*Chromium	16.5	L	16.5	L	52.1	L	[8.4]	L		UL	11.8	L							
50	Cobalt	[8.4]		[9.7]		[14.0]		[35.9]		[36.7]		[13.8]								
25	Copper			[2.9]		[5.5]														
100	Iron	8690		8670		6550		6030		10700		31000								
5	*Lead					12.1		[2.5]	K		UL	6.5								
5000	Magnesium	30600		30000		17700		[985]		84200		18400								
15	Manganese	498		480		59.4		1010		430		3680								
0.2	Mercury																			
40	*Nickel	[26.8]		[33.5]		72.5														
5000	Potassium	[1290]	B	[1650]	B	[3930]		22000		6770		[3120]	B							
5	Selenium		R		R		R		R		R		R							
10	Silver																			
5000	Sodium	40700		41300		24300		24300		114000		33700								
10	Thallium										UL									
50	Vanadium	[25.3]		[25.0]		[21.6]		[10.1]				[22.2]								
20	Zinc	87.3	J	104	J	84.8	J	[18.1]	J	783	J	29.7	J	73		70		1010		
10	*Cyanide		Q		Q		Q		Q		Q		Q							

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308563

DATA SUMMARY FORM: VOLATILES 1

WATER SAMPLES (ug/L)

Site Name: Du Pont Newport

Case #: 11145 Sampling Date(s): 12/19/88

Attachment 2-3

To calculate sample quantitation limit: (CRQL * Dilution Factor)

CRQL	COMPOUND	CQ143		CQ144		CQ145		CQ146		CQ147		CQ148				BH5688		BH5696	
	Dilution Factor	1.0/20.0		1.0/20.0		1.0/2.0		1.0		1.0		1.0							
	Location	MW-1A		Field Dup of CQ143		MW-1B		MW-18A		MW-17A		MW-13				MW-18A 12/19/88		MW-17A 12/19/88	
10	Chloromethane		U		U		U		U		U		U						
10	Bromomethane																		
10	*Vinyl Chloride																		
10	Chloroethane																		
5	*Methylene Chloride			4	B														
10	Acetone									2	B								
5	Carbon Disulfide																		
5	*1,1-Dichloroethene																		
5	1,1-Dichloroethane																		
5	*Total-1,2-Dichloroethene	40		44		10				5	J							<5.0	
5	Chloroform																		
5	*1,2-Dichloroethane																		
10	*2-Butanone																		
5	*1,1,1-Trichloroethane																		
5	*Carbon Tetrachloride																		
10	Vinyl Acetate		R		R		R		R		R		R						
5	Bromodichloromethane																		

CRQL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308564

DATA SUMMARY FORM: VOLATILES

Site Name: DuPont Newport

Case #: 11145 Sampling Date(s): 12/19/88

WATER SAMPLES (ug/L)

Attachment 2-3

To calculate sample quantitation limit: (CRQL * Dilution Factor)

	Sample No.	CQ143		CQ144		CQ145		CQ146		CQ147		CQ148							
	Dilution Factor	1.0/20.0		1.0/20.0		1.0/2.0		1.0		1.0		1.0							
	Location	MW-1A		Field Dup of CQ143		MW-4B		MW-18A		MW-17A		MW-13				MW-18A 12/19/88		MW-17A 12/19/88	
CRQL	COMPOUND																		
5	*1,2-Dichloropropane																		
5	Cis-1,3-Dichloropropene																		
5	Trichloroethene	60		64		65													
5	Dibromochloromethane																		
5	1,1,2-Trichloroethane																		
5	*Benzene						UL		UL		UL		UL						
5	Trans-1,3-Dichloropropene																		
5	Bromoform																		
10	4-Methyl-2-pentanone																		
10	2-Hexanone																		
5	*Tetrachloroethene	3300		2300		230				1	B								
5	1,1,2,2-Tetrachloroethane																		
5	*Toluene						UL		UL		UL		UL						
5	*Chlorobenzene						UL		UL	140	L		UL					120	
5	*Ethylbenzene						UL		UL		UL		UL						
5	*Styrene						UL		UL		UL		UL						
5	*Total Xylenes		UJ		UJ		UL		UL		UL		UL						

CRQL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308565

DATA SUMMARY FORM: B N A S 1

WATER SAMPLES
(ug/L)

Attachment 2-3

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

Site Name: DuPont—Newport

Case #: 11145 Sampling Date(s): 12/19/88

CRQL	COMPOUND	CQ143	CQ144	CQ145	CQ146	CQ147	CQ148		MW-18A	MW-17A
	Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0			
	Location	MW-1A	Field Dup of CQ143	MW-4B	MW-18A	MW-17A	MW-13		DuPont Data	
									12/19/88	12/19/88
10	Phenol									
10	bis(2-Chloroethyl)ether					UJ				
10	2-Chlorophenol									
10	*1,3-Dichlorobenzene									
10	*1,4-Dichlorobenzene					22				
10	Benzyl Alcohol									
10	1,2-Dichlorobenzene									
10	2-Methylphenol					UJ				
10	bis(2-Chloroisopropyl)ether					UJ	UJ			
10	4-Methylphenol									
10	N-Nitroso-di-n-propylamine					UJ				
10	Hexachloroethane					UJ	UJ			
10	Nitrobenzene					UJ	UJ			
10	Isophorone					UJ	UJ			
10	2-Nitrophenol									
10	2,4-Dimethylphenol						UJ			
50	Benzoic Acid									
10	bis(2-Chloroethoxy)methane						UJ			
10	2,4-Dichlorophenol									
10	1,2,4-Trichlorobenzene						UJ			
10	Naphthalene									
10	4-Chloroaniline									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

ORIGINAL (Red)

DATA SUMMARY FORM: B N A S 2

Site Name: Du Pont Newport

Case #: 11145 Sampling Date(s): 12/19/88

WATER SAMPLES (ug/L)

Attachment 2-3

To calculate sample quantitation limit: (CRQL * Dilution Factor)

AR308566

CRQL	COMPOUND	CQ143		CQ144		CQ145		CQ146		CQ147		CQ148				MW-18A 12/19/88		MW-17A 12/19/88	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0							
	Location	MW-1A		Field Dup of CQ143		MW-4B		MW-18A		MW-17A		MW-13							
10	Hexachlorobutadiene																		
10	4-Chloro-3-methylphenol																		
10	2-Methylnaphthalene																		
10	Hexachlorocyclopentadiene										UJ								
10	2,4,6-Trichlorophenol																		
50	2,4,5-Trichlorophenol																		
10	2-Chloronaphthalene																		
50	2-Nitroaniline																		
10	Dimethylphthalate																		
10	Acenaphthylene																		
10	2,6-Dinitrotoluene																		
50	3-Nitroaniline																		
10	Acenaphthene																		
50	2,4-Dinitrophenol		UJ		UJ		UJ		UJ										
50	4-Nitrophenol		UJ		UJ		UJ		UJ										
10	Dibenzofuran																		
10	2,4-Dinitrotoluene		UJ		UJ		UJ		UJ										
10	Diethylphthalate		UJ		UJ		UJ		UJ										
10	4-Chlorophenyl phenylether										UJ		UJ						
10	Fluorene		UJ		UJ		UJ		UJ										
50	4-Nitroaniline		UJ		UJ		UJ		UJ										
50	4,6-Dinitro-2-methylphenol		UJ		UJ		UJ		UJ		UJ								

CRQL = Contract Required Detection Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

DATA SUMMARY FORM: B N A S 3

WATER SAMPLES (ug/L)

Attachment 2

To calculate sample quantitation limit: (CRQL * Dilution Factor)

Site Name: DuPont Newport

Case #: 11145 Sampling Date(s): 12/19/88

CRDL	COMPOUND	CQ143		CQ144		CQ145		CQ146		CQ147		CQ148				MW-18A Dupont Data 12/19/88		MW-17A Dupont Data 12/19/88	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0							
	Location	MW-1A		Field Dup of CQ143		MW-4B		MW-18A		MW-17A		MW-13							
10	N-Nitrosodiphenylamine																		
10	4-Bromophenyl-phenylether										UJ		UJ						
10	*Hexachlorobenzene																		
50	*Pentachlorophenol																		
10	Phenanthrene																		
10	Anthracene																		
10	Di-n-butylphthalate																		
10	Fluoranthene																		
10	Pyrene																		
10	Butylbenzylphthalate																		
20	3,3-Dichlorobenzidine																		
10	Benzo(a)anthracene																		
10	Chrysene																		
10	bis(2-Ethylhexyl)phthalate	7	J			17		13		13		12							
10	Di-n-octylphthalate																		
10	Benzo(b)fluoranthene										UJ								
10	Benzo(k)fluoranthene		UJ		UJ		UJ		UJ		UJ								
10	Benzo(a)pyrene																		
10	Indeno(1,2,3-cd)pyrene												UJ						
10	Dibenz(a,h)anthracene												UJ						
10	Benzo(g,h,i)perylene												UJ						

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

ORIGINAL (Red)

AR308567

AR308568

DATA SUMMARY FORM: PESTICIDES AND PCBS

Site Name: DuPont Newport

Case #: 11145. Sampling Date(s): 12/19/88

WATER SAMPLES (ug/L)

Attachment 2-

To calculate sample quantitation limit: (CRQL * Dilution Factor)

CRQL	COMPOUND	CQ143	CQ144	CQ145	CQ146	CQ147	CQ148		MW-18A	MW-17A
	Dilution Factor	1.0	1.0	1.0	2.0	1.0	1.0			
	Location	MW-1A	Field Dup of CQ143	MW-4B	MW-18A	MW-17A	MW-13		DuPont Data 12/19/88	12/19/88
0.05	alpha-BHC									
0.05	beta-BHC									
0.05	delta-BHC									
0.05	*Gamma-BHC (Lindane)									
0.05	*Heptachlor									
0.05	Aldrin									
0.05	Heptachlor Epoxide									
0.05	Endosulfan I									
0.10	Dieldrin									
0.10	4,4'-DDE									
0.10	*Endrin									
0.10	Endosulfan II									
0.10	4,4'-DDD									
0.10	Endosulfan Sulfate									
0.10	4,4'-DDT									
0.5	*Methoxychlor									
0.10	Endrin ketone									
0.5	*Alpha-Chlordane									
0.5	*Gamma-Chlordane									
1.0	*Toxaphene									
0.5	*Aroclor-1016									
0.5	*Aroclor-1221									
0.5	*Aroclor-1232									
0.5	*Aroclor-1242									
0.5	*Aroclor-1248									
1.0	*Aroclor-1254									
1.0	*Aroclor-1260									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

AR308569

Dupont Newport Site
TARGET COMPOUND LIST

CRQL	COMPOUND	SDWA MCL mg/l	SDWA MCLG mg/l	WQC Aquatic Org and Drinking wtr mg/l	WQC Drinking water only mg/l	EPA Proposed MCL	EPA Proposed MCLG		
	Sulfate as SO_4								
	Chlorobenzene								
	Ethylbenzene								
	o+p-xylenes			1.4	2.4				
	Phenanthrene								
	Pyrene								
	Anthracene								
	Benzo(a) anthracene								
	Benzo(a) Pyrene								
	Benzo(ghi) perylene								
	Chrysene								
	2-Chlorophenol								
	p-Chloro-m-cresol			0.0001	0.0001				
	Acenaphthene								
	N-Nitrosodi-n-propylamine			0.02	0.02				
	1,2,4-Trichlorobenzene								
	p-Bromofluorobenzene								
	Radium-226/228	5 pci/l							
	Gross Alpha	15 pci/l							
	Gross Beta								

Attachment # 3-1
Page 1 of 4

ORIGINAL (Red)

Dupont Newport
TARGET COMPOUND LIST

CHOL	COMPOUND	SDWA MCL mg/l	SDWA MCLG mg/l	WQC Aquat. Org & Drink'g water mg/l	WQC Drink'g water only mg/l	EPA Proposed MCL mg/l	EPA Proposed MCLG mg/l		
	1,1,2,2-Tetrachloroethane								
	1,2-Dichlorobenzene			0.4	0.47				
	1,2-Trans-dichloroethylene								
	1,4-Dichlorobenzene								
	1,2-Dichloroethane		0						
	2,4-Dinitrotoluene			0.00011	0.00011				
	bis(2-Ethylhexyl) phthalate								
	Chlorobenzene								
	Cyanide, Total								
	Di-n-butyl Phthalate								
	Methylene Chloride								
	Tetrachloroethene								
	Tetrachloroethylene								
	Trichloroethylene		0			0.005			
	Indeno(1,2,3-c,d) Pyrene								
	2,4,6-Tribromophenol								
	2-Fluorobiphenyl								
	2-Fluorophenol								
	Nitrobenzene-D5			19.8	19.8				
	Phenol-D6								
	Terphenyl-D14								
	Fluoranthene			0.042	0.188				

Attachment # 3-1
Page 2 of 4

Dupont Newport
TARGET COMPOUND LIST

CRDL	ANALYTE	SDWA MCL mg/l	SDWA MCLG mg/l	WQC Aquatic Org and Drink'g water mg/l	WQC Drink'g Water only mg/l	EPA Proposed MCL mg/l	EPA Proposed MCLG mg/l			
40	Aluminum									Rs,
12	Antimony			0.146	0.146					
2	Arsenic	0.05								Rs
40	Barium	1.0				0.005				Rs.
1	Beryllium			0	0					Rs,04
1	Cadmium			0.01	0.01		0.005			Rs
1000	Calcium									Rs
2	Chromium	0.05					0.12			Rs
10	Cobalt									Rs
5	Copper						1.3			Rs
20	Iron									Rs
1	*Lead	0.05					0.02			Rs
1000	Magnesium									Rs
3	Manganese									Rs
0.2	Mercury	0.002					0.003			Rs
8	Nickel			0.0134	0.0134					RS
1000	Potassium									
1	Selenium	0.01					0.045			
2	Silver	0.05		0.05	0.05					Rs
1000	Sodium									Rs
2	Thallium			0.013	0.013					
10	Vanadium									Rs
4	Zinc	5.0								Rs
2	Cyanide									

AR308571

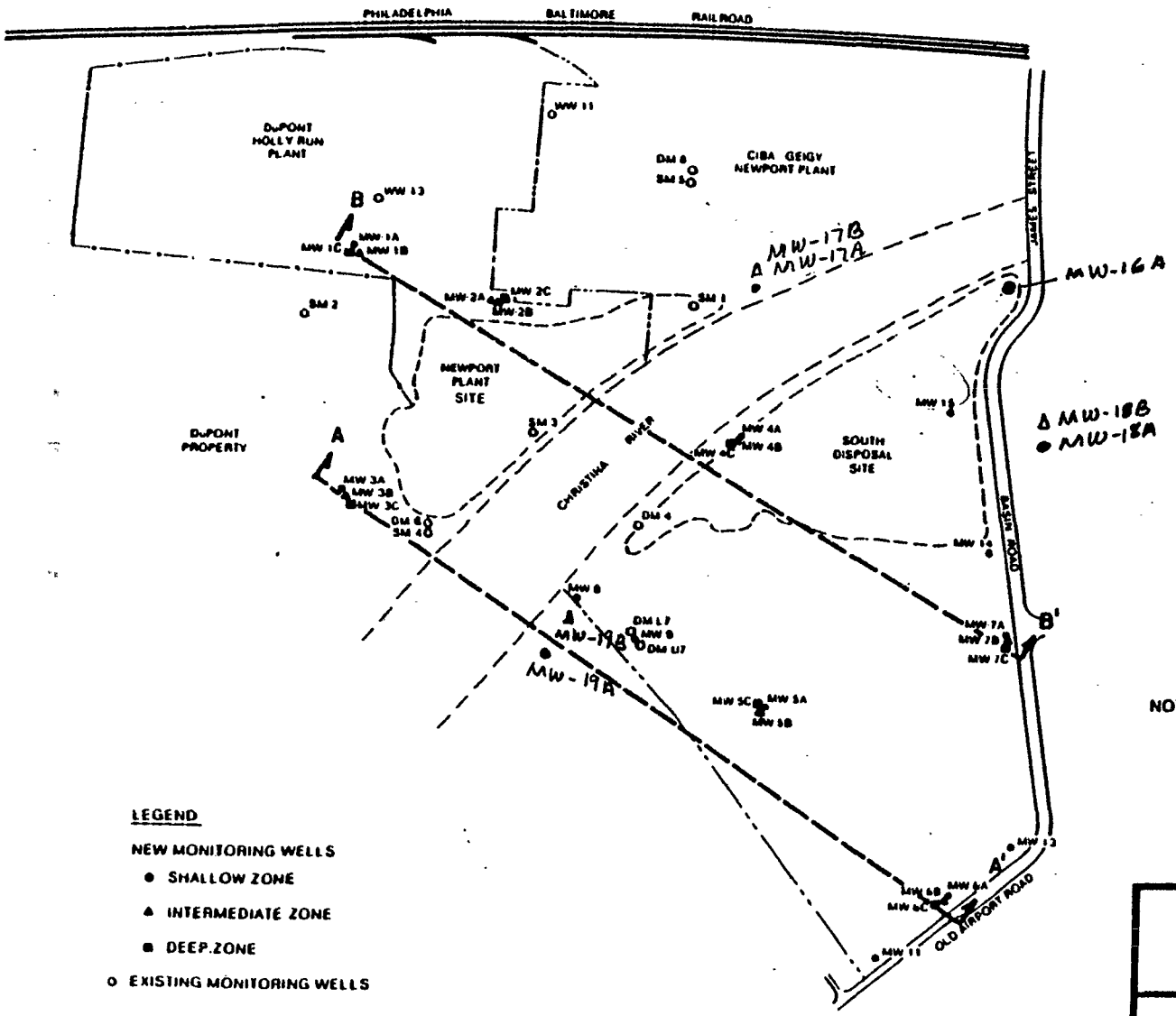
Attachment 3.1
page 3 of 4

Dupont Newport
TARGET COMPOUND LIST

CHOL	COMPOUND	SDWA MCL mg/l	SDWA MCLG mg/l	WQC Aquat. org. & Drink'g water mg/l	WQC Drink'g water only mg/l														
<	4,4'-DDE																		
)	Heptachlor Epoxide			0		0													
	4,4'-DDE																		
	4,4'-DDT			0		0													
	ARCLOR 1254																		
	ARCLOR 1260																		

AR308572

Attachment #3-1
Page 1 of 4



NOTE: Test boring and downhole geophysical testing performed on "C" deep zone wells, MW-1C thru MW-7C

CROSS-SECTION LOCATION PLAN
DuPONT - NEWPORT, DELAWARE

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

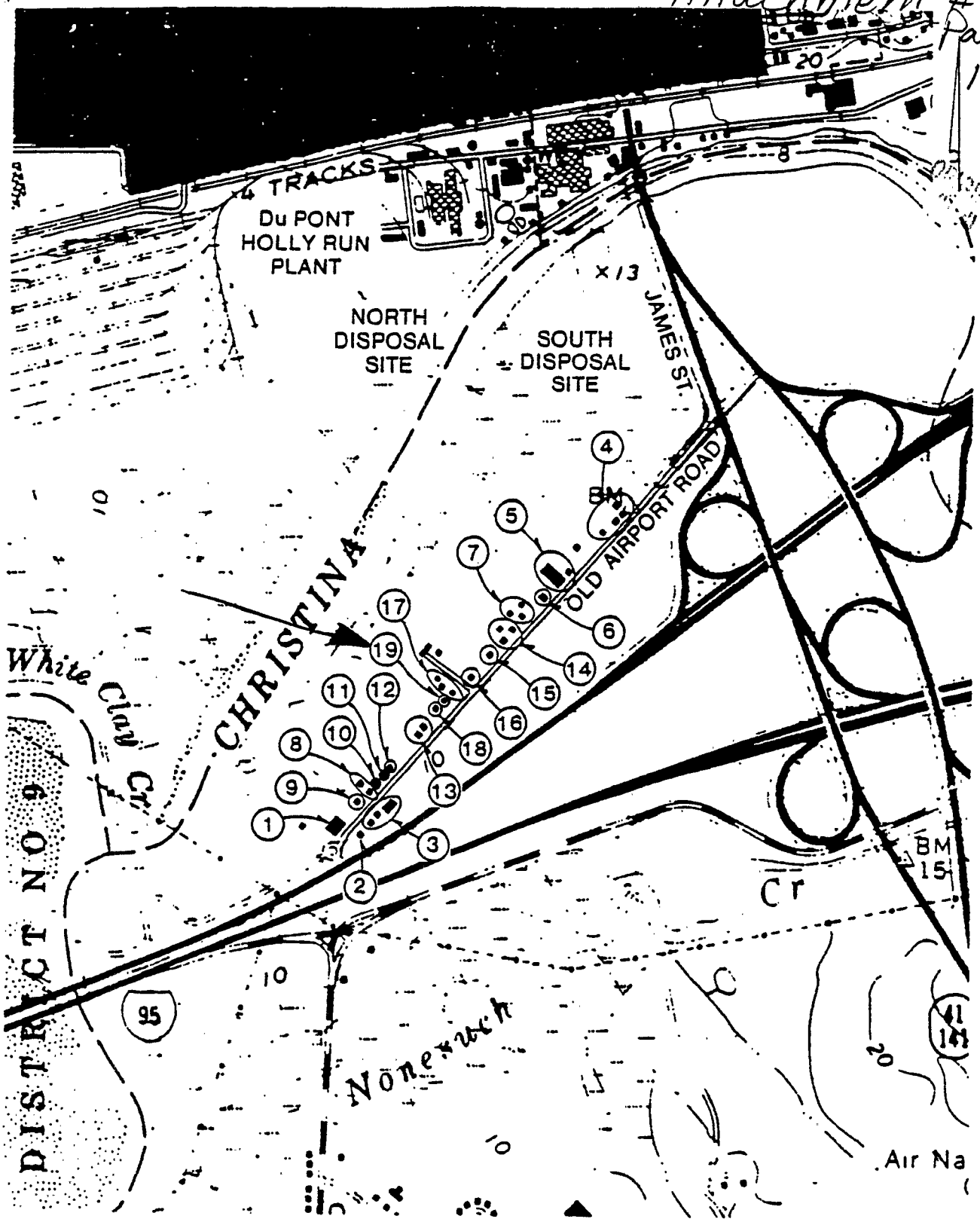
Drawn By T P	SCALE IN FEET 0 400	Date 9/2/87
Checked By R T G		JOB 87C2665-IE

FIGURE 2

AR308573

Attachment #7-1

Attachment #4-2
Page 1 of 3



OLD AIRPORT ROAD WELL INVENTORY
Du PONT - NEWPORT

AR308574

FIGURE 1-14

TABLE 1-7

OLD AIRPORT ROAD WELL INVENTORY

Reference Well No.	Usage Category	Owner or Business Name	Data Source	No. of Buildings Served	Reported Well Depth (ft)	Reported Casing Size/ Depth	Year Well Drilled	Type of Pump	Drinking or Cooking Usage	Reported Problems and Comments
1	Commercial	Joe Horisk Salvage	Office Secy.	1	80±	—	—	—	No	Filter installed due to heavy iron content.
2	Residential	Brzoska	Mrs. Brzoska	1	28±	—	—	—	Both	No filter, no problems, clear water.
3	Commercial & Residential	Elliott & Son Machines	Gene Brzoska	3	22	—	—	—	Both	No problems; artesian water company checked water quality recently; planning to drill 80-foot well to supply office building on east end; no filter.
4	Residential & Commercial	Necastro's Auto Salvage	Vince Necastro	3	"shallow"	—	—	Centr.	Both	No problems; well serves 2 houses and office; water was sampled by Aqua Services on 12/16/87 and labelled "Necastro-A"; former second well with submersible pump had problems and was abandoned; third well was drilled 4 years ago next to west side house, is not in use and was sampled by Aqua Services on 12/16/87 and labelled "Necastro-B" and had total depth measured at approximately 20 feet.
5	Commercial	Red Clay Consolidated School Dist.	Frank Edmisten	2	60±	6 in.	—	Subm.	No	Replaced pump several times recently due to black precipitate, corrosion, and iron rust problems; sulfur odor (H_2S); filter system.
6	Residential	Vince Necastro	Vince Necastro	1	—	—	—	—	Both	No problems.
7	Commercial	Kershaw Exc. Co.	Bob O'Grady	5	115	4 in.	1985	Subm.	No	Shallow well replaced 2 years ago because it went dry during the summer; new well has more iron than old well; filter system installed due to iron rust.
8	Commercial	Hardy & Son Contractors	Rick Davis	2	55±	—	—	Subm.	No	A lot of iron rust; reported 12-foot depth pumping level.
9	Residential	Goldsboro?	Not Home	1						

AR308575

Woodward-Clyde Consultants
Attachment # 4-2
Page 2 of 3

TABLE 1-7

OLD AIRPORT ROAD WELL INVENTORY

Reference Well No.	Usage Category	Owner or Business Name	Data Source	No. of Buildings Served	Reported Well Depth (ft)	Reported Casing Size/ Depth	Year Well Drilled	Type of Pump	Drinking or Cooking Usage	Reported Problems and Comments
10	Residential	Claude Blevins	Claude Blevins	2	100±	25± ft of 4 in. casing	1968 (Delmarva Drilling Co.)	Centr.?	Both	Water tested 8 to 10 years ago by University of Delaware; owner concerned about groundwater contamination due to junkyards and DuPont operations; pump in basement with foot valve; reported static water level 10 feet below ground; plans to call Al Palmer for copy of DuPont Summer '87 Test Well Program results.
11	Residential	Claude Blevins	Claude Blevins	2	100±	25± ft of 4 in. casing	1960	Centr.?	Both	See well reference No. 10; both No. 10 and 11 are rented.
12	Residential	Mitchell	Not Home	1						
13	Commercial	Delaware Auto Salvage	Jerry Russell (Owner)	2	110±	—	1972±	—	Cooking	Owner reports bad sulfur smell and iron stains, although water is clear; uses filter system; some government agency sampled well 6 to 8 years ago but never provided results; concerned about DuPont contamination of groundwater.
14	Residential	Not Home	—	1						
15	Commercial	Bob Biggs Auto Parts	Bob Biggs	1	12±	—	—	Centr.	No	No problems reported except iron stains; used for washing only.
16	Commercial & Residential	Cress Collission Service, Inc.	Millie Cress	3	—	—	1957±	—	No	Do not drink water due to possible contamination from DuPont operations.
17	Commercial	Eastern Auto Salvage	Mike Filipkowski	1	"Shallow"		—	Centr.	No	No problems except a lot of iron and some sulfur smell.
18	Residential	Bill Puckett	Bill Puckett	1	38±	—	1975±	—	Both	Water is rusty and hot water smells of sulfur; water softener in use.
19	Commercial	B&F Towing	Employee	1	65±	—	—	Centr.	No	Iron stains and sulfur odor.

Note: See Figure 1 for locations of referenced well numbers.

Woodward-Clyde Consultants

Attachment # 4-2 Page 3 of 3

AR308576

ETC

DATA MANAGEMENT SUMMARY REPORT
(DM-1H) - History of All Parameters Present, Selected Sample Point

DATE: 11/29/8
PAGE: 1

Chain of Custody Data Required for ETC Data Management Summary Report

See Below	E.I. DUPONT	DUPNEWGWM	AW05	See Below
ETC Sample No.	*Company*	*Facility*	*Sample Point*	*Date*

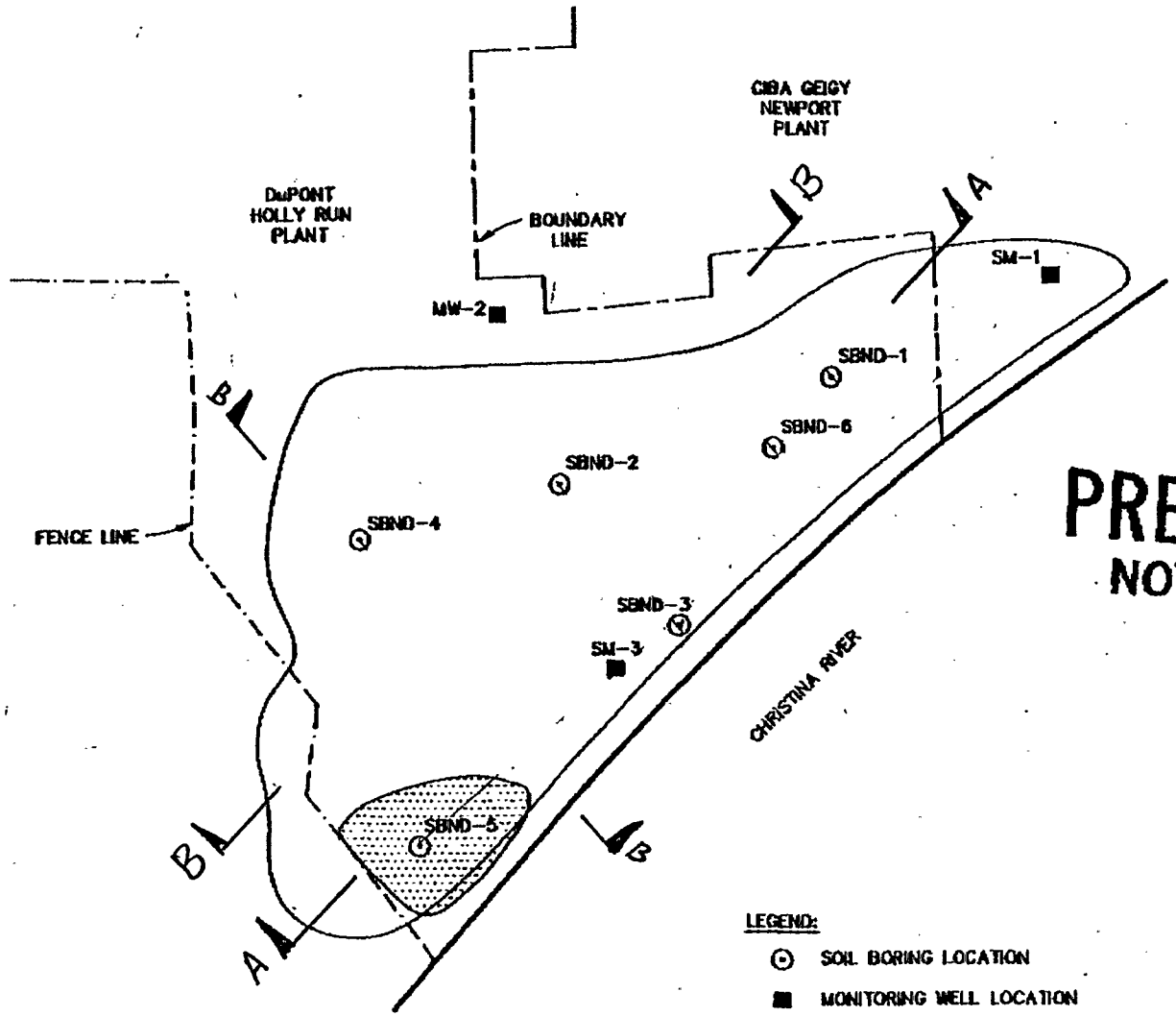
Sample Points, Sampling Dates, and ETC Sample No.'s

Parameters		Units	R AW05 880921 BG6895	AW06	AW04	AW01	AW02	AW03
Miscellaneous Parameters		ppb	←	North	→	← South	→	
2,4,6-Tribromophenol		ug/l	181.1	192.26	163.74		184.18	181.4
2-Fluorobiphenyl		ug/l	83.88	94.26	81.6		84	92.02
2-Fluorophenol		ug/l	98.06	95.98	108.3		82.62	147.36
Aluminum, Total		ug/l	47	126	56	78	77.1	485
Arsenic, Dissolved		ug/l	1.9	1.4		1.5		1.5
Arsenic, Total	50	ug/l	.90					1.3
Barium, Dissolved		ug/l	224	328	187	766	977	596
Barium, Total	1000	ug/l	220	332	174	940	807	404D ✓
Calcium, Dissolved		ug/l	39700	31200	39000	25400	26000	24500
Calcium, Total		ug/l	40000	30000	39800	25400	25400	23400
Copper, Dissolved		ug/l	5.0	3.8				7.6
Copper, Total		ug/l	14	9.6	2.9	3.6	3.0	22
Iron, Dissolved		ug/l	35	74	63	84	154	59
Iron, Total		ug/l	534	927	520	904	1150	3120
Lead, Dissolved		ug/l	1.9				1.1	4.4
Lead, Total	50	ug/l	89 ✓	36	2.9	7.0	16	126 ✓
Magnesium, Dissolved		ug/l	20000	11200	18100	10800	10800	13700
Magnesium, Total		ug/l	20000	10600	18100	10400	10700	13100
Manganese, Dissolved		ug/l	1300	407	655	937	886	455
Manganese, Total		ug/l	1350	1110	629	964	952	946
Mercury, Dissolved		ug/l	.8					
Nitrobenzene-D5		ug/l	81.46	88.66	84.52		85.18	99.46
Phenol-D6		ug/l	60.78	61.96	64.12		53.92	148.3
Potassium, Dissolved		ug/l	1900	1450	3740	1050	1660	5080
Potassium, Total		ug/l	1830	1390	3200	1120	1060	4810
Sodium, Dissolved		ug/l	52200	35800	50000	9410	9820	27000
Sodium, Total		ug/l	49000	32000	48000	8540	8510	24800
Terphenyl-D14		ug/l	88.72	84.56	96.14		89.82	94.24
Zinc, Dissolved		ug/l	107	110	109	24	64	111
Zinc, Total	5000	ug/l	108	136	32	43	7.8	201
Chromium Total	50	ug/l		6.5	3.8			
Silver Total		ug/l				3.2	2.5	

Notes: BMDL=Below Method Detection Limit ND=Parameter not detected '-'=Parameter not tested

R308577

Attachment #5-2



PRELIMINARY
NOT REVIEWED

Contaminant Concentrations

DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

SOIL COVER-SAMPLING LOCATIONS
NORTH DISPOSAL SITE
DuPONT – NEWPORT SITE

Checked by: R.T.G.
Rev. No.:
Scale: 0 – 100 Feet

FIGURE 3

Attachment # 6-1
Page 1 of 5

AR300578

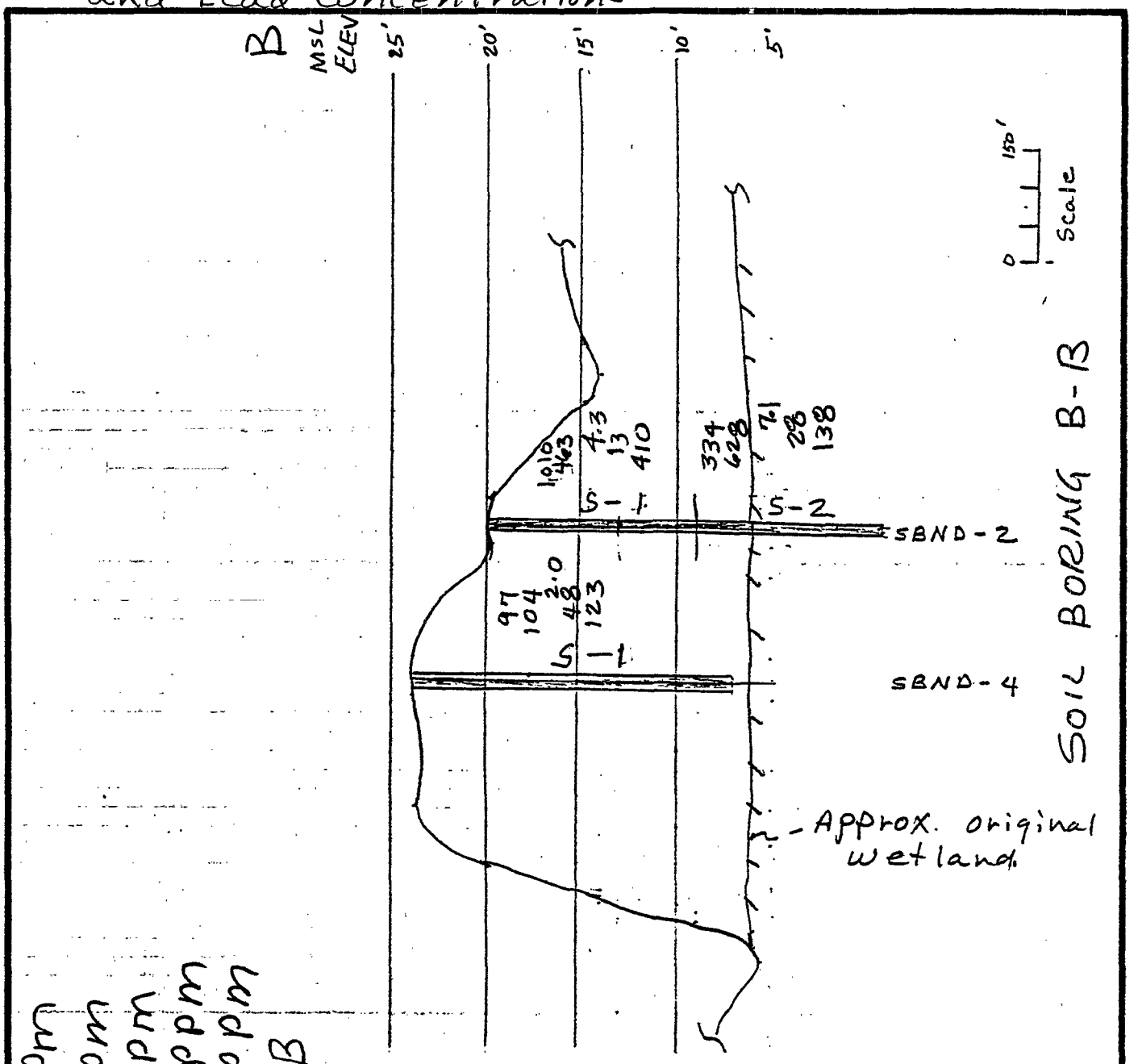
AR300578

JE Jacobs Engineering Group Inc.
Central Region — Houston, Texas

JOB NO. C03001
BY P. Filkas DATE 3-22-8
CHECKED _____ DATE _____
PAGE 2 OF 5 REV. _____

CALCULATIONS AND SKETCHES

CLIENT AND LOCATION Dupont Newport site — Attachment 6-1
UNIT North Disposal site.
ITEM Soil Borings: Barium, Zinc, Cadmium, Chromiums and Lead Concentrations



Barium ppm
Zinc ppm
Cadmium ppm
Chromium ppm
Lead ppm
B

IFC
APP
IFA

BOND 25-00-011

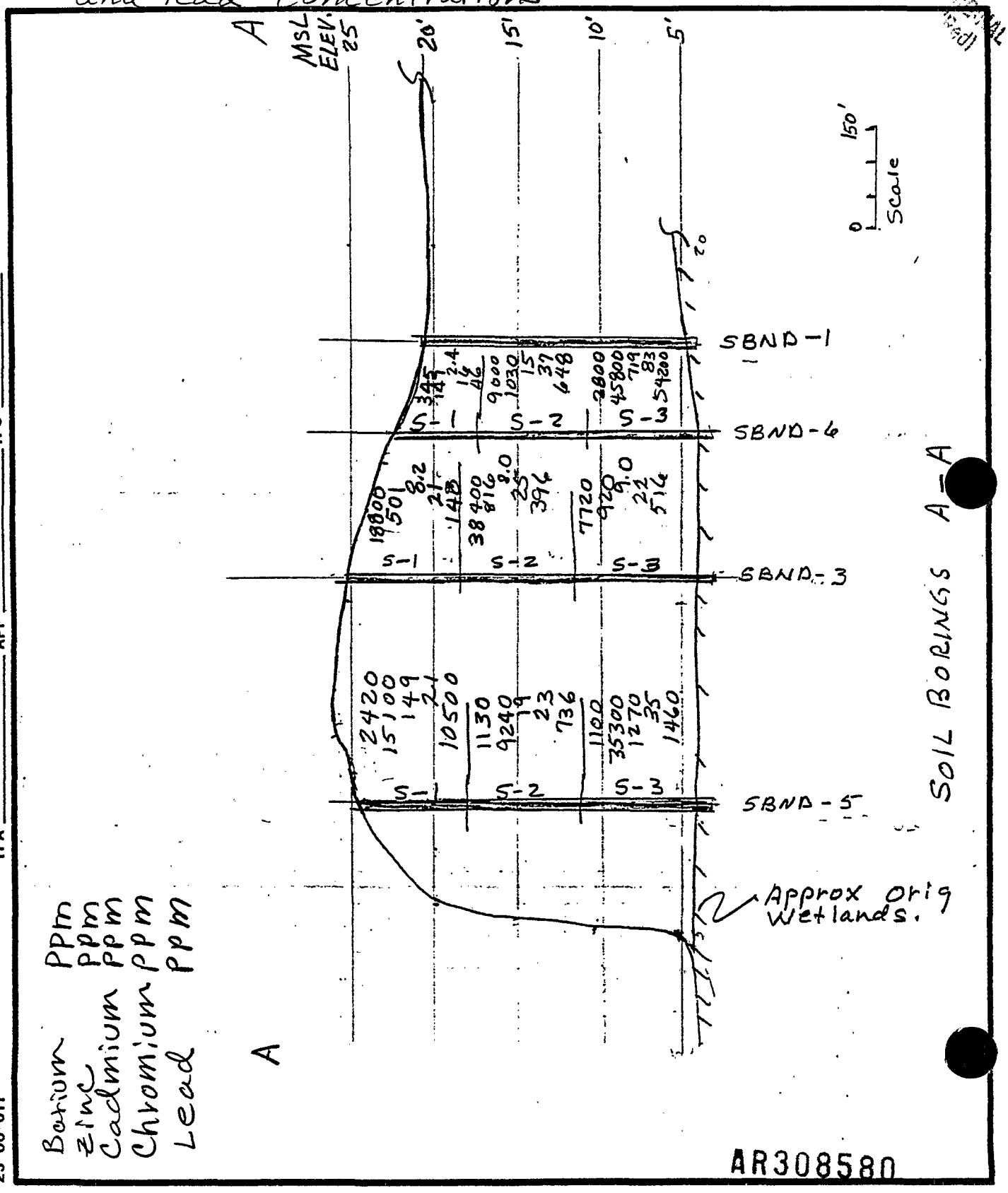
AR308579

Jacobs Engineering Group Inc.
Central Region — Houston, Texas

JOB NO. C03-001
BY P. Filkar DATE 3/22/8
CHECKED _____ DATE _____
PAGE 3 OF 5 REV. _____

CALCULATIONS AND SKETCHES

CLIENT AND LOCATION Dupont Newport site — Attachment
UNIT North Disposal Site
ITEM Soil Borings: Barium, Zinc, Cadmium, Chromium and lead concentrations



IFC
APP
IFA

BOND 25-00-011

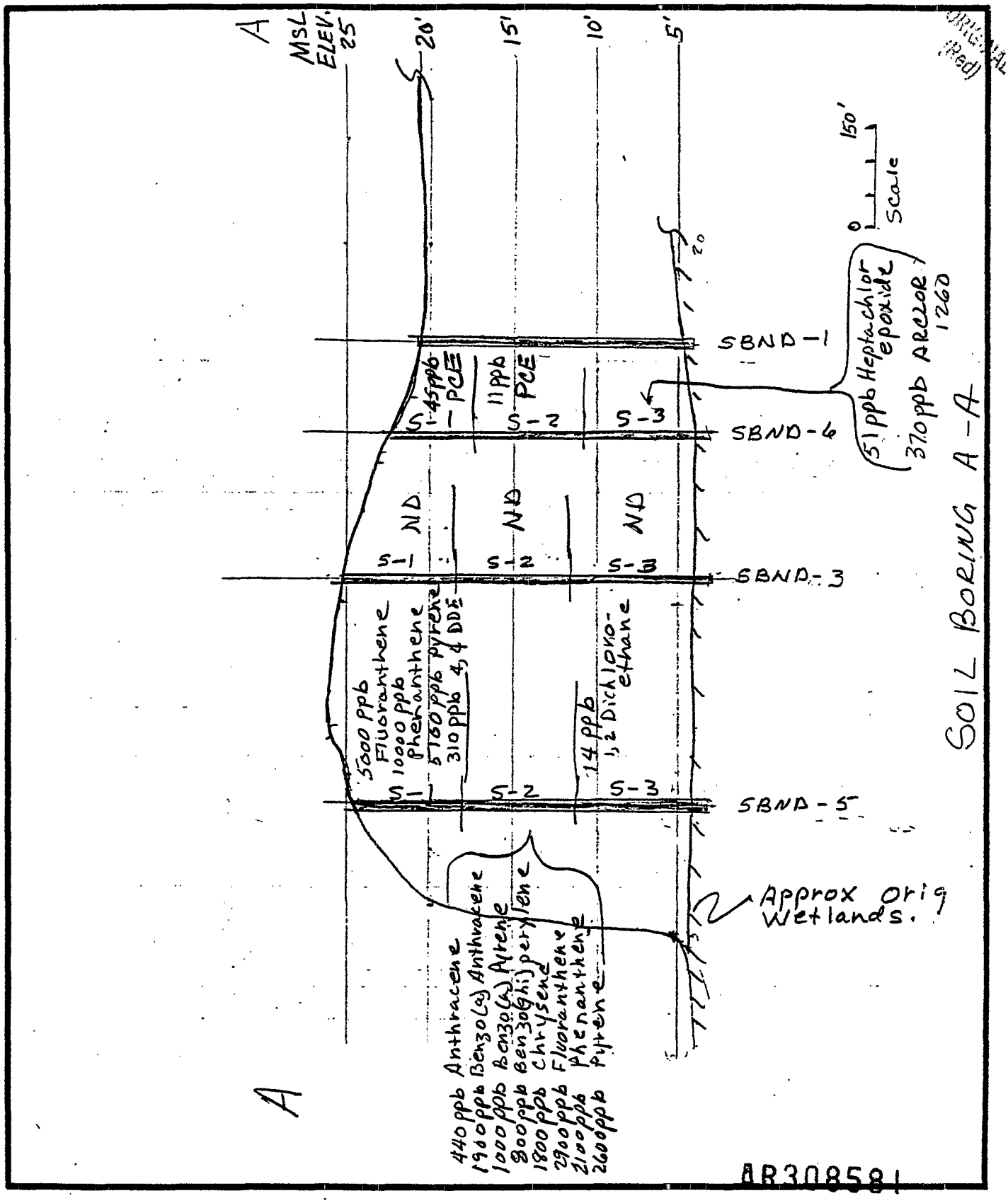
AR308580

JE Jacobs Engineering Group Inc.
Central Region — Houston, Texas

JOB NO. C03-001
BY P. Fikac DATE 3/22/8
CHECKED _____ DATE _____
PAGE 4 OF 5 REV. _____

CALCULATIONS AND SKETCHES

CLIENT AND LOCATION Dupont Newport site — Attachment 6-1
UNIT North Disposal Site
ITEM Soil Borings; organic concentrations



IFC
APP
IFA

BOND 25-00-011

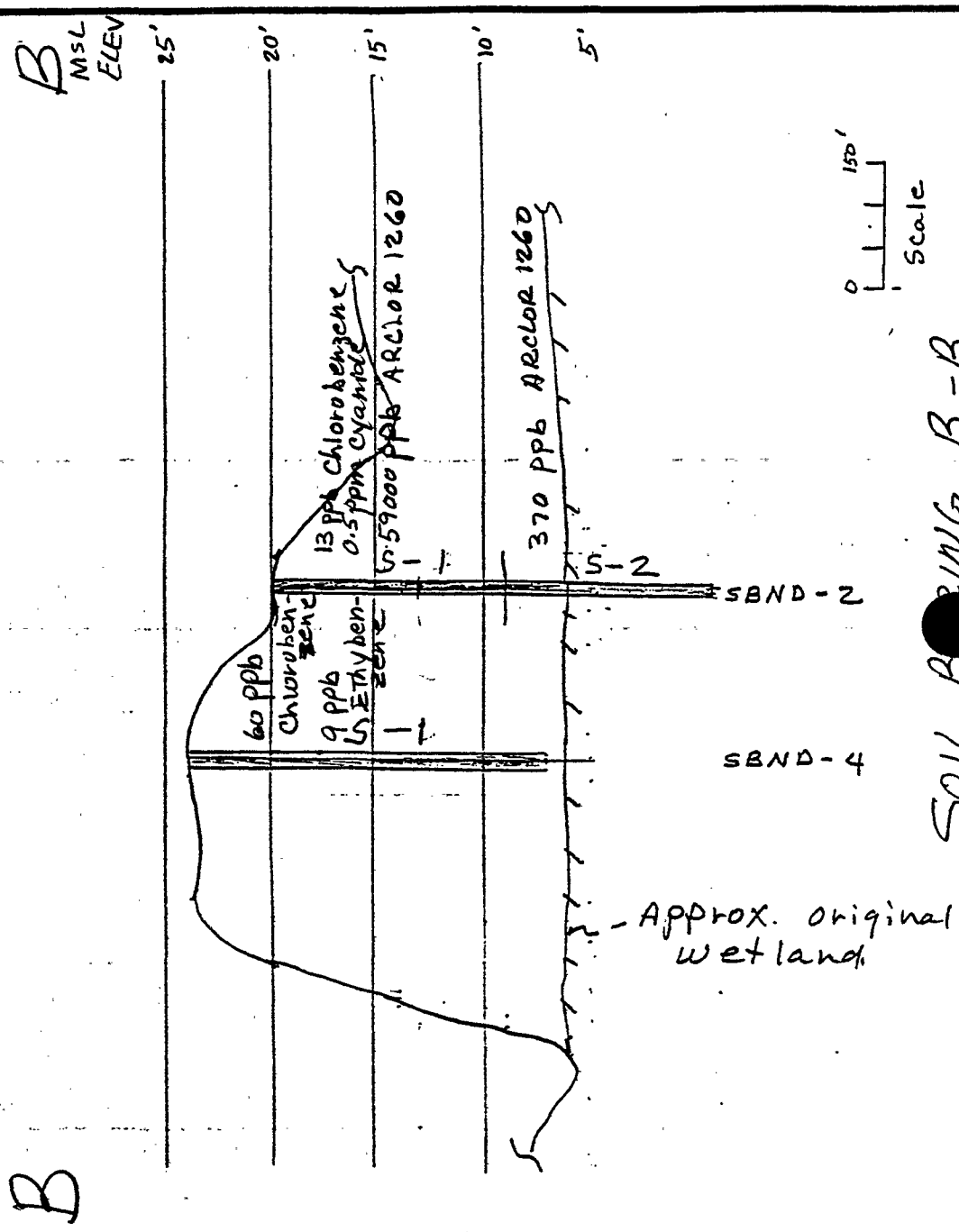
AR308581

Jacobs Engineering Group Inc.
Central Region — Houston, Texas

JOB NO. C0300b
BY P. Filkac DATE 3-22-8
CHECKED _____ DATE _____
PAGE 5 OF 5 REV. _____

CALCULATIONS AND SKETCHES

CLIENT AND LOCATION Dupont Newport site — Attachment 6
UNIT North Disposal site.
ITEM Soil Borings; organic Concentrations



IFC
APP
IFA

BOND 25-00-011

AR308582

ETC

DATA MANAGEMENT SUMMARY REPORT
(DM-1H) - History of All Parameters Present, Selected Sample Point

DATE: 01/19/89
PAGE: 1

Chain of Custody Data Required for ETC Data Management Summary Report

See Below	E.I. DUPONT	DUPNEWGUM	SGS-6	See Below
ETC Sample No.	Company	Facility	Sample Point	Date

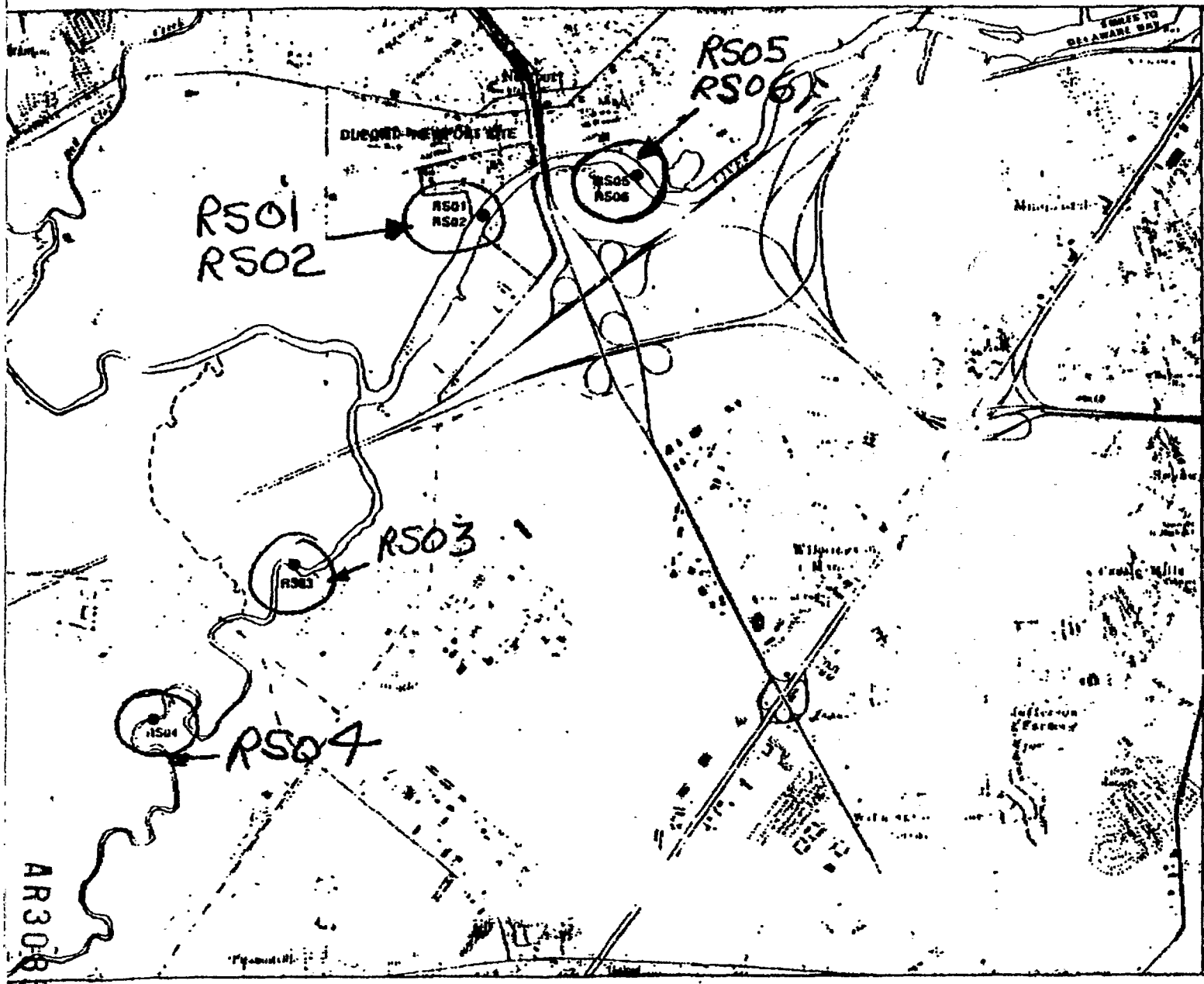
Parameters	Units	SGS-6 881109 BH1618	SGS-5	SGS-4	SGS-3	SGS-2	SGS-1		
			SURFACE SOILS						
Miscellaneous Parameters									
Aluminum, Total	mg/kg	6450	4630	8920	11900	18500	8890		
Antimony, Total	mg/kg	3.1	-		6.5	8.8	11		
Arsenic, Total	mg/kg	14	1.3	3.3	2.0	4.7	3.1		
Barium, Total	mg/kg	3550 ✓	411	895	58	431	1060 ✓		
Beryllium, Total	mg/kg	.2	0.2	0.3	0.4	1.0	0.5		
Cadmium, Total	mg/kg	36 ✓	1.5	2.3	3.2	4.1	4.0		
Calcium, Total	mg/kg	347	141	429	551	17200	1180		
Chromium, Total	mg/kg	44 ✓	10	18	23	24	21		
Cobalt, Total	mg/kg	9.5	2.1	4.0	5.0	5.3	7.4		
Copper, Total	mg/kg	218	20	8.5	5.4	12	17		
Iron, Total	mg/kg	19100	7380	14400	19900	22800	23100		
Lead, Total	mg/kg	761	58	47	27	64	87		
Magnesium, Total	mg/kg	671	805	1540	2390	7150	1640		
Manganese, Total	mg/kg	291	60	96	103	988	196		
Mercury, Total	mg/kg	1.6 ✓							
Nickel, Total	mg/kg	35 ✓	4.2	6.1	7.4	8.6	10		
Potassium, Total	mg/kg	367	246	443	798	950	1110		
Selenium, Total	mg/kg	.1							
Sodium, Total	mg/kg	58	64	43	78	125	36		
Vanadium, Total	mg/kg	82	16	30	35	40	49		
Zinc, Total	mg/kg	8240 ✓	7340	74	36	70	98		

Footnotes: BMDL=Below Method Detection Limit ND=Parameter not detected '-'=Parameter not tested

AR300583

AR308583

Attachment # 7-1



LEGEND

● RIVER SEDIMENT SAMPLING LOCATION

MAP SOURCE:
BASE MAP TAKEN FROM U.S. G.S. 7.5 MINUTE QUAD SERIES, "NEWARK, EAST DELAWARE - NEW JERSEY" DATED 1953, PHOTOREVISED 1985 AND "WILMINGTON, SOUTH, DELAWARE - NEW JERSEY" DATED 1957, PHOTO REVISED 1987

SCALE

SEDIMENT SAMPLING STATIONS
CHRISTINA RIVER

WOODWARD - CLYDE CONSULTANTS

AR308584

Page 1 of 2
Attachment # 7-2

ETC

DATA MANAGEMENT SUMMARY REPORT
(DM-1H) - History of All Parameters Present, Selected Sample Point

DATE: 11/29/8[illegible]
PAGE: 1

Chain of Custody Data Required for ETC Data Management Summary Report

See Below	E.I. DUPONT	DUPNEWGWM	RS01	See Below
ETC Sample No.	*Company*	*Facility*	*Sample Point*	*Date*

Sample Points, Sampling Dates, and ETC Sample No.'s

Parameters	Units	RS01 880923 BG6902	RS02	RS03	RS04	RS05	RS06		
Priority Poll. B/Ns GC/MS									
Indeno(1,2,3-c,d)pyrene	ug/kg	720							
Fluoranthene	ug/kg					800			
Miscellaneous Parameters									
2,4,6-Tribromophenol	ug/kg	4500			3800	4700	3500		
2-Fluorobiphenyl	ug/kg	2400			2200	2500	1900		
2-Fluorophenol	ug/kg	5000			5300	5600	4600		
Aluminum, Total	mg/kg	23300	24900	17100	15100	26500	26100		
Arsenic, Total	mg/kg	330	365	264	237	404 ✓	380 ✓		
Barium, Total	mg/kg	752	339	266	190	6330	1090		
Cadmium, Total	mg/kg	6.5	3.0	5.2	3.9	19	16		
Calcium, Total	mg/kg	1760 V	2440	2610	2360	2310	1890		
Chromium, Total	mg/kg	66	60	54	49	138 ✓	152 ✓		
Cobalt, Total	mg/kg	18	21	17	15	32	18		
Copper, Total	mg/kg	61 V	49	59	43	128 ✓	83 ✓		
Iron, Total	mg/kg	31300	40100	34000	33100	43300	38100		
Lead, Total	mg/kg	358	151	156	139	301 ✓	432 ✓		
Magnesium, Total	mg/kg	4840	5820	3650	2910	5500	5150		
Manganese, Total	mg/kg	657	1010	797	665	920	707		
Mercury, Total	mg/kg	0.4	0.3	0.7		0.8	0.9		
Nickel, Total	mg/kg	28	31	24	21	34	28		
Nitrobenzene-D5	ug/kg	2400			2000	2300	1900		
Phenol-D6	ug/kg	4700			3400	4100	3100		
Potassium, Total	mg/kg	3060	4080	1770	1320	3130	2970		
Silver, Total	mg/kg	1.0	1.1	0.7		1.3	1.2		
Sodium, Total	mg/kg	168	182	161	130	283	216		
Terphenyl-D14	ug/kg	2300			2100	2100	1800		
Vanadium, Total	mg/kg	55	66	55	54	67	57		
Zinc, Total	mg/kg	1600	812	1240	718	3370 ✓	3450 ✓		
Beryllium	mg/kg				0.4				
Thallium	mg/kg					2.6			
Cyanide	mg/kg						2.1		

Footnotes: BMDL=Below Method Detection Limit ND=Parameter not detected '-'=Parameter not tested

AR300585

Page 2 of 2

Attachment # 7-2

ETC

DATA MANAGEMENT SUMMARY REPORT
(DM-1H) – History of All Parameters Present, Selected Sample Point

DATE: 11/29/
PAGE: 1

Chain of Custody Data Required for ETC Data Management Summary Report

See Below	E.I. DUPONT	DUPNEWGWM	AS02	See Below
ETC Sample No.	*Company*	*Facility*	*Sample Point*	*Date*

Parameters	Units	AS02 880920 BG6915	AS01 (South	AS03 Wetlands)	AS04	AS05
Miscellaneous Parameters						
2,4,6-Tribromophenol *	ug/kg	4400	4000	8200	12000	11000
2-Fluorobiphenyl *	ug/kg	2000	2000	2900	4400	3700
2-Fluorophenol *	ug/kg	4500	4100	8000	12000	9600
Aluminum, Total	mg/kg	18000	25000	20400	21700	22400
Arsenic, Total	mg/kg	271	331	248	65	10
Barium, Total	mg/kg	7950	11400	3840	21500	12900
Beryllium, Total	mg/kg	0.3		0.7		
Cadmium, Total	mg/kg	36	77	31	13	45
Calcium, Total	mg/kg	2300	2720	1880	1420	2630
Chromium, Total	mg/kg	44	54	57	60	63
Cobalt, Total	mg/kg	11	21	14	15	28
Copper, Total	mg/kg	285	269	1090	307	239
Iron, Total	mg/kg	27200	32500	51900	49500	37200
Lead, Total	mg/kg	1820	1470	4800	904	559
Magnesium, Total	mg/kg	4430	5780	3720	3700	4330
Manganese, Total	mg/kg	452	560	833	299	694
Mercury, Total	mg/kg	0.5	0.3	0.7		
Nickel, Total	mg/kg	34	38	37	30	35
Nitrobenzene-D5 *	ug/kg	2000	1900	3200	4600	3700
Phenol-D6 *	ug/kg	4000	3700	5000	6400	4500
Potassium, Total	mg/kg	1650	2160	1452	1210	1620
Silver, Total	mg/kg	1.6	1.5	43		
Sodium, Total	mg/kg	169	210	224	540	338
Terphenyl-D14	ug/kg	2600	2500	2600	3500	3100
Vanadium, Total	mg/kg	45	53	61	57	53
Zinc, Total	mg/kg	3940	6270	8820	1380	3970

*5 Organic compounds

AR308586

Footnotes: BMDL=Below Method Detection Limit ND=Parameter not detected '-'=Parameter not tested

Attachment # 7-3

ETC

DATA MANAGEMENT SUMMARY REPORT
(DM-1H) - History of All Parameters Present, Selected Sample Point

DATE: 11/29/8
PAGE: 1

Chain of Custody Data Required for ETC Data Management Summary Report

See Below	E.I. DUPONT	DUPNEWGWM	AS06	See Below
ETC Sample No.	*Company*	*Facility*	*Sample Point*	*Date*

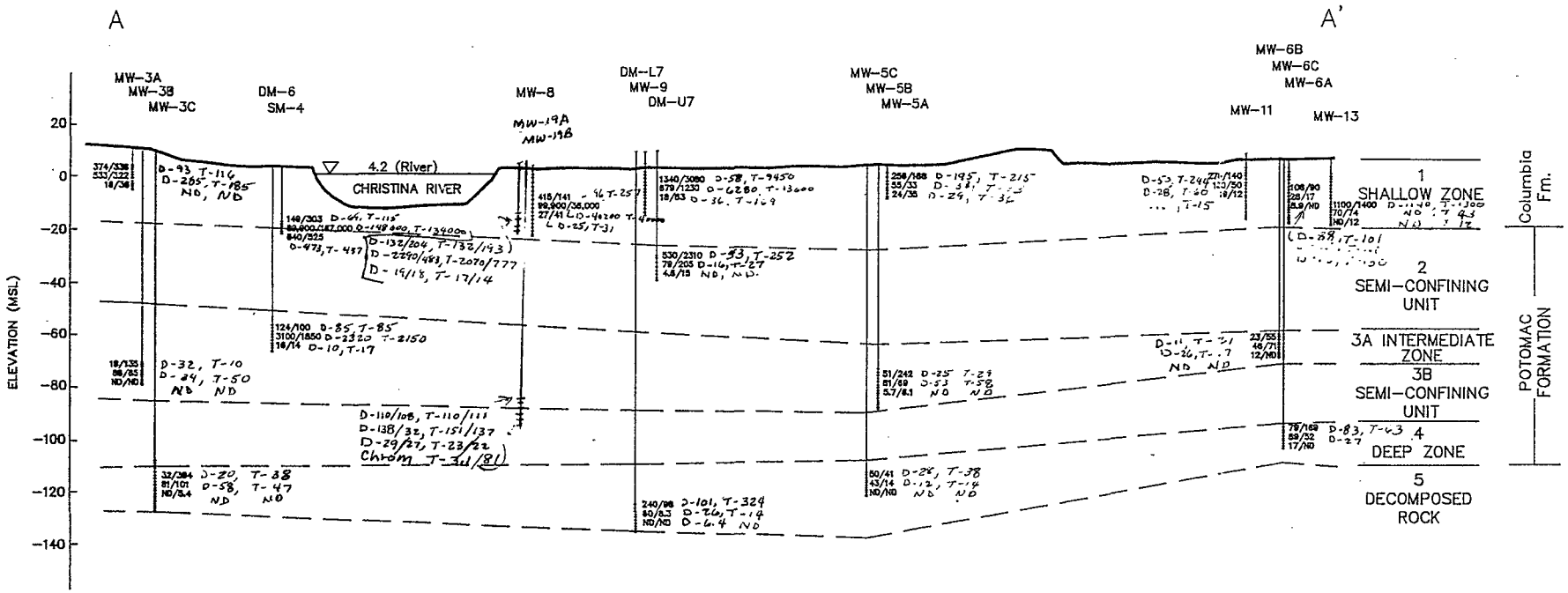
Parameters	Units	AS06 880921 BG6906	AS07	AS08	AS09				
			(North wetlands)						
Priority Poll. B/Ns GC/MS									
bis(2-Ethylhexyl)phthalate	ug/kg	3600							
Miscellaneous Parameters									
2,4,6-Tribromophenol	ug/kg	4200	3400	2900	6500				
2-Fluorobiphenyl	ug/kg	2300	2200	1600	3900				
2-Fluorophenol	ug/kg	3600	3800	2200	7700				
Aluminum, Total	mg/kg	14000	8040	7300	18800				
Arsenic, Total	mg/kg	149	129	149	435				
Barium, Total	mg/kg	1030	3420	1574	1610				
Cadmium, Total	mg/kg	9.6	39	14	48				
Calcium, Total	mg/kg	14800	18300	629	3110				
Chromium, Total	mg/kg	288	157	142	576				
Cobalt, Total	mg/kg	13	9.6	3.8	16				
Copper, Total	mg/kg	577	1410	715	827				
Iron, Total	mg/kg	32800	22800	11800	63400				
Lead, Total	mg/kg	644	8760	6010	6490				
Magnesium, Total	mg/kg	9340	2390	910	2930				
Manganese, Total	mg/kg	1620	2070	252	2170				
Mercury, Total	mg/kg	1.0	3.4	1.4	1.6				
Nickel, Total	mg/kg	58	32	21	47				
Nitrobenzene-D5	ug/kg	2000	2000	1200	4800				
Phenol-D6	ug/kg	3100	3800	820	7700				
Potassium, Total	mg/kg	760	643	358	975				
Selenium, Total	mg/kg	0.6	4.3		4.1				
Silver, Total	mg/kg	1.5	5.0	1.9	2.0				
Sodium, Total	mg/kg	230	159	76	281				
Terphenyl-D14	ug/kg	2500	2400	1600	4000				
Vanadium, Total	mg/kg	87	37	28	82				
Zinc, Total	mg/kg	1480	7570	3100	5200				
Antimony	mg/kg	3	59	31					
Beryllium				0.2					

Footnotes: BMDL=Below Method Detection Limit ND=Parameter not detected '-'=Parameter not tested

R308587

Page 2 of 2
Attachment #7-3

Attachment #4-1



DEC 88 OR 881108/881220
D- Dissolved
T- Total

LEGEND:

|	Well Screen Interval
ND	Not detected or detection below method detection limits
NS	Not Sampled
13/ND	August, 1987 / December 1987 Sampling
66	Barium Concentrations, ppb
42	Zinc Concentrations, ppb
15	Cadmium Concentrations, ppb

DWS 1000ppb
MCL 5000ppb
DWS 10ppb

SCALE IN FEET
0 300

GROUNDWATER, A-A'
BARIUM, ZINC AND CADMIUM CONCENTRATIONS
DuPONT - NEWPORT SITE
NEWPORT, DELAWARE

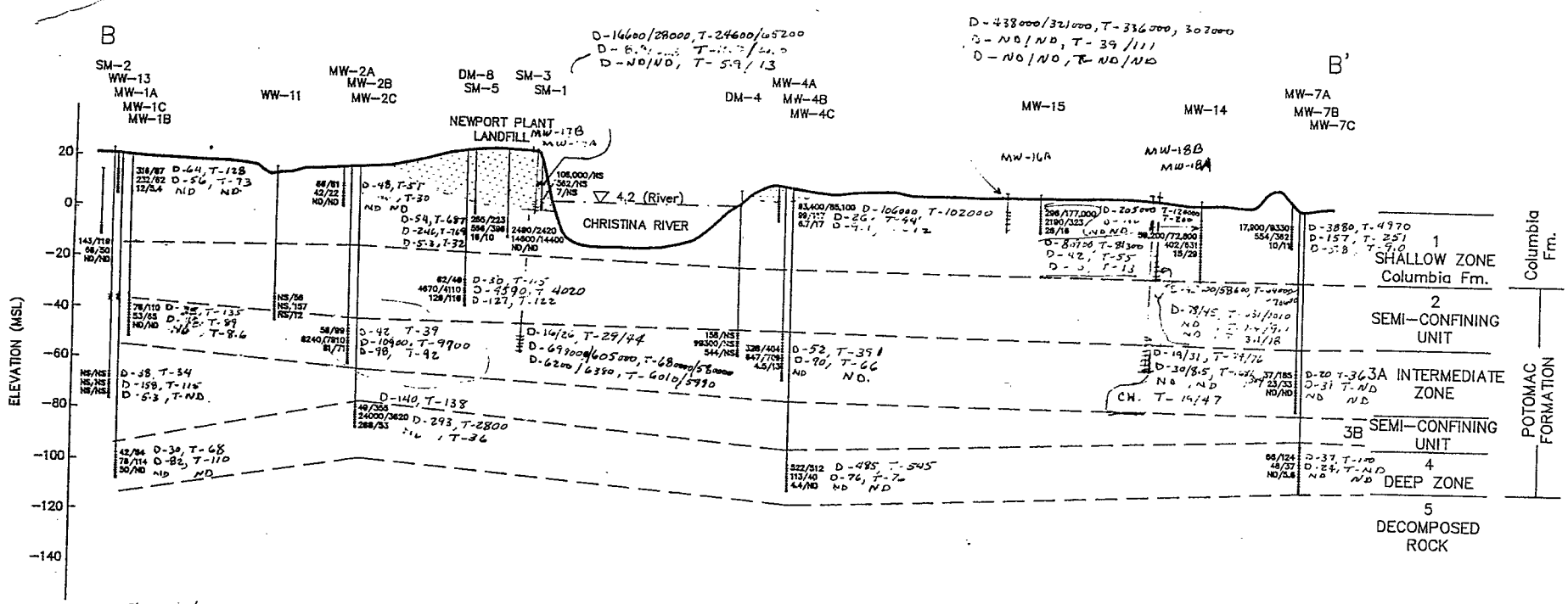
WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: A.M.H.	As Noted	Job No.: 88C2076-2

FIGURE 3

AR308588

Attachment # 4-1



Dec 88 or 881108/881219
D - Dissolved
T - Total

LEGEND:

┃	Well Screen Interval
ND	Not detected or detected below method detection limits
NS	Not sampled
13/ND	August, 1987 / December 1987 Sampling
66	Barium Concentrations, ppb
42	Zinc Concentrations, ppb
15	Cadium Concentrations, ppb
	Chromium Conc. , ppb

DWS 1000 ppb
MCL 5000 ppb
MCL 10 ppb

SCALE IN FEET
0 300

Rev. NOT TO scale

GROUNDWATER, B–B'
BARIUM, ZINC AND CADMIUM CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

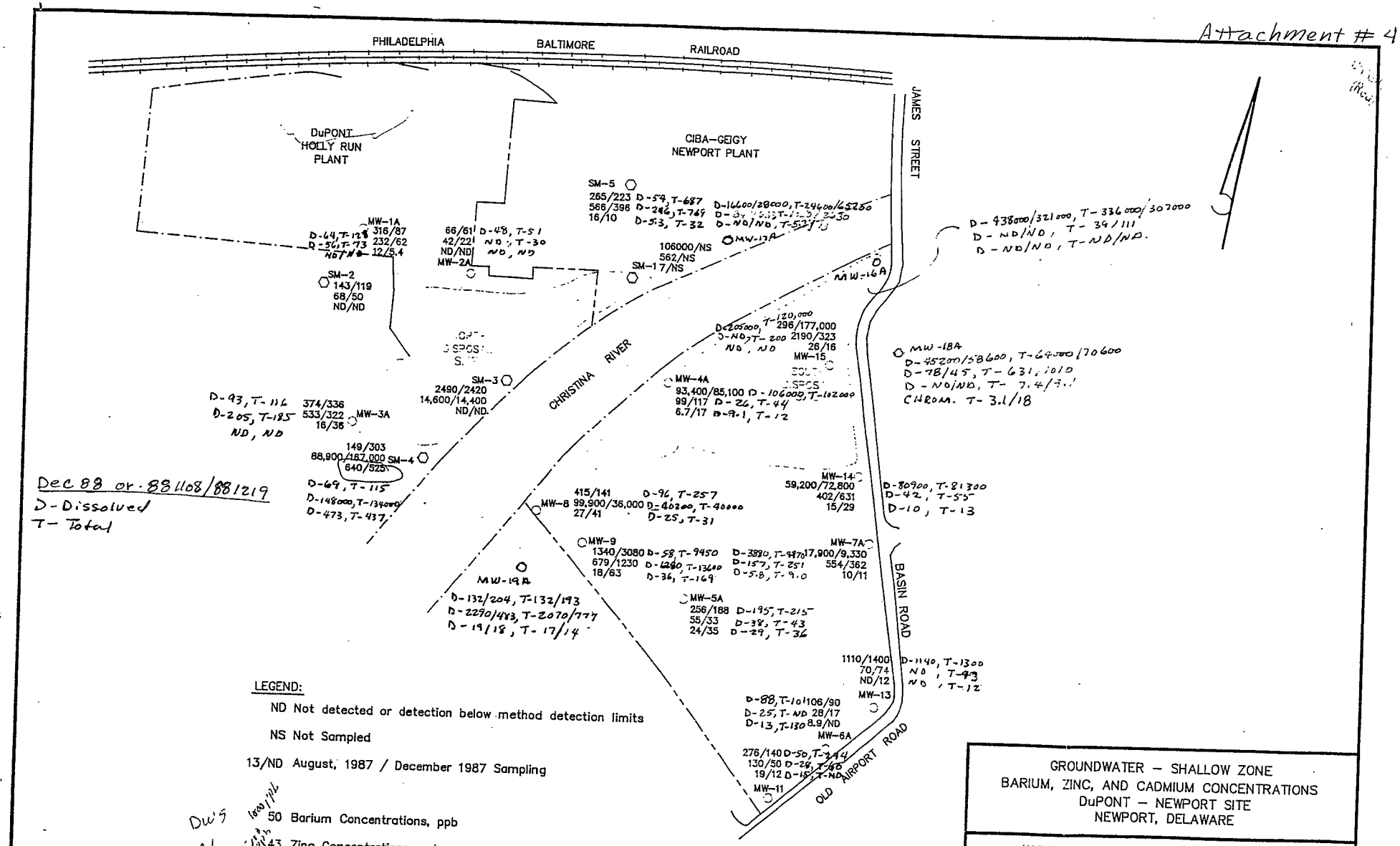
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: A.M.H.	As Noted	Job No.: 88C2076–2

FIGURE 14

AR308589

Attachment # 4-1



GROUNDWATER – SHALLOW ZONE
BARIUM, ZINC, AND CADMIUM CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

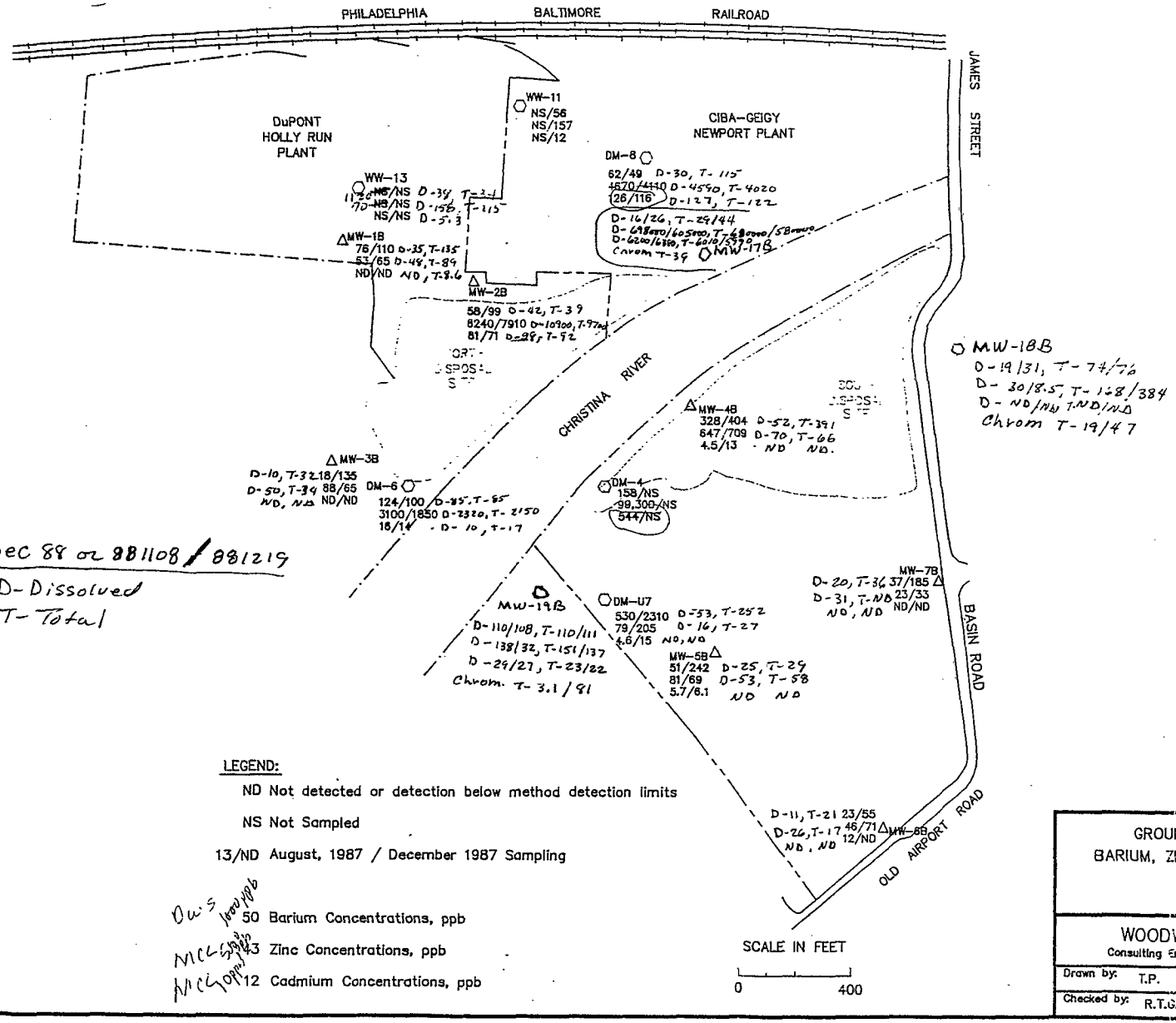
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.S.	As Noted	Job No.: 88C2076-2

FIGURE 5

AR308590

Attachment #4-1



Dec 88 or 881108 / 881219

D-Dissolved

T-Total

LEGEND:

ND Not detected or detection below method detection limits

NS Not Sampled

13/ND August, 1987 / December 1987 Sampling

Ow's 1000 ppb 50 Barium Concentrations, ppb

MCL 5000 ppb 43 Zinc Concentrations, ppb

MCL 10 ppb 12 Cadmium Concentrations, ppb

GROUNDWATER – INTERMEDIATE ZONE
BARIUM, ZINC, AND CADMIUM CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

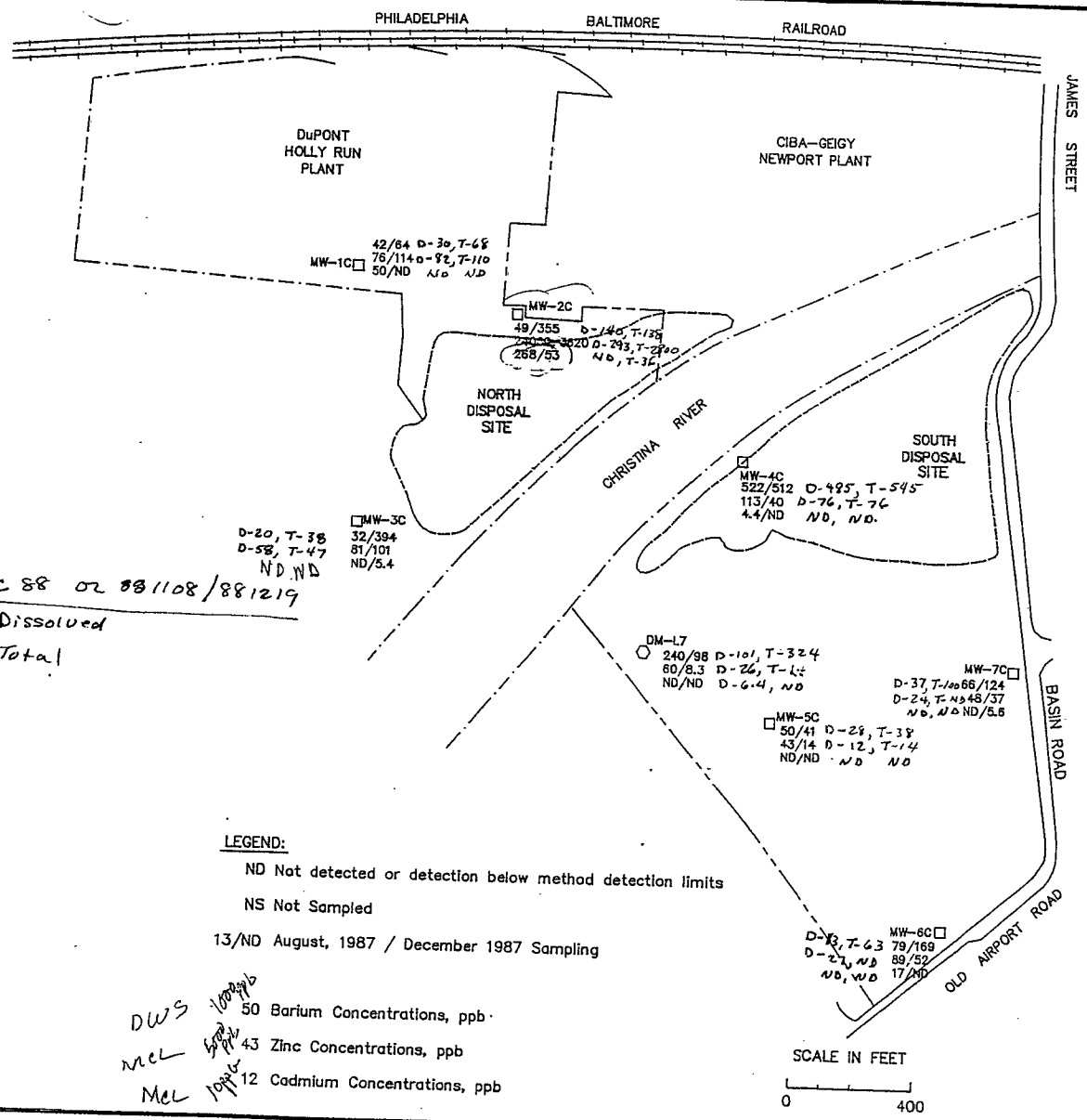
Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

AR308591

FIGURE 6

Attachment # 4-1

ORIGINAL (Red)



GROUNDWATER – DEEP ZONE
BARIUM, ZINC, AND CADMIUM CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

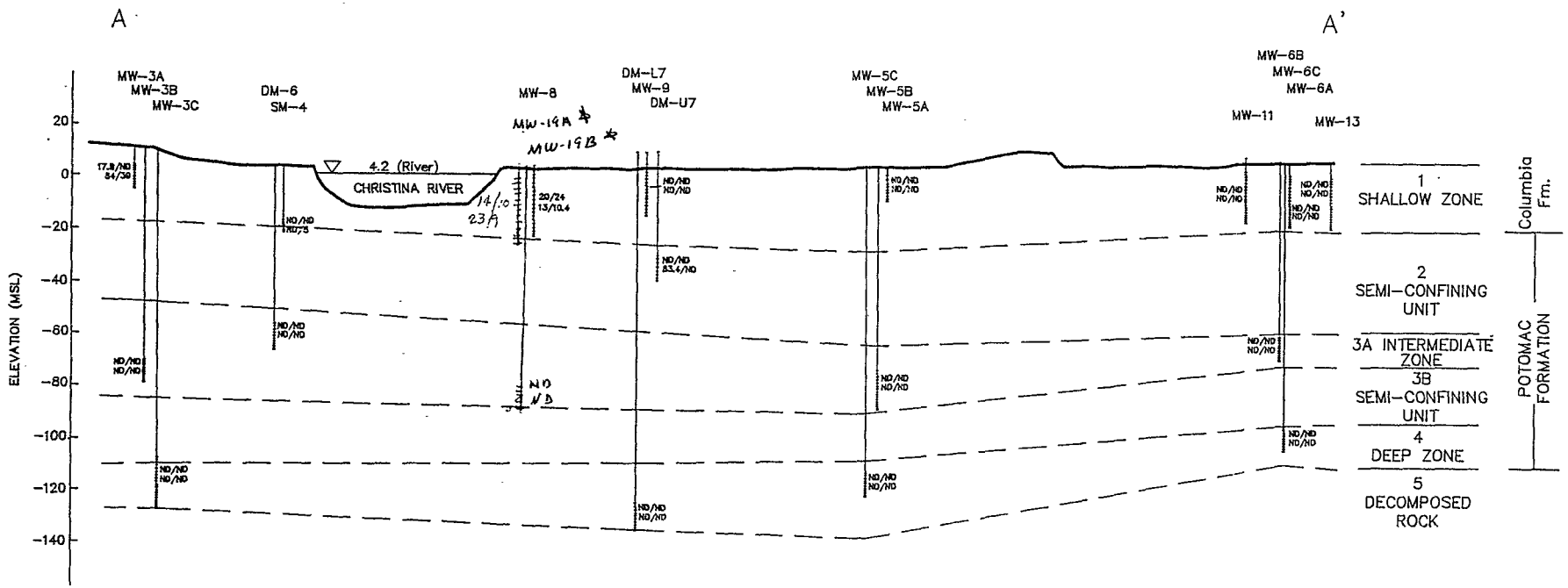
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

AR308592

FIGURE 7

Attachment # 4-1



LEGEND:

┃	Well Screen Interval
ND	Not detected or detection below method detection limits
NS	Not Sampled
13/ND	August, 1987 / December 1987 Sampling
42	Trichloroethylene (TCE) Concentrations, ppb
15	Tetrachloroethylene (PCE) Concentrations, ppb
*	New wells. Nov 88 / Dec 88 sampling

SWQS 5 ppb
RMCL 0 ppb

SCALE IN FEET
0 300

GROUNDWATER, A–A'
TCE AND PCE
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

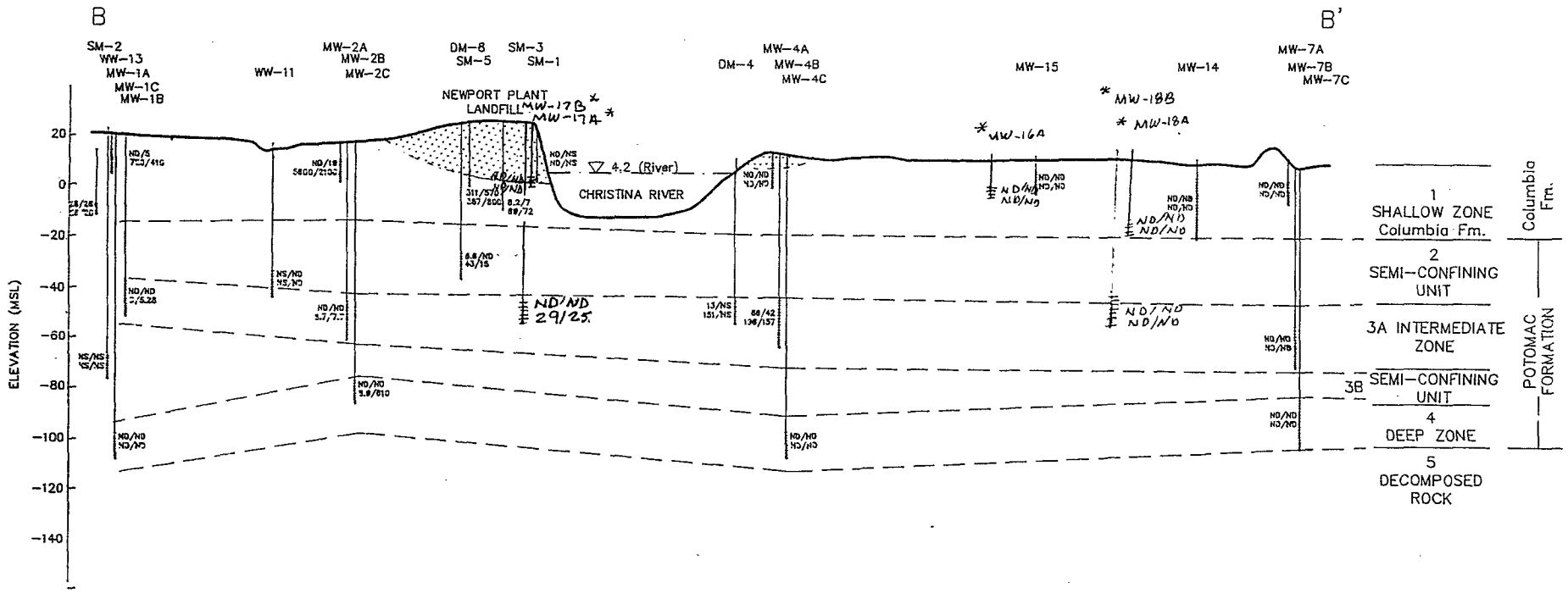
Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: A.M.H.	As Noted	Job No.: 88C2076-2

AR308593

FIGURE 8

Attachment # 4-1

ORIGINAL (Red)



SCALE IN FEET

0 300

LEGEND:

	Well Screen Interval
ND	Not detected or detected below method detection limits
NS	Not sampled
13/ND	August, 1987 / December 1987 Sampling
42	Trichloroethylene (TCE) Concentrations, ppb
15	Tetrachloroethylene (PCE) Concentrations, ppb
*	New wells. Nov 88 / Dec 88 sampling.

DWS 5 ppb
RMCL 0 ppb

GROUNDWATER, B–B'
TCE AND PCE CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

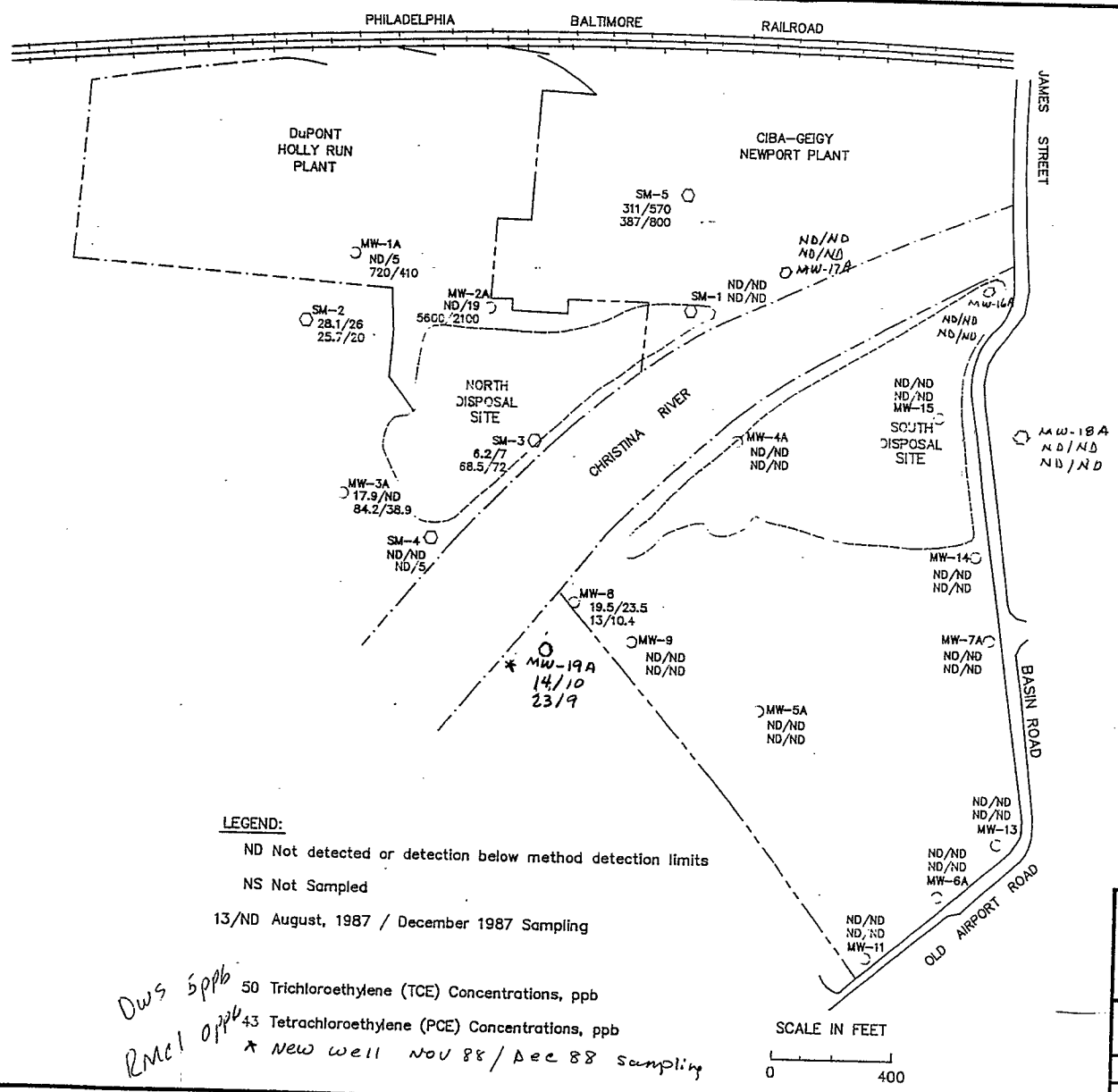
Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: A.M.H.	As Noted	Job No.: 88C2076-2

AR308594

FIGURE 9

Attachment # 4-1

ORIGINAL (Red)



GROUNDWATER – SHALLOW ZONE
TCE AND PCE CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

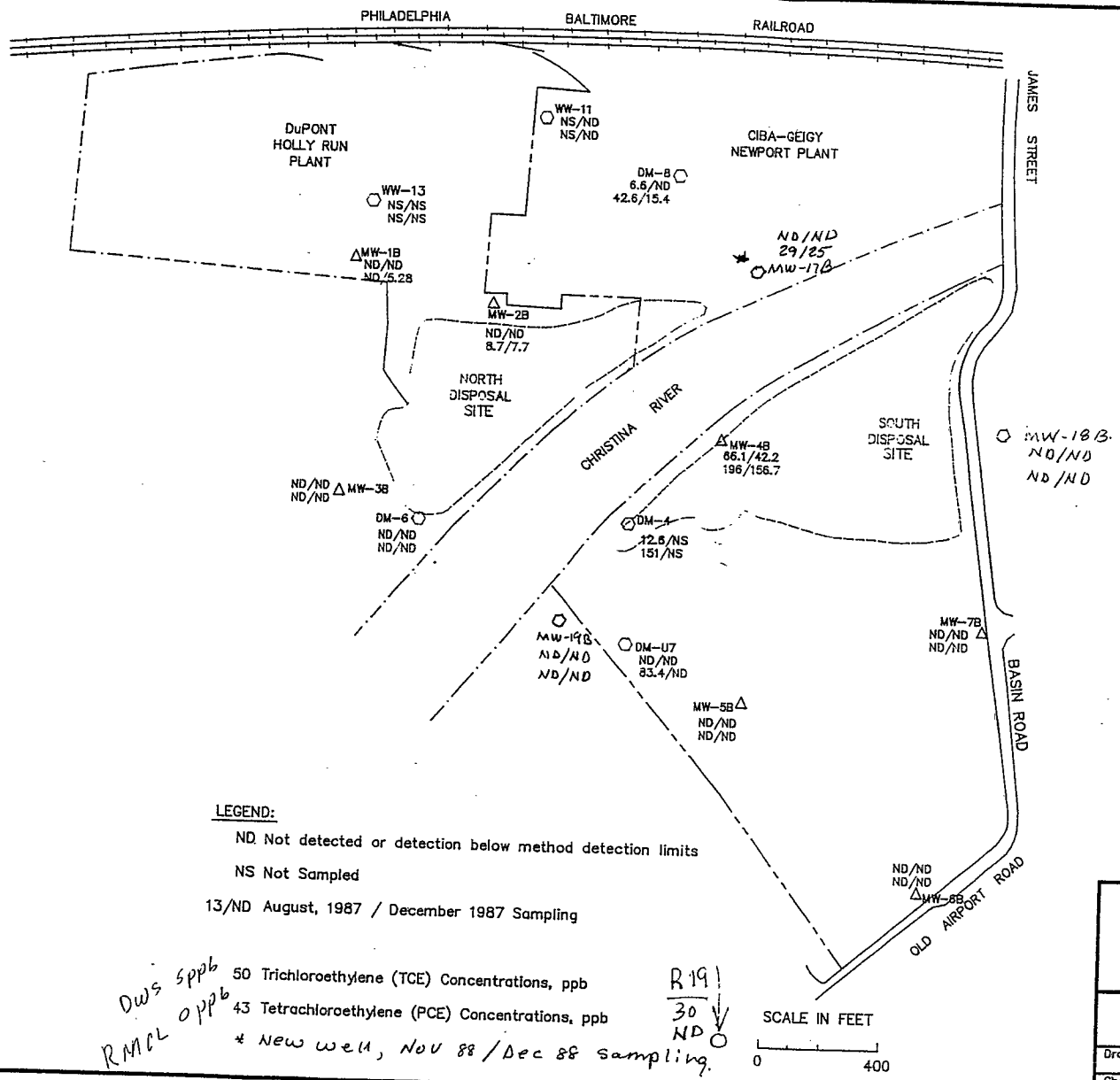
Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

AR308595

FIGURE 10

Attachment #4-1

ORIGINAL (Red)



GROUNDWATER – INTERMEDIATE ZONE
TCE AND PCE CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

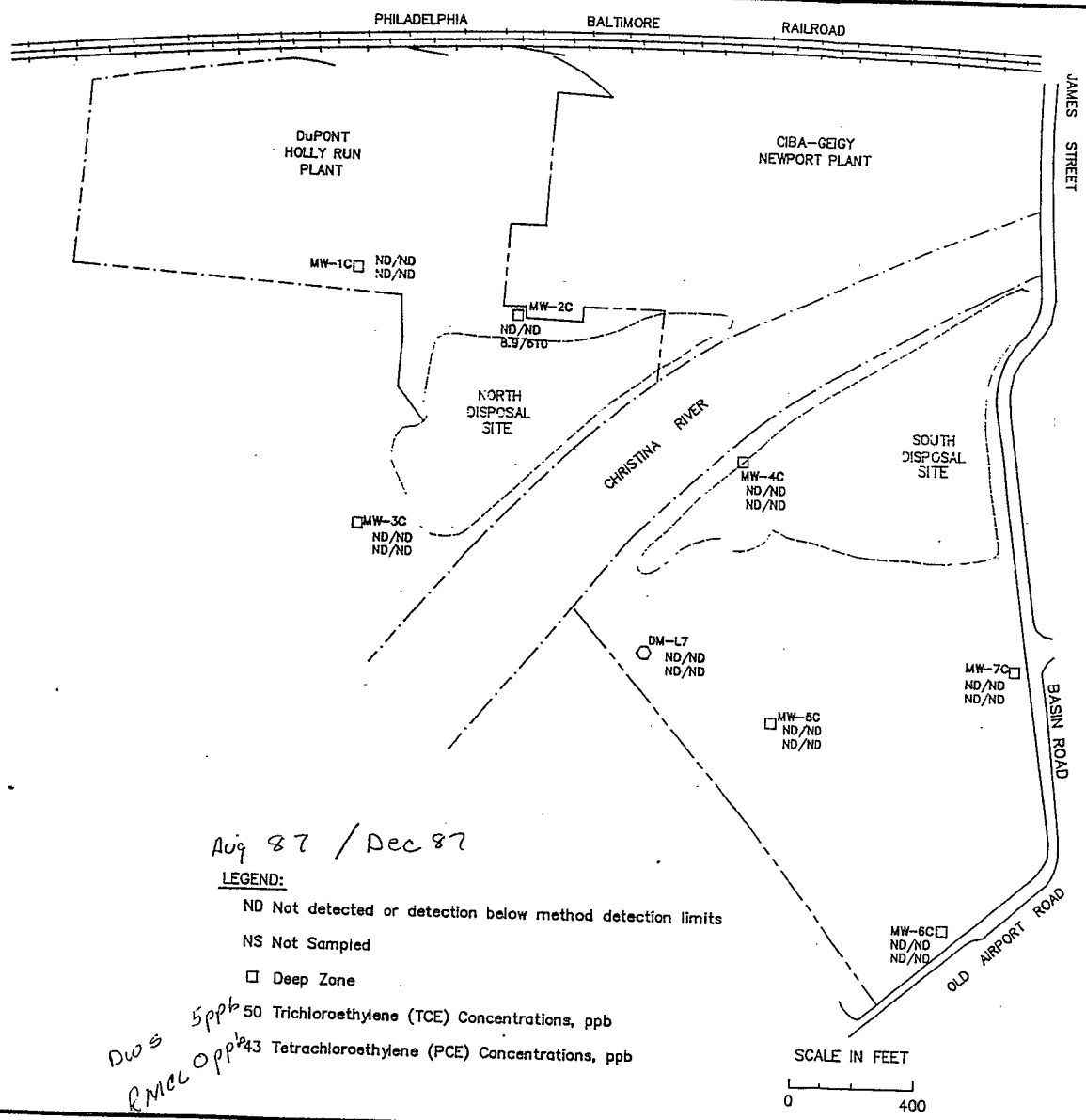
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076–2

AR308596

FIGURE 11

Attachment # 4-1



Aug 87 / Dec 87

LEGEND:

ND Not detected or detection below method detection limits

NS Not Sampled

□ Deep Zone

5ppb 50 Trichloroethylene (TCE) Concentrations, ppb

DWS RMCL 0ppb 43 Tetrachloroethylene (PCE) Concentrations, ppb

GROUNDWATER – DEEP ZONE
TCE AND PCE CONCENTRATIONS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

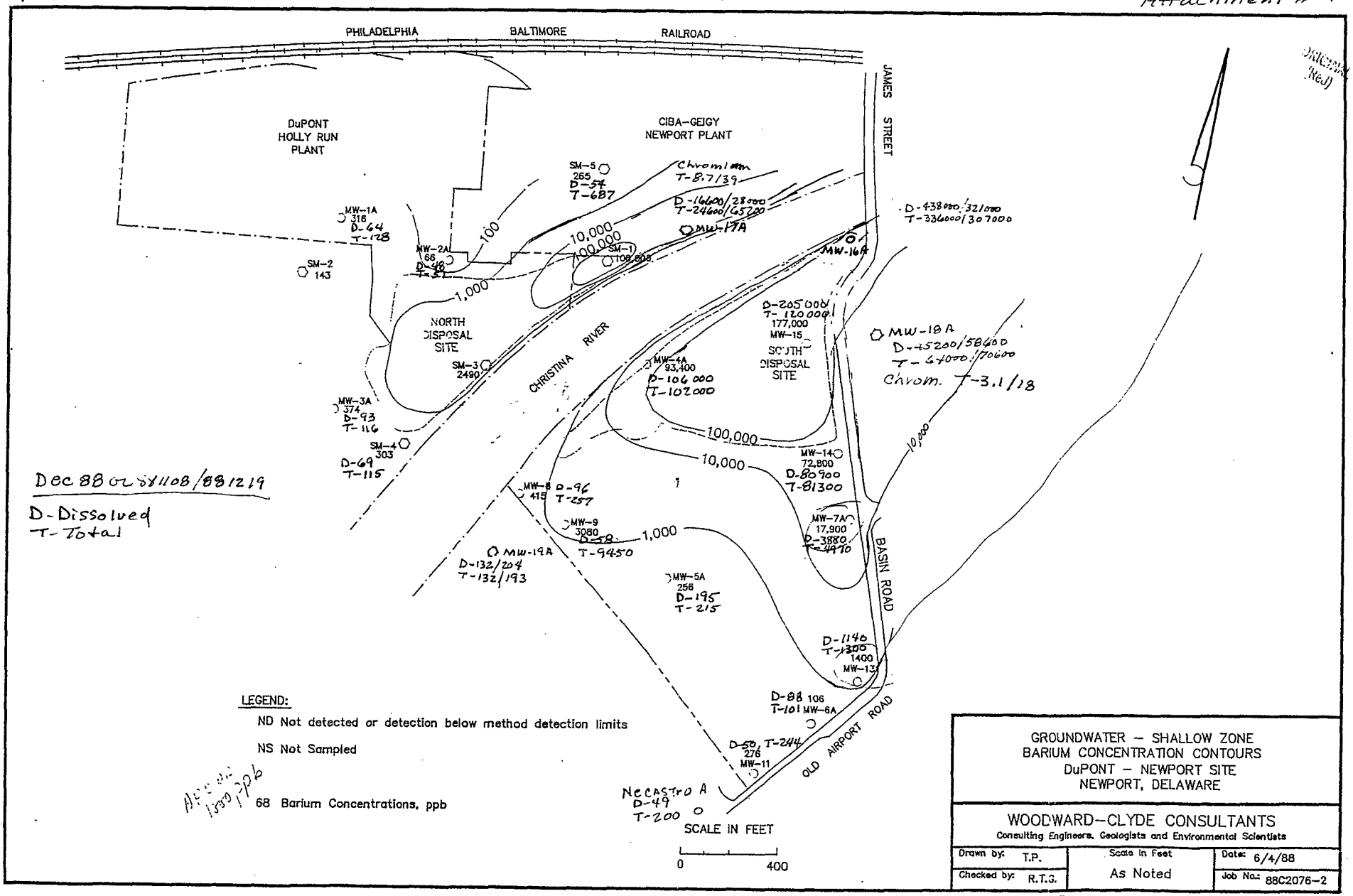
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

FIGURE 12

AR308597

Attachment # 4-1



Dec 88 OL 881108/881219

D-Dissolved
T-Total

LEGEND:

ND Not detected or detection below method detection limits

NS Not Sampled

68 Barium Concentrations, ppb

GROUNDWATER – SHALLOW ZONE
BARIUM CONCENTRATION CONTOURS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

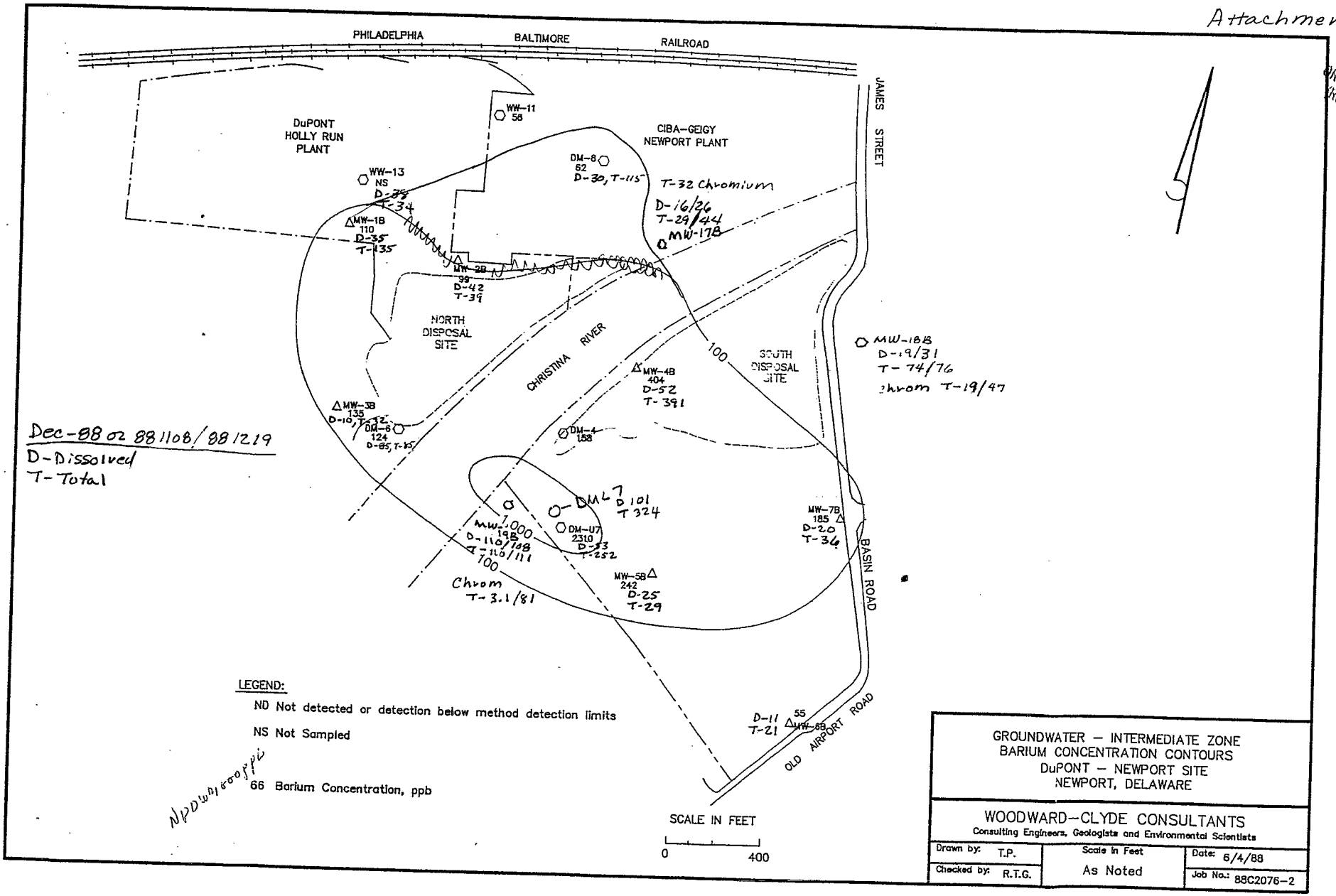
Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

AR308598

FIGURE 13

Attachment # 4-

ORIGINAL (Red)



GROUNDWATER – INTERMEDIATE ZONE
BARIUM CONCENTRATION CONTOURS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

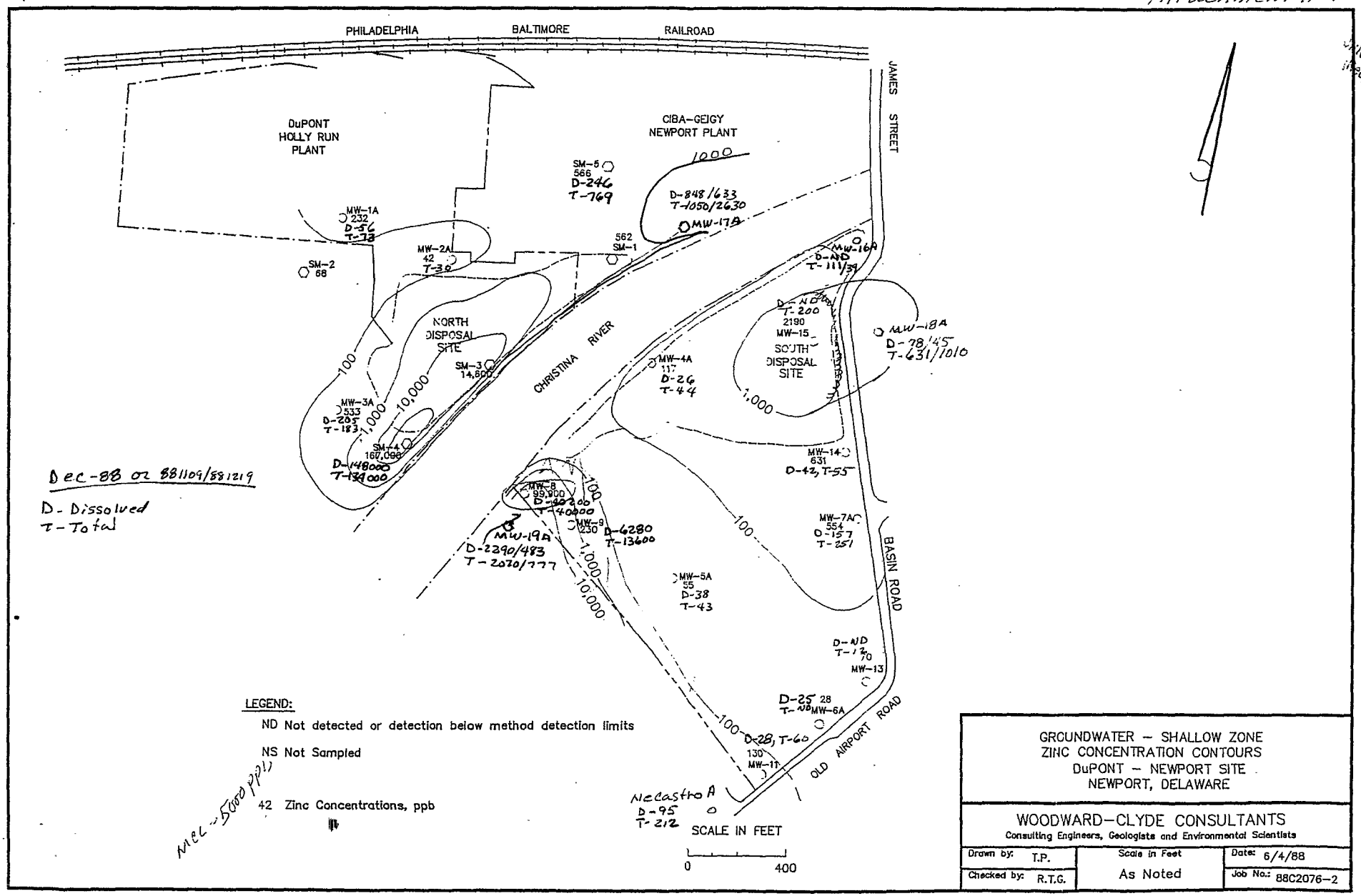
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

FIGURE 14

AR308599

Attachment #4-1



Dec-88 or 881109/881219

D - Dissolved
T - Total

GROUNDWATER – SHALLOW ZONE
ZINC CONCENTRATION CONTOURS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

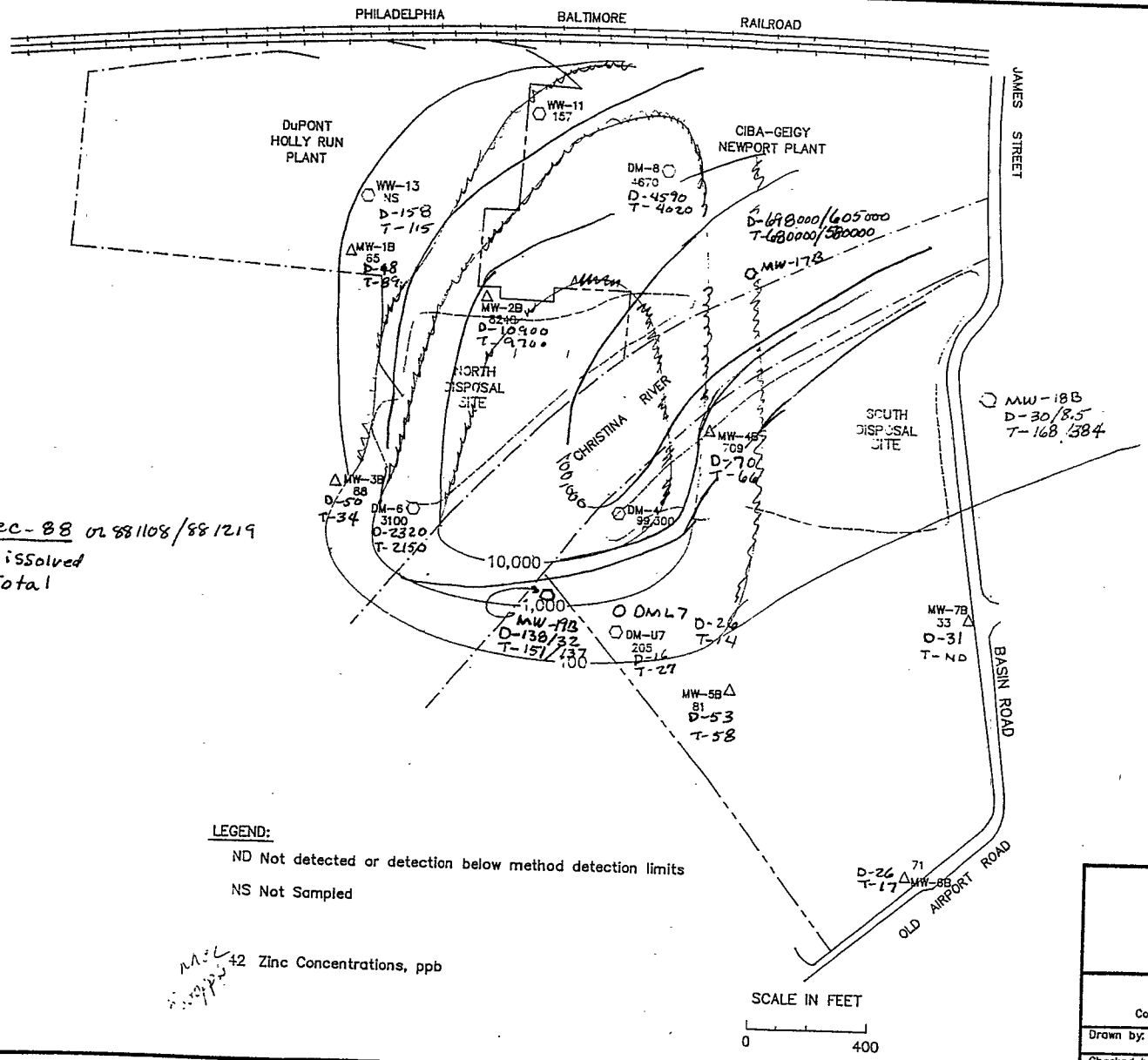
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

AR308600

FIGURE 15

Attachment # 4-1



Dec-88 or 881108/881219
D - Dissolved
T - Total

LEGEND:

ND Not detected or detection below method detection limits

NS Not Sampled

42 Zinc Concentrations, ppb

GROUNDWATER – INTERMEDIATE ZONE
ZINC CONCENTRATION CONTIURS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

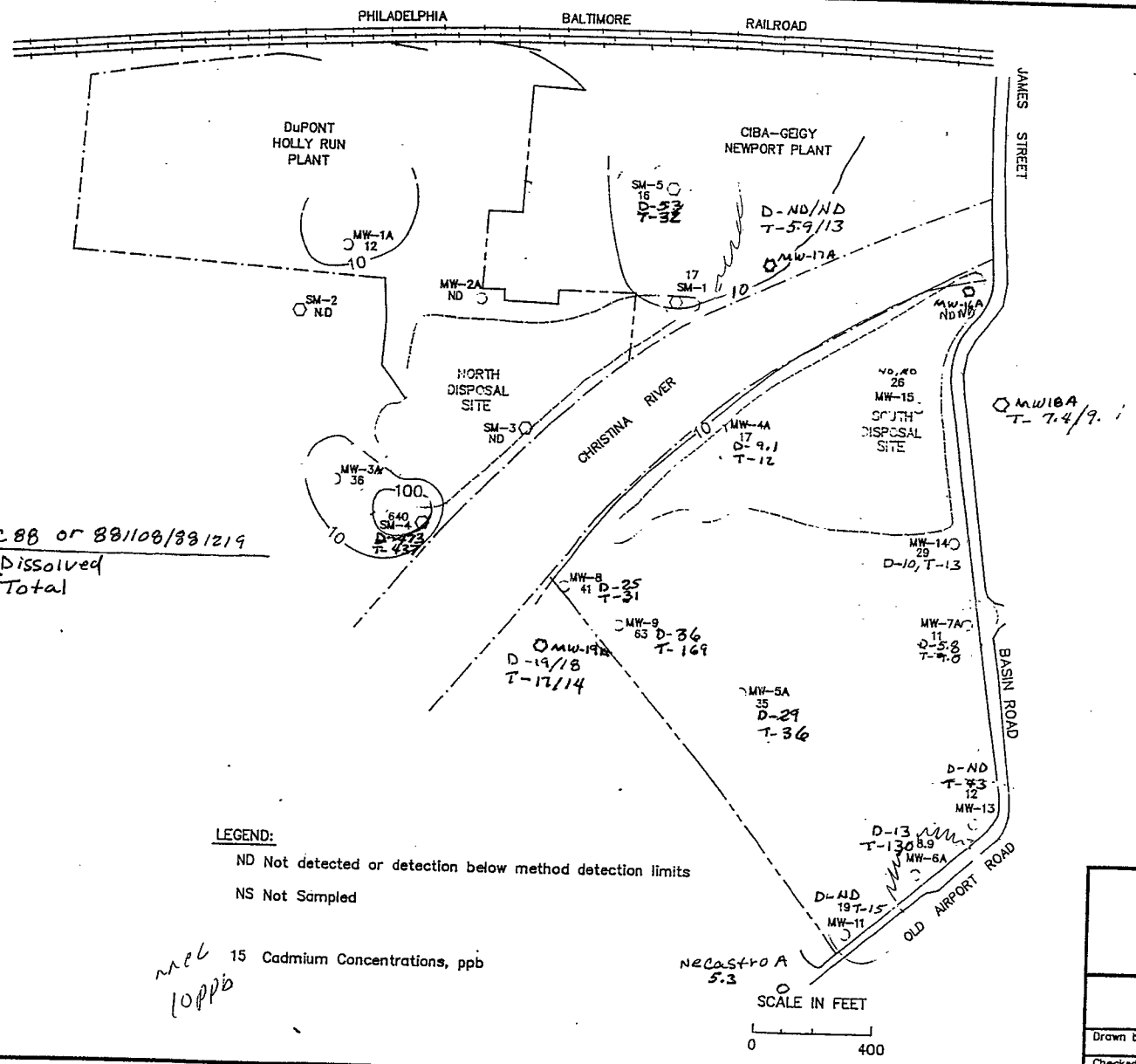
Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

AR308601

FIGURE 16.

Attachment # 4-1

ORIGINAL (Red)



Dec 88 or 881108/881219
D - Dissolved
T - Total

LEGEND:

ND Not detected or detection below method detection limits

NS Not Sampled

15 Cadmium Concentrations, ppb

mel 10ppb

GROUNDWATER - SHALLOW ZONE
CADMIUM CONCENTRATION CONTOURS
DuPONT - NEWPORT SITE
NEWPORT, DELAWARE

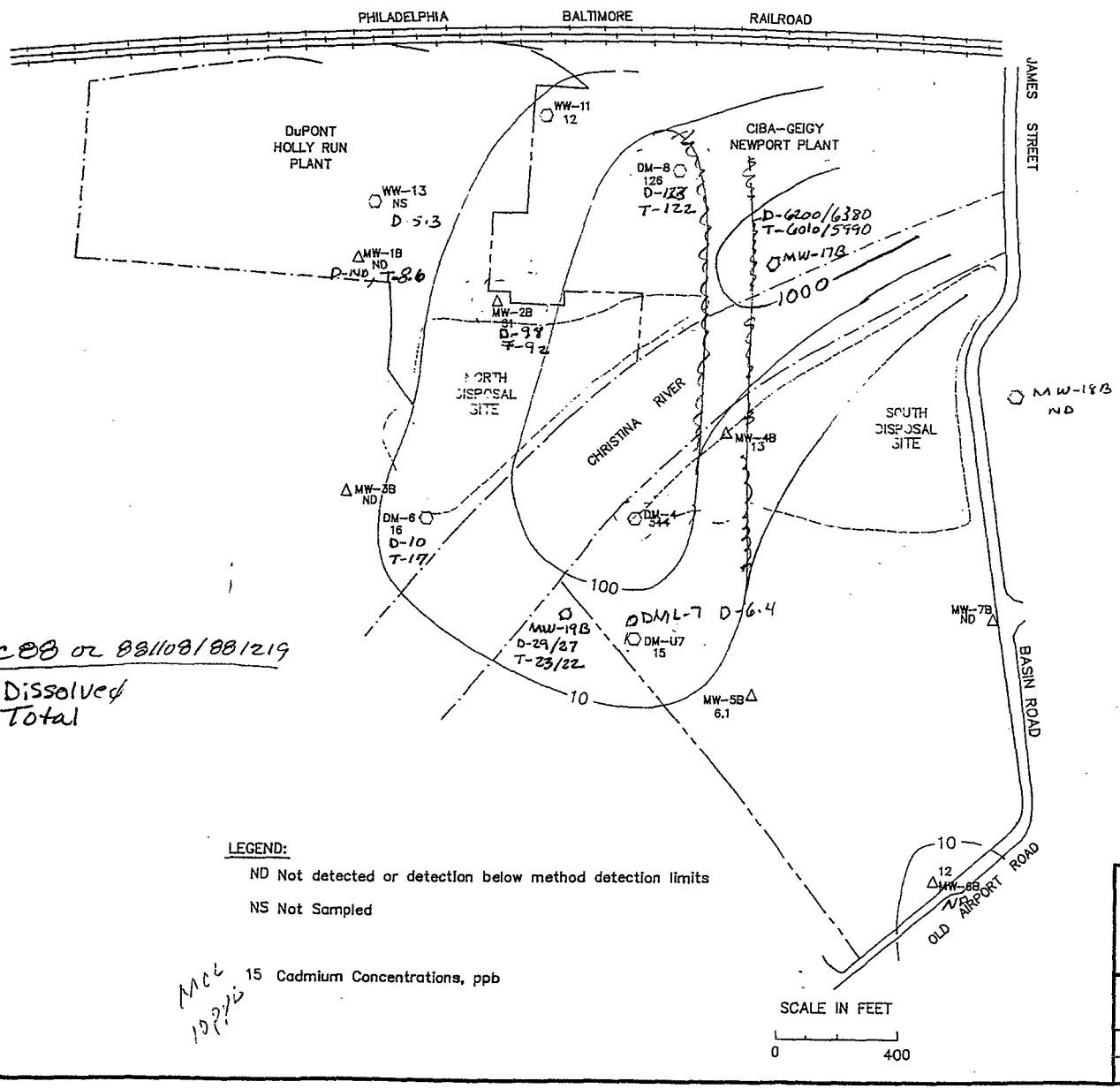
WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

AR308602

FIGURE 17

Attachment # 4-1



Dec 88 or 881108/881219

D- Dissolved
T- Total

LEGEND:

ND Not detected or detection below method detection limits

NS Not Sampled

15 Cadmium Concentrations, ppb

MCL 10 ppb

GROUNDWATER – INTERMEDIATE ZONE
CADMIUM CONCENTRATION CONTOURS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

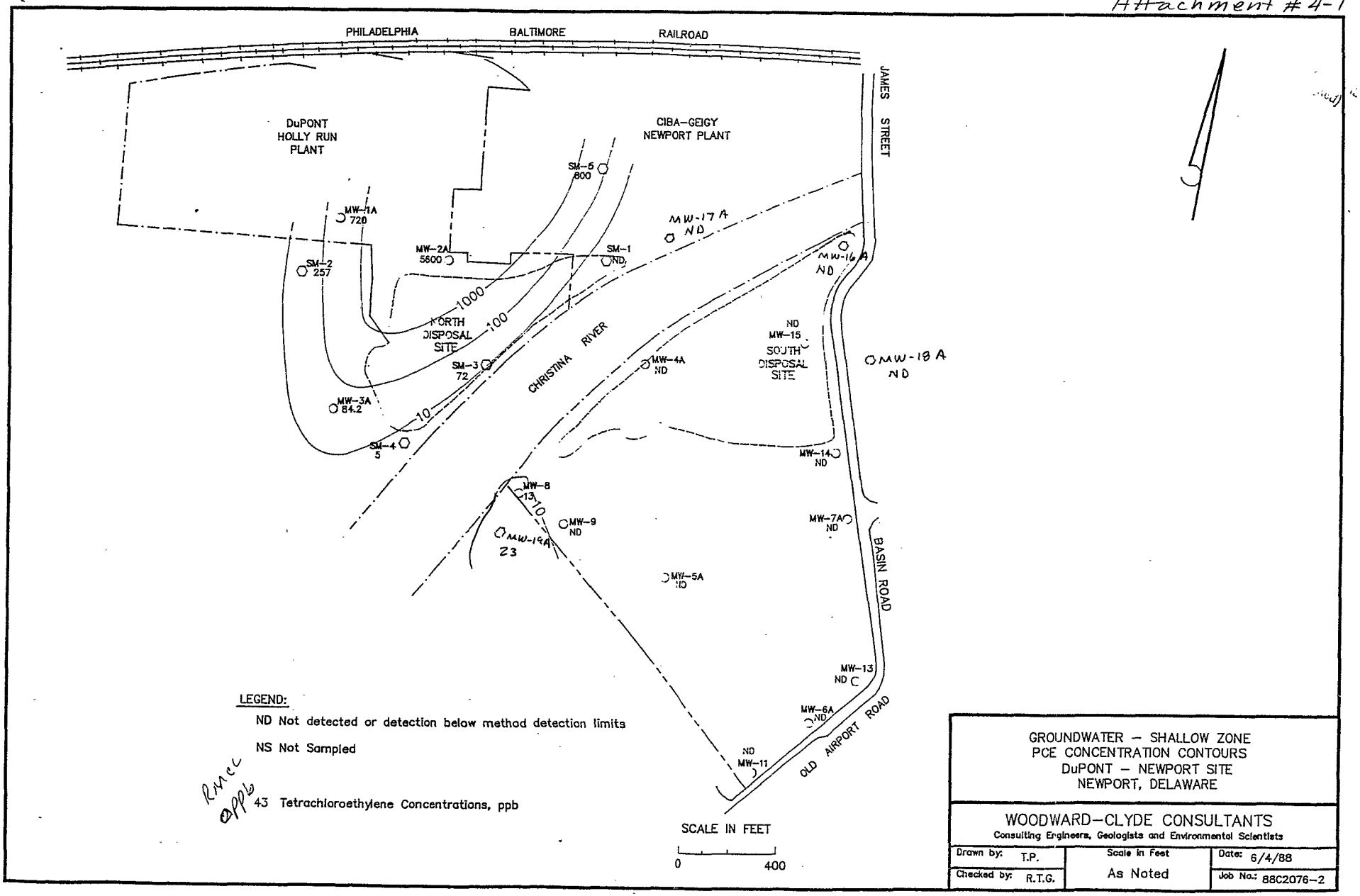
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.S.	As Noted	Job No.: 88C2076-2

AR308603

FIGURE 18

Attachment #4-1



GROUNDWATER – SHALLOW ZONE
PCE CONCENTRATION CONTOURS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

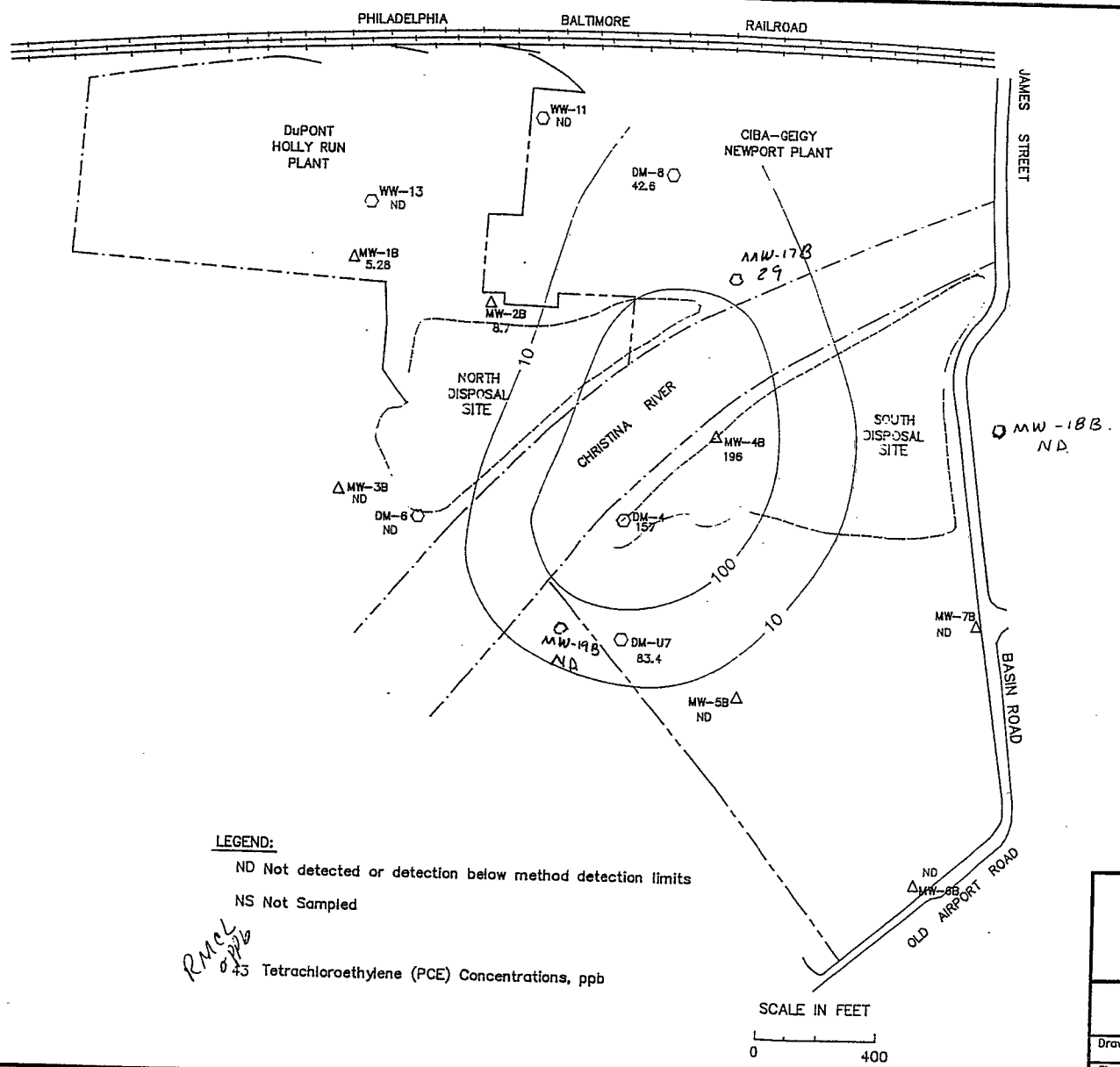
WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076-2

FIGURE 21

AR308604

Attachment # 4-1



LEGEND:

ND Not detected or detection below method detection limits

NS Not Sampled

RMCL 0.5 ppb

43 Tetrachloroethylene (PCE) Concentrations, ppb

GROUNDWATER – INTERMEDIATE ZONE
PCE CONCENTRATION CONTOURS
DuPONT – NEWPORT SITE
NEWPORT, DELAWARE

WOODWARD–CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

Drawn by: T.P.	Scale in Feet	Date: 6/4/88
Checked by: R.T.G.	As Noted	Job No.: 88C2076–2

AR308605

FIGURE 22

UNSCANNED ITEM(S)

ONE OR MORE OF THE FOLLOWING ITEMS MAY BE ASSOCIATED
WITH THIS DOCUMENT:

PHOTOGRAPHS
DRAWINGS
OVERSIZED MAPS
ROLLED MAPS

PLEASE CONTACT THE CERCLA RECORDS CENTER TO VIEW THE ITEM(S)

ETC

DATA MANAGEMENT SUMMARY REPORT
(DM-1H) - History of All Parameters Present, Selected Sample Point

DATE: 11/29/8
PAGE: 1

AR308667

Chain of Custody Data Required for ETC Data Management Summary Report

See Below	E.I. DUPONT	DUPNEWGWM	AW05	See Below
ETC Sample No.	*Company*	*Facility*	*Sample Point*	*Date*

Sample Points, Sampling Dates, and ETC Sample No.'s

Parameters		Units	AW05 880921 BG6895	AW06	AW04	AW01	HW02	AW03		
Miscellaneous Parameters		PPb	←	North	→	←	South	→		
2,4,6-Tribromophenol		ug/l	181.1	192.26	163.74		184.18	181.4		
2-Fluorobiphenyl		ug/l	83.88	94.26	81.6		84	92.02		
2-Fluorophenol		ug/l	98.06	95.98	108.3		82.62	147.36		
Aluminum, Total		ug/l	47	126	56	78	221	455		
Arsenic, Dissolved		ug/l	1.9	1.4		1.5		1.5		
Arsenic, Total	50	ug/l	.90					1.3		
Barium, Dissolved		ug/l	224	328	187	766	977	596		
Barium, Total	1000	ug/l	220	332	174	940	807	1040 ✓		
Calcium, Dissolved		ug/l	39700	31200	31000	25400	26000	24500		
Calcium, Total		ug/l	40000	30000	31800	25400	25400	23400		
Copper, Dissolved		ug/l	5.0	3.8				7.6		
Copper, Total		ug/l	14	9.6	2.9	3.6	3.0	22		
Iron, Dissolved		ug/l	35	74	63	84	147	89		
Iron, Total		ug/l	534	927	520	904	1150	3120		
Lead, Dissolved		ug/l	1.9				1.7	4.4		
Lead, Total	50	ug/l	89 ✓	36	2.9	7.0	16	126 ✓		
Magnesium, Dissolved		ug/l	20000	11200	18100	10800	10800	13700		
Magnesium, Total		ug/l	20000	10600	18100	10400	10700	13100		
Manganese, Dissolved		ug/l	1300	407	655	837	886	455		
Manganese, Total		ug/l	1350	1110	679	969	952	946		
Mercury, Dissolved		ug/l	.8							
Nitrobenzene-D5		ug/l	81.46	88.66	84.52		85.18	99.46		
Phenol-D6		ug/l	60.78	61.96	64.12		53.92	148.3		
Potassium, Dissolved		ug/l	1900	1450	3740	1050	1600	5080		
Potassium, Total		ug/l	1830	1390	3200	1120	1060	4810		
Sodium, Dissolved		ug/l	52200	35800	50000	9410	9820	27000		
Sodium, Total		ug/l	49000	32000	48000	8540	8510	24800		
Terphenyl-D14		ug/l	88.72	84.56	76.14		89.82	94.24		
Zinc, Dissolved		ug/l	107	110	109	24	64	111		
Zinc, Total	5000	ug/l	108	136	32	43	7.8	201		
Chromium Total	50	ug/l		6.5	3.8					
Silver Total		ug/l				3.2	2.5			

Footnotes: BMDL=Below Method Detection Limit ND=Parameter not detected "-"=Parameter not tested

ORIGINAL (Red)

Attachment #5-2