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81-84 WATER-QUALITY AND HYDROGEOLOGIC DATA FOR THREE PHOSPHATE INDUSTRY WASTE-DISPOSAL SITES IN CENTRAL FLORIDA, 1979-80

WATER-QUALITY AND HYDROGEOLOGIC DATA FOR THREE PHOSPHATE INDUSTRY WASTE-DISPOSAL SITES IN CENTRAL FLORIDA, 1979-80

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FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

on behalf of the

U.S. ENVIRONMENTAL PROTECTION AGENCY

81-84

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO.	2.	3. Recipient's Accession No.

4. Title and Subtitle
WATER-QUALITY AND HYDROGEOLOGIC DATA FOR THREE PHOSPHATE INDUSTRY WASTE-DISPOSAL SITES IN CENTRAL FLORIDA, 1979-80

5. Report Date
April 1982

6.

7. Author(s)
Ronald L. Miller and Horace Sutcliffe, Jr.

8. Performing Organization Rept. No.
USGS/WRI 81-84

9. Performing Organization Name and Address
U.S. Geological Survey
Water Resources Division
325 John Knox Road, Suite F-240
Tallahassee, Florida 32303

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G) S-802684

12. Sponsoring Organization Name and Address
U.S. Geological Survey
Water Resources Division
325 John Knox Road, Suite F-240
Tallahassee, Florida 32303

13. Type of Report & Period Covered

14.

15. Supplementary Notes
Prepared in cooperation with the Florida Department of Environmental Regulation on behalf of the U.S. Environmental Protection Agency, Grant No. S-802684.

16. Abstract (Limit: 200 words)

This report is a compilation of geologic, hydrologic, and water-quality data collected in the vicinity of gypsum stack complexes at two phosphate chemical plants and one phosphatic clayey waste-disposal pond at a phosphate mine and beneficiation plant in central Florida. The data were collected from September 1979 to October 1980 at the AMAX Phosphate, Inc., chemical plant, Piney Point, the USS Agri-Chemicals chemical plant, Bartow; and the International Minerals and Chemical Corporation, Clear Springs mine, Bartow. Approximately 5,400 field and laboratory water-quality determinations on water samples from 78 test holes and 31 surface-water, rainfall, and other sampling sites at phosphate industry beneficiation and chemical plant waste-disposal operations are tabulated. Records of the test holes and data collection sites as well as geologic and hydrologic data for selected test holes are presented. Maps show locations of the sampling sites.

17. Document Analysis a. Descriptors
*Chemical wastes, *Water pollution, *Water quality, Water levels, Lithologic logs, Hydrogeology, Precipitation (atmospheric), Industrial plants, Mining, Phosphates, Industrial wastes, Metals, Nitrogen compounds, Radiochemical analysis, Organic compounds, On-site data collection.

b. Identifiers/Open-Ended Terms
Florida; Polk County; Manatee County; Central Florida Phosphate Industry; USS Agri-Chemicals; International Minerals and Chemical Corporation; AMAX Phosphate, Inc.; Gypsum stacks; Slime ponds.

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
No restriction on distribution.	UNCLASSIFIED	84
	20. Security Class (This Page) UNCLASSIFIED	22. Price

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Water-Resources Investigations 81-84

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Grant No. S-802684

1982

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

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DEFINITIONS

Beneficiation.--Recovery of phosphate particles from the phosphate ore (matrix) by treatment. Treatment includes sieving or flotation.

Cooling pond.--A pond of large surface area that receives effluent process water from a gypsum stack. The warm process water is cooled before returning to the plant. Cooling ponds are generally diked with earth to 10 to 20 feet above land surface.

Diammonium phosphate pond.--Similar to a cooling pond but one which receives effluent process water from the production of diammonium phosphate (DAP). DAP is a major component of some fertilizers.

Gypsum stack.--Large piles of gypsum ($CaSO_4.2H_20$) produced as an effluent byproduct of the production of phosphoric acid. Gypsum stacks are frequently greater than 100 feet in height and cover several tens of acres.

Matrix.--Phosphate-bearing ore or strata consisting of phosphate particles, clay, and sand.

Phosphatic clayey waste-disposal pond.--A pond constructed above land surface to provide storage of fine to collodial phosphatic material received from a beneficiation plant. Synonymous with "slime pond."

Phosphogypsum.--An effluent byproduct of chemical processing and phosphoric acid production. It is a slurry composed of process water and gypsum. It is disposed of in Florida in a slurry discharge into settling ponds by the wet-stacking method using the upstream method of construction, which results in a gypsum stack.

Piezometer.--The basic device for the measurement of hydraulic head is a tube or pipe in which the elevation of a water level can be determined. In the laboratory the tube is called a manometer; in the field the pipe is called a piezometer.

Slime pond.--Synonymous with "phosphatic clayey waste-disposal pond." It is a local term used in the phosphate mining area. A large-volume settling pond used to store clayey wastes (slimes) from a phosphate mine and beneficiation plant.

Slurry.--A pumpable suspension of fine solid material, such as clay and gypsum, in liquid. Also, a mixture of water and phosphate ore (matrix) produced by high-pressure water to facilitate transportation.

ABBREVIATIONS AND CONVERSION FACTORS

[Factors for converting inch-pound units to International System (SI) of metric units and abbreviation of units]

Multiply	By	To obtain
inch (in)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
gallon (gal)	3.785	liter (L)
pound (lb)	0.0004536	gram (g)

Prefixes used for metric units in this report are as follows:

Prefix	Symbol	Factor
milli-	m	10^{-3}
micro-	u	10^{-6}
pico-	p	10^{-12}

The units of radioactive decay used are picocuries per liter (pCi/L) for liquids and picocuries per gram (pCi/g) of dry weight for solids. A picocurie is the quantity of a radioactive nuclide that produces 2.220 disintegrations per minute.

* * * * * * * * * * * * * *

National Geodetic Vertical Datum of 1929 (NGVD of 1929).

A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "mean sea level." NGVD of 1929 is referred to as sea level in this report.

WATER-QUALITY AND HYDROGEOLOGIC DATA FOR THREE PHOSPHATE INDUSTRY WASTE-DISPOSAL SITES IN CENTRAL FLORIDA, 1979-80

By Ronald L. Miller and Horace Sutcliffe, Jr.

ABSTRACT

This report is a compilation of geologic, hydrologic, and water-quality data collected in the vicinity of gypsum stack complexes at two phosphate chemical plants and one phosphatic clayey waste-disposal pond at a phosphate mine and beneficiation plant in central Florida. The data were collected from September 1979 to October 1980 at the AMAX Phosphate, Inc., chemical plant, Piney Point; the USS Agri-Chemicals chemical plant, Bartow; and the International Minerals and Chemical Corporation, Clear Springs mine, Bartow. Approximately 5,400 field and laboratory water-quality determinations on water samples from 78 test holes and 31 surface-water, rainfall, and other sampling sites at phosphate industry beneficiation and chemical plant waste-disposal operations are tabulated. Records of the test holes and data collection sites as well as geologic and hydrologic data for selected test holes are presented. Maps show locations of the sampling sites.

INTRODUCTION

In May 1979, the U.S. Geological Survey began a study of the water quality and hydrogeology of gypsum stack complexes at two phosphate chemical plants and of one phosphatic clayey waste-disposal pond (slime pond) at a mine and beneficiation plant in central Florida (fig. 1). The investigation was made in cooperation with the Florida Department of Environmental Regulation on behalf of the U.S. Environmental Protection Agency. This report presents water-quality, water-level, and geologic data and test-hole records collected from September 1979 to October 1980, as well as some pertinent previously available data.

Test holes were installed in selected areas to obtain hydrologic and geologic information and to establish sites for the periodic collection of water samples and water-level data. These data were collected to aid in determining whether ground water in the area was affected by movement of water and other substances from gypsum stacks, phosphatic clayey waste-disposal ponds, and ditches associated with the gypsum stacks and phosphatic clayey waste-disposal ponds. This report provides a data base for management and decision-making in assessing the influence of phosphate industry operations on ground-water quality in central Florida.

The gypsum stack of AMAX Phosphate, Inc. (AMAX), near Piney Point, Fla., (fig. 1) was studied because it is isolated from mining and other industrial operations and, therefore, could be used to determine whether operations of a phosphate chemical plant had affected ground-water quality. The gypsum stack near Bartow, Fla., of USS Agri-Chemicals (USSAC), a division of United States Steel Corporation, was chosen because it is in a mined area where active phosphatic clayey waste-disposal ponds were not constructed. The International Minerals and Chemical Corporation (IMC), Clear Springs mine phosphatic clayey waste-disposal pond near Bartow, Fla., was investigated because it is in an area isolated from chemical plants and older clayey waste-disposal ponds. A criterion for plant site selection was the availability of clear areas near each side of the source stack or pond where a drill rig could be maneuvered and operated. All test holes, except those used for collecting background samples, were drilled within 1 mile of a source stack or pond.

METHODS OF STUDY

Test holes were usually drilled in sets of three holes located within 10 feet of each other, and the grouping of these holes is referred to as a cluster. At each cluster an initial pilot-test hole was drilled by the U.S. Geological Survey using a 7 5/8-inch-diameter roller bit. The final depths of individual test holes at cluster sites were determined from data obtained in the pilot-test hole. The deepest, medium-depth, and shallowest test holes at each cluster are referred to with the prefixes D, M, and S, respectively, used as local identifiers in the tables of the report. The pilot-test hole was generally drilled to a second permeable zone below the surficial aquifer. Permeable zones generally corresponded to depths where circulation of drilling fluid was lost during drilling. The deepest test hole (D) was installed by inserting a 4-inch-diameter plastic polyvinyl chloride (PVC) casing in the pilot hole and pressure grouted to seal the annular space between the wall of the hole and casing. The hole was then drilled below the bottom of the casing with a 3 3/4-inch-diameter bit to provide sufficient uncased hole for water-quality sampling. The samples, therefore, represent point samples rather than composites of water through the vertical section.

Based on lithologic and permeability characteristics observed in the pilot test hole, a test hole of medium depth (M) was then drilled at each cluster site. These medium-depth test holes were completed in the first permeable zone below the surficial aquifer using construction techniques similar to those described for the deeper pilot-test hole.

The surficial aquifer test holes (S) were augered to appropriate depths into the surficial water-table aquifer. A 2-inch- or 4-inch-diameter plastic PVC casing and 5 feet of plastic PVC screen (0.010-inch slots) were inserted through the hollow-stem auger. The auger was then reverse-rotated out of each hole.

The test holes were developed with compressed air and pumped until clear, using either a submersible or centrifugal pump, depending upon the depth to water. A few low-yielding test holes were pumped with a peristaltic pump for 1 to 5 days. All test holes were pumped until stable pH and specific conductance readings were obtained before samples were collected for laboratory analysis.

Two to four water-level recorders were installed at each plant site to determine head differences between hydrologic zones. Water levels in other test holes were measured periodically using a steel tape.

During the drilling operation, drill cuttings were collected at each site, and caliper, temperature, and gamma-ray logs were run on the pilot-test holes.

ACKNOWLEDGMENTS

The authors thank the following people for their assistance and cooperation during this study: James Smith, Donald Dubois, Timothy French, and John Zibrida of AMAX Phosphate, Inc.; James Carroll and William Hall of USS Agri-Chemicals; and Lee Cawley, Jay Allen, and Eugene Armbrister of International Minerals and Chemical Corporation.

Each company provided information and aerial photographs of study sites. Personnel and equipment were provided to assist in drilling of observation and monitor wells.

Acknowledgment is also given to the companies for providing ready access to their properties for purposes of test drilling and water-quality sampling.

DATA PRESENTED

Tables and illustrations in the following sections present geologic, hydrologic, and water-quality data collected in the vicinities of the AMAX and USSAC chemical plants and the IMC Clear Springs mine and beneficiation plant. One analysis of process water from the IMC New Wales chemical plant is included with the Clear Springs mine data. Radioisotope data are included for one sample of phosphate ore collected at the USSAC plant. The water-quality tables contain about 5,400 field and laboratory determinations on samples collected from 78 test holes and 31 surface-water, rainfall, and other sampling sites at the phosphate industry beneficiation and chemical plant waste-disposal operations. This water-quality data includes background water samples that were collected from test holes located more than a mile from the source stack or pond; all other samples were collected within a 1-mile radius of the plants. The locations of test holes USSAC-39 through USSAC-42 are not shown on the plant-site location maps; they are located between 1.0 and 1.5 miles east of the plant site and their location is given by longitude and latitude in table 10. The degrees, minutes, and seconds of the latitude and longitude are given by the first six digits and digits seven through thirteen, respectively, of the site identification number for these wells. Bulk precipitation samples were collected in each study area.

In the water-quality tables, the term "total" indicates that at least 95 percent of the substance in an unfiltered sample was analyzed regardless of its physical or chemical form. "Total recoverable" means that the sample was digested wth dilute hydrochloric acid (Skougstad and others, 1979, p. 21) before analysis, usually for metallic elements, to dissolve readily dissolvable substances. This determination represents something less than the "total" amount. "Dissolved" materials are operationally defined as those that pass through a 0.45 micrometer (um) membrane filter (Skougstad and others, 1979, p. 4).

The total alpha determination is reported in picocuries per liter (pCi/L) equivalent to natural uranium. Total beta is reported in picocuries per liter equivalent to strontium-90 and yttrium-90 in secular equilibrium. The uranium (U), thorium (Th), lead (Pb), and polonium (Po) isotopes are "total" determinations that include dissolved and suspended material. Some difficulty was reported in determining gross alpha and beta on process water because of the hygroscopic nature of the dried residues. These samples were redried and immediately counted to reduce this type of error. The counting errors reported for the radiochemical determinations are the relative 2-sigma counting error in picocuries per liter.

Radiochemical measurements were made by the U.S. Environmental Protection Agency, Eastern Environmental Radiation Facility, Montgomery, Ala. Nitrogen and phosphorous species, suspended solids, color, turbidity, biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), and dissolved organic carbon (DOC) were determined by the U.S. Geological Survey Water Quality Laboratory, Ocala, Fla. All other laboratory determinations were done by the U.S. Geological Survey National Water Quality Laboratory, Atlanta, Ga. Most analytical methods used by the Geological Survey laboratories for inorganic determinations are described by Skougstad and others (1979). Methods used for organic determinations are described by Goerlitz and Brown (1979). Methods of sample preparation are described by Friedman and Beetem (1980). On all tables of water-quality analyses, the five-digit parameter code shown in parenthesis is a U.S. Environmental Protection Agency STORET identifier used by the U.S. Geological Survey for computer storage and retrieval.

For all data-collection sites shown in the appropriate figures and tables, the site map numbers need to be preceded by the appropriate local site identifier prefix as follows:

Local site identifier prefix	Phosphate industry plant site	Table number	Figure number
AMAX-	AMAX Phosphate, Inc.	1-9	2-11
USSAC-	USS Agri-Chemicals	10-19	12-22
IMC-	International Minerals and Chemical Corporation	20-28	23-30

These prefixes (AMAX, USSAC, and IMC) are not given in the body of the above listed figures and tables, but need to be used when referring to the individual site locations and are used throughout the text.

Some local identifiers used in the tables have meanings that are meant to reduce the need to refer to the "records of data-collection sites" for definition. For example, in each study area, the first clusters of test holes are numbered beginning at the north side of the stack and proceed clockwise around the stack. Thus, 1 is north, 2 is east, 3 is south, and 4 is west of the stack. The symbols are often combined; for example, 1S would indicate the data were for a shallow test hole immediately north of a stack or pond. Meanings of abbreviations and local identifiers are given below:

List of Local Site Identifiers (Prefixes) Used in Report

Local site identifier	Meaning
AMAX	AMAX Phosphate, Inc.
ARMOUR	Armour well 754-152-334
ART	Artesian well
BK	Background well upgradient or remote from source
COOL	Cooling pond
D	Deep test hole finished in second permeable zone, when used with a number
DAP	Diammonium phosphate pond
DITCH	Drainage ditch
E	East
F	Field surface-water quality analysis site
FPL	Florida Power and Light Company
IMC	International Minerals and Chemical Corporation
IN	Inflow to pond or stack
L COOL	Lower cooling pond
L FORT	Fortner Lake outflow pipe
M	Medium test hole finished in first permeable zone, when used with a number.
N	North
NE	Northeast outflow
NEW WALES	Sample of process water collected at IMC New Wales Chemical Plant.
NW	Northwest outflow
OUT	Outflow to pond or stack
P	Company installed piezometer
PD	Pond
PROD	Well finished in a producing zone of the Floridan aquifer
RAIN	Rainfall collection site
REEDER	Private well owned by Mr. Reeder
RETURN	Ditch or marina containing water that is being returned to a plant for reuse.
ROMP	Well that is part of the Regional Observation and Monitor Well Program, owned by the Southwest Florida Water Management District.
S	Shallow test hole finished in surficial aquifer, when used with a number (part of a cluster of shallow, medium, and deep test holes).
S	South
S	Surface water collection site
SE	Southeast outflow
SEEP	Seepage from pipe penetrating gypsum stack
SEEPE	Seepage east of culvert adjacent to gypsum stack
SEEPW	Seepage west of culvert adjacent to gypsum stack
SLURRY	Discharge point of phosphogypsum slurry to gypsum stack
SW	Southwest outflow
TANK	Tank receiving gypsum slurry from filters
TWD	Deep test hole
U COOL	Upper cooling pond
USGS	U.S. Geological Survey
USSAC	USS Agri-Chemicals
W	West
WT	Water-table test hole in surficial aquifer installed by USGS to measure water levels
1	Test hole north of pond or stack when used with S, M, or D
2	Test hole east of pond or stack when used with S, M, or D
3	Test hole south of pond or stack when used with S, M, or D
4	Test hole west of pond or stack when used with S, M, or D

Data for the AMAX Phosphate, Inc., Plant

The AMAX Phosphate, Inc., plant is in northwest Manatee County (fig. 1) near Piney Point, Fla. The plant processes phosphate rock from mining operations in nearby counties. Wastes from the plant are discharged to a gypsum stack. The plant layout, showing the location of cooling ponds, the gypsum stack, test holes, plant-owned wells and sampling sites is given in figure 2. Descriptions and identification numbers of the 40 ground-water sampling sites, 6 surface-water sites, and 2 rainfall collectors are given in table 1. A cross section of the gypsum stack at the AMAX plant is shown in figure 3. The top of the stack is 50 or more feet higher than the adjacent land surface.

During drilling, cuttings were collected to determine lithology. The lithologic log for AMAX-2, which is representative of the lithology of rocks to a depth of 950 feet in the area, is given in table 2. Geophysical logs for AMAX-2, including spontaneous potential, single-point resistivity, gamma ray, and caliper, are given in figure 4. Lithologic and gamma-ray logs for test holes AMAX-6, -11, -15, -19, -28, and -32 are given in figures 5 through 10, respectively. These logs define the lithology in the upper geologic section on each side of the stack and at two sites more remote from the stack.

Analyses of water samples collected at the plant site are given in tables 12 through 19 as follows:

Type of data	Table number
Major constituents	3
Chemical and physical properties	4
Nitrogen and phosphorous species	5
Radiochemical analyses	6
Miscellaneous radiochemical analyses	7
Trace elements	8
Organic constituents	9

Water levels in 1980 for test holes AMAX-9, -10, and -11 at the AMAX plant are shown in figure 11. Water-level data collected on July 18, 1980 following drilling operations are given in table 1.

Data for the USS Agri-Chemicals Plant

The USS Agri-Chemicals plant is in Polk County near Bartow, Fla., (fig. 1). The plant processes phosphate rock from nearby mining operations. The plant layout, showing the location of cooling ponds, the gypsum stack, test holes, plant-owned wells, and sampling sites is shown in figure 12. Descriptions and identification numbers of the 43 ground-water sampling sites, 15 surface-water sites, and a rainfall collector are given in table 10.

The lithologic log of USSAC-42 to a depth of 1,400 feet, located about 1 mile southeast of the gypsum stacks, is given in table 11. Geophysical logs for this well are shown in figure 13.

Lithologic and gamma-ray logs for test holes USSAC-4, -15, -20, -24, -36, and -41 are given in figures 14 through 19, respectively. These logs define the lithology in the upper geologic section on each side of the stack and at two sites more remote from the stack.

Analyses of water samples collected at the plant site are given in tables 12 through 19 as follows:

Type of data	Table number
Major constituents	12
Chemical and physical properties	13
Nitrogen and phosphorous species	14
Radiochemical analyses	15
Miscellaneous radiochemical analyses	16
Trace elements	17
Organic constituents	18
Miscellaneous field determinations	19

Water-levels in 1980 for test holes USSAC-34, -35, -36; -8; and -42 are given in figures 20 through 22, respectively. Water-level data collected on June 17, 1980 following drilling operations are given in table 10.

Data for the International Minerals and Chemical Corporation, Clear Springs Mine

The International Minerals and Chemical Corporation (IMC), Clear Springs mine and beneficiation plant is in Polk County near Bartow, Fla., (fig. 1). The layout of the phosphatic clayey waste-settling ponds and test holes, plant-owned wells, and sampling sites is shown in figure 23. One analysis of process water from the IMC New Wales chemical plant near Nichols is included, but the sampling point is not shown in figure 23. A cross section through the ponds is shown in figure 24. Descriptions and identification numbers of 17 ground-water sampling sites, 7 surface-water sites, and a rainfall collector are given in table 20.

Lithologic and gamma-ray logs for test holes IMC-3, -7, -11, -14, and -17 surrounding the settling ponds are shown in figures 25 through 29, respectively. These logs define the lithology of the upper geologic section on each side of the ponds and at a site more remote from the pond. The lithology at depth is defined in the logs for USSAC-42 in table 11 and figure 13.

Analyses of water samples collected at the plant site are given in tables 21 through 28 as follows:

Type of data	Table number
Major constituents	21
Chemical and physical properties	22
Nitrogen and phosphorous species	23
Radiochemical analyses	24
Miscellaneous radiochemical analyses	25
Trace elements	26
Organic constituents	27
Miscellaneous field analyses	28

Water-levels in 1980 for test holes IMC-10 and -11 are given in figure 30. Water-level data collected on June 18, 1980 following drilling operations are given in table 20.

REFERENCES

Friedman, L. C., and Beetem, W. A., editors, 1980, 1980 water quality laboratory services catalog: U.S. Geological Survey Open-File Report 79-697, 186 p.

Goerlitz, D. F., and Brown, Eugene, 1979, Methods for analyses of organic substances in water: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 5, Chapter A3, 40 p.

Skougstad, M. W., Fishman, M. J., Friedman, L. C., Erdmann, D. E., and Duncan, S. S., editors, 1979, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 5, Chapter A1, 626 p.

ILLUSTRATIONS

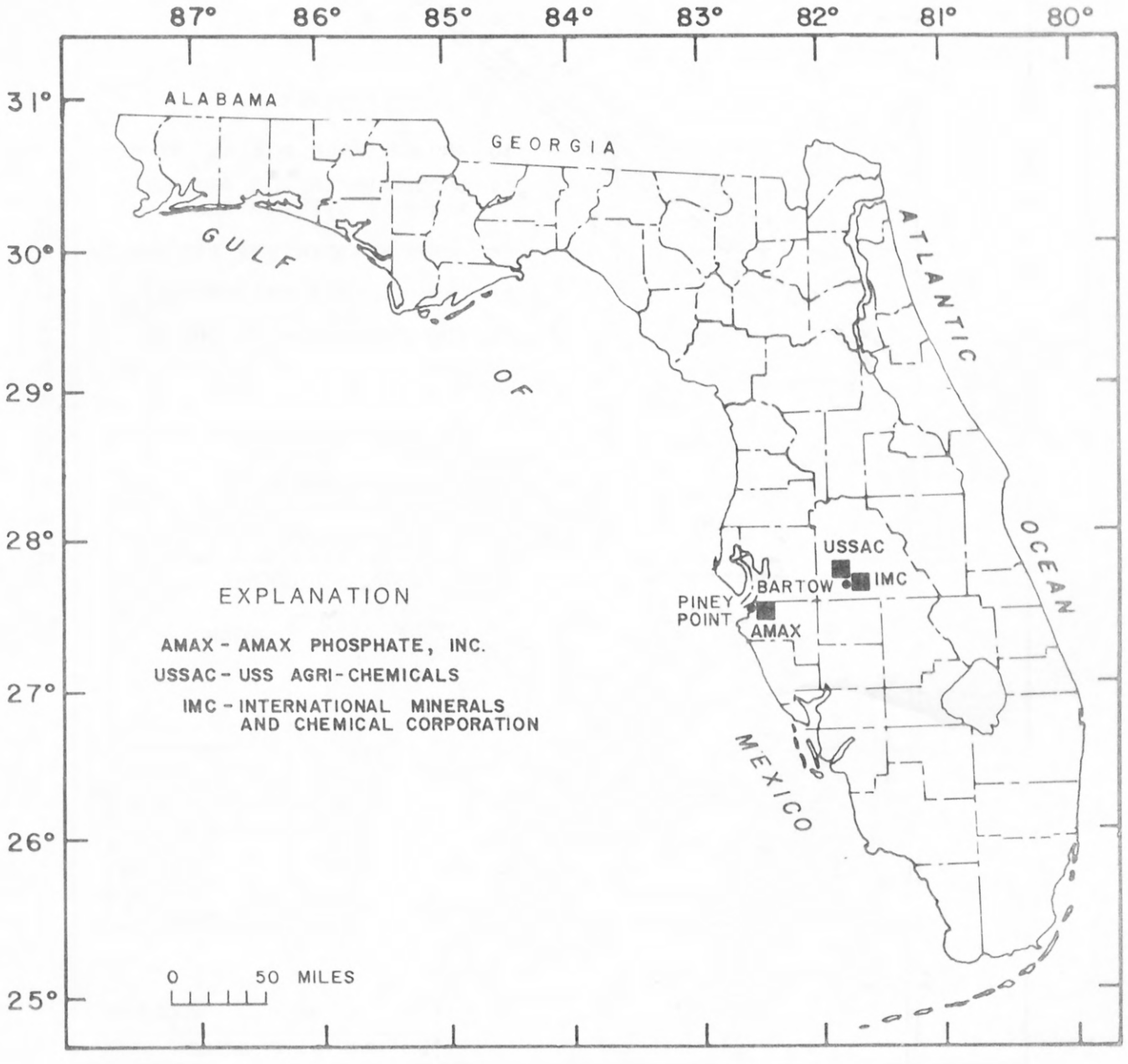


Figure 1.--Locations of study sites.

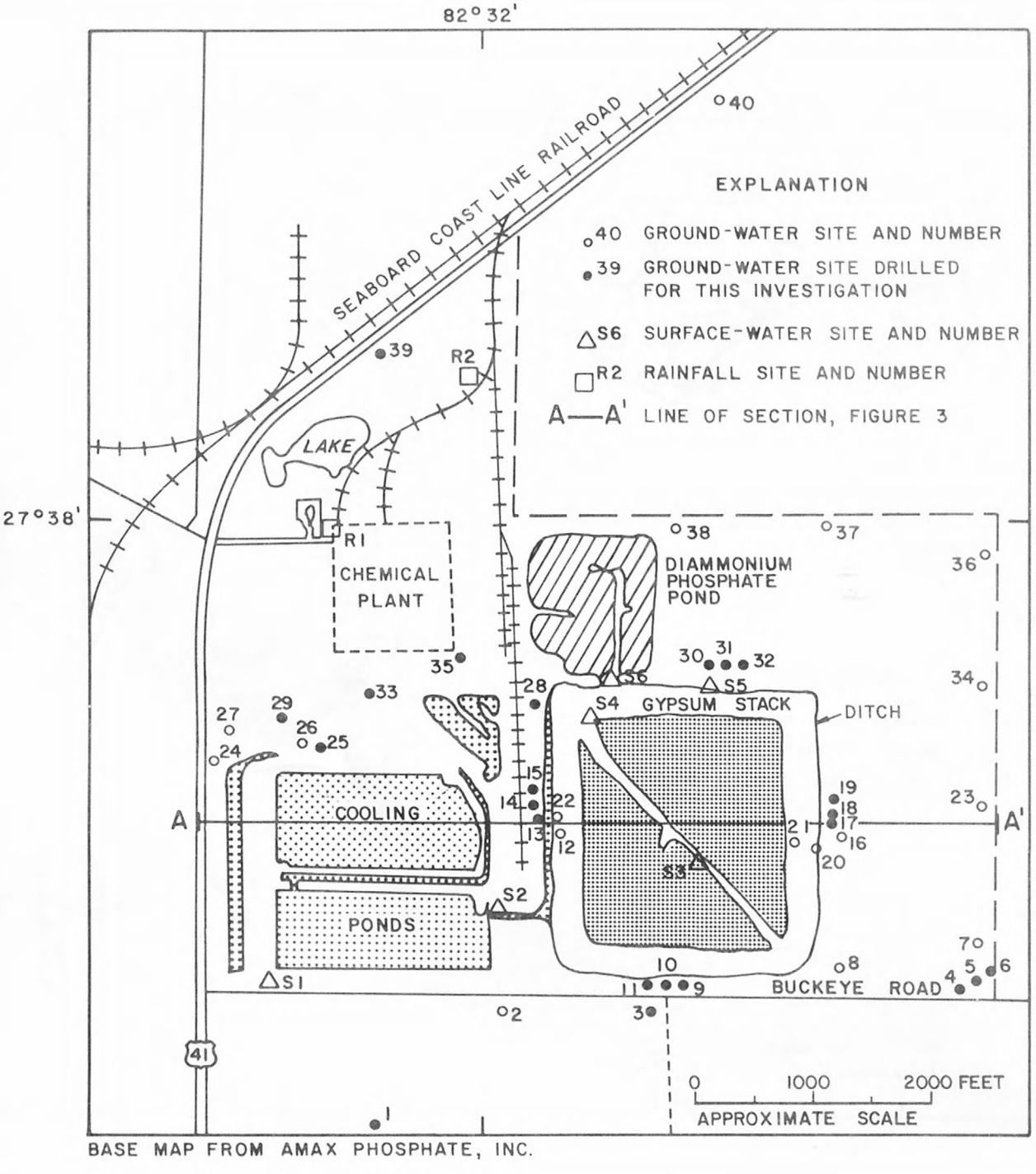


Figure 2.--Locations of data-collection sites at the AMAX Phosphate, Inc. plant.

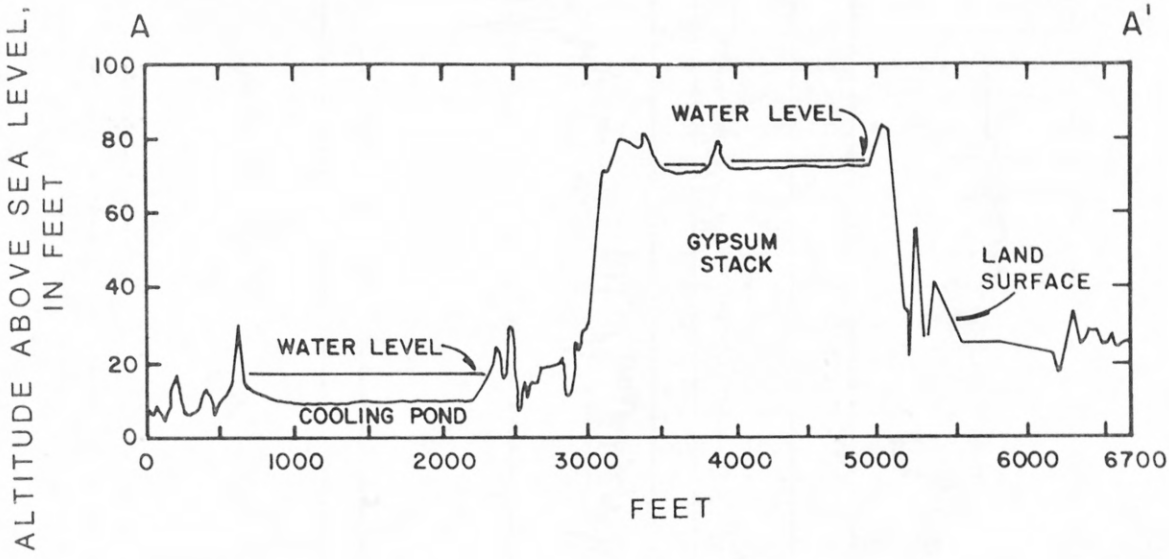


Figure 3.--Section across the AMAX Phosphate, Inc. plant site and gypsum stack (location of section is shown in figure 2).

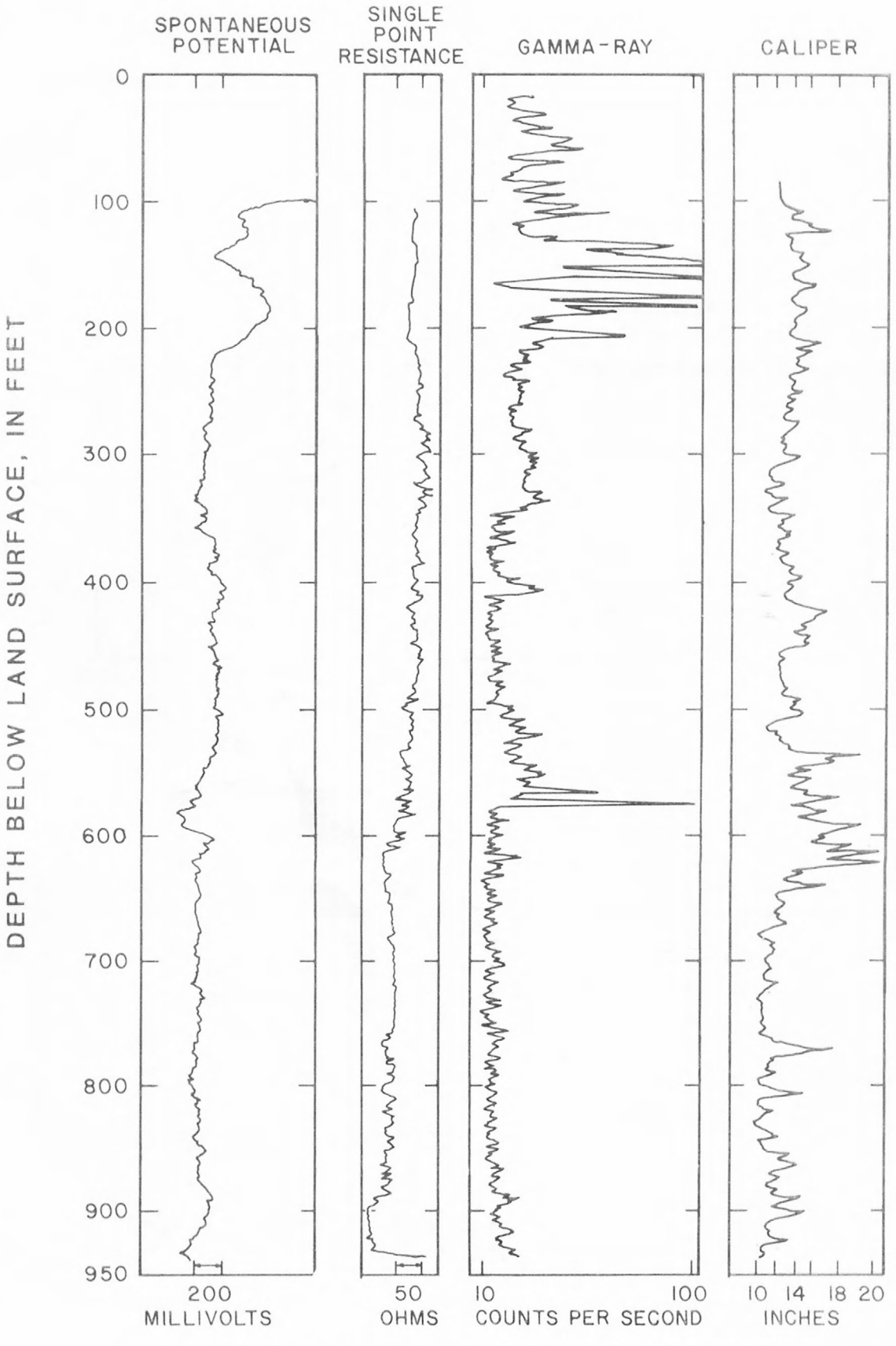
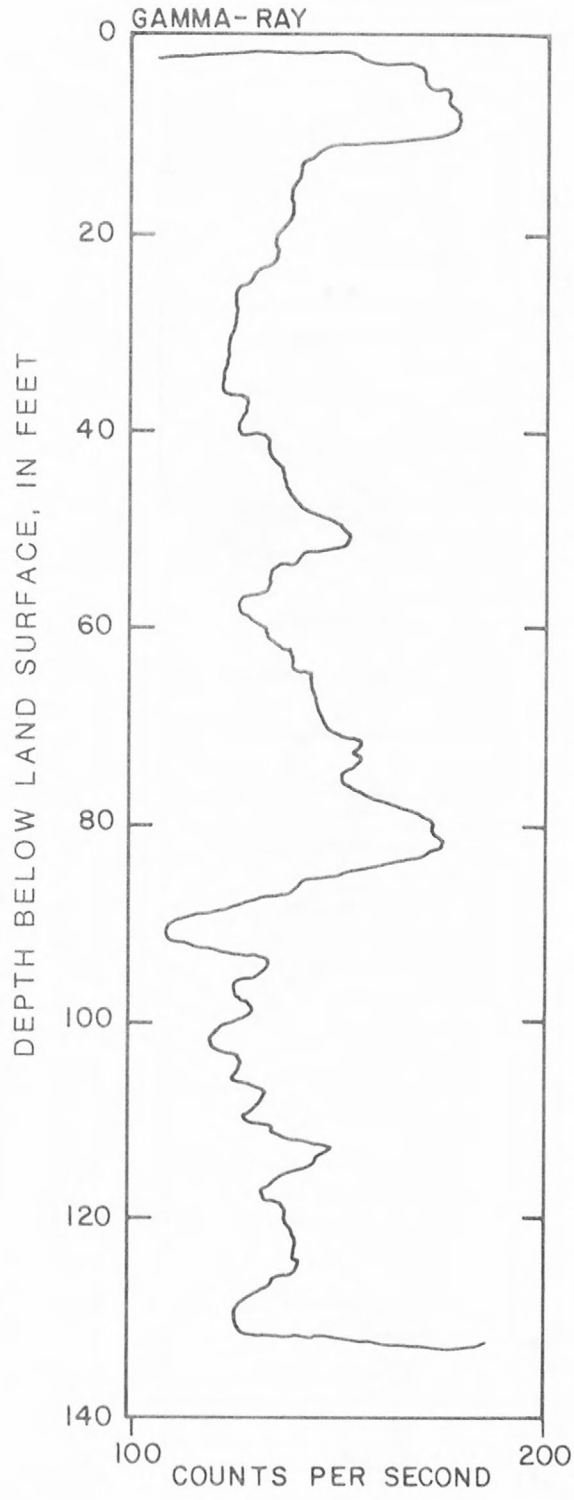
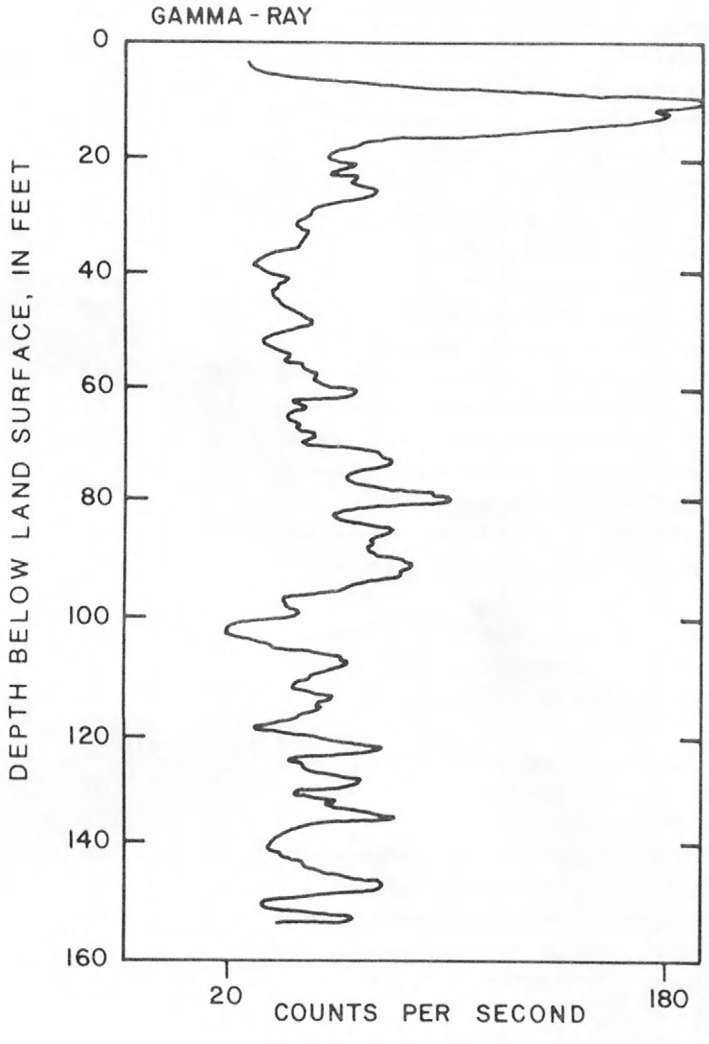


Figure 4.--Geophysical logs for test hole AMAX-2 at the AMAX Phosphate, Inc. plant.



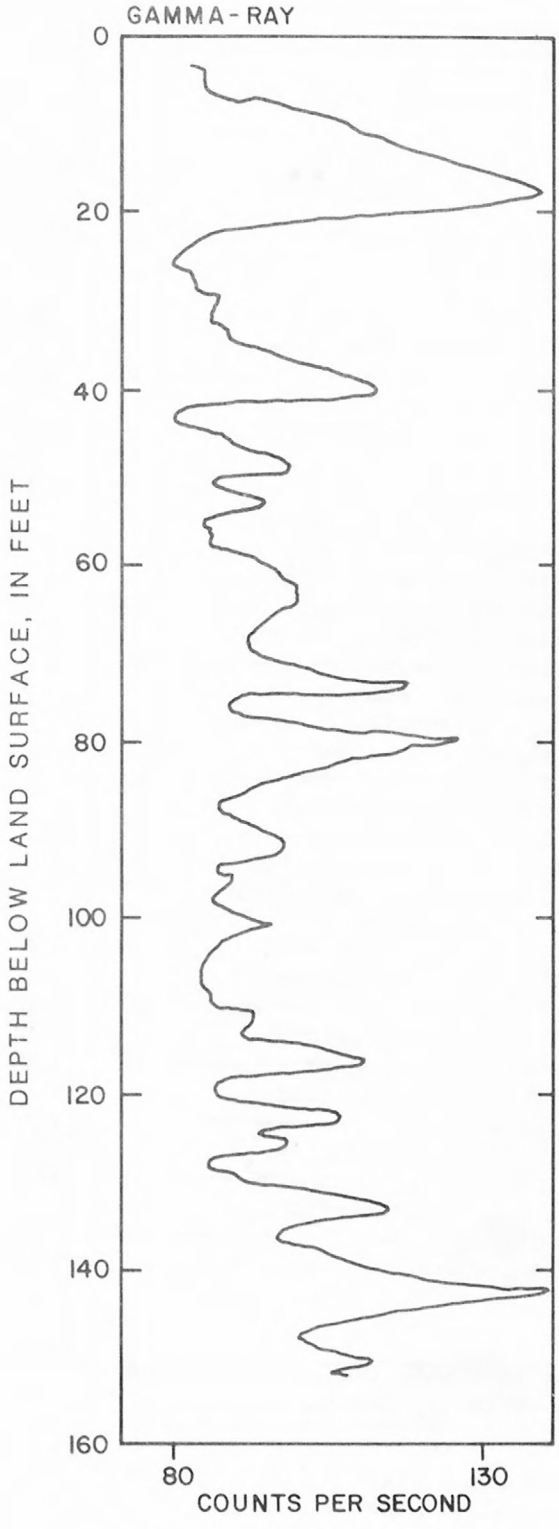
Lithology	Thickness (feet)	Depth to base (feet)
Sand, white	4	4
Sand, brown to black	3	7
Clay, white, sandy; shell; phosphate pebbles	5	12
Clay, white, sandy	5	17
Clay, light-green; sand, coarse; phosphate	5	22
Clay, light-green; sand; phosphate pebbles	3	25
Clay, gray, sandy; phosphate	7	32
Clay, gray, sandy, phosphatic	10	42
Clay, green; phosphate	10	52
Clay, green to gray, sandy; some phosphate	10	62
Clay, green to gray	10	72
Clay, gray	3	75
Limestone, gray, phosphatic	2	77
Clay, dark-gray, phosphatic; limestone, broken	5	82
Clay, dark-gray, phosphatic	5	87
Limestone, gray, phosphatic	3	90
Clay, gray, phosphatic	2	92
Clay, gray; limestone, broken	6	98
Limestone, gray; clay, dark-gray	4	102
Clay, light-gray; limestone, gray	5	107
Limestone, white, clayey	8	115
Limestone, white, very clayey	10	125
Clay, white; limestone, white, broken	3	128
Limestone, white	2	130
Clay, gray; limestone, broken	5	135

Figure 5.--Lithologic and gamma-ray logs for test hole AMAX-6 at the AMAX Phosphate, Inc. plant (casing depth 106 feet).



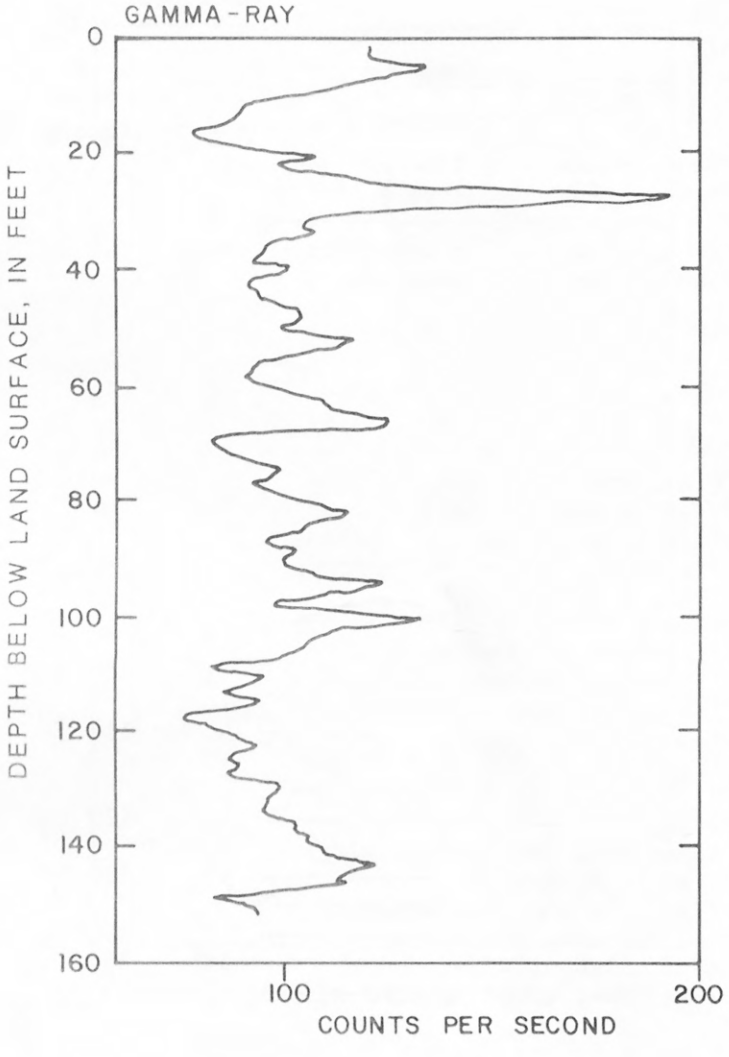
Lithology	Thickness (feet)	Depth to base (feet)
Sand, light-brown	5	5
Sand, light-brown; phosphate; some shell	5	10
Sand, gray; clay; phosphate pebbles	9	19
Clay, yellow, sandy	1	20
Clay, yellow; phosphate, sandy	5	25
Clay, gray to green; phosphate	5	30
Clay, gray, heavy; phosphate pebbles	5	35
Limestone, gray, sandy, phosphatic	1	36
Clay, gray to green, sandy	4	40
Clay, gray, sandy; some limestone pebbles	10	50
Clay, light-gray, very sticky	10	60
Clay, light-gray, phosphatic	9	69
Limestone, light-tan, phosphatic	1	70
Limestone, tan to gray, broken; clay, light-green	10	80
Clay, gray, phosphatic; limestone, gray, broken	5	85
Limestone, gray, broken, hard; clay, phosphatic	5	90
Clay, gray, phosphatic; limestone, gray, broken	10	100
Limestone, gray, broken; clay, light-gray, phosphatic	10	110
Clay, gray, phosphatic; limestone streaks	10	120
Limestone, light-gray; clay, light-gray, phosphatic	20	140
Clay, gray; limestone, light-gray, broken, phosphatic	10	150
Clay, gray; limestone, light-gray, streaks, phosphatic	5	155

Figure 6.--Lithologic and gamma-ray logs for test hole AMAX-11 at the AMAX Phosphate, Inc. plant (casing depth 121 feet).



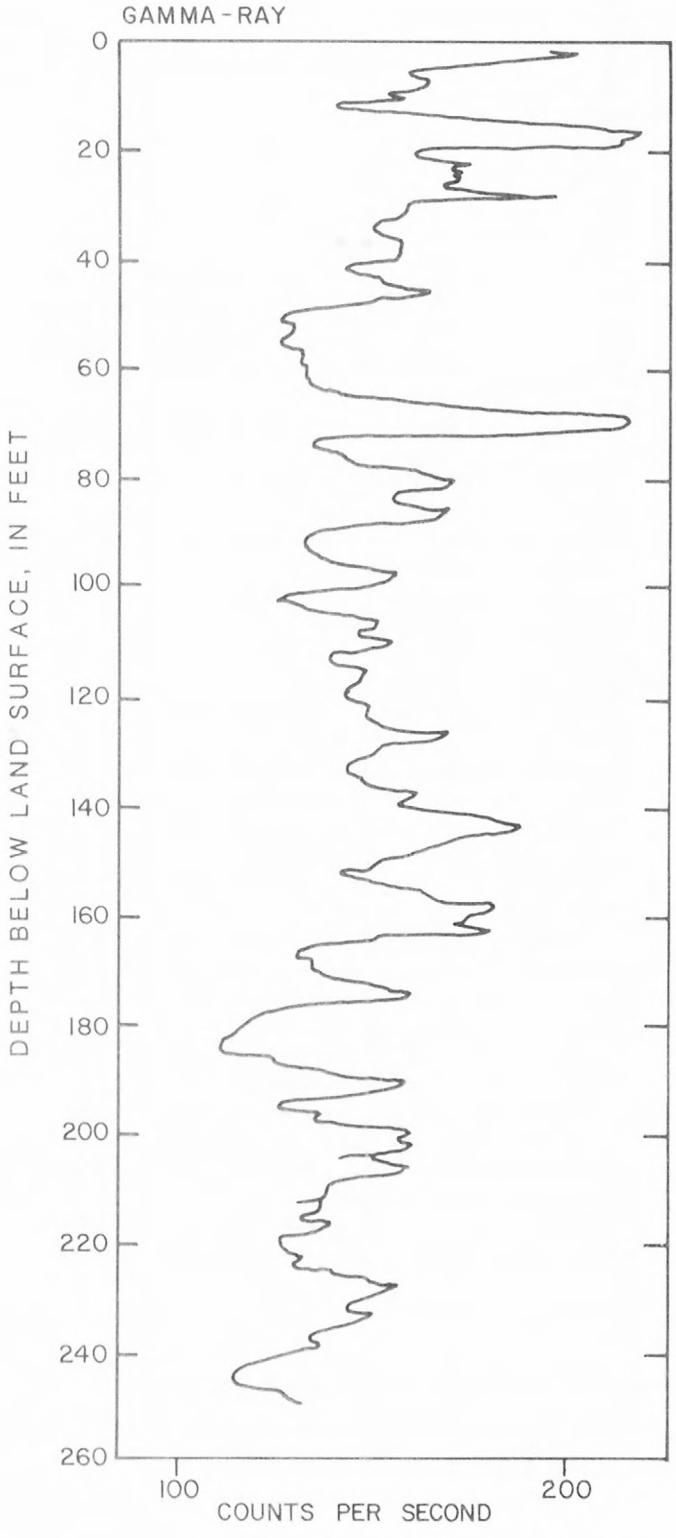
Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown, very fine	5	5
Sand, brown; shell; phosphate; gravel	5	10
Sand, brown; shell; phosphate	5	15
Shells; phosphate pebbles; sand	5	20
Shells; phosphate; clay, gray, phosphatic	8	28
Clay, gray, phosphatic	2	30
Clay, gray, phosphatic, sandy; limestone, broken	20	50
Clay, gray, phosphatic; limestone streaks, very thin	10	60
Clay, gray; limestone, broken, (no water)	10	70
Clay, gray; limestone, broken, gray	5	75
Limestone, dark-gray, (very hard); phosphate	5	80
Clay, dark-gray; phosphate; limestone, broken	30	110
Limestone, tan to gray; clay, gray to tan, phosphatic, (no water)	10	120
Limestone, tan to gray; clay, gray, phosphatic	10	130
Clay, light-gray; phosphate; limestone, broken	5	135
Clay, light-gray	18	153
Limestone, gray	2	155

Figure 7.--Lithologic and gamma-ray logs for test hole AMAX-15 at the AMAX Phosphate, Inc. plant (casing depth 128 feet).



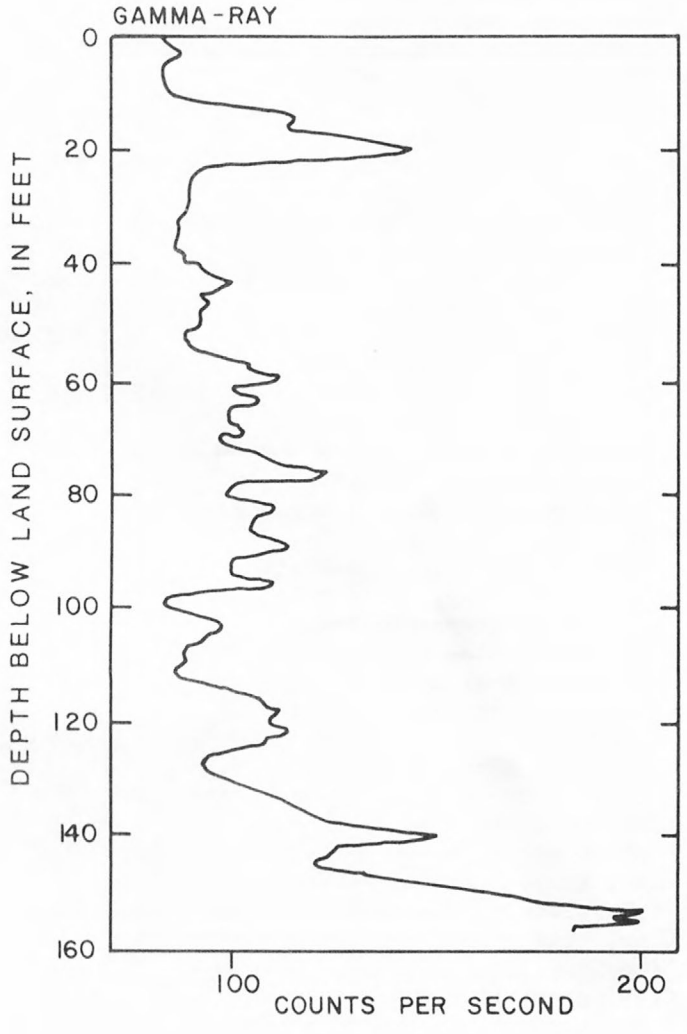
Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown, (fill) --------	10	10
Sand, brown, (fill); phosphate ----------	10	20
Sand, brown; phosphate pebbles ----------	8	28
Phosphate pebbles; sand, coarse; clay, gray, sandy -	2	30
Phosphate pebbles; gravel; clay, gray, sandy --------	3	33
Clay, light-gray, sandy; phosphate ----------	7	40
Clay, light-gray to green, sandy; limestone, broken -	10	50
Clay, light-gray to gray, sandy; phosphate ---------	15	65
Clay, gray, phosphatic -----	5	70
Clay, light-gray to green, phosphatic; limestone, broken ----------	15	85
Limestone, gray; clay, gray ----------	5	90
Clay, gray, phosphatic; limestone, broken, gray --	5	95
Limestone, gray; clay, gray; phosphate ----------	5	100
Clay, gray; phosphate; limestone, gray, broken --	10	110
Clay, gray; limestone, broken; phosphate --------	10	120
Clay, white; limestone, broken ----------	6	126
Limestone, light-gray, phosphatic, clayey -------	19	145
Limestone, light-gray; clay, streaks, white -----	5	150
Clay, white, phosphate ----	5	155

Figure 8.--Lithologic and gamma-ray logs for test hole AMAX-19 at the AMAX Phosphate, Inc. plant (casing depth 127 feet).



Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown, fine	5	5
Sand, brown; sandstone; gravel; shell	10	15
Shell; phosphate; sand	5	20
Shell; phosphate; limestone; gravel; sand	5	25
Clay, gray, sandy; phosphate; limestone; gravel	5	30
Clay, gray to green, phosphatic, sandy	10	40
Clay, gray	10	50
Clay, gray, phosphatic	15	65
Limestone, gray, broken; clay, gray; phosphate	5	70
Clay, gray, phosphatic; limestone, broken	10	80
Clay, gray, phosphatic	5	85
Limestone, gray, soft	2	87
Clay, gray, phosphatic; some limestone, broken	18	105
Clay, light-gray, phosphatic; limestone, gray, broken	5	110
Clay, light-gray; limestone streaks, (hard & soft streaks)	10	120
Limestone, tan to gray; clay, light-gray, phosphatic	15	135
Clay, light-gray, phosphatic	5	140
Clay, light-gray, phosphatic; limestone, tan to gray, streaks	13	153
Limestone, tan, hard; phosphate	5	158
Clay, gray; phosphate; limestone streaks	2	160
Limestone, gray; phosphate; clay, gray	10	170
Limestone, gray, hard; phosphate	10	180
Clay, gray; limestone streaks; phosphate	10	190
Clay, gray	4	194
Limestone, gray	1	195
Clay, gray; limestone, light-tan	10	205
Clay, light-gray, broken; limestone	17	222
Limestone, dark-gray	13	235
Limestone, tan, (no cuttings)	30	265
Limestone, tan	5	270

Figure 9.--Lithologic and gamma-ray logs for test hole AMAX-28 at the AMAX Phosphate, Inc. plant (casing depth 188 feet).



Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown, very fine -----	10	10
Sand, brown; shell; phosphate pebbles ----------	10	20
Sand, brown; shell; phosphate; clay, gray, sandy -	5	25
Clay, gray, sandy, phosphatic ----------	19	44
Limestone, gray, sandy, phosphatic ----------	2	46
Clay, gray, sandy, phosphatic ----------	9	55
Clay, gray, sandy, phosphatic; limestone, broken-	10	65
Clay, gray, sandy; limestone, broken; phosphate -	45	110
Clay, light-gray; limestone, broken ----------	5	115
Clay, light-gray; limestone, light-gray ----------	10	125
Limestone, light-gray, clayey ----------	5	130
Limestone, light-gray ------	2	132
Clay, light-gray ----------	12	144
Limestone, gray, phosphatic, clayey ----------	1	145
Clay, gray; heavy phosphate; limestone, broken --------	8	153
Clay, gray; phosphate; limestone, broken, gray --	1	154
Limestone, gray; heavy phosphate ----------	5	159
Clay, gray ----------	1	160

Figure 10.--Lithologic and gamma-ray logs for test hole AMAX-32 at the AMAX Phosphate, Inc. plant (casing depth 128 feet).

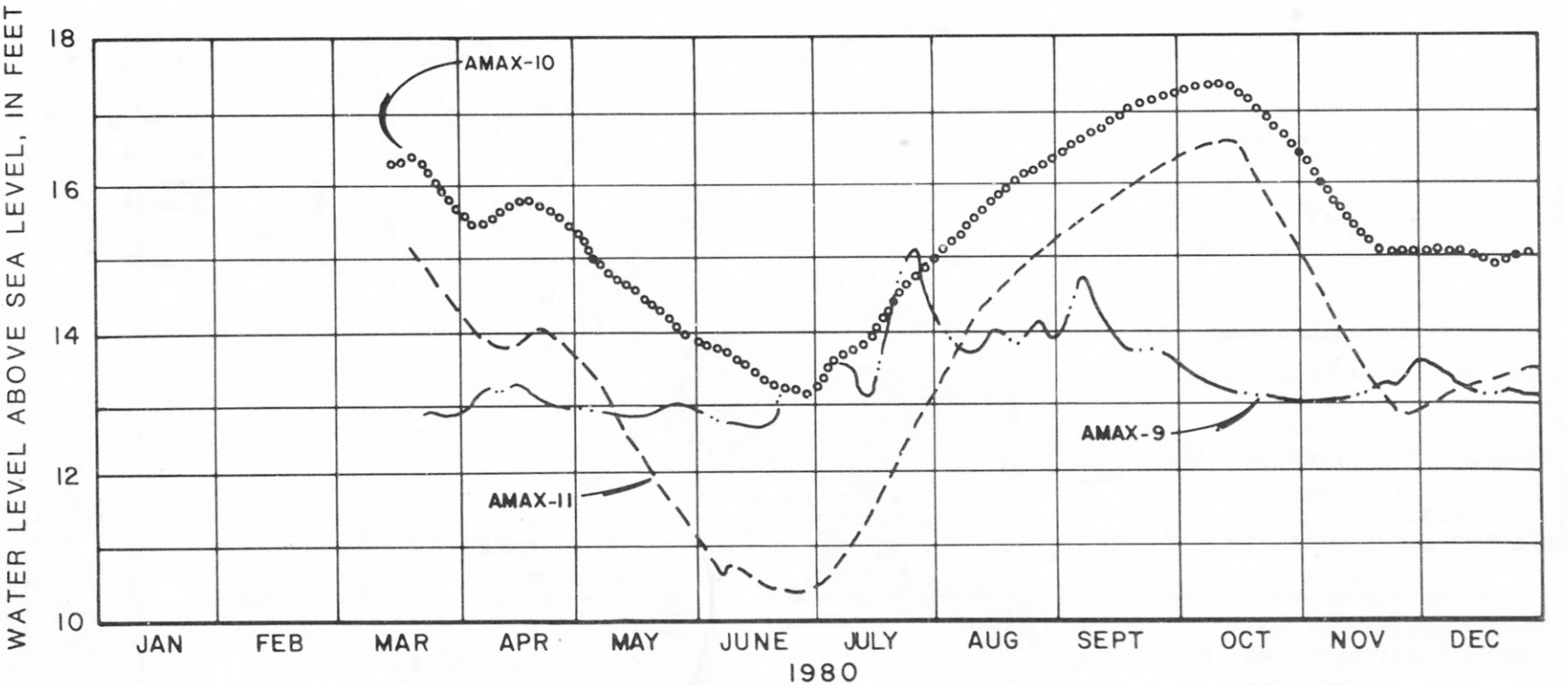


Figure 11.--Hydrographs of water levels in test holes AMAX-9 (3S), AMAX-10 (3M), and AMAX-11 (3D) at the AMAX Phosphate, Inc. plant.

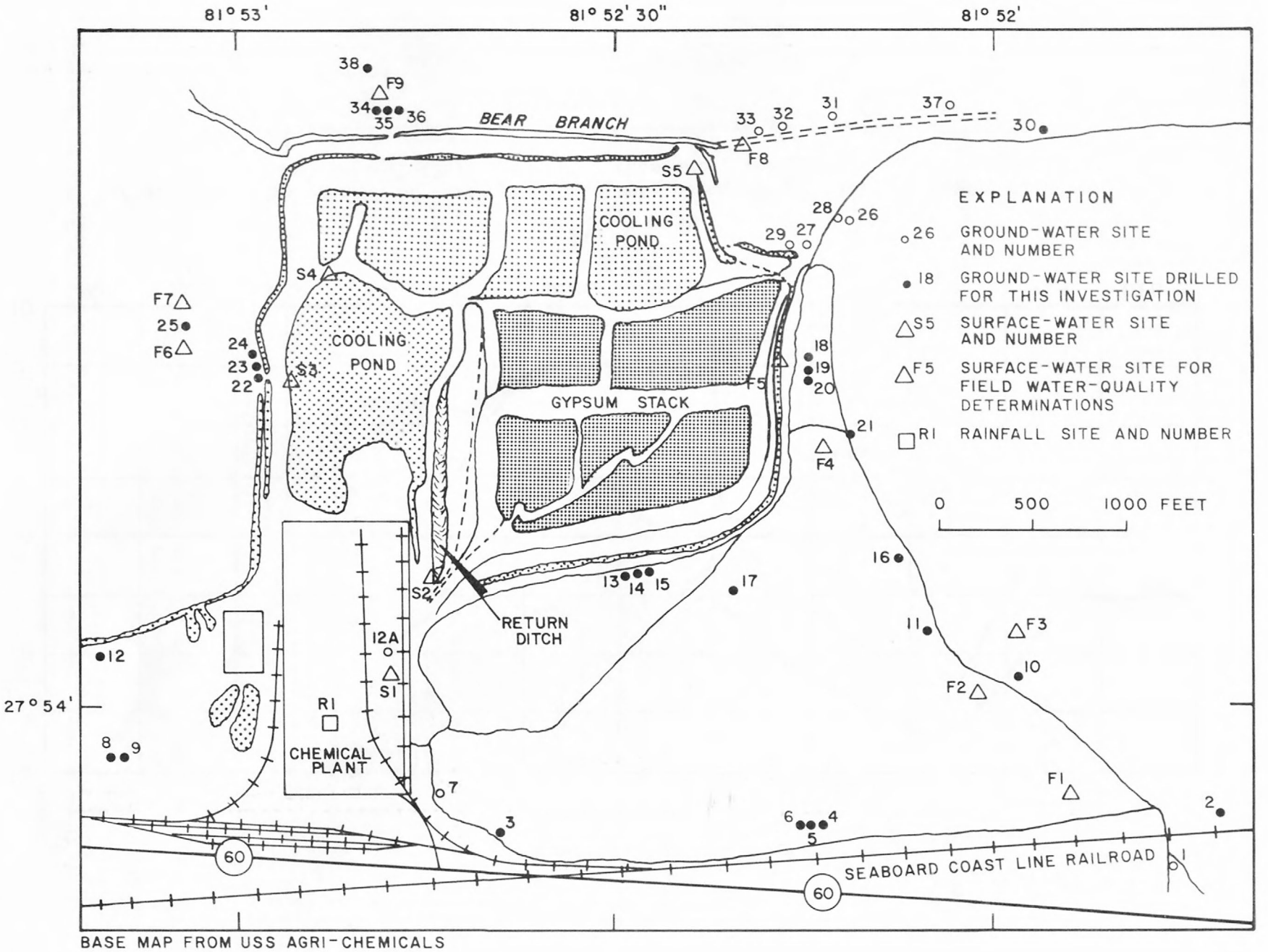


Figure 12.--Locations of data-collection sites at the USS Agri-Chemicals plant.

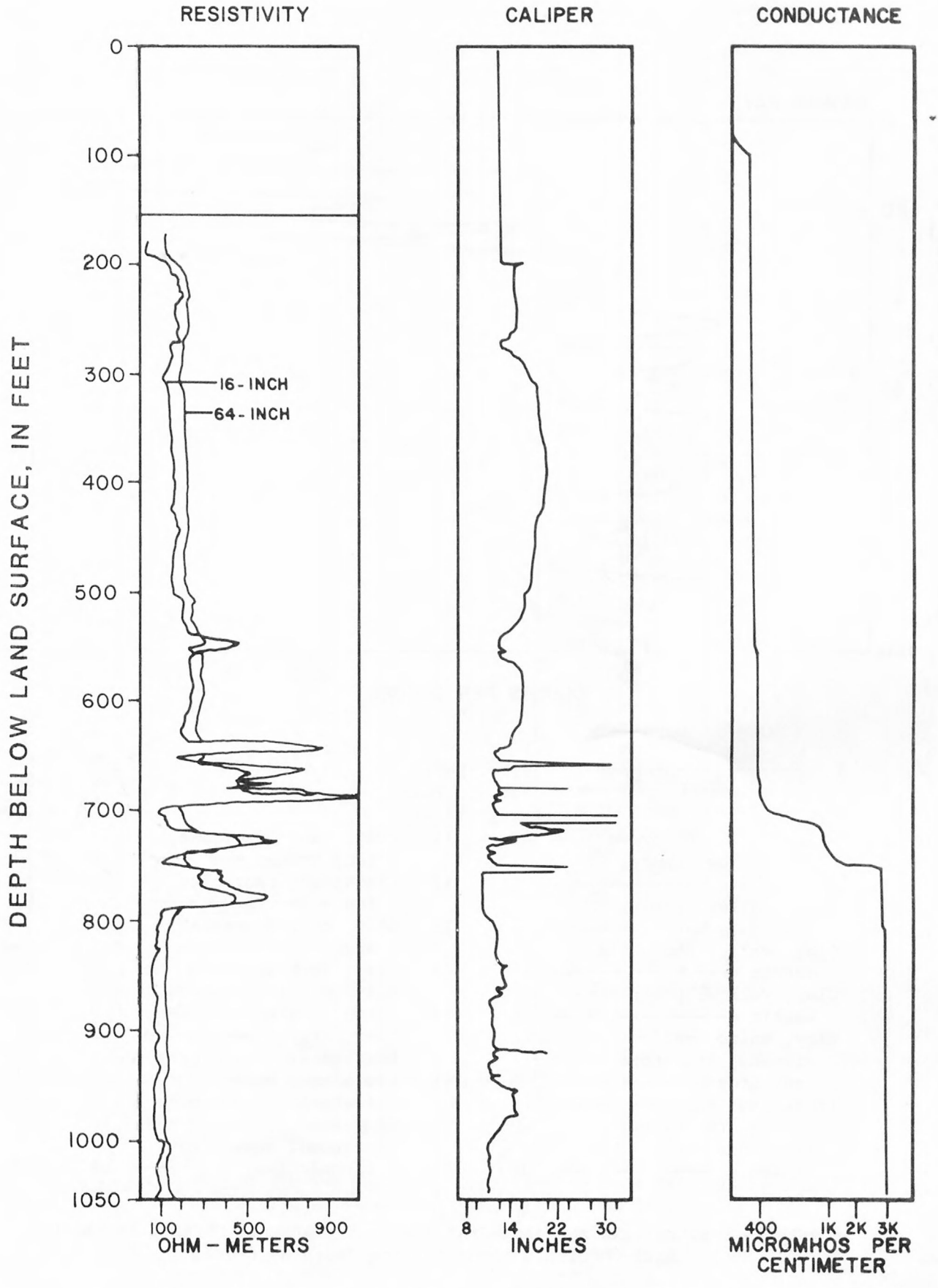
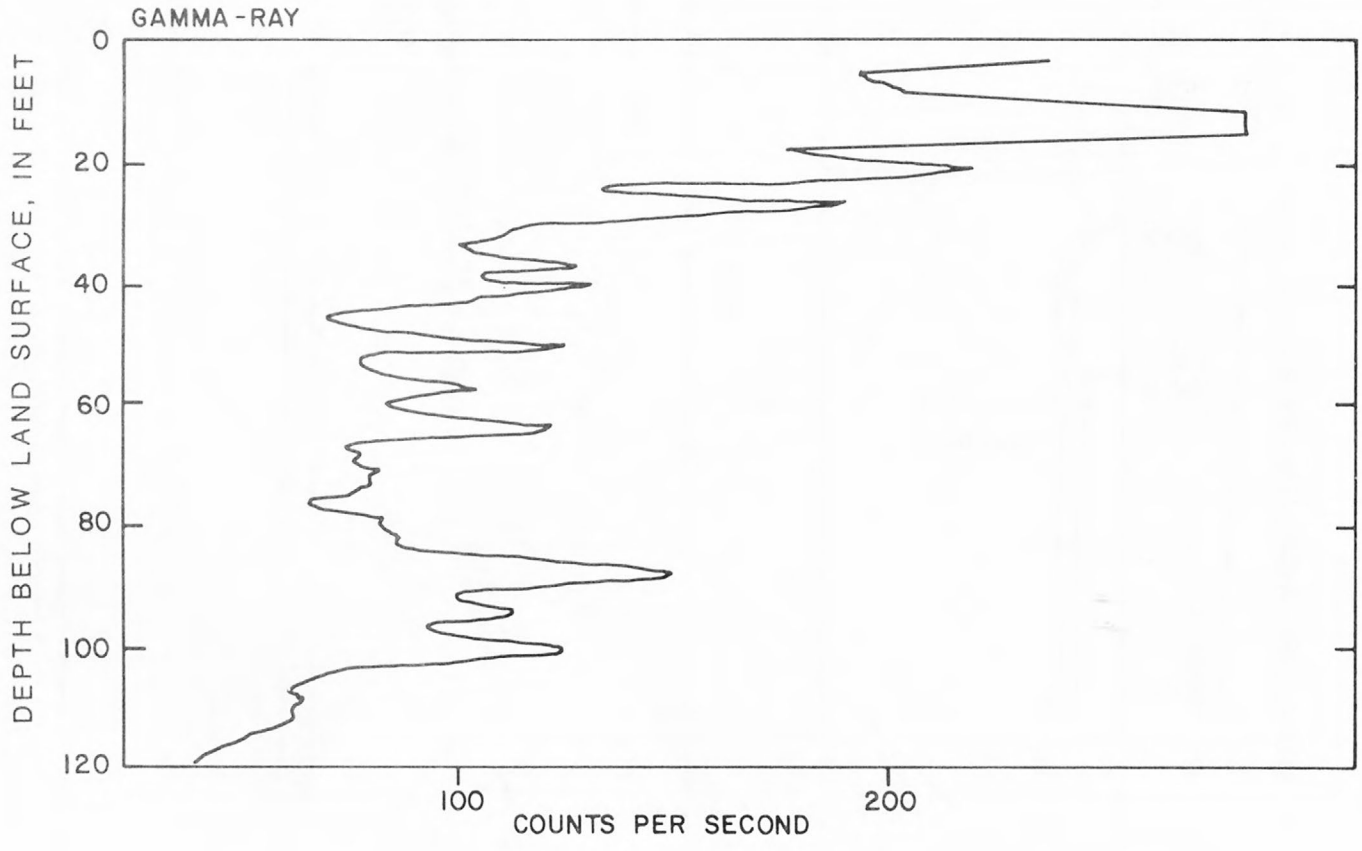
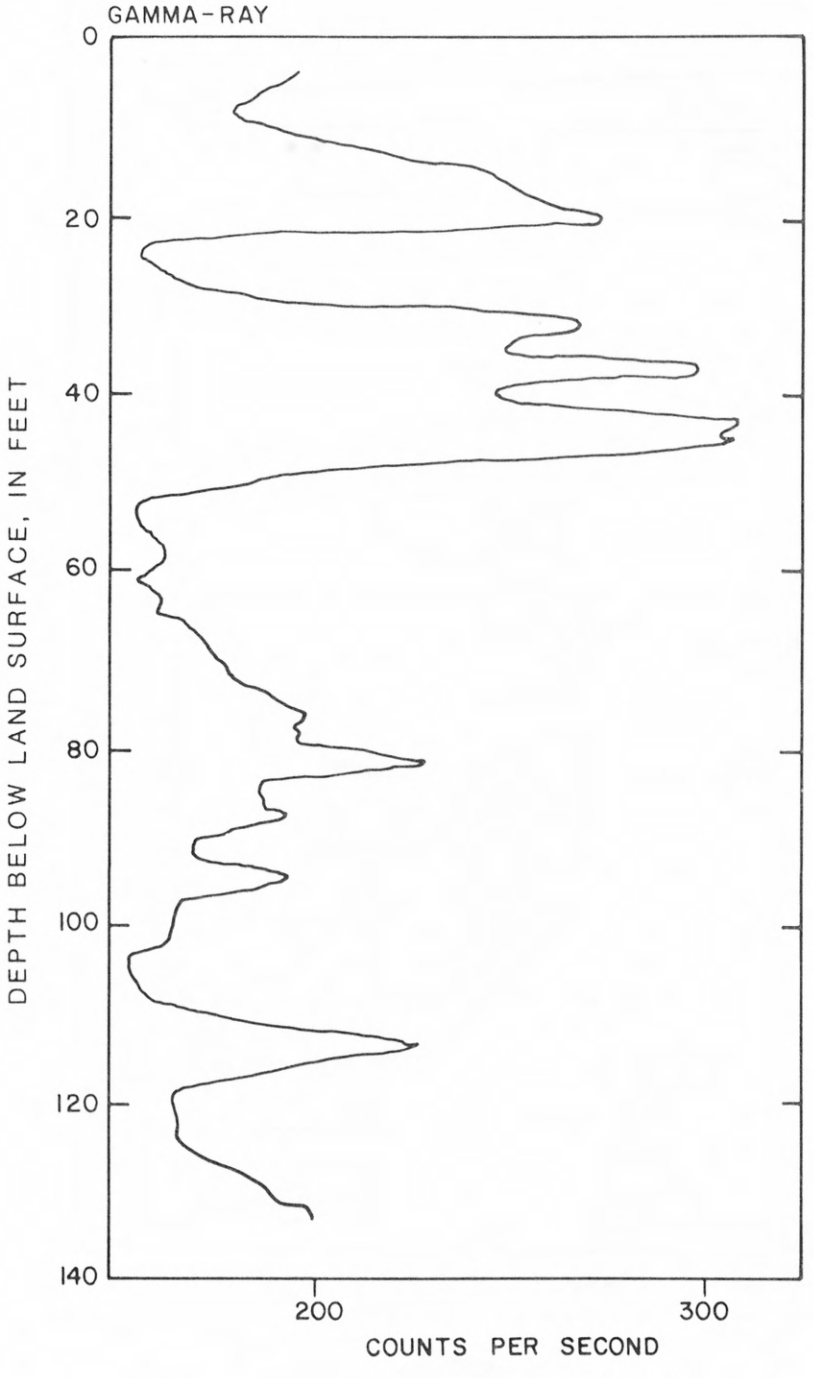


Figure 13.--Geophysical logs for test hole USSAC-42 near the USS Agri-Chemicals plant.



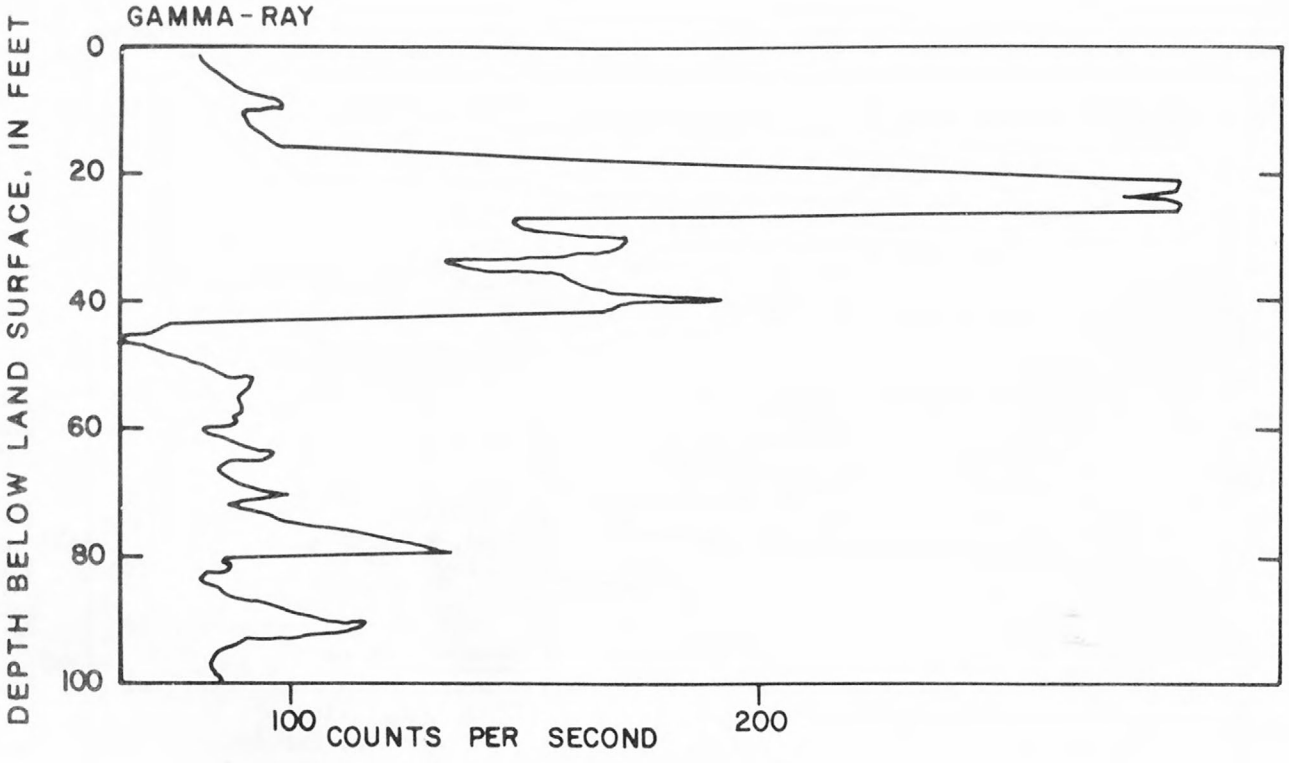
Lithology	Thickness (feet)	Depth to base (feet)
Sand, yellow to brown	11	11
Clay, yellow, sandy; phosphate	1	12
Clay, yellow, sandy; phosphate matrix	3	15
Clay, white; phosphate matrix	7	22
Clay, yellow; phosphate matrix	10	32
Clay, white, yellow streaks; limestone, tan, broken	9	41
Limestone, tan	1	42
Clay, tan to yellow; limestone, tan, broken	10	52
Clay, tan; limestone, tan, broken	8	60
Limestone, tan; clay, tan	2	62
Clay, tan; limestone, broken	3	65
Clay, dark-gray	7	72
Clay, gray; limestone, tan, broken	10	82
Clay, gray	2	84
Limestone, tan to gray	1	85
Limestone, brown, (water)	10	95
Limestone, brown	10	105
Limestone, brown (lost circulation)	14	119

Figure 14.--Lithologic and gamma-ray logs for test hole USSAC-4 at the USS Agri-Chemicals plant (casing depth 85 feet).



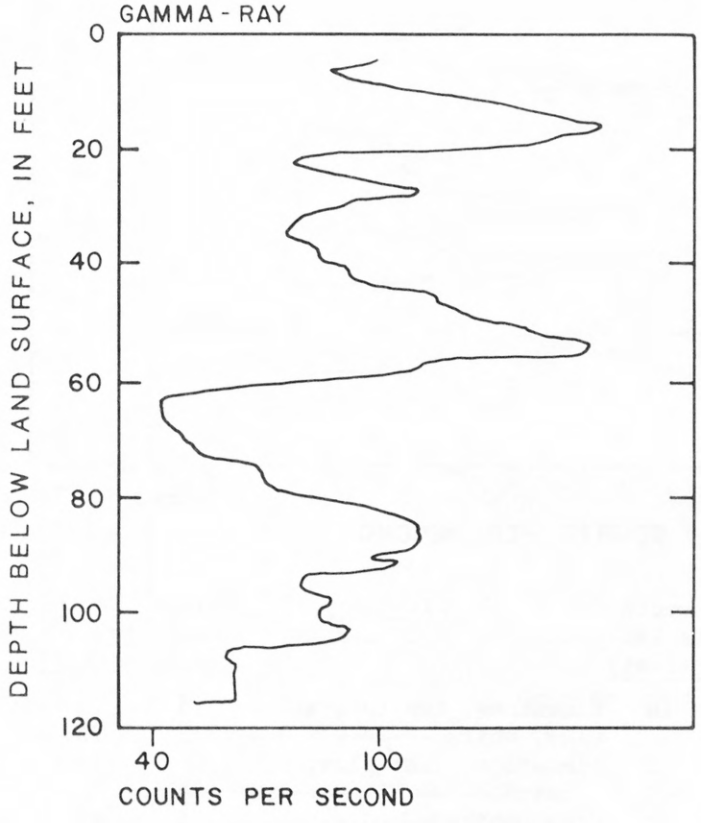
Lithology	Thickness (feet)	Depth to base (feet)
Sand, yellow, (fill)	12	12
Sand, yellow; some clay, (fill)	10	22
Sand, gray, clayey; wood, (fill)	10	32
Sand, brown to gray (fill)	11	43
Clay, gray; limestone, tan, broken	9	52
Clay, gray, yellow streaks; limestone, tan, broken	10	62
Clay, gray; limestone, tan, broken	7	69
Limestone, tan, clayey	3	72
Clay, gray; limestone, tan, broken	14	86
Limestone, brown	4	90
Cavity	2	92

Figure 15.--Lithologic and gamma-ray logs for test hole USSAC-15 at the USS Agri-Chemicals plant (casing depth 82 feet).



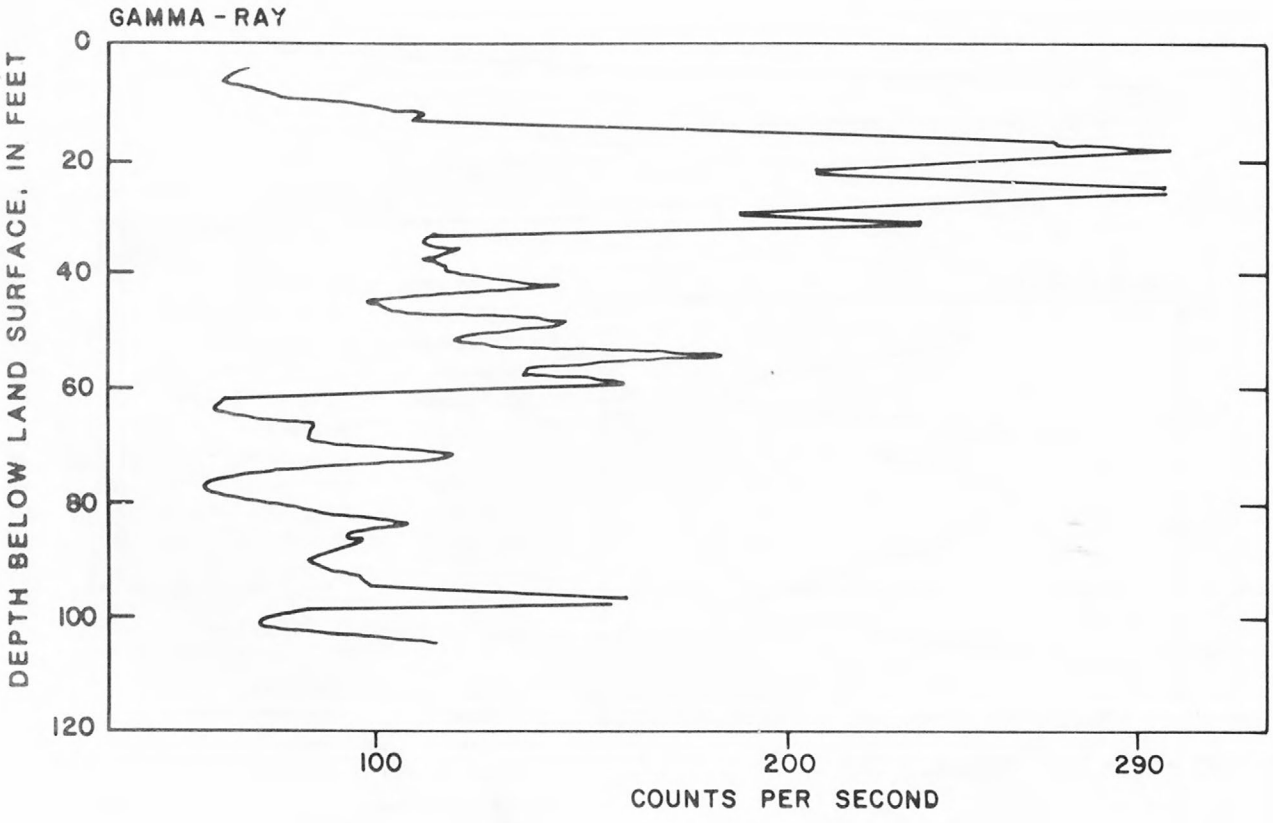
Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown, (fill)	12	12
Clay, yellow, (fill)	6	18
Organic substance, (fill)	4	22
Clay, yellow to gray	12	34
Clay, yellow, tan; limestone broken	8	42
Limestone, tan; clay, light-tan	10	52
Limestone, tan	10	62
Clay, white to gray; limestone, gray to brown	22	84
Limestone, tan; clay, white	11	95
Clay, white	3	98
Limestone, dark-brown; clay, green	5	103

Figure 16.--Lithologic and gamma-ray logs for test hole USSAC-20 at the USS Agri-Chemicals plant (casing depth 84 feet).



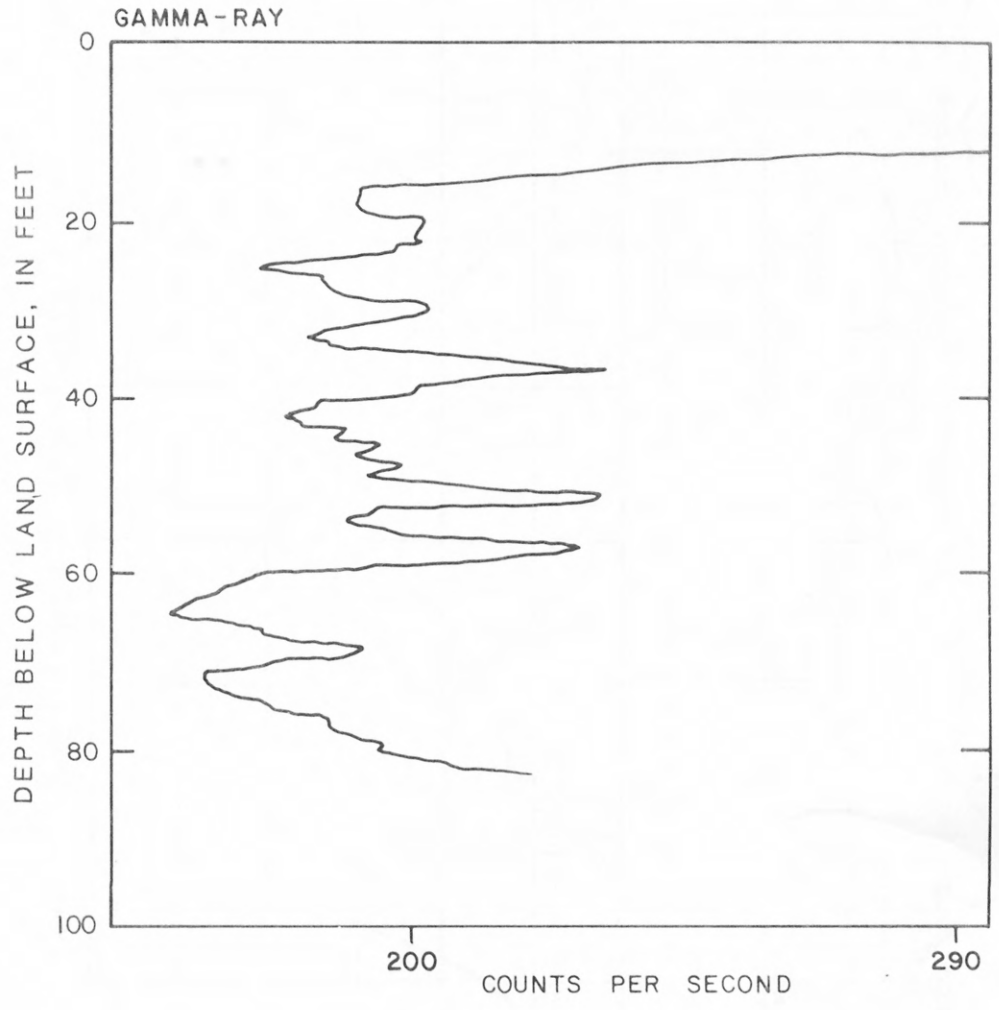
Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown; some sandy clay	7	7
Sand, brown	6	13
Phosphate matrix	3	16
Clay, green to gray	6	22
Clay, gray; limestone, gray, broken	10	32
Clay, gray	8	40
Limestone, gray to tan	2	42
Clay, gray (very sticky)	10	52
Clay, gray; limestone, broken	5	57
Limestone, tan; clay, tan to light-gray	5	62
Clay, gray; limestone, broken	5	67
Limestone, gray	5	72
Limestone, gray to tan	10	82
Limestone, gray	1	83
Clay, gray; limestone, broken, gray	2	85
Clay, gray	5	90
Limestone, tan to gray (hard)	5	95
Limestone, brown (hard)	10	105
Limestone, dark-brown, hard, some soft streaks	10	115
Limestone, dark-brown	1	116
Cavity (lost circulation)		116

Figure 17.--Lithologic and gamma-ray logs for test hole USSAC-24 at the USS Agri-Chemicals plant (casing depth 80 feet).



Lithology	Thickness (feet)	Depth to base (feet)	Lithology	Thickness (feet)	Depth to base (feet)
Sand, white	10	10	Limestone, tan to gray	5	70
Sand, white; hard pan, dark-brown	2	12	Clay, white	2	72
Sand, dark-brown	10	22	Limestone, tan; clay, white	4	76
Sand, brown	10	32	Clay, white	5	81
Phosphate matrix; sand, brown; gravel; clay	8	40	Limestone, tan	2	83
Clay, gray	2	42	Clay, gray; limestone, broken	2	85
Limestone, tan	5	47	Clay, gray	4	89
Clay, gray to white; limestone, tan, broken	5	52	Limestone, dark-gray	2	91
Clay, gray; limestone, tan	5	57	Clay, green	3	94
Limestone, tan	5	62	Limestone, brown, hard	8	102
Limestone, tan; clay, white	3	65	Cavity (lost circulation)	3	105

Figure 18.--Lithologic and gamma-ray logs for test hole USSAC-36 at the USS Agri-Chemicals plant (casing depth 78 feet).



Lithology	Thickness (feet)	Depth to base (feet)
Sand, dark-brown	7	7
Clay, gray, sandy	5	12
Clay, light-gray (very sticky)	5	17
Clay, light-green (very dry) sticky)	10	27
Limestone, tan	3	30
Limestone, hard, (lost circulation)	16	46
Clay, (lost circulation)	2	48
Clay; limestone, broken	4	52
Limestone, brown	21	73
Clay, dark-gray	2	75
Clay, gray; limestone, broken, (lost circulation)	7	82

Figure 19.--Lithologic and gamma-ray logs for test hole USSAC-41 at the USS Agri-Chemicals plant (casing depth 49 feet).

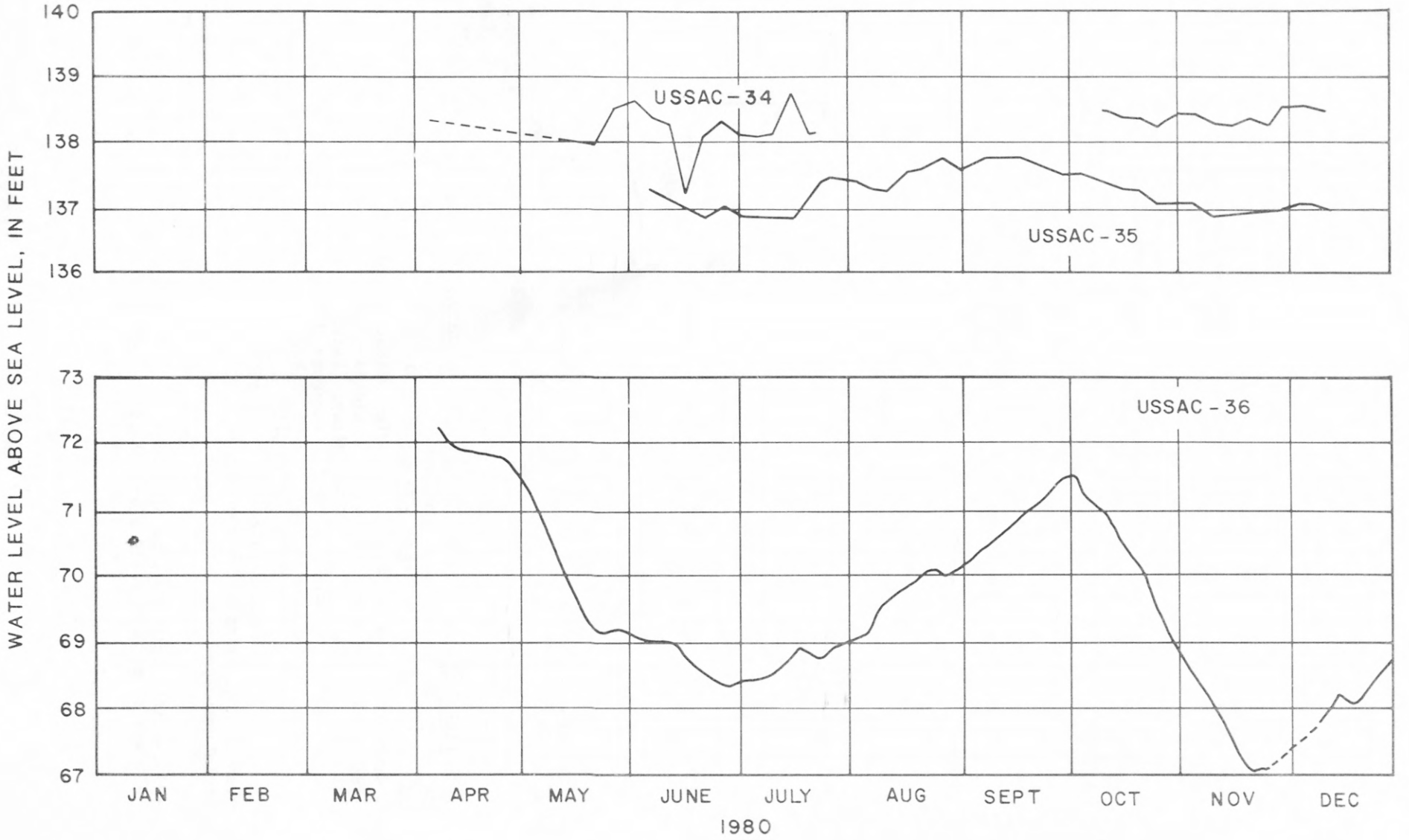


Figure 20.--Hydrographs of water levels in test holes USSAC-34, (1S), USSAC-35 (1M), and USSAC-36 (1D) at the USS Agri-Chemicals plant.

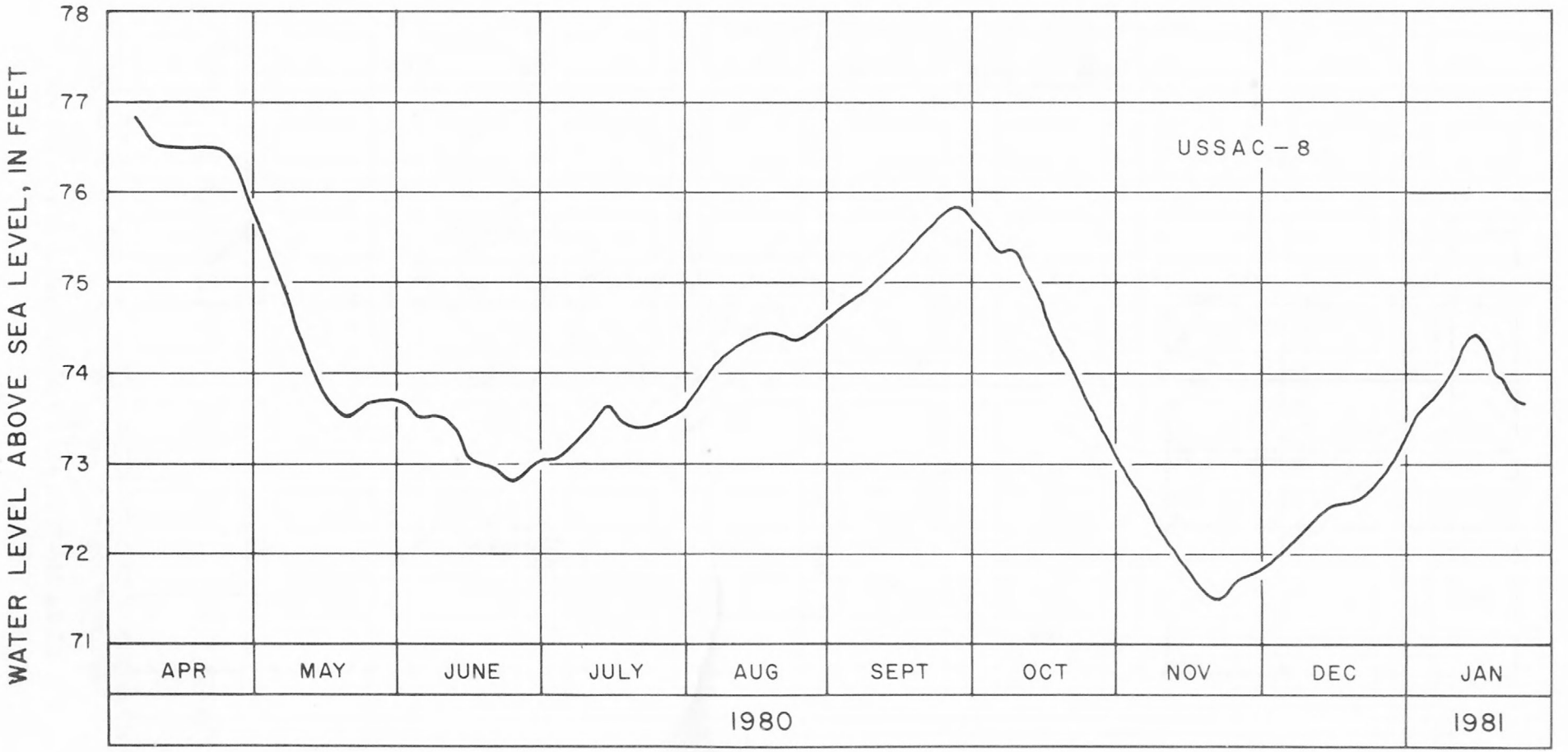


Figure 21.--Hydrograph of water levels in test hole USSAC-8 (6D) at the USS Agri-Chemicals plant.

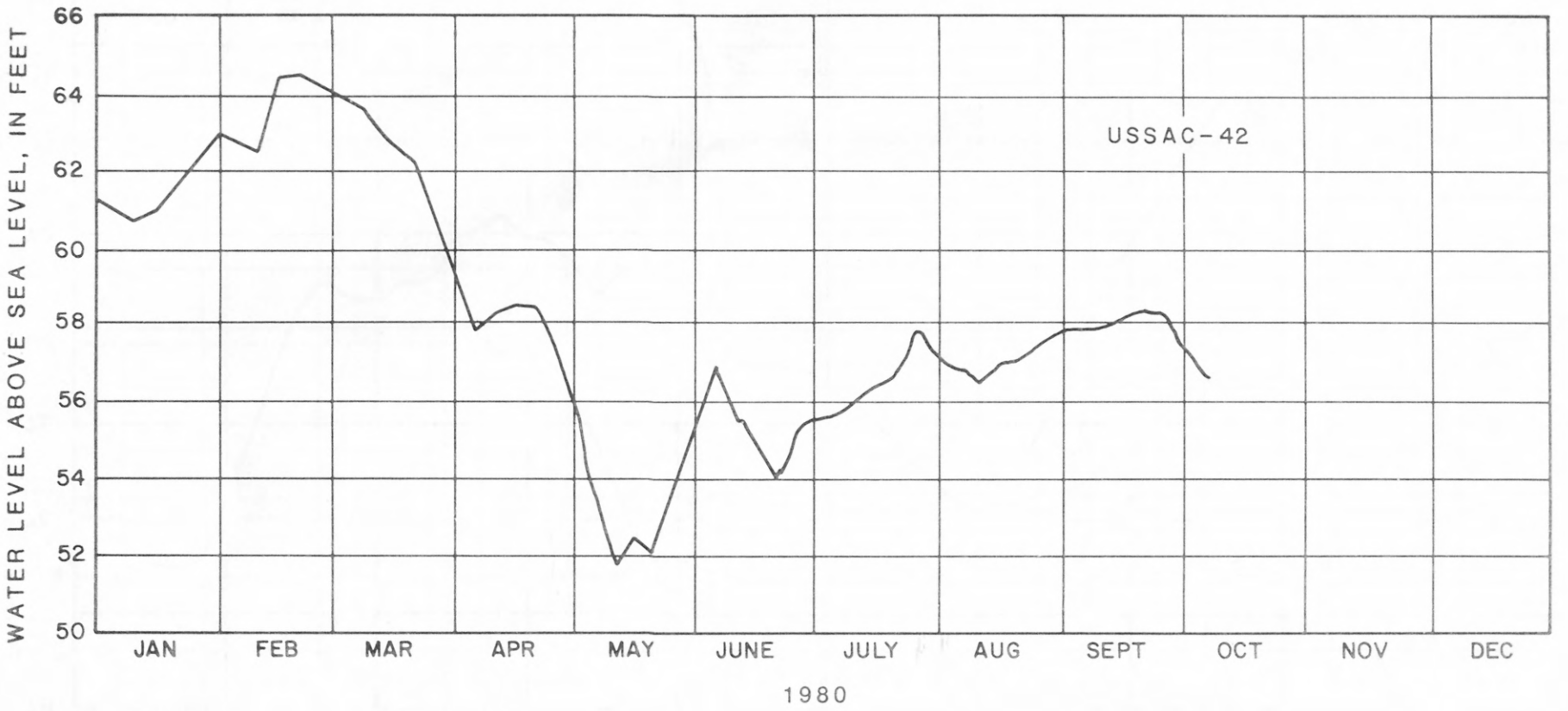


Figure 22.--Hydrograph of water levels in test hole USSAC-42 (ROMP) near the USS Agri-Chemicals plant.

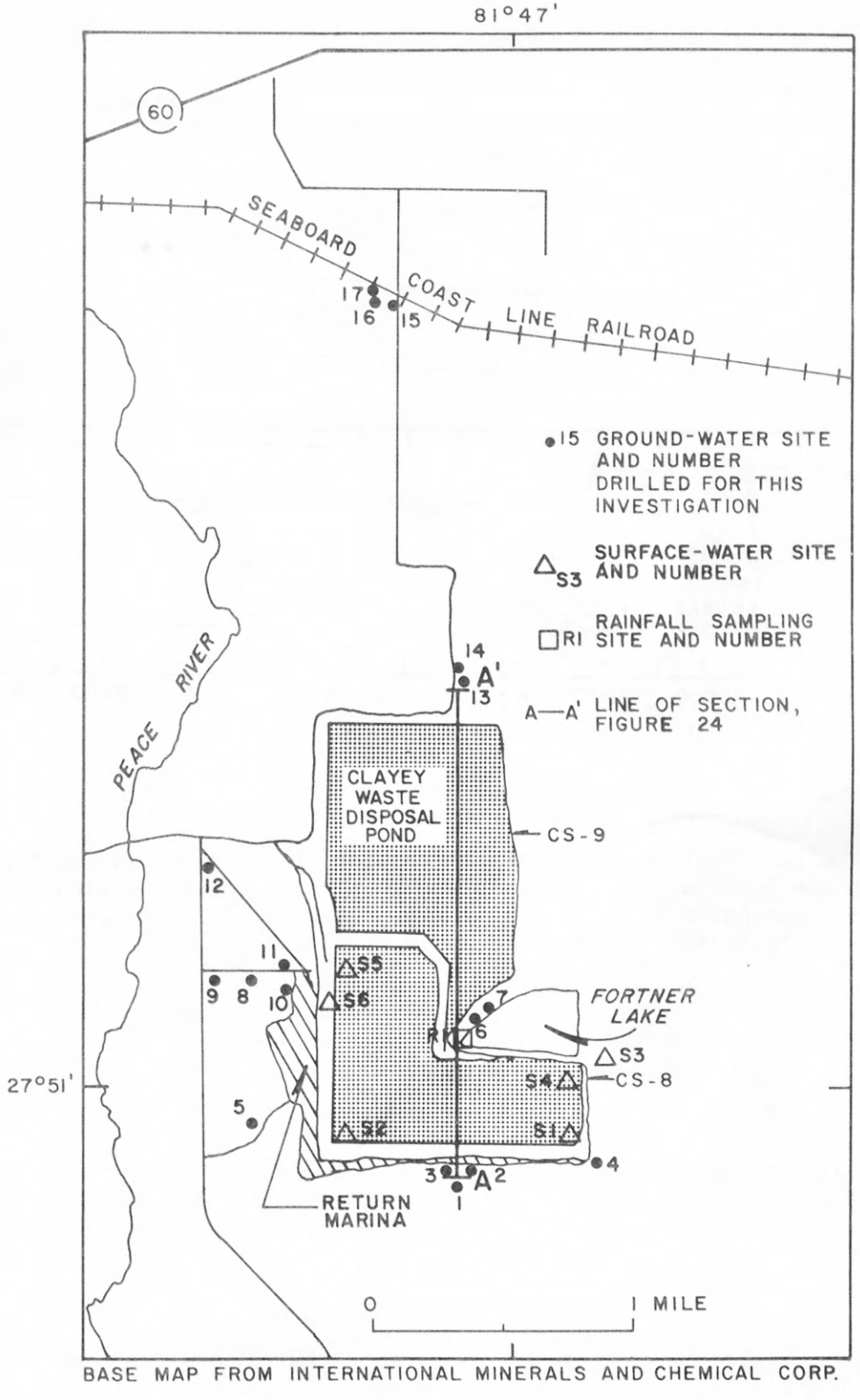


Figure 23.--Locations of test holes and data-collection sites at the International Minerals and Chemical Corporation Clear Springs mine.

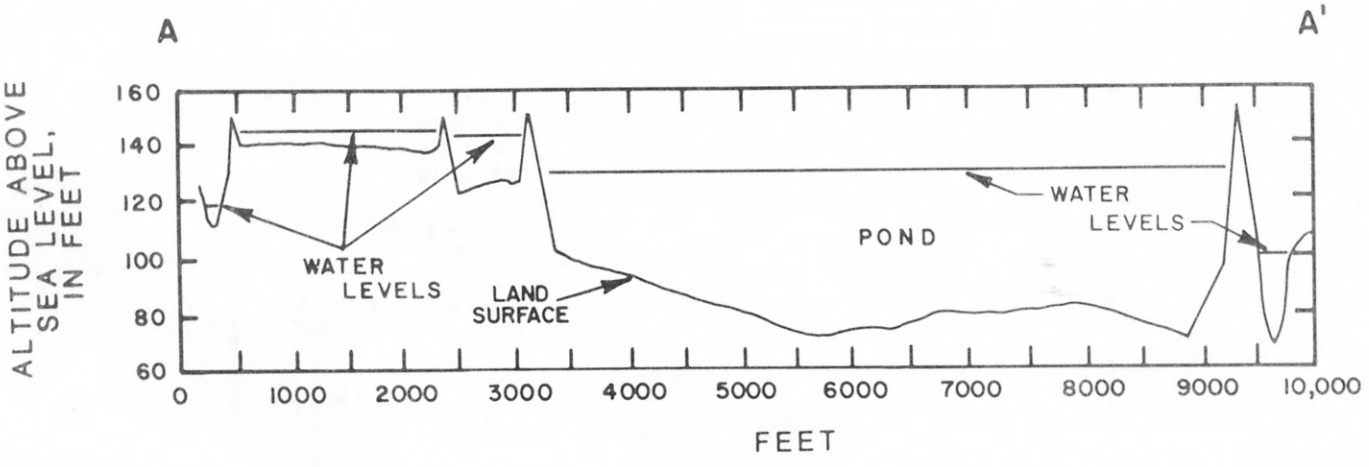
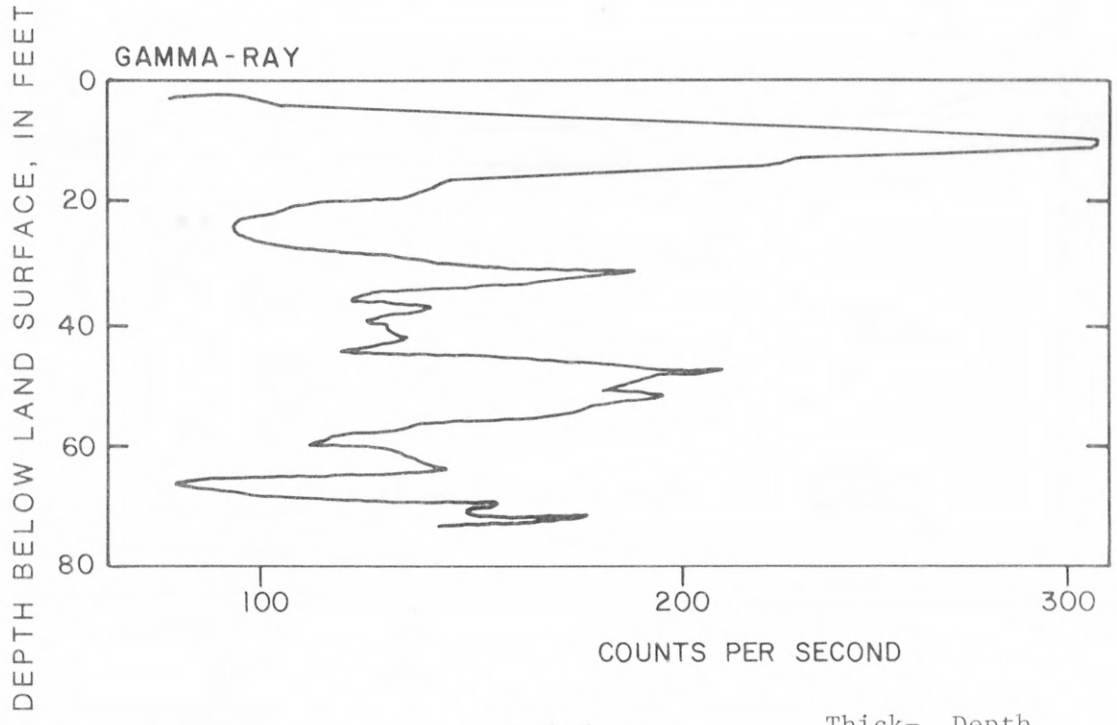
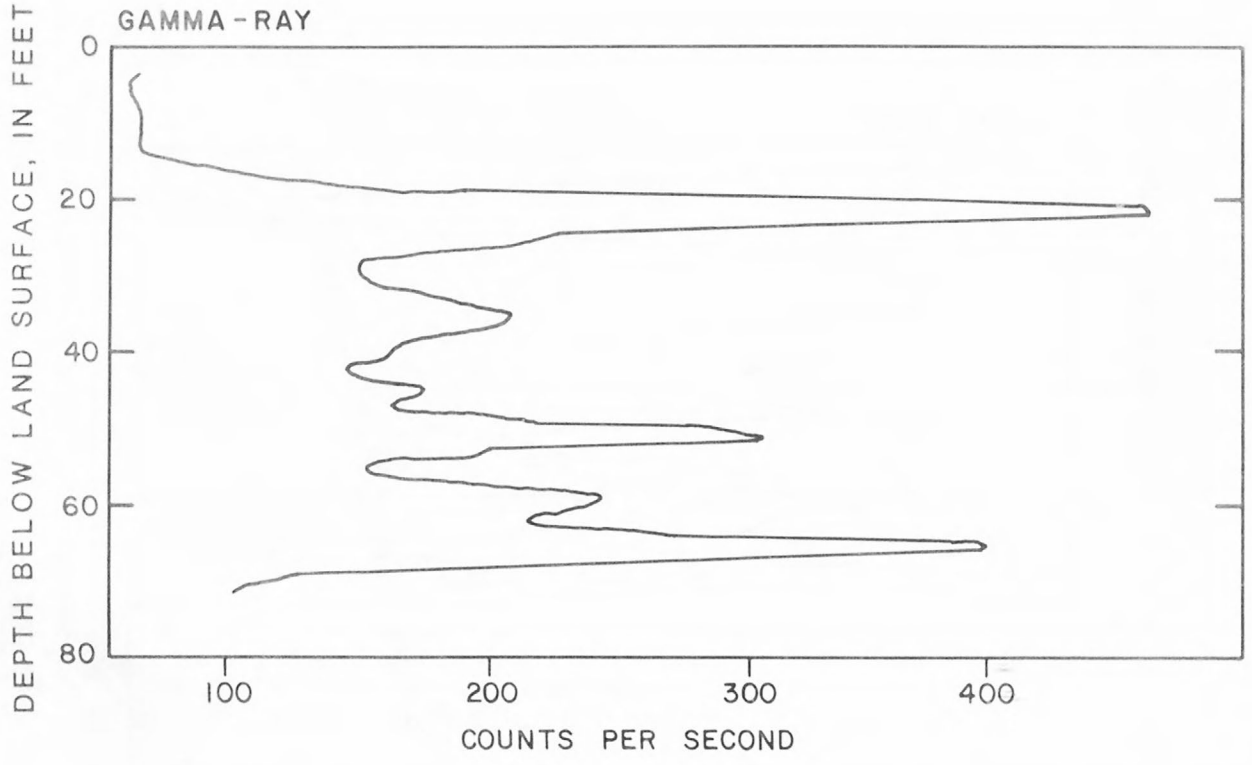


Figure 24.--Section across the phosphatic clayey waste-disposal ponds at the International Minerals and Chemical Corporation Clear Springs mine (location of section is shown in figure 23, horizontal distance is approximately 2 times the scale of figure 23).



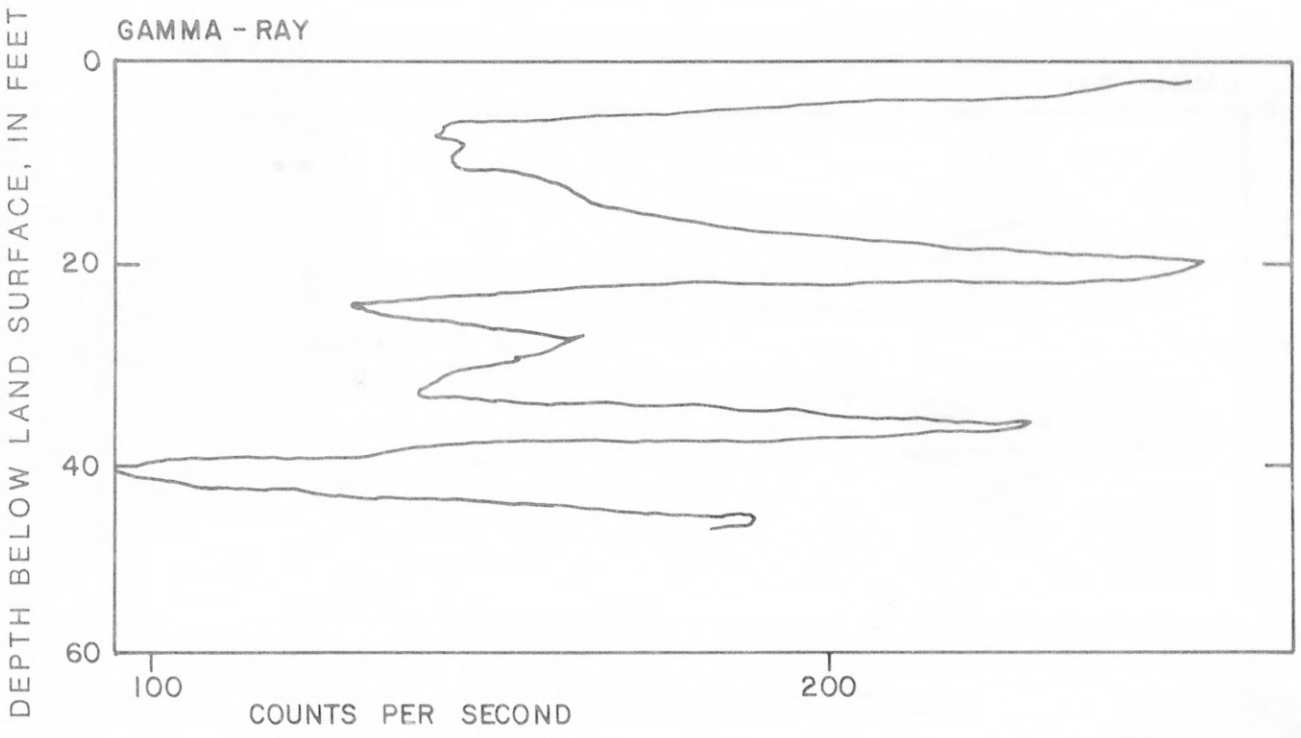
Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown	12	12
Sand, brown; clay, white	10	22
Clay, white	10	32
Clay, yellow to white; limestone, broken	8	40
Clay, yellow to gray	5	45
Clay, gray; phosphate	5	50
Limestone, gray, phosphatic	5	55
Limestone, gray, phosphatic; clay, gray	10	65
Limestone, brown	10	75

Figure 25.--Lithologic and gamma-ray logs for test hole IMC-3 at the International Minerals and Chemical Corporation Clear Springs mine (casing depth 38 feet).



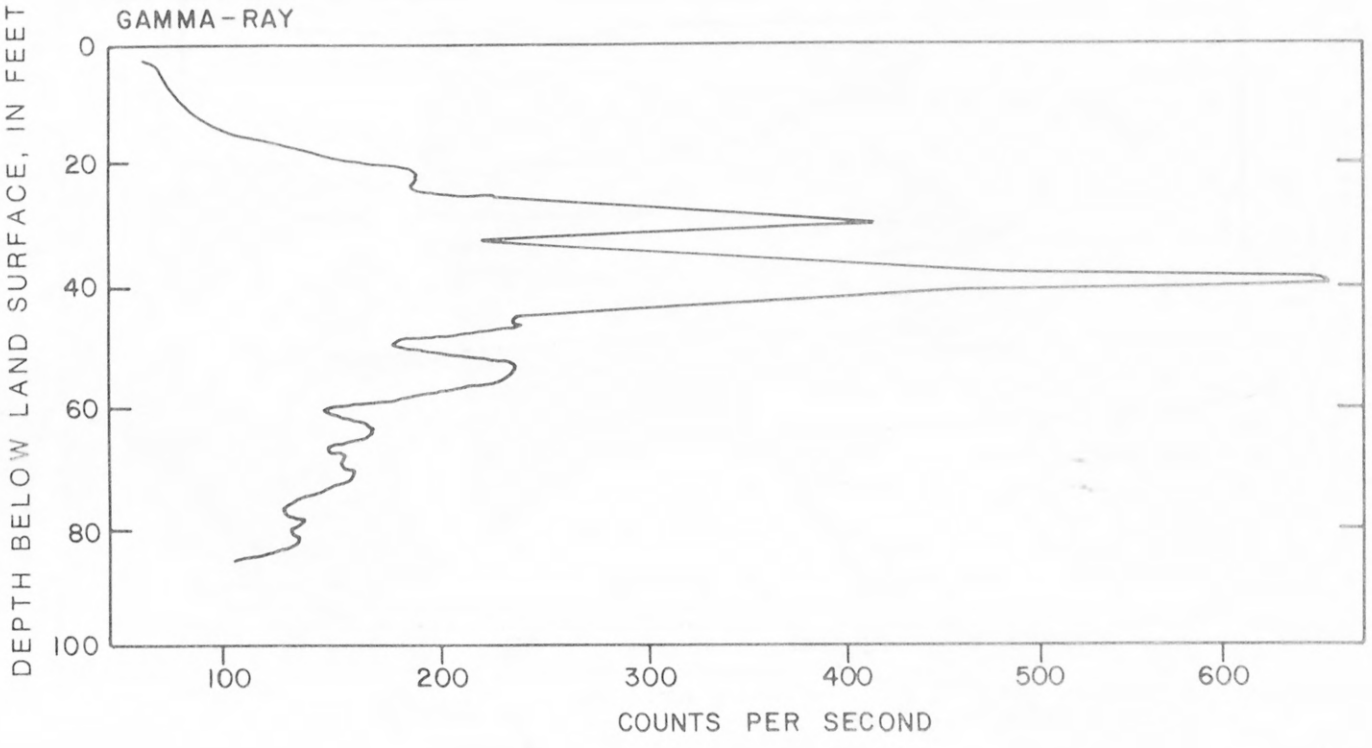
Lithology	Thickness (feet)	Depth to base (feet)
Sand, black	10	10
Clay, white, sandy; phosphate	2	12
Sand, black, fine; clay, white	10	22
Sand, clayey	5	27
Limestone, white, clayey	5	32
Clay, white; limestone, broken	5	37
Clay, yellow	5	42
Limestone, tan, light; clay white	3	45
Clay, yellow	9	54
Clay, dark-gray, phosphatic	1	55
Clay, white with gray streaks	8	63
Limestone, light-tan, soft, clayey	2	65
Limestone, tan, soft, clayey	6	71
Cavity (lost circulation)		71

Figure 26.--Lithologic and gamma-ray logs for test hole IMC-7 at the International Minerals and Chemical Corporation Clear Springs mine (casing depth 45 feet).



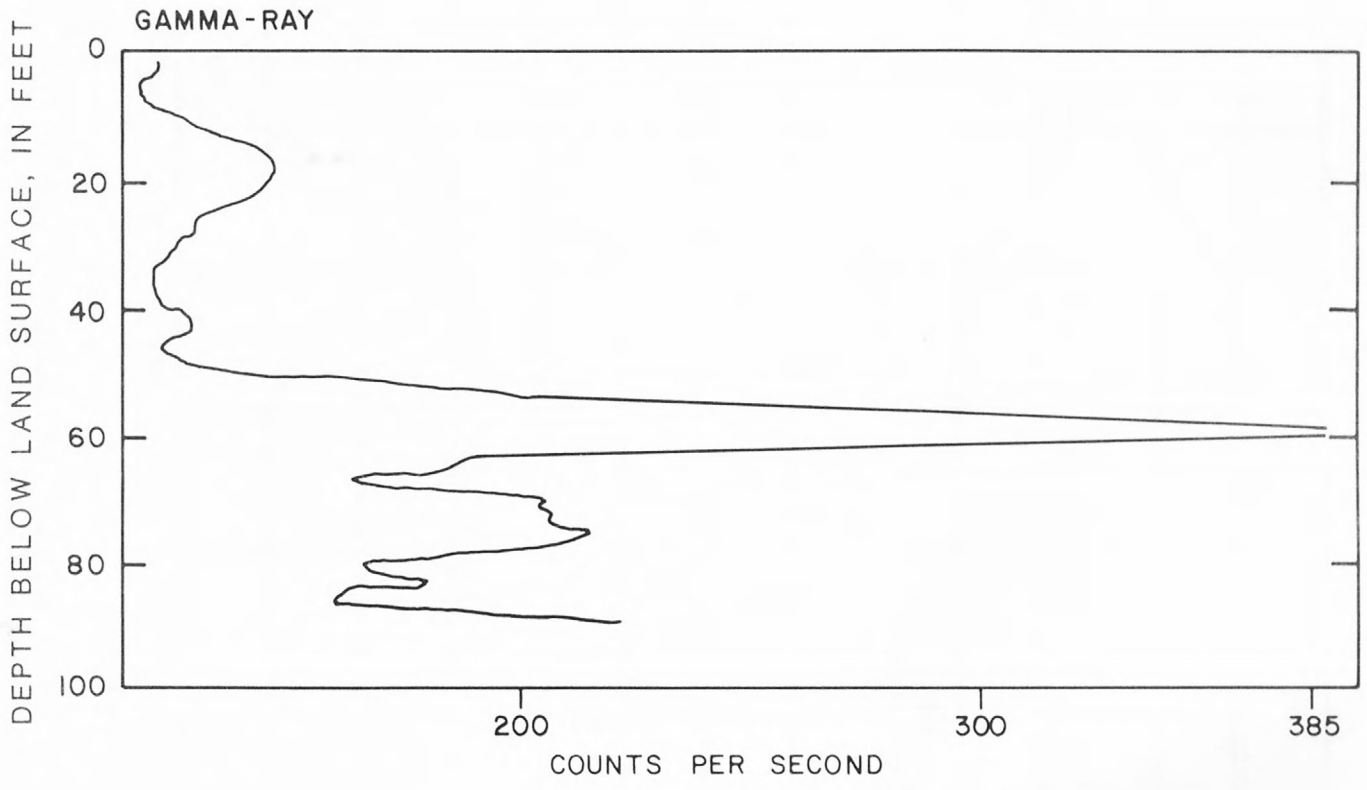
Lithology	Thickness (feet)	Depth to base (feet)
Clay, white, very sandy (fill)	12	12
Sand, brown; clay, white (fill)	13	25
Matrix	2	27
Clay, yellow	8	35
Limestone, light-tan, clayey	5	40
Limestone, tan; clay, dark-gray	2	42
Limestone, tan to gray, broken; clay, gray	6	48
Limestone (lost circulation)	14	62

Figure 27.--Lithologic and gamma-ray logs for test hole IMC-11 at the International Minerals and Chemical Corporation Clear Springs mine (casing depth 42 feet).



Lithology	Thickness (feet)	Depth to base (feet)
Sand, brown	16	16
Clay, white, sandy; matrix	24	40
Clay, white, sandy	2	42
Clay, white, sandy; limestone, tan, broken	10	52
Clay, white; limestone, tan	10	62
Limestone, tan	10	72
Clay, gray	3	75
Limestone, tan, soft	10	85
Clay, white; limestone, tan, soft	4	89

Figure 28.--Lithologic and gamma-ray logs for test hole IMC-14 at the International Minerals and Chemical Corporation Clear Springs mine (casing depth 60 feet).



Lithology	Thickness (feet)	Depth to base (feet)
Sand	5	5
Sand, yellow; gravel	2	7
Sand, light-brown	5	12
Sand, yellow, clayey (matrix)	10	22
Matrix	10	32
Matrix; phosphate pebbles, brown	10	42
Matrix; sandstone streaks	5	47
Clay, white	13	60
Lost circulation	2	62
Clay	15	77
Limestone, hard, (no circulation)	5	82
Limestone, brown (losing water)	8	90
Lost circulation	2	92

Figure 29.--Lithologic and gamma-ray logs for test hole IMC-17 at the International Minerals and Chemical Corporation Clear Springs mine (casing depth 76 feet).

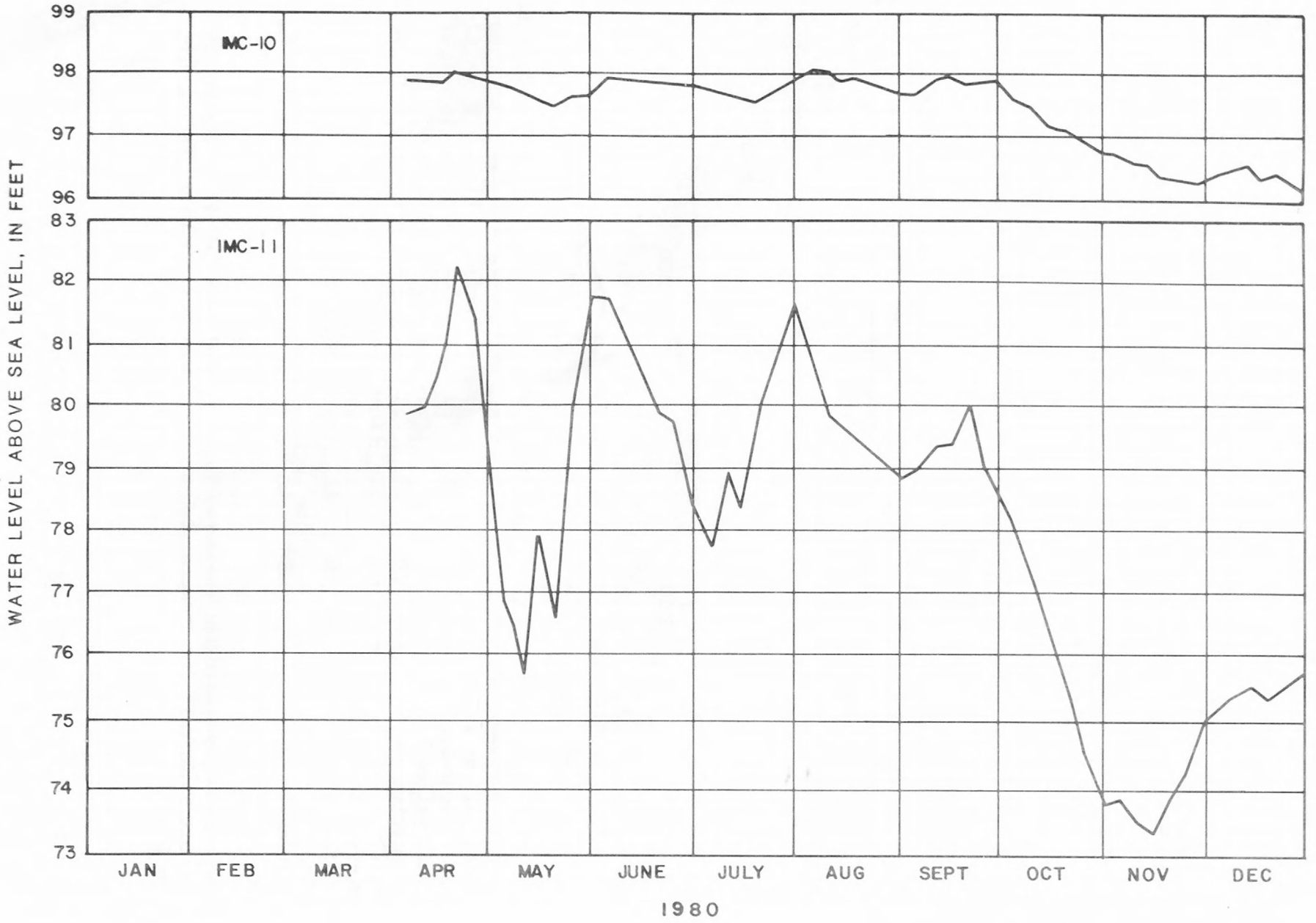


Figure 30.--Hydrographs of water levels in test holes IMC-10 (4S) and IMC-11 (4D) at the International Minerals and Chemical Corporation Clear Springs mine.

TABLES

Table 1.--Records of data-collection sites at the AMAX Phosphate, Inc., plant

Site map number: Number assigned for purposes of this report and used for reference in text or on an illustration (fig. 2). AMAX is prefix to all site map numbers in tables 1-9.
Local site identifier: Identifiers assigned during the field investigation. List of local identifiers (prefixes) given on page 5.
Site identification number: A 15-digit U.S. Geological Survey identifier for computer storage and retrieval.
Total depth: Depth of the finished well or total depth to which the hole was drilled in feet below land surface.
Casing: Depth of bottom of casing in feet below land surface. Type: P, polyvinyl chloride (PVC); G, galvanized steel.
Use of site: T, hole cased temporarily that was drilled for water or for geologic or hydrogeologic testing; all are owned privately by AMAX Phosphate, Inc., except FPL and REEDER wells. O, a cased test hole drilled for water-level and water-quality observations by U.S. Geological Survey for this investigation. C, continuous water-level recorder installed for this investigation. W, a site used for water supply. U, a site that is an abandoned water-supply site or for which no use is contemplated.
Finish: S, screens installed are 5 feet in length of PVC type with 0.010 inch slots. O, open hole below bottom of casing.
Measuring point: SL, altitude of measuring point in feet above sea level. LSD, altitude of measuring point in feet above land-surface datum.
Water level: Depth in feet below land surface datum or above sea level. +, if water level is above land-surface datum. All water levels measured July 18, 1980.

Site map number (fig. 2)	Local site identifier	Site identification number	Total depth (ft)	Casing Depth (ft)	Casing Type	Diameter (in)	Use of site	Finish	Measuring point (ft) Above SL	Measuring point (ft) Above LSD	Water level (7-18-80) (ft) Below LSD	Water level (7-18-80) (ft) Above SL
1	WT11	273711082320801	22	17	P	2	O	S	11.59	2.35	2.42	6.82
2	FPL	273718082315501	950	104	G	12	W	O	21.15	9.2	+3.06	15.01
3	WT12	273721082314401	22	17	P	2	O	S	18.77	2.78	.14	15.85
4	5S	273723082305701	20	15	P	2	O	S	31.66	3.63	1.41	26.62
5	5M	273724082305601	90	75	P	4	O	O	29.94	2.13	14.11	13.70
6	5D	273724082305602	135	106	P	4	O	O	30.09	2.32	15.10	12.67
7	P14	273724082310801	15	10	P	1 1/4	T	--	30.97	4.0	.47	26.50
8	P20	273724082312601	15	10	P	1 1/4	T	--	30.60	4.4	1.70	29.50
9	3S	273724082314101	21	16	P	4	O,C	S	21.14	1.9	5.12	14.12
10	3M	273724082314102	90	32	P	4	O,C	O	21.13	2.0	4.93	14.20
11	3D	273724082314103	155	121	P	4	O,C	O	21.16	2.1	7.02	12.04
12	P,SW	273736082314901	4	4	G	4	T	O	30.49	2.2	Dry	---
13	4S	273736082315201	25	20	P	4	O	S	19.06	2.8	1.63	14.63
14	4M	273736082315202	65	40	P	4	O	O	19.05	3.0	6.07	9.98
15	4D	273736082315203	155	128	P	4	O	O	19.11	2.8	+4.10	12.21
16	P,E2	273738082312401	7.5	7.5	G	2	T	O	30.60	1.1	6.02	23.48
17	2S	273738082312601	30	25	P	4	O	S	40.11	2.9	--	--
18	2M	273738082312602	95	44	P	4	O	O	39.97	2.6	--	--
19	2D	273738082312603	155	127	P	4	O	O	39.92	2.8	--	--
20	P23	273738082312701	10	10	G	2	T	O	41.03	3.0	6.73	31.30

Table 1.--Records of data-collection sites at the AMAX Phosphate, Inc., plant--Continued

Site map number (fig. 2)	Local site identifier	Site identification number	Total depth (ft)	Casing			Use of site	Finish	Measuring point (ft)		Water level (7-18-80) (ft)	
				Depth (ft)	Type	Diameter (in)			Above SL	Above LSD	Below LSD	Above SL
21	P22	273738082312801	8	8	G	2	T	O	48.68	4.5	Dry	---
22	P,NW	273738082314901	2.5	2.5	G	4	T	O	30.45	2.3	Dry	---
23	P19	273739082310901	14.5	10	P	1 1/4	T	--	30.72	5.0	1.08	24.64
24	ART6	273743082322301	559	83	G	8	T	O	10.30	1.0	4.10	14.40
25	WT8	273744082321301	20	15	P	2	O	S	12.09	2.71	.44	8.94
26	--	273745082321301	300	43	G	3	U	O	11.90	-2.0	1.00	8.90
27	--	273745082322201	150	39	G	3	U	O	9.42	0	0	9.42
28	PROD	273747082315201	270	188	P	4	O	O	15.61	.3	.75	14.56
29	WT9	273747082321601	20	15	P	2	O	S	9.21	1.83	.86	6.52
30	1S	273749082314001	25	20	P	4	O	S	27.40	3.8	4.19	19.41
31	1M	273749082314002	65	40	P	4	O	O	26.64	3.1	7.22	16.32
32	1D	273749082314003	160	128	P	4	O	O	26.68	3.3	11.68	11.70
33	WT7	273749082320801	20	15	P	2	O	S	13.68	2.0	1.89	9.79
34	P18	273752082310901	14.5	10	P	1 1/4	T	--	28.12	5.0	.20	22.92
35	WT6	273752082320201	20	15	P	2	O	S	--	--	--	--
36	P17	273802082311101	15	10	P	2	T	--	26.21	3.8	.96	21.45
37	P16	273802082312301	12.5	10	P	1 1/4	T	--	25.93	2.5	4.04	19.39
38	P21	273802082314101	19	10	P	1 1/4	T	--	24.02	2.8	7.06	14.16
39	WT10	273816082320501	19	14	P	2	O	S	12.86	2.5	.74	9.62
40	REEDER	273837082313501	63	34	G	2	W	O	11.53	0	.56	10.97
				Surface-water sites								
S1	DITCH	273723082321801										
S2	COOL	273729082321801										
S3	OUT	273736082314101										
S4	IN	273745082315101										
S5	SEEP	273749082313201										
S6	DAP	273749082315001										
				Rainfall sites								
R1	USGS	273802082321201										
R2	AMAX	273813082315801										

Table 2.--Lithologic log of test hole AMAX-2 at the AMAX Phosphate, Inc., plant

(Altitude of land surface is 11.95 feet)

Lithology	Thickness (ft)	Depth to base (ft)
No samples	110	110
Clay, marly, sandy, gray-buff, phosphate	20	130
Marl, chalky, slightly sandy, cream white, phosphate	30	160
Marl, marly clay	10	170
Clay, compact, pale-green	50	220
Limestone, chalky, sandy, pebbly, cream	10	230
Limestone, slightly nodular, very fossiliferous, pebbular, porous, cream	20	250
Limestone, trace of chert, some coarsely crystalline limestone, fossiliferous	10	260
Limestone, very fossiliferous, coarse, nodular, large fossils	20	280
Limestone, very cherty, hard, pebbly, porous	10	290
Limestone, chalky, cherty, sandy, granular	10	300
Limestone, phosphate specks	20	320
Limestone, chalky, granular, sandy, pebbly	10	330
Limestone, chalky, granular, sandy, pebbly, trace of phosphate	50	380
Limestone, very sandy, more phosphate	10	390
Limestone, sandy, pebbly	10	400
Limestone, fine-grained, sandy	20	420
Limestone, nodular, granular, slightly oolitic, fossiliferous, fossil Dictyconus first appears	10	430
No samples	10	440
Limestone, chalky, granular, slightly sandy	10	450
Limestone, slightly oolitic, fossiliferous	40	490
Limestone, chalky, granular, nodular, oolitic, porous	20	510
Limestone, chalky, granular, sandy	10	520
Limestone, granular, oolitic, fossiliferous, slightly sandy, some porous	20	540
No samples	50	590

Table 2.--Lithologic log of test hole AMAX-2 at the AMAX Phosphate, Inc., plant--Continued

(Altitude of land surface is 11.95 feet)

Lithology	Thickness (ft)	Depth to base (ft)
Limestone, with chert and calcite fragments	10	600
Limestone, very fossiliferous, porous, green-buff	10	610
No samples	30	640
Dolomite, hard, tight, gritty, brown	10	650
Limestone, chalky, dolomitic or marly, cream	20	670
Dolomite, hard, tight, quartzitic, gritty, brown	20	690
Limestone, dolomitic, chalky, brown streaks, cream	10	700
Limestone, chalky	10	710
Dolomite, hard, tight, cherty, medium-to dark-brown	10	720
No samples	10	730
Limestone, very fossiliferous, hard, nodular, cream-white	10	740
Limestone, soft, chalky, fossiliferous, fossil Camerina appeared at 740, fossil Lepodocyclina appeared at 750	20	760
Limestone, hard, cherty, fossiliferous, nodular, brown	10	770
Limestone, very fossiliferous, granular, nodular, cream-white	10	780
Limestone, slightly chalky	10	790
Limestone, dense, cherty, nodular, fossiliferous	10	800
Limestone, chalky, granular, cream-buff	30	830
No samples	10	840
Limestone, very fossiliferous, coquinoid, oolitic, nodular, cream	10	850
Limestone, soft, chalky, granular	10	860
Dolomite, hard, cherty, brown, some gray mottled	10	870
Limestone, granular, very fossiliferous, nodular, hard, slightly fragmented	20	890
Dolomite, hard, crystalline, cherty, some brown	10	900
Gravel(?), limestone, quartz, fossil fragments, some dolomite	40	940
Limestone, very fossiliferous calcite fragments	10	950

Total depth of the well is 950 feet

TABLE 3.--CONCENTRATIONS OF MAJOR CONSTITUENTS IN WATER FROM THE AMAX PHOSPHATE, INC., PLANT

[AMAX IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 2)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	ACIDITY (MG/L AS CACO3) (00435)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)
1	WT11	80-06-03	11	160	30	30	2.7	230	210	66	.6	530	300	25	11	.6
3	WT12	80-06-03	16	54	18	35	.8	3	160	85	1.0	210	210	60	27	1.1
4	5S	80-06-02	26	76	38	20	.9	250	58	44	.4	350	97	20	11	.5
5	5M	80-06-02	59	91	44	74	8.7	290	180	64	.8	410	120	--	28	1.6
6	5D	80-06-02	59	71	33	70	14	290	23	110	1.0	320	26	--	32	1.7
7	P14	80-05-07	8.7	140	26	35	2.4	15	470	17	1.0	460	440	40	14	.7
8	P20	80-05-07	18	55	21	19	16	2	226	30	.9	220	220	25	14	.6
9	3S	79-11-08	74	220	160	720	17	510	2200	44	1.2	1200	700	--	56	9.0
10	3M	79-11-14	37	63	35	68	12	290	24	120	.9	300	14	--	32	1.7
11	3D	79-11-15	46	44	26	63	29	200	29	107	1.1	220	23	--	35	1.9
		80-06-03	59	52	29	60	16	220	26	100	1.0	260	36	--	33	1.7
13	4S	79-11-07	150	14	170	2400	240	2910	2600	79	2.2	740	0	--	83	39
14	4M	79-11-07	28	69	26	32	8.0	180	67	74	.8	280	100	--	19	.8
15	4D	79-11-15	45	45	21	32	12	160	26	74	1.6	200	44	--	25	1.0
17	2S	79-11-21	54	270	34	180	6.5	160	1000	24	3.2	820	660	--	32	2.7
18	2M	79-11-21	31	120	39	87	12	330	240	91	.5	460	130	--	28	1.8
19	2D	79-11-21	43	53	27	74	24	219	41	114	1.0	250	31	--	37	2.1
23	P19	80-05-08	9.2	41	7.7	28	.3	70	65	38	.8	130	64	5.0	31	1.1
24	ART6	80-07-23	30	110	47	25	3.5	150	290	35	1.1	480	330	15	10	.5
25	WT8	80-06-03	21	190	18	40	1.8	430	74	65	.7	550	120	50	14	.7
26	--	80-06-04	31	100	46	24	3.6	150	280	32	1.2	450	300	--	11	.5
27	--	80-05-09	49	79	37	51	10	300	20	100	.9	350	54	--	23	1.2
28	PROD	80-03-05	32	91	41	25	3.9	160	240	30	1.1	410	250	--	12	.5
29	WT9	80-06-03	12	180	9.0	40	.8	320	140	67	.7	490	170	45	15	.8
30	1S	79-11-06	15	110	2.9	17	1.9	180	72	20	.3	290	110	--	11	.4
		80-05-08	14	99	2.6	15	1.2	180	72	21	.3	260	78	--	11	.4
31	1M	79-11-05	27	130	32	70	6.0	300	130	110	.7	460	160	--	25	1.4
32	1D	79-11-20	52	52	29	58	14	230	25	100	.9	250	24	--	32	1.6
33	WT7	80-06-04	300	190	160	610	84	632	1900	42	3.7	1100	468	1090	52	7.9
34	P18	80-05-08	8.6	27	13	20	.4	--	130	43	.8	120	120	--	26	.8
35	WT6	80-06-04	24	280	24	75	.9	250	580	54	1.3	800	550	84	17	1.2
36	P17	80-05-08	11	190	16	39	1.0	150	340	50	.5	540	390	20	14	.7
37	P16	80-03-05	6.5	15	11	10	5.0	0	82	24	.1	83	83	.9	20	.5
39	WT10	80-06-04	17	94	13	32	1.2	240	47	47	.3	290	49	35	19	.8
40	REEDER	80-03-05	27	100	18	20	1.9	290	30	30	.6	320	30	--	12	.5
S1	DITCH	80-06-04	21	110	50	190	23	270	530	89	2.6	490	220	--	45	3.8
S2	COOL	79-10-31	2800	30	120	2200	220	0	4700	15	4300	570	570	22800	85	40
S3	OUT	79-11-27	3050	21	200	2200	240	0	5000	11	5400	880	880	24300	80	32
		80-03-05	--	21	200	2200	240	--	--	--	--	880	880	--	80	32
S4	IN	79-11-27	4850	29	67	2000	260	0	4900	--	7610	350	340	23800	86	47
S5	SEEP	80-02-13	2850	24	85	2100	270	0	5200	12	4500	440	440	23300	86	45
S6	DAP	79-11-01	2700	60	80	2200	230	0	5200	14	4800	480	480	22800	86	44
R1	USGS	80-07-16	.0	1.6	.3	.9	.2	1	3.7	1.4	.3	5	4	10	26	.2
R2	AMAX	80-04-07	--	--	--	--	--	--	7.0	--	.8	--	--	--	--	--

TABLE 4.--CHEMICAL AND PHYSICAL PROPERTIES OF WATER FROM THE AMAX PHOSPHATE, INC., PLANT

[AMAX IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 2)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L) (70299)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	TURBIDITY (NTU) (00076)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)
1	WT11	80-06-03	695	652	14	1010	6.9	25.0	40	27	40
3	WT12	80-06-03	408	373	29	698	5.8	24.5	40	40	75
4	5S	80-06-02	423	415	15	685	6.3	24.5	0	8.0	25
5	5M	80-06-02	673	698	10	1020	7.2	24.0	5	2.0	45
6	5D	80-06-02	558	558	18	930	7.6	25.0	5	5.0	40
7	P14	80-05-07	794	711	--	1010	5.9	23.0	280	5.0	74
8	P20	80-05-07	453	414	--	660	5.0	22.5	5	16	40
9	3S	79-11-08	4360	3750	139	4840	6.0	25.0	--	400	300
10	3M	79-11-14	555	538	2	933	7.2	--	--	1.0	30
11	3D	79-11-15	515	468	17	803	8.5	23.5	--	1.0	30
		80-06-03	471	482	6	765	7.4	24.0	5	2.0	45
13	4S	79-11-07	6940	9000	380	11600	6.6	27.0	--	--	300
14	4M	79-11-07	--	416	0	729	7.4	25.5	--	1.0	40
15	4D	79-11-15	386	358	8	607	8.5	24.5	--	.00	0
17	2S	79-11-21	1820	1670	85	2320	6.5	25.0	--	150	85
18	2M	79-11-21	912	821	19	1290	7.2	24.5	--	2.0	57
19	2D	79-11-21	559	508	19	937	7.8	--	--	--	30
23	P19	80-05-08	277	233	--	445	6.1	22.0	160	70	--
24	ART6	80-07-23	423	641	--	932	--	25.0	--	1.0	--
25	WT8	80-06-03	683	672	8	1090	6.8	25.0	20	7.0	45
26	--	80-06-04	652	617	12	898	7.2	24.5	5	5.0	30
27	--	80-05-09	562	531	--	895	6.7	23.0	0	--	--
28	PROD	80-03-05	604	569	30	846	7.4	25.0	--	11	24
29	WT9	80-06-03	688	644	30	1060	6.6	24.0	30	80	60
30	1S	79-11-06	345	348	40	580	--	25.5	--	18	40
		80-05-08	340	345	--	570	7.1	23.0	5	27	20
31	1M	79-11-05	608	687	7	1150	8.2	26.5	--	3.0	85
32	1D	79-11-20	474	474	21	790	7.3	25.5	--	1.0	7
33	WT7	80-06-04	4470	4680	106	5800	6.0	24.5	140	260	180
34	P18	80-05-08	258	244	--	490	4.9	22.5	5	5.0	--
35	WT6	80-06-04	1290	1190	34	1590	6.5	25.0	80	130	75
36	P17	80-05-08	819	739	--	1140	6.1	22.0	5	255	--
37	P16	80-03-05	183	156	8	294	3.9	22.5	--	3.0	74
39	WT10	80-06-04	452	397	11	670	6.9	24.0	30	11	45
40	REEDER	80-03-05	417	403	8	669	7.2	22.0	--	--	43
S1	DITCH	80-06-04	1210	1260	--	1845	7.4	29.0	50	200	--
S2	COOL	79-10-31	28000	25600	50	21200	1.8	25.0	--	4.0	300
S3	OUT	79-11-27	28800	28500	57	22000	1.8	26.0	160	36	270
		80-03-05	--	--	--	22000	1.8	--	160	--	--
S4	IN	79-11-27	28600	28000	31700	22500	1.8	34.0	--	E1400	475
S5	SEEP	80-02-13	28500	28100	8	22000	1.8	27.5	--	3.0	304
S6	DAP	79-11-01	27900	25100	49	22100	1.8	24.5	--	3.0	345
R1	USGS	80-07-16	11	10	--	23	6.4	--	--	1.0	--
R2	AMAX	80-04-07	6	--	--	52	6.5	--	--	1.0	--

TABLE 5.--CONCENTRATIONS OF NITROGEN AND PHOSPHORUS SPECIES IN WATER FROM THE AMAX PHOSPHATE, INC., PLANT

[AMAX IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 2)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)
1	WT11	80-06-03	.00	--	.000	--	.280	--	.68	--	.96	--	.96	.280	--	.030	--
3	WT12	80-06-03	.00	--	.010	--	.140	--	.39	--	.53	--	.54	.980	--	.160	--
4	5S	80-06-02	.01	--	.000	--	.090	--	.37	--	.46	--	.47	.130	--	.010	--
5	5M	80-06-02	.01	--	.000	--	.380	--	.40	--	.78	--	.79	.050	--	.010	--
6	5D	80-06-02	.01	--	.000	--	.400	--	.40	--	.80	--	.81	.050	--	.050	--
7	P14	80-05-07	.00	--	.010	--	.260	--	.90	--	1.16	--	1.1	.270	--	.230	--
8	P20	80-05-07	.01	--	.000	--	1.00	--	.65	--	1.65	--	1.6	.110	--	.090	--
9	3S	79-11-08	.00	.00	.010	.010	40.0	39.0	28	23	68.0	62	68	56.0	56.0	56.0	56.0
10	3M	79-11-14	.01	--	.000	--	.220	--	.60	--	.82	--	.83	.130	--	.120	--
11	3D	79-11-15	.01	--	.000	--	.260	--	.49	--	.75	--	.76	.090	--	.060	--
		80-06-03	.01	--	.000	--	.260	--	.30	--	.56	--	.57	.030	--	.010	--
13	4S	79-11-07	.00	.00	.010	.010	470	470	350	350	820	820	820	570	--	570	--
14	4M	79-11-07	.02	--	.000	--	.220	--	.46	--	.68	--	.70	.030	--	.010	--
15	4D	79-11-15	.01	--	.000	--	.220	--	.33	--	.55	--	.56	.030	--	.020	--
17	2S	79-11-21	.00	--	.010	--	20.0	--	8.4	--	28.4	--	28	7.20	--	.120	--
18	2M	79-11-21	.00	--	.000	--	.600	--	1.2	--	1.80	--	1.8	.030	--	.020	--
19	2D	79-11-21	.00	--	.000	--	.370	--	.68	--	1.05	--	1.0	.050	--	.020	--
23	P19	80-05-08	.00	--	.010	--	.180	--	.60	--	.78	--	.79	1.30	--	1.20	--
24	ART6	80-07-23	.01	--	.000	--	.220	--	.03	--	.25	--	.26	.010	--	.010	--
25	WT8	80-06-03	.00	--	.000	--	.390	--	.69	--	1.08	--	1.0	.190	--	.060	--
26	--	80-06-04	.01	--	.000	--	.230	--	.27	--	.50	--	.51	.070	--	.010	--
27	--	80-05-09	.01	--	.000	--	.400	--	.20	--	.60	--	.61	.390	--	.020	--
28	PROD	80-03-05	.01	.01	.000	.000	.220	.200	.15	.12	.37	.32	.38	.830	.010	.030	.010
29	WT9	80-06-03	.01	--	.000	--	.620	--	.78	--	1.40	--	1.4	.500	--	.010	--
30	1S	79-11-06	.02	--	.000	--	.120	--	.33	--	.45	--	.47	.460	--	.130	--
		80-05-08	.01	--	.000	--	.220	--	.20	--	.42	--	.43	.520	--	.120	--
31	1M	79-11-05	.01	--	.000	--	.480	--	.72	--	1.20	--	1.2	.060	--	.060	--
32	1D	79-11-20	.01	--	.000	--	.180	--	.53	--	.71	--	.72	.060	--	.050	--
33	WT7	80-06-04	.00	--	.010	--	214	--	2.0	--	216	--	216	340	--	330	--
34	P18	80-05-08	.03	--	.000	--	.250	--	.33	--	.58	--	.61	.540	--	.540	--
35	WT6	80-06-04	.01	--	.000	--	.620	--	1.1	--	1.72	--	1.7	.710	--	.010	--
36	P17	80-05-08	.00	--	.010	--	.220	--	.74	--	.96	--	.97	1.20	--	.040	--
37	P16	80-03-05	.01	--	.000	--	.250	--	.47	--	.72	--	.73	.010	--	.010	--
39	WT10	80-06-04	.01	--	.000	--	.550	--	.31	--	.86	--	.87	.380	--	.220	--
40	REEDER	80-03-05	--	.01	--	.000	--	.070	--	.35	--	.42	--	--	.010	--	.010
S1	DITCH	80-06-04	.50	--	.220	--	20.0	--	14	--	34.0	--	34	37.0	--	26.0	--
S2	COOL	79-10-31	1.8	--	.010	--	680	--	1100	--	1780	--	1782	4300	--	4300	--
S3	OUT	79-11-27	E.97	--	E.010	--	720	--	320	--	1040	--	1000	5200	--	5200	--
S4	IN	79-11-27	E.84	--	E.010	--	740	--	290	--	1030	--	1031	5200	--	5200	--
S5	SEEP	80-02-13	E.86	E.70	E.020	E.020	756	744	580	580	1340	1328	1341	5100	5100	5000	5000
S6	DAP	79-11-01	1.2	--	.010	--	840	--	120	--	960	--	961	4100	--	4100	--
R1	USGS	80-07-16	.09	--	.000	--	.660	--	.38	--	1.04	--	1.1	1.70	--	1.10	--
R2	AMAX	80-04-07	.56	--	.020	--	2.70	--	.28	--	2.98	--	3.6	1.30	--	1.30	--

TABLE 6.--RADIOCHEMICAL ANALYSES OF WATER FROM THE AMAX PHOSPHATE, INC., PLANT

[AMAX IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 2)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	ALPHA, TOTAL (PCI/L) (01501)	ALPHA, TOTAL, COUNTING ERROR (PCI/L) (01502)	BETA, TOTAL (PCI/L) (03501)	BETA, TOTAL, COUNTING ERROR (PCI/L) (03502)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L) (09511)	RADIUM 226, SUSPENDED TOTAL (PCI/L) (09505)
1	WT11	80-06-03	4.6	3.1	2.3	2.0	2.4	.3
3	WT12	80-06-03	15	3.3	4.8	1.2	.32	.4
4	5S	80-06-02	<2.0	--	1.2	2.7	.50	.2
5	5M	80-06-02	3.9	3.2	7.1	2.8	2.3	.7
6	5D	80-06-02	2.5	2.6	12	3.2	3.5	.2
7	P14	80-05-07	26	3.8	25	3.1	1.1	.2
8	P20	80-05-07	6.6	3.0	23	3.5	1.4	.2
9	3S	79-11-08	<2.0	--	15	3.0	.11	3.3
10	3M	79-11-14	5.4	3.0	10	2.4	1.9	.2
11	3D	79-11-15	7.8	3.9	29	3.8	3.8	.2
		80-06-03	4.3	2.4	13	3.3	2.7	.2
13	4S	79-11-07	<2.0	--	227	14	.12	.4
14	4M	79-11-07	3.0	2.2	7.0	2.1	1.6	.1
15	4D	79-11-15	36	7.2	20	2.7	3.6	.2
17	2S	79-11-21	7.7	4.5	11	3.2	.40	5.9
18	2M	79-11-21	2.8	2.8	12	2.7	1.1	.1
19	2D	79-11-21	18	5.2	35	4.6	5.1	.2
25	WT8	80-06-03	45	7.8	15	2.4	5.5	.6
26	--	80-06-04	5.5	3.1	3.2	2.2	5.2	.2
28	PROD	80-03-05	11	5.0	4.0	2.2	4.9	.3
29	WT9	80-06-03	<2.0	--	2.8	2.7	1.7	.6
30	1S	79-11-06	3.0	2.1	--	1.9	.46	.5
		80-05-08	2.5	2.0	.0	--	.35	.1
31	1M	79-11-05	<2.0	--	7.0	4.4	1.0	.1
32	1D	79-11-20	18	5.2	22	3.1	5.0	.4
33	WT7	80-06-04	2.5	5.0	87	8.0	.10	2.2
35	WT6	80-06-04	26	7.0	13	2.9	6.0	1.9
37	P16	80-03-05	24	4.9	20	3.8	20	.4
39	WT10	80-06-04	1.1	1.6	3.9	2.8	.90	.3
40	REEDER	80-03-05	7.7	3.6	<1.0	--	1.0	.2
S2	COOL	79-10-31	583	111	1291	51	43	8.7
S3	OUT	79-11-27	585	94	1268	38	55	75
S4	IN	79-11-27	1157	139	1588	48	29	1942
S5	SEEP	80-02-13	3361	269	3168	158	7.4	3.1
S6	DAP	79-11-01	530	101	1334	53	42	6.3
R1	USGS	80-07-16	.5	.4	.6	.4	.12	.2

Table 7.--Miscellaneous radiochemical analyses of water from the AMAX Phosphate, Inc., plant

[All values are in picouries per liter and include suspended radioactive substances. AMAX is prefix to all site map numbers. ND--not detected. Analyses by U.S. Environmental Protection Agency]

Site map number (fig. 2)	Local site identifier (table 1)	Date	Uranium -234	Uranium -235	Uranium -238	Thorium -227	Thorium -228	Thorium -230	Thorium -232	Radium -228 dissolved	Radium -228 suspended
9	3S	79-11-08	0.43±0.11	0.04±0.03	0.41±0.11	ND	ND	0.11±0.06	ND	---	---
13	4S	79-11-07	0.21±0.07	0.03±0.02	1.17±0.43	ND	0.36±0.09	0.05±0.03	ND	---	---
14	4M	79-11-07	0.23±0.09	0.06±0.04	0.06±0.04	ND	ND	ND	ND	---	---
30	1S	79-11-06	0.80±0.14	0.05±0.03	0.86±0.15	ND	0.22±0.06	0.05±0.03	0.02±0.02	---	---
31	1M	79-11-05	0.17±0.06	0.05±0.03	0.09±0.04	ND	0.09±0.05	0.58±0.13	0.06±0.04	---	---
S2	COOL	79-10-31	1,878±240	68±13	1,937±252	7±2.6	18±4.5	114±13	14±4	---	---
S3	OUT	79-11-27	---	---	---	---	---	---	---	0.6±0.5	0.4±0.5
S6	DAP	79-11-01	1,488±208	56±11	1,425±200	9±4	12±3	87±10	14±3	---	---

TABLE 8.--CONCENTRATIONS OF TRACE ELEMENTS IN WATER FROM THE AMAX PHOSPHATE, INC., PLANT

[AMAX IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 2)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	BROMIDE DISSOLVED (MG/L AS BR) (71870)	IODIDE, DISSOLVED (MG/L AS I) (71865)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)
1	WT11	80-06-03	200	0	2900	80	.30	.020	19	<50	0
3	WT12	80-06-03	200	0	32000	230	.30	.010	1	<50	0
4	5S	80-06-02	200	0	1800	130	.30	.040	5	<50	0
5	5M	80-06-02	200	0	150	10	.30	.020	1	200	0
6	5D	80-06-02	100	0	550	10	.50	.040	1	<50	0
7	P14	80-05-07	200	0	24000	30	.20	.000	3	<50	0
8	P20	80-05-07	370	0	9100	70	.20	.020	3	<50	0
9	3S	79-11-08	200	0	28000	250	1.0	2.0	7	200	0
10	3M	79-11-14	50	0	80	10	.70	.070	2	0	0
11	3D	79-11-15	50	0	80	20	.40	.050	2	0	0
		80-06-03	100	0	270	10	.60	.050	0	<50	0
13	4S	79-11-07	300	0	47000	40	1.2	2.9	89	100	10
14	4M	79-11-07	60	0	40	10	.50	.460	1	200	0
15	4D	79-11-15	60	0	50	10	.40	.070	6	100	0
17	2S	79-11-21	--	0	27000	200	.30	.400	4	0	0
18	2M	79-11-21	60	0	60	0	.40	.040	2	0	0
19	2D	79-11-21	100	0	60	0	.60	.060	4	0	0
24	ART6	80-07-23	0	0	80	10	.20	.010	0	100	0
25	WT8	80-06-03	100	0	650	130	.40	.140	8	<50	0
26	--	80-06-04	200	0	160	0	.10	.010	1	<50	0
28	PROD	80-03-05	150	0	50	10	.28	.030	1	<50	0
29	WT9	80-06-03	100	0	10000	170	.30	.060	15	<50	0
30	1S	79-11-06	--	0	4000	20	.10	.180	2	200	10
		80-05-08	360	0	3100	10	.20	.120	4	100	0
31	1M	79-11-05	100	0	70	10	.50	.290	1	200	10
32	1D	79-11-20	100	0	--	10	.50	.050	2	0	0
33	WT7	80-06-04	200	0	13000	190	.60	.050	19	<50	10
35	WT6	80-06-04	200	0	12000	160	.30	.180	5	<50	0
37	P16	80-03-05	2000	0	5600	10	.70	.060	3	<50	0
39	WT10	80-06-04	300	0	250	40	.20	.010	1	<50	0
40	REEDER	80-03-05	30	0	--	10	.20	.180	0	<50	0
S2	COOL	79-10-31	--	74	63000	6100	2.2	--	920	500	60
S3	OUT	79-11-27	60000	100	68000	6200	3.9	3.2	800	700	60
		80-03-05	--	--	68000	--	--	--	--	--	--
S4	IN	79-11-27	51000	100	75000	6300	3.2	2.9	780	500	60
S5	SEEP	80-02-13	58000	85	69000	6900	1.2	2.3	900	200	70
S6	DAP	79-11-01	56000	95	110000	6300	--	--	570	400	60
R1	USGS	80-07-16	50	0	70	0	.30	.000	1	100	0

TABLE 8.--CONCENTRATIONS OF TRACE ELEMENTS IN WATER FROM THE AMAX PHOSPHATE, INC., PLANT--Continued

SITE MAP NUMBER (FIG. 2)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SELENIUM, TOTAL (UG/L AS SE) (01147)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
1	60	0	5	0	1	0	0	<.1	8	0	0	2100	2.0	10
3	30	0	6	1	0	0	10	<.1	0	0	0	130	30	10
4	10	0	1	0	1	0	10	.2	4	0	0	250	--	0
5	80	0	8	0	11	2	30	<.1	3	1	0	1600	1.0	10
6	80	0	4	0	93	7	60	.2	1	2	0	2300	1.0	50
7	90	0	20	0	0	0	0	.1	0	5	0	400	22	10
8	70	0	14	4	0	0	10	<.1	0	16	0	260	9.0	10
9	240	0	40	0	20	1	270	.5	6	8	1	900	--	10
10	150	0	10	0	0	0	20	.5	0	0	0	2600	.0	10
11	120	0	10	0	0	0	110	.7	5	2	0	5400	.0	10
	120	0	3	0	50	4	40	.1	1	2	0	5800	1.0	40
13	1200	0	60	0	20	0	1600	.2	160	8	0	190	--	20
14	90	0	2	0	1	0	20	<.1	0	0	0	2000	--	80
15	110	0	8	2	0	4	40	.4	8	9	0	4900	.0	190
17	100	0	30	0	20	0	30	.3	7	7	0	1100	--	20
18	190	0	5	0	10	0	30	.3	3	1	0	1700	--	10
19	130	0	4	0	10	0	80	.7	5	1	0	3400	--	10
23	--	--	--	--	--	--	--	--	--	--	--	170	--	--
24	60	0	4	0	0	1	10	<.1	0	0	0	8900	.0	10
25	90	0	4	0	0	0	10	<.1	3	1	0	1100	--	10
26	110	0	4	0	0	1	10	.1	0	1	0	9100	.0	440
27	--	--	--	--	--	--	--	--	--	--	--	4000	--	--
28	189	0	24	0	0	1	10	.3	4	0	0	8700	.0	20
29	100	0	3	0	0	0	0	<.1	12	1	0	600	--	10
30	60	0	20	0	0	0	10	.1	10	2	0	410	--	20
	50	0	11	0	0	0	0	.1	9	2	0	360	--	10
31	130	0	10	0	10	0	20	.6	1	0	0	1800	--	10
32	150	1	8	2	1	3	30	.7	2	0	0	4400	--	30
33	350	0	4	0	0	0	1100	.2	5	4	0	1300	--	10
34	--	--	--	--	--	--	--	--	--	--	--	160	--	--
35	200	0	5	0	0	0	10	<.1	2	3	0	1900	--	0
36	--	--	--	--	--	--	--	--	--	--	--	1200	--	--
37	20	0	16	0	0	0	10	<.1	0	1	0	380	--	10
39	90	0	4	0	0	1	2	.2	1	0	0	560	.0	0
40	104	0	--	0	1	4	10	.2	2	0	0	320	1.0	--
S1	--	--	--	--	--	--	--	--	--	--	--	3800	--	--
S2	3000	510	680	170	210	80	880	.2	66	1500	0	410	--	2700
S3	2900	500	670	240	210	110	900	.2	64	1500	1	470	--	2600
	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S4	3000	--	680	170	340	91	890	2.5	38	1700	1	480	--	2600
S5	2830	620	1020	260	72	130	1100	<.1	34	1600	3	620	--	3400
S6	2700	460	760	150	220	89	800	.1	59	1400	0	370	--	2500
R1	8	0	5	0	0	7	0	.1	1	1	0	8	2.0	30

TABLE 9.--CONCENTRATIONS OF ORGANIC CONSTITUENTS IN WATER FROM THE AMAX PHOSPHATE, INC., PLANT

[AMAX IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 2)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	PHENOLS (UG/L) (32730)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	TANNIN AND LIGNIN (MG/L) (32240)
1	WT11	80-06-03	16	--	2	.00	--	3.0
3	WT12	80-06-03	14	--	0	.00	--	--
4	5S	80-06-02	9.3	--	1	.00	--	--
5	5M	80-06-02	14	--	5	.10	--	.00
6	5D	80-06-02	16	--	3	.10	--	.00
7	P14	80-05-07	46	--	0	.10	--	.90
8	P20	80-05-07	40	--	--	--	--	--
9	3S	79-11-08	43	41	--	--	--	--
10	3M	79-11-14	5.7	4.4	1	.00	0	.00
11	3D	79-11-15	10	4.4	0	.00	0	.70
		80-06-03	13	--	8	.00	--	.00
13	4S	79-11-07	54	39	0	.20	0	11
14	4M	79-11-07	15	10	15	.10	0	3.0
15	4D	79-11-15	13	3.8	0	.00	0	.40
17	2S	79-11-21	34	--	0	.30	0	3.0
18	2M	79-11-21	48	34	26	.10	0	5.0
19	2D	79-11-21	42	12	3	.00	1	2.0
25	WT8	80-06-03	16	--	--	--	--	--
26	27	80-06-04	9.8	--	0	.30	--	.00
28	PROD	80-03-05	2.5	--	0	.00	1	.00
29	WT9	80-06-03	17	--	--	--	--	--
30	1S	79-11-06	20	--	0	.00	0	.70
		80-05-08	19	--	--	--	--	--
31	1M	79-11-05	40	--	9	.10	0	1.0
32	1D	79-11-20	4.6	--	5	.00	0	.10
33	WT7	80-06-04	64	--	2	.60	--	.20
35	WT6	80-06-04	17	--	2	.00	--	.00
37	P16	80-03-05	11	8.1	0	.10	--	--
39	WT10	80-06-04	9.7	--	1	.00	--	.10
40	REEDER	80-03-05	16	16	0	--	--	5.0
S2	COOL	79-10-31	120	118	34	.70	0	16
S3	OUT	79-11-27	145	105	--	.30	0	13
S4	IN	79-11-27	165	160	9	.40	0	14
S5	SEEP	80-02-13	110	--	30	.90	0	34
S6	DAP	79-11-01	124	104	30	.70	0	17

Table 10.--Records of data-collection sites at the USS Agri-Chemicals plant

Site map number: Number assigned for purposes of this report and used for reference in text or on an illustration (fig. 12). USSAC is prefix to all site map numbers in tables 10 through 19.
Local site identifier: Identifiers assigned during the field investigation. List of local identifiers (prefixes) given on page 5.
Site identification number: A 15-digit U.S. Geological Survey identifier for computer storage and retrieval.
Total depth: Depth of the finished well or total depth to which the hole was drilled in feet below land surface.
Casing: Depth of bottom of casing in feet below land surface. Type: P, polyvinyl chloride (PVC); S, stainless steel.
Use of site: T, hole cased temporarily that was drilled for water or for geologic or hydrogeologic testing; all are owned privately by USS Agri-Chemicals, except ROMP well. O, a cased test hole drilled for water-level and water-quality observations by U.S. Geological Survey for this investigation. C, continuous water-level recorder installed for this investigation. W, a site used for water supply.
Finish: S, screens installed by U.S. Geological Survey are 5 feet in length of PVC type with 0.010 inch slots. O, open hole below bottom of casing.
Measuring point: SL, altitude of measuring point in feet above sea level. LSD, altitude of measuring point in feet above land-surface datum.
Water level: Depth in feet below land surface datum or above sea level. +, if water level is above land-surface datum.
Date: Date of water-level measurement.

Site map number (fig. 12)	Local site identifier	Site identification number	Total depth (ft)	Casing			Use of site	Finish	Measuring point (ft)		Water level (ft)		Date
				Depth (ft)	Type	Diameter (in)			Above SL	Above LSD	Below LSD	Above SL	
1	TWD	275351081520101	126	--	S	3	T	O	131.20	1.15	61.76	68.29	6-19-80
2	WT17	275354081520501	10	5	P	2	O	S	132.71	2.30	6.93	123.48	6-17-80
3	WT16	275352081524201	10	5	P	2	O	S	147.95	2.40	3.35	142.20	6-17-80
4	5D	275353081522401	119	85	P	4	O	O	144.06	2.70	75.28	66.08	6-17-80
5	5S	275353081522411	20	15	P	4	O	S	144.95	2.00	5.54	137.41	6-17-80
6	5M	275353081572412	70	40	P	4	O	O	144.84	2.70	8.17	133.97	6-17-80
7	PROD	275353081524501	685	90	S	24	W	O	150.48	0	98.50	51.98	6-17-80
8	6D	275356081530401	119	81	P	4	O	O	154.57	2.40	79.20	72.97	6-17-80
9	6S	275356081530411	25	20	P	2	O	S	154.10	2.30	5.41	146.39	6-17-80
10	WT7	275357081520801	19	14	P	2	O	S	144.45	1.80	8.10	134.55	6-17-80
11	WT8	275359081521401	19	14	P	2	O	S	145.65	1.60	7.86	136.19	6-17-80
12	WT15	275401081530801	9	4	P	2	O	S	147.71	2.40	2.83	142.48	6-17-80
12A	ARMOUR	275402081525001	750	88	S	20	W	O	149.03	2.0	68.6	78.43	5-09-58
13	3S	275406081523601	22	17	P	4	O	S	156.40	2.30	7.74	146.36	6-17-80
14	3M	275406081523602	75	43	P	4	O	O	157.36	3.00	10.33	144.03	6-17-80
15	3D	275406081523603	135	82	P	4	O	O	156.36	2.00	86.60	67.76	6-17-80
16	WT9	275408081522101	17	12	P	2	O	S	145.82	1.20	3.36	141.26	6-17-80
17	WT11	275409081522601	14	9	P	2	O	S	153.06	3.0	6.48	143.58	6-17-80
18	2S	275414081522601	22	17	P	4	O	S	152.61	2.40	5.19	145.02	6-17-80
19	2M	275414081522602	55	42	P	4	O	O	152.31	2.10	6.75	143.46	6-17-80
20	2D	275414081522603	103	84	P	4	O	O	152.70	2.40	79.55	70.75	6-17-80
21	WT10	275415081522501	19	14	P	2	O	O	150.96	1.50	4.20	145.26	6-17-80
22	4S	275419081525801	19	14	P	4	O	S	149.60	2.30	7.71	139.59	6-17-80
23	4M	275419081525802	62	32	P	4	O	O	149.47	2.20	7.31	139.96	6-17-80
24	4D	275419081525803	116	80	P	4	O	O	149.83	2.70	76.64	70.49	1-08-80
25	WT14	275419081530701	25	20	P	2	O	S	155.17	3.00	10.55	141.62	6-17-80
26	P2	275424081522201	31	--	P	1 1/4	T	S	152.56	2.70	17.93	131.93	6-17-80
27	11B	275425081522101	--	--	P	1 1/4	T	S	144.82	3.20	8.01	133.61	6-17-80
28	---	2754260815224o1	--	--	--	--	T	--	139.60	3.0	3.24	133.36	5-09-80
29	---	275427081522801	--	--	S	3	T	O	142.36	.40	59.47	82.49	6-17-80

Table 10.--Records of data-collection sites at the USS Agri-chemicals plant--Continued

Site map number (fig. 12)	Local site identifier	Site identification number	Total depth (ft)	Casing			Use of site	Finish	Measuring point (ft)		Water level (ft)		Date
				Depth (ft)	Type	Diameter (in)			Above SL	Above LSD	Below LSD	Above SL	
30	WT12	275429081521501	19	14	P	2	O	S	136.60	3.0	10.55	123.05	6-17-80
31	P3A	275431081522201	9.20	--	P	1 1/4	T	--	136.55	3.80	3.98	128.77	6-17-80
32	P7B	275331081522801	11.60	--	P	1 1/4	T	--	138.68	2.40	6.60	129.68	6-17-80
33	P7A	275331081522901	14.20	--	P	1 1/4	T	--	138.96	2.30	6.96	129.70	6-17-80
34	1S	275332081524301	21	16	P	4	O,C	S	152.61	2.40	12.19	138.02	6-17-80
35	1M	275332081524302	65	42	P	4	O,C	O	152.66	2.20	13.56	136.90	6-17-80
36	1D	275332081524303	105	78	P	4	O,C	O	152.76	2.30	81.78	68.68	6-17-80
37	P10A	275333081521801	15.50	--	P	1 1/4	T	--	132.23	3.50	6.17	122.61	6-17-80
38	WT13	275336081525001	9	4	P	2	O	S	147.08	2.40	4.40	140.28	6-17-80
39	BKS	275346081504001	12	7	P	2	O	S	111.30	2.0	3.32	105.98	6-17-80
40	BKM	275346081504002	38.5	27	P	4	O	O	110.66	1.5	Dry	---	6-17-80
41	BKD	275346081504003	82	49	P	4	O	O	111.39	2.20	39.19	70.00	6-17-80
42	ROMP	275314081514201	1,052	200	S	12	T	O	119.41	2.80	52.91	54.50	6-17-80
						Surface-water sites							
S1	SLURRY	275400081525201											
S2	RETURN	275412081524701											
S3	L COOL	275419081525601											
S4	U COOL	275423081525301											
S5	SEEP E	275427081522701											
S5A	SEEP W	275427081522800											
F1	DITCH S, WT7	275353081520601											
F2	PD W, WT7	275358081521301											
F3	PD N, WT7	275401081521101											
F4	PD W, WT10	275412081521601											
F5	DITCH W, 2S	275414081522701											
F6	PD S, WT14	275418081530701											
F7	PD N, WT14	275420081530701											
F8	BEAR BRANCH	275430081522801											
F9	PD N, 1S	275433081524301											
						Rainfall sites							
R1	RAIN	275401081525301											

Table 11.--Lithologic log of test hole USSAC-42 at the USS Agri-Chemicals plant

[Altitude of land surface - 116.61 feet]

Lithology	Thickness (ft)	Depth to base (ft)
Clay, dark yellowish-brown, sandy, with some phosphate. From 0-3 feet sand, quartz, fine to medium, frosted	10	10
Clay, as above	10	20
Limestone, very light yellowish-gray, with yellowish-brown sandy clay and phosphate pebbles	10	30
As above, except for distinct green clay seams and fossilized animal bone fragments	10	40
Limestone, very light yellowish-gray, sandy, fossiliferous, phosphoritic, seam of grayish-brown, sandy clay, and with some dolomite	10	50
Limestone, light yellowish-gray, with lens of brown sandy clay, and great abundance of phosphate pebbles	10	60
Limestone, light yellowish-gray, sandy, fossiliferous, with cavity from 66.5-67.6 feet	10	70
Limestone, very light yellowish-gray, with lens of gray argillaceous limestone	10	80
Limestone, very light yellowish-gray, fossiliferous, with some phosphate sand	20	100
Limestone, light gray, with 5-foot lens of dark bluish-green clay	10	110
Limestone, light-gray	10	120
Limestone, light-gray, with lens of gray to black lignite	10	130
Clay, grayish-green, very calcareous	10	140
Limestone, light-gray, clayey, with dolomite	10	150
Clay, dark grayish-green, with limestone fragments	10	160
Clay, light to dark grayish-green, very calcareous, with some dolomite	10	170
Limestone, very light yellowish-gray, very porous, very fossiliferous, with clay as above from 170-173 feet	60	230
Limestone, light yellowish-gray, granular in powdery matrix, moderately hard	20	250
Limestone, light yellowish-gray, very finely granular, moderately hard	20	270

Table 11.--Lithologic log of test hole USSAC-42 at the USS Agri-Chemicals plant--Continued

[Altitude of land surface - 116.61 feet]

Lithology	Thickness (ft)	Depth to base (ft)
Limestone, medium light yellowish-gray, very finely granular to powdery, soft	120	390
Limestone, light yellowish-gray, granular in crypto-crystalline matrix, fairly hard	70	460
Limestone, yellowish-gray, finely granular in powdery matrix, soft	90	550
Dolomite, medium grayish-brown, moderate to very hard, crystalline, nonfossiliferous	30	580
Limestone, light yellowish-gray, finely granular, soft to moderately hard	40	620
Dolomite, dark grayish-brown, rhombic, moderate to very hard, crystalline, nonfossiliferous	80	700
Limestone, light yellowish-gray, finely granular to chalky, soft to moderately hard	30	730
Dolomite, dark grayish-brown, rhombic, moderate to very hard, crystalline, nonfossiliferous	20	750
Limestone, light yellowish-gray finely granular to chalky, soft to moderately hard	140	890
As above, except with some dolomite	230	1,120
Limestone, buff colored, finely granular to chalky, soft to moderately hard, with some anhydrite	70	1,190
Limestone, buff colored, finely granular to chalky, soft to moderately hard, with much selenite and anhydrite, and some chert and dolomite	210	1,400

TABLE 12.--CONCENTRATIONS OF MAJOR CONSTITUENTS IN WATER FROM THE USS AGRI-CHEMICALS PLANT

[USSAC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 12)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	ACIDITY (MG/L AS CACO3) (00435)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)
2	WT17	80-06-19	18	27	5.8	6.8	.3	84	7.4	5.0	.8	91	7	50	14	.3
4	5D	80-01-08	34	62	32	16	1.2	260	43	9.8	2.8	290	27	--	18	.4
5	5S	80-06-17	320	86	77	150	7.9	20	750	18	.34	530	510	372	38	2.8
6	5M	80-06-17	24	34	19	9.2	.6	160	3.5	6.8	.5	160	4	--	11	.3
8	6D	80-01-08	32	35	13	10	.9	140	6.2	5.5	--	140	1	--	13	.4
10	WT7	80-06-17	400	41	20	51	6.3	54	83	6.6	.9	180	130	258	37	1.6
11	WT8	80-06-18	8.5	38	53	13	.7	270	40	10	1.6	310	43	114	8	.3
12A	ARMOUR	80-01-31	19	74	19	11	1.0	160	110	12	.5	270	110	--	8	.3
13	3S	79-12-10	950	230	100	930	240	0	2100	--	1600	990	990	36900	61	13
14	3M	79-12-10	230	170	200	170	3.1	54	1500	23	.4	1250	1190	--	23	2.1
15	3D	80-06-17	290	150	230	140	6.1	800	730	16	.53	1300	520	129	19	1.7
16	WT9	80-06-12	29	50	24	26	11	200	83	11	1.0	220	24	65	19	.8
17	WT11	80-06-12	31	10	8.9	340	65	170	7400	220	54	62	0	9040	84	19
18	2S	79-11-29	1600	400	150	870	68	0	2000	--	64	1600	1600	21200	53	9.4
19	2M	79-11-29	240	160	280	190	2.3	822	1100	21	.5	1600	878	--	21	2.1
20	2D	80-01-07	30	45	23	9.6	1.5	210	6.4	6.6	.6	210	0	--	9	.3
		80-06-18	34	48	25	8.8	.7	210	11	6.8	1.3	220	13	--	8	.3
21	WT10	80-06-12	220	42	59	630	130	0	1600	11	.7	350	350	7200	73	15
22	4S	79-12-12	24	48	11	8.6	.5	100	65	14	.9	170	65	--	10	.3
23	4M	79-12-13	49	55	31	5.6	.6	240	3.7	9.8	1.9	265	62	--	4	.1
24	4D	79-12-11	28	38	18	9.3	.9	190	1.7	4.9	.7	170	0	--	11	.3
34	1S	79-12-11	200	210	71	140	40	0	2100	9.1	47	820	820	790	26	2.1
		80-06-18	270	210	77	130	49	0	3200	8.5	59	840	840	1390	24	2.0
35	1M	79-12-12	22	30	14	9.0	.8	150	1.2	2.4	--	130	0	--	13	.3
		80-06-18	27	31	17	5.4	.6	140	1.5	2.7	1.2	150	8	--	7	.2
36	1D	79-12-12	32	36	15	8.1	.7	160	2.0	3.9	1.8	150	0	--	10	.3
39	BKS	80-06-10	7.3	29	10	9.8	1.0	94	15	3.4	1.6	110	20	50	16	.4
41	BKD	80-06-10	23	51	22	9.6	.4	200	3.9	11	.7	220	18	--	9	.3
S1	SLURRY	80-01-31	4400	20	41	1400	140	0	5200	--	7500	220	220	37700	88	41
S2	RETURN	80-02-11	3000	30	52	790	110	0	5000	--	7700	290	290	36700	80	20
S3	L COOL	79-12-13	2700	57	79	790	97	0	4900	--	4300	470	470	--	74	16
S4	U COOL	80-02-11	3000	30	52	770	110	0	5100	--	5200	290	290	36200	80	20
S5	SEEP E	80-01-07	--	62	65	960	160	0	4500	--	--	430	430	35200	77	20
S5A	SEEP W	80-06-19	1900	29	470	960	210	0	4500	--	4300	2000	2000	24800	48	9.3
R1	RAIN	80-06-17	.4	2.8	.2	.3	.1	7	7.2	.4	1.8	8	1	10	8	.0

TABLE 13.--CHEMICAL AND PHYSICAL PROPERTIES OF WATER FROM THE USS AGRI-CHEMICALS PLANT

[USSAC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 12)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L) (70299)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	TURBIDITY (NTU) (00076)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)
2	WT17	80-06-19	149	125	19	241	6.1	24.0	5	200	15
4	5D	80-01-08	349	358	6	594	7.2	22.5	--	2.0	14
5	5S	80-06-17	1700	1660	54	1750	5.4	23.5	10	250	29
6	5M	80-06-17	193	195	7	332	7.5	25.0	0	2.0	0
8	6D	80-01-08	189	205	4	321	8.2	24.0	--	2.0	7
10	WT7	80-06-17	631	1080	16	606	5.6	23.0	10	15	25
11	WT8	80-06-18	334	330	18	596	6.2	23.5	0	55	5
12A	ARMOUR	80-01-31	358	345	1	548	7.7	25.5	--	1.0	27
13	3S	79-12-10	32700	30500	8	14000	2.4	25.0	--	13	22
14	3M	79-12-10	2680	2620	32	2770	5.4	24.5	--	220	70
15	3D	80-06-17	1890	2120	3	2340	6.4	24.0	5	1.0	5
16	WT9	80-06-12	351	357	34	653	6.1	--	0	280	12
17	WT11	80-06-12	25100	27300	223	22100	4.7	--	1200	300	--
18	2S	79-11-29	33400	35900	13	13400	2.3	25.0	--	1.0	388
19	2M	79-11-29	2730	2600	69	3200	6.3	24.0	--	40	79
20	2D	80-01-07	245	254	4	427	7.5	23.0	--	2.0	14
		80-06-18	256	262	7	430	7.2	24.0	0	2.0	5
21	WT10	80-06-12	13100	14000	1450	7300	4.0	24.0	100	650	300
22	4S	79-12-12	289	232	12	408	5.8	25.0	--	17	35
23	4M	79-12-13	310	336	5	478	6.8	24.0	--	3.0	10
24	4D	79-12-11	214	216	3	367	7.4	23.5	--	.00	10
34	1S	79-12-11	3800	--	5	3440	3.3	25.0	--	2.0	100
		80-06-18	4790	4430	--	4200	2.9	24.0	70	2.0	16
35	1M	79-12-12	180	175	2	287	7.7	24.5	--	1.0	5
		80-06-18	174	171	10	274	7.4	26.0	0	2.0	0
36	1D	79-12-12	204	196	3	318	7.7	24.0	--	.00	5
39	BKS	80-06-10	177	135	6	242	6.1	--	40	3.0	40
41	BKD	80-06-10	248	242	5	422	7.2	--	5	2.0	0
S1	SLURRY	80-01-31	34700	38800	43000	28400	1.5	28.0	--	17000	280
S2	RETURN	80-02-11	33400	37800	12	29300	1.3	21.5	--	7.0	309
S3	L COOL	79-12-13	--	29500	--	24500	1.4	--	--	260	--
S4	U COOL	80-02-11	33200	38500	11	29200	1.4	24.5	--	10	318
S5	SEEP E	80-01-07	23100	--	185	18100	1.9	22.5	--	22	380
S5A	SEEP W	80-06-19	27700	28100	47	21400	1.8	28.5	280	7.0	480
R1	RAIN	80-06-17	17	18	--	43	5.4	--	--	1.0	8

TABLE 14.--CONCENTRATIONS OF NITROGEN AND PHOSPHORUS SPECIES IN WATER FROM THE USS AGRI-CHEMICALS PLANT

[USSAC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 12)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHOPHOSPHATE TOTAL (MG/L AS P) (70507)	PHOSPHORUS, ORTHOPHOSPHATE DISSOL. (MG/L AS P) (00671)
2	WT17	80-06-19	.06	--	.05	--	.39	--	.18	--	.57	--	.68	3.80	--	2.2	--	
4	5D	80-01-08	.00	--	.00	--	.10	--	.20	--	.30	--	.30	.010	--	.00	--	
5	5S	80-06-17	.01	--	.00	--	12	--	7.2	--	19	--	19	130	--	130	--	
6	5M	80-06-17	.00	--	.00	--	.01	--	.01	--	.02	--	.02	.020	--	.02	--	
8	6D	80-01-08	.01	--	.00	--	.07	--	.08	--	.15	--	.16	.020	--	.02	--	
10	WT7	80-06-17	.07	--	.03	--	9.0	--	.84	--	9.8	--	9.9	140	--	140	--	
11	WT8	80-06-18	.00	--	.01	--	.18	--	.02	--	.20	--	.21	.310	--	.07	--	
12A	ARMOUR	80-01-31	.05	--	.00	--	.25	--	.20	--	.45	--	.50	.080	--	.07	--	
13	3S	79-12-10	.28	--	.01	--	35	--	15	--	50	--	50	8700	--	7500	--	
14	3M	79-12-10	.02	--	.00	--	2.8	--	.73	--	3.5	--	3.5	110	--	100	--	
15	3D	80-06-17	.00	--	.00	--	1.2	--	.10	--	1.3	--	1.3	.620	--	.62	--	
16	WT9	80-06-12	.01	--	.00	--	8.3	--	.70	--	9.0	--	9.0	3.50	--	.00	--	
17	WT11	80-06-12	43	42	.09	.09	4000	4000	500	400	4500	4400	4543	4300	4200	4300	4200	
18	2S	79-11-29	.20	.18	.00	.00	33	33	14	10	47	43	47	9300	9600	9300	9500	
19	2M	79-11-29	.00	.00	.00	.00	1.4	1.4	.70	.65	2.1	2.0	2.1	30.0	29.0	30	29	
20	2D	80-01-07	.00	--	.00	--	.10	--	.00	--	.10	--	.10	.010	--	.01	--	
		80-06-18	.00	--	.00	--	.08	--	.00	--	.08	--	.08	.020	--	.01	--	
21	WT10	80-06-12	.02	--	.02	--	46	--	7.0	--	53	--	53	3400	--	.71	--	
22	4S	79-12-12	.02	--	.00	--	.58	--	.22	--	.80	--	.82	1.40	--	1.4	--	
23	4M	79-12-13	.00	--	.00	--	.26	--	.12	--	.38	--	.38	.030	--	.01	--	
24	4D	79-12-11	.00	--	.00	--	.17	--	.11	--	.28	--	.28	.020	--	.01	--	
34	1S	79-12-11	.00	.01	.01	.00	12	6.5	2.8	1.8	14	8.3	14	37.0	--	37	--	
		80-06-18	.02	--	.00	--	18	--	.20	--	18	--	18	50.0	--	40	--	
35	1M	79-12-12	.00	--	.00	--	.20	--	.10	--	.30	--	.30	.020	--	.01	--	
		80-06-18	.00	--	.00	--	.21	--	.00	--	.21	--	.21	.020	--	.01	--	
36	1D	79-12-12	.00	--	.00	--	.08	--	.02	--	.10	--	.10	.020	--	.01	--	
39	BKS	80-06-10	.00	--	.00	--	.01	--	.73	--	.74	--	.74	.390	--	.27	--	
41	BKD	80-06-10	.04	--	.00	--	.04	--	.28	--	.32	--	.36	.050	--	.05	--	
S1	SLURRY	80-01-31	.26	.24	.02	.01	68	62	25	32	93	94	93	8500	9000	8400	8700	
S2	RETURN	80-02-11	.08	--	.02	--	67	--	75	--	142	--	142	9200	--	9200	--	
S3	L COOL	79-12-13	.49	--	.02	--	69	--	31	--	100	--	101	7300	--	6800	--	
S4	U COOL	80-02-11	E.31	--	E.01	--	66	--	84	--	150	--	150	9100	--	9100	--	
S5	SEEP E	80-01-07	.60	.49	.02	.02	52	52	85	82	137	134	137	5000	5100	5000	5100	
S5A	SEEP W	80-06-19	.45	--	.01	--	74	--	2.0	--	76	--	116	5800	--	5800	--	
R1	RAIN	80-06-17	.17	--	.01	--	2.4	--	.48	--	2.8	--	3.0	3.10	--	2.3	--	

TABLE 15.--RADIOCHEMICAL ANALYSES OF WATER FROM THE USS AGRI-CHEMICALS PLANT

[USSAC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 12)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	ALPHA, TOTAL (PCI/L) (01501)	ALPHA, TOTAL, COUNTING ERROR (PCI/L) (01502)	BETA, TOTAL (PCI/L) (03501)	BETA, TOTAL, COUNTING ERROR (PCI/L) (03502)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L) (09511)	RADIUM 226, SUSPENDED TOTAL (PCI/L) (09505)
2	WT17	80-06-19	1.6	1.1	.3	.8	.20	.1
4	5D	80-01-08	2.9	1.7	.5	.6	1.3	.1
5	5S	80-06-17	8.3	4.6	.2	.4	.10	.4
6	5M	80-06-17	5.3	2.0	.7	.6	4.7	.2
8	6D	80-01-08	3.2	1.6	.6	.7	1.3	.2
10	WT7	80-06-17	.3	3.1	4.4	3.1	.10	.1
11	WT8	80-06-18	1.8	1.5	.0	--	.40	.3
12A	ARMOUR	80-01-31	4.0	2.8	2.3	2.3	1.6	.2
13	3S	79-12-10	2027	182	2985	119	2.6	215
14	3M	79-12-10	6.0	15	.0	--	.11	2.5
15	3D	80-06-17	22	6.9	4.4	1.8	7.9	.2
16	WT9	80-06-12	1.8	1.5	7.8	1.7	.07	.5
17	WT11	80-06-12	159	50	113	34	1.9	7.6
18	2S	79-11-29	861	155	550	39	54	.6
19	2M	79-11-29	8.4	4.2	31	5.0	16	15
20	2D	80-01-07	4.5	1.9	1.2	.7	1.7	.1
		80-06-18	4.8	1.9	2.5	1.5	1.5	.1
21	WT10	80-06-12	.0	--	108	8.6	.20	8.8
22	4S	79-12-12	15	.8	.0	--	.14	.1
23	4M	79-12-13	1.5	1.4	2.6	2.6	2.6	.3
24	4D	79-12-11	1.1	1.1	1.1	2.5	1.5	.2
34	1S	79-12-11	15	17	47	27	.96	6.8
		80-06-18	1.5	4.8	70	7.1	.60	2.2
35	1M	79-12-12	.9	1.1	5.7	3.1	.32	.3
		80-06-18	.9	1.3	.0	--	2.8	.2
36	1D	79-12-12	.6	1.2	.3	.3	1.6	.1
39	BKS	80-06-10	8.2	2.2	.0	--	.20	.3
41	BKD	80-06-10	2.8	1.8	.4	.6	1.9	.1
S1	SLURRY	80-01-31	2717	272	3881	116	84	2161
S2	RETURN	80-02-11	4694	423	5477	219	79	6.8
S4	U COOL	80-02-11	4142	373	5386	215	90	7.7
S5	SEEP E	80-01-07	436	91	1304	52	1.6	.3
S5A	SEEP W	80-06-19	4416	265	2240	89	12	2.6
R1	RAIN	80-06-17	.0	--	1.6	1.6	.14	.1

Table 16.--Miscellaneous radiochemical analyses of water and phosphate ore from the USS Agri-Chemical plant

[Units are picocuries per liter for water from return ditch and picocuries per gram of dry weight for phosphate ore. USSAC is prefix to all site map numbers. Analyses by U.S. Environmental Protection Agency]

Site map number (fig. 12)	Local site identifier	Date	Uranium -234	Uranium -235	Uranium -238	Thorium -227
S2	RETURN	80-02-11	3,700±400	220±30	3,300±500	62±8
---	PHOSPHATE ORE	80-01-08	34±3	4.2±0.5	39±4	1.2±0.2

Thorium -228	Thorium -230	Thorium -232	Radium -226	Polonium -210	Lead -210	Potassium -40
17±3	1,860±60	24±3	---	---	---	---
0.9±0.1	42±2	2.5±0.2	29.0±0.2	25±5	38±18	1.4±0.4

TABLE 17.--CONCENTRATIONS OF TRACE ELEMENTS IN WATER FROM THE USS AGRI-CHEMICALS PLANT

[USSAC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 12)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	BROMIDE DISSOLVED (MG/L AS BR) (71870)	IODIDE, DISSOLVED (MG/L AS I) (71865)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)
2	WT17	80-06-19	300	0	14000	200	.00	.030	9	<50	0
4	5D	80-01-08	30	0	60	10	.00	.500	5	100	20
5	5S	80-06-17	400	0	25000	340	.20	.540	33	<50	0
6	5M	80-06-17	500	0	90	10	.10	.250	6	<50	0
8	6D	80-01-08	80	5	80	10	.00	.010	160	0	20
10	WT7	80-06-17	500	0	8300	90	.10	.360	1	<50	0
11	WT8	80-06-18	100	0	7000	430	.00	.560	8	<50	0
12A	ARMOUR	80-01-31	30	0	200	10	.10	.030	4	100	0
13	3S	79-12-10	140000	76	32000	12000	1.0	9.7	640	0	130
14	3M	79-12-10	400	0	18000	110	1.5	2.7	4	0	20
15	3D	80-06-17	400	0	100	10	.20	--	18	<50	0
16	WT9	80-06-12	200	0	25000	540	.00	.200	1	<50	0
17	WT11	80-06-12	300	16	13000	830	--	--	840	<50	10
18	2S	79-11-29	--	98	110000	13000	.80	7.0	1100	--	150
19	2M	79-11-29	40	0	1700	290	.60	4.4	54	100	10
20	2D	80-01-07	20	0	50	10	--	.210	19	100	10
		80-06-18	40	0	50	10	.00	.310	10	<50	0
21	WT10	80-06-12	1100	0	720000	8600	.10	.050	1	<50	10
22	4S	79-12-12	300	0	3500	20	.00	.000	1	0	20
23	4M	79-12-13	70	0	1000	40	.00	.110	1	0	20
24	4D	79-12-11	20	0	10	0	.00	.010	14	0	10
34	1S	79-12-11	--	0	25000	2500	--	.120	1	200	20
		80-06-18	150000	0	93000	2800	.48	.170	1	<50	10
35	1M	79-12-12	--	0	320	10	.10	.010	3	0	--
		80-06-18	80	0	290	30	.00	.010	1	<50	0
36	1D	79-12-12	20	0	20	0	.00	.000	8	0	20
39	BKS	80-06-10	300	0	490	10	.00	.000	1	<50	0
41	BKD	80-06-10	100	0	60	0	.00	.000	4	<50	0
S1	SLURRY	80-01-31	--	130	240000	6300	.20	.990	180	700	90
S2	RETURN	80-02-11	400000	100	41000	13000	.90	2.3	630	500	100
S3	L COOL	79-12-13	--	98	32000	11000	--	--	650	300	110
S4	U COOL	80-02-11	400000	100	40000	13000	.10	2.9	620	500	100
S5	SEEP E	80-01-07	410000	70	30000	8800	.30	.310	170	300	110
S5A	SEEP W	80-06-19	210000	72	18000	7100	.60	.080	180	200	100
R1	RAIN	80-06-17	--	--	--	--	--	--	--	--	--

TABLE 17.--CONCENTRATIONS OF TRACE ELEMENTS IN WATER FROM THE USS AGRI-CHEMICALS PLANT--Continued

SITE MAP NUMBER (FIG. 12)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SELENIUM, TOTAL (UG/L AS SE) (01147)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
2	80	0	20	4	2	4	0	.1	2	1	0	120	--	10
4	20	1	8	0	0	3	20	.2	11	2	0	190	6.0	10
5	70	1	10	47	1	1	10	.4	3	78	0	100	--	30
6	20	0	9	0	24	0	10	.3	5	2	0	320	2.0	30
8	20	0	9	0	0	1	10	.8	300	0	1	210	5.0	10
10	50	1	10	3	1	3	0	.1	1	3	0	90	--	10
11	70	1	20	16	1	7	0	.3	5	7	0	80	--	10
12A	20	0	20	0	0	4	3	.4	12	2	0	1700	3.0	10
13	1000	2000	--	180	15	0	470	<.1	58	630	1	2500	--	5200
14	40	0	50	24	1	0	100	<.1	0	110	0	360	--	30
15	80	0	3	0	8	0	130	.1	900	3	0	340	--	40
16	60	1	10	3	1	5	0	<.1	2	4	0	100	--	10
17	940	220	40	44	9	7	210	.4	60	370	2	140	--	80
18	1600	2100	3200	230	130	5	360	<.1	130	580	0	15000	--	7300
19	140	0	7	4	10	1	160	.2	0	30	0	210	--	20
20	20	0	8	0	0	0	20	.3	--	1	0	160	.0	10
	50	0	9	0	4	1	10	.2	5	1	0	210	1.0	10
21	360	0	50	0	0	0	610	.2	2	35	1	2600	--	100
22	20	0	7	2	1	0	10	.1	7	12	0	190	--	10
23	50	1	6	0	1	0	10	.1	1	5	0	150	--	10
24	10	0	29	0	0	0	6	.2	50	1	0	180	.0	10
34	80	0	60	37	0	0	80	.1	1	280	0	1000	--	420
	100	0	70	33	0	10	110	.1	0	330	0	850	--	1400
35	--	0	--	0	1	0	20	.1	2	3	0	--	.0	10
	60	0	11	0	17	1	10	.1	0	0	0	370	1.0	20
36	0	0	10	0	0	0	10	.3	9	3	0	210	.0	10
39	20	0	<10	0	3	2	0	<.1	7	3	0	90	--	20
41	43	0	<10	0	8	2	0	.1	13	0	1	280	4.0	10
S1	3200	--	2500	60	720	270	240	19	270	410	410	1300	--	2900
S2	2700	--	3000	500	500	110	230	.2	260	420	3	920	--	3700
S3	--	--	2600	--	460	110	--	.3	--	470	1	--	--	3400
S4	2700	--	--	46	510	120	240	.3	285	420	2	860	--	3700
S5	2100	790	1500	220	420	130	310	.1	34	690	2	3000	--	3000
S5A	2700	840	930	220	470	210	280	.1	52	1700	6	1400	--	3200
R1	--	--	--	--	--	--	--	--	--	--	--	50	--	--

TABLE 18.--CONCENTRATIONS OF ORGANIC CONSTITUENTS IN WATER FROM THE USS AGRI-CHEMICALS PLANT

[USSAC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 12)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	PHENOLS (UG/L) (32730)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	TANNIN AND LIGNIN (MG/L) (32240)
2	WT17	80-06-19	75	--	1	.10	--	.10
4	5D	80-01-08	16	9.2	2	.00	0	.00
5	5S	80-06-17	47	--	3	.20	--	.00
6	5M	80-06-17	4.9	--	0	.00	--	.00
8	6D	80-01-08	12	--	6	.00	0	.70
10	WT7	80-06-17	18	--	0	.10	--	.10
11	WT8	80-06-18	1.9	--	0	.00	--	.00
12A	ARMOUR	80-01-31	21	17	2	.00	0	.00
13	3S	79-12-10	31	31	23	2.2	0	36
14	3M	79-12-10	28	--	0	.30	0	31
15	3D	80-06-17	13	--	1	.20	--	.00
16	WT9	80-06-12	24	--	3	.10	--	.00
17	WT11	80-06-12	370	--	1300	.90	--	.20
18	2S	79-11-29	140	135	22	1.0	0	--
19	2M	79-11-29	24	--	0	.10	0	2.0
20	2D	80-01-07	13	12	7	.00	0	.00
		80-06-18	2.7	--	--	--	--	--
21	WT10	80-06-12	142	--	7	.60	--	.29
22	4S	79-12-12	54	48	0	.00	0	7.0
23	4M	79-12-13	5.6	--	0	.00	0	2.0
24	4D	79-12-11	23	--	6	.00	0	.20
34	1S	79-12-11	66	63	0	.10	0	--
		80-06-18	73	--	0	.10	--	--
35	1M	79-12-12	14	--	0	.00	0	.00
		80-06-18	13	--	3	.00	--	--
36	1D	79-12-12	12	--	0	.00	0	.00
39	BKS	80-06-10	30	--	--	.10	--	.10
41	BKD	80-06-10	5.7	--	--	.00	--	.00
S1	SLURRY	80-01-31	330	--	56	.90	0	25
S2	RETURN	80-02-11	110	--	50	2.1	0	11
S4	U COOL	80-02-11	120	--	60	2.0	0	11
S5	SEEP E	80-01-07	180	160	18	2.5	0	--
S5A	SEEP W	80-06-19	170	--	27	3.0	--	27

Table 19.--Miscellaneous field determinations of pH and specific conductance of water from the USS Agri-Chemicals plant

[USSAC is prefix to all site map numbers]

Site map number (fig. 12)	Local site identifier	Date	Specific conductance (umho/cm)	pH (units)
3	WT16	80-06-19	182	6.3
9	6S	80-06-18	346	6.0
12	WT15	80-06-18	416	5.0
25	WT14	80-06-18	892	5.0
30	WT12	80-06-19	8,310	4.2
38	WT13	80-06-19	321	5.0
F1	DITCH S, WT7	80-06-12	2,300	4.1
F2	Pd W, WT7	80-06-17	2,350	4.2
F3	Pd N, WT7	80-06-17	587	7.2
F4	Pd W, WT10	80-06-17	8,370	2.5
F5	DITCH W, 2S	80-06-18	14,300	1.8
F6	Pd S, WT14	80-06-18	4,550	3.2
F7	Pd N, WT14	80-06-18	728	8.2
F8	BEAR BRANCH	80-06-19	668	6.6
F9	Pd N, 1S	80-06-18	833	3.8

Table 20.--Records of data-collection sites at the International Minerals and Chemical Corporation, Clear Springs mine

Site map number: Number assigned for purposes of this report and used for reference in text or on an illustration (fig. 23). IMC is prefix to all site map numbers in tables 20 through 28.

Local site identifier: Identifiers assigned during the field investigation. List of local identifiers (prefixes) given on page 5.

Site identification number: A 15-digit U.S. Geological Survey identifier for computer storage and retrieval.

Total depth: Depth of the finished well or total depth to which the hole was drilled in feet below land surface.

Casing: Depth of bottom of casing in feet below land surface. Type: P, polyvinyl chloride (PVC).

Use of site: O, a cased test hole drilled for water-level and water-quality observations by U.S. Geological Survey for this investigation. C, continuous water-level recorder installed for this investigation.

Finish: S, screens installed are 5 feet in length of PVC type with 0.010 inch slots. O, open hole below bottom of casing.

Measuring point: SL, altitude of measuring point in feet above sea level. LSD, altitude of measuring point in feet above land-surface datum.

Water level: Depth in feet below land surface datum or above sea level. +, if water level is above land-surface datum. All water levels measured July 18, 1980.

Site map number (fig. 23)	Local site identifier	Site identification number	Total depth (ft)	Casing			Use of site	Finish	Measuring point (ft)		Water level (7-18-80) (ft)	
				Depth (ft)	Type	Diameter (in)			Above SL	Above LSD	Below LSD	Above SL
1	WT6	275040081470901	24	19	P	2	O	S	124.83	3.5	9.68	111.65
2	3S	275044081471001	24	19	P	2	O	S	123.78	1.0	10.40	112.38
3	3D	275044081471002	75	38	P	4	O	O	122.71	.4	17.19	105.12
4	WT5	275045081464001	24	19	P	2	O	S	125.11	1.4	12.58	111.13
5	WT7	275054081475701	29	24	P	2	O	S	103.58	1.5	9.80	92.28
6	2S	275114081471001	27	22	P	2	O	S	130.83	1.7	13.14	115.99
7	2D	275114081471002	71	45	P	4	O	O	131.52	2.8	23.76	104.96
8	WT8	275122081475101	27	22	P	2	O	S	103.78	2.6	19.38	81.80
9	WT9	275122081475101	24	19	P	2	O	S	101.36	1.7	17.75	81.91
10	4S	275123081475101	27	22	P	4	O,C	S	106.21	2.4	5.86	97.95
11	4D	275123081475102	62	42	P	4	O,C	O	105.94	2.4	23.40	80.14
12	WT10	275148081480701	24	19	P	2	O	S	99.21	2.0	9.07	88.14
13	1S	275232081471301	34	29	P	2	O	S	111.66	1.9	32.32	77
14	1D	275232081471302	89	60	P	4	O	O	11.48	2.4	46.23	62.85
15	BKS	275343081472301	44	39	P	2	O	S	118.99	3.2	43.46	72.33
16	BKM	275343081472302	65	47	P	4	O	O	117.24	1.9	41.50	73.84
17	BKD	275343081472303	92	76	P	4	O	O	117.17	2.0	49.32	65.85
		Surface-water sites										
S1	SE	275049081464001										
S2	SW	275050081473901										
S3	L FORT	275158081463501										
S4	NE	275106081464001										
S5	IN	275124081474001										
S6	RETURN	275125081474601										
PW	NEW WALES	275000082030900										
		Rainfall sites										
R1	RAIN	275114081470901										

TABLE 21.--CONCENTRATIONS OF MAJOR CONSTITUENTS IN WATER FROM THE INTERNATIONAL MINERALS AND CHEMICAL CORPORATION, CLEAR SPRINGS MINE

[IMC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 23)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	ACIDITY (MG/L AS CACO3) (00435)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)
2	3S	80-06-11	10	12	5.6	4.7	.4	27	32	3.7	1.7	53	34	10	16	.3
3	3D	80-01-10	30	56	29	14	.8	260	4.0	16	.8	260	0	--	10	.4
6	2S	80-06-11	11	27	3.0	8.1	.5	58	8.9	14	.9	80	22	45	18	.4
7	2D	80-01-22	20	56	37	12	.6	240	32	13	.3	290	52	--	8	.3
9	WT9	80-06-12	24	40	23	5.0	.7	170	6.6	5.4	.9	190	25	--	5	.2
10	4S	80-01-23	6.4	52	11	9.7	.6	140	12	20	.5	180	35	--	11	.3
11	4D	80-01-09	17	45	24	5.7	.5	200	8.6	9.0	.6	210	11	--	10	.2
14	1D	80-01-23	21	38	17	3.2	1.0	160	.0	5.5	.3	170	110	.0	4	.1
17	BKD	80-06-10	6.2	16	4.9	6.9	.3	22	1.8	20	.3	60	38	10	20	.4
S1	SE	80-01-29	3.9	45	15	29	1.6	70	140	17	1.6	170	100	--	26	1.0
S3	L FORT	80-01-30	1.0	44	16	29	1.7	68	130	17	1.9	180	110	--	26	1.0
S4	NE	80-01-29	4.0	45	15	28	1.6	73	140	17	1.7	170	100	--	26	.9
S5	IN	79-10-16	--	--	--	--	--	110	--	--	--	--	--	--	--	--
		80-01-29	4.1	44	12	27	1.6	61	130	18	1.4	160	99	--	27	.9
S6	RETURN	80-01-30	2.3	43	15	32	1.6	65	130	18	1.8	170	100	--	29	1.1
*	NEW WALES	79-09-06	4700	70	87	1700	180	0	5300	--	8500	230	230	--	83	32
R1	RAIN	80-06-10	25	37	21	12	.8	160	1.9	7.5	.8	180	20	--	13	.4
		80-06-12	.1	.3	.1	.3	.4	5	2.4	.7	.1	1	0	--	28	.1

* SAMPLE FROM NEW WALES CHEMICAL PLANT

TABLE 22.--CHEMICAL AND PHYSICAL PROPERTIES OF WATER FORM THE INTERNATIONAL MINERALS AND CHEMICAL CORPORATION, CLEAR SPRINGS MINE

[IMC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 23)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L) (70299)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	TURBIDITY (NTU) (00076)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)
2	3S	80-06-11	101	87	9	145	5.9	25.0	0	10	40
3	3D	80-01-10	292	307	2	520	7.2	24.0	--	1.0	21
6	2S	80-06-11	122	112	2	204	5.3	--	--	10	0
7	2D	80-01-22	318	318	2	532	7.2	23.5	--	.00	22
9	WT9	80-06-12	205	211	11	358	7.5	--	0	11	25
10	4S	80-01-23	194	200	2	423	5.8	21.5	--	38	22
11	4D	80-01-09	213	231	2	413	7.3	24.0	--	1.0	14
14	1D	80-01-23	182	215	1	340	6.7	24.5	--	14	31
17	BKD	80-06-10	--	98	7	159	6.4	--	0	5.0	20
S1	SE	80-01-29	300	296	2	512	7.8	17.5	--	4.0	31
S2	SW	79-10-16	--	--	--	503	--	25.5	--	18	--
S3	L FORT	80-01-30	294	282	3	492	7.3	18.5	--	8.0	64
S4	NE	79-10-16	--	--	--	510	--	24.0	--	15	--
		80-01-29	301	297	6	510	7.6	17.5	--	4.0	110
S5	IN	79-10-16	--	--	--	474	7.6	26.0	--	9000	--
		80-01-29	291	275	16000	485	6.7	20.0	--	43000	70
S6	RETURN	79-10-16	--	--	--	485	--	25.5	--	8.0	--
		80-01-30	297	283	2	497	7.4	18.0	--	5.0	45
*	NEW WALES	79-09-06	29600	25700	--	31200	1.6	--	320	10	1200
R1	RAIN	80-06-10	218	203	--	347	7.8	--	--	29	--
		80-06-12	4	7	--	23	7.2	--	--	2.0	16

* SAMPLE FROM NEW WALES CHEMICAL PLANT

TABLE 23.--CONCENTRATIONS OF NITROGEN AND PHOSPHORUS SPECIES IN WATER FROM THE INTERNATIONAL MINERALS AND CHEMICAL CORPORATION, CLEAR SPRINGS MINE

[IMC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 23)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)
2	3S	80-06-11	.78	--	.010	--	.000	--	.38	--	.38	--	1.2	.920	--	.700	--
3	3D	80-01-10	--	.00	.000	.000	.280	.280	.19	.02	.47	.30	.98	.020	.010	.010	.010
6	2S	80-06-11	.00	--	.000	--	.020	--	.26	--	.28	--	.28	5.10	--	5.10	--
7	2D	80-01-22	.00	.00	.010	.010	.030	.030	.22	.29	.25	.32	.26	.060	.060	.060	.060
9	WT9	80-06-12	.01	--	.000	--	.000	--	.32	--	.32	--	.33	.250	--	.010	--
10	4S	80-01-23	.04	.04	.020	.020	.280	.280	.30	.30	.58	.58	.64	1.00	.830	.740	.670
11	4D	80-01-09	.02	.02	.000	.000	.020	.020	.08	.21	.10	.23	.12	.080	.040	.050	.040
14	1D	80-01-23	.00	.00	.010	.010	.610	.610	.05	.24	.66	.85	.67	.550	.500	.180	.230
17	BKD	80-06-10	7.1	--	.000	--	.010	--	1.4	--	1.41	--	8.5	.710	--	.710	--
S1	SE	80-01-29	.72	--	.080	--	3.60	--	1.6	--	5.20	--	6.0	1.00	--	.800	--
S2	SW	79-10-16	.63	--	.190	--	3.40	--	1.4	--	4.80	--	5.6	1.20	--	.800	--
S3	L FORT	80-01-30	1.1	--	.150	--	1.20	--	.67	--	1.87	--	3.1	.850	--	.600	--
S4	NE	79-10-16	.58	--	.190	--	3.60	--	3.7	--	7.30	--	8.1	2.00	--	.620	--
		80-01-29	.72	--	.080	--	3.60	--	1.4	--	5.00	--	5.8	1.10	--	.780	--
S5	IN	79-10-16	.76	--	.120	--	.450	--	7.8	--	8.25	--	9.1	690	--	.460	--
		80-01-29	1.1	--	.070	--	4.00	--	1.3	--	5.30	--	6.5	--	--	1.20	--
S6	RETURN	79-10-16	.98	--	.420	--	.150	--	2.4	--	2.55	--	4.0	1.00	--	.540	--
		80-01-30	.99	--	.110	--	1.40	--	.60	--	2.00	--	3.1	.750	--	.590	--
*	NEW WALES	79-09-06	1.6	--	.030	--	460	--	26	--	486	--	160	4500	--	4500	--
R1	RAIN	80-06-10	.03	--	.000	--	.020	--	.29	--	.31	--	.34	.740	--	.170	--
		80-06-12	.15	--	.010	--	2.00	--	1.2	--	3.20	--	3.4	.380	--	.360	--

* SAMPLE FROM NEW WALES CHEMICAL PLANT

TABLE 24.--RADIOCHEMICAL ANALYSES OF WATER FROM THE INTERNATIONAL MINERALS AND CHEMICAL CORPORATION, CLEAR SPRINGS MINE

[IMC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 23)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	ALPHA, TOTAL (PCI/L) (01501)	ALPHA, TOTAL, COUNTING ERROR (PCI/L) (01502)	BETA, TOTAL (PCI/L) (03501)	BETA, TOTAL, COUNTING ERROR (PCI/L) (03502)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L) (09511)	RADIUM 226, SUSPENDED TOTAL (PCI/L) (09505)
2	3S	80-06-11	.7	.9	.0	--	.20	.4
3	3D	80-01-10	10	3.2	1.5	.8	5.5	.3
6	2S	80-06-11	1.2	1.2	.5	1.1	.60	.2
7	2D	80-01-22	6.1	3.2	.0	--	6.6	.3
9	WT9	80-06-12	10	2.4	7.9	1.7	3.5	.3
10	4S	80-01-23	2.3	2.0	4.3	2.5	.10	.3
11	4D	80-01-09	4.4	1.8	.3	.3	1.4	.2
14	1D	80-01-23	.8	1.1	.6	2.4	.30	.4
17	BKD	80-06-10	.0	--	1.7	2.7	.70	.2
S1	SE	80-01-29	3.0	2.7	1.8	2.5	.40	.5
S3	L FORT	80-01-30	.5	2.2	12	5.7	.40	.3
S4	NE	80-01-29	5.6	3.2	2.1	2.1	.40	.3
S5	IN	80-01-29	1461	131	3476	104	.80	245
S6	RETURN	80-01-30	6.4	3.1	.2	.4	.30	.2
*	NEW WALES	79-09-06	5078	--	1355	--	55	95
R1	RAIN	80-06-12	.1	.4	1.9	1.3	.08	.1

* SAMPLE FROM NEW WALES CHEMICAL PLANT

Table 25.--Miscellaneous radiochemical analyses of water from the International Minerals and Chemical Corporation, Clear Springs mine

[All values are in picocuries per liter and include suspended radioactive substances. IMC is prefix of site map numbers. Analyses by U.S. Environmental Protection Agency]

Site map number (fig. 23)	Local site identifier	Date	Uranium -234	Uranium -235
9	WT9	80-06-12	2.2±0.3	0.17±0.06
*	NEW WALES	79-09-06	1,700±200	70±10

Uranium -238	Thorium -227	Thorium -228	Thorium -230	Thorium -232
0.9±0.2	0.04±0.03	0.01±0.06	0.03±0.02	0.004±0.006
1,700±200	1.0±0.3	440±30	12±4	21±7

*Sample from New Wales chemical plant.

TABLE 26.--CONCENTRATIONS OF TRACE ELEMENTS IN WATER FROM THE INTERNATIONAL MINERALS AND CHEMICAL CORPORATION CLEAR SPRINGS MINE

[IMC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 23)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	BROMIDE DISSOLVED (MG/L AS BR) (71870)	IODIDE, DISSOLVED (MG/L AS I) (71865)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)
2	3S	80-06-11	600	0	340	10	.00	.000	0	<50	0
3	3D	80-01-10	30	0	40	10	.00	.030	4	0	20
6	2S	80-06-11	200	0	40	80	.00	1.4	1	<50	0
7	2D	80-01-22	10	0	80	940	.20	.060	4	<50	10
9	WT9	80-06-12	200	0	25000	10	.10	.230	3	100	0
10	4S	80-01-23	300	0	19000	140	.50	2.4	6	<50	10
11	4D	80-01-09	30	0	110	20	.00	.160	5	100	20
14	1D	80-01-23	10	0	2100	70	.10	.080	3	100	10
17	BKD	80-06-10	100	0	10	0	.00	.000	0	<50	0
S1	SE	80-01-29	60	0	60	70	.10	.100	3	100	0
S2	SW	79-10-16	--	0	--	--	--	--	2	--	--
S3	L FORT	80-01-30	220	0	90	30	.20	.080	3	<50	10
S4	NE	80-01-29	60	0	50	70	.10	.120	4	100	0
S5	IN	79-10-16	--	1	--	--	--	--	11	--	--
		80-01-29	420000	0	100000	5600	.10	.090	26	3600	40
S6	RETURN	80-01-30	200	0	60	30	.20	.100	3	<50	10
*	NEW WALES	79-09-06	260000	--	52000	8700	--	--	73	700	90
R1	RAIN	80-06-10	--	--	--	--	--	--	--	--	--
		80-06-12	--	--	--	--	--	--	--	--	--

* SAMPLE FROM NEW WALES CHEMICAL PLANT

TABLE 26.--CONCENTRATIONS OF TRACE ELEMENTS IN WATER FROM THE INTERNATIONAL MINERALS AND CHEMICAL CORPORATION CLEAR SPRINGS MINE--Continued

SITE MAP NUMBER (FIG. 23)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SELENIUM, TOTAL (UG/L AS SE) (01147)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
2	20	0	<10	0	1	1	0	<.1	3	3	0	50	6.0	10
3	20	0	9	0	20	2	4	.2	0	2	0	220	3.0	10
6	970	0	<10	0	2	1	0	1.8	2	1	0	90	1.0	10
7	10	1	3	4	0	0	10	.3	2	60	0	60	1.0	10
9	40	1	10	4	3	6	0	.2	3	3	1	130	--	10
10	0	0	10	2	0	0	0	1.5	1	4	0	250	1.0	10
11	0	0	11	0	10	2	3	.6	3	1	0	110	14	10
14	30	0	6	0	0	0	10	.2	0	2	0	140	.0	10
17	40	0	10	0	2	0	0	<.1	0	1	0	120	1.0	10
S1	20	0	2	0	2	1	10	.5	2	5	0	110	7.0	10
S2	--	--	--	--	--	--	--	.1	--	--	0	--	--	--
S3	20	0	5	0	1	1	0	.3	2	4	0	200	12	10
S4	20	0	4	0	1	0	0	.2	2	5	0	100	7.0	10
S5	--	--	--	--	--	--	--	.1	--	--	5	--	--	--
	40	430	1500	66	350	72	0	.0	9	750	8	190	--	3000
S6	30	0	3	1	0	0	0	.3	3	4	0	100	10	10
*	--	7	1600	23	300	130	230	<.5	110	260	1	330	--	3700
R1	--	--	--	--	--	--	--	--	--	--	--	1000	--	--
	--	--	--	--	--	--	--	--	--	--	--	40	--	--

* SAMPLE FROM NEW WALES CHEMICAL PLANT

TABLE 27.--CONCENTRATIONS OF ORGANIC CONSTITUENTS IN WATER FROM THE INTERNATIONAL MINERALS AND CHEMICAL CORPORATION CLEAR SPRINGS MINE

[IMC IS PREFIX TO ALL SITE MAP NUMBERS]

SITE MAP NUMBER (FIG. 23)	LOCAL SITE IDENTIFIER	DATE OF SAMPLE	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	PHENOLS (UG/L) (32730)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	TANNIN AND LIGNIN (MG/L) (32240)
2	3S	80-06-11	9.6	--	--	.00	--	.00
3	3D	80-01-10	26	24	0	.00	0	.00
6	2S	80-06-11	--	--	--	.10	--	.00
7	2D	80-01-22	4.5	4.3	5	.00	0	.00
9	WT9	80-06-12	9.3	--	1	.00	--	.00
10	4S	80-01-23	6.8	7.2	0	.00	0	.00
11	4D	80-01-09	20	3.4	0	.00	0	--
14	1D	80-01-23	3.7	3.4	9	.00	0	.00
17	BKD	80-06-10	1.4	--	--	.10	--	.00
S1	SE	80-01-29	8.9	12	0	.00	0	.00
S3	L FORT	80-01-30	52	--	2	.00	0	.00
S4	NE	80-01-29	37	28	2	.00	0	.00
S5	IN	80-01-29	9.0	--	10	.00	1	.00
S6	RETURN	80-01-30	13	14	2	.00	0	.00
*	NEW WALES	79-09-06	150	--	--	.40	1	--

* SAMPLE FROM NEW WALES CHEMICAL PLANT

Table 28.--Miscellaneous field and laboratory analyses of water from the International Minerals and Chemical Corporation, Clear Springs mine

[IMC is prefix to all site map numbers]

Site map number (fig. 23)	Local site identifier	Date	Fluoride, total (mg/L)	Residue total 105°C (mg/L)	Specific conductance (umho/cm)	pH (units)	Seeded biochemical oxygen demand 5-day 20°C (mg/L)
1	WT6	80-07-08	---	---	135	6.5	---
3	3D	80-01-10	---	---	---	---	1.9
4	WT5	80-07-08	---	---	208	5.3	---
5	WT7	80-07-08	---	---	360	7.3	---
7	2D	80-01-22	---	---	---	---	0.0
8	WT8	80-07-07	---	---	364	5.9	---
10	4S	80-01-23	---	---	---	---	0.0
11	4D	80-01-09	---	---	---	---	1.5
12	WT10	80-07-08	---	---	538	7.1	---
14	1D	80-01-23	---	---	---	---	1.6
S1	SE	80-01-29	---	---	---	---	2.1
S3	L FORT	80-01-30	---	---	---	---	4.6
S4	NE	79-10-16	3.7	---	---	---	---
--	--	80-01-29	---	---	---	---	1.8
S5	IN	79-10-16	1.7	26,800	---	---	---
--	--	80-01-29	---	---	---	---	2.4
S6	RETURN	80-01-30	---	---	---	---	0.9

☆U.S. GOVERNMENT PRINTING OFFICE: 1981-546-161/53

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INT. 413