

N60478.AR.001373
NWS EARLE
5090.3a

TRANSMITTAL LETTER FOR THE RESPONSE TO NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION COMMENTS ON FOCUSED INVESTIGATION AND
REMEDIAL ACTION WORK PLAN FOR BUILDING 556 NWS EARLE NJ

2/13/1996

BROWN AND ROOT ENVIRONMENTAL



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C-51-2-8-33

February 13, 1998

Project Number 5333

Mr. Brian Helland, Senior Project Manager
Northern Division Code 1812/BH
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop 82
Lester, Pennsylvania 19113

Reference: CLEAN Contract No. N62472-90-D-1298
Contract Task Order No. 226

Subject: Response to NJDEP Comments
Focused Investigation and Remedial Action Work Plan for Building 566
Naval Weapons Station Earl, Colts Neck, New Jersey

Dear Mr. Helland:

The following information is being submitted in response to the State of New Jersey Department of Environmental Protection's (NJDEP's) 1/22/98 letter related to the subject underground storage tank (UST) site at the Naval Weapons Station (NWS) Earle.

Comment 1: *Section 2.1, Results of Phase I RI, page 2-3: In the first paragraph on this page the contractor states, "The extent of the shallow ground water contamination is limited both horizontally and vertically by the silt-clay." This statement is incorrect. The silt-clay unit only prevents the contamination from migrating vertically, there is no horizontal component to prevent contaminant migration.*

It is correct that the silt-clay lithologic unit can only directly limit the vertical extent of shallow groundwater contamination. However, the presence of the silt-clay lithologic unit indirectly helps to limit the horizontal extent of shallow groundwater contamination by limiting the downgradient extent of the shallow aquifer.

The silt-clay lithologic unit acts as the confining layer for the bottom of the shallow aquifer. The land surface and the silt-clay lithologic unit both generally slope in a radial direction away from the site, in the same general direction of inferred groundwater flow. The top of the silt-clay lithologic unit slopes at a lesser gradient than the ground surface. The net effect of this is a gradual thinning of the shallow aquifer to the point where it is of negligible thickness. The groundwater either intersects the ground surface where it is discharged through seep areas, or is lost through the soil layer by evapotranspiration. These are the circumstances by which the horizontal extent of shallow groundwater contamination is limited. This hydrogeologic model is most clearly demonstrated by the geologic maps and cross-sections of the Phase I Remedial Investigation (RI) Report for Building 566 (Brown & Root Environmental, October, 1996). Copies of these figures are included with this letter in Attachment A. Refer also to the response to NJDEP's Comment 3 below.

Comment 2: *Section 2.3.2.1.5, Water-Level Measurements, page 2-13: This section of the document discusses the water level measurement events conducted at the site. The contractor does not mention nor discuss if any of the wells were checked for the presence or free phase product.*



As a general practice at petroleum contamination sites, B&R Environmental routinely checks for the presence of free-phase product, and documents observations on the sample log sheets and/or in the project log book. The sample logs were provided in Appendix G of the report. For subsequent groundwater investigation reports, B&R Environmental will include a discussion that summarizes observations related to free-product.

The first round of water levels were recorded on April 9 and 10, 1997 during groundwater sampling of these wells. No free product was noted during the water level measurements or in the purged or sampled water from the wells. The second round of water levels was obtained during in-situ permeability testing on April 15, 1997. No free product was noted in the wells during this activity.

Comment 3: *Section 3.0: The downgradient line of compliance wells is not complete, as the horizontal extent of the plume has not been fully delineated. Additional monitoring wells should be located adjacent to the wetlands.*

B&R Environmental assumes that this comment relates to the wetlands located directly to the east and northeast of the drainage field. Monitoring wells were placed directly east, south, west, and north of the drainage field. Additional monitoring wells were not placed adjacent to the wetlands in this area for the following reasons:

- Although this area is downgradient from portions of the drainage field, only trace levels of petroleum-related compounds were observed in soil and groundwater samples obtained here during the Phase I RI. In particular, Phase I RI monitoring well MW-01, and subsurface soil samples SB-31, SB-32, SB-33, SB-34, and SB-42 were located within this area. No volatile organics were positively detected in the soil or groundwater samples from this area. No semivolatiles were detected in the groundwater samples, and the maximum level of total petroleum hydrocarbons detected in the soil samples was 80 mg/kg. Refer to Attachment B for copies of the soil and groundwater sample summary figures from the Phase I RI Report.
- Based on mapped elevations of the top of the silt-clay lithologic unit and the top of the shallow groundwater surface, the wetlands represent the eastern-most extent of the shallow aquifer in this area. Therefore, this would represent the maximum possible extent of shallow groundwater contaminant migration in this area. No petroleum stained seeps or soils indicating contaminant migration to this point were observed.

The remaining comments relate to the establishment of the Classification Exception Area, which B&R Environmental assumes will be addressed following the remediation of the free-phase product.

We trust that this information adequately addresses the NJDEP's concerns. Please contact me if there are additional comments or further clarification is needed.

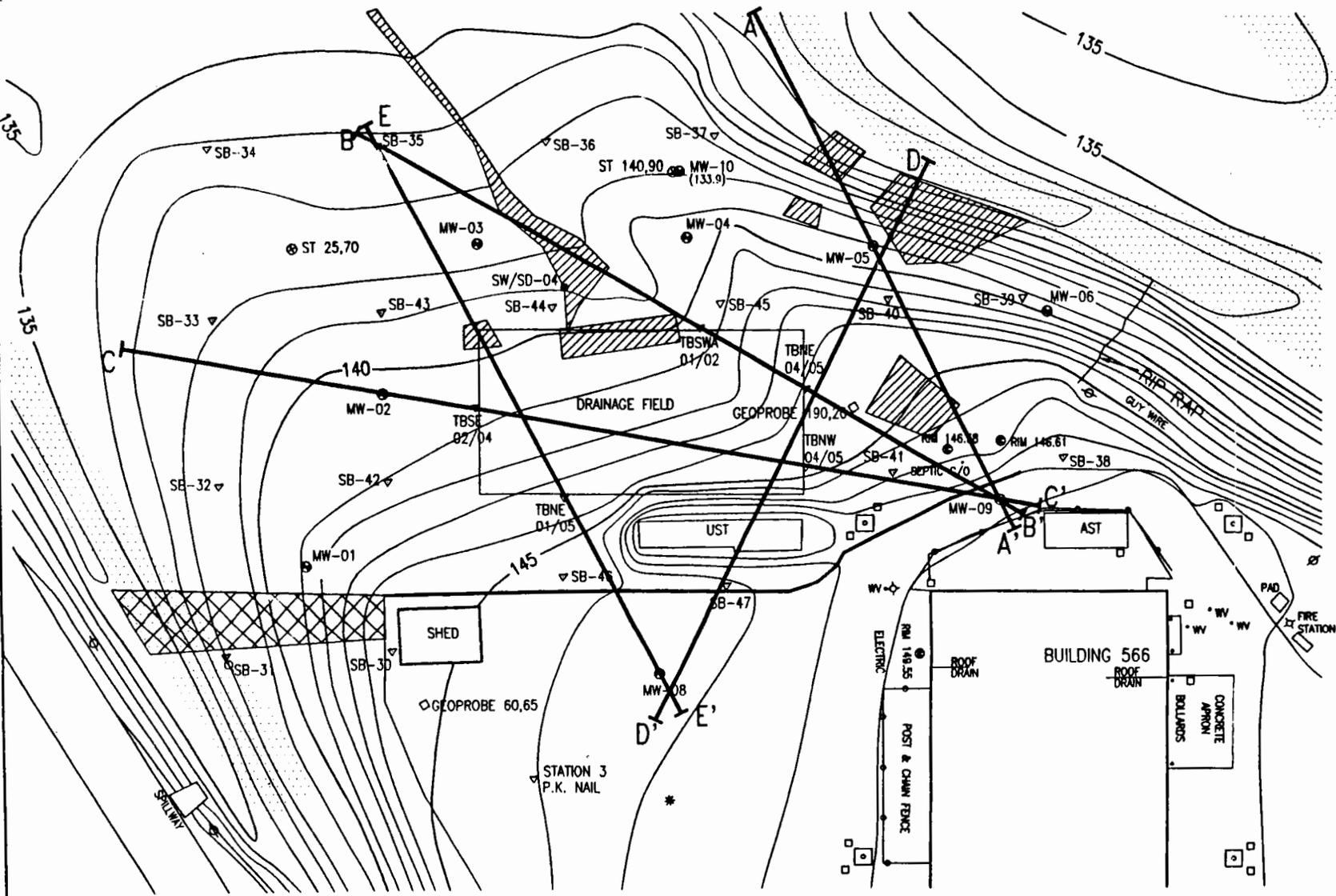
Sincerely,

Richard J. Gorrell
Project Manager

c: J. Trepanowski
G. Glenn
R. Turner
R. Good

ATTACHMENT A

GEOLOGIC CROSS SECTION MAPS FROM THE PHASE I RI REPORT



LEGEND

- WATER VALVE WV •
- MANHOLE MH ⊙
- UTILITY POLE ⊕
- LIGHT POLE *
- GUARDRAIL —○—○—
- FENCE —x—x—
- FIRE HYDRANT ⊕
- MONITORING WELL MW ⊙
- SOIL BORING △
- SEEP/STAIN AREA [Hatched Box]
- LOCATION OF GEOLOGIC CROSS SECTION A—A
- TRANSFORMER [Square with X]
- SIX-INCH CONCRETE BERM [Dashed Line]
- ROCK LINED [Grid Pattern]
- OUTFALL CHANNEL [Wavy Line]
- WETLANDS [Dotted Area]

GEOLOGIC CROSS-SECTION LOCATION MAP
CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
NWS EARLE, COLTS NECK, NEW JERSEY

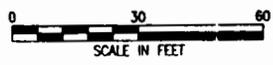
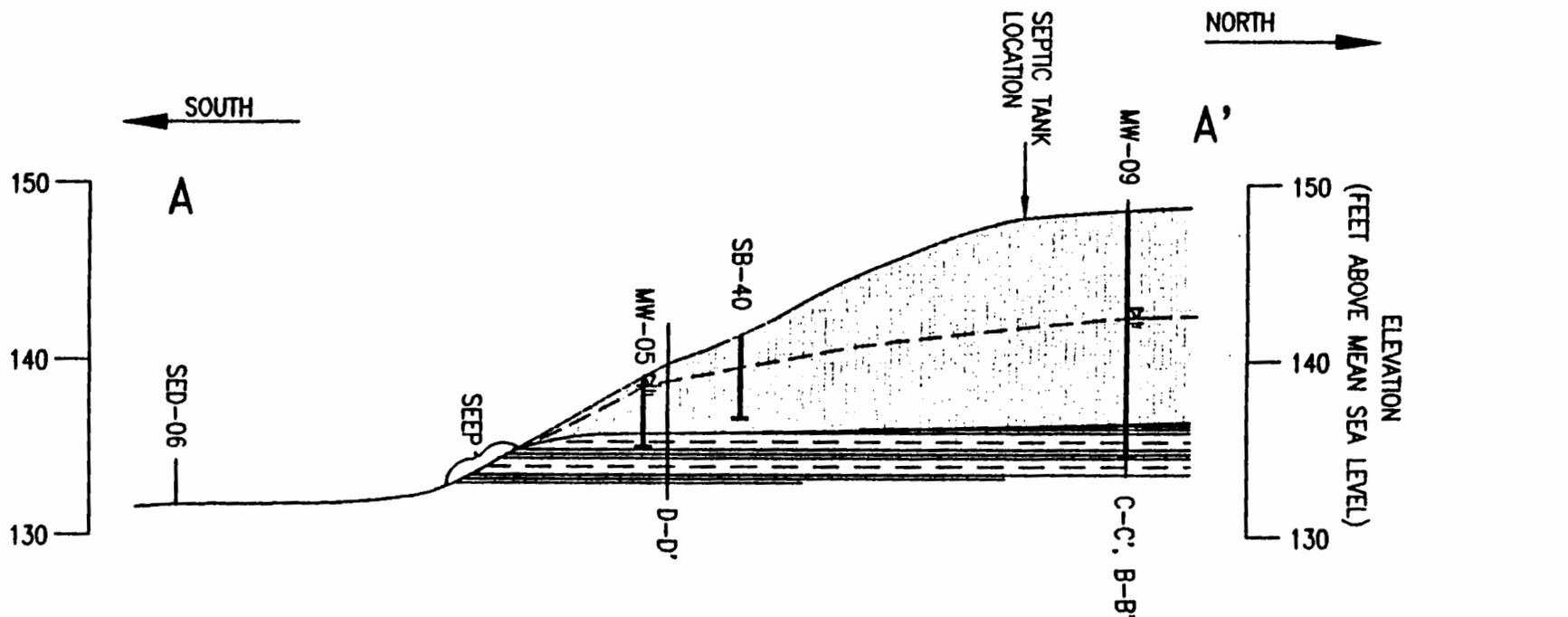


FIGURE 2-2



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LEGEND

- APPROXIMATE WATER TABLE SURFACE
- SILT - CLAY LITHOLOGIC UNIT
- SOILS, CLEAN FILL AND SHALLOW SAND LITHOLOGY
- WASTEWATER DISPOSAL SYSTEM - DRAIN FIELD

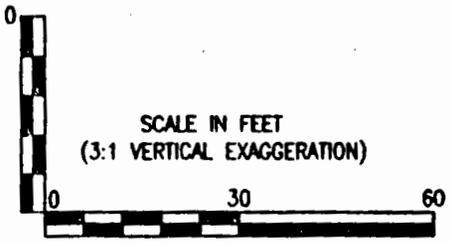


FIGURE 2-3

CROSS SECTION A-A'
CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
NWS EARLE, COLTS NECK, NEW JERSEY



2-6

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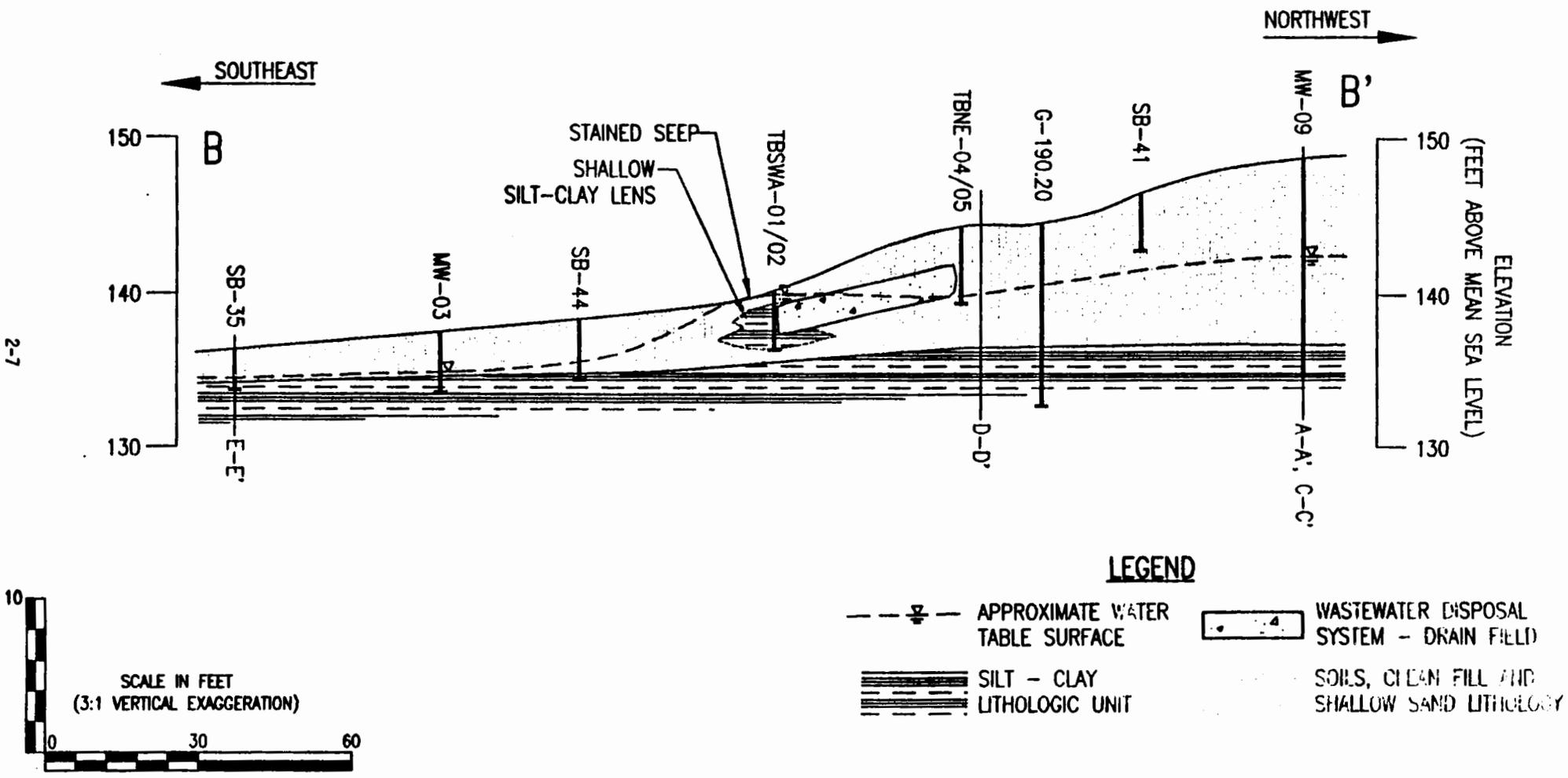
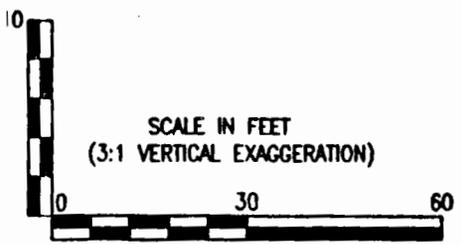
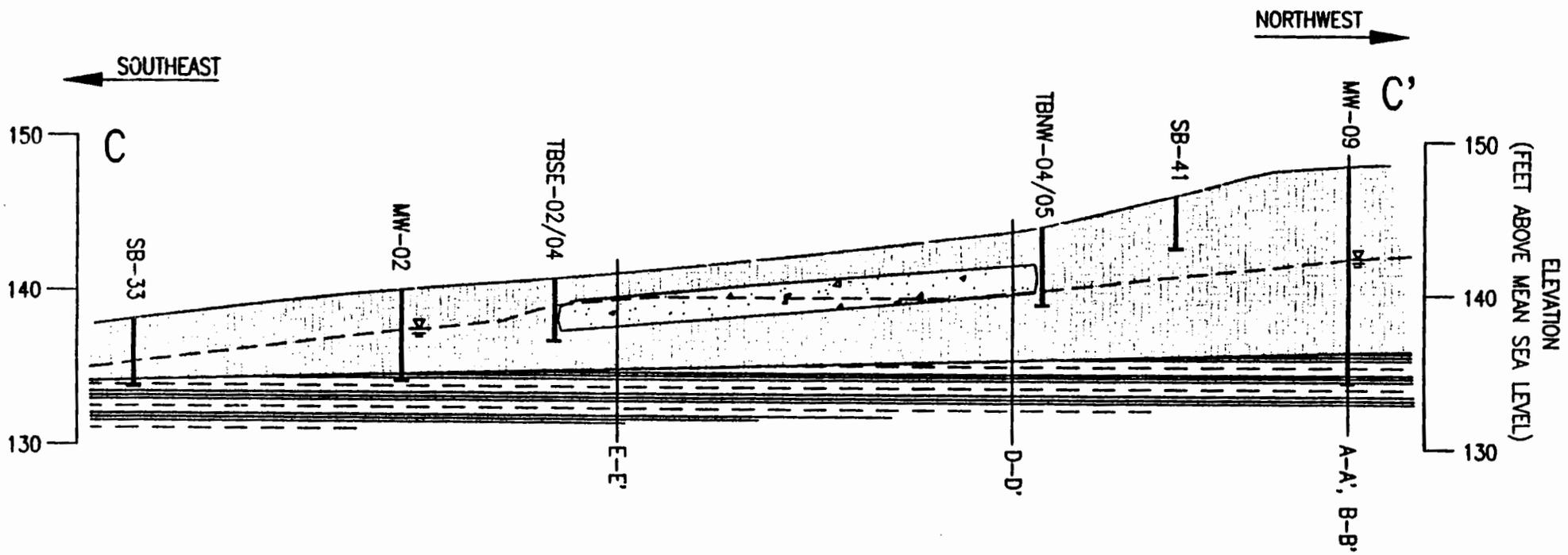


FIGURE 2-4

CROSS SECTION B-B'
CTO .206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
NWS EARLE, COLTS NECK, NEW JERSEY



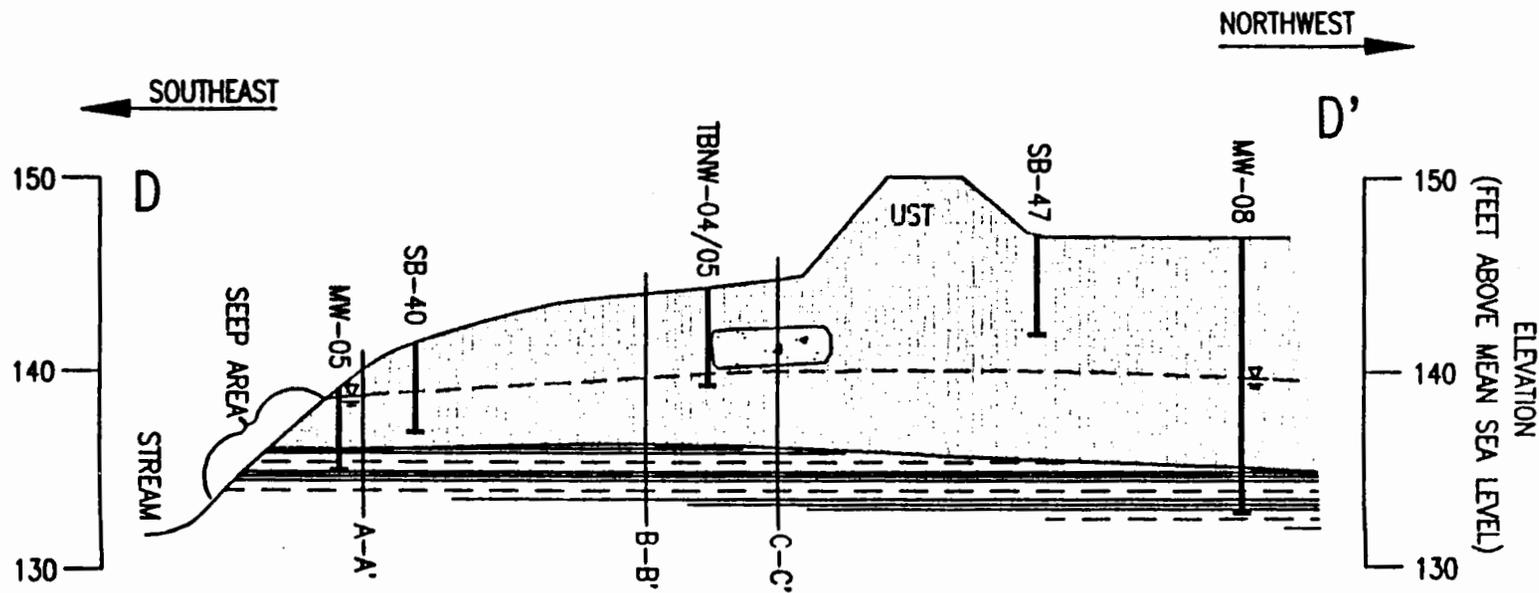
- LEGEND**
- ▽--- APPROXIMATE WATER TABLE SURFACE
 - [Stippled pattern] WASTEWATER DISPOSAL SYSTEM - DRAIN FIELD
 - [Horizontal hatching] SILT - CLAY LITHOLOGIC UNIT
 - [Dotted pattern] SOILS, CLEAN FILL AND SHALLOW SAND LITHOLOGY

FIGURE 2-5

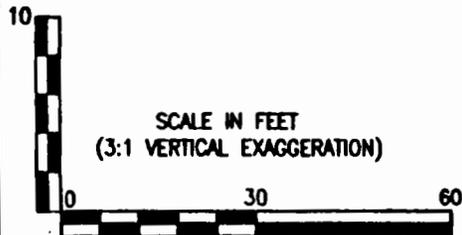
CROSS SECTION C-C'
CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
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2-9



LEGEND

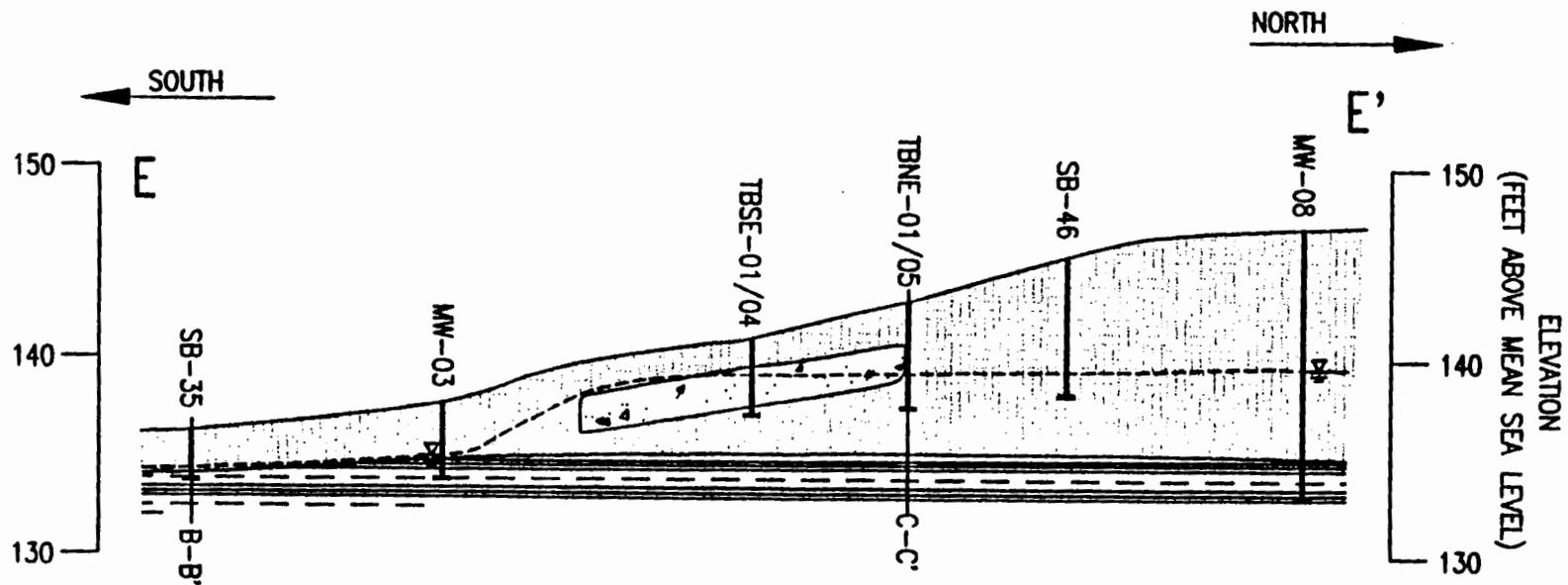
- APPROXIMATE WATER TABLE SURFACE
- WASTEWATER DISPOSAL SYSTEM - DRAIN FIELD
- SILT - CLAY LITHOLOGIC UNIT
- SOILS, CLEAN FILL AND SHALLOW SAND LITHOLOGY

FIGURE 2-6

CROSS SECTION D-D'
CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
NWS EARLE, COLTS NECK, NEW JERSEY



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LEGEND

- APPROXIMATE WATER TABLE SURFACE
- WASTEWATER DISPOSAL SYSTEM - DRAIN FIELD
- SILT - CLAY LITHOLOGIC UNIT
- SOILS, CLEAN FILL AND SHALLOW SAND LITHOLOGY

SCALE IN FEET
(3:1 VERTICAL EXAGGERATION)

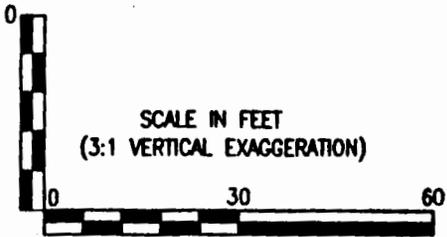
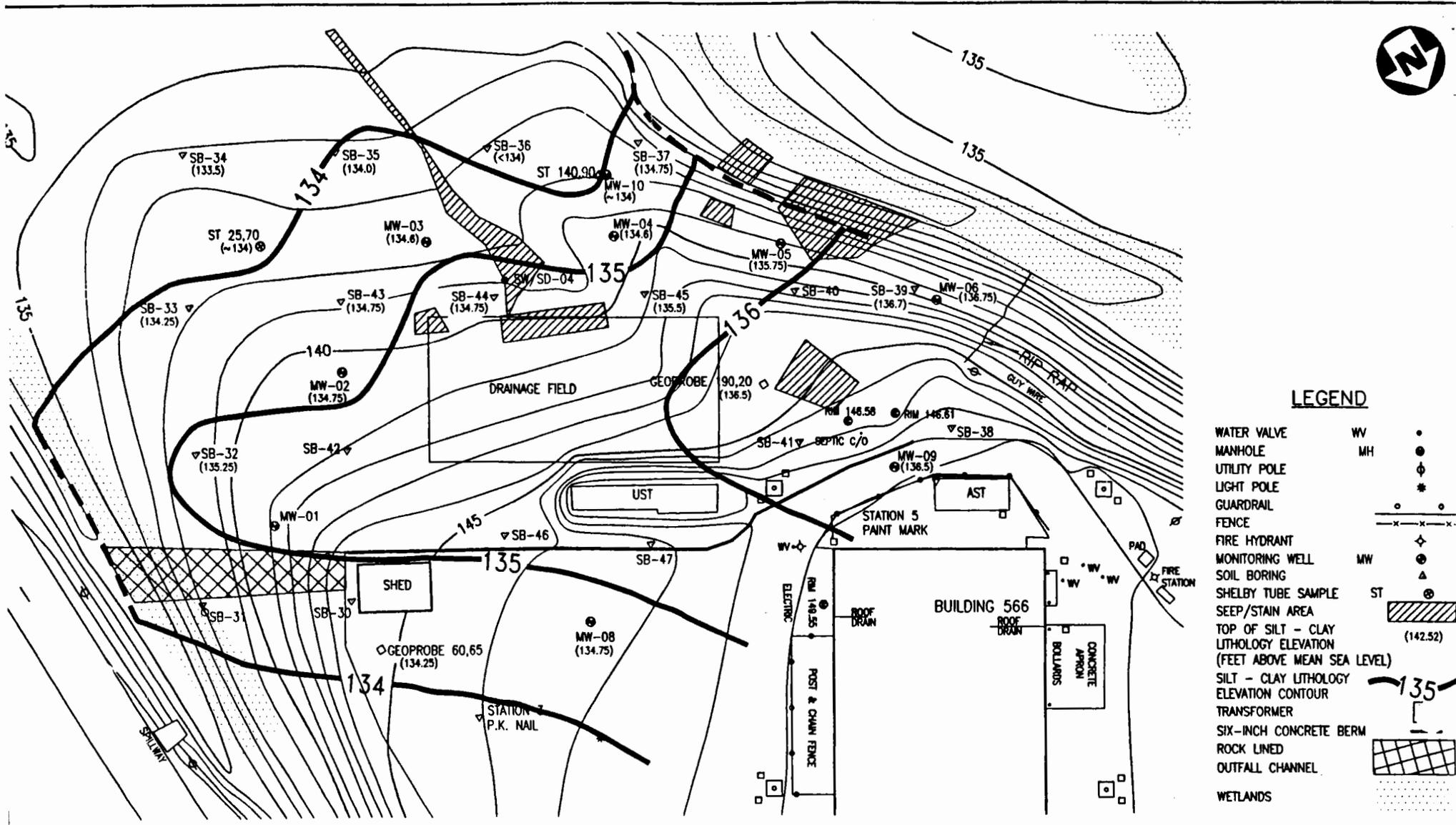


FIGURE 2-7

CROSS SECTION E-E'
CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
NWS EARLE, COLTS NECK, NEW JERSEY



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LEGEND

- WATER VALVE WV •
- MANHOLE MH ●
- UTILITY POLE ◊
- LIGHT POLE *
- GUARDRAIL —○—○—○—
- FENCE —x—x—x—x—
- FIRE HYDRANT ◊
- MONITORING WELL MW ⊕
- SOIL BORING ▲
- SHELBY TUBE SAMPLE ST ⊕
- SEEP/STAIN AREA (Hatched pattern)
- TOP OF SILT - CLAY LITHOLOGY ELEVATION (FEET ABOVE MEAN SEA LEVEL) 135
- SILT - CLAY LITHOLOGY ELEVATION CONTOUR [Line with '135']
- TRANSFORMER [Square symbol]
- SIX-INCH CONCRETE BERM [Grid pattern]
- ROCK LINED [Dotted pattern]
- OUTFALL CHANNEL [Wavy line pattern]
- WETLANDS [Stippled pattern]

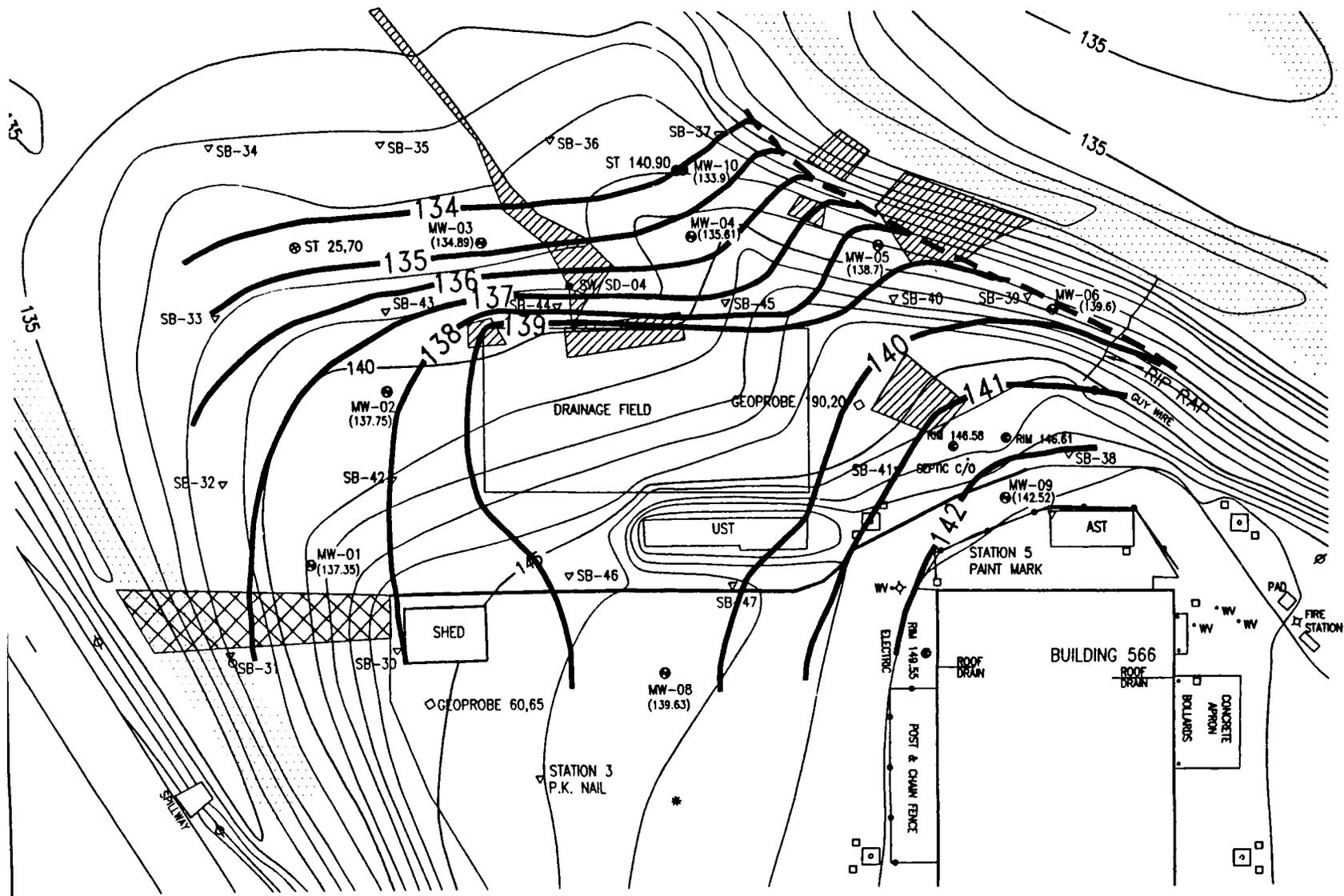
SILT AND CLAY LITHOLOGY ELEVATION
CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
NWS EARLE, COLTS NECK, NEW JERSEY



FIGURE 2-1



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LEGEND

- WATER VALVE WV •
- MANHOLE MH ⊙
- UTILITY POLE ⊕
- LIGHT POLE *
- GUARDRAIL —○—○—
- FENCE —x—x—
- FIRE HYDRANT ⋄
- MONITORING WELL MW ⊙
- SOIL BORING △
- SEEP/STAIN AREA ▨
- GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL) (142.52)
- GROUNDWATER ELEVATION CONTOUR —
- TRANSFORMER ⊞
- SIX-INCH CONCRETE BERM ▤
- ROCK LINED ▧
- OUTFALL CHANNEL ▩
- WETLANDS ▨

SHALLOW GROUNDWATER ELEVATION, MAY 29 AND 30, 1996
 CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
 NWS EARLE, COLTS NECK, NEW JERSEY



FIGURE 2-8



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ATTACHMENT B

SOIL AND GROUNDWATER RESULTS SUMMARY FIGURES FROM THE PHASE I RI REPORT

LEGEND

- SOIL BORING ▽ SB-34
- DIRECT-PUSH ◇ DP 60.65
- SHELBY TUBE ⊙ ST 25.70
- MONITORING WELL ⊕ MW-03
- NONE DETECTED N.D.
- SEED/START AREA 
- WETLANDS 

SB-4403	
TPH	1000
ACETONE	0.040
METHYLENE CHLORIDE	0.010
2-BUTANONE	0.010 J
TOLUENE	0.002 J
XYLENE	0.008 J
VOC T.I.C.	1.0 J

ST 146.90	
HYDRAULIC CONDUCTIVITY	6.19x10 ⁻⁸

SB-4515	
TPH	6700
ACETONE	0.029
METHYLENE CHLORIDE	0.004
TOLUENE	0.002 J
ETHYLBENZENE	0.012
XYLENE	0.420
VOC T.I.C.	6.3 J



SB-3625	
TPH	20
ACETONE	0.010 J
VOC T.I.C.	0.011 J

SB-3720	
TPH	30
VOC T.I.C.	0.006 J

SB-4020	
TPH	1700
VOC T.I.C.	1.4 J

SB-3910	
TPH	50
VOC T.I.C.	0.006 J

SB-4110 / SB-4815		
TPH	7,000	6,400
ACETONE	N.D.	0.085 J
ETHYLBENZENE	N.D.	0.025 J
METHYLENE CHLORIDE	0.006 J	0.015 J
XYLENE	N.D.	1.0
VOC T.I.C.	3.3 J	28.6 J

SB-3520	
TPH	22 J
VOC T.I.C.	0.010 J

SB-3425	
TPH	22 J
VOC T.I.C.	0.006 J

ST 25.70	
HYDRAULIC CONDUCTIVITY	1.51x10 ⁻⁸

SB-3330	
TPH	17 J
VOC T.I.C.	0.009 J

SB-4315	
TPH	18 J
ACETONE	0.035
ETHYLBENZENE	0.002 J
XYLENE	0.008
VOC T.I.C.	0.37 J

SB-3235	
TPH	16 J
ACETONE	0.013 J
VOC T.I.C.	0.023 J

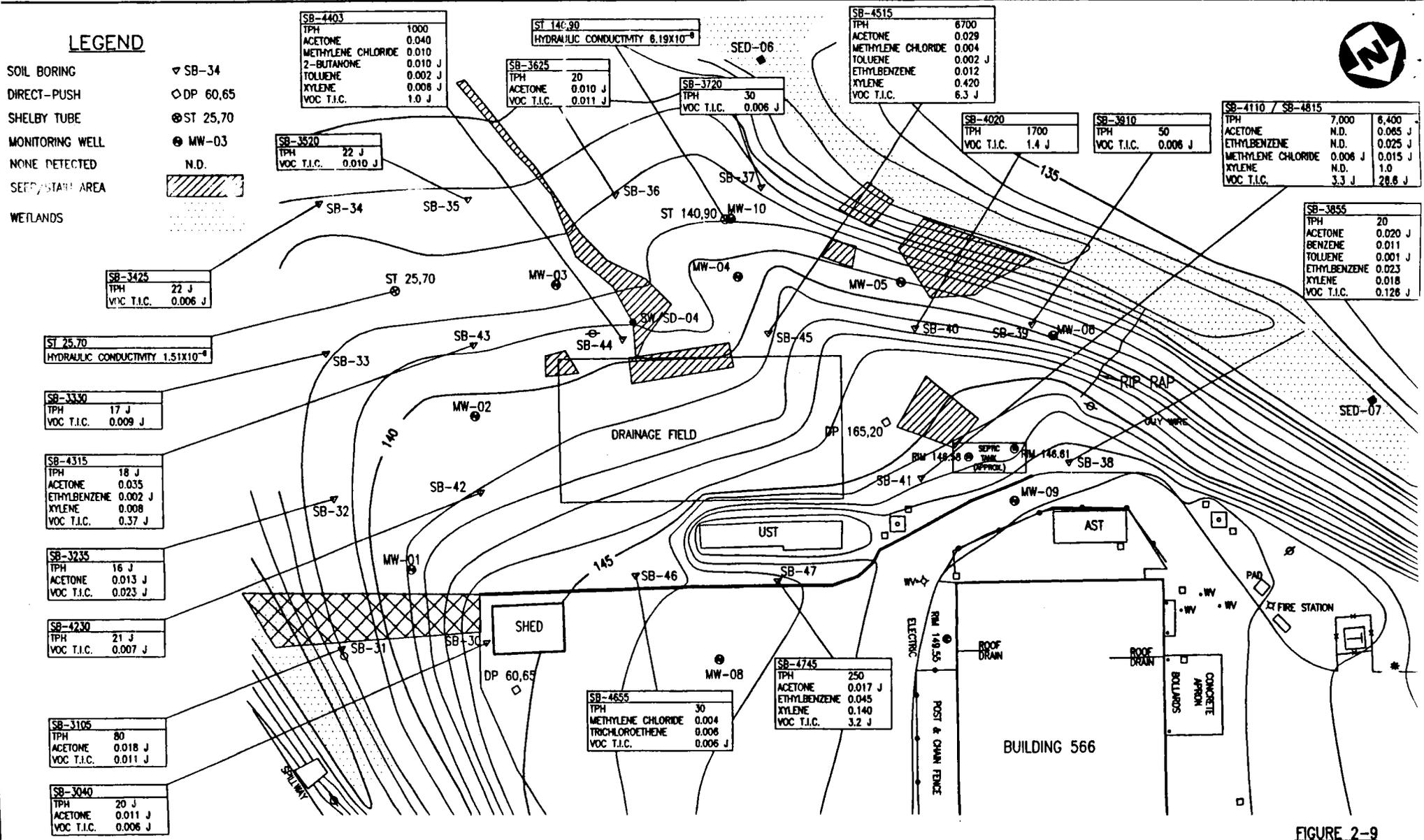
SB-4230	
TPH	21 J
VOC T.I.C.	0.007 J

SB-3105	
TPH	80
ACETONE	0.018 J
VOC T.I.C.	0.011 J

SB-3040	
TPH	20 J
ACETONE	0.011 J
VOC T.I.C.	0.006 J

SB-4655	
TPH	30
METHYLENE CHLORIDE	0.004
TRICHLOROETHENE	0.006
VOC T.I.C.	0.006 J

SB-4745	
TPH	250
ACETONE	0.017 J
ETHYLBENZENE	0.045
XYLENE	0.140
VOC T.I.C.	3.2 J



SOIL SAMPLE DATA
CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566
NWS EARLE, COLTS NECK, NEW JERSEY



NOTE: ALL CHEMICAL ANALYTICAL RESULTS IN MG/KG

FIGURE 2-9



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LEGEND

- SOIL BORING ▼ SB-35
- DIRECT-PUSH ◇ DP 165,20
- SHELBY TUBE ⊙ ST 25,70
- MONITORING WELL ● MW-03
- NONE DETECTED N.D.
- AT OR EXCEEDS NJDEP CLEANUP CRITERIA •
- SEEP/STAIN AREA 
- WETLANDS 

MW-04 / MW-07		
2-BUTANONE	3 J	N.D.
• BENZENE	11	11
TOLUENE	2 J	2 J
ETHYLBENZENE	47	47
• XYLENE	290	300
2,4-DIMETHYLPHENOL	4 J	4 J
NAPHTHALENE	130	140
2-METHYLNAPHTHALENE	200	230
ACENAPHTHYLENE	1 J	2 J
ACENAPHTHENE	7 J	8 J
DIBENZOFURAN	5 J	6 J
FLUORENE	11 J	14
PHENANTHRENE	14	20 J
ANTHRACENE	1 J	2 J
CARBAZOLE	7 J	8 J
PYRENE	N.D.	1 J
BUTYLBENZYLPHTHALATE	N.D.	1 J
TPH(NO.2 FUEL OIL)	71,000	48,000
VOC T.I.C.	810 J	840 J
SVOC T.I.C.	1,100 J	2560 J

MW-02		
CARBON DISULFIDE	1 J	
• BENZENE	12	
ETHYLBENZENE	6 J	
• XYLENE	12	
PHENOL	2 J	
VOC T.I.C.	N.D.	
SVOC T.I.C.	150	

MW-01		
VOC	N.D.	
SVOC	N.D.	
VOC T.I.C.	N.D.	
SVOC T.I.C.	18 J	

MW-03		
2,4-DIMETHYLPHENOL	2 J	
NAPHTHALENE	2 J	
VOC T.I.C.	N.D.	
SVOC T.I.C.	340 J	

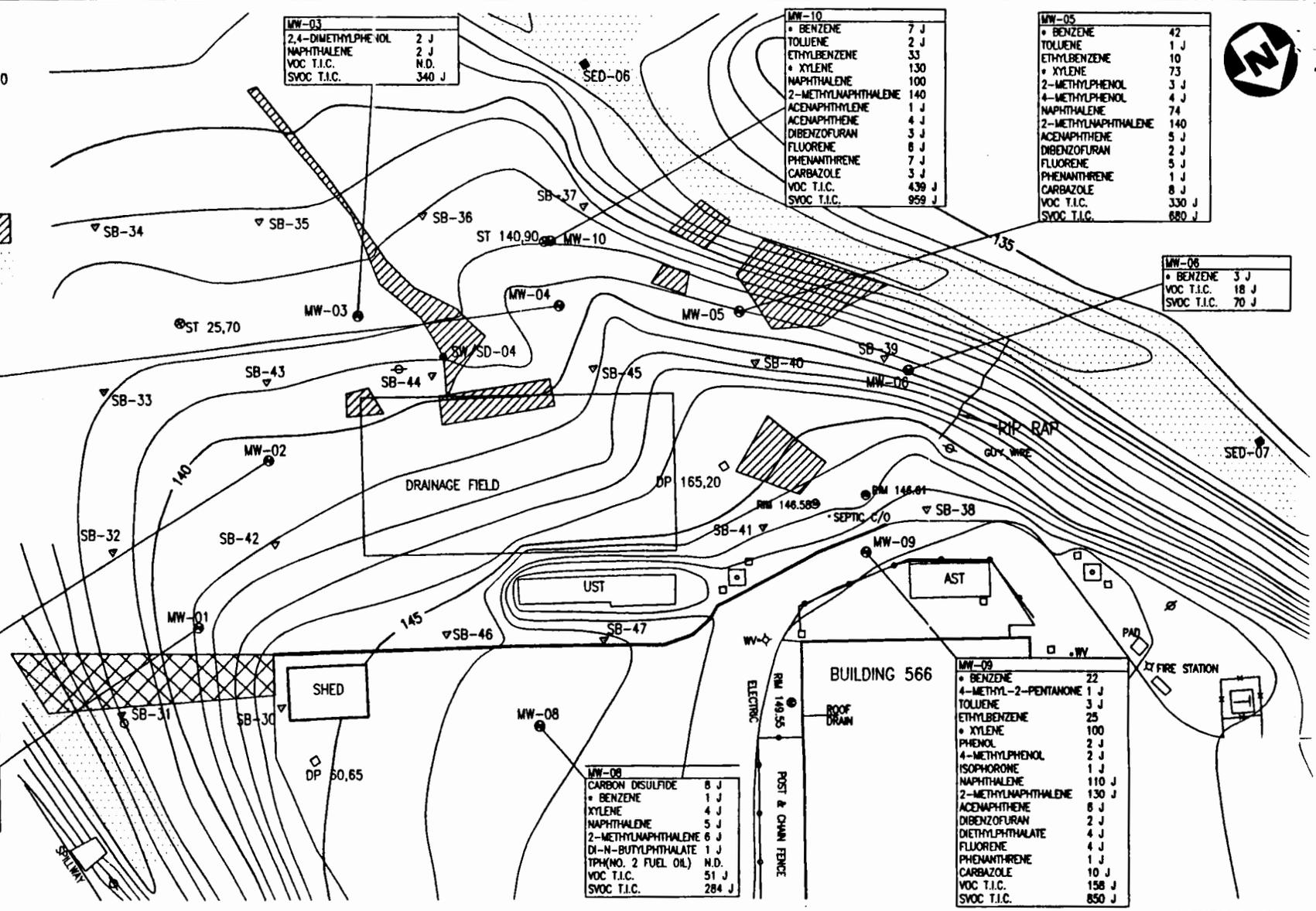
MW-10		
• BENZENE	7 J	
TOLUENE	2 J	
ETHYLBENZENE	33	
• XYLENE	130	
NAPHTHALENE	100	
2-METHYLNAPHTHALENE	140	
ACENAPHTHYLENE	1 J	
ACENAPHTHENE	4 J	
DIBENZOFURAN	3 J	
FLUORENE	8 J	
PHENANTHRENE	7 J	
CARBAZOLE	3 J	
VOC T.I.C.	439 J	
SVOC T.I.C.	959 J	

MW-05		
• BENZENE	42	
TOLUENE	1 J	
ETHYLBENZENE	10	
• XYLENE	73	
2-METHYLPHENOL	3 J	
4-METHYLPHENOL	4 J	
NAPHTHALENE	74	
2-METHYLNAPHTHALENE	140	
ACENAPHTHENE	5 J	
DIBENZOFURAN	2 J	
FLUORENE	5 J	
PHENANTHRENE	1 J	
CARBAZOLE	8 J	
VOC T.I.C.	330 J	
SVOC T.I.C.	660 J	

MW-06		
• BENZENE	3 J	
VOC T.I.C.	18 J	
SVOC T.I.C.	70 J	

MW-08		
CARBON DISULFIDE	8 J	
• BENZENE	1 J	
XYLENE	4 J	
NAPHTHALENE	5 J	
2-METHYLNAPHTHALENE	6 J	
DI-N-BUTYLPHTHALATE	1 J	
TPH(NO. 2 FUEL OIL)	N.D.	
VOC T.I.C.	51 J	
SVOC T.I.C.	284 J	

MW-09		
• BENZENE	22	
4-METHYL-2-PENTANONE	1 J	
TOLUENE	3 J	
ETHYLBENZENE	25	
• XYLENE	100	
PHENOL	2 J	
4-METHYLPHENOL	2 J	
ISOPHORONE	1 J	
NAPHTHALENE	110 J	
2-METHYLNAPHTHALENE	130 J	
ACENAPHTHENE	6 J	
DIBENZOFURAN	2 J	
DIETHYLPHTHALATE	4 J	
FLUORENE	4 J	
PHENANTHRENE	1 J	
CARBAZOLE	10 J	
VOC T.I.C.	156 J	
SVOC T.I.C.	850 J	



GROUNDWATER SAMPLE DATA

CTO 206 - UST REMEDIAL INVESTIGATION REPORT FOR BUILDING 566

NWS EARLE, COLTS NECK, NEW JERSEY



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NOTE: ALL CHEMICAL ANALYTICAL RESULTS IN UG/L

FIGURE 2-10