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**PHASE II--INDUSTRIAL AREA
GROUNDWATER REPORT
ALABAMA ARMY AMMUNITION PLANT**

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
11665 Lilburn Park Road
St. Louis, Missouri 63141

**FINAL REPORT
30 November 1981**

Prepared for:

U.S. ARMY TOXIC AND HAZARDOUS MATERIALS AGENCY
Aberdeen Proving Ground, Maryland 21010

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EXECUTIVE SUMMARY

This report summarizes the findings of the Phase II survey of the geohydrological characteristics and water quality of the water-table aquifer underlying the Industrial Area and the Flashing Ground at Alabama Army Ammunition Plant (AAP), Childersburg, Alabama. During the period October 1979 to October 1980, an environmental survey (Phase I) of AAP was conducted by Environmental Science and Engineering, Inc. (ESE) under contract to the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). The results of the Phase I survey reported by ESE (1981) indicated that the water-table aquifer underlying these areas was contaminated by nitroaromatic residues as a result of past industrial operations.

As a consequence of the potential for contaminant migration off site, further studies were performed to more clearly define the zone of contamination and extent and direction of contaminant movement. These further studies comprise the Phase II groundwater survey.

Thirty monitor wells were constructed during Phase I. Data gathered from these wells have been reported by ESE (1981). During Phase II, an additional 11 wells were constructed along with two piezometer clusters to further define the characteristics of the water-table aquifer and the potential for vertical migration. Thirteen slug tests were performed to assess horizontal permeabilities. During Phase I, samples from 26 wells were analyzed to define the water quality characteristics of the water-table aquifer. During Phase II, samples from all of the newly constructed wells were analyzed along with samples from each of the 7 wells in which contamination had been observed during Phase I.

Based on the Phase I data reported by ESE (1981) and the Phase II data presented in this report, the contamination status and migration potential have been described. The major conclusions are as follows:

1. The results of the Phase I and Phase II studies indicate that the water-table aquifer underlying the Industrial Area at AAAP contains pockets of nitroaromatic contamination which appear to be localized near discrete sources of soil contamination. These include the sites of the Washer-Flaker Houses within the Southern and Northern TNT Manufacturing Areas and contaminated spoil banks lining the Red-Water Ditch in the Southern TNT Manufacturing Area. Contaminated sediments from AAAP surface water bodies themselves do not appear to contribute significantly to the groundwater contamination. The presence of tetryl in the ground water was confirmed in the sample from only one well during Phase II. Based on the Phase I and Phase II data, the horizontal extent of contaminated ground water from these past industrial activities is confined to the Industrial Area.
2. At the Flashing Ground, nitroaromatic contamination of the ground water was not detected during Phase II and was observed only at the analytical detection limit during Phase I. Most of the groundwater constituents were observed to be at lower concentrations during Phase II due to antecedent rainfall conditions. Small peaks were observed in the Phase II chromatograms, but these were below the detection limits. Only small amounts of contaminants are migrating horizontally downgradient at this location as leachate from the contaminated soil.
3. Nitroaromatic concentrations were diluted during Phase II as a result of antecedent rainfall conditions as indicated by the comparative Phase I and Phase II data. The major contaminants found during both surveys were 2,4,6-trinitrotoluene; 2,4- and

2,6-dinitrotoluene, 1,3-dinitrobenzene, and 1,3,5-trinitrobenzene.

During Phase I (ESE, 1981), several other nitroaromatic compounds, transformation products of trinitrotoluene, were identified in the sample from the most heavily contaminated well (Well P-10). These were 4-amino-2,6-dinitrotoluene, 3,5-dinitroaniline, 2-amino-4,6-dinitrotoluene, 2,4-dinitrophenol, and 2-methyl-4,6-dinitrophenol. These compounds are found in trinitrotoluene manufacturing wastewater and also have been identified as transformation products in trinitrotoluene degradation. These transformation products were detected in Well P-10 by GC/MS screening and, with the exception of 2,4-dinitrophenol, were observed at concentrations an order of magnitude less than 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, and 1,3,5-trinitrobenzene. Their presence would be expected in each of the other wells, but at levels far below detection limits.

4. The general direction of horizontal movement of the ground water in the water-table aquifer underlying the Industrial Area is toward the Coosa River regionally and toward the Red-Water Ditch and Beaver Pond drainage system locally, with a horizontal gradient of approximately 0.01 meter per meter. Horizontal movement rate was calculated to be approximately 2.9 meters per year in this area.
5. Based on the above and the downgradient distance from the nearest contaminated well (Well P-11) to the AAAP boundary, contamination in the water-table aquifer in the Industrial Area will take a total of approximately 230 years to reach the boundary.
6. At the Flashing Ground, the water table slopes to the southeast toward Talladega Creek at a gradient of 0.0275 meter per meter.

The horizontal movement rate was calculated to be 7.7 meters per year.

7. Because of the proximity to the AAAP boundary and steep groundwater gradient, the time required for contaminants to migrate to the boundary is approximately 3 years.

8. Recharge of the lower aquifer (dolomitic limestone bedrock) was calculated to occur at a rate of 95 liters per year per square meter in the Industrial Area. This is equivalent to a vertical migration rate of 0.23 meter per year. Contaminated ground water would require approximately 10 years to migrate to the lower aquifer from contaminated pockets in the Northern TNT Manufacturing Area and approximately 33 years from contaminated pockets in the Southern TNT Manufacturing Area.

1.0 INTRODUCTION

1.1 BACKGROUND

AAAP was constructed during World War II to produce high explosives, smokeless powder, and nitrocellulose for the war effort. After the war, the facilities were retained on standby status until 1973 when they were declared excess to U.S. Army requirements and partially razed.

An environmental survey of AAAP was conducted by ESE under contract to USATHAMA from September 1979 to October 1980. This first phase survey, which involved investigation of the entire 5,168 acres (2,088 hectares), included a groundwater investigation based on sampling and analysis of 30 monitor wells. A summary of the results of the Phase I groundwater analysis (ESE, 1981) is presented below.

The water table aquifer underlying the Industrial Area is contaminated by nitroaromatic residues and shows evidence of impact from inorganic salts. Two wells, one located in each of the TNT manufacturing areas, contained water more highly contaminated than the water in other wells in the Industrial Area, indicating that the TNT manufacturing areas are the source of the groundwater contamination. One well, located in the Southern TNT Manufacturing Area, contained water of a bright yellow color. This water contained approximately 21 ppm nitroaromatic residues. The principal compounds were trinitrotoluene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 1,3-dinitrobenzene, 1,3,5-trinitrobenzene, 2,6-dinitrophenol, and 2-methyl-4,6-dinitrophenol. The second-most contaminated well, located in the Northern TNT Manufacturing Area, contained approximately 135 ppb of total nitroaromatic residues.

The potentiometric surface of the water table aquifer and the conductivity of the water in this aquifer indicate the presence of significant sources of dissolved solids in both the Southern and Northern TNT Manufacturing Areas, the Acid/Organic Manufacturing Area, the Red-Water Storage Basin, and the west side of the Tetryl Manufacturing Area. A groundwater plume with dissolved solids concentrations above

background levels appears to follow the Red-Water Ditch drainage system toward the Coosa River. The Red-Water Ditch was the principal conveyor of industrial wastewaters during plant operations.

The water table aquifer at the Flashing Ground located in the southeast corner of AAP contains traces of 2,4-dinitrotoluene (3.6 ppb) apparently derived from the soils of that disposal area. While this concentration level is low, the proximity of the Flashing Ground to the installation boundary indicates potential off-post migration.

1.2 STUDY OBJECTIVES

One purpose of the Phase II study was to provide the information necessary to develop impact mitigation plans for the Industrial Area and the Flashing Ground (Study Area 16). To meet this objective, the groundwater-specific tasks were designed to:

1. Define more precisely the extent of groundwater contamination,
2. Estimate the rate and direction of groundwater movement, and
3. Determine if there is any significant off-site migration of hazardous materials.

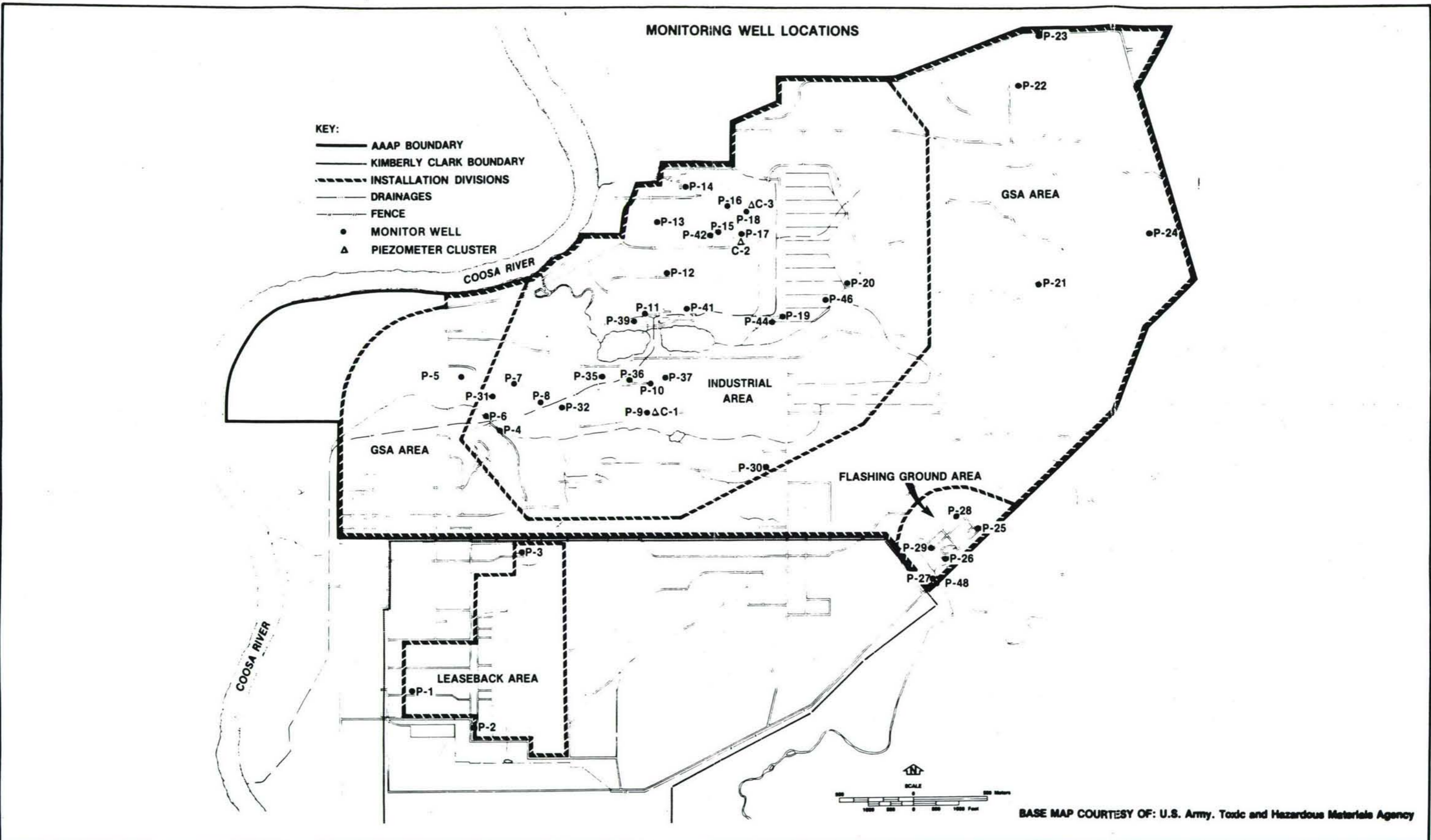
In the Industrial Area, seven additional wells and two piezometer clusters were installed to further investigate the water-table aquifer. Water samples were collected from these new wells, plus all wells previously reported to be contaminated, and were analyzed for nitroaromatic compounds. Hydraulic tests were performed on selected wells to determine the rate and direction of groundwater movement.

One new monitor well (Well P-48) was installed in the drainageway downgradient of the Flashing Ground near the southeast property boundary. Water samples from two wells in this area were analyzed to determine the off-site movement of contaminants.

1.3 SITE SELECTION

Figure 1.3-1 shows the location of all the wells drilled at AAAP; Figure 1.3-2 identifies the major surface drainage systems and water bodies at AAAP. Wells P-1 through P-30 were constructed as part of Phase I (Environmental Survey). Wells P-31 through P-48 and piezometer locations C-1, C-2, and C-3 were constructed for Phase II. Although monitor wells are numbered P-1 through P-48, only 41 wells were actually installed; 7 wells were eliminated during the planning phase, and the numbers were not reallocated to avoid confusion in the field program.

Of the original 30 wells sampled and analyzed during Phase I, only 7 (Wells P-2, P-6, P-10, P-11, P-15, P-19, P-20) contained detectable levels of explosives-derived chemicals. The general principle used in site selection for the additional wells constructed in Phase II was to place at least one well downgradient (where possible) from each contaminated well to attempt to determine the extent of contaminant migration. Additional wells were located upgradient of wells known to be contaminated and at other selected locations to further define the water-table characteristics. Table 1.3-1 is a listing of the new wells and the rationale for their site selection.

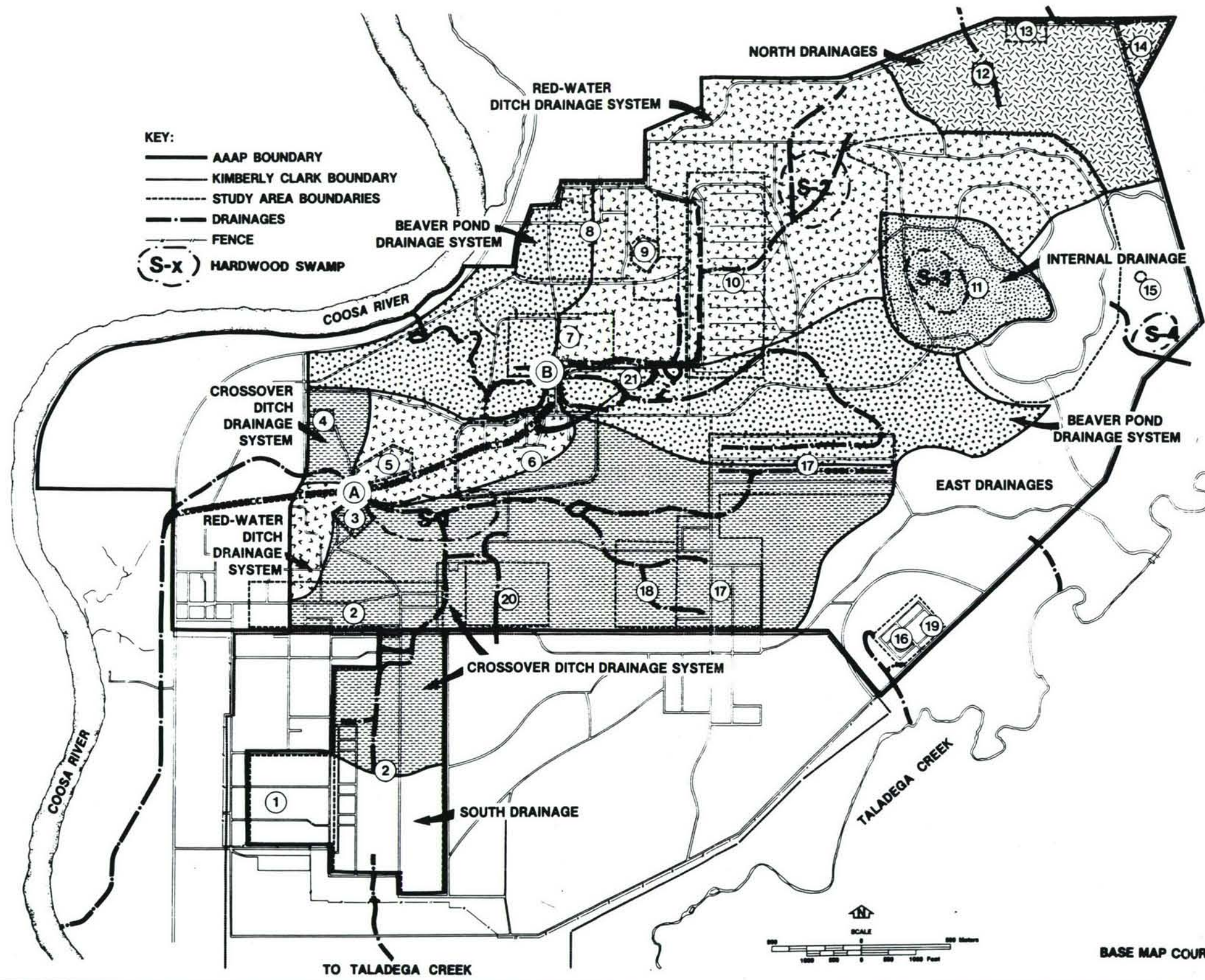


**Figure 1.3-1
MONITOR WELLS AND PIEZOMETERS**

SOURCE: ESE, 1981.

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Alabama Army Ammunition Plant
Childersburg, Alabama**

**U.S. Army
Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland**



KEY:
 — AAAP BOUNDARY
 — KIMBERLY CLARK BOUNDARY
 - - - STUDY AREA BOUNDARIES
 — DRAINAGES
 — FENCE
 (S-x) HARDWOOD SWAMP

STUDY AREA	DESCRIPTION
1	Nitrocellulose Manufacturing Area
2	Smokeless Powder Manufacturing Area
3	Inert Material Burning Ground/Sanitary Landfill
4	Manhattan Project Area
5	Red-Water Storage Basin
6	Southern TNT Manufacturing Area
7	Northern TNT Manufacturing Area
8	Acid/Organic Manufacturing Area
9	Aniline Sludge Basin
10	Tetryl Manufacturing Area
11	Magazine Area
12	Old Burning Ground
13	Small Arms Ballistics Range
14	Cannon Range
15	Old Well
16	Flashing Ground
17	Propellant Shipping Area
18	Blending Tower Area
19	Lead Facility
20	Rifle Powder Finishing Area
21	Red-Water Ditch

NOTE:
 RED-WATER DITCH CROSSES OVER THE BEAVER POND DRAINAGE AT (A) AND THE CROSSOVER DITCH AT (B) BY MEANS OF A LARGE-DIAMETER CULVERT.

BASE MAP COURTESY OF: U.S. Army, Toxic and Hazardous Materials Agency

Figure 1.3-2
 DRAINAGE SYSTEMS AT AAAP
 SOURCE: ESE, 1981.

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Table 1.3-1. Additional Monitor Wells and Piezometers (Locations Shown on Figure 1.3-1)

Well	Location	Rationale
P-31	Near the northwest corner of the Red-Water Storage Basin (Study Area 5)	Clarify the groundwater flow direction near Wells P-6 and P-7 and determine if contaminants have moved in that direction.
P-32	Adjacent to the Red-Water Ditch (Study Area 21)	Define the relationship between the Red-Water Ditch and the water table.
P-35	Near the end of TNT Manufacturing Line F, downgradient of Well P-10 and the Red-Water Ditch	Determine groundwater elevation and monitor contaminants.
P-36	Downgradient of Well P-10 adjacent to Red-Water Ditch	Monitor the groundwater elevation and measure the extent of contaminant migration.
P-37	At the end of TNT Manufacturing Line H, immediately upgradient of Well P-10	Determine groundwater elevation and monitor contamination.
P-39	Downgradient of Well P-11	Determine groundwater elevation and monitor contamination.
P-41	Near the end of TNT Manufacturing Line F	Determine groundwater elevation and monitor contamination.
P-42	Downgradient of Well P-15	Determine groundwater elevation and monitor contamination.
P-44	Downgradient of Well P-19	Determine groundwater elevation and monitor contamination.

Table 1.3-1. Additional Monitor Wells and Piezometers (Locations Shown on Figure 1.3-1)
(Continued, Page 2 of 2)

Well	Location	Rationale
P-46	Downgradient of Well P-20	Determine groundwater elevation and monitor contamination.
P-48	Downgradient of Well P-26	Determine if groundwater contaminants are migrating off site.
Piezometer Cluster C-1	Near Well P-9, upgradient of Well P-10	Monitor vertical head gradients.
Piezometer Cluster C-2	Near Well P-17, at south end of Aniline Sludge Basin (Study Area 9)	Monitor vertical head gradients. (Sub-surface conditions forced abandonment of this cluster.)
Piezometer Cluster C-3	Near Well P-18, upgradient of Aniline Sludge Basin (Study Area 9)	Monitor vertical head gradients.

Source: ESE, 1981.

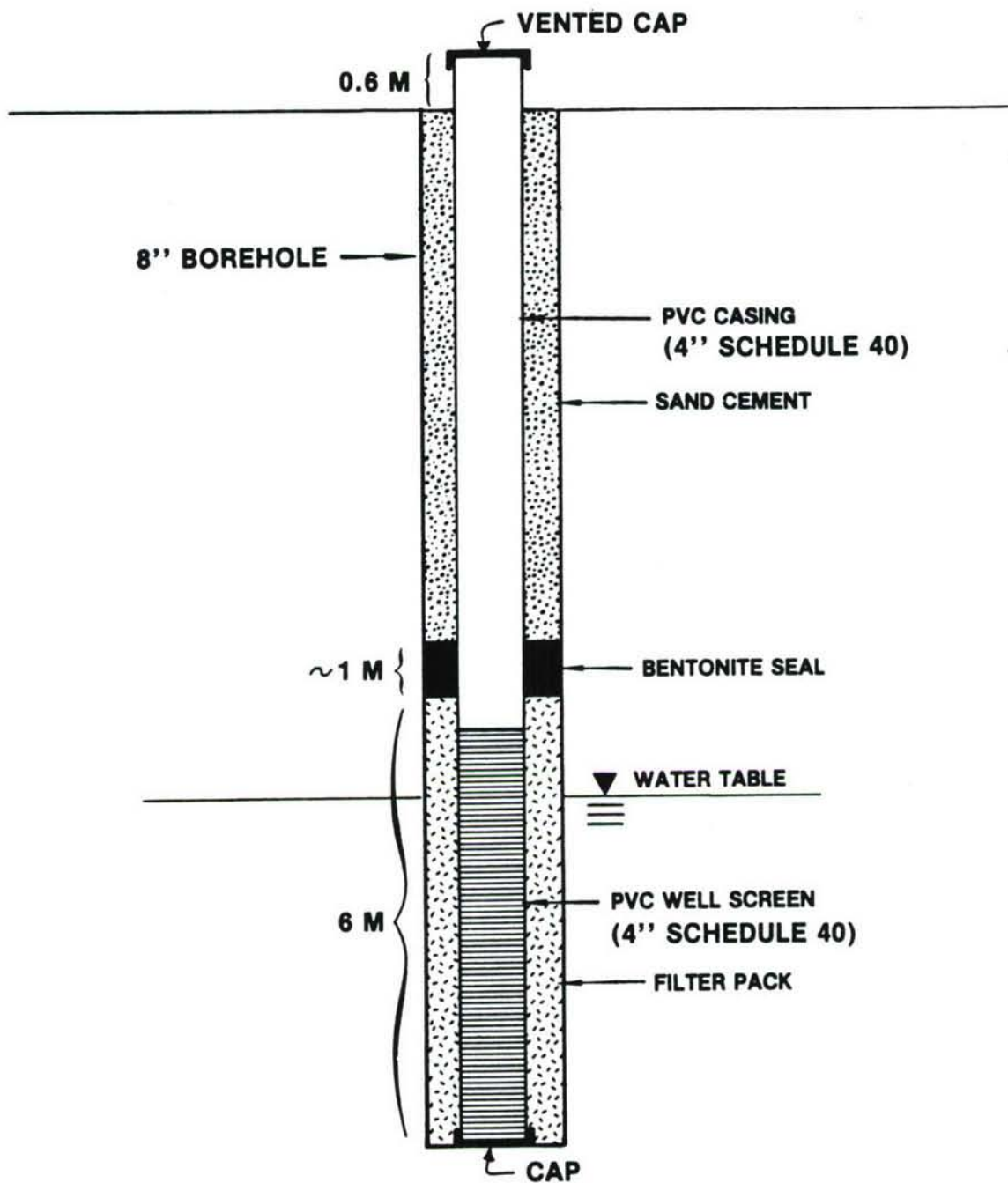
2.0 FIELD METHODS

2.1 WELL DESIGN AND CONSTRUCTION

2.1.1 MONITOR WELLS

All monitor wells were designed and constructed according to the specifications provided in USATHAMA's "Minimal Requirements for Boring Logs, Monitor Well Sketches, and Drilling Operations." Wells P-31 to P-47 (see Figure 2.1-1) were constructed in the following manner:

1. An 8-inch borehole was drilled, using hollow-stem augers, to a depth of 4.6 meters (15 feet) below the water table, or to apparent bedrock, with a maximum depth of 15.3 meters (50 feet). Split-spoon samples were taken every 1.5 meters (5 feet); grab samples were taken at any level where a change in lithology was noted.
2. The top of the well screen [typically 6.1 meters (20 feet) of factory-slotted, 4-inch, Schedule 40 PVC screen with a slot width of 0.010 inch] was set at 1.5 meters (5 feet) above the water table noted during drilling.
3. The well casing extended approximately 0.6 meter (2 feet) above the ground surface.
4. The filter pack of fine to medium sand was placed in the annular space to a depth approximately 0.6 meter (2 feet) above the top of the well screen.
5. Approximately 1 meter (3 feet) of pelletized bentonite seal was placed on top of the filter pack; thus, the top of the bentonite seal extended 1.6 meters (5 feet) above the top of the well screen.
6. The annular space from the top of the bentonite seal to the land surface was grouted with a mixture of Portland cement, sand, and water. The mixture was approximately 2 parts dry-weight sand to 1 part cement with not more than 7 gallons of clean water per 94-pound bag of cement.



(DRAWING NOT TO SCALE)

Figure 2.1-1
TYPICAL CONSTRUCTION DETAIL OF
WELLS P-31 THROUGH P-47

SOURCE: ESE, 1981.

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7. The well was developed by surging and bailing for approximately 1 hour.
8. Each well was marked with a flagged, 2-meter (6-foot) steel post.
9. USATHAMA's Contracting Officer waived the requirement for protective casing on the water-table monitor wells.
10. After installation, well locations were surveyed to a horizontal accuracy of ± 0.3 meter (± 1 foot). The top of the well casing was surveyed to ± 0.03 meter vertically. Benchmarks used were U.S. Army Corps of Engineers benchmarks on the AAAP site located at installation coordinates 22,000-N/10,800-E and 22,800-N/14,000-E.

Construction of Wells P-1 through P-30 (shown in Figure 2.1-2) was similar to construction of Wells P-31 through P-47 except:

1. The screen in Wells P-1 through P-30 terminated no farther than 1.5 meters (5 feet) from the water table;
2. A bentonite seal was used in Wells P-31 through P-47, and sand-cement grout was placed from the water table to the surface;
3. The screen was 3 meters (10 feet) in length in Wells P-1 through P-30;
4. A silt trap was included at the bottom of several wells (Wells P-1 through P-30) in the first series.

Because the steep terrain below the Flashing Ground limited drilling rig access, Well P-48 was constructed by hand in the drainageway leading off site. Details of the construction of this well are shown in Figure 2.1-3.

During the drilling operation, subsurface soil samples were collected from the monitoring wells. Soil samples were taken at least every 1.5 meters (5 feet) during drilling by ASTM Method D1586-67 (Standard Penetration Test); additional samples were taken when a significant

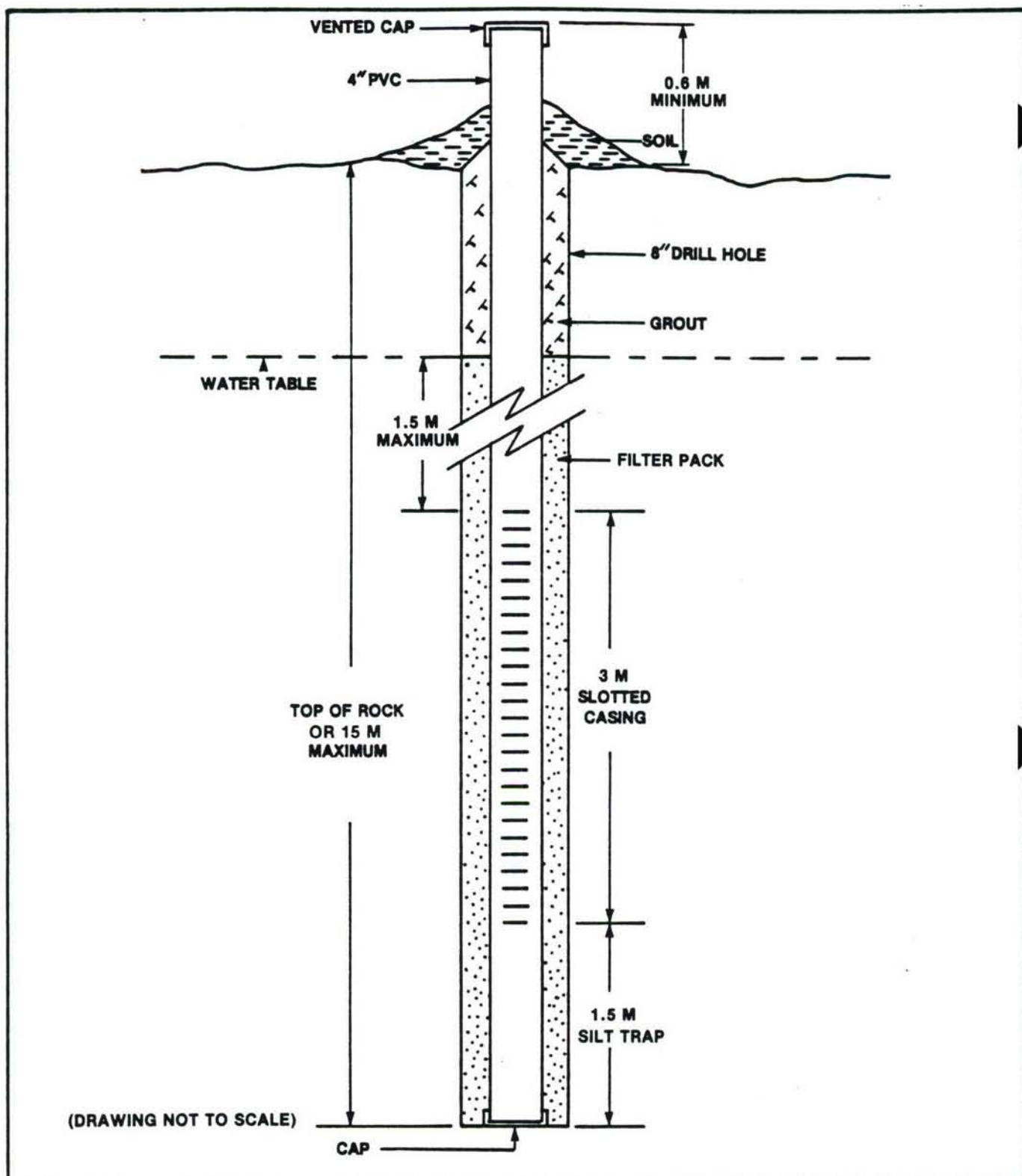
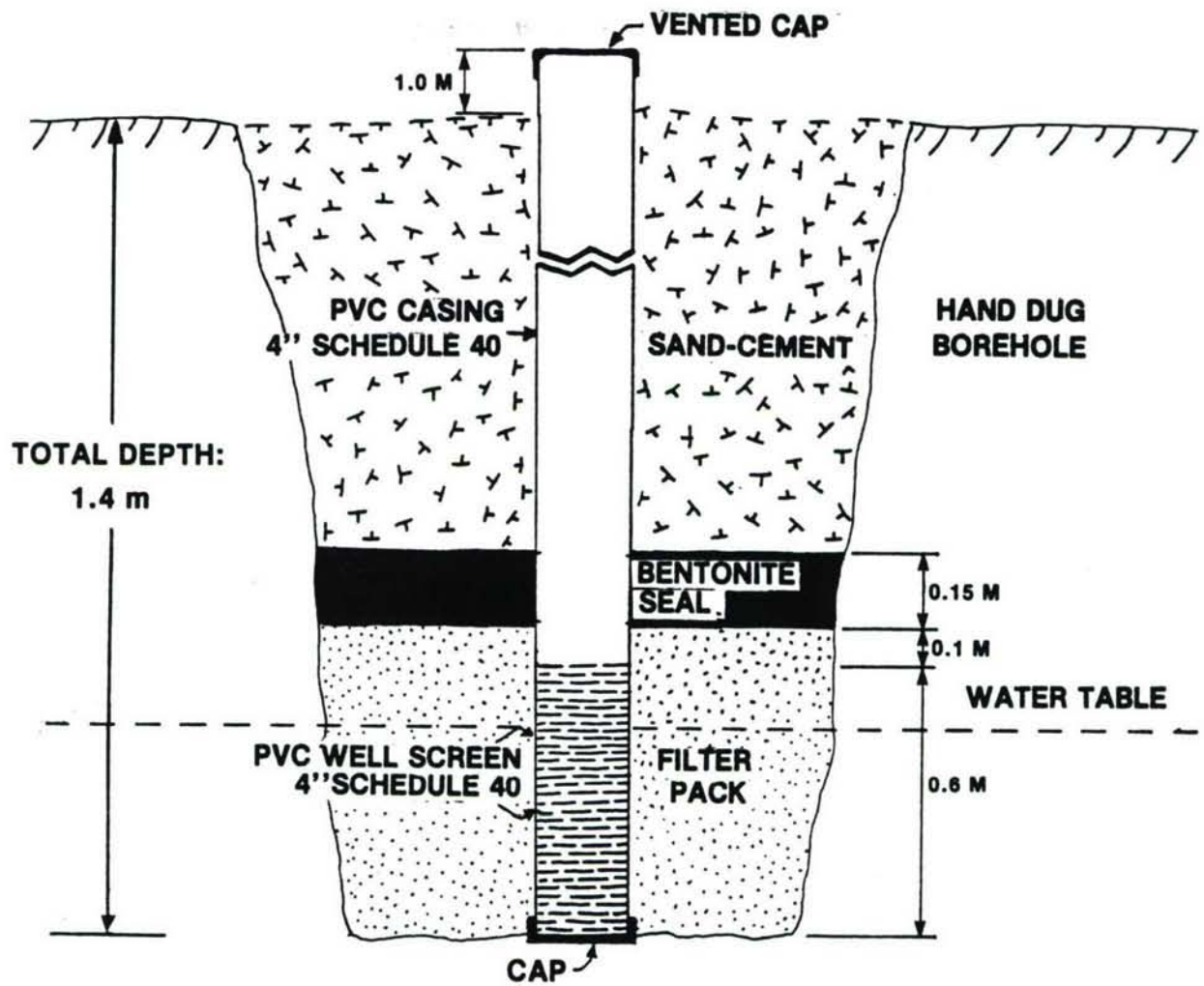


Figure 2.1-2
TYPICAL CONSTRUCTION DETAIL OF
WELLS P-1 THROUGH P-30

SOURCE: ESE, 1981.

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Figure 2.1-3
CONSTRUCTION DETAIL OF WELL P-48

SOURCE: ESE, 1981.

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stratigraphic change was noted. All of the subsurface soil samples have been retained for future reference or analysis until completion of the contract.

Detailed well logs were prepared showing stratigraphic and lithologic details of the materials present in the hole. All soil descriptions were made in accordance with the Unified Soil Classification and soil colors identified by the Munsell Soil Color Chart. Original copies of the well logs were delivered to USATHAMA at completion of each well. Field drilling files for Phase I and Phase II are included in Appendix C and Appendix D, respectively.

2.1.2 PIEZOMETER CLUSTERS

Two clusters (C-1 and C-3) of three piezometers each were installed during this study. Each cluster was designed to measure the water pressure (represented as elevation) in a particular stratum. When three piezometers (one deep, one medium, and one shallow) are installed adjacent to each other, the water level in each describes the hydraulic pressure at that depth. If water levels are different in any of the piezometers, it is an indication that potential exists for fluid migration from the higher to lower pressure zones. These clusters were used to assess the potential for vertical groundwater movement.

Piezometer Clusters C-1 and C-3 were installed near Wells P-9 and P-18, respectively, as shown on Figure 1.3-1. During the construction of Piezometer Cluster C-2, geological problems were encountered (refer to Section 2.4.2).

Construction details of the piezometer clusters are presented in Figure 2.1-4. The deepest piezometer in each cluster (average 14.3 meters deep) was constructed first to log the complete geological section to apparent bedrock and determine the thickness of the soil at that point. The shallowest piezometer (average 6.1 meters deep) was

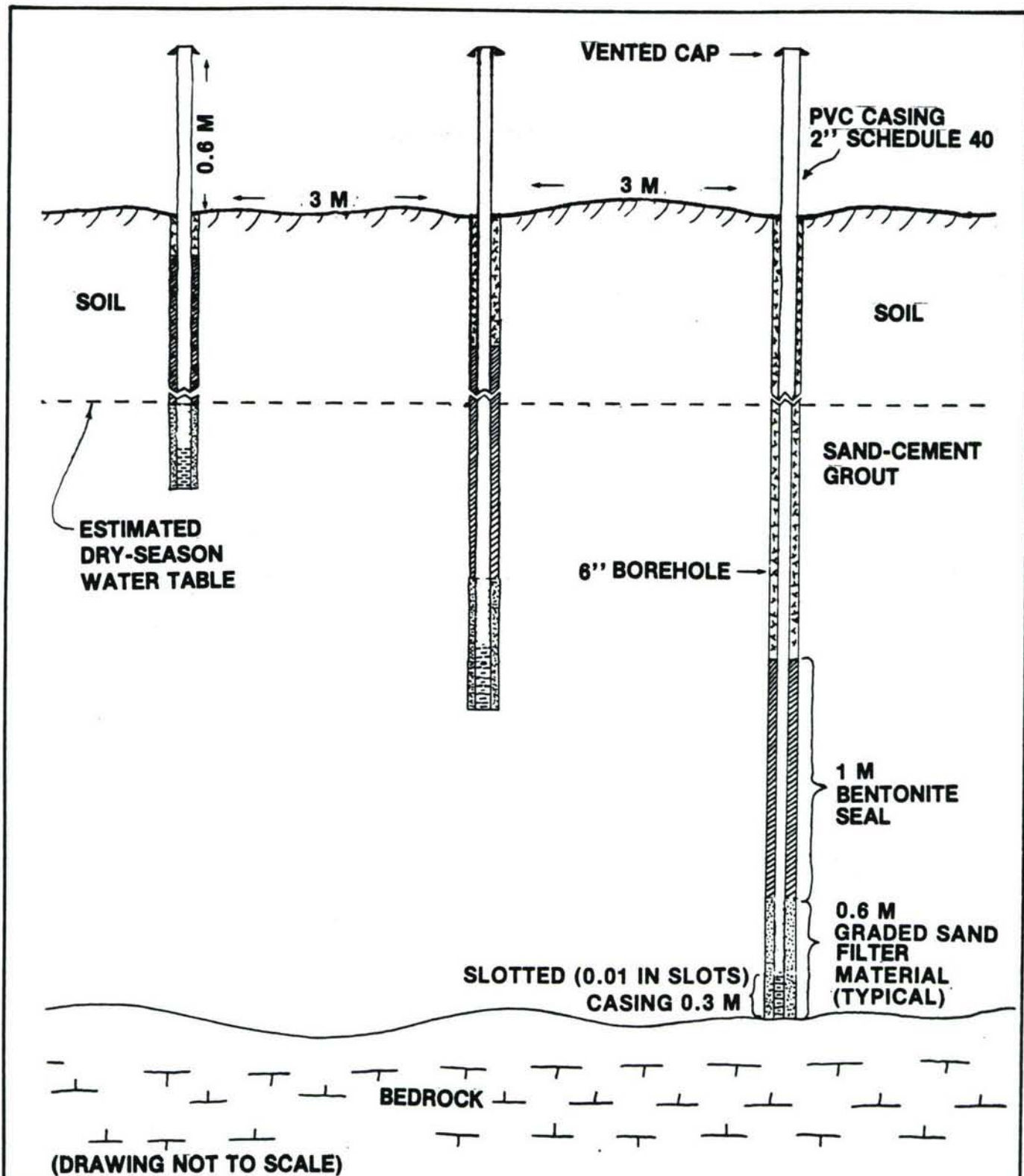


Figure 2.1-4

**CONSTRUCTION DETAIL OF
PIEZOMETER CLUSTERS C-1 AND C-3**

SOURCE: ESE, 1981.

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installed just below the estimated dry season water table. The third piezometer was placed at mid-depth between the other two.

2.2 GROUNDWATER SAMPLING

Groundwater samples were collected on February 25, 1981. Prior to sampling, each well was bailed to ensure that the sample collected was representative of the native ground water. The bailing was continued until five well volumes were removed, unless the well was bailed dry before five volumes had been removed. For some of the slow-recovery wells, only two well volumes were removed prior to sampling.

All water-level measurements (except slug tests) were made either with electric tape instruments or with conventional steel tape. Water levels were recorded from the top of the casing. Water-level elevations were then calculated. Land survey data were referenced to the top of the casing. Measurements made as part of the sampling effort were made prior to bailing. The tape was cleaned between measurements to prevent cross contamination.

To prevent cross-contamination of the wells during development and sampling, individual bailers which remained in place at every well were fabricated. These bailers were economically constructed of PVC with a plastic ball used as a valve at the bottom. As an additional protective measure, polyethylene sheeting was laid around the well head whenever the bailer was raised to prevent contact between the bailer or its support line and potentially contaminated soil.

Groundwater samples were collected and filtered through a 0.45-um membrane filter within a maximum of 4 hours after collection. However, several samples that were too turbid to be filtered in the field were centrifuged and filtered at the ESE Gainesville laboratory. The following is a list of the wells which were filtered and those which could not be filtered on site.

<u>Wells Filtered On Site</u>	<u>Wells Filtered at ESE Laboratory</u>
P-19	P-6
P-20	P-10
P-23	P-11
P-26	P-15
P-32	P-31
P-39	P-35
P-42	P-36
P-44	P-37
P-46	P-41
	P-48

Specific conductivity and pH were measured immediately after collection. Samples were kept chilled and protected from sunlight during processing. After filtration, the samples were preserved and packed in ice-filled chests at AAAP. Analytical results are presented and discussed in Section 4.2.

2.3 HYDRAULIC TESTING

Groundwater flow, which essentially controls contaminant migration, depends on several factors, including permeability of the aquifer. Because of the contaminated status of wells in the Industrial Area, hydraulic tests known as slug tests were performed on eight monitor wells in this area. Analysis of the slug test data has enabled ESE to define the hydraulic conductivity and permeability of the water-table aquifer. These values, in conjunction with soils data and water-table measurements, have been used to make estimates of groundwater flow rates and directions of movement (see Section 4.1.2).

The slug test is generally used in single-well situations where the permeability of the surrounding soils is too low to run a conventional pump test. During a slug test, a known volume of water (slug) is instantaneously displaced (added or removed), and a record is made of the time required for the water level to return to equilibrium. These

data are then analyzed to yield values of permeability. Because the volume of water displaced during slug tests is small, the permeability values determined are only representative of the soils in the immediate proximity (within a few meters) of the well. Therefore, it is important to make a number of tests in the area to ensure that the values adequately characterize the area.

During field testing, the time-rate relationship of water-level changes was recorded by a Paroscientific® quartz pressure sensor (QPS) and dedicated battery-powered digital signal processor (DSP). The pressure sensor is designed to fit into a 3-inch well and is capable of recording pressure variations of 0 to 900 pounds per square inch (psi) (2,000-foot head variations) with 0.001 psi resolution. The water level was displaced by a 3.5-inch outside diameter (O.D.) Schedule-40 PVC mechanical slug which was approximately 8 feet (2.4 meters) long. The PVC slug was used to displace a known volume of water in the well. The results obtained using this procedure are identical to those obtained by adding or removing a "slug" of water to or from the well. The advantages of using a PVC slug are that potentially contaminated water is not removed from the well and nontypical water is not added to the well. Between tests, the PVC slug was thoroughly cleaned to prevent cross-contamination between wells.

The testing procedure was to record the initial depth to water with an electric tape to determine the volume of water in each well, then lower the QPS to a depth near the bottom of the well. Because the QPS displaced some water volume, the level was allowed to come to equilibrium as recorded by the DSP. Next, the slug was quickly lowered into the well (slug-in test) and pressure measurements were recorded at short, timed intervals (1 second to several minutes) until the water again returned to equilibrium.

After completion of the slug-in test, the slug was quickly removed (slug-out test), and the recording procedure was repeated as a slug-out

test to determine the response function of the well under rising pressure head conditions.

Analysis of the slug test data was based on the method described by Bouwer and Rice (1976). This procedure was selected because it makes allowances for field situations at AAAP where the aquifer is not under artesian conditions and the wells do not fully penetrate the aquifer. The analysis assumes that the aquifer and therefore the coefficient of permeability are uniform over the entire thickness tested. Also, this method takes into account the porosity difference between the filter pack and the aquifer.

Field data for each test were tabulated as elapsed time (t) and change in pressure (Δp), which were plotted on semi-log graphs (t on the arithmetic scale, Δp on the logarithmic scale). Graphs of all wells tested are presented in Appendix A. Hydraulic conductivity was calculated according to the Bouwer and Rice (1976) equation:

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln \frac{Y_o}{Y_t}$$

where: K = Hydraulic conductivity, in feet per second (reported as centimeters per second);

- Still vague* {
- r_c = Radius, in feet; derived from the actual radius of the casing and the porosity and thickness of the filter pack; ** radius of well section where water level is rising. See opp. page*
 - R_e = Re-effective radius, in feet; must be solved for using equations and a graph presented in the original paper; *effective radial distance over which the head difference is dissipated.*
 - r_w = Well radius, in feet; *radial distance between well center and undisturbed aquifer.*
 - L = Length of screen, in feet; *r_c plus thickness of gravel envelope.*
 - t = Time, in seconds;
 - Y_o = Pressure at y-intercept on graph, in psi; and
 - Y_t = Pressure at time t, in psi.

Hydraulic conductivity was determined for all the slug-in (SI) tests and for selected slug-out (SO) tests. Slug-out data for several of the wells are not presented because analysis of the slug-in data indicated that the well had not recovered entirely to equilibrium before the slug-out tests were made. Therefore, any data from these slug-out tests are invalid. Results are tabulated in Table 2.3-1. Work sheets explaining the detailed calculations for each tested well are presented in Appendix A.

The permeability values measured in the majority of the wells (10^{-3} to 10^{-6} cm/sec) are typical of the range of values reported by standard textbook references for mixtures of sand, silt, and clay found at AAAP. The primary reason for the range of values is variations in soil type. Minor variations in sand or silt content, as well as slight changes of compaction, can account for this range of permeabilities. The soils at AAAP show considerable variation from well site to well site, which accounts for the variation of permeability rates.

Well P-11 yielded a permeability rate (10^{-1} cm/sec) considerably outside of the range normally expected in sandy clay soil. This high value indicates the presence of a more permeable zone, although none was reported on the drilling logs. There are two possible explanations for this occurrence. First, even a very small sand lens would conduct a volume of water many times greater than would normally be transmitted by a well surrounded by all clay soil.

The other possibility is that, in areas where clay soils overlie limestone bedrock, a weathered zone often exists immediately on top of the limestone. If this zone consists primarily of rock fragments, or if significant solution features exist at the soil-rock interface, the permeability at the interface will be higher than the permeability of the soil or the rock. The well casing is reported by field notes to be set on bedrock (refusal, by blow count determination) which may be in direct hydraulic contact with the bedrock aquifer. Water-level data

Table 2.3-1. Slug Test Summary

Well Number	Permeability (cm/sec)	
	Slug-In Test	Slug-Out Test
P-6	2.4×10^{-6}	
P-10	8.1×10^{-4}	3.7×10^{-4}
P-11	0.76	0.30
P-26	6.4×10^{-4}	
P-35	2.0×10^{-3} * 3.4×10^{-4} †	
P-37	4.4×10^{-5}	
P-41	3.9×10^{-3}	1.6×10^{-3}
P-44	5.3×10^{-5} * 1.5×10^{-4} †	
Range	0.30 to 2.4×10^{-6}	

* Early time.

† Late time.

Note: The different permeability values calculated for early and late times indicate changes in soil characteristics near the tested well. At Well P-35, the higher value indicates that a more permeable soil zone exists near the well, while the test of Well P-44 indicates the opposite.

Source: ESE, 1981.

from Well P-11 measured on February 11, 1981, show a water-level elevation within approximately 32 centimeters (1 foot) of that measured in the two deep piezometers C-1A and C-3A, which were constructed at bedrock surface.

If Well P-11 is hydraulically connected to a zone more permeable than the filter pack, the slug test results are actually representative of the filter pack material. The 10^{-1} cm/sec rate determined in this test is similar to that reported for clean sands (Terzaghi, 1968) such as that used for the filter pack.

2.4 PROBLEMS ENCOUNTERED

2.4.1 DRILLING OF WELLS P-37 AND P-31

On the morning of January 16, 1981, the drilling team moved to the site of Well P-37 in the Southern TNT Manufacturing Area. The first attempted drilling terminated at 0.6 meter (2 feet) when the augers could not penetrate any farther. The drilling rig was moved approximately 3 meters (10 feet) to avoid the object which prevented drilling, probably a foundation.

The second attempt proceeded well except that the sandy clay soil was very hard (standard penetration blow counts greater than 50 per foot) at every 1.5-meter (5-foot) test interval. Several of the samples were a distinct purple color, not represented on the Munsell color chart. Throughout the rest of the AAAP site few soils required drilling rig blow counts of 50 per foot, and no other boring had consistent blow counts that high.

During the drilling, at about a 6-meter (20-foot) depth, an organic odor was noticed by the crew. When this odor was noticed, drilling was halted and a phone call was placed to the ESE Laboratory/Safety Officer. At that time, some crew members reported nausea and sore throats. On the following day, a faint aromatic odor was noted within 1.5 meters (5 feet) of the hole on the windward site. During the remaining work at

this well, the drillers and geologists were equipped with organic vapor masks to ensure their safety.

After discussion with the USATHAMA Project Officer, it was decided that the well should be constructed with a 0.6-meter (2-foot) clay seal at the bottom of the hole to prevent direct vertical movement of the ground water. However, as the augers were being withdrawn from the hole, approximately 1.7 meters (5.5 feet) of clay soil caved in at the bottom of the hole. A 0.3-meter (1-foot) bentonite seal was placed above this clay, and the well was completed in accordance with the Sampling and Analysis Plan (ESE, 1979).

In addition to the other difficulties encountered at Well P-37, a rope broke during the well development phase which allowed a 2-foot surge block to fall to the bottom of this well. After a lengthy attempt to retrieve this tool, it was decided by staff of both ESE and USATHAMA to abandon the effort. The presence of the surge block in this well does not hinder water sampling by the bailer methods. The surge block is constructed of a steel rod with a rubber belting material plunger. It does not contain any compounds which would interfere with analysis for nitroaromatic compounds.

A similar, but less severe, situation was encountered during construction of Well P-31 (near the west end of the Red-Water Storage Basin). At that location, the drillers experienced nausea, vomiting, and headaches. After a short period of time, they felt better, were issued vapor masks, and completed the well.

Since these incidents, all crew members [Pittsburgh Testing Laboratory, Inc. (PTL) drillers and the ESE geologists] have had full physical examinations which included blood tests. None of these tests indicated any disorder directly attributable to the type of chemicals encountered in the field.

2.4.2 DRILLING OF PIEZOMETER CLUSTER C-2

Piezometer Cluster C-2 was planned for installation near Well P-17 at the southern end of the Aniline Sludge Basin (Study Area 9). The initial drilling proceeded in a typical manner. The soil encountered was sandy clay with medium blow counts to a depth of about 7.6 meters (25 feet), where no sample was recovered. An interval of no split-spoon sample recovery is not uncommon when sampling soil materials that exhibit low cohesive strengths (such as wet sands) or cohesive soils with water contents at or near the liquid limit. After another attempt at collecting a sample at the 7.6-meter (25-foot) depth, the hollow-stem augers were advanced to 9 meters (30 feet) and then 10.7 meters (35 feet), and additional attempts were made to collect a sample. The weight of the drill rods pushed the sampler to a depth of approximately 20.7 meters (68 feet). While the split spoon rested on the bottom, the 140-pound hammer was used to attempt to make a penetration test. No penetration had been made after 100 blows, indicating refusal. The sound of the equipment indicated a very solid base (probably rock). During the drilling, the driller did notice a change in drilling resistance at a depth of 8.4 meters (27.5 feet).

The following morning, after considerable discussion with the USATHAMA geologist, it was decided to pull the hollow-stem augers and construct the best well possible under the conditions encountered. A section of well screen 0.3 meter (1 foot) long was attached to the casing and pushed into the hole to a depth of approximately 13 meters (43 feet). At that depth, considerable resistance was encountered, and to avoid breaking the screen, the insertion effort was halted.

The well was developed and then sealed with bentonite and concrete. Later measurements of water-level fluctuations in this cluster were erratic and unsuitable for use.

The most probable explanation for the void encountered at Piezometer C-2 is that the drilling encountered a cave or incipient sinkhole. The

bedrock under AAAP is limestone which has the potential to develop karst features. The appearance of sink holes has been confirmed in the Childersburg area. A cavern, Onyx Cave, is open to the public and is located within 10 kilometers of AAAP.

2.4.3 SLUG TESTS

Use of the electronic instruments for the precise measurement of water levels was generally very successful. The problems arising were mostly mechanical in nature.

The 3.5-inch by 8-foot mechanical slug was selected to give the maximum possible water displacement in the 4-inch-diameter wells. However, on several occasions, the tight fit between the slug and the casing (1.2 cm) caused the slug to become lodged because it did not allow for slight deflections in the casing or kinks in the sensor cable.

The water level in Well P-39 was low enough so that the bottom of the well contained only approximately 0.9 meter of water. This was not a sufficient quantity to allow testing by this procedure.

3.0 LABORATORY ANALYSIS OF NITROAROMATIC COMPOUNDS

The procedures used to analyze the water samples collected from monitor wells for this phase were identical to those used in the Phase I study. The following sections are reproduced from that report.

The method used for analysis of nitroaromatic compounds in water was developed from the USATHAMA-supplied tentative gas chromatographic procedure for trinitrotoluene and related compounds in water. A modification of this method using three 2-ml extractions with toluene of a 250-ml water sample was employed for this survey. Three extractions with small amounts of toluene were used rather than extracting once with a larger volume of solvent followed by a solvent concentration step. Preliminary testing indicated that 2,4,6-trinitrotoluene and 1,3,5-trinitrobenzene extracted into methylene chloride were susceptible to thermal degradation during solvent concentration. Toluene was chosen as the extracting solvent because it is a good solvent for nitroaromatic compounds and because it is compatible with gas chromatographic electron-capture analysis (GC/EC). The single toluene extraction was satisfactory for all seven nitroaromatic compounds screened and quantitated using GC/EC. Six of the compounds (2,4-dinitrotoluene, 2,6-dinitrotoluene, trinitrotoluene, nitrobenzene, 1,3-dinitrobenzene, and 1,3,5-trinitrobenzene) were detected using one set of instrumental conditions. Tetryl detection required different conditions and a different column.

All groundwater extractions were performed on samples that had been filtered through 0.45-micrometer (μm) membrane filters immediately after collection. Any emulsions that formed during extraction were broken by centrifuging the emulsified portions and drawing off the toluene layer.

GC Analytical Conditions

Two different columns and sets of temperature regimes were required to detect all seven nitroaromatic compounds. Column conditions for analysis of the six selected nitrobenzene and nitrotoluene compounds consisted of a 6-foot by 2-mm inside diameter (i.d.) glass column packed with 3-percent OV-225 on 100/120-Mesh Gas Chrom Q. Tetryl was analyzed on a 3-foot by 2-mm i.d. glass column packed with 1.5-percent OV-17/1.95-percent QF-1 on 100/120-Mesh Gas

Chrom Q. The nitrotoluene/nitrobenzene analysis consisted of a 2-temperature ramp program performed on a Perkin-Elmer Sigma 2 Gas Chromatograph equipped with an electron-capture detector. The temperature program included isothermal hold at 100°C for elution of nitrobenzene, an isothermal hold at 165°C for elution of the dinitrotoluenes and dinitrobenzene, and a final temperature hold at 200°C for trinitrotoluene and trinitrobenzene. A temperature program at 15°C increase per minute was employed between each isothermal hold.

The gas chromatographic behavior of tetryl presented particular problems. Tetryl is sensitive to thermal decomposition on gas chromatographic columns. Because of this behavior, a temperature of 165°C was found to be the maximum allowable column temperature for detection of tetryl. New columns had to be silanized thoroughly by the injection of several 10-microliter (ul) volumes of silanizing agent (Silyl 8) before an acceptable peak shape was obtained for tetryl. Injection of several 5-ul volumes of a 1-ppm tetryl stock followed by several solvent injections also improved the chromatographic behavior of tetryl. Overall, GC/EC analysis was not an ideal method for tetryl analysis but did produce an acceptable linear response and sensitivity for use in this survey.

4.0 TECHNICAL RESULTS

4.1 GROUNDWATER HYDROLOGY

4.1.1 WATER-TABLE AQUIFER

Three water-table maps were prepared from the water-level measurements at AAAP. Figures 4.1-1 and 4.1-2 show the water table on February 5, 1980, and July 8, 1980, during the winter and summer rainy seasons, respectively. After completion of the additional monitor wells, an additional set of water-level data was collected from all 38 monitor wells on February 11, 1981. The water-table map of these data is presented in Figure 4.1-3. The increased number of data points permitted a more precise definition of the water-table conditions, especially in the high-explosives manufacturing area near the Beaver Pond, Red-Water Ditch, and Crossover Ditch drainage systems.

Comparison of the three maps reveals a strong similarity of the shape of the water-table surface in all three situations. The highest land elevations in the eastern portions of the base have the highest water-table levels. The lowest land elevations, also the lowest water table, occur near the western part of the base near the Coosa River and southern base boundary near Talladega Creek. In the center, more level part of the base, the water-table gradient flattens considerably. In the center of the base, ground water in the water-table aquifer flows perpendicular to the contour lines toward the interior drainage system (Red-Water Ditch, Beaver Pond, and Crossover Ditch drainage systems). In the southern part of AAAP near the Flashing Ground, the water table dips steeply to the south and flows toward Talladega Creek.

The area near Wells P-5 and P-7 north of the Red-Water Storage Basin is a topographic divide between the Red-Water Ditch and Crossover Ditch drainage systems and the Coosa River. Apparently (at least seasonally),

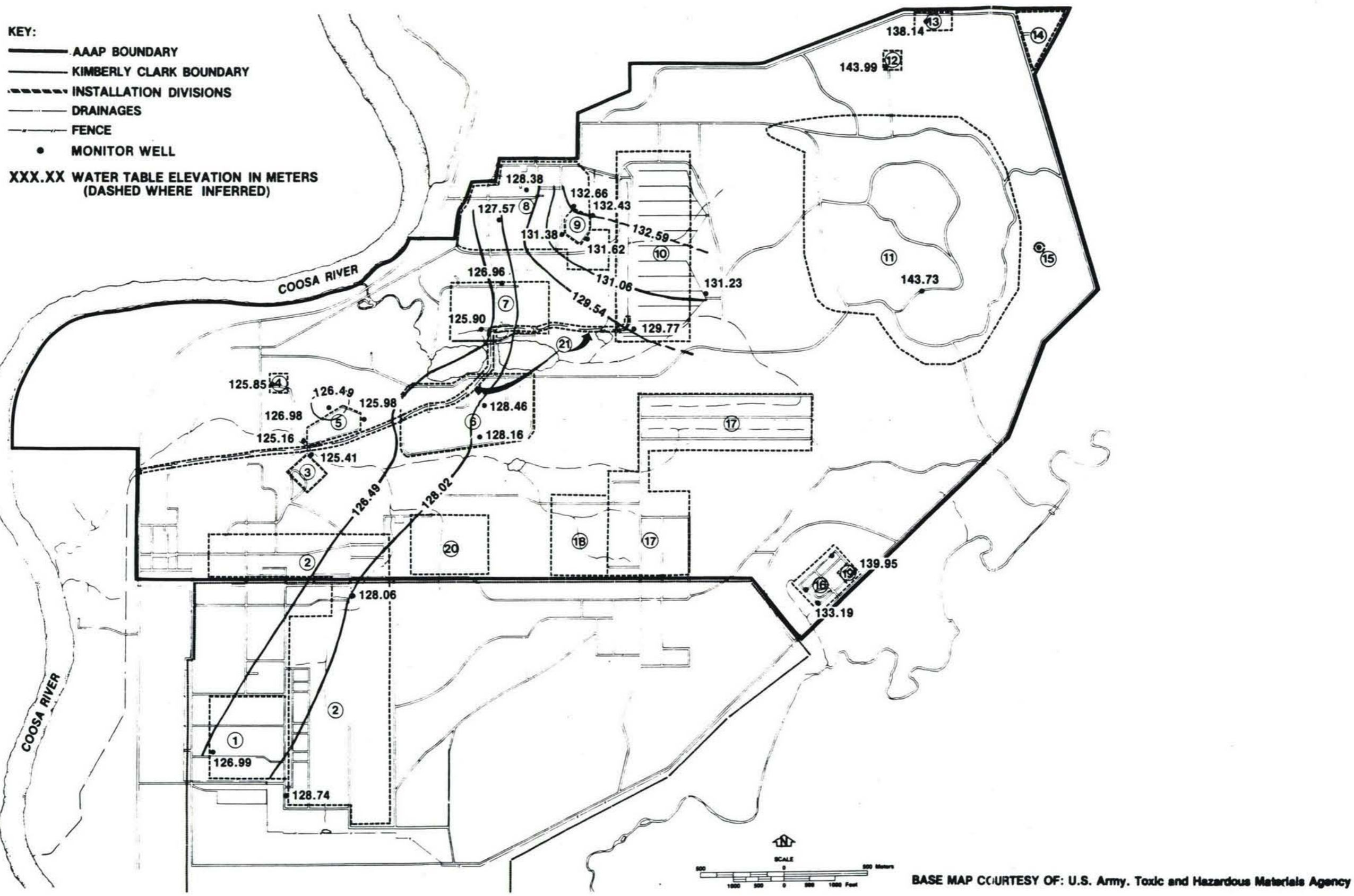


Figure 4.1-1
WATER-TABLE CONTOUR MAP -- FEBRUARY 5, 1980

SOURCE: ESE, 1980.

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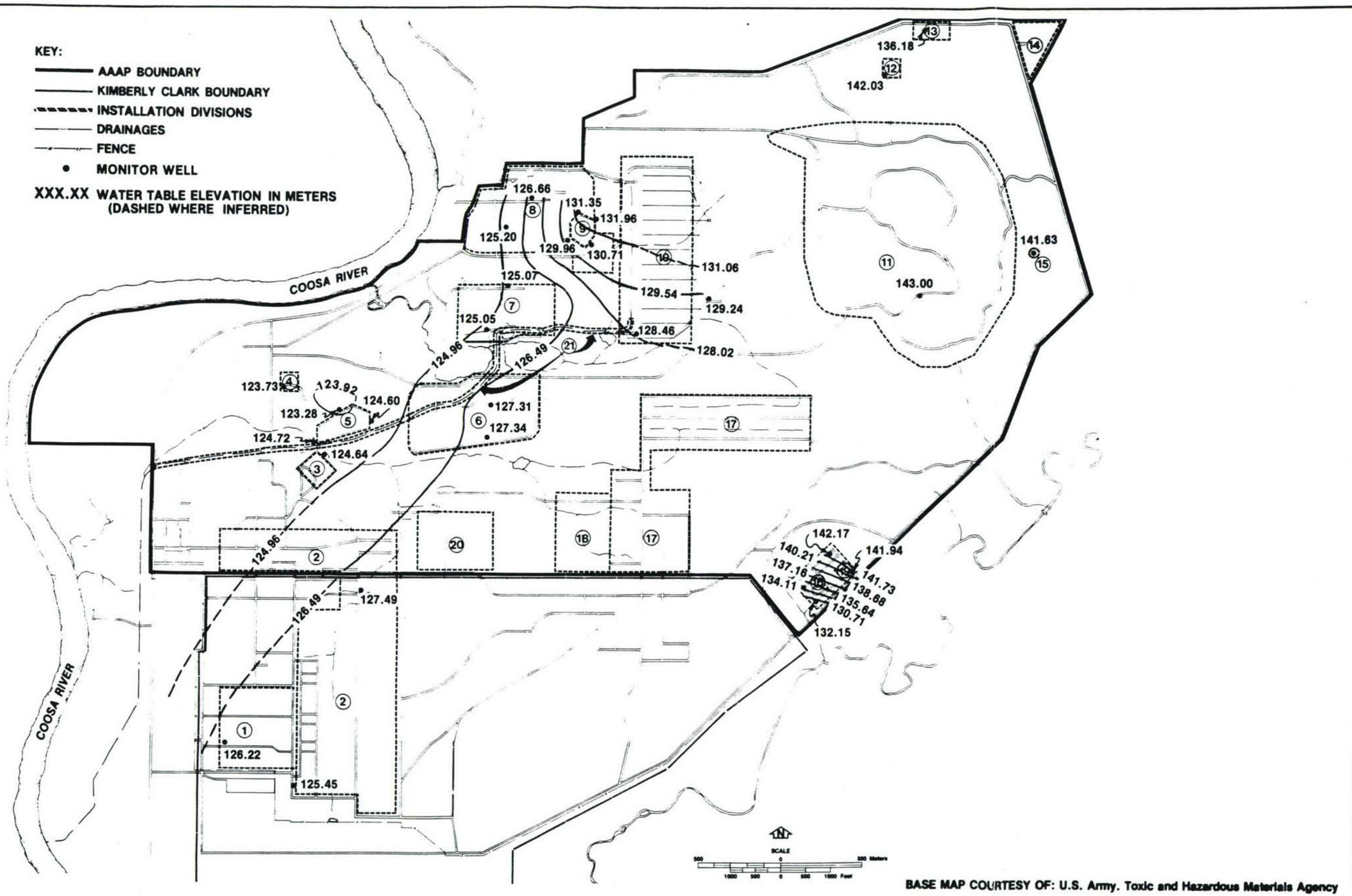


Figure 4.1-2
WATER TABLE CONTOUR MAP -- JULY 8, 1980
 SOURCE: ESE, 1981.

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WELL NUMBER	WATER ELEVATION
P-1	126.43
P-2	128.22
P-3	127.46
P-4	124.97
P-5	129.66
P-6	
P-10	125.67
P-11	125.65
P-12	120.85
P-13	127.21
P-14	128.80
P-15	131.17
P-16	130.10
P-17	130.54
P-18	130.91
P-19	129.7
P-20	128.2
P-21	138.73
P-22	143.4
P-23	138.30
P-24	143.44
P-25	144.75
P-26	128.91
P-27	134.81
P-28	147.44
P-29	140.94
P-30	
P-31	126.55
P-32	126.22
P-35	125.36
P-36	125.84
P-37	
P-39	124.21
P-41	127.08
P-42	130.32
P-44	127.3
P-46	130.0



BASE MAP COURTESY OF: U.S. Army, Toxic and Hazardous Materials Agency

Figure 4.1-3
WATER-TABLE CONTOUR MAP -- FEBRUARY 11, 1981
 SOURCE: ESE, 1981.

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a groundwater mound which drains to both the river and the ditch develops in this area. The July 8, 1980 water-table map, however, indicates that the water level of both Wells P-5 and P-7 was slightly below that of Wells P-6 and P-8. This water-level difference suggests the possibility of occasional groundwater movement north from the Red-Water Storage Basin toward the Coosa River and supports the conclusion in the previous report (ESE, 1981) that the contamination found in Well P-6 in February 1980 has migrated from contaminated sediments in the Red-Water Ditch. Analysis of samples taken from Well P-6 on February 25, 1981, did not show any quantifiable contaminants. On that date, the groundwater gradient was toward the Red-Water Ditch.

4.1.2 CONTAMINATION MIGRATION POTENTIAL

The migration rate of contaminants in soil is directly related to the movement (both horizontal and vertical) of ground water. The factors involved in determining this movement are the hydraulic conductivity and porosity of the soils and the water-table slope.

Horizontal Migration

To estimate the horizontal migration potential in the water-table aquifer, the hydraulic gradients were measured from the water-table maps. The horizontal permeability was measured by slug testing seven monitor wells. Porosity was estimated from published data (Walton, 1970).

The potential rate of horizontal pollutant movement can be estimated by using the following equation derived from Darcy's Law:

$$\bar{v} = \frac{k}{n} I$$

where: \bar{v} = Average linear velocity (cm/sec),
k = Hydraulic conductivity (cm/sec),
n = Porosity, and
I = Hydraulic gradient.

The average horizontal conductivity was calculated to be 4.6×10^{-5} cm/sec. This value appears to characterize the Explosives Manufacturing Areas and the Flashing Ground. In all cases, the porosity was assumed to be 0.5.

The Flashing Ground has the steepest gradient (0.0275) measured during this study. Applying this gradient to the above equation, a horizontal rate of movement of 7.9 meters per year may be expected. Calculations of this type assume that the soil is saturated at all times and that the gradient does not change. Since the drainage feature along the southwestern end of the Flashing Ground is often dry, as were three of the wells in February 1980, the two assumed conditions will result in a conservative estimate of migration rate; thus, the rate of movement is probably considerably less than the estimated 7.9 meters per year.

The high-explosives manufacturing area in the central part of AAP has a much lower hydraulic gradient (near 0.010). This value was calculated by drawing several flow lines across the water-table contours and averaging the slopes. Using this value gives a potential horizontal rate of movement of 2.9 meters per year. Again, this value assumes a continuous supply of water available to flow with no seasonal change in gradient and, therefore, is a conservative estimate.

Vertical Migration

The potential for vertical groundwater movement depends on the same variables (head, gradient, and hydraulic conductivity) described in the previous sections. The measurements used to determine these variables were taken from Piezometer Clusters C-1 and C-3.

Water-level measurements were taken at both clusters on January 22, 23, and 27, and February 11, 1981. During this 3-week period, four rainfall events occurred, each of which affected the shallow water table. The deep piezometers continued to show a steady rise, as expected, because winter is normally a period of recharge to the lower aquifer.

For these calculations, the hydraulic gradient (I) was assumed to be the elevation difference between the water level in Piezometer Clusters C-1 and C-3 divided by the elevation difference between the center of the two piezometer screens.

A summary of the water surface elevations and vertical gradients is presented in Table 4.1-1. On every date, there is a significant head difference between the water-level elevation of the shallow and deep piezometers. For this study, the data from the middle piezometer were used as supporting data to check the linearity of the gradients. The hydraulic gradients developed between C-1A and C-1B remained fairly uniform (0.28 to 0.46) throughout the period, while gradients between C-3A and C-3B normally were 0.20 to 0.27 (except after the heavy rainfall of February 10 the value increased to 0.77, due largely to the lower permeability/denser compaction of soil at that site as indicated by the higher standard penetration blow counts). These hydraulic gradients are significant and indicate a high probability of some vertical pollutant migration.

Applying the following formula (from Darcy's Law), the quantity of water moving vertically can be calculated.

$$Q = kIA$$

where: Q = Discharge (cm³/sec),
k = Hydraulic conductivity (cm/sec),
I = Hydraulic gradient, and
A = Area (cm²).

Table 4.1-1. Summary of Water Surface Elevations and Vertical Gradients

Piezometer	January 22, 1981		January 23, 1981		January 27, 1981		February 11, 1981	
	Screen Elevation	Water Surface Elevation	Water Surface Elevation	Water Surface Elevation	Water Surface Elevation	Water Surface Elevation	Water Surface Elevation	Water Surface Elevation
Cluster 1								
Shallow (B)	124.84	126.66	126.71	126.70	128.54	126.70	128.54	0.36
Gradient Between B and C		0.11	0.11	0.10		0.10		
Middle (C)	118.73	125.93	126.02	126.10	126.36	126.10	126.36	0.19
Gradient Between C and A		0.12	0.83	0.58		0.58		
Deep (A)	114.08	121.74	122.16	123.42	125.45	123.42	125.45	0.28
Gradient Between A and B		0.90	0.42	0.31		0.31		
Cluster 2								
Shallow (B)	126.06	126.97	126.93	126.85	131.94	126.85	131.94	0.59
Gradient Between B and C		-0.01	-0.02	-0.02		-0.02		
Middle (C)	123.51	127.00	126.99	126.89	130.42	126.89	130.42	0.88
Gradient Between C and A		0.44	0.32	0.32		0.32		
Deep (A)	119.17	125.09	125.19	125.50	126.62	125.50	126.62	0.77
Gradient Between A and B		0.27	0.25	0.20		0.20		

$\frac{.73}{6.11} = .12$

Note: All elevations are given in meters above mean sea level.

Source: ESE, 1981.

Assuming that the vertical permeability reported by Keeler (1980) is typical of this soil type (1×10^{-6} cm/sec) with hydraulic gradient of 0.37, a 1-meter-square section of soil would conduct water to the lower aquifer at a rate of 95 liters per year per square meter (equivalent to 9.5 cm rainfall per year to the limestone aquifer). This equates to an average vertical velocity of 0.23 meter per year.

4.2 GROUNDWATER QUALITY

Water quality and the contamination status of the water-table aquifer in the Industrial Area, including the Flashing Ground, are described in this section. Samples were collected on February 25, 1981, from each of the seven wells in which contamination had been observed during the Phase I survey (ESE, 1981) and from the 11 additional wells constructed during Phase II. An additional sample was collected from Well P-23 to serve as a background control since this well did not contain detectable contamination during the Phase I survey. Samples were collected as described in Section 2.2 and couriered to the ESE laboratory for chemical analysis. Specific conductance and pH were measured on site, prior to filtration. Samples were chilled and protected from light at all times to minimize changes in their constituents. All 19 samples were analyzed for the following nitroaromatic compounds: nitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 1,3-dinitrobenzene, 1,3,5-trinitrobenzene, 2,4,6-trinitrotoluene, and tetryl.

The most important groundwater quality results are summarized in the following paragraphs. These Phase II results are compared to the results of the Phase I survey (ESE, 1981) to describe the contamination status of the water-table aquifer underlying the explosives manufacturing areas [the Southern and Northern TNT Manufacturing Areas (Study Areas 6 and 7) and the Tetryl Manufacturing Area (Study Area 10)], the southern portion of the Acid/Organic Manufacturing Area (Study Area 8), the liquid-waste storage areas [the Red-Water Storage Basin (Study Area 5) and the Aniline Sludge Basin (Study Area 9)], the Red-Water Ditch (Study Area 21), and the Flashing Ground (Study Area 16). As

identified in the Phase I report (ESE, 1981), the soil and/or aquatic sediments of all these study areas are contaminated to some degree by nitroaromatic residues. The locations of the monitoring wells are shown in Figure 4.2-1.

The complete groundwater quality data base has been entered in the USATHAMA Chemical Data Files in the UNIVAC 1108 at Aberdeen Proving Ground, Maryland. The Phase I groundwater quality data are contained in Tier-2 file ALSBCGW81142. The Phase II data are contained in Tier-2 file ALSACGW81160.

4.2.1 SPECIFIC CONDUCTANCE AND pH

The results of the specific conductance measurements made during the Phase I survey suggested that dissolved salts had affected the characteristics of the water-table aquifer under the Industrial Area. The specific conductance of samples from wells outside this area ranged from 58 to 180 umho/cm; within the Industrial Area, the conductance ranged from 76 to 552 umho/cm. During the Phase II survey, specific conductances were lower than during Phase I. The results of the pH and specific conductance measurements are presented in Table 4.2-1. The Phase I data are included for comparison.

Except for Wells P-6 and P-26, conductivities at all of the wells sampled during both phases were observed to be a factor of 2 to 3 lower in February 1981 compared to February 1980. Wells P-6 and P-26 were lower by a factor of 4. The rainfall which occurred the month preceding sampling was above normal for both years; however, January 1981 was wetter than January 1980 (7.72 cm above normal and 5.64 cm above normal, respectively). Secondly, more than twice as much rainfall fell in the 15 days preceding the Phase II sampling. A total of 16.58 cm fell during this period, including major storm events which brought 9.14 cm of rain on February 10, 1981, and 4.72 cm on February 17, 1981. For the Phase I survey, total rainfall during the 15 days prior to sampling was only 6.68 cm. These data are from NOAA (1980, 1981) records collected at the Childersburg, Alabama Water Treatment Plant. Dilution of the

MONITORING WELL LOCATIONS

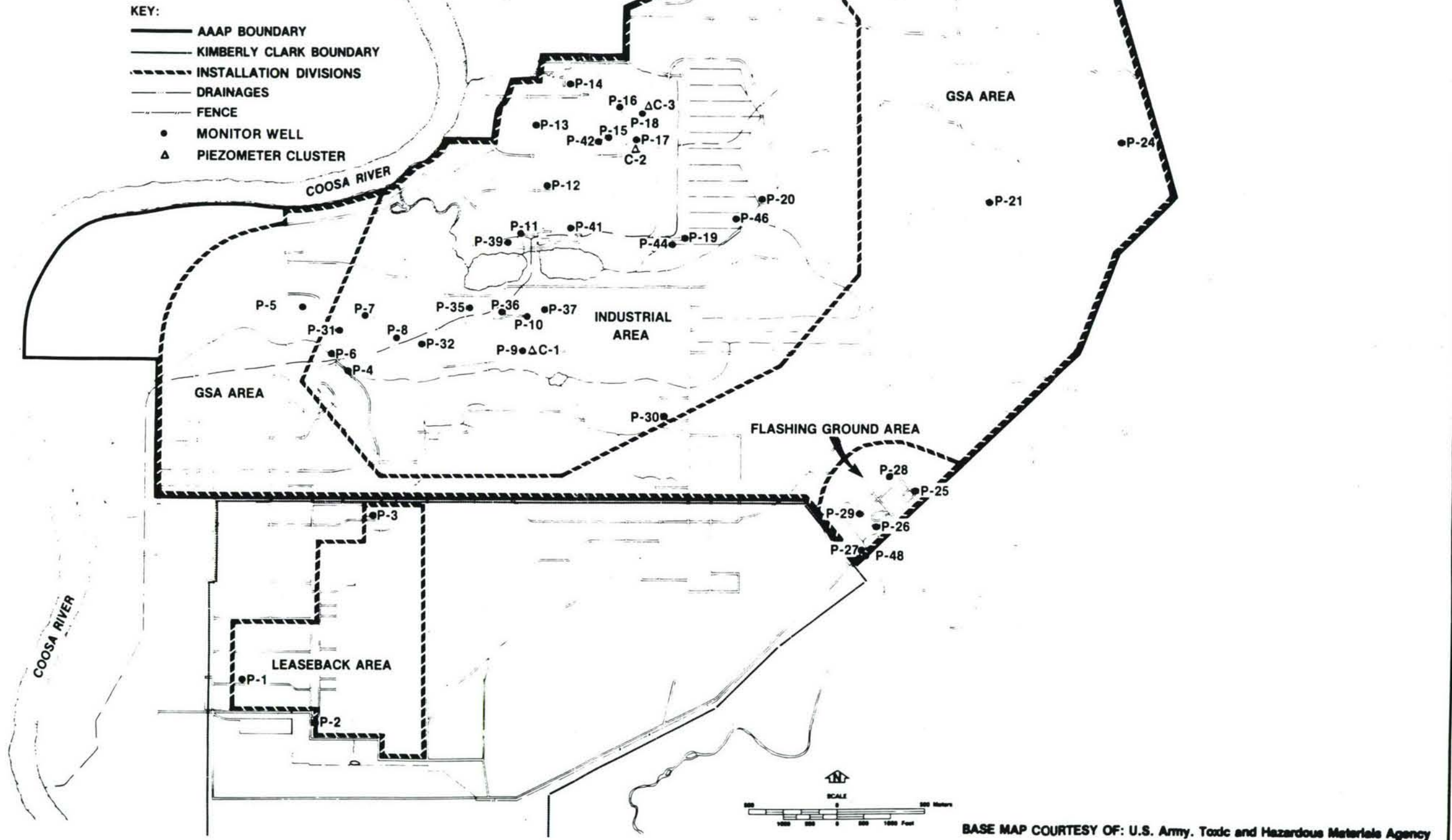


Figure 4.2-1
MONITOR WELLS AND PIEZOMETERS

SOURCE: ESE, 1981.

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Table 4.2-1. Comparison of pH and Specific Conductance in the Water-Table Aquifer--February 1980 and February 1981

Well Number	Location		February 1980†		February 1981†	
	Study Area	AAAP Area*	Specific Conductance (umho/cm)	pH Units	Specific Conductance (umho/cm)	pH Units
P-1	1	LBA	180	6.1	--	--
P-2	2	LBA	74	5.9	--	--
P-3	2	LBA	768	6.7	--	--
P-4	3	IND	33	6.1	--	--
P-5	4	IND	282	6.3	--	--
P-6	5,21**	IND	150	6.4	35	6.1
P-7	5	IND	76	6.0	--	--
P-8	5,21**	IND	384	6.7	--	--
P-9	6	IND	492	8.2	--	--
P-10	6	IND	354	5.4	122	6.2
P-11	7	IND	382	6.8	190	6.5
P-12	7	IND	232	6.2	--	--
P-13	8	IND	552	6.5	--	--
P-14	8	IND	186	6.2	--	--
P-15	8,9**	IND	122	6.0	76	6.2
P-16	8,9**	IND	40	5.8	--	--
P-17	8,9**	IND	389	6.3	--	--
P-18	8,9**	IND	195	6.1	--	--
P-19	10	IND	236	6.2	76	6.0
P-20	10	IND	50	5.6	19	5.7
P-31	5**	IND	--	--	87	5.9
P-32	5,6**	IND	--	--	95	5.6
P-35	6	IND	--	--	169	6.0
P-36	6	IND	--	--	43	5.0
P-37	6	IND	--	--	272	6.1
P-39	7	IND	--	--	158	5.5
P-41	7	IND	--	--	158	6.0
P-42	8,9	IND	--	--	87	5.7
P-44	10**	IND	--	--	144	3.4
P-46	10	IND	--	--	98	5.6

Table 4.2-1. Comparison of pH and Specific Conductance in the Water-Table Aquifer--February 1980 and February 1981 (Continued, Page 2 of 2)

Well Number	Location		February 1980†		February 1981†	
	Study Area	AAAP Area*	Specific Conductance (umho/cm)	pH Units	Specific Conductance (umho/cm)	pH Units
P-21	11	GSA	77	6.0	--	--
P-22	12	GSA	120	6.2	--	--
P-23	13	GSA	93	6.0	33	6.0
P-25	16	IND	58	5.9	--	--
P-26	16	IND	133	6.0	30	5.5
P-48	16**	IND	--	--	104	6.3

* AAAP Area: GSA = General Services Administration Area
LBA = Leaseback Area
IND = Industrial Area (Explosives Manufacturing, Flashing Ground, Manhattan Project Area, Sanitary Landfill)

† Sampled February 6, 1980, and February 25, 1981.

**Well is not located within study area.

Source: ESE, 1980 and 1981.

water-table aquifer immediately prior to the Phase II sampling probably accounts for the lower specific conductances observed. The monitor wells are constructed with a filter pack surrounding the well screen, extending from near the average water-table elevation to the bottom of the well. During bailing and sampling activities, this filter pack acts as a vertical conduit to conduct the lower-conductance shallow ground water downward to the well screen to mix with water entering from other parts of the aquifer. The resulting sample is a vertical composite from all levels of the aquifer including water from above the contaminated zone. In spite of the overall lower conductivities observed, the ground water sampled in the central part of the Industrial Area was higher in conductivity than the ground water at the edge of the Industrial Area. High conductivity also was related to detection of nitroaromatic residues. This pattern is similar to that observed during Phase I sampling.

With the exception of Well P-44, the pH values observed during Phase II were similar to those observed during Phase I. A pH value of 3.4 was observed during Phase II at Well P-44. This value is lower than any other observed in the environmental survey, including 1980 and 1981 values for Wells P-19 and P-20 and 1981 values for Well P-46 located nearby. Well P-44 had the highest observed conductivity of these wells during the Phase II sampling, however. The source of acidity at this well location cannot be confirmed or identified by other data.

4.2.2 NITROAROMATIC RESIDUES

Table 4.2-2 presents the results of analysis of the trinitrotoluene-related nitroaromatic compounds and tetryl in the 18 wells sampled during Phase II. Phase I data for Wells P-6, P-10, P-11, P-15, P-19, P-20, and P-26 are included for comparison. The Phase II results confirmed the presence of nitroaromatic residues in the ground water underlying the Northern and Southern TNT Manufacturing Areas. Comparison of the 1980 and 1981 results from Wells P-10 and P-11 suggests that the dilution effect described in the preceding paragraphs

Table 4.2-2. Comparison of the Concentration of Nitroaromatic Residues in the Water-Table Aquifer—February 1980 and February 1981

Well Number	Concentration (ug/l)													
	2,4,6- Trinitrotoluene		2,4- Dinitrotoluene		2,6- Dinitrotoluene		Nitrobenzene		1,3- Dinitrobenzene		1,3,5- Trinitrobenzene		Tetryl	
	1980	1981	1980	1981	1980	1981	1980	1981	1980	1981	1980	1981	1980	1981
P-6	0.41	<1.4	1.0	<3.0†	1.3	<3.8	<5.8	<17	<1.8	<4.8	<5.3	<9.7	<3.2	<23.9
P-31		<1.4		<3.0†	4.3	<3.8†		<17		<4.8†		<9.7		<23.9
P-32		<1.4†		<3.0		<3.8		<17		<4.8		<9.7		<23.9
P-10	10,270	4,540	4,340	1,620	860	504	36.1	<170	466	<48.2	4,380	2,010	<3.2	<23.9
P-35		47.6		<3.0	<3.8†			<17		<4.8		<9.7		<23.9
P-36		<1.4		<3.0	<3.8			<17		<4.8		<9.7		<23.9
P-37		1,070		312	606			<170		<48		<9.7		<23.9
P-11	74.4	49.0	21.0	13.7	38.7	<38.0	<5.8	<17	<1.8†	<4.8	<5.3	<9.7	<3.2	<23.9
P-39		50.2		<3.0	7.2			<17		<4.8		<9.7		<23.9
P-41		38.6		<3.0	<3.8			<17		<4.8		<9.7		<23.9
P-15	<0.41	<1.4	2.1	<3.0†	<1.3	<3.8†	<5.8	<17	<1.8	<4.8	<5.3	<9.7	<3.2	<23.9
P-42		<1.4		<3.0	<3.8			<17		<4.8		<9.7		<23.9
P-19	<0.41	<1.4	<1.2	<3.0	<1.3	<3.8	<5.8	<17	<1.8	<4.8	<5.3	<9.7		<23.9
P-20	<0.41	<1.4	<1.2	<3.0	<1.3	<3.8	<5.8	<17	<1.8	<4.8	<5.3	<9.7	8.1	<23.9
P-44		<1.4†		<3.0†	<3.8†			<17		<4.8		<9.7†		38.4
P-46		<1.4†		<3.0	<3.8			<17		<4.8		<9.7		<23.9
P-26	<0.41	<1.4	3.6	<3.0†	<1.3	<3.8†	<5.8	<17	<1.8	<4.8	<5.3	<9.7	<3.2	<23.9
P-48		<1.4†		<3.0	<3.8†			<17		<4.8		<9.7		<23.9

* Sampled February 6, 1980, and February 25, 1981.

† Trace amounts observed below the quantitative detection limit.

Source: ESE, 1980 and 1981.

also lowered the concentrations of nitroaromatic residues in the ground water sampled in 1981 (Phase II).

The quantifiable detection limits attained during the 1981 survey were slightly higher than for the 1980 results. Detection limits for each set of analyses were determined in accordance with the Quality Control Plan. These limits are determined statistically from regression analysis of uncontaminated water from the AAAP site which was spiked with known concentrations of each analyte. Because of this procedure analytical detection limits vary slightly among analytical sets. The detection limits for the dinitrotoluene isomers and the nitrobenzene compounds were high on several samples which contained high levels of 2,4,6-trinitrotoluene (TNT). In Well P-10, sampled during 1981, the high level of TNT made it impossible to analyze the sample without making a ten-fold dilution of the extract. The chromatographic column would have been destroyed at a higher concentration level. The detection limit for nitrobenzene and 1,3-dinitrobenzene was therefore 10 times higher than for samples in which the extract could be analyzed without dilution. A similar situation raised the dilution limit for 2,6-dinitrotoluene in the 1981 sample from Well P-11, although other nitroaromatic residues could be quantitated without dilution. In this sample, the TNT peak interfered only with the 2,6-dinitrotoluene.

As shown in Table 4.2-2, chromatographic peaks suggestive of the presence of traces of the analytes, but below quantitative detection levels, were frequently observed. Considering the differences in detection limits and dilution, the 1980 and 1981 data on the Phase I wells are comparable. Considered together, the 1980 and 1981 data on the Phase I and Phase II wells suggest the following pattern of contamination in the water-table aquifer at AAAP.

Overall, the major sources of groundwater contamination appear to be located around the former Washer-Flaker House areas in both the Southern and Northern TNT Manufacturing Areas. The Southern TNT Manufacturing

Area (Study Area 6) has the highest level of contamination (Wells P-10 and P-37). Ground water from Well P-36, located adjacent to TNT Line G, contained no detectable nitroaromatic residues, and water at Well P-35 contained significantly lower concentrations than the samples from Wells P-10 and P-37. These results suggest that the pattern of contaminated ground water in the TNT Manufacturing Areas consists of pockets of heavily contaminated water migrating from discrete sources rather than including large areas. In the Northern TNT Manufacturing Area (Study Area 7), the level of contamination was lower (see Wells P-11, P-39, and P-41).

Small amounts of nitroaromatic residues appear to be contaminating the ground water near the Red-Water Storage Basin and lower Red-Water Ditch, as shown in Table 4.2-2. Trinitrotoluene and 2,4- and 2,6-dinitrotoluene were observed at concentrations near the detection limit during the Phase I sampling program. No quantifiable levels were found during the 1981 sampling program. During drilling of Well P-31, a strong nitroaromatic odor was observed. No detectable nitroaromatic compounds were observed in sampling of this well; however, chromatographic peaks were observed at levels far below detection limits in water. Certain of the nitroaromatics such as nitrobenzene and the dinitrotoluenes are volatile, have a particularly strong odor, and can be detected by the sense of smell at extremely low concentrations in air. In augering the hole, the soil was likely heated and sufficient material volatilized to detect by olfaction, yet the concentration in the ground water was below chemical detection limits. Both 2,4- and 2,6-dinitrotoluene, as well as 1,3-dinitrobenzene, chromatographic peaks were observed in the sample from Well P-31; however, the concentrations were below the quantifiable limit. A non-quantifiable peak suggesting 2,4-dinitrotoluene was observed in a sample taken from Well P-6 during the 1981 sampling. No detectable nitroaromatic residues were observed in 1980 samples from Wells P-7 and P-8. The sample from Well P-32 contained less than quantifiable amounts of trinitrotoluene.

During Phase I, low concentrations of nitroaromatic residues were found in the ground water from Well P-15, downgradient from the Aniline Sludge Basin (Study Area 9). During Phase II, 2,4- and 2,6-dinitrotoluene were found in a sample of this ground water; however, concentrations were below the quantifiable limit. No contamination was observed in the aquifer at Well P-42, located just downgradient from Well P-15.

Tetryl, observed in the ground water at Well P-20 during Phase I, was not confirmed during the 1981 survey. Chromatographic peaks identifiable as trinitrotoluene, both dinitrotoluene isomers, and trinitrobenzene were observed in samples from Well P-44; however, these were below the quantitative detection limit.

During the Phase I survey, 3.6 ug/l of 2,4-dinitrotoluene was observed in the ground water at the southern end of the Flashing Ground (Study Area 16). This contamination was not present during the 1981 survey. No quantifiable concentrations of nitroaromatic residues were found in samples from Well P-26 or Well P-48 located downgradient from the Flashing Ground. Trace quantities of materials identifiable as trinitrotoluene and dinitrotoluenes were observed in these wells; however, the concentrations were below the quantifiable detection limit.

4.2.3 GROUNDWATER CONTAMINATION STATUS

The groundwater quality data from the Phase I and Phase II surveys indicate that the water-table aquifer underlying the Industrial Area at AAAP contains pockets of nitroaromatic contamination which appear to be localized near discrete sources of contamination related to the sites of previous industrial activity.

Concentrations of nitroaromatic residues just above the detection limit were observed at one well adjacent to the Red-Water Storage Basin and lower Red-Water Ditch. During Phase II, concentrations were below the detection limit at this well and at two other wells (Well P-31 located

adjacent to the Red-Water Storage Basin and Well P-32 located along the Red-Water Ditch). Apparently only small amounts of nitroaromatic residues are migrating from the contaminated sediments of these two water bodies. The presence of tetryl in Well P-20 was not confirmed during the Phase II survey; however, tetryl was observed in the sample from Well P-44.

The horizontal migration of contamination from the two TNT manufacturing areas has apparently been largely confined within the Industrial Area (Figure 4.2-2). This conclusion is based on the following evidence:

1. The absence of detectable concentrations of nitroaromatic residues in samples from Wells P-4, P-5, P-7, P-8, P-9, P-12, P-13, P-16, and P-17 during the Phase I survey and in samples from Wells P-19, P-20, and P-42 during the Phase II survey.
2. The presence of only non-quantifiable traces of nitroaromatic residues during the Phase II survey at Wells P-6, P-15, P-31, P-32, P-44, and P-46.

At the Flashing Ground, nitroaromatic contamination was below quantifiable limits during the Phase II survey. Only small amounts of contaminants (below detection limits) are moving horizontally down-gradient at this location as leachate from the contaminated soil. There was sufficient rainfall immediately preceding the Phase II sampling to reduce contaminant levels below detection limits.

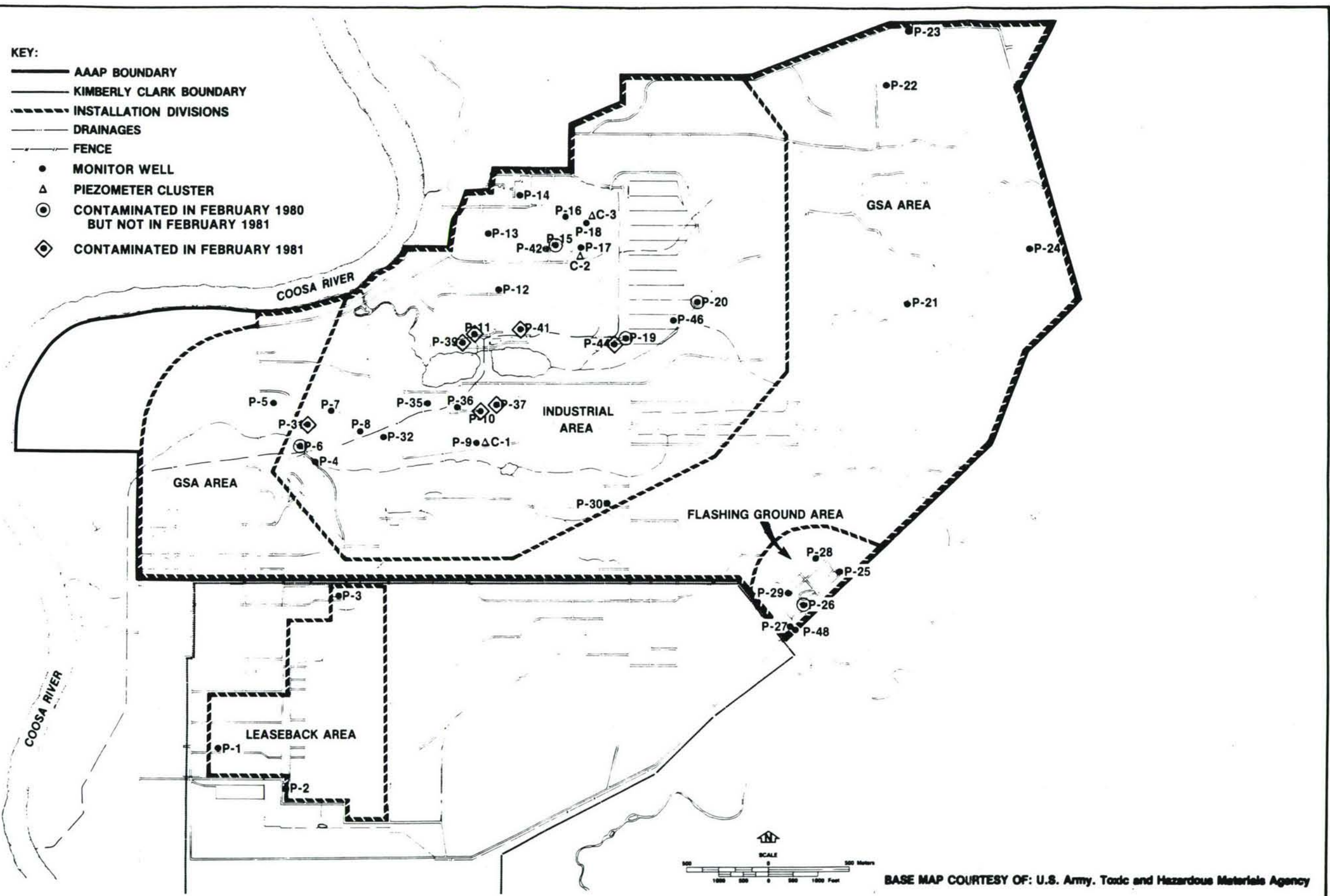


Figure 4.2-2
GROUNDWATER CONTAMINATION STATUS

SOURCE: ESE, 1981.

Groundwater Report
Alabama Army Ammunition Plant
Childersburg, Alabama

U.S. Army
Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

5.0 CONCLUSIONS

The results of geohydrological and water quality studies of the water-table aquifer underlying the Industrial Area and the Flashing Ground at AAAP are presented in the preceding sections of this report. These data were gathered during Phase I, the Environmental Survey (ESE 1981), and Phase II, the groundwater contamination study. This section summarizes the important conclusions regarding the contamination status and contaminant migration potential in the water-table aquifer at AAAP.

The following conclusions can be made regarding the geohydrological characteristics of the water-table aquifer:

1. Water-level measurements taken in monitor wells for both Phase I and Phase II indicate a strong similarity. The general flow direction in the Industrial Area is toward the Coosa River and the Red-Water Ditch, with a horizontal gradient of near 0.01 meter per meter.

At the Flashing Ground (Study Area 16), the water table slopes steeply to the southeast toward Talladega Creek at a gradient of 0.0275 meter per meter.

2. Horizontal migration rates were calculated using data collected from 13 slug tests conducted in monitor wells. These tests indicate that the ground water is moving downgradient at a rate of approximately 2.9 meters per year in the Industrial Area and 7.9 meters per year at the Flashing Ground (Study Area 16).
3. Estimates of vertical leakance of water to the lower aquifer, based on hydraulic heads measured in two piezometer clusters, show that recharge occurs at a rate of approximately 95 liters

per year per square meter. This is equivalent to vertical rate of water movement in the Industrial Area of 0.23 meter per year.

The following conclusions can be made regarding the contamination status of the water-table aquifer:

1. The Phase I survey (ESE, 1981) indicated that groundwater contamination was confined to the Industrial Area and the Flashing Ground (Study Area 16). The water-table aquifer underlying the Leaseback Area and the GSA Area is free from contamination.
2. The groundwater quality data from the Phase I and Phase II surveys indicate that the water-table aquifer underlying the Industrial Area at AAAP contains pockets of nitroaromatic contamination which appear to be localized near discrete sources of soil contamination primarily related to sites of previous industrial activity (Washer-Flaker Houses) within the Southern and Northern TNT Manufacturing Areas (Study Areas 6 and 7), and to spoil banks of contaminated Red-Water Ditch sediments within Study Area 6.
3. Based on the results of the Phase I and Phase II surveys, only small quantities of nitroaromatic residues appear to be migrating from contaminated sediments of the Red-Water Storage Basin, Red-Water Ditch, and Aniline Sludge Basin. This conclusion is based on observation of contaminant concentrations near the detection limit or below the quantifiable detection limit in wells located downgradient from these sources.
4. Increased specific conductance above the values observed in other areas at AAAP was observed in the wells within the Industrial Area. This observation was related to detection of nitroaromatic residues. A dilution effect was observed during the Phase II survey and was a result of antecedent rainfall conditions.

5. Nitroaromatic concentrations were diluted during Phase II as a result of antecedent rainfall conditions as indicated by the comparative Phase I and Phase II data. The major contaminants found during both surveys were 2,4,6-trinitrotoluene; 2,4- and 2,6-dinitrotoluene; 1,3-dinitrobenzene; and 1,3,5-trinitrobenzene.

During Phase I (ESE, 1981), several other nitroaromatic compounds, transformation products of TNT, were identified in the sample from the most heavily contaminated well. These were 4-amino-2,6-dinitrotoluene; 3,5-dinitroaniline; 2-amino-4,6-dinitrotoluene; 2,4-dinitrophenol; and 2-methyl-4,6-dinitrophenol.

The horizontal migration of contamination from the two TNT manufacturing areas has apparently been largely confined within the Industrial Area.

This conclusion is based on the following evidence:

1. The absence of detectable concentrations of nitroaromatic residues in Wells P-4, P-5, P-7, P-8, P-9, P-12, P-13, P-16, and P-17 during the Phase I survey and in Wells P-19, P-20, and P-42 during the Phase II survey.
2. The presence of only non-quantifiable traces of nitroaromatic residues during the Phase II survey at Wells P-6, P-15, P-31, P-32, P-44, and P-46.

In the Industrial Area, the closest horizontal downgradient distance from a contaminated well (P-11) to the AAP boundary is approximately 670 meters. Using the calculated horizontal flow rate of 2.9 meters per year, the time required for contaminated ground water to move off site in the northwest direction is approximately 230 years.

The Flashing Ground is much closer to the boundary. Because of this proximity and the steeper groundwater gradient, the time required for

ground water to migrate the 25-meter distance to the boundary is approximately 3 years.

Based on the observations and measurements made in the two piezometer clusters, a calculation of time required for ground water to move vertically from the water-table aquifer to the lower limestone aquifer at Wells P-11 and P-10 shows time rates of 10 years and 33 years, respectively.

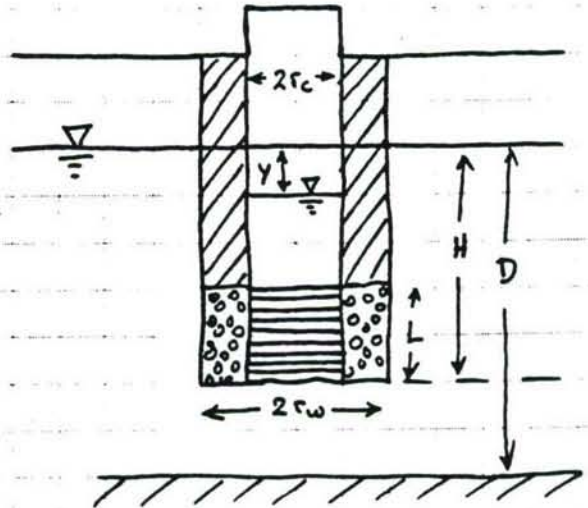
6.0 REFERENCES

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APPENDIX A
SLUG TEST CALCULATIONS

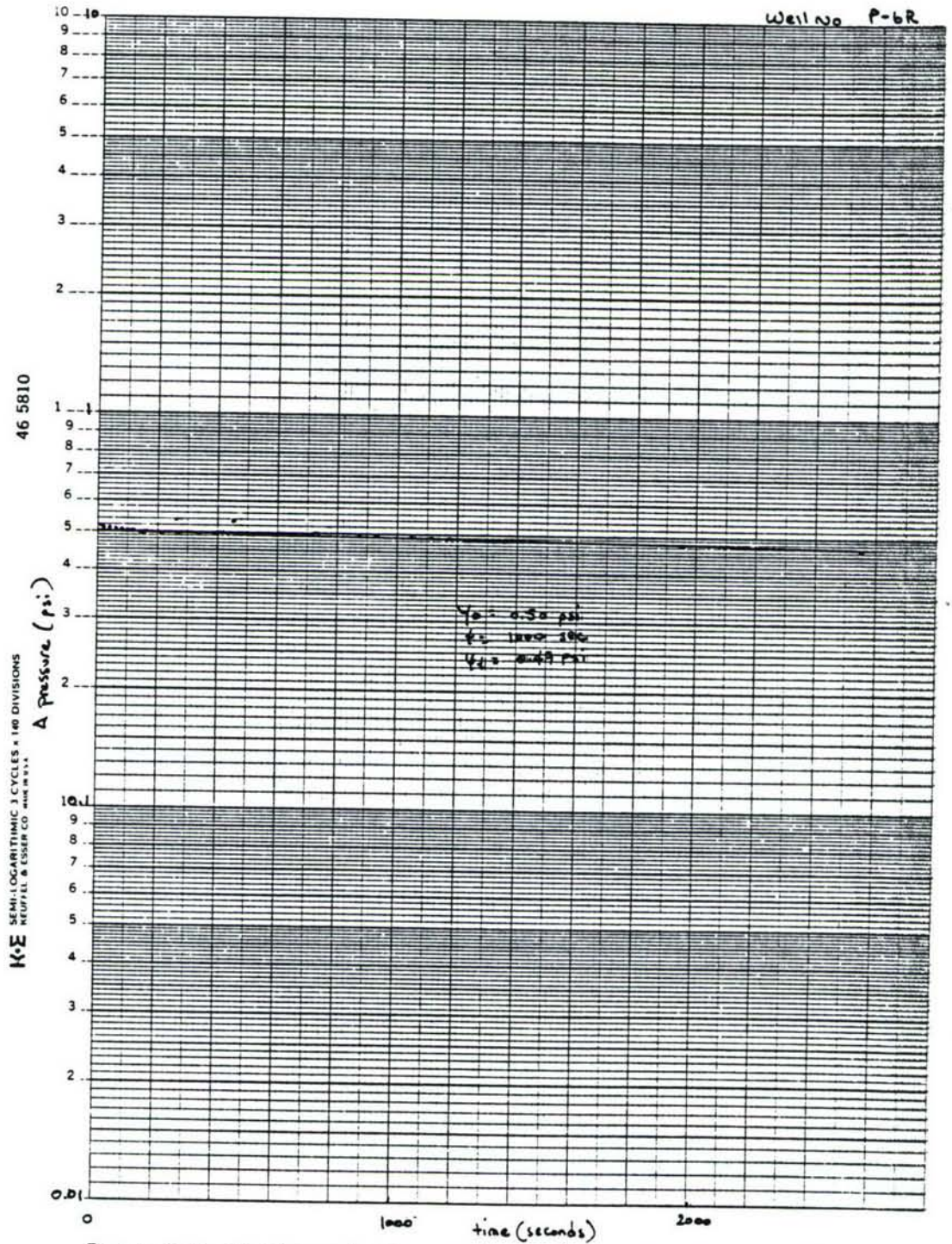
SLUG TEST CALCULATION
BOUWER & RICE (1976) METHOD

Well No A-6
Date 7-15-81
D+W-mp 14.25'
Dtw-Ls _____



Well Radii		L	D	H	rc	rc ² /2L
casing	gravel pack					
0.1667'	0.333'	4.25	21.25	4.25	0.230'	0.00622
rw	L/rw	A	B	C	Ln Re/rw	
0.333'	12.76	1.9	0.5	1.2	0.735	
y ₀	t	y _t	1/4 Ln y ₀ /y _t		k = $\frac{rc^2}{2L} \times \ln \frac{Re}{rw} \times \frac{1}{t} \ln \frac{y_0}{y_t}$	
1.15	1000	1.13	0.0000175		2.4 x 10 ⁻⁶ cm/sec	

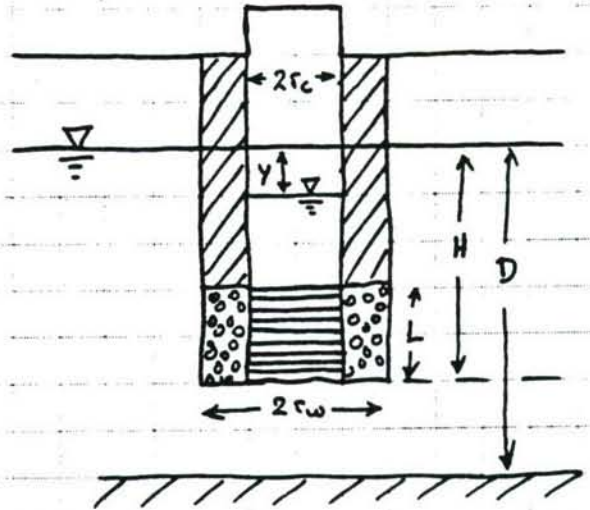
COMMENTS



Data plot of elapsed time against change in pressure for Well P-6 (SI phase)

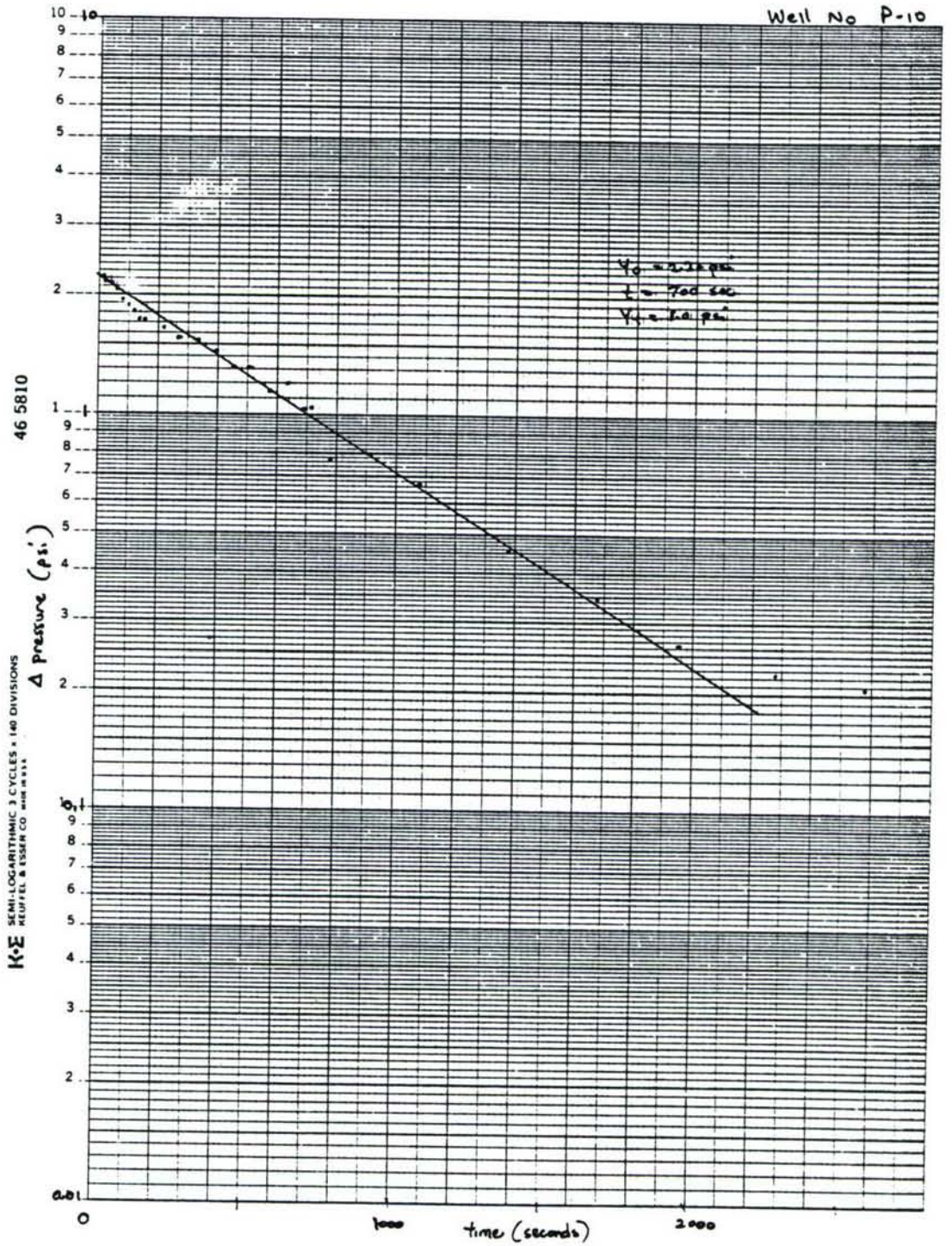
SWU TEST CALCULATION
BOUWER & RICE (1976) METHOD

Well No P-10
Date 7-14-81
D+W-mp 17'
Dtw-Ls _____

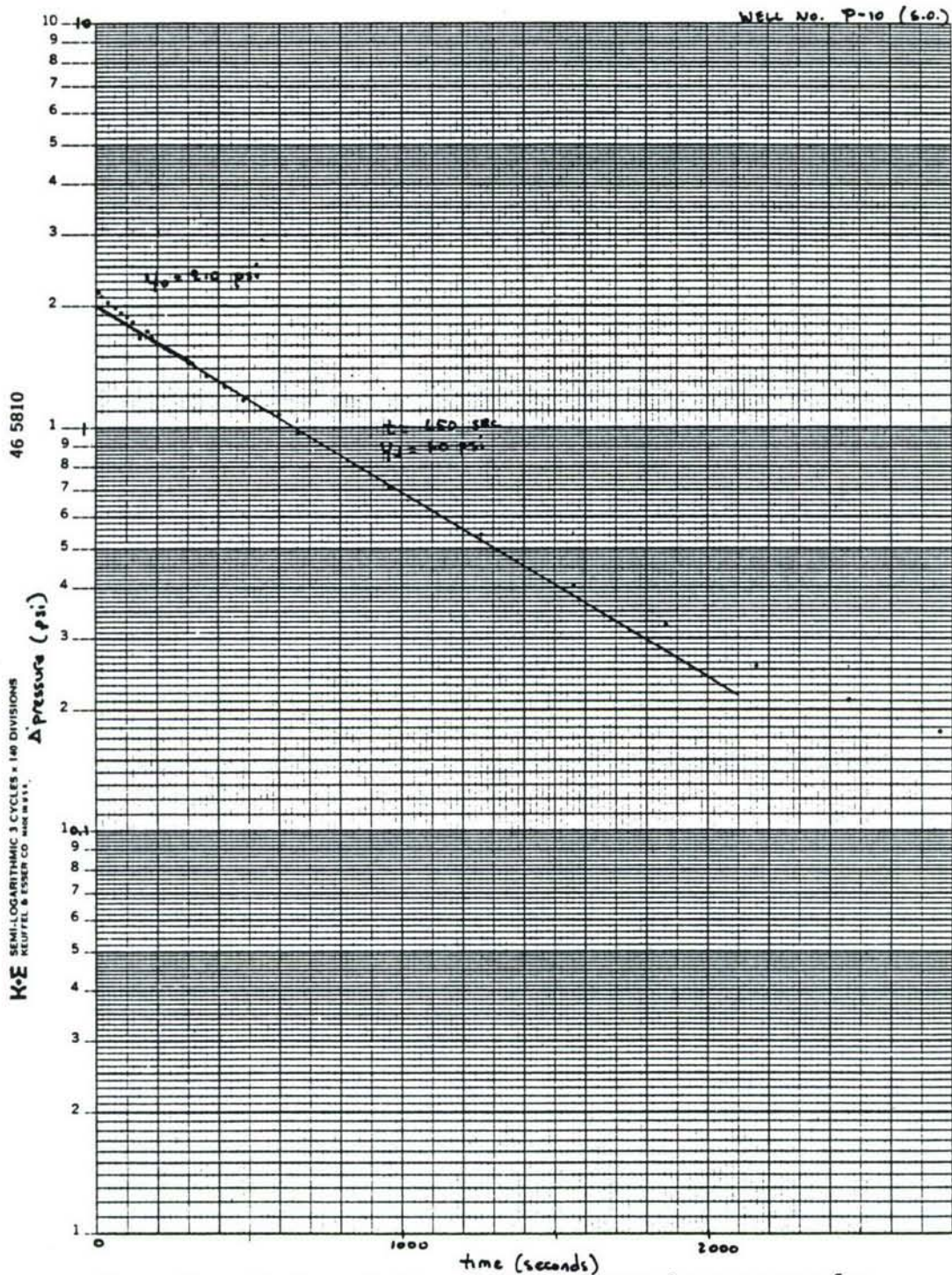


Well Radii		L	D	H	r_c	$\frac{r_c^2}{2L}$
casing	gravel pack					
2" 0.1667'	4" 0.333'	10	15.5	15.5	0.1667'	0.00834
r_w	L/r_w	A	B	C	$\ln R_e/r_w$	
0.333'	30.03	—	—	2.0	2.832	
y_0	t	y_t	$\frac{1}{4} \ln y_0/y_t$	$k = \frac{r_c^2}{2L} \times \ln \frac{R_e}{r_w} \times \frac{1}{4} \ln \frac{y_0}{y_t}$		
S1 5.08	700	2.31	0.00113	8.1×10^{-4} cm/sec		
S0 4.62	650	3.31	0.00513	3.7×10^{-4} cm/sec		

COMMENTS



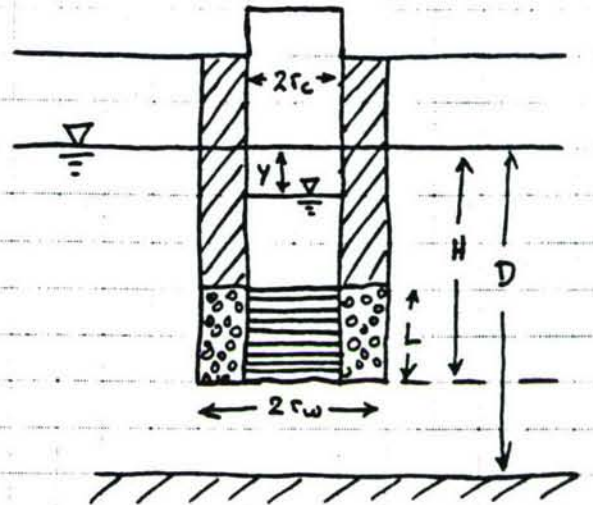
Data plot of elapsed time against change in pressure for Well No. P-10 (SI phase)



Data plot of elapsed time against change in pressure for Well No. P-10 (S0 phase)

SLUG TEST CALCULATION
BOUWER & RICE (1976) METHOD

Well No P-11
Date 7-16-81
D+W-mp 15'6"
Dtw-Ls _____

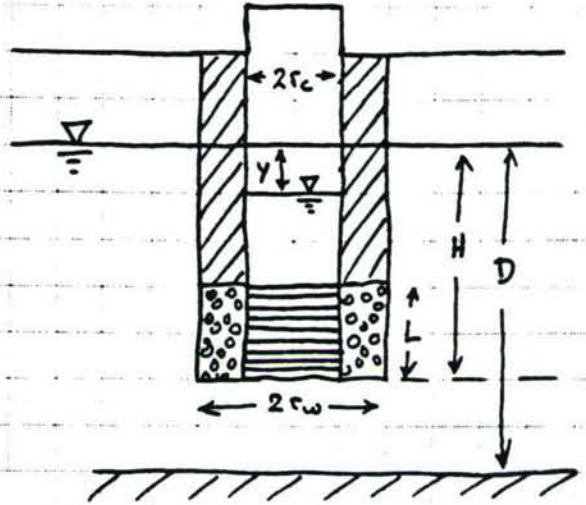


Well Radii		L	D	H	r_c	$r_c^2/2L$
casing	gravel pack					
0.1667'	0.333'	4'	4'	4'	0.230	0.00661
r_w	L/r_w	A	B	C	$\ln R_e/r_w$	
0.1667'	23.995	-	-	1.8	2.374	
y_0	t	y_t	$\frac{1}{4} \ln y_0/y_t$		$k = \frac{r_c^2}{2L} \times \ln \frac{R_e}{r_w} \times \frac{1}{4} \ln y_0/y_t$	
S1 0.357	60 sec	0.0219	0.0465		0.76 cm/sec S1	
S0 0.111	90 sec	0.0231	0.0183		0.30 cm/sec S0	

COMMENTS

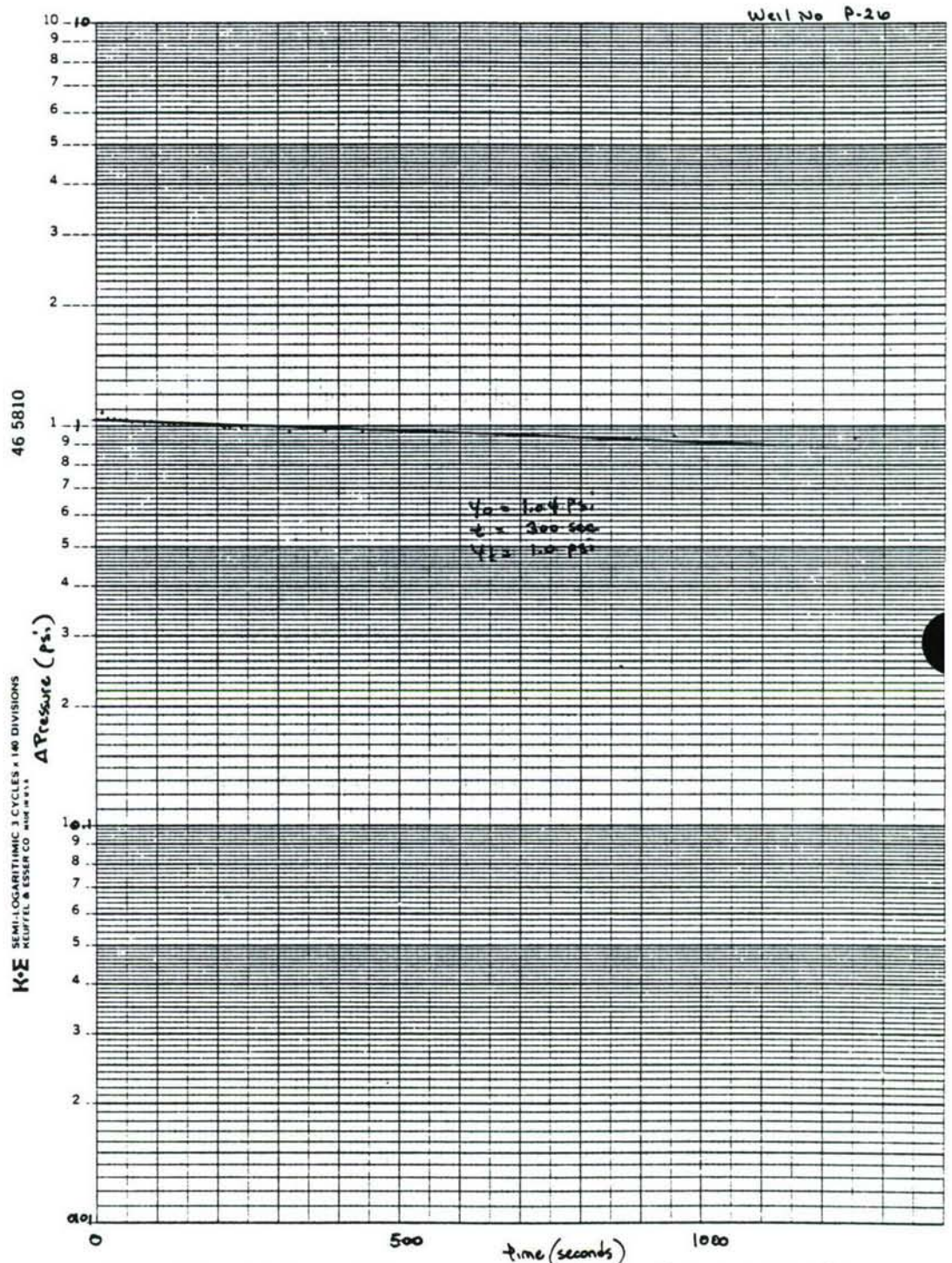
SLUG TEST CALCULATION
BOUWER & RICE (1976) METHOD

Well No P-26
Date 6-15-81
D+W-mp 47'
Dtw-Ls _____

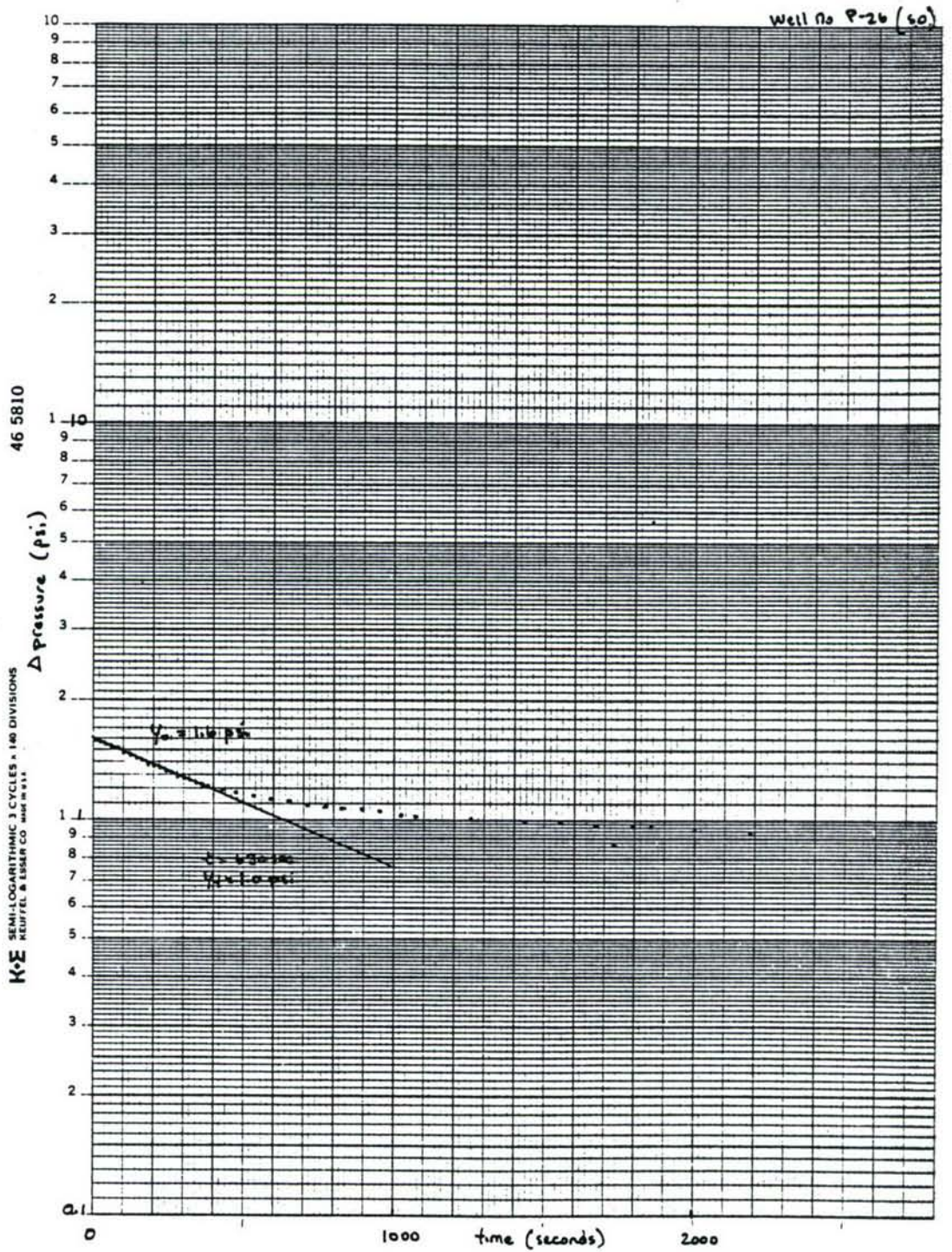


Well Radius		L	D	H	rc	rc ² /2L
casing	gravel pack					
0.1667	0.333	5.5	5.5	5.5	0.230	0.0048
rw	L/rw	A	B	C	Ln Re/rw	
0.333	16.52	-	-	1.6	0.699	
y ₀	t	y _t	1/4 Ln y ₀ /y _t		k = $\frac{rc^2}{2L} \times \ln \frac{Re}{rw} \times \frac{1}{4} \ln \frac{y_0}{y_t}$	
51 2.402'	300	2.309	0.000132		6.4 x 10 ⁻⁴ cm/sec 51	

COMMENTS



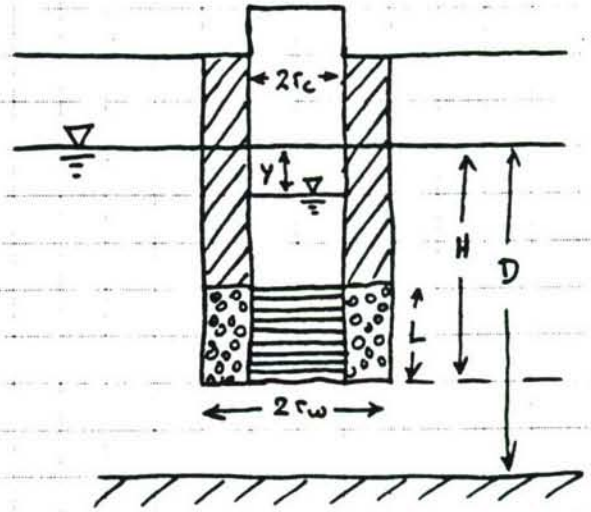
Data plot of elapsed time against change in pressure for Well No. P-26 (SI phase)



Data plot of elapsed time against change in pressure for Well No. P-26 (SO phase)

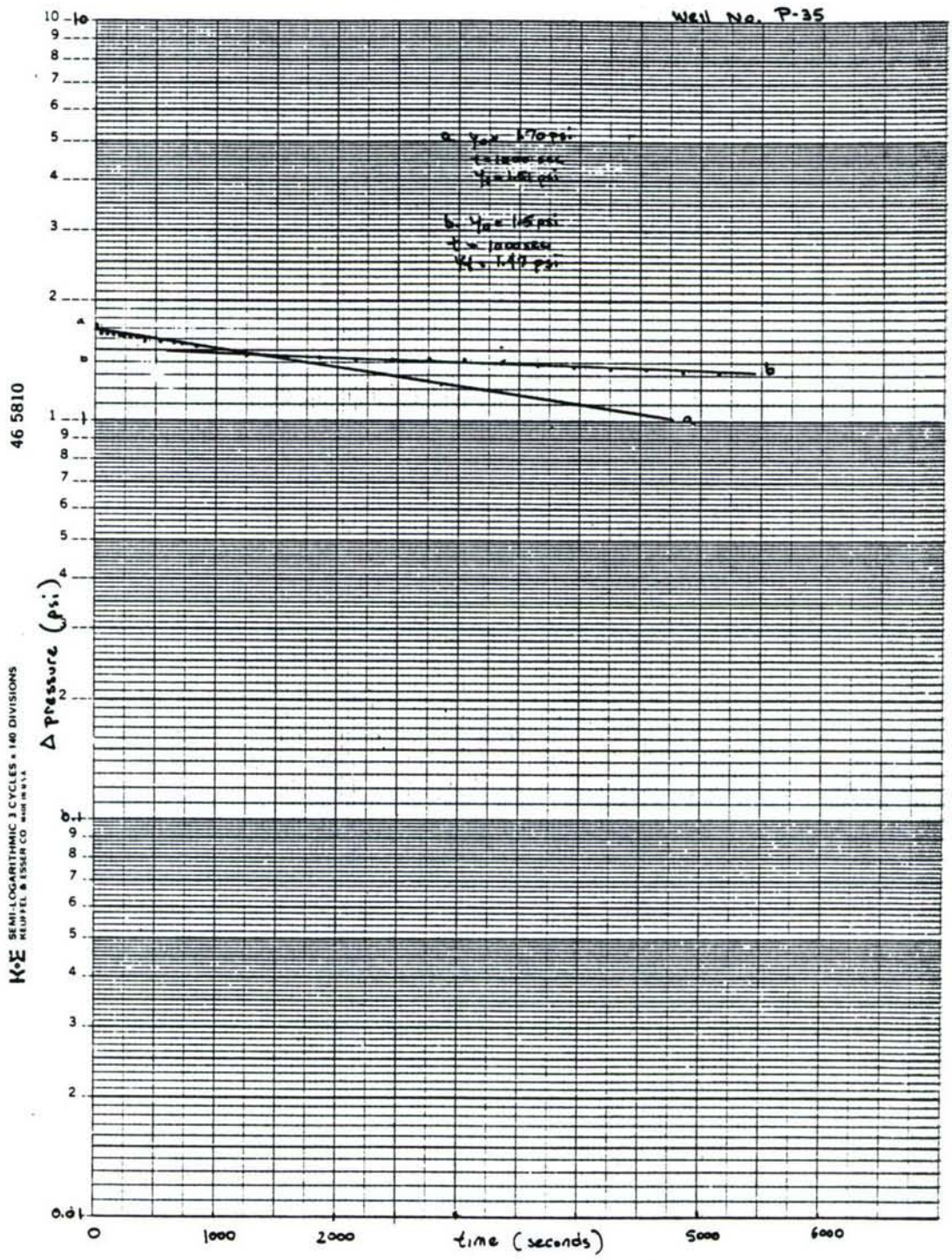
SLUG TEST CALCULATION
BOUWER & RICE (1976) METHOD

Well No P-35
Date 7-16-81
D+W-mp 16'
Dtw-Ls _____

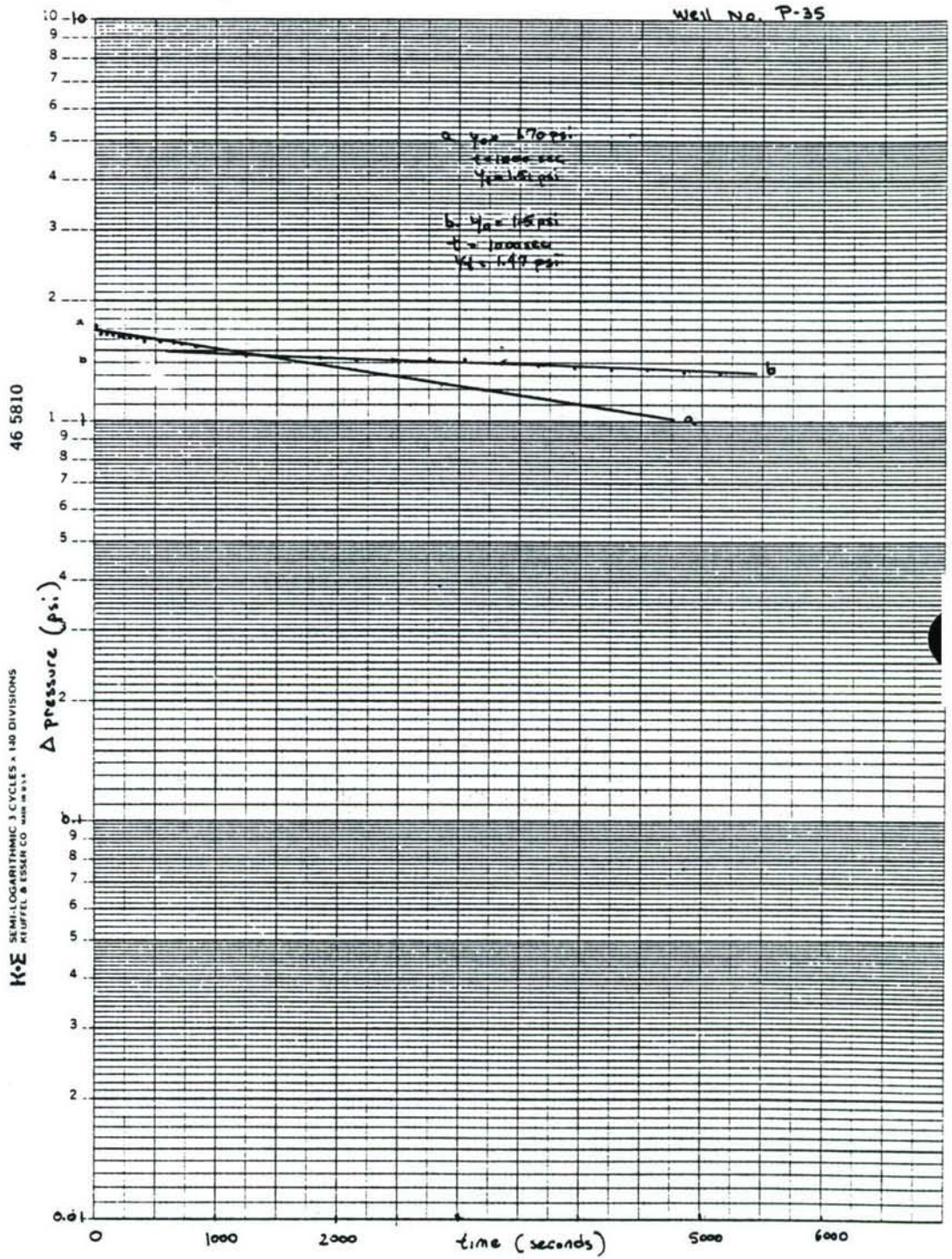


Well Radius		L	D	H	r_c	$\frac{r_c^2}{2L}$
casing	gravel pack					
4"	8"	20'	29'	29'	0.1667'	0.00069'
r_w	L/r_w	A	B	C	$\ln R_e/r_w$	
0.333	60			3.0	3.375	
y_0	t	y_t	$\frac{1}{4} \ln \frac{y_0}{y_t}$	$k = \frac{r_c^2}{2L} \times \ln \frac{R_e}{r_w} \times \frac{1}{t} \ln \frac{y_0}{y_t}$		
a. 3.926	1000 sec	3.487	0.000119	$2 \times 10^{-3} \text{ cm/sec}$		
b. 3.464	1000 sec	3.395	0.000201	$3.4 \times 10^{-4} \text{ cm/sec}$		

COMMENTS: Plot of time vs ΔP shows two slopes. Early time data, up to 1000 sec, is calculated as a (above). Late time data, greater than 1000 sec, is calculated as b.



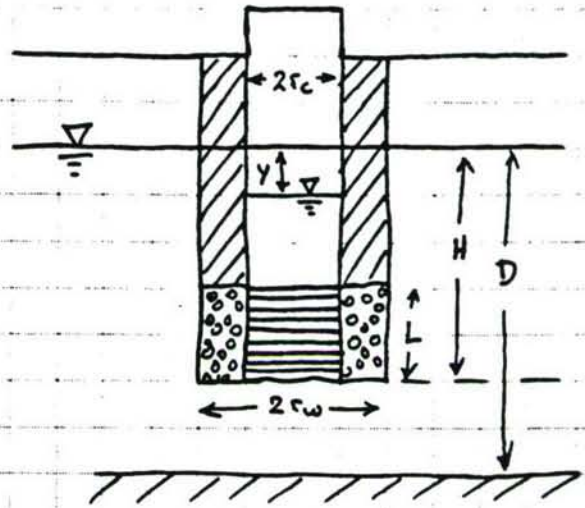
Data plot of elapsed time against change in pressure for Well No. P-35 (SI phase)



Data plot of elapsed time against change in pressure for Well P-35 (S0 phase)

SLUG TEST CALCULATION
BOUWER & RICE (1976) METHOD

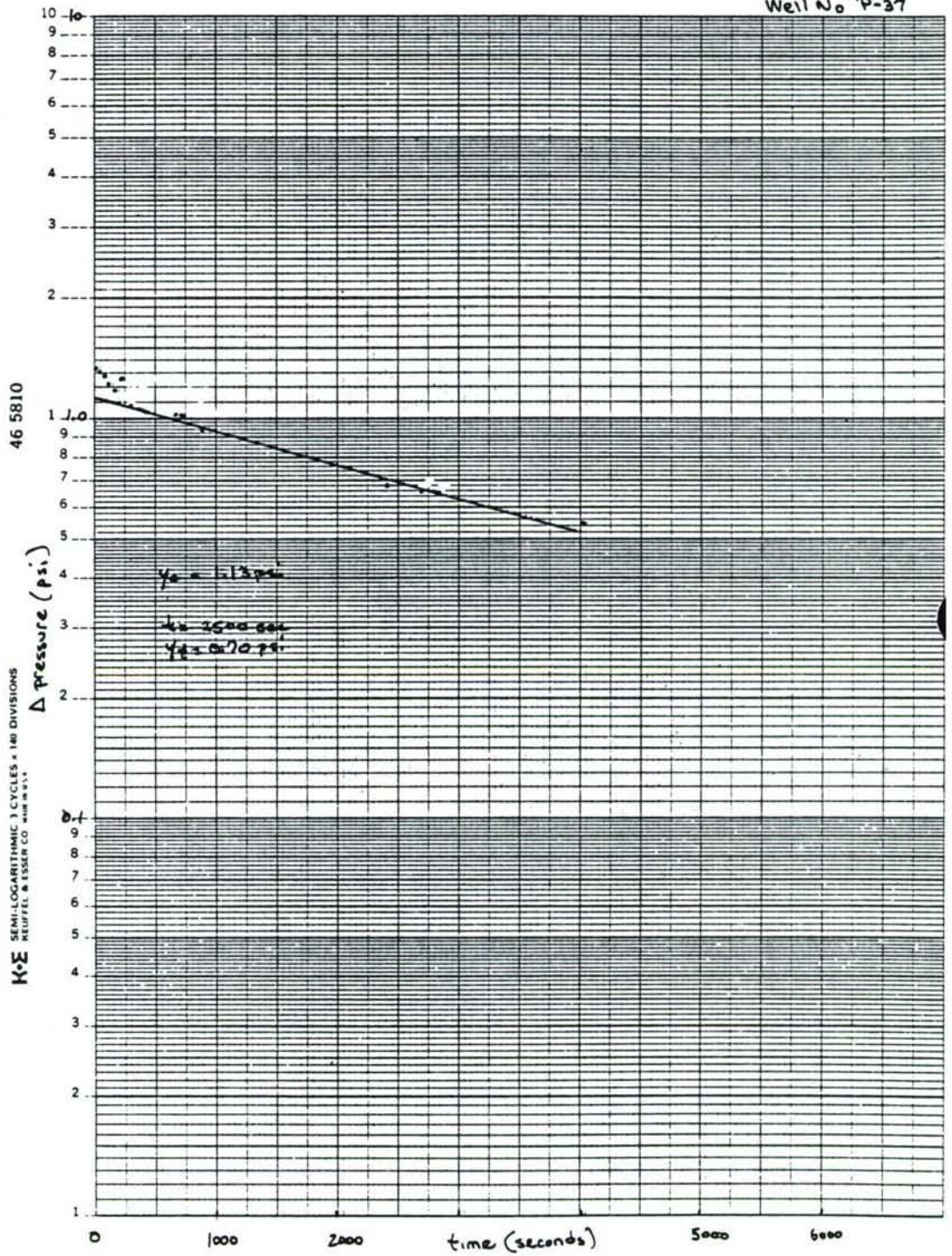
Well No P-37
Date 7-14-81
D+W-mp 15'
D+W-Ls _____



Well Radius		L	D	H	r_c	$r_c^2 / 2L$
casing	gravel pack					
0.1667'	0.333'	8.5'	8.5'	8.5'	0.230'	0.00311
r_w	L/r_w	A	B	C	$\ln R_e / r_w$	
0.333'	25.5	-	-	1.8	2.438	
y_0	t	y_t	$\frac{1}{4} \ln y_0 / y_t$	$k = \frac{r_c^2}{2L} \times \ln \frac{R_e}{r_w} \times \frac{1}{4} \ln \frac{y_0}{y_t}$		
2.610'	2500 sec	1.617'	0.00019	$4.4 \times 10^{-5} \text{ cm/sec}$		

COMMENTS

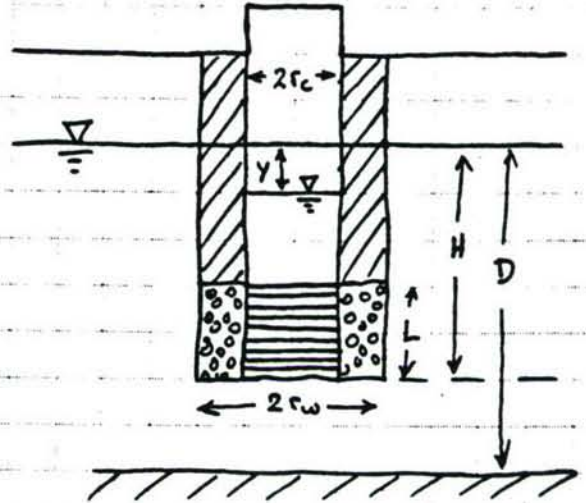
Well No P-37



Data plot of elapsed time against change in pressure for Well No. P-37 (SI phase)

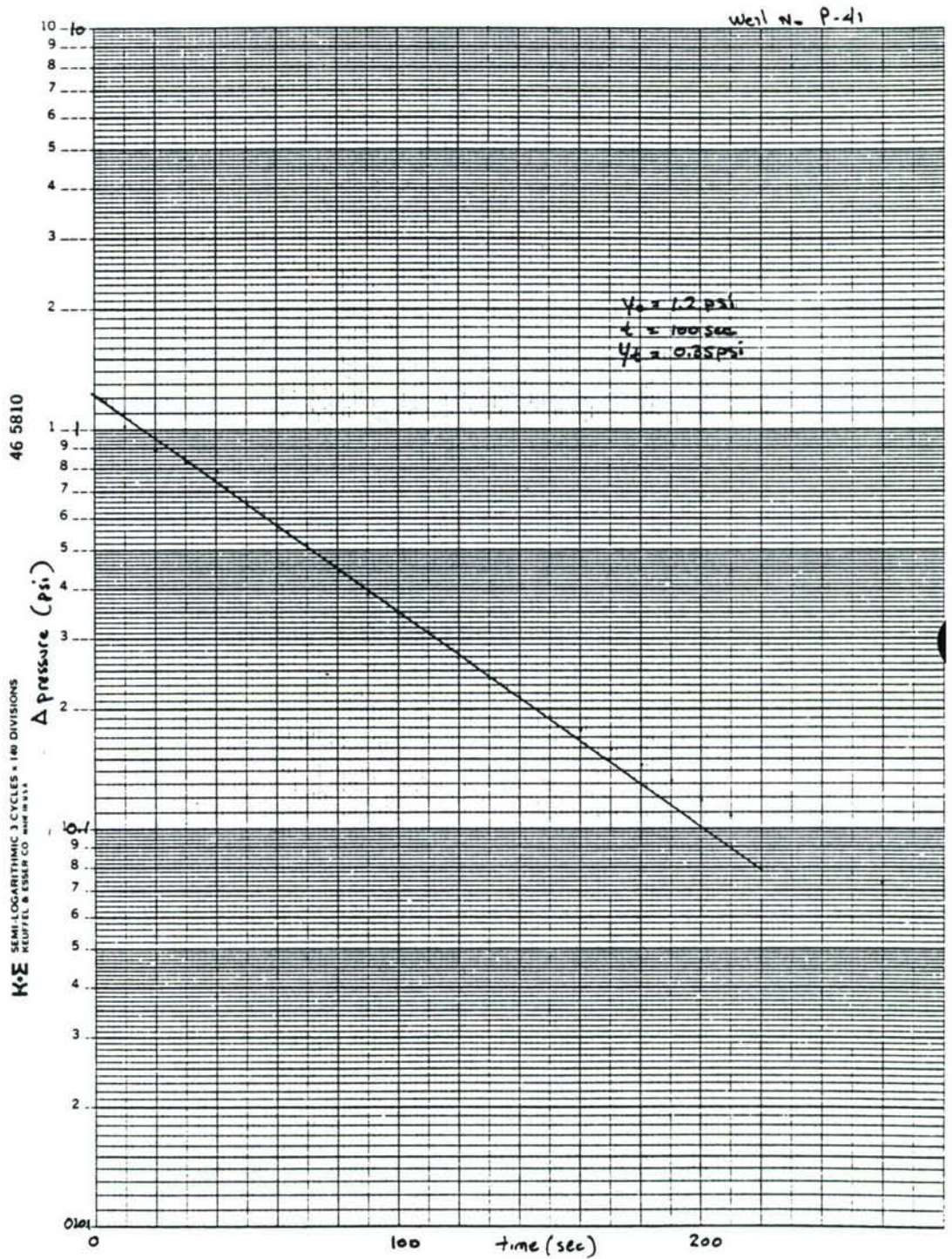
SLUG TEST CALCULATION
BOUWER & RICE (1976) METHOD

Well No P-41
Date 7-15-81
D+W-mp _____
Dtw-Ls _____

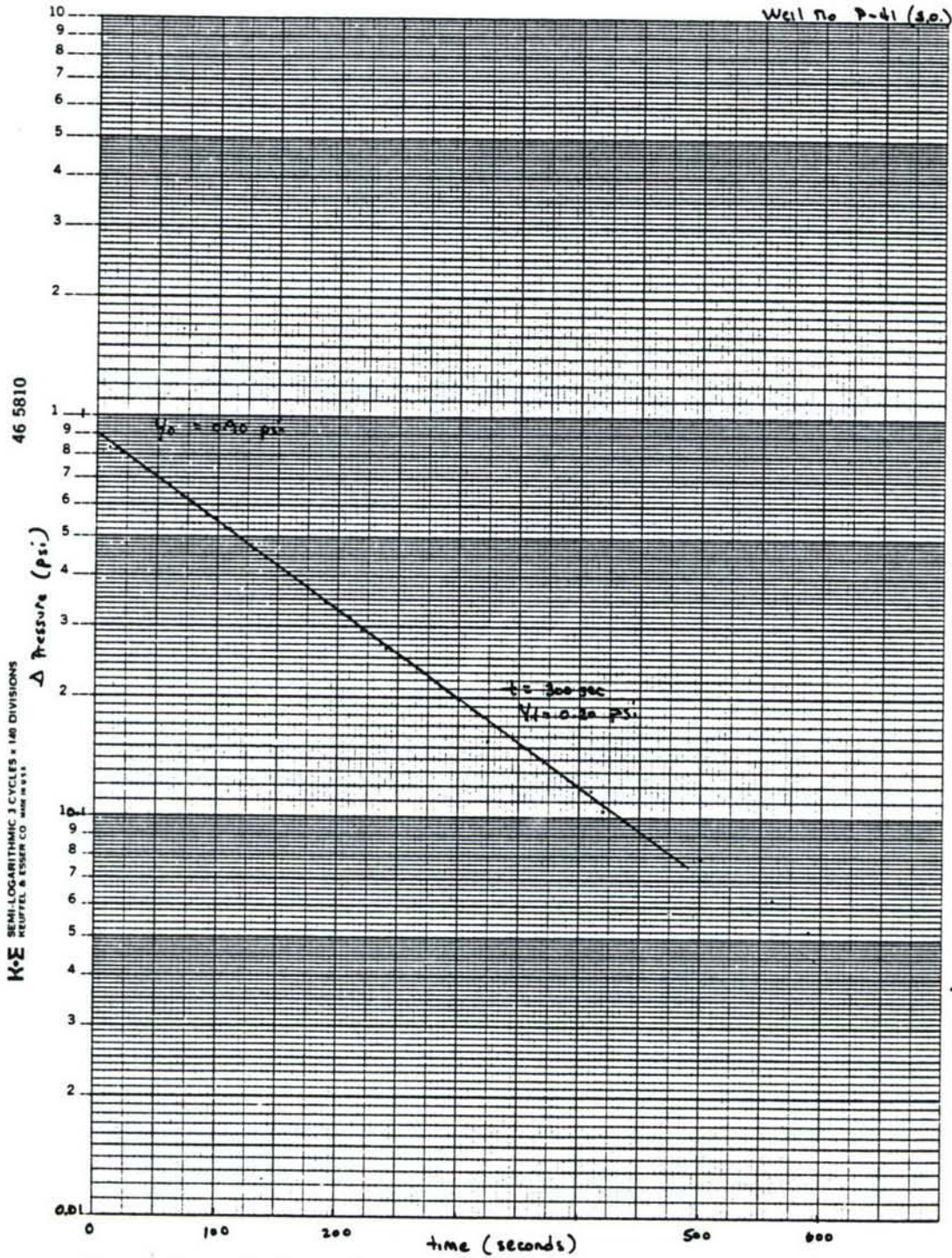


Well Radii		L	D	H	r_c	$\frac{r_c^2}{2L}$
casing	gravel pack					
0.1667	0.333	5.5	5.5	5.5	0.2388	0.00518
r_w	L/r_w	A	B	C	$\ln R_e/r_w$	
0.333	15.53	-	-	1.5	2.01	
y_0	t	y_t	$\frac{1}{4} \ln \frac{y_0}{y_t}$	$k = \frac{r_c^2}{2L} \times \ln \frac{R_e}{r_w} \times \frac{1}{4} \ln \frac{y_0}{y_t}$		
51 2.77'	100	0.81'	0.0123	$3.9 \times 10^{-3} \text{ cm/sec}$		
50 2.079	300	0.462	0.0050	$1.6 \times 10^{-3} \text{ cm/sec}$		

COMMENTS



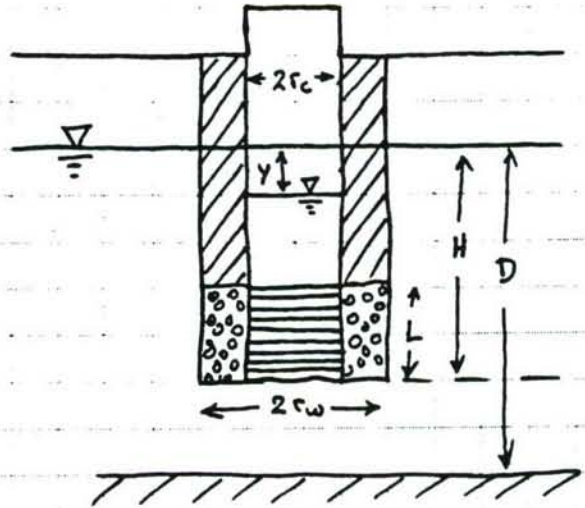
Data plot of elapsed time against change in pressure for Well No. P-41 (SI phase)



Data plot of elapsed time against change in pressure for Well No. P-41 (SO phase)

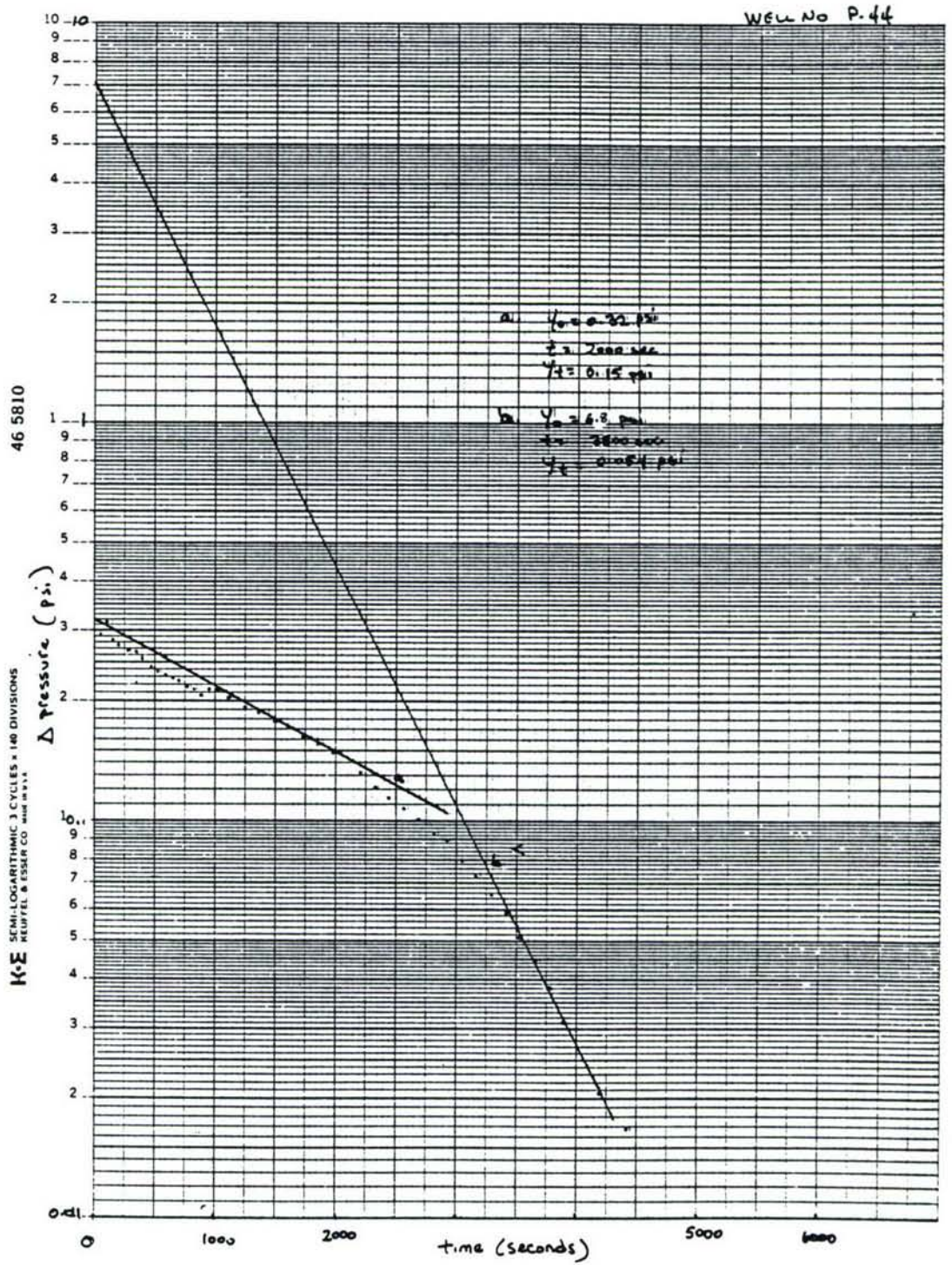
SLUG TEST CALCULATION
BOUWER & RICE (1976) METHOD

Well NO P-44
Date 7-15-81
D+W-mp 22' 2"
Dtw-Ls _____



Well Rods		L	D	H	rc	rc ² /2L
casing	gravel pack					
0.1667'	0.333	27.83	27.83	27.83	0.239	0.00103
rw	L/rw	A	B	C	Ln Re/rw	
0.354	78.62	-	-	3.5	3.372	
y ₀	t sec	y _t	1/4 Ln y ₀ /y _t		k = $\frac{rc^2}{2L} \times \ln \frac{Re}{rw} \times \frac{1}{t} \ln \frac{y_0}{y_t}$	
a 0.739'	2000	0.346	0.000379		1.3 x 10 ⁻⁶ cm/sec	
b 15.70'	3500	0.127'	0.00138		1.5 x 10 ⁻⁴ cm/sec	

COMMENTS: Plot of time vs ΔP shows two slopes. Early time data, up to 2000 sec, is calculated as an a (above). Late time data is shown as b.



Data plot of elapsed time against change in pressure for Well No. P-44 (SI phase)

APPENDIX B
COMPUTER FILE LISTING

The data files listed below are in the UNIVAC 1108 at Aberdeen Proving Ground, Maryland.

<u>File</u>	<u>Tier-2 Name</u>	<u>Date Entered</u>
Chemical File, Phase II	ALSACGW81160	6/9/81
Groundwater Stabilization File, Phase II	ALSAGGS81154	6/3/81
Field Drilling File, Phase II	ALSAGFD81141	5/21/81
Map File, Phase I and Phase II	ALSAGMA81139	5/19/81

APPENDIX C
FIELD DRILLING FILE—PHASE I

1) ALSAGFDBOREP-1	1292080021P-1	ESLAC	152	46COLOR01	2YR46 0
2) ALSAGFDBOREP-1	1292080021P-1	ESLAC	305	46COLOR01	2YR46 0
3) ALSAGFDBOREP-1	1292080021P-1	ESLAC	457	46COLOR01	2YR36 0
4) ALSAGFDBOREP-1	1292080021P-1	ESLAC	610	198COLOR01	5YR58 0
5) ALSAGFDBOREP-1	1292080021P-1	ESLAC		DPTOT01	R08CM
6) ALSAGFDBOREP-1	1292080021P-1	ESLAC	0	213GROUT01	
7) ALSAGFDBOREP-1	1292080021P-1	ESLAC	0	R08LITHL01	RESID 0
8) ALSAGFDBOREP-1	1292080021P-1	ESLAC	0	R08USCS 01	CL
9) ALSAGFDBOREP-1	1292080021P-1	ESLAC	152	46HABLO02	9BL
10) ALSAGFDBOREP-1	1292080021P-1	ESLAC	305	46HABLO02	10RL
11) ALSAGFDBOREP-1	1292080021P-1	ESLAC	457	46HABLO02	11RL
12) ALSAGFDBOREP-1	1292080021P-1	ESLAC	610	46HABLO02	4RL
13) ALSAGFDBOREP-1	1292080021P-1	ESLAC	762	46HABLO02	7BL
14) ALSAGFDBOREP-1	1292080021P-1	ESLAC	305	46MODIF01	MOT 0
15) ALSAGFDBOREP-1	1292080021P-1	ESLAC	305	46MODIF01	CAL 0
16) ALSAGFDBOREP-1	1292080021P-1	ESLAC	610	198MODIF01	S
17) ALSAGFDBOREP-1	1292080021P-1	ESLAC	457	351MOISC01	WET 0
18) ALSAGFDBOREP-1	1292080021P-1	ESLAC	457	305SCREN01	WET 0
19) ALSAGFDBOREP-1	1292080021P-1	ESLAC	213	549SFILT01	0
20) ALSAGFDBOREP-1	1292080021P-1	ESLAC		STKUP01	91CM
21) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	30COLOR01	5YR58 0
22) ALSAGFDBOREP-10	1297780007P-10	ESMDA	152	46COLOR01	75YR700
23) ALSAGFDBOREP-10	1297780007P-10	ESMDA	305	46COLOR01	10YR880
24) ALSAGFDBOREP-10	1297780007P-10	ESMDA	457	46COLOR01	10YR880
25) ALSAGFDBOREP-10	1297780007P-10	ESMDA	610	46COLOR01	75YR780
26) ALSAGFDBOREP-10	1297780007P-10	ESMDA	762	46COLOR01	75YR780
27) ALSAGFDBOREP-10	1297780007P-10	ESMDA	914	46COLOR01	75YR780
28) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	30CONSS01	M
29) ALSAGFDBOREP-10	1297780007P-10	ESMDA	152	46CONSS01	VST 0
30) ALSAGFDBOREP-10	1297780007P-10	ESMDA	305	46CONSS01	SO
31) ALSAGFDBOREP-10	1297780007P-10	ESMDA	457	46CONSS01	M
32) ALSAGFDBOREP-10	1297780007P-10	ESMDA	610	46CONSS01	M
33) ALSAGFDBOREP-10	1297780007P-10	ESMDA	762	46CONSS01	VST 0
34) ALSAGFDBOREP-10	1297780007P-10	ESMDA	914	46CONSS01	SO
35) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	914DPTOT01	914CM
36) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	916GROUT01	0
37) ALSAGFDBOREP-10	1297780007P-10	ESMDA	152	46HABLO02	8BL
38) ALSAGFDBOREP-10	1297780007P-10	ESMDA	305	46HABLO02	44RL
39) ALSAGFDBOREP-10	1297780007P-10	ESMDA	457	46HABLO02	74RL
40) ALSAGFDBOREP-10	1297780007P-10	ESMDA	610	46HABLO02	37HL
41) ALSAGFDBOREP-10	1297780007P-10	ESMDA	762	46HABLO02	44BL
42) ALSAGFDBOREP-10	1297780007P-10	ESMDA	914	46HABLO02	22RL
43) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	30MODIF01	0
44) ALSAGFDBOREP-10	1297780007P-10	ESMDA	305	46MODIF01	0
45) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	30MOISC01	DRY 0
46) ALSAGFDBOREP-10	1297780007P-10	ESMDA	152	46MOISC01	WET 0
47) ALSAGFDBOREP-10	1297780007P-10	ESMDA	305	46MOISC01	WET 0
48) ALSAGFDBOREP-10	1297780007P-10	ESMDA	457	46MOISC01	DRY 0
49) ALSAGFDBOREP-10	1297780007P-10	ESMDA	610	46MOISC01	MOIST 0
50) ALSAGFDBOREP-10	1297780007P-10	ESMDA	762	46MOISC01	MOIST 0
51) ALSAGFDBOREP-10	1297780007P-10	ESMDA	914	46MOISC01	WET 0
52) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	305SCREN01	0
53) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	914SFILT01	0
54) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	STKUP01	76CM
55) ALSAGFDBOREP-10	1297780007P-10	ESMDA	0	152UCS 01	CL

(56)	ALSAGFDBOREP-10	1297780007P-10	ESWDA	152	153USCS 01	CH	0
(57)	ALSAGFDOPREP-10	1297780007P-10	ESWDA	305	152USCS 01	CL	0
(58)	ALSAGFDOPREP-10	1297780007P-10	ESWDA	457	153USCS 01	CL	0
(59)	ALSAGFDOPREP-10	1297780007P-10	ESWDA	610	152USCS 01	CL	0
(60)	ALSAGFDOPREP-10	1297780007P-10	ESWDA	762	152USCS 01	CH	0
(61)	ALSAGFDOPREP-10	1297780007P-10	ESWDA	914	46USCS 01	CL	0
(62)	ALSAGFDOPREP-10	1297780007P-10	ESWDA	0	960LITHL01	RESID 0	
(63)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	152	351COLOR01	10R68 0	
(64)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	152	351CONSS01	SO	0
(65)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	0	DPTOT01	518CM	0
(66)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	0	152GROUT01	0	
(67)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	152	46HABLO02	19RL	0
(68)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	152	351MOISC01	MOIST 0	
(69)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	366	RFUSL01	518CM	0
(70)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	213	152SCREN01	0	
(71)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	0	305SFILT01	82CM	0
(72)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	0	STKUP01	0	
(73)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	0	518LITHL01	RESID 0	
(74)	ALSAGFDOPREP-11	1287179360P-11	ESWDA	0	518USCS 01	CL	0
(75)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	152	914COLOR01	7YR68 0	
(76)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	152	46CONSS01	SO	0
(77)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	305	46CONSS01	M	0
(78)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	457	610CONSS01	L	0
(79)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	0	DPTOT01	1067CM	0
(80)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	0	290GROUT01	0	
(81)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	0	1067LITHL01	RESID 0	
(82)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	152	46HABLO02	18BL	0
(83)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	305	46HABLO02	14BL	0
(84)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	457	46HABLO02	12BL	0
(85)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	610	46HABLO02	9BL	0
(86)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	762	46HABLO02	9BL	0
(87)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	914	46HABLO02	10BL	0
(88)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	610	198MODIF01	0	
(89)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	152	46MOISC01	DRY	0
(90)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	305	762MOISC01	MOIST 0	
(91)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	0	RFUSL01	1067CM	0
(92)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	762	305SCREN01	0	
(93)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	290	777SFILT01	0	
(94)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	0	STKUP01	86CM	0
(95)	ALSAGFDOPREP-12	1307679362P-12	ESWDA	0	1067USCS 01	CL	0
(96)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	152	65ECOLOR01	7YR78 0	
(97)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	0	DPTOT01	914CM	0
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(99)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	0	914LITHL01	RESID 0	
(100)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	152	46HABLO02	25BL	0
(101)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	305	46HABLO02	19RL	0
(102)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	457	46HABLO02	12RL	0
(103)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	610	46HABLO02	6RL	0
(104)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	762	46HABLO02	1RL	0
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(106)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	610	46MODIF01	MOT 0	
(107)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	762	46MODIF01	S	0
(108)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	152	46MOISC01	DRY	0
(109)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	305	46MOISC01	DRY	0
(110)	ALSAGFDOPREP-13	1309279362P-13	ESWDA	457	46MOISC01	LM	0

ALSAGFDBOREP-1 1292080021P-1 ESLAC 152 46COLOR01 2YR46 0

111	ALSAGFDBOREP-13	1309279362P-13	ESWDA	762	46MOISC01	WET	0
112	ALSAGFDBOREP-13	1309279362P-13	ESWDA		RFUSL01	914CM	0
113	ALSAGFDBOREP-13	1309279362P-13	ESWDA	610	305SCREN01		0
114	ALSAGFDBOREP-13	1309279362P-13	ESWDA	335	579SFILT01		0
115	ALSAGFDBOREP-13	1309279362P-13	ESWDA		STKUP01	92CM	0
116	ALSAGFDBOREP-13	1309279362P-13	ESWDA	0	914USCS 01	CL	0
117	ALSAGFDBOREP-14	1322480003P-14	ESWDA	152	46COLOR01	2YR4R	0
118	ALSAGFDBOREP-14	1322480003P-14	ESWDA	305	762COLOR01	5YR5B	0
119	ALSAGFDBOREP-14	1322480003P-14	ESWDA	152	46CONSS01	L	0
120	ALSAGFDBOREP-14	1322480003P-14	ESWDA		DPTOT01	1143CM	0
121	ALSAGFDBOREP-14	1322480003P-14	ESWDA	1067	76FILL 01		0
122	ALSAGFDBOREP-14	1322480003P-14	ESWDA	0	91GROUT01		0
123	ALSAGFDBOREP-14	1322480003P-14	ESWDA	0	1143LITHL01		0
124	ALSAGFDBOREP-14	1322480003P-14	ESWDA	152	46HABL002	RESID	0
125	ALSAGFDBOREP-14	1322480003P-14	ESWDA	305	46HABL002	23RL	0
126	ALSAGFDBOREP-14	1322480003P-14	ESWDA	457	46HABL002	26BL	0
127	ALSAGFDBOREP-14	1322480003P-14	ESWDA	610	46HABL002	27BL	0
128	ALSAGFDBOREP-14	1322480003P-14	ESWDA	762	46HABL002	9BL	0
129	ALSAGFDBOREP-14	1322480003P-14	ESWDA	914	46HABL002	58L	0
130	ALSAGFDBOREP-14	1322480003P-14	ESWDA	152	46MODIF01	1RL	0
131	ALSAGFDBOREP-14	1322480003P-14	ESWDA	305	46MODIF01	MOT	0
132	ALSAGFDBOREP-14	1322480003P-14	ESWDA	610	198MODIF01	CAL	0
133	ALSAGFDBOREP-14	1322480003P-14	ESWDA	152	503MOISC01	0	0
134	ALSAGFDBOREP-14	1322480003P-14	ESWDA	762	305MOISC01	DRY	0
135	ALSAGFDBOREP-14	1322480003P-14	ESWDA		RFUSL01	WET	0
136	ALSAGFDBOREP-14	1322480003P-14	ESWDA	762	305SCREN01	1143CM	0
137	ALSAGFDBOREP-14	1322480003P-14	ESWDA	91	975SFILT01		0
138	ALSAGFDBOREP-14	1322480003P-14	ESWDA	0	STKUP01	91CM	0
139	ALSAGFDBOREP-14	1322480003P-14	ESWDA	0	1143USCS 01	CL	0
140	ALSAGFDBOREP-15	1347979353P-15	ESWDA	0	914COLOR01	25YR460	0
141	ALSAGFDBOREP-15	1347979353P-15	ESWDA	0	914CONSS01	M	0
142	ALSAGFDBOREP-15	1347979353P-15	ESWDA	0	914DPTOT01	960CM	0
143	ALSAGFDBOREP-15	1347979353P-15	ESWDA	0	305GROUT01		0
144	ALSAGFDBOREP-15	1347979353P-15	ESWDA	0	960LITHL01	RESID	0
145	ALSAGFDBOREP-15	1347979353P-15	ESWDA	152	46HABL002	6RL	0
146	ALSAGFDBOREP-15	1347979353P-15	ESWDA	305	46HABL002	14RL	0
147	ALSAGFDBOREP-15	1347979353P-15	ESWDA	457	46HABL002	29BL	0
148	ALSAGFDBOREP-15	1347979353P-15	ESWDA	610	46HABL002	19RL	0
149	ALSAGFDBOREP-15	1347979353P-15	ESWDA	762	46HABL002	12BL	0
150	ALSAGFDBOREP-15	1347979353P-15	ESWDA	914	46HABL002	14RL	0
151	ALSAGFDBOREP-15	1347979353P-15	ESWDA	0	198MOISC01	DRY	0
152	ALSAGFDBOREP-15	1347979353P-15	ESWDA	305	610MOISC01	MOIST	0
153	ALSAGFDBOREP-15	1347979353P-15	ESWDA	610	305SCREN01		0
154	ALSAGFDBOREP-15	1347979353P-15	ESWDA	305	609SFILT01		0
155	ALSAGFDBOREP-15	1347979353P-15	ESWDA		STKUP01	91CM	0
156	ALSAGFDBOREP-15	1347979353P-15	ESWDA	0	960USCS 01	CL	0
157	ALSAGFDBOREP-16	1342879353P-16	ESWDA	152	46COLOR01	25YR460	0
158	ALSAGFDBOREP-16	1342879353P-16	ESWDA	305	457COLOR01	5YR5R	0
159	ALSAGFDBOREP-16	1342879353P-16	ESWDA	0	806CONSS01	M	0
160	ALSAGFDBOREP-16	1342879353P-16	ESWDA	0	DPTOT01	FORCK	0
161	ALSAGFDBOREP-16	1342879353P-16	ESWDA	0	244GROUT01		0
162	ALSAGFDBOREP-16	1342879353P-16	ESWDA	0	808LITHL01	RESID	0
163	ALSAGFDBOREP-16	1342879353P-16	ESWDA	152	46HABL002	8FL	0
164	ALSAGFDBOREP-16	1342879353P-16	ESWDA	305	46HABL002	39PL	0
165	ALSAGFDBOREP-16	1342879353P-16	ESWDA	457	46HABL002	37LL	0

2YR46 0

46COLOR01

152

ESLAC

1292080021P-1

ALSAGFB0REP-1

166)	ALSAGFB0REP-16	1342879353P-16	ESWDA	610	46HABL002	14BL	0
167)	ALSAGFB0REP-16	1342879353P-16	ESWDA	762	46HABL002	12BL	0
168)	ALSAGFB0REP-16	1342879353P-16	ESWDA	152	46MOIS001	MOIST	0
169)	ALSAGFB0REP-16	1342879353P-16	ESWDA	457	305MOIS001	WET	0
170)	ALSAGFB0REP-16	1342879353P-16	ESWDA	305	46MOIS001	MOIST	0
171)	ALSAGFB0REP-16	1342879353P-16	ESWDA	457	305SCREN01	0	0
172)	ALSAGFB0REP-16	1342879353P-16	ESWDA	244	762SFILT01	0	0
173)	ALSAGFB0REP-16	1342879353P-16	ESWDA	0	STKUP01	91CM	0
174)	ALSAGFB0REP-16	1342879353P-16	ESWDA	0	762USCS 01	CL	0
175)	ALSAGFB0REP-16	1331979354P-17	ESWDA	0	198COLOR01	10R56	0
176)	ALSAGFB0REP-17	1331979354P-17	ESWDA	305	198COLOR01	10R46	0
177)	ALSAGFB0REP-17	1331979354P-17	ESWDA	610	46COLOR01	5YR58	0
178)	ALSAGFB0REP-17	1331979354P-17	ESWDA	762	198COLOR01	25YR40	0
179)	ALSAGFB0REP-17	1331979354P-17	ESWDA	1067	46COLOR01	5YR58	0
180)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	198CONSS01	M	0
181)	ALSAGFB0REP-17	1331979354P-17	ESWDA	305	198CONSS01	M	0
182)	ALSAGFB0REP-17	1331979354P-17	ESWDA	610	46CONSS01	M	0
183)	ALSAGFB0REP-17	1331979354P-17	ESWDA	762	198CONSS01	M	0
184)	ALSAGFB0REP-17	1331979354P-17	ESWDA	1067	46CONSS01	ST	0
185)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	DPTOT01	1113CM	0
186)	ALSAGFB0REP-17	1331979354P-17	ESWDA	1067	46FILL 01	0	0
187)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	305GROUT01	0	0
188)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	1113LITHL01	RESID	0
189)	ALSAGFB0REP-17	1331979354P-17	ESWDA	152	46HABL002	38BL	0
190)	ALSAGFB0REP-17	1331979354P-17	ESWDA	305	46HABL002	18BL	0
191)	ALSAGFB0REP-17	1331979354P-17	ESWDA	457	46HABL002	12BL	0
192)	ALSAGFB0REP-17	1331979354P-17	ESWDA	610	46HABL002	16BL	0
193)	ALSAGFB0REP-17	1331979354P-17	ESWDA	762	46HABL002	9BL	0
194)	ALSAGFB0REP-17	1331979354P-17	ESWDA	914	46HABL002	9BL	0
195)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	198MODIF01	0	0
196)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	198MOIS001	MOIST	0
197)	ALSAGFB0REP-17	1331979354P-17	ESWDA	305	198MOIS001	MOIST	0
198)	ALSAGFB0REP-17	1331979354P-17	ESWDA	610	46MOIS001	WET	0
199)	ALSAGFB0REP-17	1331979354P-17	ESWDA	762	198MOIS001	WET	0
200)	ALSAGFB0REP-17	1331979354P-17	ESWDA	1067	46MOIS001	WET	0
201)	ALSAGFB0REP-17	1331979354P-17	ESWDA	762	305SCREN01	0	0
202)	ALSAGFB0REP-17	1331979354P-17	ESWDA	305	762SFILT01	0	0
203)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	STKUP01	91CM	0
204)	ALSAGFB0REP-17	1331979354P-17	ESWDA	0	305USCS 01	CL	0
205)	ALSAGFB0REP-17	1331979354P-17	ESWDA	305	305USCS 01	CL	0
206)	ALSAGFB0REP-17	1331979354P-17	ESWDA	610	152USCS 01	CL	0
207)	ALSAGFB0REP-17	1331979354P-17	ESWDA	762	305USCS 01	CL	0
208)	ALSAGFB0REP-17	1331979354P-17	ESWDA	1067	46USCS 01	CH	0
209)	ALSAGFB0REP-18	1336579354P-18	ESWDA	152	46COLOR01	5YR58	0
210)	ALSAGFB0REP-18	1336579354P-18	ESWDA	305	46COLOR01	2YR58	0
211)	ALSAGFB0REP-18	1336579354P-18	ESWDA	457	19RCOLOR01	7YR78	0
212)	ALSAGFB0REP-18	1336579354P-18	ESWDA	152	46CONSS01	SO	0
213)	ALSAGFB0REP-18	1336579354P-18	ESWDA	305	19RCONSS01	VST	0
214)	ALSAGFB0REP-18	1336579354P-18	ESWDA	610	46CONSS01	SO	0
215)	ALSAGFB0REP-18	1336579354P-18	ESWDA	0	DPTOT01	655CM	0
216)	ALSAGFB0REP-18	1336579354P-18	ESWDA	610	46FILL 01	0	0
217)	ALSAGFB0REP-18	1336579354P-18	ESWDA	0	229GROUT01	0	0
218)	ALSAGFB0REP-18	1336579354P-18	ESWDA	0	655LITHL01	0	0
219)	ALSAGFB0REP-18	1336579354P-18	ESWDA	152	46HABL002	RESID	0
220)	ALSAGFB0REP-18	1336579354P-18	ESWDA	305	46HABL002	10PL	0
221)	ALSAGFB0REP-18	1336579354P-18	ESWDA	305	46HABL002	11PL	0

ALSAGFDBOREP-1 1292080021P-1 ESLAC 152 46COLOR01 2YR46 0

221)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	457	46HABLO02	26BL	0
222)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	610	46HABLO02	22BL	0
223)	ALSAGFDBOREP-18	1336579355P-18	ESWDA	152	46MODIF01	0	0
224)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	305	46MOISCO1	WET	0
225)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	457	198MOISCO1	MOIST	0
226)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	305	305SCREN01	0	0
227)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	229	381SFILT01	0	0
228)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	0	STKUP01	91CM	0
229)	ALSAGFDBOREP-18	1336579354P-18	ESWDA	0	655USCS 01	CL	0
230)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	152	46COLOR01	5YR58 0	0
231)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	305	198COLOR01	7YR68 0	0
232)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	610	320COLOR01	2YR58 0	0
233)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	152	351CONSS01	ST	0
234)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	610	320CONSS01	VST	0
235)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	914	DPTOT01	930CM	0
236)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	0	15FILL 01	0	0
237)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	0	122GROUT01	0	0
238)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	0	930LITHL01	0	0
239)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	152	46HABLO02	RESID	0
240)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	305	46HABLO02	11RL	0
241)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	457	46HABLO02	10BL	0
242)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	610	46HABLO02	9BL	0
243)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	762	46HABLO02	7BL	0
244)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	152	46MODIF01	9BL	0
245)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	152	46MOISCO1	0	0
246)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	305	196MODIF01	WET	0
247)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	305	196MOISCO1	0	0
248)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	610	305MODIF01	WET	0
249)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	610	305MOISCO1	0	0
250)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	610	305SCREN01	WET	0
251)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	457	457SFILT01	0	0
252)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	0	STKUP01	91CM	0
253)	ALSAGFDBOREP-19	1329780016P-19	ESWDA	0	930USCS 01	CL	0
254)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	152	46COLOR01	5YR58 0	0
255)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	305	46COLOR01	5YR22 0	0
256)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	610	46COLOR01	10YR68 0	0
257)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	579	DPTOT01	655CM	0
258)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	0	76FILL 01	0	0
259)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	0	122GROUT01	0	0
260)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	0	610LITHL01	0	0
261)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	152	46HABLO02	RESID	0
262)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	305	46HABLO02	12RL	0
263)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	457	46HABLO02	39RL	0
264)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	610	46HABLO02	17RL	0
265)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	152	46MOISCO1	10RL	0
266)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	152	46MODIF01	WET	0
267)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	152	46MODIF01	G	0
268)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	305	46MODIF01	WG	0
269)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	305	46MOISCO1	G	0
270)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	305	46MODIF01	WET	0
271)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	305	46MODIF01	NOT	0
272)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	305	46MODIF01	CAL	0
273)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	457	46MODIF01	C	0
274)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	610	46MODIF01	WET	0
275)	ALSAGFDBOREP-2	1305780017P-2	ESLAC	610	46MODIF01	G	0
					45LITHL01	GRTZ	0

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ESLAC 152 46COLOR01

2YR46 0

ALSAGFDBOREP-1

331)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	610	46HABLO02	32BL	0
332)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	762	46HABLO02	23DL	0
333)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	914	46HABLO02	26BL	0
334)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	305	46MODIF01	MOT	0
335)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	152	503MOISC01	DRY	0
336)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	762	46MOISC01	DRY	0
337)	ALSAGFDBOREP-21	1498479339P-21	ESMDA		RFUSL01	1063CM	0
338)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	765	296SCREN01		0
339)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	305	756SFILT01		0
340)	ALSAGFDBOREP-21	1498479339P-21	ESMDA		STKUP01	95CM	0
341)	ALSAGFDBOREP-21	1498479339P-21	ESMDA	0	1063USCS 01		0
342)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	152	198COLOR01	CL	0
343)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	457	46COLOR01	2YR36 0	0
344)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	610	46COLOR01	2YR46 0	0
345)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	762	46COLOR01	10YR680	0
346)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	152	503CONSS01	7YR78 0	0
347)	ALSAGFDBOREP-22	1453980023P-22	ESLAC		DPTOT01	VST 0	0
348)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	762	46FILL 01	808CM	0
349)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	0	213GROUT01		0
350)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	0	808LITHL01		0
351)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	152	46HABLO02	RESID 0	0
352)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	305	46HABLO02	25BL	0
353)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	457	46HABLO02	18BL	0
354)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	610	46HABLO02	RBL	0
355)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	762	46HABLO02	9BL	0
356)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	305	46MODIF01	20BL	0
357)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	305	46MODIF01		0
358)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	610	46MODIF01	TFS	0
359)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	762	46MOISC01	TRCL 0	0
360)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	457	305SCREN01	MOT 0	0
361)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	213	549SFILT01	WET 0	0
362)	ALSAGFDBOREP-22	1453980023P-22	ESLAC		STKUP01	DRY 0	0
363)	ALSAGFDBOREP-22	1453980023P-22	ESLAC	0	808USCS 01		0
364)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	152	503COLOR01	CL	0
365)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	762	198COLOR01	10YR880	0
366)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1067	503COLOR01	2YR48 0	0
367)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	305	655CONSS01	5YR6A 0	0
368)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1067	503CONSS01	L 0	0
369)	ALSAGFDBOREP-23	1424679339P-23	ESMDA		DPTOT01	ST 0	0
370)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1524	46FILL 01	1570CM	0
371)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	0	305GROUT01		0
372)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	0	1570LITHL01		0
373)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	152	46HABLO02	29BL	0
374)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	305	46HABLO02	39BL	0
375)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	457	46HABLO02	30BL	0
376)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	610	46HABLO02	25BL	0
377)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	762	46HABLO02	15BL	0
378)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	914	46HABLO02	22PL	0
379)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1067	46HABLO02	27BL	0
380)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1219	46HABLO02	15BL	0
381)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1372	46HABLO02	0	0
382)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1524	46HABLO02	23PL	0
383)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	762	198PCOIF01		0
384)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1067	549SFILT01		0
385)	ALSAGFDBOREP-23	1424679339P-23	ESMDA		549SFILT01	MOIST 0	0

386)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	1240	284SCRENO1	0	0
387)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	305	1219SFILT01	0	0
388)	ALSAGFDBOREP-23	1424679339P-23	ESMDA		STKUP01	RCM	0
389)	ALSAGFDBOREP-23	1424679339P-23	ESMDA	0	1570USCS 01	CL	0
390)	ALSAGFDBOREP-24	1440680059P-24	ESMK		DPTOT01	244CM	0
391)	ALSAGFDBOREP-24	1440680059P-24	ESMK	0	30GROUT01	244CM	0
392)	ALSAGFDBOREP-24	1440680059P-24	ESMK		RFUSL01	0	0
393)	ALSAGFDBOREP-24	1440680059P-24	ESMK	91	152SCRENO1	0	0
394)	ALSAGFDBOREP-24	1440680059P-24	ESMK		STKUP01	30CM	0
395)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	0	198COLOR01	25YR480	0
396)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	305	46COLOR01	25YR480	0
397)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	457	46COLOR01	25YR8 0	0
398)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	610	46COLOR01	10YR880	0
399)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	762	46COLOR01	10YR880	0
400)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	914	396COLOR01	75YR780	0
401)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	0	198CONSS01	M	0
402)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	305	46CONSS01	M	0
403)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	457	46CONSS01	M	0
404)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	610	46CONSS01	M	0
405)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	762	46CONSS01	M	0
406)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	914	396CONSS01	M	0
407)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	0	1311DPTOT01	1311CM	0
408)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	1097	214FILL 01	0	0
409)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	0	213GROUT01	0	0
410)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	0	1311LITHL01	RESID	0
411)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	152	46HABLO02	13BL	0
412)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	305	46HABLO02	15RL	0
413)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	457	46HABLO02	90BL	0
414)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	610	46HABLO02	65BL	0
415)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	762	46HABLO02	41BL	0
416)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	914	46HABLO02	29BL	0
417)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	1067	46HABLO02	34BL	0
418)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	1219	46HABLO02	25BL	0
419)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	762	46MOISCO1	LM	0
420)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	914	396MODIF01	0	0
421)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	0	198MOISCO1	MOIST	0
422)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	305	46MOISCO1	DRY	0
423)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	457	46MOISCO1	LM	0
424)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	610	46MOISCO1	LM	0
425)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	914	396MOISCO1	LM	0
426)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	792	305SCRENO1	0	0
427)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	213	884SFILT01	0	0
428)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	0	STKUP01	91CM	0
429)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	305	152USCS 01	CL	0
430)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	457	152USCS 01	CL	0
431)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	610	152USCS 01	CL	0
432)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	762	152USCS 01	CL	0
433)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	914	397USCS 01	CL	0
434)	ALSAGFDBOREP-25	1490480007P-25	ESMDA	152	46COLOR01	2YR4 0	0
435)	ALSAGFDBOREP-26	1428980014F-26	ESMDA	305	503COLOR01	2YR4 0	0
436)	ALSAGFDBOREP-26	1428980014F-26	ESMDA	914	351COLOR01	7YR7 0	0
437)	ALSAGFDBOREP-26	1428980014F-26	ESMDA	152	46CONSS01	ST	0
438)	ALSAGFDBOREP-26	1428980014F-26	ESMDA	914	503CONSS01	ST	0
439)	ALSAGFDBOREP-26	1428980014F-26	ESMDA				
440)	ALSAGFDBOREP-26	1428980014F-26	ESMDA				

441)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	1524	0	DPTOT01	1570CM	0
442)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	0	0	46FILL 01		0
443)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	0	0	305GROUT01		0
444)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	0	0	1570LITHL01		0
445)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	152	0	46HABLO02	RESID 0	0
446)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	305	0	46HABLO02	23HL	0
447)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	457	0	46HABLO02	66PL	0
448)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	610	0	46HABLO02	14PL	0
449)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	762	0	46HABLO02	26BL	0
450)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	914	0	46HABLO02	35BL	0
451)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	1067	0	46HABLO02	25BL	0
452)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	1219	0	46HABLO02	31BL	0
453)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	1372	0	46HABLO02	27BL	0
454)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	1524	0	46HABLO02	26BL	0
455)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	152	0	46MODIF01	72BL	0
456)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	457	0	457MODIF01	MOT	0
457)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	914	0	351MODIF01	0	0
458)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	152	0	46MOISC01	MOIST 0	0
459)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	457	0	1113MOISC01	MOIST 0	0
460)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	1219	0	305SCREMO1	MOIST 0	0
461)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	305	0	1219SFILT01	0	0
462)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	0	0	STKUP01	76CM	0
463)	ALSAGFDBOREP-26	1428980014P-26	ESWDA	152	0	1570USCS 01	CL	0
464)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	152	0	46COLOR01	2YR58 0	0
465)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	305	0	46COLOR01	7YR76 0	0
466)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	457	0	46COLOR01	7YR78 0	0
467)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	610	0	46COLOR01	7YR78 0	0
468)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	457	0	46CONSS01	VST 0	0
469)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	610	0	46CONSS01	VST 0	0
470)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	655	0	DPTOT01	671CM	0
471)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	0	0	15FILL 01	0	0
472)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	0	0	183GROUT01	0	0
473)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	0	0	671LITHL01	0	0
474)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	152	0	46HABLO02	RESID 0	0
475)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	305	0	46HABLO02	10BL	0
476)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	457	0	46HABLO02	18BL	0
477)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	610	0	46HABLO02	33BL	0
478)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	152	0	46HABLO02	24BL	0
479)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	305	0	46MODIF01	0	0
480)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	457	0	46MODIF01	0	0
481)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	152	0	16RMOISC01	NET	0
482)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	457	0	46MOISC01	MOIST 0	0
483)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	610	0	46MOISC01	MOIST 0	0
484)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	351	0	REFUSL01	671CM	0
485)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	183	0	305SCRFN01	0	0
486)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	0	0	472SFILT01	0	0
487)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	0	0	STKUP01	107CM	0
488)	ALSAGFDBOREP-27	1387780016P-27	ESWDA	152	0	671USCS 01	CL	0
489)	ALSAGFDBOREP-28	1503280008P-28	ESWDA	305	0	46COLOR01	10YR70	0
490)	ALSAGFDBOREP-28	1503280008P-28	ESWDA	610	0	19PCOLOR01	2YR48 0	0
491)	ALSAGFDBOREP-28	1503280008P-28	ESWDA	762	0	46COLOR01	2YR46 0	0
492)	ALSAGFDBOREP-28	1503280008P-28	ESWDA	152	0	46COLOR01	10YR50	0
493)	ALSAGFDBOREP-28	1503280008P-28	ESWDA	457	0	46CONSS01	ST	0
494)	ALSAGFDBOREP-28	1503280008P-28	ESWDA	610	0	46CONSS01	VST 0	0
495)	ALSAGFDBOREP-28	1503280008P-28	ESWDA	610	0	46CONSS01	ST	0

551)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	305	46COLOR01	25YR460
552)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	457	152COLOR01	25YR460
553)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	457	152CONSS01	VST 0
554)	ALSAGFDBOREP-30	1374280005P-30	ESWDA		OPT0T01	655CM 0
555)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	625	30FILL 01	0
556)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	0	213GROUT01	0
557)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	152	46HARL002	74BL 0
558)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	305	46HABL002	24RL 0
559)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	457	46HADL002	28BL 0
560)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	610	46HADL002	50RL 0
561)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	457	152MODIF01	0 0
562)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	0	30MOISC01	DRY 0
563)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	152	46MOISC01	DRY 0
564)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	305	46MOISC01	DRY 0
565)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	457	152MOISC01	DRY 0
566)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	0	640REFUSL01	0 0
567)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	320	305SCREN01	655CM 0
568)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	213	411SFILT01	0 0
569)	ALSAGFDBOREP-30	1374280005P-30	ESWDA		STKUP01	911CM 0
570)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	0	152USCS 01	CL 0
571)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	152	153USCS 01	CL 0
572)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	305	152USCS 01	CH 0
573)	ALSAGFDBOREP-30	1374280005P-30	ESWDA	457	198USCS 01	CH 0
574)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	0	351COLOR01	5YR58 0
575)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	457	46COLOR01	5YR58 0
576)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	610	46COLOR01	5YR58 0
577)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	762	46COLOR01	5YR58 0
578)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	0	351CONSS01	M 0
579)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	457	46CONSS01	M 0
580)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	610	46CONSS01	M 0
581)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	762	46CONSS01	M 0
582)	ALSAGFDBOREP-4	1288679352P-4	ESWDA		OPT0T01	960CM 0
583)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	853	107FILL 01	0 0
584)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	0	305GROUT01	0 0
585)	ALSAGFDBOREP-4	1288679352P-4	ESWDA		960LITHL01	RESID 0
586)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	0	46HABL002	24BL 0
587)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	341	46HABL002	8BL 0
588)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	457	46HABL002	5BL 0
589)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	610	46HABL002	13RL 0
590)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	762	46HABL002	4RL 0
591)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	457	46MODIF01	0 0
592)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	610	46MODIF01	0 0
593)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	762	46MODIF01	0 0
594)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	152	46MOISC01	DRY 0
595)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	341	46MOISC01	MOIST 0
596)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	457	46MOISC01	MOIST 0
597)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	610	46MOISC01	WET 0
598)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	762	46MOISC01	WET 0
599)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	853	305SCREN01	0 0
600)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	213	548SFILT01	0 0
601)	ALSAGFDBOREP-4	1288679352P-4	ESWDA		STKUP01	142CM 0
602)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	0	457USCS 01	CL 0
603)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	457	153USCS 01	CL 0
604)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	762	152USCS 01	CL 0
605)	ALSAGFDBOREP-4	1288679352P-4	ESWDA	762	152USCS 01	CL 0

606)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	107	351COLOR01	5YR56 0
607)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	564	46COLOR01	2YR48 0
608)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	716	46COLOR01	2YR58 0
609)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	762	152COLOR01	2YR68 0
610)	ALSAGFDBOREP-5	1296679351P-5	ESWDA		DPTOT01	914CM
611)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	0	914LITHL01	RESID 0
612)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	0	305GROUT01	RESID 0
613)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	107	46HABLO02	23RL
614)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	259	46HABLO02	27RL
615)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	411	46HABLO02	14RL
616)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	564	46HABLO02	11RL
617)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	716	46HABLO02	13BL
618)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	762	46HABLO02	12BL
619)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	869	46HABLO02	18RL
620)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	107	198MOISC01	DRY 0
621)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	411	46MOISC01	LM 0
622)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	564	350MOISC01	MOIST 0
623)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	610	305SCREN01	MOIST 0
624)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	305	610SFILT01	0
625)	ALSAGFDBOREP-5	1296679351P-5	ESWDA		STKUP01	81CM
626)	ALSAGFDBOREP-5	1296679351P-5	ESWDA	0	914USCS 01	CL 0
627)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	152	351COLOR01	7YR68 0
628)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	610	46COLOR01	2YR46 0
629)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	762	46COLOR01	7YR78 0
630)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	152	46CONSS01	SO 0
631)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	305	46CONSS01	FR 0
632)	ALSAGFDBOREP-6	1261279352P-6	ESWDA		DPTOT01	1067CM
633)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	1006	61FILL 01	0
634)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	0	91GROUT01	0
635)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	0	1067LITHL01	RESID 0
636)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	152	46HABLO02	28BL
637)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	305	46HABLO02	27BL
638)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	457	46HABLO02	19BL
639)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	610	46HABLO02	14BL
640)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	762	46HABLO02	7BL
641)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	305	351MOISC01	MOIST 0
642)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	762	46MOISC01	MOIST 0
643)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	244	284SCREN01	MOIST 0
644)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	91	914SFILT01	0
645)	ALSAGFDBOREP-6	1261279352P-6	ESWDA		STKUP01	132CM
646)	ALSAGFDBOREP-6	1261279352P-6	ESWDA	0	1067USCS 01	CL 0
647)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	152	610COLOR01	5YR58 0
648)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	152	610CONSS01	M 0
649)	ALSAGFDBOREP-7	1277979352P-7	ESWDA		DPTOT01	808CM
650)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	762	46FILL 01	0
651)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	0	274GROUT01	0
652)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	0	808LITHL01	RESID 0
653)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	152	46HABLO02	58RL
654)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	305	46HABLO02	14RL
655)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	457	46HABLO02	9RL
656)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	610	46HABLO02	9RL
657)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	762	46HABLO02	9RL
658)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	152	46MODIF01	MOT 0
659)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	152	46MODIF01	HPL 0
660)	ALSAGFDBOREP-7	1277979352P-7	ESWDA	152	198MOISC01	MOIST 0

(661)	ALSAGFB0REP-7	1277979352P-7	ESWDA	457	198MOIS01	VMOISTO
(662)	ALSAGFB0REP-7	1277979352P-7	ESWDA	762	46MOIS01	WET 0
(663)	ALSAGFB0REP-7	1277979352P-7	ESWDA	457	305SCREN01	0
(664)	ALSAGFB0REP-7	1277979352P-7	ESWDA	274	4R8SFILT01	0
(665)	ALSAGFB0REP-7	1277979352P-7	ESWDA		STKUP01	0
(666)	ALSAGFB0REP-7	1277979352P-7	ESWDA	0	RORUSCS 01	91CM
(667)	ALSAGFB0REP-8	1280779352P-8	ESWDA	152	46COLOR01	CH 0
(668)	ALSAGFB0REP-8	1280779352P-8	ESWDA	304	46COLOR01	5YR81 0
(669)	ALSAGFB0REP-8	1280779352P-8	ESWDA	457	46COLOR01	25YR160
(670)	ALSAGFB0REP-8	1280779352P-8	ESWDA	610	46COLOR01	10YR660
(671)	ALSAGFB0REP-8	1280779352P-8	ESWDA	152	46CONSS01	10YR660
(672)	ALSAGFB0REP-8	1280779352P-8	ESWDA	304	46CONSS01	VST 0
(673)	ALSAGFB0REP-8	1280779352P-8	ESWDA	457	46CONSS01	VST 0
(674)	ALSAGFB0REP-8	1280779352P-8	ESWDA	610	46CONSS01	VST 0
(675)	ALSAGFB0REP-8	1280779352P-8	ESWDA		DPT0T01	655CM
(676)	ALSAGFB0REP-8	1280779352P-8	ESWDA	0	244GROUT01	0
(677)	ALSAGFB0REP-8	1280779352P-8	ESWDA	152	655LITHL01	RESID 0
(678)	ALSAGFB0REP-8	1280779352P-8	ESWDA	304	46HABLO02	33BL
(679)	ALSAGFB0REP-8	1280779352P-8	ESWDA	457	46HABLO02	16BL
(680)	ALSAGFB0REP-8	1280779352P-8	ESWDA	610	46HABLO02	18BL
(681)	ALSAGFB0REP-8	1280779352P-8	ESWDA	152	46HABLO02	3BL
(682)	ALSAGFB0REP-8	1280779352P-8	ESWDA	152	46MODIF01	TRG 0
(683)	ALSAGFB0REP-8	1280779352P-8	ESWDA	304	46MOIS01	MOIST 0
(684)	ALSAGFB0REP-8	1280779352P-8	ESWDA	457	46MOIS01	MOIST 0
(685)	ALSAGFB0REP-8	1280779352P-8	ESWDA	610	46MOIS01	MOIST 0
(686)	ALSAGFB0REP-8	1280779352P-8	ESWDA		RFUSL01	655CM
(687)	ALSAGFB0REP-8	1280779352P-8	ESWDA	351	305SCREN01	0
(688)	ALSAGFB0REP-8	1280779352P-8	ESWDA	244	655SFILT01	0
(689)	ALSAGFB0REP-8	1280779352P-8	ESWDA	0	STKUP01	91CM
(690)	ALSAGFB0REP-8	1280779352P-8	ESWDA	304	304USCS 01	CL 0
(691)	ALSAGFB0REP-8	1280779352P-8	ESWDA	457	153USCS 01	CH 0
(692)	ALSAGFB0REP-8	1280779352P-8	ESWDA	610	45USCS 01	CH 0
(693)	ALSAGFB0REP-8	1280779352P-8	ESWDA	0	30COLOR01	5YR58 0
(694)	ALSAGFB0REP-8	1280779352P-8	ESWDA	152	610COLOR01	75YR700
(695)	ALSAGFB0REP-8	1280779352P-8	ESWDA	0	30CONSS01	0
(696)	ALSAGFB0REP-9	1293880052P-9	ESWDA	762	762DPT0T01	R08CM
(697)	ALSAGFB0REP-9	1293880052P-9	ESWDA	0	46FILL 01	0
(698)	ALSAGFB0REP-9	1293880052P-9	ESWDA	0	213GROUT01	0
(699)	ALSAGFB0REP-9	1293880052P-9	ESWDA	0	808LITHL01	RESID 0
(700)	ALSAGFB0REP-9	1293880052P-9	ESWDA	152	46HABLO02	7BL
(701)	ALSAGFB0REP-9	1293880052P-9	ESWDA	305	46HABLO02	6BL
(702)	ALSAGFB0REP-9	1293880052P-9	ESWDA	457	46HABLO02	32RL
(703)	ALSAGFB0REP-9	1293880052P-9	ESWDA	610	46HABLO02	RBL
(704)	ALSAGFB0REP-9	1293880052P-9	ESWDA	762	46HABLO02	10BL
(705)	ALSAGFB0REP-9	1293880052P-9	ESWDA	152	610CONSS01	VST 0
(706)	ALSAGFB0REP-9	1293880052P-9	ESWDA	0	20MOIS01	DRY 0
(707)	ALSAGFB0REP-9	1293880052P-9	ESWDA	152	153MOIS01	MOIST 0
(708)	ALSAGFB0REP-9	1293880052P-9	ESWDA	305	457MOIS01	WET 0
(709)	ALSAGFB0REP-9	1293880052P-9	ESWDA	457	305SCREN01	0
(710)	ALSAGFB0REP-9	1293880052P-9	ESWDA	213	762SFILT01	0
(711)	ALSAGFB0REP-9	1293880052P-9	ESWDA		STKUP01	0
(712)	ALSAGFB0REP-9	1293880052P-9	ESWDA		152USCS 01	0
(713)	ALSAGFB0REP-9	1293880052P-9	ESWDA		656USCS 01	0
(714)	ALSAGFB0REP-9	1293880052P-9	ESWDA	152	656USCS 01	CL 0
(715)	ALSAGFB0REP-9	1293880052P-9	ESWDA		CH	0

APPENDIX D
FIELD DRILLING FILE—PHASE II

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DPTOT01 1463CM

1277681012C-1A ESWDA

ALSAGFDBOREC-1A

1)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	DPTOT01	1463CM	0
2)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	30SCREMN01		0
3)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	107SFILY01		0
4)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	107BSEAL01		0
5)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219GROUT01		0
6)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	STKUP01	1130CM	0
7)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	RFUSL01	1463CM	0
8)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152USCS 01	CL	0
9)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152COLOR01	75YR560	0
10)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152CONSS01	ST	0
11)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01SC01	DRY	0
12)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152LJTHL01	RESID	0
13)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152HARL002	10RL	0
14)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152USCS 01	CL	0
15)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152COLOR01	10YR760	0
16)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152CONSS01	ST	0
17)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01SC01	DRY	0
18)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152LJTHL01	RESID	0
19)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01F01	PL	0
20)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152HABLO02	11BL	0
21)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152USCS 01	CL	0
22)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152COLOR01	5Y61	0
23)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152CONSS01	ST	0
24)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01SC01	DRY	0
25)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152LJTHL01	RESID	0
26)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01F01	PL	0
27)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152HABLO02	26BL	0
28)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152USCS 01	CL	0
29)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152COLOR01	5Y61	0
30)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152CONSS01	ST	0
31)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01SC01	MOIST	0
32)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152LJTHL01	RESID	0
33)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01F01	PL	0
34)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152HABLO02	8PL	0
35)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152USCS 01	CL	0
36)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152COLOR01	5Y61	0
37)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152CONSS01	ST	0
38)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01SC01	MOIST	0
39)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152LJTHL01	RESID	0
40)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01F01	PL	0
41)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152HABLO02	6BL	0
42)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152USCS 01	CL	0
43)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152COLOR01	5Y61	0
44)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152CONSS01	ST	0
45)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01SC01	MOIST	0
46)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152LJTHL01	RESID	0
47)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01F01	PL	0
48)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152HABLO02	11DL	0
49)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152USCS 01	CL	0
50)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152COLOR01	5Y61	0
51)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152CONSS01	ST	0
52)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01SC01	MOIST	0
53)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152LJTHL01	RESID	0
54)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152M01F01	PL	0
55)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	152HABLO02	7PL	0

56)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1067	152USCS 01	CL	0
57)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1067	152COLOR01	5Y61	0
58)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1067	152CONSS01	ST	0
59)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1067	152M01SC01	VM01ST0	0
60)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1067	152LJTHL01	RESID 0	0
61)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1067	152MODIF01	PL	0
62)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219	153HABL002	7BL	0
63)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219	153USCS 01	CL	0
64)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219	153COLOR01	5YR5R 0	0
65)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219	153CONSS01	ST	0
66)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219	153M01SC01	VM01ST0	0
67)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219	153LJTHL01	RESID 0	0
68)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1219	153MODIF01	PL	0
69)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1372	91HABL002	4BL	0
70)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1372	91USCS 01	SC	0
71)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1372	91COLOR01	5YR43 0	0
72)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1372	91CONSS01	L	0
73)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1372	91M01SC01	WET	0
74)	ALSAGFDBOREC-1A	1277681012C-1A	ESWDA	1372	91LJTHL01	RESID 0	0
75)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	427	30SCREN01	457CM	0
76)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	376	81SFILT01	76CM	0
77)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	290	86BSEAL01	0	0
78)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	290GROUT01	0	0
79)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	STKUP01	0	0
80)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	152USCS 01	CL	0
81)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	152COLOR01	75YR560	0
82)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	152CONSS01	ST	0
83)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	152M01SC01	DRY	0
84)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	152LJTHL01	RESID 0	0
85)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	0	152MODIF01	PL	0
86)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	152	153HABL002	10BL	0
87)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	152	153USCS 01	CL	0
88)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	152	153COLOR01	10YR760	0
89)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	152	153CONSS01	ST	0
90)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	152	153M01SC01	DRY	0
91)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	152	153LJTHL01	RESID 0	0
92)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	152	153MODIF01	PL	0
93)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	305	152HABL002	11BL	0
94)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	305	152USCS 01	CL	0
95)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	305	152COLOR01	5Y61	0
96)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	305	152CONSS01	ST	0
97)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	305	152M01SC01	DRY	0
98)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	305	152LJTHL01	RESID 0	0
99)	ALSAGFDBOREC-1B	1293081013C-1B	ESWDA	305	152MODIF01	PL	0
100)	ALSAGFDBOREC-1B	1293281013C-1C	ESWDA	1036	30SCREN01	1047CM	0
101)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	1006	61SFILT01	0	0
102)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	762	244BSEAL01	0	0
103)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	762GROUT01	0	0
104)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	STKUP01	0	0
105)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	152USCS 01	CL	0
106)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	152COLOR01	75YR560	0
107)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	152CONSS01	ST	0
108)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	152M01SC01	DRY	0
109)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	152LJTHL01	RESID 0	0
110)	ALSAGFDBOREC-1C	1293281013C-1C	ESWDA	0	152MODIF01	PL	0

0

DPTOT01 1463CM

12776R1012C-1A ESMWA

ALSAGFDBOREC-1A

111	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	0	152LITHL01	RESID 0
112	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	0	152MODIF01	PL 0
113	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	152	153HARL002	10BL 0
114	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	152	153USCS 01	CL 0
115	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	152	153COLOR01	10YR760
116	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	152	153CONSS01	ST 0
117	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	152	153MOISC01	DRY 0
118	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	152	153LITHL01	RESID 0
119	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	152	153MODIF01	PL 0
120	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	305	152HARL002	0
121	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	305	152USCS 01	CL 0
122	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	305	152COLOR01	5Y61 0
123	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	305	152CONSS01	ST 0
124	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	305	152MOISC01	DRY 0
125	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	305	152LITHL01	RESID 0
126	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	305	152MODIF01	PL 0
127	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	457	153HARL002	0
128	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	457	153USCS 01	CL 0
129	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	457	153COLOR01	5Y61 0
130	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	457	153CONSS01	ST 0
131	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	457	153MOISC01	MOIST 0
132	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	457	153LITHL01	RESID 0
133	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	457	153MODIF01	PL 0
134	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	610	152HARL002	0
135	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	610	152USCS 01	CL 0
136	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	610	152COLOR01	5Y61 0
137	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	610	152CONSS01	ST 0
138	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	610	152MOISC01	MOIST 0
139	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	610	152LITHL01	RFSID 0
140	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	610	152MODIF01	PL 0
141	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	762	152HARL002	0
142	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	762	152USCS 01	CL 0
143	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	762	152COLOR01	5Y61 0
144	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	762	152CONSS01	ST 0
145	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	762	152MOISC01	MOIST 0
146	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	762	152LITHL01	RESID 0
147	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	762	152MODIF01	PL 0
148	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	914	153HARL002	0
149	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	914	153USCS 01	CL 0
150	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	914	153COLOR01	5Y61 0
151	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	914	153CONSS01	ST 0
152	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	914	153MOISC01	MOIST 0
153	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	914	153LITHL01	RESID 0
154	ALSAGFDBOREC-1C	1293281013C-1C	ESMDA	914	153MODIF01	PL 0
155	ALSAGFDBOREC-2	1324281014C-2	ESMDA	1372	DPTOT01	0
156	ALSAGFDBOREC-2	1324281014C-2	ESMDA	119H	701FILL 01	2073CM 0
157	ALSAGFDBOREC-2	1324281014C-2	ESMDA	873	30SCREN01	0
158	ALSAGFDBOREC-2	1324281014C-2	ESMDA	873	457SFILT01	0
159	ALSAGFDBOREC-2	1324281014C-2	ESMDA	0	91BSEAL01	0
160	ALSAGFDBOREC-2	1324281014C-2	ESMDA	0	R23GROUT01	0
161	ALSAGFDBOREC-2	1324281014C-2	ESMDA	0	STKUP01	0
162	ALSAGFDBOREC-2	1324281014C-2	ESMDA	0	RFUSL01	0
163	ALSAGFDBOREC-2	1324281014C-2	ESMDA	0	137USCS 01	0
164	ALSAGFDBOREC-2	1324281014C-2	ESMDA	0	177COLOR01	0
165	ALSAGFDBOREC-2	1324281014C-2	ESMDA	0	177CONSS01	0



(166)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	0	137MOISCO1	DRY	0
(167)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	0	137LITHL01	RESID	0
(168)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	0	137MODIF01	PL	0
(169)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	0	137MODIF01	RT	0
(170)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	137	153HARL002	4 OBL	0
(171)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	137	153USCS 01	CL	0
(172)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	137	153COLOR01	10R48	0
(173)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	137	153CONSS01	ST	0
(174)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	137	153MOISCO1	MOIST	0
(175)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	137	153LITHL01	RESID	0
(176)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	137	153MODIF01	PL	0
(177)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	290	152HABLO02	36BL	0
(178)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	290	152USCS 01	CL	0
(179)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	290	152COLOR01	10R48	0
(180)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	290	152CONSS01	ST	0
(181)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	290	152MOISCO1	MOIST	0
(182)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	290	152LITHL01	RESID	0
(183)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	290	152MODIF01	PL	0
(184)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	442	152HABLO02	18BL	0
(185)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	442	152USCS 01	CL	0
(186)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	442	152COLOR01	10R48	0
(187)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	442	152CONSS01	ST	0
(188)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	442	152MOISCO1	MOIST	0
(189)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	442	152LITHL01	RESID	0
(190)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	442	152MODIF01	PL	0
(191)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	594	153HABLO02	RBL	0
(192)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	594	153USCS 01	CL	0
(193)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	594	153COLOR01	5YR56	0
(194)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	594	153CONSS01	ST	0
(195)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	594	153MOISCO1	MOIST	0
(196)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	594	153LITHL01	RESID	0
(197)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	594	153MODIF01	PL	0
(198)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	747	1326HABLO02	4BL	0
(199)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	747	1326USCS 01	CL	0
(200)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	747	1326COLOR01	5YR56	0
(201)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	747	106CONSS01	ST	0
(202)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	747	106MOISCO1	MOIST	0
(203)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	747	106LITHL01	RESID	0
(204)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	853	1220CONSS01	L	0
(205)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	853	1220MOISCO1	WET	0
(206)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	853	1220LITHL01	MUD	0
(207)	ALSAGFDBOREC-2	1324281014C-2	ESWDA	853	1220LITHL01	1415CM	0
(208)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1384	36SCREN01	DPTOT01	0
(209)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1384	77SFILT01	0	0
(210)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1073	262RSEAL01	0	0
(211)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	1073GROUT01	0	0
(212)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	STKUP01	107CM	0
(213)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	REFUSL01	1415CM	0
(214)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	152USCS 01	CL	0
(215)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	152COLOR01	10R5R	0
(216)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	152CONSS01	ST	0
(217)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	152MOISCO1	DRY	0
(218)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	0	152LITHL01	RESID	0
(219)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	152	153HABLO02	2BL	0
(220)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	152	153HABLO02	2BL	0

0

DPTOT01 1463CM

12776R1012C-1A ESM DA

ALSAGFDBOREC-1A

(221)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	152	153USCS 01	CL	0
(222)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	152	153COLOR01	10R46	0
(223)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	152	153CONSS01	ST	0
(224)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	152	153M0ISG01	DRY	0
(225)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	152	153LITHL01	RESID	0
(226)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	152	153MODIF01	0	0
(227)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	305	152HABL002	35BL	0
(228)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	305	152USCS 01	CL	0
(229)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	305	152COLOR01	10R48	0
(230)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	305	152CONSS01	ST	0
(231)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	305	152M0ISG01	DRY	0
(232)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	305	152LITHL01	RESID	0
(233)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	457	153HABL002	34RL	0
(234)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	457	153USCS 01	CL	0
(235)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	457	153COLOR01	10R48	0
(236)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	457	153CONSS01	ST	0
(237)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	457	153M0ISG01	LH	0
(238)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	457	153LITHL01	RESID	0
(239)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	610	152HABL002	39BL	0
(240)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	610	152USCS 01	CL	0
(241)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	610	152COLOR01	10YR660	0
(242)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	610	152MODIF01	MOT	0
(243)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	610	152CONSS01	ST	0
(244)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	610	152M0ISG01	LH	0
(245)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	610	152LITHL01	RESID	0
(246)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	762	152HABL002	25BL	0
(247)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	762	152USCS 01	CL	0
(248)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	762	152COLOR01	10YR660	0
(249)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	762	152MODIF01	MOT	0
(250)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	762	152CONSS01	ST	0
(251)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	762	152M0ISG01	LH	0
(252)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	762	152LITHL01	RESID	0
(253)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	914	153HABL002	27BL	0
(254)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	914	153USCS 01	CL	0
(255)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	914	153COLOR01	25YR460	0
(256)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	914	153M0ISG01	LH	0
(257)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	914	153CONSS01	ST	0
(258)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	914	153LITHL01	RESID	0
(259)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	914	153MODIF01	MOT	0
(260)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1067	152HABL002	20BL	0
(261)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1067	152USCS 01	CL	0
(262)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1067	152COLOR01	25YR460	0
(263)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1067	152MODIF01	MOT	0
(264)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1067	152CONSS01	ST	0
(265)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1067	152M0ISG01	LH	0
(266)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1067	152LITHL01	RESID	0
(267)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152HABL002	21HL	0
(268)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152USCS 01	CL	0
(269)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152COLOR01	5YR56	0
(270)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152CONSS01	ST	0
(271)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152M0ISG01	LH	0
(272)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152LITHL01	RESID	0
(273)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152MODIF01	PL	0
(274)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1219	152MODIF01	MOT	0
(275)	ALSAGFDBOREC-3A	1332481015C-3A	ESM DA	1372	42HAPL002	47HL	0

0

1463CM

DPTOT01

1277681012C-1A ESWDA

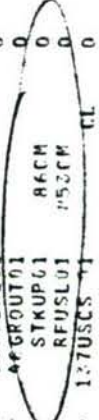
ALSAGFDBOREC-1A

(276)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1372	43USCS 01	CL	0
(277)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1372	43COLOR01	5YR46	0
(278)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1372	43CONSS01	ST	0
(279)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1372	43MOISC01	LM	0
(280)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1372	43LITHL01	RESID	0
(281)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1372	43MOUIF01	MOT	0
(282)	ALSAGFDBOREC-3A	1332481015C-3A	ESWDA	1372	43MODIF01	WLAM	0
(283)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA		DPTOT01	762CM	0
(284)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	732	30SCREN01		0
(285)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	686	76SFILT01		0
(286)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	573	1138SEAL01		0
(287)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	0	573GROUT01		0
(288)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA		STKUP01	91CM	0
(289)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	0	152USCS 01	CL	0
(290)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	0	152COLOR01	10R58	0
(291)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	0	152CONSS01	ST	0
(292)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	0	152MOISC01	DRY	0
(293)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	0	152LITHL01	RESID	0
(294)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	152	153HABL002	23BL	0
(295)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	152	153USCS 01	CL	0
(296)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	152	153COLOR01	10R46	0
(297)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	152	153CONSS01	ST	0
(298)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	152	153MOISC01	DRY	0
(299)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	152	153LITHL01	RESID	0
(300)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	305	152HABL002	35RL	0
(301)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	305	152USCS 01	CL	0
(302)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	305	152COLOR01	10R48	0
(303)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	305	152CONSS01	ST	0
(304)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	305	152MOISC01	DRY	0
(305)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	305	152LITHL01	RESID	0
(306)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	457	153HABL002	34BL	0
(307)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	457	153USCS 01	CL	0
(308)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	457	153COLOR01	10R48	0
(309)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	457	153CONSS01	ST	0
(310)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	457	153MOISC01	LM	0
(311)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	457	153LITHL01	RESID	0
(312)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	610	106HABL002	39BL	0
(313)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	610	106USCS 01	CL	0
(314)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	610	106COLOR01	10YR660	0
(315)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	610	106CONSS01	ST	0
(316)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	610	106MOISC01	LM	0
(317)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	610	106LITHL01	RESID	0
(318)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	716	46HABL002	25RL	0
(319)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	716	46USCS 01	CL	0
(320)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	716	46COLOR01	10YR660	0
(321)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	716	46CONSS01	ST	0
(322)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	716	46MOISC01	LM	0
(323)	ALSAGFDBOREC-3B	1336081015C-3B	ESWDA	716	46LITHL01	RESID	0
(324)	ALSAGFDBOREC-3C	1336681016C-3C	ESWDA		DPTOT01	1067CM	0
(325)	ALSAGFDBOREC-3C	1336681016C-3C	ESWDA	1013	30SCREN01		0
(326)	ALSAGFDBOREC-3C	1336681016C-3C	ESWDA	945	99SFILT01		0
(327)	ALSAGFDBOREC-3C	1336681016C-3C	ESWDA	632	1138SEAL01		0
(328)	ALSAGFDBOREC-3C	1336681016C-3C	ESWDA	0	872GROUT01		0
(329)	ALSAGFDBOREC-3C	1336681016C-3C	ESWDA	1044	23FILL 01		0
(330)	ALSAGFDBOREC-3C	1336681016C-3C	ESWDA		STKUP01	94CM	0

Land surface definition

331)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	0	152USCS	01	CL	0
332)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	0	152COLOR01		10R58	0
333)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	0	152CONSS01		ST	0
334)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	0	152M01SC01		DRY	0
335)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	0	152LITHL01		RESID	0
336)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	152	153HABLO02		23BL	0
337)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	152	153USCS	01	CL	0
338)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	152	153COLOR01		10R46	0
339)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	152	153CONSS01		ST	0
340)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	152	153M01SC01		DRY	0
341)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	152	153LITHL01		RESID	0
342)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	305	152HABLO02		35BL	0
343)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	305	152USCS	01	CL	0
344)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	305	152COLOR01		10R48	0
345)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	305	152CONSS01		ST	0
346)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	305	152M01SC01		DRY	0
347)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	305	152LITHL01		RESID	0
348)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	457	153HABLO02		34BL	0
349)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	457	305USCS	01	CL	0
350)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	457	153COLOR01		10R48	0
351)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	457	153CONSS01		ST	0
352)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	457	153M01SC01		LM	0
353)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	457	153LITHL01		RESID	0
354)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	610	152HABLO02		39BL	0
355)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	610	152COLOR01		10YR660	0
356)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	610	152CONSS01		ST	0
357)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	610	152M01SC01		LM	0
358)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	610	152LITHL01		RESID	0
359)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	762	152HABLO02		25BL	0
360)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	762	152USCS	01	CL	0
361)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	762	152COLOR01		10YR660	0
362)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	762	152CONSS01		ST	0
363)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	762	152M01SC01		LM	0
364)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	762	152LITHL01		RESID	0
365)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	914	107HABLO02		27BL	0
366)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	914	107USCS	01	CL	0
367)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	914	107COLOR01		25YR460	0
368)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	914	107M01SC01		LM	0
369)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	914	107CONSS01		ST	0
370)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	914	107LITHL01		RESID	0
371)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	1021	46HABLO02		20BL	0
372)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	1021	46USCS	01	CL	0
373)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	1021	46COLOR01		25YR460	0
374)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	1021	46CONSS01		ST	0
375)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	1021	46M01SC01		LM	0
376)	ALSAGFDBOREC-3C	1338681016C-3C	ESWDA	1021	46LITHL01		RESID	0
377)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	828	DPTOT01		853CM	0
378)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	219	25FILL	01	CL	0
379)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	76	610SCRENF01		0	0
380)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	76	752SFILT01		0	0
381)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	46	30HSEAL01		0	0
382)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	1	44GROUT01		0	0
383)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	1	STKUP01		0	0
384)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	1	REFUSL01		0	0
385)	ALSAGFDBOREC-3C	1280181035F-31	ESWDA	1	17USCS	01	0	0

2.82 ft.



Land surface elevation

386)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	0	137COLOR01	10YR660
387)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	0	137CONSS01	SO 0
388)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	0	137MOISC01	MOIST 0
389)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	0	137LITHL01	RESID 0
390)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	6	137MODIF01	PL 0
391)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	137	153HABL002	68BL 0
392)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	137	153USCS 01	CL 0
393)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	137	153COLOR01	10YR840
394)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	137	153CONSS01	ST 0
395)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	137	153MOISC01	DRY 0
396)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	137	153LITHL01	RESID 0
397)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	137	153MODIF01	PL 0
398)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152HABL002	36BL 0
399)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152USCS 01	CL 0
400)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152COLOR01	75YR780
401)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152COLOR01	75YR780
402)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152CONSS01	ST 0
403)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152MOISC01	MOIST 0
404)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152LITHL01	RESID 0
405)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	290	152MODIF01	PL 0
406)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152HABL002	16BL 0
407)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152USCS 01	CL 0
408)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152CONSS01	ST 0
409)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152MOISC01	MOIST 0
410)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152COLOR01	10YR780
411)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152MODIF01	MOT 0
412)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152LITHL01	RESID 0
413)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	442	152MODIF01	PL 0
414)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	594	153HABL002	58L 0
415)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	594	153USCS 01	CL 0
416)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	594	153COLOR01	10YR780
417)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	594	153CONSS01	ST 0
418)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	594	153MOISC01	MOIST 0
419)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	594	153LITHL01	RESID 0
420)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	747	106HABL002	08L 0
421)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	747	106USCS 01	CL 0
422)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	747	106COLOR01	10YR800
423)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	747	106CONSS01	ST 0
424)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	747	106MOISC01	VMOISTO
425)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	747	45LITHL01	RESID 0
426)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	747	106MODIF01	PL 0
427)	ALSAGFDBOREP-31	1280181035P-31	ESWDA	792	61LITHL01	LMSN 0
428)	ALSAGFDBOREP-32	1291781036P-32	ESWDA		DPTOT01	747CM 0
429)	ALSAGFDBOREP-32	1291781036P-32	ESWDA		RFUSL01	747CM 0
430)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	722	25FILL 01	0
431)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	250	472SCREN01	0
432)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	145	578SFILT01	0
433)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	61	84FSEAL01	0
434)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	61GROUT01	0
435)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	STKUP01	0
436)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	137USCS 01	0
437)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	137COLOR01	75YR780
438)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	137MODIF01	PL 0
439)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	137MOISC01	MOIST 0
440)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	137CONSS01	RESID 0

419.98 ft

423.78 ft

1.6 ft

45CM

441)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	137M01SC01	MOIST 0
442)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	0	137L1THL01	RESID 0
443)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	137	153HABL002	32FL 0
444)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	137	153USCS 01	CL 0
445)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	137	153MODIF01	PL 0
446)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	137	153COLOR01	10YR660
447)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	137	153CONSS01	ST 0
448)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	137	153M01SC01	DRY 0
449)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	137	153L1THL01	RESID 0
450)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	290	152HABL002	54BL 0
451)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	290	152USCS 01	CL 0
452)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	290	152MODIF01	PL 0
453)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	290	152COLOR01	10YR680
454)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	290	152CONSS01	VST 0
455)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	290	152M01SC01	MOIST 0
456)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	290	152L1THL01	RESID 0
457)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	152HABL002	3BL 0
458)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	305USCS 01	CL 0
459)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	305MODIF01	PL 0
460)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	305MODIF01	MOT 0
461)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	305COLOR01	10YR660
462)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	305CONSS01	ST 0
463)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	305M01SC01	MOIST 0
464)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	442	305L1THL01	RESID 0
465)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	594	153HABL002	10RL 0
466)	ALSAGFDBOREP-32	1291781036P-32	ESWDA	594	153M01SC01	1295CM 0
467)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	1280	DPT0T01	0
468)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	671	15FILL 01	0
469)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	671	610SCREN01	0
470)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	579	488SFILT01	0
471)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	472	107BSEAL01	0
472)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	472GROUT01	0
473)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	STKUP01	0
474)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	152USCS 01	CL 0
475)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	152MODIF01	PL 0
476)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	152COLOR01	5YR58 0
477)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	152CONSS01	ST 0
478)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	152M01SC01	LM 0
479)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	0	152L1THL01	RESID 0
480)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	152	153HABL002	24PL 0
481)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	152	153USCS 01	CL 0
482)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	152	153MODIF01	PL 0
483)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	152	153COLOR01	10YR780
484)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	152	153CONSS01	ST 0
485)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	152	153M01SC01	LM 0
486)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	152	153L1THL01	RESID 0
487)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152HABL002	15PL 0
488)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152USCS 01	CL 0
489)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152MODIF01	PL 0
490)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152MODIF01	MOT 0
491)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152COLOR01	10YR780
492)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152CONSS01	ST 0
493)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152M01SC01	LM 0
494)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	305	152L1THL01	RESID 0
495)	ALSAGFDBOREP-35	1282681023P-35	ESWDA	457	153HABL002	11FL 0

120.8

2.7

0

DPTOT01 1463CM

1277681021C-1A ESWDA

ALSAGFDBOREC-1A

(	496)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	457	153USCS 01	CL	0
(	497)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	457	153MODIF01	PL	0
(	498)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	457	153MODIF01	MOT	0
(	499)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	457	153COLOR01	10YR780	0
(	500)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	457	153CONSS01	ST	0
(	501)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	457	153MOISC01	LM	0
(	502)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	457	153LITHL01	RESID	0
(	503)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	610	152HABL002	12BL	0
(	504)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	610	152USCS 01	CL	0
(	505)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	610	152MODIF01	PL	0
(	506)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	610	152COLOR01	10YR780	0
(	507)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	610	152CONSS01	ST	0
(	508)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	610	152MOISC01	LM	0
(	509)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	610	152LITHL01	RESID	0
(	510)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	152HABL002	14BL	0
(	511)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	305USCS 01	CL	0
(	512)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	305MODIF01	PL	0
(	513)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	305MODIF01	SS	0
(	514)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	305COLOR01	10YR780	0
(	515)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	305CONSS01	ST	0
(	516)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	305MOISC01	LM	0
(	517)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	762	305LITHL01	RESID	0
(	518)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	914	153HABL002	18BL	0
(	519)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152HABL002	7BL	0
(	520)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152USCS 01	CL	0
(	521)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152MODIF01	MOT	0
(	522)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152MODIF01	SS	0
(	523)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152MODIF01	PL	0
(	524)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152COLOR01	10YR680	0
(	525)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152CONSS01	ST	0
(	526)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152MOISC01	LM	0
(	527)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1067	152LITHL01	RESID	0
(	528)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76HABL002	58L	0
(	529)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76USCS 01	CL	0
(	530)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76MODIF01	PL	0
(	531)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76MODIF01	MOT	0
(	532)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76COLOR01	10YR660	0
(	533)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76CONSS01	ST	0
(	534)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76MOISC01	VM01ST0	0
(	535)	ALSAGFDBOREP-35	12R2681023P-35	ESWDA	1219	76LITHL01	RESID	0
(	536)	ALSAGFDBOREP-36	1256781021P-36	ESWDA		DPTOT01	960CM	0
(	537)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46FILL 01	CL	0
(	538)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	610SCREN01	PL	0
(	539)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	213	701SEFLT01	25YR580	0
(	540)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	122	91HSCAL01	HLAM	0
(	541)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	122GR0UT01	SO	0
(	542)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	STKUP01	LM	0
(	543)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	152USCS 01	RESID	0
(	544)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	152MODIF01	CL	0
(	545)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	152COLOR01	PL	0
(	546)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	152MODIF01	25YR580	0
(	547)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	152CONSS01	HLAM	0
(	548)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	152MOISC01	SO	0
(	549)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	0	152LITHL01	LM	0
(	550)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	152	153HABL002	RESID	0

2.0

1256781021P-36

551)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	152	153USCS 01	CL	0
552)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	152	153MODIF01	MOT	0
553)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	152	153COLOR01	PURPLE	0
554)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	152	153CONSS01	SO	0
555)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	152	153MOISC01	LM	0
556)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	152	153LITHL01	RESID	0
557)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	152HABL002	11BL	0
558)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	152USCS 01	CL	0
559)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	152MODIF01	MOT	0
560)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	152COLOR01	PURPLE	0
561)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	152CONSS01	SO	0
562)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	152MOISC01	LM	0
563)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	305	152LITHL01	RESID	0
564)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153HABL002	19BL	0
565)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153USCS 01	CL	0
566)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153MODIF01	PL	0
567)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153MODIF01	MOT	0
568)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153COLOR01	5YR68	0
569)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153CONSS01	M	0
570)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153MOISC01	WET	0
571)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	457	153LITHL01	RESID	0
572)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152HABL002	18BL	0
573)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152USCS 01	CL	0
574)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152MODIF01	PL	0
575)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152MODIF01	MOT	0
576)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152COLOR01	PURPLE	0
577)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152CONSS01	M	0
578)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152MOISC01	WET	0
579)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	610	152LITHL01	RESID	0
580)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152HABL002	15BL	0
581)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152USCS 01	CL-SC	0
582)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152MODIF01	PL	0
583)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152MODIF01	MOT	0
584)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152MODIF01	MOT	0
585)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152COLOR01	PURPLE	0
586)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152CONSS01	M	0
587)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152MOISC01	WET	0
588)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	762	152LITHL01	RESID	0
589)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46HABL002	23RL	0
590)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46USCS 01	CL	0
591)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46MODIF01	PL	0
592)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46MODIF01	MOT	0
593)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46COLOR01	PURPLE	0
594)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46CONSS01	M	0
595)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46MOISC01	WET	0
596)	ALSAGFDBOREP-36	1296781021P-36	ESWDA	914	46LITHL01	RESID	0
597)	ALSAGFDBOREP-36	1296881016P-37	ESWDA	DPTOT01	DPTOT01	853CM	0
598)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	686	16AFILL 01	CL	0
599)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	655	3JNSEAL01	CL	0
600)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	122	5355FLT01	0	0
601)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	61	61JNSEAL01	0	0
602)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	61	61JNSEAL01	0	0
603)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	61	61JNSEAL01	0	0
604)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	61	61JNSEAL01	0	0
605)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	61	61JNSEAL01	0	0

2.0

5/15/20

0

1463CM

DPTOT01

1277681012C-1A ESWDA

ALSAGFDBOREC-1A

606)	ALSAGFDBOREP-37	1296881016F-37	ESWDA	0	152CONSS01	M	0
607)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	0	152M0ISC01	DRY	0
608)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	0	853LITHL01	RESID	0
609)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	152	153USCS 01	CL	0
610)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	152	153MODIF01	PL	0
611)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	152	153COLOR01	PURPLE0	0
612)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	152	153CONSS01	M	0
613)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	152	153M0ISC01	DRY	0
614)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	305	152USCS 01	CL	0
615)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	305	152MODIF01	PL	0
616)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	305	152COLOR01	PURPLE0	0
617)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	305	152CONSS01	M	0
618)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	305	152M0ISC01	DRY	0
619)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	457	153USCS 01	CL-SC	0
620)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	457	153COLOR01	PURPLE0	0
621)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	457	153CONSS01	D	0
622)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	457	153M0ISC01	DRY	0
623)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	610	152USCS 01	CL	0
624)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	610	152MODIF01	PL	0
625)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	610	152COLOR01	PURPLE0	0
626)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	610	152CONSS01	D	0
627)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	610	152M0ISC01	LM	0
628)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	762	91USCS 01	CL	0
629)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	762	91MODIF01	PL	0
630)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	762	91MODIF01	ODOR	0
631)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	762	91COLOR01	PURPLE0	0
632)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	762	91CONSS01	D	0
633)	ALSAGFDBOREP-37	1296881016P-37	ESWDA	762	91M0ISC01	LM	0
634)	ALSAGFDBOREP-37	1296881016P-37	ESWDA		RFUSL01	P53CM	0
635)	ALSAGFDBOREP-39	1309381027P-39	ESWDA		DPTOT01	828CM	0
636)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	219	610SCREN01		0
637)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	162	667SFILT01		0
638)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	101	61HSEAL01		0
639)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	61GROUT01		0
640)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	STKUP01	86CM	0
641)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	152USCS 01	CL	0
642)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	152MODIF01	PL	0
643)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	152COLOR01	75YR60	0
644)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	152CONSS01	M	0
645)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	152M0ISC01	MOIST	0
646)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	0	152LITHL01	RESID	0
647)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	152	153HABLO02	42RL	0
648)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	152	153USCS 01	CL	0
649)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	152	153MODIF01	PL	0
650)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	152	153COLOR01	75YR60	0
651)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	152	153CONSS01	M	0
652)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	152	153M0ISC01	MOIST	0
653)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	152	153LITHL01	RESID	0
654)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	305	152HABLO02	27RL	0
655)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	305	152USCS 01	CL	0
656)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	305	152MODIF01	PL	0
657)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	305	152COLOR01	5YR58	0
658)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	305	152CONSS01	M	0
659)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	305	152M0ISC01	MOIST	0
660)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	305	152LITHL01	RESID	0

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(661)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153HABL002	19BL	0
(662)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153USCS 01	CL	0
(663)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153MODIF01	PL	0
(664)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153MODIF01	MOT	0
(665)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153COLOR01	5YR58	0
(666)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153CONSS01	M	0
(667)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153MOISC01	MOIST	0
(668)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	457	153LITHL01	RESID	0
(669)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91HABL002	1RRL	0
(670)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91USCS 01	CL	0
(671)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91MODIF01	PL	0
(672)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91MODIF01	MOT	0
(673)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91COLOR01	5YR58	0
(674)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91CONSS01	SO	0
(675)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91MOISC01	MOIST	0
(676)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	610	91LITHL01	RESID	0
(677)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	701	61USCS 01	CL	0
(678)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	701	61MODIF01	PL	0
(679)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	701	61COLOR01	75YR68	0
(680)	ALSAGFDBOREP-39	1309381027P-39	ESWDA	701	61CONSS01	SO	0
(681)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	701	61MOISC01	WET	0
(682)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	701	61LITHL01	RESID	0
(683)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	762	91USCS 01	CL	0
(684)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	762	91MODIF01	PL	0
(685)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	762	91COLOR01	75YR68	0
(686)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	762	91CONSS01	SO	0
(687)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	762	91MOISC01	WET	0
(688)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	762	61LITHL01	RESID	0
(689)	ALSAGFDBOREP-39	1309381016P-39	ESWDA	823	30LITHL01	LMSN	0
(690)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	320	DPTOT01	625CM	0
(691)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	320	305SCREN01	0	0
(692)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	244	381SFILT01	0	0
(693)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	152	918SEAL01	0	0
(694)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	152GROUT01	0	0
(695)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	STKUP01	30CM	0
(696)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	137USCS 01	CL	0
(697)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	137MODIF01	PL	0
(698)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	137COLOR01	25YR40	0
(699)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	137CONSS01	M	0
(700)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	137MOISC01	DRY	0
(701)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	0	137LITHL01	RESID	0
(702)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	137	153HABL002	23RL	0
(703)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	137	153USCS 01	CL	0
(704)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	137	153MODIF01	PL	0
(705)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	137	153COLOR01	10YR70	0
(706)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	137	153CONSS01	ST	0
(707)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	137	153MOISC01	MOIST	0
(708)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	137	153LITHL01	RESID	0
(709)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	290	152HABL002	20RL	0
(710)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	290	152USCS 01	CL	0
(711)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	290	152MODIF01	PL	0
(712)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	290	152MODIF01	MOT	0
(713)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	290	152COLOR01	10YR70	0
(714)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	290	152CONSS01	ST	0
(715)	ALSAGFDBOREP-41	1295281026P-41	ESWDA	290	152MOISC01	MOIST	0

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771)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	579	153MOISC01		MOIST 0
772)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	579	153LITLH01		RESID 0
773)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152HABLO02	3RL	0
774)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152USCS 01		CL 0
775)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152MODIF01		PL 0
776)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152MODIF01		MOT 0
777)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152COLOR01		5YR68 0
778)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152CONSS01		VST 0
779)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152MOISC01		MOIST 0
780)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	732	152LITLH01		RESID 0
781)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	884	152USCS 01		CL 0
782)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	884	152MODIF01		PL 0
783)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	884	152COLOR01		75YR780
784)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	884	152CONSS01		SO 0
785)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	884	152MOISC01		VMOISTO
786)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	884	183LITLH01		RESID 0
787)	ALSAGFDBOREP-42	1359381028P-42	ESWDA	1067	15LITLH01		DLMT 0
788)	ALSAGFDBOREP-42	1316981028P-44	ESWDA		DPTOT01	1554CM	0
789)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1433	122FILL 01		0
790)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	518	914SCREMO1		0
791)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	427	792SFILT01		0
792)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	323	104BSEAL01		0
793)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	323GROUT01		0
794)	ALSAGFDBOREP-44	1316981028P-44	ESWDA		STKUP01	91CM	0
795)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	137USCS 01		CL 0
796)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	137MODIF01		PL 0
797)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	137MODIF01		RT 0
798)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	137COLOR01		25YR460
799)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	137CONSS01		SO 0
800)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	137MOISC01		LM 0
801)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	0	137LITLH01		RESID 0
802)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	137	153HABLO02	24BL	0
803)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	137	153USCS 01		CL 0
804)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	137	153MODIF01		PL 0
805)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	137	153COLOR01		5YR68 0
806)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	137	153CONSS01		M 0
807)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	137	153MOISC01		MOIST 0
808)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	137	153LITLH01		RESID 0
809)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	290	152HABLO02	18BL	0
810)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	290	152USCS 01		CL 0
811)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	290	152MODIF01		PL 0
812)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	290	152COLOR01		75YR780
813)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	290	152CONSS01		M 0
814)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	290	152MOISC01		MOIST 0
815)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	290	152LITLH01		RESID 0
816)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	442	152HABLO02	21RL	0
817)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	442	152USCS 01		CL 0
818)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	442	152MODIF01		PL 0
819)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	442	152COLOR01		5YR56 0
820)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	442	152CONSS01		M 0
821)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	442	152MOISC01		MOIST 0
822)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	442	152LITLH01		RESID 0
823)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153HABLO02	17FL	0
824)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153USCS 01		CL 0
825)	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153MODIF01		PL 0

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ALSAGFDBOREC-1A

8263	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153MODIF01	MOT	0
827	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153COLOR01	25YR580	0
828	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153CONSS01	VST	0
829	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153MOISC01	MOIST	0
830	ALSAGFDBOREP-44	1316981028P-44	ESWDA	594	153LITHL01	RESID	0
831	ALSAGFDBOREP-44	1316981028P-44	ESWDA	747	152HABL002	9BL	0
832	ALSAGFDBOREP-44	1316981028P-44	ESWDA	747	152USCS 01	CL	0
833	ALSAGFDBOREP-44	1316981028P-44	ESWDA	747	152MODIF01	PL	0
834	ALSAGFDBOREP-44	1316981028P-44	ESWDA	747	152LITHL01	RESID	0
835	ALSAGFDBOREP-44	1316981028P-44	ESWDA	747	10COLOR01	10YR880	0
836	ALSAGFDBOREP-44	1316981028P-44	ESWDA	747	10CONSS01	M	0
837	ALSAGFDBOREP-44	1316981028P-44	ESWDA	747	10MOISC01	VMOISTO	0
838	ALSAGFDBOREP-44	1316981028P-44	ESWDA	757	142COLOR01	25YR460	0
839	ALSAGFDBOREP-44	1316981028P-44	ESWDA	757	142CONSS01	VST	0
840	ALSAGFDBOREP-44	1316981028P-44	ESWDA	757	142MOISC01	MOIST	0
841	ALSAGFDBOREP-44	1316981028P-44	ESWDA	899	153HABL002	15BL	0
842	ALSAGFDBOREP-44	1316981028P-44	ESWDA	899	153USCS 01	CL	0
843	ALSAGFDBOREP-44	1316981028P-44	ESWDA	899	153MODIF01	PL	0
844	ALSAGFDBOREP-44	1316981028P-44	ESWDA	899	153COLOR01	5YR66 0	0
845	ALSAGFDBOREP-44	1316981028P-44	ESWDA	899	153CONSS01	VST	0
846	ALSAGFDBOREP-44	1316981028P-44	ESWDA	899	153MOISC01	MOIST	0
847	ALSAGFDBOREP-44	1316981028P-44	ESWDA	899	153LITHL01	RESID	0
848	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1052	152HABL002	13BL	0
849	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1052	152USCS 01	CL-SC	0
850	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1052	152MODIF01	PL	0
851	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1052	152COLOR01	25Y74 0	0
852	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1052	152CONSS01	SO	0
853	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1052	152MOISC01	MOIST	0
854	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1052	152LITHL01	RESID	0
855	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1204	152HABL002	7BL	0
856	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1204	152USCS 01	CL	0
857	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1204	152MODIF01	PL	0
858	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1204	152COLOR01	5YR68 0	0
859	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1204	152CONSS01	SO	0
860	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1204	152MOISC01	MOIST	0
861	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1204	152LITHL01	RESID	0
862	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1356	153HABL002	13BL	0
863	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1356	153USCS 01	CL	0
864	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1356	153MODIF01	PL	0
865	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1356	153COLOR01	75YR560	0
866	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1356	153CONSS01	M	0
867	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1356	153MOISC01	MOIST	0
868	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1356	153LITHL01	RESID	0
869	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1509	45USCS 01	SC	0
870	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1509	45COLOR01	10YR660	0
871	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1509	45CONSS01	SO	0
872	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1509	45MOISC01	VMOISTO	0
873	ALSAGFDBOREP-44	1316981028P-44	ESWDA	1509	45LITHL01	RESID	0
874	ALSAGFDBOREP-44	1322981033P-46	ESWDA	1052	DPTOT01	1113CM	0
875	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1052	61FILL 01	0	0
876	ALSAGFDBOREP-46	1322981033P-46	ESWDA	442	61R5CFRN01	0	0
877	ALSAGFDBOREP-46	1322981033P-46	ESWDA	390	6615FILL01	0	0
878	ALSAGFDBOREP-46	1322981033P-46	ESWDA	295	1518SEAL01	0	0
879	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	1566ROUT01	0	0
880	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	STKUP01	0	0

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881)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	152USCS 01	CL	0
882)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	152MODIF01	PL	0
883)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	152COLOR01	5YR5R	0
884)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	152CONSS01	SO	0
885)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	152M01SC01	MOIST	0
886)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	0	152LITHL01	RESID	0
887)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	152	153HABLO02	39BL	0
888)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	152	153USCS 01	CL	0
889)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	152	153MODIF01	PL	0
890)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	152	153COLOR01	75YR680	0
891)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	152	153CONSS01	M	0
892)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	152	153M01SC01	MOIST	0
893)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	152	153LITHL01	RESID	0
894)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	305	152USCS 01	CL	0
895)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	305	152MODIF01	PL	0
896)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	305	152COLOR01	5YR68	0
897)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	305	152CONSS01	ST	0
898)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	305	152M01SC01	MOIST	0
899)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	305	152LITHL01	RESID	0
900)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153HABLO02	29BL	0
901)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153USCS 01	CL	0
902)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153MODIF01	PL	0
903)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153MODIF01	MOT	0
904)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153COLOR01	5YR68	0
905)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153CONSS01	ST	0
906)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153M01SC01	MOIST	0
907)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	457	153LITHL01	RESID	0
908)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	610	152HABLO02	30BL	0
909)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	610	152USCS 01	CL	0
910)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	610	152MODIF01	PL	0
911)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	610	152COLOR01	75YR560	0
912)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	610	152CONSS01	M	0
913)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	610	152M01SC01	MOIST	0
914)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	610	152LITHL01	RESID	0
915)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	762	152HABLO02	35BL	0
916)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	762	152USCS 01	CL	0
917)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	762	152MODIF01	PL	0
918)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	762	152COLOR01	75YR560	0
919)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	762	152CONSS01	M	0
920)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	762	152M01SC01	MOIST	0
921)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	762	152LITHL01	RESID	0
922)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	914	153HABLO02	20BL	0
923)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	914	153USCS 01	CL	0
924)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	914	153MODIF01	PL	0
925)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	914	153COLOR01	75YR560	0
926)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	914	153CONSS01	M	0
927)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	914	153M01SC01	MOIST	0
928)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	914	153LITHL01	RESID	0
929)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1067	46HABLO02	21BL	0
930)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1067	46USCS 01	CL	0
931)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1067	46MODIF01	PL	0
932)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1067	46COLOR01	75YR560	0
933)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1067	46CONSS01	M	0
934)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1067	46M01SC01	MOIST	0
935)	ALSAGFDBOREP-46	1322981033P-46	ESWDA	1067	46LITHL01	RESID	0

(936) ALSAGFB0REP-48	1314081040P-48	ESWDA	DFTOT01	140CM	0
(937) ALSAGFB0REP-48	1314081040P-48	ESWDA	RFUSL01	140CM	0
(938) ALSAGFB0REP-48	1314081040P-48	ESWDA	79SFILT01		0
(939) ALSAGFB0REP-48	1314081040P-48	ESWDA	61SCREM01		0
(940) ALSAGFB0REP-48	1314081040P-48	ESWDA	15BSEAL01		0
(941) ALSAGFB0REP-48	1314081040P-48	ESWDA	46GROUT01		0
(942) ALSAGFB0REP-48	1314081040P-48	ESWDA	STKUP01	96CM	0
(943) ALSAGFB0REP-48	1314081040P-48	ESWDA	61USCS 01	CL	0
(944) ALSAGFB0REP-48	1314081040P-48	ESWDA	61MODIF01	PL	0
(945) ALSAGFB0REP-48	1314081040P-48	ESWDA	61COLOR01	75YR540	0
(946) ALSAGFB0REP-48	1314081040P-48	ESWDA	61CONSS01	M	0
(947) ALSAGFB0REP-48	1314081040P-48	ESWDA	61MOISCO1	DRY	0
(948) ALSAGFB0REP-48	1314081040P-48	ESWDA	61LITHL01	RESID	0
(949) ALSAGFB0REP-48	1314081040P-48	ESWDA	79USCS 01	CL	0
(950) ALSAGFB0REP-48	1314081040P-48	ESWDA	79MODIF01	PL	0
(951) ALSAGFB0REP-48	1314081040P-48	ESWDA	79COLOR01	75YR780	0
(952) ALSAGFB0REP-48	1314081040P-48	ESWDA	79CONSS01	M	0
(953) ALSAGFB0REP-48	1314081040P-48	ESWDA	79MOISCO1	MOIST	0
(954) ALSAGFB0REP-48	1314081040P-48	ESWDA	79LITHL01	RESID	0

3.16

3.1.10