COAL MINING AND RECLAMATION PERMIT

REVISED 6-21-04

Issued To: AMERICAN ENERGY CORP
43521 Mayhugh Hill Rd.
Beallsville, OH 43716

Telephone: (740) 926-9152

Permit Number: D-425
Application Number: D-0425-3
Acreage: 0
Underground Acreage 3440

Effective: 08/15/2003
Expires: 10/21/2004

Type of Operation: Underground (Longwall)

CONDITIONS

CONDITION TYPE	DESCRIPTION
Archeology	Prior to subsidence a level 1 historic architectural survey is necessary to determine which structures may be eligible for listing on the National Register of Historic Places. Applicant then needs to propose a mitigation plan on the eligible National Register structures 180 days prior to subsidence per PPD Underground 89-3. Note: this does not apply to panels 1 and 2 however surface disturbance of these panels will require further coordination with the Division prior to affectment.

Revised 6-21-04 RSS

The issuance of this permit means only that the application to conduct a coal mining operation meets the requirements of Chapter 1513 of the Revised Code, and as such DOES NOT RELIEVE the operator of any obligation to meet other federal, state or local requirements.

This permit is issued in accordance with and subject to the provisions, conditions, and limitations of Chapter 1513 of the Revised Code and Chapters 1501:13-1, 1501:13-3 through 1501:13-14 of the Administrative Code.

The water monitoring plan for this permit shall be:

Quality: See Page 26, F3 of the Permit Application
Quantity See Page 26, F3 of the Permit Application

Note: These monitoring requirements are separate from NPDES monitoring requirements.

Signature: Michael G. Sponsler by [signature] **Date:** 08/15/2003
Chief, Mineral Resources Management

ORIGINAL

F46 Rev: 07/01/2001

AEC 18066

INTER-OFFICE COMMUNICATION

ARCHAEOLOGY STATUS FORM

TO: Scott Stitzler

FROM: Jeff Reichwein, Ph.D.

DATE: June 21, 2004

Applicant: American Energy Corp

~~Application~~ Permit D-0425-3

Conditional Permit Issuance Revision

PLEASE INDICATE BELOW THE STATUS OF THE HISTORIC AND PREHISTORIC PROPERTIES ON THE ABOVE APPLICATION:

_____ CLEARANCE: EXPLANATION PROVIDED IN CLEARANCE LETTER.

X CONDITIONAL CLEARANCE: EXPLANATION PROVIDED BELOW:

applicant may longwall mine only panels one and two.

_____ SURVEY PENDING: EXPLANATION PROVIDED BELOW:

COAL MINING AND RECLAMATION PERMIT

REVISED 2-23-04

Issued To: AMERICAN ENERGY CORP
43521 Mayhugh Hill Rd.
Beallsville, OH 43716

Telephone: (740) 926-9152

Permit Number: D-425
Application Number: D-0425-3
Acreage: 0
Underground Acreage 3440

Effective: 08/15/2003
Expires: 10/21/2004

Type of Operation: Underground (Longwall)

CONDITIONS

CONDITION TYPE	DESCRIPTION
Archeology	Prior to subsidence a level 1 historic architectural survey is necessary to determine which structures may be eligible for listing on the National Register of Historic Places. Applicant then needs to propose a mitigation plan on the eligible National Register structures 180 days prior to subsidence per PPD Underground 89-3. Note: this does not apply to the northern most panel.

The issuance of this permit means only that the application to conduct a coal mining operation meets the requirements of Chapter 1513 of the Revised Code, and as such DOES NOT RELIEVE the operator of any obligation to meet other federal, state or local requirements.

This permit is issued in accordance with and subject to the provisions, conditions, and limitations of Chapter 1513 of the Revised Code and Chapters 1501:13-1, 1501:13-3 through 1501:13-14 of the Administrative Code.

The water monitoring plan for this permit shall be:

Quality: See Page 26, F3 of the Permit Application
Quantity See Page 26, F3 of the Permit Application

Note: These monitoring requirements are separate from NPDES monitoring requirements.

Signature: Michael L. Sponsler by R. Ritter **Date:** 08/15/2003
Chief, Mineral Resources Management

ORIGINAL

F46 Rev: 07/01/2001

INTER-OFFICE COMMUNICATION

ARCHAEOLOGY STATUS FORM

TO: Scott Stutler

FROM: Jeffrey Richards, PhD

DATE: February 23, 2004

Applicant: American Energy Corporation

Application: D-425-3

PLEASE INDICATE BELOW THE STATUS OF THE HISTORIC AND PREHISTORIC PROPERTIES ON THE ABOVE APPLICATION:

_____ CLEARANCE: EXPLANATION PROVIDED IN CLEARANCE LETTER.

_____ CONDITIONAL CLEARANCE: EXPLANATION PROVIDED BELOW:

X SURVEY PENDING: EXPLANATION PROVIDED BELOW:

Prior to any ground disturbance a Level I historic architectural survey necessary to determine which structures may be eligible for listing on the National Register of Historic Places. Applicant then needs to (does not apply to northern panel).

Propose a mitigation plan on the eligible National Register structures 180 days prior to disturbance per PAD-87-3.

REVISED 11-17-03

COAL MINING AND RECLAMATION PERMIT

Issued To: AMERICAN ENERGY CORP
43521 Mayhugh Hill Rd.
Beallsville, OH 43716

Telephone: (740) 926-9152

Permit Number: D-425
Application Number: D-0425-3
Acreage: 0
Underground Acreage 3440

Effective: 08/15/2003
Expires: 10/21/2004

Type of Operation: Underground (Longwall)

CONDITIONS

CONDITION TYPE	DESCRIPTION
Archeology	Except for the northernmost panel, no subsidence may occur on this permit until archaeological and cultural resources clearance has been granted by the Ohio Historical Preservation Office and the Division of Mineral Resources Management.

The issuance of this permit means only that the application to conduct a coal mining operation meets the requirements of Chapter 1513 of the Revised Code, and as such DOES NOT RELIEVE the operator of any obligation to meet other federal, state or local requirements.

This permit is issued in accordance with and subject to the provisions, conditions, and limitations of Chapter 1513 of the Revised Code and Chapters 1501:13-1, 1501:13-3 through 1501:13-14 of the Administrative Code.

The water monitoring plan for this permit shall be:

Quality: See Page 26, F3 of the Permit Application
Quantity See Page 26, F3 of the Permit Application

Note: These monitoring requirements are separate from NPDES monitoring requirements.

Signature: Michael G. Sponsler by [signature] **Date:** 08/15/2003
Chief, Mineral Resources Management

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F46 Rev: 07/01/2001

COAL MINING AND RECLAMATION PERMIT

Issued To: AMERICAN ENERGY CORP
43521 Mayhugh Hill Rd.
Beallsville, OH 43716

Telephone: (740) 926-9152

Permit Number: D-425
Application Number: D-0425-3
Acreage: 0
Underground Acreage 3440

Effective: 08/15/2003
Expires: 10/21/2004

Type of Operation: Underground (Longwall)

CONDITIONS

CONDITION TYPE	DESCRIPTION
Archeology	No subsidence may occur on this permit until archaeological and cultural resources clearance has been granted by the Ohio Historical Preservation Office and the Division of Mineral Resources Management.

LOCATION IS NOT AVAILABLE

The issuance of this permit means only that the application to conduct a coal mining operation meets the requirements of Chapter 1513 of the Revised Code, and as such DOES NOT RELIEVE the operator of any obligation to meet other federal, state or local requirements.

This permit is issued in accordance with and subject to the provisions, conditions, and limitations of Chapter 1513 of the Revised Code and Chapters 1501:13-1, 1501:13-3 through 1501:13-14 of the Administrative Code.

The water monitoring plan for this permit shall be:

Quality: See Page 26, F3 of the Permit Application
Quantity See Page 26, F3 of the Permit Application

Note: These monitoring requirements are separate from NPDES monitoring requirements.

Signature: Michael D. Somerlot by [illegible] **Date:** 08/15/2003
Chief, Mineral Resources Management

F46 Rev: 07/01/2001

ORIGINAL

0425-3

AEC 18071

PERMIT SUMMARY SHEET
Division of Mineral Resources Management

Permit Number: D-425

Application Number: D-0425-3

See permit cover sheet for specific conditions and hydrologic monitoring requirements.

Inspector's Note:
This summary is designed only to advise you of important provisions of a permit that require your attention and monitoring. Your familiarity with requirements and permitted activities will insure that mining and reclamation occurs as was intended and approved at the time of permit issuance. Please take the time to review relevant provisions of the permit carefully and thoroughly. Should you have questions about this or any permit, please do not hesitate to contact the application manager within the Permitting Section.

Items marked are applicable to this permit:

- ☐ Auger Mining (attachment 18)
- ☐ Alternate Resoiling Material (attachment 19)
- ☐ Blasting Plans
- ☐ Buffer Zone Variance Request (BZVR)
- ☐ Coal Waste Disposal (attachment 28)
- ☐ Delay in Contemporaneous Reclamation
- ☐ Excess Spoil Disposal
- ☐ Experimental Mining Practices
- ☐ Federal Lands
- ☐ Mountain Top Removal
- ☐ MSHA Impoundment
- ☐ AML No-Cost Area
- ☐ Prime Farmlands (attachment 15)
- ☐ Remining (attachment 33)
- ☐ Remining (Modified effluent)
- ☐ Special handling of acid-forming/toxic material
- ☐ Beneficial Use of CCB's (Att. 34)
- ☐ Public Road Permit (attachment 9)
- ☐ Small Area Drainage Exemption (SADE)
- ☐ Steep Slope Mining
- ☐ Slurry Impoundment
- ☑ Test Hole Variance
- ☐ Variance from AOC
- ☐ Wetlands Affectment/Avoidance
- ☐ Within 500' of active UG mine
- ☑ Within 500' of abandoned UG mine
- ☐ Within 100' of a cemetery
- ☐ Within 300' of occupied dwelling (attachment 10)
- ☐ Within 300' of public building, church, school, community or institutional building or public
- ☐ Within 1000' of wild, scenic or recreational river
- ☐ OEPA 401/COE 404 permits needed for wetlands or stream affectment and/or reconstruction
- ☐ Tree Planting in Reclamation Plans

Application Manager: Scott Stiteler, Application Manager **Date:** 8-15-05

F103 Rev: 07/01/2001

ORIGINAL

D0425-3

AEC 18072

APPROVED UNDERGROUND COAL MINING PERMIT APPLICATION

Applicant:

Name: AMERICAN ENERGY CORP
Address: 43521 Mayhugh Hill Rd.
Beallsville, OH 43716
Telephone: (740) 926-9152

Application Number: D-0425-3

Number of acres in underground workings: 3440

Number of surface acres to be affected: 0

The water monitoring plan for this permit shall be:

Quality: See Page 26, F3 of the Permit Application
Quantity: See Page 26, F3 of the Permit Application

Note: These monitoring requirements are separate from NPDES monitoring requirements.

This application is APPROVED since it demonstrates and the Division has found that the criteria in paragraph (E) of rule 1501: 13-5-01 of the Administrative Code have been met.

Signature: Michael [illegible] **Date:** 8-15-03

F63 Rev: 07/01/2001

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00425-3

AEC 18073

Cumulative Hydrologic Impact Assessment
American Energy Corporation
Underground Coal Mining and Reclamation Permit Application D-0425-3
Mike Dillman
August 15, 2003

Background

Location: The proposed underground adjacent area application is located in Belmont County, Washington Township, Sections 13, 14, 19, 20, 25, 26, 31, and 32; in Belmont County, Wayne Township, Section 1; and in Monroe County, Sunsbury Township, Sections 6, 30, and 36. The operation will be northeast of the village of Beallsville and south of permit D-0425-1.

Operation: The proposed operation will involve full recovery longwall underground mining of the #8 Pittsburgh Coal seam of the Pennsylvanian Monongahela Group within an application area of 3,440 acres. Full coal recovery will occur beneath 2727.4 acres, with total coal acreage to be mined reaching 2966.7 acres, including partial recovery in development areas. No permit area will be involved.

Previous Mining: Longwall mining operations for the #8 Coal seam have been conducted in the general area for over 20 years. Recently, a portion of the proposed adjacent area was permitted for room and pillar underground mining of the #8 Coal seam by adjacent area permit D-0425-4. Abandoned deep mine Bt-270, which was known as the Powhatan No. 1 and mined the # 8 Coal seam, is located at least 200 feet downdip of the limits of the proposed mine, at least 220 feet from development mining areas, and at least 340 feet from full coal recovery operations. Therefore, this abandoned underground mine will not be intercepted.

Geology: Within the application area, the #8 Coal seam dips to the southeast at 0.5 percent, or approximately 26 feet per mile, which is consistent with the regional dip. There are some minor undulations; however no significant structural deformities are present in the underlying bedrock. The #8 Coal varies in elevation from approximately 720 feet mean sea level in the northwest corner of the application area to approximately 640 feet mean sea level in the southeast corner of the application area. Overburden thickness within the application area varies from 280 feet along Crabapple Creek in the north-central portion of the application area (near the section corner common to sections 25, 26, 31, and 32) to 650 feet in the northeastern portion. Shale, limestone, claystone, sandstone, and coal are present in the overburden. The principal coal seams in the overburden are the #9 Sewickley, the #11 Waynesburg, and the #12 Washington; the #10 Coal seam is absent throughout the application area. Surface elevations range from approximately 940 feet mean sea level where Crabapple Creek crosses the boundary of the application area on the north to 1320 feet mean sea level in the northeast portion of the application area.

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D0425-3

AEC 18074

The #8 Coal is usually around five feet thick, with an average of 5.15 feet and a range from 3.97 feet to 5.7 feet. The #8 Coal seam has high total sulfur and pyritic sulfur contents. The total sulfur percent ranges from 4.71 to 6.61 and averages around 5.5 percent. The pyritic sulfur percent ranges from 1.68 to 4.42 and averages about 2.8 percent. Nevertheless, acid mine drainage and gravity discharge should not be a problem, given the depth of the coal seam beneath the land surface. Shale, claystone, and/or limestone underlie the #8 Coal seam.

Bedrock units within the proposed adjacent area belong to the Dunkard Group. This Group is Upper Pennsylvanian to Permian in age, begins at the top of the #11 Waynesburg Coal, and continues to the land surface. The underlying Monongahela Group includes the Pittsburgh #8 Coal, the Waynesburg #11 Coal, and the intervening strata. The top of the #11 Coal is near, but below, drainage in the proposed adjacent area. "Soft" rocks such as shale and claystone comprise about 65 percent of the overburden above the #8 Coal seam, although their distribution varies. Within the Dunkard Group, soft rocks comprise about 85 percent of the interval, whereas in the Monongahela Group they comprise only about 44 percent of the column. These rocks have limited primary permeability, tend to deform in a more plastic manner, and are more prone to self-healing after fracturing, in contrast to harder rocks such as limestone and sandstone.

Ground Water: The Analysis of Existing Ground Water File Data from the Ohio Division of Water states that, "Ground water supplies are very limited and often inadequate. Yields generally range from 0 to 20 gpm at depths from 28 feet to 114 feet. Supplies are obtained from thin beds of sandstone, shale, and limestone." The report recommends the monitoring of wells in the area, which will be accomplished through the submitted monitoring plan.

The applicant has identified an unconsolidated aquifer, labeled zoned A and formed in silt, sand and gravel, and weathered bedrock above solid bedrock. This unconsolidated aquifer occurs from the land surface to a depth of approximately 30 feet, and recharges all but one of the dug wells in the area. This zone is used for domestic, commercial, and livestock-watering purposes and can produce water at rates from less than 2 gallons per minute to greater than 20 gallons per minute. In addition, two bedrock aquifers, labeled B and C in descending order, are located within the hydrology review area. Aquifer B is composed of silt, sandstone, limestone, and coal between the elevations of 1280 and 990 feet mean sea level, and includes the strata from the Washington #12 Coal to the surface of the consolidated bedrock. This zone has domestic and livestock-watering uses. Water production rates are generally less than two gallons per minute. Aquifer C is composed of silt, sandstone, limestone, and coal between the elevations of 1070 and 890 feet mean sea level, and includes the strata from the Waynesburg #11 Coal to the bottom of the Washington #12 Coal. This zone also has domestic and livestock-watering uses and generally produces at less than two gallons per minute. Based on the site-specific information provided in the application, the above intervals are considered to be aquifers only where they occur within 100 feet of the land surface, in the zone of greatest secondary porosity and permeability.

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Ground water supplies within the hydrology review area consist of drilled wells, dug wells, and developed springs. In general, the wells and developed springs have good water quality, although several of them exhibit high total sulfates, hardness, and specific conductivity. A number of residences are supplied by the public water line.

Surface Water: Almost the entire proposed adjacent area is located within the Captina Creek drainage basin. Only very small portions located in the southern half of Section 6 in Sunsbury Township and along State Route 556 in Sections 30 and 36 in Sunsbury Township are within the Sunfish Creek drainage basin. The drainage basin code designation is S-04.

Perennial tributaries Piney Creek, Crabapple Creek, and Peavine Creek drain the northwestern, north-central, and northeastern portions of the proposed adjacent area, respectively. The Ohio EPA has designated these streams as warmwater aquatic life habitats that are used as agricultural and industrial water supplies, and as primary contact recreation waters. The far southwestern and south-central portion of the proposed adjacent area are drained by south-flowing tributaries of East Fork and Ackerson Run, respectively. These streams are located within the Sunfish Creek drainage basin. East Fork and Ackerson Run have similar OEPA classifications as the previously-mentioned streams, except that East Fork is a secondary contact recreation water.

For further information regarding the Geology, Ground Water, and Surface Water, refer to the Written Findings for D-0425-1 and D-0425-4.

Predicted Consequences

Ground Water: Studies of mining impacts at the Powhatan No. 6 Mine, located approximately six miles north of this proposed adjacent area in a similar geologic and hydrologic setting and also mining the #8 Coal, have been summarized by the applicant. Of 46 undermined wells evaluated at the Powhatan No. 6 Mine, 41% were minimally impacted, 11% were moderately impacted, and 48% were severely impacted. Of the 32 undermined developed springs that were evaluated, 6% had minimal decreases in flow, 3% had moderate decreases in flow, and 91% had severe decreases in flow. Wells whose water levels and springs whose flow rates returned within two months of undermining or did not decline were considered to have undergone minimal impacts. Similarly, those wells and springs that returned to pre-mining conditions within two to six months were considered to have undergone moderate impacts, while those wells and springs that did not return to pre-mining conditions within six months or within the monitoring period were considered to have undergone severe impacts.

Based on similar hydrogeologic settings between the Powhatan No. 6 Mine and the proposed adjacent area, it is believed that similar impacts, in terms of the percent of impacted supplies, will occur as a result of the proposed operation. It should be noted that of the variables that typically affect diminution of water supplies, such as overburden thickness, panel position, topographic setting, and percentage of hard rocks, only topographic setting had a correlation to impact for wells, while none of the variables

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showed any correlation with impact to developed springs. That is, there was no apparent relationship between the physical setting of springs and the impacts of mining on springs. Therefore, the relationship of a used supply's recharging aquifer to the zones of the classical subsidence profile, e.g., the fractured, dilated, constrained, and surface fracture zones, is not considered to be significant with respect to anticipated impact.

In its application, American Energy Corporation presented the results of an additional study at the Powhatan No. 6 Mine of all springs (80 in number) undermined from January 1992 through March 2003, a period of over 11 years, in order to determine the distances and positions at which springs are negatively impacted by the mining of adjacent longwall panels. Springs were considered to be impacted if their flow decreased below historic, normal ranges for an extended period of time, taking rainfall into account. Springs were categorized as being located to the side of or off the end of an adjacent panel. These 80 springs were monitored monthly and/or weekly due to their proximity to the longwall mining. Monthly monitoring was performed when the spring was within 1000 feet of any longwall panel, and occurred for a minimum of one year prior to the longwall panel passing the spring until one year after the panel passed the spring. Weekly monitoring usually was performed when a spring was within 500 feet of an approaching panel and occurred for three weeks before and after the panel passed. Of the 80 springs, some were not monitored weekly due to the fact that no panel passed within the minimum distance to trigger weekly monitoring.

Of the 40 weekly monitored springs located off the sides of the panels, the furthest distance at which an impact occurred was 500 feet. Of the 11 weekly monitored springs located off the ends of panels, the furthest distance from the adjacent panel at which impact occurred was determined to be 210 feet. This value, for prediction purposes, was increased to 300 feet due to the fact that the data set for the end of panel analysis was smaller than the data set for the side of panel analysis. A similar study regarding impacts to a small set of wells (15 in number), suggests that impacts to wells located along the sides of panels are limited to 500 feet. Hydrographs and spreadsheets have been submitted to document the above findings.

The applicant indicates that the difference in impact distances for springs between the two settings, i.e. from the panel side and from the panel end, are due to the final configuration (subsidence trough) that develops after a panel has moved past a point. This is due to the fact that strata beyond the end of a panel undergo smaller stresses than strata beyond the side of a panel. As a result, the subsidence trough extends to a smaller distance beyond the panel end as compared to the panel side.

A review of the literature indicates that the vast majority of ground water impacts occur in an area defined by an angle of less than 40 degrees from a vertical line drawn at the panel's edge; this angle has been called the angle of dewatering (Cifelli and Rauch, 1986; Tieman and Rauch, 1986; Rauch, 1989; and Carver and Rauch, 1994). Calculations based on this angle of dewatering, given a maximum overburden thickness of 650 feet, produce a dewatering distance of approximately 550 feet from the panel edge (650 x tan 40^0 = 545, as tan 40^0 = 0.839). In fact, Carver and Rauch, 1994, found that 90 percent of

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00425-3

AEC 18077

affected supplies adjacent to panels were within a 27-degree angle of dewatering. The remaining 10 percent that exceeded the 27-degree angle of dewatering in the Carver and Rauch study consisted of a single supply.

These findings support the Powhatan No. 6 Mine finding, as 600-foot maximum overburden thickness x tan 27° = 305 feet (tan 27° = 0.510). The impact distances reported in the literature therefore agree very well with those in studies conducted at the Powhatan No. 6 Mine, which found that ground water supplies were not affected at a distance greater than 500 feet from the sides of longwall panels for both wells and springs and 300 feet from the ends of panels for springs. (In rare instances, wells were impacted up to 700 feet from the end of a panel; however, in most instances, impacts were limited to 500 feet.)

Consequently, in consideration of all of the above studies, it is predicted that supplies greater than 500 feet from a panel side or 300 feet from a panel end will not be adversely affected by subsidence caused by longwall mining. It should be noted that distinction in distances of disturbance from panel side (500 feet) and panel end (300 feet) is not found in the literature.

Based on data presented in the application, minimal, and usually temporary, impacts to iron, manganese, and hardness may occur as a result of the proposed underground mining operation.

Surface Water: Sufficient cover above the #8 Coal seam, will prevent inflow of water diverted from the streams into the deep mine. The streams shall be monitored for quantity and quality in order to assess the impact of mining. The proposed mining operation should not significantly affect stream quality with respect to pH, total iron, manganese, acidity, and dissolved solids. Minor short-term turbidity resulting from subsidence is possible, and would be reflected by an increase in total suspended solids. Monitoring data collected at the Powhatan No. 6 Deep Mine has indicated that longwall mining has not significantly affected the flow of streams that were undermined by full coal recovery operations. Observations cited in the literature and noted by the applicant of previous streamflow loss indicate that the diverted flow re-appears downstream, and that pre-mining conditions return within a relatively short period of time. Dixon and Rauch, 1990, found that streamflow recovery over mines with at least 500 feet of overburden is complete by about one year after undermining. Carver and Rauch, 1994, report that subsidence from longwall mining typically reduced stream discharge for two to three years, depending on site-specific conditions, and that water diverted from affected streams remained in the shallow ground water flow system and probably did not penetrate deeper than local base level. They indicate that the lost ground waters probably moved down gradient through shallow aquifers and then returned to streamflow. Consequently the proposed operation should not jeopardize the previously mentioned designations of the Ohio EPA for any of the streams.

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Monitoring and Water Replacement

The applicant adequately addressed the monitoring plan for the wells, developed springs, and streams. Furthermore the applicant has identified several options for providing temporary and long-term water supply replacements. Among these are the repairs of damaged supplies, drilling of new wells, deepening of existing wells, replacement of developed springs with ponds, and the connection to the public water line.

In conclusion, the proposed operation will not result in material damage to the hydrologic balance of the hydrology review area, and the proposed operation has been designed to minimize the anticipated hydrologic impacts to the hydrologic balance.

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DMRM
12/00

OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Mineral Resources Management

WRITTEN FINDINGS

Applicant: American Energy Corporation

Application No.: D-0425-3

(This permit contains shadow area only)

The Division of Mineral Resources Management completed a regulatory review of this application on August 15, 2003. As required in provisions of 1501:13-5-01(E) of the Ohio Administrative Code, the Division's comprehensive review of this application resulted in finding the following:

1. The permit area is within an area designated as unsuitable for mining pursuant to 1501:13-3-07 of the Ohio Administrative Code. As of this date, three areas within the state have been designated as unsuitable: Guernsey County, Valley Township Sections 7 & 8 (for all coal mining operations); Carroll County, Harrison Township Sections 4 and 5, Center Township Sections 27 and 33, Washington Township Sections 28, 29, 30, 34, 35, and 36 (for full coal recovery underground mining operations); and Belmont County, Smith Township Sections 27, 28, 33, 34 (for surface operations), and Sections 27, 33, 34 (for underground operations above the Meigs Creek No. 9 coal seam).

2. The permit area is not within an area under study for designation as unsuitable for mining. This finding was determined following a review of lands unsuitable petitions on file with the Division as of 8-15-03.

3. Coal mining operations proposed in this permit application will not affect the continued existence of threatened or endangered species or result in the destruction or adverse modification of their critical habitat as determined under the Endangered Species Act of 1973 (16 U.S.C. 1513 et seq.).

   There are several species on the federal list that are found in the coal mining region of Ohio. Sightings of Indiana Bat have been recorded in Belmont and Monroe Counties. Review of the permit application; consultation with the U.S. Department of the Interior, Fish and Wildlife Service dated 12-11-02; and information dated 1-22-03 provided by the Natural Heritage Program administered by the Division of Natural Areas & Preserves; and/or consideration of the endangered and threatened species from the U.S. Fish & Wildlife Service (7/02) offer no indication of listed species having been sighted or critical habitat on or in the vicinity of the application area.

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D0425-3

4. The private mineral estate has been severed from the private surface estate on the surface properties owned by (See Page 7, C.(1)(b) of this permit). This finding is based upon a review of the following documents submitted under Part 1, C(8)(b)(ii) of the permit application. We have determined that these documents allow for the extraction of coal by the mining method(s) identified in the application: Deed Affidavits.

5. The applicant and/or any affiliated company has corrected or is in the process of correcting, to the satisfaction of the issuing agencies, all notices of violations/IHCO's and has no unpaid final demand(s) for civil penalty assessments. This finding is based on verification of Division-issued NOV's, IHCO's, and CPA's and review of information through the AVS on 8-14-03. See attached documentation verifying this information. This finding is also based on a records search by Dave Clark from the Cambride district office on 8-15-2003.

6. The applicant is not delinquent in payment of the Federal reclamation fee required by Section 402 of Public Law 95-87 based on review of the AVS on 8-14-03. See attached AVS printout.

7. The applicant (and the operator, if applicable) does not control and has not controlled mining operations with a demonstrated pattern of willful violations of Chapter 1513. of the Revised Code and rules adopted thereunder of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with such provisions. This finding is based on a records search by Dave Clark from the Cambridge district office on 8-15-2003.

8. The Division has reviewed and the chief has approved each of the following items pursuant to 1501:13-01 through 1501:13-14 of the Ohio Administrative Code:

	Buffer Zone Variance Request: *Date of approval* _____
X	Test Hole Variance Request: *Date of approval* 3-26-02
	Small Area Drainage Exemption: *Date of approval* _____
	Road Permit: *Date of approval* _____
	Alternative Resoiling Material: *Date of approval* _____
	Beneficial use of CCP's
	Other permits necessary to operate are issued or applied for including: NPDES, 404, 401, others _____, or the permit is conditioned appropriately.

Refer to the administrative file for documentation of any other specific approvals required.

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00425-3

9. Coal mining and reclamation to be performed under this permit will be consistent with other operations to be performed during the same permit term in areas adjacent to the permit area. This finding is based upon the Division's review of the permit application and adjacent proposed or existing permit areas, including: See Attachment 5 and Attachment 23 located in the permit application.

10. Based on our hydrologist's review of Part 2, Items B, C, D, E, F and Part 3, Items A(7), D(9), E, F, H of the permit application as documented in the Cumulative Hydrologic Impact Assessment (CHIA), we find that the proposed operations have been designed to prevent damage to the hydrologic balance outside the permit area.

11. The probable cumulative hydrologic impact for this mining operation area and adjacent areas on the hydrologic regime and water availability is: See attached CHIA. This finding is based upon the Division's hydrologist's a comprehensive review of the permit application, Attachment 14, analysis of existing ground water data maintained by the Division of Water, and other available hydrological and geological data which is part of the permit application. These findings are summarized in the (CHIA) completed by the Division's hydrologist on 8-15-03.

12. Based upon the Division's review of the permit application; use of reasonable mining and reclamation practices proposed in the application; technical review by the Division's engineers, hydrologists, soil scientists, and other technical experts; consultation with other agencies; and the Division's previous experience with the applicant (if applicable), the chief of the Division has found that the mining and reclamation plans contained in Parts 2, 3, and 4 of the application can be feasibly and responsibly accomplished.

13. To protect against possible adverse effects of the proposed mining operations on properties listed or eligible for listing on the National Register of Historic Places, the Chief of the Division has implemented one of the following three actions after considering information provided by the Division Archaeologist and the SHPO dated 8-15-03:

X	The permit is conditionally approved with strict limitations on mining activities in and around the historic resources. Please refer to the permit approval document that includes special conditions designed to protect historic resources that are applicable to this permit.
	Prior to application approval, the Chief requested specific revisions to the proposed mining and reclamation plan so that impacts to the historic resources on the permit area are eliminated and/or minimized. Submitted revisions are reflected in the permit application.
	Following review by the Division's Archaeologist and representatives of the State Historic Preservation Office (SHPO), the Chief determined in a written finding that no additional protective measures are needed to protect the historic resource(s) found on the permit area.

ORIGINAL

00425-2

DMRM
12/00

14. The Division of Mineral Resources Management has determined that permit application number D-0425-3 submitted on 12-11-02, is accurate, complete, and complies with the requirements of Chapter 1513 of the Ohio Revised Code and all rules adopted thereunder.

__X__ There are special conditions on this permit.

(Application Manager) 8-15-03 (Date)

(Chief, Division of Mineral Resources Management) 8-15-03 (Date)

ORIGINAL

D0425-3

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
UNDERGROUND COAL MINING AND RECLAMATION
PERMIT APPLICATION

RECEIVED
APR 08 2002

Applicant: American Energy Corporation

A. Type of Operation (check appropriate space (s)):

____ Shaft, ____ Slope, ____ Drift,
____ Room and Pillar, ____ Pillar Extraction,
__X__ Longwall, ____ Combined Surface and Underground

B. Type of Application (Check appropriate space (s)):

(1) ____ New
(2) ____ Initial Underground Workings to Existing Permit
(3) __X__ Additional Underground Workings

C. Address the following if applicable:

(1) Permit Number D-0425
(2) Date Issued October 22, 1984

D. Did a person other than an employee of the applicant prepare this application? ____ Yes, __X__ No. If Yes, provide:

Preparer's Name _____
Address
City _____ State _____ Zip _____
Telephone _____

E. I, the undersigned, a responsible official of the applicant, do hereby verify the information in the complete permit application as true and correct to the best of my information and belief.

Printed Name Robert D. Moore ; Title President

Signature _____ ; Date April 5, 2002

Sworn before me and subscribe in my presence this

5th day of April, 2002.

Barbara L. Rush
Notary Public

BARBARA L. RUSH
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES 9-01-04

ORIGINAL

D0425-3

AEC 18084

F. For Revision Review Only. This item is to be completed after revision, if any, have been made to the permit application.

I, the undersigned, a responsible official of the applicant, do hereby verify and acknowledge the revisions made during the permit review process as true and correct to the best of my information and belief.

Printed Name Robert D. Moore ; Title President
Signature ; Date 7/11/03

Sworn before me and subscribe in my presence this 11th day of July, 2003.

KATHY J. ROE
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES 12-25-04

Notary Public Kathy J. Roe

PART 1, LEGAL, FINANCIAL, COMPLIANCE, AND RELATED INFORMATION

A. IDENTIFICATION OF INTERESTS

(1) Applicant's Name **American Energy Corporation**
Address **43521 Mayhugh Hill Road**
City **Beallsville** State **Ohio** Zip **43716**
Telephone 740 - 926 - 9152
Employer Identification No. (EIN) _____ ,or
Social Security No. (SSN) _____

(2) Indicate business structure of applicant and additional information:

_____ Single Proprietorship,
_____ Partnership (registration no. and date obtained) _____ ,
X Corporation (charter no. and date incorporated) **00842695, 4/12/1993** ,
_____ Association, _____ Other, specify _____

(3) If the applicant is a single proprietorship, provide the following:
Owner's Name _____
Address _____
City _____ State _____ Zip _____
Telephone _____-_____-_____
EIN _____ , or SSN _____
Beginning date of ownership _____

ORIGINAL

00423-3

(4) If the applicant is a business entity other than a single proprietorship, provide the following for the applicants statutory agent and submit Attachment 1.

Agent's Name American Energy Corporation
Address 43521 Mayhugh Hill Road
City Beallsville State OH Zip 43716
Telephone 740 - 926 - 9152
EIN __ _____ , or SSN (optional) _____

(5) Is the operator of the mine to be a person different from the applicant? _____ Yes, X No. If "yes," provide the operator's name and submit Attachment 17. (Note: if more than one operator, indicate operator's name and submit a separate attachment for each.)

Operator's Name _____

(6) Provide the following for the person who will pay the abandoned mine land reclamation fee for the applicant.

Name American Energy Corporation
Address 43521 Mayhugh Hill Road
City Beallsville State OH Zip 43716
Telephone 740 - 926 - 9152
EIN __ _____ , or SSN (optional) _____

(7) Provide the following for all persons having the authority or ability to commit the financial, real property assets, or working resources of the applicant who are not otherwise identified as officers, directors, or owners of the applicant. If none, check box: [X].
If any person listed is a business entity and not an individual, also complete Attachment 1 for that person.

Name _____
Address _____
City _____ State _____ Zip _____
Telephone _____ - _____ - _____
EIN _____, or SSN _____
Date O & C relationship began/ended (if applicable)
_____ / _____
Submit and identify additional pages necessary to complete response.

ORIGINAL

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 1
(OWNERS AND CONTROLLERS)

Applicant's Name AMERICAN ENERGY CORPORATION

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. If any person listed is a business entity and not an individual, also complete an Attachment 1 for that person.

Name of business entity AMERICAN ENERGY CORPORATION

Name Robert D. Moore
Street address 43521 MAYHUGH HILL ROAD
City BEALLSVILLE State OHIO Zip 43716
EIN _____, or SSN _____
Title of position within entity PRESIDENT & TREASURER
Date position assumed/ended (if applicable) 6/25/01
Percent of ownership 0% Date of ownership _____
Location in organizational structure PRESIDENT & TREASURER

Name MURRAY ENERGY CORPORATION
Street address 43521 MAYHUGH HILL ROAD
City BEALLSVILLE State OHIO Zip 43713
EIN _____, or SSN _____
Title of position within entity SOLE SHAREHOLDER
Date position assumed/ended (if applicable) _____
Percent of ownership 100% Date of ownership 2/23/01
Location in organizational structure SOLE SHAREHOLDER

Name MICHAEL O. McKOWN
Street address 43521 MAYHUGH HILL ROAD
City BEALLSVILLE State OHIO Zip 43713
EIN _____ or SSN _____
Title of position within entity SECRETARY
Date position assumed/ended (if applicable) 11/01/99
Percent of ownership _____ Date of ownership _____
Location in organizational structure SECRETARY

Submit and identify additional pages necessary to complete response.

ORIGINAL

004258

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 1
(OWNERS AND CONTROLLERS)

Applicant's Name AMERICAN ENERGY CORPORATION

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. If any person listed is a business entity and not an individual, also complete an Attachment 1 for that person.

Name of business entity MURRAY ENERGY CORPORATION

Name ROBERT E. MURRAY
Street address 29325 Chagrin Blvd., Suite 300
City Pepper Pike State OHIO Zip 44122
EIN _____, or SSN _____
Title of position within entity PRESIDENT CEO, AND SHAREHOLDER
Date position assumed/ended (if applicable) 2/23/01
Percent of ownership 100% Date of ownership 2/23/01
Location in organizational structure _____

Name MICHAEL D. LOIACONO
Street address 29325 Chagrin Blvd., Suite 300
City Pepper Pike State OHIO Zip 44122
EIN _____, or SSN _____
Title of position within entity TREASURER
Date position assumed/ended (if applicable) 2/23/01
Percent of ownership 0% Date of ownership _____
Location in organizational structure _____

Name MICHAEL O. McKOWN
Street address 29325 Chagrin Blvd., Suite 300
City Pepper Pike State OHIO Zip 44122
EIN _____ or SSN _____
Title of position within entity SECRETARY
Date position assumed/ended (if applicable) 2/23/01
Percent of ownership 0% Date of ownership _____
Location in organizational structure _____

Submit and identify additional pages necessary to complete response.

ORIGINAL

004253

AEC 18088

(8) Provide the following for all persons owning or controlling the coal to be mined by another person under a lease, sublease, or other contract and (a) having the right to receive the coal after mining, or (b) having the authority to determine the manner in which another person conducts coal mining operations. If none, check box: [X]. If any person listed is a business entity and not an individual, also complete Attachment 1 for that person.

Name _____
Address _____
City _____ State _____ Zip _____
Telephone ____-____-____
EIN _____, or SSN _____
O & C relationship to entity _____
Date O & C relationship began/ended (if applicable)
_____/_____
Submit and identify additional pages necessary to complete response.

(9) List below the person or persons primarily responsible for ensuring that the applicant will comply with Chapter 1513. of the Revised Code and the rules adopted pursuant thereto while mining and reclaiming the area for which this permit is requested.
Robert D. Moore

(10) Has the applicant, any person listed under Items A(3), (7), and (8), or any person listed on Attachment 1 who "owned or controlled" or "owns or controls" as defined in 1501: 13-4-03(A), held a coal mining permit in the United States within the five years preceding the date of the application?
__X__ Yes, _____ No. If "yes," submit Attachment 5.
SEE ATTACHMENT 5

(11) Does the applicant, any person listed under Items A(3), (7), and (8), or any person listed on Attachment 1 have a pending coal mining application in any state of the United States?
__X__ Yes, _____ No. If "yes," submit Attachment 23.
SEE ATTACHMENT 23

(12) Indicate name of mine **Century Mine**

(13) List below the MSHA identification numbers for the mine and for all mine-associated structures requiring MSHA approval on the proposed permit area.

33-01070

(14) Submit Attachment 22, Certificate of Liability Insurance.
SEE ATTACHMENT 22

ORIGINAL

11/92

OHIO DE RTMENT OF NATURAL RES JRCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity AMERICAN ENERGY CORPORATION

Address 43521 MAYHUGH HILL ROAD

City BEALLSVILLE State OHIO Zip 43716
Telephone 740 - 926 - 9152
EIN _____ or SSN

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
D-0425	OHIO	ODNR, DMR	33-01070 11/06/00
D-1159	OHIO	ODNR, DMR	33-01070 11/06/00

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

ORIGINAL

D0425

AEC 18090

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: UtahAmerican Energy, Inc.
Address: P. O. Box 187
City: St. Clairsville State: OH Zip: 43950
Telephone: 435 - 613 - 0393
EIN: _ or SSN:

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
ACT/007/013	UT	DOGM	Horse Canyon Mine 42-00100 12/24/78 Lila Canyon Mine 42-02241 4/15/99

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray, Director

ORIGINAL

D0-25

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: UMCO Energy, Inc.
Address: 981 Route 917
City: Bentleyville State: PA Zip: 15314
Telephone: 724 - 258 - 2056
EIN: _____ or SSN: _____

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
63921301	PA	DEP	36-08375 June 08, 1994

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray – Director

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: The Oklahoma Coal Company
Address: 29325 Chagrin Blvd, Suite 300
City: Pepper Pike State: OH Zip: 44122
Telephone: 216 - 765 - 1340
EIN: _____ or SSN: _____

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
D-0230	OH	DMRM	No MSHA number

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray, Director

ORIGINAL

004253

AEC 18093

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: Maple Creek Mining Company
Address: 981 Route 917
City: Bentleyville State: PA Zip: 15314
Telephone: 724 - 258 - 2056
EIN: _____ or SSN: _____

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
63841302	PA	DEP	36-00970 – June 30, 1995
63733706	PA	DEP	36-00970 – June 30, 1995
63723707	PA	DEP	36-00970 – June 30, 1995

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray – Director

ORIGINAL

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: MonValley Transportation Center, Inc.
Address: P.O. Box 135 1060 Ohio Ave.
City: Glassport State: PA Zip: 15045
Telephone: 412 - 673 - 1500
EIN: _ or SSN:

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
02851602	PA	DEP	36-08678 06/08/95

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray - Director

ORIGINAL

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: The American Coal Company
Address: 29325 Chagrin Blvd Suite 300
City: Pepper Pike State: OH Zip: 43122
Telephone: 216 - 765 - 1240
EIN: ___ or SSN: ___

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
02	IL	Office of Mines And Minerals	11-02752 10/14/98
255	IL	Office of Mines And Minerals	11-02752 10/14/98
257	IL	Office of Mines and Minerals	11-02752 10/14/98
306	IL	Office of Mines and Minerals	11-02752 10/14/98
1410	IL	Office of Mines and Minerals	11-02752 10/14/98
352	IL	Office of Mines and Minerals	11-02752 10/14/98 (to replace #344 soon)

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray President

ORIGINAL

00429

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: The Ohio Valley Coal Company
Address: 56854 Pleasant Ridge Road
City: Alledonia State: OH Zip: 43902
Telephone: 740 - 926 - 1351
EIN: _____ or SSN: _____

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
D-0360	OH	DMRM	33-01159 5/25/88

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray - Director

ORIGINAL

D0425-3

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name: AMERICAN ENERGY CORPORATION

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity: Belmont Coal Company
Address: P. O. Box 146
City: Powhatan Point State: OH Zip: 43942
Telephone: 714 - 795 - 5200
EIN: _____ or SSN: _____

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
D-1020	OH	DMRM	33-04397 7/31/97
D-0241	OH	DMRM	33-03048 7/2/93

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including the percent ownership and location in organizational structure:

Robert E. Murray, Shareholder, 100%

ORIGINAL

D0423-2

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

ATTACHMENT 23
(PENDING PERMIT APPLICATIONS)

Applicant's Name AMERICAN ENERGY CORPORATION

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed AMERICAN ENERGY CORPORATION

Application No.	Name of Regulatory Authority	State
D-0425-2	DMRM	OH
R-1159-4	DMRM	OH

ORIGINAL

00425-3

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

ATTACHMENT 23
(PENDING PERMIT APPLICATIONS)

Applicant's Name AMERICAN ENERGY CORPORATION

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed BELMONT COAL COMPANY INC.

Application No.	Name of Regulatory Authority	State
10168	DMRM	OH
1473	DMRM	OH

ORIGINAL

00425-3

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

ATTACHMENT 23
(PENDING PERMIT APPLICATIONS)

Applicant's Name AMERICAN ENERGY CORPORATION

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed UMCO ENERGY, INC. - HIGH QUALITY MINE

Application No.	Name of Regulatory Authority	State
63921301	PA DEP	PA

ORIGINAL

00425-3

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

ATTACHMENT 23
(PENDING PERMIT APPLICATIONS)

Applicant's Name AMERICAN ENERGY CORPORATION

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed The Ohio Valley Coal Company

Application No.	Name of Regulatory Authority	State
D-0360-12	DMRM	OH
D-0360-13	DMRM	OH

ORIGINAL

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

ATTACHMENT 23
(PENDING PERMIT APPLICATIONS)

Applicant's Name AMERICAN ENERGY CORPORATION

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed PENNAMERICAN COAL, L.P. BURRELL MINE

Application No.	Name of Regulatory Authority	State
32951301	PA DEP	PA

ORIGINAL

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11-96

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 22
(CERTIFICATE OF LIABILITY INSURANCE)

Name of Insured American Energy Corporation

This is to certify that the policy of insurance listed below has been issued to the above named insured and is in force at this time. The policy provides bodily injury and property damage insurance for all coal mining and reclamation operations of the insured in the State of Ohio as required by paragraph (B) of rule 1501:13-7-07 of the Administrative Code stated below.

Name of Insurer Federal Insurance Company
Policy Number 37104410
Policy Period 6/1/03 - 6/1/04
Name of Underwriting Agent Reschini Agency, Inc.
Address of Underwriting Agent 922 Philadelphia St., Indiana, PA 15701
Telephone Number of Underwriting Agent (800) 828 - 5040

In the event of cancellation or non-renewal of this policy, including non-payment of policy premiums, the insurer agrees to promptly notify:

The Division of Reclamation
Foundation Square
Columbus, OH 43224

6/3/03
Date

Karen L. Williams
Signature of Underwriting Agent

This certificate is issued as a matter of information only and confers no rights upon the Division of Reclamation. This certificate does not amend, extend, or alter the coverage afforded by the policy listed above.

1501:13-7-07(B) The Public Liability Insurance Policy shall:

1.) Be in effect during the term of the permit or any renewal, inluding the length of all reclamation operations;

2.) Provide for personal injury and property damage protection in amounts adequate to compensate any persons injured or property damaged as a result of coal mining and reclamation operations, including the use of explosives. The minimum insurance coverage for bodily injury and property damage shall be three hundred thousand dollars for each occurrence and five hundred thousand dollars in the aggregate; and

3.) Include a rider requiring that the insurer notify the Chief whenever substantive changes are made in the policy, including any termination or failure to renew.

ORIGINAL RECEIVED D0425-3

B. COMPLIANCE INFORMATION

(1) Has the applicant, any subsidiary, affiliate, or persons controlled by or under common control with the applicant:

a) Had a federal or state coal mining permit suspended or revoked in the five years preceding the date of submission of this application? _____ Yes, __X__ No. If "yes," submit Attachment 6.

b) Forfeited a mining bond or similar security deposited in lieu of bond? _____ Yes, __X__ No. If "yes," submit Attachment 6.

(2) Has the applicant been issued a notice of violation (NOV) in connection with any coal mining and reclamation operation during the three years preceding the date of submission of this application for violations of Chapter 1513. of the Revised Code or these rules, or of any federal or state law, rule, or regulation pertaining to air or water environmental protection? __X__ Yes, _____ No. If "yes," submit Attachment 7A.

SEE ATTACHMENT 7A

(3) Have any unabated federal or state cessation orders (COs) and unabated air and water quality notices of violation (NOVs) been received prior to the submission date of this application by any coal mining and reclamation operation owned or controlled by either the applicant or by any person who owns or controls the applicant? _____ Yes, __X__ No. If "yes," submit Attachment 7B.

ORIGINAL

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 7A
(NOTICES OF VIOLATION)

Applicants Name AMERICAN ENERGY CORPORATION (CENTURY MINE)

Permit No.	Violation Number	Date of Issuance	Issuing Agency	State	Brief Description of N.O.V.	Action Taken to Abate N.O.V.	Current Status of N.O.V. (*)
D-0425	21575	9/26/01	ODNR	OHIO	DAMAGE HAS RESULTED AS THE OPERATOR HAS DISTURBED GROUND, GRUBBED AN AREA BEYOND THE SOUTHERN PERMIT LIMITS.	EROSION AND SEDIMENT CONTROLS WERE ESTABLISHED AND AN IBR WAS SUBMITTED AND ISSUED	TERMINATED
D-0425	21542	9/26/01	ODNR	OHIO	DAMAGE HAS RESULTED AS SEDIMENT FROM THE DISTURBED AREA HAS DISCHARGED OFF OF THE PERMIT INTO THE RECEIVING STREAM.	EROSION AND SEDIMENT CONTROLS WERE ESTABLISHED AND AN IBR WAS SUBMITTED AND ISSUED	TERMINATED

(*) If administrative or judicial proceedings have been initiated concerning any of the violations, identify the violation and provided an addendum indicating the date, location, type of proceeding, and current status.

AEC 181006

C. RIGHT OF ENTRY INFORMATION

(1)(a) Provide the following information for every legal or equitable owner of record, surface and mineral, of the property to be mined on the permit area (i.e. areas affected by surface operations and facilities), indicating whether the ownership is of surface, coal, or noncoal mineral.

N/A - NO PERMIT AREA

Name _____
Address _____
City _____ State _____ Zip _____
Surface _____, Coal _____, Noncoal _____
Deed Parcel No.

Name _____
Address _____
City _____ State _____ Zip _____
Surface _____, Coal _____, Noncoal _____
Deed Parcel No.

Name _____
Address _____
City _____ State _____ Zip _____
Surface _____, Coal _____, Noncoal _____
Deed Parcel No.

Name _____
Address _____
City _____ State _____ Zip _____
Surface _____, Coal _____, Noncoal _____
Deed Parcel No.

ORIGINAL

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JUL 29 2003

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Name L. & L. BOAN
Address 53640 CRABAPPLE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-72, 2-13-71

Name H. CROOKS
Address 53345 CRABAPPLE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-156, 2-13-155

Name B. & B. FISHER
Address 53441 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-156

Name G. & P. HOOVER
Address 52450 CHERRY RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-23, 2-3-5, 2-3-4, 2-3-2

Name D. & J. HUGHES
Address 4910 SEMINOLE AVENUE
City WINTER PARK State FLORIDA Zip 32792
Surface X , Coal
Deed Parcel No. 2-13-156

Name R. & T. JARRETT

RECEIVED

ORIGINAL
00425-3
AEC 18108

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Address 43220 CRABAPPLE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-160

Name G. LOUDEN
Address 53369 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-160

Name G. & C. LOUDEN
Address 53337 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-160

Name M. LOUDEN
Address 53370 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-160

Name R. & C. LOUDEN
Address 53272 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-160

Name M. & D. LUCAS
Address 55181 PUGH RIDGE ROAD

RECEIVED

ORIGINAL

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-71

Name N. LUCAS
Address 46519 CAPTINA HIGHWAY
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-14, 2-15-11, 2-15-12

Name M. MEYER, ET AL C/O KENNETH MEYER, SR.
Address 53180 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-160

Name R. & C. MOBLEY
Address 53859 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-18

Name T. & P. OTTO
Address 53900 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-18

Name M. & A. PERKINS
Address 53470 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716

RECEIVED
ORIGINAL
00425-3

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Surface X , Coal _____
Deed Parcel No. 2-13-156

Name D. PHILLIPS & J. SMITH
Address 44140 HUDSON ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal _____
Deed Parcel No. 2-13-54, 2-13-55, 2-13-56, 2-13-57

Name RAVEN ROCKS, INC.
Address 54061 CRUM ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal _____
Deed Parcel No. 2-5-30, 2-13-155, 2-13-156, 2-13-157, 2-5-29

Name S. ROUTH
Address 3041 NORWOOD STREET
City CUYAHOGA FALLS State OHIO Zip 44221
Surface X , Coal _____
Deed Parcel No. 2-13-20, 2-13-160

Name R. THOMAS
Address 53739 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal _____
Deed Parcel No. 2-13-18, 2-13-157

Name J. & M. WARD
Address 53500 BELMONT RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal _____
Deed Parcel No. 2-13-155, 2-13-156, 2-13-157

RECEIVED
ORIGINAL
00425-T

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Name C. BUTLER
Address 46761 PUGH ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal ____
Deed Parcel No. 2-13-21,

Name J. DAVIS
Address 5101 THOMPSON ROAD
City GAHANNA State OHIO Zip 43230
Surface X , Coal ____
Deed Parcel No. 2-13-164, 2-13-196, 2-13-197

Name D. & B. HAINES
Address 3859 N. VISTA
City UNIONTOWN State OHIO Zip 44685
Surface X , Coal ____
Deed Parcel No. 2-13-35, 2-13-36

Name JAMES BROWN and K LICHTKOPPLER
Address 401 WEST 39TH STREET
City SHADYSIDE State OHIO Zip 43947
Surface X , Coal ____
Deed Parcel No. 2-13-32, 2-13-33, 2-13-34

Name R.,SR. & S. REGER
Address 457 WEST 45TH STREET
City SHADYSIDE State OHIO Zip 43947
Surface X , Coal ____
Deed Parcel No. 2-13-10, 2-13-11, 2-13-12, 2-13-13

ORIGINAL
RECEIVED

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C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Name W. & N. HIBBITS
Address 820 BROADWAY BLVD.
City STEUBENVILLE State OHIO Zip 43952
Surface X , Coal
Deed Parcel No. 2-13-05

Name T. & T. LITTLETON
Address 322 JACQUETTE STREET
City BRIDGEPORT State OHIO Zip 43912
Surface X , Coal
Deed Parcel No. 2-13-96

Name N. & D. MOORE
Address 53676 PUGH RIDGE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-108, 2-13-07, 2-13-06, 2-13-27
2-13-28, 2-13-29, 2-13-174, 2-13-175

Name P. & G. MOORE C/O WILLIAM & KATHERINE FIELDING
Address 54274 PUGH RIDGE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-171, 2-13-175, 2-13-170

Name M. PERKINS
Address 53030 PUGH RIDGE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-169

RECEIVED

Name N. PERKINS

ORIGINAL

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Address P.O. BOX 7
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-166, 2-13-167, 2-13-168, 2-13-169, 2-13-95, 2-13-25, 2-13-24, 2-13-22, 2-13-26

Name O.& N. PERKINS
Address 54060 PUGH RIDGE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-3, 2-13-04

Name W. PERKINS c/o HAZEL R. HOPTON
Address 1500 S. KENNETH
City MONAHANS State TEXAS Zip 79756-6314
Surface X , Coal
Deed Parcel No. 2-13-108

Name A. WILES, ET AL
Address 54081 PUGH RIDGE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-171, 2-13-170

Name M. & C. BECKETT
Address 54305 CRABAPPLE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-105, 2-13-109

Name C. BONDY

RECEIVED
ORIGINAL

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Address 625 S. ZANE HIGHWAY
City MARTINS FERRY State OHIO Zip 43935
Surface X , Coal
Deed Parcel No. 2-13-129

Name J. & M. BONDY
Address 53871 CRABAPPLE ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-129

Name C. & K. BROWN
Address 56859 FERRY LANDING ROAD
City SHADYSIDE State OHIO Zip 43947
Surface X , Coal
Deed Parcel No. 2-13-129

Name 20 BUCKHORN CLUB, INC. c/o PAUL BITTNER, TREA.
Address 1845 13TH STREET
City CUYAHOGA FALLS State OHIO Zip 44223
Surface X , Coal
Deed Parcel No. 2-13-100

Name D. ELROD
Address 1844 TOOMBS DRIVE
City AKRON State OHIO Zip 44306
Surface X , Coal
Deed Parcel No. 2-13-195

Name J. ERCHAK, ET AL
Address 11385 MARBURGER ROAD

RECEIVED

ORIGINAL 00423-3

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

City STOUTSVILLE State OHIO Zip 43154
Surface X , Coal
Deed Parcel No. 2-13-82, 2-13-104, 2-13-103

Name R. E. LUND
Address 52735 WASHINGTON STREET, P.O. BOX 119
City BEALLSVILE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-109, 2-3-26

Name J. & R. HUML
Address 43160 LURAY DRIVE
City ST. CLAIRSVILLE State OHIO Zip 43950
Surface X , Coal
Deed Parcel No. 2-13-131, 2-13-132

Name T. & N. LITTLETON
Address 45198 HUDSON ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-101, 2-13-188

Name H. MELLOTT
Address 44826 STATE ROUTE 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-13-194, 2-1-3, 2-3-16, 2-3-17, 2-1-4, 2-3-15

Name F. ROTE
Address 1091 EAST BOULEVARD

RECEIVED

ORIGINAL 0025-3

AEC 18116

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

City AURORA State OHIO Zip 44202
Surface X , Coal
Deed Parcel No. 2-13-132, 2-13-131, 2-13-129

Name D. TAYLOR, ET AL
Address 45368 HUDSON ROAD
City ALLEDONIA State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-13-105, 2-13-109, 2-13-30, 2-13-107

Name F. WALKER
Address 6359 SMITH-KRAMER ROAD
City HARTVILLE State OHIO Zip 44632
Surface X , Coal
Deed Parcel No. 2-13-104

Name D. & V. WARD
Address 7730 BASIL ROAD
City BALTIMORE State OHIO Zip 43105
Surface X , Coal
Deed Parcel No. 2-13-102

Name G. MACKO, ET AL
Address 1579 UNION STREET
City BARBERTON State OHIO Zip 44203
Surface X , Coal
Deed Parcel No. 2-8-1

Name J. & T. EDGE
Address 1 WARWOOD TERRACE
City WHEELING State WV Zip 26003
Surface X , Coal

RECEIVED

ORIGINAL 8C425-3

AEC 18117

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Deed Parcel No. 2-13-193, 2-13-182

Name C. ORUM
Address 217 OAKMONT ROAD
City WHEELING State WV Zip 26003
Surface X , Coal
Deed Parcel No. 2-13-176

Name B. & L. BAKER
Address 49971 RUN ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-3

Name R. & L. BAKER
Address 52856 BELMONT AVENUE, P.O. BOX 269
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-7

Name H. Crook, Jr.
Address 53345 Crabapple Road
City Alledonia State OHIO Zip 43902
Surface X , Coal
Deed Parcel No. 2-3-26

Name T. LEDNEY, ANO
Address 187 DIVISION STREET
City POWHATAN PT. State OHIO Zip 43942
Surface X , Coal
Deed Parcel No. 2-3-1

RECEIVED
JUL 29 2003

ORIGINAL
00425-1

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Name J. & L. RILEY
Address 43917 GAME RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-2

Name S. SMITH
Address 52618 CHERRY RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-26

Name D. & J. HALL
Address 45551 STATE ROUTE 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-11

Name R. & M. INHERST
Address 52670 TWP. HWY. 180
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-12

Name G., SR. & M. RILEY, ET AL
Address 45440 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-10, 2-3-11

Name J. RILEY

RECEIVED

ORIGINAL 00425-3

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Address 45221 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-10, 2-3-11

Name T. & P. BIER
Address 44145 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-1-2

Name L. DALTON
Address 44642 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-17

Name V. & C. DALTON
Address 44758 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-17

Name C. & B. DATKULIAK
Address 52836 BELMONT AVENUE, P.O. BOX 249
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-1-2

Name M. DATKULIAK
Address P.O. BOX 249

RECEIVED

ORIGINAL 00625-3

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-13, 2-3-14

Name D. & K. DORNON
Address 44592 GAME RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-15

Name C. & P. MELLOTT
Address 44617 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-17

Name G. & D. MELLOTT
Address 52005 ATKINSON RUN ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-16

Name T. & J. REED
Address 43920 GAME RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal
Deed Parcel No. 2-3-3, 2-3-26, 2-3-14

Name I. STAPP & D. SCHNEGG
Address 44592 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716

RECEIVED

ORIGINAL 0025-3

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Surface X , Coal _____
Deed Parcel No. 2-3-17

Name L. & E. TRUEX
Address 44380 ST. RT. 556
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal _____
Deed Parcel No. 2-1-2

Name J. & A. HAMILTON
Address 52700 CHERRY RIDGE ROAD
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal _____
Deed Parcel No. 2-3-26

Name J W HAMILTON II
Address 52731 Washington Street, Box 150
City BEALLSVILLE State OHIO Zip 43716
Surface X , Coal _____
Deed Parcel No. 2-3-26

Name R. CROOKS
Address 55079 Crabapple Rd
City Alledonia State OHIO Zip 43902
Surface X , Coal _____
Deed Parcel No. 2-3-26

RECEIVED

ORIGINAL 00425-3

AEC 18122

C. (2) Provide either or the following information for the holders of record of any leasehold interest in the coal to be mined or property to be affected by surface operations or facilities, indicating whether the held interest is of surface, coal, or noncoal rights.

Name Consolidated Land Company
Address 29325 Chagrin Boulevard, Suite 300
City Pepper Pike State Ohio Zip 44122
Surface _____, Coal X, Noncoal

Name American Energy Corporation
Address 43521 Mayhugh Hill Road
City Beallsville State Ohio Zip 43716
Surface _____, Coal X, Noncoal
Submit and identify additional pages necessary to complete response.

(3) Are there purchasers of record under a real estate contract of the coal to be mined or property to be affected by surface operations and facilities? ____ Yes, X No. If yes, submit Attachment 2.

(4) Is any owner, holder, or purchaser listed in items C(1)(a and b), (2), or (3) respectively, a business entity other than a single proprietorship? X Yes, ____ No. If yes, submit Attachment 3.
SEE ATTACHMENT 3

(5) Is any part of the proposed permit area adjacent to any lands which are not owned by those persons identified in item C(1)(a)? ____ Yes, X No. If yes, submit Attachment 4.

(6) Does the applicant hold lands, interests in lands, options, or pending bids on interests in lands which are contiguous to the property to be mined? X Yes, ____ No. If yes, provide a description of the lands.
SEE ADDENDUM TO PART 1, PAGE 8 C(7), FUTURE APPLICATION AREA SEQUENCE MAP

(7) Is it anticipated that individual mining permits will be sought for any of those lands described in item C(6) above? ____ Yes, X No. If yes, submit as an addendum and identify those lands to include the size, sequence and timing of future mining permits, utilizing a map pursuant to 1501:13-4-13(J)(20), Ohio Administrative Code.
ALL FUTURE MINING WILL BE PERFORMED UNDER PERMIT D-0425 WITH ADDITIONAL ACREAGES ADDED VIA ADJACENT AREA APPLICATIONS
SEE ADDENDUM TO PART 1, PAGE 8 C(7), FUTURE APPLICATION AREA SEQUENCE MAP

D0425-3

ORIGINAL

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name AMERICAN ENERGY CORPORATION

This attachment is to be completed and submitted with the permit application if the response to item C.(4) in Part 1 of the permit application is "yes." A separate attachment is to be submitted for each business entity.

Name of business entity AMERICAN ENERGY CORPORATION

Statutory agent AMERICAN ENERGY CORPORATION

Street Address 43521 MAYHUGH HILL ROAD

City BEALLSVILLE State OHIO Zip 43716

Person's name ROBERT D. MOORE Position PRESIDENT/TREASURER

Street Address 43521 MAYHUGH HILL ROAD

City BEALLSVILLE State OHIO Zip 43716

Person's name MICHAEL O. MCKOWN Position SECRETARY

Street Address 43521 MAYHUGH HILL ROAD

City BEALLSVILLE State OHIO Zip 43716

Person's name _____ Position

Street Address

City _____ State _____ Zip

Person's name _____ Position

Street Address

City _____ State _____ Zip

ORIGINAL

00423

12/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name AMERICAN ENERGY CORPORATION

This attachment is to be completed and submitted with the permit application if the response to item C.(4) in Part 1 of the permit application is "yes." A separate attachment is to be submitted for each business entity.

Name of business entity CONSOLIDATED LAND COMPANY

Statutory agent A. H. STATUTORY AGEN CORP. #842696

Street Address 925 EUCLID AVENUE, SUITE 1100

City CLEVELAND State OHIO Zip 44115

Person's name PETER VULJANIC Position PRESIDENT

Street Address 29325 Chagrin Blvd., Suite 300

City Pepper Pike State OHIO Zip 44122

Person's name MICHAEL E. ELLIOT Position SECRETARY

Street Address 29325 Chagrin Blvd., Suite 300

City Pepper Pike State OHIO Zip 44122

Person's name ROBERT D. MOORE Position TREASURER AND ASSISTANT SECRETARY

Street Address 29325 Chagrin Blvd., Suite 300

City Pepper Pike State OHIO Zip 44122

Person's name MAYNARD R. ST. JOHN Position VICE PRESIDENT

Street Address 29325 Chagrin Blvd., Suite 300

City Pepper Pike State OHIO Zip 44122

ORIGINAL

C. (8)(a) Provide either of the following to allow for coal mining operations on the permit area:

N/A - NO PERMIT AREA

(i) A copy of the documents, or
(ii) An affidavit wherein the documents are described.

AFFIDAVIT

State of Ohio, _____ County, ss. _____ being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Typed of document
Execution Date
Expiration Date
Parties: From _____ To
Description of land: No. Acres
County _____ Township
Sections _____ Lots
Parcel #
Explanation of legal rights claimed

Pending litigation _____ Yes, _____ No.

Signature of Affiant Date

Position

Sworn before me and subscribed in my presence this
_____ day of _____, 20 _____.

Notary Public

ORIGINAL

C. (8)(b) Provide either of the following to allow for coal mining operations within the underground workings:

(i) A copy of the documents or
(ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the underground workings, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, BELMONT County, ss. Robert D. Moore being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document LEASE
Execution Date
Expiration Date NONE
Parties: From CONSOLIDATED LAND COMPANY To AMERICAN ENERGY CORPORATION

Description of land: No. Acres
County MONROE Township SUNSBURY
Sections 6, 12, 30, 36
Lots N/A
Parcel # 1-3-19/ 2-1-1/ 2-1-2/ 2-1-3/ 2-1-4/ 2-2-1/ 2-3-1/ 2-3-10/ 2-3-11/ 2-3-12 /2-3-13/ 2-3-14/ 2-3-15/ 2-3-16/ 2-3-17/ 2-3-2/ 2-3-25/ 2-3-26/ 2-3-28/ 2-3-3/ 2-3-3/ 2-3-30/ 2-3-4/ 2-3-5/ 2-3-6 /2-3-7/ 2-3-8/ 2-3-9

Explanation of legal rights claimed
SEE ATTACHED ADDENDA

Pending litigation _____ Yes, X No.

RECEIVED
SEP 12 2003

Signature of Affiant Date 8-14-03

PRESIDENT
Position

Sworn before me and subscribed in my presence this 14th day of August, 2003.

Barbara L. Rush
Notary Public

BARBARA L. RUSH
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES 9-01-04

ORIGINAL

ORIGINAL

AEC 18128

C. (8)(b) Provide either of the following to allow for coal mining operations within the underground workings:

(i) A copy of the documents or
(ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the underground workings, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. Robert D. Moore being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document LEASE
Execution Date
Expiration Date NONE
Parties: From CONSOLIDATED LAND COMPANY To AMERICAN ENERGY CORPORATION

Description of land: No. Acres
County BELMONT Township SEE BELOW
Sections WAYNE: 1, 7
WASHINGTON: 31, 25, 14, 19, 13, 32, 26, 20
Lots N/A
Parcel # 2-5-25/ 2-5-28/ 2-5-29/ 2-5-30/ 2-5-48/ 2-63-1/ 2-8-1/ 2-13-04/ 2-13-05/ 2-13-06/ 2-13-07/ 2-13-08/ 2-13-10/ 2-13-100/ 2-13-101/ 2-13-102/ 2-13-103/ 2-13-104/ 2-13-105/ 2-13-106/ 2-13-106/ 2-13-107/ 2-13-108/ 2-13-109/ 2-13-11/ 2-13-12/ 2-13-121/ 2-13-129/ 2-13-13/ 2-13-13/ 2-13-130/ 2-13-131/ 2-13-132/ 2-13-14/ 2-13-155/ 2-13-156/ 2-13-157/ 2-13-160/ 2-13-164/ 2-13-166/ 2-13-167/ 2-13-168/ 2-13-169/ 2-13-170/ 2-13-171/ 2-13-173/ 2-13-174/ 2-13-175/ 2-13-176/ 2-13-18/ 2-13-182/ 2-13-188/ 2-13-193/ 2-13-194/ 2-13-195/ 2-13-196/ 2-13-197/ 2-13-20/ 2-13-21/ 2-13-22/ 2-13-23/ 2-13-24/ 2-13-25/ 2-13-26/ 2-13-27/ 2-13-28/ 2-13-29/ 2-13-3/ 2-13-30/ 2-13-31/ 2-13-32/ 2-13-33/ 2-13-34/ 2-13-35/ 2-13-36/ 2-13-54/ 2-13-55/ 2-13-56/ 2-13-57/ 2-13-71/ 2-13-72/ 2-13-82/ 2-13-95/ 2-13-96/ 2-15-11/ 2-15-12
Explanation of legal rights claimed
SEE ATTACHED ADDENDA

Pending litigation _____ Yes, X No.

Signature of Affiant

Date 8-14-03

PRESIDENT
Position

Sworn before me and subscribed in my presence this 14th day of August, 2003.

Barbara L. Rush
Notary Public

BARBARA L. RUSH
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES

ORIGINAL

ADDENDUM TO PAGE 10, PART 1, C (8)(b)
AMERICAN ENERGY CORPORATION

Item 1 - Mining rights for tract 2-5-28, 2-5-29, 2-5-30, 2-63-1

TOGETHER with the free and uninterrupted right of way into, upon and under the above described Parcels of land numbered from 52 to 62 both inclusive, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal, together with the privilege of mining and removing through said described premises other coal belonging to the grantee, its successors and assigns, or which may be hereafter acquired by said grantee, its successors and assigns.

Item 2 - Mining rights for tract 2-5-25

TOGETHER with the free and uninterrupted use and enjoyment of right of way into, upon and under said land, at such points and in such manner as may be considered proper and necessary for the advantageous and economical operation thereof, and in the digging and mining of said coal, and without liability therefore and hereby waiving any and all damages that might or could arise therefrom by reason of such digging, mining and carrying away all of said coal, together with the privilege of carrying, transporting and removing through the described premises, this and other coal now owned or acquired by said Grantee, its successors or assigns, generally freed, clear and discharged of any servitude whatever to the overlying land or anything therein or thereon. The said Grantors reserved, however to them, their heirs and assigns, the right to drill through said coal for oil and gas, and water, etc. The said Grantee, its successors and assigns, have the right to purchase at any time as much of the surface (reserving three acres around the buildings, if any buildings are on the land) of said land as may be necessary in mining, manufacturing, or marketing said coal, at the price of $150.00 per acre, which payment shall entitle them to a deed in fee simple for the same. Said grantee shall have the right to enter upon said farm to drill and test said coal without liability for damages, except as to growing crops.

Item 3 - Mining rights for tract 2-63-1

TOGETHER with the free and uninterrupted right of way into, upon and under the above described Parcels of land numbered from 52 to 62 both inclusive, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal, together with the privilege of mining and removing through said described premises other coal belonging to the grantee, its successors and assigns, or which may be hereafter acquired by said grantee, its successors and assigns.

Item 4 - Mining rights for tract 2-5-48

TOGETHER with the free uninterrupted use and enjoyment of right of way into, upon and

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under said Parcels 71, 72, 73 and 74, at such points and in such manner as may be considered proper and necessary for the advantageous and economical operation thereof, and in the digging and mining of said coal, and without liability therefore and hereby waiving any and all damages that might or could arise therefrom by reason of such digging, mining and carrying away all of said coal, together with the privilege of carrying, transporting and removing through the described premises, this and other coal now owned by, acquired by said grantee, its successors or assigns, generally freed, clear and discharged of any servitude whatever to the overlying land or anything therein or thereon. The said grantors reserved, however to them, their heirs and assigns, the right to drill through said coal for oil and gas and water, etc. The said Grantee, its successors and assigns, have the right to purchase at any time as much of the surface (reserving three acres around the buildings, if any buildings are on the land) of said land as may be necessary in mining, manufacturing or marketing said coal, at the price of $150 per acre, which payment shall entitle them to a deed in fee simple for the same. Said Grantee shall have the right to enter upon said farm to drill and test coal without liability for damages, except as to growing crops.

Item 5 - Mining rights for tract 2-13-14, 2-13-18, 2-13-20, 2-13-21, 2-13-22, 2-13-23, 2-13-54, 2-13-55, 2-13-56, 2-13-57, 2-13-72, 2-13-71, 2-13-121, 2-13-04, 2-13-3, 2-13-82, 2-13-100, 2-13-101, 2-13-102, 2-13-103, 2-13-104, 2-13-106, 2-13-107, 2-13-109, 2-13-34, 2-13-06, 2-13-07, 2-13-24, 2-13-05, 2-13-26, 2-13-32, 2-13-33, 2-13-35, 2-13-36, 2-13-95, 2-13-25, 2-13-13, 2-13-08, 2-13-27, 2-13-28, 2-13-29, 2-13-30, 2-13-31, 2-13-108, 2-13-129, 2-13-130, 2-13-131, 2-13-132, 2-13-96, 2-13-10, 2-13-11, 2-13-12, 2-13-105

"Together with the free and uninterrupted rights of way into, upon and under said described land, at such points, and in such manner as may be useful for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the privilege of mining and removing through said described premises other coal belonging to said Grantees, their heirs and assigns, or which may hereafter be acquired, together with the right and privilege to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface or under it necessary for the removal of all of the Pittsburgh Vein underlying the same and neighboring properties now owned, or hereafter acquired by said Grantees, their heirs and assigns; and said Grantees, their heirs and assigns, shall in no wise be liable for damages for failure to support the overlying surface, or for the sinking or falling in of said surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of said coal or the exercise of any of the above mining privileges."

"It is expressly understood and agreed that the enumeration herein is in enlargement and not in restriction of the incidental rights accruing to said Grantees, by virtue of the within grant of coal and mining privileges."

"And together with the right to use and occupy such amount of surface of the above described land as may in the opinion of said Grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any rights incidental thereto, or that may be useful for the deposit of gob or refuse from said mines, or for carrying on the coal business and for the erection of buildings and machinery and tenant houses, and all other

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buildings needful or useful to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and other structures, and for the operation of railroads; and the said Grantors do, for themselves and their heirs, executors, administrators and assigns, covenant and agree that Grantors will upon demand and payment of, at the rate not exceeding One Hundred Dollars per acre, by the Grantees, their heirs and assigns, execute and deliver unto said Grantees, their heirs, and assigns, a good and sufficient deed of General Warranty, (and furnish therewith a complete Abstract of Title showing said lands to be free and clear of liens and encumbrances), conveying in fee simple, clear of liens and encumbrances, such amount of the above described land as Grantees in their opinion may require for the purposes herein next above set forth. And said Grantees agree to purchase the same at not exceeding said above stipulated price per acre."

Item 6 - Mining rights for tract 2-13-155, 2-13-156, 2-13-157

"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said Grantees, their heirs and assigns, or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said Grantees, their heirs and assigns, and waiving and releasing said Grantees, their heirs and assigns, from all liability for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said Grantees, their heirs and assigns, by virtue of the within grant of coal and mining privileges."

"And the said Grantors do for themselves and their heirs, executors, administrators and assigns, covenant and agree that Grantors will upon demand and payment of at the rate of One Hundred Dollars per acre, by the Grantees, their heirs and assigns, convey in fee simple unto the said Grantees, their heirs and assigns, such amount of said above described surface as may, in the opinion of said Grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any right incidental thereto, or that may be useful for the deposit of gob or refuse from said mines or for carrying on the coal business, or for the erection of necessary buildings and machinery and tenant houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads."

"And the said Grantees do for themselves, their heirs and assigns, agree to pay for such real estate as may be used for the purpose herein next above set forth at the rate of $100 per acre.

Item 7 - Mining rights for tract 2-13-160

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"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said Grantees, their heirs and assigns, or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said Grantees, their heirs and assigns, and waiving and releasing said Grantees, their heirs and assigns, from all liability for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said Grantees, their heirs and assigns, by virtue of the within grant of coal and mining privileges."

"And the said Grantor does for herself and her heirs, executors, administrators and assigns, covenant and agree that Grantor will upon demand and payment of at the rate of One Hundred Dollars per acre by the Grantees, their heirs and assigns, convey in fee simple unto the said Grantees, their heirs and assigns, such amount of said above described surface as may, in the opinion of said Grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any right incidental thereto, or that may be useful for the deposit of gob or refuse from said mines or for carrying on the coal business, or for the erection of necessary buildings and machinery and tenant houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads."

"And said Grantees do for themselves, their heirs and assigns, agree to pay for such real estate as may be used for the above purpose herein next above set forth at the rate of $100 per acre."

Item 8 - Mining rights for tract 2-15-11, 2-15-12

Together with the free and uninterrupted rights of way into, upon and under said described land, at such points, and in such manner as may be proper and necessary for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said Grantees, their heirs, or which may be hereafter acquired, together with the right and privilege to make drains on the surface and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface or under it necessary for the removal of all coal of the said Pittsburgh Vein underlying the same and neighboring properties now owned or hereafter acquired by said Grantees, their heirs and assigns; and said Grantees, their heirs and assigns, shall in no wise be liable for damages for failure to support the overlying surface, or for the sinking or falling in of said surface, or for destroying and spring or well of water, or for diverting any water flow or natural stream by reason of the removal of said coal or the exercise of any of the above mining privileges.

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It is expressly understood and agreed that the enumeration herein is in enlargement of and not in restriction of the incidental rights accruing to said Grantees, by virtue of the within grant of coal and mining privileges.

And together with the right to use and occupy such amount of surface of the above described land as may in the opinion of said Grantees, their heirs and assigns, be necessary for the purpose of mining said coal or exercising any rights incidental thereto, or that may be necessary for the deposit of gob or refuse from said mines, or for carrying on the coal business and for the erection of necessary buildings and machinery; or for the construction thereon of tracks, shafts, mine openings and necessary structures and for the operation of railroads; and the said Grantor does for himself and his heirs, executors, administrators and assigns covenant and agree that Grantor will upon demand and payment of, at the rate not exceeding Two Hundred Dollars ($200) per acre, by the Grantees, their heirs and assigns, execute and deliver unto said Grantees, their heirs and assigns, a good and sufficient deed of General Warranty (and furnish therewith a complete Abstract of Title showing said lands to be free and clear of liens and encumbrances) conveying in fee simple, clear of liens and encumbrances, such amount of the above described land as Grantees in their opinion may require for the purposes herein next above set forth. And said Grantees agree to purchase the same at not exceeding said above stipulated price per acre.

Item 9 - Mining rights for tract 2-13-173

"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said Grantees, their heirs and assigns, or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said grantees, their heirs and assigns, and waiving and releasing said grantees, their heirs and assigns, from all liability for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said grantees, their heirs and assigns, by virtue of the within grant of coal and mining privileges."

"And the said Grantors do for themselves and their heirs, executors, administrators and assigns, covenant and agree that Grantors will up demand and payment of at the rate of One Hundred Dollars per acre by the grantees, their heirs and assigns, convey in fee simple unto the said grantees, their heirs and assigns, such amount of said above described surface as may, in the opinion of said grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any right incidental thereto, or that may be

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useful for the deposit of gob or refuse from said mines or for carrying on the coal business, or for the erection of necessary buildings and machinery and tenant houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads."

"And the said grantees do, for themselves, their heirs and assigns, agree to pay for such real estate as may be used for the purpose herein next above set forth at the rate of $100.00 per acre."

Item 10 - Mining rights for tract 2-13-188

"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said Grantees, their heirs and assigns, or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said Grantees, their heirs and assigns, and waiving and releasing said Grantees, their heirs and assigns, from all liability for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said Grantees, their heirs and assigns, by virtue of within grant of coal and mining privileges."

"And the said Grantors do for themselves and their heirs, executors, administrators and assigns, covenant and agree that Grantors will upon demand and payment of at the rate of One Hundred Dollars per acre by the Grantees, their heirs and assigns, convey in fee simple unto the said Grantees, their heirs and assigns, such amount of said above described surface as may, in the opinion of said Grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any right incidental thereto, or that may be useful for the deposit of gob or refuse from said mines or for carrying on the coal business, or for the erection of necessary buildings and machinery and tenant houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads."

"And the said Grantors do for themselves, their heirs and assigns, agree to pay for such real estate as may be used for the purpose herein next above set forth at the rate of One Hundred Dollars per acre."

Item 11 - Mining rights for tract 2-13-194

"TOGETHER with the free and uninterrupted right of way into, upon and under said land at such points and in such manner as may be proper and necessary for the purpose of digging,

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mining, coking, draining and ventilating and carrying away said coal, etc. , (hereby waiving all surface damages or damages of any sort arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs or assigns.

Item 12 - Mining rights for tract 2-13-169, 2-13-168, 2-13-167

"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said grantees, their heirs and assigns, or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said grantees, their heirs and assigns, and waiving and releasing said grantees, their heirs and assigns, from all liability for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said grantees, their heirs and assigns, by virtue of the within grant of coal and mining privileges."

"And the said grantors do for themselves and their heirs, executors, administrators and assigns, covenant and agree that grantors will upon demand and payment of at the rate of One Hundred Dollars per acre by the grantees, their heirs and assigns, convey in fee simple unto the said grantees, their heirs and assigns, such amount of said above described surface as may, in the opinion of said grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any right incidental thereto, or that may be useful for the deposit of gob or refuse from said mines or for carrying on the coal business, or for the erection of necessary buildings and machinery and tenant houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads."

"And the said grantees do for themselves, their heirs and assigns, agree to pay for such real estate as may be used for the purpose herein next above set forth at the rate of $100 per acre."

Item 13 - Mining rights for tract 2-13-175, 2-13-176, 2-13-174

"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining and ventilating and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said grantees, their heirs and assigns,

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or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said grantees, their heirs and assigns, and hereby waiving and releasing said grantees, their heirs and assigns, from all liabilities for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said grantees, their heirs and assigns, by virtue of this grant of coal and mining privileges."

"The grantors shall upon the payment by the grantees, their heirs and assigns, at the rate of one hundred dollars per acre therefor, convey to the said grantees, their heirs and assigns, such amount of said above described surface as may, in the opinion of the said grantees, their heirs and assigns, be useful for the purpose of mining said coal or exercising any right incidental thereto, or that may be useful for the deposit of gob or refuse from said mines, or for carrying on the coal business, or for the erection of necessary buildings and machinery and tenant houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads, provided, however, that no surface shall be appropriated or sold within the distance of five hundred (500) feet from any building on said lands."

Item 14 - Mining rights for tract 2-13-182

"Together with the free and uninterrupted rights of way into, upon and under said described land, at such points, and in such manner as may be useful for the purpose of digging, draining, and ventilating, and mining and removing said coal, together with the privilege of mining and removing through said seam of coal under said described premises, other coal belonging to said grantees, their heirs and assigns, or which may be hereafter acquired, together with the right and privilege to make drains on the surface and air holes and change the same as the convenience of mining may require, together with all the mining privileges on said surface or under it necessary for the removal of all of said seam of coal underlying said premises and for the removal of coal underlying neighboring properties now owned or hereafter acquired by said grantees, their heirs and assigns, through said seam of coal under said premises."

"And said grantees, their heirs and assigns, shall in no wise be liable for damages for failure to support the overlying surface, or for the sinking or falling in of said surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of said coal or the exercise of any of the above mining privileges."

"It is expressly understood and agreed that the enumeration herein is in enlargement and not in restriction of the incidental rights accruing to said grantee by virtue of the within grant of coal and mining privileges."

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Item 15 - Mining rights for tract 2-13-196, 2-13-197

"Together with free and uninterrupted right of way into, upon and under said land at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, ventilating, testing and carrying away said coal, hereby waiving all damages arising therefrom, or from the removal of all the said coal; together with the privilege of mining and removing through said described premises, other coal belonging to said Grantee, his heirs and assigns or which may hereafter be acquired.

"The Grantors hereby agree that the Grantee, his heirs and assigns shall have the right to purchase any of the surface over the above described coal which may be necessary for the purpose of mining and removing the same, the grantors, however, hereby reserving to themselves, their heirs and assigns, the right to use jointly with the said Grantee, his heirs and assigns, such parts of such surface so purchased as may be necessary to the grantors, their heirs and assigns, for the purpose of exploring for, mining, removing and producing oil, gas and other minerals underlying the above described premises, and hereinafter expressly reserved, which joint use, however, shall not interfere or conflict with the use thereof by the said grantee, his heirs and assigns; the purchase price or consideration for any surface which may be purchased by the said grantee, his heirs and assigns as aforesaid, shall be at the rate of One Hundred Dollars ($100.) per acre, and upon the payment of such purchase price or consideration the said grantee, his heirs and assigns shall be entitled to receive from said grantors, their heirs and assigns, a warranty deed for the same, which Warranty deed, however, shall contain such appropriate provisions and conditions as shall secure to the said grantors, their heirs and assigns, the right to such joint use, subject to the conditions and limitations aforesaid.

Item 16 - Mining rights for tract 2-13-164

"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining, and ventilating, mining and removing said coal, together with the right of mining and removing through said premises, other coal belonging to said Grantees, their heirs and assigns, or which may be hereafter acquired, together with the right and privilege to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface or under it necessary for the removal of all the Pittsburgh vein underlying the same and neighboring properties now owned, or hereafter acquired, by said grantees, their heirs and assigns, and said Grantees, their heirs and assigns, shall in no wise be liable for damages for failure to support the overlying surface, or for the sinking or falling in of said surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of said coal or the exercise of any of the above mining privileges."

"It is expressly understood and agreed that the enumeration herein is an enlargement and not a restriction of the incidental rights accruing to said grantees, by virtue of the within grant of

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coal and mining privileges."

"And the said grantor for himself and his heirs, executors, administrators and assigns, covenants and agrees with said grantees, their heirs and assigns, that he will upon demand and the payment therefor by said grantees, their heirs or assigns, at the rate of One Hundred Dollars per acre, convey by good and sufficient deed of general warranty in fee simple to said grantees, their heirs or assigns, such amount of said above described surface as may, in the opinion of said grantees, their heirs or assigns, from time to time, be useful for the purpose of mining said coal, or for exercising any right incidental thereto, or that may be useful for the deposit of gob or refuse from said mines, or for carrying on the coal business, or for the erection of the necessary buildings and machinery and tenement houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads."

Item 17 - Mining rights for tract 2-13-171, 2-13-170

"Together with the free and uninterrupted rights of way into, upon and under said land at such points and in such manner as may be proper for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said Grantees, their heirs and assigns, or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said grantees, their heirs and assigns, and waiving and releasing said grantees, their heirs and assigns, from all liability for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, or for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said grantees, their heirs and assigns, by virtue of the within grant of coal and mining privileges."

"And the said grantors do for themselves and their heirs, executors, administrators and assigns, covenant and agree that grantors will upon demand and payment of at the rate of One Hundred Dollars per acre by the grantees, their heirs and assigns, convey in fee simple unto the said grantees, their heirs and assigns, such amount of said above described surface as may, in the opinion of said grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any right incidental thereto, or that may be useful for the deposit of gob or refuse from said mines or for carrying on the coal business, or for the erection of necessary buildings and machinery and tenant houses, and all other buildings necessary to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and necessary structures, and for the operation of railroads."

"And the said grantees, do for themselves, their heirs and assigns, agree to pay for such real estate as may be used for the purpose herein next above set forth at the rate of $100 per acre."

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Item 18 - Mining rights for tract 2-13-195

"Together with the free, uninterrupted use and enjoyment of right of way into, upon and under said lands at such points and in such manner as may be considered proper and necessary for the advantageous and economical operation thereof, and in the digging and mining of said coal and draining and ventilating of the mines, and without liability therefor, and hereby waiving any and all damages that might or could arise therefrom by reason of such digging, mining, draining and ventilating and carrying away of all of said coal or the manufacture of said coal or other coal into coke or other products, together with the privilege of carrying or transferring and removing through the described premises this and other coal and mine supplies now owned or hereafter acquired by said grantee, his heirs and assigns, generally freed, clear and discharged of any servitude whatever to the overlying land or anything therein or thereon, reserving however, the right to drill through said coal for oil or gas in such manner as not to endanger the working of said mines. Said grantee, his heirs and assigns, shall have the right to purchase at any time so much of said land as may be necessary for railroad, and in mining, manufacturing and marketing said coal at the price of $100 per acre, upon receipt of which payment the said grantor, her heirs and assigns agree to deliver a deed in fee for the same.

"It is agreed that said second party, his heirs or assigns, shall have the right at any time to enter upon said land and drill or test said coal, and to remove at any time all machinery used for such purpose, without being liable for any damages."

It is expressly understood and agreed that the words "grantor" or "grantors", as used in the foregoing grants of rights and options under the headings "PARCEL 1" and "PARCEL 2" hereof, refer to the grantors of S. H. Robbins, and not to S. H. Robbins, as Grantor in former deed, and that in the execution and delivery of former deed said S. H. Robbins did assign and make over to The Cleveland Trust Company, as Grantee therein, only the interest which said S. H. Robbins had in such rights and options.

Item 19 - Mining rights for tract 2-13-193

"TOGETHER with the right in perpetuity of mining, taking out and removing such coal; also the further right in perpetuity to remove coal to and from other lands or lands through entries, shafts, air ways and mine openings of any and every kind whatsoever with the same rights in removing coal to or from such other lands to use the surface, entries, shafts, pits and other appliances for mining, upon, in and through or under the lands herein described, as are herein granted for the mining and removal of the coal hereby granted; provided further that the said grantee, his heirs, executors, administrators and assigns, shall have and are hereby given the right to re-enter and take from time to time so much of and such part of the surface over the aforesaid coal rights as said grantee, his heirs, executors, administrators or assigns, may desire, and as may be necessary for pits, shafts, buildings, structures and appurtenances thereto, platforms, drifts, drains, reservoirs, roads, switches, side tracks, machinery and chutes to facilitate the taking out, mining and removing of such coal paying therefor at the rate of $100 per acre, provided, however, that no part of the surface of said premises within

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AEC 18140

100 yards of any building now erected shall be taken except upon the payment of the just and reasonable value of said surface so taken and the actual damage resulting to the residue of said premises by the use to which said surface is put; and also granting the right to enter upon said land at any time for the purpose of testing for said coal. Giving and granting the rights and privileges hereinbefore mentioned without liability by reason of or in any way resulting from their enjoyment or from the removal of said coal from over and under said premises or any part thereof. Excepting and reserving the right to drill and operate through said vein of coal for oil, gas and other minerals.

Item 20 - Mining rights for tract 2-3-2

Together with the free and uninterrupted right of way into, upon and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating, and carrying away said coal, etc. (hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs or assigns.

Item 21 - Mining rights for tract 2-3-3, 2-3-4, 2-3-5

Together with the free and uninterrupted right of way under, into and upon said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc.(hereby waiving all damages or damages of any sort arising therefrom or from the removal of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, or which may be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserve the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs and assigns.

Item 22 - Mining rights for tract 2-3-6

Together with the free and uninterrupted right of way under, into and upon said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc.(hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and

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agreed between the parties hereto, that the said grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs or assigns.

Item 23 - Mining rights for tract 2-3-7, 2-3-8, 2-3-9

TOGETHER with the free and uninterrupted right of way under, into and upon said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc.(hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, which may hereafter be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor and his heirs shall be paid at the rate of $100.00 per acre for all surface land taken and used for the mining of said coal by said grantee, his heirs and assigns.

Item 24 - Mining rights for tract 2-3-10

TOGETHER with the free and uninterrupted right of way into, upon and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc. (Hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal, belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs or assigns.

Item 25 - Mining rights for tract 2-3-11

TOGETHER with the free and uninterrupted right of way under, into and upon said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc. (hereby waiving all surface damages or damages of any sort arising therefrom and from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs, and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs or assigns.

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ADDENDUM TO PAGE 10, PART 1, C (8)(b)
AMERICAN ENERGY CORPORATION

Item 26 - Mining rights for tract 2-3-12

TOGETHER with the free and uninterrupted right of way into, upon and under said land, at such point and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining, and ventilating and carrying away said coal, etc. (hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs or assigns. Said grantor for himself and his heirs and assigns, reserved the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface.

Item 27 - Mining rights for tract 2-3-13

TOGETHER with the free and uninterrupted right of way into, upon and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining, ventilating and carrying away said coal, etc. (hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs or assigns, or which may hereafter be acquired by said grantee, his heirs or assigns. Said grantor, for himself and his heirs and assigns, reserves the rights to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs and assigns.

Item 28 - Mining rights for tract 2-3-14

TOGETHER with the free and uninterrupted right of way under, into and upon said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc. (hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor and his heirs shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by grantee, his heirs and assigns.

Item 29 - Mining rights for tract 2-3-15

TOGETHER with the free and uninterrupted right of way into, upon and under said lands, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc.(hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said

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coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used in the mining of said coal by said grantee, his heirs and assigns.

Item 30 - Mining rights for tract 2-3-16

TOGETHER with the free and uninterrupted right of way under, into and upon said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal, etc.(hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs and assigns. Said grantor, for himself and his heirs and assigns, reserves the rights to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor, and his heirs, shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs or assigns.

Item 31 - Mining rights for tract 2-3-17

TOGETHER with all the rights and privileges useful and necessary in the mining and removing of said coal, including the right of mining the same without leaving any support for the overlying strata, without liability for any injury which may result to the surface from the breaking of said strata, the right of ventilation and drainage, and generally freed, cleared and discharged of any servitude whatever to the overlying land or to anything therein, thereon or thereunder, and also the right of access to the mines for man and materials; the shafts or openings for such purposes, however, to be in the ravines and waste places upon said land, and not nearer than ten rods of the principal buildings thereon. Any surface ground required for operating or manufacturing of any kind may be taken but shall be paid for before being occupied at the rate of One Hundred Dollars per acre, which payment shall entitle the party of the second part to a deed in fee for the same; also the right of mining, ventilating, draining and transporting the coal of other lands through the mines and openings in and upon said lands of the party of the first part. Grantor, his heirs and assigns, reserves, however, the right to drill and operate through said coal for oil and gas and other minerals.

Item 32 - Mining rights for tract 2-3-26

TOGETHER with the mining rights reserved in the conveyance dated April 1, 1908, to Israel Coon by William A. Williams and his wife Mary E. Williams, which reads as follows: "Reserving all coal, oil and gas beneath the surface and reserving the right to mine, lease, sell, operate for, and market the same, and all the privileges necessary to operate for and mine the same, including water and pipeline rights, the right of way over and under the

surface, and the rights of ingress and egress without being held liable for damage to the surface and the growing crops," and the coal and mining rights of said reservation were conveyed by William A. Williams to Board of Foreign Missions of the Methodist Episcopal Church by deed dated November 13, 1916 and recorded in Vol. 84, Page 416 of the Records of Deeds, Monroe County, Ohio.

Item 33 - Mining rights for tract 2-3-28

TOGETHER with the right and privilege to mine all of said coal without reservation or liability for damages that may arise by reason of mining of said coal or the operation of said mine or mines to the surface or to the improvements upon the surface over said coal, or to any waters or water ways situated upon, or on said premises, and the right to use any and all entries and other passage ways under said lands for the purpose of transporting and mining coal from adjoining and contiguous territory, and together with right and privilege to use the necessary surface over said coal for the purpose of renting, constructing and maintaining the necessary air shafts to ventilate mines for removing of said coal and coal from adjoining and contiguous territory, said air shafts to be kept in such report and so guarded by said grantees, their heirs and assigns, as not to endanger stock on said premises, and together with the right to enter upon said described premises at all reasonable times to make necessary surveys, or to drill or examine said coal in any reasonable manner.

Item 34 - Mining rights for tract 2-3-30

TOGETHER with the free and uninterrupted right of way into, upon, and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining and ventilating and carrying away said coal (hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal) together with the privilege of mining and removing through, upon and over said described premises other coal belonging to said party of the record part, his heirs and assigns, or which may hereafter be acquired.

Item 35 - Mining rights for tract 2-2-1, 2-1-1

"Together with the free and uninterrupted rights of way into, upon and under said described land, at such points, and in such manner as may be useful for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said grantees, their heirs and assigns, or which may be hereafter acquired, together with the right and privilege to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface or under it necessary for the removal of all of the Pittsburgh Vein underlying the same and neighboring properties now owned, or hereafter acquired by said Grantees, their heirs and assigns, and said Grantees, their heirs and assigns, shall in no wise be liable for damages for failure to support the overlying surface, or for the sinking or falling in of said surface, or for destroying any spring

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or well of water or for diverting any water flow or natural stream by reason of the removal of said coal or the exercise of any of the above mining privileges.
"It is expressly understood and agreed that the enumeration herein is in enlargement and not in restriction of the incidental rights accruing to said Grantees, by virtue of the within grant of coal and mining privileges.
"And together with the right to use and occupy such amount of surface of the above described land as may in the opinion of said Grantees, their heirs and assigns, from time to time, be useful for the purpose of mining said coal or exercising any rights incidental thereto, or that may be useful for the deposit of gob or refuse from said mines, or for carrying on the coal business and for the erection of buildings and machinery and tenant houses, and all other buildings needful or useful to carry on the coal business, or for the construction thereon of tracks, shafts, mine openings and other structures, and for the operation of railroads, and the said Grantors, do for themselves and their heirs, executors, administrators and assigns, covenant and agree that Grantors will upon demand and payment of, at the rate not exceeding one hundred dollars per acre, by the Grantees, their heirs and assigns, execute and deliver unto said Grantees, their heirs and assigns, a good and sufficient deed of General Warranty (and furnish therewith a complete Abstract of title showing said lands to be free and clear of liens and encumbrances) conveying in fee simple, clear of liens, and encumbrances, such amount of the above described land as Grantees, in their opinion may require for the purposes herein next above set forth. And said Grantees agree to purchase the same at not exceeding said above stipulated price per acre.
"The Grantors reserve the rights to bore or dig through said vein of coal for oil or gas, but such boring or digging shall not interfere with the mining or removal of said coal."

Item 36 - Mining rights for tract 2-1-2

Together with the right and privilege to mine all of said coal without reservation or liability for damages that may arise by reason of mining said coal or the operation of said mine or mines to the surface or to the improvements upon the surface over said coal, or to any waters or waterways situated upon or on said premises, and the right to use any and all entries, and other passageways under said lands for the purposes of transporting and mining coal from adjoining and contiguous territory; and together with the right and privilege to use the necessary surface over said coal for the purpose of erecting, constructing and maintaining the necessary air shafts to ventilate mines for the removing of said coal and coal from adjoining and contiguous territory, said air shafts to be kept in such repair and so guarded by said grantee, its successors and assigns, as not to endanger stock on said premises, and together with the right to enter upon said described premises at all reasonable time to make necessary surveys or to drill or examine said coal, in any reasonable manner. SUBJECT, HOWEVER, to the reservation in favor of A. A. Caldwell, H. E. Caldwell and Mary E. Caldwell, his wife, grantors of S. H. Robbins, their heirs and assigns, and in favor of the grantors of said grantors their hers and assigns, of the right to drill and operate through said vein of coal for oil and gas and any and all other minerals.

Item 37 - Mining rights for tract 2-1-3, 2-1-4

Together with all the mining rights and privileges necessary in the mining and removing of

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the said coal including the right of mining the same without leaving any support for the overlying stratus and without liability for any injury which may result to the surface from the breaking of said strata the right of ventilation and drainage, and of access to the mines for men and materials. The right of mining, ventilating, draining and transporting the coal of other lands through the mines and openings in and upon the lands aforesaid.
SUBJECT, HOWEVER, to the reservation in favor of said A. A. Caldwell, and H. A. Caldwell and Mary E. Caldwell, his wife, their heirs and assigns, grantors of S. H. Robbins, and in favor of the grantors of said grantors, their heirs and assigns, of the right to drill and operate through said coal for oil and gas.

Item 38 - Mining rights for tract 2-3-25

All coal in the underlying above described lands is herein excepted and reserved, and any surface land that may be needed by the Grantors, their executors, administrators and assignees, for the mining, operating and removal of the coal shall be paid for the agreed price of One Hundred Dollars per acre, and all surface damages are excepted and waived....be the same more or less but subject to all legal highways

Item 39 - Mining rights for tract 2-3-17

TOGETHER with all the rights and privileges useful and necessary in the mining and removing of said coal, including the right of mining the same without leaving any support for the overlying strata, without liability for any injury which may result to the surface from the breaking of said strata, the right of ventilation and drainage, and generally freed, cleared and discharged of any servitude whatever to the overlying land or to anything therein, thereon or thereunder, and also the right of access to the mines for man and materials; the shafts or openings for such purposes, however, to be in the ravines and waste places upon said land, and not nearer than ten rods of the principal buildings thereon. Any surface ground required for operating or manufacturing of any kind may be taken but shall be paid for before being occupied at the rate of One Hundred Dollars per acre, which payment shall entitle the party of the second part to a deed in fee for the same; also the right of mining, ventilating, draining and transporting the coal of other lands through the mines and openings in and upon said lands of the party of the first part. Grantor, his heirs and assigns, reserves, however, the right to drill and operate through said coal for oil and gas and other minerals.

Item 40 - Mining rights for tract 2-3-1

Together with the free and uninterrupted right of way into and upon said land, at such points and in such manner as may be proper and necessary for the purposes of digging, mining, coking, draining and ventilating and carrying away said coal, etc. (hereby waiving all surface damages or damages of any sort, arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to the grantee, his heirs and assigns, or which may hereafter be acquired by said grantee, his heirs, and assigns. Said grantor for himself and his heirs and assigns, reserves the right to drill and operate through said coal for oil and gas. It is understood and agreed between the parties hereto that the said grantor, and his heirs and assigns, reserves the

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right to drill and operate through said coal for oil and gas. It is further understood and agreed between the parties hereto that the said grantor, and his heirs and assigns shall be paid at the rate of $100.00 per acre for all surface land taken and used for mining said coal by said grantee, his heirs and assigns.

Item 41 - Mining rights for tract 2-13-166

"Together with the free and uninterrupted rights of way into, upon and under said lands at such points and in such manner as may be proper for the purpose of digging, draining and ventilating, and mining and removing said coal, together with the right of mining and removing through said premises other coal belonging to said Grantees, their heirs and assigns, or which may be hereafter acquired, together with the right to make drains on the surface, and air holes, and change the same as the convenience of mining may require, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal underlying the same and neighboring properties now owned or hereafter acquired by said grantees, their heirs and assigns, and waiving and releasing said grantees, their heirs and assigns, from all liability for damages for failure to support the overlying surface, or for sinking or falling in of such surface, or for destroying any spring or well of water, o for diverting any water flow or natural stream by reason of the removal of such coal or the exercise of any of the above mining privileges, together with all incidental rights that shall or may accrue to the said Grantees, their heirs and assigns, by virtue of the within grant of coal and mining privileges."

Item 42 - Mining rights for tract 2-8-1

"Together with the free and uninterrupted rights of way into, upon and under said lands at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating, and carrying away said coal; hereby waiving all surface damages and right of support to overlying strata and damages of any sort arising therefrom or through the removal of said coal, together with all mining privileges on said surface, or under it, necessary for the removal of all said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs, and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the said coal.

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200200012991
Filed for Record in
BELMONT COUNTY, OHIO
MARY CATHERINE NIXON
12-11-2002 03:58 pm.
DEED 14.00
Volume 783 Page 471 - 472

Instrument
200200012991

****

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, That CAROL ANN BAKER, married, of Belmont County, State of Ohio, for valuable consideration paid, grant with general warranty covenants, to CONSOLIDATED LAND COMPANY, whose tax-mailing address is 29325 Chagrin Boulevard, Suite 300, Pepper Pike, Ohio, 44122, the following real property:

> All the coal of the vein commonly known as the Pittsburgh vein and also known as Seam No. Eight in the Geological Reports of the State of Ohio in and underlying the following tract:
>
> Situate in Section 26, Township 5, Range 4, Washington Township, Belmont County, Ohio:
>
> Known as the School House Lot and described as follows: It being a part of the East half of Section 26, Township 5, of Range 4 on the West side of said East half, and West of the Public Road. Beginning at a stone (as originally marked) marked with the letter A, situate at the edge of said road; thence running North 12 rods to a stone marked B, thence East 6 rods to a stone marked C, thence South to the place of beginning, containing One Fourth of an Acre.
>
> Together with the right to mine and remove said coal by the longwall mining method, room and pillar method, underground method, or any other method of mining whether now know or hereafter developed and together with the right to ingress, egress, and regress to, from, over and across said premises and adjoining premises owned or controlled by Grantee, its successors and assigns, for the purpose of removing and transporting, without additional charge, said coal, or any other coal that the Grantee, its successors and assigns, may now own or may hereafter acquire, and together with the right to bring upon said property men, machinery, materials and equipment necessary, convenient or useful for the mining and marketing of said coal by the methods hereunder authorized and including the right to deposit spoil, rock, earth and gob on said premise caused by such operations or operations on adjoining premises, together with full and complete right of drainage, all free from any liability whatsoever on the part of Grantee, its successors and assigns, for any damage to lands, mineral, other veins of coal, and the surface thereof, or any water course, or structure thereon, and together with the right to enter upon said property for the purpose of plugging oil and gas wells in order that the same do not interfere with the mining of said coal. Grantor, their heirs, successors and assigns, waive and forever release all rights of subjacent and

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$3.00
[signature]

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lateral support and all subsidence damages from the mining and removal of all of the coal or any part thereof.

Being part of Auditor's Parcel No. 4300812.

Prior Deed Reference: Volume _____, Page _____
Belmont County Deed Records

Lloyd E. Baker, husband of the grantor, releases all rights of dower therein

EXECUTED this 3rd day of ~~September~~ December, 2002.

Carol Ann Baker
Carol Ann Baker

Lloyd E. Baker
Lloyd E. Baker

STATE OF OHIO)
BELMONT COUNTY) SS.

Before me, a Notary Public in and for said County and State, personally appeared the above named Carol Ann Baker and Lloyd E. Baker, wife and husband, who acknowledged that they did sign the foregoing instrument and that the same is their free act and deed.

In Testimony Whereof, I have hereunto set my hand and official seal, at Alledonia Ohio this 3rd day of ~~September~~ December, 2002.

Denise R. Jackson
Notary Public

My Commission Expires: [illegible] 7-27-2006

R E Hanwell

This instrument prepared by Elizabeth L. Glick
Attorney at Law
St. Clairsville, Ohio 43950

[illegible] baker consolidated food co. warranty deed

00425-3

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AEC 18150

200200012990
Filed for Record in
BELMONT COUNTY, OHIO
MARY CATHERINE NIXON
12-11-2002 03:58 pm.
DEED 14.00
Volume 783 Page 469 - 470

Instrument
200200012990

****

QUIT CLAIM DEED

KNOW ALL MEN BY THESE PRESENTS, That CAROL ANN BAKER, married, of Belmont County, State of Ohio, for valuable consideration paid, grants to CONSOLIDATED LAND COMPANY, whose tax-mailing address is 29325 Chagrin Boulevard, Suite 300, Pepper Pike, Ohio, 44122, the following real property:

> All the coal of the vein commonly known as the Pittsburgh vein and also known as Seam No. Eight in the Geological Reports of the State of Ohio in and underlying the following tract:
>
> Situate in Section 26, Township 5, Range 4, Washington Township, Belmont County, Ohio:
>
> Beginning at a stone planted on the section line 3.16 rods west from a stone planted for the southeast corner of a fifty acres and 34 perches tract of land; thence west 20 rods; thence north 4 rods; thence east 20 rods; thence south 4 rods to the place of beginning; containing one-half (½) acre.
>
> Together with the right to mine and remove said coal by the longwall mining method, room and pillar method, underground method, or any other method of mining whether now know or hereafter developed and together with the right to ingress, egress, and regress to, from, over and across said premises and adjoining premises owned or controlled by Grantee, its successors and assigns, for the purpose of removing and transporting, without additional charge, said coal, or any other coal that the Grantee, its successors and assigns, may now own or may hereafter acquire, and together with the right to bring upon said property men, machinery, materials and equipment necessary, convenient or useful for the mining and marketing of said coal by the methods hereunder authorized and including the right to deposit spoil, rock, earth and gob on said premise caused by such operations or operations on adjoining premises, together with full and complete right of drainage, all free from any liability whatsoever on the part of Grantee, its successor and assigns, for any damage to lands, mineral, other veins of coal, and the surface thereof, or any water course, or structure thereon, and together with the right to enter upon said property for the purpose of plugging oil and gas wells in order that the same do not interfere with the mining of said coal. Grantor, their heirs, successors and assigns, waive and forever release all rights of subjacent and lateral support and all subsidence damages from the mining and removal of all of the coal or any part thereof.

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$3.00
Dappellone DEPUTY

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AEC 18151

Being part of Auditor's Parcel No. 4300810

Prior Deed Reference: Parcel No. 2 (3) - Washington Township
First Tract, Exception (Page 505)
Volume 707, Page 1
Belmont County Deed Records

Lloyd E. Baker, husband of the grantor, releases all rights of dower therein.

EXECUTED this 3rd day of ~~September~~ December, 2002.

Carol Ann Baker
Carol Ann Baker

Lloyd E. Baker
Lloyd E. Baker

STATE OF OHIO, }
COUNTY OF BELMONT } ss,

Before me, a Notary Public in and for said County and State, personally appeared the above named Carol Ann Baker and Lloyd E. Baker, wife and husband, who acknowledged that they did sign the foregoing instrument and that the same is their free act and deed.

In Testimony Whereof, I have hereunto set my hand and official seal, at Alledonia OHIO this 3rd day of ~~September~~ December, 2002.

Denise R. Jackson
Notary Public

My Commission Expires: DENISE R. JACKSON Notary Public, State of Ohio My Commission Expires 8-27-2005

R E Howell

This instrument prepared by: Elizabeth L Glick,
Attorney at Law
St. Clairsville, Ohio 43950

nvcc7\baker consolidated\andco.quit claim deed

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AEC 18152

(9)(a) List below the following information for each surface owner of land within the proposed permit area.

N/A - NO PERMIT AREA

OWNER NAME	COUNTY	TOWNSHIP	SEC./LOT	T- , R-

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3. (9) (b) List below the following information for each surface owner of land within the proposed underground workings.

OWNER NAME		COUNTY	TOWNSHIP	SEC./LOT	T-	R-
L. & L.	BOAN	BELMONT	WAYNE	1	6	5
H.	CROOKS	BELMONT	WAYNE	1	6	5
H.	CROOKS, JR	MONROE	SUNSBURY	6	5	5
B. & B.	FISHER	BELMONT	WAYNE	1	6	5
G. & P.	HOOVER	BELMONT	WAYNE	1	6	5
		MONROE	SUNSBURY	6	5	5
D. & J.	HUGHES	BELMONT	WAYNE	1	6	5
R. & T.	JARRETT	BELMONT	WAYNE	1	6	5
G.	LOUDEN	BELMONT	WAYNE	1	6	5
G. & C.	LOUDEN	BELMONT	WAYNE	1	6	5
M.	LOUDEN	BELMONT	WAYNE	1	6	5
R. & C.	LOUDEN	BELMONT	WAYNE	1	6	5
M. & D.	LUCAS	BELMONT	WAYNE	1	6	5
N.	LUCAS	BELMONT	WAYNE	1	6	5
M.	MEYER, ET AL	BELMONT	WAYNE	1	6	5
R. & C.	MOBLEY	BELMONT	WAYNE	1	6	5
T. & P.	OTTO	BELMONT	WAYNE	1	6	5
M. & A.	PERKINS	BELMONT	WAYNE	1	6	5

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AEC 18154

3. (9) (b) List below the following information for each surface owner of land within the proposed underground workings.

OWNER NAME		COUNTY	TOWNSHIP	SEC./LOT	T-	R-
D. PHILLIPS & J. SMITH		BELMONT	WAYNE	1	6	5
		BELMONT	WASHINGTON	31	5	4
RAVEN ROCKS, INC.		BELMONT	WAYNE	1, 7	6	5
S.	ROUTH	BELMONT	WAYNE	1	6	5
R.	THOMAS	BELMONT	WAYNE	1	6	5
J. & M.	WARD	BELMONT	WAYNE	1	6	5
S.	LOUDEN	BELMONT	WAYNE	1	6	5
Crabapple Corner		BELMONT	WAYNE	1	6	5
C.	BUTLER	BELMONT	WASHINGTON	19	5	4
J.	DAVIS	BELMONT	WASHINGTON	19	5	4
D. & B.	HAINES	BELMONT	WASHINGTON	19	5	4
K.	LICHTKOPPLER, AND J. BROWN ET AL	BELMONT	WASHINGTON	19	5	4
R., SR. & S.	REGER	BELMONT	WASHINGTON	19, 14, 20	5	4
W. & N.	HIBBITS	BELMONT	WASHINGTON	25	5	4
T. & T.	LITTLETON	BELMONT	WASHINGTON	25	5	4
N. & D.	MOORE	BELMONT	WASHINGTON	25, 19, 20	5	4
P. & G.	MOORE	BELMONT	WASHINGTON	25, 26, 20	5	4
M.	PERKINS	BELMONT	WASHINGTON	25	5	4
N.	PERKINS	BELMONT	WASHINGTON	25, 19	5	4
O. & N.	PERKINS	BELMONT	WASHINGTON	25, 26	5	4
W.	PERKINS	BELMONT	WASHINGTON	25	5	4

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3. (9) (b) List below the following information for each surface owner of land within the proposed underground workings.

OWNER NAME		COUNTY	TOWNSHIP	SEC./LOT	T-	R-
A.	WILES, ET AL	BELMONT	WASHINGTON	25, 26	5	4
M. & C.	BECKETT	BELMONT	WASHINGTON	31, 32	5	4
C.	BONDY	BELMONT	WASHINGTON	31	5	4
J. & M.	BONDY	BELMONT	WASHINGTON	31	5	4
C. & K.	BROWN	BELMONT	WASHINGTON	31	5	4
20 BUCKHORN CLUB, INC.		BELMONT	WASHINGTON	31	5	4
D.	ELROD	BELMONT	WASHINGTON	31	5	4
J.	ERCHAK, ET AL	BELMONT	WASHINGTON	31	5	4
R. E.	LUND	BELMONT	WASHINGTON	31	5	4
R.	CROOKS	MONROE	SUNSBURY	6	5	5
J. & R.	HUML	BELMONT	WASHINGTON	31	5	4
T. & N.	LITTLETON	BELMONT	WASHINGTON	31	5	4
H.	MELLOTT	BELMONT	WASHINGTON	31	5	4
F.	ROTE	BELMONT	WASHINGTON	31	5	4
D.	TAYLOR, ET AL	BELMONT	WASHINGTON	31, 32, 25	5	4
F.	WALKER	BELMONT	WASHINGTON	31	5	4
D. & V.	WARD	BELMONT	WASHINGTON	31	5	4
G.	MACKO, ET AL	BELMONT	WASHINGTON	13	5	4
J. & T.	EDGE	BELMONT	WASHINGTON	26	5	4
C	ORUM	BELMONT	WASHINGTON	20	5	4
B. & L.	BAKER	MONROE	SUNSBURY	6	5	5

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3. (9) (b) List below the following information for each surface owner of land within the proposed underground workings.

OWNER NAME		COUNTY	TOWNSHIP	SEC./LOT	T-	R-
J. & A.	HAMILTON	MONROE	SUNSBURY	6	5	5
J. W.	HAMILTON, II	MONROE	SUNSBURY	6	5	5
T.	LEDNEY, ANO	MONROE	SUNSBURY	6	5	5
J AND L	RILEY	MONROE	SUNSBURY	6	5	5
S	SMITH	MONROE	SUNSBURY	6	5	5
D. & J.	HALL	MONROE	SUNSBURY	30	4	4

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3. (9) (b) List below the following information for each surface owner of land within the proposed underground workings.

OWNER NAME		COUNTY	TOWNSHIP	SEC./LOT	T-	R-
R. & M.	INHERST	MONROE	SUNSBURY	30	4	4
G., SR. & M.	RILEY, ET AL	MONROE	SUNSBURY	30	4	4
J	RILEY	MONROE	SUNSBURY	30	4	4
T. & P.	BIER	MONROE	SUNSBURY	36	4	4
L	DALTON	MONROE	SUNSBURY	36	4	4
V. & C.	DALTON	MONROE	SUNSBURY	36	4	4
C. & B.	DATKULIAK	MONROE	SUNSBURY	36	4	4
M	DATKULIAK	MONROE	SUNSBURY	36	4	4
D. & K.	DORNON	MONROE	SUNSBURY	36	4	4
C. & P.	MELLOTT	MONROE	SUNSBURY	36	4	4
G. & D.	MELLOTT	MONROE	SUNSBURY	36	4	4
H. & B.	MELLOTT	MONROE	SUNSBURY	36	4	4
I	STAPP AND D SCHNEGG	MONROE	SUNSBURY	36	4	4
T. & J.	REED	MONROE	SUNSBURY	36	4	4
T. & J.	REED	MONROE	SUNSBURY	6	5	5
L. & E.	TRUEX	MONROE	SUNSBURY	36	4	4

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D. AREAS WHERE MINING IS PROHIBITED OR LIMITED-**Permit Area**

(1) Does the permit area included in this permit application include any area dedicated as a nature preserve pursuant to Chapter 1517., Ohio Revised Code? _____ Yes, _____ No. If "yes," submit proof of valid existing right.

N/A, NO PERMIT AREA

(2) Does the permit area included in this permit application include any area within one thousand feet of the waterlines of any wild, scenic, or recreational river dedicated pursuant to Chapter 1501., Ohio Revised Code? _____ Yes, _____ No. If yes, submit proof of valid existing right.

N/A, NO PERMIT AREA

(3) Does the permit area included in this permit application include any area within the boundaries of the following systems: national park, national wildlife refuge, national trails, national wilderness preservation, national recreational areas, or wild and scenic rivers or river corridors, including those rivers under study? _____ Yes, _____ No. If yes, submit proof of valid existing right.

N/A, NO PERMIT AREA

(4) Does the permit area included in this permit application include any federal lands within the boundaries of any national forest? _____ Yes, _____ No. If yes, submit approval of the U.S. Secretary of Interior of proof of valid existing right.

N/A, NO PERMIT AREA

(5) Will operations in the permit area conducted under this permit adversely affect any publicly owned park or place included on the National Register of Historic Places? _____ Yes, _____ No. If yes, submit joint approval from the chief and the federal, state, or local agency with jurisdiction over the park or places or proof of valid existing right.

N/A, NO PERMIT AREA

(6) Will operations in the permit area conducted under this permit affect land within one hundred feet of the outside right-of-way of a public highway? _____ Yes, _____ No. If yes, list the highway(s) in the space below and submit Attachment 9 or proof of valid existing right.

N/A, NO PERMIT AREA

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D. (7) Will operations in the permit area conducted under this permit affect land within three hundred feet of any occupied dwelling? ____ Yes, ____ No. If yes, list the name of the owner(s) in the space below and submit Attachment 10 or proof of valid existing right.

N/A, NO PERMIT AREA

(8) Will operations in the permit area conducted under this permit affect land within three hundred feet of any public building, school, church, community or institutional building, or public park? Yes, ____ No. If yes, submit proof of valid existing right.

N/A, NO PERMIT AREA

(9) Will operations in the permit area conducted under this permit affect land within one hundred feet of a cemetery? ____ Yes, ____ No. If yes, submit proof of valid existing right or appropriate authorization to relocate the cemetery.

N/A, NO PERMIT AREA

(10) Will operations conducted during this permit result in the extension of any part of the pit within fifty feet of horizontal distance to any adjacent land or water in which the applicant does not own either the surface or mineral rights? ____ Yes, ____ No. If yes, list below the name(s) of the adjacent owner(s) and submit Attachment 11.

N/A, NO PERMIT AREA

E. AREAS WHERE MINING IS PROHIBITED OR LIMITED -**Permit and Shadow Area**

Are there areas within the proposed permit area, shadow area, or adjacent areas designated unsuitable for coal mining operations under rule 1501:13-3-07 of the Administrative Code or under study for designation in an administrative proceeding under this rule? ____ Yes, **X** No.

(1) If yes to the item above, did the applicant make substantial legal and financial commitments in the proposed areas prior to January 4, 1977? ____ Yes, ____ No.

(2) If yes to item (1) above, submit as an addendum to the permit application information supporting the assertions that the commitments were made prior to January 4, 1977.

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F. PERMIT TERM AND EXTENT -Permit and Underground Workings

(1) Anticipated/actual date for:
(a) Starting mining operations JANUARY 1, 2003

(b) Terminating mining operations JANUARY 1,2008

(2) Does the applicant propose a permit term in excess of five (5) years? _ Yes, X No. If yes, submit an addendum with the information required by 1501:13-4-03(E)(3), Ohio Administrative Code.

(3) Indicate the following acreage figures:
(a) Total Acres N/A (Permit area)
(b) Total Acres 3440.0 (Underground Workings)

(4) Horizontal extent of underground workings over life of permit in acres:
(a) Full coal Recovery 3440.0 ACRES
(b) Room and Pillar N/A

G. PUBLIC NOTICE-Permit and Shadow Area

(1) In the space below, provide the name and address of the public office where a complete copy of this permit application is to be filed.
SEE ADDENDUM TO PAGE 15(G)(2)

(2) In the space below, list name and address of the newspaper and submit an addendum providing the text of the advertisement that is to be published in a newspaper of general circulation in the locality of the proposed operation. Note: The advertisement is to provide the information required by paragraph (A) of rule 1501:13-5-01 of the Administrative Code.

THE TIMES LEADER
200 SOUTH 4TH STREET
MARTINS FERRY, OH 43935

MONROE COUNTY BEACON
103 E. COURT STREET
WOODSFIELD, OHIO 43793

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ADDENDUM TO PART 1, PAGE 15, ITEM G(2)
AMERICAN ENERGY CORPORATION

PUBLIC NOTICE

Pursuant to Section 1501:13-5-01 of the Ohio Administrative Code, notice is hereby given that AMERICAN ENERGY CORPORATION, 43521 Mayhugh Hill Road, Beallsville, has submitted an Adjacent Area Application to the Ohio Department of Natural Resources, Division of Mineral Resources Management.

AMERICAN ENERGY CORPORATION, 43521 Mayhugh Hill Road, Beallsville, Ohio, 43716 has submitted an underground coal mining application designated as D-0425-3 to the Ohio Department of Natural Resources, Division of Mineral Resources Management. The proposed additional acreages for permit D-0425 is located in sections 6, 12, 30, 36 Sunsbury Township, Monroe County, and section 1 and 7 in Wayne Township, and 31, 25, 19, 13, 32, 26, 14 and 20 in Washington Township in Belmont County. The area is located in the Armstrong Mills, Woodsfield, Hunter, and Cameron Quads 7 – ½ minute U. S. G. S. Quadrangle maps 4.3 miles South of State Route 148, immediately North and East of Beallsville, Ohio. The proposed underground workings encompass 4060.0 Acres. Coal in this underground area will be removed using full coal recovery methods.
The Adjacent Area Application is on file at the Belmont County Courthouse, Recorders Office, Main Street, St.Clairsville, Ohio, 43950, and Monroe County Courthouse, Recorders Office, 101 North Main Street, Woodsfield, Ohio, 43793 for public viewing. Written comments or requests for informal conference may be sent to the Chief, Department of Natural Resources, Division of Mineral Resources Management, 1855 Fountain Square Court, Columbus, Ohio 43224, within thirty (30) days of the last date of publication of this notice.

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PUBLIC NOTICE

Pursuant to Section 1501:13-5-01 of the Ohio Administrative Code, notice is hereby given that AMERICAN ENERGY CORPORATION, 43521 Mayhugh Hill Rd., Beallsville, has submitted an Adjacent Area Application to the Ohio Department of Natural Resources, Division of Mineral Resources Management.

AMERICAN ENERGY CORPORATION, 43521 Mayhugh Hill Rd., Beallsville, OH 43716 has submitted an underground coal mining application designated as D-0425-3 to the Ohio Department of Natural Resources, Division of Mineral Resources Management. The proposed additional acreages for permit D-0425 are located in sections 6, 12, 30, 36 Sunsbury Township, Monroe County, and sections 1 and 7 in Wayne Township, and 31, 25, 19, 13, 32, 26, 14 and 20 in Washington Township in Belmont County. The area is located in the Armstrongs Mills, Woodsfield, Hunter and Cameron Quads 7 – 1/2 minute U.S.G.S. Quadrangle maps 4.3 miles South of SR 148, immediately North and East of Beallsville, Ohio. The proposed underground workings encompass 4060.0 acres. Coal in this underground area will be removed using full coal recovery methods.

The Adjacent Area Application is on file at the Belmont County Courthouse, Recorder's Office, Main Street, St. Clairsville, OH 43950, and Monroe County Courthouse, Recorder's Office, 101 North Main Street, Woodsfield, OH 43793 for public viewing.

Written comments or requests for informal conference may be sent to the Chief, Department of Natural Resources, Division of Mineral Resources Management, 1855 Fountain Square Court, Columbus, OH 43224 within thirty (30) days of the last date of publication of this notice.

Dec. 26, 2002, Jan. 2, 9, 16, 2003

I, Arlean Selvy do solemnly swear that the notice, a copy of which is hereto attached, was published for four (4) weeks on/or after December 26, 2002 in

MONROE COUNTY BEACON
a newspaper of general circulation in
Monroe County, Ohio

[signature], publisher

Printer's Fee $ 250.80

Sworn to and subscribed before me this 24th day of February, 2003.

[signature]
Sheila J. McKee
Notary Public, State of Ohio
My Commission Expires 11-08-05

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PART 2 ENVIRONMENTAL RESOURCES INFORMATION

A. CULTURAL, HISTORIC, AND ARCHEOLOGICAL INFORMATION -**Permit and Planned Subsidence Area**

(1) Are there any cultural or historic resources or structures listed or eligible for listing on the National Register of Historic Places within the proposed permit or planned subsidence area? X Yes, No. If yes, submit an addendum describing the resources and structures including the location and submit Attachment 27 or 27A as appropriate.

SEE ATTACHMENT 27A AND ADDENDA

(2) Are there any know archeological sites within the proposed permit or planned subsidence area? Yes, X No. If yes, submit an addendum describing the site including the location and submit Attachment 27 or 27A as appropriate.

(3) If applicable, based upon the review of the proposed planned subsidence areas and the completed Attachment 27A for the initial six months of projected mining, have any properties listed or eligible for listing on the National Register of Historic Places been identified? Yes, ____No. If yes, submit an addendum listing each property identified.

SEE ATTACHMENT 27A AND ADDENDA

(4) Submit an addendum indicating the method to be used to identify historic properties on planned subsidence areas as mining progresses.

SEE ADDENDUM TO PAGE 16, A(4)

B. GEOLOGY DESCRIPTION - **Permit and Shadow Area**

(1) Submit an addendum describing the geology within the proposed permit area and shadow area down to and including the first stratum below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely affected by mining. The description shall also include information on the areal and structural geology of the permit and shadow area and any other geologic parameters which may influence the probable hydrologic consequences and protection of the hydrologic balance from material damage outside of the permit area.

SEE ORIGINAL PERMIT D-0425 AND ADDENDUM TO PART 2, PAGE 16, ITEM B(1)

(2) Submit an addendum describing how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially affected surface and ground waters per paragraph (C) of rule 1501:13-4-13 of the Administrative Code.

SEE ORIGINAL PERMIT D-0425 AND ADDENDUM TO PART 2, PAGE 16, ITEM B(2)

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT
Planned Subsidence Areas - Underground Mining Operations

ATTACHMENT 27A
(HISTORIC AND PREHISTORIC PROPERTIES)

1. Applicant's Name AMERICAN ENERGY CORPORATION Permit # D-0425

Address 43521 MAYHUGH HILL ROAD, TWP. ROAD 88

City BEALLSVILLE State OHIO Zip 43716

2. Contact Person MELANIE HOMAN Phone (740) 926-9152

3. Location and Acreage Information

County BELMONT / MONROE Township WAYNE, WASHINGTON / SUNSBURY

13, 14, 19, 20, 25, 26, 31, & 32 Washington Twp., T- 5 R- 4 Section(s) / Lots
1, 7 Wayne Twp. T- 6 , R- 5
6, 12, 30, 36 Sunsbury Twp. T- 4 , R- 4

USGS Quadrangle ARMSTRONGS MILLS, HUNTER & WOODSFIELD Acreage 3440.0 Acres

4. Full Coal Recovery Area Map Attached: (USGS Quadrangle with full coal recovery area delineated)

5. Historic and Prehistoric Structures:

Definitions

A historic or prehistoric structure is a work made up on interdependent and interrelated parts in a definite pattern of organization. Constructed by humans, and 50 years or older, it is usually an engineering project.

Types

Historic structures include, but are not limited to dwellings, buildings, barns, farmstead outbuildings, bridges, culverts, churches, schools, halls, iron furnaces, (and associated buildings), canals, forts, abandoned coal mine buildings, mine entrances, tipples, and related structures, etc.

Prehistoric structures include, but are not limited to, earthworks and mounds.

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AEC 18165

List all known historic and prehistoric structures below and locate each one on the map to be sent to the SHPO including corresponding labeled black and white front and rear photographs of each structure. Attach addendum, if necessary.

Structure Type	Construction Date	Map Reference	Photo# Front	Photo# Rear
SEE ADDENDUM TO ATTACHMENT 27A				

6. Previous Historic and/or Archeological Surveys: (describe any surveys known to applicant on the planned subsidence areas)

NONE KNOWN TO APPLICANT

7. **SHPO please send this form to:**

Dr. Jeffrey C. Reichwein
Division of Mines and Reclamation
Fountain Square, Building B-3
Columbus, OH 43224

FOR USE BY THE STATE HISTORIC PRESERVATION OFFICE ONLY

(check appropriate spaces)

A. _____ This is a recommendation for an archeological survey of the proposed full coal recovery area based on the following reasons (attached addendum, if necessary):

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A SHPO review of the area shown on the map has provided a listing below of all known historic and prehistoric properties listed and eligible for listing on the "National Register of Historic Places" and known historic and prehistoric sites on the permit and adjacent areas (in a 1.5 mile radius). The listing includes, when appropriate, those historic and prehistoric structures identified by the applicant in items 5. and 6. above.

Listed and Eligible National Register Sites

Site Name	(#)	Type	Proposed Area	Adjacent Area

Known Historic and Prehistoric Sites

Site Name	(#)	Type	Proposed Area	Adjacent Area

B. _____ A SHPO review of the area shown on the application map and information contained in this attachment finds that the proposed mining does not have a reasonable probability of affecting and properties listed or eligible for listing on the "National Register of Historic Places." Therefore, no further coordination will be necessary with this office unless the scope of the proposed application area changes.

State Historic Preservation Officer _____

SHPO # _____

Date _____

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ADDENDUM TO PART 2, PAGE 16, A(4)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

METHOD USED TO IDENTIFY HISTORIC PROPERTIES AS MINING PROGRESSES

Potential historic properties have been identified in Attachment 27A submitted with this application. Properties that are deemed eligible for listing on the National Register for Historic Places will be identified by SHPO and will be noted as such by AEC. As mining progresses, AEC will identify properties to be undermined six months prior to undermining, and proper mitigative efforts will be implemented.

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ADDENDUM TO PART 2, PAGE 16, B(1)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

GEOLOGY DESCRIPTION

Stratigraphy of the proposed permit area is formed by the Monongahela formation of the Pennsylvania period, and the Dunkard group of Permian time. The primary strata of both sections consists of an alternating sequence of limestone, sandstone, clay, shale, claystone, soapstone, and coal.

The Monongahela formation is approximately 245 feet thick. In ascending order, it occupies the interval from the Pittsburgh No. 8 to the Waynesburg No. 11 coal bed. The primary rock units are limestone, shale, and claystone. Limestone forms 44 to 68 percent of this stratigraphic interval. As a result of longwall mining, the immediate strata overlying the Pittsburgh No. 8 coal bed will cave to a height of 3 to 6 times the mining height, depending on the bulking factor of roof strata. The beds above this caved zone are provided some support by the caved rock but may sag and give rise to bed separation and may be subject to fracturing, to heights 24 to 54 times the mining height (120 to 270 feet above the mine).

The Dunkard group is 250 to 300 feet thick, occupying the interval from the Waynesburg No. 11 coal bed to the ground surface. The primary rock units here are shale and claystone. These soft units form about 85 percent of this stratigraphic interval. This strata is primarily located within the constrained zone of disturbance resulting from longwall mining. The constrained zone is defined as that interval above 24 to 54 times the mining height and below 50 feet from the ground surface. This strata is expected to be sufficiently confined to prevent development of any fractures. Rock beds here will tend to absorb most of the strain energy without fracturing.

Strata close to the surface, however, are not sufficiently confined and may move in any direction. Surface cracks may be produced from tensile strains resulting from longwall mining. The depth of these cracks is generally estimated to be less than 50 feet.

The main safety against inflow of groundwater into the CENTURY MINE is afforded by the constrained zone. The nature and thickness of the individual beds found here are of particular importance. Through extensive core drilling, multiple beds of claystone, with total thicknesses of 79 to 108 feet, have been identified. These claystone beds are relatively impermeable and generally capable of absorbing large amounts of strain energy before fracture. In the application area, it is our opinion that sufficient claystones are in-place to provide an adequate barrier against inflow from surface water and shallow groundwater disruptions caused by longwall mining. Where stream valleys are encountered, longwall operations are generally not planned under less than about 200 feet of cover to further protect the mine and overlying groundwater resources. Consequently, no longwall operations will occur in areas with less than 200 feet of cover. The rock strata of Belmont County typically form a gentle monocline that dips southeasterly at grades less than one percent. This dip trend accurately represents the application area with

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the base elevation of the No. 8 seam ranging from approximately 660 ft. in the southeast corner to approximately 715 ft. in the northwest corner.

The orientation of the major joints in rock and face cleat in coal is approximately N 75° W. The minor joints and butt cleats are generally perpendicular to these (N 15° E).

Geology and Coal Resources of Belmont County, Ohio, Geological Survey Professional Paper 380, reports that a small dome-shaped anticline lies in eastern Belmont County, primarily in Mead Township. This structure is located over five miles northeast of the CENTURY MINE application area and, therefore, is not expected to have an impact on ground water flow in the application area.

In addition, there is a graben structure that passes through portions of Belmont County. This graben has been tracked through the adjacent Powhatan No. 3 Mine and enters the No. 6 reserve on the eastern boundary. It proceeds in a southwesterly direction, turns approximately 90 degrees, proceeds in a northwesterly direction, then turns again and proceeds in a general westerly direction off the Powhatan mine property.

The structural contours of the No. 8 Seam indicate that the graben is made up of a series of slumps in the deposit, indicated by a thickening of the seam at the bottom of the structure. This structure apparently affected the structural contours to the north of the graben, but these effects do not extend into the application area.

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ADDENDUM TO PAGE 16, B(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

Geological Impact of Coal Removal Upon Ground Water

The geological impact of coal removal, according to the PHC, is expected to vary from short term to long term. The Pittsburgh (No. 8) coal seam will be mined, and in this area has dip of approximately 0.5% to the southeast, with the strike to the northeast. Ground water occurs in this area in several disconnected saturated zones associated with the occurrence of the coal seams and underlying clay stone units that prevent downward migration of the ground water. Ground water is generally limited to within the first 100 ft of the surface. Since primary porosity in the rock units is poor, nearly all of the ground water in this area of Ohio occurs as secondary porosity in the joints, cleats, fractures, and bedding planes of the rocks.

As longwall mining progresses, a caved area occurs immediately over the coal seam mined. Above this area, fractures occur in hard rocks and extend upward to about 200 ft above the coal seam. In the area above these fractures, a zone known as the continuous deformation zone develops where the rocks bend down and form the classic subsidence basin. In the center of the basin, rocks are put into compression, while there are areas of tension from the gate entries inward for a short distance and outside the basin for a short distance. As the mining occurs, the rocks may be fractured and bedding planes may open as a result of this deformation. This process provides new openings to contain additional ground water, with a lowering of the phreatic surface of the water in the area. After mining, the aquifers are more connected and provide a larger source of water for well recharge.

The potential exists to re-drill existing wells or to drill new wells after mining. Groundwater still is available after subsidence. When subsidence occurs, the water level in some wells drops, sometimes to below the bottom of the well bore. Ground water is not lost to the mine, but the water table is lowered in response to changes in rock permeability. The Century Mine is a dry mine which indicates that the groundwater does not flow into the mine. Rather, layers of rock that act as aquatards prevent downward migration of water into the mine. The other layers of rock, being more plastic than elastic, tend to fracture or the bedding planes separate and make more channels for the ground water to reside. Existing wells can be deepened or new wells drilled to encounter the new water table and to increase well bore reservoir storage to provide similar quantities of water after mining. Additionally, if well yield is low, it has become the practice of some mining companies to install a well and place a pump in the bore that pumps to a cistern buried on the surface. This pump operates almost continuously and provides the cistern with water. A pump is then located in the cistern, which now provides the needed water.

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ADDENDUM TO PAGE 16, B(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

In summary, the coal removal is expected to have some impact on ground water in the application area. The impacts are described in the PHC and in the Addendum to Page 18 F(1).

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B. (3) For those areas to be affected by underground mining surface operations where removal of the overburden down to the level of the coal seam will occur, submit Attachment 12(s) as required by paragraphs (C)(2)(a) and (C) of rule 1501:13-4-13 of the Administrative Code.

N/A

(4) For those areas within the shadow area where the stratum above the coal seam to be mined will not be removed, submit Attachment 13(s) as required by paragraphs (C)(2)(d) and (e) of rule 1501:13-4-13 of the Administrative Code.

SEE APPROVED TEST HOLE VARIANCE REQUEST AND ATTACHMENTS

C. GROUND WATER INFORMATION-Permit, **Shadow Area, and Adjacent Area**

(1) Submit an Attachment 14B which describes the ground water hydrology of the proposed permit area, shadow area, and adjacent area. The Attachment 14B is to include information on each waterbearing stratum or zone as required by paragraph (D) of rule 1501:13-4-13 of the Administrative Code, including the first waterbearing stratum below the coal to be mined.

SEE ATTACHMENT 14B AND ADDENDA

(2) Are there any wells on the proposed permit area, shadow area, and adjacent area? __X__ Yes, _____ No. If yes, submit Attachment 14C.

(3) Are there any springs on the proposed permit area, or developed springs on the shadow area and adjacent area? __X__ Yes, _____ No. If yes, submit Attachment 14C.

(4) Are there any public water supply sources on the proposed permit area, shadow area, and adjacent area? _____ Yes, __X__ No. If yes, submit Attachment 14A, Attachment 14D, and show location on the hydrology map.

(5) Submit Attachment 14A for representative wells and developed springs as required by paragraph (D)(4) of rule 1501:13-4-13. Based on this data identify the seasonal variations of ground water quality and quantity.

D. SURFACE WATER INFORMATION-Permit, **Shadow Area, and Adjacent Area**

(1) List the name of the watershed that will receive water discharges from the proposed permit, shadow and adjacent areas as listed in the Gazetteer of Ohio Streams published by the Ohio Department of Natural Resources.

CAPTINA CREEK, AND SUNFISH CREEK

(2) Are there any perennial or intermittent streams or other surface water bodies on the proposed permit, shadow area, and adjacent area? __X__ Yes, _____ No. If yes, submit Attachment 14A and Attachment 14D and show location on application and hydrology map.

SEE ATTACHMENT 14A, 14D, AND APPLICATION AND HYDROLOGY MAP

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March 21, 2002

Mr. Michael S. Sponsler, Chief
Ohio Department of Natural Resources
Division of Mineral Resources Management
1855 Fountain Square Court, Bldg. H-2
Columbus, Ohio 43224-1383

Attn: Mr. George Mychkovsky, Geologist

Dear George,

The American Energy Corporation is preparing an application to add 4,060 acres of underground (Pittsburgh No. 8 Seam) reserves adjacent to our currently approved underground mining area, referred to as Century Mine, Permit D-0425-3. The proposed workings are located in Sections 7 & 1, T-6 R-5, Wayne Township, Sections 13, 14, 19, 20, 25, 26, 31, & 32, T-5 R-4, Washington Township, Belmont County, Ohio, and Sections 6 & 12, T-5 R-5, and Sections 30 & 36, T-4 R-4, Sunsbury Township, Monroe County, Ohio. With the exception of the mains and entries, American Energy Corporation plans to use full-recovery mining for the entire application area.

The Pittsburgh No. 8 Coal seam ranges in elevation from approximately 610 feet to 711 feet msl, with overburden ranging from approximately 280 feet to 676 feet within the proposed shadow area. The lowest overburden thickness of 280 feet was determined at the low spot near Section corner 32 /26, 31 / 25. Due to the fact that the Pittsburgh #8 coal lies at least 280 below the surface, there is no potential for acid mine drainage. All water that cannot be utilized within the mine for dust control will be pumped to a surface sediment pond for treatment, if necessary, before being released to the stream system.

Pursuant to OAC 1501:13-4-13 (C)(2)(e)(ii), twenty-six (26) test holes are required. A total of nineteen (19) test holes are being submitted with this request. Attachment 13's for thirteen (13) of the test holes are being submitted, twelve (12) of which have complete chemical analysis. The remaining seven (7), (one Attachment 13 and 6 drill logs) being submitted represent geologic data only. In summary, seven (7) test holes are lacking pursuant to the above referenced rule. See attached Addendum to this variance request.

The following information is submitted in support of this request:

1. A Test Hole Variance Request Map showing existing test holes, their surface elevations, their coal elevations and the structural contours based on these holes and the surrounding test holes. The proposed mining area boundary and panel layout, hydrologic boundary, and location of geologic cross sections are also shown on the map.

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2. Logs of test holes and/or Attachment 13's for each hole.

3. A total of two (2) cross sections, A - A' and B - B', one along strike and one along dip.

We believe that all the data submitted with the original permit application and the previous adjacent area application (D-0425-1), combined with the information submitted herein demonstrates that the structure and stratigraphy of this application area is well known, and adequately represents the conditions of the proposed shadow area. Your prompt review and approval of this variance request is appreciated.

The approved test hole variance request with all attached information will be submitted with the application. Should you have any questions, please contact me as soon as possible.

Sincerely,

Jack A. Hamilton & Associates, Inc.
Consultants for American Energy Corporation

Ellen M. Greer, Permitting

Enclosures

cc: American Energy Corporation
File

APPROVED ☒
DISAPPROVED ☐
DATE: 3/26/02
SIGNED Michael Y. Sponsler
by R W Allen
Chief

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D0425-3

ADDENDUM TO TEST HOLE VARIANCE REQUEST
AMERICAN ENERGY CORPORATION
APPLICATION D-0425-3

Test Hole	Location	Surf. Elev.	Top of Coal Elev.	Overburden Thickness	Attachment 13	Drill Log	Chemical Analysis
AEC-2000-01	NE Qtr. Sec. 36	1023	682	341	X		Yes
*AEC-2000-02	NE Qtr. Sec. 30	1264	664	600	X		Yes
AEC-2000-03	NE Qtr. Sec. 31	976	676	300	X		Yes
AEC-2000-04	NE Qtr. Sec. 19	1267	670	597	X		Yes
AEC-2001-02	NE Qtr. Sec. 25	1239	677	562	X		Yes
AEC-2001-04	NW Qtr. Sec. 31	1004	676	328	X		Yes
AEC-2001-10	NW Qtr. Sec. 36	1267	687	580	X		Yes
*AEC-2001-14	SE Qtr. Sec. 30	1315	641	674	X		Yes
AEC-2001-16	SW Qtr. Sec. 31	1225	688	537	X		Yes
AEC-2001-24	SE Qtr. Sec. 7	1140	711	429	X		Yes
AEC-2001-25	SW Qtr. Sec. 1	1220	707	513	X		Yes
CLC-2001-29	SE Qtr. Sec.31	1210	688	522	X		No
N94-15	SE Qtr. Sec. 36	1199	653	546		X	No
N94-16	SE Qtr. Sec. 25	1279	677	602		X	No
N94-17	NW Qtr. Sec. 6	1183	707	476		X	No
*N94-41	NE Qtr. Sec. 5	1149	676	473	X		Yes
*NA-87-10	SE Qtr. Sec. 30	1332	656	676		X	No
*DDH-09	NE Qtr. Sec. 24	1120	610	510		X	No
Y & O-7	SE Qtr. Sec. 1	1060	701	359		X	No

* N94-41 located outside proposed shadow area, south of southwest corner.

* DDH-09 located outside proposed shadow area, south of northeast corner.

* AEC-2000-02 located outside proposed shadow area, east of southeast corner.

* NA-87-10 located outside proposed shadow area, east of southeast corner.

* AEC-2001-14 located outside proposed shadow area, east of southeast corner.

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ATTACHMENT 13

DIAMOND DRILL HOLE:
Y&O-7

HETAGE
DIAMOND DRILLIN

R, INC. T6N R5

NIA 15767

FOR Y. & O. COAL
Latta Boan Proper
ON between twp. roa
Crabapple Creek,
HOLE NO. DDH-7

Field Engineer: Kim Cecil
Surface Elevation: 1,060
Drill Hole Coordinates (State Plane 1927 NA Datum) DATE 2-16-67 19
Northing: 683,189
Easting: 2,415,888 nt STATE Ohio
Drilling Company: Leroy G. Hetager, Inc. DRILL NO. 1

Page I CLASSIFICATION	THICKNESS OF STRATA FEET	INS.	DEPTH FROM SURFACE FEET	INS.	Properties
Surface sand and silt, soft	5.	0	5.	0	cv, ev
Brown sandstone coarse grained	21.	0	26.	0	cs, es
Gray sandstone, coarse grained	26.	10	52.	10	cs, es
COAL, dirty with shale Weynesburg "A"	0.	9	53.	7	ac, cv, ev
Gray ~~sh~~ clay shale	16.	5	70.	0	cv, ev
Gray sandstone	11.	0	81.	0	cs, es
Green shale	2.	8	83.	8	cm, em
Gray limestone	2.	4	86.	0	ak, cs, es
Green shale	8.	0	94.	0	cm, em
Limestone	3.	2	97.	2	ak, cs, es
Shale, gray	2.	10	100.	0	cm, em
Black shale	0.	10	100.	10	ac, cm, em
Gray limey shale	9.	2	110.	0	ak, cm, em
Gray sandstone	7.	5	117.	5	cs, es
Gray clayey shale	2.	7	120.	0	cm, em
Black shale	2.	0	122.	0	ac, cm, em
Gray shale & Limestone	30.	2	152.	2	ak, cs, es
Black shale	0.	4	152.	6	ac, cm, em
Green shale	3.	6	156.	0	cm, em
Red shale	0.	9	156.	9	cm, em
Gray limey shale	10.	0	166.	9	ak, cm, em
Red shale	0.	3	167.	0	cm, em

STARTED 2-8-67 COMPLETED 2-14-67 19 TOTAL

continued to page 2

FORM 3

ORIGINAL

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AEC 18177

LEROY G. HETTAGER, INC.
DIAMOND CORE DRILLING

P. O. BOX 363, PUNXSUTAWNEY, PENNSYLVANIA 15767

DIAMOND CORE DRILL HOLE RECORD

FOR Y. & O. COAL COMPANY ADDRESS Martin's Ferry, Ohio DATE 2-16-67 19

ON Lotta Boan Property located between twp. road 103 and Crab-apple Creek, w. of twp. line TWP. Sec.1 Wayne Twp. COUNTY Belmont STATE Ohio

HOLE NO. DDH-7 SIZE HOLE 4" EL. DRILLER HARRY MERRITT DRILL NO. 1

Page II CLASSIFICATION	THICKNESS OF STRATA FEET	INS. THS.	DEPTH FROM SURFACE FEET	INS. THS.	Propert
Green shale	2.	0	169.	0	cm, em
Gray sandstone	3.	0	172.	0	cs, es
Green shale	2.	8	174.	8	cm, em
Gray limestone	12.	7	187.	3	ck, cs, c
Green weathered shale	1.	3	188.	6	cm, em
Red shale	1.	6	190.	0	cm, em
Green shale with some red	15.	00	205.	0	cm, em
Gray limestone	6.	0	211.	0	ck, cs, e
Green shale	4.	9	215.	0	cm, em
Gray limestone	9.	6	224.	6	ck, cs, e
Green shale	3.	0	227.	6	cm, em
Gray limestone with some shale	38.	6	266.	0	ck, cs, es
Black shale	3.	3	269.	3	cc, cm, e
COAL Sewickley No. 9	2.	6	271.	9	cc, cv, ev
Gray shale	10.	3	282.	0	cm, em
Gray limestone	8.	0	290.	0	ck, cs, es
COAL	1.	8	291.	8	cc, cv, ev
Binder	0.	3	291.	11	cm, em
COAL	0.	7	292.	6	cc, cv, ev
Gray clayey shale	2.	0	294.	6	cm, em
Gray limestone	5.	0	299.	6	ck, cs, e
Black Limestone	0.	6	300.	0	cm, em
			continued on page 3		

STARTED 2-8-67 COMPLETED 2-14-67 19 TOTAL

FORM 2

ORIGINAL D0425-3

AEC 18178

L_ROY G. HET_GER, INC.
DIAMOND CORE DRILLING
P. O. BOX 363, PUNXSUTAWNEY, PENNSYLVANIA 15767

DIAMOND CORE DRILL HOLE RECORD

FOR Y. & O. COAL CO. ADDRESS Martin's Ferry DATE 2-16-67 19

ON Latta Boan Property located between twp. road 103 and Crabapple Creek, W. of twp. line TWP. Sec. 1 Wayne Twp. COUNTY Belmont STATE Ohio

HOLE NO. DDH-7 SIZE HOLE 4" EL. DRILLER HARRY MERRITT DRILL NO. 1

Page III CLASSIFICATION	Thickness of Strata Feet	Ins. Ths.	Depth from Surface Feet	Ins. Ths.	
Gray limestone	15.	6	315.	6	ak,cs,es
Gray limey shale	7.	6	323.	0	ak,cm,em
Gray limestone	2.	7	325.	7	ak,cs,es
Gray clay shale	2.	6	328.	1	cm,em
Black shale	0.	6	328.	7	ac,cm,em
COAL	1.	0	329.	7	ac,cv,ev
Gray limestone	16.	5	346.	0	ak,cs,es
Gray clah shale	5.	9	351.	9	cm,em
COAL Roof Coal	1.	2	352.	11	ac,cv,ev
Binder (shale)	1.	0	353.	11	cm,em
COAL Pgh #8	5.	1	359.	0	ac,cv,ev
Gray shale	3.	0	362.	0	cm,em

Acid Producing: ac
Alkaline Producing: ak
Compactible: c(v-very, m-moderate,s-slight)
Erodible: e(v-very, m-moderate, s-slight)

Hard Rock 150.83 ft 41%
Soft Rock 211.17 ft 59%
362.00 ft

STARTED 2-8-67 COMPLETED 2-14-67 19 TOTAL 362. 0 362.0

FORM 2

ORIGINAL

00425-3

AEC 18179

ATTACHMENT 13

DIAMOND DRILL HOLE:
DDH-09

arter
arce

Field Engineer: Kim Cecil
Surface Elevation: 1,120
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 677,890 le plugged.
Easting: 2,431,025
Drilling Company:

	Thickness		Total Depth		Propert
	Feet	Inches	Feet	Inches	
Surface	15	0	15	0	—
Brown and Gray Sandstone	5	11	20	11	CS, es
Gray Shale	2	4	23	3	CM, em
Soft Gray Clay	8	8	31	11	CV, ev
Red Clay, Not Recovered	4	1	36	0	CV, ev
Soft Red Clay	14	5	50	5	CV, ev
Gray Shale	10	0	60	5	CM, em
Gray Sandy Shale	6	5	66	10	CS, es
Gray Silty Shale	15	4	82	2	CM, em
Gray Sandy Shale	1	8	83	10	CS, es
Soft Red Clay, Not Cored	5	4	89	2	CV, ev
Gray Sandy Shale	6	9	95	11	CS, es
Red Shale	1	6	97	5	CM, em
Gray Shale	3	6	100	11	CM, em
Red and Gray Shale	1	10	102	9	CM, em
Gray Sandy Shale	14	1	116	10	CS, es
Gray Argillaceous Shale	9	8	126	6	CM, em
Fine Grained Gray Sandstone	4	0	130	6	CS, es
Gray Sandy Shale	4	2	134	8	CS, es
Soft Dark Calcareous Clay	5	4	140	0	CV, ev
Black Shale	0	5	140	5	ac, cm, e
Coal Washington No. 12	4	0	144	5	ac, cv, e
Hard Gray Calcareous Clay	13	5	157	10	ak, cm, e
Gray Sandy Shale	9	10	167	8	CS, es
Gray Calcareous Clay	5	0	172	8	ak, cv, e
Gray Sandy Shale	3	10	177	6	CS, es
Gray Clay	1	10	179	4	CV, ev
Red Clay	2	7	181	11	CV, ev
Gray Clay	5	11	187	10	CV, ev
Gray Shale	10	10	198	8	CM, em
Coal WAYNESBURG "A" COAL	3	2	201	10	ac, cv, e
Pyrite	0	2	202	0	ac, cs, e
Coal	3	2	205	2	ac, cv, e
Argillaceous Limestone	5	5	210	7	ak, cs, e
Calcareous Clay	9	0	219	7	ak, cv, e
Gray Sandy Shale	6	4	225	11	CM, em
Gray Shale	2	5	228	4	CM, em
Gray Argillaceous Limestone	2	0	230	4	ak, cs, e
Gray Sandy Shale	7	3	237	7	CS, es
Dark Gray Shale	2	7	240	2	CM, em

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AEC 18180

	Thickness		Total Depth		Propert
	Feet	Inches	Feet	Inches	
Gray Argillaceous Shale	4	5	244	7	cm, cr
Soft Dark Gray Clay	2	3	246	10	cv, cv
Shaley Coal	0	11	247	9	ac, cm,
Gray Shale	4	3	252	0	cm, cr
Gray Sandy Shale	4	0	256	0	cs, cs
Gray Carbonaceous Sandstone	5	1	261	1	cs, cs
Gray Sandy Shale	3	10	264	11	cs, cs
Gray Shale	1	7	266	6	cm, cr
Shaley Coal Waynesburg No. 11	0	9	267	3	ac, cm,
Soft Gray Clay	2	0	269	3	cv, cs
Gray Limestone	3	2	272	5	ak, cs,
Hard Gray Clay	4	4	276	9	cm, cr
Gray Argillaceous Limestone	11	2	287	11	ak, cs,
Soft Gray Clay	3	8	291	7	cv, cv
Gray Argillaceous Limestone	2	4	293	11	ak, cs,
Soft Pyritic Clay	1	9	295	8	ac, cm,
Gray Sandy Shale	2	7	298	3	cs, cs
Fine Grained Gray Sandstone	6	11	305	2	cs, cs
G ray Sandy Shale	3	4	308	6	cs, cs
Green Shale	1	0	309	6	cm, cr
Red Shale	1	6	311	0	cm, cm
Green Shale	0	11	311	11	cm, cm
Gray Argillaceous Limestone	9	0	320	11	ak, cs, c
Green Shale	3	9	324	8	cm, cm
Red Shale	0	8	325	4	cm, cm
Gray Argillaceous Limestone	9	0	334	4	ak, cs, c
Gray Limestone	3	5	337	9	ak, cs, c
Gray Argillaceous Shale	6	6	344	3	cm, cm
Gray Calcareous Clay	3	3	347	6	ak, cv, c
Gray Silty Shale	20	6	368	0	cm, cm
Gray Argillaceous Shale	14	11	382	11	cm, cm
Green Shale	1	7	384	6	cm, cm
Gray Limestone	6	3	390	9	ak, cs, c
Gray Argillaceous Shale	6	9	397	6	cm, cm
Gray Silty Shale	5	3	402	9	cm, cm
Gray Argillaceous Shale	6	9	409	6	cm, cm
Black Carbonaceous Shale	4	2	413	8	ac, cm, c
Coal Sewickley No. 9	2	2	415	10	ac, cv, c
Black Shale	2	0	417	10	ac, cm, c
Dark Gray Shale	3	2	421	0	cm, cm
Gray Shale	6	4	427	4	cm, cm
Gray Sandy Shale	1	2	428	6	cs, cs
Gray Shale	7	5	435	11	cm, cm
Coal	0	9	436	8	ac, cv, c
Gray Shale	3	1	439	9	cm, cm
Coal	0	7	440	4	ac, cv, c
Black Shale	1	0	441	4	ac, cm, c
Coal	0	7	441	11	ac, cv, c
Black Shale	0	11	442	10	ac, cm, c
Gray Argillaceous Shale	19	5	462	3	cm, cm
Dark Shale	8	6	470	9	cm, cm
Gray Argillaceous Limestone	5	2	475	11	ak, cs, c
Gray Clay	2	2	478	1	cv, cv
Shaley Coal	0	6	478	7	ac, cm, c
Gray Shale	3	8	482	3	cm, cm
Dark Gray Sandy Shale	5	2	487	5	cs, cs

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AEC 18181

	Thickness Feet	Thickness Inches	Total Depth Feet	Total Depth Inches	Proper
Hard Gray Limestone	1	10	489	3	ak,cs
Medium Gray Limestone	2	0	491	3	ak,cs
Hard Gray Limestone	2	0	493	3	ak,cs
Medium Gray Calcareous Shale	3	0	496	3	ak,cm,
Gray and Medium Gray Shale	2	5	498	8	cm,c
Gray Clay Shale (With Calcareous Nodules)	0	6	499	2	ak,cm,
Gray Shale with Limestone Bands	0	6	499	8	ak,cm,
Gray Clay Shale	2	3	501	11	cm,c
Dark Gray to Black Shale	0	5	502	4	ac,cm,
Roof Coal	1	2-1/2	503	6-1/2	ac,cv,
Dark Gray to Black Shale	0	2-1/2	503	9	ac,cm,
Gray Shale (Draw Slate)	0	10	504	7	
(Slightly Bony Coal	0	1-1/4	504	8-1/4	ac,cm,
(Coal, few thin fusian streaks, occasional pyrite	1	8-3/4	506	5	
(Medium Gray Shale	0	0-1/4	506	5-1/4	
(Coal (vertical fracture) few fusian lenses	2	2	508	7-1/4	
No. 8 coal 5' - 1½" (Dark Gray Shale	0	0-1/4	508	7-1/2	
(Coal	0	2-3/8	508	9-7/8	
(Shale	0	0-1/8	508	10	ac,cv,
(Coal	0	5	509	3	
(Coal, thin fusian streaks	0	5-1/2	509	8-1/2	
Medium Gray Shale	2	3-1/2	512	0	

Acid Producing: ac
Alkaline Producing: ak
Compactible: c(v-very, m-moderate,s-slight)
Erodible: e(v-very, m-moderate, s-slight)

Hard Rock 84.8 ft 16%
Soft Rock 427.2 ft 84%
512.00 ft

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00425-3

AEC 18182

ATTACHMENT 13

DIAMOND DRILL HOLE:

NA-87-10

Field Engineer: Kim Cecil

Surface Elevation: 1,332 72-1111

Drill Hole Coordinates (State Plane 1927 NA Datum)

Northing: 676,339

Easting: 2,426,242

DRILL HOLE N: Drilling Company: L J Hughs & Sons, Inc. AMRICK

DRILLING FOR CLEVELAND, OHIO

SURFACE ELE\ f 16, 1987

f 27, 1987

LOCATION: OHIO, MONROE COUNTY

SUNSBURY TOWNSHIP

SOUTHEAST 1/4

SECTION 30.

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE	Properties
CASING	18.00	18.00	
GREEN SANDSTONE	12.00	30.00	cs es
RED AND GREEN SHALE	15.00	45.00	cm, em
RED AND GREEN CLAYSTONE	15.00	60.00	cv, ev
GREEN SHALE	15.00	75.00	cm, em
RED CLAYSTONE	10.00	85.00	cv, ev
GREEN SHALE	13.40	98.40	cm, em
RED AND GREEN SHALE	3.60	102.00	cm, em
GREEN SHALE	6.00	108.00	cm, em
GRAY SANDSTONE	7.00	115.00	cs, es
GREEN SHALE	4.70	119.70	cm, em
RED AND GREEN SHALE	4.20	123.90	cm, em
GRAY CLAYSTONE	5.00	128.90	cv, ev
GRAY SHALE	1.10	130.00	cm, em
GREEN LIMY SHALE	7.00	137.00	ck, cm, e
RED CLAYSTONE	3.50	140.50	cv, ev
GREEN SHALE	7.50	148.00	cm, em
RED AND GREEN SHALE	4.70	152.70	cm, em
GREEN LIMY SHALE	2.30	155.00	ck, cm, e
GRAY SANDSTONE	2.90	157.90	cs, es
GREEN SHALE	2.10	160.00	cm, em
RED CLAYSTONE	5.00	165.00	cv, ev
GREEN SHALE	14.00	179.00	cm, em
RED SHALE	21.00	200.00	cm, em
GREEN LIMY SHALE	11.90	211.90	ck, cm, e
RED AND GREEN CLAYSTONE	16.10	228.00	cv, ev
GREEN LIMY SHALE	7.00	235.00	ck, cm, e
GREEN SHALE	15.00	250.00	cm, em

ORIGINAL

00425-3

AEC 18183

LJ HUGHES & SONS, INC.

THE NORTH AMERICAN COAL CORPORATION

CONTINUATION OF DRILL HOLE NO. NA-87-10

FORMATION	STRATA THICKNESS		250.00 DEPTH FROM SURFACE	Propertie
RED AND GREEN CLAYSTONE	5.80		255.80	cv, ev
LIMESTONE	2.50		258.30	ak, cs, e
RED AND GREEN CLAYSTONE	1.30		259.60	cv, ev
GREEN LIMY SHALE	5.40		265.00	ak, cm, e
GREEN SHALE	2.00		267.00	cm, em
GRAY SANDSTONE	3.90		270.90	cs, es
GREEN SHALE	6.50		277.40	cm, em
RED SHALE	2.60		280.00	cm, em
GREEN SHALE	25.00		305.00	cm, em
GRAY CLAYSTONE	6.00		311.00	cv, ev
COAL	2.10		313.10	ac, cv, e
GRAY SHALE	0.50	WASHINGTON (No.12)	313.60	cm, em
COAL	1.00		314.60	ac, cv, e
GRAY CLAYSTONE	2.90		317.50	cv, ev
GREEN CLAYSTONE	10.30		327.80	cv, ev
RED CLAYSTONE	6.60		334.40	cv, ev
GREEN SANDY SHALE	5.60		340.00	cs, es
GRAY SANDY SHALE	16.60		356.60	cs, es
GREEN SHALE	1.60		358.20	cm, em
COAL	0.55		358.75	ac, cv, e
GRAY SHALE WITH PYRITE	0.45		359.20	ac, cm, e
COAL	0.20	WAYNESBURG "A"	359.40	ac, cv, e
GRAY SHALE	0.30		359.70	cm, em
COAL WITH SHALE STREAKS	6.50		366.20	ac, cm, e
GRAY SHALE	0.80		367.00	cm, em
LIMESTONE WITH SHALE	3.00		370.00	ak, cs, e
GREEN LIMY SHALE	8.50		378.50	ak, cm, e
GRAY SANDSTONE	6.50		385.00	cs, es
GREEN SHALE	3.80		388.80	cm, em
LIMESTONE	1.30		390.10	ak, cs, e
GREEN LIMY SHALE	1.50		391.60	ak, cm, e
GRAY SANDSTONE	5.60		397.20	cs, es
GREEN SHALE	4.90		402.10	cm, em
LIMESTONE	4.50		406.60	ak, cs, e
GRAY CLAYSTONE	3.10		409.70	cv, ev
BLACK SHALE	0.50		410.20	ac, cm, e
COAL	0.60	Waynesburg No. 11	410.80	ac, cv, ev
GRAY SHALE	4.20		415.00	cm, em
GRAY SANDSTONE WITH SHALE	8.20		423.20	cs, es
GRAY SHALE	2.50		425.70	cm, em
COAL	0.30		426.00	ac, cv, e
GRAY SHALE	0.50		426.50	cm, em
GRAY CLAYSTONE	3.50		430.00	cv, ev
LIMESTONE WITH SHALE	20.30		450.30	ak, cs, e
GREEN CLAYSTONE	7.50		457.80	cv, ev
GRAY CLAYSTONE	2.20		460.00	cv, ev
GREEN CLAYSTONE	1.60		461.60	cv, ev
GREEN SHALE	4.00		465.60	cm, em

ORIGINAL

D0425+3

AEC 18184

LJ HUGHES & SONS, INC.

THE NORTH AMERICAN COAL CORPORATION

CONTINUATION OF DRILL HOLE NO. NA-87-10

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE	Properties
			465.60	
RED AND GREEN SHALE	3.40		469.00	cm, em
LIMESTONE WITH SHALE	24.20		493.20	ak cs e
GRAY CLAYSTONE	2.00		495.20	cv, ev
LIMESTONE WITH SHALE	5.20		500.40	ak cs e
GREEN CLAYSTONE	4.10		504.50	cv, ev
LIMESTONE	10.30		514.80	ak cs e
GREEN SHALE	3.60		518.40	cm, em
LIMESTONE WITH SHALE	46.60		565.00	ak cs e
GRAY CLAYSTONE	2.40		567.40	cv, ev
GRAY SHALE	0.30		567.70	cm, em
COAL	0.20	SEWICKLEY (No.9)	567.90	ac, cv, e
GRAY SHALE	2.00		569.90	cm, em
GREEN SANDY SHALE	10.10		580.00	cs, es
GRAY SANDSTONE	14.00		594.00	cs es
GRAY SANDY SHALE	1.00		595.00	cs, es
GRAY SHALE	6.45		601.45	cm, em
GRAY SANDSTONE WITH COAL STREAKS	1.30		602.75	cs, es
GRAY CLAYSTONE	0.40		603.15	cv ev
COAL	1.20		604.35	ac, cv, e
GRAY SHALE	0.20	FISHPOT	604.55	cm, em
COAL	0.60		605.15	ac, cv, e
LIMESTONE WITH SHALE	19.85		625.00	ak cs e
GREEN SHALE	4.30		629.30	cm, em
GRAY SHALE	5.00		634.30	cm em
LIMESTONE	9.70		644.00	ak, cs e
BONY COAL	0.85	REDSTONE	644.85	ac, cv e
LIMY SHALE	2.50		647.35	ak, cm, e
LIMESTONE	2.65		650.00	ak, cs e
LIMESTONE WITH CLAYSTONE STREAKS	15.00		665.00	ak, cs, e
GREEN CLAYSTONE	3.90		668.90	cv ev
GRAY SHALE	0.50		669.40	cm, em
BONY COAL	0.85	ROOF COAL	670.25	ac, cv, e
GRAY SHALE	0.85		671.10	cm, em
COAL	5.05	PITTSBURGH (No.8)	676.15	ac, cv, e
GRAY LIMY SHALE	8.85		685.00	ak, cm, e

TOTAL DEPTH: 685 FEET

25 BAGS CEMENT PLACED IN HOLE

Hard Rock 218.30 32%
Soft Rock 466.70 68%

Acid Producing: ac
Alkaline Producing: ak
Compactible: c(v-very, m-moderate,s-slight)
Erodible: e(v-very, m-moderate, s-slight)

ORIGINAL

00425 3

AEC 18185

ATTACHMENT 13

DIAMOND DRILL HOLE:
N94-15

Field Engineer: Kim Cecil
Surface Elevation: 1,199 872-1111
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 675,369
Easting: 2,420,873

DRILL HOLE! Drilling Company: L J Hughs & Sons H MILLER

DRILLING FO

SURFACE ELE ER 4 1994
ER 5 1994

LOCATION: OHIO BELMONT COUNTY

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE	Properties
CASING	20.00	20.00	
RED SHALY CLAYSTONE	16.10	36.10	CV eV
GRAY SHALY CLAYSTONE	9.00	45.10	CV, eV
RED SHALY CLAYSTONE	6.30	51.40	CV, eV
GRAY LIMY SHALY CLAYSTONE	8.60	60.00	ck, CV, e
RED AND GRAY SHALY CLAYSTONE	17.90	77.90	CV, eV
GRAY LIMY SHALY CLAYSTONE	16.00	93.90	ck, CV, e
GRAY SHALE	6.10	100.00	cm, em
GRAY SHALY CLAYSTONE	4.40	104.40	CV, eV
RED SHALY CLAYSTONE	0.80	105.20	CV, eV
GRAY LIMESTONE	2.50	107.70	ck, cs, e
GRAY LIMY SHALE	8.70	116.40	ck, cm, e
RED SHALY CLAYSTONE	1.30	117.70	CV, eV
GRAY LIMY SHALE	7.60	125.30	ck cm, e
RED AND GRAY SHALY CLAYSTONE	3.50	128.80	CV eV
GRAY SHALY CLAYSTONE	6.00	134.80	CV, eV
RED AND GRAY SHALY CLAYSTONE	3.50	138.30	CV, eV
GRAY LIMY SHALY CLAYSTONE	5.60	143.90	ck, CV, e
GRAY SANDSTONE	0.80	144.70	cs, es
GRAY SHALY CLAYSTONE	2.20	146.90	CV, eV
GRAY SANDSTONE	1.00	147.90	cs, es
GRAY SHALY CLAYSTONE	2.60	150.50	CV, eV
GRAY SHALY CLAYSTONE WITH COAL SPARS	0.30	150.80	ac, CV, e

ORIGINAL

00425-3

AEC 18186

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-15

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE	Property
		150.80	
DARK GRAY SHALY CLAYSTONE	5.00	155.80	cv, cv
BONY COAL	0.50	156.30	ac, cv, c
COAL WITH PYRITE NODULES AND SHALE STREAKS . . .	0.50	156.80	ac, cv, c
COAL	1.42 Washington No. 12	158.22	ac, cv, c
DARK SHALE	0.19	158.41	cm, c
COAL	0.09	158.50	ac, cv, c
DARK SHALE	0.07	158.57	cm, cm
COAL (LOSS 0.30) . . .	1.08	159.65	ac, cv, c
GRAY SHALY CLAYSTONE	8.05	167.70	cv, cv
GRAY SHALY CLAYSTONE WITH SANDSTONE BANDS	3.60	171.30	cm, cm
GRAY SANDSTONE	48.10	219.40	cs, cs
GRAY SHALE	1.50	220.90	cm, cm
GRAY SANDSTONE WITH SHALE STREAKS	1.80	222.70	cs, cs
GRAY SANDSTONE	3.00	225.70	cs, cs
GRAY SHALY CLAYSTONE	0.10	225.80	cv, cv
GRAY SANDSTONE WITH SOME SHALE STREAKS	5.70	231.50	cs, cs
COAL WITH PYRITE . . .	0.15	231.65	ac, cv, c
DARK SHALY CLAYSTONE	0.21	231.86	cv, cv
GRAY SANDSTONE	0.24	232.10	cs, cs
GRAY SHALY CLAYSTONE	0.27	232.37	cv, cv
GRAY SANDSTONE WITH SHALE NODULES	0.40	232.77	cs, cs
GRAY SANDY SHALE WITH SANDSTONE STREAKS	0.73	233.50	cs, cs
GRAY SANDSTONE	15.60	249.10	cs, cs
DARK GRAY SANDY SHALE	0.60	249.70	cs, cs
GRAY SANDSTONE WITH SHALE STREAKS	8.40	258.10	cs, cs
GRAY SANDSTONE WITH COAL SPARS	6.70	264.80	cs, cs
GRAY SHALY CLAYSTONE WITH LIME NODULES	1.80	266.60	ak, cm, c
GRAY LIMESTONE	0.90	267.50	ak, cs, c
GRAY LIMY SHALY CLAYSTONE	4.30	271.80	ak, cm, c
GRAY LIMESTONE	3.50	275.30	ak, cs, c
DARK GRAY LIMY SHALY CLAYSTONE	3.70	279.00	ak, cm, c
BLACK BONY SHALE	0.70	279.70	ac, cm, c
GRAY SHALY CLAYSTONE	1.20	280.90	cv, cv
GRAY SANDY SHALE	2.20	283.10	cs, cs
GRAY SANDSTONE	1.60	284.70	cs, cs
GRAY LIMY SHALY CLAYSTONE	2.10	286.80	ak, cm
GRAY SANDSTONE	10.00	296.80	cs, cs
GRAY SANDY SHALE WITH SANDSTONE STREAKS	3.45	300.25	cs, cs

ORIGINAL

D0425-3

AEC 18187

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-15

FORMATION	STRATA THICKNESS	300.25 DEPTH FROM SURFACE	Properties
COAL	0.10 Waynesburg No. 11	300.35	ac, cv, e
GRAY SHALY CLAYSTONE	0.50	300.85	cv, ev
COAL WITH PYRITE . . .	0.28	301.13	ac, cv, e
DARK GRAY SHALY CLAYSTONE	1.98	303.11	cv, ev
COAL	0.05	303.16	ac, cv, e
GRAY SHALY CLAYSTONE	0.90	304.06	cv, ev
GRAY LIMESTONE	1.34	305.40	ak, cs, e
GRAY LIMY SHALY CLAYSTONE	7.10	312.50	ak, cm, e
GRAY LIMESTONE	5.00	317.50	ak, cs, e
GRAY LIMY SHALY CLAYSTONE	3.60	321.10	ak, cm, e
GRAY LIMESTONE	1.30	322.40	ak, cs, e
GRAY LIMY SHALY CLAYSTONE	7.70	330.10	ak, cm, e
GRAY LIMESTONE	1.60	331.70	ak, cs, e
GRAY LIMY SHALY CLAYSTONE	6.00	337.70	ak, cm, e
RED AND GRAY SHALY CLAYSTONE	2.70	340.40	cv, ev
GRAY LIMY SHALY CLAYSTONE	13.40	353.80	ak, cm, e
GRAY SANDSTONE WITH SHALE STREAKS	2.40	356.20	cs, es
GRAY SHALY CLAYSTONE	0.90	357.10	acm, en
GRAY SHALY LIMESTONE	19.60	376.70	ak, cs, e
GREEN LIMY SHALY CLAYSTONE	3.20	379.90	ak, cm, e
GRAY SANDSTONE WITH SHALE STREAKS	0.80	380.70	cs, es
GREEN SHALE	0.70	381.40	cm, em
GRAY SHALY LIMESTONE	3.90	385.30	ak, cs, e
GREEN SHALY LIMY CLAYSTONE	0.90	386.20	ak, cm, e
GRAY LIMESTONE	4.20	390.40	ak, cs, e
GREEN LIMY SHALY CLAYSTONE	5.20	395.60	ak, cm, e
GRAY LIMESTONE	2.70	398.30	ak, cs, e
DARK GRAY LIMY SHALY CLAYSTONE	1.30	399.60	ak, cm, e
GRAY LIMESTONE	3.70	403.30	ak, cs, e
GRAY LIMY SHALE	6.30	409.60	ak, cm, e
GRAY LIMESTONE	3.50	413.10	ak, cs, e
GRAY LIMY SHALE	4.10	417.20	ak, cm, e
WHITE LIMESTONE	5.70	422.90	ak, cs, e
GRAY LIMESTONE WITH GREEN LIMY SHALY CLAYSTONE	7.90	430.80	ak, cs, e
GRAY GREEN LIMY SHALE	2.80	433.60	ak, cm, e
GRAY LIMESTONE	2.90	436.50	ak, cs, e
GRAY GREEN LIMY SHALY CLAYSTONE	5.40	441.90	ak, cm, e
DARK GRAY SHALY CLAYSTONE	1.20	443.10	cv, ev
GRAY LIMESTONE	0.40	443.50	ak, cs, e
DARK GRAY SHALY CLAYSTONE	1.80	445.30	cv, ev
DARK SHALE	0.30	445.60	cm, em

ORIGINAL 00425

AEC 18188

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-15

FORMATION	STRATA THICKNESS		445.60 DEPTH FROM SURFACE	Properties
BLACK SHALE WITH COAL SPARS	0.15		445.75	ac,cm,c
PYRITE	0.02		445.77	ac,cs,c
COAL	0.58	Sewickley No. 9	446.35	ac,cv,c
DARK SHALE	0.05		446.40	cm,cn
COAL	1.95		448.35	ac,cv,c
BLACK SHALE WITH PYRITE AND COAL STREAKS	0.10		448.45	ac,cm,
GRAY SHALY CLAYSTONE	2.05		450.50	cv,cv
GRAY GREEN LIMY SHALY CLAYSTONE	16.60		467.10	ak,cm,c
DARK SHALY CLAYSTONE	0.30		467.40	cv,cv
DARK SHALY CLAYSTONE WITH COAL SPARS	0.12		467.52	ac,cm,c
COAL	0.15		467.67	ac,cv,c
GRAY SHALY CLAYSTONE	0.18		467.85	cv,cv
COAL	0.16		468.01	ac,cv,c
BONE	0.08		468.09	ac,cv,c
COAL	0.08		468.17	ac,cv,c
DARK SHALE	0.26		468.43	cm,cn
GRAY SHALE	0.20		468.63	cm,cn
COAL	1.19		469.82	ac,cv,c
GRAY SHALY CLAYSTONE	0.20		470.02	cv,cv
DARK SHALE	0.88		470.90	cm,cn
GRAY LIMESTONE WITH SOME SHALE	19.20		490.10	ak,cs,c
GRAY GREEN SANDY SHALE WITH SANDSTONE STREAKS	9.20		499.30	cs,cs
DARK SHALY CLAYSTONE	3.90		503.20	cv,cv
DARK GRAY LIMESTONE	3.30		506.50	ak,cs,c
GRAY GREEN SHALY CLAYSTONE	1.80		508.30	cv,cv
GRAY SHALY CLAYSTONE	1.20		509.50	cv,cv
DARK SHALY CLAYSTONE	5.50		515.00	cv,cv
BLACK SHALE	0.60		515.60	ac,cm,c
DARK GRAY LIMY SHALY CLAYSTONE	4.60		520.20	ak,cm,c
WHITE LIMESTONE	12.10		532.30	ak,cs,c
GRAY SHALY CLAYSTONE WITH LIMESTONE NODULES	3.80		536.10	ak,cm,c
GRAY SHALY CLAYSTONE	1.60		537.70	cv,cv
DARK GRAY SHALY CLAYSTONE WITH PYRITE STREAKS	1.10		538.80	ac,cv,c
GRAY SHALY CLAYSTONE WITH SHALE STREAKS	0.54		539.34	cm,cn
DARK SHALY CLAYSTONE	0.33		539.67	cv,cv
BONY COAL	0.05		539.72	ac,cv,c
COAL WITH PYRITE STREAKS . . .	0.86	Roof Coal	540.58	ac,cv,c

ORIGINAL

00425-3

AEC 18189

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-15

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE	Properti
		540.58	
BONE	0.09	540.67	ac, cv, c
DARK SHALE	0.12	540.79	cm, cn
GRAY SHALY CLAYSTONE	0.67	541.46	cv, cv
DARK SHALE WITH COAL SPARS	0.05	541.51	ac cm c
PYRITE WITH COAL SPARS	0.09 Pittsburgh No. 8	541.60	ac, cm,
COAL	1.71	543.31	ac cv c
GRAY CLAYSTONE	0.03	543.34	cv, cv
COAL	3.01	546.35	ac cv,
COAL WITH PYRITE NODULES . . .	0.08	546.43	ac, cv, c
COAL	0.18	546.61	ac, cv, c
COAL WITH PYRITE NODULES AND STREAKS . . .	0.07	546.68	ac, cv, c
DARK GRAY SHALY CLAYSTONE	0.23	546.91	cv, cv
GRAY LIMY SHALY CLAYSTONE	8.19	555.10	ak, cm,
GRAY SANDSTONE WITH LIME	2.00	557.10	ak, cs, c
GRAY SANDSTONE	1.60	558.70	cs, es
GRAY SHALY CLAYSTONE	1.90	560.60	cv, cv
GRAY SANDSTONE	2.50	563.10	cs, es
GRAY SANDY SHALE WITH SANDSTONE AND LIME STREAKS	1.90	565.00	ak, cs, e

TOTAL DEPTH OF HOLE = 565.00 FEET

20 BAGS CEMENT PLACED IN HOLE

Acid Producing: ac
Alkaline Producing: ak
Compactible: c(v-very, m-moderate,s-slight)
Erodible: e(v-very, m-moderate, s-slight)

Hard Rock 217.88 38.5%
Soft Rock 347.12 61.5%
565.00 ft

ORIGINAL

00425-3

AEC 18190

ATTACHMENT 13

DIAMOND DRILL HOLE:
N94-16

Field Engineer: Kim Cecil
Surface Elevation: 1,279 972-1111
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 680,939
Easting: 2,426,487

Drilling Company: L J Hughs & Sons, Inc. H MILLER

DRILL HOLE:

DRILLING FO

SURFACE ELE

ER 6 1994
ER 11 1994

LOCATION: OHIO BELMONT COUNTY

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE	Properties
CASING	20.00	20.00	
RED SHALY CLAYSTONE	2.00	22.00	CV, eV
GRAY SANDY SHALE	7.50	29.50	CS, eS
GRAY SHALY CLAYSTONE	0.80	30.30	CV, eV
SHALY COAL . . .	0.40	30.70	aC, CV, e
DARK GRAY SHALY CLAYSTONE	2.00	32.70	CV, eV
GRAY SANDY LIMESTONE	3.00	35.70	aK, CS, e
GRAY LIMY SHALY CLAYSTONE	2.30	38.00	aK, Cm, e
GRAY LIMY SANDSTONE	7.10	45.10	aK, CS, e
GRAY SHALY CLAYSTONE	3.10	48.20	CV, eV
RED SHALY CLAYSTONE	6.30	54.50	CV, eV
GRAY SHALY CLAYSTONE	3.70	58.20	CV, eV
SHALY COAL . . .	0.20	58.40	aC, CV, e
DARK SHALE	3.40	61.80	Cm, em
GRAY SHALY CLAYSTONE	0.10	61.90	CV, eV
BLACK SHALE	1.20	63.10	aC, Cm, e
GRAY LIMY SHALY CLAYSTONE	17.20	80.30	aK, Cm, e
GRAY SHALE	6.80	87.10	Cm, en
RED SHALY CLAYSTONE	3.40	90.50	CV, eV
GRAY SHALY CLAYSTONE	4.30	94.80	CV, eV
RED AND GRAY SHALY CLAYSTONE	3.20	98.00	CV, eV
GRAY SANDSTONE	4.10	102.10	CS, eS
RED AND GRAY SHALY CLAYSTONE	9.20	111.30	CV, eV
GRAY SANDY SHALE	6.10	117.40	CS, eS
GRAY SHALY CLAYSTONE	5.80	123.20	CV, eV

ORIGINAL 20425

AEC 18191

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-16

FORMATION	STRATA THICKNESS	123.20 DEPTH FROM SURFACE	Popular
RED SHALY CLAYSTONE	4.40	127.60	cv, ev
GRAY LIMY SHALY CLAYSTONE	14.50	142.10	ak, cm, e
RED SHALY CLAYSTONE	9.70	151.80	cv, ev
GRAY LIMY SHALY CLAYSTONE	9.90	161.70	ak, cm,
RED SHALY CLAYSTONE	1.70	163.40	cv, ev
GRAY SHALE	16.60	180.00	cm, em
GRAY SHALY CLAYSTONE	6.50	186.50	cv, ev
GRAY LIMESTONE	2.40	188.90	ak, cs, e
GRAY SHALY CLAYSTONE	11.10	200.00	cv, ev
RED AND GRAY SHALY CLAYSTONE	1.40	201.40	cv, ev
GRAY SHALE	4.70	206.10	cm, em
GRAY SHALY CLAYSTONE	2.00	208.10	cv, ev
GRAY LIMY SHALY CLAYSTONE	5.90	214.00	ak, cm, e
GRAY SANDSTONE	3.70	217.70	cs, es
GRAY SHALY CLAYSTONE	1.10	218.80	cv, ev
GRAY SANDSTONE WITH SHALE STREAKS	1.80	220.60	cs, es
GRAY SHALY CLAYSTONE	0.60	221.20	cv, ev
BONY COAL	0.40	221.60	ac, cv, e
GRAY LIMY SHALY CLAYSTONE	15.70	237.30	ak, cm, e
BONY SHALE WITH GRAY SHALE STREAKS	1.20	238.50	cm, em
COAL	0.33 Washington No. 12	238.83	ac, cv, e
BONE	0.05	238.88	ac, cv, e
COAL	1.32	240.20	ac, cv, e
BLACK SHALE	0.12	240.32	ac, cm, e
COAL	0.23	240.55	ac, cv, e
DARK GRAY SHALY CLAYSTONE	0.33	240.88	cv, ev
BLACK SHALE	0.05	240.93	ac, cm, e
COAL	1.35	242.28	ac, cv, e
GRAY SHALY CLAYSTONE	16.12	258.40	cv, ev
GRAY SANDY SHALE	3.00	261.40	cs, es
GRAY SANDSTONE	6.60	268.00	cs, es
GRAY SANDY SHALE	12.80	280.80	cs, es
DARK GRAY SHALY CLAYSTONE	0.90	281.70	cv, ev
COAL	0.86	282.56	ac, cv, ev
GRAY SHALY CLAYSTONE	0.14	282.70	cv, ev
COAL WITH BONE BANDS . . .	4.53	287.23	ac, cv, ev
GRAY SHALY CLAYSTONE	0.16	287.39	cv, ev
COAL	0.25	287.64	ac, cv, e
BONY COAL	0.07	287.71	ac, cv, e
COAL	1.00	288.71	ac, cv, e
BLACK SHALE	0.04	288.75	ac, cm, e
GRAY LIMESTONE	0.77	289.52	ak, cs, es
DARK SHALY CLAYSTONE WITH LIME BANDS	0.30	289.82	cv, cm, e
BLACK SHALE	0.60	290.42	ac, cm, e

ORIGINAL

00425-3

AEC 18192

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-16

FORMATION	STRATA THICKNESS	290.42 DEPTH FROM SURFACE	Properties
GRAY LIMESTONE	1.40	291.82	aK,cs,c
GRAY SHALY CLAYSTONE	0.75	292.57	cV,cV
BLACK SHALE	0.15	292.72	ac,cm,c
DARK GRAY LIMESTONE	1.28	294.00	aK,cs,c
GRAY LIMY SHALY CLAYSTONE	2.60	296.60	aK,cm,c
GRAY LIMY SANDY SHALE	4.20	300.80	aK,cs,c
GRAY SHALE	3.10	303.90	cm,cm
GRAY LIMY SHALY CLAYSTONE	6.20	310.10	aK,cm,c
GRAY SANDSTONE WITH LIME NODULES	6.90	317.00	cs,cs
GRAY LIMY SHALY CLAYSTONE	4.40	321.40	aK,cm,c
GRAY LIMESTONE	5.40	326.80	aK,cs,c
DARK GRAY SHALY CLAYSTONE	1.60	328.40	cV,cV
GRAY SANDY SHALE	4.80	333.20	cs,cs
GRAY SANDSTONE	14.70	347.90	cs,cs
DARK GRAY LIMY SHALY CLAYSTONE	1.00	348.90	aK,cm,c
DARK GRAY SHALE	1.70	350.60	cm,cm
DARK GRAY SHALY CLAYSTONE	2.10	352.70	cV,cV
COAL WITH PYRITE . . .	0.30 Waynesburg No. 11	353.00	ac,cV,c
GRAY SHALY CLAYSTONE	1.40	354.40	cV,cV
GRAY SHALY LIMESTONE	17.00	371.40	aK,cs,c
GRAY LIMESTONE	1.70	373.10	aK,cs,c
GRAY LIMY SHALY CLAYSTONE	4.50	377.60	aK,cm,c
GRAY LIMESTONE	3.20	380.80	aK,cs,c
DARK GRAY SHALY CLAYSTONE	2.20	383.00	cV,cV
GREEN SHALY CLAYSTONE	2.20	385.20	cV,cV
GRAY SANDSTONE	5.10	390.30	cs,cs
GRAY SANDY SHALE	1.50	391.80	cs,cs
RED SHALY CLAYSTONE	2.40	394.20	cV,cV
GRAY SHALY CLAYSTONE	1.90	396.10	cV,cV
GRAY LIMESTONE	1.40	397.50	aK,cs,c
GRAY LIMY SHALY CLAYSTONE	11.60	409.10	aK,cm,c
GRAY SHALY LIMESTONE	15.70	424.80	aK,cs,c
GRAY LIMY SHALY CLAYSTONE	21.50	446.30	aK,cm,c
GRAY LIMESTONE	2.70	449.00	aK,cs,c
GRAY LIMY SHALE	13.70	462.70	aK,cm,c
WHITE LIMESTONE	5.70	468.40	aK,cs,c
GRAY SHALY CLAYSTONE	0.80	469.20	cV,cV
GRAY SHALY LIMESTONE	14.80	484.00	aK,cs,cs
GRAY LIMY SHALY CLAYSTONE	7.90	491.90	aK,cm,c
GRAY SANDY SHALE	5.80	497.70	cs,cs
GRAY SANDSTONE	27.80	525.50	cs,cs
DARK SHALE	3.40	528.90	cm,cm
DARK SANDSTONE	0.20	529.10	cs,cs
DARK SANDY SHALE WITH COAL AND SANDSTONE STREAKS AND NODULES	0.78	529.88	cm,cm

ORIGINAL

D0425-3

AEC 18193

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-16

FORMATION	STRATA THICKNESS	529.88 DEPTH FROM SURFACE	Prop...
GRAY SHALE	1.26	531.14	cm, cm
COAL	0.20	531.34	ac, cv, c
DARK SHALE WITH PYRITE	0.13	531.47	ac, cm, c
COAL	0.72	532.19	ac, cv, c
GRAY SHALY CLAYSTONE	0.29	532.48	cv, cv
COAL WITH SHALE BANDS . . .	0.61	533.09	ac, cv, c
DARK SHALY CLAYSTONE	0.90	533.99	cv, cv
GRAY LIMESTONE	16.90	550.89	ak, cs, c
GRAY LIMY SHALY CLAYSTONE	5.41	556.30	ak, cm, c
GRAY SANDSTONE	3.70	560.00	cs, cs
GRAY LIMY SHALY CLAYSTONE	4.40	564.40	ak, cm, c
GRAY LIMESTONE	1.50	565.90	ak, cs, c
GRAY SHALY CLAYSTONE	3.00	568.90	cm, cm
BONE	0.34	569.24	ac, cs, c
PYRITE	0.05	569.29	ac, cs, c
COAL	0.45	569.74	ac, cv, c
GRAY SHALY CLAYSTONE	0.76	570.50	cv, cv
BLACK SHALY CLAYSTONE	0.50	571.00	ac, cv, c
GRAY SHALY CLAYSTONE	0.90	571.90	cv, cv
GRAY LIMY SHALE	2.30	574.20	ak, cm, c
GRAY SHALY LIMESTONE	11.20	585.40	ak, cs, c
GRAY LIMY SHALY CLAYSTONE	5.60	591.00	ak, cm, c
GRAY SHALY CLAYSTONE	1.70	592.70	cv, cv
BONE	0.12	592.82	ac, cv, c
GRAY SHALY CLAYSTONE	1.05	593.87	cv, cv
BONE	0.06	593.93	ac, cv, c
BONE WITH PYRITE STREAKS	0.05	593.98	ac, cv, c
COAL	1.47 Roof Coal	595.45	ac, cv, c
DARK SHALE	0.04	595.49	cm, cm
COAL	0.06	595.55	ac, cv, c
DARK SHALE	0.03	595.58	cm, cm
COAL	0.09	595.67	ac, cv, c
DARK SHALY CLAYSTONE WITH COAL SPARS	0.10	595.77	cv, cv
DARK GRAY SHALY CLAYSTONE	0.36	596.13	cv, cv
GRAY SHALE	0.28	596.41	cm, cm
COAL	5.41 Pittsburgh No. 8	601.82	ac, cv, c
BONE WITH COAL BANDS	0.12	601.94	ac, cv, c
COAL WITH PYRITE NODULES . . .	0.11	602.05	ac, cv, c
BLACK SHALE	0.17	602.22	ac, cm, c
DARK GRAY LIMY SHALY CLAYSTONE	7.90	610.12	ak, cm, c
GRAY SHALE	2.01	612.13	cm, cm
DARK GRAY SANDY SHALE	0.67	612.80	cs, cs
GRAY SANDSTONE	2.20	615.00	cs, cs

Acid Producing: ac
Alkaline Producing: ak
Compactible: c(v-very, m-moderate, s-slight)
Erodible: e(v-very, m-moderate, s-slight)

ORIGINAL 00425-3

AEC 18194

ATTACHMENT 13

DIAMOND DRILL HOLE:
N94-17

Field Engineer: Kim Cecil
Surface Elevation: 1,183
Drill Hole Coordinates (State Plane 1927 NA Datum) 1111
Northing: 679,526
Easting: 2,413,456

Drilling Company: L J Hughs & Sons, Inc. HILLER

DRILL HOLE NO.

DRILLING FOR:

SURFACE ELEVAT 12 1994
13 1994

LOCATION: OHIO BELMONT COUNTY

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE	Properties
CASING	20.00	20.00	
GRAY AND BROWN SANDSTONE	12.00	32.00	CS CS
GRAY SHALY CLAYSTONE	10.10	42.10	CV, CV
RED AND GRAY LIMY SHALY CLAYSTONE	10.20	52.30	CK, CM, CV
GRAY LIMY SHALY CLAYSTONE	9.80	62.10	CK, CM, CV
RED AND GRAY SHALY CLAYSTONE	5.00	67.10	CV, CV
GRAY SHALY CLAYSTONE	13.40	80.50	CV, CV
GRAY LIMY SHALE	5.20	85.70	CK, CM, CV
DARK GRAY LIMY SHALY CLAYSTONE	6.53	92.23	CK, CM, C
BLACK SHALY CLAYSTONE	1.25	93.48	CC, CV, CV
COAL	0.95 Washington No. 12	94.43	CC, CV, CV
DARK GRAY SHALY CLAYSTONE	1.10	95.53	CV, CV
GRAY LIMY SHALY CLAYSTONE	12.27	107.80	CK, CM, CV
GRAY LIMY SANDSTONE	61.30	169.10	CK CS CS
COAL	0.80	169.90	CC, CV, CV
DARK GRAY SHALY CLAYSTONE	0.30	170.20	CV, CV
GRAY SANDY SHALY CLAYSTONE	11.90	182.10	CM, CM
GRAY SHALY CLAYSTONE	3.60	185.70	CV, CV
GRAY SANDSTONE	7.60	193.30	CS, CS
GRAY SANDY SHALE	3.90	197.20	CS CS
GRAY SANDY SHALY CLAYSTONE	3.10	200.30	CM, CM
GRAY LIMESTONE	1.20	201.50	CK CS CS
GRAY SHALY CLAYSTONE	8.00	209.50	CV, CV
GRAY LIMESTONE	3.00	212.50	CK CS CS

ORIGINAL

004258

AEC 18195

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-17

FORMATION	STRATA THICKNESS	212.50 DEPTH FROM SURFACE	Properties
DARK GRAY SHALY CLAYSTONE	4.50	217.00	cv,cv
GRAY SANDSTONE	2.60	219.60	cs,cs
GRAY SANDY SHALE	6.10	225.70	cs,cs
GRAY SANDSTONE	4.50	230.20	cs,cs
GRAY SANDY SHALE	1.00	231.20	cs,c
GRAY SANDSTONE	3.40	234.60	cs,c
GRAY SANDY SHALE WITH SANDSTONE STREAKS	1.00	235.60	cs,c
GRAY SANDY SHALE	1.00	236.60	cs,cs
GRAY SANDSTONE WITH GRAY CLAYSTONE BANDS	0.96	237.56	cs,c
GRAY SHALY CLAYSTONE WITH PYRITE NODULES	0.70	238.26	ac,cv,
COAL	0.10 Waynesburg No. 11	238.36	ac,cv,
GRAY CLAYSTONE	0.15	238.51	cv,cv
COAL	0.25	238.76	ac,cv,
GRAY LIMY SHALY CLAYSTONE	1.14	239.90	ak,cm,
BONY COAL	0.10	240.00	ac,cv,
GRAY LIMY SHALY CLAYSTONE	9.10	249.10	ak,cm,
GRAY LIMESTONE	4.50	253.60	ak,cs,
GRAY LIMY SHALY CLAYSTONE	2.60	256.20	ak,cm
GRAY LIMESTONE	2.20	258.40	ak,cs,
GRAY GREEN LIMY SHALY CLAYSTONE	5.90	264.30	ak,cm,
GRAY LIMESTONE	2.80	267.10	ak,cs,
GRAY GREEN LIMY SHALY CLAYSTONE	5.20	272.30	ak,cm,
GRAY SANDSTONE	2.30	274.60	cs,cs
GRAY SHALY CLAYSTONE	1.10	275.70	cv,cv
RED SHALY CLAYSTONE	1.00	276.70	cv,cv
GRAY LIMY SHALY CLAYSTONE	7.50	284.20	ak,cm,
GRAY GREEN LIMY SANDY SHALE	9.10	293.30	ak,cs,
GRAY LIMESTONE	5.70	299.00	ak,cs,
GRAY LIMY SHALY CLAYSTONE	13.10	312.10	ak,cm,
GRAY LIMY SANDSTONE	7.40	319.50	ak,cs,
GRAY LIMY SHALY CLAYSTONE	2.10	321.60	ak,cm,
GRAY LIMESTONE	4.20	325.80	ak,cs,
GRAY GREEN LIMY SHALY CLAYSTONE	5.30	331.10	ak,cm,
GRAY LIMY SHALY CLAYSTONE	5.50	336.60	ak,cm,
GRAY LIMESTONE	2.90	339.50	ak,cs,
GRAY LIMY SHALY CLAYSTONE	5.30	344.80	ak,cm,
GRAY LIMESTONE	6.90	351.70	ak,cs,
GREEN SHALY CLAYSTONE	1.10	352.80	cv,cv
WHITE LIMESTONE	5.30	358.10	ak,cs,
GRAY LIMESTONE WITH LIMY SHALY CLAYSTONE	9.60	367.70	ak,cs,
DARK SHALY CLAYSTONE	3.40	371.10	cv,cv

ORIGINAL

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AEC 18196

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-17

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE 371.10	Aspects
GRAY LIMESTONE WITH GREEN CLAY STREAKS	2.40	373.50	ak,cs,e
GREEN SHALE WITH LIME NODULES	1.50	375.00	ak,cm,e
GRAY SHALY LIMESTONE	3.30	378.30	ak,cs,e
DARK GRAY LIMY SHALY CLAYSTONE	3.03	381.33	ak,cm,e
DARK SHALY CLAYSTONE	1.47	382.80	cv,ev
PYRITE WITH COAL SPARS	0.09	382.89	ac,cm,e
COAL	0.25 Sewickley No. 9	383.14	ac,cv,e
BONE	0.02	383.16	ac,cv,e
GRAY SHALY CLAYSTONE	0.03	383.19	cv,ev
COAL	0.40	383.59	ac,cv,e
DARK GRAY SHALY CLAYSTONE	0.05	383.64	cv,ev
COAL	1.27	384.91	ac,cv,e
DARK SHALE WITH COAL SPARS	0.15	385.06	ac,cv,e
DARK GRAY SHALY CLAYSTONE	0.65	385.71	cv,ev
GRAY GREEN SHALY CLAYSTONE WITH DARK SHALE STREAKS AND BANDS	17.01	402.72	cm,em
DARK GRAY SHALY CLAYSTONE	0.57	403.29	cv,ev
DARK SHALY CLAYSTONE WITH COAL SPARS	0.10	403.39	ac,cv,e
GRAY SANDY SHALE	0.80	404.19	cs,es
COAL	0.19	404.38	ac,cv,e
GRAY SHALY CLAYSTONE	0.04	404.42	cv,ev
COAL	0.74	405.16	ac,cv,e
DARK SHALE WITH PYRITE	0.07	405.23	ac,cm,e
COAL	0.04	405.27	ac,cv,e
GRAY SHALY CLAYSTONE	0.07	405.34	cv,ev
COAL	0.28	405.62	ac,cv,e
GRAY SHALE	0.05	405.67	cm,em
COAL	0.89	406.56	ac,cv,e
DARK GRAY SHALE	0.30	406.86	cm,em
COAL	0.30	407.16	ac,cv,e
BLACK SHALE WITH COAL SPARS	0.09	407.25	ac,cm,e
COAL WITH SHALE BANDS . . .	0.20	407.45	ac,cv,e
BLACK SHALE	0.04	407.49	ac,cm,e
DARK SHALY CLAYSTONE	0.55	408.04	cv,ev
GRAY LIMESTONE	17.20	425.24	ak,cs,e
GRAY SANDSTONE	2.56	427.80	cs,es
GRAY GREEN LIMY SHALY CLAYSTONE	7.00	434.80	ak,cm,e
GRAY LIMESTONE	4.90	439.70	ak,cs,e
GRAY SHALY CLAYSTONE	2.30	442.00	cv,ev
COAL	0.80	442.80	ac,cv,e
DARK SHALY CLAYSTONE	0.23	443.03	cv,ev
COAL	0.19	443.22	ac,cv,e

ORIGINAL

00425-3

AEC 18197

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-17

FORMATION	STRATA THICKNESS	443.22 DEPTH FROM SURFACE	Properti
DARK SHALY CLAYSTONE	0.23	443.45	cv, c
GRAY SHALY CLAYSTONE	2.25	445.70	cv, c
GRAY LIMESTONE	1.20	446.90	ak, cs,
DARK GRAY SHALY CLAYSTONE	2.30	449.20	cv, c
GRAY LIMESTONE	7.00	456.20	ak, cs,
WHITE LIMESTONE	5.10	461.30	ak, cs,
GRAY LIMY SHALY CLAYSTONE	8.87	470.17	ak, cm,
BLACK SHALY COAL WITH CLAY STREAKS	0.13 Rock Coal	470.30	ac, cv, c
COAL WITH PYRITE . . .	0.50	470.80	ac, cv, c
DARK SHALY CLAYSTONE	0.79	471.59	cv, cv
BONE	0.25	471.84	ac, cv, c
COAL	4.75 Pittsburgh No. 8	476.59	ac, cv, c
PYRITE AND SHALE	0.03	476.62	ac, cm, c
DARK SHALE	0.08	476.70	cm, cm
DARK GRAY SHALY CLAYSTONE	2.20	478.90	cv, cv
GRAY LIMESTONE	2.10	481.00	ak, cs, c
GRAY LIMY SHALY CLAYSTONE	19.00	500.00	ak, cm, c

TOTAL DEPTH OF HOLE = 500.00 FEET

22 BAGS CEMENT PLACED IN HOLE

Acid Producing: ac
Alkaline Producing: ak
Compactible: c(v-very, m-moderate,s-slight)
Erodible: e(v-very, m-moderate, s-slight)

Acid Rock 191.62 ft 38%
Soft Rock 308.38 ft 62%
500.00 ft

ORIGINAL

00425-3

AEC 18198

ATTACHMENT 15

DIAMOND DRILL HOLE: AEC 2000-01

Field Engineer: Kim Cecil
Surface Elevation: 1,023.19
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 678,882
Easting: 2,420,954
Drilling Company: LJ Hughes and Sons, Inc.

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
23.00	0.00	23.00	Casing				0.00
16.40	23.00	39.40	Shale, blk	YES	cm, em		0.00
1.30	39.40	40.70	Claystone, dk gy	YES	cv, ev		0.00
0.70	40.70	41.40	Claystone, gy	YES	cv, ev		0.00
3.10	41.40	44.50	Claystone, dk gy		cv, ev		0.00
11.90	44.50	56.40	Sandstone, gy w/ sh stks		cs, es	y	11.90
0.60	56.40	57.00	Claystone, grn		cv, ev		0.00
12.00	57.00	69.00	Claystone, gy		cv, ev		0.00
0.80	69.00	69.80	Shale, dk gy, layered		cm, em		0.00
2.60	69.80	72.40	Claystone, gy		cv, ev		0.00
0.30	72.40	72.70	Shale, dk gy		cm, em		0.00
0.50	72.70	73.20	Claystone, dk gy		cv, ev		0.00
3.70	73.20	76.90	Shale, dk gy		cm, em		0.00
21.80	76.90	98.70	Claystone, dk gy		cv, ev		0.00
0.20	98.70	98.90	**Bone w/ coal, WAYNESBURG No. 11**		ac, cv, ev		0.00
1.30	98.90	100.20	Claystone, gy		cv, ev		0.00
0.60	100.20	100.80	Shale, blk		ac, cm, em		0.00
26.80	100.80	127.60	Claystone, dk gy w/ ss stks		ak, cv, ev		0.00
2.90	127.60	130.50	Shale, gy		cm, em		0.00
7.40	130.50	137.90	Claystone, red/ grn		cv, ev		0.00
7.50	137.90	145.40	Limestone		ak, cs, es	y	7.50
8.10	145.40	153.50	Claystone, grn		cv, ev		0.00
12.70	153.50	166.20	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.20	166.20	167.40	Claystone, grn		cv, ev		0.00
21.50	167.40	188.90	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.90	188.90	192.80	Shale, grn		cm, em		0.00
3.60	192.80	196.40	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.35	196.40	196.75	Claystone, grn		cv, ev		0.00
0.55	196.75	197.30	Shale, blk		ac, cm, em		0.00
19.00	197.30	216.30	Limestone, shaley, layered		ak, cs, es	y	19.00
1.80	216.30	218.10	Claystone, grn		cv, ev		0.00
5.70	218.10	223.80	Limestone		ak, cs, es	y	5.70
0.90	223.80	224.70	Fireclay, layered		ak, cs, es		0.00
2.30	224.70	227.00	Claystone, gy		cv, ev		0.00
5.50	227.00	232.50	Claystone, grn		cv, ev		0.00
0.90	232.50	233.40	Claystone, gy		cv, ev		0.00
8.90	233.40	242.30	Limestone		ak, cs, es	y	8.90
1.40	242.30	243.70	Claystone, dk gy		cv, ev		0.00
1.50	243.70	245.20	Shale, blk		ac, cm, em		0.00
4.10	245.20	249.30	**Coal, SEWICKLEY No. 8**		ac, cv, ev		0.00
6.00	249.30	255.30	Shale, gy/ grn		cm, em		0.00
9.80	255.30	265.10	Claystone, gy/ grn		cv, ev		0.00
2.10	265.10	267.20	Shale, dk gy		cm, em		0.00
4.50	267.20	271.70	**Coal**		ac, cv, ev		0.00
1.00	271.70	272.70	Shale, gy/ grn		cm, em		0.00
17.00	272.70	289.70	Limestone		ak, cs, es	y	17.00
0.30	289.70	290.00	Claystone, grn		cv, ev		0.00
21.80	290.00	311.80	Claystone, gy		cv, ev		0.00
4.10	311.80	315.90	Shale, blk		ac, cm, em		0.00
10.90	315.90	326.80	Claystone, gy/ grn		cv, ev		0.00
1.90	326.80	328.70	Limestone, massive		ak, cs, es	y	1.90
2.10	328.70	330.80	Shale, dk gy w/ ls nods		ak, cm, em		0.00

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2000-01

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
1.80	330.80	332.60	Limestone, shaley, nodular		ak, cs, es	y	1.80
1.60	332.60	334.20	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.80	334.20	336.00	Claystone, dk gy w/ ss stks		cm, em		0.00
0.30	336.00	336.30	Coal w/ bone stks		ac, cv, ev		0.00
0.10	336.30	336.40	Shale, blk		ac, cm, em		0.00
0.10	336.40	336.50	Coal w/ bone stks, ROOF COAL		ac, cv, ev		0.00
0.50	336.50	337.00	Shale, gy, soft		cm, em		0.00
0.35	337.00	337.35	Shale w/bone		cm, em		0.00
3.61	337.35	340.96	Coal w/ bone stks, PITTSBURGH No.8		ac, cv, ev		0.00
1.49	340.96	342.45	Coal w/ bone, pyritic		ac, cv, ev		0.00
1.00	342.45	343.45	Shale, dk		cm, em		0.00
3.40	343.45	346.85	Shale, gy w/ ls nods		ak, cm, em		0.00
3.50	346.85	350.35	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.00	350.35	353.35	Shale, gy, sandy		cs, es		0.00
3.20	353.35	356.55	Shale, gy		cm, em		0.00
2.70	356.55	359.25	Sandstone w/sh stks		cs, es	y	2.70
5.40	359.25	364.65	Shale, gy		cm, em		0.00
	Total Depth	364.65					75.40

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 75.40

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 21%

	Thickness (Ft.)	Percent (%)
Hard Rock	75.40	21%
Soft Rock	288.25	79%
	364.65	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as $CaCO_3$	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	$CaCO_3$ Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	303.49	1.91	1.85	59.7	-143.8
Coal	2.96	4.71	1.88	147.00	144.0
Bottom, 10 ft.	320.60	3.64	3.62	113.55	-207.1

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2000-02

Field Engineer: Kim Cecil
Surface Elevation: 1,264.00
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 678,055
Easting: 2,426,386
Drilling Company: LJ Huges and Sons, Inc.

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
21.00	0.00	21.00	Casing				0.00
5.00	21.00	26.00	Shale, grn	YES	cm, em		0.00
7.00	26.00	33.00	Sandstone, gy	YES	cs, es	y	7.00
4.70	33.00	37.70	Shale, grn		cm, em		0.00
4.20	37.70	41.90	Shale, red/grn	YES	cm, em		0.00
5.00	41.90	46.90	Claystone, gy		cv, ev		0.00
1.10	46.90	48.00	Shale, gy	YES	cm, em		0.00
7.00	48.00	55.00	Shale, grn, limey		ak, cm, em		0.00
11.00	55.00	66.00	Shale, red/grn		cm, em		0.00
7.00	66.00	73.00	Shale, gy w/ ls nods		ak, cm, em		0.00
2.90	73.00	75.90	Sandstone, gy		cs, es	y	2.90
2.10	75.90	78.00	Shale, grn		cm, em		0.00
5.00	78.00	83.00	Claystone, red		cv, ev		0.00
14.00	83.00	97.00	Shale, grn		cm, em		0.00
21.00	97.00	118.00	Shale, red		cm, em		0.00
11.90	118.00	129.90	Shale, grn w/ ls nods		ak, cm, em		0.00
16.10	129.90	146.00	Claystone, red/grn		cv, ev		0.00
7.00	146.00	153.00	Shale, grn w/ ls nods		ak, cm, em		0.00
15.00	153.00	168.00	Shale, grn		cm, em		0.00
5.80	168.00	173.80	Claystone, red/grn		cv, ev		0.00
2.50	173.80	176.30	Limestone, nodular		ak, cs, es	y	2.50
1.30	176.30	177.60	Claystone, red/grn		cv, ev		0.00
5.40	177.60	183.00	Shale, grn, limey		ak, cm, em		0.00
2.00	183.00	185.00	Shale, grn		cm, em		0.00
3.90	185.00	188.90	Sandstone, gy		cs, es	y	3.90
6.50	188.90	195.40	Shale, grn		cm, em		0.00
2.60	195.40	198.00	Shale, red		cm, em		0.00
25.00	198.00	223.00	Shale, grn		cm, em		0.00
10.00	223.00	233.00	Claystone, gy		cv, ev		0.00
2.10	233.00	235.10	Coal w/ sh layers, WASHINGTON No. 12		ac, cv, ev		0.00
0.50	235.10	235.60	Shale, gy		cm, em		0.00
1.00	235.60	236.60	Coal		ac, cv, ev		0.00
2.90	236.60	239.50	Claystone, gy		cv, ev		0.00
10.30	239.50	249.80	Claystone, grn		cv, ev		0.00
6.60	249.80	256.40	Claystone, red		cv, ev		0.00
5.60	256.40	262.00	Shale, gy, sandy		cs, es		0.00
16.60	262.00	278.60	Shale, gy, sandy		cs, es		0.00
8.60	278.60	287.20	Shale, grn		cm, em		0.00
0.55	287.20	287.75	Coal, WAYNESBURG "A"		ac, cv, ev		0.00
0.45	287.75	288.20	Shale, gy, pyrite		ac, cm, em		0.00
0.20	288.20	288.40	Coal w/ bone		ac, cv, ev		0.00
0.30	288.40	288.70	Coal w/ sh stks		ac, cv, ev		0.00
0.80	288.70	289.50	Shale, gy		cm, em		0.00
3.00	289.50	292.50	Limestone, nodular		ak, cs, es	y	3.00
8.50	292.50	301.00	Limestone, shaley		ak, cs, es	y	8.50
6.50	301.00	307.50	Sandstone, gy		cs, es	y	6.50
3.80	307.50	311.30	Shale, grn		cm, em		0.00
1.30	311.30	312.60	Limestone, nodular		ak, cs, es	y	1.30
1.50	312.60	314.10	Shale, grn w/ ls nods		ak, cm, em		0.00
5.60	314.10	319.70	Sandstone, gy		cs, es	y	5.60
4.90	319.70	324.60	Shale, grn		cm, em		0.00
4.50	324.60	329.10	Limestone		ak, cs, es	y	4.50
3.10	329.10	332.20	Claystone, gy		cv, ev		0.00
0.50	332.20	332.70	Shale, blk		ac, cm, em		0.00
0.95	332.70	333.65	Shale, dk gy		cm, em		0.00
4.20	333.65	337.85	Shale, gy		cm, em		0.00

ORIGINAL

00425-3

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2000-02

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
13.20	337.85	351.05	Sandstone, gy w/sh stks		cs, es	y	13.20
0.50	351.05	351.55	Shale, blk		ac, cm, em		0.00
0.30	351.55	351.85	**Coal, WAYNESBURG No. 11**		ac, cv, ev		0.00
0.50	351.85	352.35	Shale, gy		cm, em		0.00
3.50	352.35	355.85	Claystone, gy		cv, ev		0.00
20.30	355.85	376.15	Limestone, shaley		ak, cs, es	y	20.30
7.50	376.15	383.65	Claystone, grn		cv, ev		0.00
2.20	383.65	385.85	Claystone, gy		cv, ev		0.00
1.60	385.85	387.45	Claystone, grn		cv, ev		0.00
3.40	387.45	390.85	Shale, red/grn		cm, em		0.00
24.20	390.85	415.05	Limestone w/ sh layers		ak, cs, es	y	24.20
2.00	415.05	417.05	Claystone, gy		cv, ev		0.00
5.20	417.05	422.25	Limestone w/ sh layers		ak, cs, es	y	5.20
4.10	422.25	426.35	Claystone, grn		cv, ev		0.00
10.30	426.35	436.65	Limestone		ak, cs, es	y	10.30
3.60	436.65	440.25	Shale, grn		cm, em		0.00
43.60	440.25	483.85	Limestone w/ sh layers		ak, cs, es	y	43.60
2.40	483.85	486.25	Claystone, gy		cv, ev		0.00
0.30	486.25	486.55	Shale, gy		cm, em		0.00
1.85	486.55	488.40	**Coal, SEWICKLEY No. 9**		ac, cv, ev		0.00
3.00	488.40	491.40	Shale, gy		cm, em		0.00
10.10	491.40	501.50	Shale, grn, sandy		cs, es		0.00
17.00	501.50	518.50	Sandstone, gy		cs, es	y	17.00
3.00	518.50	521.50	Shale, gy, sandy		cs, es		0.00
6.45	521.50	527.95	Shale, gy		cm, em		0.00
1.30	527.95	529.25	Sandstone, gy w/ coal stks		cs, es		0.00
0.40	529.25	529.65	Claystone, gy		cv, ev		0.00
1.25	529.65	530.90	**Coal**		ac, cv, ev		0.00
0.25	530.90	531.15	Shale, gy		cm, em		0.00
1.30	531.15	532.45	**Coal**		ac, cv, ev		0.00
19.85	532.45	552.30	Limestone w/ sh layers		ak, cs, es	y	19.85
2.40	552.30	554.70	Shale, grn		cm, em		0.00
3.20	554.70	557.90	Shale, gy		cm, em		0.00
9.70	557.90	567.60	Limestone, nodular		ak, cs, es	y	9.70
1.10	567.60	568.70	**Coal, bony**		ac, cv, ev		0.00
2.50	568.70	571.20	Shale, gy w/ ls nods		ak, cm, em		0.00
2.65	571.20	573.85	Limestone		ak, cs, es	y	2.65
14.00	573.85	587.85	Limestone w/ claystone stks		ak, cs, es	y	14.00
3.90	587.85	591.75	Claystone, grn		cv, ev		0.00
0.50	591.75	592.25	Shale, gy		cm, em		0.00
1.43	592.25	593.68	**Coal w/ bone, pyritic, ROOF COAL**		ac, cv, ev		0.00
0.82	593.68	594.50	Shale, gy		cm, em		0.00
5.15	594.50	599.65	**Coal, PITTSBURGH NO. 8**		ac, cv, ev		0.00
0.17	599.65	599.82	**Bone w/ coal stks**		ac, cv, ev		0.00
1.35	599.82	601.17	Shale, gy		cm, em		0.00
10.10	601.17	611.27	Shale, gy w/ ls nods		ak, cm, em		0.00
Total Depth		611.27					225.70

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 225.70

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 37%

Thickness (Ft.)	Percent (%)

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2000-02

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
Hard Rock:	225.70	37%					
Soft Rock:	385.57	63%					
	611.27						

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	CaCO3 Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	187.17	2.24	1.31	70.1	-117.2
Coal	3.88	5.91	3.04	185.00	181.0
Bottom, 10 ft.	28.40	5.08	4.21	159.00	130.0

ORIGINAL

00425P3

ATTACHMENT 10

DIAMOND DRILL HOLE: AEC 2006-03

Field Engineer: Kim Ceol
Surface Elevation: 976.43
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 682,637
Easting: 2,421,552
Drilling Company: LJ Hughes & Sons, Inc

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
23.00	0.00	23.00	Casing				0.00
2.00	23.00	25.00	Shale, gy	YES	cm, em		0.00
3.30	25.00	28.30	Claystone, gy w/ ls nods	YES	ac, cv, ev		0.00
0.60	28.30	28.90	Limestone		ak, cs, es	y	0.60
0.30	28.90	29.20	Claystone, gy, soft	YES	cv, ev		0.00
0.50	29.20	29.70	Shale, dk gy, limey		ak, cm, em		0.00
0.80	29.70	30.50	Limestone		ak, cs, es	y	0.80
0.30	30.50	30.80	Claystone, gy, soft		cv, ev		0.00
3.20	30.80	34.00	Core loss				0.00
0.50	34.00	34.50	Claystone, dk gy		cv, ev		0.00
1.50	34.50	36.00	Shale, gy, sandy	YES	cs, es		0.00
2.00	36.00	38.00	Shale, gy		cm, em		0.00
0.50	38.00	38.50	Shale, gy, sandy		cs, es		0.00
0.60	38.50	39.10	Clay, soft		cv, ev		0.00
1.60	39.10	40.70	Shale, gy, sandy		cs, es		0.00
1.20	40.70	41.90	Shale, gy		cm, em		0.00
15.10	41.90	57.00	Sandstone, gy w/sh stks		cs, es	y	15.10
0.40	57.00	57.40	Claystone, gy		cv, ev		0.00
0.30	57.40	57.70	Bone w/ coal stks, WAYNESBURG No. 11		ac, cv, ev		0.00
2.10	57.70	59.80	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.00	59.80	62.80	Limestone, shaley, nodular		ak, cs, es	y	3.00
3.50	62.80	66.30	Shale, gy w/ ls nods		ak, cm, em		0.00
0.80	66.30	67.10	Limestone		ak, cs, es	y	0.80
1.60	67.10	68.70	Shale, gy w/ ls nods		ak, cm, em		0.00
4.00	68.70	72.70	Limestone, massive		ak, cs, es	y	4.00
2.80	72.70	75.50	Shale, gy, limey		ak, cm, em		0.00
8.50	75.50	84.00	Claystone, gy		cv, ev		0.00
2.00	84.00	86.00	Limestone, nodular		ak, cs, es	y	2.00
9.00	86.00	95.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.40	95.00	95.40	Claystone, red		cv, ev		0.00
2.60	95.40	98.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.70	98.00	98.70	Limestone		ak, cs, es	y	0.70
11.50	98.70	110.20	Shale, gy w/ ls nods		ak, cm, em		0.00
12.80	110.20	123.00	Limestone w/ sh layers		ak, cs, es	y	12.80
0.60	123.00	123.60	Limestone, shaley, nodular		ak, cs, es	y	0.60
14.90	123.60	138.50	Shale, gy, limey		ak, cm, em		0.00
4.00	138.50	142.50	Limestone, nodular		ak, cs, es	y	4.00
0.50	142.50	143.00	Shale, gy w/ ls nods		ak, cm, em		0.00
4.90	143.00	147.90	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.30	147.90	150.20	Limestone, shaley		ak, cs, es	y	2.30
2.30	150.20	152.50	Shale, gy w/ ls nods		ak, cm, em		0.00
16.00	152.50	168.50	Limestone, layered		ak, cs, es	y	16.00
2.40	168.50	170.90	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.00	170.90	175.90	Limestone		ak, cs, es	y	5.00
7.10	175.90	183.00	Shale, gy w/ ls nods		ak, cm, em		0.00
11.60	183.00	194.60	Limestone, nodular		ak, cs, es	y	11.60
4.40	194.60	199.00	Shale, dk gy, limey		ak, cm, em		0.00
1.40	199.00	200.40	Shale, dk gy, broken		cv, ev		0.00
0.20	200.40	200.60	Shale, blk		ac, cm, em		0.00
1.30	200.60	201.90	Coal w/ sh stks, SEWICKLEY No. 9		ac, cv, ev		0.00
1.20	201.90	203.10	Shale, dk gy		cm, em		0.00
4.30	203.10	207.40	Shale, gy, sandy		cs, es		0.00
6.40	207.40	213.80	Sandstone w/ sh stks		cs, es	y	6.40
12.80	213.80	226.20	Shale, gy		cm, em		0.00

ORIGINAL

00425-3

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2000-03

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
0.15	226.20	226.35	Shale, blk		ac, cm, em		0.00
1.75	226.35	228.10	Coal w/ sh stks, FISHPOT		ac, cv, ev		0.00
0.25	228.10	228.35	Shale w/ coal, carbonated		ac, cv, ev		0.00
0.70	228.35	229.05	Coal, pyritic		ac, cv, ev		0.00
0.50	229.05	229.55	Coal, bony		ac, cv, ev		0.00
0.85	229.55	230.40	Shale, dk gy		cm, em		0.00
17.10	230.40	247.50	Limestone, nodular		ak, cs, es	y	17.10
0.40	247.50	247.90	Claystone, grn		cv, ev		0.00
1.90	247.90	249.80	Limestone, shaley		ak, cs, es	y	1.90
0.60	249.80	250.40	Claystone, grn		cv, ev		0.00
1.30	250.40	251.70	Shale, gy		cm, em		0.00
3.70	251.70	255.40	Sandstone w/sh stks		cs, es	y	3.70
1.10	255.40	256.50	Shale, gy, sandy		cs, es		0.00
3.60	256.50	260.10	Shale, gy		cm, em		0.00
1.40	260.10	261.50	Shale, gy w/ ls nods		ak, cm, em		0.00
1.50	261.50	263.00	Limestone, nodular		ak, cs, es	y	1.50
4.10	263.00	267.10	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.20	267.10	268.30	Limestone, shaley		ak, cs, es	y	1.20
1.50	268.30	269.80	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.70	269.80	271.50	Limestone, shaley, nodular		ak, cs, es	y	1.70
1.40	271.50	272.90	Shale, gy w/ ls nods		ak, cm, em		0.00
13.40	272.90	286.30	Limestone, nodular		ak, cs, es	y	13.40
4.50	286.30	290.80	Shale, gy w/ ls nods		ak, cm, em		0.00
2.50	290.80	293.30	Claystone, gy		cv, ev		0.00
0.40	293.30	293.70	Shale, dk gy		cm, em		0.00
0.66	293.70	294.36	Coal, pyrite, ROOF COAL		ac, cv, ev		0.00
0.25	294.36	294.61	Coal, bony w/ sh		ac, cv, ev		0.00
0.97	294.61	295.58	Shale, dk gy		cm, em		0.00
3.84	295.58	299.42	Coal, bony w/ sh stks PITTSBURGH NO.8		ac, cv, ev		0.00
0.95	299.42	300.37	Coal		ac, cv, ev		0.00
0.21	300.37	300.58	Coal w/ sh stks		ac, cv, ev		0.00
0.50	300.58	301.08	Shale, dk gy		cm, em		0.00
1.95	301.08	303.03	Limestone, shaley, nodular		ak, cs, es	y	1.95
5.20	303.03	308.23	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.50	308.23	313.73	Shale, gy		cm, em		0.00
8.00	313.73	321.73	Sandstone w/ sh stks		cs, es	y	8.00
1.30	321.73	323.03	Limestone, nodular		ak, cs, es	y	1.30
	Total Depth	323.03					137.45

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 137.45

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 43%

	Thickness (Ft.)	Percent (%)
Hard Rock:	137.45	43%
Soft Rock:	185.58	57%
	323.03	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

	Potential Acidity, tons	CaCO3 Deficiency,

ORIGINAL

D0425

AEC 18205

ATTACHMENT 10

DIAMOND DRILL HOLE: AEC 2008-03

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
Stratum	Neutralization Potential, tons/100 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	/1000 tons as $CaCO_3$ (Total Sul.)	tons/1000 tons as $CaCO_3$ (Total Sul.)		
Roof, 10 ft.	164.06	2.90	2.14	90.7	-73.4		
Coal	7.63	5.62	3.02	176.0	158.0		
Bottom, 10 ft.	308.00	3.00	2.58	93.6	-214.0		

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2009-04

Field Engineer: Kim Cecil
Surface Elevation: 1,267.00
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 682,440
Easting: 2,430,373
Drilling Company: LJ Hughes and Sons, Inc.

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
23.00	0.00	23.00	Casing				0.00
14.00	23.00	37.00	Claystone, red/gy	YES	cv, ev		0.00
1.00	37.00	38.00	Core loss				0.00
2.30	38.00	40.30	Claystone, gy	YES	cv, ev		0.00
3.30	40.30	43.60	Shale, gy w/ ls nods		ak, cm, em		0.00
1.80	43.60	45.40	Shale, gy, broken		cv, ev		0.00
5.20	45.40	50.60	Shale, gy w/ ls nods		ak, cm, em		0.00
2.40	50.60	53.00	Claystone, red	YES	cv, ev		0.00
6.60	53.00	59.60	Claystone, red/gy	YES	cv, ev		0.00
5.40	59.60	65.00	Sandstone, gy w/ sh stks		cs, es	y	5.40
14.60	65.00	79.60	Shale, gy w/ ls nods		ak, cm, em		0.00
11.00	79.60	90.60	Claystone, red	YES	cv, ev		0.00
0.40	90.60	91.00	Core loss				0.00
11.50	91.00	102.50	Shale, red/gy		cm, em		0.00
0.50	102.50	103.00	Core loss				0.00
16.00	103.00	119.00	Shale, gy		cv, ev		0.00
0.20	119.00	119.20	**Bone, WASHINGTON No. 13**		ac, cv, ev		0.00
3.80	119.20	123.00	Shale, gy, limey		ak, cm, em		0.00
54.00	123.00	177.00	Shale, red/ gy w/ ls nods		ak, cm, em		0.00
2.60	177.00	179.60	Limestone, nodular		ak, cs, es	y	2.60
7.40	179.60	187.00	Shale, gy w/ ls nods		ak, cm, em		0.00
3.30	187.00	190.30	Shale, red		cm, em		0.00
18.30	190.30	208.60	Shale, gy w/ ls nods		ak, cm, em		0.00
0.20	208.60	208.80	Shale, blk		ac, cm, em		0.00
5.60	208.80	214.40	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
25.55	214.40	239.95	Sandstone, gy w/ ss stks		cs, es	y	25.55
0.10	239.95	240.05	Shale, blk		ac, cm, em		0.00
3.10	240.05	243.15	**Coal w/ shale stks, LITTLE WASHINGTON**		ac, cv, ev		0.00
2.70	243.15	245.85	Claystone, gy		cv, ev		0.00
0.25	245.85	246.10	Core loss				0.00
16.30	246.10	262.40	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.60	262.40	263.00	Core loss				0.00
10.90	263.00	273.90	Shale, gy		cm, em		0.00
9.10	273.90	283.00	Shale, gy, sandy		cs, es		0.00
2.35	283.00	285.35	Shale, gy		cm, em		0.00
5.75	285.35	291.10	**Coal, bony w/ sh stks WAYNESBURGH "A"**		ac, cv, ev		0.00
0.65	291.10	291.75	Shale, gy w/ ls nods		ak, cm, em		0.00
1.00	291.75	292.75	Shale, blk, carb.		ac, cm, em		0.00
10.25	292.75	303.00	Shale, gy w/ ls nods		ak, cm, em		0.00
1.00	303.00	304.00	Shale, gy, sandy		cs, es		0.00
10.90	304.00	314.90	Shale, gy		cm, em		0.00
5.50	314.90	320.40	Sandstone, gy		cs, es	y	5.50
2.90	320.40	323.30	Shale, gy, sandy		cm, em		0.00
3.50	323.30	326.80	Sandstone w/ sh stks		cs, es	y	3.50
0.80	326.80	327.60	Claystone, gy		cv, ev		0.00
3.70	327.60	331.30	Limestone, nodular		ak, cs, es	y	3.70
1.40	331.30	332.70	Claystone, gy, soft		cv, ev		0.00
0.50	332.70	333.20	Shale, dk gy, soft		cm, em		0.00
2.30	333.20	335.50	Shale, gy, sandy		cm, em		0.00
5.60	335.50	341.10	Sandstone, gy		cs, es	y	5.60
4.90	341.10	346.00	Shale, gy, sandy		cm, em		0.00
5.30	346.00	351.30	Sandstone w/ sh stks		cs, es	y	5.30

ORIGINAL

00425-3

AEC 18207

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 3000-04

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
1.30	351.30	352.60	Shale, gy w/ ss stks		cs, es		0.00
4.60	352.60	357.20	Shale, gy		cm, em		0.00
0.30	357.20	357.50	Shale, blk		ac, cm, em		0.00
1.00	357.50	358.50	Claystone, gy		cv, ev		0.00
4.50	358.50	363.00	Limestone, massive		ak, cs, es	y	4.50
3.80	363.00	366.80	Shale, gy w/ ls nods		ak, cm, em		0.00
10.60	366.80	377.40	Limestone		ak, cs, es	y	10.60
12.30	377.40	389.70	Shale, gy w/ ls nods		ak, cm, em		0.00
5.20	389.70	394.90	Shale, gy, sandy		cs, es		0.00
5.60	394.90	400.50	Shale, red/gy		cm, em		0.00
2.50	400.50	403.00	Limestone, nodular		ak, cs, es	y	2.50
20.00	403.00	423.00	Limestone w/ claystone parting		ak, cs, es	y	20.00
2.30	423.00	425.30	Limestone		ak, cs, es	y	2.30
11.80	425.30	437.10	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.90	437.10	443.00	Limestone, shaley		ak, cs, es	y	5.90
35.00	443.00	478.00	Limestone w/ sh layers		ak, cs, es	y	35.00
10.50	478.00	488.50	Shale, gy w/ ls nods		ak, cm, em		0.00
8.90	488.50	497.40	Limestone, shaley		ak, cs, es	y	8.90
3.00	497.40	500.40	Shale, gy w/ ls nods		ak, cm, em		0.00
2.05	500.40	502.45	**Coal, bone, pyrite, SEWICKLEY No. 9**		ac, cv, ev		0.00
22.35	502.45	524.80	Shale, gy		cm, em		0.00
1.60	524.80	526.40	Shale, dk gy, soft		cm, em		0.00
0.80	526.40	527.20	Claystone, gy		cv, ev		0.00
1.10	527.20	528.30	**Coal w/ sh stks**		ac, cv, ev		0.00
0.90	528.30	529.20	**Coal w/ pyrite**		ac, cv, ev		0.00
19.90	529.20	549.10	Limestone, nodular		ak, cs, es	y	19.90
8.60	549.10	557.70	Shale, gy w/ ls nods		ak, cm, em		0.00
3.90	557.70	561.60	Limestone, shaley		ak, cs, es	y	3.90
2.20	561.60	563.80	Claystone, gy		cv, ev		0.00
0.60	563.80	564.40	Shale, blk w/ coal		ac, cm, em		0.00
0.80	564.40	565.20	**Coal, bone**		ac, cv, ev		0.00
2.50	565.20	567.70	Shale, gy, limey		ak, cm, em		0.00
13.20	567.70	580.90	Limestone, nodular		ak, cs, es	y	13.20
6.20	580.90	587.10	Claystone, gy		cv, ev		0.00
1.60	587.10	588.70	Claystone, dk gy		cv, ev		0.00
0.60	588.70	589.30	Shale, blk, carb.		ac, cm, em		0.00
0.97	589.30	590.27	**Coal w/ bone, ROOF COAL**		ac, cv, ev		0.00
0.92	590.27	591.19	Shale, dk gy, soft		cm, em		0.00
3.97	591.19	595.16	**Coal w/ sh stks, pyrite, PITTSBURGH No.8**		ac, cv, ev		0.00
0.90	595.16	596.06	**Bone w/ coal layers**		ac, cv, ev		0.00
0.33	596.06	596.39	**Coal w/ pyrite**		ac, cv, ev		
4.20	596.39	600.59	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.40	600.59	605.99	Shale, gy, sandy		cs, es		0.00
2.60	605.99	608.59	Claystone, gy		cv, ev		0.00
2.00	608.59	610.59	Shale, gy		cm, em		0.00
	Total Depth	610.59					183.85

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 183.85

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 30%

	Thickness (Ft.)	Percent (%)
Hard Rock	183.85	30%
Soft Rock	426.74	70%
	610.59	

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2000-04

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	CaCO3 Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	278.84	2.94	2.64	91.92	-186.80
Coal	5.01	5.95	2.85	186.0	181.0
Bottom, 10 ft.	164.00	3.32	3.17	103.85	-60.1

ORIGINAL

00425-3

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2001-02

Field Engineer: Kim Cecil
Surface Elevation: 1,238.55
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 684,949
Easting: 2,425,410
Drilling Company: LJ Hughes and Sons, Inc.

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
22.00	0.00	22.00	Casing				0.00
1.30	22.00	23.30	Shale, gy	YES	cm, em		0.00
1.30	23.30	24.60	Claystone, gy, soft	YES	cv, ev		0.00
0.60	24.60	25.20	Shale, gy		cm, em		0.00
3.20	25.20	28.40	Limestone, massive	YES	ak, cs, es	y	3.20
16.10	28.40	44.50	Shale, red/gy w/ ls nods		ak, cm, em		0.00
2.40	44.50	46.90	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
4.60	46.90	51.50	Sandstone, gy	YES	cs, es	y	4.60
3.80	51.50	55.30	Shale, gy w/ ls nods		ak, cm, em		0.00
7.70	55.30	63.00	Claystone, red		cv, ev		0.00
33.50	63.00	96.50	Shale, red/gy	YES	cm, em		0.00
6.50	96.50	103.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
20.00	103.00	123.00	Claystone, red/gy w/ ls nods		ak, cv, ev		0.00
20.00	123.00	143.00	Shale, gy w/ ls nods		ak, cm, em		0.00
4.10	143.00	147.10	Claystone, red/gy		cv, ev		0.00
3.30	147.10	150.40	Limestone, nodular		ak, cs, es	y	3.30
1.00	150.40	151.40	Claystone, gy		cv, ev		0.00
0.40	151.40	151.80	Limestone		ak, cs, es	y	0.40
5.80	151.80	157.60	Claystone, gy		cv, ev		0.00
3.90	157.60	161.50	Shale, red/gy		cm, em		0.00
1.50	161.50	163.00	Shale, gy, sandy		cs, es		0.00
15.50	163.00	178.50	Shale, gy		cm, em		0.00
4.50	178.50	183.00	Claystone, gy		cv, ev		0.00
20.00	183.00	203.00	Shale, gy		cm, em		0.00
4.90	203.00	207.90	Claystone, gy		cv, ev		0.00
1.00	207.90	208.90	Shale, dk gy		cm, em		0.00
0.90	208.90	209.80	Shale, blk		ac, cm, em		0.00
2.65	209.80	212.45	Coal w/ pyrite, WASHINGTON No. 12		ac, cv, ev		0.00
0.55	212.45	213.00	Shale, gy w/ coal stks		ac, cv, ev		0.00
0.20	213.00	213.20	Coal w/ bone stks		ac, cv, ev		0.00
0.30	213.20	213.50	Shale, dk gy w/ coal stks		ac, cv, ev		0.00
0.95	213.50	214.45	Coal		ac, cv, ev		0.00
0.30	214.45	214.75	Shale, blk		ac, cm, em		0.00
14.00	214.75	228.75	Claystone, gy		cv, ev		0.00
12.00	228.75	240.75	Shale, gy		cm, em		0.00
4.50	240.75	245.25	Shale, gy, sandy		cs, es		0.00
1.20	245.25	246.45	Shale, gy		cm, em		0.00
6.10	246.45	252.55	Shale, dk gy		cm, em		0.00
7.00	252.55	259.55	Coal w/ pyrite and sh stks, LITTLE WASHINGTON		ac, cv, ev		0.00
0.40	259.55	259.95	Limestone, nodular		ak, cs, es	y	0.40
0.35	259.95	260.30	Shale, gy w/ ls nods		ak, cm, em		0.00
0.75	260.30	261.05	Shale, blk		ac, cm, em		0.00
0.80	261.05	261.85	Limestone		ak, cs, es	y	0.80
0.70	261.85	262.55	Claystone, gy		cv, ev		0.00
0.70	262.55	263.25	Limestone, nodular		ak, cs, es	y	0.70
6.30	263.25	269.55	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.20	269.55	274.75	Sandstone, gy, massive		cs, es	y	5.20
5.50	274.75	280.25	Shale, gy, sandy		cs, es		0.00
3.20	280.25	283.45	Shale, gy		cm, em		0.00
1.70	283.45	285.15	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
4.10	285.15	289.25	Sandstone, gy		cs, es	y	4.10
4.00	289.25	293.25	Shale, gy, sandy		cs, es		0.00
1.30	293.25	294.55	Shale, gy		cm, em		0.00
1.50	294.55	296.05	Shale, dk gy		cm, em		0.00
0.90	296.05	296.95	Shale, gy w/ ls nods		ak, cm, em		0.00
4.70	296.95	301.65	Claystone, dk gy		cv, ev		0.00

ORIGINAL

00425-3

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2001-02

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
0.70	301.85	302.35	Shale, blk		ac, cm, em		0.00
0.20	302.35	302.55	Shale, dk gy		ac, cm, em		0.00
7.80	302.55	310.35	Shale, gy		cm, em		0.00
6.10	310.35	316.45	Shale, gy, sandy		cs, es		0.00
5.10	316.45	321.55	Shale, gy		cm, em		0.00
0.20	321.55	321.75	Coal w/ pyrite, WAYNESBURGH No. 11		ac, cv, ev		0.00
0.60	321.75	322.35	Shale, gy		cm, em		0.00
1.80	322.35	324.15	Shale, gy w/ ls nods		ak, cm, em		0.00
2.30	324.15	326.45	Limestone, nodular		ak, cs, es	y	2.30
3.80	326.45	330.25	Claystone, gy, w/ ls nods		ak, cv, ev		0.00
12.10	330.35	342.35	Limestone w/ sh layers		ak, cs, es	y	12.10
16.00	342.35	358.35	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.20	358.35	361.55	Shale, red/gy w/ ls nods		ak, cm, em		0.00
1.20	361.55	362.75	Limestone		ak, cs, es	y	1.20
3.60	362.75	366.35	Claystone, gy		cv, ev		0.00
1.20	366.35	367.55	Limestone, shaley		ak, cs, es	y	1.20
2.00	367.55	369.55	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.50	369.55	370.05	Limestone, nodular		ak, cs, es	y	0.50
2.00	370.05	372.05	Shale, gy		cm, em		0.00
1.20	372.05	373.25	Core loss				0.00
41.10	373.25	414.35	Limestone w/ sh layers		ak, cs, es	y	41.10
21.10	414.35	435.45	Limestone, shale, nodular		ak, cs, es	y	21.10
19.00	435.45	454.45	Limestone w/ sh layers		ak, cs, es	y	19.00
2.70	454.45	457.15	Shale, gy, limey		ak, cm, em		0.00
0.60	457.15	457.75	Shale, dk gy		cm, em		0.00
0.20	457.75	457.95	Shale, blk		ac, cm, em		0.00
0.90	457.95	458.85	Coal, SEWICKELY No. 9		ac, cv, ev		0.00
0.70	458.85	459.55	Shale, dk gy w/ coal		ac, cm, em		0.00
8.50	459.55	468.05	Shale, gy		cm, em		0.00
5.40	468.05	473.45	Shale, gy, sandy		cs, es		0.00
5.70	473.45	479.15	Shale, gy		cm, em		0.00
10.40	479.15	489.55	Sandstone w/ sh stks		cs, es	y	10.40
1.40	489.55	490.95	Shale, gy		cm, em		0.00
1.00	490.95	491.95	Coal w/ bone layers, FISHPOT		ac, cv, ev		0.00
0.35	491.95	492.30	Coal / shale layers		ac, cv, ev		0.00
0.90	492.30	493.20	Coal w/ pyrite		ac, cv, ev		0.00
19.65	493.20	512.85	Limestone, nodular		ak, cs, es	y	19.65
6.50	512.85	519.35	Shale, gy, sandy		cs, es		0.00
4.90	519.35	524.25	Shale, gy		cm, em		0.00
3.20	524.25	527.45	Limestone, massive		ak, cs, es	y	3.20
1.50	527.45	528.95	Claystone, gy		cv, ev		0.00
1.50	528.95	530.45	Claystone, dk gy		cv, ev		0.00
3.40	530.45	533.85	Shale, gy w/ ls nods		ak, cm, em		0.00
13.70	533.85	547.55	Limestone, nodular		ak, cs, es	y	13.70
5.40	547.55	552.95	Claystone, gy		cv, ev		0.00
0.25	552.95	553.20	Shale, dk gy		cm, em		0.00
0.50	553.20	553.70	Claystone, gy, soft		cv, ev		0.00
0.95	553.70	554.65	Claystone, gy		cv, ev		0.00
0.64	554.65	555.29	Coal w/ bone and sh stks, ROOF COAL		ac, cv, ev		0.00
0.70	555.29	555.99	Claystone, gy		cv, ev		0.00
2.06	555.99	558.05	Coal w/ pyrite, PITTSBURGH No.8		ac, cv, ev		0.00
1.21	558.05	559.26	Coal w/ bone		ac, cv, ev		0.00
2.08	559.26	561.34	Coal w/ sh layers		ac, cv, ev		0.00
1.87	561.34	563.21	Claystone, dk gy		cv, ev		0.00
2.60	563.21	565.81	Claystone, gy		cv, ev		0.00
5.50	565.81	571.31	Shale, gy, sandy		cs, es		0.00
9.80	571.31	581.11	Sandstone w/ sh stks		cs, es	y	9.80
	Total Depth	581.11					177.85

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2001-02

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
Total Thickness of Hard Rock Overlying Mining Unit							177.95
Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit							31%

	Thickness (Ft.)	Percent (%)
Hard Rock:	177.95	31%
Soft Rock:	403.16	69%
	581.11	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	$CaCO_3$ Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	146.21	2.44	2.22	76.26	-71.95
Coal	4.74	5.44	2.92	170.0	165.3
Bottom, 10 ft.	156.50	3.64	3.40	113.55	-43.0

ORIGINAL

ATTACHMENT 10

DIAMOND DRILL HOLE: AEC 2001-04

Field Engineer: Kim Cecil
Surface Elevation: 1,003.59
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 684,675
Easting: 2,418,410
Drilling Company: Jay Little Drilling Company

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
18.00	0.00	18.00	Casing				0.00
1.42	18.00	19.42	Sandstone, gy	YES	cs, es	y	1.42
1.75	19.42	21.17	Shale, dk gy w/ coal	YES	cv, ev		0.00
1.00	21.17	22.17	Limestone	YES	ak, cs, es	y	1.00
0.58	22.17	22.75	Claystone, gy		cv, ev		0.00
1.45	22.75	24.20	**Coal w/ sh stks, WAYNESBURGH "A"**	YES	ac, cv, ev		0.00
1.08	24.20	25.28	Limestone		ak, cs, es	y	1.08
0.50	25.28	25.78	Claystone, gy	YES	cv, ev		0.00
9.67	25.78	35.45	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.34	35.45	39.79	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
9.25	39.79	49.04	Claystone, red/gy, sandy w/ ls nods		ak, cm, em		0.00
2.50	49.04	51.54	Limestone, shaley		ak, cs, es	y	2.50
2.16	51.54	53.70	Sandstone, gy		cs, es	y	2.16
4.25	53.70	57.95	Shale, gy, sandy		cs, es		0.00
1.58	57.95	59.53	Claystone, gy		cv, ev		0.00
3.75	59.53	63.28	Limestone w/ clay stks		ak, cs, es	y	3.75
3.92	63.28	67.20	Claystone, dk gy/ gy w/ ls nods		ak, cv, ev		0.00
18.16	67.20	85.36	Shale, gy, sandy		cs, es		0.00
30.00	85.36	115.36	Limestone w/ claystone		ak, cs, es	y	30.00
4.42	115.36	119.78	Shale, gy, sandy		cs, es		0.00
11.42	119.78	131.20	Limestone w/ sh layers		ak, cs, es	y	11.42
5.92	131.20	137.12	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
0.50	137.12	137.62	Sandstone, gy		cs, es	y	0.50
0.83	137.62	138.45	Shale, grn, sandy		cs, es		0.00
12.50	138.45	150.95	Limestone, w/ claystone		ak, cs, es	y	12.50
16.92	150.95	167.87	Shale, gy/grn, sandy, limey		ak, cs, es		0.00
9.16	167.87	177.03	Claystone, gy/grn w/ ls nods		ak, cv, ev		0.00
20.34	177.03	197.37	Limestone, shaley		ak, cs, es	y	20.34
3.50	197.37	200.87	Shale, grn, sandy, limey		ak, cs, es		0.00
14.00	200.87	214.87	Claystone, grn w/ ls nods		ak, cv, ev		0.00
3.25	214.87	218.12	Shale, grn w/ ls nods		ak, cm, em		0.00
9.58	218.12	227.70	Limestone, shaley, nodular		ak, cs, es	y	9.58
3.58	227.70	231.28	Claystone, gy		cv, ev		0.00
2.00	231.28	233.28	**Coal, bony w/ sh. Layers, SEWICKLEY No. 9**		ac, cv, ev		0.00
1.50	233.28	234.78	Shale, dk gy		cm, em		0.00
7.75	234.78	242.53	Sandstone, gy		cs, es	y	7.75
6.00	242.53	248.53	Shale, gy		cm, em		0.00
5.00	248.53	253.53	Claystone, gy		cv, ev		0.00
2.55	253.53	256.08	**Coal w/ sh layers**		ac, cv, ev		0.00
0.71	256.08	256.79	Shale, dk gy, sandy		cs, es		0.00
16.16	256.79	272.95	Limestone, shaley		ak, cs, es	y	16.16
5.58	272.95	278.53	Claystone, gy/ grn w/ ls nods		ak, cv, ev		0.00
4.58	278.53	283.11	Sandstone, gy		cs, es	y	4.58
4.42	283.11	287.53	Shale, gy		cm, em		0.00
2.16	287.53	289.69	Limestone, nodular		ak, cs, es	y	2.16
3.16	289.69	292.85	Claystone, gy/ grn w/ ls nods		ak, cv, ev		0.00
0.50	292.85	293.35	Shale, dk gy		cm, em		0.00
1.25	293.35	294.60	**Coal w/ pyrite**		ac, cv, ev		0.00
12.25	294.60	306.85	Limestone, shaley, nodular		ak, cs, es	y	13.25
3.25	306.85	310.10	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.00	310.10	313.10	Claystone, gy/grn w/ ls nods		ak, cv, ev		0.00
0.42	313.10	313.52	Limestone		ak, cs, es	y	0.42

ORIGINAL

00425-3

AEC 18213

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC 2001-04

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
2.92	313.52	316.44	Claystone, gy/grn w/ ls nods		ak, cv, ev		0.00
3.16	316.44	319.60	Claystone, gy		cv, ev		0.00
0.95	319.60	320.55	**Coal w/ sh layers, ROOF COAL**		ac, cv, ev		0.00
1.02	320.55	321.57	Shale, dk gy		cm, em		0.00
4.03	321.57	325.60	**Coal, bony, PITTSBURGH No.8**		ac, cv, ev		0.00
1.27	325.60	326.87	**Coal w/ pyrite**		ac, cv, ev		0.00
3.81	326.87	330.68	Limestone, shaley		ak, cs, es	y	3.81
4.00	330.68	334.68	Claystone, gy w/ ls nods		ak, cv, ev		0.00
7.83	334.68	342.51	Sandstone, gy		cs, es	y	7.83
0.84	342.51	343.35	Shale, gy, sandy		cs, es		0.00
	Total Depth	343.35					151.21

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 151.21

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 44%

	Thickness (Ft.)	Percent (%)
Hard Rock:	151.21	44%
Soft Rock:	192.14	56%
	343.35	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	CaCO3 Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft	175.05	2.07	1.25	64.7	-110.4
Coal	4.61	5.05	2.79	158.00	153.4
Bottom, 10 ft	401.00	2.01	1.51	62.81	-338.19

ORIGINAL

00425-3

AEC 18214

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-10

Field Engineer: Kim Cecil
Surface Elevation: 1,266.50
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 678,002
Easting: 2,417,321
Drilling Company: Keragen Resources

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
67.00	0.00	67.00	Casing				0.00
3.00	67.00	70.00	Claystone, gy	YES	cv, ev		0.00
10.00	70.00	80.00	Claystone, red/ grn	YES	cv, ev		0.00
9.00	80.00	89.00	Shale, gy, sandy	YES	cm, em		0.00
3.80	89.00	92.80	Shale, red		cm, em		0.00
12.10	92.80	104.90	Claystone, red/ grn w/ ls nods		ak, cv, ev		0.00
3.70	104.90	108.60	Claystone, gy, sandy		cm, em		0.00
2.10	108.60	110.70	Claystone, red/ grn w/ ls nods		ak, cv, ev		0.00
2.20	110.70	112.90	Shale, grn, sandy w/ ls nods		ak, cs, es		0.00
5.80	112.90	118.70	Shale, red/ grn, sandy		cs, es		0.00
0.90	118.70	119.60	Claystone, red/ grn		cv, ev		0.00
16.80	119.60	136.40	Claystone, red/ grn w/ ls nods		ak, cv, ev		0.00
2.30	136.40	138.70	Shale, gy, sandy		cs, es		0.00
0.80	138.70	139.50	Claystone, red/ grn		cv, ev		0.00
10.50	139.50	150.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.60	150.00	153.60	Claystone, red/ grn, limey		ak, cv, ev		0.00
3.70	153.60	157.30	Shale, gy w/ ss stks		cs, es		0.00
6.40	157.30	163.70	Shale, red/ grn		cm, em		0.00
38.00	163.70	201.70	Sandstone, gy w/ sh stks		cs, es	y	38.00
0.60	201.70	202.30	Shale, blk w/ coal stks		ac, cv, ev		0.00
12.70	202.30	215.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
63.00	215.00	278.00	Sandstone, gy w/ sh stks		cs, es	y	63.00
1.80	278.00	279.80	Sandstone, gy w/ coal stks		cs, es	y	1.80
8.20	279.80	288.00	Sandstone, gy, massive		cs, es	y	8.20
0.40	288.00	288.40	Sandstone, gy w/ coal stks		cs, es	y	0.40
15.50	288.40	303.90	Sandstone, gy, massive		cs, es	y	15.50
1.60	303.90	305.50	Claystone, gy		cv, ev		0.00
2.10	305.50	307.60	Limestone, shaley		ak, cs, es	y	2.10
2.40	307.60	310.00	Shale, gy w/ interbedded ss		cs, es		0.00
4.60	310.00	314.60	Sandstone, gy w/ sh stks		cs, es	y	4.60
2.10	314.60	316.70	Shale, gy w/ ls nods		ak, cm, em		0.00
2.30	316.70	318.80	Shale, dk gy		cm, em		0.00
5.50	318.80	324.30	Limestone, shaley, layered		ak, cs, es	y	5.50
2.60	324.30	326.90	Shale, dk gy		cm, em		0.00
0.35	326.90	327.25	Shale, blk		ac, cm, em		0.00
0.65	327.25	327.90	**Coal w/ bone stks, WAYNESBURGH No. 11**		ac, cv, ev		0.00
5.10	327.90	333.00	Shale, gy		cm, em		0.00
2.20	333.00	335.20	Shale, gy w/ ss stks		cs, es		0.00
5.80	335.20	341.00	Sandstone, gy w/ sh stks		cs, es	y	5.80
0.90	341.00	341.90	Shale, gy		cm, em		0.00
0.30	341.90	342.20	**Bone w/ coal, LITTLE WAYNESBURGH**		ac, cv, ev		0.00
0.80	342.20	343.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
27.00	343.00	370.00	Limestone, shaley, layered		ak, cs, es	y	27.00
2.80	370.00	372.80	Claystone, gy		cv, ev		0.00
4.50	372.80	377.30	Sandstone, gy, churned		cs, es	y	4.50
4.60	377.30	381.90	Shale, red/ grn		cm, em		0.00
1.00	381.90	382.90	Limestone, shaley, massive		ak, cs, es	y	1.00
5.20	382.90	388.10	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.00	388.10	389.10	Shale, gy, sandy		cs, es		0.00
7.90	389.10	397.00	Sandstone, gy w/ sh stks		cs, es	y	7.90
10.80	397.00	407.80	Claystone, gy, sandy		cm, em		0.00
2.20	407.80	410.00	Limestone, massive		ak, cs, es	y	2.20

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-10

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
1.00	410.00	411.00	Claystone, gy		cv, ev		0.00
5.20	411.00	416.20	Limestone, massive		ak, cs, es	y	5.20
2.00	416.20	418.20	Shale, gy, sandy		cs, es		0.00
3.00	418.20	421.20	Sandstone, gy w/ sh stks		cs, es	y	3.00
0.80	421.20	422.00	Claystone, gy		cv, ev		0.00
33.60	422.00	455.60	Limestone, shaley, layered		ak, cs, es	y	33.60
3.30	455.60	458.90	Shale, gm		cm, em		0.00
5.40	458.90	464.30	Limestone, massive		ak, cs, es	y	5.40
17.40	464.30	481.70	Limestone, shaley, layered		ak, cs, es	y	17.40
2.30	481.70	484.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.00	484.00	486.00	Shale, dk gy		cm, em		0.00
3.15	486.00	489.15	**Coal w/ bone stks, SEWICKLEY No. 9**		ac, cv, ev		0.00
0.10	489.15	489.25	Pyrite		ac, cs, es	y	0.10
1.35	489.25	490.60	Claystone, gy w/ ls nods		ak cv, ev		0.00
2.50	490.60	493.10	Shale, gy, sandy		cs, es		0.00
1.90	493.10	495.00	Claystone, gy, sandy w/ ls nods		ak, cm, em		0.00
8.70	495.00	503.70	Shale, gy		cm, em		0.00
3.50	503.70	507.20	Shale, dk gy		cm, em		0.00
0.85	507.20	508.05	**Coal w/ bone stks**		ac, cv, ev		0.00
0.40	508.05	508.45	Claystone, dk gy		cv, ev		0.00
1.00	508.45	509.45	**Coal**		ac, cv, ev		0.00
0.30	509.45	509.75	Claystone, dk gy		cv, ev		0.00
0.55	509.75	510.30	**Coal w/ sh stks**		ac, cv, ev		0.00
1.50	510.30	511.80	Claystone, dk gy		cv, ev		0.00
14.30	511.80	526.10	Limestone, shaley, layered		ak, cs, es	y	14.30
3.40	526.10	529.50	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.50	529.50	534.00	Sandstone, gy		cs, es	y	4.50
7.00	534.00	541.00	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
2.80	541.00	543.80	Limestone, shaley, layered		ak, cs, es	y	2.80
3.75	543.80	547.55	Claystone, gy		cv, ev		0.00
0.65	547.55	548.20	**Coal, shaley, bony, pyritic**		ac, cv, ev		0.00
16.30	548.20	564.50	Limestone, shaley, layered		ak, cs, es	y	16.30
3.20	564.50	567.70	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.70	567.70	568.40	Limestone, shaley, layered		ak, cs, es	y	0.70
1.60	568.40	570.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.80	570.00	571.80	Claystone, dk gy		cv, ev		0.00
2.32	571.80	574.12	Shale, dk gy		cm, em		0.00
0.28	574.12	574.40	**Coal w/ pyrite, ROOF COAL**		ac, cv, ev		0.00
0.90	574.40	575.30	Shale, dk gy/ gy		cm, em		0.00
5.05	575.30	580.35	**Coal, PITTSBURGH No. 8**		ac, cv, ev		0.00
0.15	580.35	580.50	**Coal w/ bone stks**		ac, cv, ev		0.00
1.85	580.50	582.35	Shale, gy		cm, em		0.00
1.35	582.35	583.70	Limestone, shaley		ak, cs, es	y	1.35
2.70	583.70	586.40	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.10	586.40	588.50	Claystone, gy		cv, ev		0.00
1.10	588.50	589.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.50	589.60	590.10	Shale, gy, sandy		cs, es		0.00
3.40	590.10	593.50	Sandstone, gy w/ sh stks		cs, es	y	3.40
0.80	593.50	594.30	Shale, gy w/ ss stks		cs, es		0.00
1.90	594.30	596.20	Sandstone, gy w/ sh stks		cs, es	y	1.90
1.70	596.20	597.90	Shale, gy w/ ss stks		cs, es		0.00
2.10	597.90	600.00	Sandstone, gy, churned		cs, es	y	2.10
	Total Depth	600.00					299.55

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-10

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
Total Thickness of Hard Rock Overlying Mining Unit							299.55
Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit							50%

	Thickness (Ft.)	Percent (%)
Hard Rock	299.55	50%
Soft Rock	300.45	50%
	600.00	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	$CaCO_3$ Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	158.20	1.60	1.51	50.1	-108.1
Coal	4.35	5.24	2.81	165.00	160.7
Bottom, 10 ft.	188.60	2.29	2.01	71.10	-117.5

ORIGINAL

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-14

Field Engineer: Kim Cecil
Surface Elevation: 1,314.97
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 674,805
Easting: 2,425,948
Drilling Company: Keragen Resources

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
15.00	0.00	15.00	Casing				0.00
4.90	15.00	19.90	Sandstone, gy / sh stks	Yes	cs, es	y	4.90
5.10	19.90	25.00	Shale, gy	Yes	cm, em		0.00
8.70	25.00	33.70	Shale,dk gy	Yes	cm, em		0.00
1.40	33.70	35.10	Limestone		sk, cs, es	y	1.40
2.55	35.10	37.65	Shale,dk gy		cm, em		0.00
0.25	37.65	37.90	Coal		ac, cv, ev		0.00
0.20	37.90	38.10	Shale, blk		ac, cv, ev		0.00
7.50	38.10	45.60	Claystone, gy w/ ls nods		sk, cv, ev		0.00
11.40	45.60	57.00	Claystone, red w/ ls nods	Yes	sk, cv, ev		0.00
3.70	57.00	60.70	Claystone, gy, sandy, limey		sk, cm, em		0.00
4.80	60.70	65.50	Sandstone, gy / sh stks	Yes	cs, es	y	4.80
33.50	65.50	99.00	Claystone, red w/ ls nods		sk, cv, ev		0.00
2.60	99.00	101.60	Claystone, gy, sandy w/ ls nods		sk, cm, em		0.00
6.80	101.60	108.40	Sandstone, gy / sh stks		cs, es	y	6.80
3.20	108.40	111.60	Shale, gy w/ ss stks		cs, es		0.00
6.40	111.60	118.00	Shale, red/ grn w/ ls nods	Yes	sk, cm, em		0.00
1.00	118.00	119.00	Claystone, gy		cv, ev		0.00
4.30	119.00	123.30	Shale, gy, sandy		cs, es		0.00
5.20	123.30	128.50	Claystone, gy w/ ls nods		sk, cv, ev		0.00
7.50	128.50	136.00	Claystone, red		cv, ev		0.00
4.00	136.00	140.00	Claystone, red/ grn, sandy w/ ls nods		sk, cm, em		0.00
1.90	140.00	141.90	Sandstone, gy / sh stks		cs, es	y	1.90
6.10	141.90	148.00	Shale, red/ grn		cm, em		0.00
1.10	148.00	149.10	Sandstone, gy, churned		cs, es	y	1.10
4.90	149.10	154.00	Sandstone, gy / sh stks		cs, es	y	4.90
7.60	154.00	161.60	Claystone, red/ grn w/ ls nods		sk, cv, ev		0.00
5.40	161.60	167.00	Claystone, gy, sandy w/ ls nods		sk, cm, em		0.00
2.10	167.00	169.10	Claystone, red/ grn w/ ls nods		sk, cv, ev		0.00
2.00	169.10	171.10	Claystone, dk gy		cv, ev		0.00
1.90	171.10	173.00	Shale, gy, sandy w/ ls nods		sk, cm, em		0.00
12.40	173.00	185.40	Claystone, red/ grn		cv, ev		0.00
8.80	185.40	194.20	Claystone, red/ grn w/ ls nods		sk, cv, ev		0.00
0.30	194.20	194.50	Claystone, blk		ac, cv, ev		0.00
8.00	194.50	202.50	Claystone, gy w/ ls nods		sk, cv, ev		0.00
27.20	202.50	229.70	Claystone, red/ grn w/ ls nods		sk, cv, ev		0.00
12.70	229.70	242.40	Shale, gy w/ ls nods		sk, cm, em		0.00
0.45	242.40	242.85	Shale, dk gy, layered		cm, em		0.00
5.15	242.85	248.00	Claystone, red/ grn		cv, ev		0.00
4.00	248.00	252.00	Limestone, shaley, layered		sk, cs, es	y	4.00
8.00	252.00	260.00	Shale, gy, sandy w/ ls nods		sk, cs, es		0.00
2.00	260.00	262.00	Claystone, gy		cv, ev		0.00
1.40	262.00	263.40	Shale, gy w/ ss stks		cs, es		0.00
5.60	263.40	269.00	Sandstone, gy / sh stks		cs, es	y	5.60
0.40	269.00	270.00	Shale, gy w/ ss stks		cs, es		0.00
7.00	270.00	277.00	Claystone, red/ grn		cv, ev		0.00
2.60	277.00	279.60	Claystone, gy, sandy		cm, em		0.00
4.20	279.60	283.80	Claystone, gy, sandy w/ ls nods		sk, cm, em		0.00
1.00	283.80	284.80	Sandstone, gy, churned		cs, es	y	1.00
3.30	284.80	288.10	Sandstone, gy / sh stks		cs, es	y	3.30
2.10	288.10	290.20	Claystone, gy, sandy w/ ls nods		sk, cm, em		0.00
2.50	290.20	292.70	Sandstone, gy / sh stks		cs, es	y	2.50

ORIGINAL

00425-3

AEC 18218

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-14

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
3.70	292.70	296.40	Shale, gy w/ ss stks		cs, ss		0.00
3.00	296.40	299.40	Shale, gy		cm, em		0.00
0.10	299.40	299.50	Limestone, shaley, layered		ak, cs, ss	y	0.10
4.40	299.50	303.90	Claystone, gy		cv, ev		0.00
1.40	303.90	305.30	Shale, blk w/ coal stks		ac, cv, ev		0.00
1.45	305.30	306.75	**Coal w/ bone stks, WASHINGTON No. 12**		ac, cv, ev		0.00
0.50	306.75	307.25	Shale, dk gy		ac, cv, ev		0.00
1.25	307.25	308.50	**Coal w/ bone stks**		ac, cv, ev		0.00
14.50	308.50	323.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
8.30	323.00	331.30	Claystone, gy, sandy w/ ls nods		ak, cm, em		0.00
16.30	331.30	347.60	Sandstone, gy w/ crossbeds		cs, ss	y	16.30
4.50	347.60	352.10	Shale, gy w/ ss stks and ls nods		ak, cs, ss		0.00
2.90	352.10	355.00	Shale, gy w/ ss stks		cs, ss		0.00
0.35	355.00	355.35	Shale, dk gy, layered		cm, em		0.00
1.85	355.35	357.30	Shale, gy		cm, em		0.00
0.20	357.30	357.50	Shale, dk gy		cm, em		0.00
1.40	357.50	358.90	**Coal w/ bone stks, LITTLE WASHINGTON**		ac, cv, ev		0.00
0.10	358.90	359.00	Shale, blk		ac, cv, ev		0.00
3.50	359.00	362.50	**Coal w/ sh layers**		ac, cv, ev		0.00
0.20	362.50	362.70	Shale, blk		ac, cv, ev		0.00
1.40	362.70	364.10	**Coal w/ bone stks, pyritic**		ac, cv, ev		0.00
0.90	364.10	365.00	Claystone, blk		ac, cv, ev		0.00
2.20	365.00	367.20	Limestone, shaley, layered		ak, cs, ss	y	2.20
9.90	367.20	377.10	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.20	377.10	382.30	Shale, gy w/ ss stks		cs, ss		0.00
2.20	382.30	384.50	Shale, gy		cm, em		0.00
0.90	384.50	385.40	Claystone, gy		cv, ev		0.00
1.60	385.40	387.00	Limestone, shaley, layered		ak, cs, ss	y	1.60
7.70	387.00	394.70	Sandstone, gy		cs, ss	y	7.70
2.50	394.70	397.20	Shale, gy w/ ss stks		cs, ss		0.00
1.60	397.20	398.80	Shale, dk gy		cm, em		0.00
0.70	398.80	399.50	Shale, blk		ac, cv, ev		0.00
1.05	399.50	400.55	Shale, dk gy		cm, em		0.00
5.05	400.55	405.60	Limestone, shaley, layered		ak, cs, ss	y	5.05
0.30	405.60	405.90	Sandstone, gy w/ sh stks		cs, ss	y	0.30
3.30	405.90	409.20	Claystone, dk gy		cv, ev		0.00
0.90	409.30	410.10	Shale, dk gy		cm, em		0.00
0.75	410.10	410.85	Shale, blk w/ coal stks		ac, cm, em		0.00
1.35	410.85	412.20	Claystone, gy		cv, ev		0.00
0.60	412.20	412.80	Shale, gy		cm, em		0.00
8.50	412.80	421.30	Shale, gy w/ ss stks		cs, ss		0.00
0.70	421.30	422.00	Shale, dk gy, layered		cm, em		0.00
0.38	422.00	422.38	Shale, dk gy w/ coal stks		cm, em		0.00
0.22	422.38	422.60	**Coal w/ bone stks, WAYNESBURGH No. 11**		ac, cv, ev		0.00
1.10	422.60	423.70	Claystone, dk gy		cv, ev		0.00
4.50	423.70	428.20	Claystone, gy		cv, ev		0.00
0.40	428.20	428.60	Shale, dk gy w/ ss stks		cs, ss		0.00
19.00	428.60	447.60	Limestone, shaley, layered		ak, cs, ss	y	19.00
8.10	447.60	455.70	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.80	455.70	457.50	Limestone, shaley, layered		ak, cs, ss	y	1.80
1.10	457.50	458.60	Claystone, grn		cv, ev		0.00
0.70	458.60	459.30	Shale, blk w/ coal stks		cm, em		0.00
0.40	459.30	459.70	Claystone, dk gy		cv, ev		0.00
2.70	459.70	462.40	Claystone, gy w/ ss stks		cm, em		0.00
1.60	462.40	464.00	Sandstone, gy, churned		cs, ss	y	1.60
0.60	464.00	464.60	Shale, gy w/ ss stks		cs, ss		0.00
4.60	464.60	469.20	Shale, red/ grn		cm, em		0.00
10.40	469.20	479.60	Limestone, shaley, layered		ak, cs, ss	y	10.40
0.50	479.60	480.10	Claystone, gy		cv, ev		0.00
2.00	480.10	482.10	Shale, gy, sandy		cs, ss		0.00
19.60	482.10	501.70	Limestone, shaley, layered		ak, cs, ss	y	19.60
2.70	501.70	504.40	Shale, gy w/ ss stks		cs, ss		0.00
1.30	504.40	505.70	Claystone, gy		cv, ev		0.00
10.00	505.70	515.70	Limestone, shaley, layered		ak, cs, ss	y	10.00

ORIGINAL

00425-3

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-3001-14

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
3.30	515.70	519.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
17.70	519.00	536.70	Limestone, shaley, layered		ak, cs, es	y	17.70
2.70	536.70	539.40	Claystone, gy		cv, ev		0.00
5.10	539.40	544.50	Claystone, gy/ grn		cv, ev		0.00
11.40	544.50	555.90	Limestone, shaley, layered		ak, cs, es	y	11.40
4.60	555.90	560.50	Claystone, gy/ grn		cv, ev		0.00
9.50	560.50	570.00	Limestone, shaley, layered		ak, cs, es	y	9.50
1.00	570.00	571.00	Claystone, dk gy		cv, ev		0.00
1.00	571.00	572.00	Shale, blk w/ coal stks		ac, cv, ev		0.00
0.45	572.00	572.45	Sandstone, gy, churned		cs, es	y	0.45
0.45	572.45	572.90	Shale, blk/ dk gy		cm, em		0.00
5.10	572.90	578.00	Claystone, gy, sandy, w/ ls nods		al, cm, em		0.00
16.00	578.00	594.00	Shale, gy w/ ss stks		cs, es		0.00
1.70	594.00	595.70	Sandstone, gy w/ sh stks		cs, es	y	1.70
2.00	595.70	597.70	Shale, gy w/ ss stks		cs, es		0.00
3.30	597.70	601.00	Shale, dk gy		cm, em		0.00
0.40	601.00	601.40	Shale, dk gy, layered		cm, em		0.00
0.60	601.40	602.00	Shale, blk w/ coal stks		ac, cv, ev		0.00
0.75	602.00	602.75	**Coal w/ bone stks, pyritic, SEWICKLEY No. 9**		ac, cv, ev		0.00
0.55	602.75	603.30	Shale, blk w/ coal stks		ac, cv, ev		0.00
1.40	603.30	604.70	**Coal w/ sh layers**		ac, cv, ev		0.00
18.90	604.70	623.60	Limestone, shaley, layered		ak, cs, es	y	18.90
2.80	623.60	626.40	Sandstone, gy w/ sh stks		cs, es	y	2.80
6.80	626.40	633.20	Shale, gy		cm, em		0.00
0.50	633.20	633.70	Sandstone, gy w/ sh stks		cs, es	y	0.50
2.00	633.70	635.70	Shale, dk gy		cm, em		0.00
3.10	635.70	638.80	Limestone, shaley, layered		ak, cs, es	y	3.10
0.40	638.80	639.20	Shale, dk gy		cm, em		0.00
1.00	639.20	640.20	Claystone, grn		cv, ev		0.00
1.80	640.20	642.00	Shale, blk w/ coal stks		ac, cv, ev		0.00
1.20	642.00	643.20	Claystone, gy		cv, ev		0.00
0.60	643.20	643.80	Claystone, gy, sandy		cm, em		0.00
5.55	643.80	649.35	Limestone, shaley, massive		ak, cs, es	y	5.55
0.60	649.35	649.95	Claystone, dk gy w/ ls nods		ak, cm, em		0.00
4.60	649.95	654.55	Limestone, nodular		ak, cs, es	y	4.60
0.70	654.55	655.25	Shale, dk gy w/ ls nods		ak, cm, em		0.00
2.55	655.25	657.80	Limestone, nodular		ak, cs, es	y	2.55
3.10	657.80	660.90	Claystone, dk gy/ gy		cv, ev		0.00
0.25	660.90	661.15	Limestone, shaley, nodular		ak, cs, es	y	0.25
1.05	661.15	662.20	Claystone, gy		cv, ev		0.00
0.70	662.20	662.90	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.40	662.90	663.30	Limestone, shaley, mosaic		ak, cs, es	y	0.40
1.65	663.30	664.95	Claystone, grn		cv, ev		0.00
1.95	664.95	666.90	Claystone, brn/ blk		cv, ev		0.00
0.25	666.90	667.15	Shale, blk w/ coal stks		ac, cv, ev		0.00
1.05	667.15	668.20	**Coal w/ bone, pyritic, ROOF COAL**		ac, cv, ev		0.00
0.49	668.20	668.69	Shale, blk/ dk gy		ac, cv, ev		0.00
0.25	668.69	668.94	Shale, brn/ blk		cm, em		0.00
0.15	668.94	669.09	Limestone, shaley, layered		ak, cs, es	y	0.15
4.88	669.09	673.97	**Coal w/ bone stks, PITTSBURGH No. 8**		ac, cv, ev		0.00
0.68	673.97	674.65	**Coal, pyritic**		ac, cv, ev		0.00
0.10	674.65	674.75	Shale, dk gy		cm, em		0.00
0.40	674.75	675.15	Shale, gy		cm, em		0.00
0.50	675.15	675.65	Shale, gy w/ ls nods		ak, cm, em		0.00
1.55	675.65	677.20	Limestone, nodular		ak, cs, es	y	0.00
2.30	677.20	679.50	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.20	679.50	680.70	Claystone, gy, sandy		cm, em		0.00
2.30	680.70	683.00	Shale, gy w/ ls nods		ak, cm, em		0.00
2.80	683.00	685.80	Sandstone, gy		cs, es	y	2.80
Total Depth		685.80					220.20

ORIGINAL

03425#3

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-14

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 220.20

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 32%

	Thickness (Ft.)	Percent (%)
Hard Rock	220.20	32%
Soft Rock	465.60	68%
	685.80	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	CaCO3 Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	193.31	1.90	1.62	59.4	-133.9
Coal	6.13	5.11	2.21	160.00	153.9
Bottom, 10 ft.	146.10	3.37	2.53	105.05	-41.1

ORIGINAL

00425-3

AEC 18221

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-18

Field Engineer: Kim Cecil
Surface Elevation: 1,224.59
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 681,638
Easting: 2,416,392
Drilling Company: Kerogen Resources

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
16.00	0.00	16.00	Casing				0.00
1.10	16.00	17.10	Sandstone, gy, massive	YES	cs, es	y	1.10
13.20	17.10	30.30	Claystone, red	YES	cv, ev		0.00
5.50	30.30	35.80	Shale, gy w/ ss stks		cs, es		0.00
2.40	35.80	38.20	Sandstone, gy w/ sh stks	YES	cs, es	y	2.40
9.90	38.20	48.10	Claystone, red	YES	cv, ev		0.00
5.90	48.10	54.00	Claystone, dk gy		cv, ev		0.00
2.00	54.00	56.00	Shale, red/ grn	YES	cm, em		0.00
3.00	56.00	59.00	Core loss				0.00
12.40	59.00	71.40	Claystone, red/ grn		cv, ev		0.00
6.90	71.40	78.30	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.40	78.30	80.70	Claystone, red/ ren, sandy		cs, es		0.00
28.80	80.70	109.50	Claystone, red/ gy		cv, ev		0.00
4.70	109.50	114.20	Shale, red/ grn		cm, em		0.00
7.80	114.20	122.00	Shale, red/ grn, sandy		cs, es		0.00
3.50	122.00	125.50	Shale, red		cm, em		0.00
2.35	125.50	127.85	Shale, blk/ dk gy, layered		ac, cm, em		0.00
0.10	127.85	127.95	Coal		ac, cv, ev		0.00
1.85	127.95	129.80	Limestone		cak, cs, es	y	1.85
2.00	129.80	131.80	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.40	131.80	132.20	Shale, dk gy, layered		cm, em		0.00
13.80	132.20	146.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.70	146.00	148.70	Claystone, red/ grn		cv, ev		0.00
0.80	148.70	149.50	Shale, blk		ac, cm, em		0.00
2.20	149.50	151.70	Coal w/ Sh, pyritic, WASHINGTON No. 13		ac, cv, ev		0.00
0.75	151.70	152.45	Shale, dk gy		cm, em		0.00
15.15	152.45	167.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
6.20	167.60	173.80	Claystone, red/ grn		cv, ev		0.00
3.20	173.80	177.00	Claystone, gy		cv, ev		0.00
43.30	177.00	220.30	Sandstone, gy w/ sh stks		cs, es	y	43.30
5.60	220.30	225.90	Shale, gy, conglomerate w/ iron nods		cs, es		0.00
0.80	225.90	226.70	Coal w/ sh layers		ac, cv, ev		0.00
1.10	226.70	227.80	Claystone, dk gy		cv, ev		0.00
1.40	227.80	229.20	Limestone		cak, cs, es	y	1.40
0.70	229.20	229.90	Claystone, grn		cv, ev		0.00
9.10	229.90	239.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.50	239.00	240.50	Shale, gy		cm, em		0.00
1.70	240.50	242.20	Shale, gy, sandy		cs, es		0.00
1.80	242.20	244.00	Sandstone, gy w/ sh stks		cs, es	y	1.80
9.50	244.00	253.50	Shale, red/ gy		cm, em		0.00
1.10	253.50	254.60	Limestone, nodular		cak, cs, es	y	1.10
7.70	254.60	262.30	Shale, gy		cm, em		0.00
1.70	262.30	264.00	Limestone, shaley, layered		cak, cs, es	y	1.70
4.70	264.00	268.70	Claystone, gy		cv, ev		0.00
0.80	268.70	269.50	Shale, dk gy, layered		cm, em		0.00
10.20	269.50	279.70	Shale, gy, sandy		cs, es		0.00
8.60	279.70	288.30	Sandstone, gy w/ sh stks		cs, es	y	8.60
0.70	288.30	289.00	Shale, gy, sandy		cs, es		0.00
3.00	289.00	292.00	Shale, gy		cm, em		0.00
0.60	292.00	292.60	Coal w/ sh stks, WAYNESBURGH No. 11		ac, cv, ev		0.00
2.10	292.60	294.70	Claystone, gy		cv, ev		0.00
1.80	294.70	296.50	Limestone		cak, cs, es	y	1.80

ORIGINAL

D042583

AEC 18222

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-16

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
5.10	296.50	301.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.20	301.60	305.80	Limestone, shaley, layered		cak, cs, es	y	4.20
1.00	305.80	306.80	Shale, gy		cm, em		0.00
2.00	306.80	308.80	Limestone, mosaic		cak, cs, es	y	2.00
2.20	308.80	311.00	Claystone, gy		cv, ev		0.00
2.10	311.00	313.10	Limestone, shaley, layered		cak, cs, es	y	2.10
3.50	313.10	316.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.40	316.60	321.00	Limestone, nodular		cak, cs, es	y	4.40
1.60	321.00	322.60	Shale, gy/ grn		cm, em		0.00
3.40	322.60	326.00	Claystone, gy		cv, ev		0.00
3.60	326.00	329.60	Shale, gy, sandy		cs, es		0.00
2.30	329.60	331.90	Shale, red/ grn		cm, em		0.00
6.90	331.90	338.80	Limestone, layered		cak, cs, es	y	6.90
0.90	338.80	339.70	Claystone, grn w/ ls nods		ak, cv, ev		0.00
6.40	339.70	346.10	Sandstone, gy w/ sh stks		cs, es	y	6.40
1.50	346.10	347.60	Shale, grn		cm, em		0.00
10.70	347.60	358.30	Limestone, shaley, layered		cak, cs, es	y	10.70
7.10	358.30	365.40	Claystone, grn w/ ls nods		ak, cv, ev		0.00
10.80	365.40	376.20	Claystone, grn		cv, ev		0.00
2.20	376.20	378.40	Claystone, grn w/ ls nods		ak, cv, ev		0.00
5.70	378.40	384.10	Limestone, shaley, layered		cak, cs, es	y	5.70
5.10	384.10	389.20	Claystone, grn w/ ls nods		ak, cv, ev		0.00
1.90	389.20	391.10	Claystone, grn		cv, ev		0.00
13.70	391.10	404.80	Limestone, nodular		cak, cs, es	y	13.70
2.90	404.80	407.70	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.90	407.70	410.60	Claystone, grn		cv, ev		0.00
5.50	410.60	416.10	Limestone, massive		cak, cs, es	y	5.50
4.10	416.10	420.20	Limestone, shaley, layered		cak, cs, es	y	4.10
2.50	420.20	422.70	Shale, grn w/ ls nods		ak, cm, em		0.00
2.20	422.70	424.90	Limestone, mosaic		cak, cs, es	y	2.20
0.90	424.90	425.80	Claystone, grn w/ ls nods		ak, cv, ev		0.00
12.50	425.80	438.30	Limestone, nodular		cak, cs, es	y	12.50
2.00	438.30	440.30	Claystone, brn/ blk		ac, cv, ev		0.00
1.40	440.30	441.70	**Coal w/ bone, pyritic, SEWICKLEY No. 9**		ac, cv, ev		0.00
0.20	441.70	441.90	**Shale, blk w/ coal stks**		ac, cm, em		0.00
1.40	441.90	443.30	**Coal w/ pyrite**		ac, cv, ev		0.00
1.00	443.30	444.30	Claystone, dk gy		cv, ev		0.00
2.00	444.30	446.30	Claystone, grn w/ ls nods		ak, cv, ev		0.00
3.40	446.30	449.70	Limestone, shaley, layered		cak, cs, es	y	3.40
11.10	449.70	460.80	Claystone, gy/ grn w/ ls nods		ak, cv, ev		0.00
0.60	460.80	461.40	**Coal w/ sh stks**		ac, cv, ev		0.00
0.50	461.40	461.90	Claystone, gy w/ ls nods		ak, cv, ev		0.00
11.40	461.90	473.30	Limestone, nodular		cak, cs, es	y	11.40
0.30	473.30	473.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
6.90	473.60	480.50	Limestone, nodular		cak, cs, es	y	6.90
2.30	480.50	482.80	Claystone, grn w/ ls nods		ak, cv, ev		0.00
1.80	482.80	484.60	Limestone, shaley, layered		cak, cs, es	y	1.80
11.40	484.60	496.00	Shale, gy/ grn w/ ls nods		ak, cm, em		0.00
4.40	496.00	500.40	Limestone, shaley, layered		ak, cs, es		0.00
2.10	500.40	502.50	Claystone, grn w/ ls nods		ak, cv, ev		0.00
0.70	502.50	503.20	Claystone, blk/ dk gy		ac, cv, ev		0.00
1.40	503.20	504.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.10	504.60	507.70	Limestone, massive		cak, cs, es	y	3.10
3.20	507.70	510.90	Claystone, gy		cv, ev		0.00
11.90	510.90	522.80	Limestone, shaley, layered		cak, cs, es	y	11.90
2.30	522.80	525.10	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.50	525.10	525.60	Limestone		cak, cs, es	y	0.50
5.00	525.60	530.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.10	530.60	530.70	Shale, blk		ac, cm, em		0.00
0.55	530.70	531.25	**Coal w/ bone layers, ROOF COAL**		ac, cv, ev		0.00
0.80	531.25	532.05	Shale, dk gy		cm, em		0.00
3.24	532.05	535.29	**Coal, PITTSBURGH No.8**		ac, cv, ev		0.00
1.51	535.29	536.80	**Coal w/ bone stks**		ac, cv, ev		0.00
0.80	536.80	537.60	Claystone, dk gy		cv, ev		0.00

ORIGINAL

B0425-3

AEC 18223

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-16

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
5.20	537.50	542.70	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.50	542.70	544.20	Sandstone, gy, churned		cs, es	y	1.50
1.70	544.20	545.90	Shale, gy, conglomerate w/ iron nods		cs, es		0.00
0.60	545.90	546.50	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.30	546.50	547.80	Shale, gy		cm, em		0.00
0.80	547.80	548.60	Shale, dk gy, layered		cm, em		0.00
0.40	548.60	549.00	Claystone, gy		cv, ev		0.00
4.50	549.00	553.50	Shale, gy w/ ss stks		cs, es		0.00
	Total Depth	553.50					185.95

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 185.95

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 34%

	Thickness (Ft.)	Percent (%)
Hard Rock:	185.95	34%
Soft Rock:	367.55	66%
	553.50	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	CaCO3 Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	339.11	1.50	1.24	46.8	-292.3
Coal	1.45	6.61	3.88	207.00	205.6
Bottom, 10 ft.	252.00	1.14	0.92	35.60	-216.4

ORIGINAL

00425 3

AEC 18224

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-24

Field Engineer: Kim Cecil
Surface Elevation: 1,140.00
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 682,935
Easting: 2,410,742
Drilling Company: Kerogen Resources

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
22.00	0.00	22.00	Casing				0.00
2.65	22.00	24.65	Shale, dk gy/ gy	YES	cm, em		0.00
0.55	24.65	25.20	Limestone, shaley	YES	ak, cs, es	y	0.55
0.30	25.20	25.50	Claystone, gy	YES	cv, ev		0.00
0.30	25.50	25.80	Limestone, shaley	YES	ak, cs, es	y	0.30
9.90	25.80	35.70	Claystone, gy	YES	cv, ev		0.00
1.60	35.70	37.30	Shale, blk w/ coal stks	YES	ac, cm, em		0.00
0.55	37.30	37.85	**Coal, WASHINGTON No. 12**	YES	ac, cv, ev		0.00
11.70	37.85	49.55	Claystone, gy	YES	cv, ev		0.00
2.80	49.55	52.35	Shale, gy w/ ss stks	YES	cs, es		0.00
52.85	52.35	105.20	Sandstone, gy		cs, es	y	52.85
0.50	105.20	105.70	Shale, gy, sandy		cs, es		0.00
6.20	105.70	111.90	Sandstone, gy		cs, es	y	6.20
6.60	111.90	118.50	Sandstone, gy w/ coal stks		cs, es	y	6.60
1.10	118.50	119.60	Shale, dk gy w/ coal stks		ac, cm, em		0.00
2.10	119.60	121.70	Sandstone, gy w/ coal stks		cs, es	y	2.10
19.40	121.70	141.10	Sandstone, gy w/ crossbeds		cs, es	y	19.40
1.40	141.10	142.50	Shale, gy w/ interbedded ss		cs, es		0.00
0.80	142.50	143.30	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
0.45	143.30	143.75	Sandstone, gy w/ sh stks		cs, es	y	0.45
2.15	143.75	145.90	Shale, gy w/ ls nods		ak, cm, em		0.00
2.95	145.90	148.85	Shale, gy, sandy w/ ls nods		ak, cs, es		0.00
7.15	148.85	156.00	Shale, blk/ dk gy		ac, cm, em		0.00
2.00	156.00	158.00	Shale, gy w/ ls nods		ak, cm, em		0.00
2.45	158.00	160.45	Shale, blk		ac, cm, em		0.00
3.25	160.45	163.70	Limestone, shaley, nodular		ak, cs, es	y	3.25
1.00	163.70	164.70	Shale, gy w/ ls nods		ak, cm, em		0.00
2.30	164.70	167.00	Claystone, gy/ grn		cv, ev		0.00
0.45	167.00	167.45	Shale, blk		ac, cm, em		0.00
3.05	167.45	170.50	Shale, gy		cm, em		0.00
2.40	170.50	172.90	Shale, gy w/ ss stks		cs, es		0.00
1.10	172.90	174.00	Sandstone, gy w/ sh stks		cs, es	y	1.10
3.10	174.00	177.10	Shale, gy		cm, em		0.00
1.40	177.10	178.50	Shale, gy w/ ss stks		cs, es		0.00
5.70	178.50	184.20	Claystone, gy		cv, ev		0.00
0.37	184.20	184.57	**Coal, WAYNESBURGH No. 11**		ac, cv, ev		0.00
0.43	184.57	185.00	Claystone, gy		cv, ev		0.00
1.20	185.00	186.20	Claystone, dk gy w/ ls nods		ak, cv, ev		0.00
0.80	186.20	187.00	Claystone, gy		cv, ev		0.00
8.05	187.00	195.05	Limestone, nodular		ak, cs, es	y	8.05
6.45	195.05	201.50	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.10	201.50	206.60	Claystone, gy		cv, ev		0.00
1.05	206.60	207.65	Shale, grn, sandy		cs, es		0.00
4.95	207.65	212.60	Limestone, shaley		ak, cs, es	y	4.95
3.75	212.60	216.35	Shale, dk gy/ gy/ grn		cm, em		0.00
2.80	216.35	219.15	Sandstone, gy w/ sh stks		cs, es	y	2.80
3.85	219.15	223.00	Claystone, gy/ grn		cv, ev		0.00
5.70	223.00	228.70	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.50	228.70	232.20	Shale, gy/ grn		cm, em		0.00
5.80	232.20	238.00	Shale, grn w/ ss stks		cs, es		0.00
8.30	238.00	246.30	Limestone, shaley, nodular		ak, cs, es	y	8.30
2.50	246.30	248.80	Claystone, gy w/ ls nods		ak, cv, ev		0.00

ORIGINAL

00425-3

AEC 18225

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-3001-24

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
0.60	248.80	249.40	Claystone, red/ grn		cv, ev		0.00
9.75	249.40	259.15	Claystone, gy/ grn		cv, ev		0.00
6.85	259.15	266.00	Limestone, shaley, layered		ak, cs, es	y	6.85
2.80	266.00	268.80	Shale, gy/ grn		cm, em		0.00
2.15	268.80	270.95	Sandstone, gy w/ sh stks		cs, es	y	2.15
2.35	270.95	273.30	Shale, gy w/ ss stks		cs, es		0.00
1.20	273.30	274.50	Shale, grn, sandy, limey		ak, cs, es		0.00
1.50	274.50	276.00	Shale, grn w/ ls nods		ak, cm, em		0.00
4.70	276.00	280.70	Limestone, shaley, layered		ak, cs, es	y	4.70
4.60	280.70	285.30	Shale, grn w/ ls nods		ak, cm, em		0.00
12.30	285.30	297.60	Limestone		ak, cs, es	y	12.30
1.85	297.60	299.85	Shale, gy, limey		ak, cm, em		0.00
10.30	299.85	309.15	Limestone, nodular		ak, cs, es	y	10.30
2.35	309.15	311.50	Shale, gy/ grn		cm, em		0.00
3.15	311.50	314.65	Limestone, massic		ak, cs, es	y	3.15
1.65	314.65	316.30	Shale, gy		cm, em		0.00
7.70	316.30	324.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.45	324.00	328.45	Shale, dk gy w/ ls nods		ak, cm, em		0.00
0.70	328.45	329.15	Claystone, blk w/ ls nods		ak, cv, ev		0.00
0.30	329.15	329.45	Shale, blk w/ coal stks		ac, cm, em		0.00
3.10	329.45	332.55	**Coal w/ bone/ shale, SEWICKLEY No. 9**		ac, cv, ev		0.00
4.00	332.55	336.55	Shale, dk gy		cm, em		0.00
2.65	336.55	339.20	Shale, gy w/ interbedded ss		cs, es		0.00
4.65	339.20	343.85	Shale, gy		cm, em		0.00
3.90	343.85	347.75	Shale, gy w/ ls nods		ak, cm, em		0.00
8.00	347.75	355.75	Shale, dk gy/ gy		cm, em		0.00
0.70	355.75	356.45	Limestone, massive		ak, cs, es	y	0.70
1.43	356.45	357.88	**Coal, shaley**		ac, cv, ev		0.00
0.62	357.88	358.50	Shale, blk/ dk gy		cm, em		0.00
15.00	358.50	373.50	Limestone, nodular		ak, cs, es	y	15.00
9.15	373.50	382.65	Shale, gy/ grn w/ ls nods		ak, cm, em		0.00
0.20	382.65	382.85	Shale, gy w/ interbedded ss		cs, es		0.00
1.05	382.85	383.90	Shale, dk gy		cm, em		0.00
4.75	383.90	388.65	Shale, gy w/ ls nods		ak, cm, em		0.00
4.50	388.65	393.15	Claystone, dk gy w/ ls nods		ak, cv, ev		0.00
0.60	393.15	393.75	Shale, blk w/ coal stks		ac, cm, em		0.00
0.65	393.75	394.40	Shale, dk gy		cm, em		0.00
1.10	394.40	395.50	Claystone, gy, sandy		cm, em		0.00
0.85	395.50	396.35	Shale, dk gy, limey		ak, cm, em		0.00
6.30	396.35	402.65	Limestone, nodular		ak, cs, es	y	6.30
0.60	402.65	403.25	Claystone, gy		cv, ev		0.00
8.60	403.25	411.85	Limestone, shaley		ak, cs, es	y	8.60
4.62	411.85	416.47	Shale, gy w/ ls nods		ak, cm, em		0.00
1.15	416.47	417.62	Limestone, shaley, nodular		ak, cs, es	y	1.15
2.77	417.62	420.39	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.25	420.39	421.64	Claystone, gy		cv, ev		0.00
1.40	421.64	423.04	Claystone, blk/ tan		ac, cv, ev		0.00
0.39	423.04	423.43	**Bone w/ coal, ROOF COAL**		ac, cv, ev		0.00
0.72	423.43	424.15	Shale, dk gy		cm, em		0.00
0.65	424.15	424.80	Shale, blk w/ coal stks		ac, cm, em		0.00
3.71	424.80	428.51	**Coal, PITTSBURGH No.8**		ac, cv, ev		0.00
1.14	428.51	429.65	**Coal w/ pyrite**		ac, cv, ev		0.00
0.10	429.65	429.75	Shale, blk w/ coal stks		ac, cm, em		0.00
1.69	429.75	431.44	Shale, gy w/ ls nods		ak, cm, em		0.00
2.30	431.44	433.74	Limestone, shaley, nodular		ak, cs, es	y	2.30
3.51	433.74	437.25	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.05	437.25	440.30	Shale, gy, sandy		cs, es		0.00
1.40	440.30	441.70	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.95	441.70	442.65	Limestone, shaley, nodular		ak, cs, es	y	0.95
3.95	442.65	446.60	Shale, gy, sandy		cs, es		0.00
	Total Depth	446.60					131.35

ORIGINAL

004298

AEC 18226

ATTACHMENT 13

DIAMOND DRILL HOLE: AEC-2001-24

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 191.35

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 43%

	Thickness (Ft.)	Percent (%)
Hard Rock:	191.35	43%
Soft Rock:	255.25	57%
	446.60	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	CaCO3 Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	155.69	1.29	1.11	40.2	-115.5
Coal	1.25	5.26	2.10	164.00	162.8
Bottom, 10 ft.	443.50	1.16	1.12	36.25	-407.3

ORIGINAL

ATTACHMENT 13
DIAMOND DRILL HOLE: ASC-2001-28

Field Engineer: Kim Cecil
Surface Elevation: 1,220.00
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 682,930
Easting: 2,413,493
Drilling Company: Kerogen Resources

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
28.00	0.00	28.00	Casing				0.00
1.90	28.00	29.90	Claystone, gy w/ ls nods	YES	ak, cv, ev		0.00
19.25	29.90	49.15	Claystone, red/ gy w/ ls nods	YES	ak, cv, ev		0.00
4.90	49.15	54.05	Shale, gy w/ ls nods		ak, cm, em		0.00
4.10	54.05	58.15	Shale, gy, sandy, limey		ak, cm, em		0.00
7.40	58.15	65.55	Sandstone, gy w/ crossbeds		cs, es	y	7.40
1.30	65.55	66.85	Shale, gy w/ ls nods		ak, cm, em		0.00
0.80	66.85	67.65	Shale, gy		cm, em		0.00
1.00	67.65	68.65	Shale, gy w/ ss stks		cs, es		0.00
10.10	68.65	78.75	Claystone, gy/ grn		cv, ev		0.00
2.90	78.75	81.65	Claystone, gy w/ ls nods		ak, cv, ev		0.00
8.95	81.65	90.60	Claystone, red/ gy		cv, ev		0.00
3.60	90.60	94.20	Shale, gy w/ ss stks		cs, es		0.00
9.45	94.20	103.65	Shale, gy, sandy, limey		ak, cs, es		0.00
1.75	103.65	105.40	Shale, dk gy		cm, em		0.00
0.93	105.40	106.33	**Coal w/ bone stks**		ac, cv, ev		0.00
0.53	106.33	106.86	Shale, dk gy		cm, em		0.00
1.15	106.86	108.01	Shale, gy w/ ls nods		ak, cm, em		0.00
0.80	108.01	108.81	Claystone, gy		cv, ev		0.00
2.00	108.81	110.81	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.05	110.81	114.86	Shale, gy w/ ss stks		cs, es		0.00
1.85	114.86	116.71	Shale, gy, sandy, limey		ak, cs, es		0.00
6.50	116.71	123.21	Shale, dk gy/ gy		cm, em		0.00
1.00	123.21	124.21	Shale, blk		ac, cm, em		0.00
1.71	124.21	125.92	**Coal w/ bone and sh layers, WASHINGTON No. 12**		ac, cv, ev		0.00
1.00	125.92	126.92	Shale, blk/ dk gy		ac, cm, em		0.00
8.90	126.92	135.82	Claystone, gy		cv, ev		0.00
5.00	135.82	140.82	Shale, gy w/ ss stks		cs, es		0.00
47.90	140.82	188.72	Sandstone, gy w/ sh stks		cs, es	y	47.90
1.50	188.72	190.22	Shale, gy w/ ss stks		cs, es		0.00
7.65	190.22	197.87	Sandstone, gy w/ sh stks		cs, es	y	7.65
0.60	197.87	198.47	**Coal w/ bone**		ac, cv, ev		0.00
0.95	198.47	199.42	Shale, dk gy/ gy		cm, em		0.00
7.05	199.42	206.47	Shale, gy w/ ls nods		ak, cm, em		0.00
3.60	206.47	210.07	Shale, gy		cm, em		0.00
11.55	210.07	221.62	Shale, gy w/ ss stks		cs, es		0.00
7.10	221.62	228.72	Sandstone, gy w/ crossbeds		cs, es	y	7.10
2.55	228.72	231.27	Shale, gy		cm, em		0.00
3.75	231.27	235.02	Shale, dk gy w/ ss stks		cs, es		0.00
7.90	235.02	242.92	Shale, gy w/ ls nods		ak, cm, em		0.00
6.25	242.92	249.17	Shale, dk gy		cm, em		0.00
0.85	249.17	250.02	Limestone, shaley, layered		ak, cs, es	y	0.85
1.05	250.02	251.07	Shale, dk gy/ gy		cm, em		0.00
3.45	251.07	254.52	Shale, gy w/ ls nods		ak, cm, em		0.00
1.15	254.52	255.67	Shale, blk		ac, cm, em		0.00
0.65	255.67	256.32	Limestone, shaley, nodular		ak, cs, es	y	0.65
8.15	256.32	264.47	Shale, gy		cm, em		0.00
4.00	264.47	268.47	Shale, gy w/ ss stks		cs, es		0.00
4.25	268.47	272.72	Shale, dk gy/ gy		cm, em		0.00
0.40	272.72	273.12	**Coal w/ bone, WAYNESBURGH No. 11**		ac, cv, ev		0.00
3.80	273.12	276.92	Shale, gy w/ ls nods		ak, cm, em		0.00
1.50	276.92	278.42	Limestone, shaley, nodular		ak, cs, es	y	1.50
5.90	278.42	284.32	Shale, dk gy/ gy w/ ls nods		ak, cm, em		0.00
4.05	284.32	288.37	Limestone, nodular		ak, cs, es	y	4.05
11.65	288.37	300.02	Claystone, dk gy/ gy w/ ls nods		ak, cv, ev		0.00
2.10	300.02	302.12	Limestone, shaley, nodular		ak, cs, es	y	2.10

ATTACHMENT 13
DIAMOND DRILL HOLE: AEC-2001-35

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
2.60	302.12	304.72	Claystone, gy, limey		ak, cv, ev		0.00
1.35	304.72	306.07	Shale, gy, sandy		cs, es		0.00
1.85	306.07	307.92	Sandstone, gy, massive		ak, cs, es	y	1.85
4.25	307.92	312.17	Claystone, red/ gy		cv, ev		0.00
10.45	312.17	322.62	Shale, gy w/ ls nods		ak, cm, em		0.00
2.00	322.62	324.62	Shale, gy, sandy		cs, es		0.00
5.65	324.62	330.27	Sandstone, gy w/ sh stks		cs, es	y	5.65
1.35	330.27	331.62	Limestone, nodular		ak, cs, es	y	1.35
6.40	331.62	338.02	Shale, gy w/ ls nods		ak, cm, em		0.00
7.20	338.02	345.22	Claystone, red/ gy		cv, ev		0.00
5.75	345.22	350.97	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.60	350.97	352.57	Claystone, gy, sandy w/ ls nods		ak, cv, ev		0.00
4.75	352.57	357.32	Shale, gy w/ ss stks		cs, es		0.00
1.15	357.32	358.47	Shale, gy, sandy, limey		ak, cs, es		0.00
2.70	358.47	361.17	Shale, gy		cm, em		0.00
12.00	361.17	373.17	Claystone, gy w/ ls nods		ak, cv, ev		0.00
30.10	373.17	403.27	Limestone, layered		ak, cs, es	y	30.10
2.75	403.27	406.02	Shale, gy w/ ls nods		ak, cm, em		0.00
12.10	406.02	418.12	Limestone, Shaley, nodular		ak, cs, es	y	12.10
4.90	418.12	423.02	Shale, dk gy/ gy w/ ls nods		ak, cm, em		0.00
1.65	423.02	424.67	Shale, dk gy w/ coal stks		ac, cm, em		0.00
3.65	424.67	428.32	**Coal w/ bone layers, SEWICKLEY No. 9**		ac, cv, ev		0.00
4.10	428.32	432.42	Shale, gy/ grn		cm, em		0.00
8.05	432.42	440.47	Shale, gy w/ ss stks		cs, es		0.00
11.15	440.47	451.62	Claystone, dk gy/ gy w/ ls nods		ak, cv, ev		0.00
0.57	451.62	452.19	**Coal w/ bone stks**		ac, cv, ev		0.00
1.00	452.19	453.19	Shale, blk/ dk gy, limey		ak, cm, em		0.00
19.90	453.19	473.09	Limestone, nodular		ak, cs, es	y	19.90
1.65	473.09	474.74	Claystone, grn w/ ls nods		ak, cv, ev		0.00
2.60	474.74	477.34	Shale, gy, sandy		cs, es		0.00
2.20	477.34	479.54	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.10	479.54	481.64	Limestone, shaley, nodular		ak, cs, es	y	2.10
2.90	481.64	484.54	Claystone, gy/ grn		cv, ev		0.00
0.45	484.54	484.99	Shale, gy/ grn w/ ls nods		ak, cm, em		0.00
0.30	484.99	485.29	Shale, dk gy		cm, em		0.00
0.55	485.29	485.84	**Coal w/ sh layers**		ac, cv, ev		0.00
0.40	485.84	486.24	Shale, dk gy		cm, em		0.00
1.25	486.24	487.49	Shale, gy, limey, sandy		ak, cs, es		0.00
6.00	487.49	493.49	Limestone, nodular		ak, cs, es	y	6.00
0.45	493.49	493.94	Claystone, gy w/ ls nods		ak, cv, ev		0.00
7.75	493.94	501.69	Limestone, shaley, nodular		ak, cs, es	y	7.75
1.55	501.69	503.24	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.50	503.24	505.74	Claystone, gy		cv, ev		0.00
0.50	505.74	506.24	Claystone, brn/ blk		ac, cv, ev		0.00
0.15	506.24	506.39	Shale, blk		ac, cm, em		0.00
0.80	506.39	507.19	**Coal w/ sh layers, ROOF COAL**		ac, cv, ev		0.00
1.10	507.19	508.29	Shale, blk/ dk gy		ac, cm, em		0.00
2.10	508.29	510.39	**Bone w/ coal stks, PITTSBURGH No.8**		ac, cv, ev		0.00
2.74	510.39	513.13	**Coal**		ac, cv, ev		0.00
0.18	513.13	513.31	**Coal w/ bone stks**		ac, cv, ev		0.00
0.10	513.31	513.41	Shale, dk gy		cm, em		0.00
0.60	513.41	514.01	Shale, dk gy w/ ls nods		ak, cm, em		0.00
0.90	514.01	514.91	Limestone, shaley		ak, cs, es	y	0.90
2.20	514.91	517.11	Shale, gy w/ ls nods		ak, cm, em		0.00
0.50	517.11	517.61	Limestone, shaley		ak, cs, es	y	0.50
0.70	517.61	518.31	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.65	518.31	519.96	Limestone, shaley		ak, cs, es	y	1.65
3.60	519.96	523.56	Shale, gy, sandy, limey		ak, cs, es		0.00
Total Depth		523.56					169.05

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

ORIGINAL

ATTACHMENT 13
DIAMOND DRILL HOLE: AEC-2001-28

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
Total Thickness of Hard Rock Overlying Mining Unit							169.05
Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit							32%

	Thickness (Ft.)	Percent (%)
Hard Rock:	169.05	32%
Soft Rock:	354.51	68%
	523.56	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as CaCO3	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	CaCO3 Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	175.45	1.99	1.63	62.1	-113.4
Coal	4.33	5.46	2.57	171.00	166.7
Bottom, 10 ft.	493.50	1.72	1.48	53.75	-439.8

ORIGINAL

00425-3

AEC 18230

ATTACHMENT 13

DIAMOND DRILL HOLE: CLC 2001-29

Field Engineer: Ken Cecil
Surface Elevation: 1,210.16
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 681,382
Easting: 2,419,418
Drilling Company: Keragen Resources

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
25.00	0.00	25.00	Casing				0.00
7.00	25.00	32.00	Claystone, gy, sandy		cm, em		0.00
10.00	32.00	42.00	Shale, gy, sandy	YES	cs, es		0.00
3.30	42.00	45.30	Shale, gy	YES	cm, em		0.00
4.10	45.30	49.40	Shale, red/ grn		cm, em		0.00
0.70	49.40	50.10	Shale, dk gy		cm, em		0.00
3.40	50.10	53.50	Claystone, gy w/ is nods		ak, cv, ev		0.00
0.80	53.50	54.30	Limestone		ak, cs, es	y	0.80
8.70	54.30	63.00	Claystone, red/ gy/ grn w/ is nods		ak, cv, ev		0.00
6.80	63.00	69.80	Claystone, gy w/ is nods		ak, cv, ev		0.00
7.60	69.80	77.40	Claystone, red w/ is nods		ak, cv, ev		0.00
6.60	77.40	84.00	Claystone, red/ gy/ grn w/ is nods		ak, cv, ev		0.00
11.20	84.00	95.20	Shale, gy w/ is nods		ak, cm, em		0.00
1.40	95.20	96.60	Claystone, red/ grn		cv, ev		0.00
5.40	96.60	102.00	Shale, gy		cm, em		0.00
0.50	102.00	102.50	Limestone, shaley, layered		ak, cs, es	y	0.50
2.50	102.50	105.00	Claystone, gy w/ is nods		ak, cv, ev		0.00
1.10	105.00	106.10	Limestone		ak, cs, es	y	1.10
10.20	106.10	116.30	Claystone, red/ grn/ gy w/ is nods		ak, cv, ev		0.00
5.60	116.30	121.90	Shale, gy		cm, em		0.00
1.10	121.90	123.00	Claystone, red/ grn		cv, ev		0.00
5.20	123.00	128.20	Shale, gy, sandy		cs, es		0.00
4.20	128.20	132.40	Shale, red		cm, em		0.00
4.50	132.40	136.90	Shale, gy, sandy, slumped		cs, es		0.00
1.10	136.90	138.00	Shale, gy		cm, em		0.00
4.50	138.00	142.50	Claystone, gy w/ is nods		ak, cv, ev		0.00
0.60	142.50	143.10	Shale, gy		cm, em		0.00
0.10	143.10	143.20	Shale, blk w/ coal stks		ac, cm, em		0.00
2.10	143.20	145.30	Limestone, shaley, layered		ak, cs, es	y	2.10
6.30	145.30	151.60	Claystone, gy w/ is nods		ak, cv, ev		0.00
1.10	151.60	152.70	Claystone, dk gy		cv, ev		0.00
0.10	152.70	152.80	Bone		ac, cv, ev		0.00
4.20	152.80	157.00	Claystone, gy w/ is nods		ak, cv, ev		0.00
0.80	157.00	157.80	Claystone, dk gy		cv, ev		0.00
0.50	157.80	158.30	Shale, blk		ac, cm, em		0.00
0.30	158.30	158.60	Coal		ac, cv, ev		0.00
0.40	158.60	159.00	Claystone, dk gy		cv, ev		0.00
2.00	159.00	161.00	Coal w/ bone stks, WASHINGTON No. 12		ac, cv, ev		0.00
8.00	161.00	169.00	Claystone, gy w/ is nods		ak, cv, ev		0.00
6.70	169.00	175.70	Shale, gy w/ ss stks		cs, es		0.00
6.00	175.70	181.70	Shale, gy		cm, em		0.00
4.70	181.70	186.40	Shale, gy w/ ss stks		cs, es		0.00
2.00	186.40	188.40	Shale, gy, sandy, slumped		cs, es		0.00
28.40	188.40	216.80	Sandstone, gy, massive		cs, es	y	28.40
8.70	216.80	225.50	Shale, dk gy w/ ss stks		cs, es		0.00
0.50	225.50	226.00	Sandstone, gy w/ coal spars		cs, es	y	0.50
1.80	226.00	227.80	Shale, gy		cm, em		0.00
0.90	227.80	228.70	Coal w/ bone stks, WAYNESBURG "A"		ac, cv, ev		0.00
0.80	228.70	229.50	Limestone, shaley, layered		ak, cs, es	y	0.80
0.90	229.50	230.40	Claystone, dk gy w/ is nods		ak, cv, ev		0.00
2.10	230.40	232.50	Limestone		ak, cs, es	y	2.10
6.70	232.50	239.20	Claystone, gy w/ is nods		ak, cv, ev		0.00

ORIGINAL

AEC 18231

ATTACHMENT 13

DIAMOND DRILL HOLE: CLC 3901-29

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
1.50	239.20	240.80	Sandstone, gy w/ sh stks		cs, es	y	1.60
7.40	240.80	248.20	Shale, gy w/ ss stks		cs, es		0.00
0.60	248.20	248.80	Sandstone, gy w/ sh stks		cs, es	y	0.60
3.10	248.80	251.90	Shale, red/ grn/ gy		cm, em		0.00
5.90	251.90	257.80	Shale, gy w/ ss stks		cs, es		0.00
3.50	257.80	261.30	Shale, dk gy/ gy		cm, em		0.00
1.20	261.30	262.50	Limestone, shaley, layered		ak, cs, es	y	1.20
5.10	262.50	267.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.30	267.60	267.90	Shale, blk		ac, cm, em		0.00
1.60	267.90	269.50	Shale, gy, sandy		cs, es		0.00
18.50	269.50	288.00	Sandstone, gy w/ sh stks		cs, es	y	18.50
4.70	288.00	292.70	Shale, gy w/ ss stks		cs, es		0.00
0.60	292.70	293.30	Shale, dk gy		cm, em		0.00
1.70	293.30	295.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.60	295.00	296.60	Limestone		ak, cs, es	y	1.60
3.70	296.60	300.30	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.50	300.30	302.80	Limestone, shaley, layered		ak, cs, es	y	2.50
1.60	302.80	304.40	Limestone, massive		ak, cs, es	y	1.60
1.00	304.40	305.40	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.90	305.40	307.30	Limestone, mosaic		ak, cs, es	y	1.90
3.70	307.30	311.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.90	311.00	312.90	Limestone, shaley, layered		ak, cs, es	y	1.90
0.70	312.90	313.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.40	313.60	314.00	Limestone, shaley		ak, cs, es	y	0.40
3.40	314.00	317.40	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.60	317.40	319.00	Limestone, massive		ak, cs, es	y	1.60
2.90	319.00	321.90	Claystone, gy w/ ls nods		ak, cv, ev		0.00
2.00	321.90	323.90	Claystone, gy/ grn		cv, ev		0.00
1.40	323.90	325.30	Shale, gy w/ ss stks		cs, es		0.00
1.20	325.30	326.50	Sandstone, gy w/ sh stks		cs, es	y	1.20
0.70	326.50	327.20	Shale, gy w/ ss stks		cs, es		0.00
2.00	327.20	329.20	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.50	329.20	330.70	Shale, red/ gy/ grn		cm, em		0.00
3.20	330.70	333.90	Claystone, gy w/ ls nods		ak, cv, ev		0.00
0.80	333.90	334.70	Limestone		ak, cs, es	y	0.80
3.30	334.70	338.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.30	338.00	341.30	Claystone, gy, sandy w/ ls nods		ak, cm, em		0.00
3.10	341.30	344.40	Shale, gy w/ ss stks		cs, es		0.00
1.50	344.40	345.90	Sandstone, gy w/ sh stks		cs, es	y	1.50
1.00	345.90	346.90	Claystone, gy		cv, ev		0.00
1.60	346.90	348.50	Limestone, shaley, layered		ak, cs, es	y	1.60
2.30	348.50	350.80	Claystone, gy w/ ls nods		ak, cv, ev		0.00
7.10	350.80	357.90	Limestone, nodular		ak, cs, es	y	7.10
0.90	357.90	358.80	Claystone, gy w/ ls nods		ak, cv, ev		0.00
1.20	358.80	360.00	Limestone, massive		ak, cs, es	y	1.20
1.30	360.00	361.30	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.00	361.30	366.30	Limestone, shaley, layered		ak, cs, es	y	5.00
1.00	366.30	367.30	Sandstone, gy w/ sh stks		cs, es	y	1.00
2.40	367.30	369.70	Shale, gy w/ ss stks		cs, es		0.00
1.40	369.70	371.10	Limestone		ak, cs, es	y	1.40
2.30	371.10	373.40	Claystone, gy/ grn w/ ls nods		ak, cv, ev		0.00
0.20	373.40	373.60	Shale, dk gy, layered		cm, em		0.00
2.40	373.60	376.00	Claystone, gy w/ ls nods		ak, cv, ev		0.00
5.70	376.00	381.70	Limestone, massive		ak, cs, es	y	5.70
8.60	381.70	390.30	Claystone, gy/ grn w/ ls nods		ak, cv, ev		0.00
3.20	390.30	393.50	Limestone, massive		ak, cs, es	y	3.20
7.10	393.50	400.60	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.60	400.60	405.20	Limestone, shaley, layered		ak, cs, es	y	4.60
4.30	405.20	409.50	Claystone, gy w/ ls nods		ak, cv, ev		0.00
9.50	409.50	419.00	Limestone, shaley, layered		ak, cs, es	y	9.50
1.20	419.00	420.20	Claystone, dk gy/ gy w/ ls nods		ak, cv, ev		0.00
16.20	420.20	436.40	Limestone, shaley, layered		ak, cs, es	y	16.20
4.45	436.40	440.85	Claystone, gy/ grn		cv, ev		0.00
3.00	440.85	443.85	Coal w/ bone and sh layers, SEWICKLEY No. 9		ac, cv, ev		0.00

ORIGINAL

AEC 18232

ATTACHMENT 13

DIAMOND DRILL HOLE: CLC 2001-29

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
3.85	443.85	447.70	Claystone, gy w/ ls nods		ak, cv, ev		0.00
3.40	447.70	451.10	Sandstone, gy, slumped		cs, es	y	3.40
4.90	451.10	456.00	Shale, gy, sandy		cs, es		0.00
8.10	456.00	464.10	Shale, gy		cm, em		0.00
0.45	464.10	464.55	Shale, dk gy, layered		cm, em		0.00
3.20	464.55	467.75	**Coal w/ sh layers**		ac, cv, ev		0.00
0.85	467.75	468.60	Claystone, dk gy		cv, ev		0.00
17.20	468.60	485.80	Limestone, shaley, layered		ak, cs, es	y	17.20
1.10	485.80	486.90	Claystone, grn w/ ls nods		ak, cv, ev		0.00
5.90	486.90	492.80	Sandstone, gy, churned		cs, es	y	5.90
3.60	492.80	496.40	Shale, gy w/ interbedded ss		cs, es		0.00
1.90	496.40	498.30	Shale, gy, w/ ls nods		ak, cm, em		0.00
1.80	498.30	500.10	Limestone, massive		ak, cs, es	y	1.80
6.50	500.10	506.60	Claystone, grn		cv, ev		0.00
0.30	506.60	506.90	Shale, blk		ac, cm, em		0.00
0.40	506.90	507.30	Limestone, nodular		ak, cs, es	y	0.40
1.40	507.30	508.70	Claystone, gy		cv, ev		0.00
2.00	508.70	510.70	Claystone, grn w/ ls nods		ak, cv, ev		0.00
3.50	510.70	514.20	Claystone, gy/ grn		cv, ev		0.00
0.40	514.20	514.60	Shale, blk		ac, cm, em		0.00
1.28	514.60	515.88	**Coal w/ pyrite, ROOF COAL**		ac, cv, ev		0.00
0.87	515.88	516.75	Claystone, dk gy/ gy		cv, ev		0.00
2.00	516.75	518.75	**Coal w/ pyrite, PITTSBURGH No. 8**		ac, cv, ev		0.00
3.70	518.75	522.45	**Coal w/ bone**		ac, cv, ev		0.00
0.15	522.45	522.60	Claystone, blk		ac, cv, ev		0.00
2.10	522.60	524.70	Claystone, dk gy/ gy		cv, ev		0.00
1.10	524.70	525.80	Limestone		ak, cs, es	y	1.10
1.40	525.80	527.20	Claystone, gy w/ ls nods		ak, cv, ev		0.00
4.10	527.20	531.30	Claystone, gy		cv, ev		0.00
1.00	531.30	532.30	Shale, gy, sandy		cs, es		0.00
1.90	532.30	534.20	Sandstone, gy w/ sh stks		cs, es	y	1.90
0.80	534.20	535.00	Shale, gy, sandy		cs, es		0.00
0.70	535.00	535.70	Sandstone, gy w/ sh stks		cs, es	y	0.70
	Total Depth	535.70					162.10

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 162.10

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 30%

	Thickness (Ft.)	Percent (%)
Hard Rock:	162.10	30%
Soft Rock:	373.60	70%
	535.70	

ORIGINAL

00425-3

AEC 18233

ATTACHMENT 13

DIAMOND DRILL HOLE: N94-41

Field Engineer: William Siplivey
Surface Elevation: 1,149.20
Drill Hole Coordinates (State Plane 1927 NA Datum)
Northing: 674,396
Easting: 2,413,650
Drilling Company: LJ Hughes and Sons, Inc.

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
30.00	0.00	30.00	Casing				0.00
20.00	30.00	40.00	Claystone, red/grn	YES	cv, ev		0.00
20.00	40.00	60.00	Claystone, gy	YES	cv, ev		0.00
7.80	60.00	67.80	Claystone, grn	YES	cv, ev		0.00
0.90	67.80	68.70	Sandstone, gy		cs, es	y	0.90
10.00	68.70	78.70	Claystone, gy		cv, ev		0.00
1.00	78.70	79.70	**Coal, WASHINGTON No. 12**		ac, cv, ev		0.00
10.30	79.70	90.00	Claystone, gy		cv, ev		0.00
5.00	90.00	95.00	Claystone, grn		cv, ev		0.00
61.25	95.00	156.25	Sandstone, gy		cs, es	y	61.25
0.10	156.25	156.35	**Coal**		ac, cv, ev		0.00
0.60	156.35	156.95	Sandstone, gy		cs, es	y	0.60
0.20	156.95	157.15	Shale, gy w/ coal stks		cm, em		0.00
0.70	157.15	157.85	**Coal**		ac, cv, ev		0.00
0.80	157.85	158.65	Shale, gy w/ ls nods		ak, cm, em		0.00
2.00	158.65	160.65	Limestone		ak, cs, es	y	2.00
28.35	160.65	189.00	Claystone, grn w/ ls nods		ak, cv, ev		0.00
1.00	189.00	190.00	Limestone		ak, cs, es	y	1.00
1.00	190.00	191.00	Shale, grn		cm, em		0.00
8.60	191.00	199.60	Sandstone, gy w/ sh stks		cs, es	y	8.60
1.00	199.60	200.60	Shale, gy		cm, em		0.00
5.05	200.60	205.65	Limestone w/ sh layers		ak, cs, es	y	5.05
4.35	205.65	210.00	Claystone, gy		cv, ev		0.00
4.50	210.00	214.50	Shale, gy, sandy		cs, es		0.00
3.65	214.50	218.15	Sandstone, gy		cs, es	y	3.65
1.95	218.15	220.10	Shale, gy, sandy		cs, es		0.00
5.70	220.10	225.80	Shale, gy		cm, em		0.00
0.30	225.80	226.10	**coal, WAYNESBURG No. 11**		ac, cv, ev		0.00
3.90	226.10	230.00	Claystone, gy		cv, ev		0.00
20.40	230.00	250.40	Limestone w/ claystone stks		ak, cs, es	y	20.40
2.70	250.40	253.10	Claystone, grn		cv, ev		0.00
5.10	253.10	258.20	Limestone w/ claystone stks		ak, cs, es	y	5.10
16.35	258.20	274.55	Shale, red/grn		cm, em		0.00
8.75	274.55	283.30	Shale, grn		cm, em		0.00
11.50	283.30	294.80	Limestone		ak, cs, es	y	11.50
10.00	294.80	304.80	Claystone, grn, limey		ak, cv, ev		0.00
2.20	304.80	307.00	Sandstone, gy w/ sh stks		cs, es	y	2.20
8.10	307.00	315.10	Limestone w/ claystone stks		ak, cs, es	y	8.10
5.40	315.10	320.50	Claystone, grn, limey		ak, cv, ev		0.00
9.50	320.50	330.00	Limestone w/ claystone stks		ak, cs, es	y	9.50
10.00	330.00	340.00	Limestone		ak, cs, es	y	10.00
2.00	340.00	342.00	Claystone, grn		cv, ev		0.00
14.70	342.00	356.70	Limestone, nodular		ak, cs, es	y	14.70
10.00	356.70	366.70	Claystone, grn w/ ls nods		ak, cv, ev		0.00
3.55	366.70	370.25	Claystone, gy		cv, ev		0.00
1.50	370.25	372.05	**Coal, SEWICKLEY No. 9**		ac, cv, ev		0.00
3.40	372.05	375.45	Claystone, gy		cv, ev		0.00
14.55	375.45	390.00	Shale, grn w/ ss bands		cs, es		0.00
3.30	390.00	393.30	Shale, gy, sandy		cs, es		0.00
3.70	393.30	397.00	Shale, gy		cm, em		0.00
1.15	397.00	398.15	Claystone, gy		cv, ev		0.00
0.10	398.15	398.25	**Coal**		ac, cv, ev		0.00

ORIGINAL

004258

AEC 18234

ATTACHMENT 13

DIAMOND DRILL HOLE: N94-41

Thickness (ft.)	Depth From (ft.)	To (ft.)	Strata	Water Bearing	Physical Properties	HR	Thickness of Hard Rock (ft.)
0.33	398.25	398.58	Shale, gy		cm, em		0.00
0.85	398.58	399.43	Coal, bony w/ pyrite		ac, cv, ev		0.00
0.17	399.43	399.60	Shale, gy		cm, em		0.00
1.30	399.60	400.90	Coal, bony		ac, cv, ev		0.00
0.30	400.90	401.20	Shale, gy		cm, em		0.00
0.45	401.20	401.65	Coal, bony		ac, cv, ev		0.00
0.50	401.65	402.15	Shale, gy		cm, em		0.00
15.85	402.15	418.00	Limestone		ak, cs, es	y	15.85
2.00	418.00	420.00	Claystone, grn, limey		ak, cv, ev		0.00
4.00	420.00	424.00	Claystone, grn w/ as bands		cm, em		0.00
3.00	424.00	427.00	Claystone, grn		cv, ev		0.00
4.20	427.00	431.20	Limestone		ak, cs, es	y	4.20
4.20	431.20	435.40	Claystone, grn		cv, ev		0.00
19.05	435.40	454.45	Limestone, nodular		ak, cs, es	y	19.05
8.65	454.45	463.10	Claystone, grn w/ ls stks		cm, em		0.00
1.85	463.10	464.95	Claystone, gy		cv, ev		0.00
0.50	464.95	465.45	Coal, bony, ROOF COAL		ac, cv, ev		0.00
1.20	465.45	466.65	Shale, gy		cm, em		0.00
0.80	466.65	467.45	Shale, dk gy w/ coal stks		cm, em		0.00
0.55	467.45	468.00	Shale, gy		cm, em		0.00
2.87	468.00	470.87	Coal, PITTSBURGH No.8		ac, cv, ev		0.00
0.13	470.87	471.00	Pyrite		ac, cs, es		0.00
2.10	471.00	473.10	Coal		ac, cv, ev		0.00
6.00	473.10	479.10	Claystone, gy, limey		ak, cv, ev		0.00
12.00	479.10	491.10	Sandstone, gy		cs, es	y	12.00
4.00	491.10	495.10	Shale, gy, sandy		cs, es		0.00
2.00	495.10	497.10	Limestone, nodular		ak, cs, es	y	2.00
2.90	497.10	500.00	Claystone, gy		cv, ev		0.00
	Total Depth	500.00					217.65

Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

Total Thickness of Hard Rock Overlying Mining Unit 217.65

Thickness and Percentage of Hard and Soft Rock Overlying Mining Unit 44%

	Thickness (Ft.)	Percent (%)
Hard Rock	217.65	44%
Soft Rock	282.35	56%
	500.00	

ACID/BASE ACCOUNTING for Mining Pittsburgh No. 8 Coalbed

Stratum	Neutralization Potential, tons/1000 tons as $CaCO_3$	Total Sulphur %	Pyritic Sulphur %	Potential Acidity, tons /1000 tons as $CaCO_3$ (Total Sul.)	$CaCO_3$ Deficiency, tons/1000 tons as $CaCO_3$ (Total Sul.)
Roof, 10 ft.	1.43	3.32	2.95	104.0	102.6
Coal	2.30	6.40	4.42	200.00	197.7
Bottom, 10 ft.	23.79	4.14	3.60	129.00	105.3

ORIGINAL

Ohio Department of Natural Resources

BOB TAFT, GOVERNOR — SAMUEL W. SPECK, DIRECTOR

James R. Morris • Chief

Division of Water

Date: March 1, 2002

ANALYSIS OF EXISTING GROUND WATER FILE DATA

Prepared By: Dennis Crist, Geology Program Supervisor

Operator: The American Energy Corporation

County: Belmont, Monroe

Township: Belmont-Washington Sec. 13, 14, 19, 20, 25, 26, 31
Belmont-Wayne Sec. 1, 7
Monroe, Sunbury Sec. 5, 6, 23, 24, 29, 30, 35, 36
Monroe, Switzerland Sec. 18

Number of water well logs within 1,000 foot radius of site (copies attached) : Field located: 43

General description of local hydrology:

Ground water supplies are very limited and often inadequate. Yields generally range from 0 to 20 gpm at depths from 28 to 114 feet. Supplies are obtained from thin beds of sandstone, shale, and limestone.

Areas of Particular concern:

Mining the Pittsburgh No. 8 Coal seam at elevation ranges from 725 to 615 feet may result in quantity and/or dewatering of wells located in the area. All wells should be located and monitored before, during, and after mining operations to determine if subsidence resulting from longwall mining of the area causes any negative effects.

ORIGINAL

1939 Fountain Square Court, Columbus, Ohio 43224-1385 (614-265-6717)

Poss w-180m ?

V L LOG AND DRILLING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1500 Dublin Road
Columbus, Ohio

(21) No. 210324

County Monroe Township Sunsbury Section of Township 3 6

Owner Merle Mellott Address Beallsville Ohio

Location of property 1 Mile East of Beallsville O. State Route 556

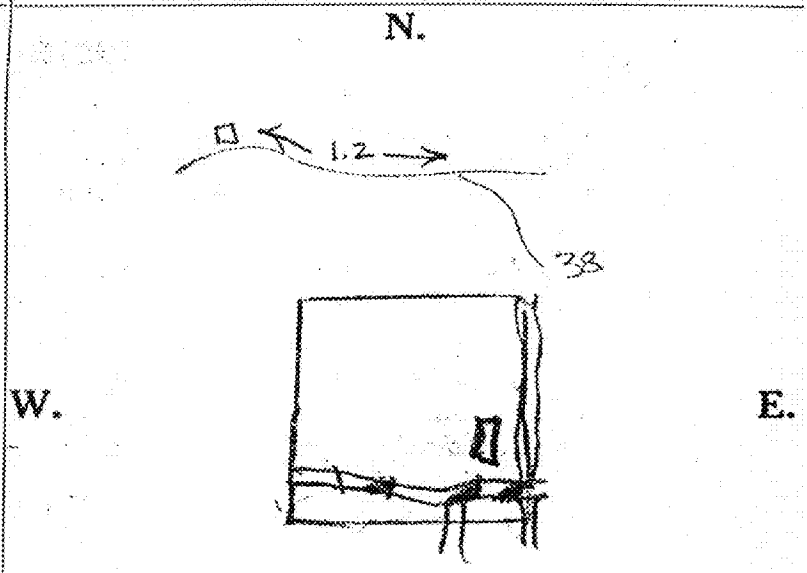
CONSTRUCTION DETAILS	BAILING OR PUMPING TEST
Casing diameter 8 Length of casing 14	Pumping rate ..... G.P.M. Duration of test ..... hrs.
Type of screen ..... Length of screen	Drawdown ..... ft. Date .....
Type of pump	Developed capacity .....
Capacity of pump	Static level—depth to water 70 ft.
Depth of pump setting	Pump installed by .....
Date of completion	

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	10 Ft.
Sandy	10	16
Red	16	28
Shale	28	41
Sandy	41	47
Red	47	71
Sand	71	77
Shale	77	88
Red	88	95
Water 71		

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm L. A. Matz Date 4/25/59

Address Woodfield O. Signed L. A. Matz

ORIGINAL 00425-3

24

AEC 18237

WEL .OG AND DRILLING R IRT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus, Ohio 43212

ORIGIN

№ 366703

PLEASE USE PENCIL OR TYPEWRITER

DO NOT USE INK.

County Marion Township Lincolnwy Section of Township 3 6

Owner John Onsler Address Bellbrook, O.

Location of property 1 mi. E. of Marion-Bellbrook Road (556)

CONSTRUCTION DETAILS

Casing diameter 8 Length of casing

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion

BAILING OR PUMPING TEST

Pumping Rate G.P.M. Duration of test hrs

Drawdown ft. Date

Static level-depth to water 16 ft.

Quality (clear, cloudy, taste, odor)

Pump installed by

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	11 Ft.
Sandstone	11	27
Lime	27	50
Water 19		

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

N.

W. E.

S.

See reverse side for instructions

Drilling Firm L. A. [illegible] Date 4/2/56

Address [illegible] Signed [illegible]

ORIGINAL 00425

*If additional space is needed to complete well log, use next consecutive numbered form.

20

AEC 18238

ORIGINAL

W L LOG AND DRILLING RE RT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus, Ohio

PLEASE USE PENCIL OR TYPEWRITER. DO NOT USE INK.

ok see Quad (17) W-204

No. 245929

County Monroe Township Sunsbury Section of Township 36

Owner Glenn Millott Address Beallsville O.

Location of property 2 Mile East of Beallsville, O. along State Route 5 on the South side of Road.

CONSTRUCTION DETAILS

Casing diameter 8 Length of casing 20

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion

BAILING OR PUMPING TEST

Pumping rate G.P.M. Duration of test hrs

Drawdown ft. Date

Developed capacity

Static level—depth to water 45 ft.

Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	19 Ft.
Shale	19	20
Lime	20	26
Red	26	30
Shale	30	55
Lime	55	58
Shale	58	90

Water 24
Water 55

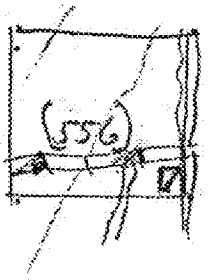
SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

N.

Corner of S & 556

W. E.



S.

See reverse side for instructions

Drilling Firm J. A. Mat Date 10/7/61

Address [illegible] Signed J. A. Mat

ORIGINAL

0042529 25

AEC 18239

W L LOG AND DRILLING RE RT

ORIGINA

(49) OK

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus, Ohio

PLEASE USE PENCIL OR TYPEWRITER. DO NOT USE INK.

No. 272585

County Monroe Township Sunsbury Section of Township 30

Owner James Riley Address Beallsville O. R. 1

Location of property 2½ Miles on 556 east of Beallsville

CONSTRUCTION DETAILS

Casing diameter 10 Length of casing 12

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion Sept 22/64

BAILING OR PUMPING TEST

Pumping rate G.P.M. Duration of test hrs.

Drawdown ft. Date

Developed capacity 25 gals

Static level—depth to water ft.

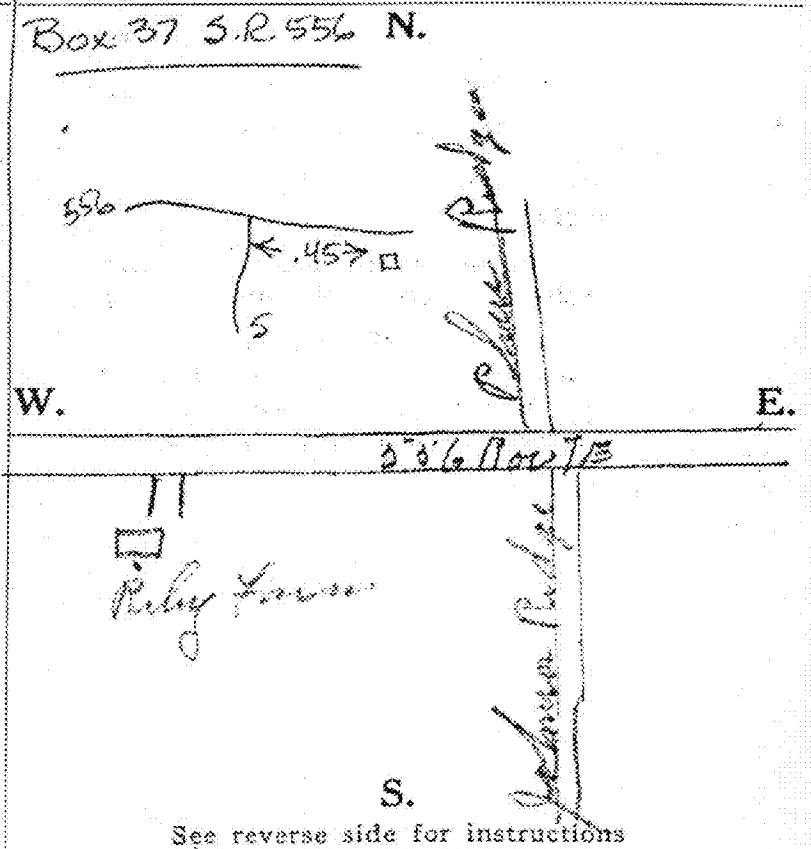
Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Loam & shale	0 Feet	12 Ft.
Sand & Clay	12	35
Clay & Sand	35	105
Water at 31 ft		

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm Chas. McKinney Date Sept 22/64

Address Powhatan Pt Signed Chas. McKinney

ORIGINAL

00425

26

AEC 18240

WE' .OG AND DRILLING REI RT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus, Ohio 43212

PLEASE USE PENCIL OR TYPEWRITER
DO NOT USE INK.

№ 326312

WL-161

County Belmont Township Washington Section of Township 19

Owner WILLIAM PIERCE Address Beallisville RD# 1

Location of property County RD. of State Rt. 556

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 18'
Type of screen Length of screen
Type of pump
Capacity of pump
Depth of pump setting
Date of completion

BAILING OR PUMPING TEST

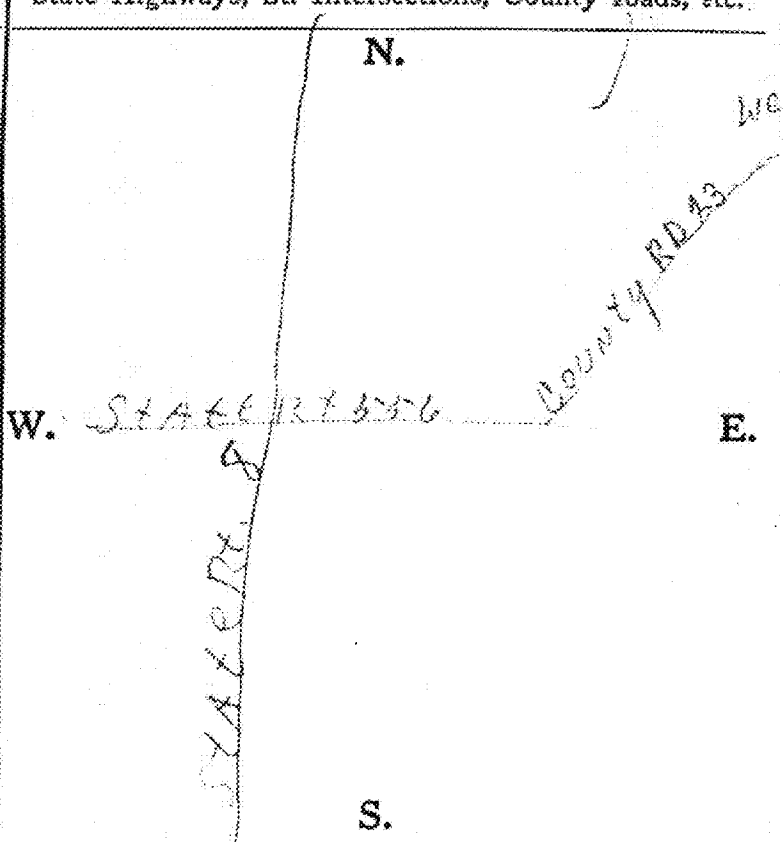
Pumping Rate 1/2 G.P.M. Duration of test 1 hrs.
Drawdown 80' ft. Date 9-1-65
Static level-depth to water 42' ft.
Quality (clear, cloudy, taste, odor) Clear
Pump installed by

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
	0 Feet	Ft.
Rock & Clay	0	21
Shale Gray	21	26
Shale Red	26	33
Shale Gray	33	52
Rock	52	65
Shale & Rock	65	80
Water at	52'	

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm Hogue Date 9-1-65

Address Rt #3 Wood Scrold Signed E E Hogue

DD425-3

TR107

(37)

*If additional space is needed to complete well log, use next consecutive numbered form.

AEC 18241

ORIGINAL

V" LOG AND DRILLING REP T

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1500 Dublin Road
Columbus, Ohio

OK (25) Poss

No. 210304

County Monroe Township Sunbury Section of Township 36

Owner Carlos Millott Address Beallsville, Ohio

Location of property prox (2) Miles East of Beallsville, O. South Side of R.T. State (556)

CONSTRUCTION DETAILS

Casing diameter 8 Length of casing 21

Type of screen ..... Length of screen .....

Type of pump .....

Capacity of pump .....

Depth of pump setting .....

Date of completion .....

BAILING OR PUMPING TEST

Pumping rate ..... G.P.M. Duration of test ..... hrs.

Drawdown ..... ft. Date .....

Developed capacity .....

Static level—depth to water 14 ft.

Pump installed by .....

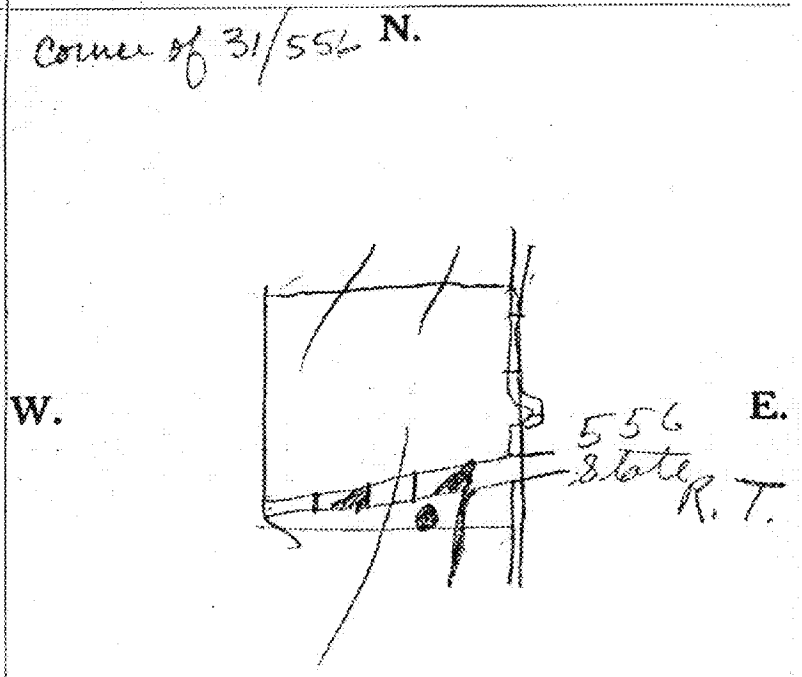
WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	16 Ft.
Shale	16	30
Red	30	39
Shale	39	48
Red	48	57
Shale	57	60

Water 28

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm [illegible] Date 4/7/58

Address [illegible] Signed [illegible]

ORIGINAL

00425-3

AEC 18242

(DEPARTMENT OF NATURAL RESOUR(
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2415435	679061		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 18A					
2.	Lab Identification Number	306204					
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elavation for Sampling Station (msl)	1180					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	1.8					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	8.8					
11.	Total Acidity (mg/l $CaCO_3$)	2.8					
12.	Total Alkalinity (mg/l $CaCO_3$)	150					
13.	Specific Conductivity (umhos/cm at 25 C)	390					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.51					
16.	Total Sulfates (mg/l)	29					
17.	Total Iron (mg/l)	1.5					
18.	Total Suspended Solids (mg/l)	41					
19.	Total Hardness (mg/l $CACO_3$)	160					
20.	Nitrates (mg/l)	0.19					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/8/2003					

Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

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D0425-3

AEC 18243

(DEPARTMENT OF NATURAL RESOUR(
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2430445	681857		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 18B					
2.	Lab Identification Number	0306205					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1208					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.71					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	6					
10.	pH(Standard Units)	8.6					
11.	Total Acidity (mg/l $CaCO_3$)	6.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	200					
13.	Specific Conductivity (umhos/cm at 25 C)	510					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.06					
16.	Total Sulfates (mg/l)	52					
17.	Total Iron (mg/l)	0.35					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	250					
20.	Nitrates (mg/l)	0.53					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/8/2003					

Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

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DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2426713	682173		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 23B					
2.	Lab Identification Number	306203					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1250					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	1.2					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	8.4					
11.	Total Acidity (mg/l $CaCO_3$)	4.3					
12.	Total Alkalinity (mg/l $CaCO_3$)	120					
13.	Specific Conductivity (umhos/cm at 25 C)	340					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.17					
16.	Total Sulfates (mg/l)	42					
17.	Total Iron (mg/l)	1.6					
18.	Total Suspended Solids (mg/l)	47					
19.	Total Hardness (mg/l $CACO_3$)	140					
20.	Nitrates (mg/l)	0.18					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/8/2003					

Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

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C DEPARTMENT OF NATURAL RESOURC
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424944	681463			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 27A					
2.	Lab Identification Number	306199					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1100					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.91					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	8.2					
11.	Total Acidity (mg/l $CaCO_3$)	9.5					
12.	Total Alkalinity (mg/l $CaCO_3$)	170					
13.	Specific Conductivity (umhos/cm at 25 C)	410					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.42					
16.	Total Sulfates (mg/l)	25					
17.	Total Iron (mg/l)	0.22					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	170					
20.	Nitrates (mg/l)	0.3					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/8/2003					

Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

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ORIGINAL

D0425-3

AEC 18246

DEPARTMENT OF NATURAL RESOURC
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2424274	680794		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 27B					
2.	Lab Identification Number	306200					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1100					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	1.3					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	8.3					
11.	Total Acidity (mg/l $CaCO_3$)	6.3					
12.	Total Alkalinity (mg/l $CaCO_3$)	130					
13.	Specific Conductivity (umhos/cm at 25 C)	360					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.05					
16.	Total Sulfates (mg/l)	41					
17.	Total Iron (mg/l)	0.09					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	150					
20.	Nitrates (mg/l)	0.09					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/8/2003					

Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

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JUL 2003
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DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2425051	680416			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 27C					
2.	Lab Identification Number	306201					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1160					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	1.1					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	8.7					
11.	Total Acidity (mg/l $CaCO_3$)	8.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	260					
13.	Specific Conductivity (umhos/cm at 25 C)	570					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.18					
16.	Total Sulfates (mg/l)	46					
17.	Total Iron (mg/l)	0.06					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	290					
20.	Nitrates (mg/l)	0.08					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/8/2003					

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Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

ORIGINAL

D0425-3

AEC 18248

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DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422027	681680.6			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-32A					
2.	Lab Identification Number	306116					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1130					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.58					
8.	Date Above Measurements Made	6/4/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.5					
11.	Total Acidity (mg/l $CaCO_3$)	7.1					
12.	Total Alkalinity (mg/l $CaCO_3$)	170					
13.	Specific Conductivity (umhos/cm at 25 C)	340					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.14					
16.	Total Sulfates (mg/l)	26					
17.	Total Iron (mg/l)	1.5					
18.	Total Suspended Solids (mg/l)	34					
19.	Total Hardness (mg/l $CACO_3$)	180					
20.	Nitrates (mg/l)	0.17					
21.	Date Sampled for Analysis	6/4/2003					
22.	Date Last Precipitation Event Occurred	6/3/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES	2422047	682141.5			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-329					
2.	Lab Identification Number	306117					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1000					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.09					
8.	Date Above Measurements Made	6/4/2003					
9.	Aquifer/Zone Identification for Well/Spring	8					
10.	pH(Standard Units)	7.5					
11.	Total Acidity (mg/l $CaCO_3$)	5.3					
12.	Total Alkalinity (mg/l $CaCO_3$)	130					
13.	Specific Conductivity (umhos/cm at 25 C)	290					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.01					
16.	Total Sulfates (mg/l)	61					
17.	Total Iron (mg/l)	0.9					
18.	Total Suspended Solids (mg/l)	22					
19.	Total Hardness (mg/l $CACO_3$)	140					
20.	Nitrates (mg/l)	0.1					
21.	Date Sampled for Analysis	6/4/2003					
22.	Date Last Precipitation Event Occurred	6/3/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	241384	681962			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 51A					
2.	Lab Identification Number	306353					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1220					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.08					
8.	Date Above Measurements Made	5/29/2003					
9.	Aquifer/Zone Identification for Well/Spring	S					
10.	pH(Standard Units)	8					
11.	Total Acidity (mg/l $CaCO_3$)	14					
12.	Total Alkalinity (mg/l $CaCO_3$)	290					
13.	Specific Conductivity (umhos/cm at 25 C)	770					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	1.9					
16.	Total Sulfates (mg/l)	19					
17.	Total Iron (mg/l)	4.6					
18.	Total Suspended Solids (mg/l)	260					
19.	Total Hardness (mg/l $CACO_3$)	340					
20.	Nitrates (mg/l)	<0.07					
21.	Date Sampled for Analysis	5/29/2003					
22.	Date Last Precipitation Event Occurred	5/28/2003					

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	STATE PLANE COORDINATES:	2413318	681709			LOCATION	ADJ
1.	Idiantification No. Of Sampling Station From Hydrology Map	DS 54A					
2.	Lab Identification Number	305354					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1190					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.38					
8.	Date Above Measurements Made	5/29/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7					
11.	Total Acidity (mg/l $CaCO_3$)	13					
12.	Total Alkalinity (mg/l $CaCO_3$)	180					
13.	Specific Conductivity (umhos/cm at 25 C)	450					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.01					
16.	Total Sulfates (mg/l)	27					
17.	Total Iron (mg/l)	0.12					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	180					
20.	Nitrates (mg/l)	0.07					
21.	Date Sampled for Analysis	5/29/2003					
22.	Date Last Precipitation Event Occurred	5/28/2003					

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	STATE PLANE COORDINATES:	2413039	681493			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 54B					
2.	Lab Identification Number	305355					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1215					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.34					
8.	Date Above Measurements Made	5/29/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	8.1					
11.	Total Acidity (mg/l $CaCO_3$)	2.9					
12.	Total Alkalinity (mg/l $CaCO_3$)	83					
13.	Specific Conductivity (umhos/cm at 25 C)	270					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.25					
16.	Total Sulfates (mg/l)	30					
17.	Total Iron (mg/l)	2.7					
18.	Total Suspended Solids (mg/l)	110					
19.	Total Hardness (mg/l $CACO_3$)	110					
20.	Nitrates (mg/l)	0.94					
21.	Date Sampled for Analysis	5/29/2003					
22.	Date Last Precipitation Event Occurred	5/28/2003					

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	STATE PLANE COORDINATES:	2414012	680954			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 54C					
2.	Lab Identification Number	305356					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1140					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.58					
8.	Date Above Measurements Made	5/30/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.5					
11.	Total Acidity (mg/l $CaCO_3$)	7.4					
12.	Total Alkalinity (mg/l $CaCO_3$)	230					
13.	Specific Conductivity (umhos/cm at 25 C)	570					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.13					
16.	Total Sulfates (mg/l)	29					
17.	Total Iron (mg/l)	0.57					
18.	Total Suspended Solids (mg/l)	17					
19.	Total Hardness (mg/l $CACO_3$)	220					
20.	Nitrates (mg/l)	0.25					
21.	Date Sampled for Analysis	5/30/2003					
22.	Date Last Precipitation Event Occurred	5/29/2003					

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	STATE PLANE COORDINATES:	2422308.8			677730.13	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 91	DS 91	DS 91			
2.	Lab Identification Number	0110188	0201211	0202393			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1140	1140	1140			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.5	3	2			
8.	Date Above Measurements Made	10/16/2001	1/10/2002	2/26/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.6	8	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	6.6	<1.0	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	230	190	210			
13.	Specific Conductivity (umhos/cm at 25 C)	500	420	410			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	0.03	0.02			
16.	Total Sulfates (mg/l)	32	35	34			
17.	Total Iron (mg/l)	0.11	0.59	0.06			
18.	Total Suspended Solids (mg/l)	<1.0	2	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	160	170	200			
20.	Nitrates (mg/l)	0.75	0.78	0.76			
21.	Date Sampled for Analysis	10/16/2001	1/10/2002	2/26/2002			
22.	Date Last Precipitation Event Occurred	10/15/2001	1/7/2002	2/26/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422980.9			678059.32	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 92	DS 92	DS 92			
2.	Lab Identification Number	0110189	0201212	0202394			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.5	4	1.6			
8.	Date Above Measurements Made	10/16/2001	1/10/2002	2/26/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.5	7.9	8.1			
11.	Total Acidity (mg/l $CaCO_3$)	3.1	9.6	3.1			
12.	Total Alkalinity (mg/l $CaCO_3$)	230	160	180			
13.	Specific Conductivity (umhos/cm at 25 C)	560	390	420			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	0.02	0.02			
16.	Total Sulfates (mg/l)	54	42	49			
17.	Total Iron (mg/l)	<0.05	0.33	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	4	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	240	180	200			
20.	Nitrates (mg/l)	7	2.6	4.3			
21.	Date Sampled for Analysis	10/16/2001	1/10/2002	2/26/2002			
22.	Date Last Precipitation Event Occurred	10/15/2001	1/7/2002	2/26/2002			

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	STATE PLANE COORDINATES	2423676			676500.44	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 93	DS 93	DS 93			
2.	Lab Identification Number	0110190	0201213	0202396			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1160	1160	1160			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/16/2001	1/10/2002	2/26/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.7	8.3	8			
11.	Total Acidity (mg/l $CaCO_3$)	3.6	<1.0	3.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	210	210	210			
13.	Specific Conductivity (umhos/cm at 25 C)	520	510	440			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.04	0.02	0.03			
16.	Total Sulfates (mg/l)	41	42	42			
17.	Total Iron (mg/l)	<0.05	0.08	0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	1.3			
19.	Total Hardness (mg/l $CACO_3$)	250	220	240			
20.	Nitrates (mg/l)	0.77	1.5	2.5	Flow measurements were unavailable		
21.	Date Sampled for Analysis	10/16/2001	1/10/2002	2/26/2002			
22.	Date Last Precipitation Event Occurred	10/15/2001	1/7/2002	2/26/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES	2418683.4			679146.44	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 94	DS 94	DS 94			
2.	Lab Identification Number	0110198	0201230	0202441			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1180	1180	1180			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	3.5	0.57			
8.	Date Above Measurements Made	10/17/2001	1/11/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.8	8.1	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	9.8	6.8	1.9			
12.	Total Alkalinity (mg/l $CaCO_3$)	150	100	140			
13.	Specific Conductivity (umhos/cm at 25 C)	280	320	440			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.05	0.03	<0.01			
16.	Total Sulfates (mg/l)	33	33	38			
17.	Total Iron (mg/l)	0.09	0.21	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	160	140	180			
20.	Nitrates (mg/l)	1.6	2.9	1.7			
21.	Date Sampled for Analysis	10/17/2001	1/11/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	1/10/2002	2/27/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418862.1			678613.06	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	DS 95	DS 95	DS 95			
2.	Lab Identification Number	0110199	0201230	0202442			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	0.6	NA			
8.	Date Above Measurements Made	10/17/2001	1/11/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	8.1	8.2	8.1			
11.	Total Acidity (mg/l $CaCO_3$)	3.9	1.9	11			
12.	Total Alkalinity (mg/l $CaCO_3$)	240	230	180			
13.	Specific Conductivity (umhos/cm at 25 C)	370	510	570			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	52	43	50			
17.	Total Iron (mg/l)	<0.05	0.52	0.04			
18.	Total Suspended Solids (mg/l)	<1.0	2.7	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	260	270	280			
20.	Nitrates (mg/l)	1.2	1	2.9			
21.	Date Sampled for Analysis	10/17/2001	1/11/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	1/10/2002	2/27/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2426247.6			681655.94	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	DS 98	DS 98	DS 98			
2.	Lab Identification Number	0110228	0201227	0202362			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/18/2001	1/11/2002	2/22/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	6	7.9	8			
11.	Total Acidity (mg/l $CaCO_3$)	18	5.8	20			
12.	Total Alkalinity (mg/l $CaCO_3$)	340	210	220			
13.	Specific Conductivity (umhos/cm at 25 C)	600	670	610			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.53	<0.02	<0.01			
16.	Total Sulfates (mg/l)	105	120	130			
17.	Total Iron (mg/l)	0.25	0.28	0.09			
18.	Total Suspended Solids (mg/l)	4.7	1.3	3.3			
19.	Total Hardness (mg/l $CACO_3$)	340	320	320			
20.	Nitrates (mg/l)	0.38	2.7	2.5	Flow measurements were unavailable		
21.	Date Sampled for Analysis	10/18/2001	1/11/2002	2/22/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	1/10/2002	2/21/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES	2415266	680492			LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	DS 100					
2.	Lab Identification Number	304035					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1160					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	1.6					
8.	Date Above Measurements Made	4/2/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.6					
11.	Total Acidity (mg/l $CaCO_3$)	10					
12.	Total Alkalinity (mg/l $CaCO_3$)	210					
13.	Specific Conductivity (umhos/cm at 25 C)	600					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	<0.01					
16.	Total Sulfates (mg/l)	33					
17.	Total Iron (mg/l)	<0.04					
18.	Total Suspended Solids (mg/l)	3.3					
19.	Total Hardness (mg/l $CACO_3$)	190					
20.	Nitrates (mg/l)	1.9					
21.	Date Sampled for Analysis	4/2/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415612	679964			LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	DS 101					
2.	Lab Identification Number	304034					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1200					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.4					
8.	Date Above Measurements Made	4/2/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.4					
11.	Total Acidity (mg/l $CaCO_3$)	3.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	120					
13.	Specific Conductivity (umhos/cm at 25 C)	300					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.01					
16.	Total Sulfates (mg/l)	28					
17.	Total Iron (mg/l)	<0.05					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	120					
20.	Nitrates (mg/l)	0.22					
21.	Date Sampled for Analysis	4/2/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2419480.9			676389.29	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	DS 103	DS 103	DS 103			
2.	Lab Identification Number	0110420	0202146	304052			
3.	High (H)/Low (L) Designation (if applicable)	L	T/I	H			
4.	Surface Elevation for Sampling Station (msl)	1190	1190	1190			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	0.6	0.45			
8.	Date Above Measurements Made	10/29/2001	2/6/2002	4/3/2003			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.8	7.08	7.6			
11.	Total Acidity (mg/l $CaCO_3$)	9.6	5.7	5.4			
12.	Total Alkalinity (mg/l $CaCO_3$)	230	140	170			
13.	Specific Conductivity (umhos/cm at 25 C)	610	420	430			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	0.07	0.02			
16.	Total Sulfates (mg/l)	36	34	34			
17.	Total Iron (mg/l)	<0.05	<0.05	<0.05			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	270	160	180			
20.	Nitrates (mg/l)	0.39	1.8	3.6			
21.	Date Sampled for Analysis	10/29/2001	2/6/2002	4/3/2003			
22.	Date Last Precipitation Event Occurred	10/24/2001	2/4/2002	3/31/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2420618.9			675828.75	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 112	DS 112	DS112	DS112		
2.	Lab Identification Number	011036	0112240	0202141	304053		
3.	High (H)/Low (L) Designation (if applicable)	L	T/I	T/I	H		
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	NA	NA	NA	0.63		
8.	Date Above Measurements Made	10/31/2001	11/8/2001	2/6/2002	4/3/2003		
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B		
10.	pH(Standard Units)	8	8.1	7.38	8		
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	2.8	7.6	4.3		
12.	Total Alkalinity (mg/l $CaCO_3$)	96	110	190	220		
13.	Specific Conductivity (umhos/cm at 25 C)	290	270	610	750		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Manganese (mg/l)	0.07	0.02	0.03	<0.01		
16.	Total Sulfates (mg/l)	39	18	56	58		
17.	Total Iron (mg/l)	0.73	0.06	<0.05	<0.05		
18.	Total Suspended Solids (mg/l)	7.3	<1.0	<1.0	<1.0		
19.	Total Hardness (mg/l $CACO_3$)	120	110	260	270		
20.	Nitrates (mg/l)	0.4	0.32	5	11		
21.	Date Sampled for Analysis	10/31/2001	11/8/2001	2/6/2002	4/3/2003		
22.	Date Last Precipitation Event Occurred	10/24/2001	11/2/2001	1/31/2002	3/31/2003		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2419927.2			676639.91	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 113	DS 113	DS 113	DS 113		
2.	Lab Identification Number	0111037	0112241	0202142	304051		
3.	High (H)/Low (L) Designation (if applicable)	L	T/I	T/I	H		
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	NA	NA	NA	0.63		
8.	Date Above Measurements Made	10/31/2001	11/8/2001	2/6/2002	4/3/2003		
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B		
10.	pH(Standard Units)	7.8	7.8	6.89	6.9		
11.	Total Acidity (mg/l $CaCO_3$)	7.9	20	15	11		
12.	Total Alkalinity (mg/l $CaCO_3$)	200	260	110	110		
13.	Specific Conductivity (umhos/cm at 25 C)	450	530	320	360		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Manganese (mg/l)	0.02	<0.02	0.05	0.02		
16.	Total Sulfates (mg/l)	36	56	38	38		
17.	Total Iron (mg/l)	<0.05	0.05	0.46	0.07		
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	38	<1.0		
19.	Total Hardness (mg/l $CACO_3$)	210	280	130	120		
20.	Nitrates (mg/l)	1.7	2.6	0.17	0.28		
21.	Date Sampled for Analysis	10/31/2001	11/8/2001	2/6/2002	4/3/2003		
22.	Date Last Precipitation Event Occurred	10/24/2001	11/2/2001	2/4/2002	3/31/2003		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2420033.4			879086.99	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 114	DS 114	DS 114			
2.	Lab Identification Number	0111038	0202143	0202143			
3.	High (H)/Low (L) Designation (if applicable)	L	T/I	H			
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	0.94			
8.	Date Above Measurements Made	10/31/2001	2/6/2002	4/7/2003			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.5	7.78	7.5			
11.	Total Acidity (mg/l $CaCO_3$)	4.7	1.9	3.2			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	170	120			
13.	Specific Conductivity (umhos/cm at 25 C)	320	340	270			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.07	0.04	0.01			
16.	Total Sulfates (mg/l)	20	24	21			
17.	Total Iron (mg/l)	<0.05	<0.05	0.21			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	150	150	120			
20.	Nitrates (mg/l)	<0.09	<0.09	<0.09			
21.	Date Sampled for Analysis	10/31/2001	2/6/2002	4/7/2003			
22.	Date Last Precipitation Event Occurred	10/24/2001	1/31/2002	4/6/2003			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2419781.3			679519.69	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 116	DS 116	DS 116	DS 116		
2.	Lab Identification Number	0111040	0112244	0202144	304068		
3.	High (H)/Low (L) Designation (if applicable)	L	T/I	T/I	H		
4.	Surface Elevation for Sampling Station (msl)	1160	1160	1160	1160		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	NA	NA	NA	1		
8.	Date Above Measurements Made	10/31/01	11/8/01	2/6/02	4/7/03		
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B		
10.	pH(Standard Units)	8	8	7.39	6.7		
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	6.8	<1.0	12		
12.	Total Alkalinity (mg/l $CaCO_3$)	190	190	150	99		
13.	Specific Conductivity (umhos/cm at 25 C)	370	400	350	240		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Manganese (mg/l)	0.1	<0.02	0.04	0.03		
16.	Total Sulfates (mg/l)	34	35	31	29		
17.	Total Iron (mg/l)	5.4	<0.05	<0.05	1.7		
18.	Total Suspended Solids (mg/l)	59	<1.0	<1.0	9.3		
19.	Total Hardness (mg/l $CACO_3$)	200	260	140	100		
20.	Nitrates (mg/l)	0.15	1.4	<0.09	0.22		
21.	Date Sampled for Analysis	10/31/2001	11/8/2001	2/6/2002	4/7/2003		
22.	Date Last Precipitation Event Occurred	10/24/2001	11/2/2001	1/31/2002	4/6/2003		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2419904.9			680728.22	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 117	DS 117	DS 117			
2.	Lab Identification Number	0111041	0112245	305015			
3.	High (H)/Low (L) Designation (if applicable)	L	T/I	T/H			
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	0.47			
8.	Date Above Measurements Made	10/31/2001	11/6/2001	5/1/2003			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.8	7.8	6.7			
11.	Total Acidity (mg/l $CaCO_3$)	4.7	<1.0	18			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	210	180			
13.	Specific Conductivity (umhos/cm at 25 C)	360	390	530			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.02	0.02	<0.01			
16.	Total Sulfates (mg/l)	30	17	31			
17.	Total Iron (mg/l)	<0.05	0.08	0.07			
18.	Total Suspended Solids (mg/l)	<1.0	100	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	190	60	200			
20.	Nitrates (mg/l)	<0.09	2.7	<0.07			
21.	Date Sampled for Analysis	10/31/2001	11/6/2001	5/3/2003			
22.	Date Last Precipitation Event Occurred	10/24/2001	11/2/2001	5/1/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2420908	680270		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 117A					
2.	Lab Identification Number	305375					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1060					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.1					
8.	Date Above Measurements Made	5/30/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.5					
11.	Total Acidity (mg/l $CaCO_3$)	14					
12.	Total Alkalinity (mg/l $CaCO_3$)	210					
13.	Specific Conductivity (umhos/cm at 25 C)	530					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.01					
16.	Total Sulfates (mg/l)	31					
17.	Total Iron (mg/l)	0.18					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	210					
20.	Nitrates (mg/l)	<0.07					
21.	Date Sampled for Analysis	5/30/2003					
22.	Date Last Precipitation Event Occurred	5/29/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422251	675343.5			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-135A					
2.	Lab Identification Number	306122					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1200					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	5.77					
8.	Date Above Measurements Made	6/3/2003					
9.	Aquifer/Zone Identification for Well/Spring	S					
10.	pH(Standard Units)	7.1					
11.	Total Acidity (mg/l $CaCO_3$)	11					
12.	Total Alkalinity (mg/l $CaCO_3$)	57					
13.	Specific Conductivity (umhos/cm at 25 C)	170					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.45					
16.	Total Sulfates (mg/l)	22					
17.	Total Iron (mg/l)	4.3					
18.	Total Suspended Solids (mg/l)	160					
19.	Total Hardness (mg/l $CACO_3$)	80					
20.	Nitrates (mg/l)	0.47					
21.	Date Sampled for Analysis	6/3/2003					
22.	Date Last Precipitation Event Occurred	6/2/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418058	677523			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-144A					
2.	Lab Identification Number	306144					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1180					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0					
8.	Date Above Measurements Made	6/6/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	6.8					
11.	Total Acidity (mg/l $CaCO_3$)	10					
12.	Total Alkalinity (mg/l $CaCO_3$)	66					
13.	Specific Conductivity (umhos/cm at 25 C)	250					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.58					
16.	Total Sulfates (mg/l)	52					
17.	Total Iron (mg/l)	0.81					
18.	Total Suspended Solids (mg/l)	4.7					
19.	Total Hardness (mg/l $CACO_3$)	80					
20.	Nitrates (mg/l)	0.2					
21.	Date Sampled for Analysis	6/6/2003					
22.	Date Last Precipitation Event Occurred	6/5/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2412646.3	683965.98		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 145	DS 145	DS 145			
2.	Lab Identification Number	0110107	0201225	0203001			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1120	1120	1120			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/11/2001	1/10/2002	2/28/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.95	8	8.3			
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	5.8	7.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	150	100			
13.	Specific Conductivity (umhos/cm at 25 C)	550	410	340			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	23	22	26			
17.	Total Iron (mg/l)	0.06	0.12	0.43			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	250	200	120	*The flow from DS – 145 is piped directly into a holding tank and there is no location from which a spring flow can be determined.*		
20.	Nitrates (mg/l)	0.18	0.47	0.75			
21.	Date Sampled for Analysis	10/11/2001	1/10/2002	2/28/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/7/2002	2/27/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417549	676124.4			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-146A					
2.	Lab Identification Number	306141					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1260					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.17					
8.	Date Above Measurements Made	6/6/2003					
9	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.4					
11.	Total Acidity (mg/l $CaCO_3$)	6					
12	Total Alkalinity (mg/l $CaCO_3$)	150					
13.	Specific Conductivity (umhos/cm at 25 C)	360					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	<0.01					
16.	Total Sulfates (mg/l)	31					
17.	Total Iron (mg/l)	<0.04					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	160					
20.	Nitrates (mg/l)	0.12					
21.	Date Sampled for Analysis	6/6/2003					
22.	Date Last Precipitation Event Occurred	6/5/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2416694	675931.2			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-146B					
2.	Lab Identification Number	306142					
3.	High (H)/Low (L) Designation (if applicable)	!					
4.	Surface Elevation for Sampling Station (msl)	1200					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.27					
8.	Date Above Measurements Made	6/6/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	6.9					
11.	Total Acidity (mg/l $CaCO_3$)	12					
12.	Total Alkalinity (mg/l $CaCO_3$)	130					
13.	Specific Conductivity (umhos/cm at 25 C)	300					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	<0.01					
16.	Total Sulfates (mg/l)	31					
17.	Total Iron (mg/l)	0.06					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	140					
20.	Nitrates (mg/l)	0.12					
21.	Date Sampled for Analysis	6/6/2003					
22.	Date Last Precipitation Event Occurred	6/5/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2416066	680362.4			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-150A					
2.	Lab Identification Number	306119					
3.	High (H)/Low (L) Designation (if applicable)	L					
4.	Surface Elevation for Sampling Station (msl)	1220					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.31					
8.	Date Above Measurements Made	6/4/2003					
9.	Aquifer/Zone Identification for Well/Spring	S					
10.	pH(Standard Units)	7.6					
11.	Total Acidity (mg/l $CaCO_3$)	3.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	88					
13.	Specific Conductivity (umhos/cm at 25 C)	170					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.04					
16.	Total Sulfates (mg/l)	26					
17.	Total Iron (mg/l)	0.24					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	100					
20.	Nitrates (mg/l)	0.11					
21.	Date Sampled for Analysis	6/4/2003					
22.	Date Last Precipitation Event Occurred	6/3/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2416336.8			674751.57	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 151	DS 151				
2.	Lab Identification Number	0111005	304023				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1160	1160				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	0.27				
8.	Date Above Measurements Made	10/18/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8	8.7				
11.	Total Acidity (mg/l $CaCO_3$)	7.4	16				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	120				
13.	Specific Conductivity (umhos/cm at 25 C)	360	390				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.06	0.12				
16.	Total Sulfates (mg/l)	34	49				
17.	Total Iron (mg/l)	0.32	0.08				
18.	Total Suspended Solids (mg/l)	3.3	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	150	120				
20.	Nitrates (mg/l)	0.16	0.88				
21.	Date Sampled for Analysis	10/18/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415427	678795.3			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-152A					
2.	Lab Identification Number	306118					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1240					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.9					
8.	Date Above Measurements Made	6/4/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	9.2					
11.	Total Acidity (mg/l $CaCO_3$)	<1.0					
12.	Total Alkalinity (mg/l $CaCO_3$)	100					
13.	Specific Conductivity (umhos/cm at 25 C)	260					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.09					
16.	Total Sulfates (mg/l)	31					
17.	Total Iron (mg/l)	0.86					
18.	Total Suspended Solids (mg/l)	31					
19.	Total Hardness (mg/l $CACO_3$)	160					
20.	Nitrates (mg/l)	0.19					
21.	Date Sampled for Analysis	6/4/2003					
22.	Date Last Precipitation Event Occurred	6/3/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424238.7		677147.6		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-184A					
2.	Lab Identification Number	306164					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1220					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	6/7/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	6.8					
11.	Total Acidity (mg/l $CaCO_3$)	18					
12.	Total Alkalinity (mg/l $CaCO_3$)	140					
13.	Specific Conductivity (umhos/cm at 25 C)	410					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.3					
16.	Total Sulfates (mg/l)	22					
17.	Total Iron (mg/l)	0.35					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	140					
20.	Nitrates (mg/l)	0.4					
21.	Date Sampled for Analysis	6/7/2003					
22.	Date Last Precipitation Event Occurred	6/6/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424557		677095.2		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS-1848					
2.	Lab Identification Number	306165					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1240					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	1.88					
8.	Date Above Measurements Made	6/4/2003					
9.	Aquifer/Zone Identification for Well/Spring	6					
10.	pH(Standard Units)	8					
11.	Total Acidity (mg/l $CaCO_3$)	5.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	150					
13.	Specific Conductivity (umhos/cm at 25 C)	730					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.04					
16.	Total Sulfates (mg/l)	21					
17.	Total Iron (mg/l)	0.92					
18.	Total Suspended Solids (mg/l)	35					
19.	Total Hardness (mg/l $CACO_3$)	230					
20.	Nitrates (mg/l)	0.08					
21.	Date Sampled for Analysis	6/7/2003					
22.	Date Last Precipitation Event Occurred	6/6/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES	2414179.5			681461.23	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 202	DS 202	DS 202			
2.	Lab Identification Number	0110149	0201295	304021			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1160	1160	1160			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	0.47			
8.	Date Above Measurements Made	10/12/2001	1/18/2002	4/2/2003			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.29	8.2	7.7			
11.	Total Acidity (mg/l $CaCO_3$)	6.2	<1.0	4.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	74	100	180			
13.	Specific Conductivity (umhos/cm at 25 C)	290	280	360			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	1.8	0.03	0.03			
16.	Total Sulfates (mg/l)	22	38	30			
17.	Total Iron (mg/l)	6.7	0.41	0.36			
18.	Total Suspended Solids (mg/l)	340	120	19			
19.	Total Hardness (mg/l $CACO_3$)	140	80	160			
20.	Nitrates (mg/l)	0.46	0.68	0.19			
21.	Date Sampled for Analysis	10/12/2001	1/18/2002	4/2/2003			
22.	Date Last Precipitation Event Occurred	10/11/2001	1/14/2002	3/31/2003			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2421424.8			675089.42	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 206	DS 206	DS 206			
2.	Lab Identification Number	0110150	0201278	0202431			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/12/2001	1/19/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.5	7.7	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	8	<1.0	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	70	70			
13.	Specific Conductivity (umhos/cm at 25 C)	420	180	160			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.09	0.03	0.03			
16.	Total Sulfates (mg/l)	40	27	26			
17.	Total Iron (mg/l)	0.56	0.16	0.27			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	160	80	60			
20.	Nitrates (mg/l)	<0.09	0.1	<0.09	Flow measurements were unavailable		
21.	Date Sampled for Analysis	10/12/2001	1/19/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/11/2001	1/14/2002	2/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422503.4			676352.3	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 209	DS 209	DS 209			
2.	Lab Identification Number	0110192	0201288	0202368			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/16/2002	1/17/2002	2/22/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.6	8.4	8			
11.	Total Acidity (mg/l $CaCO_3$)	5.5	1.9	1.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	200	230	190			
13.	Specific Conductivity (umhos/cm at 25 C)	450	400	380			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	44	55	38			
17.	Total Iron (mg/l)	0.66	<0.05	0.07			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	200	120	180			
20.	Nitrates (mg/l)	0.87	1.1	1.3	flow measurements were unavailable		
21.	Date Sampled for Analysis	10/16/2001	1/17/2002	2/22/2002			
22.	Date Last Precipitation Event Occurred	10/15/2001	1/14/2002	2/21/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422860.1			675440.05	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 210	DS 210	DS 210			
2.	Lab Identification Number	0110191	0201289	0202369			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/16/2002	1/17/2002	2/22/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.7	8.1	8.1			
11.	Total Acidity (mg/l $CaCO_3$)	4	7.7	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	230	190	180			
13.	Specific Conductivity (umhos/cm at 25 C)	430	420	360			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	37	51	39			
17.	Total Iron (mg/l)	<0.05	<0.05	0.07			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	240	150	200			
20.	Nitrates (mg/l)	0.84	1.5	2	Flow measurements were unavailable		
21.	Date Sampled for Analysis	10/16/2001	1/17/2002	2/22/2002			
22.	Date Last Precipitation Event Occurred	10/15/2001	1/14/2002	2/21/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417233.1			675724.36	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 251	DS 251				
2.	Lab Identification Number	0110240	304024				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1220	1220				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	1.3				
8.	Date Above Measurements Made	10/18/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.5	6.3				
11.	Total Acidity (mg/l $CaCO_3$)	24	20				
12.	Total Alkalinity (mg/l $CaCO_3$)	190	120				
13.	Specific Conductivity (umhos/cm at 25 C)	680	670				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.05	0.02				
16.	Total Sulfates (mg/l)	46	45				
17.	Total Iron (mg/l)	0.06	<0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	260	200				
20.	Nitrates (mg/l)	0.71	2.1				
21.	Date Sampled for Analysis	10/18/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415481.3			674735.35	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 252					
2.	Lab Identification Number	0111004					
3.	High (H)/Low (L) Designation (if applicable)	L					
4.	Surface Elavation for Sampling Station (msl)	1170					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	10/18/2001					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.4					
11.	Total Acidity (mg/l $CaCO_3$)	24					
12.	Total Alkalinity (mg/l $CaCO_3$)	160					
13.	Specific Conductivity (umhos/cm at 25 C)	800					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	9.8					
16.	Total Sulfates (mg/l)	28					
17.	Total Iron (mg/l)	2					
18.	Total Suspended Solids (mg/l)	1.3					
19.	Total Hardness (mg/l $CACO_3$)	310					
20.	Nitrates (mg/l)	0.42			flow was unavailable		
21.	Date Sampled for Analysis	10/30/2001					
22.	Date Last Precipitation Event Occurred	10/28/2001					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417793.6			674417.69	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 258	DS 258				
2.	Lab Identification Number	0110239	304029				
3.	High (H)/Low (L) Designation (If applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	1.4				
8.	Date Above Measurements Made	10/18/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.6	7.3				
11.	Total Acidity (mg/l $CaCO_3$)	19	9.4				
12.	Total Alkalinity (mg/l $CaCO_3$)	220	170				
13.	Specific Conductivity (umhos/cm at 25 C)	500	480				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.05	0.02				
16.	Total Sulfates (mg/l)	67	50				
17.	Total Iron (mg/l)	0.08	0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	240	190				
20.	Nitrates (mg/l)	0.71	2.1				
21.	Date Sampled for Analysis	10/18/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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ATTACHMENT 14A

(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418051			674135.28	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 260	DS 260				
2.	Lab Identification Number	0110237	304030				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	0.28				
8.	Date Above Measurements Made	10/18/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.6	7.1				
11.	Total Acidity (mg/l $CaCO_3$)	13	3.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	90				
13.	Specific Conductivity (umhos/cm at 25 C)	280	300				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.09	<0.01				
16.	Total Sulfates (mg/l)	23	23				
17.	Total Iron (mg/l)	0.31	<0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	150	100				
20.	Nitrates (mg/l)	0.76	4.7				
21.	Date Sampled for Analysis	10/18/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417906.4			676244.04	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 270	DS 270				
2.	Lab Identification Number	0110233	304025				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	0.31				
8.	Date Above Measurements Made	10/18/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8.7	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	3.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	96	100				
13.	Specific Conductivity (umhos/cm at 25 C)	280	510				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	<0.01				
16.	Total Sulfates (mg/l)	32	67				
17.	Total Iron (mg/l)	<0.05	0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	120	160				
20.	Nitrates (mg/l)	0.35	3.8				
21.	Date Sampled for Analysis	10/18/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418051.4			676569.55	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 271	DS 271				
2.	Lab Identification Number	0110232	304026				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	0.4				
8.	Date Above Measurements Made	10/18/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8	7.3				
11.	Total Acidity (mg/l $CaCO_3$)	3.9	9.8				
12.	Total Alkalinity (mg/l $CaCO_3$)	180	200				
13.	Specific Conductivity (umhos/cm at 25 C)	430	570				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15	Total Manganese (mg/l)	<0.02	<0.02				
16.	Total Sulfates (mg/l)	32	36				
17.	Total Iron (mg/l)	<0.05	<0.05				
18.	Total Suspended Solids (mg/l)	3.3	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	220	240				
20.	Nitrates (mg/l)	1.8	4.6				
21.	Date Sampled for Analysis	10/18/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	3417710.6			676847.49	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 272	DS 272				
2.	Lab Identification Number	0110231	304027				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/18/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8.4	6.8				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	5.3				
12.	Total Alkalinity (mg/l $CaCO_3$)	76	52				
13.	Specific Conductivity (umhos/cm at 25 C)	240	300				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	<0.02				
16.	Total Sulfates (mg/l)	22	20				
17.	Total Iron (mg/l)	<0.05	0.04				
18.	Total Suspended Solids (mg/l)	1.3	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	90	100				
20.	Nitrates (mg/l)	0.1	4		Flow measurements were unavailable		
21.	Date Sampled for Analysis	10/18/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417096.8			678247.56	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 284	DS 284				
2.	Lab Identification Number	0110230	304064				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	7.5				
8.	Date Above Measurements Made	10/18/2001	4/7/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.6	7				
11.	Total Acidity (mg/l $CaCO_3$)	10	4.6				
12.	Total Alkalinity (mg/l $CaCO_3$)	120	63				
13.	Specific Conductivity (umhos/cm at 25 C)	270	200				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.51	0.13				
16.	Total Sulfates (mg/l)	20	26				
17.	Total Iron (mg/l)	0.92	0.44				
18.	Total Suspended Solids (mg/l)	69	2				
19.	Total Hardness (mg/l $CACO_3$)	140	70				
20.	Nitrates (mg/l)	0.12	<0.07				
21.	Date Sampled for Analysis	10/18/2001	4/7/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	4/6/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2416934.2			679418.73	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 285	DS 285				
2.	Lab Identification Number	0110229	304065				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1140	1140				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	1.3				
8.	Date Above Measurements Made	10/18/2001	4/7/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.6	6.3				
11.	Total Acidity (mg/l $CaCO_3$)	4.6	15				
12.	Total Alkalinity (mg/l $CaCO_3$)	190	84				
13.	Specific Conductivity (umhos/cm at 25 C)	380	230				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.03	0.04				
16.	Total Sulfates (mg/l)	25	26				
17.	Total Iron (mg/l)	0.2	1.6				
18.	Total Suspended Solids (mg/l)	<1.0	18				
19.	Total Hardness (mg/l $CACO_3$)	200	80				
20.	Nitrates (mg/l)	0.2	0.72				
21.	Date Sampled for Analysis	10/18/2001	4/7/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	4/6/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2412297.1		681423		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS-308	DS-308	DS-308			
2.	Lab Identification Number	0207133	0210046	304017			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.84	0.86	1.6			
8.	Date Above Measurements Made	7/11/2002	10/3/2002	4/2/2003			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.5	7.8	7.9			
11.	Total Acidity (mg/l $CaCO_3$)	6.3	7.5	3.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	200	200	200			
13.	Specific Conductivity (umhos/cm at 25 C)	850	760	610			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.03	0.03	<0.01			
16.	Total Sulfates (mg/l)	37	32	35			
17.	Total Iron (mg/l)	1.5	0.13	0.07			
18.	Total Suspended Solids (mg/l)	130	<1.0	2			
19.	Total Hardness (mg/l $CACO_3$)	290	310	300			
20.	Nitrates (mg/l)	1.9	1.6	2.5			
21.	Date Sampled for Analysis	7/11/2002	10/3/2002	4/2/2003			
22.	Date Last Precipitation Event Occurred	7/9/2002	10/3/2002	3/31/2003			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424459.8	678454.7			LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS-309	DS-309				
2.	Lab Identification Number	0210054	0303348				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	1240	1240				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.3	0.04				
8.	Date Above Measurements Made	1/3/2002	3/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	6.9	4.4				
12.	Total Alkalinity (mg/l $CaCO_3$)	240	180				
13.	Specific Conductivity (umhos/cm at 25 C)	680	380				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.29	0.08				
16.	Total Sulfates (mg/l)	75	36				
17.	Total Iron (mg/l)	0.12	0.09				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	240	180				
20.	Nitrates (mg/l)	1.8	0.36				
21.	Date Sampled for Analysis	10/3/2002	3/28/2003				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/26/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2426999.6			684413.55	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	DS 402	DS 402				
2.	Lab Identification Number	0201359	0202402				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm or cfs)	NA	1.6				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.8	8				
11.	Total Acidity (mg/l $CaCO_3$)	9.6	1.3				
12.	Total Alkalinity (mg/l $CaCO_3$)	92	190				
13.	Specific Conductivity (umhos/cm at 25 C)	260	440				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.02				
16.	Total Sulfates (mg/l)	30	42				
17.	Total Iron (mg/l)	0.66	0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	110	210				
20.	Nitrates (mg/l)	3.8	4.4				
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/23/2002	2/25/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2427244.1			684578.99	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 403	DS 403				
2.	Lab Identification Number	0201360	0202403				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1280	1280				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.6	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	15	4.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	88	180				
13.	Specific Conductivity (umhos/cm at 25 C)	200	360				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.02				
16.	Total Sulfates (mg/l)	24	38				
17.	Total iron (mg/l)	1.1	0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	100	170				
20.	Nitrates (mg/l)	1	0.98		Flow measurements were unavailable		
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/23/2002	2/26/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2427722.9			684512.81	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	DS 404	DS 404				
2.	Lab Identification Number	0201358	0202401				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm or cfs)	NA	NA				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.7	8				
11.	Total Acidity (mg/l $CaCO_3$)	5.8	5.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	68	170				
13.	Specific Conductivity (umhos/cm at 25 C)	210	440				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.01				
16.	Total Sulfates (mg/l)	34	55				
17.	Total Iron (mg/l)	0.92	<0.02				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	100	230				
20.	Nitrates (mg/l)	3.1	4.4		flows were unavailable		
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/23/2002	2/26/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2428372.5			684329.56	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 405	DS 405				
2.	Lab Identification Number	0201357	0202400				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1170	1170				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.9	8.3				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	4.5				
12.	Total Alkalinity (mg/l $CaCO_3$)	43	83				
13.	Specific Conductivity (umhos/cm at 25 C)	160	220				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.05				
16.	Total Sulfates (mg/l)	27	25				
17.	Total Iron (mg/l)	0.93	2.1				
18.	Total Suspended Solids (mg/l)	<1.0	3.3				
19.	Total Hardness (mg/l $CACO_3$)	60	120				
20.	Nitrates (mg/l)	1.6	1.5		flows were unavailable		
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/23/2002	2/26/2002				

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2427609.3			692922.88	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 406	DS 406				
2.	Lab Identification Number	0201356	0202399				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	1230	1230				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	0.67				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.8	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	12	7.2				
12.	Total Alkalinity (mg/l $CaCO_3$)	160	200				
13.	Specific Conductivity (umhos/cm at 25 C)	380	460				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.02				
16.	Total Sulfates (mg/l)	27	34				
17.	Total Iron (mg/l)	0.52	0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	190	230				
20.	Nitrates (mg/l)	4.9	7.6				
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/23/2002	2/26/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424935.7			684143.96	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 411	DS 411				
2.	Lab Identification Number	0201361	0202404				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.5	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	5.8	<1.0				
12.	Total Alkalinity (mg/l $CaCO_3$)	190	210				
13.	Specific Conductivity (umhos/cm at 25 C)	560	710				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.02				
16.	Total Sulfates (mg/l)	65	78				
17.	Total Iron (mg/l)	1.3	<0.04				
18.	Total Suspended Solids (mg/l)	10	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	260	360				
20.	Nitrates (mg/l)	14	18		flows were unavailable		
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/23/2002	2/26/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424182.3			682838.91	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 412	DS 412				
2.	Lab Identification Number	0201362	0202408				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	1160	1160				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8.1	8.7				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	2				
12.	Total Alkalinity (mg/l $CaCO_3$)	34	120				
13.	Specific Conductivity (umhos/cm at 25 C)	91	410				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.02				
16.	Total Sulfates (mg/l)	<1.5	60				
17.	Total Iron (mg/l)	<0.05	0.06				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	40	180				
20.	Nitrates (mg/l)	0.9	3.7		flows were unavailable		
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/23/2002	2/26/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424849.6			682420.01	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DS 413	DS 413				
2.	Lab identification Number	0201383	0202406				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	1/24/2002	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.5	8				
11.	Total Acidity (mg/l $CaCO_3$)	5.8	5.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	64	170				
13.	Specific Conductivity (umhos/cm at 25 C)	260	480				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.02				
16.	Total Sulfates (mg/l)	32	42				
17.	Total Iron (mg/l)	0.17	<0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	100	230				
20.	Nitrates (mg/l)	8.1	10		flows were unavailable		
21.	Date Sampled for Analysis	1/24/2002	2/26/2002				
22.	Date Last Precipitation Event Occurred	1/26/2002	2/26/2002				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424371.6	683851.0			LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 414					
2.	Lab Identification Number	0202405					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1140					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	2/26/2002					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.9					
11.	Total Acidity (mg/l $CaCO_3$)	2.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	180					
13.	Specific Conductivity (umhos/cm at 25 C)	480					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.02					
16.	Total Sulfates (mg/l)	34					
17.	Total Iron (mg/l)	<0.04					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	200			*The flow from DS – 414 is piped directly into a holding tank and there is no location from which a spring flow can be determined.*		
20.	Nitrates (mg/l)	11					
21.	Date Sampled for Analysis	2/26/2002					
22.	Date Last Precipitation Event Occurred	2/26/2002					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2423161.0	683185		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 416					
2.	Lab Identification Number	3/31/03					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1120					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.82					
8.	Date Above Measurements Made	3/31/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7					
11.	Total Acidity (mg/l $CaCO_3$)	11					
12.	Total Alkalinity (mg/l $CaCO_3$)	110					
13.	Specific Conductivity (umhos/cm at 25 C)	270					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.02					
16.	Total Sulfates (mg/l)	27					
17.	Total Iron (mg/l)	<0.04					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	150					
20.	Nitrates (mg/l)	3.9					
21.	Date Sampled for Analysis	3/31/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2429947.6		682239.7		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 420	DS 420	DS 420			
2.	Lab Identification Number	0207047	0209142	203358			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1260	1260	1260			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.93	0.01	3.8			
8.	Date Above Measurements Made	7/2/2002	9/12/2002	3/21/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.8	7.9	7.7			
11.	Total Acidity (mg/l $CaCO_3$)	4.4	9.7	6.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	200	270	130			
13.	Specific Conductivity (umhos/cm at 25 C)	470	560	300			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.03	0.5	0.09			
16.	Total Sulfates (mg/l)	44	42	40			
17.	Total Iron (mg/l)	0.42	0.051	2.2			
18.	Total Suspended Solids (mg/l)	31	4.7	110			
19.	Total Hardness (mg/l $CACO_3$)	230	270	180			
20.	Nitrates (mg/l)	2.5	0.33	0.7			
21.	Date Sampled for Analysis	7/2/2002	9/12/2002	3/21/2002			
22.	Date Last Precipitation Event Occurred	7/1/2002	9/3/2002	3/21/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2429653.3		660379.5		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 422	DS 422				
2.	Lab Identification Number	0207046	203359				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1160	1160				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.01	0.16				
8.	Date Above Measurements Made	7/2/2002	3/21/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7	5.7				
11.	Total Acidity (mg/l $CaCO_3$)	2.5	9				
12.	Total Alkalinity (mg/l $CaCO_3$)	38	25				
13.	Specific Conductivity (umhos/cm at 25 C)	130	100				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.01	0.02				
16.	Total Sulfates (mg/l)	23	21				
17.	Total Iron (mg/l)	0.2	0.09				
18.	Total Suspended Solids (mg/l)	2	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	50	50				
20.	Nitrates (mg/l)	0.66	0.83				
21.	Date Sampled for Analysis	7/2/2002	3/21/2002				
22.	Date Last Precipitation Event Occurred	7/1/2002	3/21/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2429799		680948.4		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 423	DS 423	DS 423			
2.	Lab Identification Number	0207036	0209146	203362			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.42	0.01	1.4			
8.	Date Above Measurements Made	7/2/2002	9/12/2002	3/21/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.4	8	7.2			
11.	Total Acidity (mg/l $CaCO_3$)	13	7.1	5.4			
12.	Total Alkalinity (mg/l $CaCO_3$)	190	220	180			
13.	Specific Conductivity (umhos/cm at 25 C)	560	540	490			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.01	0.02	<0.01			
16.	Total Sulfates (mg/l)	91	99	87			
17.	Total Iron (mg/l)	<0.04	0.09	0.06			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	240	290	410			
20.	Nitrates (mg/l)	3.5	2.6	4.1			
21.	Date Sampled for Analysis	7/1/2002	9/12/2002	3/21/2002			
22.	Date Last Precipitation Event Occurred	7/1/2002	9/3/2002	3/21/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2431293.3		682695.8		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 424	DS 424	DS 424			
2.	Lab Identification Number	0207037	0209147	203363			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1220	1220	1220			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.23	0.04	3			
8.	Date Above Measurements Made	7/1/2002	9/12/2002	3/21/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	8.0	7.6	7.0			
11.	Total Acidity (mg/l $CaCO_3$)	6.0	7.4	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	96	150	53			
13.	Specific Conductivity (umhos/cm at 25 C)	300	260	150			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.01	1.4	0.05			
16.	Total Sulfates (mg/l)	45	34	30			
17.	Total Iron (mg/l)	0.07	0.49	1			
18.	Total Suspended Solids (mg/l)	28	<1.0	39			
19.	Total Hardness (mg/l $CACO_3$)	120	160	60			
20.	Nitrates (mg/l)	0.09	<0.07	0.12			
21.	Date Sampled for Analysis	7/1/2002	9/12/2002	3/21/2002			
22.	Date Last Precipitation Event Occurred	7/1/2002	9/3/2002	3/21/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2423784.5		682150		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 426	DS 426	DS 426			
2.	Lab Identification Number	0207127	0209149	203364			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.38	0.06	1			
8.	Date Above Measurements Made	7/11/2002	9/12/2002	3/21/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.2	7.5	6.7			
11.	Total Acidity (mg/l $CaCO_3$)	24	9.7	6.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	190	100			
13.	Specific Conductivity (umhos/cm at 25 C)	340	370	270			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.09	0.05	0.02			
16.	Total Sulfates (mg/l)	29	31	27			
17.	Total Iron (mg/l)	0.09	0.16	0			
18.	Total Suspended Solids (mg/l)	<1.0	<1	<1			
19.	Total Hardness (mg/l $CACO_3$)	190	200	130			
20.	Nitrates (mg/l)	0.3	0.1	0.31			
21.	Date Sampled for Analysis	7/11/2002	9/12/2002	3/21/2002			
22.	Date Last Precipitation Event Occurred	7/9/2002	9/3/2002	3/21/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418994.6		674586.3		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 427	DS 427	DS 427			
2.	Lab Identification Number	210052	210052	210052			
3.	High (H)/Low (L) Designation (if applicable)	L	H	I			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.5	0.63	0.29			
8.	Date Above Measurements Made	10/3/2002	3/25/2002	7/10/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.9	6.9	6.9			
11.	Total Acidity (mg/l $CaCO_3$)	5.3	10	10			
12.	Total Alkalinity (mg/l $CaCO_3$)	220	190	190			
13.	Specific Conductivity (umhos/cm at 25 C)	550	460	460			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.03	0.08	0.08			
16.	Total Sulfates (mg/l)	49	50	50			
17.	Total Iron (mg/l)	0.08	<0.04	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	250	320	320			
20.	Nitrates (mg/l)	1.9	0.58	0.58			
21.	Date Sampled for Analysis	10/3/2002	3/25/2002	3/25/2002			
22.	Date Last Precipitation Event Occurred	9/27/2002	3/25/2002	3/25/2002			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2411570.4		679129.8		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 435	DS 435	DS 435			
2.	Lab Identification Number	0207180	0209225	204018			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1170	1170	1170			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.72	0.63	0.68			
8.	Date Above Measurements Made	7/15/2002	9/18/2002	3/28/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	5.8	5.8	5.9			
11.	Total Acidity (mg/l $CaCO_3$)	12	32	8.5			
12.	Total Alkalinity (mg/l $CaCO_3$)	40	43	49			
13.	Specific Conductivity (umhos/cm at 25 C)	170	210	150			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.5	0.33	0.71			
16.	Total Sulfates (mg/l)	19	18	23			
17.	Total Iron (mg/l)	<0.04	<0.04	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	50	60	60			
20.	Nitrates (mg/l)	0.16	0.18	<0.09			
21.	Date Sampled for Analysis	7/15/2002	9/18/2002	3/28/2002			
22.	Date Last Precipitation Event Occurred	7/9/2002	9/15/2002	3/26/2002			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES	2432420.6		684914.9		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 441	DS 441	DS 441			
2.	Lab Identification Number	0207040	204046	NA			
3.	High (H)/Low (L) Designation (if applicable)	I	H	L			
4.	Surface Elevation for Sampling Station (msl)	990	990	990			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	1.8	0.75	0			
8.	Date Above Measurements Made	7/1/2002	3/29/2002	10/8/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.9	7.2	NA			
11.	Total Acidity (mg/l $CaCO_3$)	4.8	4.9	NA			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	150	NA			
13.	Specific Conductivity (umhos/cm at 25 C)	360	300	NA			
14.	Total Dissolved Solids (mg/l)	ND	ND	NA			
15.	Total Manganese (mg/l)	<0.01	0.09	NA			
16.	Total Sulfates (mg/l)	43	39	NA			
17.	Total Iron (mg/l)	<0.04	1.8	NA			
18.	Total Suspended Solids (mg/l)	10	56	NA			
19.	Total Hardness (mg/l $CACO_3$)	170	160	NA			
20.	Nitrates (mg/l)	0.26	0.18	NA			
21.	Date Sampled for Analysis	7/1/2002	3/29/2002	NA			
22.	Date Last Precipitation Event Occurred	7/1/2002	3/29/2002	10/4/2002			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2414819.2	675138.1			LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 445	DS 445				
2.	Lab Identification Number	0210050	303353				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.08	0.57				
8.	Date Above Measurements Made	10/3/2002	3/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.2	6.9				
11.	Total Acidity (mg/l $CaCO_3$)	11	14				
12.	Total Alkalinity (mg/l $CaCO_3$)	170	160				
13.	Specific Conductivity (umhos/cm at 25 C)	390	360				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.05	0.01				
16.	Total Sulfates (mg/l)	35	36				
17.	Total Iron (mg/l)	0.7	<0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	180	180				
20.	Nitrates (mg/l)	1.7	0.36				
21.	Date Sampled for Analysis	10/3/2002	3/28/2003				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/26/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2414864.6		675103.2		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 446	DS 446				
2.	Lab Identification Number	210103	303354				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.04	0.19				
8.	Date Above Measurements Made	10/8/2002	3/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8.7	7.2				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	7.8				
12.	Total Alkalinity (mg/l $CaCO_3$)	95	160				
13.	Specific Conductivity (umhos/cm at 25 C)	290	360				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.03	0.1				
16.	Total Sulfates (mg/l)	40	38				
17.	Total Iron (mg/l)	0.55	0.28				
18.	Total Suspended Solids (mg/l)	23	8				
19.	Total Hardness (mg/l $CACO_3$)	140	170				
20.	Nitrates (mg/l)	0.31	0.47				
21.	Date Sampled for Analysis	10/8/2002	3/28/2003				
22.	Date Last Precipitation Event Occurred	10/4/2002	3/26/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2414791.3		674946.3		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 447	DS 447				
2.	Lab Identification Number	210104	303355				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.04	0.21				
8.	Date Above Measurements Made	10/8/2002	3/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8.2	7.5				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	4.1				
12.	Total Alkalinity (mg/l $CaCO_3$)	120	95				
13.	Specific Conductivity (umhos/cm at 25 C)	320	230				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.03	<0.01				
16.	Total Sulfates (mg/l)	32	32				
17.	Total Iron (mg/l)	0.06	0.06				
18.	Total Suspended Solids (mg/l)	<1.0	2				
19.	Total Hardness (mg/l $CACO_3$)	140	110				
20.	Nitrates (mg/l)	0.22	0.36				
21.	Date Sampled for Analysis	10/8/2002	3/28/2003				
22.	Date Last Precipitation Event Occurred	10/4/2002	3/26/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424399.2		676287.3		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 450	DS 450				
2.	Lab Identification Number	0210057	0303349				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1220	1220				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.49	7.8				
8.	Date Above Measurements Made	10/3/2002	3/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.6	8.2				
11.	Total Acidity (mg/l $CaCO_3$)	8.8	5.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	230	210				
13.	Specific Conductivity (umhos/cm at 25 C)	510	520				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.01	<0.01				
16.	Total Sulfates (mg/l)	40	46				
17.	Total Iron (mg/l)	0.05	0.06				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	230	220				
20.	Nitrates (mg/l)	0.9	2.2				
21.	Date Sampled for Analysis	10/3/2002	3/28/2003				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/26/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2414504	677911		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 460					
2.	Lab Identification Number	304496					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1240					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.05					
8.	Date Above Measurements Made	4/28/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.6					
11.	Total Acidity (mg/l $CaCO_3$)	14					
12.	Total Alkalinity (mg/l $CaCO_3$)	230					
13.	Specific Conductivity (umhos/cm at 25 C)	690					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.07					
16.	Total Sulfates (mg/l)	51					
17.	Total Iron (mg/l)	0.16					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	300					
20.	Nitrates (mg/l)	2.2					
21.	Date Sampled for Analysis	4/28/2003					
22.	Date Last Precipitation Event Occurred	4/22/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2414441	677498		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 461					
2.	Lab Identification Number	304497					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1205					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.19					
8.	Date Above Measurements Made	4/28/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.6					
11.	Total Acidity (mg/l $CaCO_3$)	210					
12.	Total Alkalinity (mg/l $CaCO_3$)	0.64					
13.	Specific Conductivity (umhos/cm at 25 C)	710					
14.	Total Dissolved Solids (mg/l)	ND					
15	Total Manganese (mg/l)	0.21					
16.	Total Sulfates (mg/l)	61					
17.	Total Iron (mg/l)	0.64					
18.	Total Suspended Solids (mg/l)	18					
19.	Total Hardness (mg/l $CACO_3$)	300					
20.	Nitrates (mg/l)	4.8					
21.	Date Sampled for Analysis	4/28/2003					
22.	Date Last Precipitation Event Occurred	4/22/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2141194	677332			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 453					
2.	Lab Identification Number	304498					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1220					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feat)	NA					
7.	Flow for Spring/Stream (gpm)	0.25					
8.	Date Above Measurements Made	4/28/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.1					
11.	Total Acidity (mg/l $CaCO_3$)	10					
12.	Total Alkalinity (mg/l $CaCO_3$)	150					
13.	Specific Conductivity (umhos/cm at 25 C)	480					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.58					
16.	Total Sulfates (mg/l)	20					
17.	Total Iron (mg/l)	2.5					
18.	Total Suspended Solids (mg/l)	14					
19.	Total Hardness (mg/l $CACO_3$)	180					
20.	Nitrates (mg/l)	0.19					
21.	Date Sampled for Analysis	4/28/2003					
22.	Date Last Precipitation Event Occurred	4/22/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415442		684988.6		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DS 500					
2.	Lab Identification Number	0310132					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1180					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	1.5					
8.	Date Above Measurements Made	4/9/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	6.4					
11.	Total Acidity (mg/l $CaCO_3$)	13					
12.	Total Alkalinity (mg/l $CaCO_3$)	86					
13.	Specific Conductivity (umhos/cm at 25 C)	220					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.05					
16.	Total Sulfates (mg/l)	28					
17.	Total Iron (mg/l)	0.04					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	90					
20.	Nitrates (mg/l)	0.61					
21.	Date Sampled for Analysis	4/9/2003					
22.	Date Last Precipitation Event Occurred	4/8/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2418373	684511		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DW 23A					
2.	Lab Identification Number	306202					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1260					
5.	Depth of Well below Land Surface (msl)	23					
6.	Static Water Level of Well below Land Surface (feet)	5					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	A					
10.	pH(Standard Units)	7.6					
11.	Total Acidity (mg/l $CaCO_3$)	16					
12.	Total Alkalinity (mg/l $CaCO_3$)	89					
13.	Specific Conductivity (umhos/cm at 25 C)	300					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.01					
16.	Total Sulfates (mg/l)	25					
17.	Total Iron (mg/l)	0.75					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	90					
20.	Nitrates (mg/l)	0.81					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/8/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417549.2 676124.4				LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W-146A					
2.	Lab Identification Number	306163					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1260					
5.	Depth of Well below Land Surface (msl)	34					
6.	Static Water Level of Well below Land Surface (feet)	2.4					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	6/7/2003					
9.	Aquifer/Zone Identification for Well/Spring	A					
10.	pH(Standard Units)	7					
11.	Total Acidity (mg/l $CaCO_3$)	28					
12.	Total Alkalinity (mg/l $CaCO_3$)	190					
13.	Specific Conductivity (umhos/cm at 25 C)	0.93					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.15					
16.	Total Sulfates (mg/l)	83					
17.	Total Iron (mg/l)	0.93					
18.	Total Suspended Solids (mg/l)	35					
19.	Total Hardness (mg/l $CACO_3$)	230					
20.	Nitrates (mg/l)	0.57					
21.	Date Sampled for Analysis	6/7/2003					
22.	Date Last Precipitation Event Occurred	6/6/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2431235.7			682516.99	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	WL 161	WL 161	WL 161			
2.	Lab Identification Number	0110131	0201209	0202360			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1280	1280	1280			
5.	Depth of Well below Land Surface (msl)	75	75	75			
6.	Static Water Level of Well below Land Surface (feet)	42*	42*	42*			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/9/2001	1/10/2002	2/22/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.6	7.9	8			
11.	Total Acidity (mg/l $CaCO_3$)	4.9	5.8	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	220	230	210			
13.	Specific Conductivity (umhos/cm at 25 C)	720	650	550			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	0.02	<0.01			
16.	Total Sulfates (mg/l)	83	88	87			
17.	Total Iron (mg/l)	0.09	<0.05	0.06			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	300	320	290			
20.	Nitrates (mg/l)	8.7	6.8	6.1	This well is buried *DENOTES DEPTH OBTAINED FROM WELL LOG		
21.	Date Sampled for Analysis	10/9/2001	1/10/2002	2/22/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/7/2002	2/21/2002			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418842.3			678833.01	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	W 179	W 179	W 179			
2.	Lab Identification Number	0110200	0201228	0202439			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	99	99	99			
6.	Static Water Level of Well below Land Surface (feet)	NA	29	29			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/17/2001	1/11/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.9	8.2	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	9.2	9.6	6.7			
12.	Total Alkalinity (mg/l $CaCO_3$)	290	240	240			
13.	Specific Conductivity (umhos/cm at 25 C)	640	570	580			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	0.02	0.01			
16.	Total Sulfates (mg/l)	64	41	45			
17.	Total Iron (mg/l)	<0.05	0.06	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	1.3			
19.	Total Hardness (mg/l $CACO_3$)	270	250	280			
20.	Nitrates (mg/l)	1.3	2.3	2.3			
21.	Date Sampled for Analysis	10/17/2001	1/11/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	1/7/2002	2/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418741.7			675636.38	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	WL 180	WL 180	WL 180			
2.	Lab Identification Number	0110103	0201263	0202433			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1260	1260	1260			
5.	Depth of Well below Land Surface (msl)	60	60	60			
6.	Static Water Level of Well below Land Surface (feet)	14*	14*	14*			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/9/2001	1/17/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.82	8.1	7.6			
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	5.8	2.5			
12.	Total Alkalinity (mg/l $CaCO_3$)	210	190	190			
13.	Specific Conductivity (umhos/cm at 25 C)	800	870	850			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	0.01			
16.	Total Sulfates (mg/l)	49	60	45			
17.	Total Iron (mg/l)	0.1	0.1	0.13			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	370	360	410			
20.	Nitrates (mg/l)	0.36	1.5	1.8	WL-180 has been buried *DENOTED DEPTH OBTAINED FROM WELL LOG		
21.	Date Sampled for Analysis	10/9/2001	1/17/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/14/2002	2/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418926.5			678861.35	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 180A	W 180A	W 180A			
2.	Lab Identification Number	0110201	0201228	0202440			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	112	112	112			
6.	Static Water Level of Well below Land Surface (feet)	NA	27	27			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/17/2001	1/11/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.9	8.3	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	7.2	3.8	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	280	260	260			
13.	Specific Conductivity (umhos/cm at 25 C)	580	590	590			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	0.02	<0.01			
16.	Total Sulfates (mg/l)	44	41	32			
17.	Total Iron (mg/l)	0.23	0.12	0.08			
18.	Total Suspended Solids (mg/l)	4.7	<1.0	1.3			
19.	Total Hardness (mg/l $CACO_3$)	180	150	90			
20.	Nitrates (mg/l)	0.52	1.1	2.4			
21.	Date Sampled for Analysis	10/17/2001	1/11/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	1/10/2002	2/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415818.5			675356.27	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	WL 181	WL 181	WL 181			
2.	Lab Identification Number	0110102	0201232	0202434			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210			
5.	Depth of Well below Land Surface (msl)	50	50	50			
6.	Static Water Level of Well below Land Surface (feet)	19*	19	19			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/9/2001	1/11/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.64	7.8	8			
11.	Total Acidity (mg/l $CaCO_3$)	4.4	12	3.2			
12.	Total Alkalinity (mg/l $CaCO_3$)	200	200	190			
13.	Specific Conductivity (umhos/cm at 25 C)	570	520	480			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	0.02	0.01			
16.	Total Sulfates (mg/l)	56	57	58			
17.	Total Iron (mg/l)	<0.05	<0.05	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	240	230	230			
20.	Nitrates (mg/l)	0.69	3.2	3.1	* DENOTES DEPTH OBTAINED FROM WELL LOG		
21.	Date Sampled for Analysis	10/9/2001	1/11/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/10/2002	2/27/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415435.3			679061.18	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 181A	W 181A				
2.	Lab Identification Number	0110197	0202432				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1260	1260				
5.	Depth of Well below Land Surface (msl)	85	85				
6.	Static Water Level of Well below Land Surface (feet)	NA*	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/17/2001	2/27/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	4.2	5.4				
12.	Total Alkalinity (mg/l $CaCO_3$)	210	300				
13.	Specific Conductivity (umhos/cm at 25 C)	440	790				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.01				
16.	Total Sulfates (mg/l)	41	120				
17.	Total Iron (mg/l)	<0.05	0.11				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	210	190				
20.	Nitrates (mg/l)	0.33	0.15		W-181A has been sealed		
21.	Date Sampled for Analysis	10/17/2001	2/27/2002				
22.	Date Last Precipitation Event Occurred	10/16/2001	2/27/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424001.9			676722.7	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 184	W 184				
2.	Lab Identification Number	0110101	0201223				
3.	High (H)/Low (L) Designation (if applicable)	L	T/I				
4.	Surface Elevation for Sampling Station (msl)	1260	1260				
5.	Depth of Well below Land Surface (msl)	65	65				
6.	Static Water Level of Well below Land Surface (feet)	unknown	unknown				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/9/2001	1/11/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	8.04	8.3				
11.	Total Acidity (mg/l $CaCO_3$)	6.8	17				
12.	Total Alkalinity (mg/l $CaCO_3$)	84	220				
13.	Specific Conductivity (umhos/cm at 25 C)	260	660				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	0.07				
16.	Total Sulfates (mg/l)	18	27				
17.	Total Iron (mg/l)	0.61	2.6				
18.	Total Suspended Solids (mg/l)	11	31				
19.	Total Hardness (mg/l $CACO_3$)	80	320				
20.	Nitrates (mg/l)	<0.09	0.54				
21.	Date Sampled for Analysis	10/9/2001	1/11/2002				
22.	Date Last Precipitation Event Occurred	10/8/2001	1/10/2002				

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2424042		676954.7		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DW-184A					
2.	Lab Identification Number	306123					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1260					
5.	Depth of Well below Land Surface (msl)	21					
6.	Static Water Level of Well below Land Surface (feet)	5					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	6/3/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7					
11.	Total Acidity (mg/l $CaCO_3$)	27					
12.	Total Alkalinity (mg/l $CaCO_3$)	290					
13.	Specific Conductivity (umhos/cm at 25 C)	0.08					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	<0.01					
16.	Total Sulfates (mg/l)	59					
17.	Total Iron (mg/l)	0.08					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	370					
20.	Nitrates (mg/l)	1.5					
21.	Date Sampled for Analysis	6/3/2003					
22.	Date Last Precipitation Event Occurred	6/2/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2412989.3		683011.21	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 194	W 194	W 194			
2.	Lab Identification Number	0110106	0201218	0203002			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210			
5.	Depth of Well below Land Surface (msl)	90	90	90			
6.	Static Water Level of Well below Land Surface (feet)	NA*	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/11/2001	1/10/2002	2/28/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.32	7.3	7.8			
11.	Total Acidity (mg/l $CaCO_3$)	13	3.8	12			
12.	Total Alkalinity (mg/l $CaCO_3$)	190	190	170			
13.	Specific Conductivity (umhos/cm at 25 C)	1200	1100	1100			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	27	32	32			
17.	Total Iron (mg/l)	0.06	<0.05	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	400	400	370			
20.	Nitrates (mg/l)	0.22	0.3	0.39	W 194 has been sealed		
21.	Date Sampled for Analysis	10/11/2001	1/10/2002	2/28/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/7/2002	2/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2413151.2		682365.1	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 196	W 196	W 196			
2.	Lab Identification Number	0110108	0201342	0203021			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	130	130	130			
6.	Static Water Level of Well below Land Surface (feet)	NA*	NA	NA			
7.	Flow for Spring/Stream (gpM)	NA	NA	NA			
8.	Date Above Measurements Made	10/11/2001	1/23/2002	3/1/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.84	7.5	8			
11.	Total Acidity (mg/l $CaCO_3$)	2.7	13	9			
12.	Total Alkalinity (mg/l $CaCO_3$)	230	210	200			
13.	Specific Conductivity (umhos/cm at 25 C)	550	820	570			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	62	58	50			
17.	Total Iron (mg/l)	0.17	<0.05	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	230	250	210			
20.	Nitrates (mg/l)	1.2	1.7	2.2	W 196 has been sealed		
21.	Date Sampled for Analysis	10/11/2001	1/23/2002	3/1/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/21/2002	2/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2413005.9		682318.85	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 197	W 197	W 197			
2.	Lab Identification Number	0110116	0201296	0203164			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1220	1220	1220			
5.	Depth of Well below Land Surface (msl)	80	80	80			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA*	NA	NA			
8.	Date Above Measurements Made	10/9/2001	1/18/2002	3/15/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.43	8.2	8			
11.	Total Acidity (mg/l $CaCO_3$)	8.4	15	9.3			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	160	160			
13.	Specific Conductivity (umhos/cm at 25 C)	1300	1400	1400			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	71	89	71			
17.	Total Iron (mg/l)	0.05	<0.05	0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	460	390	230			
20.	Nitrates (mg/l)	0.63	0.83	0.68	W 197 has been sealed		
21.	Date Sampled for Analysis	10/9/2001	1/18/2002	3/15/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/14/2002	3/13/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES	2412578	681441			LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	W 202					
2.	Lab Identification Number	304018					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1260					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Wall below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	4/2/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.4					
11.	Total Acidity (mg/l $CaCO_3$)	6.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	200					
13.	Specific Conductivity (umhos/cm at 25 C)	460					
14.	Total Dissolved Solids (mg/l)	NO					
15.	Total Manganese (mg/l)	<0.01					
16.	Total Sulfates (mg/l)	40					
17.	Total Iron (mg/l)	<0.04					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	230					
20.	Nitrates (mg/l)	4.3			inaccessible		
21.	Date Sampled for Analysis	4/2/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2412578.1			681441.15	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	W 203	W 203				
2.	Lab Identification Number	0110146	0201292				
3.	High (H)/Low (L) Designation (if applicable)	L	L				
4.	Surface Elevation for Sampling Station (msl)	1260	1260				
5.	Depth of Well below Land Surface (msl)	100	100				
6.	Static Water Level of Well below Land Surface (feet)	NA*	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/12/2001	1/18/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.82	8.3				
11.	Total Acidity (mg/l $CaCO_3$)	2	<1.0				
12.	Total Alkalinity (mg/l $CaCO_3$)	200	20				
13.	Specific Conductivity (umhos/cm at 25 C)	530	240				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	1.3				
16.	Total Sulfates (mg/l)	69	37				
17.	Total Iron (mg/l)	<0.05	4.2				
18.	Total Suspended Solids (mg/l)	<1.0	620				
19.	Total Hardness (mg/l $CACO_3$)	230	80				
20.	Nitrates (mg/l)	1	3.9		W-203 has been buried		
21.	Date Sampled for Analysis	10/12/2001	1/18/2002				
22.	Date Last Precipitation Event Occurred	10/11/2001	1/14/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2411862.5			680192.68	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	W 206	W 208				
2.	Lab Identification Number	0110193	0201279				
3.	High (H)/Low (L) Designation (if applicable)	L	L				
4.	Surface Elevation for Sampling Station (msl)	1240	1240				
5.	Depth of Well below Land Surface (msl)	130	130				
6.	Static Water Level of Well below Land Surface (feet)	unknown	unknown				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/16/2001	1/19/2002				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.6	8.1				
11.	Total Acidity (mg/l $CaCO_3$)	5.3	12				
12.	Total Alkalinity (mg/l $CaCO_3$)	180	170				
13.	Specific Conductivity (umhos/cm at 25 C)	620	550				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	<0.02				
16.	Total Sulfates (mg/l)	48	50				
17.	Total Iron (mg/l)	0.36	0.76				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	260	250				
20.	Nitrates (mg/l)	0.76	2.1				
21.	Date Sampled for Analysis	10/16/2001	1/19/2002				
22.	Date Last Precipitation Event Occurred	10/16/2001	1/14/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2426013.6			682270.24	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	W 224	W 224	W 224			
2.	Lab Identification Number	0110225	0201226	0202361			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1280	1280	1280			
5.	Depth of Well below Land Surface (msl)	100	100	100			
6.	Static Water Level of Well below Land Surface (feet)	NA*	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	10/18/2001	1/11/2002	2/22/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.7	8.1	7.8			
11.	Total Acidity (mg/l $CaCO_3$)	13	5.8	3.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	230	230	220			
13.	Specific Conductivity (umhos/cm at 25 C)	510	570	500			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	76	84	80			
17.	Total Iron (mg/l)	<0.05	<0.05	0.09			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	250	280	260			
20.	Nitrates (mg/l)	0.42	0.7	0.63	W-224 HAS BEEN BURIED		
21	Date Sampled for Analysis	10/18/2001	1/11/2002	2/22/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	1/10/2002	2/21/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417901.9			674362.46	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 259					
2.	Lab Identification Number	0110238					
3.	High (H)/Low (L) Designation (if applicable)	L					
4.	Surface Elevation for Sampling Station (msl)	1180					
5.	Depth of Well below Land Surface (msl)	79					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	10/18/2001					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.7					
11.	Total Acidity (mg/l $CaCO_3$)	2.6					
12.	Total Alkalinity (mg/l $CaCO_3$)	140					
13.	Specific Conductivity (umhos/cm at 25 C)	220					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	<0.02					
16.	Total Sulfates (mg/l)	29					
17.	Total Iron (mg/l)	<0.05					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	80					
20.	Nitrates (mg/l)	4.3					
21.	Date Sampled for Analysis	10/18/2001					
22.	Date Last Precipitation Event Occurred	10/16/2001					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417901.9			674362.46 LOCATION		ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DW 259	DW 259				
2.	Lab Identification Number	0110238	306140				
3.	High (H)/Low (L) Designation (if applicable)	L	I				
4.	Surface Elevation for Sampling Station (msl)	1190	1190				
5.	Depth of Well below Land Surface (msl)	9	9				
6.	Static Water Level of Well below Land Surface (feet)	NA	2				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/18/2001	6/6/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.7	7.4				
11.	Total Acidity (mg/l $CaCO_3$)	2.6	33				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	270				
13.	Specific Conductivity (umhos/cm at 25 C)	220	690				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.02	4.3				
16.	Total Sulfates (mg/l)	29	16				
17.	Total Iron (mg/l)	<0.05	1.1				
18.	Total Suspended Solids (mg/l)	<1.0	8				
19.	Total Hardness (mg/l $CACO_3$)	80	270				
20.	Nitrates (mg/l)	4.3	0.2				
21.	Date Sampled for Analysis	10/18/2001	6/6/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	6/5/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417474.2			675677.72	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	DW 268					
2.	Lab Identification Number	0110234					
3.	High (H)/Low (L) Designation (if applicable)	L					
4.	Surface Elevation for Sampling Station (msl)	1260					
5.	Depth of Well below Land Surface (msl)	32					
6.	Static Water Level of Well below Land Surface (feet)	5.5					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	10/18/2001					
9.	Aquifer/Zone Identification for Well/Spring	A					
10.	pH(Standard Units)	7.8					
11.	Total Acidity (mg/l $CaCO_3$)	<1.0					
12.	Total Alkalinity (mg/l $CaCO_3$)	110					
13.	Specific Conductivity (umhos/cm at 25 C)	310					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.08					
16.	Total Sulfates (mg/l)	25					
17.	Total Iron (mg/l)	2.2					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	110					
20.	Nitrates (mg/l)	5					
21.	Date Sampled for Analysis	10/18/2001					
22.	Date Last Precipitation Event Occurred	10/16/2001					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417975	677790.8			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W-281					
2.	Lab Identification Number	306143					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1240					
5.	Depth of Well below Land Surface (msl)	34					
6.	Static Water Level of Well below Land Surface (feet)	14					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	6/6/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	6.8					
11.	Total Acidity (mg/l $CaCO_3$)	14					
12.	Total Alkalinity (mg/l $CaCO_3$)	94					
13.	Specific Conductivity (umhos/cm at 25 C)	360					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.01					
16.	Total Sulfates (mg/l)	33					
17.	Total Iron (mg/l)	0.11					
18.	Total Suspended Solids (mg/l)	4					
19.	Total Hardness (mg/l $CACO_3$)	140					
20.	Nitrates (mg/l)	1.1					
21.	Date Sampled for Analysis	6/6/2003					
22.	Date Last Precipitation Event Occurred	6/5/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2412161.2			678274.71	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 308					
2.	Lab Identification Number	0201364					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1220					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	1/24/2002					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.3					
11.	Total Acidity (mg/l $CaCO_3$)	1.9					
12.	Total Alkalinity (mg/l $CaCO_3$)	170					
13.	Specific Conductivity (umhos/cm at 25 C)	900					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	<0.02					
16.	Total Sulfates (mg/l)	35					
17.	Total Iron (mg/l)	0.06					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	410					
20.	Nitrates (mg/l)	0.48			Flows could not be obtained from this buried well		
21.	Date Sampled for Analysis	1/24/2002					
22.	Date Last Precipitation Event Occurred	1/23/2002					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413908.3			6803086	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 325					
2.	Lab Identification Number	0112282					
3.	High (H)/Low (L) Designation (if applicable)	T/L					
4.	Surface Elevation for Sampling Station (msl)	1160					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	11/14/2001					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.16					
11.	Total Acidity (mg/l $CaCO_3$)	7.5					
12.	Total Alkalinity (mg/l $CaCO_3$)	130					
13.	Specific Conductivity (umhos/cm at 25 C)	310					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.08					
16.	Total Sulfates (mg/l)	24					
17.	Total Iron (mg/l)	0.27					
18.	Total Suspended Solids (mg/l)	2					
19.	Total Hardness (mg/l $CACO_3$)	140					
20.	Nitrates (mg/l)	0.23			Flows could not be obtained from this sealed well		
21.	Date Sampled for Analysis	11/14/2001					
22.	Date Last Precipitation Event Occurred	11/8/2001					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413908.3			6803086	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DW 400	DW 400				
2.	Lab identification Number	304070	304070				
3.	High (H)/Low (L) Designation (if applicable)	H	H				
4.	Surface Elevation for Sampling Station (msl)	1240	1240				
5.	Depth of Well below Land Surface (msl)	22	22				
6.	Static Water Level of Well below Land Surface (feet)	18	15				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	4/7/2003	6/10/2003				
9.	Aquifer/Zone Identification for Well/Spring	A	A				
10.	pH(Standard Units)	7.5	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	7.9	15				
12.	Total Alkalinity (mg/l $CaCO_3$)	160	120				
13.	Specific Conductivity (umhos/cm at 25 C)	690	610				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.03	0.01				
16.	Total Sulfates (mg/l)	100	72				
17.	Total Iron (mg/l)	0.69	0.05				
18.	Total Suspended Solids (mg/l)	21	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	270	240				
20.	Nitrates (mg/l)	9	11*		*Well is located on a dairy farm		
21.	Date Sampled for Analysis	4/7/2003	6/10/2003				
22.	Date Last Precipitation Event Occurred	4/6/2003	6/8/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2427491	684198		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 401					
2.	Lab Identification Number	306198					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1250					
5.	Depth of Well below Land Surface (msl)	70					
6.	Static Water Level of Well below Land Surface (feet)	19					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	6/10/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	8.2					
11.	Total Acidity (mg/l $CaCO_3$)	17					
12.	Total Alkalinity (mg/l $CaCO_3$)	280					
13.	Specific Conductivity (umhos/cm at 25 C)	910					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.02					
16.	Total Sulfates (mg/l)	99					
17.	Total Iron (mg/l)	3.3					
18.	Total Suspended Solids (mg/l)	59					
19.	Total Hardness (mg/l $CACO_3$)	440					
20.	Nitrates (mg/l)	4.7					
21.	Date Sampled for Analysis	6/10/2003					
22.	Date Last Precipitation Event Occurred	6/6/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413908.3			6803086	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DW 408					
2.	Lab Identification Number	303385					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1210					
5.	Depth of Well below Land Surface (msl)	20					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	3/31/2003					
9.	Aquifer/Zone Identification for Well/Spring	A					
10.	pH(Standard Units)	7.3					
11.	Total Acidity (mg/l $CaCO_3$)	19					
12.	Total Alkalinity (mg/l $CaCO_3$)	270					
13.	Specific Conductivity (umhos/cm at 25 C)	840					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.02					
16.	Total Sulfates (mg/l)	99					
17.	Total Iron (mg/l)	0.07					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	410					
20.	Nitrates (mg/l)	14*			DW-408 HAS BEEN BURIED *Well is located on a dairy farm		
21.	Date Sampled for Analysis	3/31/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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	STATE PLANE COORDINATES:	2413908.3			6803086	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 409	W 409				
2.	Lab Identification Number	303384	303384				
3.	High (H)/Low (L) Designation (if applicable)	H	I				
4.	Surface Elevation for Sampling Station (msl)	1210	1210				
5.	Depth of Well below Land Surface (msl)	61	61				
6.	Static Water Level of Well below Land Surface (feet)	20.5	32				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	3/31/2003	6/10/2003				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH(Standard Units)	7.5	8.4				
11.	Total Acidity (mg/l $CaCO_3$)	16	10				
12.	Total Alkalinity (mg/l $CaCO_3$)	250	240				
13.	Specific Conductivity (umhos/cm at 25 C)	690	770				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.02	<0.1				
16.	Total Sulfates (mg/l)	70	63				
17.	Total Iron (mg/l)	<0.04	<0.04				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	340	290				
20.	Nitrates (mg/l)	10*	10*		*well is located on dairy farm		
21.	Date Sampled for Analysis	3/31/2003	6/10/2003				
22.	Date Last Precipitation Event Occurred	3/31/2003	6/8/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2429888.9		682037.2		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DW 421	DW 421	DW 421			
2.	Lab Identification Number	0207038	0209143	203357			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1300	1300	1300			
5.	Depth of Well below Land Surface (msl)	UNKNOWN	UNKNOWN	UNKNOWN			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	7/1/2002	9/12/2002	3/21/2002			
9.	Aquifer/Zone Identification for Well/Spring	A	A	A			
10.	pH(Standard Units)	6.8	6.8	7			
11.	Total Acidity (mg/l $CaCO_3$)	18	26	4.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	180	130			
13.	Specific Conductivity (umhos/cm at 25 C)	430	400	240			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.01	0.02	0.01			
16.	Total Sulfates (mg/l)	44	44	25			
17.	Total Iron (mg/l)	0.15	0.85	0.83			
18.	Total Suspended Solids (mg/l)	<1.0	<0.01	<0.01			
19.	Total Hardness (mg/l $CACO_3$)	190	190	140			
20.	Nitrates (mg/l)	2	1	2.3	**No access for Static Measurements**		
21.	Date Sampled for Analysis	7/1/2002	9/12/2002	3/21/2002			
22.	Date Last Precipitation Event Occurred	7/1/2002	9/3/2002	3/21/2002			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2429799		680948.4		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 423	W 423	W 423			
2.	Lab Identification Number	0207045	0209145	303390			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1220	1220	1220			
5.	Depth of Well below Land Surface (msl)	94	94	94			
6.	Static Water Level of Well below Land Surface (feet)	28	28	28			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	7/2/2002	9/12/2002	3/31/2003			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.3	6.7	7.4			
11.	Total Acidity (mg/l $CaCO_3$)	6.2	14	9			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	160	150			
13.	Specific Conductivity (umhos/cm at 25 C)	400	350	290			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.01	0.02	<0.01			
16.	Total Sulfates (mg/l)	34	55	34			
17.	Total Iron (mg/l)	0.2	0.93	0.09			
18.	Total Suspended Solids (mg/l)	<1.0	<0.01	<0.01			
19.	Total Hardness (mg/l $CACO_3$)	160	160	170			
20.	Nitrates (mg/l)	1.4	<0.07	0.8			
21.	Date Sampled for Analysis	7/2/2002	9/12/2002	3/31/2003			
22.	Date Last Precipitation Event Occurred	7/1/2002	9/3/2002	3/31/2003			

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2428184.7		679014.1		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DW 425	DW 425				
2.	Lab Identification Number	210056	203355				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1300	1300				
5.	Depth of Well below Land Surface (msl)	25	25				
6.	Static Water Level of Well below Land Surface (feet)	20.6	14				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/3/2002	3/22/2002				
9.	Aquifer/Zone Identification for Well/Spring	A	A				
10.	pH(Standard Units)	7.3	7.3				
11.	Total Acidity (mg/l $CaCO_3$)	30	9.9				
12.	Total Alkalinity (mg/l $CaCO_3$)	310	290				
13.	Specific Conductivity (umhos/cm at 25 C)	760	580				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.96	0.01				
16.	Total Sulfates (mg/l)	140	72				
17.	Total Iron (mg/l)	15	0.1				
18.	Total Suspended Solids (mg/l)	180	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	500	360				
20.	Nitrates (mg/l)	0.91	0.93				
21.	Date Sampled for Analysis	10/3/2002	3/22/2002				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/22/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2417593.5		674730.6		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DW 428	DW 426				
2.	Lab Identification Number	210051	204003				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1250	1250				
5.	Depth of Well below Land Surface (msl)	39	39				
6.	Static Water Level of Well below Land Surface (feet)	20	15				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/3/2002	3/25/2002				
9.	Aquifer/Zone Identification for Well/Spring	A	A				
10.	pH(Standard Units)	7.2	7.2				
11.	Total Acidity (mg/l $CaCO_3$)	4.1	4.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	57	77				
13.	Specific Conductivity (umhos/cm at 25 C)	160	160				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	0.02	0.08				
16.	Total Sulfates (mg/l)	20	28				
17.	Total Iron (mg/l)	0.72	0.55				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	170	90				
20.	Nitrates (mg/l)	3.2	0.34				
21.	Date Sampled for Analysis	10/3/2002	3/25/2002				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/25/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415584.1		680298.2		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 427	W 427	W 427			
2.	Lab Identification Number	0207134	0210041	203356			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240			
5.	Depth of Well below Land Surface (msl)	71	71	71			
6.	Static Water Level of Well below Land Surface (feet)	5	5	14			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	7/11/2002	10/2/2002	3/22/2003			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.3	7.7	7.5			
11.	Total Acidity (mg/l $CaCO_3$)	13	13	4.2			
12.	Total Alkalinity (mg/l $CaCO_3$)	250	260	260			
13.	Specific Conductivity (umhos/cm at 25 C)	690	590	580			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.01	0.03	0.01			
16.	Total Sulfates (mg/l)	67	70	69			
17.	Total Iron (mg/l)	1.1	0.8	1.9			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	310	310	230			
20.	Nitrates (mg/l)	9.2	6.9	8.7			
21.	Date Sampled for Analysis	7/11/2002	10/2/2002	3/22/2002			
22.	Date Last Precipitation Event Occurred	7/9/2002	9/27/2002	3/21/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2416136.6	683346.1			LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W-435	W 435	W 435			
2.	Lab Identification Number	0204010	0207195	210043			
3.	High (H)/Low (L) Designation (if applicable)	H	I	L			
4.	Surface Elevation for Sampling Station (msl)	1070	1070	1070			
5.	Depth of Well below Land Surface (msl)	65	65	65			
6.	Static Water Level of Well below Land Surface (feet)	NA*	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	3/26/2002	7/14/2002	10/2/2002			
9.	Aquifer/Zone Identification for Well/Spring	C	C	C			
10.	pH(Standard Units)	6.7	7.3	7.3			
11.	Total Acidity (mg/l $CaCO_3$)	7.9	16	14			
12.	Total Alkalinity (mg/l $CaCO_3$)	170	210	220			
13.	Specific Conductivity (umhos/cm at 25 C)	420	630	590			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.09	0.07	0.02			
16.	Total Sulfates (mg/l)	92	130	100			
17.	Total Iron (mg/l)	<0.04	0.18	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	220	260	270			
20.	Nitrates (mg/l)	0.49	0.28	<0.07	*W-435 HAS BEEN SEALED		
21.	Date Sampled for Analysis	3/26/2002	7/14/2002	10/2/2002			
22.	Date Last Precipitation Event Occurred	3/19/2002	7/9/2002	9/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2416372		682166.2		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W-435A					
2.	Lab Identification Number	306161					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1220					
5.	Depth of Well below Land Surface (msl)	75					
6.	Static Water Level of Well below Land Surface (feet)	38					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	6/7/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.7					
11.	Total Acidity (mg/l $CaCO_3$)	4.6					
12.	Total Alkalinity (mg/l $CaCO_3$)	210					
13.	Specific Conductivity (umhos/cm at 25 C)	610					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	<0.01					
16.	Total Sulfates (mg/l)	52					
17.	Total Iron (mg/l)	<0.04					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	260					
20.	Nitrates (mg/l)	4.6					
21.	Date Sampled for Analysis	6/7/2003					
22.	Date Last Precipitation Event Occurred	6/6/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2416508		682408.2		LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DW-4358					
2.	Lab Identification Number	306162					
3.	High (H)/Low (L) Designation (if applicable)	I					
4.	Surface Elevation for Sampling Station (msl)	1240					
5.	Depth of Well below Land Surface (msl)	18					
6.	Static Water Level of Well below Land Surface (feet)	6					
7.	Flow for Spring/Stream (gpm)	na					
8.	Date Above Measurements Made	6/7/2003					
9.	Aquifer/Zone Identification for Well/Spring	A					
10.	pH(Standard Units)	7.3					
11.	Total Acidity (mg/l $CaCO_3$)	7.5					
12.	Total Alkalinity (mg/l $CaCO_3$)	120					
13.	Specific Conductivity (umhos/cm at 25 C)	340					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	<0.01					
16.	Total Sulfates (mg/l)	35					
17.	Total Iron (mg/l)	0.06					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	150					
20.	Nitrates (mg/l)	1.8					
21.	Date Sampled for Analysis	6/7/2003					
22.	Date Last Precipitation Event Occurred	6/6/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2422003.3		682821.4	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W-436	W 436	W 436			
2.	Lab Identification Number	0204009	207194	210042			
3.	High (H)/Low (L) Designation (if applicable)	H	I	L			
4.	Surface Elevation for Sampling Station (msl)	1020	1020	1020			
5.	Depth of Well below Land Surface (msl)	85	85	85			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	3/26/2002	7/15/2002	10/2/2002			
9.	Aquifer/Zone Identification for Well/Spring	C	C	C			
10.	pH(Standard Units)	7	7	7			
11.	Total Acidity (mg/l $CaCO_3$)	15	15	32			
12.	Total Alkalinity (mg/l $CaCO_3$)	290	290	320			
13.	Specific Conductivity (umhos/cm at 25 C)	780	1000	1000			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.08	<0.01	0.01			
16.	Total Sulfates (mg/l)	220	240	290			
17.	Total Iron (mg/l)	0.04	0.06	0.15			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	440	490	560			
20.	Nitrates (mg/l)	2.4	3.4	3.7	inaccessible		
21.	Date Sampled for Analysis	3/26/2002	7/15/2002	10/2/2002			
22.	Date Last Precipitation Event Occurred	3/19/2002	7/9/2002	9/27/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2432428.2		Y=685059		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DW 437	DW 437	DW 437			
2.	Lab Identification Number	207039	204044	na			
3.	High (H)/Low (L) Designation (if applicable)	I	H	L			
4.	Surface Elevation for Sampling Station (msl)	980	980	980			
5.	Depth of Well below Land Surface (msl)	13	13	13			
6.	Static Water Level of Well below Land Surface (feet)	6	4	DRY			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	7/1/2002	3/29/2002	10/8/2002			
9.	Aquifer/Zone Identification for Well/Spring	A	A	A			
10.	pH(Standard Units)	6.6	6.5	NA			
11.	Total Acidity (mg/l $CaCO_3$)	12	6.2	NA			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	75	NA			
13.	Specific Conductivity (umhos/cm at 25 C)	370	200	NA			
14.	Total Dissolved Solids (mg/l)	ND	ND	NA			
15.	Total Manganese (mg/l)	<0.01	<0.01	NA			
16.	Total Sulfates (mg/l)	38	36	NA			
17.	Total Iron (mg/l)	<0.04	0.16	NA			
18.	Total Suspended Solids (mg/l)	37	<1.0	NA			
19.	Total Hardness (mg/l $CACO_3$)	170	100	NA			
20.	Nitrates (mg/l)	0.56	3.1	NA			
21.	Date Sampled for Analysis	7/1/2002	3/29/2002	NA			
22.	Date Last Precipitation Event Occurred	6/27/2002	3/29/2002	10/4/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2432818.8		684591.8		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 438	W 438	W 438			
2.	Lab Identification Number	207041	207041	304050			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	970	970	970			
5.	Depth of Well below Land Surface (msl)	30	30	30			
6.	Static Water Level of Well below Land Surface (feet)	11.7	11	12			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	7/1/2002	10/8/2002	3/29/2002			
9.	Aquifer/Zone Identification for Well/Spring	C	C	C			
10.	pH(Standard Units)	8	8.1	7.8			
11.	Total Acidity (mg/l $CaCO_3$)	4.7	<1.0	11			
12.	Total Alkalinity (mg/l $CaCO_3$)	310	350	270			
13.	Specific Conductivity (umhos/cm at 25 C)	600	760	440			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	0.15	0.07	0.02			
16.	Total Sulfates (mg/l)	14	7.4	28			
17.	Total Iron (mg/l)	<0.04	<0.04	0.85			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	30	20	80			
20.	Nitrates (mg/l)	<0.09	0.1	0.26			
21.	Date Sampled for Analysis	7/1/2002	10/8/2002	3/29/2002			
22.	Date Last Precipitation Event Occurred	6/27/2002	10/4/2002	3/3/29/02			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415088.1		675777.7		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DW 581	DW 581	DW 581			
2.	Lab Identification Number	207128	210048	303351			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1220	1220	1220			
5.	Depth of Well below Land Surface (msl)	21	21	21			
6.	Static Water Level of Well below Land Surface (feet)	4	4	3.7			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	7/11/2002	10/2/2002	3/28/2003			
9.	Aquifer/Zone Identification for Well/Spring	A	A	A			
10.	pH(Standard Units)	7.8	7.1	7.1			
11.	Total Acidity (mg/l $CaCO_3$)	22	37	27			
12.	Total Alkalinity (mg/l $CaCO_3$)	300	380	290			
13.	Specific Conductivity (umhos/cm at 25 C)	830	980	780			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	2.3	2.4	0.33			
16.	Total Sulfates (mg/l)	110	110	110			
17.	Total Iron (mg/l)	1.7	4.3	0.5			
18.	Total Suspended Solids (mg/l)	<1.0	5.3	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	370	450	360			
20	Nitrates (mg/l)	<0.09	0.1	1			
21	Date Sampled for Analysis	7/11/2002	10/3/2002	3/28/2003			
22	Date Last Precipitation Event Occurred	7/9/2002	9/27/2002	3/26/2003			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2414912.5		675614.1		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	DW 582	DW 582	DW 582			
2.	Lab Identification Number	207129	210049	303352			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210			
5.	Depth of Well below Land Surface (msl)	30	30	30			
6.	Static Water Level of Well below Land Surface (feet)	UNKNOWN	UNKNOWN	UNKNOWN			
7.	Flow for Spring/Stream (gpm)	NA	NA	NA			
8.	Date Above Measurements Made	7/11/2002	10/3/2002	3/28/2003			
9.	Aquifer/Zone Identification for Well/Spring	A	A	A			
10.	pH(Standard Units)	7.3	7.2	7.1			
11.	Total Acidity (mg/l $CaCO_3$)	14	14	7.9			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	200	110			
13.	Specific Conductivity (umhos/cm at 25 C)	550	860	470			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.01	0.02	0.31			
16.	Total Sulfates (mg/l)	53	66	50			
17.	Total Iron (mg/l)	0.52	0.1	4.1			
18.	Total Suspended Solids (mg/l)	12	<1.0	18			
19.	Total Hardness (mg/l $CACO_3$)	230	370	230			
20.	Nitrates (mg/l)	2	5.7	6.8	inaccessible		
21.	Date Sampled for Analysis	7/11/2002	10/3/2002	3/28/2003			
22.	Date Last Precipitation Event Occurred	7/9/2002	9/27/2002	3/26/2003			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2418144.2	684064.1		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W-590	W-590				
2.	Lab Identification Number	210126	304502				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1060	1060				
5.	Depth of Well below Land Surface (msl)	85	85				
6.	Static Water Level of Well below Land Surface (feet)	57.5	43.5				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/10/2002	4/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	C	C				
10.	pH(Standard Units)	6	5.7				
11.	Total Acidity (mg/l $CaCO_3$)	34	26				
12.	Total Alkalinity (mg/l $CaCO_3$)	110	81				
13.	Specific Conductivity (umhos/cm at 25 C)	460	0.21				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.01	0.03				
16.	Total Sulfates (mg/l)	100	110				
17.	Total Iron (mg/l)	0.1	0.21				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	220	190				
20.	Nitrates (mg/l)	1.4	0.38				
21.	Date Sampled for Analysis	10/10/2002	4/28/2003				
22.	Date Last Precipitation Event Occurred	10/9/2002	4/22/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

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	STATE PLANE COORDINATES:		2418261.5	684159.50		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 591	W 591				
2.	Lab Identification Number	210128	304046				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1065	1065				
5	Depth of Well below Land Surface (msl)	82	82				
6.	Static Water Level of Well below Land Surface (feet)	72.5	62				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	10/10/2002	4/3/2003				
9	Aquifer/Zone Identification for Well/Spring	C	C				
10.	pH(Standard Units)	7.4	7.7				
11.	Total Acidity (mg/l $CaCO_3$)	15	6.3				
12.	Total Alkalinity (mg/l $CaCO_3$)	240	210				
13.	Specific Conductivity (umhos/cm at 25 C)	550	500				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Manganese (mg/l)	<0.01	0.06				
16.	Total Sulfates (mg/l)	56	50				
17.	Total Iron (mg/l)	0.1	0.55				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	270	220				
20.	Nitrates (mg/l)	<0.07	0.09				
21	Date Sampled for Analysis	10/10/2002	4/3/2003				
22	Date Last Precipitation Event Occurred	10/10/2002	3/31/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415313.4		678071.6	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 595	W 595			
2.	Lab Identification Number	210219	304063			
3.	High (H)/Low (L) Designation (if applicable)	L	H			
4.	Surface Elevation for Sampling Station (msl)	1342	1342			
5.	Depth of Well below Land Surface (msl)	21.5	21.5			
6.	Static Water Level of Well below Land Surface (feet)	9	4			
7.	Flow for Spring/Stream (gpm)	NA	NA			
8.	Date Above Measurements Made	10/21/2002	4/7/2003			
9.	Aquifer/Zone Identification for Well/Spring	A	A			
10.	pH(Standard Units)	7.8	7.6			
11.	Total Acidity (mg/l $CaCO_3$)	8.5	16			
12.	Total Alkalinity (mg/l $CaCO_3$)	220	180			
13.	Specific Conductivity (umhos/cm at 25 C)	480	500			
14.	Total Dissolved Solids (mg/l)	ND	ND			
15.	Total Manganese (mg/l)	0.2	0.29			
16.	Total Sulfates (mg/l)	15	39			
17.	Total iron (mg/l)	7.2	27			
18.	Total Suspended Solids (mg/l)	61	130			
19.	Total Hardness (mg/l $CACO_3$)	180	190			
20.	Nitrates (mg/l)	0.1	0.12			
21.	Date Sampled for Analysis	10/21/2002	4/7/2003			
22.	Date Last Precipitation Event Occurred	10/19/2002	4/6/2003			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2414037	677941	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W-601				
2.	Lab Identification Number	0304494				
3.	High (H)/Low (L) Designation (if applicable)	H				
4.	Surface Elevation for Sampling Station (msl)	1255				
5.	Depth of Well below Land Surface (msl)	51				
6.	Static Water Level of Well below Land Surface (feet)	14				
7.	Flow for Spring/Stream (gpm)	N/A				
8.	Date Above Measurements Made	4/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	A				
10.	pH(Standard Units)	7.8				
11.	Total Acidity (mg/l $CaCO_3$)	1.4				
12.	Total Alkalinity (mg/l $CaCO_3$)	180				
13.	Specific Conductivity (umhos/cm at 25 C)	420				
14.	Total Dissolved Solids (mg/l)	ND				
15.	Total Manganese (mg/l)	0.12				
16.	Total Sulfates (mg/l)	15				
17.	Total Iron (mg/l)	6.5				
18.	Total Suspended Solids (mg/l)	29				
19.	Total Hardness (mg/l $CACO_3$)	160				
20.	Nitrates (mg/l)	0.22				
21.	Date Sampled for Analysis	4/28/2003				
22.	Date Last Precipitation Event Occurred	4/22/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2414269	677859	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	W 602				
2.	Lab Identification Number	0304495				
3.	High (H)/Low (L) Designation (if applicable)	H				
4.	Surface Elevation for Sampling Station (msl)	1245				
5.	Depth of Well below Land Surface (msl)	65				
6.	Static Water Level of Well below Land Surface (feet)	19				
7.	Flow for Spring/Stream (gpm)	NA				
8.	Date Above Measurements Made	4/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	B				
10.	pH(Standard Units)	8.3				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0				
12.	Total Alkalinity (mg/l $CaCO_3$)	340				
13.	Specific Conductivity (umhos/cm at 25 C)	770				
14.	Total Dissolved Solids (mg/l)	ND				
15.	Total Manganese (mg/l)	0.24				
16.	Total Sulfates (mg/l)	33				
17.	Total Iron (mg/l)	25				
18.	Total Suspended Solids (mg/l)	800				
19.	Total Hardness (mg/l $CACO_3$)	150				
20.	Nitrates (mg/l)	0.16				
21.	Date Sampled for Analysis	4/28/2003				
22.	Date Last Precipitation Event Occurred	4/22/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415969	681142			LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	W 604					
2.	Lab Identification Number	304501					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1240					
5.	Depth of Well below Land Surface (msl)	58					
6.	Static Water Level of Well below Land Surface (feet)	14					
7.	Flow for Spring/Stream (gpm)	NA					
8.	Date Above Measurements Made	4/28/2003					
9.	Aquifer/Zone Identification for Well/Spring	B					
10.	pH(Standard Units)	7.3					
11.	Total Acidity (mg/l $CaCO_3$)	14					
12.	Total Alkalinity (mg/l $CaCO_3$)	260					
13.	Specific Conductivity (umhos/cm at 25 C)	750					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Manganese (mg/l)	0.27					
16.	Total Sulfates (mg/l)	90					
17.	Total Iron (mg/l)	8.9					
18.	Total Suspended Solids (mg/l)	49					
19.	Total Hardness (mg/l $CACO_3$)	310					
20.	Nitrates (mg/l)	0.34					
21.	Date Sampled for Analysis	4/28/2003					
22.	Date Last Precipitation Event Occurred	4/22/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2421731.319		682256.5916	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-01	U1-01	U1-01			
2.	Lab Identification Number	0110327	305373	0202314			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	980	980	980			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	161.05	237.68	118.44			
8.	Date Above Measurements Made	10/22/2001	5/30/2003	2/19/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.9	8.1	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	<1.0	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	170	130	110			
13.	Specific Conductivity (umhos/cm at 25 C)	380	390	230			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.04	0.02	<0.01			
16.	Total Sulfates (mg/l)	55	40	39			
17.	Total Iron (mg/l)	0.11	0.15	0.06			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	200	140	130			
20.	Nitrates (mg/l)	0.11	<0.07	0.19			
21.	Date Sampled for Analysis	10/22/2001	5/30/2003	2/19/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	5/29/2003	2/19/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2415842 684685 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	U1-01B					
2.	Lab Identification Number	308142					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1120					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.008					
8.	Date Above Measurements Made	4/9/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.2					
11.	Total Acidity (mg/l $CaCO_3$)	5.3					
12.	Total Alkalinity (mg/l $CaCO_3$)	65					
13.	Specific Conductivity (umhos/cm at 25 C)	180					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.11					
16.	Total Sulfates (mg/l)	30					
17.	Total Iron (mg/l)	1.7					
18.	Total Suspended Solids (mg/l)	57					
19.	Total Hardness (mg/l $CACO_3$)	90					
20.	Nitrates (mg/l)	0.77					
21.	Date Sampled for Analysis	4/9/2003					
22.	Date Last Precipitation Event Occurred	4/8/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2421309.828		682496.5293	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-02	U1-02	U1-02		
2.	Lab Identification Number	0110328	308369	0202313		
3.	High (H)/Low (L) Designation (if applicable)	L	I	H		
4.	Surface Elevation for Sampling Station (msl)	970	970	970		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	60.6	332	412.44		
8.	Date Above Measurements Made	10/22/2001	5/30/2003	2/19/2002		
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA		
10.	pH(Standard Units)	7.8	8.2	8.3		
11.	Total Acidity (mg/l $CaCO_3$)	4.2	1.6	1.8		
12.	Total Alkalinity (mg/l $CaCO_3$)	120	100	92		
13.	Specific Conductivity (umhos/cm at 25 C)	320	300	180		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND		
15.	Total Maganese (mg/l)	<0.02	<0.02	<0.01		
16.	Total Sulfates (mg/l)	51	32	33		
17.	Total Iron (mg/l)	<0.05	0.08	0.07		
18.	Total Suspended Solids (mg/l)	<1.0	<1.1	<1.0		
19.	Total Hardness (mg/l $CACO_3$)	160	120	140		
20.	Nitrates (mg/l)	0.18	<0.09	0.13		
21.	Date Sampled for Analysis	10/22/2001	5/30/2003	2/19/2002		
22.	Date Last Precipitation Event Occurred	10/16/2001	5/29/2003	2/19/2002		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

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	STATE PLANE COORDINATES:	2415442.1			684988.6	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U1 02A					
2.	Lab Identification Number	210124					
3.	High (H)/Low (L) Designation (if applicable)	L					
4.	Surface Elevation for Sampling Station (msl)	1060					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (cfs)	0.002					
8.	Date Above Measurements Made	10/23/2001					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.1					
11.	Total Acidity (mg/l $CaCO_3$)	22					
12.	Total Alkalinity (mg/l $CaCO_3$)	65					
13.	Specific Conductivity (umhos/cm at 25 C)	190					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	4.3					
16.	Total Sulfates (mg/l)	26					
17.	Total Iron (mg/l)	14					
18.	Total Suspended Solids (mg/l)	320					
19.	Total Hardness (mg/l $CACO_3$)	180					
20.	Nitrates (mg/l)	0.31					
21.	Date Sampled for Analysis	10/23/2001					
22.	Date Last Precipitation Event Occurred	10/16/2001					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2421530.786		682096.6732	LOCATION		PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-03	U1-03	U1-03			
2.	Lab Identification Number	0110329	305372	0202315			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	980	980	980			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	145.43	238	84.42			
8.	Date Above Measurements Made	10/22/2001	5/30/2003	2/19/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	8.3	8.4			
11.	Total Acidity (mg/l $CaCO_3$)	6.8	<1.0	1.7			
12.	Total Alkalinity (mg/l $CaCO_3$)	150	120	100			
13.	Specific Conductivity (umhos/cm at 25 C)	370	360	230			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	<0.02	0.01	<0.01			
16.	Total Sulfates (mg/l)	43	34	36			
17.	Total Iron (mg/l)	<0.05	0.11	0.06			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	190	130	120			
20.	Nitrates (mg/l)	2.6	<0.07	0.14			
21.	Date Sampled for Analysis	10/22/2001	5/30/2003	2/19/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	5/29/2003	2/19/2002			

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	STATE PLANE COORDINATES:	2424323.435		679733.3539	LOCATION		ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U1-04	U1-04				
2.	Lab Identification Number	0110367	0202397				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1050	1050				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	424.17	399.58				
8.	Date Above Measurements Made	10/24/2001	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.9	8.1				
11.	Total Acidity (mg/l $CaCO_3$)	6.2	5				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	160				
13.	Specific Conductivity (umhos/cm at 25 C)	310	330				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.04	2				
16.	Total Sulfates (mg/l)	36	36				
17.	Total Iron (mg/l)	0.35	0.67				
18.	Total Suspended Solids (mg/l)	22	4				
19.	Total Hardness (mg/l $CACO_3$)	160	150				
20.	Nitrates (mg/l)	<0.09	0.2				
21.	Date Sampled for Analysis	10/24/2001	2/26/2002				
22.	Date Last Precipitation Event Occurred	10/23/2001	2/26/2002				

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	STATE PLANE COORDINATES:	2423183.956			679784.6213	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U1-05	U1-05				
2.	Lab Identification Number	0110333	0202398				
3.	High (H)/Low (L) Designation (If applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1050	1050				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.31	207.37				
8.	Date Above Measurements Made	10/23/2001	3/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.8	8.2				
11.	Total Acidity (mg/l $CaCO_3$)	4.9	1.7				
12.	Total Alkalinity (mg/l $CaCO_3$)	180	120				
13.	Specific Conductivity (umhos/cm at 25 C)	350	240				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.38	0.06				
16.	Total Sulfates (mg/l)	21	27				
17.	Total Iron (mg/l)	0.65	0.2				
18.	Total Suspended Solids (mg/l)	15	2				
19.	Total Hardness (mg/l $CACO_3$)	190	120				
20.	Nitrates (mg/l)	0.09	0.23				
21.	Date Sampled for Analysis	10/23/2001	3/26/2002				
22.	Date Last Precipitation Event Occurred	10/18/2001	2/26/2002				

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422911.633		678380.909		LOCATION	AOJ
1.	Identification No. Of Sampling Station From Hydrology Map	U1-06	U1-06				
2.	Lab Identification Number	0110335	0202395				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0	0.89				
8.	Date Above Measurements Made	10/23/2001	2/26/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.8	8.2				
11.	Total Acidity (mg/l $CaCO_3$)	3.3	4.9				
12.	Total Alkalinity (mg/l $CaCO_3$)	120	100				
13.	Specific Conductivity (umhos/cm at 25 C)	240	200				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.18	0.14				
16.	Total Sulfates (mg/l)	14	23				
17.	Total Iron (mg/l)	0.54	0.44				
18.	Total Suspended Solids (mg/l)	13	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	110	90				
20.	Nitrates (mg/l)	0.3	0.78				
21.	Date Sampled for Analysis	10/23/2001	2/26/2002				
22.	Date Last Precipitation Event Occurred	10/16/2001	2/26/2002				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2421035.413		679872.3571	LOCATION		GATE
1.	Identification No. Of Sampling Station From Hydrology Map	U1-07	U1-07	U1-07			
2.	Lab Identification Number	0111054	0112367	0202312			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1010	1010	1010			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	135.33	308.4	169.91			
8.	Date Above Measurements Made	10/31/2001	12/18/2001	2/19/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	8.1	8.3			
11.	Total Acidity (mg/l $CaCO_3$)	1.5	<1.0	1.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	86	100			
13.	Specific Conductivity (umhos/cm at 25 C)	400	190	200			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.03	<0.02	0.01			
16.	Total Sulfates (mg/l)	33	26	34			
17.	Total Iron (mg/l)	0.11	0.71	0.11			
18.	Total Suspended Solids (mg/l)	<1.0	13	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	160	80	110			
20.	Nitrates (mg/l)	<0.09	0.24	0.18			
21.	Date Sampled for Analysis	10/31/2001	12/18/2001	2/19/2002			
22.	Date Last Precipitation Event Occurred	10/26/2001	12/17/2001	2/19/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2420675.015		677726.1511	LOCATION		PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-08	U1-08	U1-08			
2.	Lab Identification Number	0110331	0112363	0202310			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1050	1050	1050			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	17.95	587.68	78.55			
8.	Date Above Measurements Made	10/23/2001	12/18/2002	2/19/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	8.2	8.4			
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	5.7	3.3			
12.	Total Alkalinity (mg/l $CaCO_3$)	130	100	93			
13.	Specific Conductivity (umhos/cm at 25 C)	300	280	190			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	27	28	30			
17.	Total Iron (mg/l)	0.64	0.1	0.1			
18.	Total Suspended Solids (mg/l)	25	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	150	110	100			
20.	Nitrates (mg/l)	0.17	<0.09	0.19			
21.	Date Sampled for Analysis	10/23/2001	12/18/2001	2/19/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	12/17/2001	2/19/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2420733.675			677646.1473	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-09	U1-09	U1-09			
2.	Lab Identification Number	0110332	0112364	0203309			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1050	1050	1050			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	1.96	589.13	56.64			
8.	Date Above Measurements Made	10/23/2001	12/18/2001	2/19/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.9	8.3			
11.	Total Acidity (mg/l $CaCO_3$)	2.2	3.8	2.5			
12.	Total Alkalinity (mg/l $CaCO_3$)	200	140	130			
13.	Specific Conductivity (umhos/cm at 25 C)	430	370	290			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.02	0.02	0.03			
16.	Total Sulfates (mg/l)	36	34	33			
17.	Total Iron (mg/l)	0.34	0.35	0.26			
18.	Total Suspended Solids (mg/l)	16	11	1.6			
19.	Total Hardness (mg/l $CACO_3$)	190	170	140			
20.	Nitrates (mg/l)	0.26	0.09	0.31			
21.	Date Sampled for Analysis	10/23/2001	12/18/2001	2/19/2002			
22.	Date Last Precipitation Event Occurred	10/16/2001	12/17/2001	2/19/2002			

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Applicant's Name: AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2410813.561		677393.1363	LOCATION		GATE
1.	Identification No. Of Sampling Station From Hydrology Map	U1-10	U1-10	U1-10			
2.	Lab Identification Number	0110423	0112365	0202311			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1060	1060	1060			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	4	515.07	37.17			
8.	Date Above Measurements Made	10/29/2001	12/18/2001	2/19/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.4	7.7	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	6.6	1.9	2.2			
12.	Total Alkalinity (mg/l $CaCO_3$)	130	100	95			
13.	Specific Conductivity (umhos/cm at 25 C)	430	280	200			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.03	<0.02	<0.01			
16.	Total Sulfates (mg/l)	26	30	30			
17.	Total Iron (mg/l)	0.5	0.12	0.07			
18.	Total Suspended Solids (mg/l)	11	7.3	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	110	120	90			
20.	Nitrates (mg/l)	0.12	<0.09	0.26			
	Date Sampled for Analysis	10/29/2001	12/18/2001	2/19/2002			
	ast Precipitation Event	10/25/2001	12/17/2001	2/19/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES		2418552.797		676959.8076	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-11	U1-11	U1-11			
2.	Lab Identification Number	011008	0112366	304028			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	7.9	315.1	0.28			
8.	Date Above Measurements Made	10/30/2001	12/18/2001	4/2/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	8	8.1	7.8			
11.	Total Acidity (mg/l $CaCO_3$)	7.9	1.9	2.3			
12.	Total Alkalinity (mg/l $CaCO_3$)	130	120	99			
13.	Specific Conductivity (umhos/cm at 25 C)	290	280	270			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.29	<0.02	0.02			
16.	Total Sulfates (mg/l)	26	30	30			
17.	Total Iron (mg/l)	1.1	0.11	0.3			
18.	Total Suspended Solids (mg/l)	28	2	2.7			
19.	Total Hardness (mg/l $CACO_3$)	130	90	110			
20.	Nitrates (mg/l)	0.1	0.2	0.7			
21.	Date Sampled for Analysis	10/30/2001	12/18/2001	4/2/2003			
22.	Date Last Precipitation Event Occurred	10/26/2001	12/17/2001	3/31/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418334.678		679989.9885	LOCATION		PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-12	U1-12				
2.	Lab Identification Number	0111009	304067				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1080	1080				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	2	0.64				
8.	Date Above Measurements Made	10/30/2001	4/7/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	6	7.5				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	2.8				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	75				
13.	Specific Conductivity (umhos/cm at 25 C)	300	190				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.11	0.03				
16.	Total Sulfates (mg/l)	21	24				
17.	Total Iron (mg/l)	4.5	1.2				
18.	Total Suspended Solids (mg/l)	240	19				
19.	Total Hardness (mg/l $CACO_3$)	210	80				
20.	Nitrates (mg/l)	0.25	0.24				
21.	Date Sampled for Analysis	10/30/2001	4/7/2003				
22.	Date Last Precipitation Event Occurred	10/26/2001	4/6/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2417393.923		680037.189	LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1-13	U1-13				
2.	Lab Identification Number	0111010	304066				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1080	1080				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	4	0.86				
8.	Date Above Measurements Made	10/30/2001	4/7/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	8	7.5				
11.	Total Acidity (mg/l $CaCO_3$)	2.8	3.1				
12.	Total Alkalinity (mg/l $CaCO_3$)	120	65				
13.	Specific Conductivity (umhos/cm at 25 C)	250	180				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.1	0.06				
16.	Total Sulfates (mg/l)	23	28				
17.	Total Iron (mg/l)	0.46	1.9				
18.	Total Suspended Solids (mg/l)	41	39				
19.	Total Hardness (mg/l $CACO_3$)	150	70				
20.	Nitrates (mg/l)	0.18	0.37				
21.	Date Sampled for Analysis	10/30/2001	4/7/2003				
22.	Date Last Precipitation Event Occurred	10/26/2001	4/6/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415724		678308		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U1-14	U1-14	U1-14			
2.	Lab Identification Number	205057	205371	205057			
3.	High (H)/Low (L) Designation (if applicable)	T/H	I	T/H			
4.	Surface Elevation for Sampling Station (msl)	1180	1180	1180			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	28.2	0.25	0.45			
8.	Date Above Measurements Made	5/6/2002	5/30/2003	5/1/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.6	8.3	7.7			
11.	Total Acidity (mg/l $CaCO_3$)	4.5	3	8.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	120	190	190			
13.	Specific Conductivity (umhos/cm at 25 C)	300	590	1.3			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.09	0.05	0.06			
16.	Total Sulfates (mg/l)	32	64	75			
17.	Total Iron (mg/l)	1.4	0.88	1.3			
18.	Total Suspended Solids (mg/l)	67	31	33			
19.	Total Hardness (mg/l $CACO_3$)	140	340	240			
20.	Nitrates (mg/l)	0.35	0.33	0.42			
21.	Date Sampled for Analysis	5/6/2002	5/30/2003	5/1/2003			
22.	Date Last Precipitation Event Occurred	5/6/2002	5/29/2003	4/31/03			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2425289		678147		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U1-15	U1-15				
2.	Lab Identification Number	205048	303394				
3.	High (H)/Low (L) Designation (if applicable)	T/H	H				
4.	Surface Elevation for Sampling Station (msl)	1120	1120				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	22.3	0.06				
8.	Date Above Measurements Made	5/6/2002	3/31/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.7	7.7				
11.	Total Acidity (mg/l $CaCO_3$)	6.3	3.4				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	150				
13.	Specific Conductivity (umhos/cm at 25 C)	360	280				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.04	0.02				
16.	Total Sulfates (mg/l)	48	46				
17.	Total Iron (mg/l)	1.2	0.26				
18.	Total Suspended Solids (mg/l)	32	2.7				
19.	Total Hardness (mg/l $CACO_3$)	170	150				
20.	Nitrates (mg/l)	0.31	0.37				
21.	Date Sampled for Analysis	5/6/2002	3/31/2003				
22.	Date Last Precipitation Event Occurred	5/6/2002	3/31/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2423667		680812	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U1 16	U1 16	U1 16	U1 16		
2.	Lab identification Number	205052	207368	210151	303389		
3.	High (H)/Low (L) Designation (if applicable)	T/H	I	L	H		
4.	Surface Elevation for Sampling Station (msl)	1020	1020	1020	1020		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	46.8	5.1	2.1	0.18		
8.	Date Above Measurements Made	5/6/2002	7/29/2002	10/9/2002	3/31/2003		
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA	NA		
10.	pH(Standard Units)	8	8	8	7.8		
11.	Total Acidity (mg/l $CaCO_3$)	4.8	5.8	3.6	2.7		
12.	Total Alkalinity (mg/l $CaCO_3$)	160	210	190	130		
13.	Specific Conductivity (umhos/cm at 25 C)	450	570	660	330		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Maganese (mg/l)	0.03	0.04	0.07	0.01		
16.	Total Sulfates (mg/l)	65	86	86	61		
17.	Total Iron (mg/l)	0.55	0.65	0.74	0.3		
18.	Total Suspended Solids (mg/l)	24	6.7	18	6.5		
19.	Total Hardness (mg/l $CACO_3$)	180	270	190	160		
20.	Nitrates (mg/l)	0.22	0.47	<0.07	0.31		
21.	Date Sampled for Analysis	5/6/2002	7/29/2002	10/9/2002	3/31/2003		
22.	Date Last Precipitation Event Occurred	5/6/2002	7/29/2002	10/9/2002	3/31/2003		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2425438		681733	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U1 17	U1 17	U1 17			
2.	Lab Identification Number	205061	207371	303387			
3.	High (H)/Low (L) Designation (if applicable)	T/H	L	H			
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	27.3	1.6	0.07			
8.	Date Above Measurements Made	5/6/2002	10/9/2002	3/31/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.9	7.9	7.7			
11.	Total Acidity (mg/l $CaCO_3$)	5.5	3.7	3.7			
12.	Total Alkalinity (mg/l $CaCO_3$)	160	190	140			
13.	Specific Conductivity (umhos/cm at 25 C)	470	700	360			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.74	0.01	<0.01			
16.	Total Sulfates (mg/l)	84	90	70			
17.	Total Iron (mg/l)	14	0.12	<0.04			
18.	Total Suspended Solids (mg/l)	150	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	570	180	180			
20.	Nitrates (mg/l)	0.16	<0.07	0.32			
21.	Date Sampled for Analysis	5/6/2002	10/9/2002	3/31/2003			
22.	Date Last Precipitation Event Occurred	5/6/2002	10/9/2002	3/31/2003			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422007		684569		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U1-18	U1-18				
2.	Lab Identification Number	205042	207217				
3.	High (H)/Low (L) Designation (if applicable)	H	I				
4.	Surface Elevation for Sampling Station (msl)	960	960				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	221.8	62				
8.	Date Above Measurements Made	4/27/2002	7/17/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.7	7.4				
11.	Total Acidity (mg/l $CaCO_3$)	5	7.2				
12.	Total Alkalinity (mg/l $CaCO_3$)	160	230				
13.	Specific Conductivity (umhos/cm at 25 C)	420	610				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganess (mg/l)	0.09	0.02				
16.	Total Sulfates (mg/l)	44	34				
17.	Total Iron (mg/l)	0.9	0.13				
18.	Total Suspended Solids (mg/l)	27	3.3				
19.	Total Hardness (mg/l $CACO_3$)	190	220				
20.	Nitrates (mg/l)	0.45	<0.09				
21.	Date Sampled for Analysis	4/27/2002	7/17/2002				
22.	Date Last Precipitation Event Occurred	4/27/2002	7/17/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	3423925		884241		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U1-19					
2.	Lab Identification Number	205043					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1040					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	216.9					
8.	Date Above Measurements Made	4/27/2002					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.8					
11.	Total Acidity (mg/l $CaCO_3$)	5.2					
12.	Total Alkalinity (mg/l $CaCO_3$)	180					
13.	Specific Conductivity (umhos/cm at 25 C)	420					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.07					
16.	Total Sulfates (mg/l)	43					
17.	Total Iron (mg/l)	0.97					
18.	Total Suspended Solids (mg/l)	23					
19.	Total Hardness (mg/l $CACO_3$)	190					
20.	Nitrates (mg/l)	0.3					
21.	Date Sampled for Analysis	4/27/2002					
22.	Date Last Precipitation Event Occurred	4/27/2002					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415069.461		681660.8474	LOCATION		PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1A-01	U1A-01	U1A-01			
2.	Lab Identification Number	0110362	0112397	304048			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	11.08	NA	0.4			
8.	Date Above Measurements Made	10/24/2001	12/21/2001	4/3/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.6	7.9	7.8			
11.	Total Acidity (mg/l $CaCO_3$)	4.2	<1.0	2.1			
12.	Total Alkalinity (mg/l $CaCO_3$)	110	62	65			
13.	Specific Conductivity (umhos/cm at 25 C)	280	170	310			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.13	0.02	0.03			
16.	Total Sulfates (mg/l)	22	27	26			
17.	Total Iron (mg/l)	0.32	0.26	0.16			
18.	Total Suspended Solids (mg/l)	6	5.3	1.3			
19.	Total Hardness (mg/l $CACO_3$)	130	90	60			
20.	Nitrates (mg/l)	0.26	0.64	0.09			
21.	Date Sampled for Analysis	10/24/2001	12/21/2001	4/3/2003			
22.	Date Last Precipitation Event Occured	10/23/2001	12/20/2001	3/31/2003			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413256.507		681645.3		LOCATION	PANEL
1.	Identification No. Of Sampling Station From Hydrology Map	U1A-02	U1A-02				
2.	Lab Identification Number	0110334	304020				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0	0.004				
8.	Date Above Measurements Made	10/23/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.1	7.4				
11.	Total Acidity (mg/l $CaCO_3$)	22	3.9				
12.	Total Alkalinity (mg/l $CaCO_3$)	65	62				
13.	Specific Conductivity (umhos/cm at 25 C)	190	260				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	4.3	0.05				
16.	Total Sulfates (mg/l)	26	28				
17.	Total Iron (mg/l)	14	0.85				
18.	Total Suspended Solids (mg/l)	320	31				
19.	Total Hardness (mg/l $CACO_3$)	180	80				
20.	Nitrates (mg/l)	0.31	0.38				
21.	Date Sampled for Analysis	10/23/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/16/2001	3/31/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2414081	678706	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	U1A 05	U1A 05				
2.	Lab Identification Number	205047	205047				
3.	High (H)/Low (L) Designation (if applicable)	T/H	H				
4.	Surface Elevation for Sampling Station (msl)	1160	1160				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	23.4	0.02				
8.	Date Above Measurements Made	5/6/2002	4/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.3	7.7				
11.	Total Acidity (mg/l $CaCO_3$)	2.4	1.1				
12.	Total Alkalinity (mg/l $CaCO_3$)	58	110				
13.	Specific Conductivity (umhos/cm at 25 C)	190	410				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.01	0.02				
16.	Total Sulfates (mg/l)	28	33				
17.	Total Iron (mg/l)	0.09	0.56				
18.	Total Suspended Solids (mg/l)	1.3	18				
19.	Total Hardness (mg/l $CACO_3$)	70	160				
20.	Nitrates (mg/l)	<0.09	0.1				
21.	Date Sampled for Analysis	5/6/2002	4/28/2003				
22.	Date Last Precipitation Event Occurred	5/6/2002	4/23/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2415645.4 681012.6 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	U1A 06	U1A 06				
2.	Lab Identification Number	207136	204006				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1080	1080				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	NA	NA				
8.	Date Above Measurements Made	7/11/2002	3/25/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.2	7.1				
11.	Total Acidity (mg/l $CaCO_3$)	7.5	6				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	110				
13.	Specific Conductivity (umhos/cm at 25 C)	350	220				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.16	0.1				
16.	Total Sulfates (mg/l)	24	35				
17.	Total Iron (mg/l)	0.7	0.09				
18.	Total Suspended Solids (mg/l)	8.7	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	150	130				
20.	Nitrates (mg/l)	<0.09	<0.09				
21.	Date Sampled for Analysis	7/11/2002	3/25/2002				
22.	Date Last Precipitation Event Occurred	7/9/2002	3/25/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415502	682501	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	U1A 07	U1A 07	U1A 07			
2.	Lab Identification Number	207215	304047	na			
3.	High (H)/Low (L) Designation (if applicable)	I	H	L			
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	1	0.09	9			
8.	Date Above Measurements Made	7/17/2002	4/3/2003	10/9/2002			
9.	Aquifer/Zone identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.9	NA			
11.	Total Acidity (mg/l $CaCO_3$)	2.3	2	NA			
12.	Total Alkalinity (mg/l $CaCO_3$)	110	85	NA			
13.	Specific Conductivity (umhos/cm at 25 C)	320	320	NA			
14.	Total Dissolved Solids (mg/l)	ND	ND	NA			
15.	Total Maganese (mg/l)	0.01	0.04	NA			
16.	Total Sulfates (mg/l)	22	30	NA			
17.	Total Iron (mg/l)	0.19	0.47	NA			
18.	Total Suspended Solids (mg/l)	<0.01	7.3	NA			
19.	Total Hardness (mg/l $CACO_3$)	110	100	NA			
20.	Nitrates (mg/l)	0.09	0.09	NA			
21.	Date Sampled for Analysis	7/17/2002	4/3/2003	10/9/2002			
22.	Date Last Precipitation Event Occurred	7/17/2002	3/31/2003	10/4/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413886		683580	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U1A 08	U1A 08	U1A 08			
2.	Lab Identification Number	205036	207212	na			
3.	High (H)/Low (L) Designation (if applicable)	H	I	L			
4.	Surface Elevation for Sampling Station (msl)	1140	1140	1140			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	28	0.06	0			
8.	Date Above Measurements Made	4/25/2002	7/17/2002	10/9/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.5	NA			
11.	Total Acidity (mg/l $CaCO_3$)	4.4	8.3	NA			
12.	Total Alkalinity (mg/l $CaCO_3$)	120	170	NA			
13.	Specific Conductivity (umhos/cm at 25 C)	400	550	NA			
14.	Total Dissolved Solids (mg/l)	ND	ND	NA			
15.	Total Maganese (mg/l)	0.03	0.11	NA			
16.	Total Sulfates (mg/l)	31	32	NA			
17.	Total Iron (mg/l)	0.34	1.5	NA			
18.	Total Suspended Solids (mg/l)	5.3	19	NA			
19.	Total Hardness (mg/l $CACO_3$)	150	190	NA			
20.	Nitrates (mg/l)	0.24	0.12	NA			
21.	Date Sampled for Analysis	4/25/2002	7/17/2002	10/9/2002			
22.	Date Last Precipitation Event Occurred	4/25/2002	7/17/2002	10/4/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425.3)

	STATE PLANE COORDINATES:	2417211.6	684109.1	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	U1A 09	U1A 09	U1A 09			
2.	Lab Identification Number	205041	207218	207218			
3.	High (H)/Low (L) Designation (if applicable)	H	I	L			
4.	Surface Elevation for Sampling Station (msl)	1050	1050	1050			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	3.37	1	0			
8.	Date Above Measurements Made	4/25/2002	7/17/2002	7/17/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.5	7.5	NA			
11.	Total Acidity (mg/l $CaCO_3$)	1.4	3.6	NA			
12.	Total Alkalinity (mg/l $CaCO_3$)	190	120	NA			
13.	Specific Conductivity (umhos/cm at 25 C)	260	340	NA			
14.	Total Dissolved Solids (mg/l)	ND	ND	NA			
15.	Total Maganese (mg/l)	0.01	0.06	NA			
16.	Total Sulfates (mg/l)	25	30	NA			
17.	Total Iron (mg/l)	0.18	0.48	NA			
18.	Total Suspended Solids (mg/l)	<1.0	13	NA			
19.	Total Hardness (mg/l $CACO_3$)	300	120	NA			
20.	Nitrates (mg/l)	<0.09	0.14	NA			
21.	Date Sampled for Analysis	4/25/2002	7/17/2002	10/9/2002			
22.	Date Last Precipitation Event Occurred	4/25/2002	7/17/2002	10/4/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2415933		665556	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U1A 10	U1A 10				
2.	Lab Identification Number	205039	207373				
3.	High (H)/Low (L) Designation (if applicable)	H	I				
4.	Surface Elevation for Sampling Station (msl)	1100	1100				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.5522	0.0017				
8.	Date Above Measurements Made	4/25/2002	7/29/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.5	8				
11.	Total Acidity (mg/l $CaCO_3$)	3.4	4.1				
12.	Total Alkalinity (mg/l $CaCO_3$)	100	170				
13.	Specific Conductivity (umhos/cm at 25 C)	280	400				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.02	0.04				
16.	Total Sulfates (mg/l)	26	26				
17.	Total Iron (mg/l)	0.53	0.59				
18.	Total Suspended Solids (mg/l)	2	10				
19.	Total Hardness (mg/l $CACO_3$)	100	150				
20.	Nitrates (mg/l)	<0.09	0.24				
21.	Date Sampled for Analysis	4/25/2002	7/29/2002				
22.	Date Last Precipitation Event Occurred	4/25/2002	7/29/2002				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2421834	686580	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	D1-01	D1 01	D1 01			
2.	Lab Identification Number	207216	210146	303343			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	930	930	930			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	236	198	2607.84			
8.	Date Above Measurements Made	7/17/2002	10/9/2002	3/28/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	8	7.5	8.1			
11.	Total Acidity (mg/l $CaCO_3$)	2.4	6.9	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	170	180	120			
13.	Specific Conductivity (umhos/cm at 25 C)	550	600	320			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	<0.01	0.01	0.01			
16.	Total Sulfates (mg/l)	57	67	48			
17.	Total Iron (mg/l)	<0.04	<0.04	0.1			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	160	190	110			
20.	Nitrates (mg/l)	0.09	<0.07	0.18			
21.	Date Sampled for Analysis	7/17/2002	10/9/2002	3/28/2003			
22.	Date Last Precipitation Event Occurred	7/9/2002	10/4/2002	3/26/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2419954		685861	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	D1A-1	D1A-1	D1A-1			
2.	Lab Identification Number	210147	207214	205045			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	78	102	627.6			
8.	Date Above Measurements Made	10/9/2002	7/17/2002	4/27/2002			
9.	Aquifer/Zone identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.5	8.2	8.1			
11.	Total Acidity (mg/l $CaCO_3$)	7	2.3	2.5			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	220	100			
13.	Specific Conductivity (umhos/cm at 25 C)	660	650	280			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.01	<0.01	<0.01			
16.	Total Sulfates (mg/l)	68	55	28			
17.	Total Iron (mg/l)	<0.04	0.05	0.14			
18.	Total Suspended Solids (mg/l)	<1.0	1.3	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	180	130	120			
20.	Nitrates (mg/l)	<0.07	<0.09	<0.09			
21.	Date Sampled for Analysis	10/9/2002	7/17/2002	4/27/2002			
22.	Date Last Precipitation Event Occurred	10/9/2002	7/17/2002	4/27/2002			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2411246	683434	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	U2 01	U2 01				
2.	Lab Identification Number	206037	na				
3.	High (H)/Low (L) Designation (if applicable)	H	L				
4.	Surface Elevation for Sampling Station (msl)	1040	1040				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	2.5429	0				
8.	Date Above Measurements Made	4/27/2002	10/9/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.9	NA				
11.	Total Acidity (mg/l $CaCO_3$)	1.3	NA				
12.	Total Alkalinity (mg/l $CaCO_3$)	74	NA				
13.	Specific Conductivity (umhos/cm at 25 C)	260	NA				
14.	Total Dissolved Solids (mg/l)	ND	NA				
15.	Total Maganese (mg/l)	0.01	NA				
16.	Total Sulfates (mg/l)	22	NA				
17.	Total iron (mg/l)	0.1	NA				
18.	Total Suspended Solids (mg/l)	<1.0	NA				
19.	Total Hardness (mg/l $CACO_3$)	170	NA				
20.	Nitrates (mg/l)	<0.09	NA				
21.	Date Sampled for Analysis	4/27/2002	10/9/2002				
22.	Date Last Precipitation Event Occurred	4/27/2002	10/4/2002				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2409350		678661	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U2 02	U2 02	U2 02			
2.	Lab Identification Number	206044	207372	210146			
3.	High (H)/Low (L) Designation (if applicable)	H	I	L			
4.	Surface Elevation for Sampling Station (msl)	1060	1060	1060			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	57.5	272	200			
8.	Date Above Measurements Made	4/25/2002	7/29/2002	10/9/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	8	7.8	7.1			
11.	Total Acidity (mg/l $CaCO_3$)	1	3.6	8.1			
12.	Total Alkalinity (mg/l $CaCO_3$)	78	120	110			
13.	Specific Conductivity (umhos/cm at 25 C)	220	320	460			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.03	0.03	0.01			
16.	Total Sulfates (mg/l)	21	31	96			
17.	Total Iron (mg/l)	0.23	0.05	0.06			
18.	Total Suspended Solids (mg/l)	2	4	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	70	120	190			
20.	Nitrates (mg/l)	<0.09	0.39	0.32			
21.	Date Sampled for Analysis	4/25/2002	7/29/2002	10/9/2002			
22.	Date Last Precipitation Event Occurred	4/25/2002	7/29/2002	10/4/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2411707		678441 LOCATION				
1.	Identification No. Of Sampling Station From Hydrology Map	U2 04	U2 04				
2.	Lab Identification Number	205040	207211				
3.	High (H)/Low (L) Designation (if applicable)	H	I				
4.	Surface Elevation for Sampling Station (msl)	1180	1180				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	57.3	5				
8.	Date Above Measurements Made	4/25/2002	7/17/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.5	7.1				
11.	Total Acidity (mg/l $CaCO_3$)	3.1	5				
12.	Total Alkalinity (mg/l $CaCO_3$)	86	150				
13.	Specific Conductivity (umhos/cm at 25 C)	330	380				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.21	2.2				
16.	Total Sulfates (mg/l)	23	18				
17.	Total Iron (mg/l)	0.34	2.2				
18.	Total Suspended Solids (mg/l)	<1.0	6.7				
19.	Total Hardness (mg/l $CACO_3$)	110	160				
20.	Nitrates (mg/l)	<0.09	0.16				
21.	Date Sampled for Analysis	4/25/2002	7/17/2002				
22.	Date Last Precipitation Event Occurred	4/25/2002	7/17/2002				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2411046 878847.8587 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	U2 05	U2 05	U2 05			
2.	Lab Identification Number	207182	209227	204017			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1180	1180	1180			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.001	0.0001	0.003			
8.	Date Above Measurements Made	7/15/2002	9/18/2002	3/28/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	8	8.3	7.7			
11.	Total Acidity (mg/l $CaCO_3$)	5.4	3.2	6.5			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	210	120			
13.	Specific Conductivity (umhos/cm at 25 C)	470	680	260			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.48	0.11	0.16			
16.	Total Sulfates (mg/l)	38	33	31			
17.	Total Iron (mg/l)	0.62	1.7	0.27			
18.	Total Suspended Solids (mg/l)	16	23	5.3			
19.	Total Hardness (mg/l $CACO_3$)	180	150	120			
20.	Nitrates (mg/l)	0.09	0.2	1.4			
21.	Date Sampled for Analysis	7/15/2002	9/18/2002	3/28/2002			
22.	Date Last Precipitation Event Occurred	7/9/2002	9/18/2002	3/26/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2412776		682842	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U2 07	U2 07				
2.	Lab Identification Number	207135	304016				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	1210	1210				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	0.0001	0.001				
8.	Date Above Measurements Made	7/11/2002	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	6.6	6.9				
11.	Total Acidity (mg/l $CaCO_3$)	16	9.5				
12.	Total Alkalinity (mg/l $CaCO_3$)	77	94				
13.	Specific Conductivity (umhos/cm at 25 C)	630	710				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	11	0.14				
16.	Total Sulfates (mg/l)	7	24				
17.	Total Iron (mg/l)	6.6	1.2				
18.	Total Suspended Solids (mg/l)	58	29				
19.	Total Hardness (mg/l $CACO_3$)	160	260				
20.	Nitrates (mg/l)	<0.09	1.5				
21.	Date Sampled for Analysis	7/11/2002	4/2/2003				
22.	Date Last Precipitation Event Occurred	7/9/2002	3/31/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2411718		686336	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	D2 01	D2 01				
2.	Lab Identification Number	205046	210152				
3.	High (H)/Low (L) Designation (if applicable)	H	L				
4.	Surface Elevation for Sampling Station (msl)	1000	1000				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	2.93	3.6				
8.	Date Above Measurements Made	4/27/2002	10/9/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.7	7.7				
11.	Total Acidity (mg/l $CaCO_3$)	1.5	4				
12.	Total Alkalinity (mg/l $CaCO_3$)	73	120				
13.	Specific Conductivity (umhos/cm at 25 C)	220	410				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.02	0.02				
16.	Total Sulfates (mg/l)	22	34				
17.	Total Iron (mg/l)	0.05	0.08				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	80	140				
20.	Nitrates (mg/l)	<0.09	<0.07				
21.	Date Sampled for Analysis	4/27/2002	10/9/2002				
22.	Date Last Precipitation Event Occurred	4/27/2002	10/4/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2428348.409		679563.1657	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U-40	U-40	U-40	U-40		
2.	Lab Identification Number	0112248	0202308	205093	210153		
3.	High (H)/Low (L) Designation (if applicable)	I	H	T	L		
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100	1100		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	1233.09	29.45	1000	0		
8.	Date Above Measurements Made	12/14/2001	2/19/2002	5/8/2002	10/9/2002		
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA	NA		
10.	pH(Standard Units)	8.2	8.3	8	7.7		
11.	Total Acidity (mg/l $CaCO_3$)	3.7	2.5	1.8	4		
12.	Total Alkalinity (mg/l $CaCO_3$)	140	77	91	120		
13.	Specific Conductivity (umhos/cm at 25 C)	300	160	260	410		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Maganese (mg/l)	<0.02	<0.01	0.02	0.07		
16.	Total Sulfates (mg/l)	31	30	29	34		
17.	Total Iron (mg/l)	0.12	0.19	0.13	0.83		
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	130		
19.	Total Hardness (mg/l $CaCO_3$)	150	80	100	190		
20.	Nitrates (mg/l)	<0.09	0.3	<0.09	<0.07		
21.	Date Sampled for Analysis	12/14/2001	2/19/2002	5/8/2002	10/9/2002		
22.	Date Last Precipitation Event Occurred	12/8/2001	2/19/2002	5/8/2002	10/4/2002		

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2427817.83		678739.9481	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U40-01	U40-01	U40-01			
2.	Lab Identification Number	0112249	0112392	0202307			
3.	High (H)/Low (L) Designation (if applicable)	T/L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1120	1120	1120			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	1.6	246.83	24.67			
8.	Date Above Measurements Made	11/9/2001	12/20/2001	2/19/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	8.2	8	8.3			
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	3.8	3.4			
12.	Total Alkalinity (mg/l $CaCO_3$)	130	64	76			
13.	Specific Conductivity (umhos/cm at 25 C)	260	180	180			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	<0.02	<0.02	<0.01			
16.	Total Sulfates (mg/l)	34	24	30			
17.	Total Iron (mg/l)	0.06	0.2	0.1			
18.	Total Suspended Solids (mg/l)	<1.0	7.3	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	150	100	100			
20.	Nitrates (mg/l)	<0.09	0.41	0.34			
21.	Date Sampled for Analysis	11/9/2001	12/20/2001	2/19/2002			
22.	Date Last Precipitation Event Occurred	11/8/2001	12/19/2001	2/19/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2430714		661891	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U40 02	U40 02	U40 02	U40 02	U40 02	U40 02
2.	Lab Identification Number	205049	207049	207369	209144	210149	303393
3.	High (H)/Low (L) Designation (if applicable)	T/H	I	I	L	L	H
4.	Surface Elevation for Sampling Station (msl)	1140	1140	1140	1140	1140	1140
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA	NA	NA
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA	NA	NA
7.	Flow for Spring/Stream (gpm)	5	1.1	1.5	0.00007	0	0.004
8.	Date Above Measurements Made	5/6/2002	7/2/2002	7/29/2002	9/12/2002	10/9/2002	3/31/2003
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA	NA	NA	NA
10.	pH(Standard Units)	7.8	7.6	7.4	7.7	7.5	8.3
11.	Total Acidity (mg/l $CaCO_3$)	3.6	1.1	19	7.3	5.1	2.7
12.	Total Alkalinity (mg/l $CaCO_3$)	110	160	190	220	120	150
13.	Specific Conductivity (umhos/cm at 25 C)	340	370	480	520	450	330
14	Total Dissolved Solids (mg/l)	ND	ND	ND	ND	ND	ND
15.	Total Maganese (mg/l)	0.2	0.59	1.8	5.8	0.03	0.12
16.	Total Sulfates (mg/l)	43	28	36	2.7	34	32
17.	Total Iron (mg/l)	2.6	0.57	0.41	3.8	0.2	0.14
18.	Total Suspended Solids (mg/l)	110	29	3.3	97	21	<1.0
19.	Total Hardness (mg/l $CACO_3$)	150	160	210	360	150	160
20.	Nitrates (mg/l)	0.14	0.17	0.11	0.2	<0.07	0.17
21.	Date Sampled for Analysis	5/6/2002	7/2/2002	7/29/2002	9/12/2002	10/9/2002	3/31/2003
22.	Date Last Precipitation Event Occurred	5/6/2002	7/1/2002	7/29/2002	9/3/2002	10/4/2002	3/31/2003

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2431277		662139	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U40 03	U40 03	U40 03	U40 03		
2.	Lab Identification Number	206064	207048	209148	203306		
3.	High (H)/Low (L) Designation (if applicable)	T/H	I	L	H		
4.	Surface Elevation for Sampling Station (msl)	1190	1190	1190	1190		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	0.1	1.5	0.0002	0.004		
8.	Date Above Measurements Made	5/6/2002	7/2/2002	9/12/2002	3/21/2002		
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA	NA		
10.	pH(Standard Units)	7.6	7.6	7.6	7.6		
11.	Total Acidity (mg/l $CaCO_3$)	4.2	1.5	16	3.7		
12.	Total Alkalinity (mg/l $CaCO_3$)	96	200	240	180		
13.	Specific Conductivity (umhos/cm at 25 C)	270	500	520	410		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Maganese (mg/l)	0.06	0.08	0.68	0.06		
16.	Total Sulfates (mg/l)	29	60	67	46		
17.	Total Iron (mg/l)	0.42	0.38	3.8	0.19		
18.	Total Suspended Solids (mg/l)	15	57	83	<1.0		
19.	Total Hardness (mg/l $CACO_3$)	120	250	280	210		
20.	Nitrates (mg/l)	<0.09	0.73	0.1	0.46		
21.	Date Sampled for Analysis	5/6/2002	7/2/2002	9/12/2002	3/21/2002		
22.	Date Last Precipitation Event Occurred	5/6/2002	7/1/2002	9/3/2002	3/21/2002		

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2429629		678398	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U40 04	U40 04	U40 04			
2.	Lab Identification Number	205055	208023	303392			
3.	High (H)/Low (L) Designation (if applicable)	T/H	L	H			
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	68	1	NA			
8.	Date Above Measurements Made	5/6/2002	7/31/2002	3/31/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.3	7.3			
11.	Total Acidity (mg/l $CaCO_3$)	3.7	1.6	3.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	100	150	82			
13.	Specific Conductivity (umhos/cm at 25 C)	290	320	190			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.01	0.02	<0.01			
16.	Total Sulfates (mg/l)	27	33	34			
17.	Total Iron (mg/l)	0.09	0.32	<0.04			
18.	Total Suspended Solids (mg/l)	<1.0	11	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	100	150	100			
20.	Nitrates (mg/l)	<0.09	0.12	0.16			
21.	Date Sampled for Analysis	5/6/2002	7/31/2002	3/31/2003			
22.	Date Last Precipitation Event Occurred	5/6/2002	7/29/2002	3/31/2003			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2430237		678369	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U40 05	U40 05	U40 05	U40 05		
2.	Lab Identification Number	205056	210251	208024	303391		
3.	High (H)/Low (L) Designation (if applicable)	T/H	L	I	H		
4.	Surface Elevation for Sampling Station (msl)	1060	1060	1060	1060		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	324	10	3	NA		
8.	Date Above Measurements Made	5/6/2002	10/24/2002	7/31/2002	3/31/2003		
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA	NA		
10.	pH(Standard Units)	7.6	7.8	7.5	7.4		
11.	Total Acidity (mg/l $CaCO_3$)	2.9	6.9	2.6	1.9		
12.	Total Alkalinity (mg/l $CaCO_3$)	85	180	130	58		
13.	Specific Conductivity (umhos/cm at 25 C)	240	650	310	150		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Maganese (mg/l)	0.01	0.09	<0.01	<0.01		
16.	Total Sulfates (mg/l)	28	110	26	33		
17.	Total Iron (mg/l)	0.09	0.38	<0.04	0.07		
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0		
19.	Total Hardness (mg/l $CACO_3$)	100	210	130	60		
20.	Nitrates (mg/l)	<0.09	<0.07	0.13	0.57		
21.	Date Sampled for Analysis	5/6/2002	10/24/2002	7/31/2002	3/31/2003		
22.	Date Last Precipitation Event Occurred	5/6/2002	10/19/2002	7/29/2002	3/31/2003		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2433321		681506	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	D 40	D 40				
2.	Lab Identification Number	210153	0303381				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	980	980				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	32	515.2				
8.	Date Above Measurements Made	7/29/2002	3/31/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	8	8.1				
11.	Total Acidity (mg/l $CaCO_3$)	5.8	<1.0				
12.	Total Alkalinity (mg/l $CaCO_3$)	210	81				
13.	Specific Conductivity (umhos/cm at 25 C)	570	210				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.04	<0.01				
16.	Total Sulfates (mg/l)	86	38				
17.	Total Iron (mg/l)	0.85	<0.04				
18.	Total Suspended Solids (mg/l)	6.7	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	270	100				
20.	Nitrates (mg/l)	0.47	0.13				
21.	Date Sampled for Analysis	7/29/2002	3/31/2003				
22.	Date Last Precipitation Event Occurred	7/29/2002	3/31/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2423749.754		673176.1187	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U-41	U-41	U-41			
2.	Lab Identification Number	0110376	0112399	0303347			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	4.22	NA	0.27			
8.	Date Above Measurements Made	10/25/2001	12/21/2001	3/28/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.9	8			
11.	Total Acidity (mg/l $CaCO_3$)	3.1	15	1.1			
12.	Total Alkalinity (mg/l $CaCO_3$)	150	84	100			
13.	Specific Conductivity (umhos/cm at 25 C)	430	360	290			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.05	0.02	0.02			
16.	Total Sulfates (mg/l)	36	29	40			
17.	Total Iron (mg/l)	0.25	0.44	0.14			
18.	Total Suspended Solids (mg/l)	7.3	40	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	180	110	140			
20.	Nitrates (mg/l)	<0.09	0.35	0.19			
21.	Date Sampled for Analysis	10/25/2001	12/21/2001	3/28/2003			
22.	Date Last Precipitation Event Occurred	10/24/2001	12/20/2001	3/26/2003			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2423487.345		674297.1603	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U41-01	U41-01	U41-01			
2.	Lab Identification Number	0110377	0112398	0303345			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	104.94	NA	0.16			
8.	Date Above Measurements Made	10/25/2001	12/21/2001	3/28/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	8.2	7.9	8.1			
11.	Total Acidity (mg/l $CaCO_3$)	2.5	7.6	1.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	140	86	110			
13.	Specific Conductivity (umhos/cm at 25 C)	430	370	310			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.03	0.04	<0.01			
16.	Total Sulfates (mg/l)	36	29	41			
17.	Total Iron (mg/l)	0.17	0.49	0.07			
18.	Total Suspended Solids (mg/l)	4.7	43	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	170	120	140			
20.	Nitrates (mg/l)	<0.09	0.47	0.21			
21.	Date Sampled for Analysis	10/25/2001	12/21/2001	3/28/2003			
22.	Date Last Precipitation Event Occurred	10/24/2001	12/20/2001	3/26/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2423675.449		675192.5233	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U41-02	U41-02	U41-02			
2.	Lab Identification Number	0110375	0112400	0303346			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1130	1130	1130			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	70.7	NA	0.08			
8.	Date Above Measurements Made	10/25/2001	12/21/2001	3/28/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.9	7.9			
11.	Total Acidity (mg/l $CaCO_3$)	5.5	11	1.2			
12.	Total Alkalinity (mg/l $CaCO_3$)	140	86	110			
13.	Specific Conductivity (umhos/cm at 25 C)	390	260	310			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.02	0.02	<0.01			
16.	Total Sulfates (mg/l)	37	30	39			
17.	Total Iron (mg/l)	0.05	0.49	0.1			
18.	Total Suspended Solids (mg/l)	<1.0	15	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	200	100	140			
20.	Nitrates (mg/l)	0.09	0.51	<0.07			
21.	Date Sampled for Analysis	10/25/2001	12/21/2001	3/28/2003			
22.	Date Last Precipitation Event Occurred	10/24/2001	12/20/2001	3/26/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2430080.339			675296.4688	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U41-04	U41-04	U41-04	U41-04		
2.	Lab Identification Number	0111042	0112251	0112386	304050		
3.	High (H)/Low (L) Designation (if applicable)	L	T/L	I	H		
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200	1200		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	0	0	0	0.003		
8.	Date Above Measurements Made	10/31/2001	11/5/2001	12/20/2001	4/3/2003		
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA	NA		
10.	pH(Standard Units)	8.4	8.4	8.6	8.3		
11.	Total Acidity (mg/l $CaCO_3$)	2.6	3	5.7	3.3		
12.	Total Alkalinity (mg/l $CaCO_3$)	120	120	110	100		
13.	Specific Conductivity (umhos/cm at 25 C)	450	240	400	750		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Maganese (mg/l)	0.27	0.04	0.12	0.16		
16.	Total Sulfates (mg/l)	14	28	23	29		
17.	Total Iron (mg/l)	2.4	0.11	0.5	0.32		
18.	Total Suspended Solids (mg/l)	38	<1.0	21	7.3		
19.	Total Hardness (mg/l $CACO_3$)	120	120	130	140		
20.	Nitrates (mg/l)	0.17	<0.09	0.27	<0.07		
21.	Date Sampled for Analysis	10/31/2001	11/5/2001	12/20/2001	4/3/2003		
22.	Date Last Precipitation Event Occurred	10/26/2001	11/2/2001	12/19/2001	3/31/2003		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2420693		673004		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U41-05	U41-05				
2.	Lab Identification Number	205053	303344				
3.	High (H)/Low (L) Designation (if applicable)	T/H	H				
4.	Surface Elevation for Sampling Station (msl)	1120	1120				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	58.2	NA				
8.	Date Above Measurements Made	5/6/2002	3/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.8	7.7				
11.	Total Acidity (mg/l $CaCO_3$)	3.8	3.1				
12.	Total Alkalinity (mg/l $CaCO_3$)	120	93				
13.	Specific Conductivity (umhos/cm at 25 C)	330	270				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.08	0.06				
16.	Total Sulfates (mg/l)	30	38				
17.	Total Iron (mg/l)	0.06	0.85				
18.	Total Suspended Solids (mg/l)	<1.0	18				
19.	Total Hardness (mg/l $CACO_3$)	140	120				
20.	Nitrates (mg/l)	<0.09	<0.09				
21.	Date Sampled for Analysis	5/6/2002	3/28/2003				
22.	Date Last Precipitation Event Occurred	5/6/2002	3/26/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		3415879.159		672731.2725	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U-42					
2.	Lab Identification Number	303396					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1100					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (gpm)	0.22					
8.	Date Above Measurements Made	3/31/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.5					
11.	Total Acidity (mg/l $CaCO_3$)	4					
12.	Total Alkalinity (mg/l $CaCO_3$)	85					
13.	Specific Conductivity (umhos/cm at 25 C)	370					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.02					
16.	Total Sulfates (mg/l)	31					
17.	Total Iron (mg/l)	0.19					
18.	Total Suspended Solids (mg/l)	3.3					
19.	Total Hardness (mg/l $CACO_3$)	140					
20.	Nitrates (mg/l)	0.39					
21.	Date Sampled for Analysis	3/31/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2416312.517		675339.8787	LOCATION	GATE
1.	Identification No. Of Sampling Station From Hydrology Map	U42-01	U42-01	U42-01			
2.	Lab Identification Number	0110330	0112386	303395			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1150	1150	1150			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.6	484.77	0.09			
8.	Date Above Measurements Made	10/23/2001	12/19/2001	3/31/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	8.1	7.3			
11.	Total Acidity (mg/l $CaCO_3$)	6.1	5.7	4.2			
12.	Total Alkalinity (mg/l $CaCO_3$)	220	92	55			
13.	Specific Conductivity (umhos/cm at 25 C)	720	310	150			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.48	0.02	0.01			
16.	Total Sulfates (mg/l)	36	28	28			
17.	Total Iron (mg/l)	<0.05	0.27	0.26			
18.	Total Suspended Solids (mg/l)	<1.0	2.7	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	250	120	80			
20.	Nitrates (mg/l)	0.15	0.59	0.53			
21.	Date Sampled for Analysis	10/23/2001	12/19/2001	3/31/2003			
22.	Date Last Precipitation Event Occurred	10/16/2001	12/18/2001	3/31/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2417186.851		673230.2749	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U42-02	U42-02				
2.	Lab Identification Number	0111007	304031				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1140	1140				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	5.3	0.02				
8.	Date Above Measurements Made	10/30/2001	4/2/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.7	8.1				
11.	Total Acidity (mg/l $CaCO_3$)	3.4	2				
12.	Total Alkalinity (mg/l $CaCO_3$)	130	89				
13.	Specific Conductivity (umhos/cm at 25 C)	290	320				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.63	0.04				
16.	Total Sulfates (mg/l)	28	34				
17.	Total Iron (mg/l)	2	0.27				
18.	Total Suspended Solids (mg/l)	79	2.7				
19.	Total Hardness (mg/l $CACO_3$)	140	100				
20.	Nitrates (mg/l)	0.2	0.58				
21.	Date Sampled for Analysis	10/30/2001	4/2/2003				
22.	Date Last Precipitation Event Occurred	10/26/2001	3/31/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2416265.41		674972.3585	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U42-03	U42-03	U42-03			
2.	Lab Identification Number	0110374	0112390	304032			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0	4	0.002			
8.	Date Above Measurements Made	10/25/2001	12/20/2001	4/2/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.7	7.9	8			
11.	Total Acidity (mg/l $CaCO_3$)	3.5	<1.0	4.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	100	62	93			
13.	Specific Conductivity (umhos/cm at 25 C)	270	230	450			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.13	27	0.28			
16.	Total Sulfates (mg/l)	11	10.12	28			
17.	Total Iron (mg/l)	1.1	1.8	0.53			
18.	Total Suspended Solids (mg/l)	76	27	3.3			
19.	Total Hardness (mg/l $CACO_3$)	100	100	110			
20.	Nitrates (mg/l)	0.26	0.36	0.08			
21.	Date Sampled for Analysis	10/25/2001	12/20/2001	4/2/2003			
22.	Date Last Precipitation Event Occurred	10/24/2001	12/19/2001	3/31/2003			

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ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name: AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:		2413554.236		675080.4454	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	U42-04	U42-04				
2.	Lab Identification Number	0111236	0112387				
3.	High (H)/Low (L) Designation (if applicable)	I	I				
4.	Surface Elevation for Sampling Station (msl)	1140	1140				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	9.4	18.75				
8.	Date Above Measurements Made	11/16/2001	12/19/2001				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	8	8				
11.	Total Acidity (mg/l $CaCO_3$)	2.7	<1.0				
12.	Total Alkalinity (mg/l $CaCO_3$)	160	82				
13.	Specific Conductivity (umhos/cm at 25 C)	470	280				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.05	<0.02				
16.	Total Sulfates (mg/l)	25	28				
17.	Total Iron (mg/l)	0.19	0.46				
18.	Total Suspended Solids (mg/l)	<1.0	11				
19.	Total Hardness (mg/l $CACO_3$)	190	90				
20.	Nitrates (mg/l)	<0.09	0.49				
21.	Date Sampled for Analysis	11/16/2001	12/19/2001				
22.	Date Last Precipitation Event Occurred	11/8/2001	12/18/2001				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413772		674772	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U42 05	U42 06	U42 05			
2.	Lab Identification Number	206035	210252	206026			
3.	High (H)/Low (L) Designation (if applicable)	H	L	I			
4.	Surface Elevation for Sampling Station (msl)	1120	1120	1130			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	0.6666	89	3			
8.	Date Above Measurements Made	4/26/2002	10/24/2002	7/31/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.5	7.5			
11.	Total Acidity (mg/l $CaCO_3$)	1.3	1.4	3.7			
12.	Total Alkalinity (mg/l $CaCO_3$)	99	100	87			
13.	Specific Conductivity (umhos/cm at 25 C)	320	430	300			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.07	<0.01	0.04			
16.	Total Sulfates (mg/l)	26	97	25			
17.	Total Iron (mg/l)	0.37	<0.04	0.68			
18.	Total Suspended Solids (mg/l)	8	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	100	180	110			
20.	Nitrates (mg/l)	0.39	<0.07	0.34			
21.	Date Sampled for Analysis	4/26/2002	10/24/2002	7/31/2002			
22.	Date Last Precipitation Event Occurred	4/25/2002	10/19/2002	7/29/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (O-0425-3)

	STATE PLANE COORDINATES:	2427162		662331	LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U43 01	U43 01	U43 01		
2.	Lab Identification Number	205050	303389	na		
3.	High (H)/Low (L) Designation (if applicable)	T/H	H	I		
4.	Surface Elevation for Sampling Station (msl)	1160	1160	1160		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	20.9	0.04	0		
8.	Date Above Measurements Made	5/6/2002	3/31/2003	7/29/2002		
9.	Aquifer/Zone identification for Well/Spring	NA	NA	NA		
10.	pH(Standard Units)	8	7.7	NA		
11.	Total Acidity (mg/l $CaCO_3$)	3.3	4.1	NA		
12.	Total Alkalinity (mg/l $CaCO_3$)	90	75	NA		
13.	Specific Conductivity (umhos/cm at 25 C)	260	200	NA		
14.	Total Dissolved Solids (mg/l)	ND	ND	NA		
15.	Total Maganese (mg/l)	0.01	0.02	NA		
16.	Total Sulfates (mg/l)	33	41	NA		
17.	Total Iron (mg/l)	0.05	0.15	NA		
18.	Total Suspended Solids (mg/l)	2.7	4.7	NA		
19.	Total Hardness (mg/l $CACO_3$)	100	100	NA		
20.	Nitrates (mg/l)	0.48	0.44	NA		
21.	Date Sampled for Analysis	5/6/2002	3/31/2003	7/29/2002		
22.	Date Last Precipitation Event Occurred	5/6/2002	3/31/2003	7/29/2002		

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2427772	685747	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	U43 02	U43 02	U43 02			
2.	Lab Identification Number	205094	210142	303382			
3.	High (H)/Low (L) Designation (if applicable)	T/I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	293	0.12	NA			
8.	Date Above Measurements Made	5/8/2002	10/9/2002	3/31/2003			
9.	Aquifer/Zone identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	8	8.2			
11.	Total Acidity (mg/l $CaCO_3$)	2.8	<1.0	1.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	100	110	120			
13.	Specific Conductivity (umhos/cm at 25 C)	280	230	300			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	<0.01	0.02	0.02			
16.	Total Sulfates (mg/l)	33	12	51			
17.	Total Iron (mg/l)	0.59	0.2	0.17			
18.	Total Suspended Solids (mg/l)	11	<1.0	3.3			
19.	Total Hardness (mg/l $CACO_3$)	130	110	150			
20.	Nitrates (mg/l)	0.87	<0.07	0.86			
21.	Date Sampled for Analysis	5/8/2002	10/9/2002	3/31/2003			
22.	Date Last Precipitation Event Occured	5/8/2002	10/4/2002	3/31/2003			

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	STATE PLANE COORDINATES:	2427802		686159	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U43 03	U43 03	U43 03			
2.	Lab Identification Number	205095	303383	205096			
3.	High (H)/Low (L) Designation (if applicable)	T/I	H	L			
4.	Surface Elevation for Sampling Station (msl)	1080	1090	1080			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	596	0.07	0			
8.	Date Above Measurements Made	5/8/2002	3/31/2003	10/9/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	7.8	NA			
11.	Total Acidity (mg/l $CaCO_3$)	6.2	1.7	NA			
12.	Total Alkalinity (mg/l $CaCO_3$)	100	110	NA			
13.	Specific Conductivity (umhos/cm at 25 C)	260	230	NA			
14.	Total Dissolved Solids (mg/l)	ND	ND	NA			
15.	Total Maganese (mg/l)	<0.01	0.02	NA			
16.	Total Sulfates (mg/l)	26	26	NA			
17.	Total Iron (mg/l)	0.18	0.14	NA			
18.	Total Suspended Solids (mg/l)	53	4.7	NA			
19.	Total Hardness (mg/l $CACO_3$)	120	130	NA			
20.	Nitrates (mg/l)	<0.09	0.13	NA			
21.	Date Sampled for Analysis	5/8/2002	3/31/2003	10/9/2002			
22.	Date Last Precipitation Event Occurred	5/8/2002	3/31/2003	10/4/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES	2431831		686191	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U43 04	U43 04	U43 04			
2.	Lab Identification Number	205098	207044	0303379			
3.	High (H)/Low (L) Designation (if applicable)	T/H	L	H			
4.	Surface Elevation for Sampling Station (msl)	1020	1020	1020			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	568	157	183.68			
8.	Date Above Measurements Made	5/8/2002	7/1/2002	3/31/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.9	7.8	7.8			
11.	Total Acidity (mg/l $CaCO_3$)	3.4	2.4	2.2			
12.	Total Alkalinity (mg/l $CaCO_3$)	110	140	110			
13.	Specific Conductivity (umhos/cm at 25 C)	280	330	260			
14	Total Dissolved Solids (mg/l)	ND	ND	ND			
15	Total Maganese (mg/l)	<0.01	<0.01	<0.01			
16.	Total Sulfates (mg/l)	31	32	41			
17.	Total Iron (mg/l)	0.3	<0.04	<0.04			
18.	Total Suspended Solids (mg/l)	4.7	2.7	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	110	140	140			
20.	Nitrates (mg/l)	<0.09	0.22	0.21			
21.	Date Sampled for Analysis	5/8/2002	7/1/2002	3/31/2003			
22.	Date Last Precipitation Event Occurred	5/8/2002	7/1/2002	3/31/2003			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2432814		684498	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	U43 05	U43 05	U43 05			
2.	Lab Identification Number	205097	207043	210143			
3.	High (H)/Low (L) Designation (if applicable)	T/H	I	L			
4.	Surface Elevation for Sampling Station (msl)	980	980	980			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (cfs)	1205	195	105			
8.	Date Above Measurements Made	5/8/2002	7/1/2002	10/9/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	8	8	7.9			
11.	Total Acidity (mg/l $CaCO_3$)	3.2	5.2	2.8			
12.	Total Alkalinity (mg/l $CaCO_3$)	100	140	120			
13.	Specific Conductivity (umhos/cm at 25 C)	260	310	210			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	<0.01	<0.01	0.22			
16.	Total Sulfates (mg/l)	28	31	12			
17.	Total iron (mg/l)	0.28	0.12	0.34			
18.	Total Suspended Solids (mg/l)	<1.0	3.3	26			
19.	Total Hardness (mg/l $CACO_3$)	100	130	120			
20.	Nitrates (mg/l)	<0.09	0.23	<0.07			
21.	Date Sampled for Analysis	5/8/2002	7/1/2002	10/9/2002			
22.	Date Last Precipitation Event Occurred	5/8/2002	7/1/2002	10/4/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2429427.4	686531		LOCATION	
1.	Identification No. Of Sampling Station From Hydrology Map	U43 06				
2.	Lab Identification Number	306139				
3.	High (H)/Low (L) Designation (if applicable)	I				
4.	Surface Elevation for Sampling Station (msl)	1060				
5.	Depth of Well below Land Surface (msl)	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA				
7.	Flow for Spring/Stream (cfs)	1.13				
8.	Date Above Measurements Made	6/5/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA				
10.	pH(Standard Units)	7.2				
11.	Total Acidity (mg/l $CaCO_3$)	13				
12.	Total Alkalinity (mg/l $CaCO_3$)	59				
13.	Specific Conductivity (umhos/cm at 25 C)	190				
14.	Total Dissolved Solids (mg/l)	ND				
15.	Total Maganese (mg/l)	0.03				
16.	Total Sulfates (mg/l)	27				
17.	Total Iron (mg/l)	0.39				
18.	Total Suspended Solids (mg/l)	5.3				
19.	Total Hardness (mg/l $CACO_3$)	70				
20	Nitrates (mg/l)	0.18				
21.	Date Sampled for Analysis	6/5/2003				
22.	Date Last Precipitation Event Occurred	6/4/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2433836	683983	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	D43	D43	D43	D43		
2.	Lab Identification Number	205096	207042	210144	0303380		
3.	High (H)/Low (L) Designation (if applicable)	T	I	L	H		
4.	Surface Elevation for Sampling Station (msl)	1130	1130	1130	1130		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	1925	272	157	933.5664		
8.	Date Above Measurements Made	5/8/2002	7/1/2002	10/9/2002	3/31/2003		
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA	NA		
10.	pH(Standard Units)	8	7.9	8	8.2		
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	5	4	<1.0		
12.	Total Alkalinity (mg/l $CaCO_3$)	92	120	170	98		
13.	Specific Conductivity (umhos/cm at 25 C)	240	300	390	230		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND	ND		
15.	Total Maganese (mg/l)	<0.01	<0.01	0.33	<0.01		
16.	Total Sulfates (mg/l)	29	32	12	40		
17.	Total Iron (mg/l)	0.22	<0.04	0.52	<0.04		
18.	Total Suspended Solids (mg/l)	<1.0	1.3	15	<1.0		
19.	Total Hardness (mg/l $CACO_3$)	90	120	110	120		
20.	Nitrates (mg/l)	<0.09	0.33	<0.07	0.16		
21.	Date Sampled for Analysis	5/8/2002	7/1/2002	10/9/2002	3/31/2003		
22.	Date Last Precipitation Event Occurred	5/8/2002	7/1/2002	10/4/2002	3/31/2003		

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	STATE PLANE COORDINATES:	2413257		681645	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 26					
2.	Lab Identification Number	304019					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1200					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (cfs)	NA					
8.	Date Above Measurements Made	4/2/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.3					
11.	Total Acidity (mg/l $CaCO_3$)	<1.0					
12.	Total Alkalinity (mg/l $CaCO_3$)	35					
13.	Specific Conductivity (umhos/cm at 25 C)	93					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.1					
16.	Total Sulfates (mg/l)	19					
17.	Total Iron (mg/l)	1					
18.	Total Suspended Solids (mg/l)	6.7					
19.	Total Hardness (mg/l $CACO_3$)	30					
20.	Nitrates (mg/l)	0.42					
21.	Date Sampled for Analysis	4/2/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2422880	678311		LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 27					
2.	Lab Identification Number	305012					
3.	High (H)/Low (L) Designation (if applicable)	T/H					
4.	Surface Elevation for Sampling Station (msl)	1200					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (cfs)	0.001					
8.	Date Above Measurements Made	5/1/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	8.6					
11.	Total Acidity (mg/l $CaCO_3$)	<1.0					
12.	Total Alkalinity (mg/l $CaCO_3$)	97					
13.	Specific Conductivity (umhos/cm at 25 C)	280					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.44					
16.	Total Sulfates (mg/l)	21					
17.	Total Iron (mg/l)	1.3					
18.	Total Suspended Solids (mg/l)	10					
19.	Total Hardness (mg/l $CACO_3$)	120					
20.	Nitrates (mg/l)	<0.07					
21.	Date Sampled for Analysis	5/1/2003					
22.	Date Last Precipitation Event Occurred	4/30/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:				LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 30					
2.	Lab Identification Number	304049					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1200					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (cfs)	NA					
8.	Date Above Measurements Made	4/3/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	8.3					
11.	Total Acidity (mg/l $CaCO_3$)	4.8					
12.	Total Alkalinity (mg/l $CaCO_3$)	100					
13.	Specific Conductivity (umhos/cm at 25 C)	750					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.15					
16.	Total Sulfates (mg/l)	29					
17.	Total Iron (mg/l)	0.29					
18.	Total Suspended Solids (mg/l)	8					
19.	Total Hardness (mg/l $CACO_3$)	150					
20.	Nitrates (mg/l)	0.1					
21.	Date Sampled for Analysis	4/3/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413659	677407		LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 39					
2.	Lab Identification Number	305013					
3.	High (H)/Low (L) Designation (if applicable)	T/H					
4.	Surface Elevation for Sampling Station (msl)	1210					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (cfs)	0					
8.	Date Above Measurements Made	5/1/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7					
11.	Total Acidity (mg/l $CaCO_3$)	2.3					
12.	Total Alkalinity (mg/l $CaCO_3$)	30					
13.	Specific Conductivity (umhos/cm at 25 C)	170					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.04					
16.	Total Sulfates (mg/l)	19					
17.	Total Iron (mg/l)	0.41					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	40					
20.	Nitrates (mg/l)	<0.07					
21.	Date Sampled for Analysis	5/1/2003					
22.	Date Last Precipitation Event Occurred	4/30/2003					

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2419112		674093	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 45	P 45				
2.	Lab Identification Number	210053	204005				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)						
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (cfs)	0	0				
8.	Date Above Measurements Made	10/3/2002	3/25/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	8	7.2				
11.	Total Acidity (mg/l $CaCO_3$)	9.1	5				
12.	Total Alkalinity (mg/l $CaCO_3$)	100	73				
13.	Specific Conductivity (umhos/cm at 25 C)	330	190				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.56	0.25				
16.	Total Sulfates (mg/l)	43	23				
17.	Total Iron (mg/l)	3.6	1.2				
18.	Total Suspended Solids (mg/l)	22	6				
19.	Total Hardness (mg/l $CACO_3$)	140	80				
20.	Nitrates (mg/l)	0.14	<0.09				
21.	Date Sampled for Analysis	10/3/2002	3/25/2002				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/25/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2418326	675202	LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	P 48					
2.	Lab Identification Number	304032					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1200					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (cfs)	NA					
8.	Date Above Measurements Made	4/2/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	8					
11.	Total Acidity (mg/l $CaCO_3$)	4.6					
12.	Total Alkalinity (mg/l $CaCO_3$)	93					
13.	Specific Conductivity (umhos/cm at 25 C)	450					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.27					
16.	Total Sulfates (mg/l)	27					
17.	Total Iron (mg/l)	0.51					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	110					
20.	Nitrates (mg/l)	0.11					
21.	Date Sampled for Analysis	4/2/2003					
22.	Date Last Precipitation Event Occurred	3/31/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:				LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 50	P 50				
2.	Lab Identification Number	210055	303350				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1200	1200				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (cfs)	0	0.003				
8.	Date Above Measurements Made	10/3/2002	3/28/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	8.5	7.7				
11.	Total Acidity (mg/l $CaCO_3$)	<1.0	<1.0				
12.	Total Alkalinity (mg/l $CaCO_3$)	140	140				
13.	Specific Conductivity (umhos/cm at 25 C)	350	350				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.02	0.02				
16.	Total Sulfates (mg/l)	29	33				
17.	Total Iron (mg/l)	0.16	0.1				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	110	160				
20.	Nitrates (mg/l)	0.08	0.72				
21.	Date Sampled for Analysis	10/3/2002	3/28/2003				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/26/2003				

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2414460 675841 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	P 51	P 51	P 51			
2.	Lab Identification Number	207130	210047	303356			
3.	High (H)/Low (L) Designation (if applicable)	I	L	H			
4.	Surface Elevation for Sampling Station (msl)	1170	1170	1170			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (cfs)	0.004	0	NA			
8.	Date Above Measurements Made	7/11/2002	10/3/2002	3/28/2003			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	6.8	6.9	7.5			
11.	Total Acidity (mg/l $CaCO_3$)	8.5	7	3.6			
12.	Total Alkalinity (mg/l $CaCO_3$)	57	64	46			
13.	Specific Conductivity (umhos/cm at 25 C)	120	220	230			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	1.1	0.24	0.86			
16.	Total Sulfates (mg/l)	15	32	35			
17.	Total Iron (mg/l)	1.3	0.82	0.75			
18.	Total Suspended Solids (mg/l)	11	1.3	8			
19.	Total Hardness (mg/l $CACO_3$)	50	90	100			
20.	Nitrates (mg/l)	0.15	0.13	0.12			
21.	Date Sampled for Analysis	7/11/2002	10/3/2002	3/28/2003			
22.	Date Last Precipitation Event Occurred	7/9/2002	9/27/2002	3/26/2003			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2412801 683565 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	P 57	P 57				
2.	Lab Identification Number	210045	204047				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1170	1170				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (cfs)	0	0.01				
8.	Date Above Measurements Made	10/3/2002	3/29/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	6	6.6				
11.	Total Acidity (mg/l $CaCO_3$)	5.9	4.3				
12.	Total Alkalinity (mg/l $CaCO_3$)	12	18				
13.	Specific Conductivity (umhos/cm at 25 C)	170	100				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.32	0.08				
16.	Total Sulfates (mg/l)	40	22				
17.	Total Iron (mg/l)	0.14	0.71				
18.	Total Suspended Solids (mg/l)	<1.0	4.7				
19.	Total Hardness (mg/l $CACO_3$)	50	40				
20.	Nitrates (mg/l)	<0.07	0.09				
21.	Date Sampled for Analysis	10/3/2002	3/29/2002				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/29/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2412448 684175 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	P 58	P 58				
2.	Lab Identification Number	210044	204045				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1110	1110				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (cfs)	0	0.02				
8.	Date Above Measurements Made	10/3/2002	3/29/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.4	7.5				
11.	Total Acidity (mg/l $CaCO_3$)	2.7	2.5				
12.	Total Alkalinity (mg/l $CaCO_3$)	51	54				
13.	Specific Conductivity (umhos/cm at 25 C)	150	120				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.03	0.06				
16.	Total Sulfates (mg/l)	15	21				
17.	Total Iron (mg/l)	0.13	0.49				
18.	Total Suspended Solids (mg/l)	<1.0	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	60	130				
20.	Nitrates (mg/l)	<0.07	0.26				
21.	Date Sampled for Analysis	10/3/2002	3/29/2002				
22.	Date Last Precipitation Event Occurred	9/27/2002	3/29/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413550		692834	LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 59	P 59				
2.	Lab Identification Number	207137	304048				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	1210	1210				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (cfs)	0.008	0.01				
8.	Date Above Measurements Made	7/11/2002	3/29/2002				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	7.6	7.5				
11.	Total Acidity (mg/l $CaCO_3$)	88	5.5				
12.	Total Alkalinity (mg/l $CaCO_3$)	68	42				
13.	Specific Conductivity (umhos/cm at 25 C)	180	140				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.22	0.03				
16.	Total Sulfates (mg/l)	20	26				
17.	Total Iron (mg/l)	0.61	0.6				
18.	Total Suspended Solids (mg/l)	5.3	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	60	60				
20.	Nitrates (mg/l)	<0.09	0.11				
21.	Date Sampled for Analysis	7/11/2002	3/29/2002				
22.	Date Last Precipitation Event Occurred	7/9/2002	3/29/2002				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2414447	678228		LOCATION		
1.	Identification No. Of Sampling Station From Hydrology Map	P 80					
2.	Lab Identification Number	304499					
3.	High (H)/Low (L) Designation (if applicable)	H					
4.	Surface Elevation for Sampling Station (msl)	1220					
5.	Depth of Well below Land Surface (msl)	NA					
6.	Static Water Level of Well below Land Surface (feet)	NA					
7.	Flow for Spring/Stream (cfs)	NA					
8.	Date Above Measurements Made	4/28/2003					
9.	Aquifer/Zone Identification for Well/Spring	NA					
10.	pH(Standard Units)	7.5					
11.	Total Acidity (mg/l $CaCO_3$)	5.8					
12.	Total Alkalinity (mg/l $CaCO_3$)	120					
13.	Specific Conductivity (umhos/cm at 25 C)	410					
14.	Total Dissolved Solids (mg/l)	ND					
15.	Total Maganese (mg/l)	0.03					
16.	Total Sulfates (mg/l)	31					
17.	Total Iron (mg/l)	0.23					
18.	Total Suspended Solids (mg/l)	<1.0					
19.	Total Hardness (mg/l $CACO_3$)	170					
20.	Nitrates (mg/l)	<0.07					
21.	Date Sampled for Analysis	4/28/2003					
22.	Date Last Precipitation Event Occurred	4/27/2003					

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:			LOCATION			
1.	Identification No. Of Sampling Station From Hydrology Map	U41 06	U41 06	U41 06			
2.	Lab Identification Number	205034	210253	210253			
3.	High (H)/Low (L) Designation (if applicable)	H	L	I			
4.	Surface Elevation for Sampling Station (msl)						
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	12	6			
8.	Date Above Measurements Made	4/27/2002	10/24/2002	7/31/2002			
9	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.8	8	7.3			
11.	Total Acidity (mg/l $CaCO_3$)	4.6	3.6	5.1			
12.	Total Alkalinity (mg/l $CaCO_3$)	110	140	160			
13.	Specific Conductivity (umhos/cm at 25 C)	360	630	510			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0 06	0.04	0.26			
16.	Total Sulfates (mg/l)	31	240	28			
17.	Total Iron (mg/l)	0.59	0.04	0.15			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	120	310	200			
20.	Nitrates (mg/l)	<0 09	0.1	0.15			
21.	Date Sampled for Analysis	4/27/2002	10/24/2002	7/31/2002			
22.	Date Last Precipitation Event Occurred	4/27/2002	10/19/2002	7/29/2002			

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2433321 881505 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	D 40	D 40				
2.	Lab Identification Number	210153	0303381				
3.	High (H)/Low (L) Designation (if applicable)	I	H				
4.	Surface Elevation for Sampling Station (msl)	980	980				
5.	Depth of Well below Land Surface (msl)	NA	NA				
6.	Static Water Level of Well below Land Surface (feet)	NA	NA				
7.	Flow for Spring/Stream (gpm)	32	1.15				
8.	Date Above Measurements Made	7/29/2002	3/31/2003				
9.	Aquifer/Zone Identification for Well/Spring	NA	NA				
10.	pH(Standard Units)	8	8.1				
11.	Total Acidity (mg/l $CaCO_3$)	5.8	<1.0				
12.	Total Alkalinity (mg/l $CaCO_3$)	210	81				
13.	Specific Conductivity (umhos/cm at 25 C)	570	310				
14.	Total Dissolved Solids (mg/l)	ND	ND				
15.	Total Maganese (mg/l)	0.04	<0.01				
16.	Total Sulfates (mg/l)	86	36				
17.	Total Iron (mg/l)	0.65	<0.04				
18.	Total Suspended Solids (mg/l)	6.7	<1.0				
19.	Total Hardness (mg/l $CACO_3$)	270	100				
20.	Nitrates (mg/l)	0.47	0.13				
21.	Date Sampled for Analysis	7/29/2002	3/31/2003				
22.	Date Last Precipitation Event Occurred	7/29/2002	3/31/2003				

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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES: 2419954 685861 LOCATION						
1.	Identification No. Of Sampling Station From Hydrology Map	D1A-1	D1A-1	D1A-1			
2.	Lab Identification Number	210147	207214	205045			
3.	High (H)/Low (L) Designation (if applicable)	L	L	H			
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	78	102	627.6			
8.	Date Above Measurements Made	10/9/2002	7/17/2002	4/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	NA	NA	NA			
10.	pH(Standard Units)	7.5	8.2	8.1			
11.	Total Acidity (mg/l $CaCO_3$)	7	2.3	2.5			
12.	Total Alkalinity (mg/l $CaCO_3$)	180	220	100			
13.	Specific Conductivity (umhos/cm at 25 C)	660	650	280			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Maganese (mg/l)	0.01	<0.01	<0.01			
16.	Total Sulfates (mg/l)	68	55	28			
17.	Total Iron (mg/l)	<0.04	0.05	0.14			
18.	Total Suspended Solids (mg/l)	<1.0	1.3	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	180	130	120			
20.	Nitrates (mg/l)	<0.07	<0.09	<0.09			
21.	Date Sampled for Analysis	10/9/2002	7/17/2002	4/27/2002			
22.	Date Last Precipitation Event Occurred	10/9/2002	7/17/2002	4/27/2002			

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Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2413880.6			681253.93	LOCATION
1.	Identification No. Of Sampling Station From Hydrology Map	DS 201	DS 201	DS 201		
2.	Lab Identification Number	0110148	0201294	304022		
3.	High (H)/Low (L) Designation (if applicable)	L	I	H		
4.	Surface Elevation for Sampling Station (msl)	1160	1160	1160		
5.	Depth of Well below Land Surface (msl)	NA	NA	NA		
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA		
7.	Flow for Spring/Stream (gpm)	0	0	0		
8.	Date Above Measurements Made	10/12/2001	1/18/2002	4/2/2003		
9	Aquifer/Zone Identification for Well/Spring	B	B	B		
10.	pH(Standard Units)	7.14	8	7.7		
11.	Total Acidity (mg/l $CaCO_3$)	24	7.7	2.2		
12.	Total Alkalinity (mg/l $CaCO_3$)	200	210	82		
13.	Specific Conductivity (umhos/cm at 25 C)	410	610	280		
14.	Total Dissolved Solids (mg/l)	ND	ND	ND		
15.	Total Manganese (mg/l)	1.8	<0.02	0.05		
16.	Total Sulfates (mg/l)	5.6	73	26		
17.	Total Iron (mg/l)	8.8	<0.05	0.21		
18.	Total Suspended Solids (mg/l)	560	<1.0	<1.0		
19.	Total Hardness (mg/l $CACO_3$)	180	210	100	No access for flow measurement, the spring fills a sump	
20.	Nitrates (mg/l)	<0.09	3	3.6		
21.	Date Sampled for Analysis	10/12/2001	1/18/2002	4/2/2003		
22.	Date Last Precipitation Event Occurred	10/11/2001	1/14/2002	3/31/2003		

Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

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) DEPARTMENT OF NATURAL RESOUI S
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name AMERICAN ENERGY CORPORATION (D-0425-3)

	STATE PLANE COORDINATES:	2410269.1			678119.88	LOCATION	ADJ
1.	Identification No. Of Sampling Station From Hydrology Map	DS 86	DS 86	DS 86			
2.	Lab Identification Number	0110133	0201233	0202437			
3.	High (H)/Low (L) Designation (if applicable)	L	I	H			
4.	Surface Elevation for Sampling Station (msl)	1180	1180	1180			
5.	Depth of Well below Land Surface (msl)	NA	NA	NA			
6.	Static Water Level of Well below Land Surface (feet)	NA	NA	NA			
7.	Flow for Spring/Stream (gpm)	NA	0.5	NA			
8.	Date Above Measurements Made	10/10/2001	1/10/2002	2/27/2002			
9.	Aquifer/Zone Identification for Well/Spring	B	B	B			
10.	pH(Standard Units)	7.1	8	9.3			
11.	Total Acidity (mg/l $CaCO_3$)	21	1.9	<1.0			
12.	Total Alkalinity (mg/l $CaCO_3$)	110	100	81			
13.	Specific Conductivity (umhos/cm at 25 C)	320	310	220			
14.	Total Dissolved Solids (mg/l)	ND	ND	ND			
15.	Total Manganese (mg/l)	<0.02	<0.02	0.04			
16.	Total Sulfates (mg/l)	38	41	36			
17.	Total Iron (mg/l)	<0.05	<0.05	0.25			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0			
19.	Total Hardness (mg/l $CACO_3$)	110	140	75			
20.	Nitrates (mg/l)	0.2	1.5	2.1			
21.	Date Sampled for Analysis	10/10/2001	1/10/2002	2/27/2002			
22.	Date Last Precipitation Event Occurred	10/5/2001	1/7/2002	2/27/2002			

Laboratory Name **Tra-Det Inc.**
Address **P.O. Box 2019 Wheeling**
State **West Virginia** Zip **26003-0219**

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DIVISION OF RECLAMATION

ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

APPLICANT BENNOC, INC. (D-0425-1)

1	Identification No. of Sampling Station from Hydrology Map	D-9	D-9	D-10	D-10	D-11	D-11
2	Identification Number 99-	05-784	---	05-785	08-526	05-786	08-527
3	High (H)/Low (L) Designation (if applicable)	H	L	H	L	H	L
4	Surface Elevation for Sampling Station (msl)	930	930	918	918	955	955
5	Depth of Well Below Land Surface (feet)	---	---	---	---	---	---
6	Static Water Level of Well Below Land Surface (feet)	---	---	---	---	---	---
7	Flow for Spring and Stream (gpm or cfs)	.35 CFS	DRY	.96 CFS	.05 CFS	3.0 CFS	.08 CFS
8	Date Above Measurements Made	5-24-99	8-17-99	5-24-99	8-17-99	5-24-99	8-17-99
9	Aquifer/Zone Identification For Well/Spring	---	---	---	---	---	---
10	pH (Standard Units)	7.97		8.03	7.95	7.89	7.73
11	Total Acidity (mg/l CaCO3)	3.60		4.00	10.40	4.40	10.00
12	Total Alkalinity (mg/l CaCO3)	151.60		138.20	165.60	105.00	130.00
13	Specific Conductivity (umhos/cm at 25° C)	410.0		431.0	496	322.0	400
14	Total Dissolved Solids (mg/l)	---		---	---	---	---
15	Total Manganese (mg/l)	<0.02		0.03	<0.02	0.10	<0.02
16	Total Sulfates (mg/l)	34.0		43.0	55.0	25.0	41.0
17	Total Iron (mg/l)	0.34		0.30	0.04	0.26	0.14
18	Total Suspended Solids (mg/l)	14.0		11.0	2.0	10.0	14.0
19	Total Hardness (mg/l as CaCO3)	180.0		166.0	187.0	134.0	151.0
20	Nitrates	0.35		0.40	0.57	0.36	0.64
21	Date Sampled for Analysis	5-24-99		5-24-99	8-17-99	5-24-99	8-17-99
22	Date Last Precipitation Event Occurred	5-24-99	8-15-99	5-24-99	8-15-99	5-24-99	8-15-99

Laboratory Name TRA-DET, INC. RECEIVED
Address P.O. BOX 2019 AUG 0 6 2003 City WHEELING
State WEST VIRGINIA Zip 26003-0219

NOTE: If information required by items 5, 6, and 9 is unobtainable, submit as an addendum to Attachment 14A a statement giving the reasons why the information is unobtainable.

NOTE: For each sample provide data for either item 13 or 14. ORIGINAL D0425-3

ADDENDUM TO ATTACHMENT 14A
PAGE 1 OF 1
CENTURY MINE
PERMIT D-0425-3

For numerous surface water and ground water sites, neither flows nor static water levels were provided, "NA" or "unknown" was indicated in the flow or static water level columns. In some cases, a note has been included that indicates that flows were unavailable. Some of the missing flows are due to a lack of accessibility to a static water level, or the setup of tanks, etc., provided no means to obtain a flow measurement. In some cases, the flows or static water levels were obtained on some dates, but not on others due to inexperienced field samplers.

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ATTACHMENT 14B
(GROUND WATER HYDROLOGY DESCRIPTION)

APPLICANT'S NAME Americam Energy Corporation. – Century Mine Permit Number D-0425-3

Aquifer/Zone Identification	Aquifer/Zone Lithology	Aquifer/Zone Thickness	Aquifer/Zone Elevation (msl)	Aquifer/Zone Horiz. Extent	Aquifer/Zone Known Uses	Approx. Rate of Discharge/Usage of Aquifer/Zone (gpm or cfs)
(A) Unconsolidated Material	Silt, Sand & Gravel Weathered Bedrock	Up to 30 feet	910 to 1280 msl	Local-Primarily along stream valleys	Domestic Livestock, Commercial	Variable-Generally <2 to >20 gpm
(B) Washington No. 12 Cyclothem	Silt, Sandstone, Limestone, Coal	Approximately 70 feet	990 to 1280 msl	Local-Primarily where less than 100 feet deep	Domestic Livestock	Variable-Generally less than 2 gpm
(C) Waynesburg No. 11 Cyclothem	Silt, Sandstone, Limestone, Coal	Approximately 100 feet	890 to 1070 msl	Local-Primarily where less than 100 feet deep	Domestic Livestock	Variable-Generally less than 2 gpm

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ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name - AMERICAN ENERGY CORPORATION D-0425-3

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet Below Land Surface	Static Water Level in Feet Below Land Surface	Lithology of Supplying Aquifer/ Waterbearing Zone (see Attch. 14B)	Known Uses of Well/Spring (if spring give discharge rate)
DS 32	Raven Rocks Inc.	1160	NA	NA	B	L, See D-0425-1
DS 91	R and M Inherst	1140	NA	NA	B	L, See Attach. 14A
DS 92	R and M Inherst	1240	NA	NA	B	L,D See Attach 14A
DS 93	R&M Inherst	1160	NA	NA	B	L
DS 94	B and K Dornon	1180	NA	NA	B	L, See Attach. 14A
DS 95	H. MELLOTT	1200	NA	NA	B	L, 0.5 GPM
DS 98	N. Perkins	1200	NA	NA	B	L
DS 100	H. Crooks, Jr.	1160	NA	NA	B	L, See Attach. 14A
DS 101	J and A Hamilton	1200	NA	NA	B	Livestock, 0.4 GPM
DS 103	L. Dalton	1190	NA	NA	B	L, See Attach. 14A
DS 112	H Mellott	1210	NA	NA	B	L
DS 113	H Mellott	1210	NA	NA	B	L
DS 114	H Mellott	1080	NA	NA	B	L
DS 116	H Mellott	1160	NA	NA	B	L
DS 117	H Mellott	1210	NA	NA	B	L
DS 145	J and M Ward	1120	NA	NA	B	Domestic
DS 151	R and D Burrow	1160	NA	NA	B	L, See Attach. 14A
DS 202	B and W Jarrett	1160	NA	NA	B	L
DS 206	J. Riley	1240	NA	NA	B	Domestic
DS 209	G and M Riley	1240	NA	NA	B	Domestic
DS 210	G and M Riley	1200	NA	NA	B	L
DS 251	C. and S Datkuliak	1220	NA	NA	B	L, 1.3 GPM
DS 252	R and D Burrow	1170	NA	NA	B	Livestock
DS 256	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 258	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 260	C and B Datkuliak	1180	NA	NA	B	Livestock
DS 267	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 269	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 270	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 271	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 272	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 273	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 274	C and B Datkuliak	1200	NA	NA	B	Livestock
DS 283	M. Datkuliak	1280	NA	NA	B	Livestock
DS 284	M. Datkuliak	1200	NA	NA	B	Livestock
DS 285	M. Datkuliak	1140	NA	NA	B	Livestock
DS 306	W. Doughty	1240	NA	NA	B	Unused
DS 309	R. Heller	1240	NA	NA	B	Livestock
DS 402	N and D Moore	1200	NA	NA	B	L, See Attach. 14A
DS 403	N and D Moore	1280	NA	NA	B	L
DS 404	N and D Moore	1180	NA	NA	B	L

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name - AMERICAN ENERGY CORPORATION D-0425-3

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet Below Land Surface	Static Water Level in Feet Below Land Surface	Lithology of Supplying Aquifer/ Waterbearing Zone (see attch. 14B)	Known Uses of Well/Spring (if spring give discharge rate)
DS 405	N and D Moore	1170	NA	NA	B	L
DS 406	N and D Moore	1230	NA	NA	B	L, See Attach. 14A
DS 411	N and D Moore	1180	NA	NA	B	L
DS 412	N and D Moore	1180	NA	NA	B	L
DS 413	N and D Moore	1200	NA	NA	B	L
DS 414	N and D Moore	1140	NA	NA	B	Domestic, L, & Agricultural See Attach. 14A
DS 416	N and D Moore	1130	NA	NA	B	L, See Attach. 14A
DS 420	J. Brown	1250	NA	NA	B	Livestock
DS 422	J. Davis	1160	NA	NA	B	Unused
DS 423	C. Butler	1210	NA	NA	B	Livestock
DS 424	C. Butler	1220	NA	NA	B	Livestock
DS 426	N. Moore	1100	NA	NA	B	Livestock
DS 427	R. Kindelberger	1240	NA	NA	B	Domestic/Livestock
DS 435	L and L. Boan	1170	NA	NA	B	Domestic
DS 441	R. Reager	990	NA	NA	B	Domestic
DS 442	R & C. Louden	1180	NA	NA	B	Domestic
DS 445	B & L Baker	1180	NA	NA	B	Livestock
DS 446	B & L Baker	1180	NA	NA	B	Livestock
DS 447	B & L Baker	1180'	NA	NA	B	Livestock
DS 450	R & M Heller	1220	NA	NA	B	Livestock
DS 460	G. & P. Hoover	1240'	NA	NA	B	Livestock
DS 461	G. & P. Hoover	1305	NA	NA	B	Livestock
DS 462	G. & P. Hoover	1200'	NA	NA	B	Livestock
DS 463	G. & P. Hoover	1220	NA	NA	B	Livestock
DS 500	R & C MOBLEY	1180	NA	NA	B	LIVESTOCK
DS 117A	Elrod	1050'	NA	NA	B	Domestic
DS 132A	Inherst	1185'	NA	NA	B	Livestock
DS 135A	RILEY	1200'	NA	NA	B	Unused
DS 140A	Dalton	1200'	NA	NA	B	Livestock
DS 144A	C & B Datkuliak	1180	NA	NA	B	UNUSED
DS 146A	C & B Datkuliak	1260	NA	NA	B	Unused
DS 146B	C & B Datkuliak	1200'	NA	NA	B	Unused
DS 146C	C & B Datkuliak	1160	NA	NA	B	Unused
DS 146D	C & B Datkuliak	1220'	NA	NA	B	Unused
DS 146E	C & B Datkuliak	1320'	NA	NA	B	Unused
DS 150A	Crooks	1220	NA	NA	B	Livestock
DS 152A	T and J Reed	1240'	NA	NA	B	Livestock
DS 154A	B & L Baker	1200'	NA	NA	B	Livestock
DS 181A	J and A Hamilton	1260	NA	NA	B	Livestock
DS 184A	S & B Brandon Jr	1230'	NA	NA	B	Unused

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name - AMERICAN ENERGY CORPORATION D-0425-3

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet Below Land Surface	Static Water Level in Feet Below Land Surface	Lithology of Supplying Aquifer/ Waterbearing Zone (see attch. 14B)	Known Uses of Well/Spring (if spring give discharge rate)
DS 184B	S & B Brandon Jr	1240'	NA	NA	B	Unused
DS 18A	Brown	1180'	NA	NA	B	Livestock
DS 18B	Brown	1209'	NA	NA	B	Livestock
DS 23B	Perkins	1250	NA	NA	B	Livestock
DS 27A	N. D. Moore	1100	NA	NA	B	Livestock
DS 27B	N. D. Moore	1100	NA	NA	B	Livestock
DS 27C	N. D. Moore	1160'	NA	NA	B	Livestock
DS 32A	Hibbitts	1130	NA	NA	B	Livestock
DS 32B	Hibbitts	1090	NA	NA	B	Unused - Pipe
DS 51A	N. Lucas	1220	NA	NA	B	Livestock
DS 51B	N. Lucas	1120	NA	NA	B	Livestock
DS 51C	N. Lucas	1145'	NA	NA	B	Livestock
DS 53A	G & P Hoover	1200'	NA	NA	B	Livestock
DS 54A	Jarrett	1190'	NA	NA	B	Livestock
DS 54B	Jarrett	1215'	NA	NA	B	Livestock
DS 54C	Jarrett	1140	NA	NA	B	Livestock
DW 10	M and C Beckett	980	30	See D-0425-1	A	Unused
DW 13	D. Taylor	972	15	See D-0425-1	A	Unused
DW 14	J and T Edge	957	13	See D-0425-1	A	Unused
DW 19	R and C Mobley	1260	28	See D-0425-1	A	Unused
DW 50	F. Lucas	1141	16	See D-0425-1	A	Domestic
DW 83	Raven Rocks Inc.	1140	5	See D-0425-1	A	Unused
DW 132	F. Rote	1044	9	See D-0425-1	A	Unused
DW 259	C & B Datkuliak	1190	9'	2'	A	Unused
DW 288	C and B Datkuliak	1260	32'	5.5'	A	Domestic
DW 400	N & D Moore	1240	22	15'	A	Unused
DW 408	N and D Moore	1210	20' ®	Buried	Buried	Domestic/Livestock
DW 420	N. Perkins	1240	51'	24'	A	Unused
DW 421	J. Brown	1300	NA	NA	A	Domestic
DW 422	C. Butler	1280	NA	NA	A	Unused
DW 425	Cline	1300	25	14	A	Domestic
DW 426	D. Kindelberger	1250	39	15	A	Domestic
DW 437	R. Reager	980	13	4	A	Unused
DW 581	B & L Baker	1220	21'	4'	A	Commercial & Domestic
DW 582	B & L Baker	1210	30 (R)	Unknown	A	Domestic
DW 140A	Dalton	1290'	28'	6'	A	Unused
DW 184A	S & B Brandon, Jr	1270'	21	5'	A	Domestic
DW 23A	Perkins	1260'	23'	5'	A	Unused
DW 40B	N. D. Moore	1210'	20' (R)	Buried/Sealed	A	Domestic/Livestock
DW 423A	J Davis	1220'	See Attach. 14A	Unknown	Unknown	Unused
DW 435B	Phillips	1240	18'	5'	A	Domestic
DW 435A	Phillips	1230	75	>6	B	Domestic
W 3	O and N Perkins	1246	73	See D-0425-1	B	Unused
W 11	D. Taylor	976	25	See D-0425-1	C	Domestic
W 12	D. Taylor	976	35	See D-0425-1	C	Unused
W 16	R. Thomas	1240	Unknown	See D-0425-1	Unknown	Unused

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ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name - AMERICAN ENERGY CORPORATION D-0425-3

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet Below Land Surface	Static Water Level in Feet Below Land Surface	Lithology of Supplying Aquifer/ Water-bearing Zone (see attch. 14B)	Known Uses of Well/Spring (If spring give discharge rate)
W 17	T and P Otto	1240	78	See D-0425-1	B	Domestic
W 18	R and C Mobley	1282	104	See D-0425-1	B	Unused
W 22	C and K Brown	1080	61	See D-0425-1	C	Domestic
W 23	C. Bondy	1040	60	See D-0425-1	C	Domestic
W 33	Raven Rocks Inc.	1181	75.5	See D-0425-1	B	Unused
W 36	Raven Rocks Inc.	1240	Buried	See D-0425-1	Unknown	Unused
W 85	D. Tayer	1000	41	See D-0425-1	C	Domestic
W 179	Dorman	1240	99'	29'	B	Domestic
W 184	M. LOUDEN	1260	65	Unknown	B	Domestic
W 194	B. FISHER	1210	90, R	Sealed	B	Domestic
W 196	R and C Louden	1240	130	Sealed	B	Domestic
W 197	R and C Louden	1220	80	Sealed	B	Domestic
W 202	S & W Jarrett	1280	NA	SEALED	NA	UNUSED
W 203	R and C Louden	1260	100	Buried	B	Domestic
W 208	Hudson	1240	130	Unknown	B	Domestic
W 213	M. Lucas	1260	94	Unknown	B	Unused
W 216	C. Datkuliak	1260	Unknown	Sealed	Sealed	Unused
W 217	C. Datkuliak	1240	49	Unknown	Unknown	Unused
W 219	C. Datkuliak	1260	Unknown	Unknown	Unknown	Unused
W 224	N. Perkins	1280	100	Buried	B	Domestic
W 281	M. Datkuliak	1240	34'	14'	B	Unused
W 283	M. Datkuliak	1280	Unknown	Unknown	Unknown	Unused
W 308	Decker	1220	Unknown	Unknown	Unknown	Domestic
W 325	B. MELLOTT	1160	Unknown	Unknown	Unknown	Unused
W 401	N. D. Moore	1350'	70' (R)	19'	B	Unused
W 407	N. D. Moore	1220'	70' (R)	Buried	B	Domestic
W 409	N and D Moore	1210	81'	28'	B	Domestic/Livestock
W 410	N. D. Moore	1385'	80' (R)	Sealed	B	Unused
W 423	J. Davis	1220	94	NA	B	Domestic
W 424	Cline	1300	NA	NA	B	Unused
W 427	R. CROOKS	1240	71	5	B	Domestic
W 435	L and L. Boan	1070	65	Sealed	C	Domestic
W 436	T and T. Littleton	1020	65	30	C	Domestic
W 438	G. Mann	970	30	SEE ATTACHMENT 14A	C	Domestic
W 583	M. Meyer	1230	19'	1.5'	B	Unused
W 590	J and M Bondy	1060	65	57.5	C	Domestic
W 591	J and M Bondy	1065	82	72.5	C	Domestic
W 592	20 Buckhorn Club	1050	45, R	Dry	B	Domestic
W 593	R. Fisher	1240	Buried	Buried	Unknown	Unused
W 594	T & J Reed	1268	Unknown	Unknown	Unknown	Unused
W 595	T & J Reed	1242	21.5'	9'	B	Unused
W 601	G. Hoover Sr.	1255'	51'	14'	A	Unused
W 602	G. Hoover Sr.	1245'	65'	19'	B	Livestock
W 603	G & P Hoover	1255'	85'	35'	B	Unused
W 604	G & P Hoover	1240'	56'	14'	B	Unused
W 146A	C & B Datkuliak	1280'	34'	2.3'	A	Unused
W 148A	T.P. Bier	1210'	60' (R)	20' (R)	B	Domestic
W 180A	D and K Dorman	1240	112'	27'	B	Domestic
W 181A	J and A Hamilton	1260	85	Buried	B	Domestic
W 23A	C. Bondy	1040	NA	NA	Unknown	Unused
W 435A	Phillips	1230'	75'	36'	B	Domestic
W 583'	M. Meyer	1230	NA	NA	Unknown	Unused
WL 1	O and N Perkins	1239	63	See D-0425-1	B	Unused

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8-10-03 11:36PM SCOTT STITELER # 7/ 7

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ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name - AMERICAN ENERGY CORPORATION D-0425-3

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet Below Land Surface	Static Water Level in Feet Below Land Surface	Lithology of Supplying Aquifer/ Waterbearing Zone (see attch. 14B)	Known Uses of Well/Spring (if spring give discharge rate)
WL 2	O and N Perkins	1236	62	See D-0425-1	B	Unused
WL 9	M and C Beckett	980	28	See D-0425-1	A	L, Domestic
WL 161	C Butler	1280	75	42*	B	Domestic
WL 180	C & P MELLOTT	1260	60	14*	B	Domestic
WL 181	Burrow	1210	50	19*	B	unused
WL 204	G & D MELLOTT	1200	90	45*	B	Unused
WL 205	J. Riley	1240'	100	27*	B	Unused
WL 427A	Lund	1270'	101'	41'	B	Domestic

L DENOTES LIVESTOCK USE
D DENOTES DOMESTIC USE
* DENOTES DEPTH OBTAINED FROM WELL LOG

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ATTACHMENT 14D
PERMIT D-0425
AMERICAN ENERGY CORPORATION

Surface Water/ Public Supply Identification	Type of Surface Water/Public Supply	Name of Owner of Surface Water/ Public Supply	Known Uses of Surface Water/ Public Supply	WATERSHED	DRAINAGE BASIN
P-1	Pond	R. Thomas	Recreation		
P-4	Pond	Raven Rocks	Recreational		
P-5	Pond	Raven Rocks	Recreational		
P-26	Pond	R&T Jarrett	Unused		
P-27	Pond	R&M Inherst	Livestock		
P-30	Pond	H&B Mellott	Livestock		
P-39	Pond	T. Ledney And	Unused		
P-40	Pond	C&B Datkuliak	Livestock		
P-45	Pond	R. Kindelberger	Livestock		
P-46	Pond	W. Reed	Recreation		
P-47	Pond	N. Hamilton	Livestock		
P-50	Pond	R. Heller	Livestock		
P-51	Pond	T. Ledney	Livestock		
P-52	Pond	W. Reed	Recreation		
P-53	Pond	W. Reed	Livestock		
P-54	Pond	W. Reed	Recreation		
P-55	Pond	W. Reed	Recreation		
P-56	Pond		Unused		
P-57	Pond	J and M Ward	Recreation		
P-58	Pond	J and M Ward	Recreation		
P-59	Pond	G Louden	Recreation		
P-61	Pond	J. Riley	Livestock		
P-63	Pond	N. Moore	Livestock		
U2-02/D2-01	Perennial, PINEY CREEK	See Application Map	Unused	PINEY CREEK	CAPTINA CREEK
U-21/D-22/U-21/D-21/U2-07	INTERMITTENT TRIBUTARIES TO PINEY CREEK	See Application Map	Livestock	PINEY CREEK	CAPTINA CREEK
D-20	PERENNIAL TRIBUTARIES TO PINEY CREEK	See Application Map	Livestock	PINEY CREEK	CAPTINA CREEK
U-1/U1-01/U1-06/U1-04/U1-05/U1-08/U1-09/U1-10/U1-11/U1-12/U1-13/U1-02/U1-03/U1-07	Perennial, Crabapple Creek	See Application Map	Livestock	CRABAPPLE CREEK	CAPTINA CREEK

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ATTACHMENT 14D
PERMIT D-0425
AMERICAN ENERGY CORPORATION

U1A-05/U1A-02/U1A-01/U1A-08/U1A-07/U1-01A/U1-01B/U1A-10/U1A 07/U-11B/D1-1A	INTERMITTENT, TRIBUTARIES TO U-1A	See Application Map	Livestock	CRABAPPLE CREEK	CAPTINA CREEK
U-1A/D-11	Perennial TRIBUTARIES TO U-1A	See Application Map	Livestock	CRABAPPLE CREEK	CAPTINA CREEK
U-8/D-8/u1-19/U-100/U1-18/U1-09/U1-11	Intermittent, TRIBUTARIES TO CRABAPPLE	See Application Map	Unused	CRABAPPLE CREEK	CAPTINA CREEK
U1-02A/U1-02B/U1-02C/U1-02D/U1-12/U1-13/U1-14	INTERMITTENT TRIBUTARIES TO U1-02	See Application Map	Livestock	CRABAPPLE CREEK	CAPTINA CREEK
U1-03/U1-10/U1-08/U1-01/U1-04	PERENNIAL TRIBUTARIES TO CRABAPPLE CREEK	See Application Map	Livestock	CRABAPPLE CREEK	CAPTINA CREEK
D1-01/U1-07	PERENNIAL CRABAPPLE CREEK	See Application Map	Livestock	CRABAPPLE CREEK	CAPTINA CREEK
U1-16/U1-17/U1-05/U1-06/U1-15	INTERMITTENT TRIBUTARIES TO U1-04	See Application Map	Livestock	CRABAPPLE CREEK	CAPTINA CREEK
U40-01/U40-02A/U40-03A/U40-04/U43-01/U43 06/U43-03/U43-04/U43-02	INTERMITTENT TRIBUTARIES TO PEA VINE	See Application Map	Livestock	PEA VINE	CAPTINA CREEK
D43-05	PERENNIAL TRIBUTARIES TO PEA VINE	See Application Map	Livestock	PEA VINE	CAPTINA CREEK
U-40/D-40/D-43	Perennial, Pea Vine	See Application Map	Livestock	PEA VINE	CAPTINA CREEK
U41/U41-01/U41-02	Perennial	See Application Map	Livestock	ACKERSON RUN	SUNFISH CREEK
U41-04	Intermittent	See Application Map	Livestock	ACKERSON RUN	SUNFISH CREEK
U42/U42-01/U42-02/U42 03/U42-04	Perennial	See Application Map	Unused	EAST FORK	SUNFISH CREEK

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Addendum to
Attachments 14A, 14C, and 14D

American Energy Corporation Century Mine
D-0425-3

Hydrolgy Site	State Plane Coordinates X	Y
WL-2	2425563	685465
W-3	2425516	685300
WL-9	2421146	685617
DW-10	2421239	685690
W-11	2420388	685769
DW-13	2420856	685497
W-12	2420608	685690
DW-14	2421834	685338
W-17	241874	685544
W-18	2414163	685324
DW-19	2414148	685239
W-22	2418780	684360
W-23	2418334	684557
DW-35	2413519	684384
DW-50	2408752	684058
DW-83	2409755	685741
W-85	2422819	684877
DW-132	2418905	684993
DS-32	2409430	685855
P-4	2413282	684961
P-5	2413152	684745
D-11	2421683	685076
U-1	2421918	684338
U1-A	2417744	684094
U-2	2411918	684035
U-8	2425214	686712
U-22	2404395	694869
U-21	2409901	685533
D-21	2410266	684229
D-22	2409219	684099

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ADDENDUM TO ATTACHMENT 14C AND 14D
AEC - Century Mine D-0425-3

Greound Water / Surface Water Site Index

SITE ID		Location	/	Section
Crabapple Creek L				
D	8	SE	QTR	2
D	11	NE	QTR	31
D	20	SW	QTR	2
D	21	NE	QTR	7
D	22	NE	QTR	7
D	P2	SW	QTR	2
DS	1	SE	QTR	26
DS	2	SE	QTR	26
DS	4	SW	QTR	26
DS	7	SW	QTR	2
DS	8	SE	QTR	2
DS	13	SE	QTR	2
DS	14	SE	QTR	2
DS	20	NE	QTR	7
DS	28	NE	QTR	26
DS	32	NE	QTR	7
DS	32	NE	QTR	7
DS	79	NE	QTR	7
DS	80	SW	QTR	26
DS	81	SE	QTR	2
DS	82	SE	QTR	2
DS	86	SE	QTR	12
DS	86	SE	QTR	12
DS	91	NW	QTR	30
DS	91	SW	QTR	30
DS	92	NW	QTR	30
DS	92	NW	QTR	30
DS	93	NW	QTR	30
DS	93	NW	QTR	30
DS	94	NE	QTR	36
DS	94	NE	QTR	36
DS	95	NE	QTR	36
DS	95	NE	QTR	36
DS	95	NE	QTR	36
DS	98	SE	QTR	25
DS	98	SE	QTR	25

SITE ID		Location	/	Section
DS	100	NE	QTR	6
DS	101	NE	QTR	6
DS	103	SE	QTR	36
DS	112	SE	QTR	36
DS	113	SE	QTR	36
DS	114	NE	QTR	36
DS	116	NE	QTR	36
DS	117	SE	QTR	31
DS	118	NW	QTR	24
DS	123	NE	QTR	6
DS	126	NW	QTR	29
DS	127	NW	QTR	29
DS	129	NE	QTR	35
DS	145	NW	QTR	1
DS	150	NW	QTR	35
DS	151	NW	QTR	35
DS	186	SE	QTR	30
DS	189	SW	QTR	24
DS	190	SE	QTR	30
DS	191	SE	QTR	30
DS	193	NE	QTR	29
DS	198	SW	QTR	1
DS	201	SE	QTR	1
DS	202	SE	QTR	1
DS	206	SW	QTR	30
DS	209	SW	QTR	30
DS	210	SW	QTR	30
DS	211	NW	QTR	17
DS	212	SW	QTR	18
DS	251	SW	QTR	36
DS	252	NE	QTR	5
DS	256	NW	QTR	35
DS	258	NW	QTR	35
DS	260	NW	QTR	35
DS	261	NW	QTR	35
DS	262	NE	QTR	35
DS	357	SW	QTR	36

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AEC 18457

ADDENDUM TO ATTACHMENT 14C AND 14D
AEC - Century Mine D-0425-3

Greound Water / Surface Water Site Index

SITE ID		Location	/	Section
DS	269	SW	QTR	36
DS	270	SW	QTR	36
DS	271	SW	QTR	36
DS	272	SW	QTR	36
DS	273	SW	QTR	36
DS	274	SW	QTR	36
DS	284	NW	QTR	36
DS	285	NW	QTR	36
DS	294	SE	QTR	24
DS	308	SW	QTR	1
DS	309	SE	QTR	30
DS	402	NW	QTR	19
DS	403	NW	QTR	19
DS	404	NW	QTR	19
DS	405	NW	QTR	19
DS	406	NW	QTR	19
DS	411	NE	QTR	25
DS	412	NE	QTR	25
DS	413	SW	QTR	25
DS	414	NE	QTR	25
DS	416	NW	QTR	25
DS	420	NE	QTR	19
DS	421	SE	QTR	19
DS	422	SE	QTR	19
DS	423	SE	QTR	19
DS	424	NE	QTR	19
DS	426	SW	QTR	25
DS	427	NE	QRT	35
DS	428	NW	QTR	6
DS	429	NW	QTR	6
DS	430	NW	QTR	6
DS	431	NW	QTR	6
DS	432	NW	QTR	6
DS	433	NW	QTR	6
DS	434	NW	QTR	6
DS	435	NW	QTR	6
DS	436	NW	QTR	6

SITE ID		Location	/	Section
DS	438	NE	QTR	12
DS	439	NE	QTR	12
DS	440	NE	QTR	12
DS	441	SW	QTR	14
DS	442	SW	QTR	1
DS	445	NE	QTR	5
DS	446	NE	QTR	5
DS	447	NE	QTR	5
DS	450	SE	QTR	30
DS	500	NE	QTR	1
DS	20A	NE	QTR	7
DS	17	SW	QTR	2
DW	10	SE	QTR	32
DW	13	SE	QTR	32
DW	14	SW	QTR	26
DW	15	SW	QTR	26
DW	19	NE	QTR	1
DW	24	SW	QTR	32
DW	31	SE	QTR	8
DW	34	SE	QTR	8
DW	35	NE	QTR	1
DW	40	SE	QTR	2
DW	47	SW	QTR	2
DW	50	NE	QTR	7
DW	52	NW	QTR	7
DW	82	NE	QTR	7
DW	83	NE	QTR	7
DW	84	NE	QTR	7
DW	132	NE	QTR	31
DW	144	SW	QTR	2
DW	146	SE	QTR	2
DW	147	SE	QTR	32
DW	162	SE	QTR	12
DW	268	SW	QTR	36
DW	400	NW	QTR	19
DW	408	NE	QTR	25
DW	420	SE	QTR	25

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AEC 18458

ADDENDUM TO ATTACHMENT 14C AND 14D
AEC - Century Mine D-0425-3

Greound Water / Surface Water Site Index

SITE ID		Location	/	Section
DS	437	NW	QTR	6
DW	425	NE	QTR	30
DW	426	NW	QTR	35
DW	437	SW	QTR	14
DW	581	SE	QTR6	
DW	582	NE	QTR	5
P	1	NE	QTR	1
P	3	SE	QTR	8
P	4	NE	QTR	1
P	5	NE	QTR	1
P	6	SE	QTR	2
P	7	SW	QTR	7
P	26	SW	QTR	1
P	27	NW	QTR	30
P	30	SE	QTR	36
P	32	NW	QTR	18
P	39	SE	QTR6	
P	40	SW	QTR	36
P	45	NE	QRT	35
P	46	NW	QTR	6
P	47	SW	QTR	6
P	50	SE	QTR	30
P	51	SE	QTR	6
P	52	NW	QTR	6
P	53	NW	QTR	6
P	54	NW	QTR	6
P	55	NE	QTR	12
P	56	SW	QTR	6
P	57	NW	QTR	1
P	58	NW	QTR	1
P	59	SW	QTR	1
P	61	NW	QTR	29
P	62	NW	QTR	29
P	63	NE	QTR	25
Piney Creek L		NW	QTR	1
Piney Creek U		SE	QTR	7
S	1	NE	QTR	1

SITE ID		Location	/	Section
DW	421	NE	QTR	19
DW	422	NE	QTR	19
U	2	NW	QTR	1
U	21	NE	QTR	7
U	22	NE	QTR	7
U	31	NW	QTR	7
U1	1	SW	QTR	25
U1	2	SE	QTR	31
U1	3	SE	QTR	31
U1	4	NE	QTR	30
U1	5	NW	QTR	30
U1	6	NW	QTR	30
U1	7	NE	QTR	36
U1	8	NE	QTR	36
U1	9	NE	QTR	36
U1	10	SE	QTR	30
U1	11	SE	QTR	36
U1	12	NW	QTR	36
U1	13	NW	QTR	36
U1	1A	NW	QTR	1
U1	1B	NW	QTR	1
U1		NW	QTR	25
U1A	1	SE	QTR	1
U1A	2	SW	QTR	1
U1A	6	SE	QTR	1
U1A		NW	QTR	31
U2	5	NW	QTR	6
U2	7	SW	QTR	1
U40	1	NW	QTR	24
U40	2	NE	QTR	19
U40	3	NE	QTR	19
U40		NW	QTR	24
U41	1	NW	QTR	29
U41	2	SW	QTR	30
U41	3	NE	QTR	29
U41	4	SE	QTR	36
U41		NW	QTR	29

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ADDENDUM TO ATTACHMENT 14C AND 14D
AEC - Century Mine D-0425-3

Greound Water / Surface Water Site Index

SITE ID		Location	/	Section
S	2	NE	QTR	1
S	3	NE	QTR	1
U42	4	SE	QTR6	
U42		NW	QTR	35
U8		SE	QRT	26
W	3	SE	QRT	26
W	11	SE	QTR	32
W	12	SE	QTR	32
W	16	NE	QTR	1
W	17	NE	QTR	1
W	18	NE	QTR	1
W	22	NW	QTR	31
W	23	NW	QTR	31
W	32	SE	QTR	8
W	33	SE	QTR	8
W	36	NE	QTR	1
W	85	NW	QTR	25
W	134	NE	QTR	25
W	143	SE	QTR	8
W	176	SW	QTR	18
W	179	NE	QTR	36
W	179	NE	QTR	36
W	182	NE	QTR	35
W	183	NE	QTR	35
W	184	SE	QTR	30
W	184	SW	QTR	30
W	185	SE	QTR	30
W	187	SE	QTR	30
W	192	SE	QTR	30
W	194	SW	QTR	1
W	194	SW	QTR	1
W	196	SW	QTR	1
W	197	SW	QTR	1
W	202	SW	QTR	1
W	203	SW	QTR	1
W	207	NW	QTR	6
W	208	NW	QTR	6

SITE ID		Location	/	Section
U42	1	SW	QTR	36
U42	2	NW	QTR	35
U42	3	SW	QTR	36
W	217	SW	QTR	6
W	219	SW	QTR	6
W	224	SE	QTR	25
W	226	SW	QTR	6
W	259	NW	QTR	35
W	268	SW	QTR	36
W	281	SW	QTR	36
W	283	NW	QTR	36
W	292	SW	QTR	6
W	293	SE	QTR	24
W	308	SW	QTR	6
W	317	SW	QTR	6
W	318	SW	QTR	6
W	325	NE	QTR	6
W	351	SE	QTR	30
W	352	SW	QTR	6
W	353	SW	QTR	6
W	401	NW	QTR	19
W	407	NE	QTR	25
W	409	NE	QTR	25
W	410	NE	QTR	25
W	414	NW	QTR	18
W	423	SE	QTR	19
W	424	NE	QTR	30
W	427	NE	QTR	6
W	428	SW	QTR	6
W	429	SW	QTR	6
W	430	SW	QTR	6
W	431	SW	QTR	6
W	432	SW	QTR	6
W	433	SW	QTR	6
W	434	SW	QTR	6
W	435	SE	QTR	1
W	436	NW	QTR	25

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ADDENDUM TO ATTACHMENT 14C AND 14D
AEC - Century Mine D-0425-3

Greound Water / Surface Water Site Index

SITE ID		Location	/	Section
W	213	NW	QTR	6
W	215	SW	QTR	6
W	216	SW	QTR	6
W	592	NW	QTR	31
W	593	SW	QTR	1
W	594	SE	QTR	6
W	595	SE	QTR	6
W	180A	NE	QTR	36
W	180A	NE	QTR	36
W	181A	NE	QTR	6
W	181A	NE	QTR	6
W	23A	NW	QTR	31
WL	1	SE	QRT	26
WL	2	SE	QRT	26
WL	4	SE	QTR	26
WL	5	SE	QTR	26
WL	9	SE	QTR	32
WL	39	SE	QTR	2
WL	161	NE	QTR	19
WL	177	NW	QTR	24
WL	178	NW	QTR	24
WL	180	SE	QTR	36
WL	181	NE	QTR	5
WL	188	SW	QTR	30
WL	204	SE	QTR	36
WL	205	SW	QTR	30

SITE ID		Location	/	Section
W	438	NW	QTR	13
W	583	SW	QTR	1
W	590	NW	QTR	31
W	591	NW	QTR	31

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D. (3) Based on the data listed on Attachment 14A, and other information submitted with this application, identify the seasonal variations in water quality and quantity for the streams identified in Part 2, D(2).

SEE ATTACHMENT 14A, ADDENDA, PHC

E. HYDROLOGIC DETERMINATION -**Permit, Shadow Area, and Adjacent Area**

Based on the information submitted in response to items B, C, and D in this part of the permit application, submit an addendum describing the probable hydrologic consequences of this proposed underground mining operation on the hydrologic regime of the proposed permit area, shadow area, and adjacent area. The description shall include findings on each of the following items:

(1) The consequences of the proposed operation on the contents of total suspended and dissolved solids, total iron, total manganese, acidity, and pH;

(2) Whether adverse impacts may occur to the hydrologic balance; and

(3) The impact the proposed operation will have on:

(a) sediment yield from the disturbed area, flooding and stream flow alteration or diminution, ground water and surface water availability.

SEE ADDENDA TO PART 2, PAGE 18, ITEM E

F. ALTERNATIVE WATER SUPPLY INFORMATION -**Permit, Shadow Area, and Adjacent Area**

(1) Based on the response in Part 2, Item E, submit an addendum identifying the extent to which the proposed coal mining activities may proximately result in contamination, diminution, or interruption of an underground or surface source of water within the proposed permit area, shadow area, and adjacent area that is used for domestic, agricultural, industrial, or other legitimate use.

SEE ADDENDUM TO PART 2, PAGE 18, F(1)

(2) If contamination, diminution, or interruption may result, submit an addendum identifying the alternative sources of water supply that could be developed to replace the existing sources including information on water availability and suitability of alternative sources for existing pre-mining uses and postmining land use.

SEE ADDENDUM TO PART 2, PAGE 18, F(2)

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ADDENDUM TO PAGE 18, PART 2, D
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

SEASONAL VARIATIONS OF WATER QUALITY AND QUANTITY

Surface and groundwater data contained in the Attachment 14 forms included with this application indicate the seasonal variances of quality and quantity of the water in this area.

The water wells existing in the area give a fairly representative indication of the near surface water bearing zones that can be found in this region. The Probable Hydrologic Consequences of mining gives a detailed description of these characteristics.

Precipitation is one of the principal factors influencing water systems. Infiltration of precipitation increases soil moisture and influences groundwater chemical composition. The time required for infiltrating precipitation to reach lower water bearing zones increases with increasing depth. Depending on the morphological structure, character of surface vegetation, and intensity of precipitation, the amounts of infiltration also vary greatly. Amounts of infiltration subsequently influence the dissolved solids contents of groundwater, which, in most cases, become more dilute during periods of prolonged precipitation. Rainfall data collected near the mine has been included in this application.

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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
RAINFALL - THROUGH JUNE 2003

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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE - ALLEDONIA STATION
RAINFALL - 2003

RAINFALL AS OF: 07/14/03

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	0.10	0.02	0.00	0.00	T	0.00	0.00						
2	0.18	0.00	0.03	0.00	0.00	0.23	0.00						
3	0.07	0.65	0.00	0.00	0.00	0.89	0.00						
4	0.03	0.03	0.02	0.04	0.67	0.02	0.00						
5	0.20	0.00	0.32	0.04	0.14	0.00	0.40						
6	0.12	0.10	0.02	0.20	0.00	0.64	0.14						
7	0.00	0.00	0.00	0.37	0.35	0.10	0.00						
8	T	0.00	0.00	T	T	0.41							
9	0.00	0.07	0.03	0.00	1.51	0.00							
10	0.02	0.07	0.00	0.47	0.20	T							
11	0.00	0.05	0.00	0.07	0.22	0.24							
12	0.00	0.00	0.00	0.00	0.17	0.01							
13	0.00	0.00	0.13	0.00	0.00	0.10							
14	0.01	0.20	0.00	0.00	0.52	0.00							
15	0.00	0.00	0.00	0.00	0.30	0.18							
16	0.11	1.30	0.00	0.07	0.00	0.36							
17	T	0.05	0.00	0.06	0.18	0.49							
18	0.01	0.02	0.00	0.00	0.00	0.00							
19	0.05	0.07	T	0.00	0.00	0.01							
20	0.05	T	0.14	0.54	0.93	0.00							
21	0.00	0.25	0.03	0.02	0.00	0.00							
22	0.00	0.40	0.00	0.01	0.01	0.00							
23	0.07	0.16	0.00	0.00	0.00	0.00							
24	0.00	0.00	0.00	0.00	0.06	0.00							
25	0.00	0.00	0.00	0.00	0.00	0.00							
26	0.16	0.00	0.03	0.00	0.00	0.01							
27	0.00	0.00	0.00	0.00	0.14	0.00							
28	0.16	0.00	0.00	0.27	T	0.00							
29	0.16		0.00	T	0.10	0.00							
30	0.00		0.23	0.04	0.00	0.00							
31	0.07		0.06		0.50								
TOTAL	1.57	3.54	1.04	2.60	6.00	3.69	0.54	0.00	0.00	0.00	0.00	0.00	19.18
H/L	L	H	L	L	H	L	L						

Rain gauge is read at 7:00 am for the prior d H/L compares the monthly rainfall with the 50 year average for this area

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AEC 184644

00425-3

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE - ALLEDONIA STATION, LOCATED APPROXIMATELY 3.5 MILES NORTH OF APPLICATION AREA
RAINFALL - 2002

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	0.00	0.00	0.00	0.00	0.77	0.00	0.01	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.00	0.60	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	
3	0.00	T	0.00	0.14	0.00	0.00	0.00	0.00	1.18	0.02	0.15	0.00	
4	0.00	T	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.37	0.01	0.20	
5	0.00	0.00	0.00	0.02	0.00	1.12	0.00	0.36	0.00	0.00	0.50	T	
6	0.56	0.00	0.00	0.00	0.05	1.02	0.00	0.00	0.00	0.00	0.04	0.00	
7	0.01	0.00	0.00	0.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8	0.00	0.00	0.09	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9	0.00	0.00	0.00	0.05	0.00	0.00	1.20	0.00	0.00	0.01	T	0.00	
10	0.11	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.69	0.05	
11	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.22	
12	0.04	T	T	0.16	0.50	T	0.00	T	0.00	0.01	0.00	0.00	
13	0.00	0.00	T	0.40	0.75	1.05	0.00	0.00	0.00	0.20	0.00	0.61	
14	0.05	0.00	0.00	0.52	0.27	0.01	0.00	0.03	0.00	0.00	0.00	0.00	
15	0.00	0.00	0.70	0.00	0.00	0.52	0.00	0.00	0.24	1.08	0.30	0.00	
16	0.00	0.03	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.40	0.00	
17	0.00	0.00	0.23	0.00	1.30	0.01	0.00	0.00	0.00	0.08	0.11	0.06	
18	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.48	0.17	0.07	0.18	0.00	
19	0.18	0.02	0.52	0.23	T	0.00	0.00	0.01	0.02	0.21	0.05	0.41	
20	T	0.44	0.29	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.02	
21	T	0.02	0.03	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.14	0.00	
23	0.50	0.00	0.00	0.00	0.00	0.00	1.24	0.00	0.00	0.00	0.00	0.00	
24	0.03	0.00	0.03	0.00	0.20	0.00	0.00	T	0.00	0.00	0.00	0.00	
25	0.00	0.14	0.08	0.07	0.04	0.00	0.00	0.00	T	0.47	T	0.33	
26	0.00	0.11	1.02	0.00	0.00	0.00	0.04	0.00	1.88	0.01	0.13	T	
27	0.00	0.02	0.00	1.22	0.00	1.26	T	T	0.68	0.00	0.00	0.00	
28	0.00	0.00	0.00	0.01	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
29	0.30		0.00	0.06	0.00	0.00	T	0.00	0.00	0.43	0.00	0.00	
30	0.39		0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.15	0.03	0.00	
31	0.09		0.10		0.10		0.00	0.00		0.00		1.07	
TOTAL	2.26	1.47	3.93	3.53	6.24	5.53	2.49	0.96	4.20	3.94	3.12	2.97	40.64
H/L	L	L	H	L	H	H	L	L	H	H	H	H	

Rain gauge is read at 7:00 am for the prior day. H/L compares the monthly rainfall with the 50 year average for this area

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Addendum to Part 2, Page 18(D)(2)
American Energy Corporation
Century Mine

2001 RAINFALL (IN.)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	0.00	0.01	0.00	0.11	0.00	1.50	1.51	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.06	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.44	0.00	
3	0.02	0.00	0.00	0.00	0.00	T	0.02	0.00	0.00	0.00	0.00	0.00	
4	0.04	T	0.75	0.00	0.00	0.00	0.28	T	0.00	0.00	0.00	0.02	
5	0.01	0.01	0.07	0.33	0.00	0.43	0.16	0.00	0.00	0.28	0.00	0.00	
6	0.01	0.05	0.01	0.75	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.15	
7	0.00	0.00	0.00	T	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	
8	0.01	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.09	0.35	
9	0.00	0.20	T	0.06	0.00	0.00	0.00	1.23	0.00	0.00	0.00	0.00	
10	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.03	0.04	0.00	0.00	0.00	
11	0.00	0.00	0.00	0.25	0.00	0.02	0.00	0.00	0.01	0.02	0.00	0.00	
12	0.00	0.00	0.35	0.00	0.86	0.00	0.00	2.28	0.00	0.50	0.00	0.00	
13	0.00	0.02	0.29	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	
14	0.04	0.70	0.00	T	0.00	0.00	0.00	0.00	0.33	0.37	0.00	0.10	
15	T	0.15	0.15	0.59	0.48	0.00	0.00	0.00	0.00	0.01	0.00	0.13	
16	T	0.31	0.50	0.03	0.13	0.72	0.00	0.00	0.00	0.44	0.00	1.20	
17	T	0.00	0.05	0.00	0.14	0.00	0.57	0.00	0.00	0.00	0.00	0.38	
18	0.19	0.00	0.00	0.00	0.00	0.00	T	0.02	0.00	0.00	0.00	0.01	
19	0.00	T	0.00	0.00	0.44	0.00	0.00	0.03	0.02	0.00	0.00	0.01	
20	0.41	T	0.41	0.78	0.00	0.53	0.00	0.00	0.46	0.00	0.70	0.01	
21	0.00	0.00	0.94	0.14	0.74	0.20	0.00	0.00	0.02	0.00	0.00	0.00	
22	0.00	0.08	0.00	0.00	0.55	1.05	0.00	0.16	0.00	0.00	0.00	0.00	
23	0.00	0.00	0.19	0.01	0.13	0.00	0.00	0.05	T	0.65	0.00	0.20	
24	0.01	0.00	0.04	T	0.40	0.07	0.02	0.00	0.57	0.37	0.73	0.00	
25	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.02	0.00	0.00	0.01	
26	0.34	0.00	0.00	0.00	0.10	0.00	0.13	0.57	0.00	T	0.00	0.18	
27	T	0.00	0.00	0.03	0.05	0.00	0.00	0.00	T	0.00	0.90	0.00	
28	T	0.00	0.00	0.00	T	0.00	0.60	0.07	0.04	0.00	0.34	0.07	
29	0.51		0.06	0.00	0.07	0.31	0.06	0.00	0.00	0.00	0.38	0.00	
30	T		T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.19	
31	0.01		0.00		0.00		0.00	1.71		0.00		0.00	
TOTAL	1.60	1.59	3.81	3.96	4.37	5.97	3.85	6.51	1.51	2.64	3.70	3.01	42.52
H/L	L	L	H	H	H	H	L	H	L	H	H	H	

Rain gauge is read at 7:00 am for the prior day. H/L compares the monthly rainfall with the 50 year average for this area

AEC 18466

Probable Hydrologic Consequences

Prepared for American Energy Corporation By Moody and Associates

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TABLE 1 Powhatan No.6 Mine Ground Water Quality Summary. Attached

TABLE A Well data and predicted hydraulic impacts summary Attached

TABLE B Spring and pond data and predicted hydraulic impacts summary Attached

APPENDIX A Powhatan No. 6 Mine – Well, spring and stream hydrographs Attached

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INTRODUCTION

Moody and Associates, Inc. (Moody's) has prepared this Potential Hydrologic Consequences (PHC) statement for the American Energy Corporation (AEC) - Century Mine. The Century Mine is located in Belmont County, Ohio. The PHC was prepared using the information provided AEC., published geologic reports and Moody's knowledge of other longwall coal mines in this area. In particular, Moody's prepared the PHC for the existing Century Mine permit area and has prepared seven PHC's for the Powhatan No. 6 Mine, which is north of the Century Mine. The historical hydrologic data from the Powhatan No.6 Mine was utilized in this evaluation.

TOPOGRAPHIC SETTING

The Century Mine is located Belmont County in southeastern Ohio. The topography of the entire application area is typical of the Appalachian Plateau Province and is characterized by narrow rounded ridges and deep V shaped valleys dissecting the terrain, which is underlain by essentially horizontal sedimentary rocks. Topographic relief within the D-0425-3 Application Area is approximately 380 feet. The lowest surface elevation with in the application area is approximately 940 feet located where Crabapple Creek crosses the northern application area boundary. The highest surface elevation is 1320 feet located in the northeast section of the application area.

The surface drainage within the application area can be divided into two main drainage areas. Pea Vine Creek, Crabapple Creek and Piney Run, which are tributaries to Captina Creek, drain the north section of the application area. Ackerson Run and East Fork, tributaries to Sunfish Creek, drain the southern section. State Route 556 marks the approximate location of the north/south drainage divide.

Most of the developed water supplies in the application area are located along or near roads. The undeveloped areas away from the roads contain few developed water supplies.. The water supplies are listed on ATTACHMENT 14C. The descriptive information on the used supplies is listed on TABLE A – Wells and TABLE B – Springs. Only the potential impacts on the used water supplies are addressed in this PHC.

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GEOLOGIC SETTING

A detailed discussion of the stratigraphic and structural setting of the application area is provided in the Geologic Section of this application. However, those properties of the geologic setting pertinent to ground water occurrence and movement are described here.

The bedrock units that outcrop in the application area belong to the Dunkard Group, which is Upper Pennsylvanian to Permian in age. The rocks consist of interbedded sandstone, siltstone, shale, mudstone, clay, fresh to brackish water limestone and coal. The Monongahela Formation (Pennsylvanian) underlies the Dunkard Group and consists of similar rock types. The Pittsburgh (No. 8) Coal Seam, which is the seam to be mined, marks the bottom of the Monongahela Formation. According to Mr. James M. Raab, a hydrogeologist with the Ohio Department of Natural Resources, in correspondence to Dave Bartsch of the Ohio Valley Coal Company dated January 30, 1989, water below 250 feet beneath the stream bottoms is brackish (personal communication).

Based on corehole data presented in other parts of this application, "soft" rocks constitute an average of 65 percent of the rock column in the D-0425-3 Application Area. Soft rocks are defined here as shale, mudstone, claystone, sandy shale and clay. The relatively high percentage of soft rocks is significant as these units have limited primary permeability, tend to deform in a more plastic manner and are more prone to self-healing after fracturing. Aquifers in these units normally have low yields and are less susceptible to subsidence fracturing due to mining. Fractures tend to close in response to lithostatic pressures or plug with fine-grained sediment and may contain clays that swell when wetted.

In addition, there is considerable horizontal and vertical variability of the rock units. Rapid facies and hydrologic property changes tend to limit the horizontal continuity of the individual rock units. With the exception of major coal seams, very few lithologic units are continuous across the proposed application area. Horizontal facies changes and corresponding changes in hydrologic properties of the rocks tend to enhance the importance of localized flow systems. In addition, most available ground water in this region is limited to the first 100 feet of the surface where enhanced secondary permeability associated with rock fracturing is present. The records from the developed wells within the application area support this. The majority of the developed wells in the application area are less than 100 feet. (See ATTACHMENT 14C

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for well depths) Ground water recharge in the upland or ridge top areas results in downward migration primarily within this shallow saturated zone. Because the topographic relief between ridge tops often exceeds 100 feet, there are localized flow systems under the hilltops that are not in hydrologic communication with adjacent hilltops. While the ground water under any given ridge top can be viewed as being continuous, the continuity generally does not extend to adjacent hilltops.

The geologic structures in the application area consist of gently folded rocks that dip to the southeast at approximately 30 feet per mile. Overburden thickness above the Pittsburgh Coal seam ranges from a low of approximately 270 feet along the bottom of the Crabapple Creek valley to 660 feet under the hilltop in the southeast section of the application area. While geologic structure can influence regional ground water flow patterns, local variations in hydraulic properties of the rocks tend to accentuate localized flow systems.

GENERAL HYDROLOGIC SETTING

The source of all ground and surface water in the mine plan area is precipitation. Upon reaching the land surface, water that is not part of direct surface runoff or evapotranspiration infiltrates into the subsurface and contributes to soil moisture and ground water.

Within the bedrock aquifer system, ground water occurs in primary and secondary openings. Primary openings are pore spaces between sand, silt and clay grains formed at the time of sediment depositions. Primary permeability is the ability of water to move between pore spaces. In this area, primary permeability is very low and limited ground water movement occurs in hard or soft rocks as a result of primary openings (Stoner 1983, Siplivy 1992).

Fractures or partings in the rock mass form secondary porosity and permeability. Most available ground water in the application area occurs within the first 100 feet below the surface within these secondary openings. The success of a water well in terms of yield potential is dependent upon the well encountering water filled fracture zone(s) that transmit enough water to the well bore to meet the well's intended use (Schmitt et al, 1983; Waite, 1987).

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Fractures are not ubiquitous in the area, however, and are not interconnected over large areas. For these reasons, it is very difficult to identify aquifers over large areas and the ground water flow system tends to be made up of small localized fracture controlled systems. While fractures in hard rocks tend to stay open better than fractures in soft rock, the horizontal and vertical variability of even the hard rock units tend to produce hydraulically isolated areas. In addition, fractures tend to close at increasing depths due to overlying lithostatic pressures, thereby limiting the effective depth of the ground water flow system (Stoner, 1983).

During full recovery mining, where the roof is allowed to collapse, existing natural fractures are often reopened and new fractures are created. Typically, a rubble zone develops above the extracted coal seam with a gradually reduced fracture density pattern above the rubble zone. However, the fractures developed by subsidence are normally a poorly interconnected network of cracks and are rarely continuous from the land surface to the mine void (Rauch, 1987).

Conditions at the Powhatan No. 6 Mine, located north of the Century mine, support the conclusion that both naturally occurring and mine induced fractures do not connect the near surface aquifers with the mine void. Longwall mining at the Powhatan No. 6 mine has not resulted in large volumes of water in-flow in the longwall or adjacent areas (Bartsch, 1994). The Powhatan No. 6 mine is generally very dry with very minor amounts of water inflow limited to the low cover areas (generally less than 200 feet). The Century Mine is located in the same geologic and hydrologic setting as the Powhatan No. 6 mine and the similar impacts as occurred at the Powhatan No. 6 are expected at the Century mine.

The soft rocks (i.e., shales and claystones) tend to deform in a more plastic manner with limited fracturing. Many of the fractures that do form in soft rocks tend to "heal" by fracture compression or clogging. This process limits the amount of water that would tend to migrate downward. A readjustment of the subsurface flow system does occur in areas of high cover (>200 feet) resulting in some changes in ground water levels and a repositioning of some hillside springs. The water that infiltrates from the land surface remains in the flow system and is not expected to enter the mine. The repositioning of the static water levels often results in inconvenience (usually temporary) to the ground water users in the area. The amounts of soft rocks in the rocks overlying the Pittsburgh Coal seam are shown on the drill hole logs in Attachment 13.

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Based on an evaluation of the geologic units presently supplying water to wells or springs in the Application Area, a total of three aquifers have been identified within the D-0425-3 hydrologic boundary. These units, which are also outlined on Form 14B of this application, are summarized below:

Aquifer A: Unconsolidated Material

Includes the layer of soil and weathered bedrock above solid bedrock.

Aquifer B: Washington No. 12 Cyclothem

Includes the rock sequence from the Washington Coal Seam to the surface of the consolidated bedrock. Occurs from approximately 350 feet to 500 feet above the No. 8 Pittsburgh Coal Seam.

Aquifer C: Waynesburg No. 11 Cyclothem

Includes the rock sequence from the Waynesburg No. 11 Coal Seam to the Washington No. 12 Coal Seam. Occurs from approximately 250 feet to 350 feet above the No. 8 Pittsburgh Coal Seam.

These units are only recognized as aquifers where they occur within 100 feet of the surface where secondary porosity and permeability is greatest.

WATER SUPPLIES

All water supplies, both used and unused, within the application area have been inventoried and are shown in ATTACHMENT 14C. Only the used supplies are discussed in Table A and B in the Addendum to Page 18, Part 2, F (1).

In the Addendum to Page 18, Part 2, F (1), TABLE A presents a summary of the data for the used wells and TABLE B presents a summary of the data for the used developed springs in the Century Mine Application Area. Similar overburden, lithologic, and topographic settings are associated with the springs. Most of the inventoried springs occur as hillside seeps. This is a common phenomenon in this

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hydrogeologic setting and it reflects the presence of low permeability units that act as aquitards and promotes horizontal flow of groundwater to the side of the hills.

EVALUATION OF HYDROLOGIC IMPACTS FROM LONGWALL MINING

Published reports on the impacts of longwall mining were reviewed as a guide to selecting those variables pertinent to predicting the hydrologic consequences of mining in the application area. An annotated bibliography of this literature is provided as the end of this report. Also water supply monitoring data collected by the Ohio Valley Coal Company has been reviewed in order to assess the hydrologic impacts of mining in Belmont County.

Literature Review

Stoner (1983); Rauch (1984); Cifelli (1986); and Dixon et al (1988 & 1990) explored the relation between overburden thickness and effects on ground water levels. In general, a conclusion was drawn that there is an inverse relation between overburden thickness and detrimental impacts to water levels. Aquifers less than 200 feet above longwall mines are more likely to be partially dewatered than aquifers greater than 200 feet above the mine.

The importance of rock fracturing was investigated by Dixon et al (1990), Parizek (1971), Schubert (1980), and Stoner (1983). The studies conclude that secondary rock fractures have a major influence on ground water occurrence and movement. In addition, Rauch (1984), determined that rock lithology of the overburden material was important in evaluating hydrologic impacts of mining. In general, the presence of a high percentage of soft rocks such as shale, clay, and mudstones minimizes negative impacts.

Walker (1988) and Leavitt et al (1992) indicated the position of the water supply over the longwall panel affected the degree of hydrologic impact. In general, the greatest water level declines occurred directly over the panels and decreased away from the panels. Water wells outside the angle of draw were generally unaffected.

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Leavitt et al (1992) found a strong correlation between topographic position and water level declines over longwall mines. In general, where overburden thickness exceeded 300 feet, the greatest impacts occurred in hilltop wells and springs, a lesser impact was noted in hillside wells and springs and the least impacts were noted in valley bottom wells and springs.

Leavitt et al (1992) and Tieman et al (1986) made a correlation between hydrologic base level and water level declines. In general, the closer the bottom of the well (or spring) is to the local hydrologic base level, the less severe and less permanent are the impacts. However, Leavitt noted that base level and topographic position are similar variables and topographic position proved to be a more reliable variable in predicting hydrologic impacts.

These variables, which include overburden thickness, local rock lithology, position over the longwall mining panel, topographic position and local hydrologic base level, are used here to evaluate the potential hydrologic impacts in the application area.

Review of analog data from the Powhatan No. 6 mine

The Powhatan No. 6 mine is located approximately six miles north of the application area. The Century and Powhatan No. 6 mines are in the same geologic and hydrologic setting and both are No. 8 (Pittsburgh) seam mines. The Ohio Valley Coal Company (OVCC) has been monitoring groundwater levels in wells and springs flows for water supplies located over the Powhatan No. 6 mine. The water levels in wells and spring flow rates are measured on a monthly basis for one year prior to undermining until the longwall face is within 3 weeks of undermining the supply, at which point monitoring frequency is increased to a weekly basis. Monitoring is reduced to a monthly basis 3 weeks after undermining and discontinued after one year. This monitoring data also includes the distance from the active mine face to the supply at the time the measurement was taken. Hydrographs of well water levels and spring flows were prepared using the OVCC data. The hydrographs show the changes in well water levels or spring flows as the longwall panel approaches and passes under a supply. A total of 46 well hydrographs and 32 spring hydrographs were evaluated for water supplies over the Powhatan No. 6 Mine. Copies of the hydrographs are attached as APPENDIX A.

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Each of the hydrographs includes both static water levels measured in feet from the top of casing or spring flow rates and the position of the panel through time. At any point in time as the panel approaches, passes by and moves away from the supply, the flow rate or static water level can be determined. In addition, the variables that may affect the impacts of mining on the water supply are listed on the graph. These include elevation, depth of wells, topographic position (as hilltop, hillside or valley bottom), hydrologic base level elevation, position in relation to mining (as outside mine area, over the gates or chain pillars of the panel, over the quarter panel or over the midpanel), the overburden thickness and the percent of soft rock in the overburden.

Based on the observed changes in water levels or flows, the water supplies were placed in one of three categories. These categories describe the impact that mining had on the water supplies. The following are the categories and the criteria that define each category.

Minimal Impacts - Water levels for wells or flow rates for springs either did not decline during mining or returned to pre-mining conditions within two months of undermining

Moderate Impacts - Water levels for wells or flow rates for springs declined during mining but returned to premining ranges within two to six months after mining.

Severe Impacts - Water levels for wells or flow rates for springs declined during mining and did not return to premining ranges within six months (or the duration of the monitoring period) after undermining.

A total of 46 wells met the criteria for detailed analysis, which included static water level measurements prior to, during and after mining operations. Of these 46 wells, 19 (41%) had minimal impacts as a result of mining; five (11%) were moderately impacted by mining and 22 (48%) were severely impacted as a result of mining.

There is not a discernible correlation between the minimally impacted wells, the moderately impacted wells or the severely impacted wells and the variables of overburden thickness, overburden lithology, position over the panel or well depth. This may be attributed to the relatively narrow range of difference in these variables for the wells evaluated. There is, however, an apparent relation between topographic position and the impacts of longwall mining on water well supplies. In general, at the Powhatan No. 6

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Mine, fewer wells in a valley setting experienced significant water level declines than wells located on hillsides or hilltops. This is consistent with the investigations of Mr. Bruce Leavitt, et al., who reported a similar finding in their 1992 report, "Effects of Longwall Coal Mining on Rural Water Supplies and Stress Relief Fracture Flow Systems".

The conclusion derived from this data analysis is that of the wells with geologic settings similar to those within the Powhatan Mine area; 41% may be minimally impacted by mining with no changes in water levels or water levels that recover within two months of undermining, 11% may be moderately impacted with water level declines that recover within six months and 48% may be severely affected with water level declines that do not recover within six months.

A similar analysis was performed for the developed springs. A total of 32 springs met the criteria for detailed analysis, which included flow measurements prior to, during and after mining operations. Of these 32 springs, 2 (6%) had minimal decreases in flow rates (no decrease or recovery within two months); 1 (3%) had moderate decreases in flow rates (decreased flow rates with recovery within six months), and 29 (91%) had severe decreases in flow rates (decreased flow rates that do not recover to pre-mining levels within six months).

Like the water wells, there is not a discernible correlation between the minimally impacted springs, the marginally impacted springs and the severely impacted springs and the variables of overburden thickness, overburden lithology, position over the panel, discharge rates and also topographic position.

The conclusion derived from this data analysis is that of the springs with geologic settings similar to those within the Powhatan Mine area; 6% of the springs may be minimally impacted by mining, 3% may be moderately impacted by mining with temporary decreases in flow rates that persist for less than six months and 91% may be severely impacted by mining with decreased flow rates that do not recover within six months.

Four stream segments that were monitored in the pre- and post-mining phases at the Powhatan No. 6 Mine were selected at random for detailed evaluation. Hydrographs of these four data sets are presented in APPENDIX A at the end of this report. The stream data is described in the following paragraphs.

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Monitoring Point U34-067

This unnamed tributary to Williams Creek was monitored for flow rates on twelve separate occasions prior to undermining and 14 times post undermining. This first order stream is shown on the USGS Topographic map as an intermittent stream and there was approximately 265 feet of overburden in the area. There was no apparent impact on stream flow as a result of undermining.

Monitoring Point U34-144

This unnamed tributary to Williams Creek was monitored for flow rates on nine separate occasions prior to undermining and 15 times post undermining. This is a first order stream and is shown as intermittent on the USGS Topographic map. There is approximately 288 feet of overburden in the area. There was no apparent impact on stream flow as a result of undermining.

Monitoring Point U34-038

This point on Williams Creek was monitored for flow rates on 12 occasions prior to mining and nine times post mining. Williams Creek is a third order stream and has perennial flow. There is approximately 250 feet of cover at this location. There was no apparent impact on stream flow as a result of undermining.

Monitoring Point U29-C

Flow in this first order intermittent stream was monitored on twelve occasions prior to undermining and 13 times after undermining. The overburden thickness is approximately 260 feet. No apparent impacts were noted as a result of undermining.

Water Quality Impacts

The water quality effects of longwall mining on the ground water flow system were also reviewed using the Powhatan No. 6 mine data. A total of 28 wells and 22 springs were evaluated. Each of these 50 water

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supplies is located over previously mined sections of the Powhatan No. 6 Mine. In each case, an affect on water quantity in terms of reduced water levels or reduced flow rates was documented and water quality data was available both before and after the impacts occurred. A summary of the water quality data for those supplies is presented in TABLE 1, which presents the range of water quality in both the pre-mining phase and post- mining phase for pH, acidity, alkalinity, iron, manganese, hardness and sulfate. Nitrate concentrations did not appear to vary in response to mining.

This data indicates the water quality changes from the premining to the post mining phase are relatively minor. However, the following trends were noted:

For Wells:

15 of the 28 wells exhibited increasing levels of iron in the post-mining phase
Seven of the 16 wells tested for manganese exhibited increasing levels of manganese in the post-mining phase

For springs:

10 of the 22 springs exhibited increased iron levels in the post-mining phase
Seven of the 22 springs exhibited increased manganese levels in the post-mining phase
Seven of the 22 springs exhibited increased hardness levels in the post-mining phase

Typically the iron and manganese increases were temporary and did not persist for more than a year.

PROBABLE HYDROLOGIC CONSEQUENCES SUMMARY

Surface Water Impacts

Based on a review of the existing literature, it is expected water flow in selected sections of first order streams where overburden thickness exceeds 200 feet may be temporarily reduced over relatively short stream segments. Due to the high percentage of soft rocks in the mine overburden, the overburden thickness and the minimal amount of water that is expected to enter the mine, any stream water loss that may occur is not expected to drain into the mine.

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Ground Water

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The data available from the published literature and from the Powhatan No. 6 mine indicate that ground water levels may decline as mining passes under an area. Most developed water supplies will most likely experience a decline in static water level or flow. The amount of this decline appears to be dependent on the topographic position of the water supply. Hilltop water supplies may be impacted more often than water supplies located in valley bottoms. Springs are generally more significantly impacted than wells. Approximately 90% of the springs undermined may experience significant impacts, while approximately 50% of the wells may be significantly impacted. Some recovery of ground water levels occurs after mining has passed under a water supply.

Post Mining Water Breakouts

The area with the lowest cover is located along Crabapple Creek in the north central section of the application area. The lowest surface elevation in the application area is approximately 960 feet msl, located where Crabapple Creek crosses the application area boundary. The lowest proposed surface opening elevation for the Century mine is 920 feet msl. The maximum coal elevation in Application Area D-0425-3 is approximately 720 feet msl or 200 feet below the lowest surface opening elevation. No post mining water breakouts are predicted to occur due to mining in the D–0425–3 Application Area.

Water Supplies

The potential impacts on water supplies by mining have been evaluated based on a review of published reports and data collected by OVCC for the Powhatan No. 6 mine.

The potential impacts on wells located over or near longwall areas are 41% may be minimally impacted by mining with no changes in water levels or water levels that recover within two months of undermining, 11% may be moderately impacted with water level declines that recover within six months and 48% may be severely affected with water level declines that do not recover within six months.

The potential impacts on springs located over or near longwall areas are 6% of the springs may be minimally impacted by mining; 3% may be moderately impacted by mining with temporary decreases in flow rates that persist for less than six months and 91% may be severely impacted by mining with decreased flow rates that do not recover within six months.

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Water wells or springs located 700 feet or more from longwall areas are not expected to be impacted by mining operations. A recent analysis of spring impact distances shows that springs to the side of longwall panels are impacted up to 500 ft away from the longwall mining, while springs located off the ends of the panels are only impacted up to about 300 ft away.

Aquifer Impacts

The purpose of this PHC is to describe the impacts to the regional hydrologic balance as a result of the proposed mining operation. Aquifers in the Application Area are not continuous over the entire region and are limited by discontinuous stratigraphic units, rapid horizontal and vertical facie changes and topography. Most of the available groundwater is transmitted through secondary porosity (i.e. fractures, joints and bedding planes). The aquifers in the area are isolated saturated zones that generally exist within the first 100 feet of the ground surface. Thus, impacts to aquifers in one area do not occur in neighboring areas.

Impacts to the aquifers may be described in terms of the impacts to the developed water supplies. Past experience in the adjacent Powhatan No. 6 Mine shows that the static water level in wells and the flow of springs may decrease. These changes indicate that the saturated zones have been reestablished at lower elevations. As a result of the mining, cracks, joints, and bedding planes are enlarged and therefore secondary porosity is enhanced. Lowering of the saturated zones indicates that deepening of wells and relocation of springs to lower topographically positions will restore the water supplies. Water infiltration from rainfall (the source of the groundwater) is unchanged and the same amount of water is available to the saturated zones. While the elevations of the saturated zones may change, the groundwater is still available to be utilized as water supplies for domestic, agricultural, and recreational uses.

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Attachment to :

American Energy Corporation
Century Mine
Application D-0425-3

APPENDIX A

Powhatan Number 6 Mine
Well, Spring, and Stream Hydrographs

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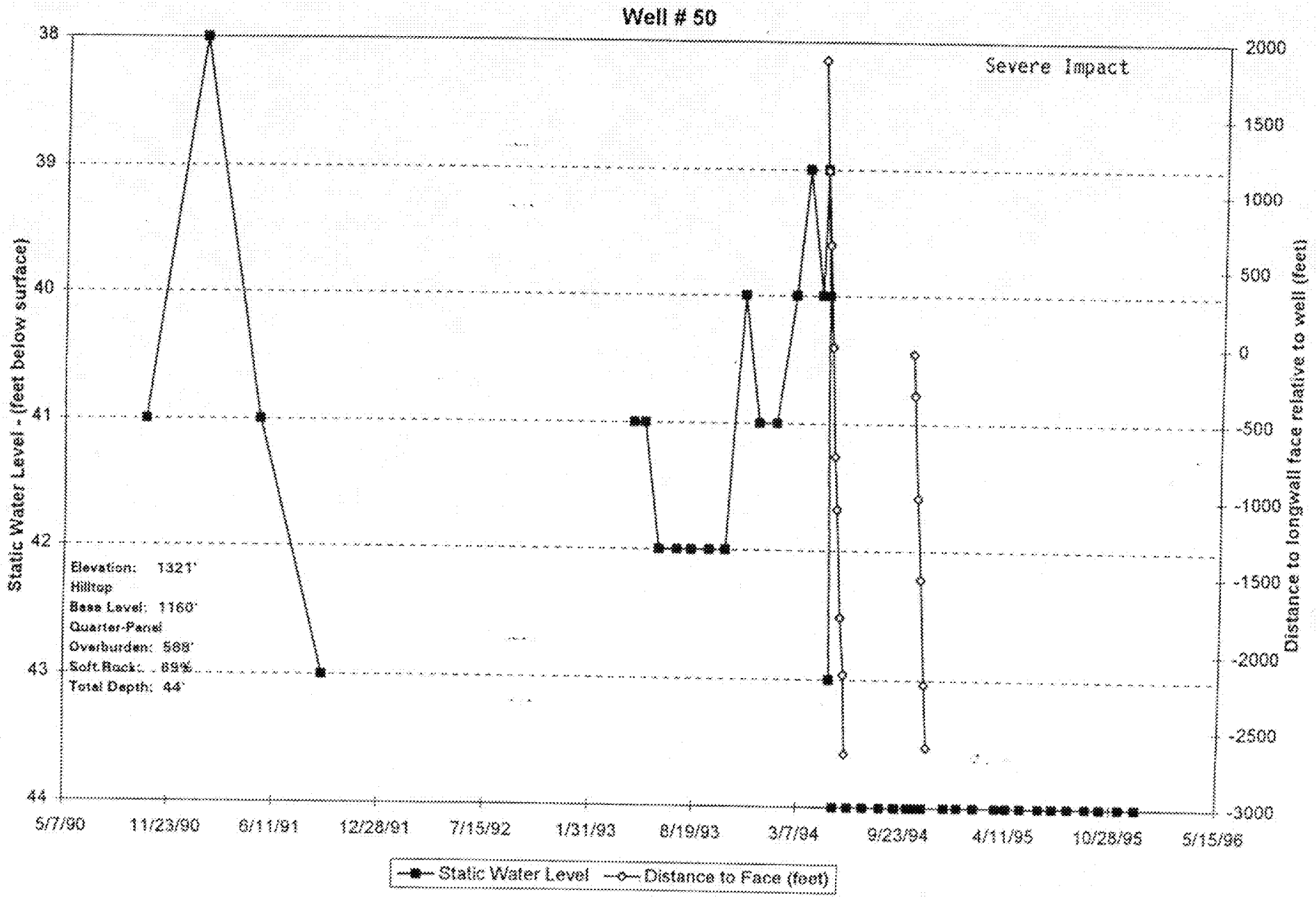

Prepared by: Moody and Assoc., Inc.4/13/97

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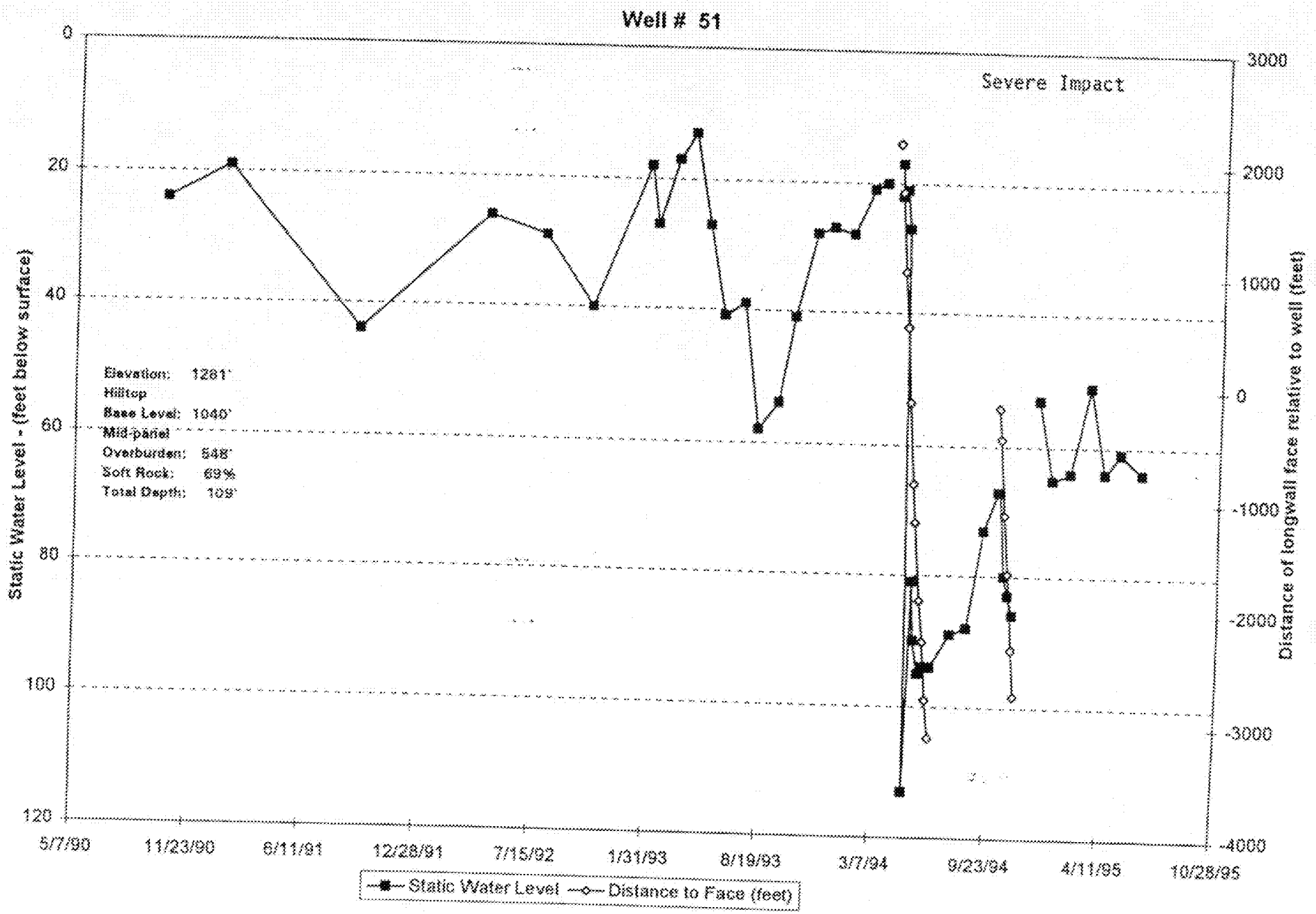

Prepared by: Moody and Assoc. Inc. 4/13/97

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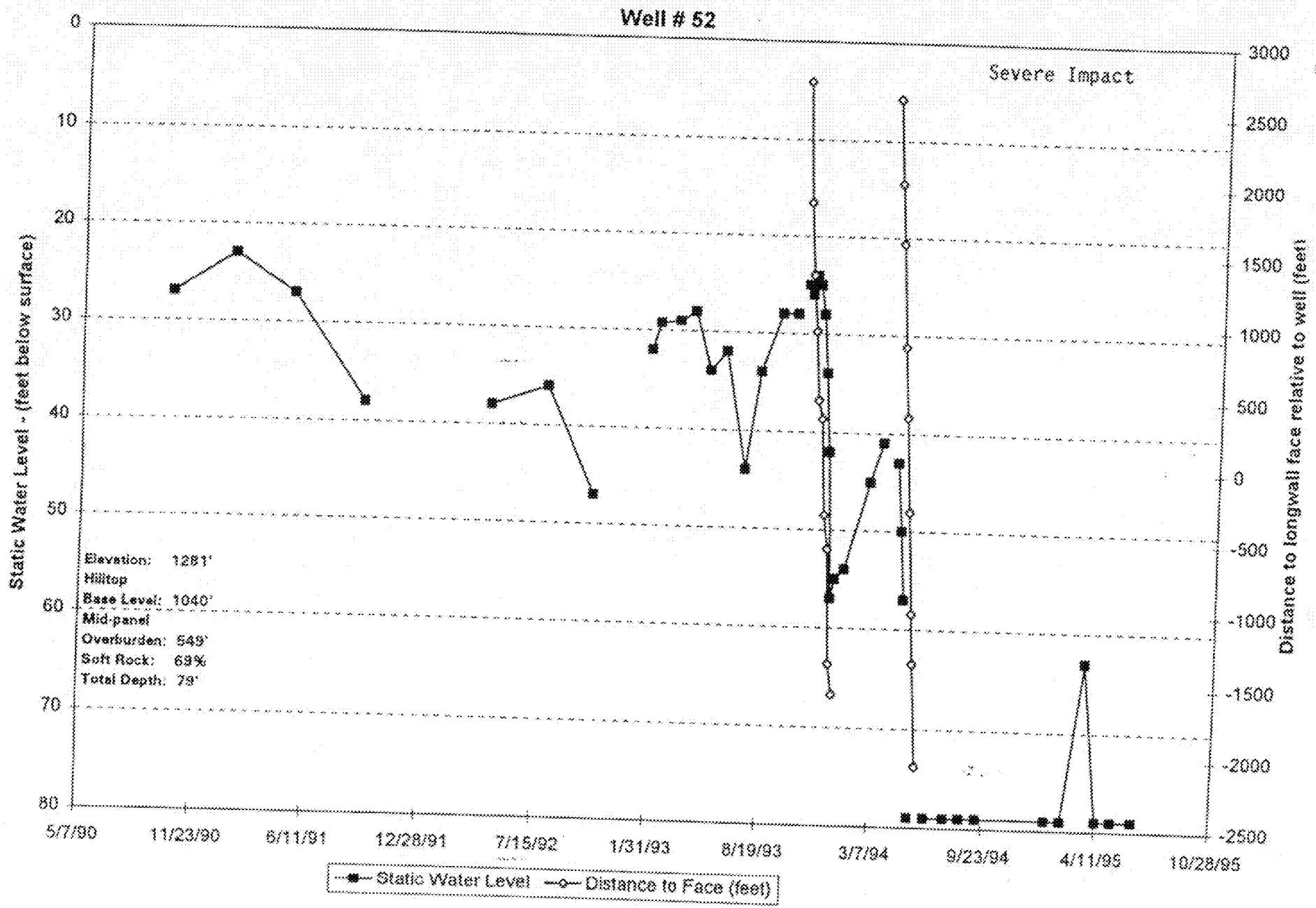

Prepared by: Moody and Assoc., Inc. 4/13/97

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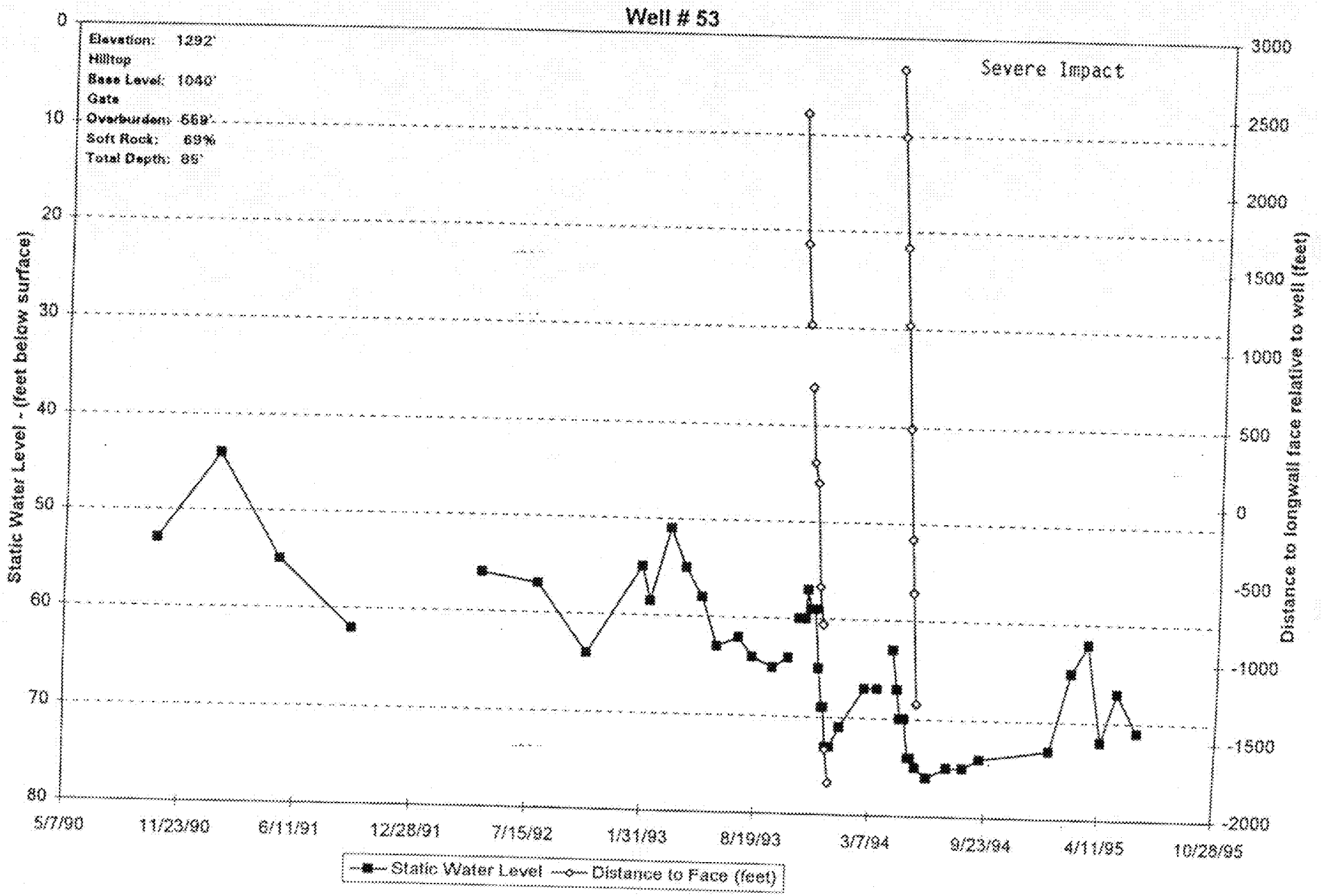

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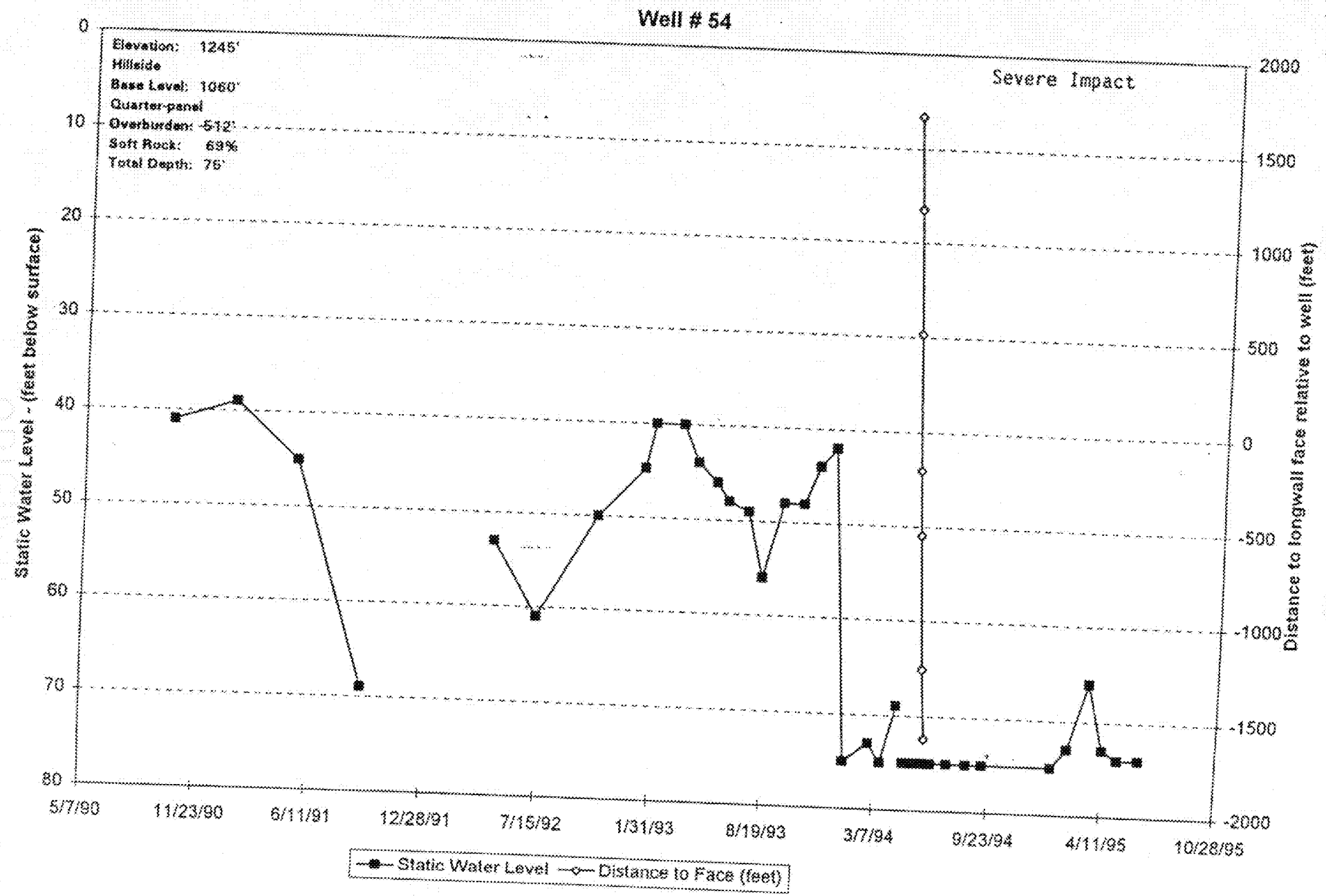

Prepared by: Moody and Assoc. Inc. 4/12/97

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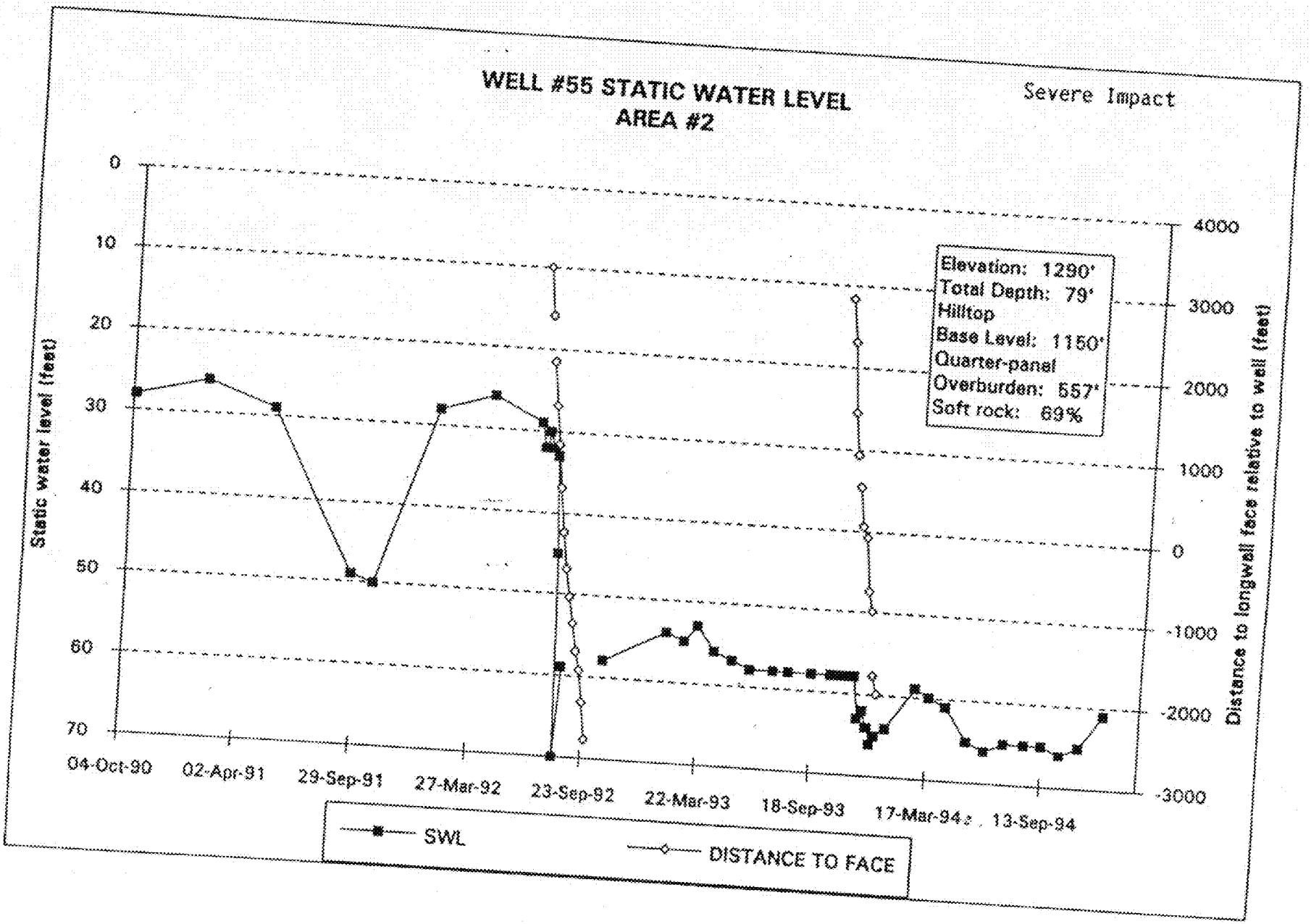

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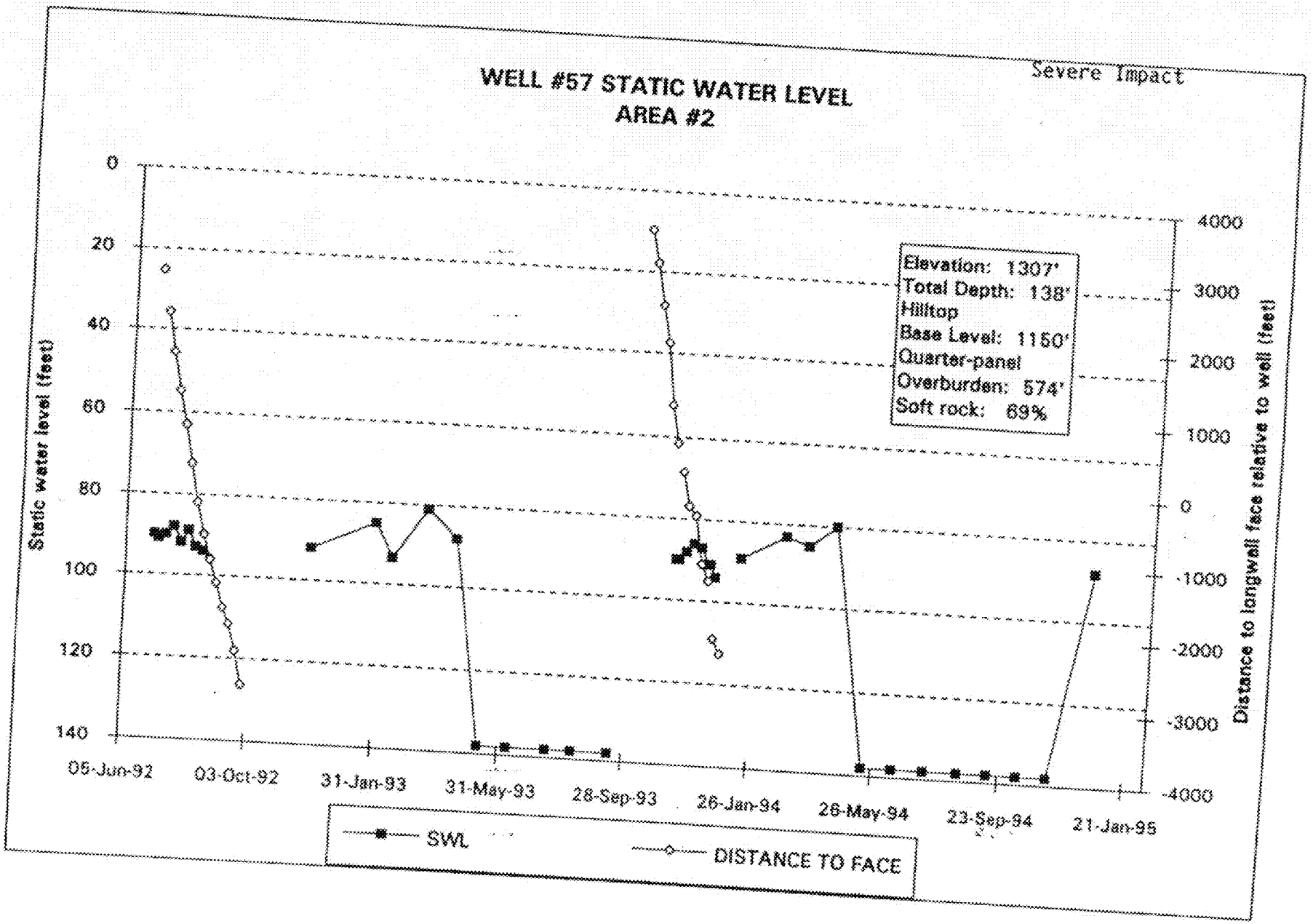
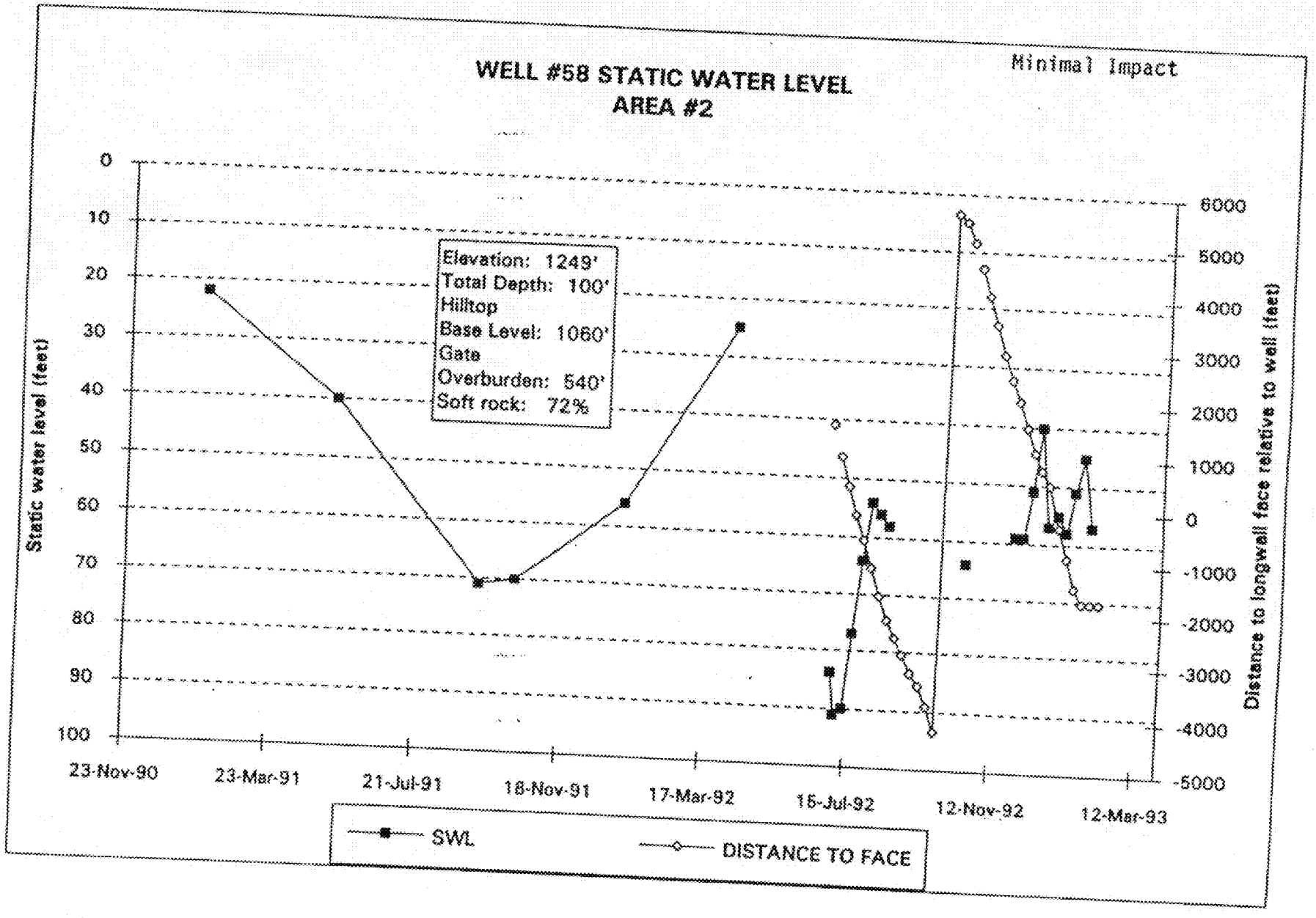
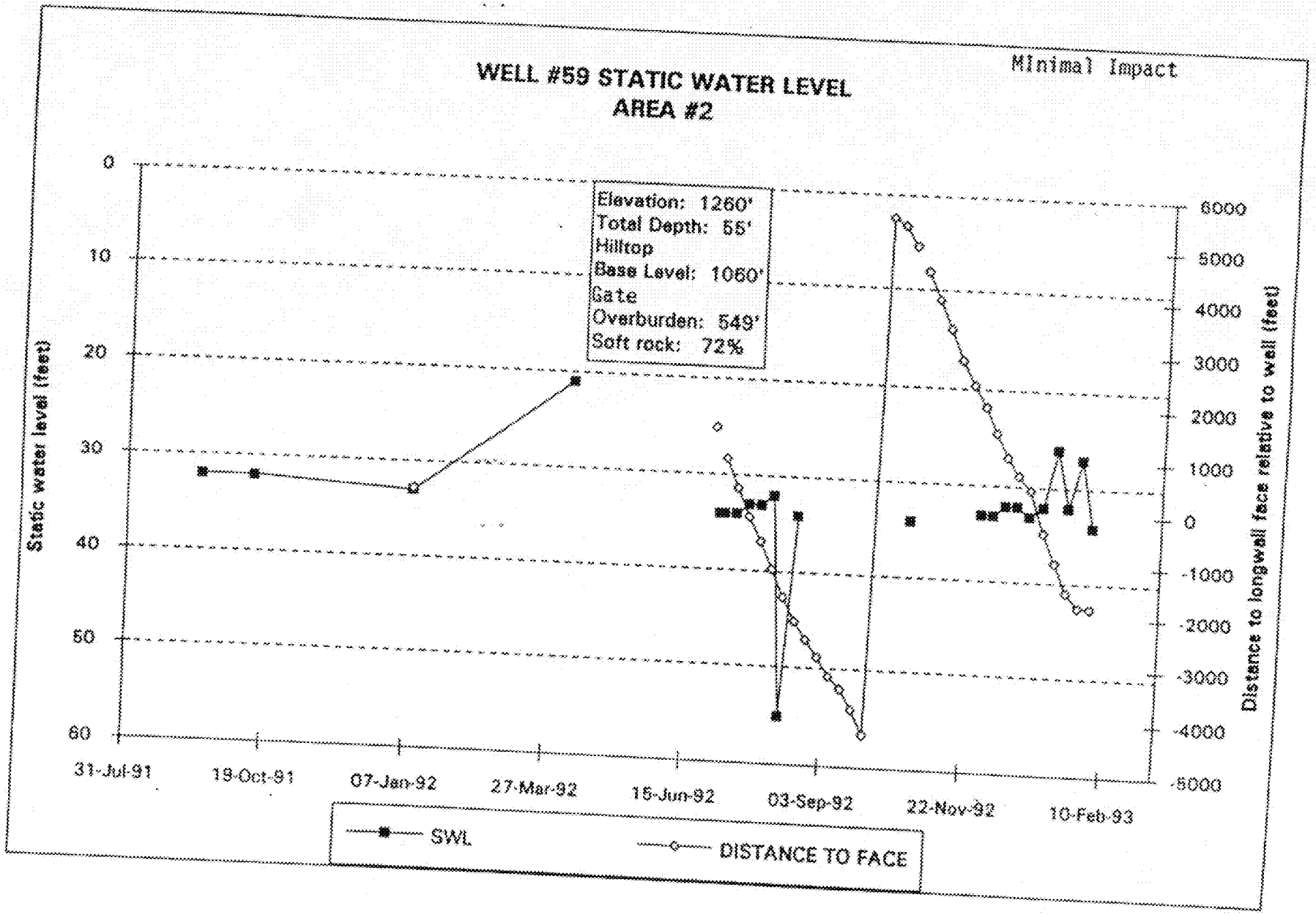

WELL #57 STATIC WATER LEVEL
AREA #2
Severe Impact
Elevation: 1307'
Total Depth: 138'
Hilltop
Base Level: 1150'
Quarter-panel
Overburden: 574'
Soft rock: 69%
Static water level (feet)
0
20
40
60
80
100
120
140
Distance to longwall face relative to well (feet)
4000
3000
2000
1000
0
-1000
-2000
-3000
-4000
05-Jun-92
03-Oct-92
31-Jan-93
31-May-93
28-Sep-93
26-Jan-94
26-May-94
23-Sep-94
21-Jan-95
SWL
DISTANCE TO FACE

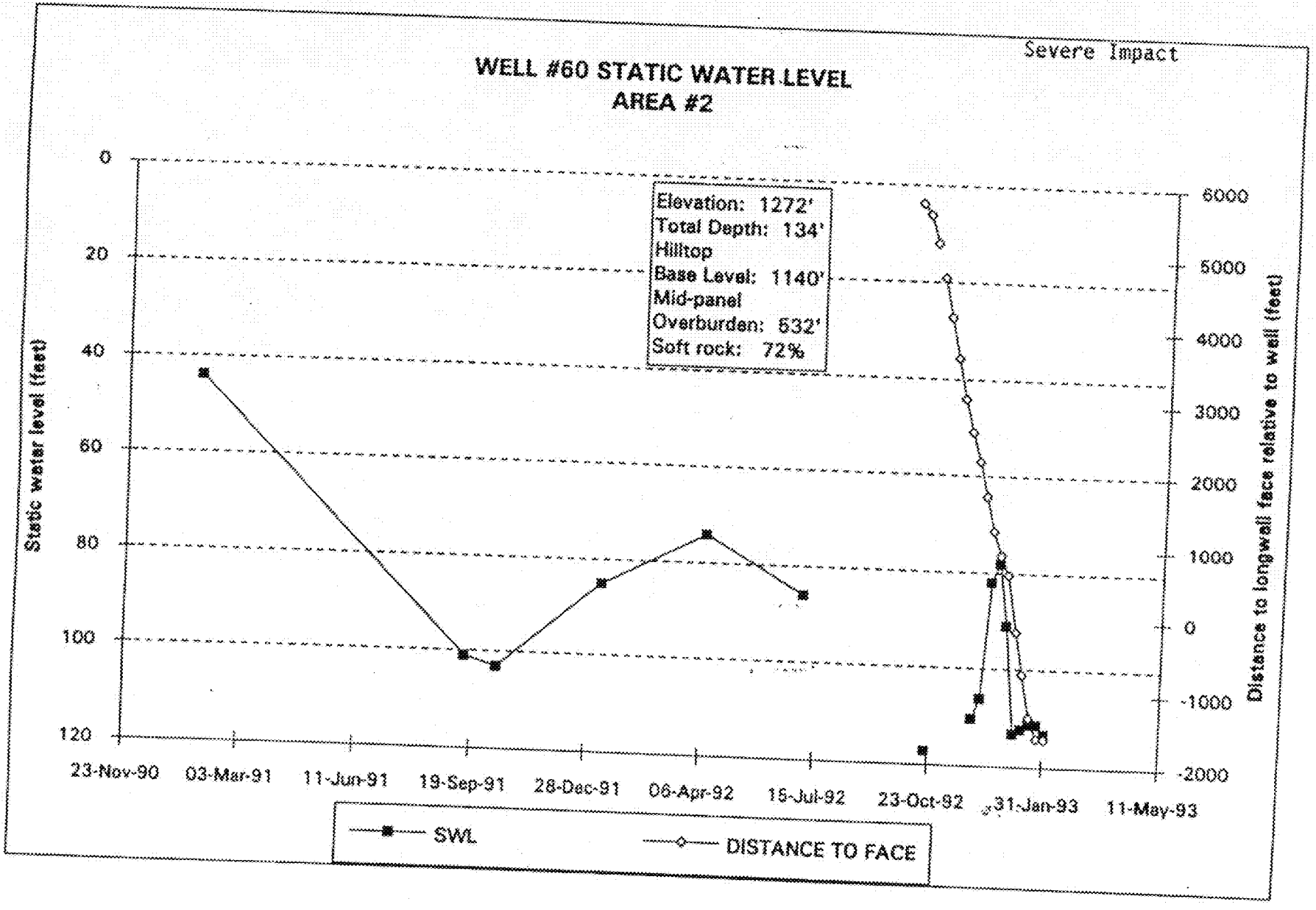
ORIGINAL


WELL #58 STATIC WATER LEVEL
AREA #2
Minimal Impact
Elevation: 1249'
Total Depth: 100'
Hilltop
Base Level: 1060'
Gata
Overburden: 540'
Soft rock: 72%
Static water level (feet)
0
10
20
30
40
50
60
70
80
90
100
Distance to longwall face relative to well (feet)
6000
5000
4000
3000
2000
1000
0
-1000
-2000
-3000
-4000
-5000
23-Nov-90
23-Mar-91
21-Jul-91
18-Nov-91
17-Mar-92
15-Jul-92
12-Nov-92
12-Mar-93
SWL
DISTANCE TO FACE

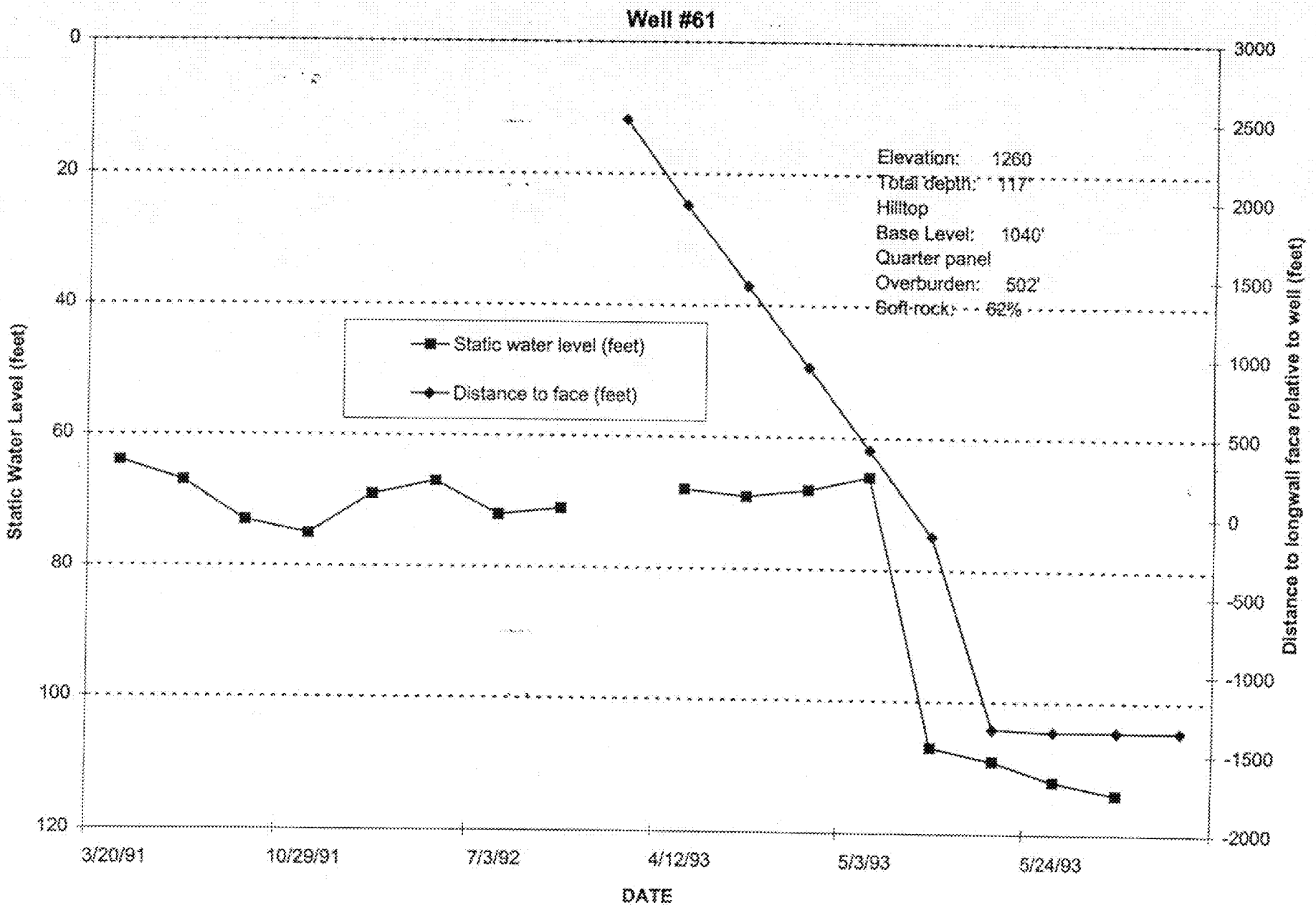
ORIGINAL


WELL #59 STATIC WATER LEVEL
AREA #2
Minimal Impact
Elevation: 1260'
Total Depth: 55'
Hilltop
Base Level: 1060'
Gate
Overburden: 549'
Soft rock: 72%
Static water level (feet)
0
10
20
30
40
50
60
Distance to longwall face relative to well (feet)
6000
5000
4000
3000
2000
1000
0
-1000
-2000
-3000
-4000
-5000
31-Jul-91
19-Oct-91
07-Jan-92
27-Mar-92
15-Jun-92
03-Sep-92
22-Nov-92
10-Feb-93
SWL
DISTANCE TO FACE

ORIGINAL


Severe Impact
WELL #60 STATIC WATER LEVEL
AREA #2
Elevation: 1272'
Total Depth: 134'
Hilltop
Base Level: 1140'
Mid-panel
Overburden: 532'
Soft rock: 72%
Static water level (feet)
0
20
40
60
80
100
120
Distance to longwall face relative to well (feet)
6000
5000
4000
3000
2000
1000
0
-1000
-2000
23-Nov-90
03-Mar-91
11-Jun-91
19-Sep-91
28-Dec-91
06-Apr-92
15-Jul-92
23-Oct-92
31-Jan-93
11-May-93
SWL
DISTANCE TO FACE

Severe Impact



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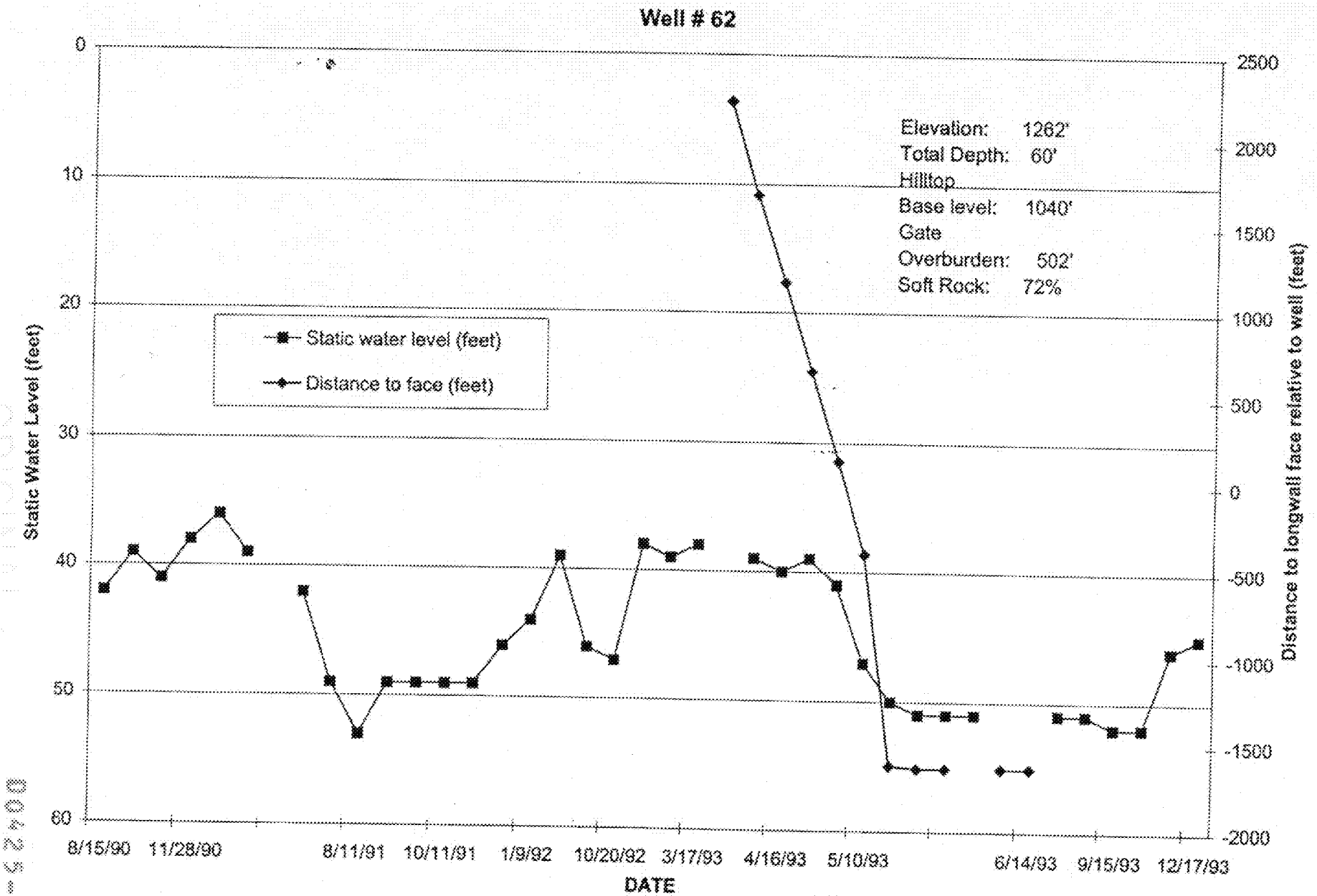
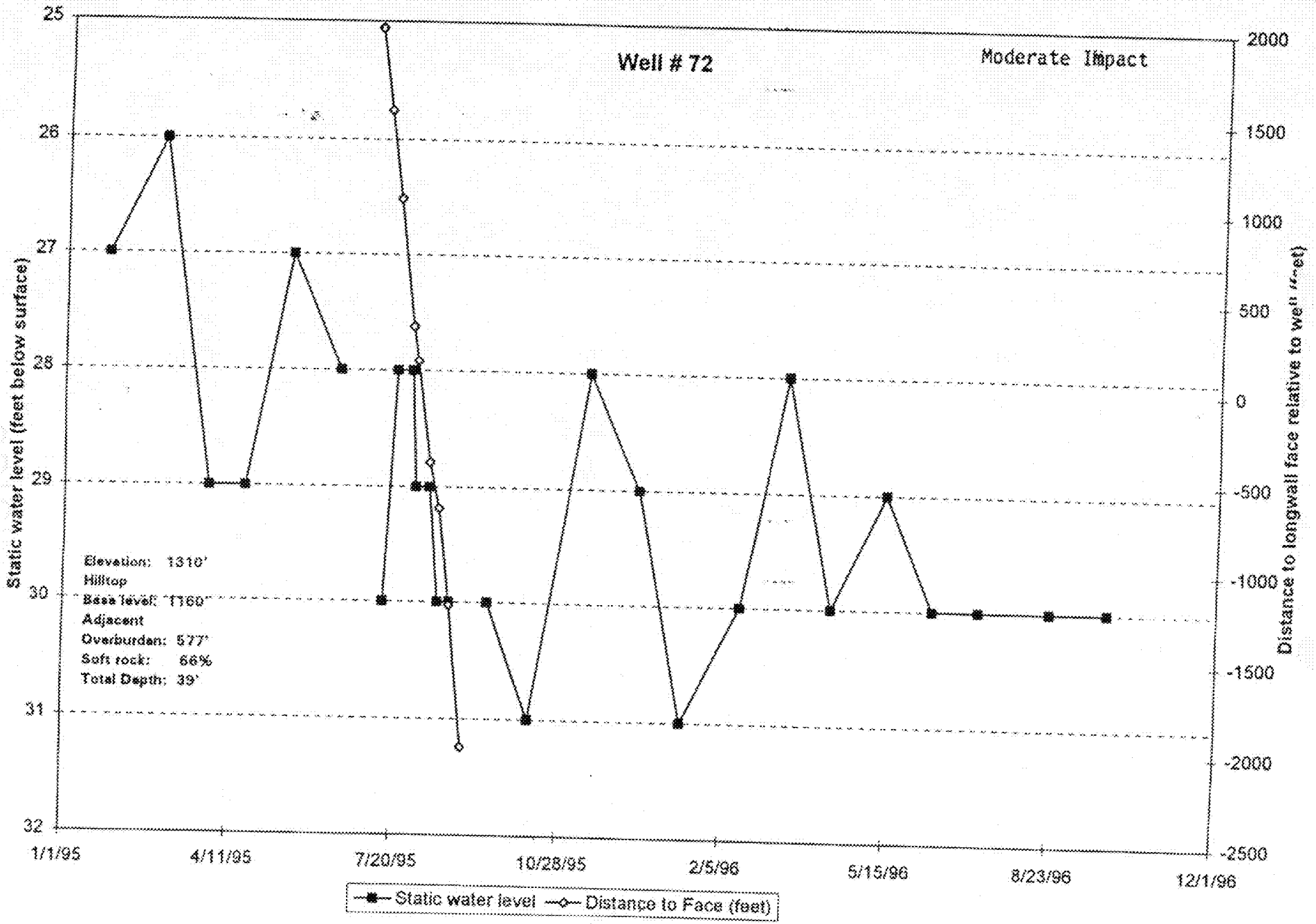
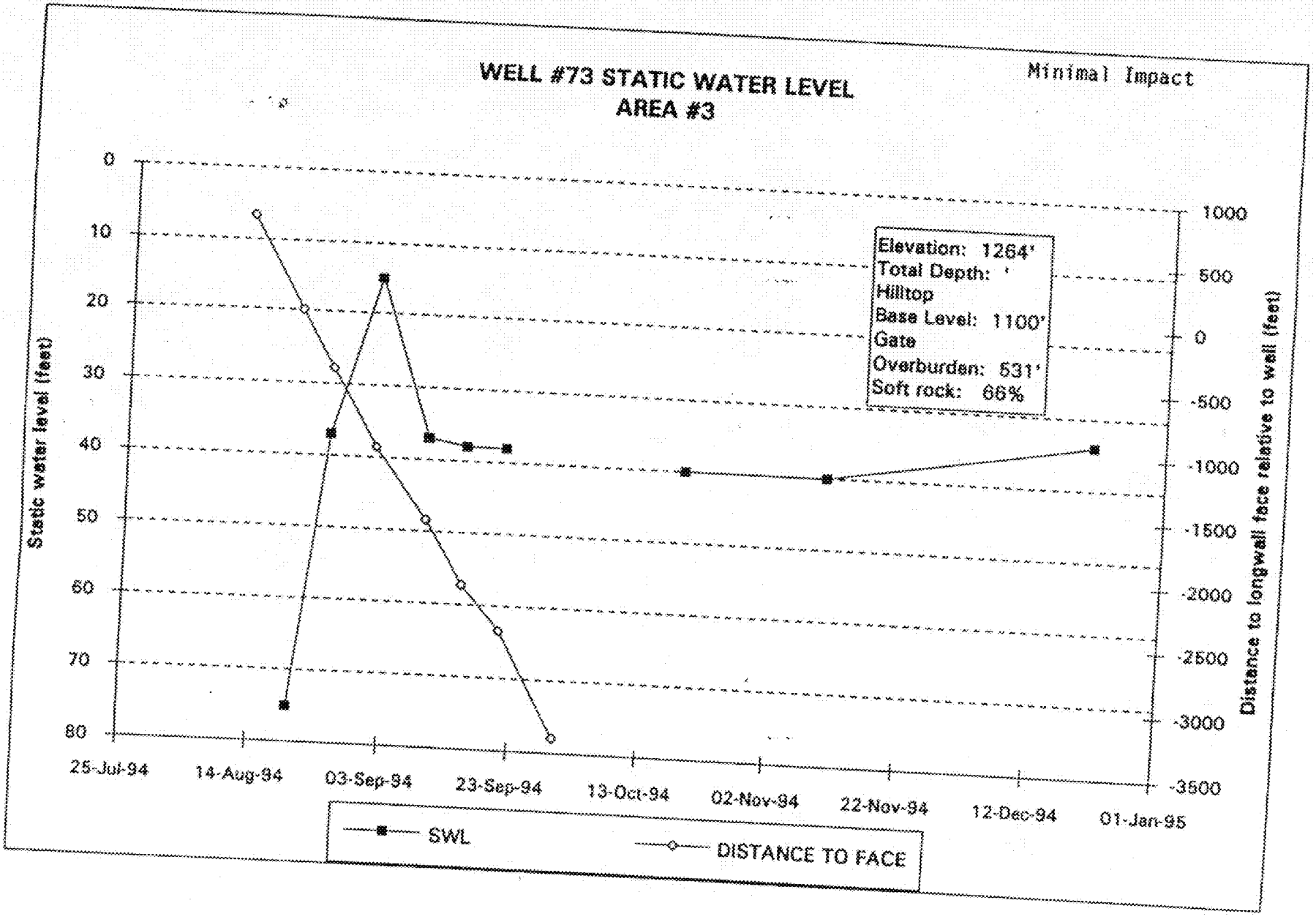
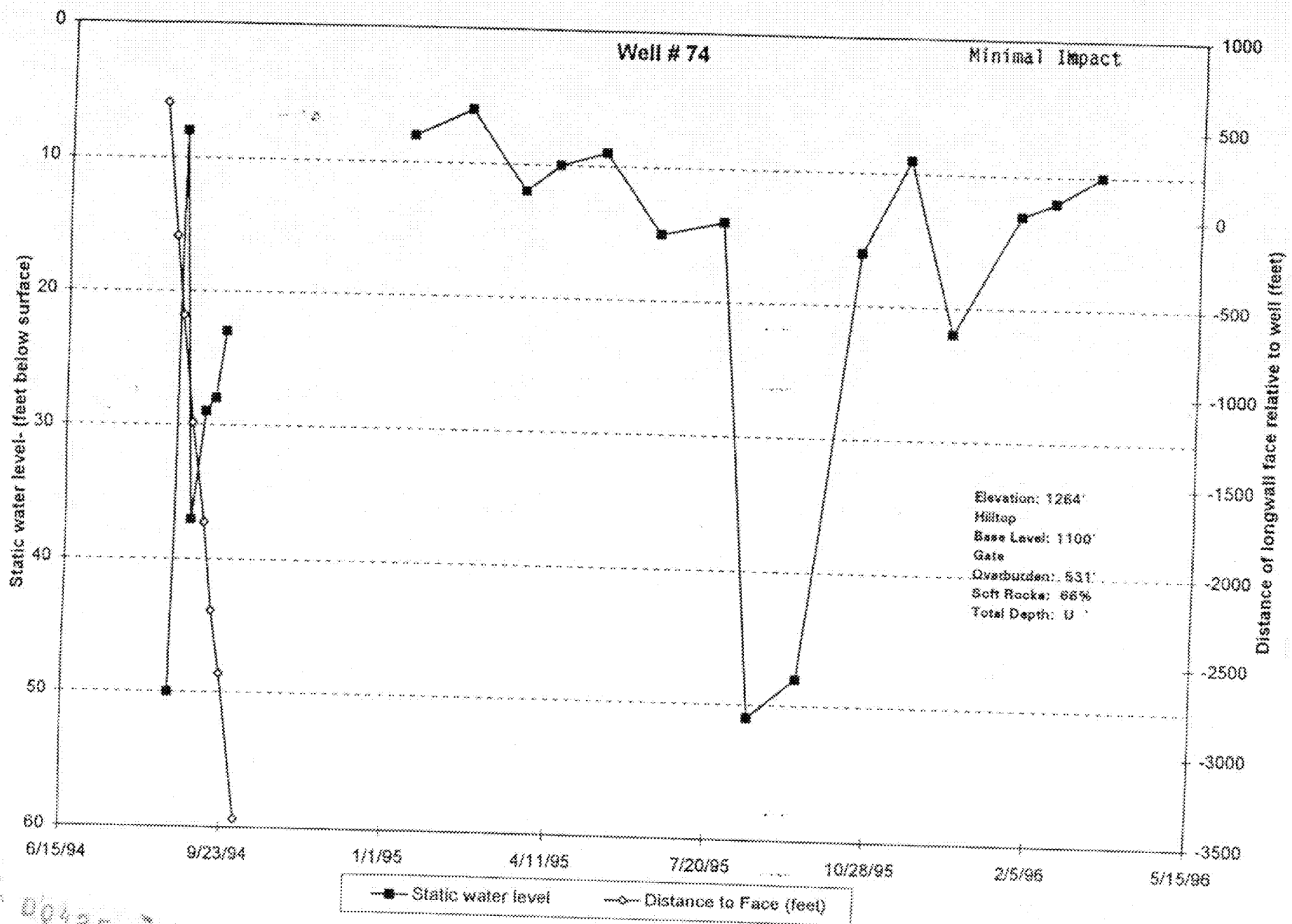
Severe Impact




Well # 72
Moderate Impact
Static water level (feet below surface)
Distance to longwall face relative to well (feet)
25
26
27
28
29
30
31
32
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-2500
1/1/95
4/11/95
7/20/95
10/28/95
2/5/96
5/15/96
8/23/96
12/1/96
Elevation: 1310'
Hilltop
Base level: 1160'
Adjacent
Overburden: 577'
Soft rock: 66%
Total Depth: 39'
Static water level
Distance to Face (feet)

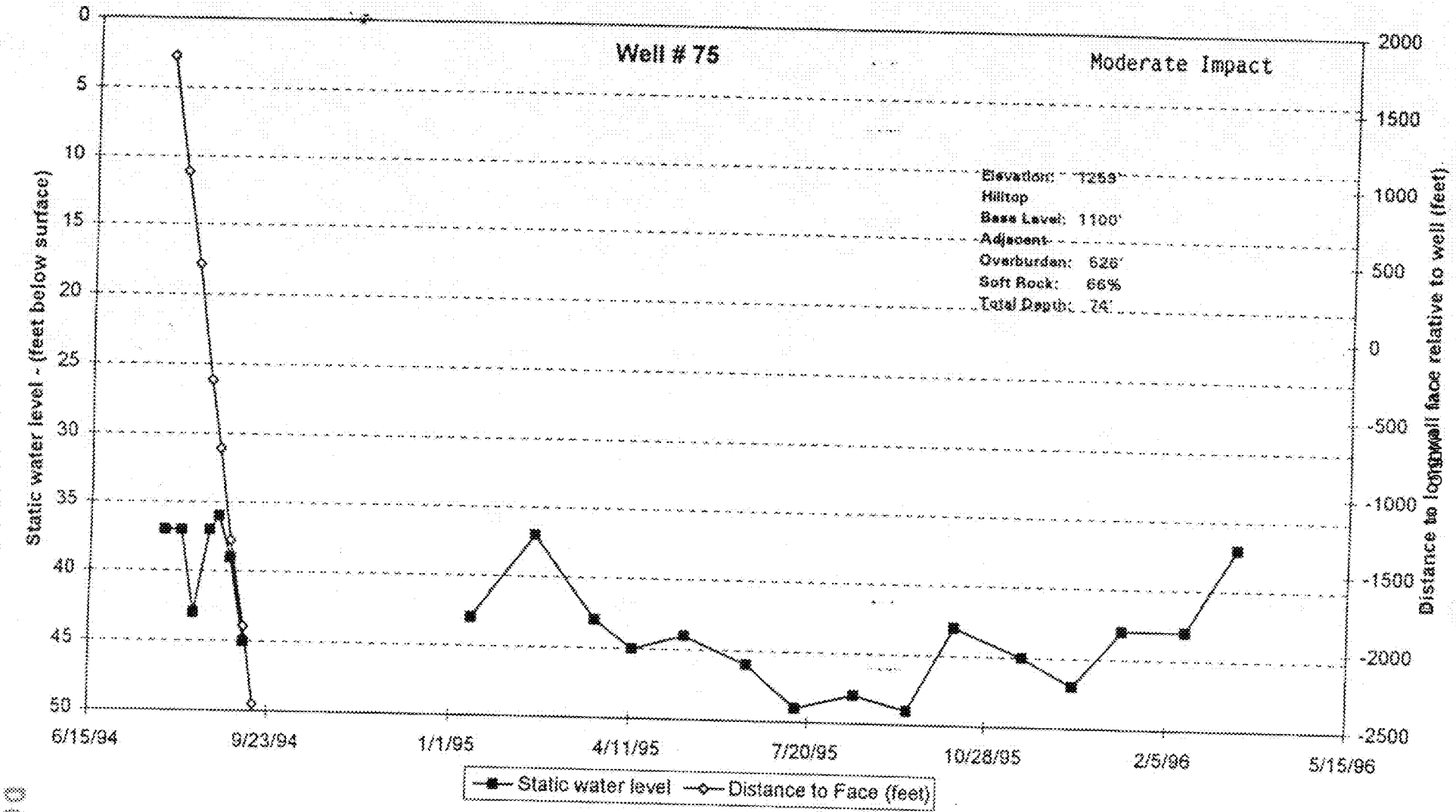

WELL #73 STATIC WATER LEVEL
AREA #3
Minimal Impact
Static water level (feet)
0
10
20
30
40
50
60
70
80
Distance to longwall face relative to well (feet)
1000
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
25-Jul-94
14-Aug-94
03-Sep-94
23-Sep-94
13-Oct-94
02-Nov-94
22-Nov-94
12-Dec-94
01-Jan-95
Elevation: 1264'
Total Depth: '
Hilltop
Base Level: 1100'
Gate
Overburden: 531'
Soft rock: 66%
SWL
DISTANCE TO FACE

AEC 18496



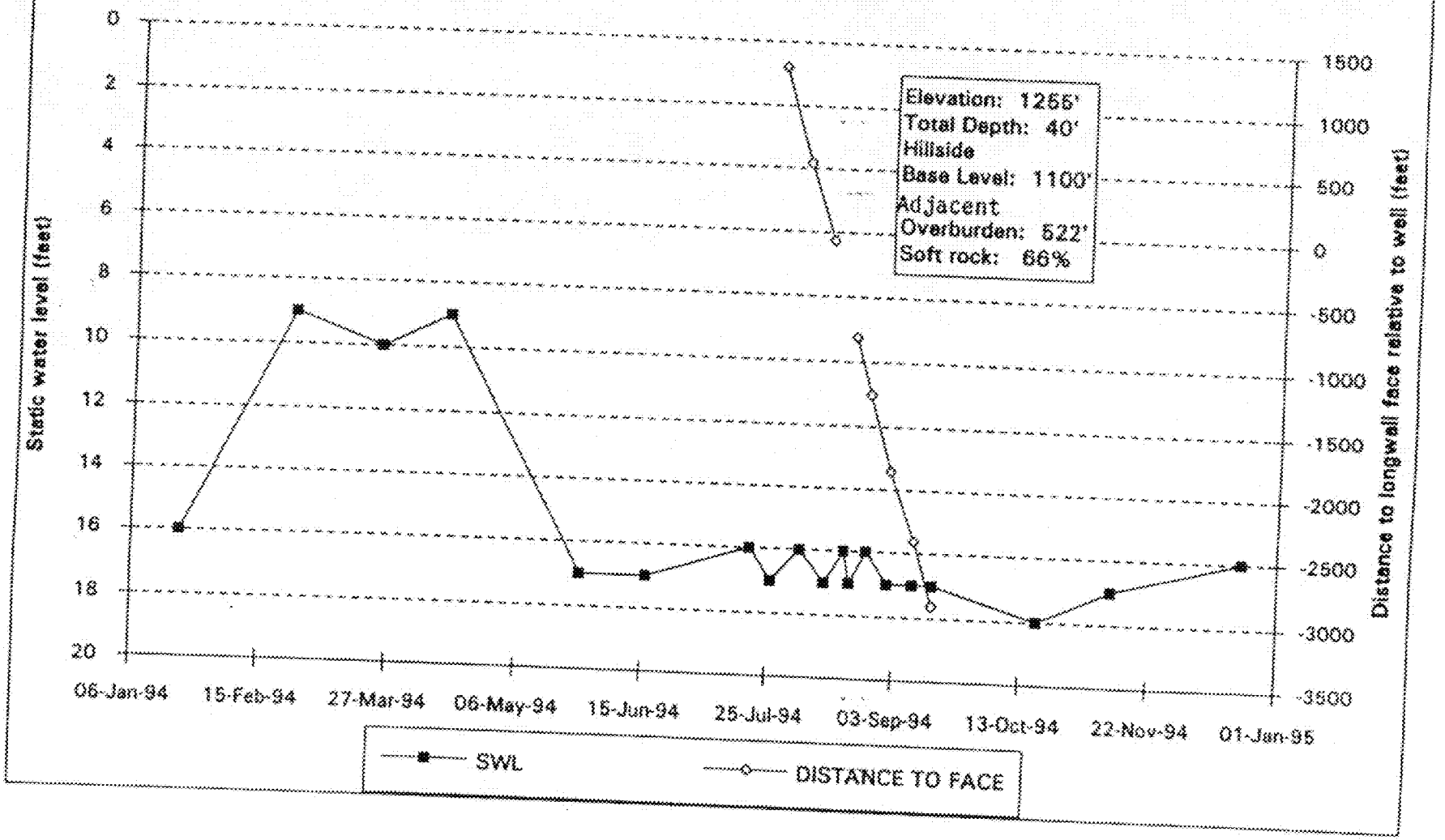
ORIGINAL

AEC 18497


Well # 75
Moderate Impact
Elevation: 1259'
Hilltop
Base Level: 1100'
Adjacent
Overburden: 626'
Soft Rock: 66%
Total Depth: 74'
Static water level - (feet below surface)
Distance to longwall face relative to well (feet)
0
5
10
15
20
25
30
35
40
45
50
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-2500
6/15/94
9/23/94
1/1/95
4/11/95
7/20/95
10/28/95
2/5/96
5/15/96
Static water level
Distance to Face (feet)

Minimal Impact

WELL #77 STATIC WATER LEVEL
AREA #3



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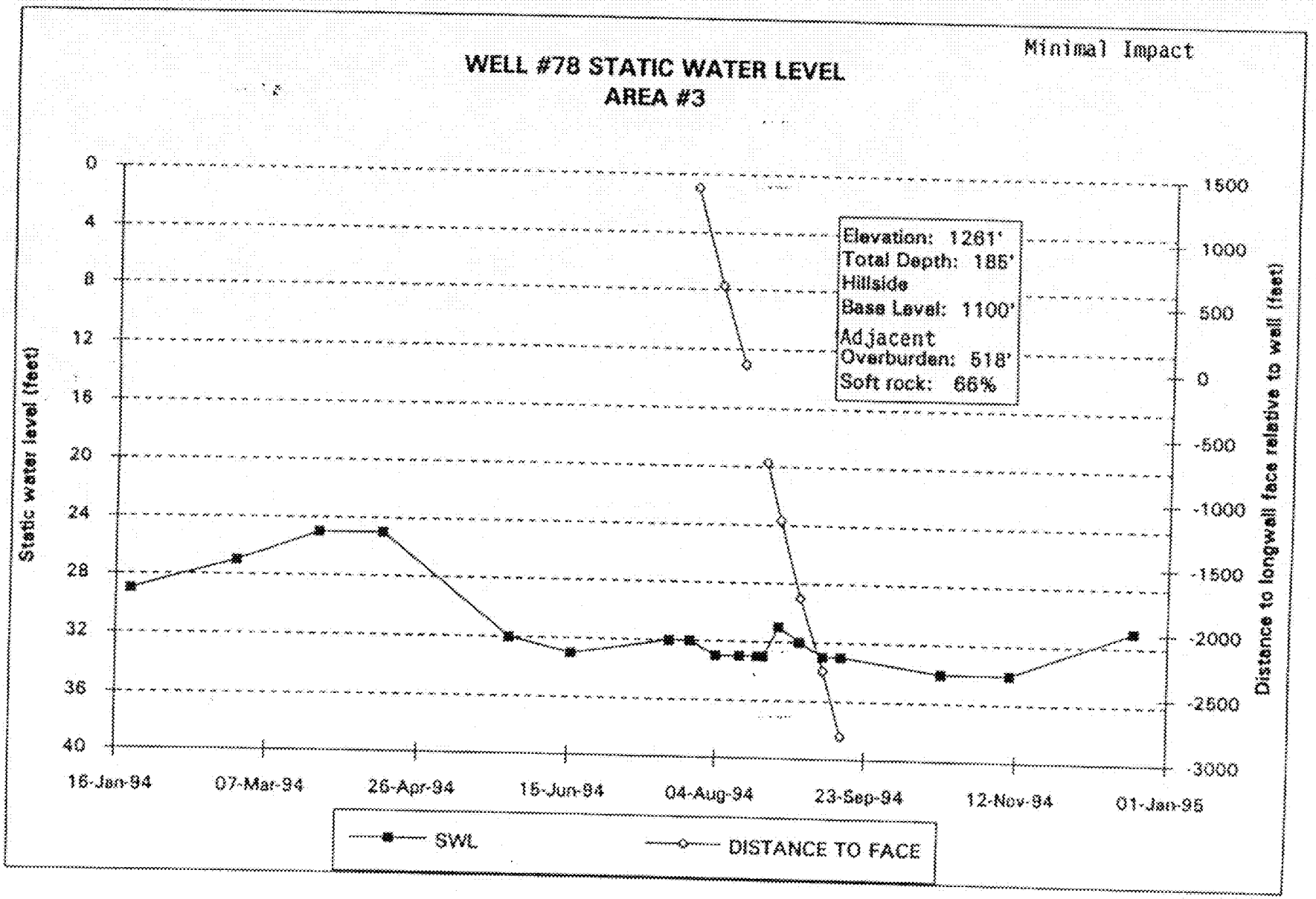

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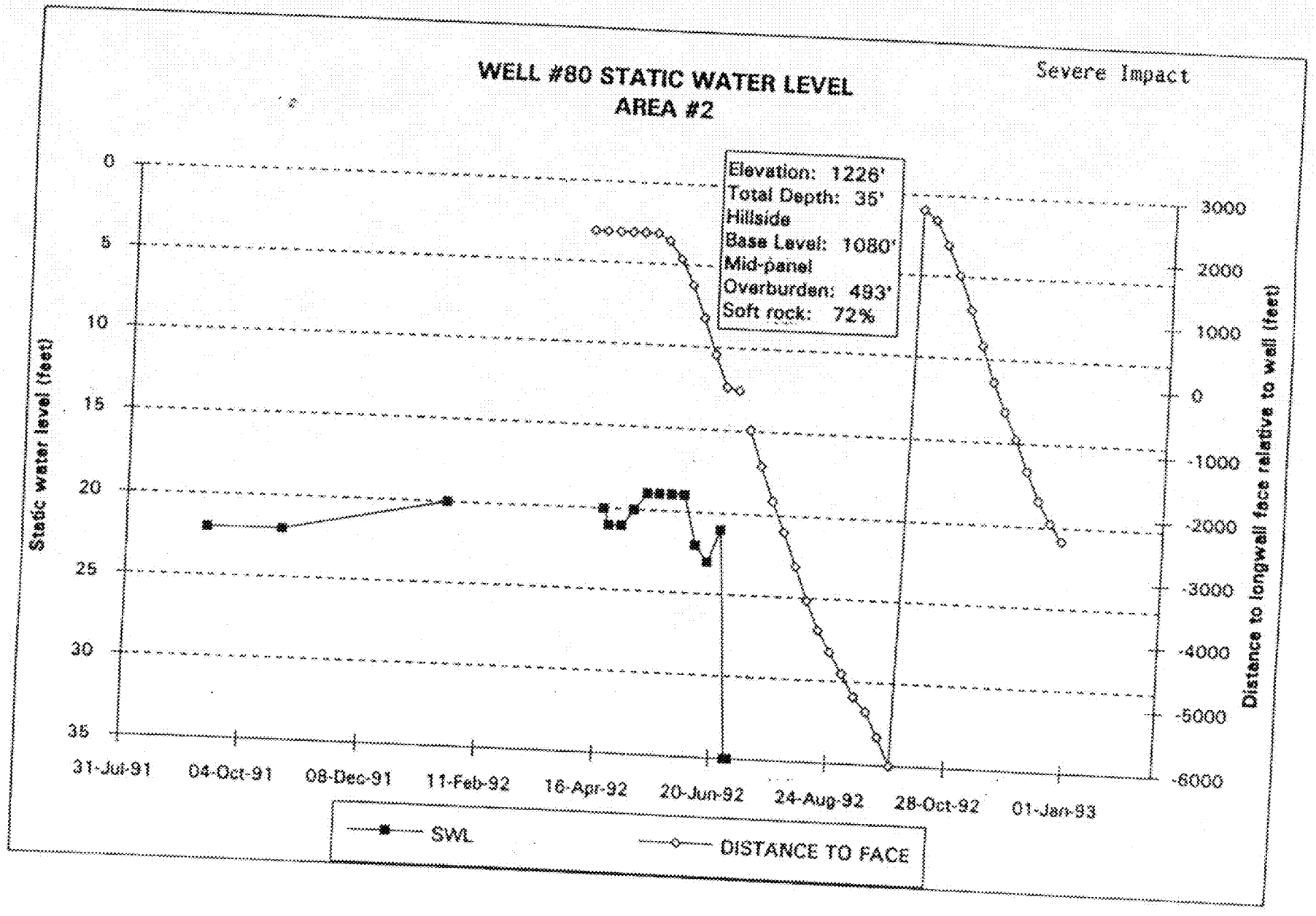
WELL #80 STATIC WATER LEVEL
AREA #2
Severe Impact
Elevation: 1226'
Total Depth: 35'
Hillside
Base Level: 1080'
Mid-panel
Overburden: 493'
Soft rock: 72%
Static water level (feet)
0
5
10
15
20
25
30
35
Distance to longwall face relative to well (feet)
3000
2000
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
31-Jul-91
04-Oct-91
08-Dec-91
11-Feb-92
16-Apr-92
20-Jun-92
24-Aug-92
28-Oct-92
01-Jan-93
SWL
DISTANCE TO FACE

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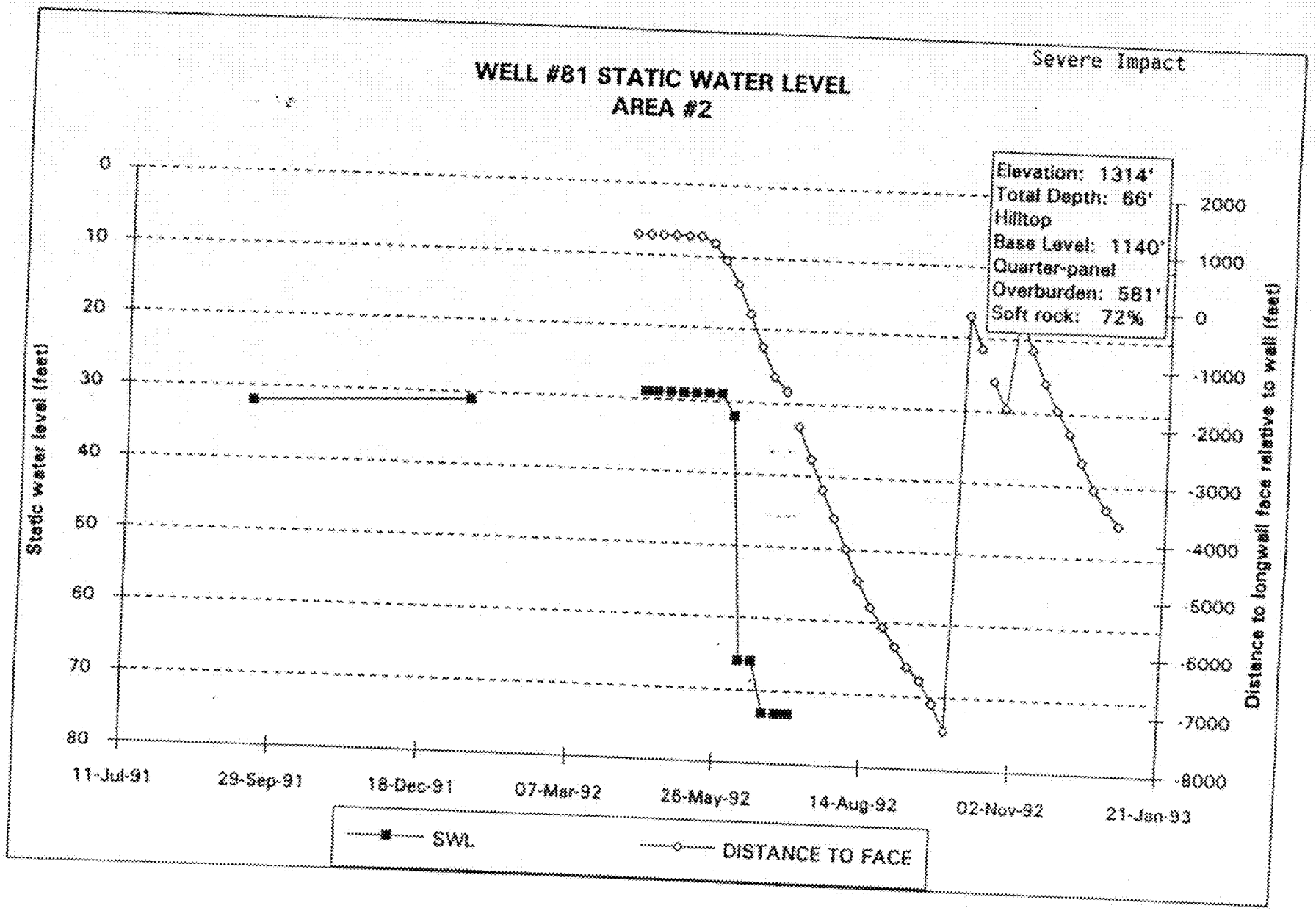

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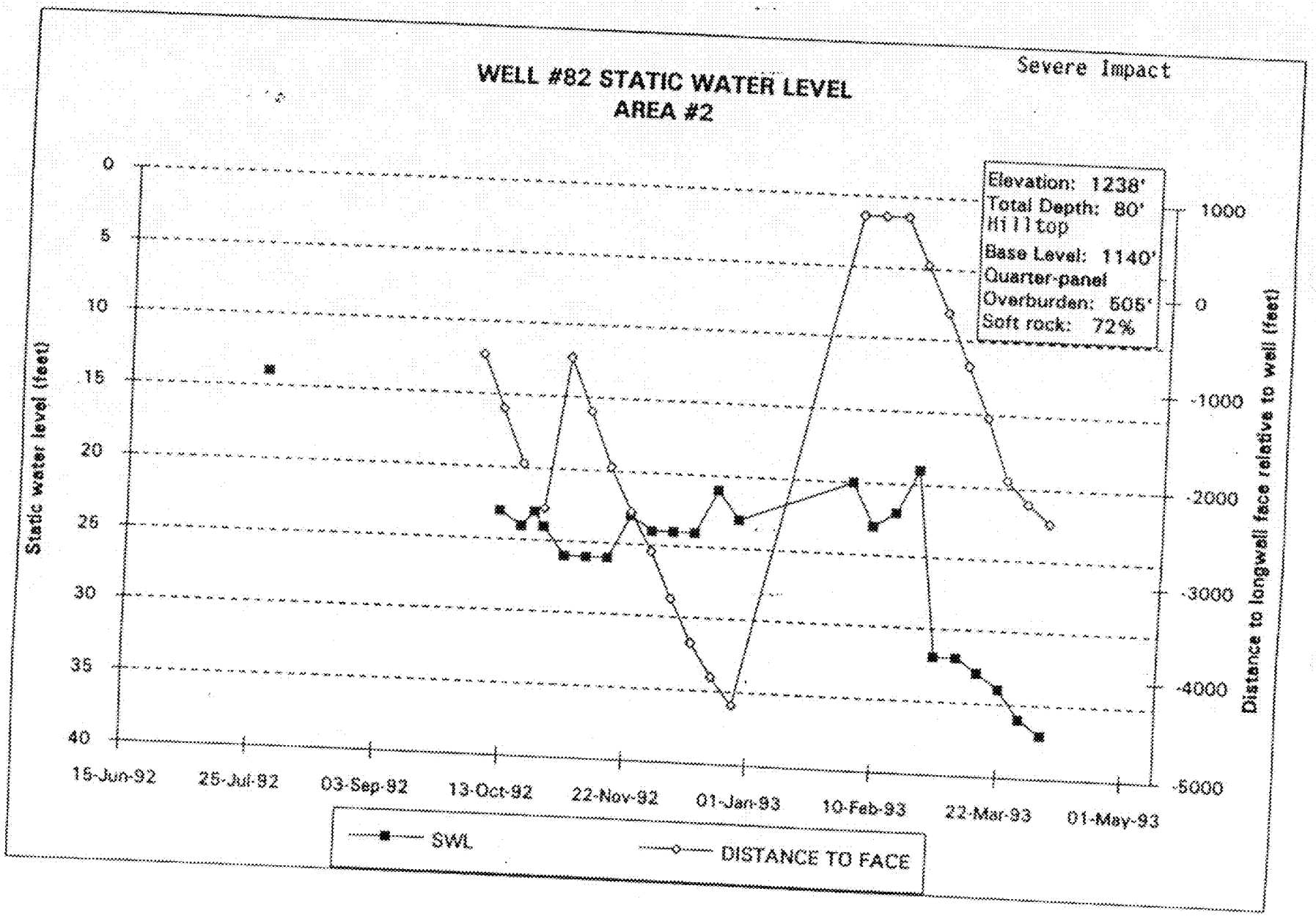
AEC 18502

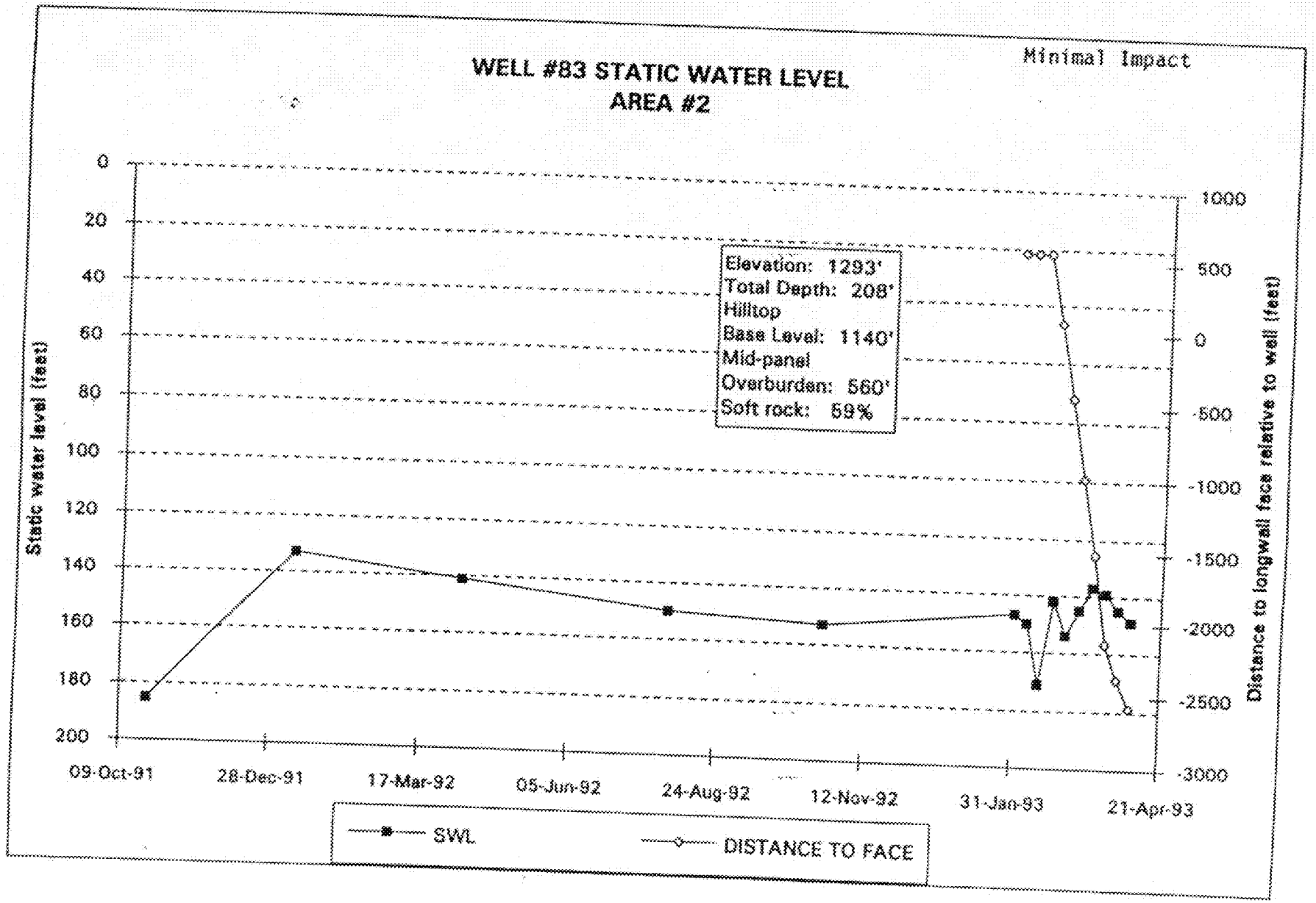

WELL #82 STATIC WATER LEVEL
AREA #2
Severe Impact
Elevation: 1238'
Total Depth: 80'
Hill top
Base Level: 1140'
Quarter-panel
Overburden: 505'
Soft rock: 72%
Static water level (feet)
0
5
10
15
20
25
30
35
40
Distance to longwall face relative to well (feet)
1000
0
-1000
-2000
-3000
-4000
-5000
15-Jun-92
25-Jul-92
03-Sep-92
13-Oct-92
22-Nov-92
01-Jan-93
10-Feb-93
22-Mar-93
01-May-93
SWL
DISTANCE TO FACE

AEC 18503

AEC 18504

00425-3

Minimal Impact



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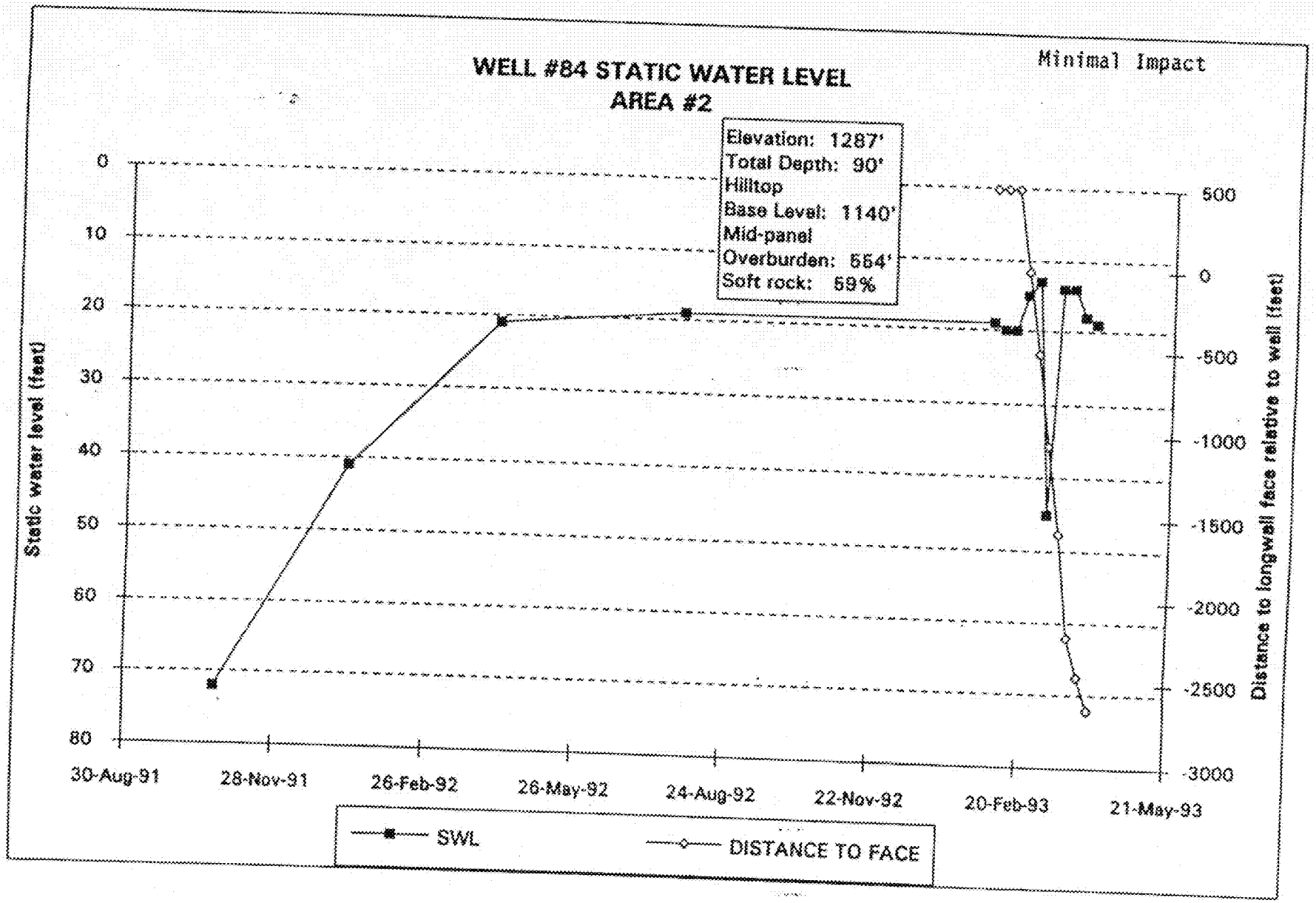

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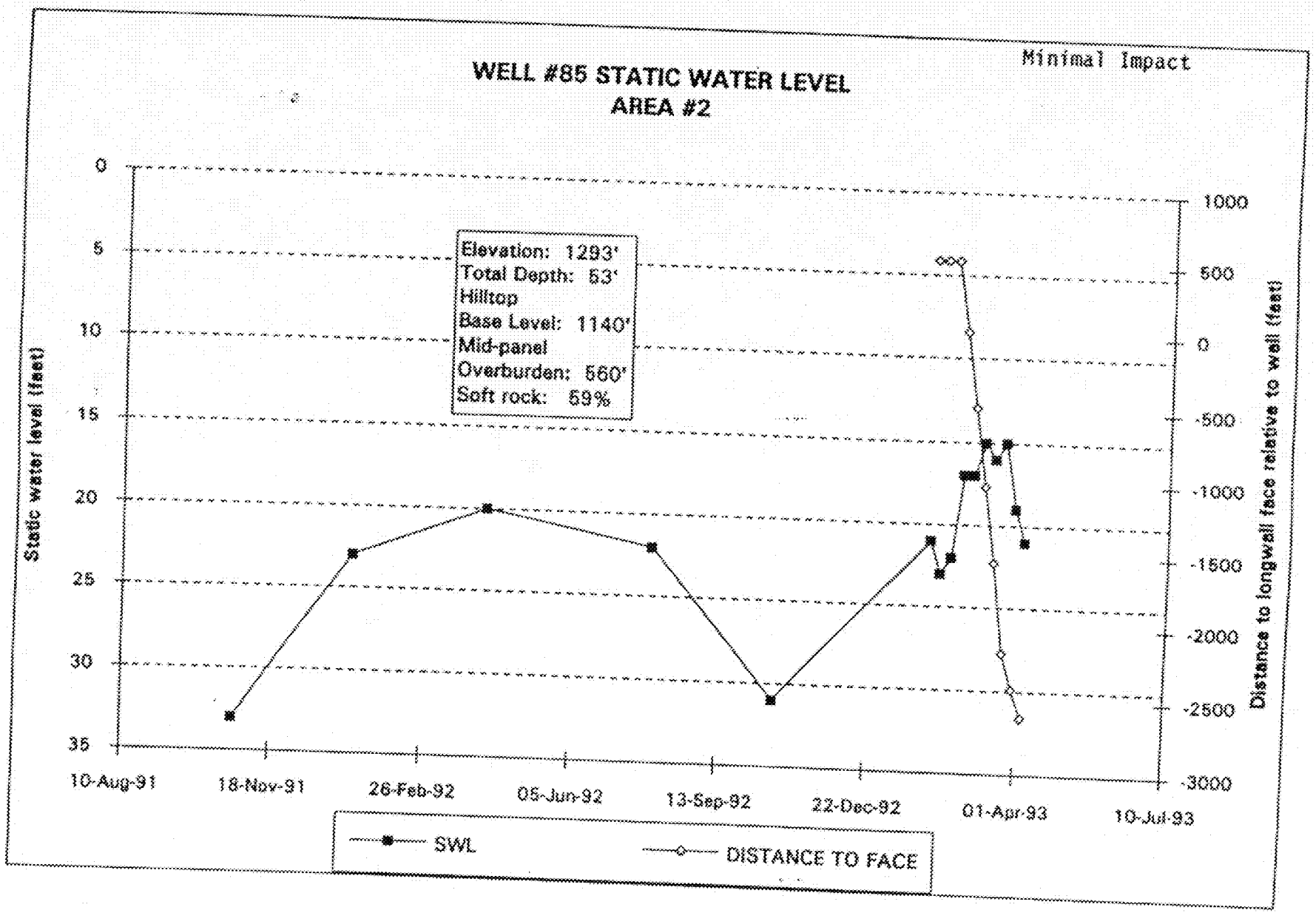

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D0425-3

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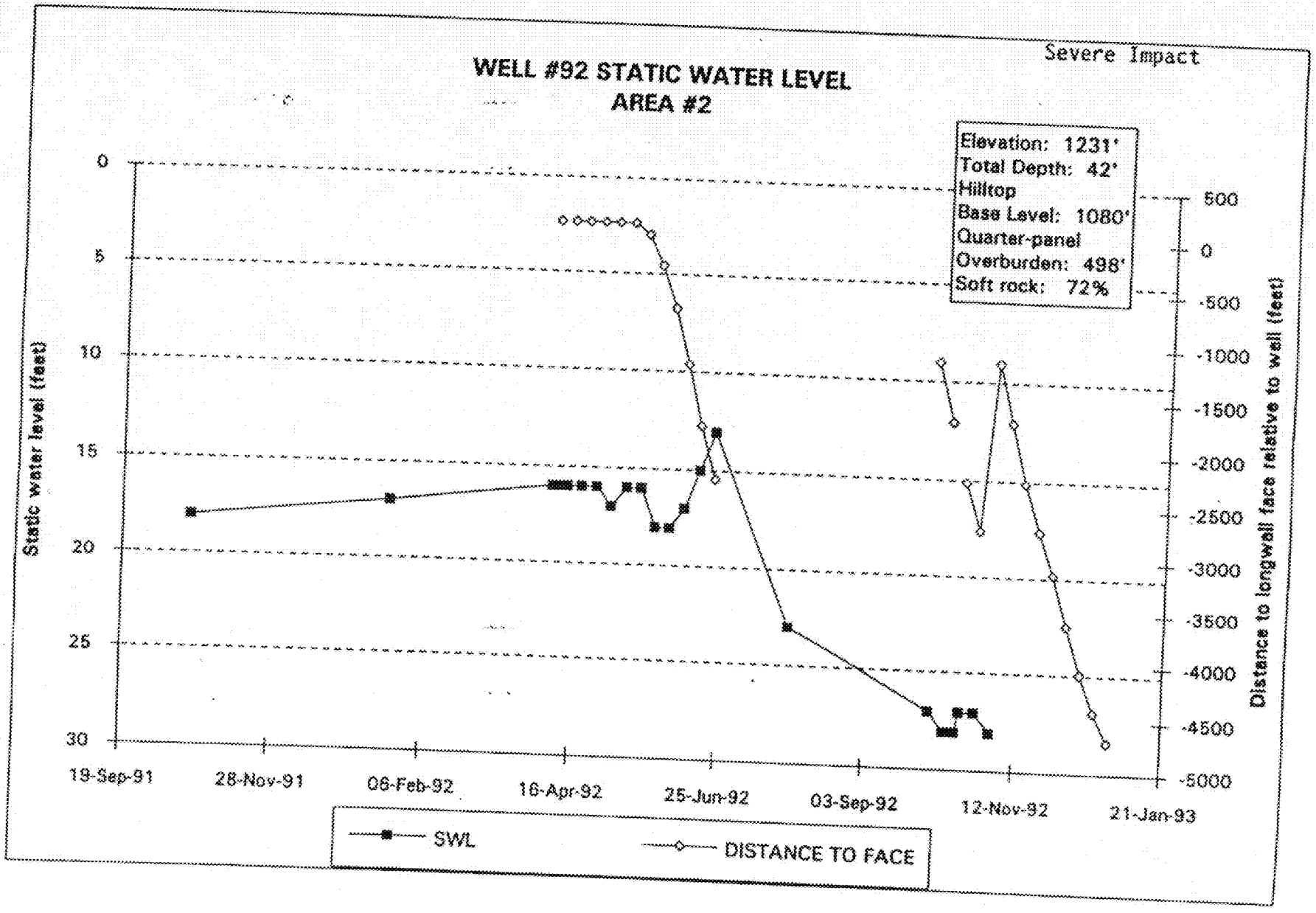
AEC 18506


WELL #92 STATIC WATER LEVEL
AREA #2
Severe Impact
Elevation: 1231'
Total Depth: 42'
Hilltop
Base Level: 1080'
Quarter-panel
Overburden: 498'
Soft rock: 72%
Static water level (feet)
0
5
10
15
20
25
30
Distance to longwall face relative to well (feet)
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
-4500
-5000
19-Sep-91
28-Nov-91
06-Feb-92
16-Apr-92
25-Jun-92
03-Sep-92
12-Nov-92
21-Jan-93
SWL
DISTANCE TO FACE

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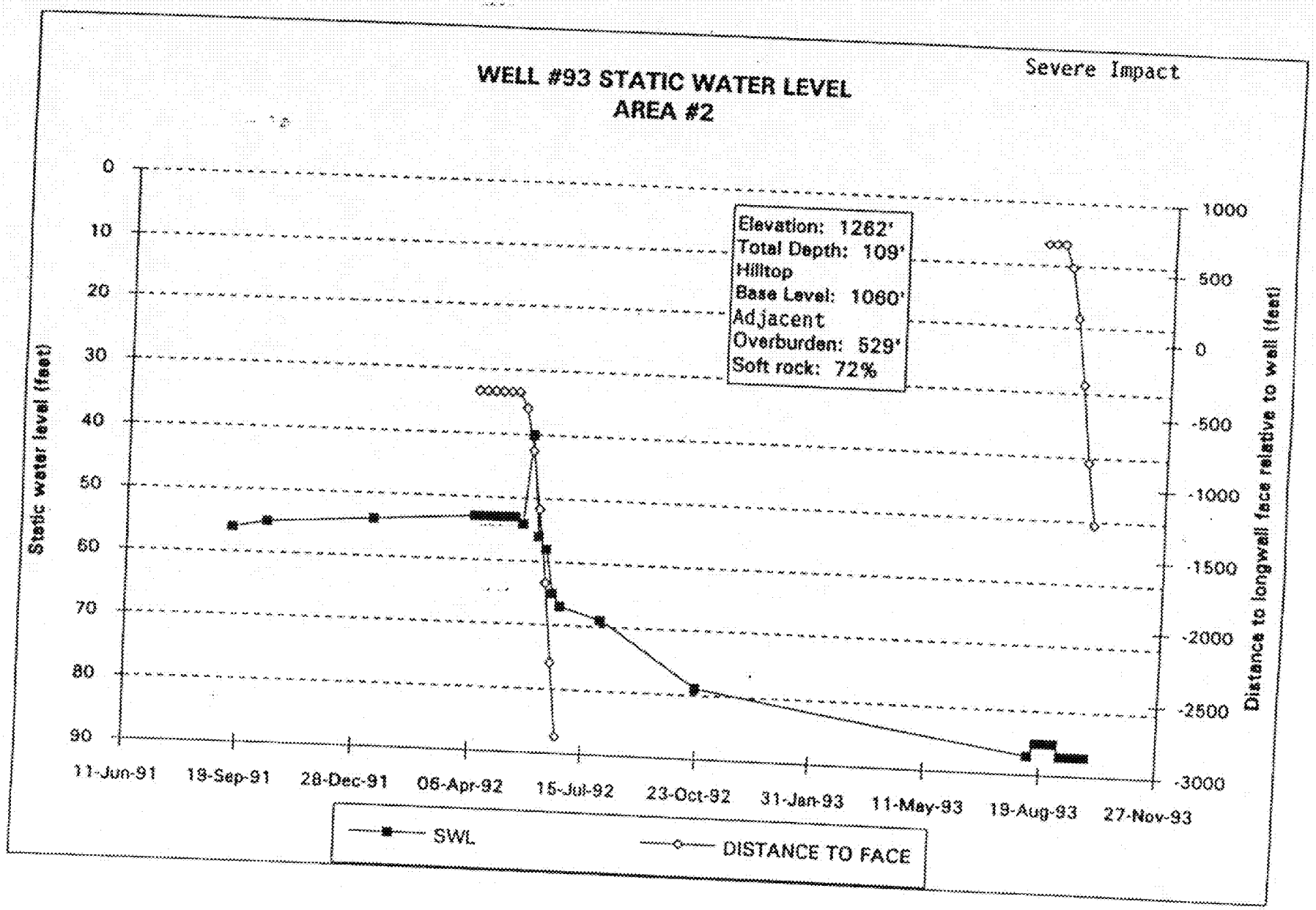

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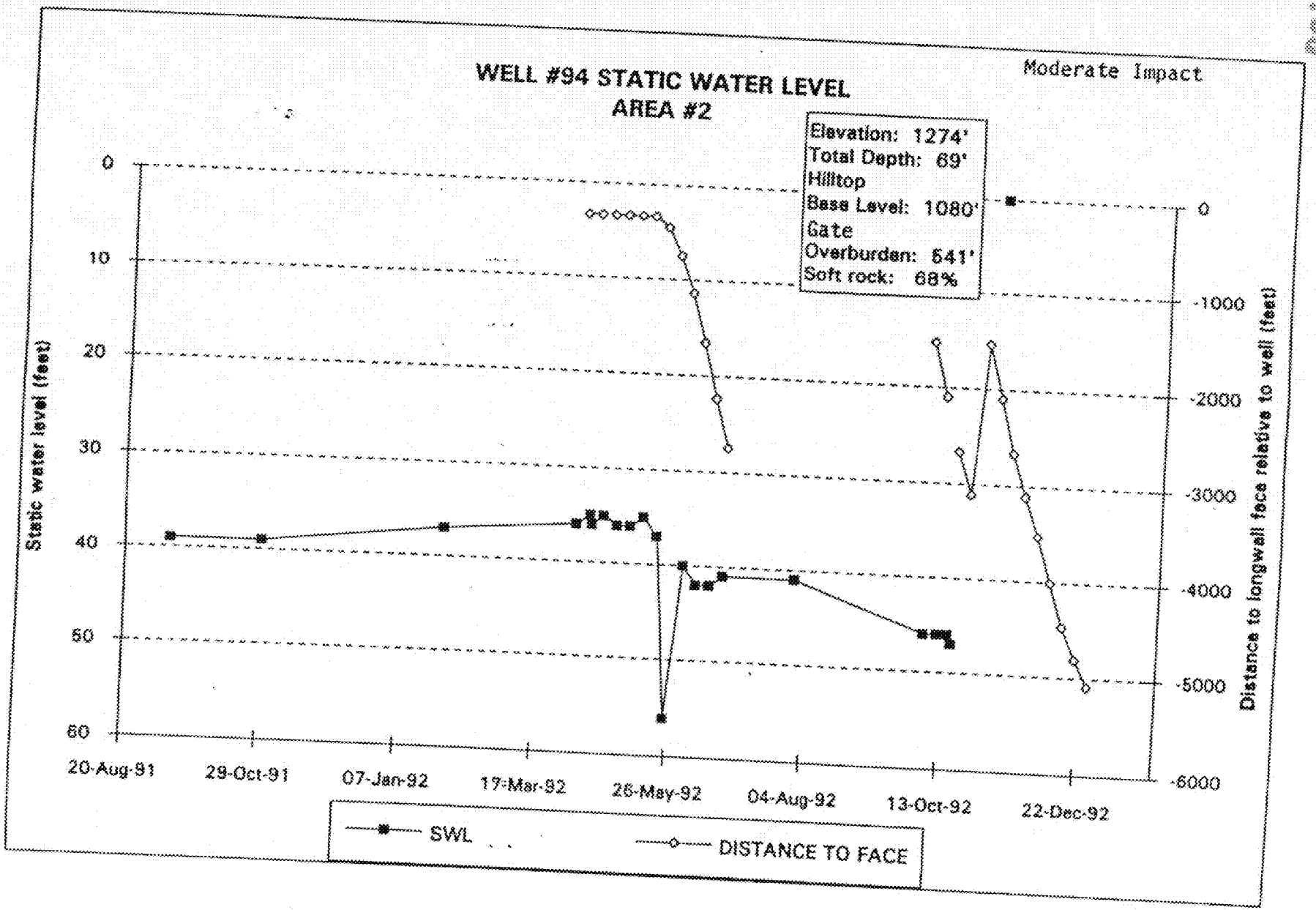
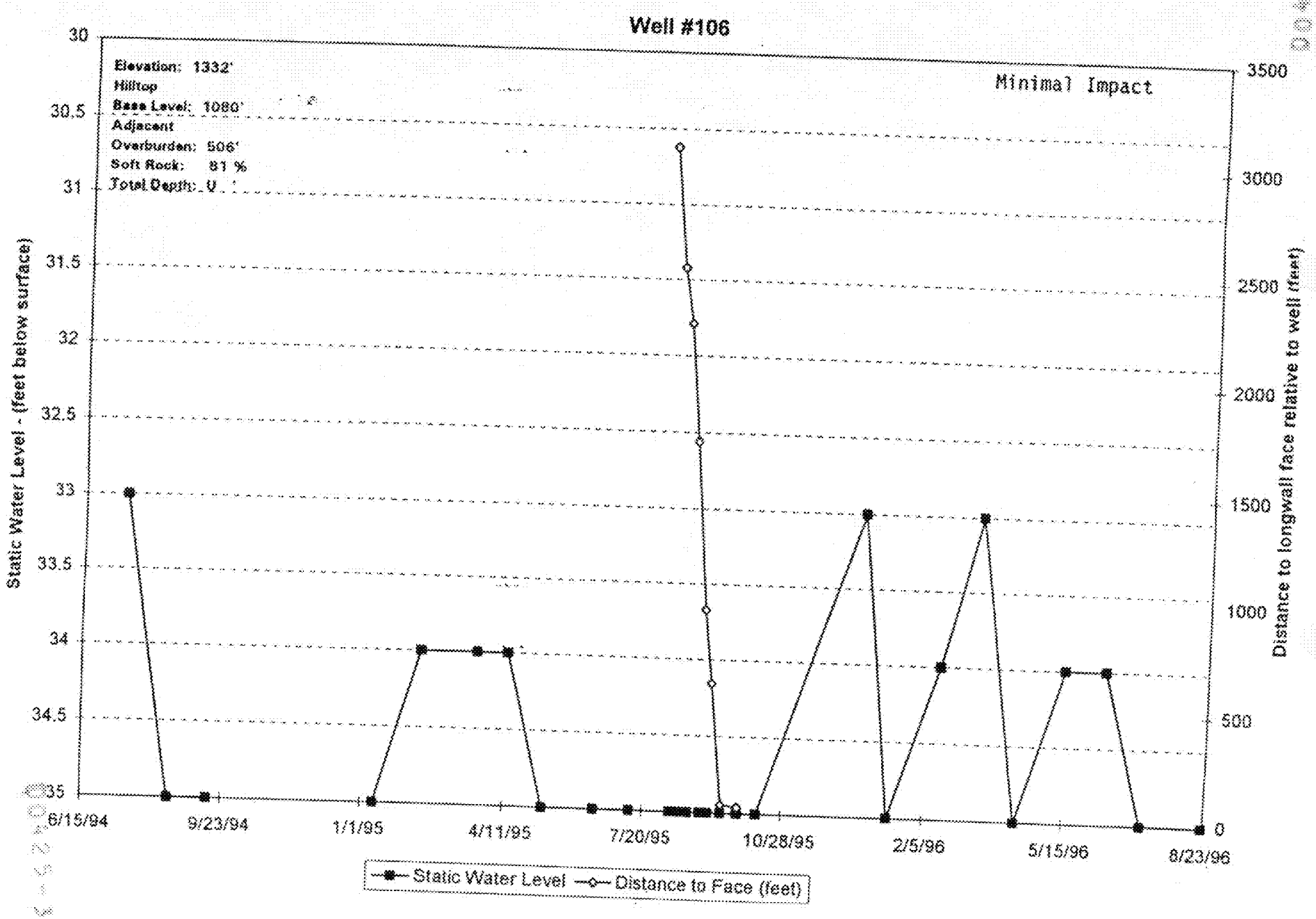

WELL #94 STATIC WATER LEVEL
AREA #2
Moderate Impact
Elevation: 1274'
Total Depth: 69'
Hilltop
Base Level: 1080'
Gate
Overburden: 641'
Soft rock: 68%
Static water level (feet)
0
10
20
30
40
50
60
Distance to longwall face relative to well (feet)
0
-1000
-2000
-3000
-4000
-5000
-6000
20-Aug-91
29-Oct-91
07-Jan-92
17-Mar-92
26-May-92
04-Aug-92
13-Oct-92
22-Dec-92
SWL
DISTANCE TO FACE

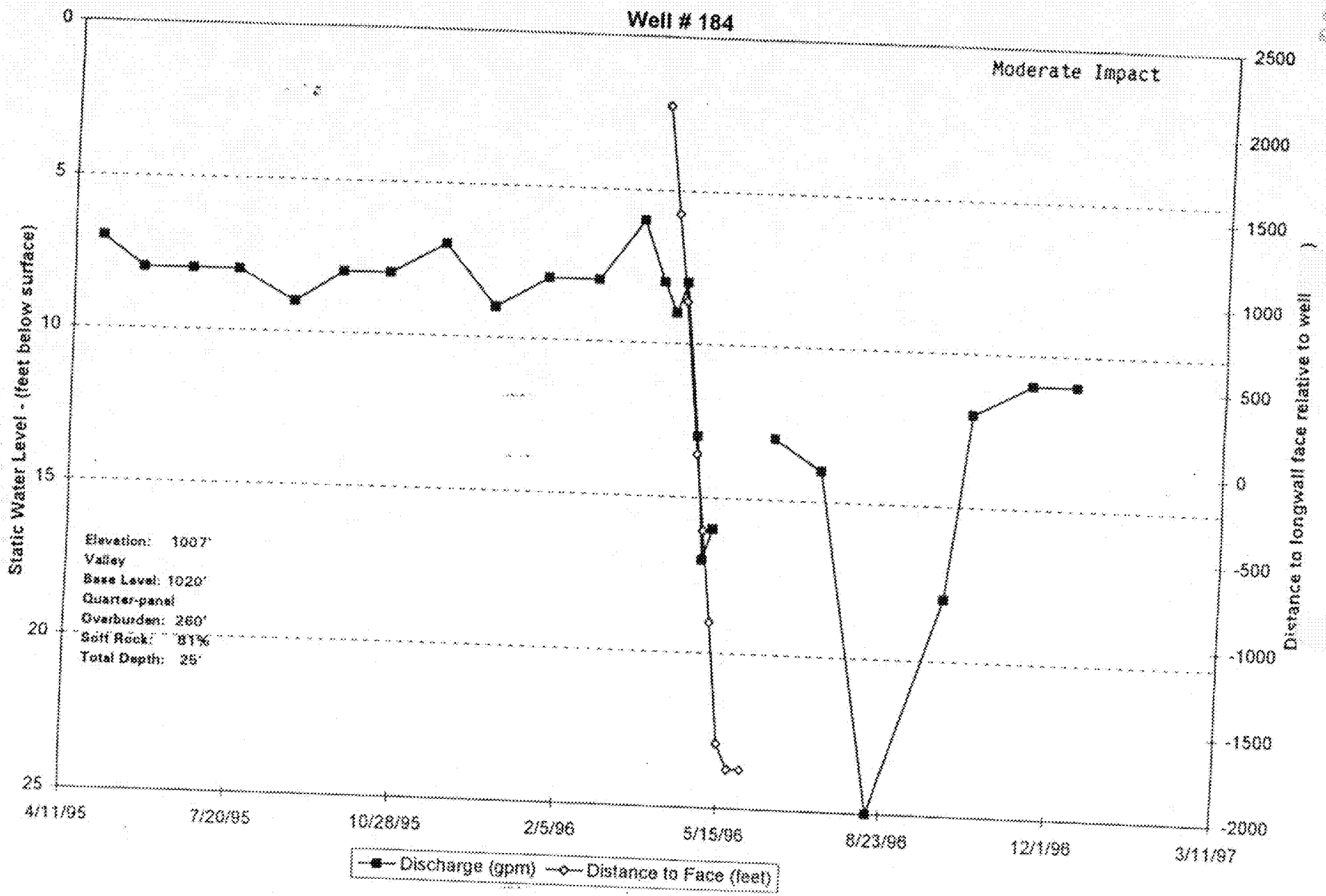
ORIGINAL



Prepared by: Moody and Assoc. Inc. 4/13/97

ORIGINAL

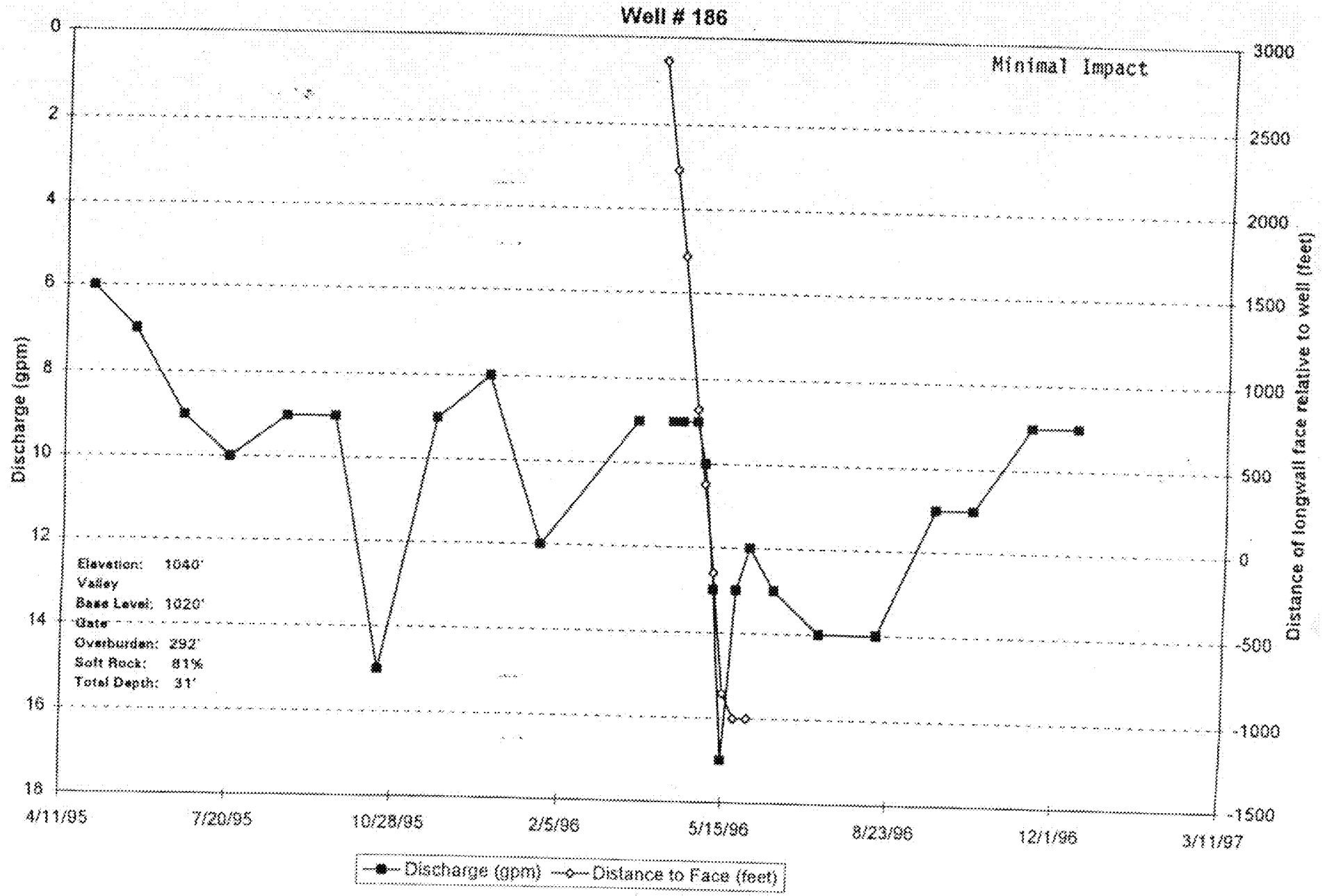
AEC 18510



Prepared by: Moody and Assoc., Inc. 4/13/97

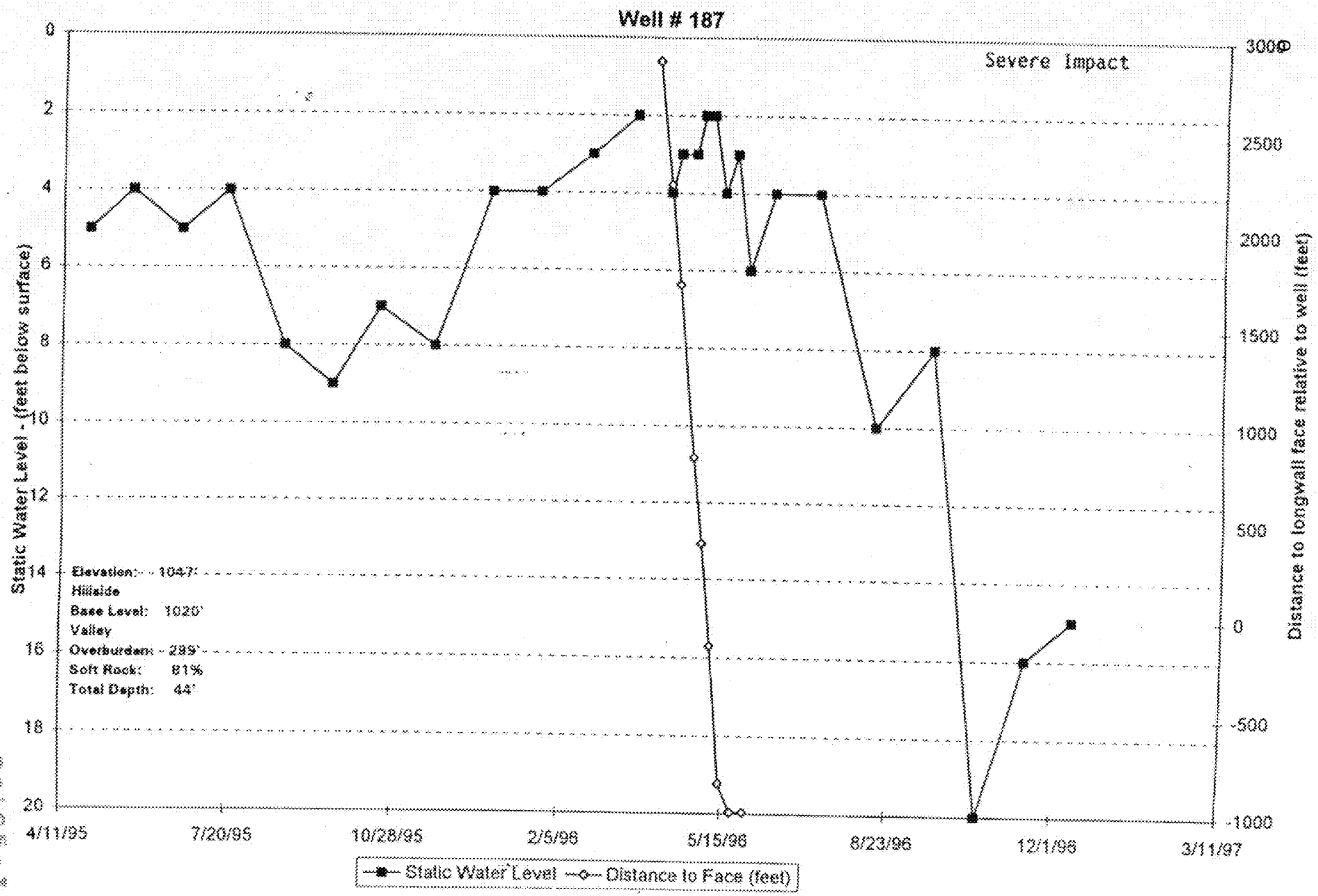
ORIGINAL

AEC 18511



Prepared by: Moody and Assoc. Inc. 4/13/97

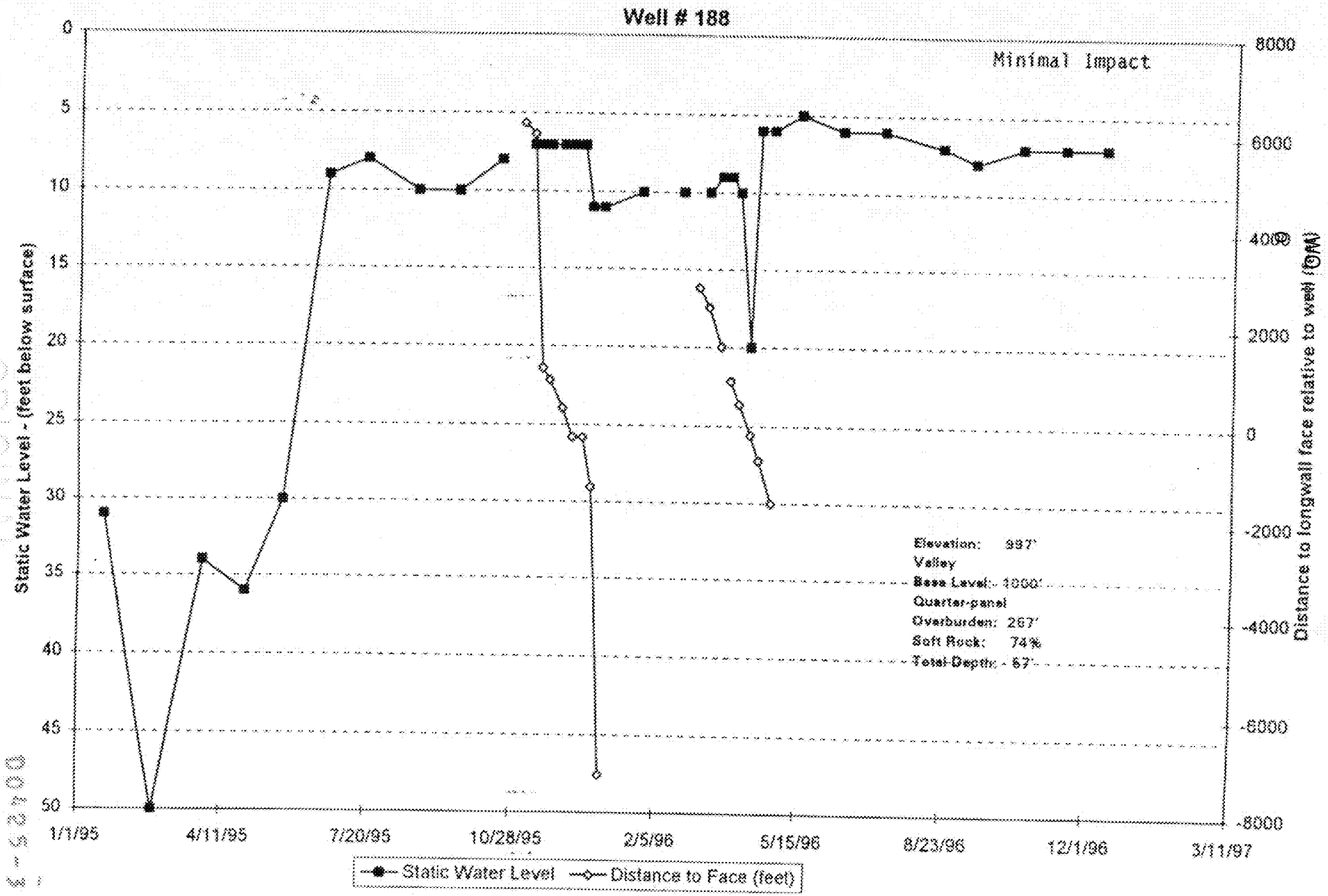
AEC 18512



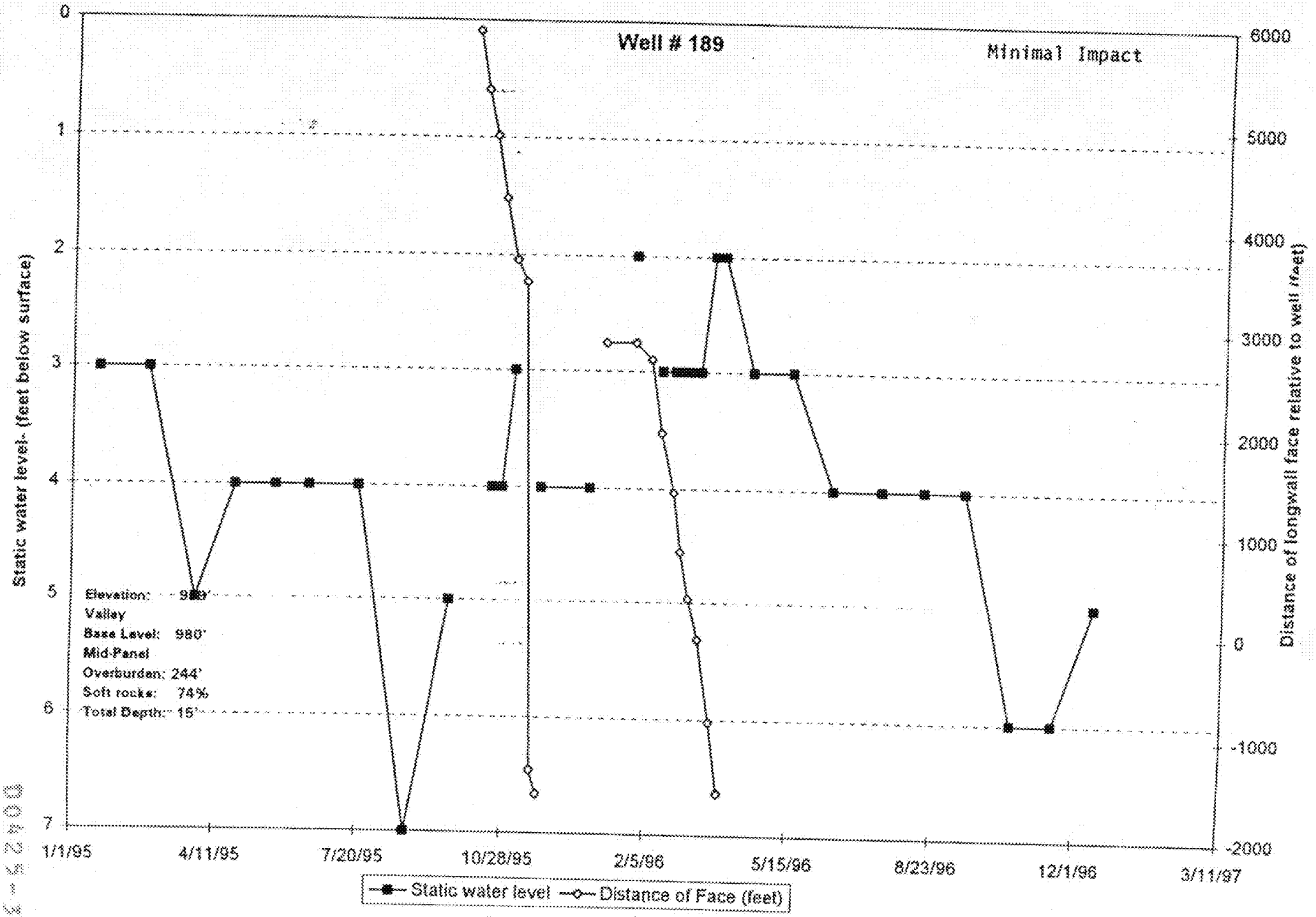
Prepared by: Moody and Assoc. Inc. 4/13/97

ORIGINAL

AEC 185113

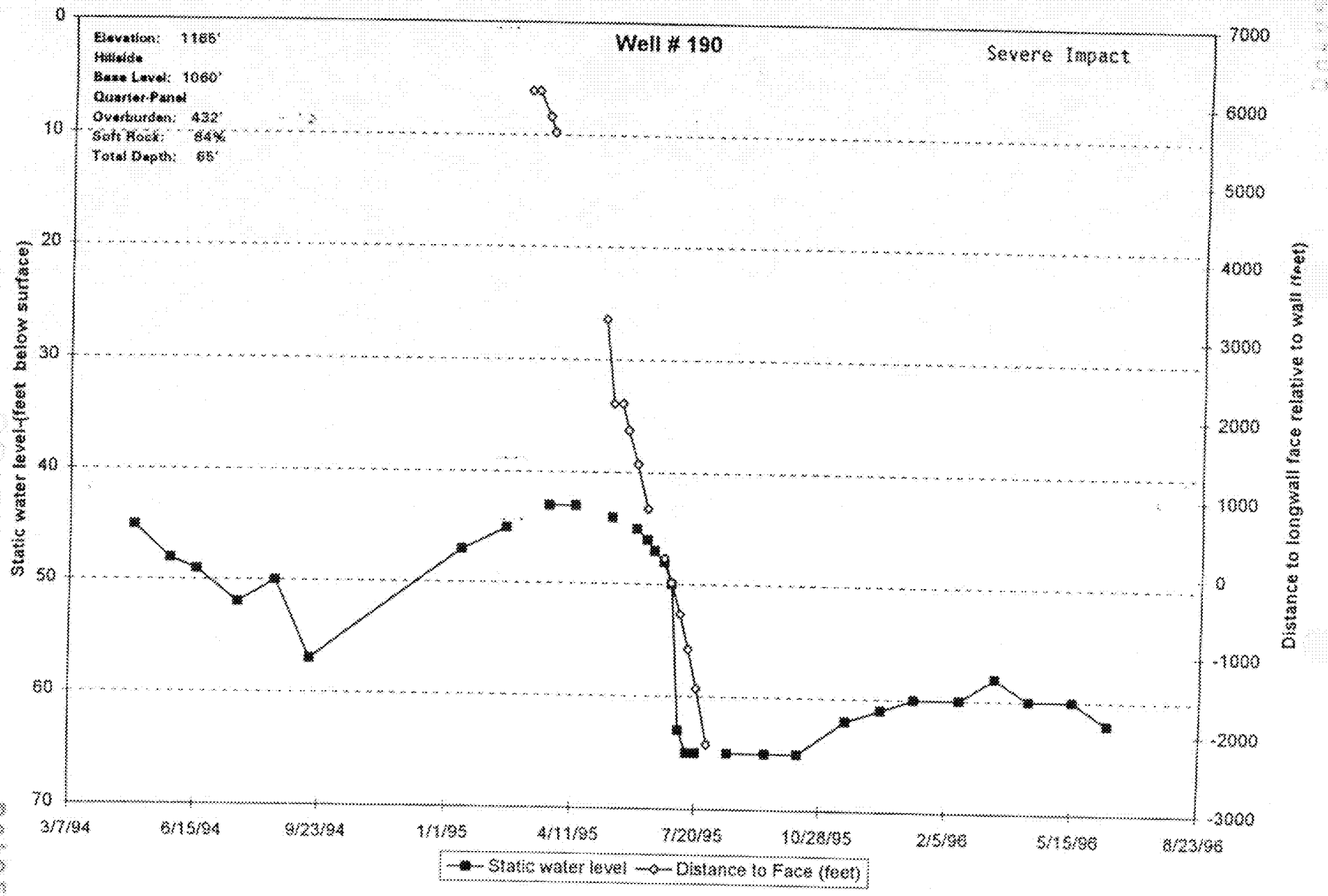


Prepared by: Moody and Assoc., Inc. 4/13/97

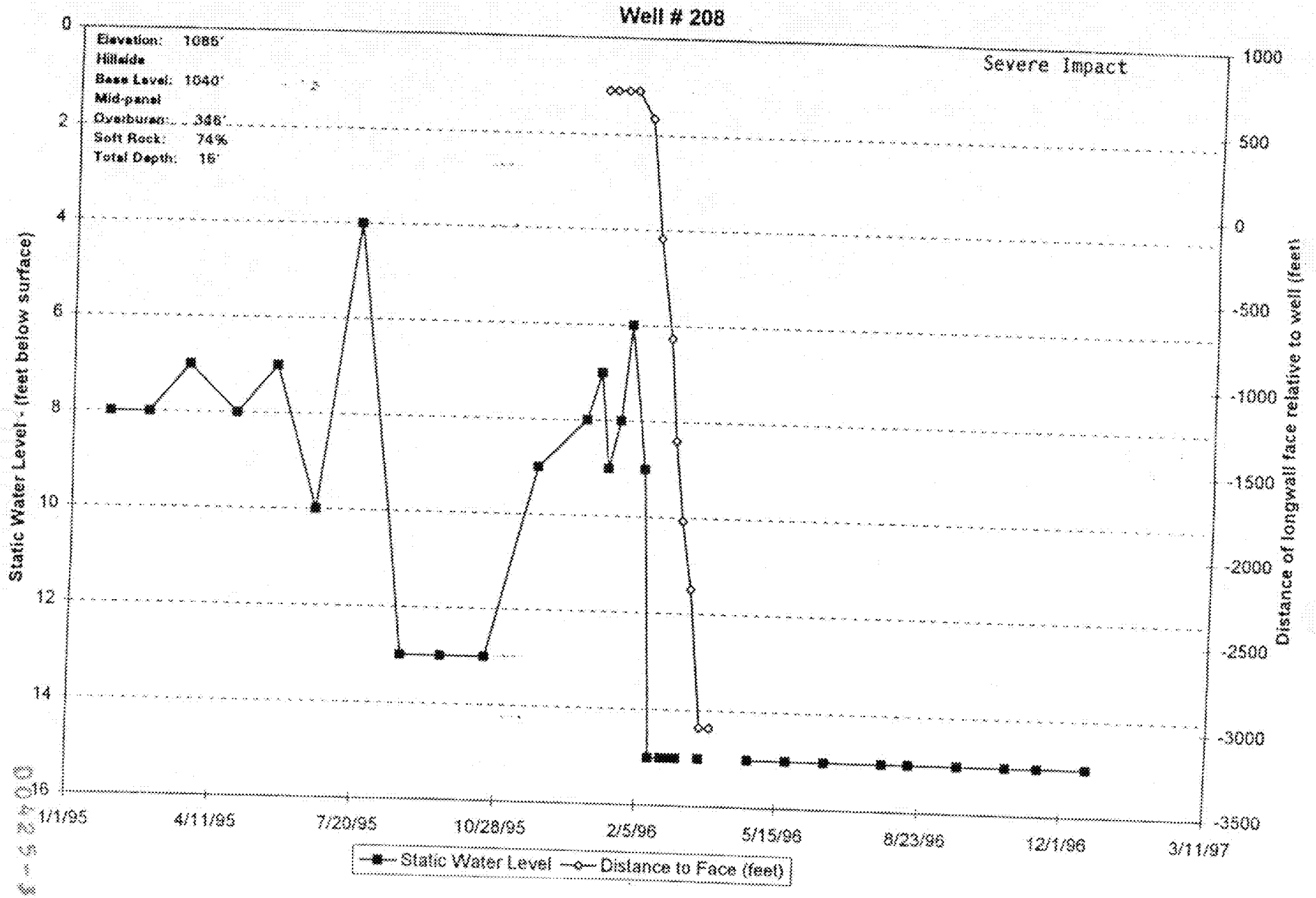


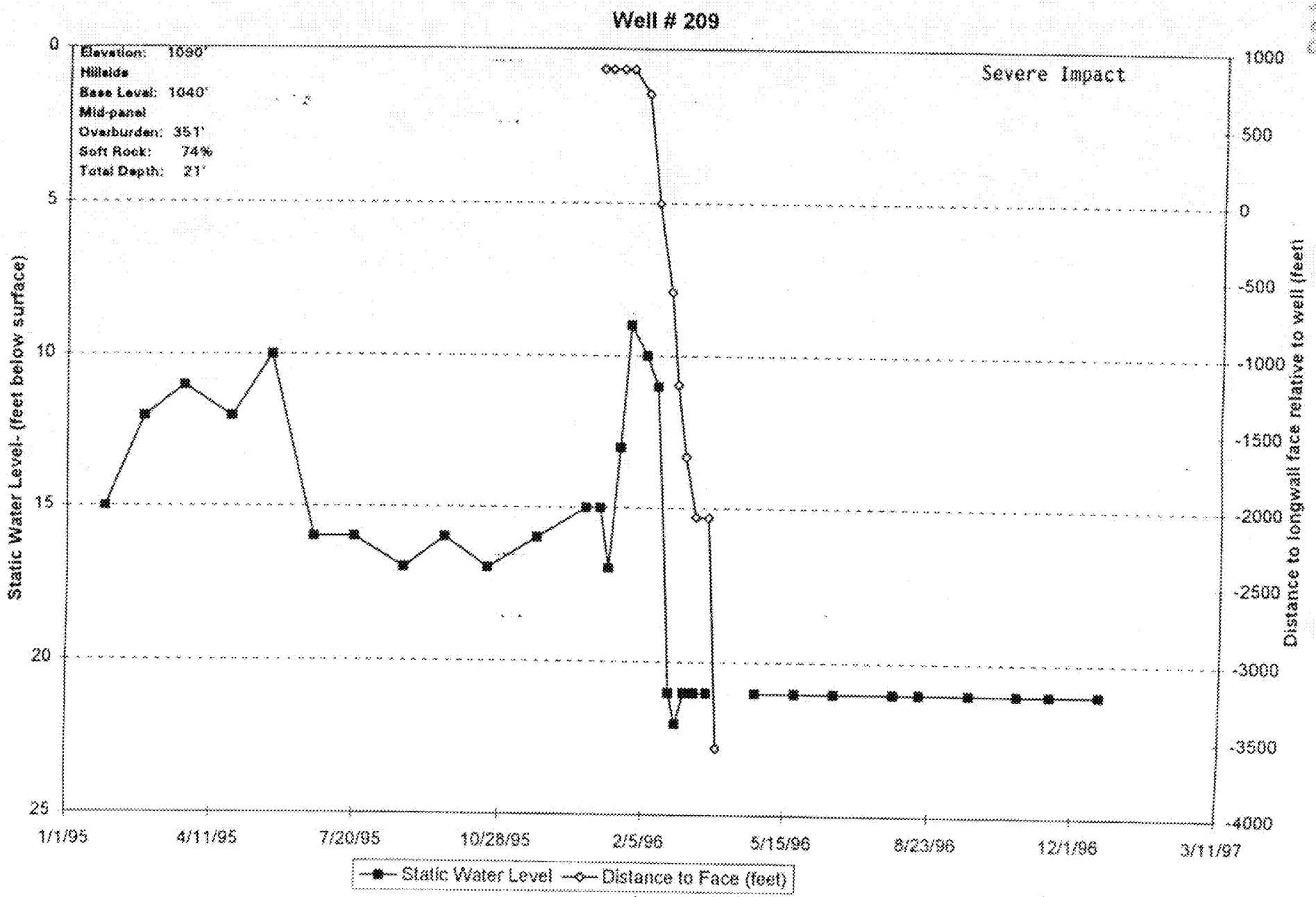
Prepared by: Moody and Assoc., Inc.4/13/97

AEC 18515



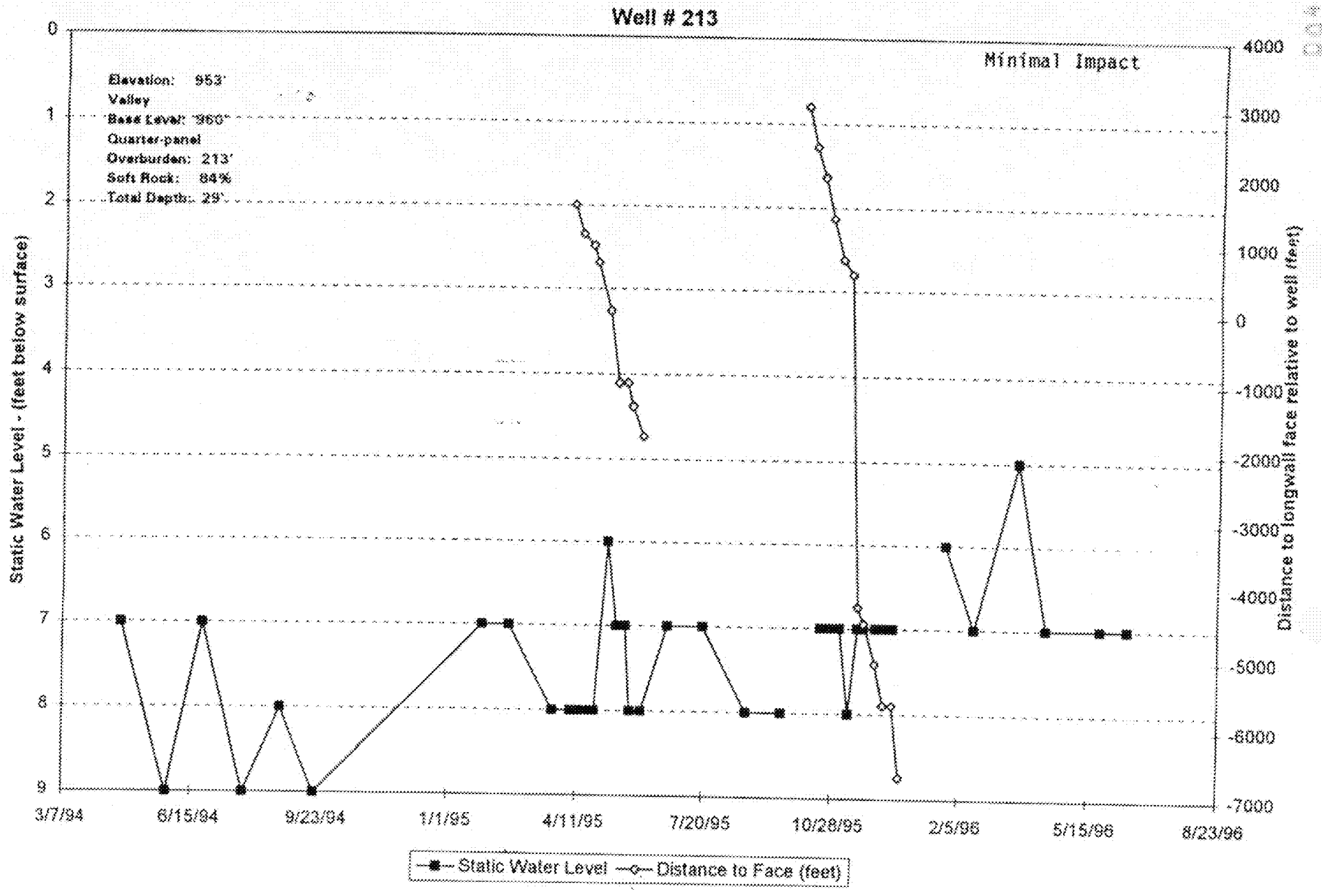
Prepared by: Moody and Assoc. Inc. 4/13/97


Well # 208
Elevation: 1085'
Hillside
Base Level: 1040'
Mid-panel
Overburden: 348'
Soft Rock: 74%
Total Depth: 16'
Severe Impact
Static Water Level - (feet below surface)
Distance of longwall face relative to well (feet)
0
2
4
6
8
10
12
14
16
1000
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
1/1/95
4/11/95
7/20/95
10/28/95
2/5/96
5/15/96
8/23/96
12/1/96
3/11/97
Static Water Level
Distance to Face (feet)

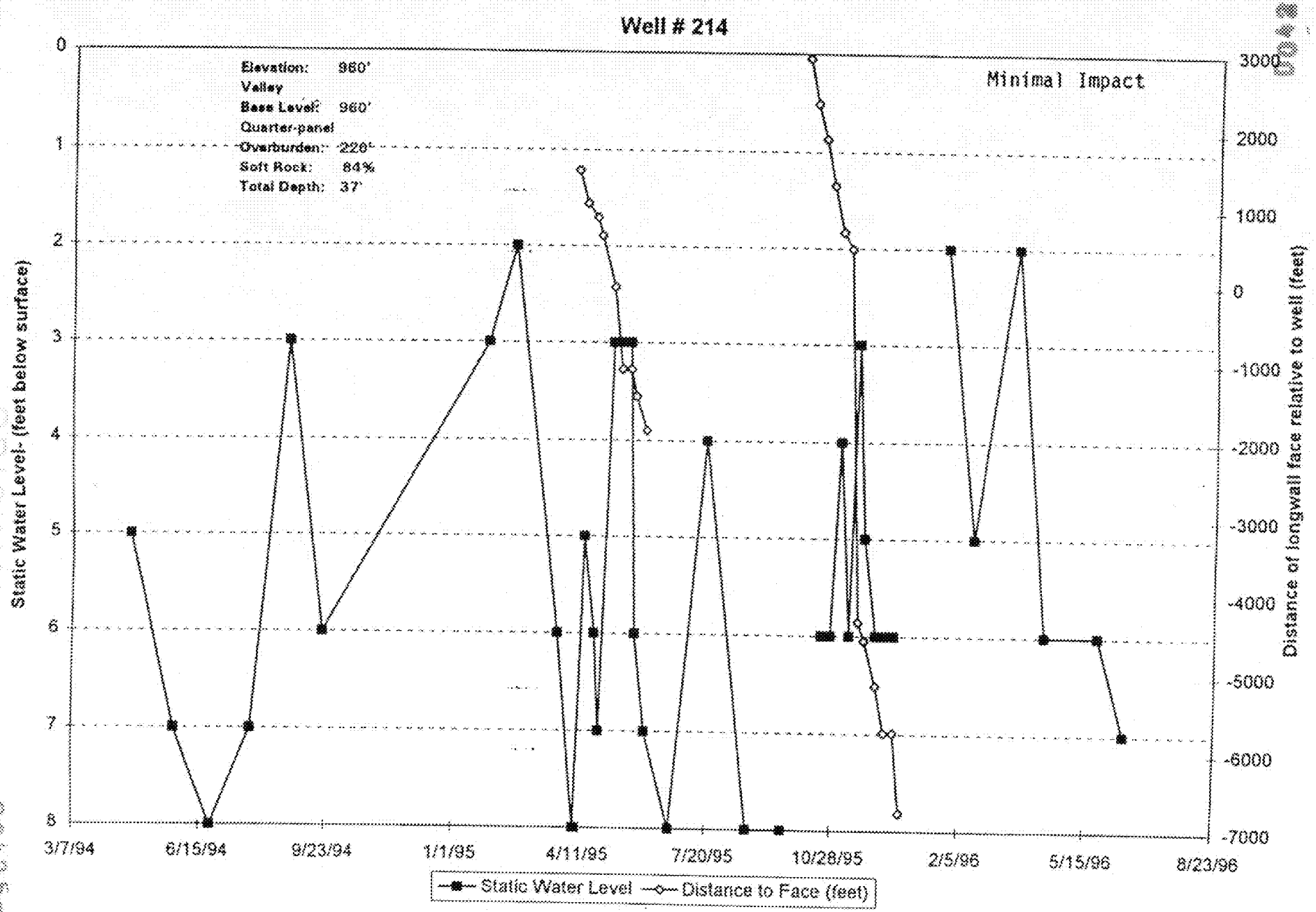


Prepared by: Moody and Assoc. Inc. 4/13/97

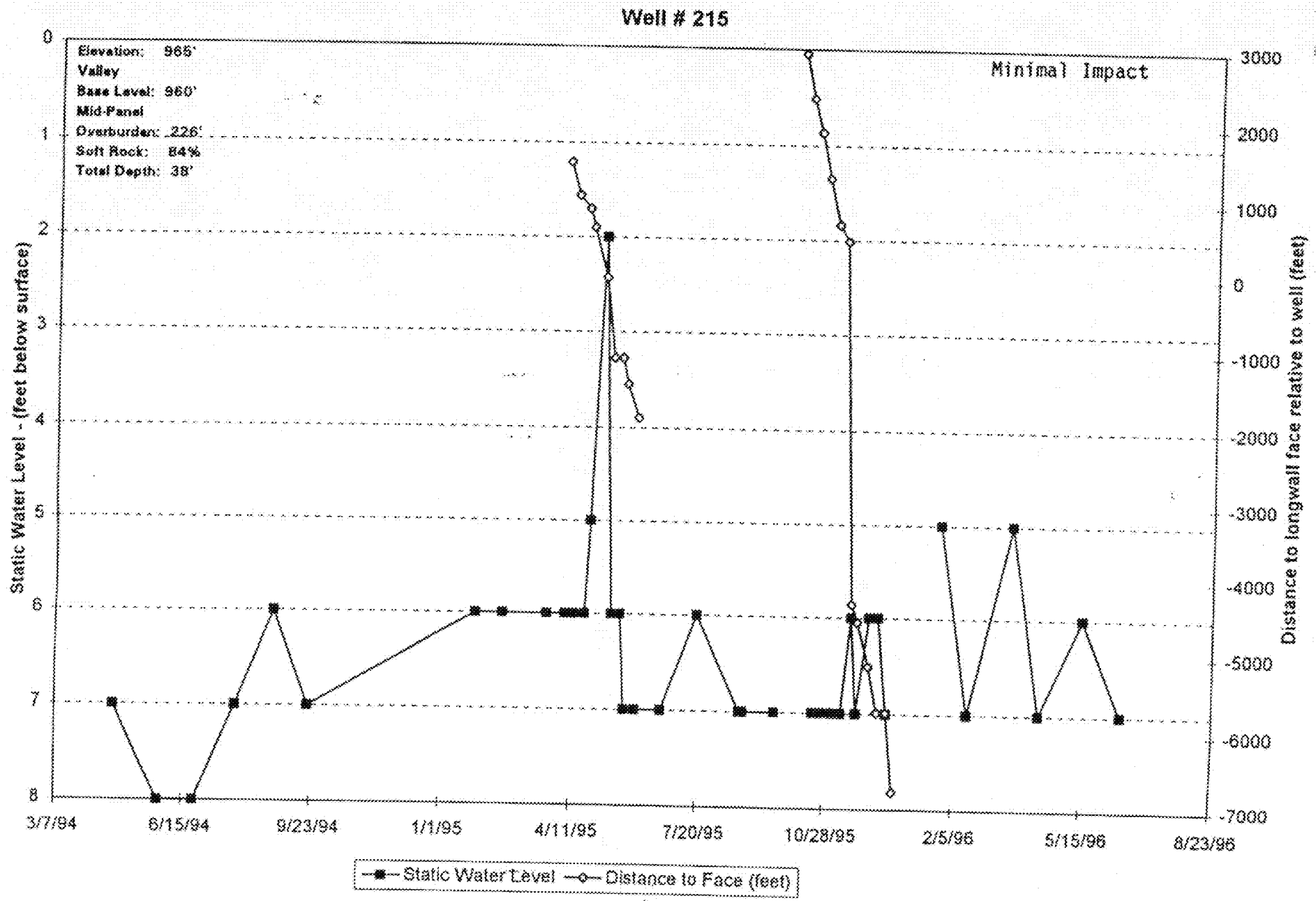
AEC 18518



Prepared by: Moody and Assoc., Inc. 4/13/97

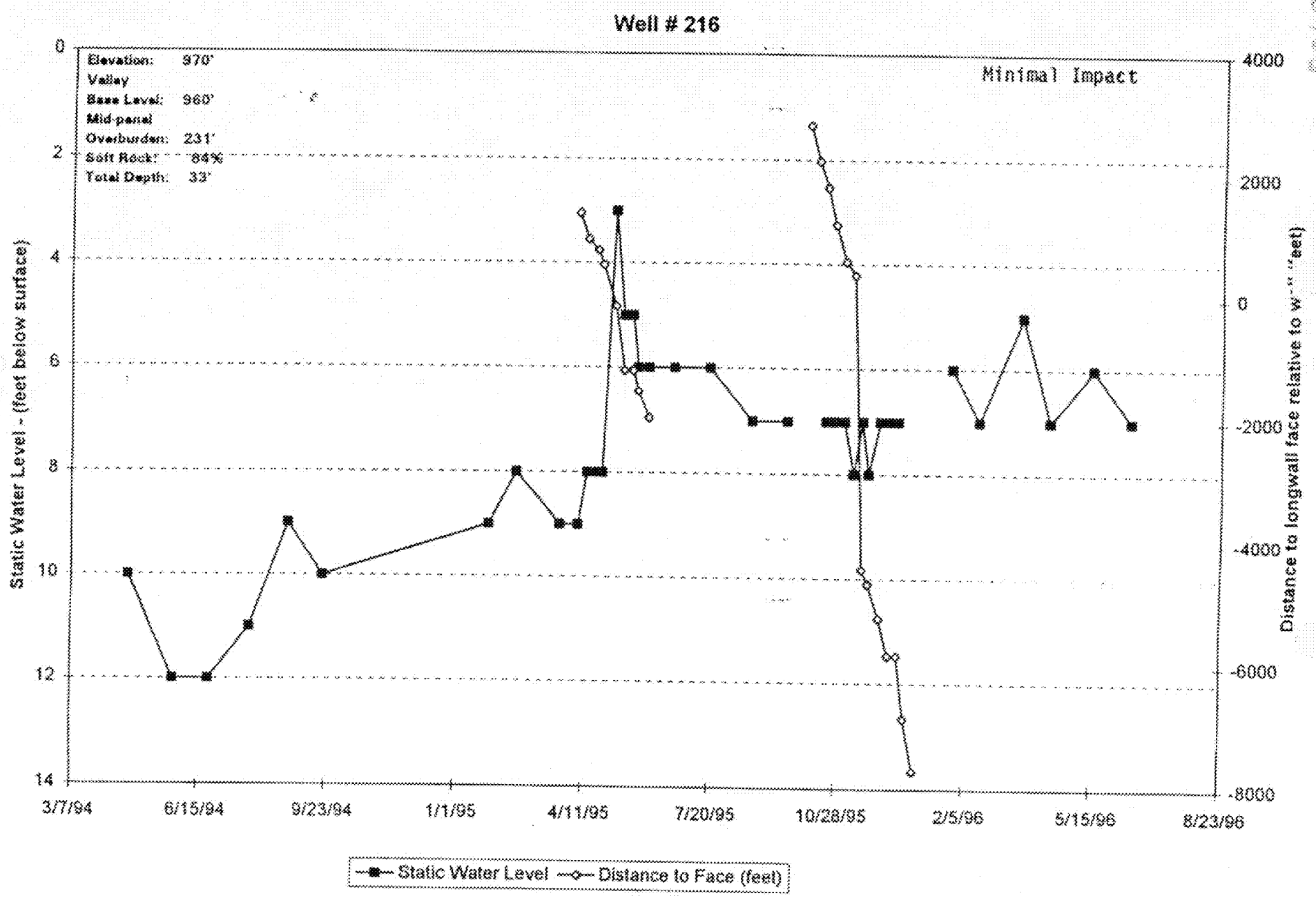


Prepared by: Moody and Assoc. Inc. 4/13/97

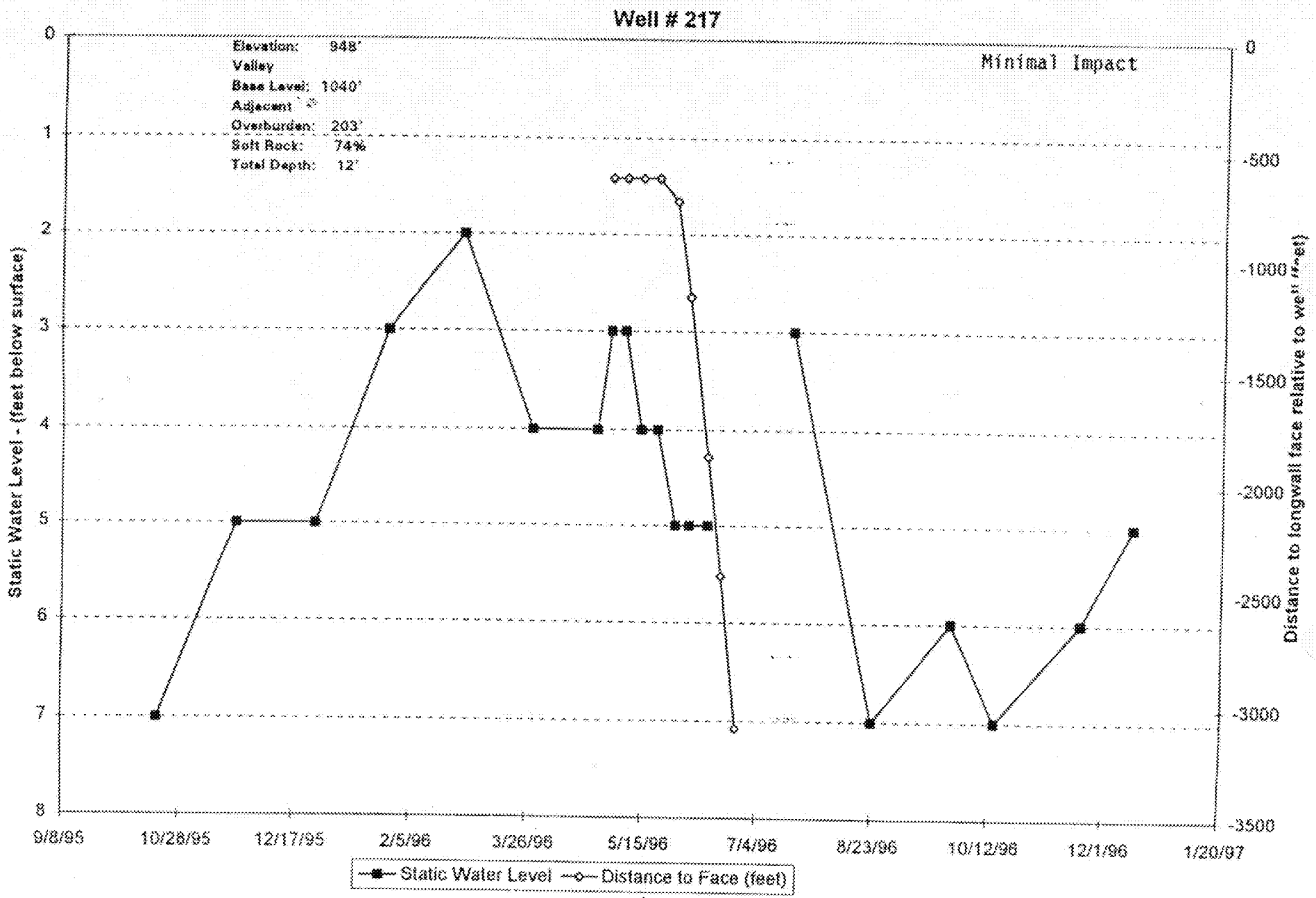


Prepared by: Moody and Assoc., Inc. 4/13/97

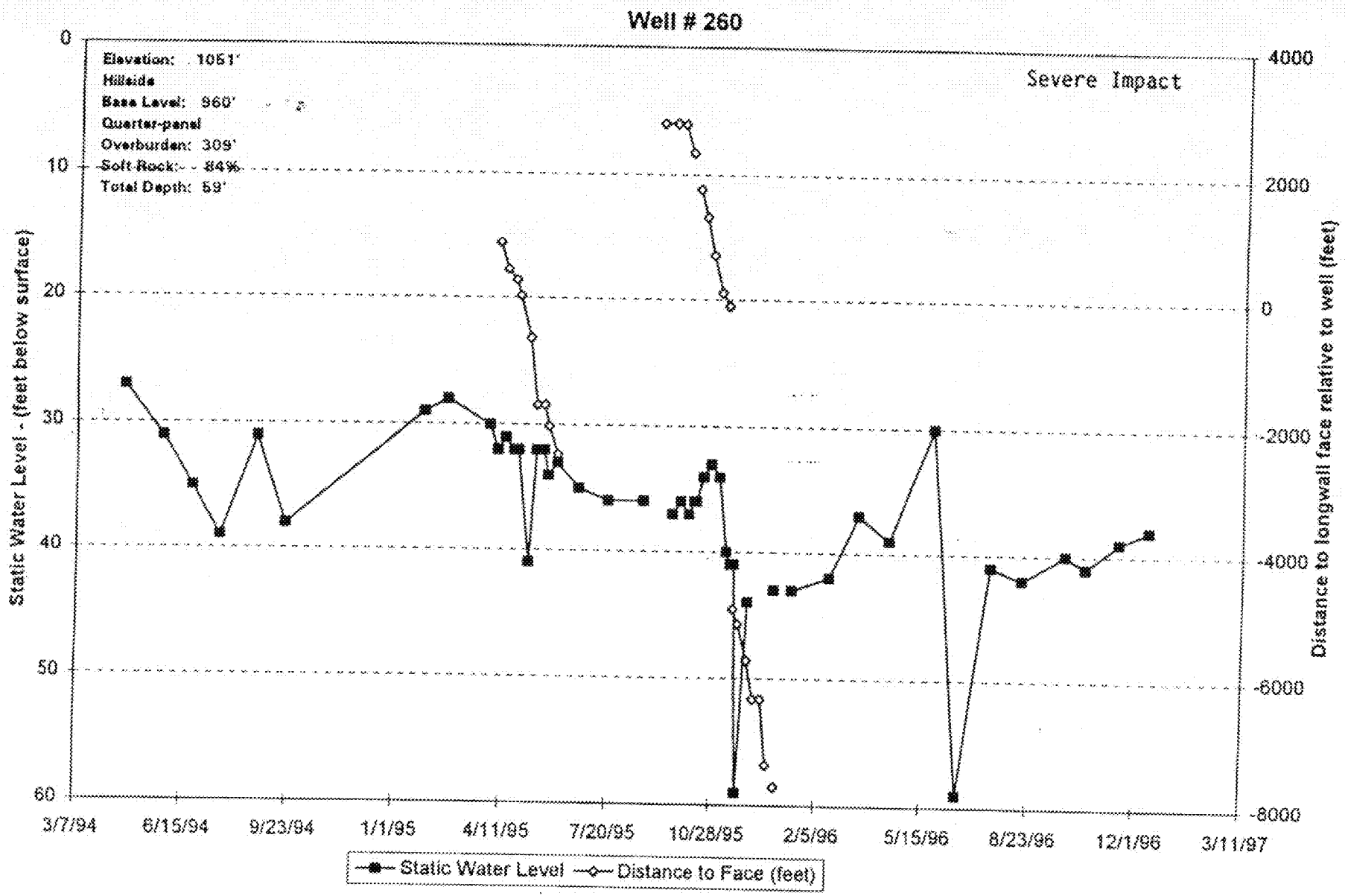
AEC 18521


Well # 216
Elevation: 970'
Valley
Base Level: 960'
Mid-panel
Overburden: 231'
Soft Rock: 84%
Total Depth: 33'
Minimal Impact
Static Water Level - (feet below surface)
Distance to longwall face relative to w-" "eet)
0
2
4
6
8
10
12
14
4000
2000
0
-2000
-4000
-6000
-8000
3/7/94
6/15/94
9/23/94
1/1/95
4/11/95
7/20/95
10/28/95
2/5/96
5/15/96
8/23/96
Static Water Level
Distance to Face (feet)

AEC 18522



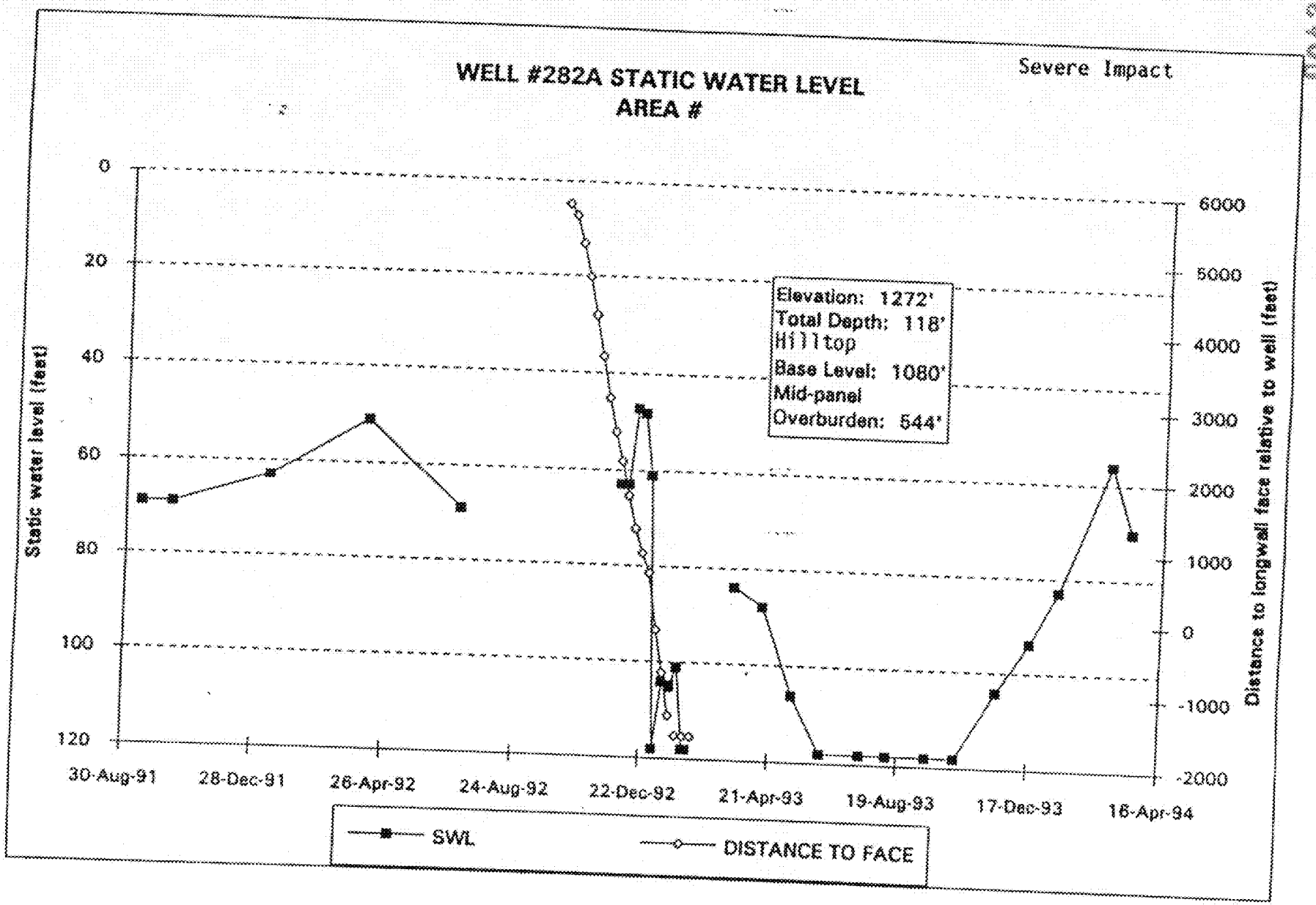
Prepared by: Moody and Assoc. Inc. 4/12/97



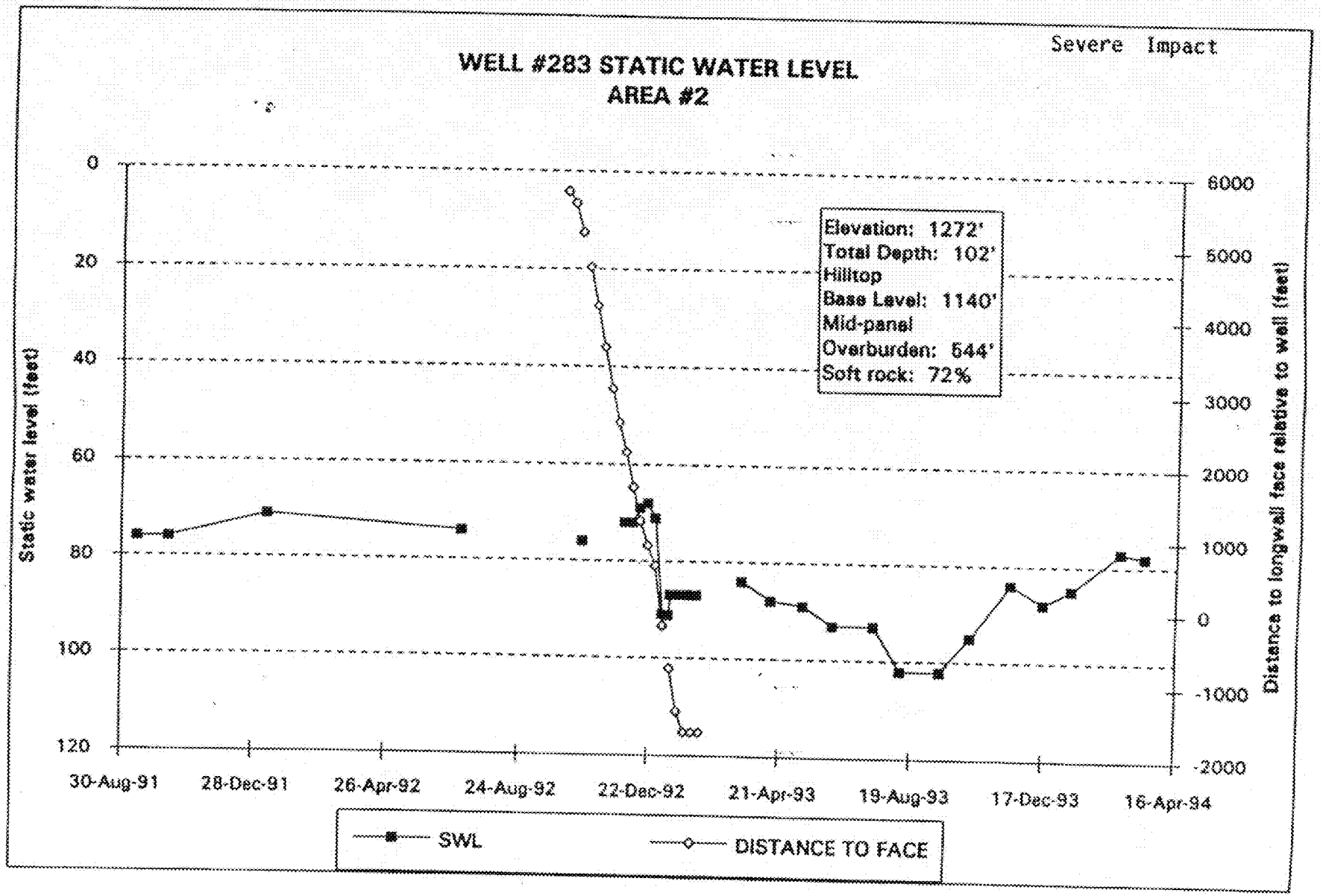
Prepared by: Moody and Assoc., Inc. 4/13/97

AEC 18524

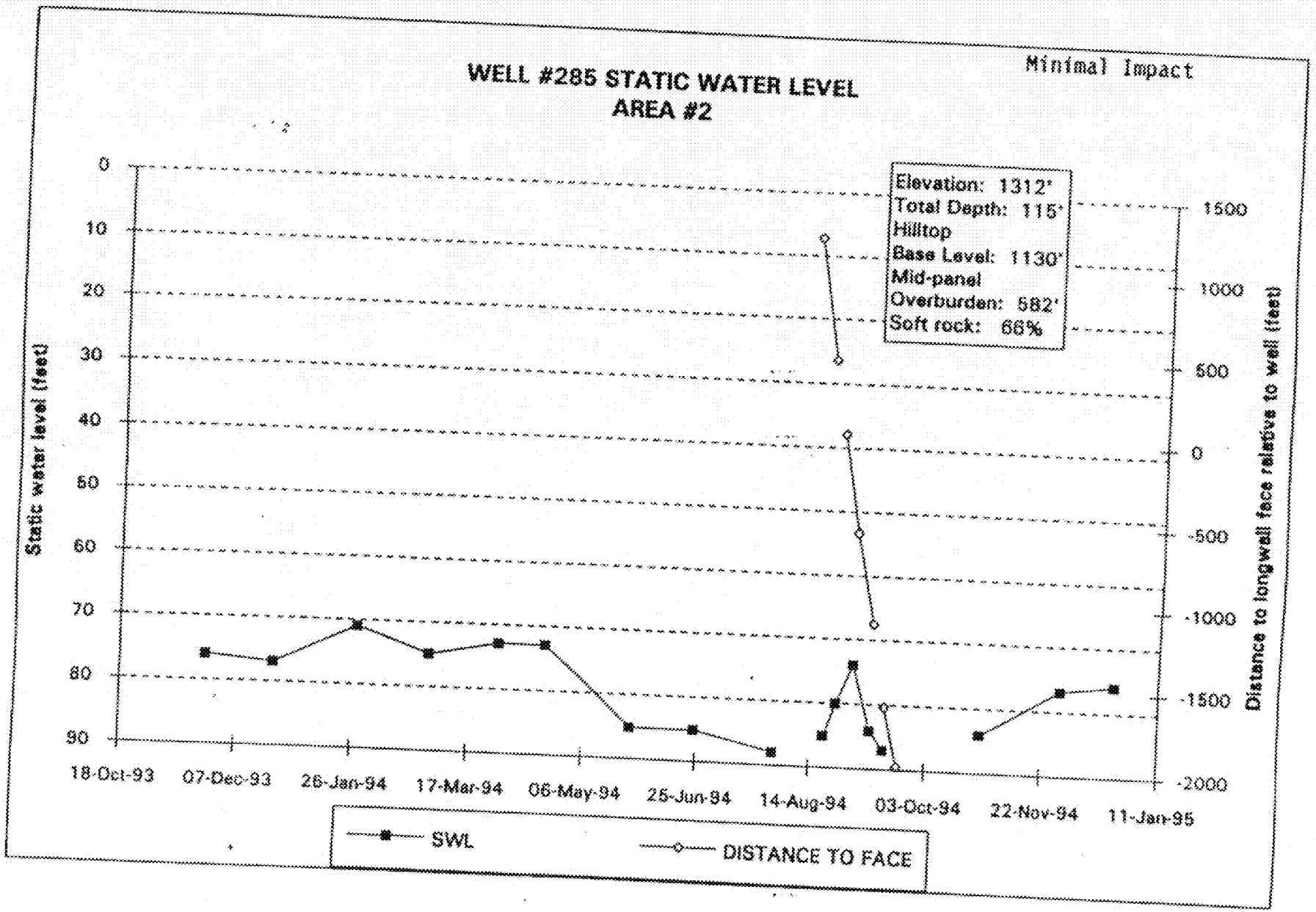
AEC 18525



00425-3


Severe Impact
WELL #283 STATIC WATER LEVEL
AREA #2
Elevation: 1272'
Total Depth: 102'
Hilltop
Base Level: 1140'
Mid-panel
Overburden: 544'
Soft rock: 72%
Static water level (feet)
0
20
40
60
80
100
120
Distance to longwall face relative to well (feet)
6000
5000
4000
3000
2000
1000
0
-1000
-2000
30-Aug-91
28-Dec-91
26-Apr-92
24-Aug-92
22-Dec-92
21-Apr-93
19-Aug-93
17-Dec-93
16-Apr-94
SWL
DISTANCE TO FACE

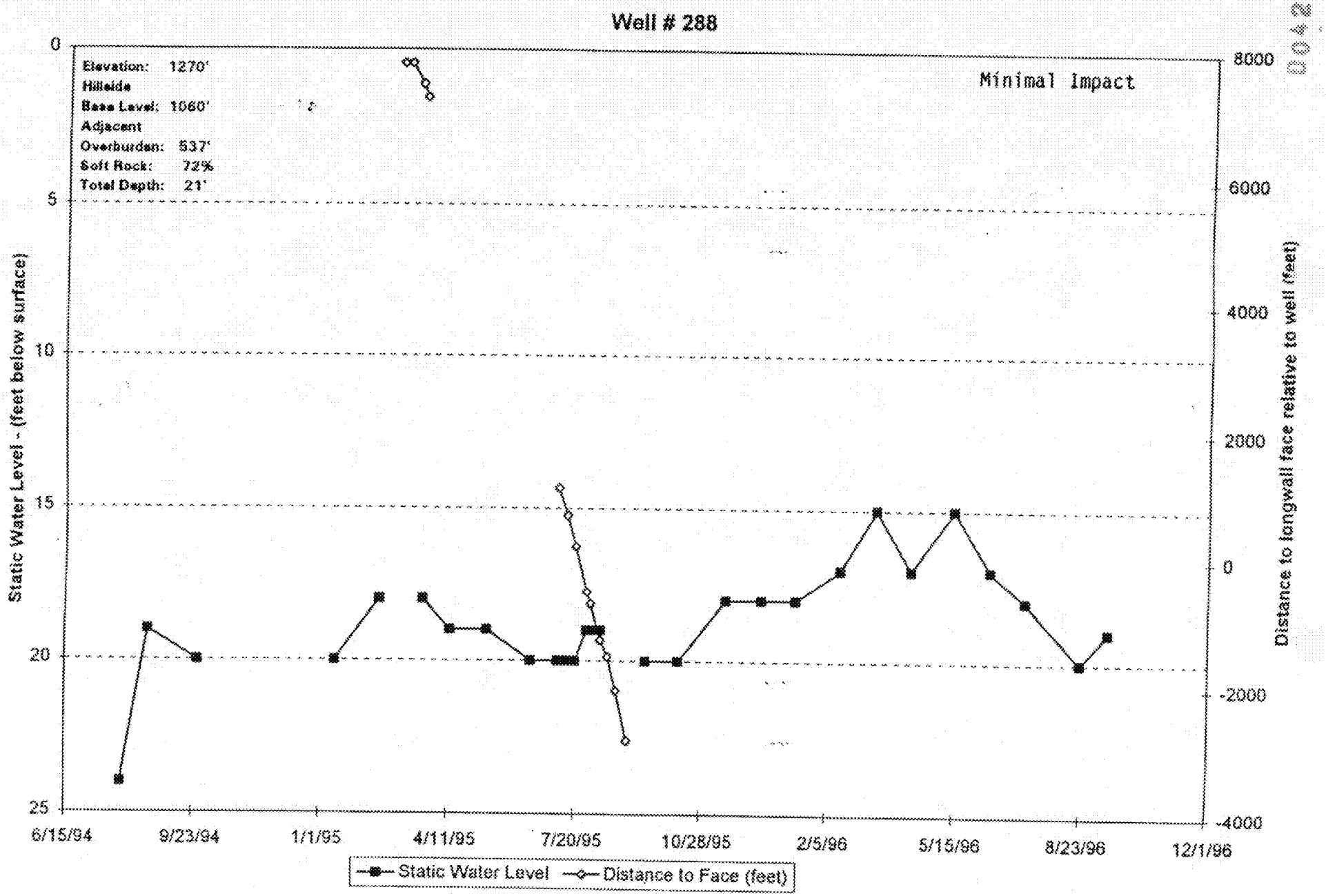
AEC 18526



ORIGINAL

D0425-3

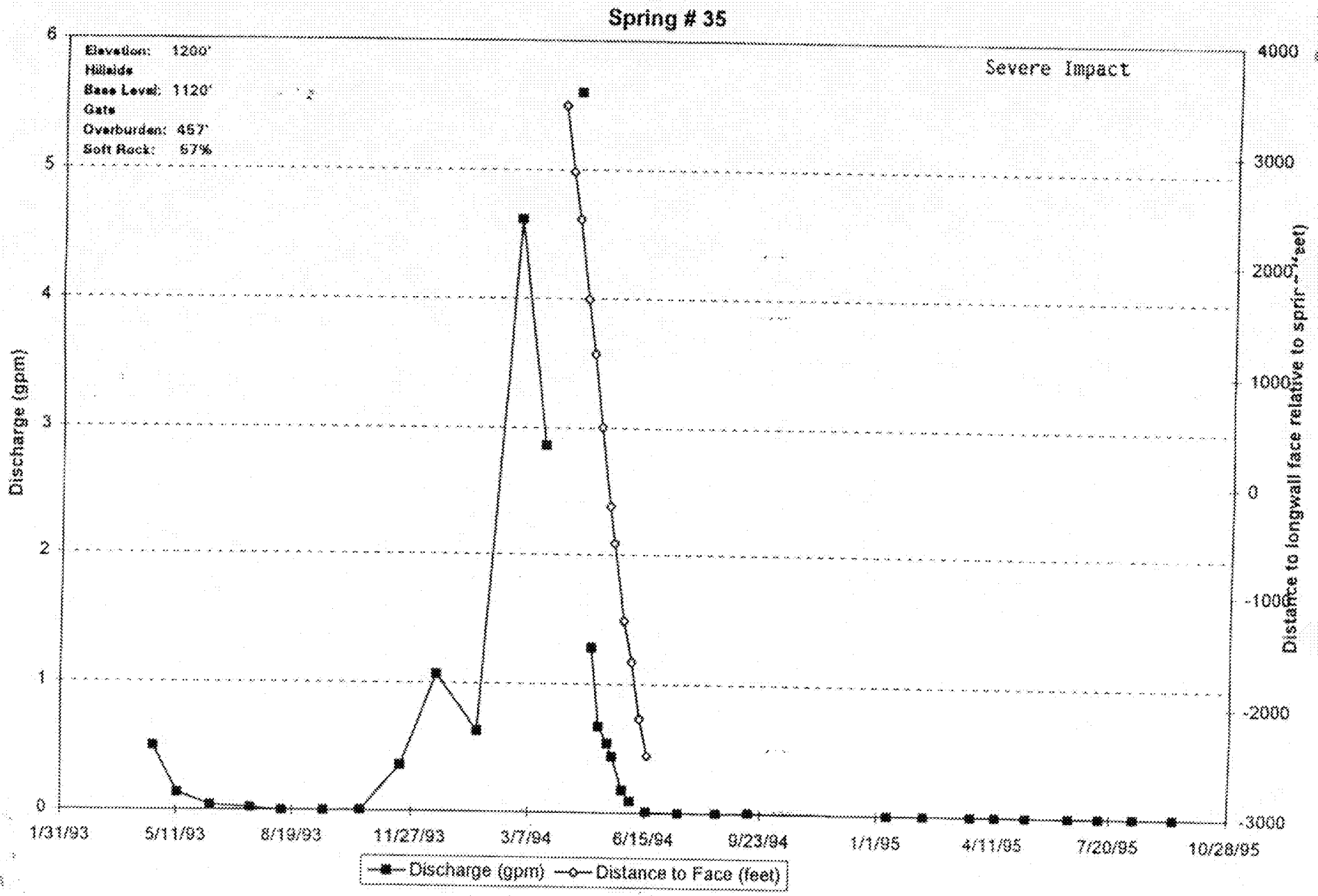
AEC 18527

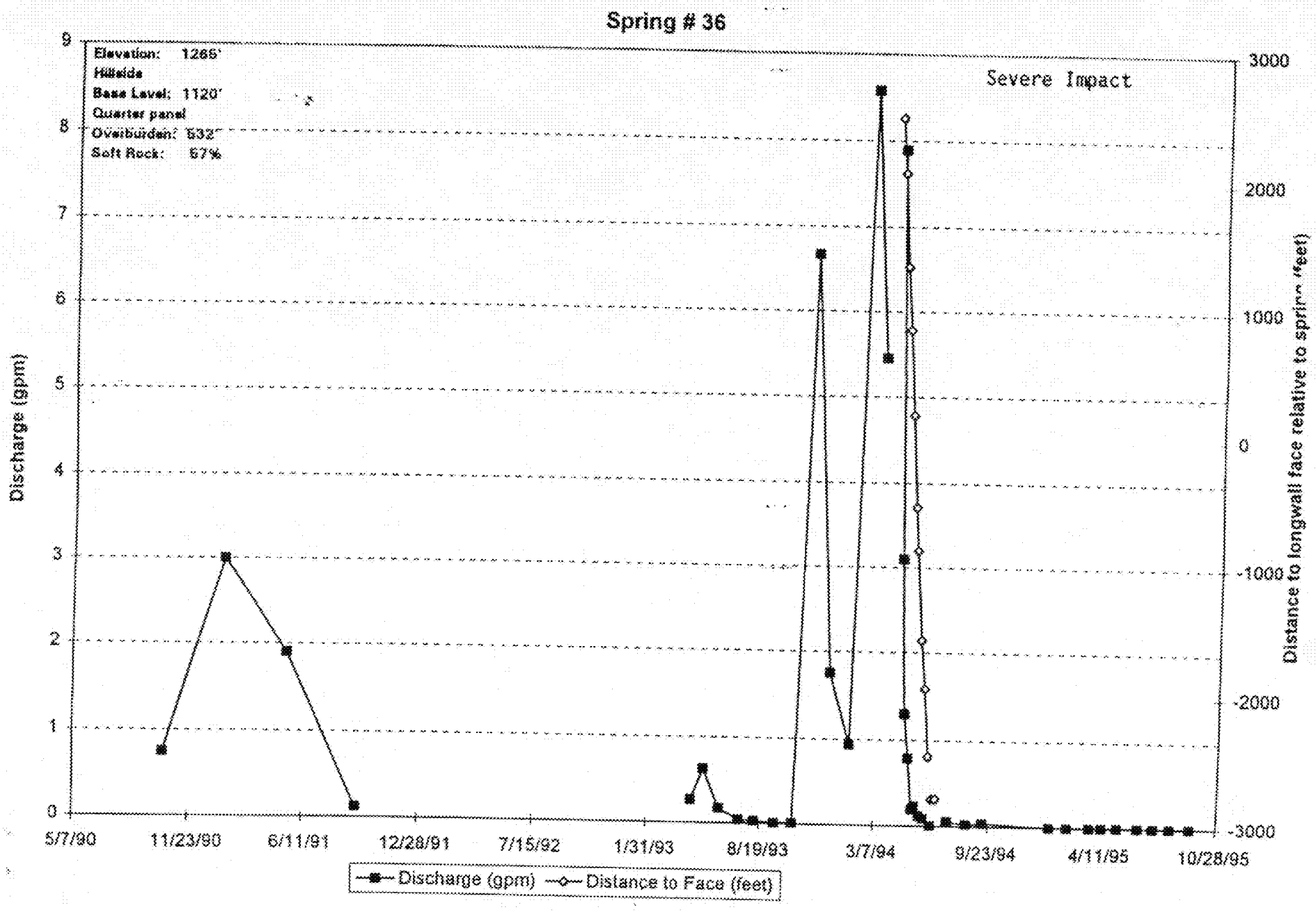


Prepared by: Moody and Assoc., Inc. 4/13/97

ORIGINAL

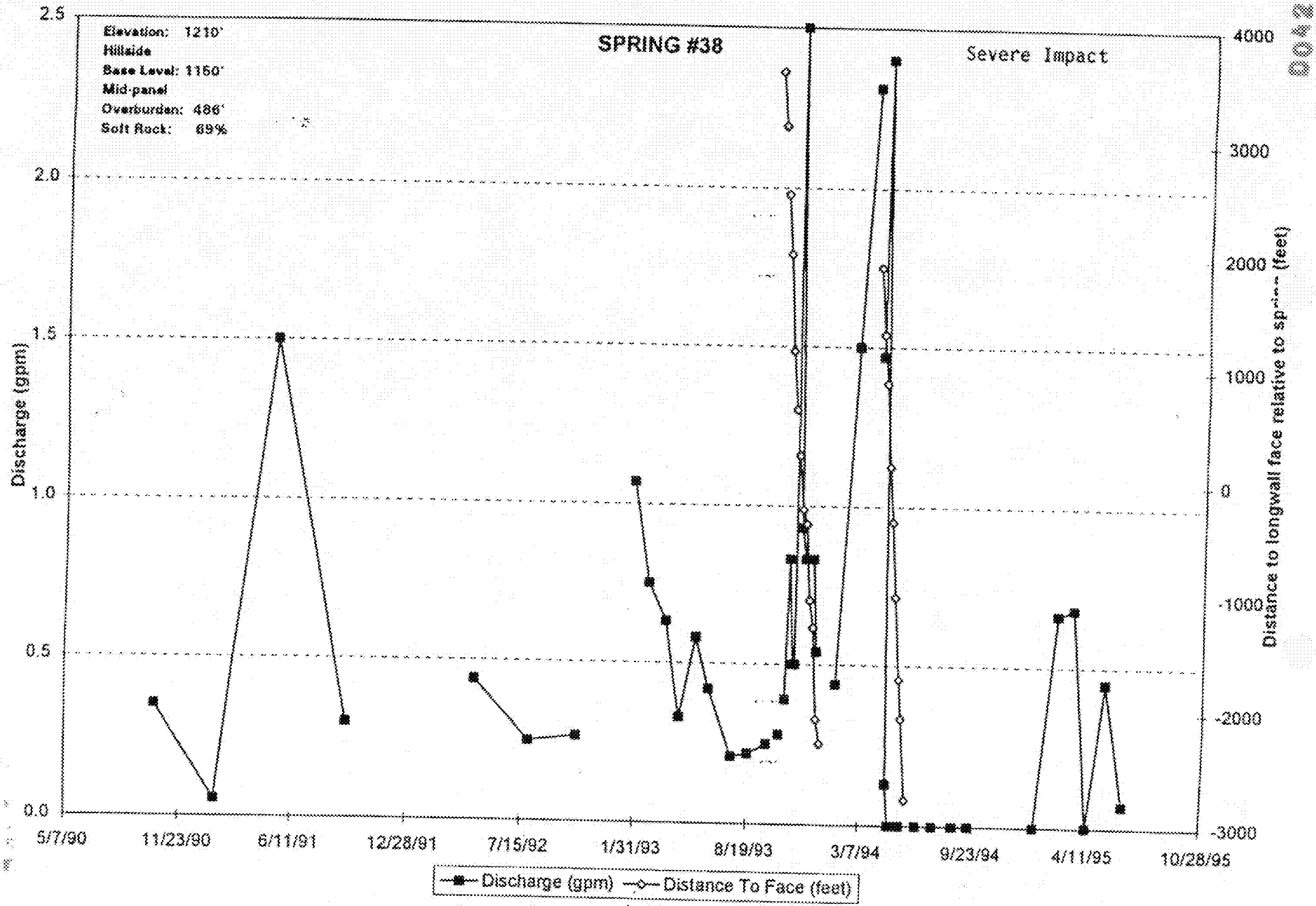
AEC 18528


Spring # 35
Elevation: 1200'
Hillside
Base Level: 1120'
Gate
Overburden: 467'
Soft Rock: 57%
Severe Impact
Discharge (gpm)
Distance to longwall face relative to spring (feet)
0
1
2
3
4
5
6
4000
3000
2000
1000
0
-1000
-2000
-3000
1/31/93
5/11/93
8/19/93
11/27/93
3/7/94
6/15/94
9/23/94
1/1/95
4/11/95
7/20/95
10/28/95
Discharge (gpm)
Distance to Face (feet)



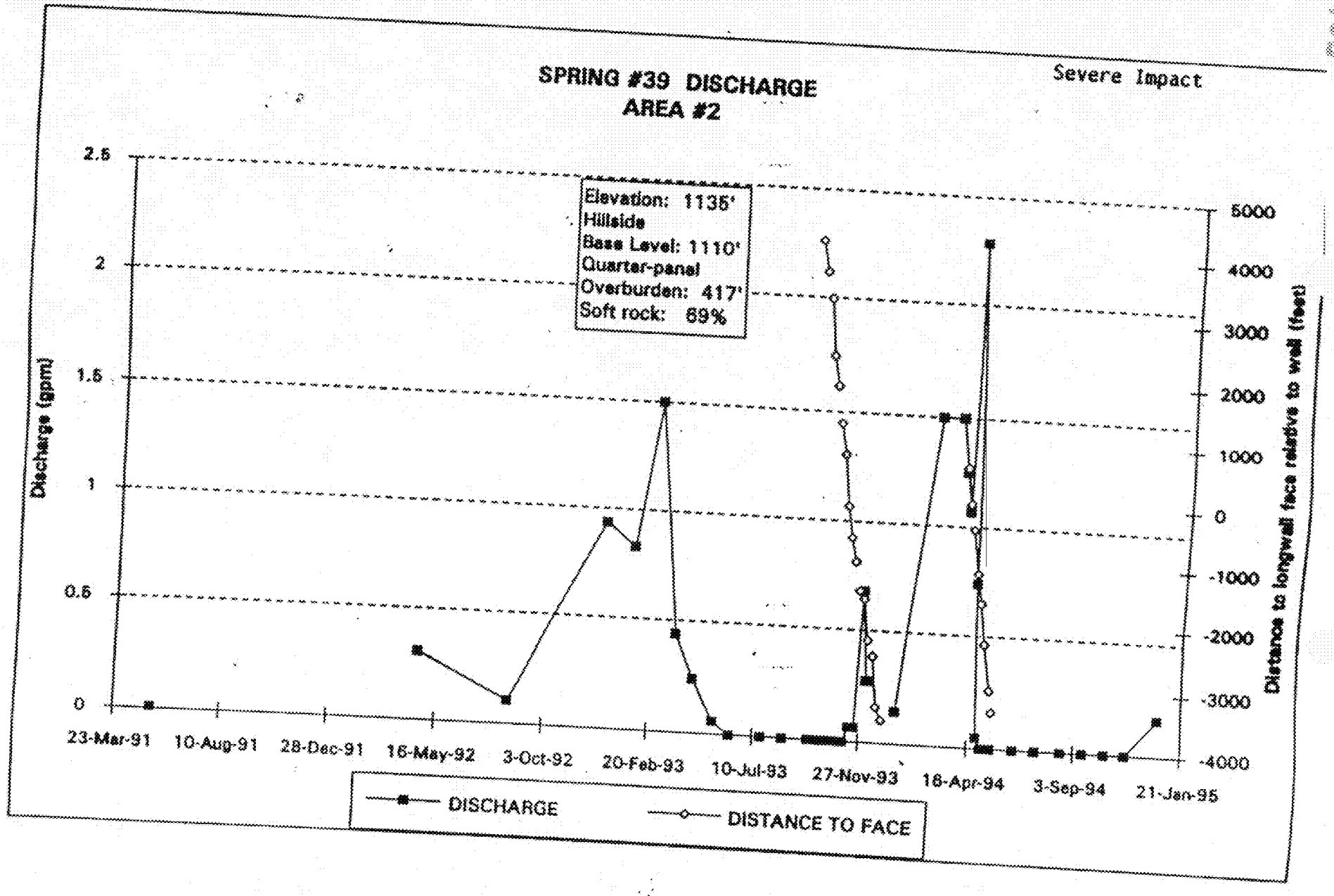
Prepared by: Moody and Assoc., Inc. 4/14/97

AEC 185300



Prepared by: Moody and Assoc. Inc. 4/12/97

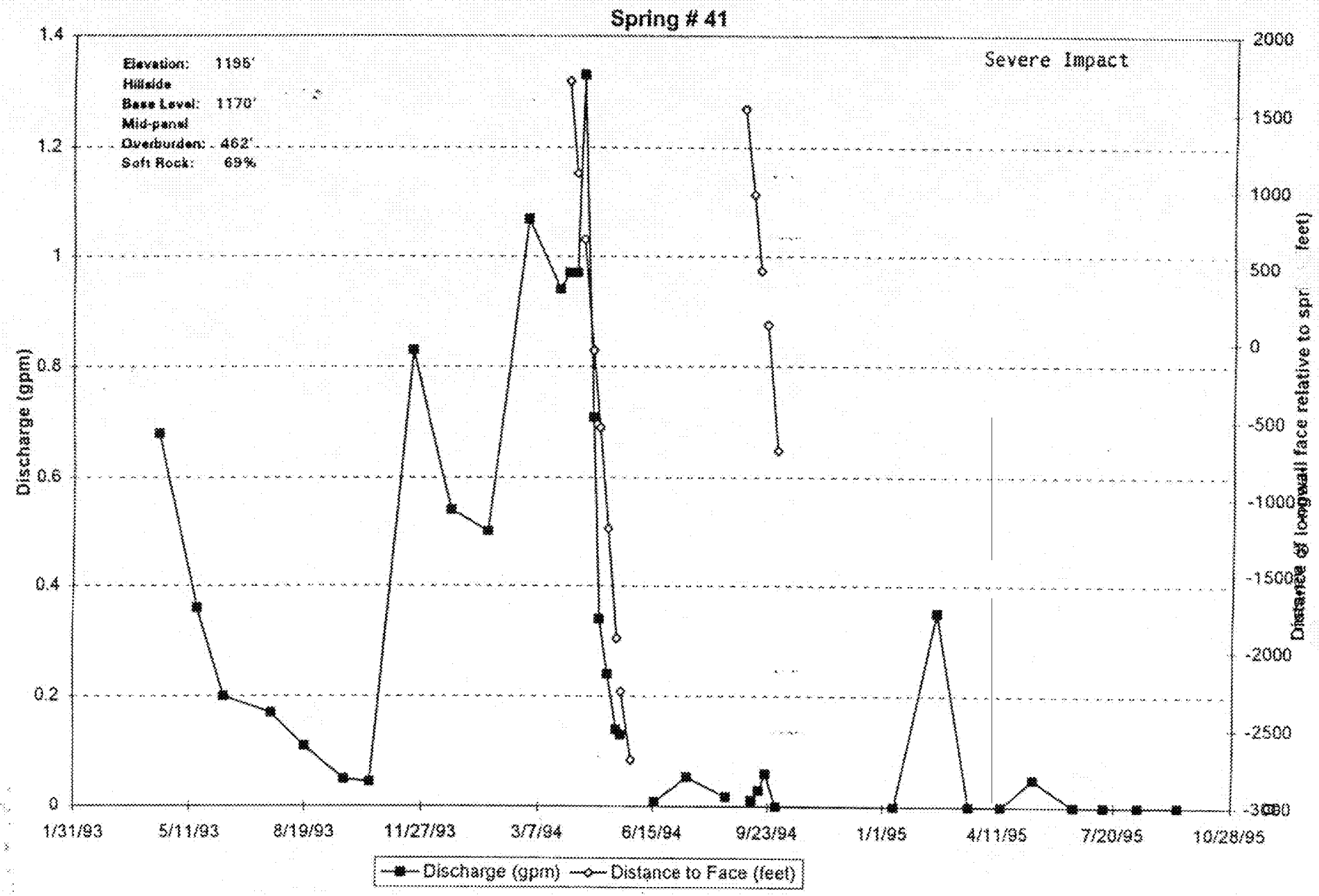
AEC 18531



ORIGINAL

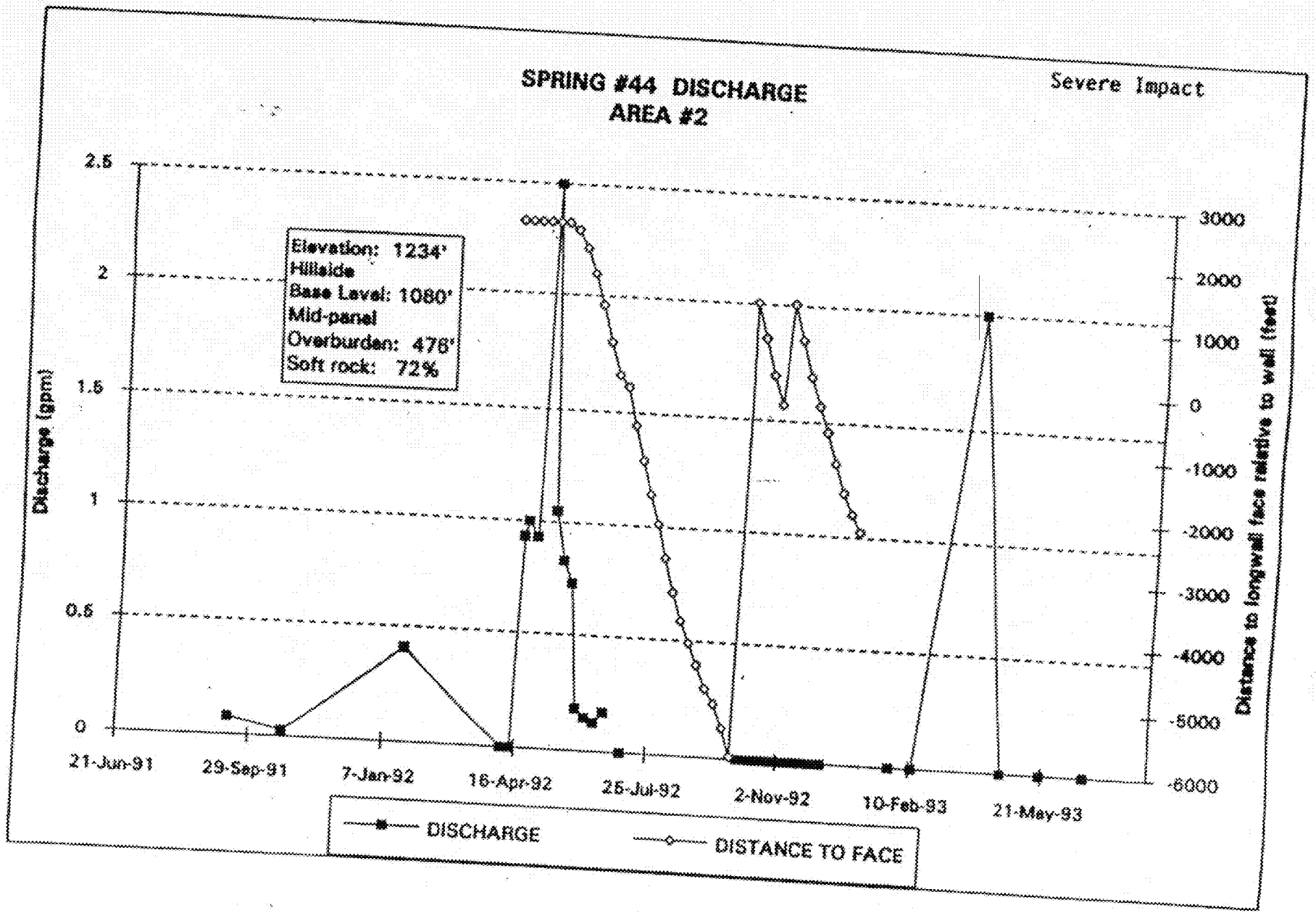
00425-3

AEC 185332

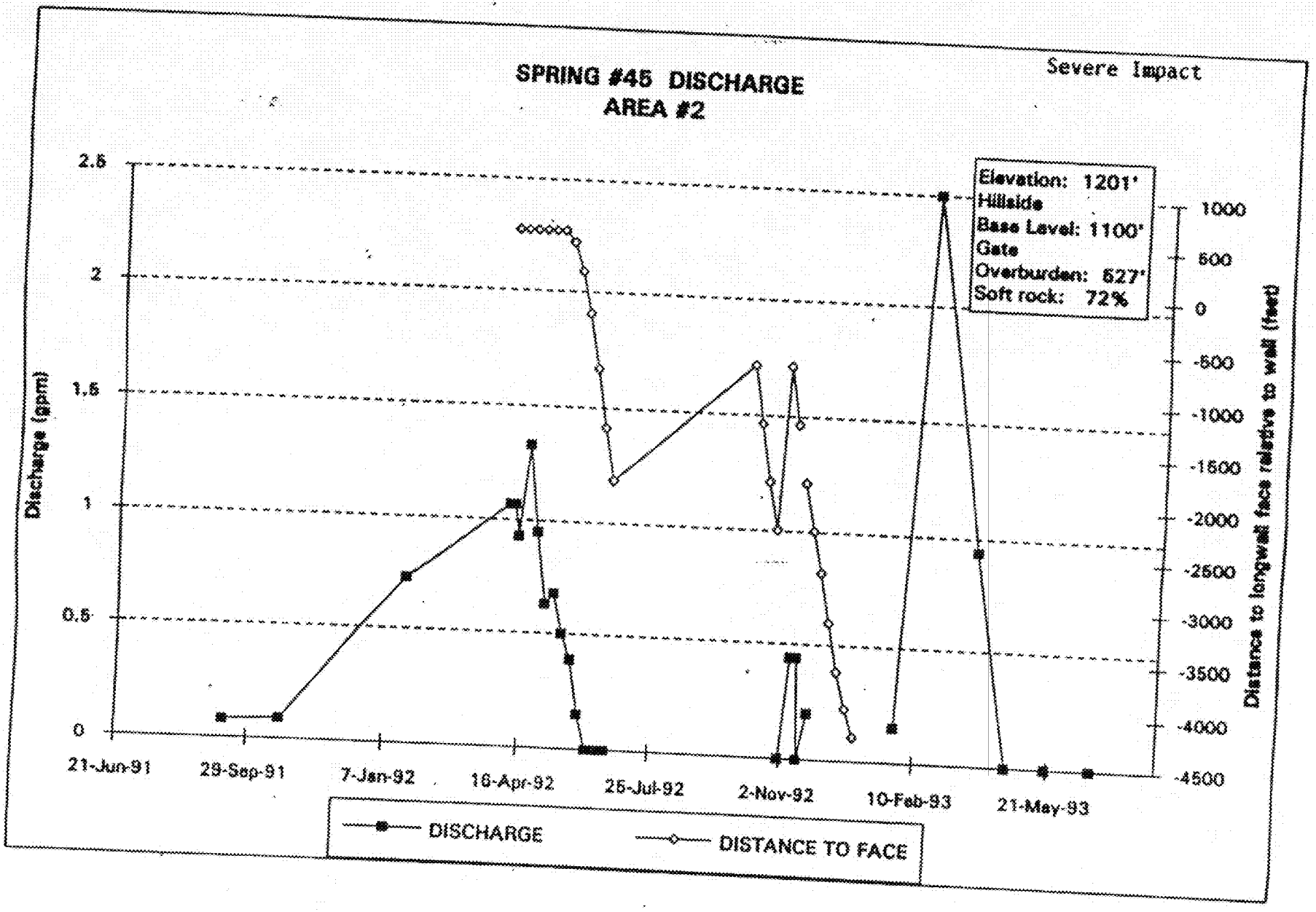


Prepared by: Moody and Assoc., Inc. 4/13/97

AEC 185333

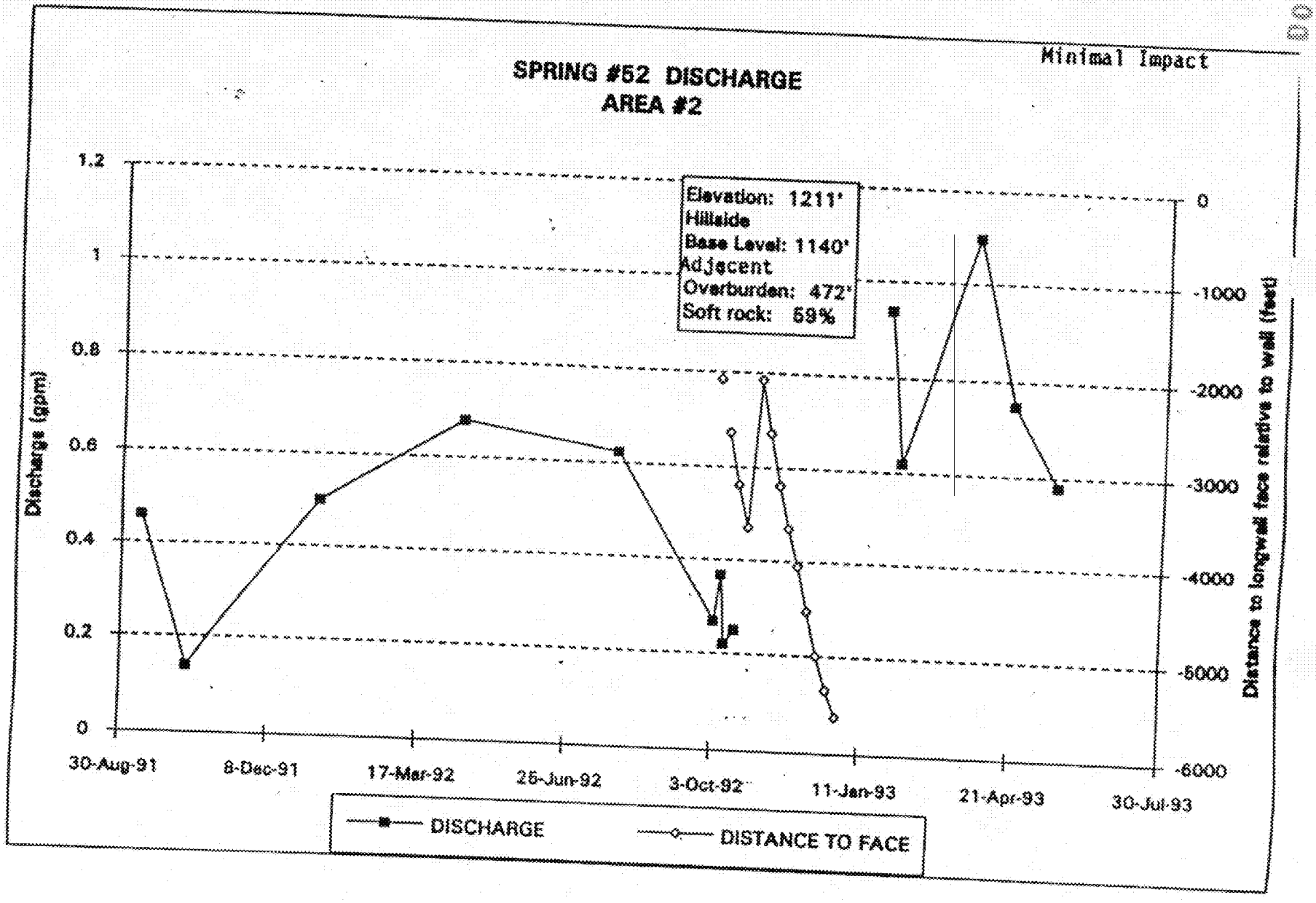

SPRING #44 DISCHARGE
AREA #2
Severe Impact
Elevation: 1234'
Hillside
Base Level: 1080'
Mid-panel
Overburden: 478'
Soft rock: 72%
Discharge (gpm)
2.5
2
1.5
1
0.5
0
Distance to longwall face relative to wall (feet)
3000
2000
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
21-Jun-91
29-Sep-91
7-Jan-92
16-Apr-92
25-Jul-92
2-Nov-92
10-Feb-93
21-May-93
DISCHARGE
DISTANCE TO FACE

AEC 185344


SPRING #45 DISCHARGE
AREA #2
Severe Impact
Elevation: 1201'
Hillside
Base Level: 1100'
Gate
Overburden: 627'
Soft rock: 72%
Discharge (gpm)
2.5
2
1.5
1
0.5
0
Distance to longwall face relative to wall (feet)
1000
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
-4500
21-Jun-91
29-Sep-91
7-Jan-92
16-Apr-92
25-Jul-92
2-Nov-92
10-Feb-93
21-May-93
DISCHARGE
DISTANCE TO FACE

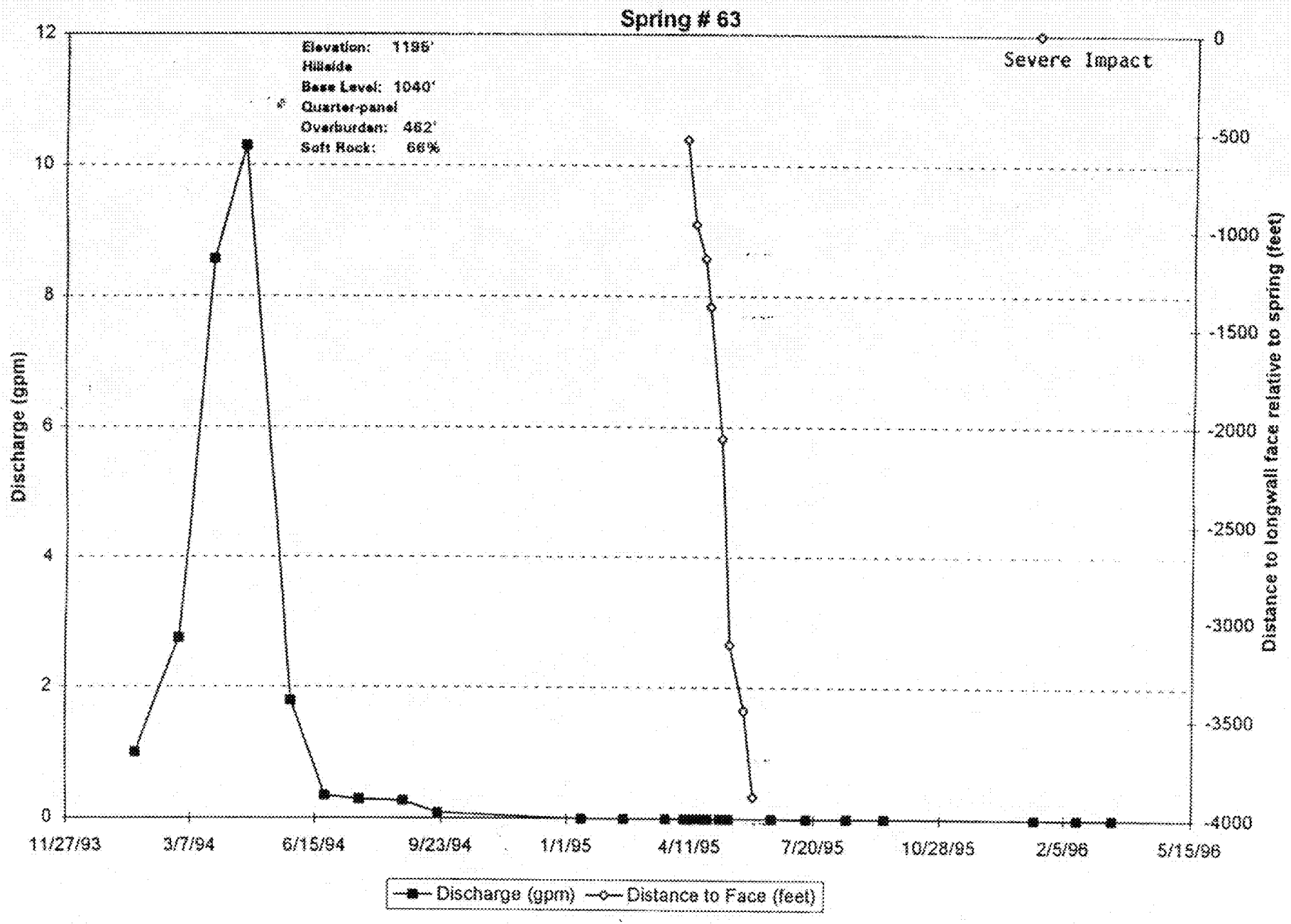
AEC 185335

Minimal Impact



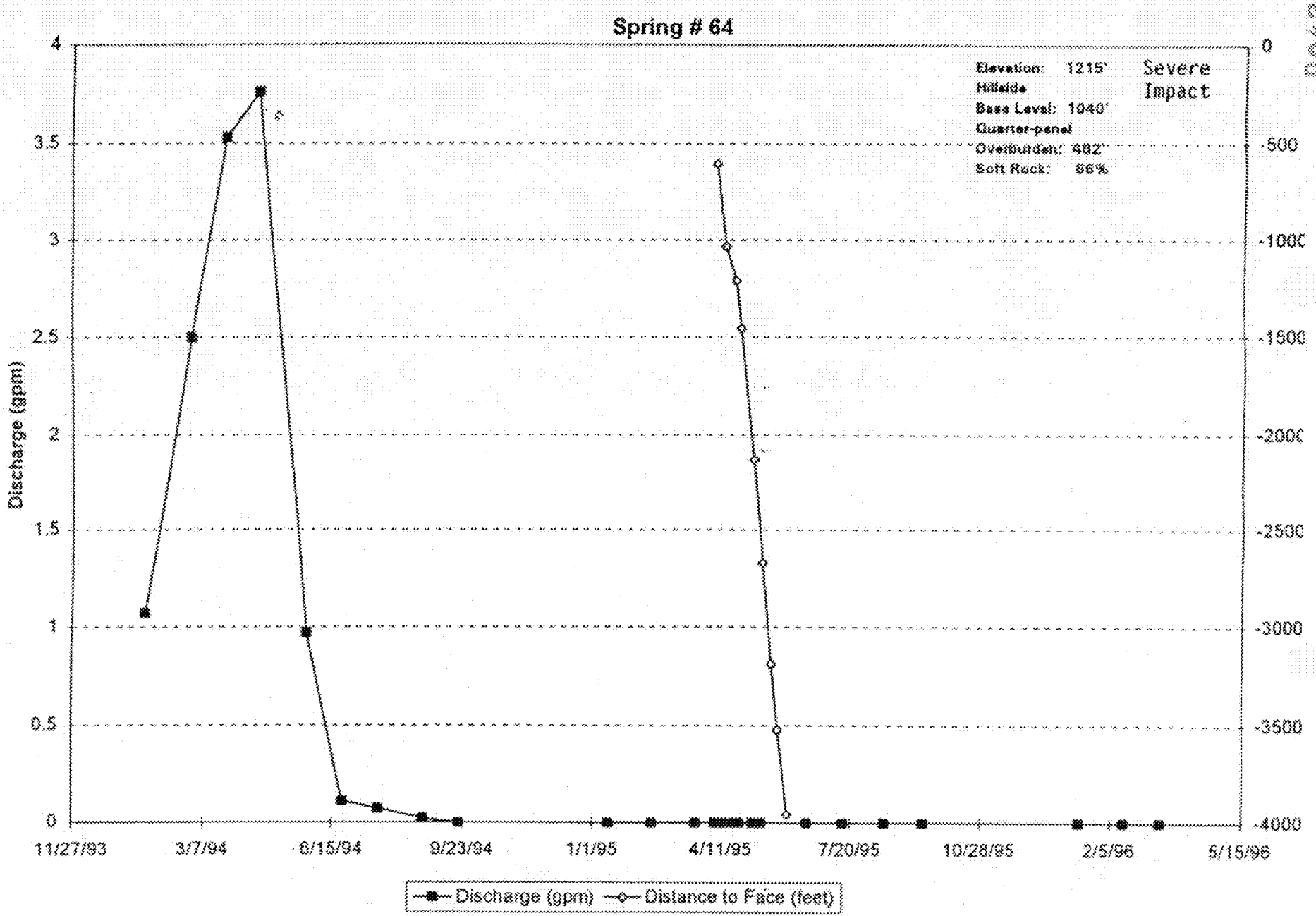
ORIGINAL

AEC 185336



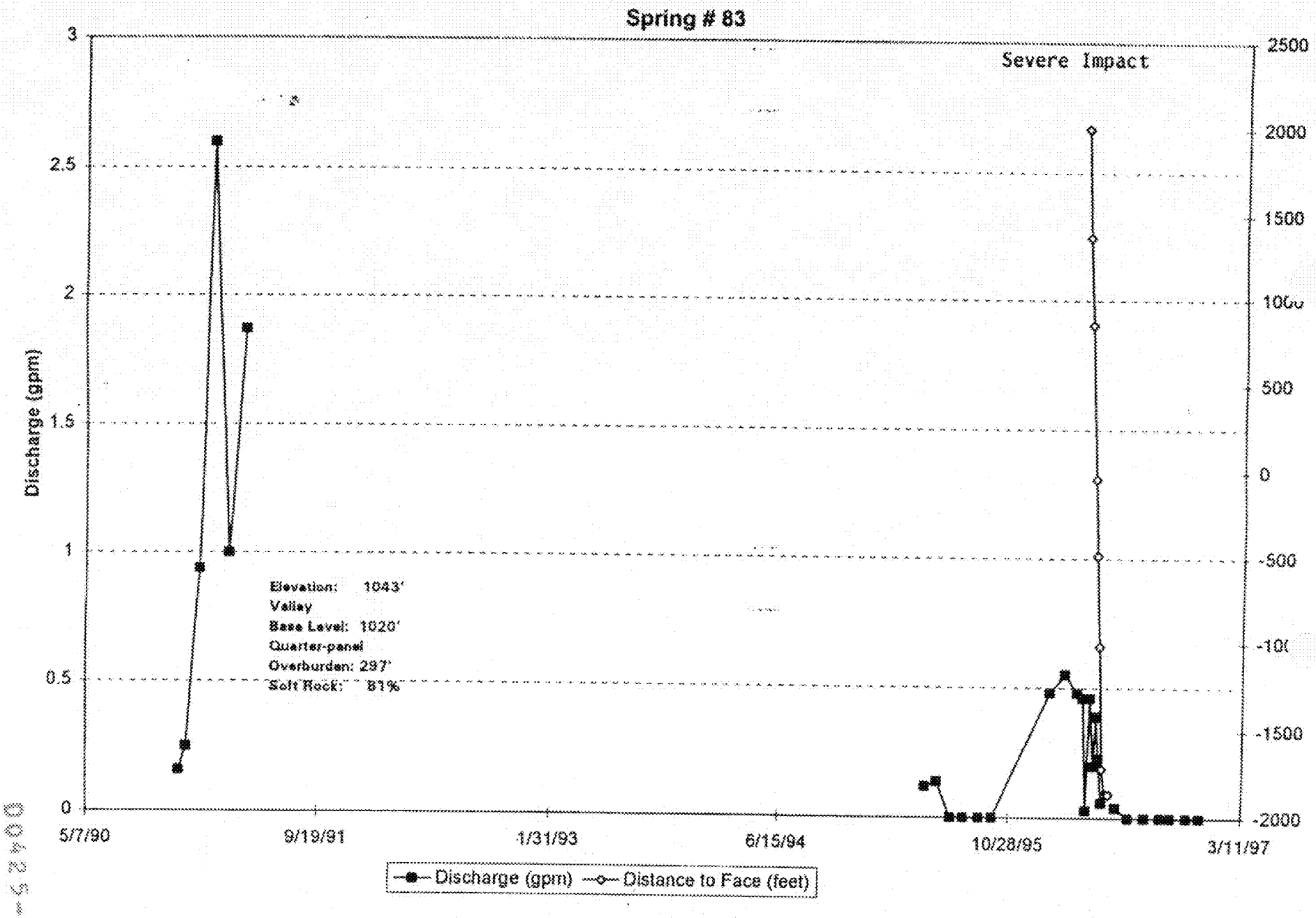
Prepared by: Moody and Assoc., Inc. 4/13/9

AEC 18537



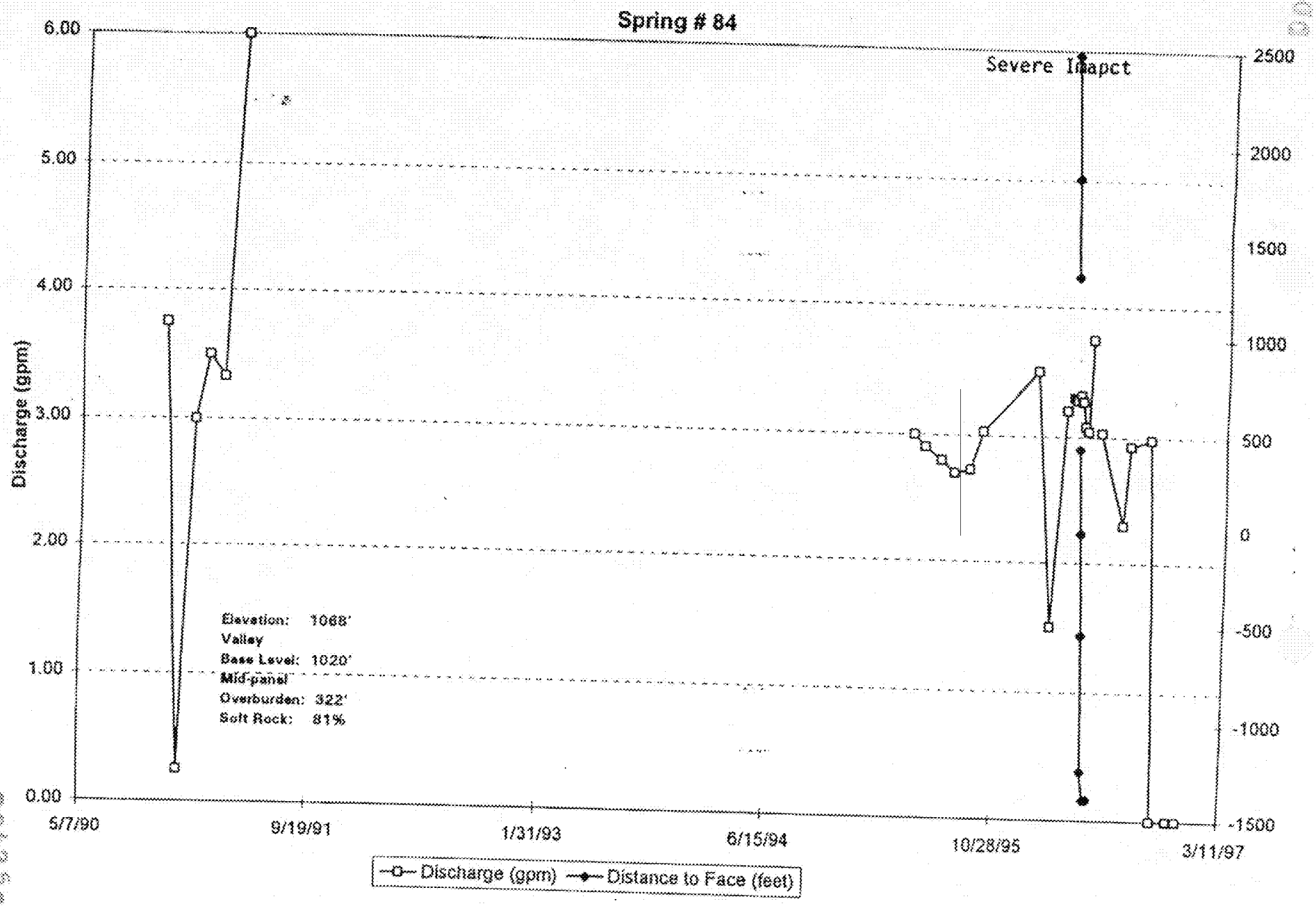
Prepared by: Moody and Assoc., Inc. 4/13/97

AEC 185388



Prepared by: Moody and Assoc., Inc. 4/13/97

ORIGINAL
00425-3
AEC 18539
00425-3

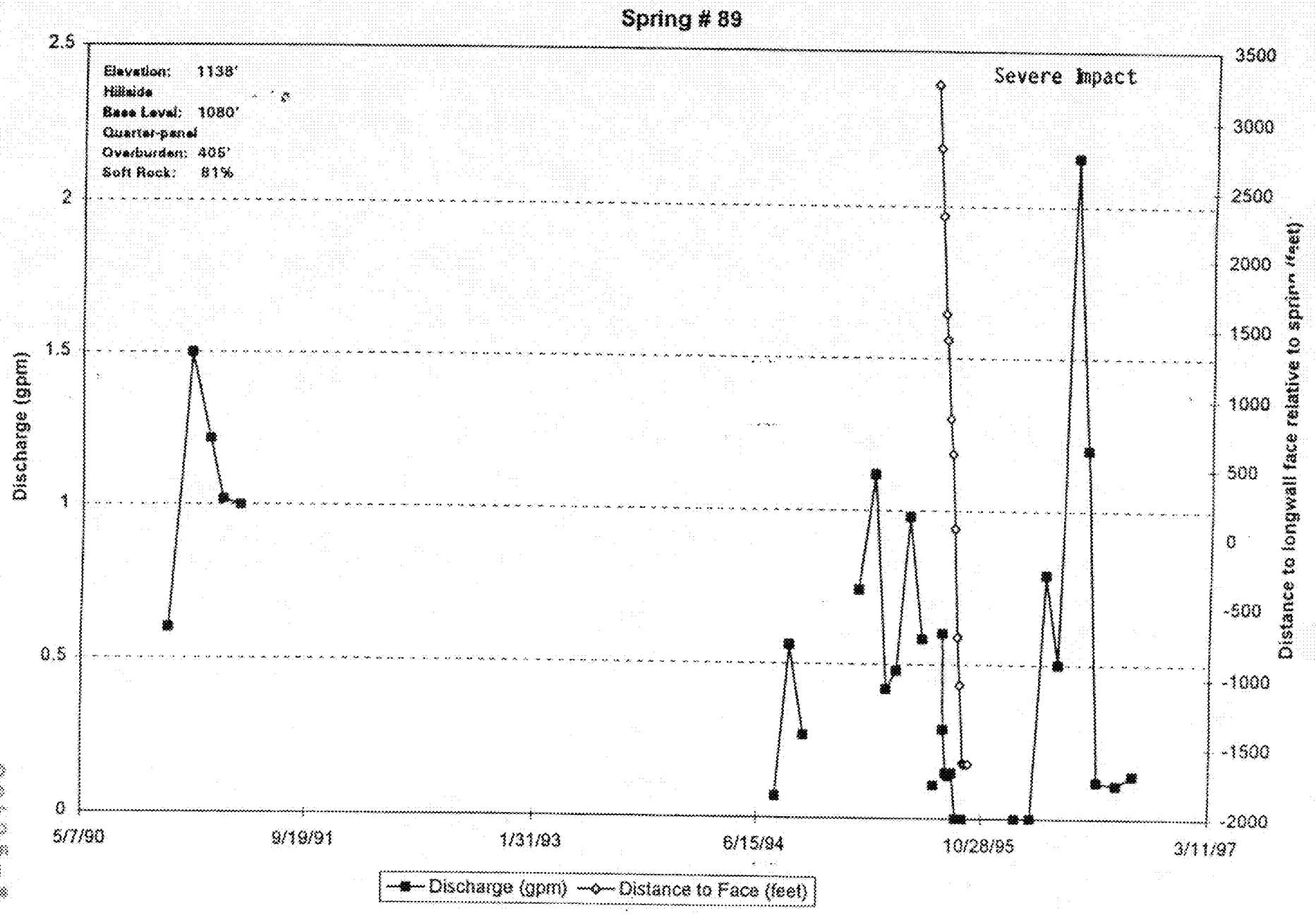


Prepared by: Moody and Assoc, Inc.

ORIGINAL

00425-3

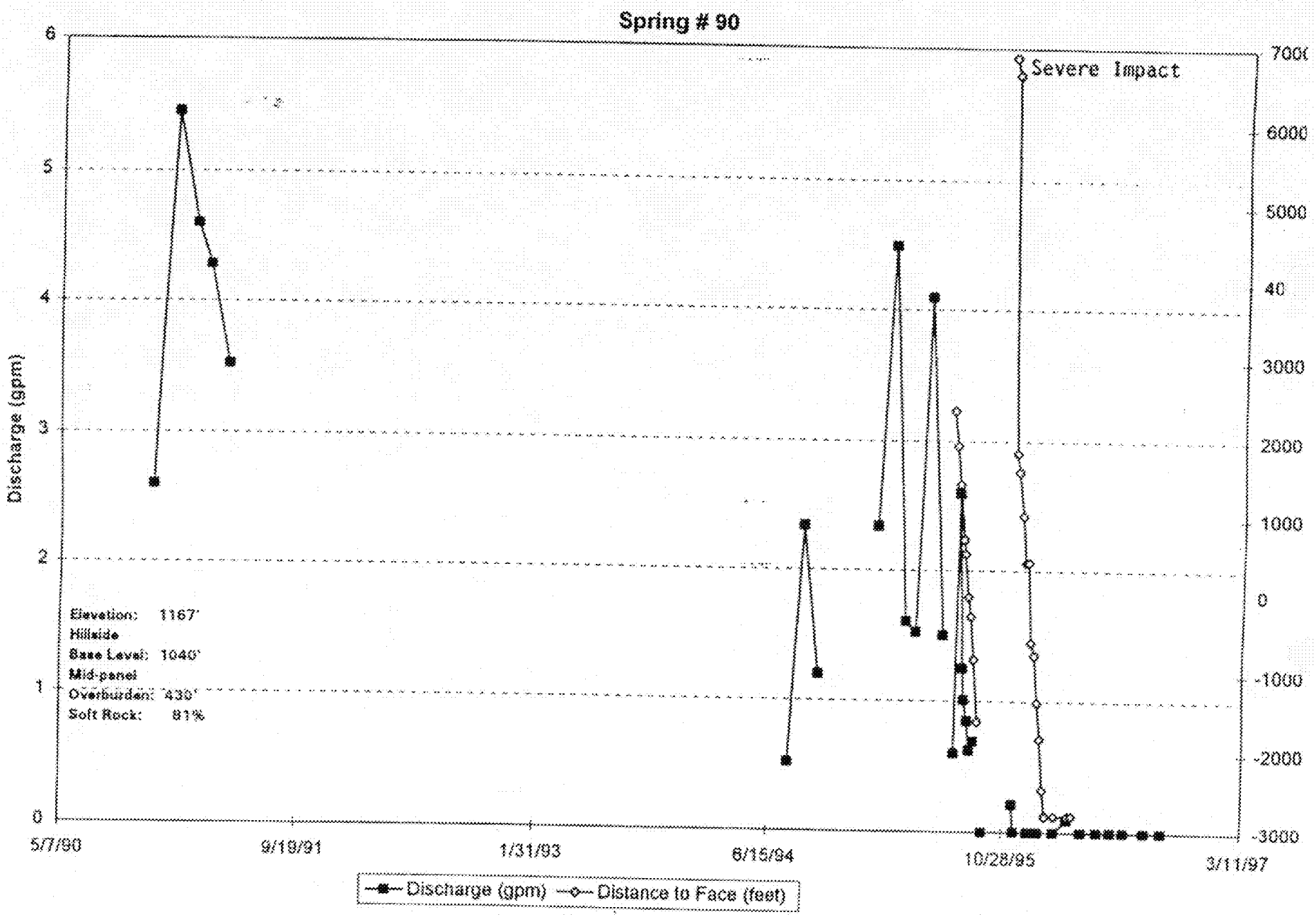
AEC 18540



ORIGINAL

00425-3

AEC 18541

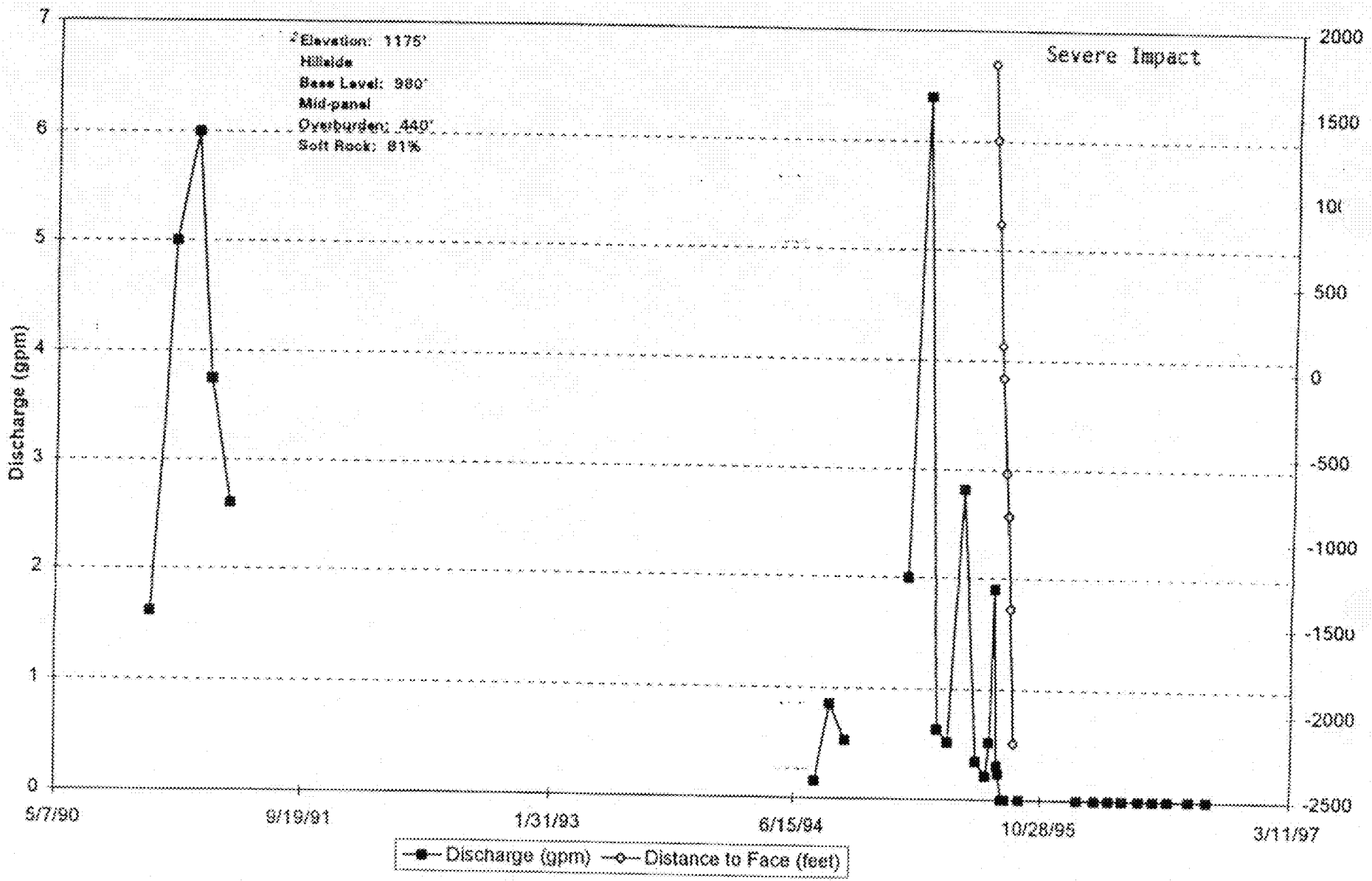


Prepared by: Moody and Assoc. Inc. 4/13/97

AEC 18542

D0425-3

Spring # 92

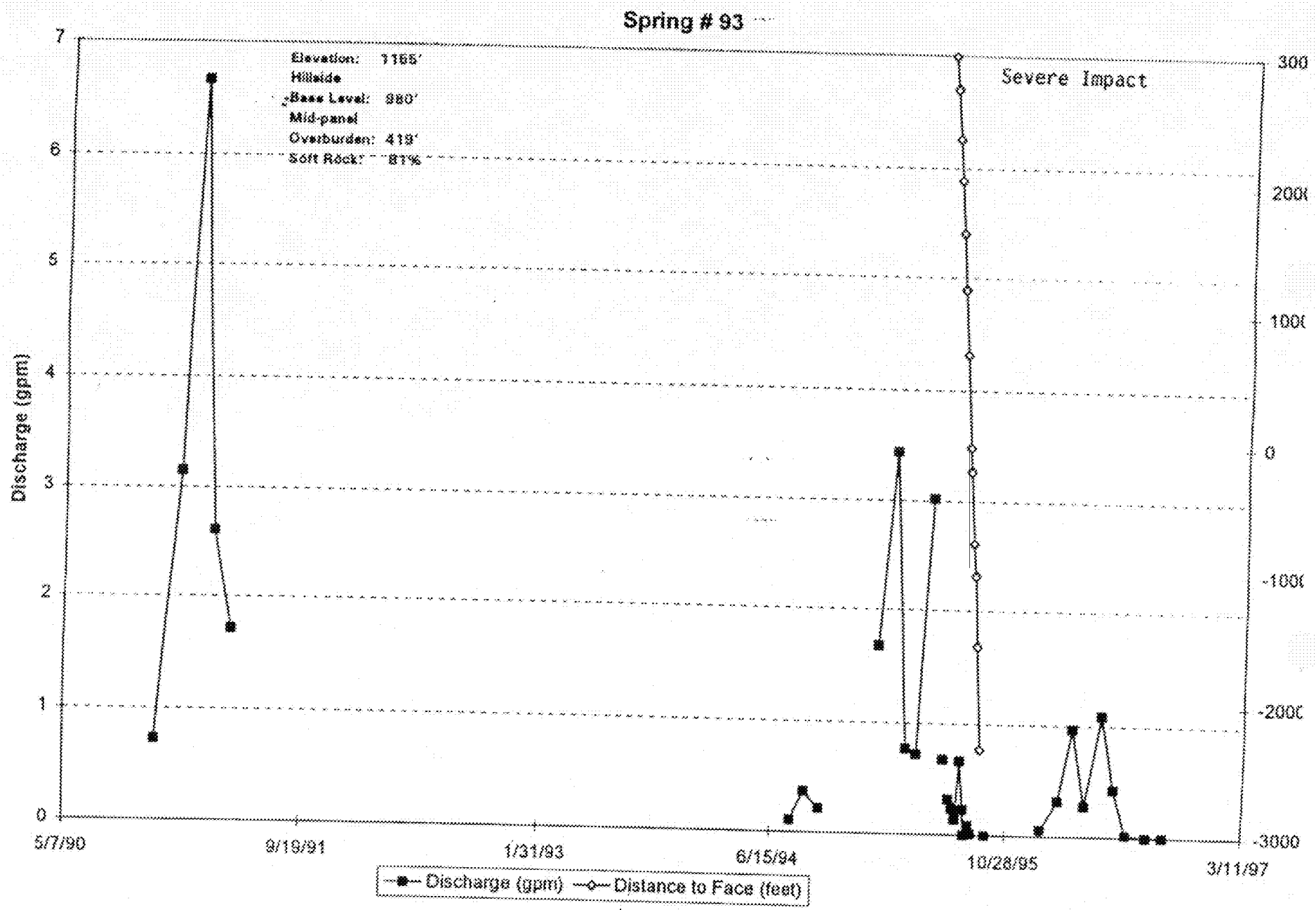


Prepared by: Moody and Assoc., Inc. 4/13/97

ORIGINAL

D0425-3

AEC 18543



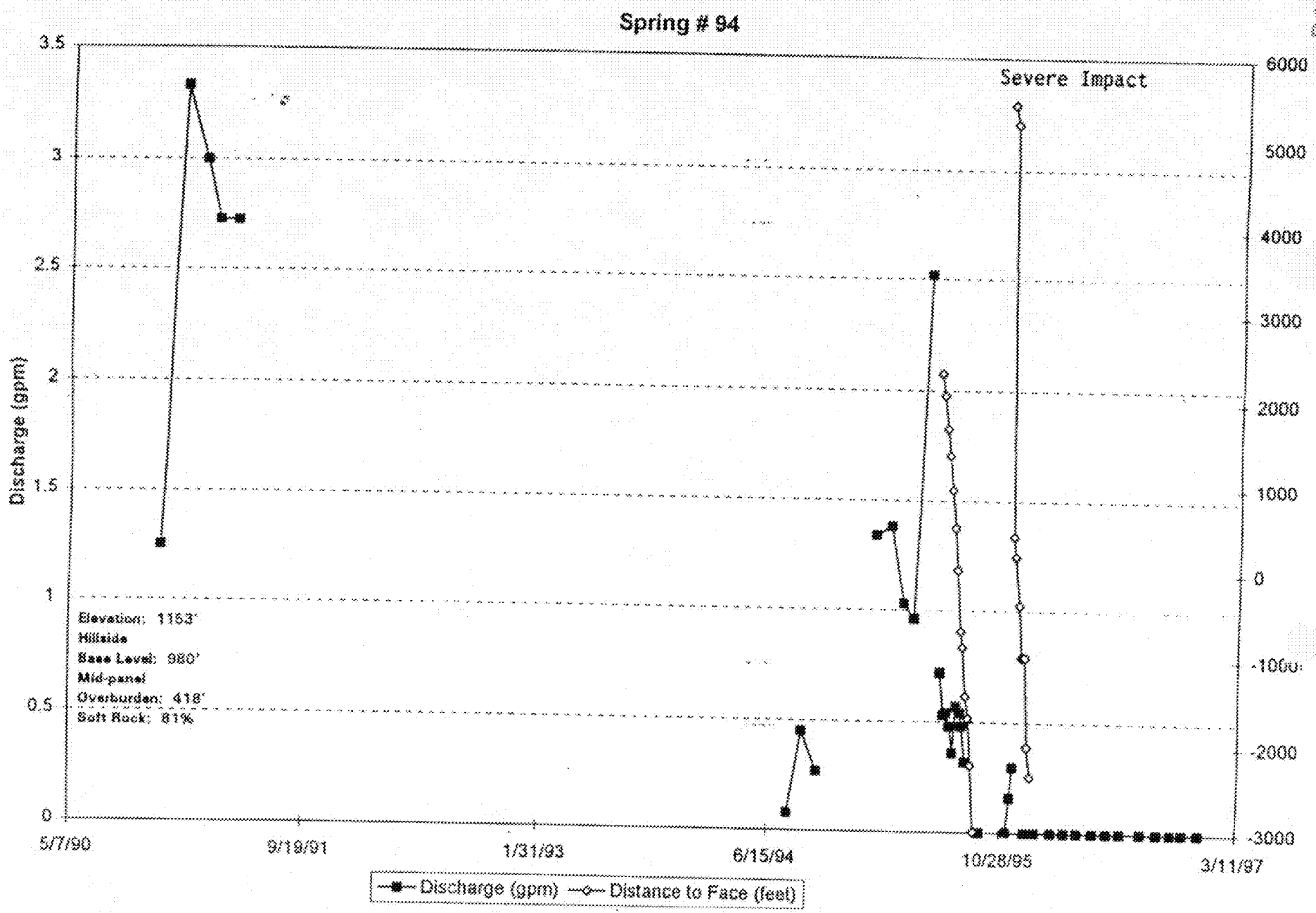
Prepared by: Moody and Assoc., Inc. 4/13/97

ORIGINAL

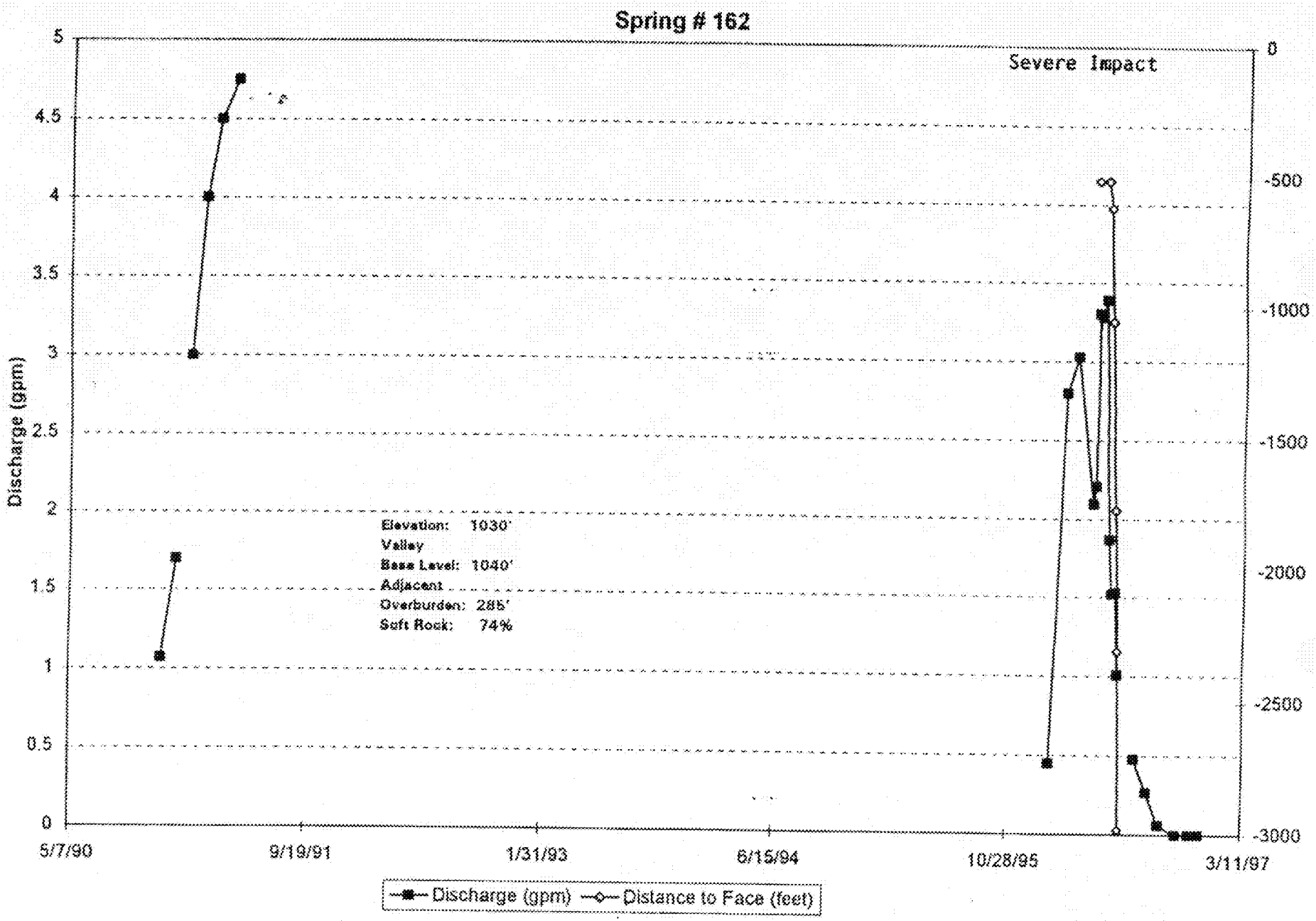
00425-3

AEC 18544

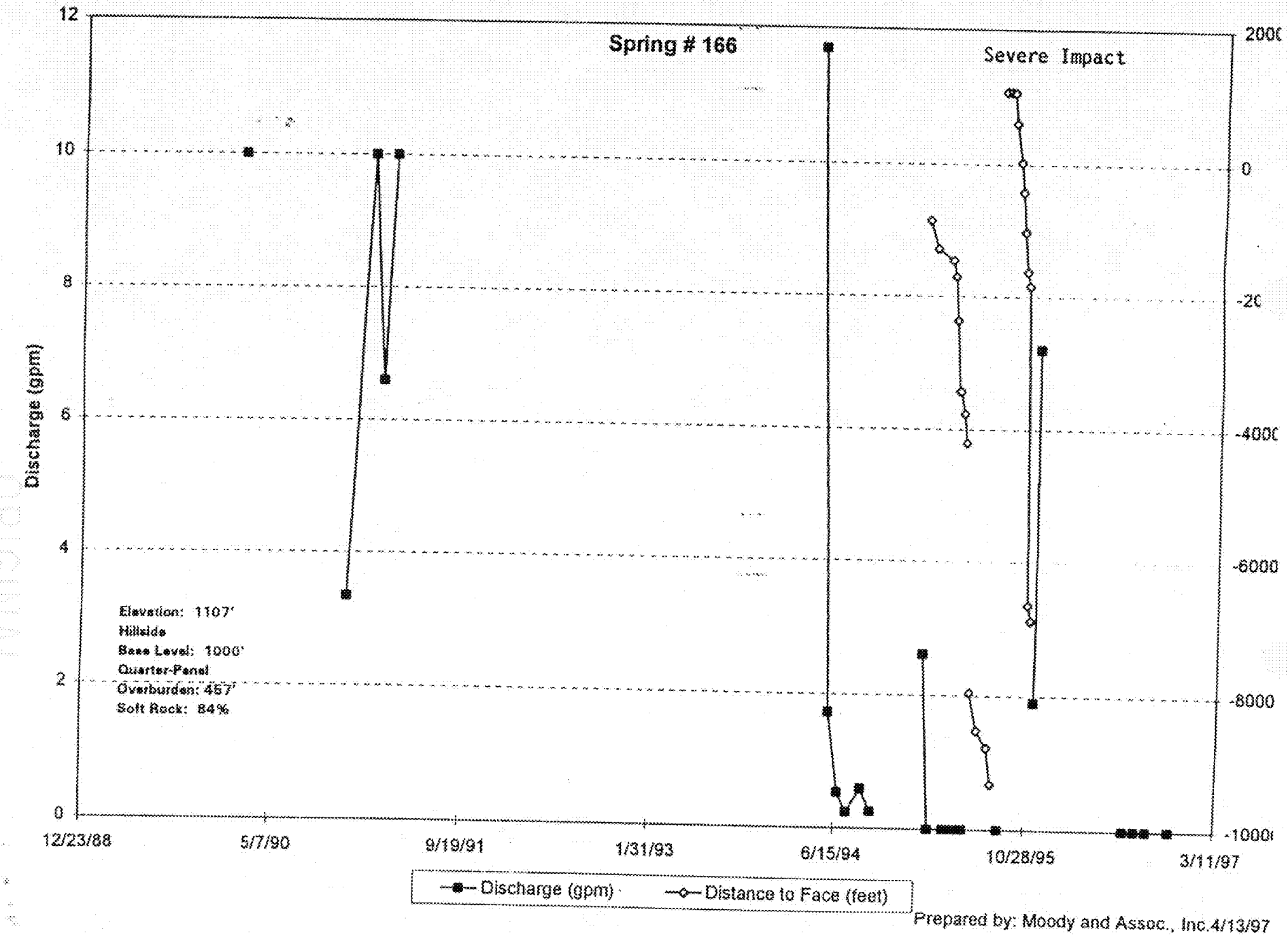
00425-3


Spring # 94
Severe Impact
Discharge (gpm)
3.5
3
2.5
2
1.5
1
0.5
0
6000
5000
4000
3000
2000
1000
0
-1000
-2000
-3000
5/7/90
9/19/91
1/31/93
6/15/94
10/28/95
3/11/97
Elevation: 1153'
Hillside
Base Level: 980'
Mid-panel
Overburden: 418'
Soft Rock: 81%
Discharge (gpm)
Distance to Face (feet)

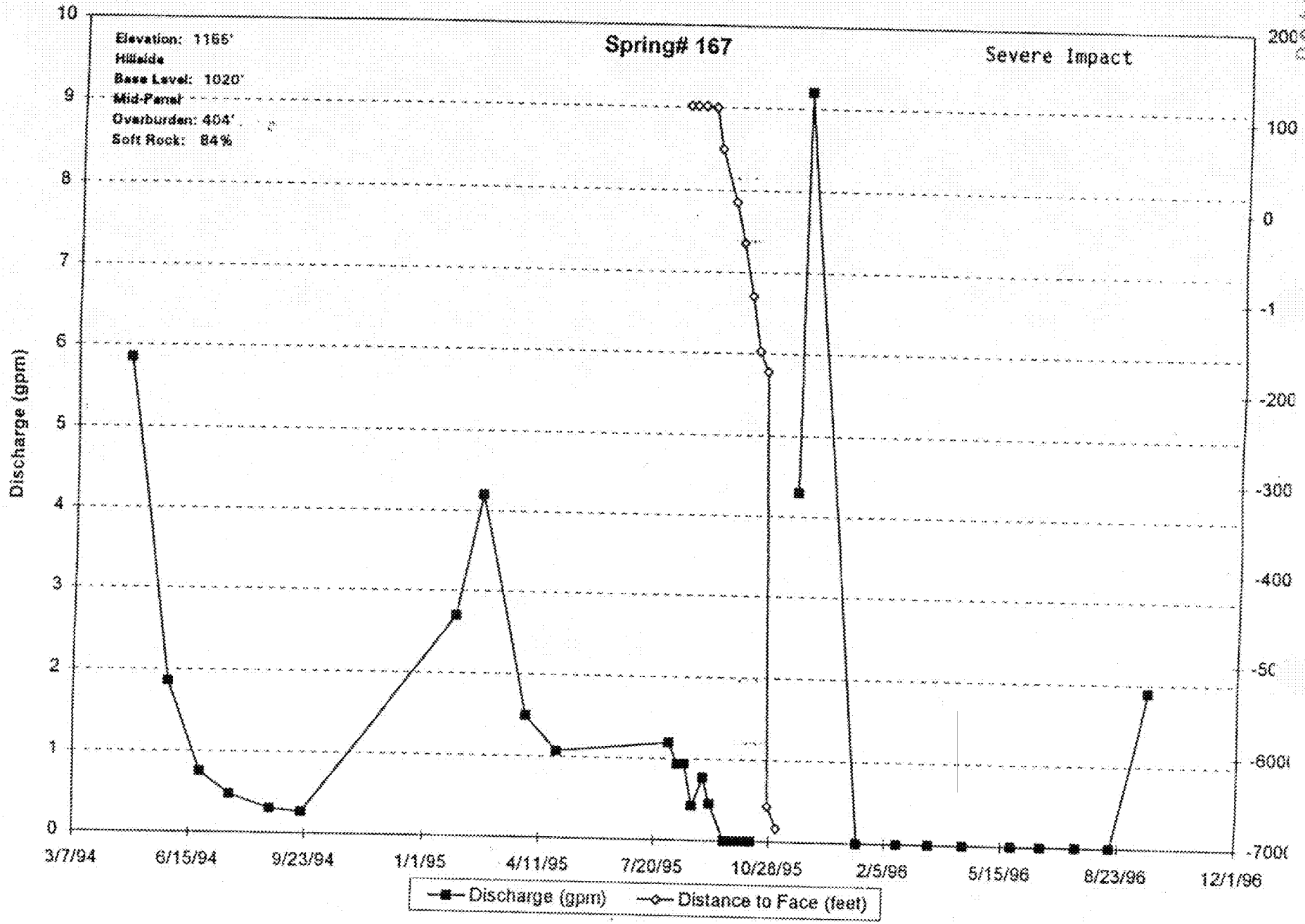
AEC 185445



Prepared by: Moody and Assoc., Inc. 4/13/9



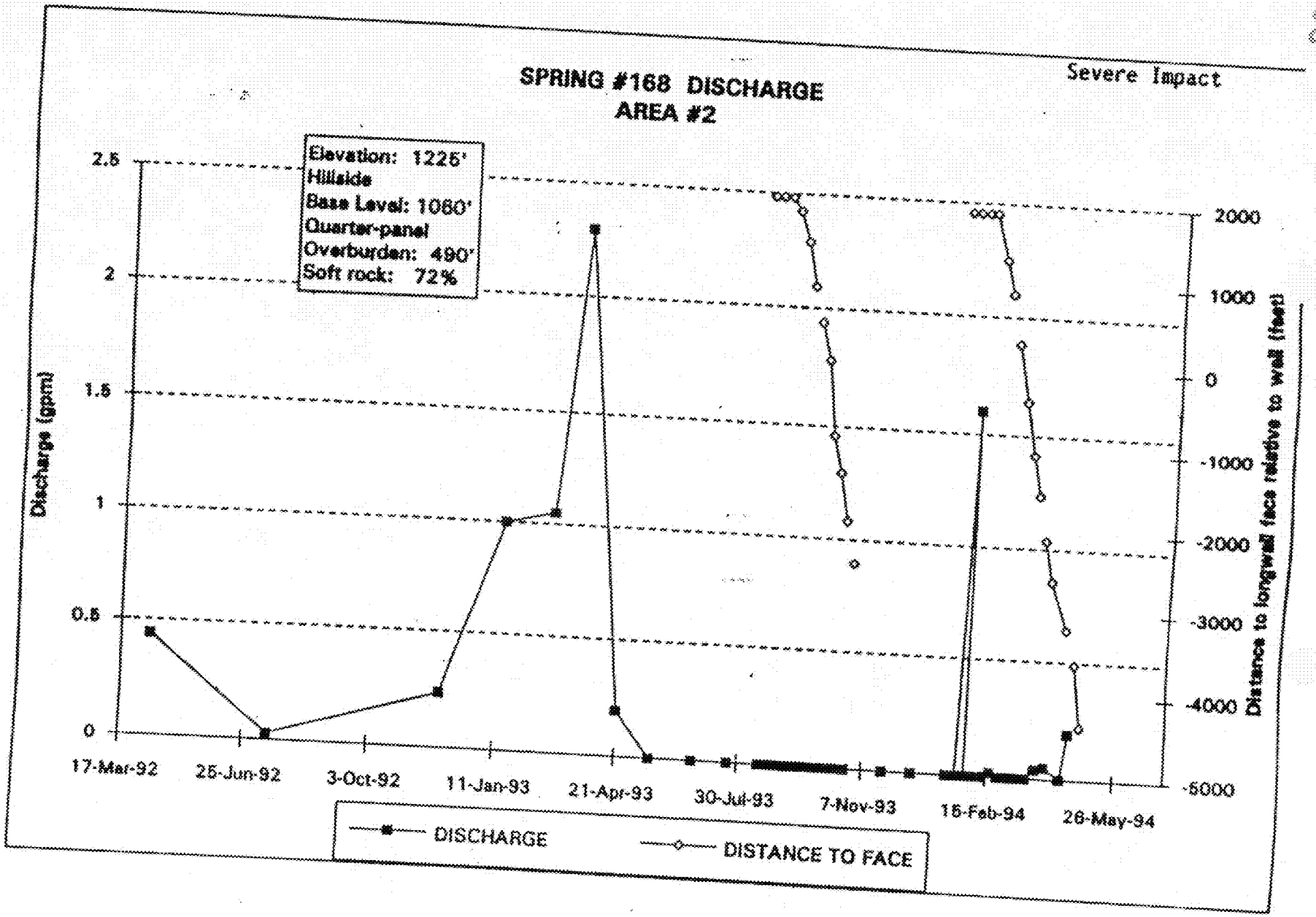
Prepared by: Moody and Assoc., Inc.4/13/97



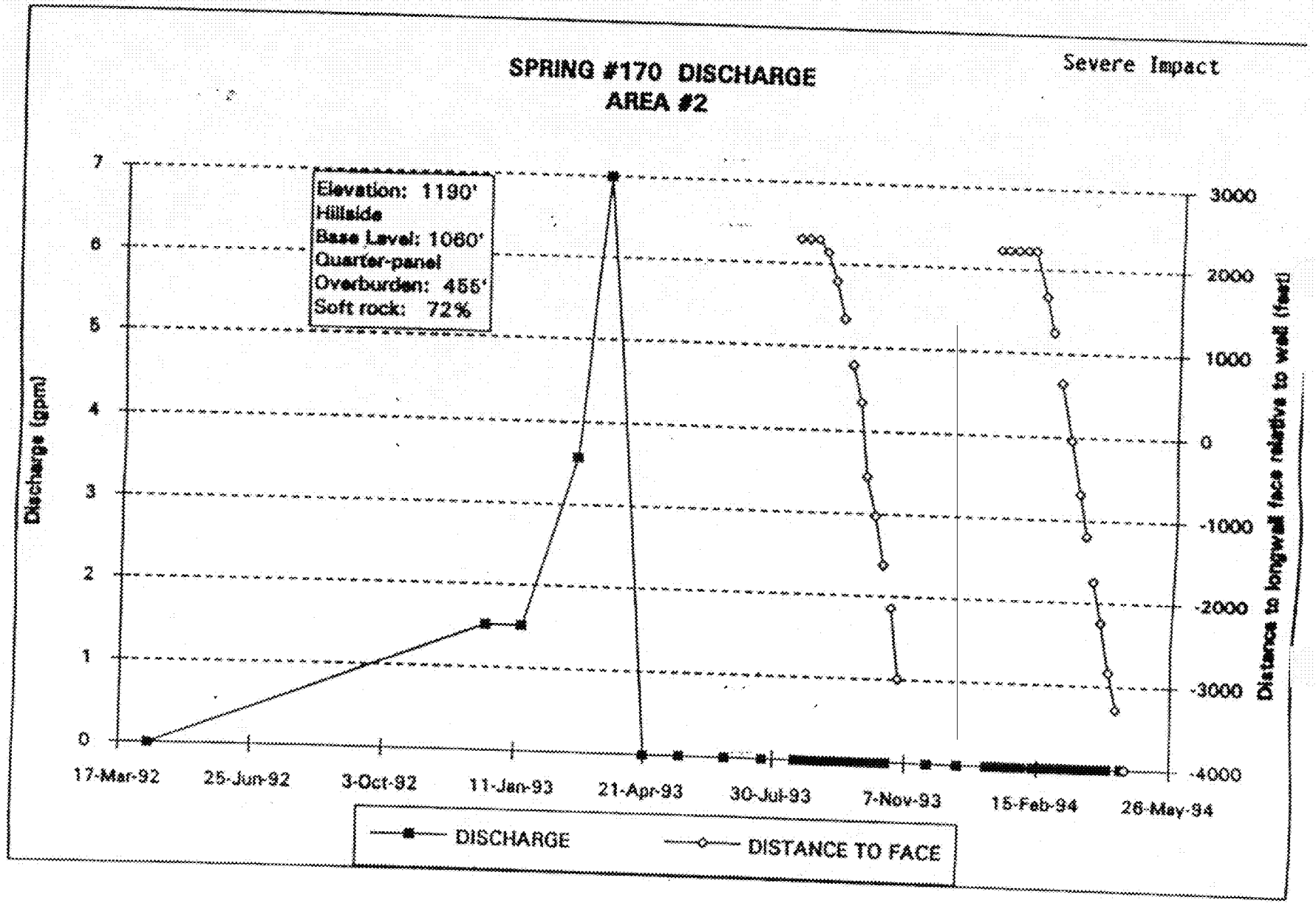
Prepared by: Moody and Assoc. Inc4/13/97

ORIGINAL

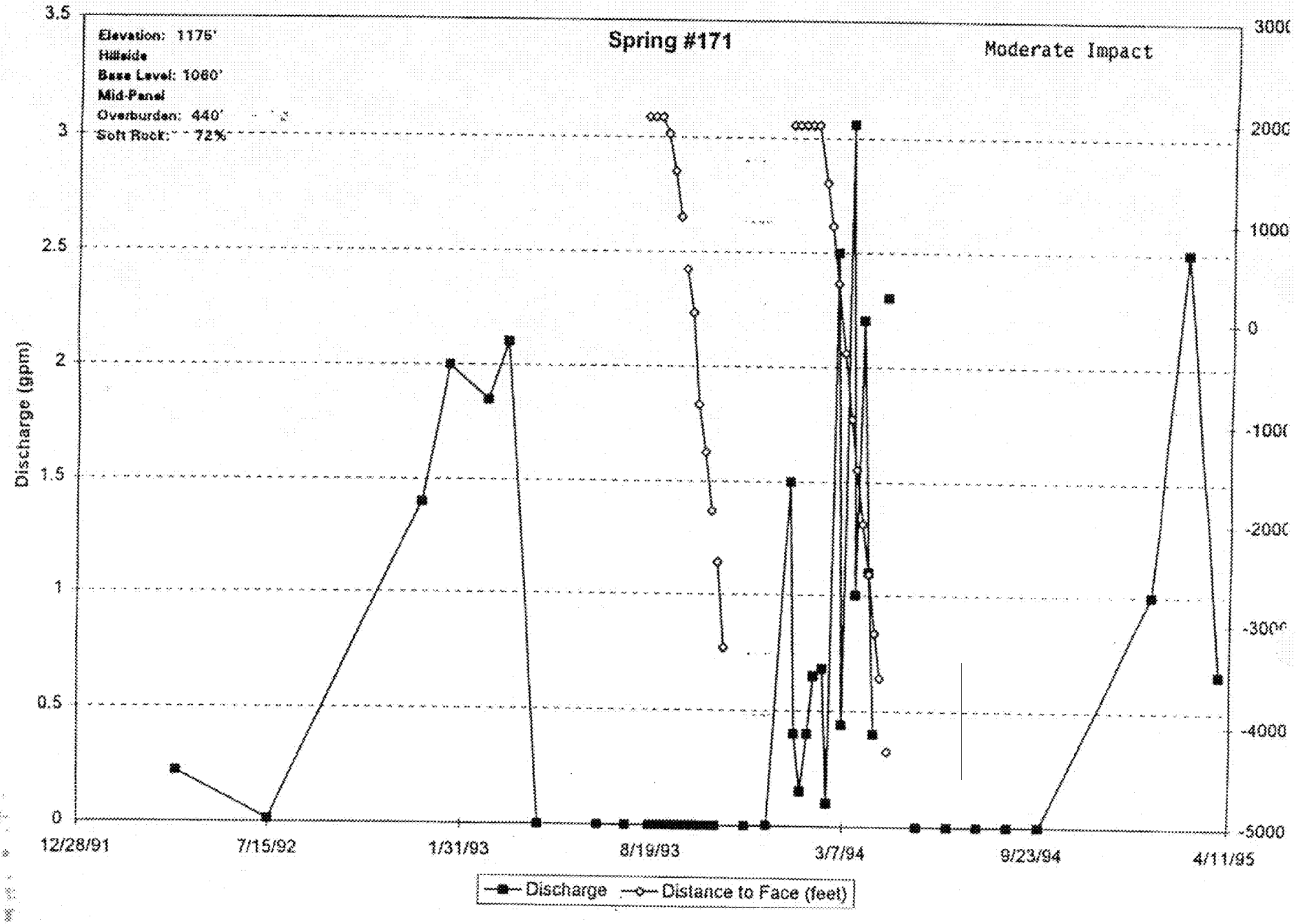
AEC 185448


SPRING #168 DISCHARGE
AREA #2
Severe Impact
Elevation: 1225'
Hillside
Base Level: 1080'
Quarter-panel
Overburden: 490'
Soft rock: 72%
Discharge (gpm)
2.5
2
1.5
1
0.5
0
17-Mar-92
25-Jun-92
3-Oct-92
11-Jan-93
21-Apr-93
30-Jul-93
7-Nov-93
16-Feb-94
26-May-94
2000
1000
0
-1000
-2000
-3000
-4000
-5000
Distance to longwall face relative to well (feet)
DISCHARGE
DISTANCE TO FACE

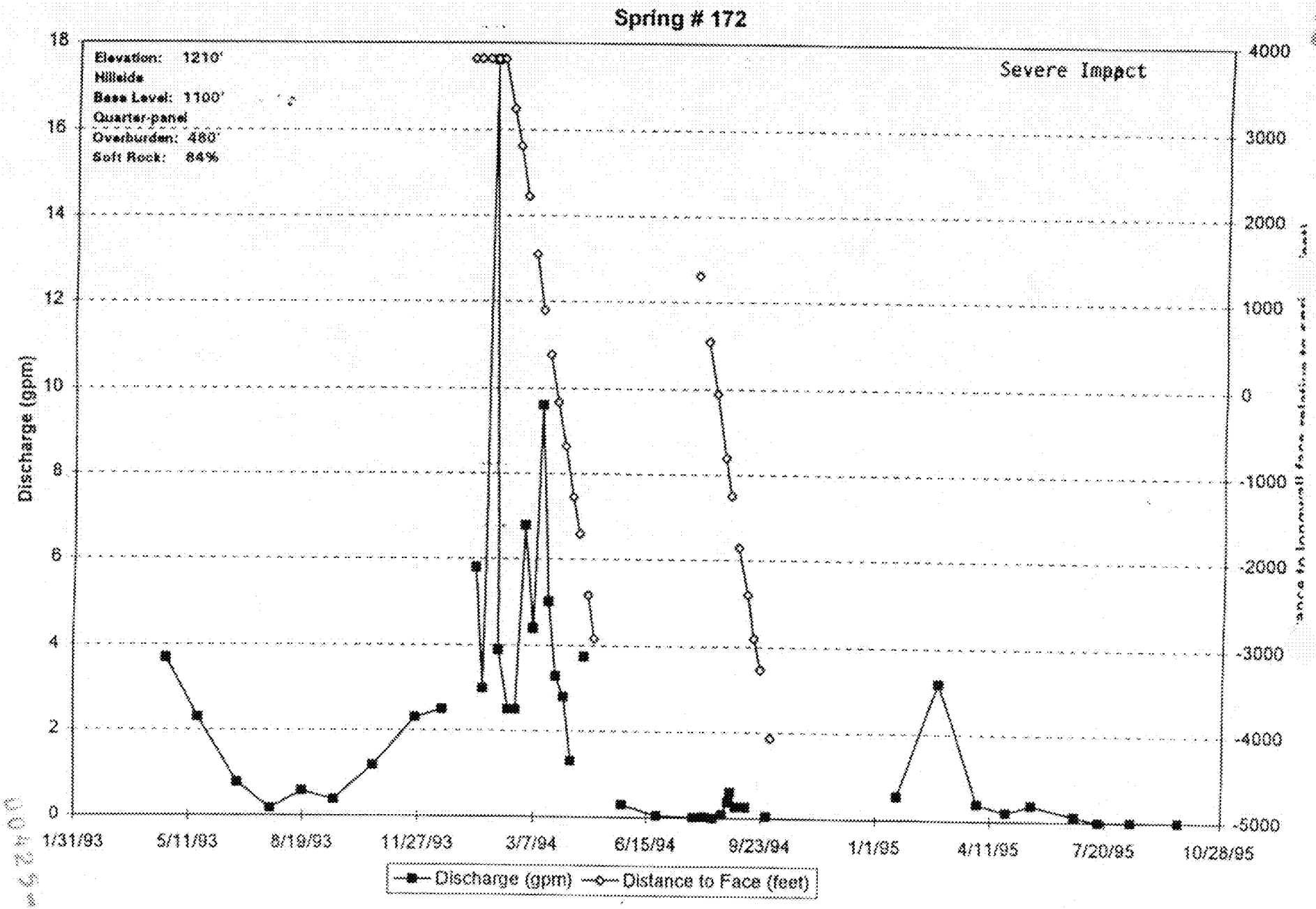
AEC 185499


SPRING #170 DISCHARGE
AREA #2
Severe Impact
Elevation: 1190'
Hillside
Base Level: 1080'
Quarter-panel
Overburden: 455'
Soft rock: 72%
Discharge (gpm)
Distance to longwall face relative to well (feet)
0
1
2
3
4
5
6
7
3000
2000
1000
0
-1000
-2000
-3000
-4000
17-Mar-92
25-Jun-92
3-Oct-92
11-Jan-93
21-Apr-93
30-Jul-93
7-Nov-93
15-Feb-94
26-May-94
DISCHARGE
DISTANCE TO FACE

AEC 18550

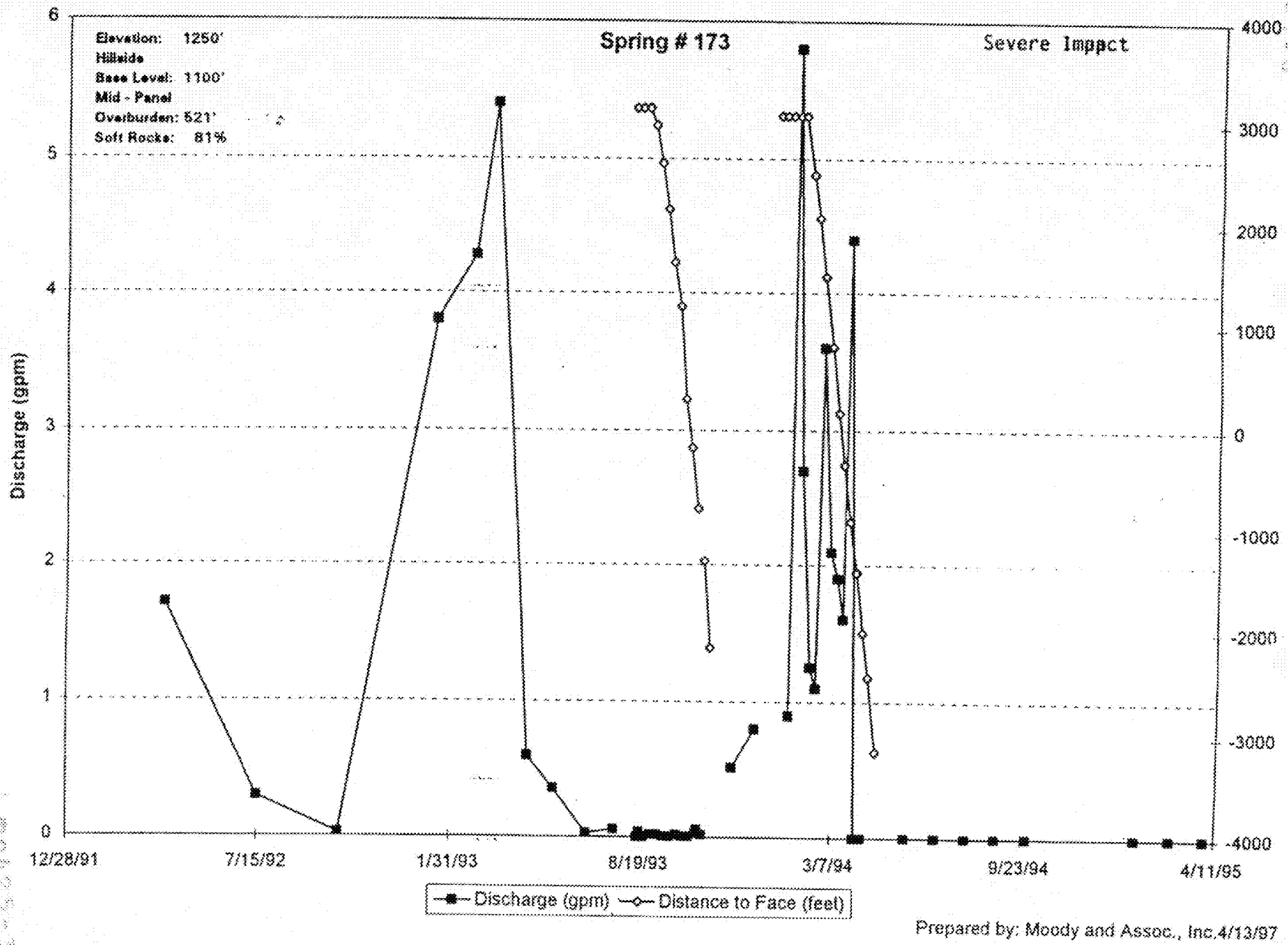

Elevation: 1175'
Hillside
Base Level: 1060'
Mid-Panel
Overburden: 440'
Soft Rock: 72%
Spring #171
Moderate Impact
Discharge (gpm)
3.5
3
2.5
2
1.5
1
0.5
0
3000
2000
1000
0
-1000
-2000
-3000
-4000
-5000
12/28/91
7/15/92
1/31/93
8/19/93
3/7/94
9/23/94
4/11/95
Discharge
Distance to Face (feet)

AEC 18551



Prepared by: Moody and Assoc., Inc. 4/13/97

AEC 18552



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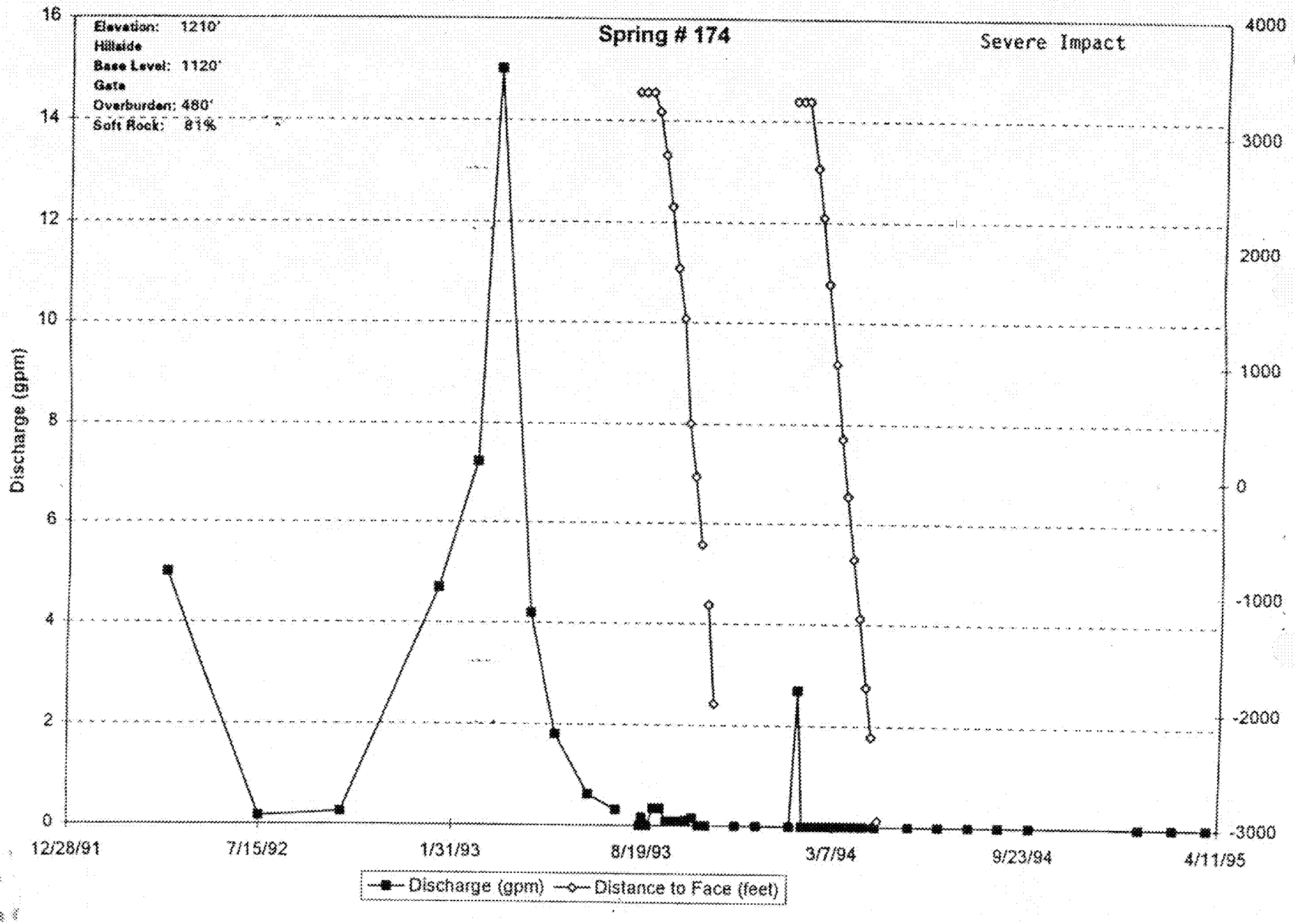
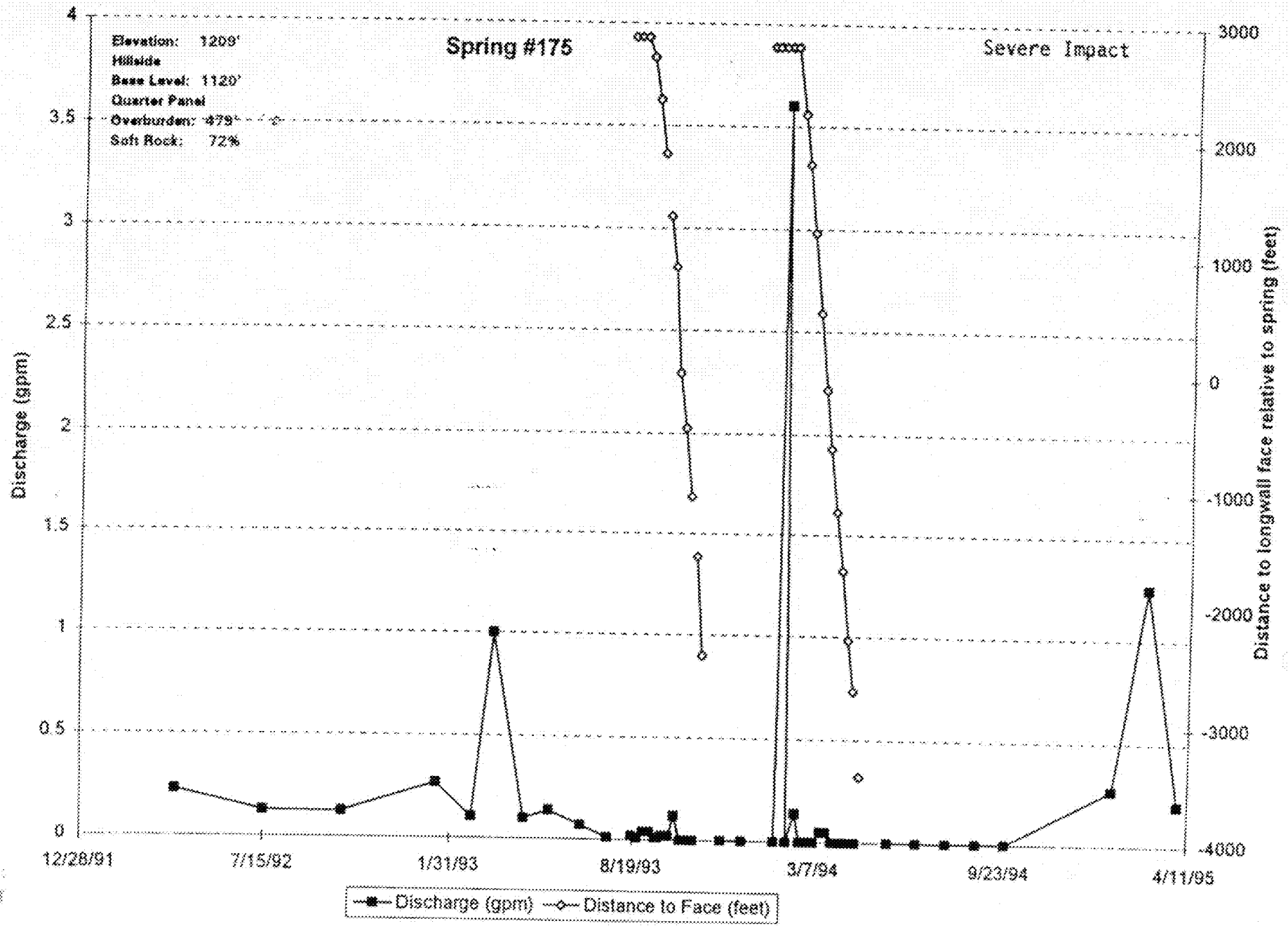
AEC 18553



Prepared by: Moody and Assoc., Inc. 4/13/97

AEC 185541



Prepared by: Moody and Assoc., Inc. 4/13/97

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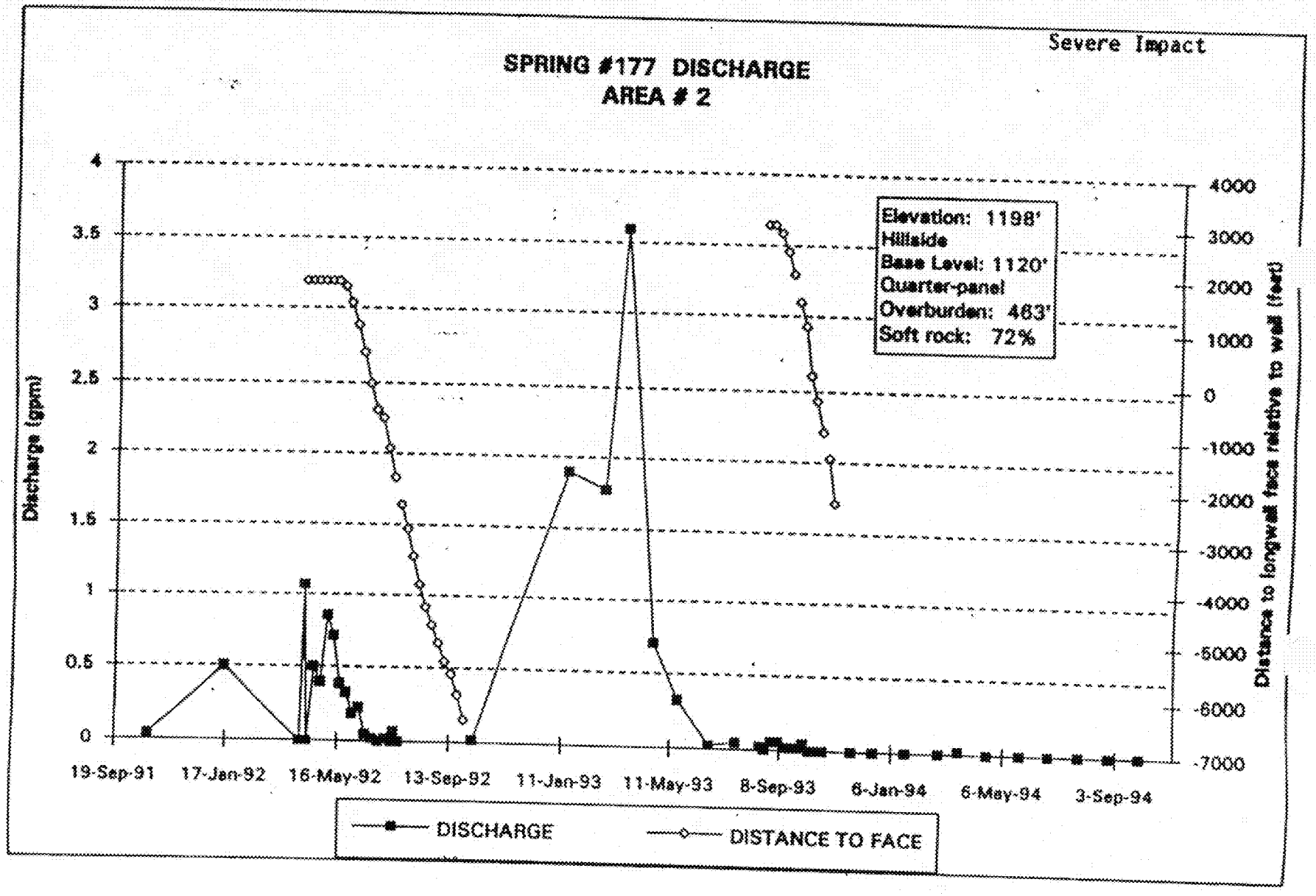
AEC 18555

Severe Impact



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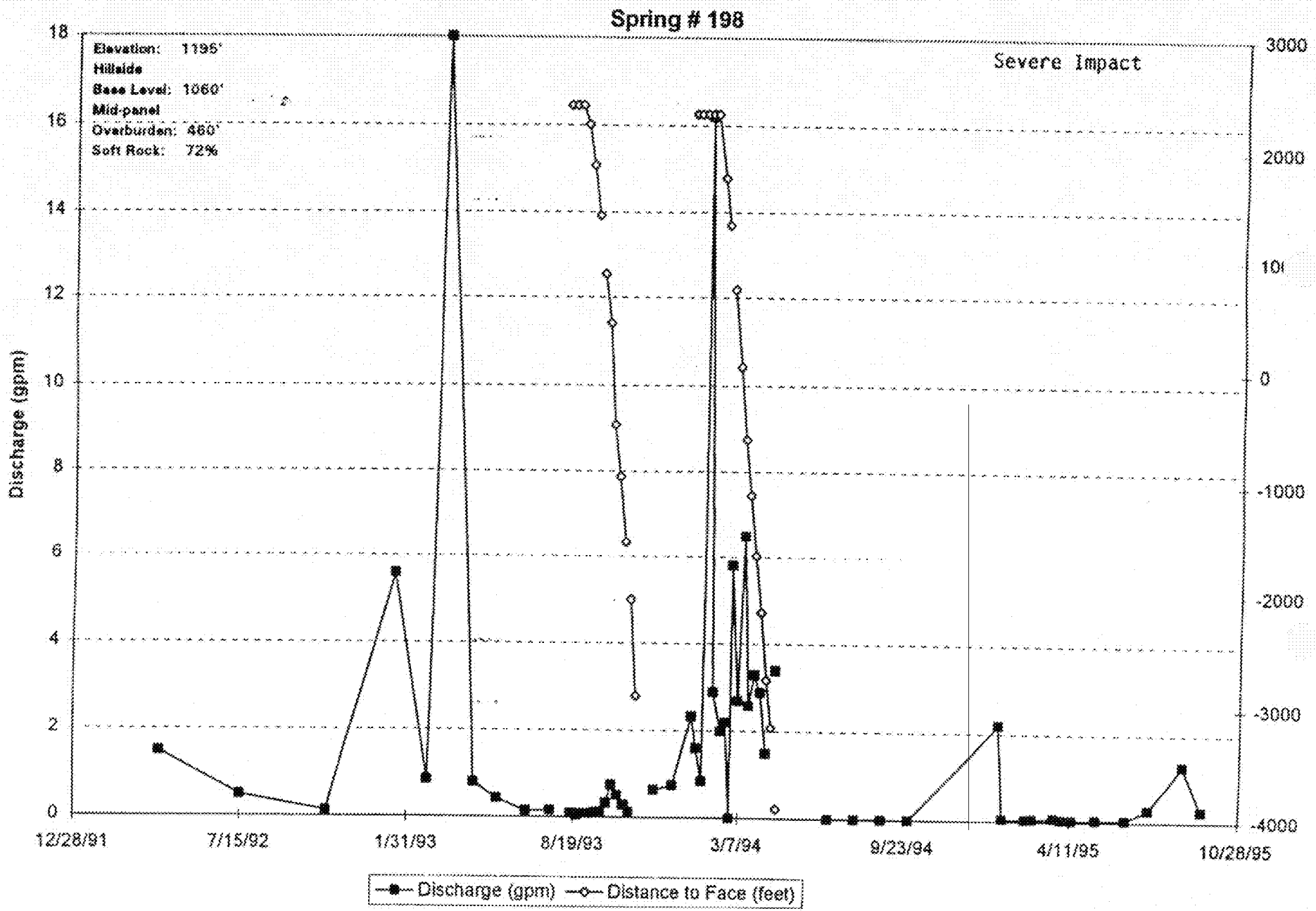

Prepared by: Moody and Assoc., Inc. 4/13/97

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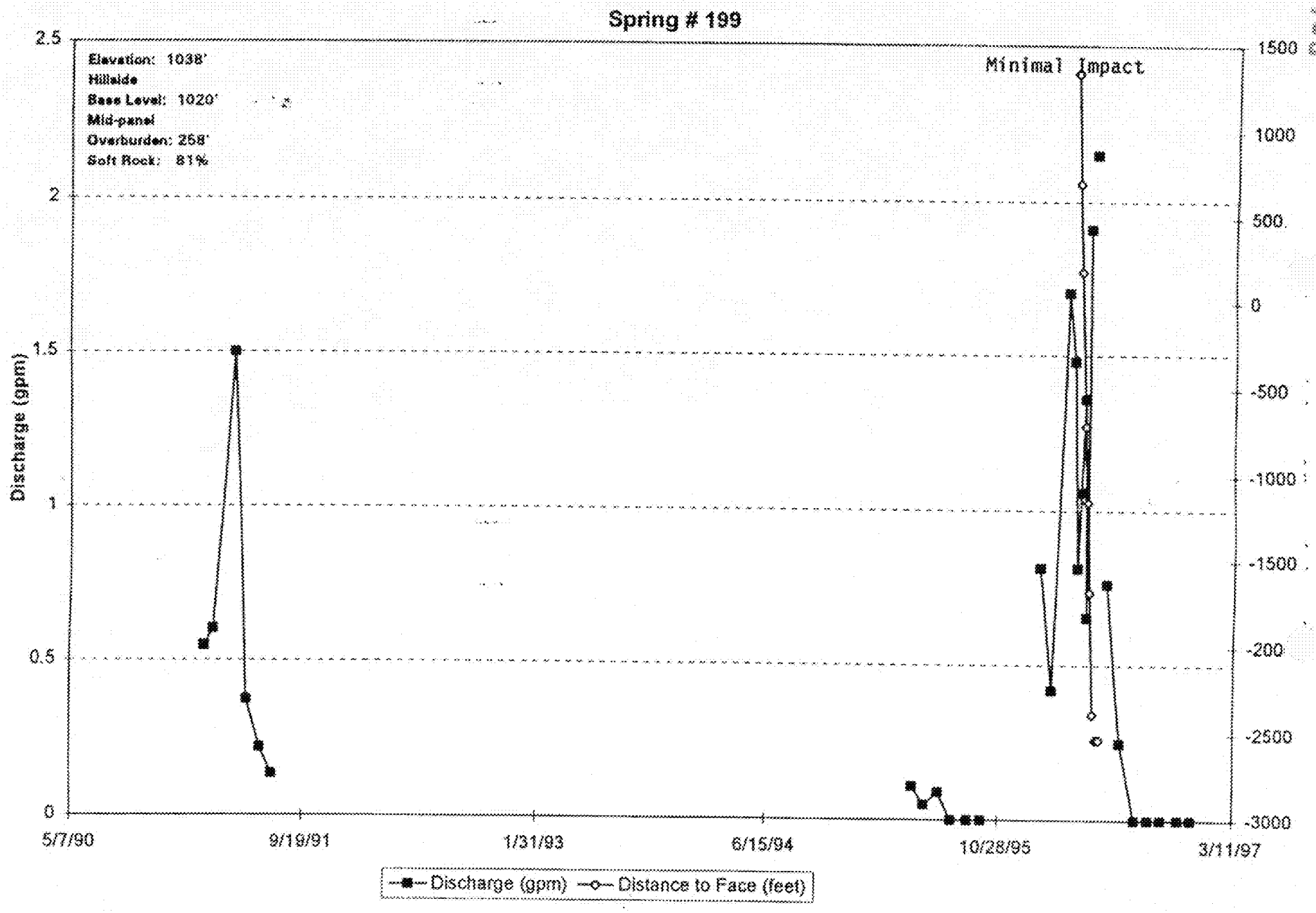
AEC 185577



Prepared by: Moody and Assoc., Inc.4/13/97

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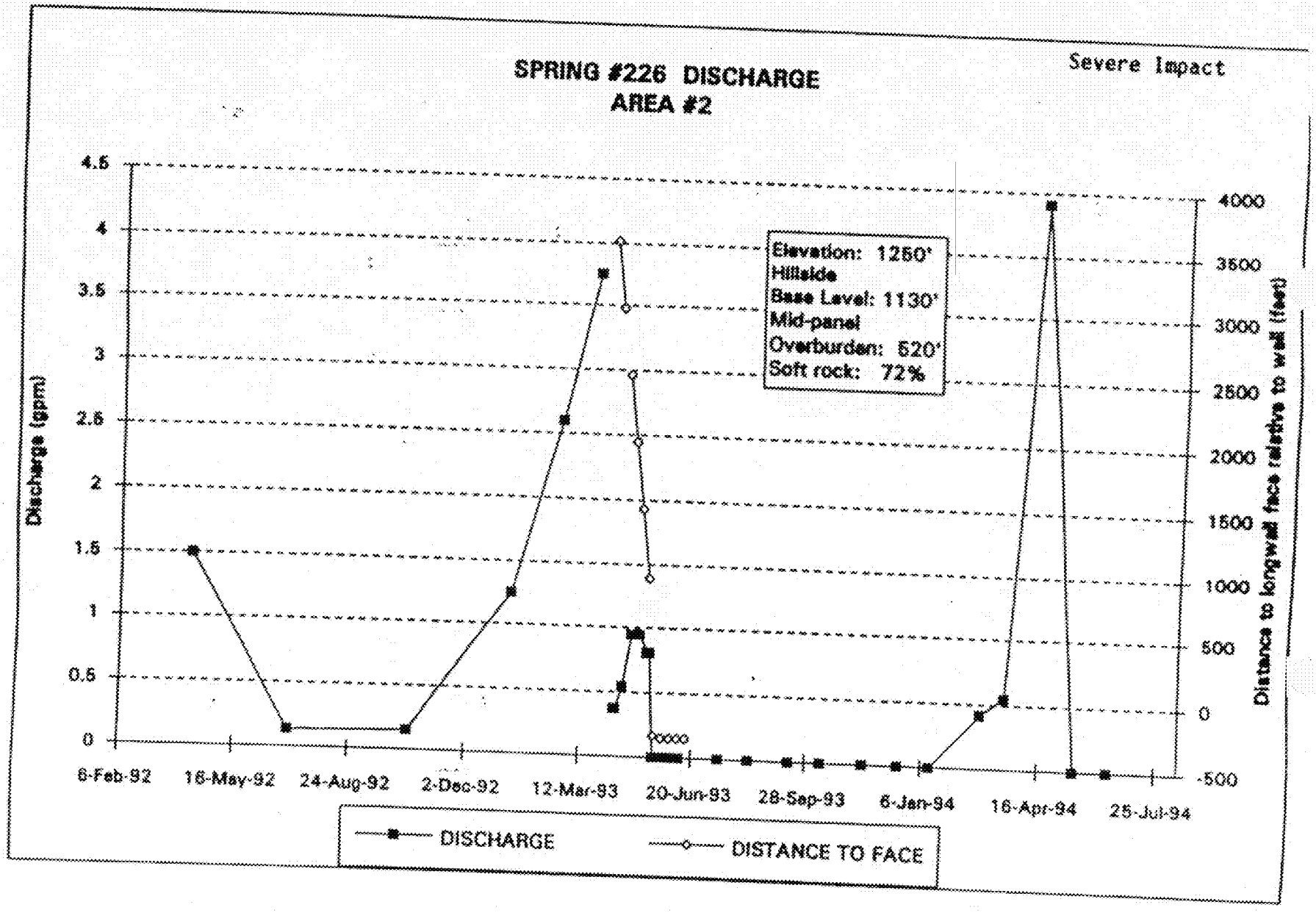
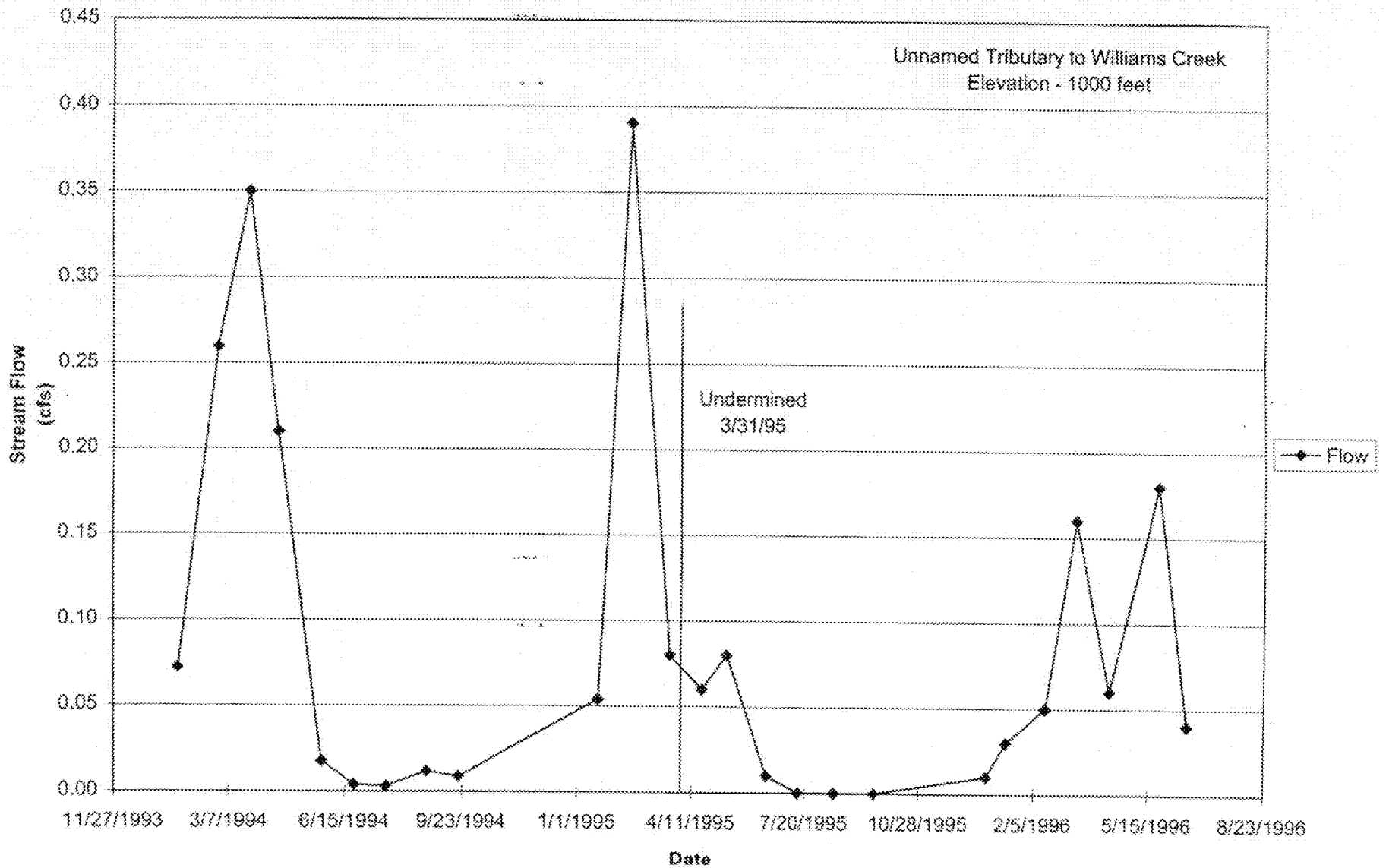
AEC 18558



ORIGINAL

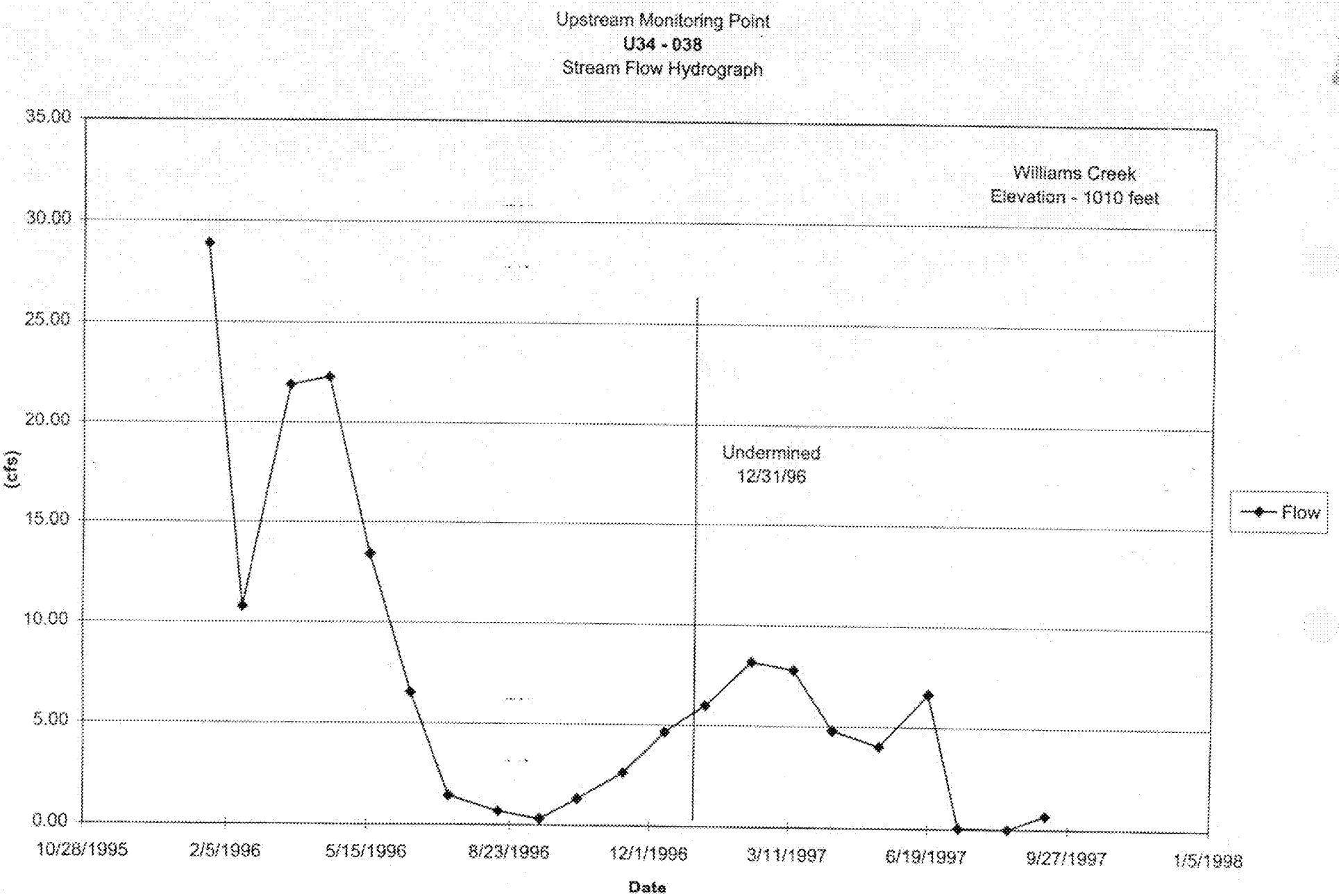
AEC 185599

Upstream Monitoring Point
U 29 - C
Steam Flow Hydrograph



ORIGINAL

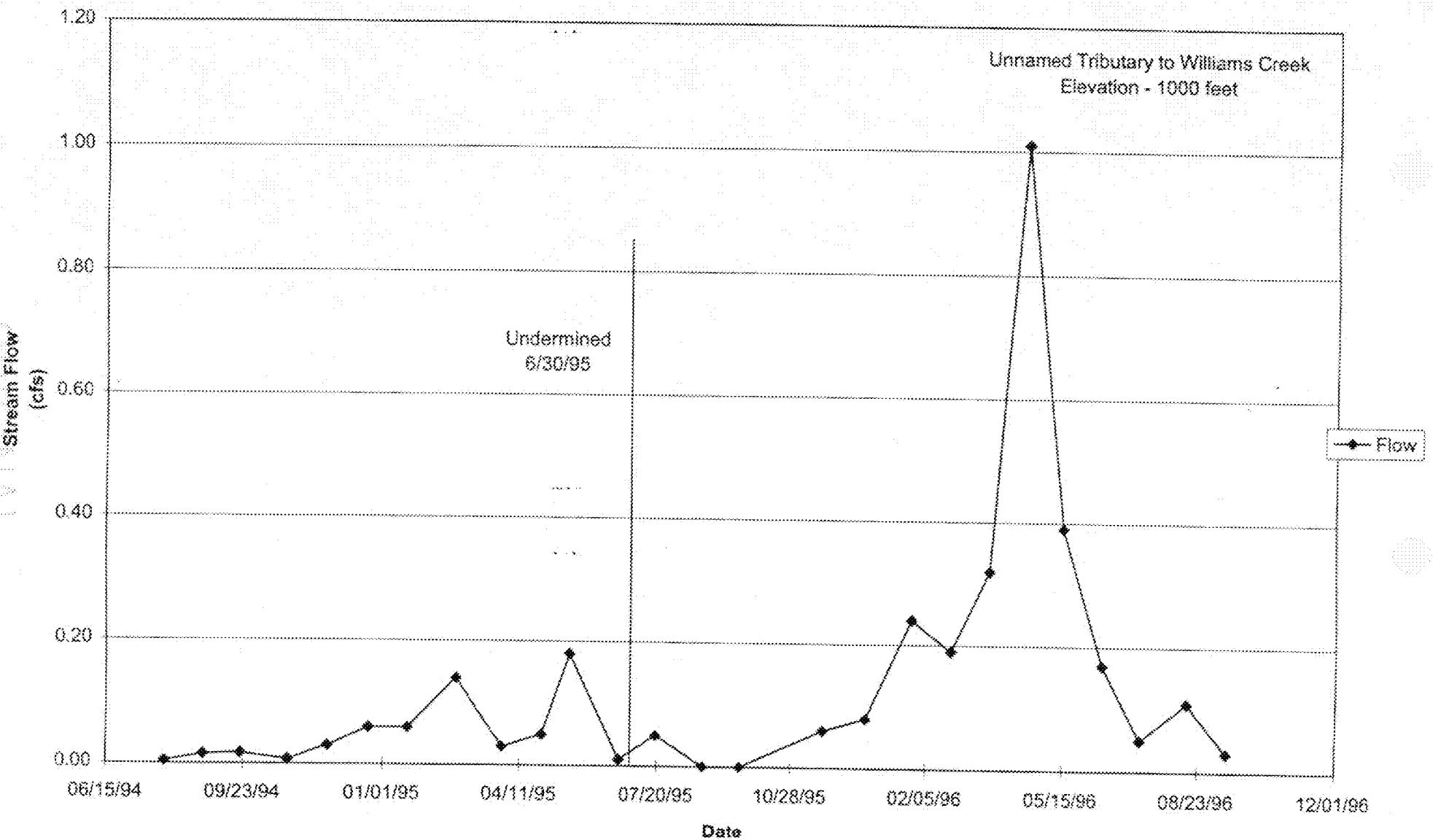
AEC 18560



ORIGINAL

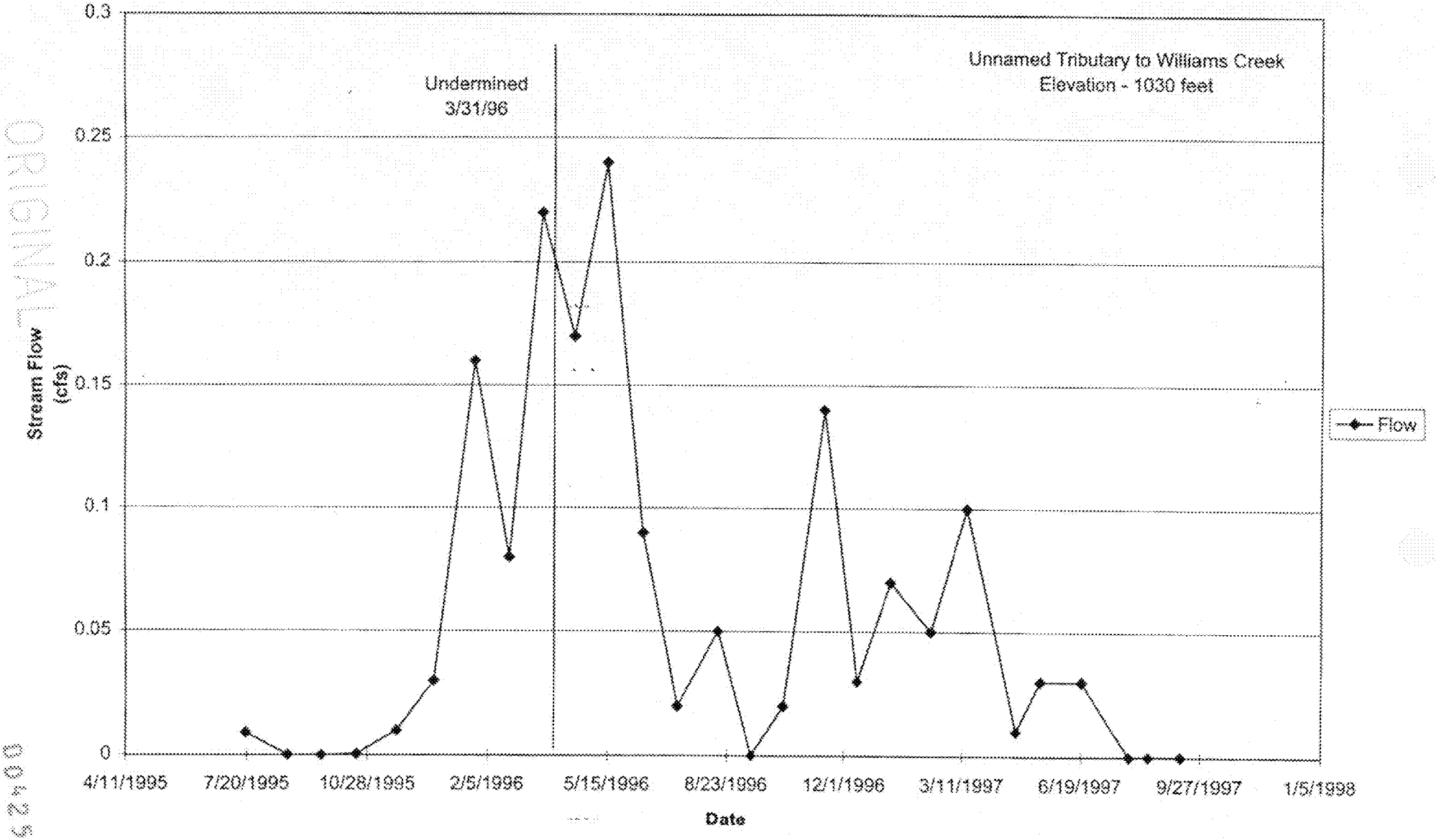
AEC 18561

Upstream Monitoring Point
U 34 - 067
Stream Flow Hydrograph



ORIGINAL

Upstream Monitoring Point
U 034-144
Stream Flow Hydrograph



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AEC 185633

ADDENDUM TO PART 2, PAGE 18, F(1) .
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

DEVELOPED SUPPLIES OF GROUND AND SURFACE WATER THAT MAY BE IMPACTED AS A RESULT OF THE PROPOSED OPERATION

Of the supplies listed in Attachment 14C and 14D, impacts shown in Appendix A (exerpted from the PHC prepared by Moody and Associates, Inc.) are expected as a result of the proposed operation. According to the PHC, these sources may be impacted permanently or may have delayed or long-term recovery. Wells may experience significant declines in static water level with little or no recovery. Springs may experience significant flow declines with long-term or no recovery.

ORIGINAL

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TABLE A

Addendum to Page 18, Part 2 F (1)

Well Data

Applicant's Name - American Energy Corporation D-0425-3

Well	Surface Elevation (feet)	Total Depth (feet)	Bottom Elevation (feet)	Coal Elevation (feet)	Overburden Depth well bottom to coal (feet)	Aquifer *See Attachment 14B*	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
WL 9	980	28	952	670	282	A	68	Valley	Outside	950	No impact expected
W 11	940	25	915	670	245	A	68	Valley	Outside	625	No impact expected
W 17	1240	76	1164	700	464	C	68	Hilltop	Outside	500	Imapct as described in PHC
W 22	1060	51	1009	686	323	C	68	Hillside	Quarter	125	Imapct as described in PHC
W 23	1039	60	979	688	291	C	68	Valley	Mid Panel	325	Imapct as described in PHC
DW 50	1140	16	1124	720	404	A	68	Hilltop	Outside	3375	No impact expected
W 85	1000	41	959	675	284	C	69	Valley	Mid Panel	350	Imapct as described in PHC
WL 161	1250	75	1175	670	505	B	78	Hilltop	Quarter	175	Imapct as described in PHC
W 179	1240	125	1115	690	425	B	66	Hilltop	Quarter	75	Imapct as described in PHC
W 180 A	1260	145	1115	665	450	B	61.5	Hilltop	Quarter	300	Imapct as described in PHC
WL 180	1260	60	1200	690	510	B	50	Hilltop	Gate	25	Imapct as described in PHC
WL 181	1210	85	1125	680	445	B	56	Hilltop	Outside	475	Imapct as described in PHC
W 181 A	1210	85	1125	690	435	B	62	Hilltop	Quarter	210	Imapct as described in PHC
DW 184 A	1270	21		655		A	63	Hillside	Outside	750	No impact expected
W 184	1260	65	1195	660	535	B	68	Hilltop	Outside	500	Imapct as described in PHC
W 194	1220	90	1130	710	420	B	66	Hilltop	Quarter	150	Imapct as described in PHC
W 196	1240	130	1110	710	400	B	68	Hilltop	Mid Panel	750	No impact expected
W 197	1220	80	1140	710	430	B	68	Hilltop	Outside	800	No impact expected
W 203	1260	100	1160	710	450	B	68	Hilltop	Mid Panel	180	Imapct as described in PHC

Century Mine D-0425-3 TABLES A B 7-14-03-rev

TABLE A
Page 1 of 3

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TABLE A

Addendum to Page 18, Part 2 F (1)

Well Data

Applicant's Name - American Energy Corporation D-0425-3

Well	Surface Elevation (feet)	Total Depth (feet)	Bottom Elevation (feet)	Coal Elevation (feet)	Overburden Depth well bottom to coal (feet)	Aquifer *See Attachment 14B*	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
W 208	1240	130	1110	710	400	B	68	Hilltop	Mid Panel	400	Impact as described in PHC
W 324	1280	100	1180	670	510	B	68	Hilltop	Quarter	40	Impact as described in PHC
W 308	1220	UNK	UNK	700	UNK	UNK	62	Hilltop	Outside	480	Impact as described in PHC
W 407	1220	70		675		B	69	Hilltop	Outside	400	Impact as described in PHC
DW 408	1210	20		675		A	69	Hilltop	Quarter	75	Impact as described in PHC
W 409	1210	61		675		B	69	Hilltop	Mid Panel	225	Impact as described in PHC
DW 421	1300	UNK	UNK	670	UNK	UNK	70	Hilltop	Mid Panel	175	Impact as described in PHC
W 423	1220	94	1126	660	466	B	70	Hilltop	Mid Panel	250	Impact as described in PHC
DW 425	1300	25	1275	660	615	A	63	Hilltop	Outside	1200	No impact expected
DW 426	1250	39	1211	660	551	A	61.5	Hilltop	Outside	800	No impact expected
W 427	1240	71	1169	700	469	B	62	Hilltop	Gate	325	Impact as described in PHC
W 435 A	1220	75		690		B	57	Hilltop	Quarter	50	Impact as described in PHC
W 435	1080	85	995	700	295	B	68	Valley	Mid Panel	175	Impact as described in PHC
W 436	1020	85	935	675	260	B	57	Valley	Mid Panel	275	Impact as described in PHC
W 438	970	30	940	680	260	A	70	Valley	Outside	425	Impact as described in PHC
DW 581	1220	21	1199	680	519	A	56	Hilltop	Outside	1125	No impact expected
DW 582	1210	30	1180	680	500	A	56	Hilltop	Outside	1300	No impact expected
W 590	1060	85		680		C	68	Hillside	Gate	0	Impact as described in PHC
W 591	1065	82		680		C	68	Hillside	Gate	75	Impact as described in PHC

ORIGINAL

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TABLE A

Addendum to Page 18, Part 2 F (1)

Well Data

Applicant's Name - American Energy Corporation D-0425-3

Well	Surface Elevation (feet)	Total Depth (feet)	Bottom Elevation (feet)	Coal Elevation (feet)	Overburden Depth well bottom to coal (feet)	Aquifer *See Attachment 14B*	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
W 602	1245	65		700		B	62	Hillside	Outside	1578	Impact as described in PHC
Total 39											
Average	1181	68	1104	684	419		65	Hillside-	Outside-		
Median	1220	70	1125	680	435		68	Hilltop-	Gate-		
Minimum	940	16	915	655	245		50	Valley-	Quarter-		
Maximum	1300	145	1275	720	615		78		Middle-		

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TABLE B

Addendum to Page 18, Part 2 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

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AUG 13 2003

Supply ID			Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
DS	18	A	1180	660	520	B	70	Hillside	Mid Panel	375	Imapct as described in PHC
DS	18	B	1208	660	548	B	70	Hillside	Quarter	150	Imapct as described in PHC
DS	23	B	1250	670	580	B	69	Hillside	Gate	25	Imapct as described in PHC
DS	27	A	1100	670	430	B	69	Valley	Mid Panel	225	Imapct as described in PHC
DS	27	B	1100	670	430	B	69	Hillside	Mid Panel	275	Imapct as described in PHC
DS	27	C	1160	670	490	B	69	Hillside	Mid Panel	225	Imapct as described in PHC
DS	32	A	1130	680	450	B	57	Hillside	Mid Panel	400	Imapct as described in PHC
DS	32		1160	718	440	B	72	Hillside	Outside	2800	No impact expected
DS	51	A	1220	700	520	B	68	Hilltop	Outside	1150	No impact expected
DS	51	B	1120	700	420	B	68	Valley	Outside	400	Imapct as described in PHC
DS	51	C	1145	700	445	B	68	Hillside	Outside	1050	No impact expected
DS	54	A	1190	710	480	B	68	Hillside		1400	No impact expected
DS	54	B	1215	710	505	B	68	Hilltop	Outside	1625	No impact expected
DS	54	C	1140	700	440	B	67	Hillside	Outside	1800	No impact expected
DS	91		1140	670	470	B	50	Hillside	Gate	50	Imapct as described in PHC
DS	92		1240	670	570	B	50	Hilltop	Mid Panel	275	Imapct as described in PHC
DS	93		1160	670	490	B	79	Hillside	Gate	175	Imapct as described in PHC
DS	94		1180	685	495	B	50	Hillside	Mid Panel	400	Imapct as described in PHC
DS	95		1200	680	520	B	50	Hillside	Gate	25	Imapct as described in PHC
DS	98		1200	670	530	B	69	Hillside	Quarter	400	Imapct as described in PHC

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TABLE B

Addendum to Page 18, Part 2 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

Supply ID		Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
DS 100		1160	700	460	B	57	Hillside	Gate	550	Imapct as described in PHC
DS 101		1180	690	490	B	62	Hillside	Gate	225	Imapct as described in PHC
DS 103		1190	670	520	B	61.5	Hillside	Mid Panel	375	Imapct as described in PHC
DS 112		1170	660	510	B	61.5	Hillside	Quarter	200	Imapct as described in PHC
DS 113		1210	670	540	B	61.5	Hillside	Gate	60	Imapct as described in PHC
DS 114		1080	690	390	B	79	Hillside	Mid Panel	325	Imapct as described in PHC
DS 116		1200	690	510	B	79	Hillside	Mid Panel	325	Imapct as described in PHC
DS 117	A	1050	690	360	B	70	Hillside	Quarter	145	Imapct as described in PHC
DS 117		1210	690	520	B	70	Hilltop	Quarter	215	Imapct as described in PHC
DS 132	A	1185	670	515	B	79	Hillside	Mid Panel	275	Imapct as described in PHC
DS 140	A	1200	660	540	B	61.5	Hillside	Mid Panel	350	Imapct as described in PHC
DS 145		1120	710	410	B	68	Hillside	Quarter	0	Imapct as described in PHC
DS 150	A	1220	690	530	B	57	Hilltop	Mid Panel	325	Imapct as described in PHC
DS 151		1160	670	490	B	56	Hillside	Outside	875	No impact expected
DS 152	A	1240	690	550	B	50	Hilltop	Gate	425	Imapct as described in PHC
DS 154	A	1200	680	520	B	50	Hillside	Gate	145	Imapct as described in PHC
DS 181	A	1260	690	570	B	50	Hilltop	Gate	400	Imapct as described in PHC
DS 201		1120	700	420	B	68	Hillside	Outside	2075	No impact expected
DS 202		1160	700	460	B	68	Hillside	Outside	1900	No impact expected
DS 206		1240	650	590	B	61.5	Hilltop	Outside	635	No impact expected

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TABLE B

Addendum to Page 16, Part 2 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

Supply ID	Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
DS 209	1260	660	600	B	61.5	Hilltop	Quarter	325	Imapct as described in PHC
DS 210	1200	650	550	B	61.5	Hillside	Outside	300	Imapct as described in PHC
DS 251	1220	670	550	B	50	Hillside	Mid Panel	100	Imapct as described in PHC
DS 252	1170	680	490	B	50	Valley	Outside	1150	No impact expected
DS 256	1200	670	530	B	61.5	Hillside	Outside	1225	No impact expected
DS 258	1200	660	540	B	61.5	Hillside	Outside	1225	No impact expected
DS 260	1180	660	520	B	61.5	Valley	Outside	1500	No impact expected
DS 267	1200	670	530	B	50	Hillside	Quarter	250	Imapct as described in PHC
DS 269	1200	670	530	B	50	Hillside	Mid Panel	275	Imapct as described in PHC
DS 270	1200	680	520	B	50	Hillside	Quarter	265	Imapct as described in PHC
DS 271	1200	680	520	B	50	Hillside	Gate	65	Imapct as described in PHC
DS 272	1200	680	520	B	50	Hillside	Quarter	175	Imapct as described in PHC
DS 273	1200	680	520	B	50	Hillside	Mid Panel	360	Imapct as described in PHC
DS 274	1200	680	520	B	50	Hillside	Mid Panel	375	Imapct as described in PHC
DS 283	1280	690	590	B	50	Hilltop	Mid Panel	375	Imapct as described in PHC
DS 284	1200	690	510	B	50	Hillside	Quarter	325	Imapct as described in PHC
DS 285	1140	690	450	B	50	Hillside	Quarter	190	Imapct as described in PHC
DS 309	1240	660	580	B	61.5	Hillside	Outside	1025	No impact expected
DS 402	1200	680	520	B	69	Hillside	Gate	190	Imapct as described in PHC
DS 403	1180	675	505	B	69	Hillside	Gate	350	Imapct as described in PHC

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TABLE B

Addendum to Page 18, Part 2 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

Supply ID	Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
DS 404	1180	680	500	B	69	Hillside	Gate	275	Impact as described in PHC
DS 405	1190	675	515	B	69	Hillside	Gate	475	Impact as described in PHC
DS 406	1230	670	560	B	69	Hillside	Mid Panel	275	Impact as described in PHC
DS 411	1180	670	510	B	69	Hillside	Quarter	50	Impact as described in PHC
DS 412	1220	670	550	B	57	Hillside	Mid Panel	300	Impact as described in PHC
DS 413	1200	670	530	B	69	Hillside	Quarter	150	Impact as described in PHC
DS 414	1140	670	470	B	69	Hillside	Mid Panel	325	Impact as described in PHC
DS 416	1120	675	445	B	69	Hillside	Gate	60	Impact as described in PHC
DS 420	1260	670	590	B	70	Hillside	Gate	40	Impact as described in PHC
DS 423	1210	670	540	B	70	Hillside	Mid Panel	425	Impact as described in PHC
DS 424	1180	670	510	B	70	Hillside	Quarter	300	Impact as described in PHC
DS 426	1100	675	425	B	57	Hillside	Gate	90	Impact as described in PHC
DS 427	1240	660	580	B	61.5	Hilltop	Outside	1075	No impact expected
DS 441	990	680	310	B	70	Valley	Gate	575	Impact as described in PHC
DS 442	1180	710	470	B	68	Hillside	Gate	225	Impact as described in PHC
DS 445	1180	680	500	B	56	Hilltop	Outside	1475	No impact expected
DS 446	1180	680	500	B	56	Hilltop	Outside	1450	No impact expected
DS 447	1180	680	500	B	56	Hilltop	Outside	1575	No impact expected
DS 450	1220	660	560	B	68	Hillside	Outside	1025	No impact expected
DS 460	1240	700	540	B	62	Hillside	Outside	1350	No impact expected

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0042 5-3
AEEC 185711

TABLE B

Addendum to Page 18, Part 2 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

Supply ID	Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
DS 461	1205	700	505	B	62	Hillside	Outside	1425	No impact expected
DS 463	1220	690	530	B	62	Hillside	Outside	1900	No impact expected

Total Springs		62				
Average	1184	679	505	62	Valley -	Mid Panel -
Median	1200	680	517.5	62	Hillside -	Quarter -
Minimum	990	650	310	50	Hilltop -	Gate -
Maximum	1280	718	600	79		Outside -

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TABLE B

Addendum to Page 18, Part 2 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

Supply ID	Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
P 1	1220	700	520	NA	74	Hilltop	Mid Panel	400	
P 4	1160	715	445	NA	60	Hillside	Quarter	50	
P 5	1160	715	445	NA	60	Hillside	Mid Panel	275	
P 27	1200	670	530	NA	66	Hilltop	Mid Panel	400	
P 30	1200	660	540	NA	61.5	Valley	Outside	275	
P 40	1200	670	530	NA	56	Valley	Outside	425	
P 45	1190	660	530	NA	61.5	Valley	Outside	1475	
P 50	1200	660	540	NA	61.5	Hillside	Outside	900	
P 51	1170	680	490	NA	56	Valley	Outside	1700	
P 58	1100	700	400	NA	68	Hillside	Gate	0	
P 59	1180	710	470	NA	65	Hillside	Gate	225	
P 61	1100	650	450	NA	68	Valley	Outside	1500	
P 63	1190	675	515	NA	69	Valley	Mid Panel	350	
D21	1080	710	370	NA	57	Valley	Outside	1850	
D22	1090	710	380	NA	57	Valley	Outside	2825	
U1 1	980	675	305	NA	57	Valley	Quarter	50	
U1 5	1050	680	370	NA	50	Valley	Gate	75	
U1 6	1160	675	485	NA	50	Valley	Quarter	275	
U1 7	1020	680	340	NA	70	Valley	Gate	200	
U1 8	1040	670	370	NA	73	Valley	Gate	25	

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TABLE B

Addendum to Page 18, Part 3 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

Supply ID		Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact
U1	9	1040	670	370	NA	79	Valley	Gate	50	
U1	10	1060	670	390	NA	63	Valley	Quarter	100	
U1	12	1080	690	390	NA	50	Valley	Gate	100	
U1	13	1080	690	390	NA	50	Valley	Gate	90	
U1	A	1130	680	450	NA	59	Valley	Quarter	350	
U1A	1	1080	700	380	NA	57	Valley	Gate	725	
U2		1020	710	310	NA	68	Hillside	Gate	175	
U2	7	1180	710	470	NA	68	Hilltop	Gate	325	
U40		1090	650	440	NA	69	Valley	Outside	700	
U40	1	1130	660	470	NA	68	Valley	Outside	1500	
U40	2	1180	670	510	NA	70	Hillside	Mid Panel	325	
U40	2	1180	670	510	NA	70	Hillside	Mid Panel	250	
U40	3	1200	670	530	NA	70	Hilltop	Quarter	100	
U41	1	1100	645	455	NA	61.5	Valley	Outside	1450	
U41	2	1120	650	470	NA	68	Valley	Outside	600	
U41	2	1120	650	470	NA	61.5	Valley	Outside	1850	
U41	4	1200	660	540	NA	61.5	Valley	Outside	475	
U42	3	1190	670	520	NA	61.5	Valley	Outside	675	
U42	4	1240	680	560	NA	56	Valley	Quarter	225	

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TABLE B

Addendum to Page 18, Part 2 F (1)

Spring, Pond and Stream Data

Applicant's Name - American Energy Corporation D-0425-3

Supply ID		Surface Elevation (feet)	Coal Elevation (feet)	Overburden (feet)	Aquifer See Attachment 14B	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Predicted Impact

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CENTURY MINE
PERMIT D-0424-3
ADDENDUM TO PAGE 18, PART 2, F(1)

During early 1999, a group of wells and one spring in close proximity to each other , in the Powhatan No. 6 Mine permit area, were monitored on a daily basis to determine the actual impact date. The purpose of this specialized monitoring was to monitor these sources intensely to determine if and when impacts occurred in relationship to mining. The monitoring covered a portion of the Powhatan No. 6 Mine D-0360-6 approved application area. It was located over the 26 East longwall panel. This monitoring was preformed in lieu of the normal weekly monitoring when the longwall gets within 3 weeks of mining beneath a source. The results varied, but are presented in Table C. Most of the sources were located at the top of a hill along Belmont County Highway 56.

Sources were monitored daily from January 31, 1999 until March 31, 1999. The relative location of the longwall panel is shown in Table C as a positive number as the longwall approaches the source, and as a negative number as the longwall retreats away after passing beneath a source. Impacts were said to occur when the static water level or flow exceed the pre-mining range of values (depth to water increased or flow decreased). Hydrographs of the wells and spring that were a part of that study are enclosed and show the distance that the sources were undermined.

Three of the 15 wells were not impacted during the monitoring period. The one spring also was not impacted during this period. Of the wells, six were impacted by the previous panel (25 East), and then were not impacted again by the 26 East panel. Of the 8 wells impacted by the mining in the 25 East panel alone, impacts were all observed as occurring after the mining had past the source, and for sources over the panel or the gate, the longwall was an average of 999 ft past the source when the impacts occurred. In the one instance of the source being in the adjacent longwall panel (460 ft north of the 26 East panel), impacts were not observed until the longwall was 2943 ft past the source, showing that the impacts had lagged due to their distance from the face.

There were two dug wells that were studied during this time. DW-206, located over the 26 East panel, had impacts typical to dug wells in that prior to the face reaching the source, water levels rose due to the ground being put into compression. When the ground is in compression, the fractures in the rock close from the compressive forces and the water is forced into the well bore with a corresponding rise in static water level. When the longwall was over 770 ft past the well, the static water level dropped below historic levels. In the other dug well, DW-356, located over the northern gate entries, the static water level was within or near the historic levels until the face was 570 ft from the source, when the swl rose during the remainder of the daily monitoring period. The static water level returned to normal soon after the daily monitoring had concluded. When the adjacent longwall panel (27 East) was past the source by 936 ft, the static water level had dropped below historic levels.

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Page 2

Of the 4 wells impacted by mining in the 25 East (previously mined) panel, the greatest distance to an impacted well (W-205) was 440 ft. However, there were wells closer than 440 ft that were not impacted by the 25 East panel. (W-203, 355 ft; W-199, 185 ft; and W-367 335 ft). All of these wells were impacted when the 26 East panel was mined.

The one spring (DS-101), monitored during the daily monitoring period, was not impacted by the 26 East panel until two months after the source was undermined. It is believed that rainfall probably accounted for it continuing to flow during this time. The spring still flows periodically from a rainfall event, like most springs that have been impacted.

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Spring Impacts – Distances From Longwall Panels And Impacts to Soil Moisture and Tree Growth

Ohio Valley studied all of the springs undermined from January 1992 through March 2003, a period of over 11 years, involving site specific data for 80 springs. The purpose of this study was to determine the distance at which springs are negatively impacted by the mining of an adjacent longwall panel and their position relative to adjacent panels at The Ohio Valley Coal Company's (OVCC's) Powhatan No. 6 Mine (the mine). Springs were considered to be impacted if their flow decreased below historic, normal ranges for an extended period of time, taking rainfall into account. Additionally, the impact of the mining on soil moisture and tree growth was examined in other studies, but will be reported here.

The Powhatan No. 6 Mine is located in eastern Belmont County, Ohio. Springs were categorized as being located to the side or off the end of an adjacent panel. The distance to the adjacent panel was measured from available mapping. OVCC's normal monitoring procedure is to monitor springs (and other water sources) if they are within 500 ft of an approaching panel, on a weekly basis for 3 weeks prior to the longwall passing the spring and for 3 weeks after the longwall has passed the spring. Monthly monitoring generally is done on all springs within 1000 ft of any longwall panel for a minimum of one year prior to the longwall passing the spring until a year after the longwall passes a spring. The same monitoring is used for wells, although wells are not discussed in this analysis. This monitoring allows OVCC to determine if an impact has occurred. This data may be found in the Quarterly Monitoring Reports for The Ohio Valley Coal Company, Powhatan No. 6 Mine, Permit D-0360, First Quarter, 1992 through the First Quarter, 2003 submitted to the Ohio Department of Natural Resources, Division of Mineral Resources Management.

Measurement Method

It is important that one understands what the measurements indicate. The longwall is monitored daily from a fixed location (the center of the main belt). The locations of the longwall are recorded daily as the "longwall plus". The sources (wells, springs, and stream monitoring points) can be related to the same datum from their relative position on the application or quarterly monitoring map as the "source plus". Subtracting the two values (longwall plus – source plus gives the relative distance between the longwall face and the source. This difference usually begins at some value above zero when each panel starts, and decreases to zero and then becomes negative until the panel is finished. The values become positive again when the next panel starts. The source positions are measured from the edges of adjacent panels to determine how far away the longwall panel impacts the source.

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Spring Impacts

At the Powhatan No. 6 Mine, 80 springs have been monitored monthly and weekly due to their proximity to the longwall mining. A total of 6 springs were not monitored weekly as being adjacent to a mining panel, i.e., they were located too far away (beyond 500 ft) from an adjacent panel to warrant weekly monitoring. A total of 14 monitored (monthly) springs were located as being off the end of a longwall panel, 3 of which were too far away to warrant weekly monitoring. A few springs over 500 ft from the longwall panels were monitored weekly, primarily because they were in use at the time. A total of 63 springs, monitored monthly, were located as being off the side of an adjacent longwall panel, 19 of which were too far away to warrant weekly monitoring.

Of the 11 weekly monitored springs located off the end of panels, the furthest distance from the adjacent panel at which an impact occurred was determined to be 210 ft. Of the 40 weekly monitored springs located off the side of the panels, the furthest distance at which an impact occurred was 500 ft. This additional impact distance is believed to be due to the final configuration (subsidence trough) that develops after a panel has past a point. Since there is no subsidence trough at the ends of panels, the strata experiences different stresses than strata to the side of a panel, leading to a different spring impact distance. Based on monthly monitoring, springs located at more than 500 ft from the side of adjacent panels were not impacted by the mining of the adjacent panel. The adjacent panel did not impact springs more than 210 ft from the end of adjacent panels. However, since the number of springs located off the end of a panel is small, 300 ft will be used as the greatest distance that springs have been impacted from the ends of panels.

The accompanying table entitled Spring Impact Inventory is a summary of impact distances for each monitored spring. Only 2 of 11 monitored springs (18.2 percent) located off the end of a panel showed any impacts from adjacent panels. Of the 44 monitored springs located off the side of the panels, only 21 (47.7 percent) showed impacts from adjacent panels. Therefore impacts only occur in a limited number of cases, probably determined by topographic position.

Soil Moisture

The Soil Survey of Belmont County (U.S. Department of Agriculture, Soil Conservation Service, 1981) indicates that certain soils within Belmont County, Ohio may become perched with water at different times of the year. That is not to say that the entire soil zone becomes perched, rather, as observed in the field, seepage zones develop. The soil types in this area are primarily Lowell-Westmoreland Silt Loams that may become perched from January to May depending on rainfall and the elevation of the high water table. These zones are usually located where an intermittent stream begins.

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Growing Season for Plants and Saturated Zones

The normal growing season for plants is from mid-May through mid-September in this area of Ohio. Plants receive their moisture and nutrients from the soil which receives its moisture from rainfall. Only hydrophytic plants are known to grow within permanently saturated zones (wetlands), and thrive in such conditions, while most other vegetation would "drown," being deprived of oxygen to the root zone. Trees located close to saturated areas (perched soils) have been found to be dead or dying due to oxygen deprivation. The time that soils are perched in this area is at the beginning of the growing season only, indicating that perched soils probably have little to do with tree growth.

Impact of Longwall Mining on Soil Moisture and Tree Growth

Previous studies show that soil moisture and tree diameter growth are not impacted by longwall mining located directly over such mining (Runkle, 1992. and Runkle, 2001). Tree diameter growth was not found to be impacted by panels at any distance away from longwall mining or directly over such mining (Hicks and Rentch, 2000 and Hicks and Rentch, 2001). It is apparent that longwall mining, while impacting springs at distances from 320 to 480 ft from a panel does not adversely impact soil moisture or tree growth at any distance or even directly over longwall mining panels.

Impact of Ground Water on Soil Moisture

Results of monitoring three saturated zones adjacent to locations where soil moisture and tree diameter studies indicate that it appears that the deep zone may be initially impacted by longwall operations as far away as 1800 ft, though minimally. There does not appear to be any impact to the shallow zone from operations as close as 275 ft to the nearest segment of the working face (Craig and Wallen, 2001). This information, coupled with the results of the soil moisture study and the tree growth study, indicates that there is no relationship between fluctuations in the site hydrology, soil moisture, and the growth or health of vegetation. Indeed, the study concluded at the end of 2002 with one year of data after mining indicating that there was no impact of longwall mining on soil moisture or tree growth regardless of impacts to the groundwater (Holt, 2003).

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Conclusions

An analysis of OVCC's spring monitoring data has determined that impacts to springs located beyond the perimeter of longwall mining panels are limited or are rare especially when the spring is off the end of a longwall panel. In addition, impacts are limited to a distance of less than 500 ft from the side of a panel. Impacts are limited to a distance of about 300 ft for springs located off the end of a longwall panel. Some springs that overlay panels may not be impacted, although most (over 90 percent) are impacted to some degree. Existing information shows that some soils in the area may become perched in the early spring but research shows that overall soil moisture is not impacted

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by longwall mining, nor is the growth or health of trees located either adjacent to or directly over longwall panels.

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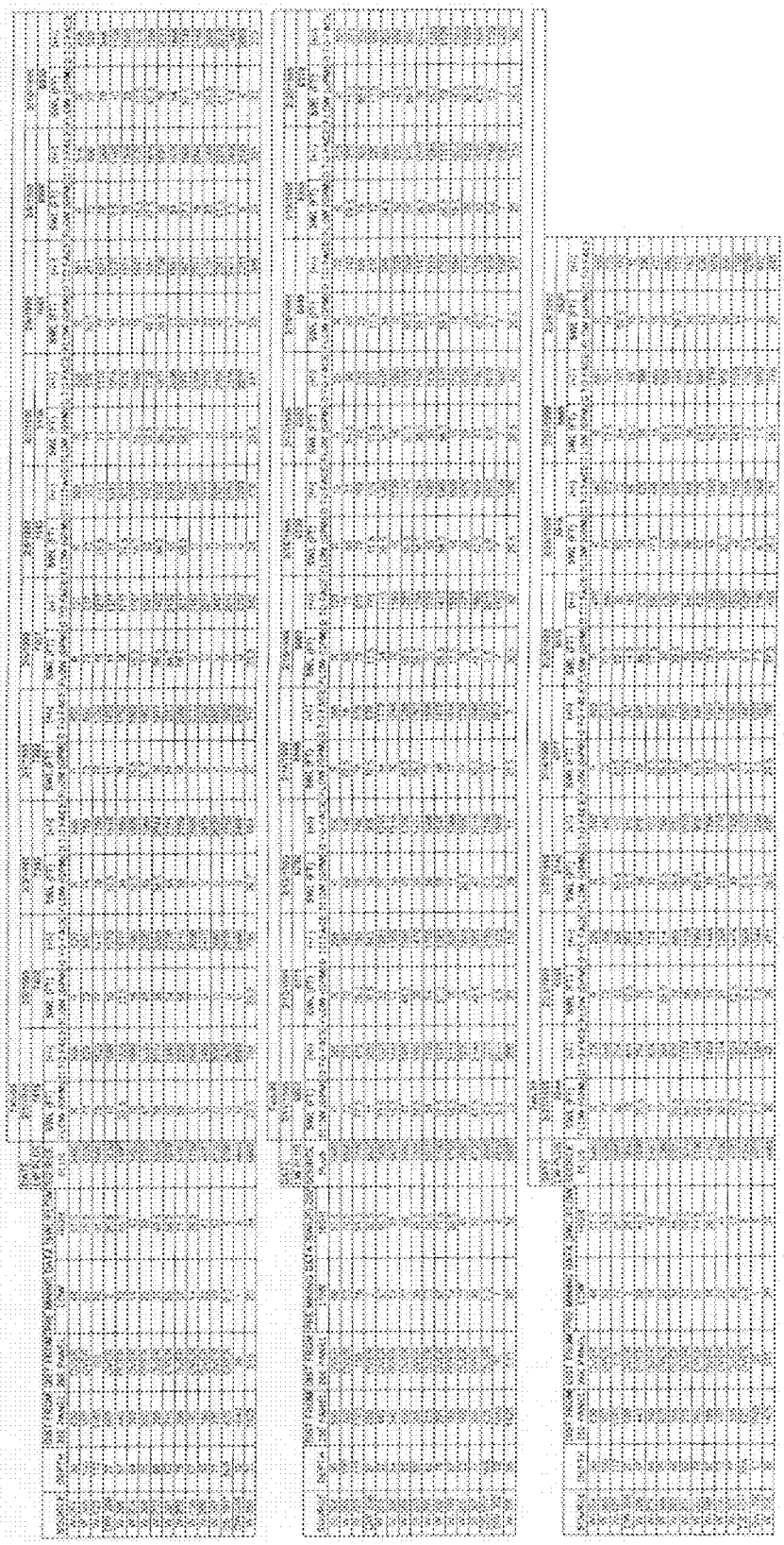

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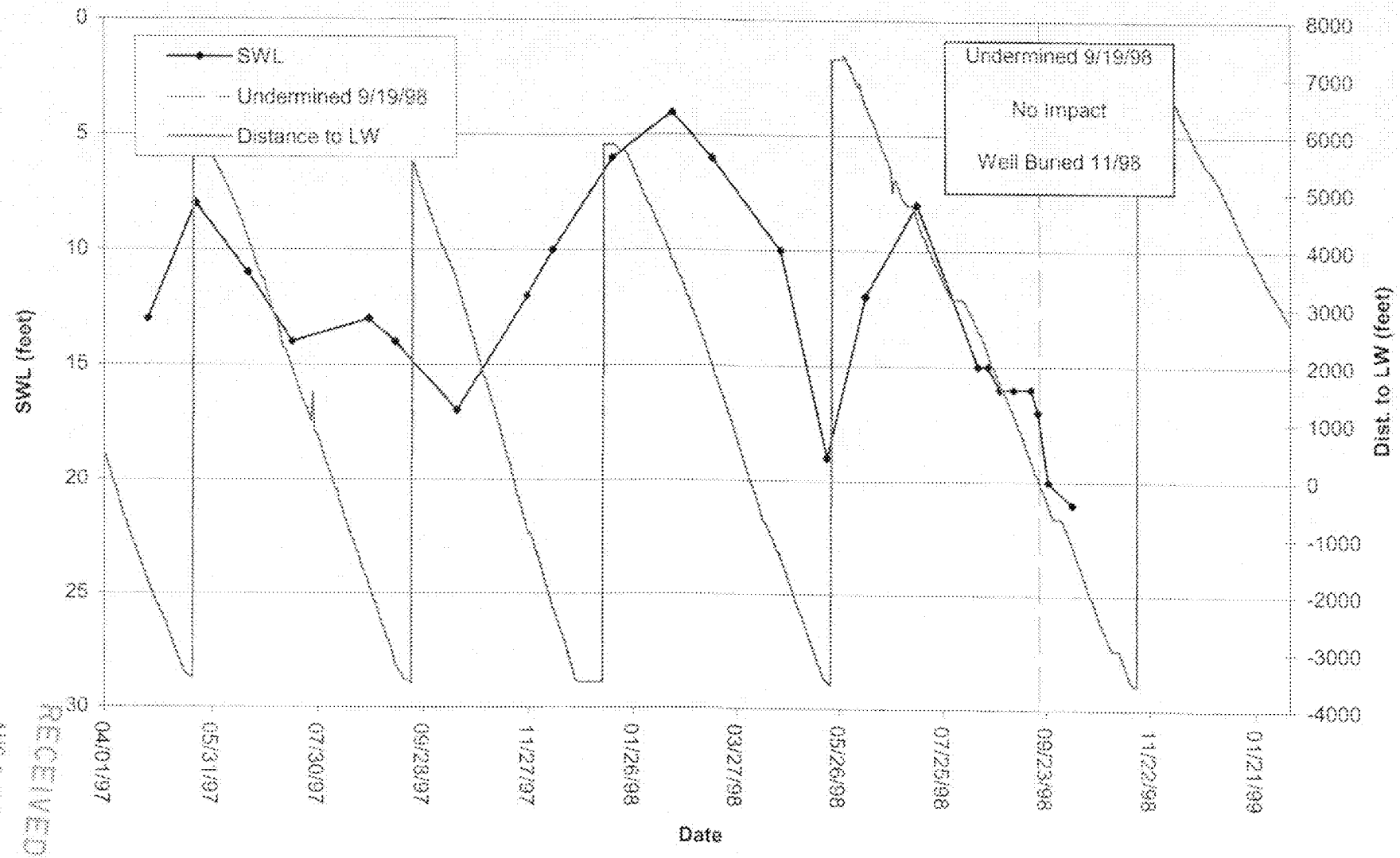

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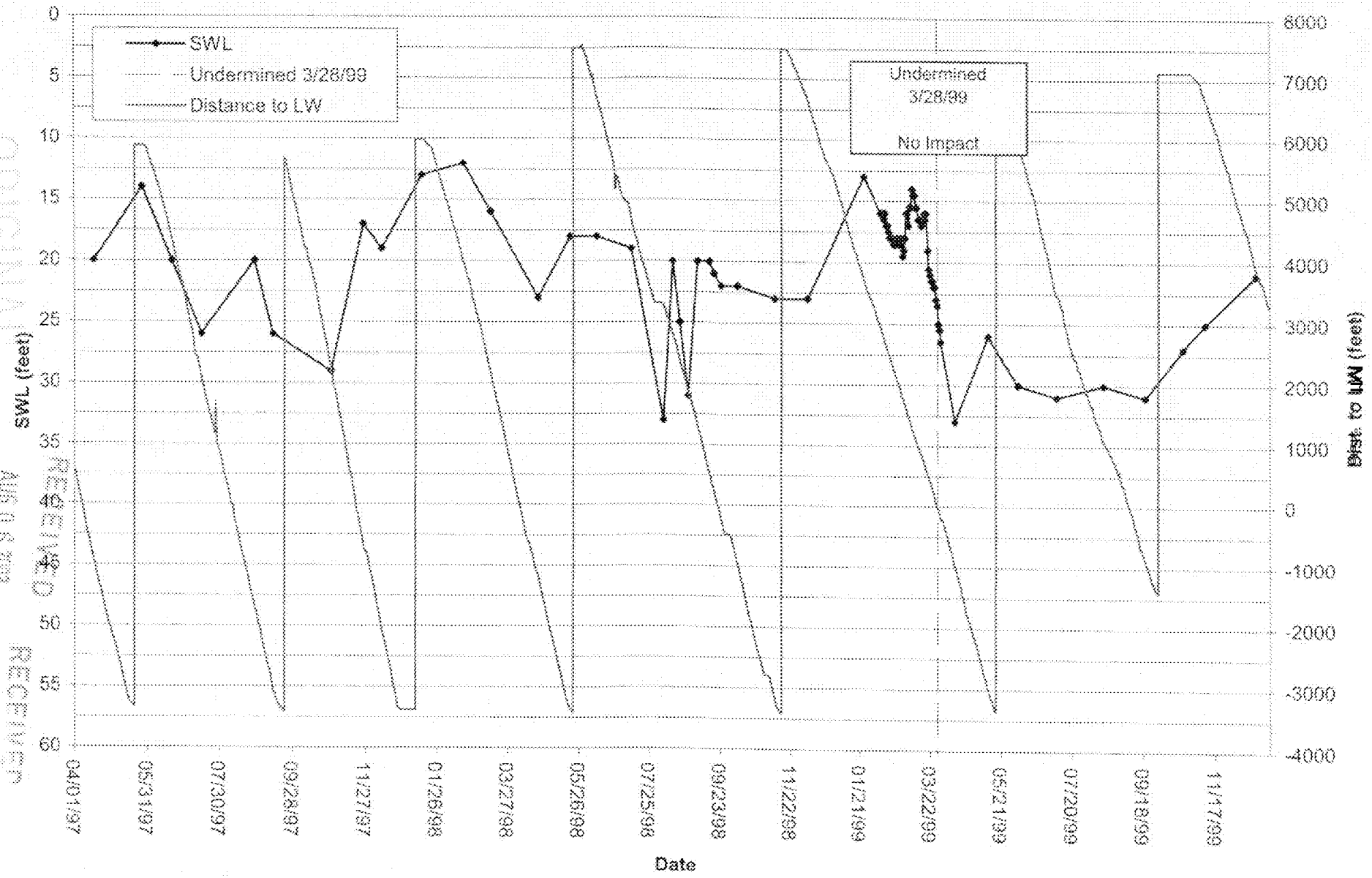

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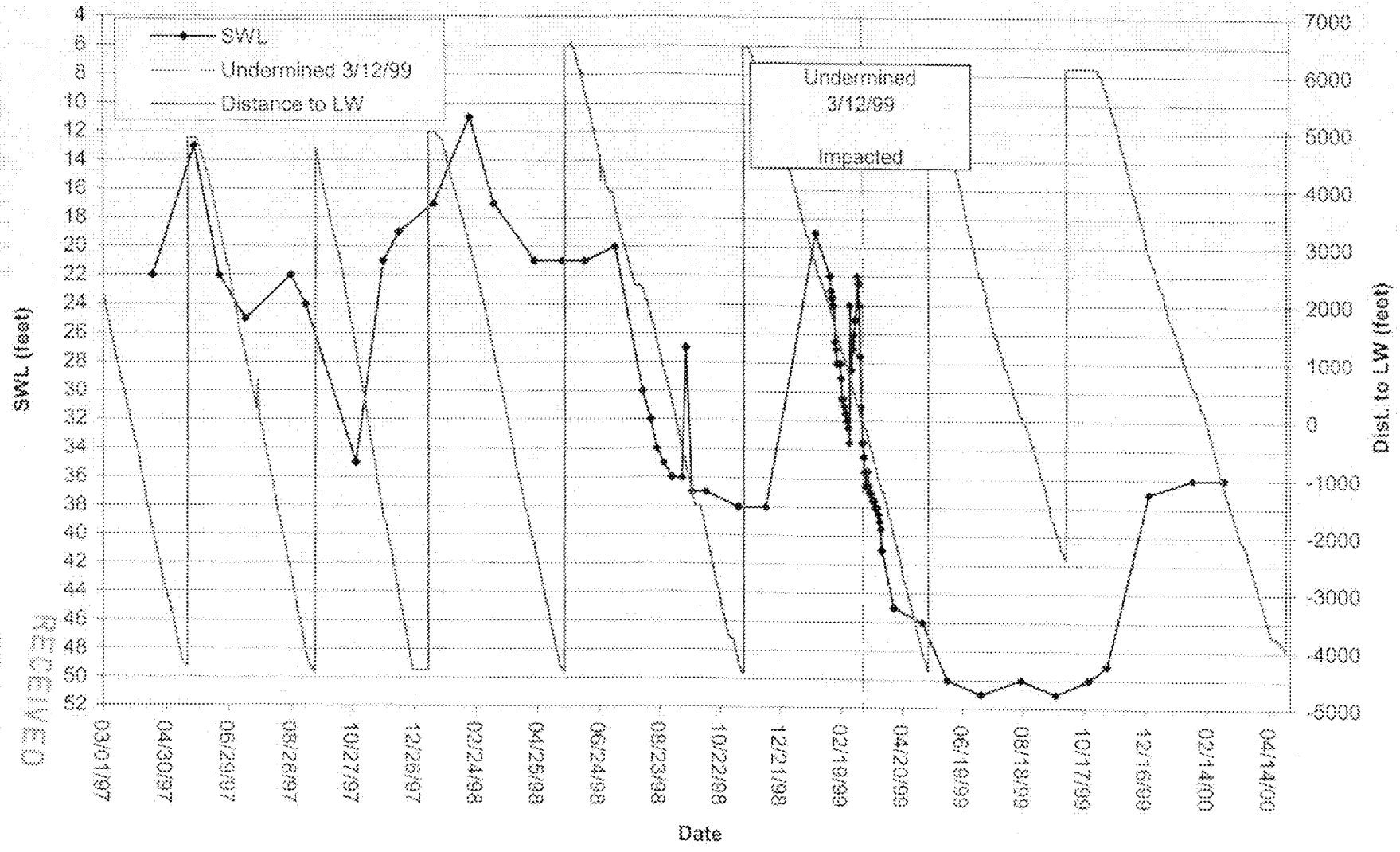

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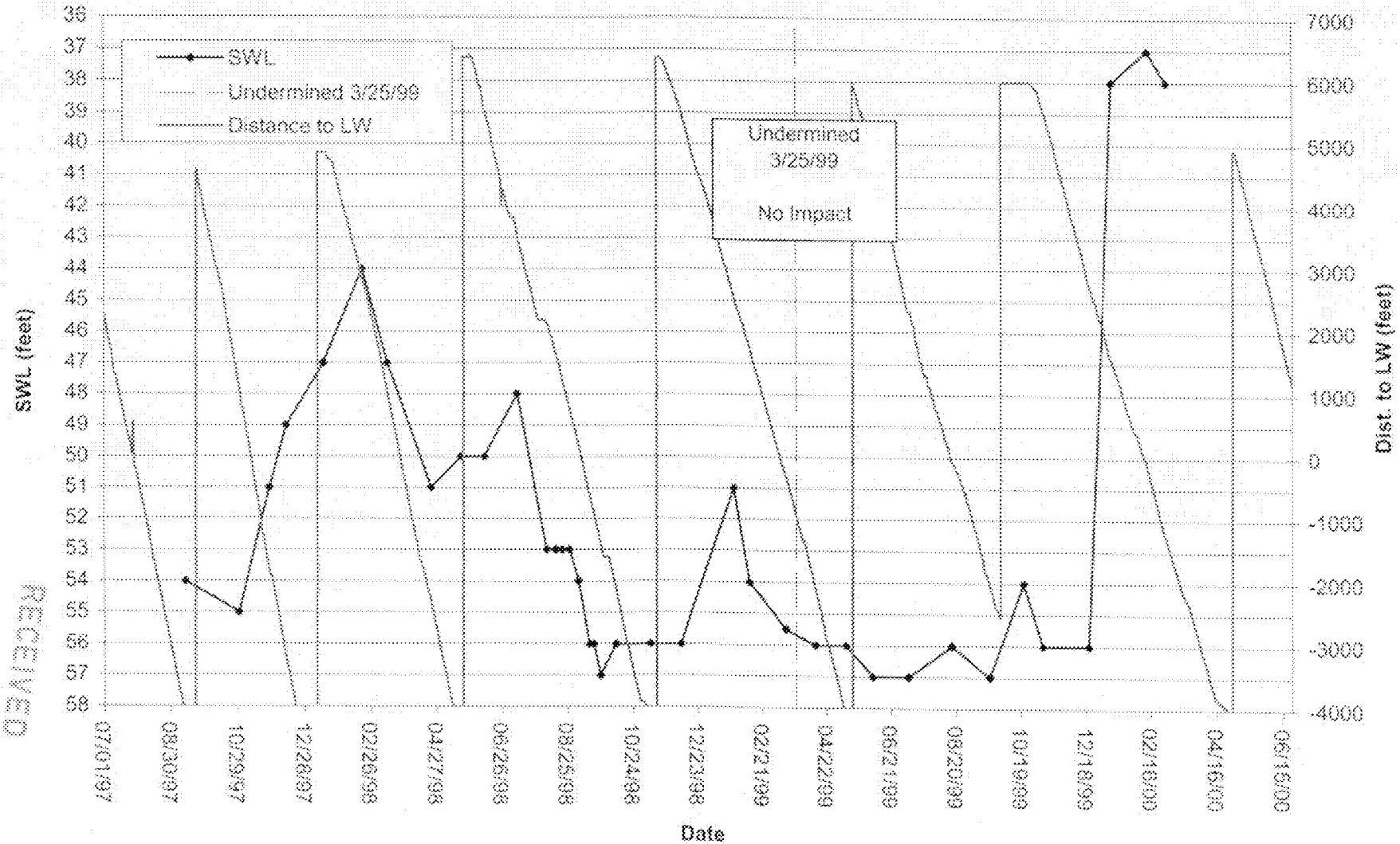

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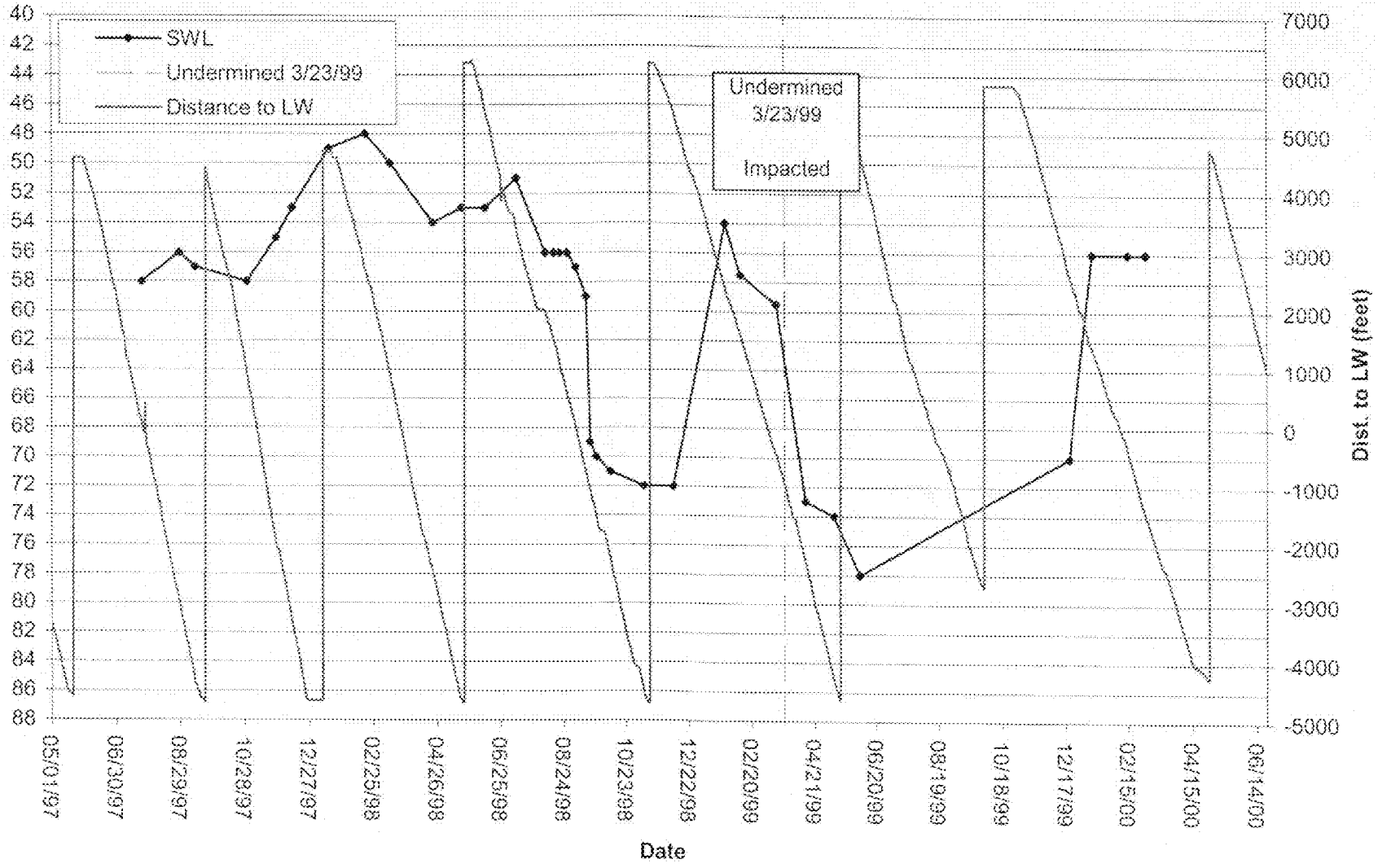

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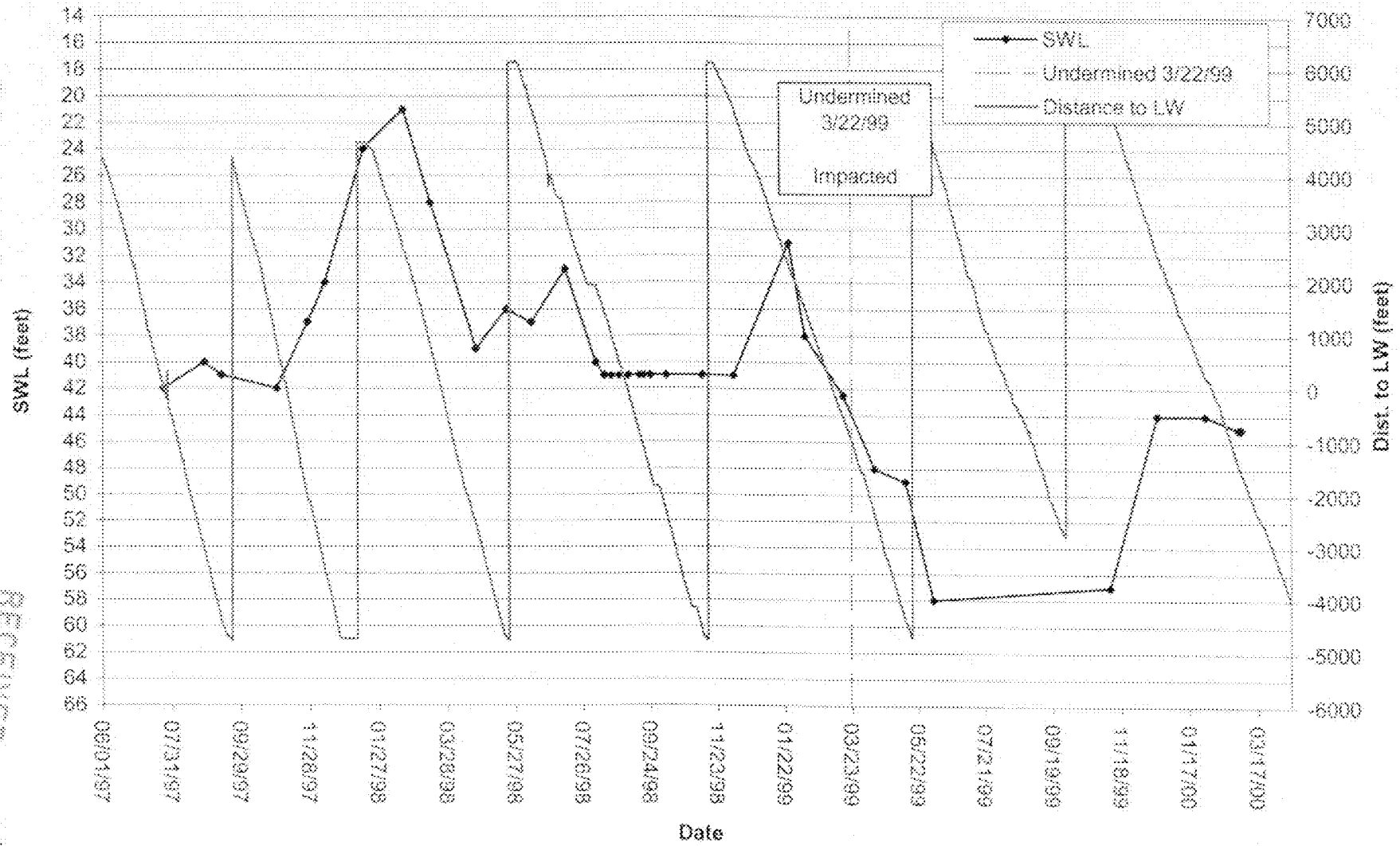

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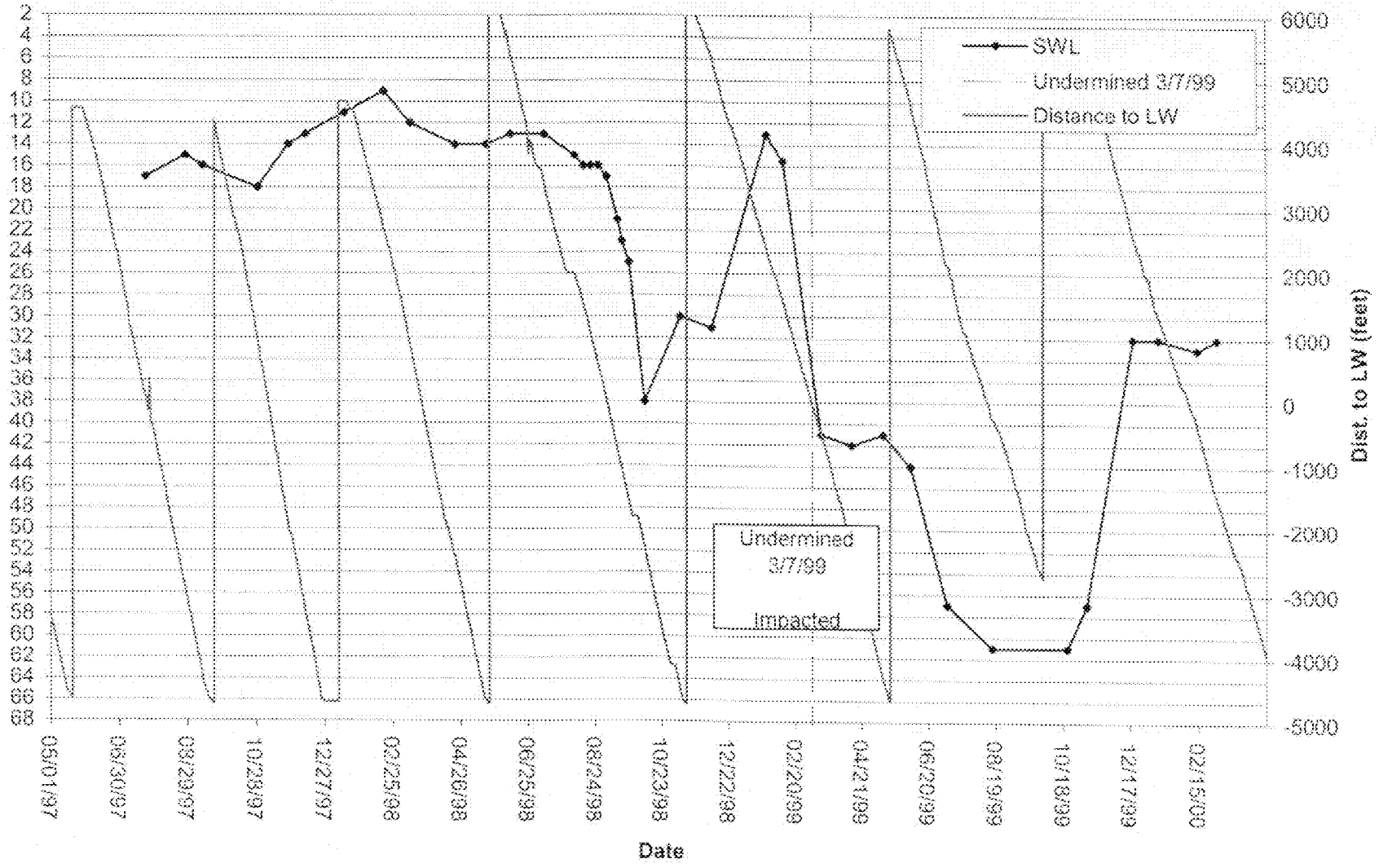

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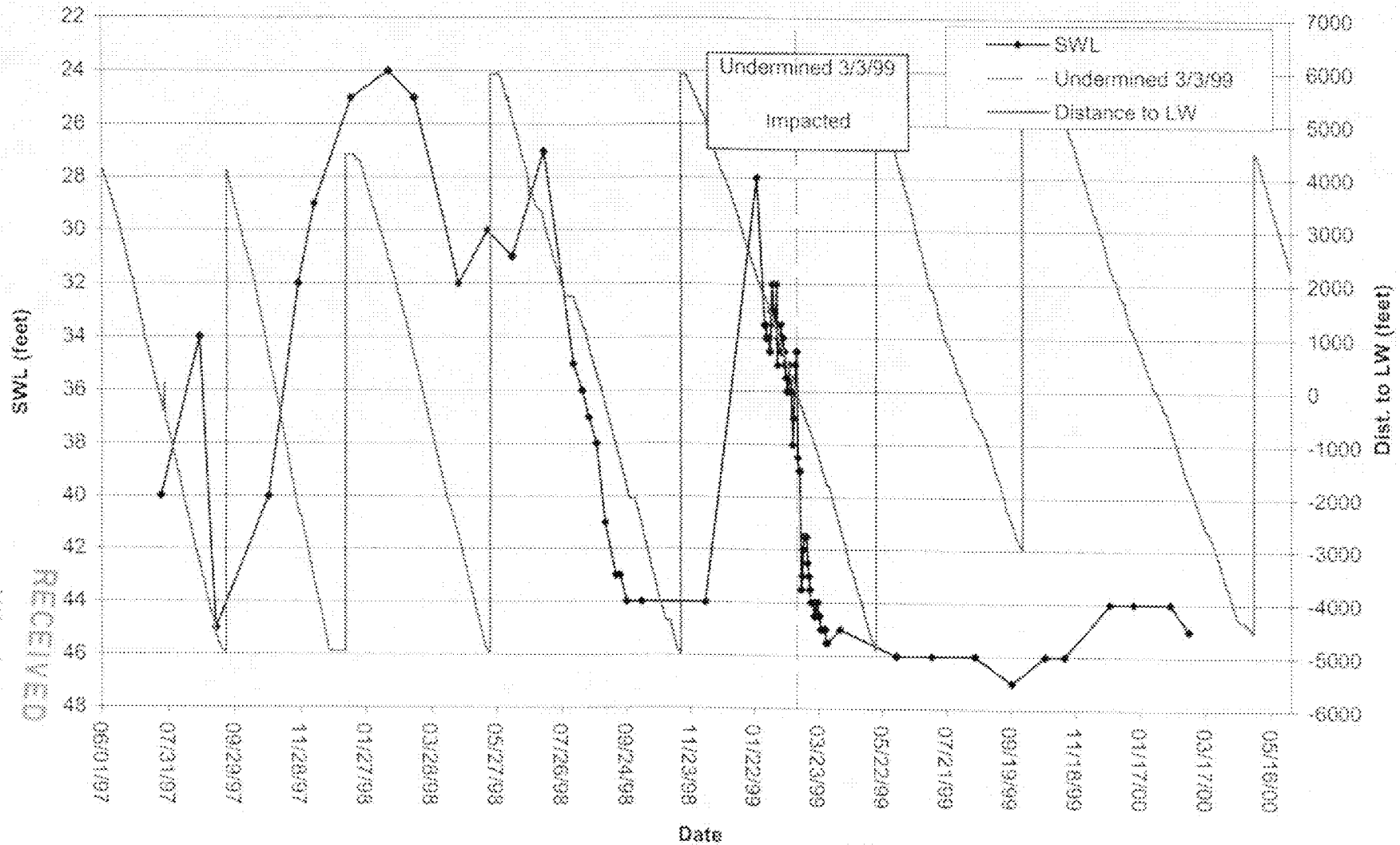

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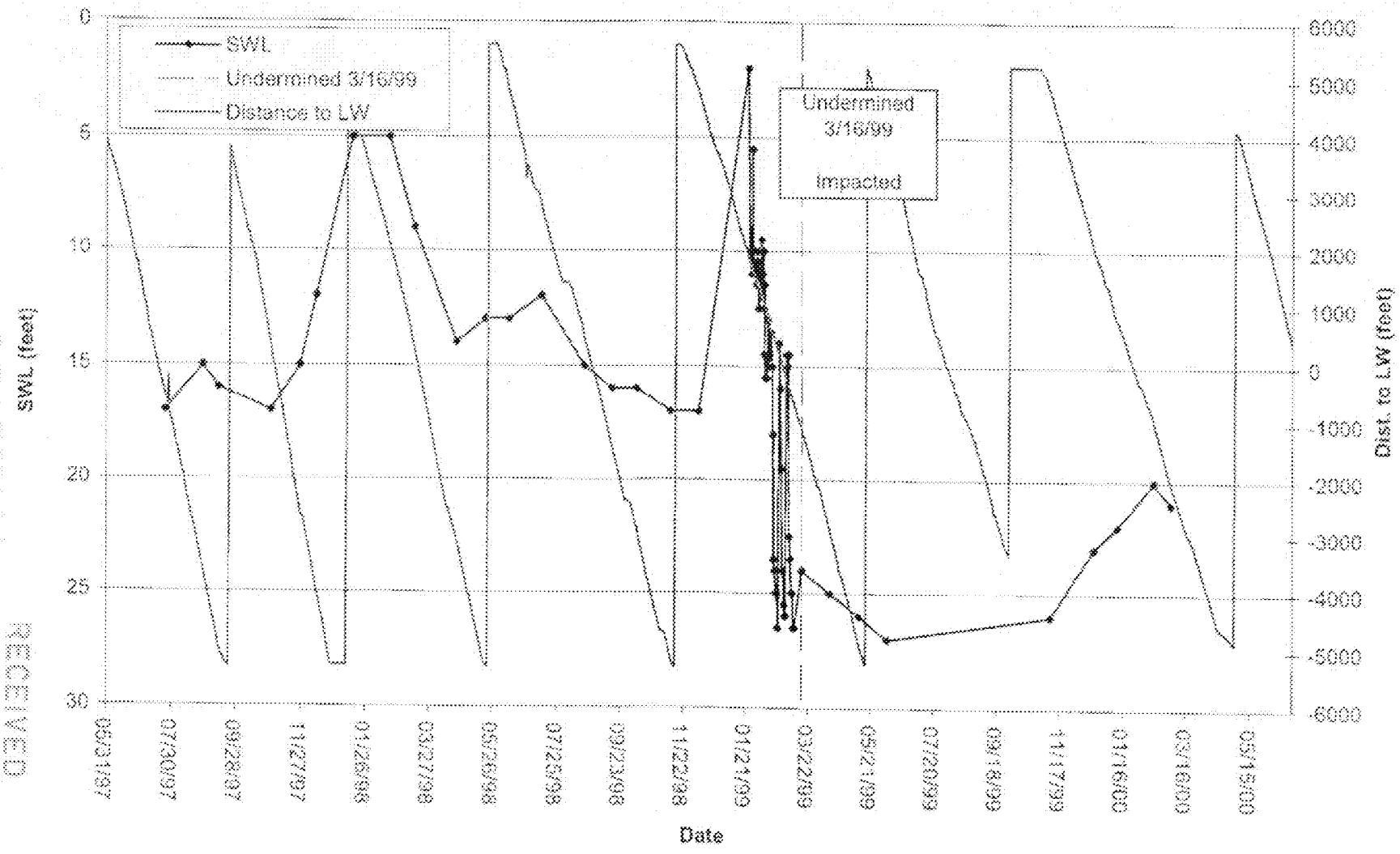

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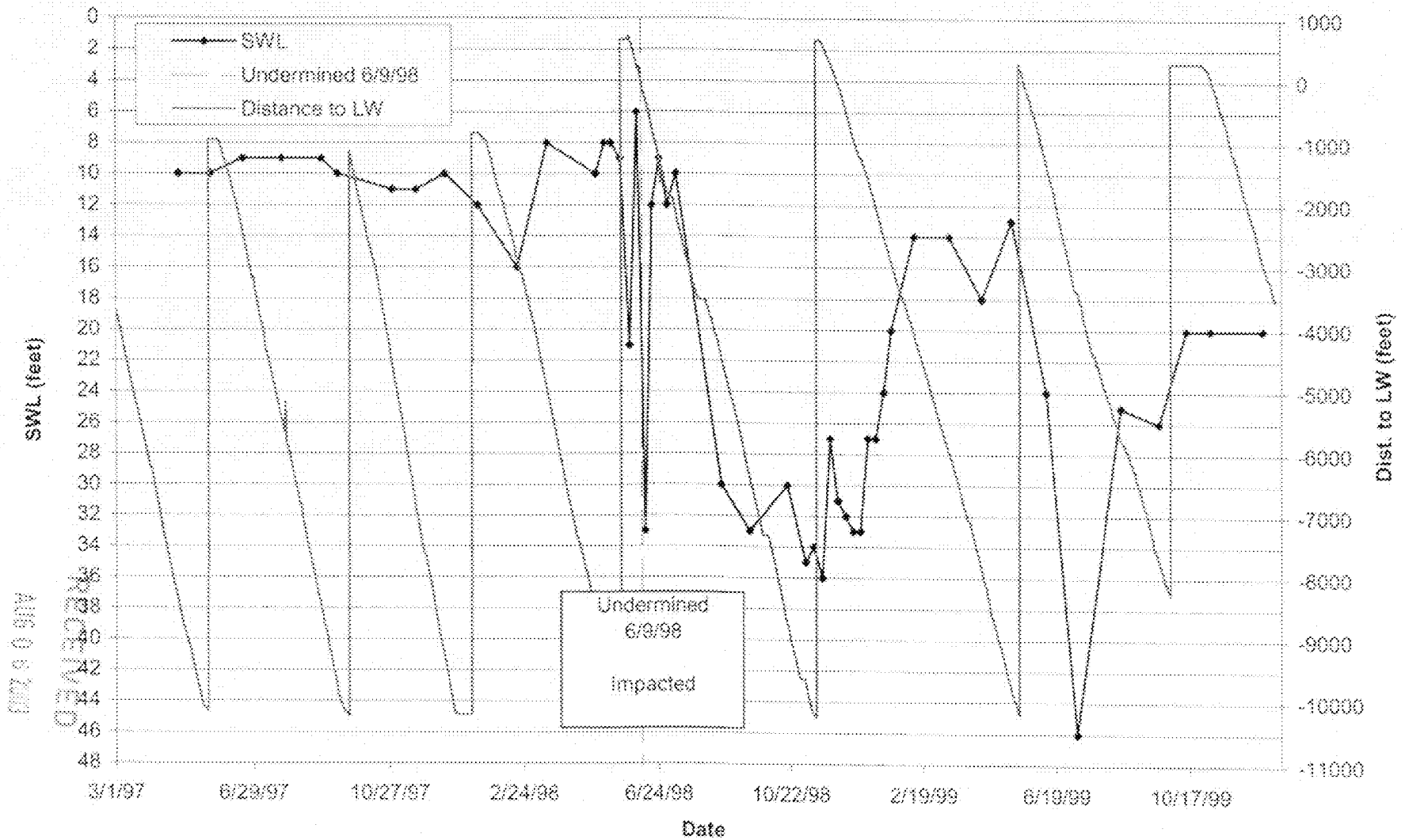

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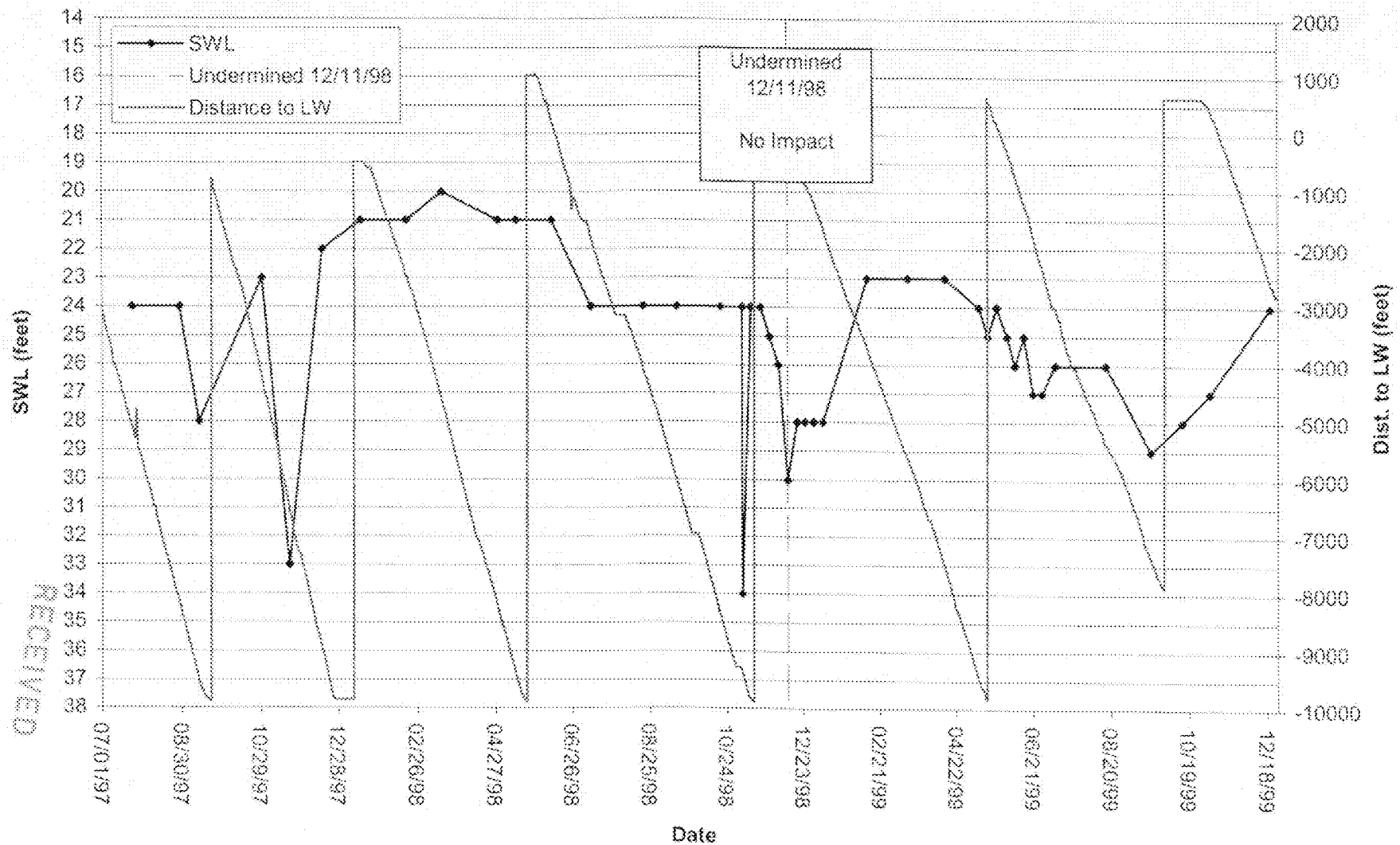

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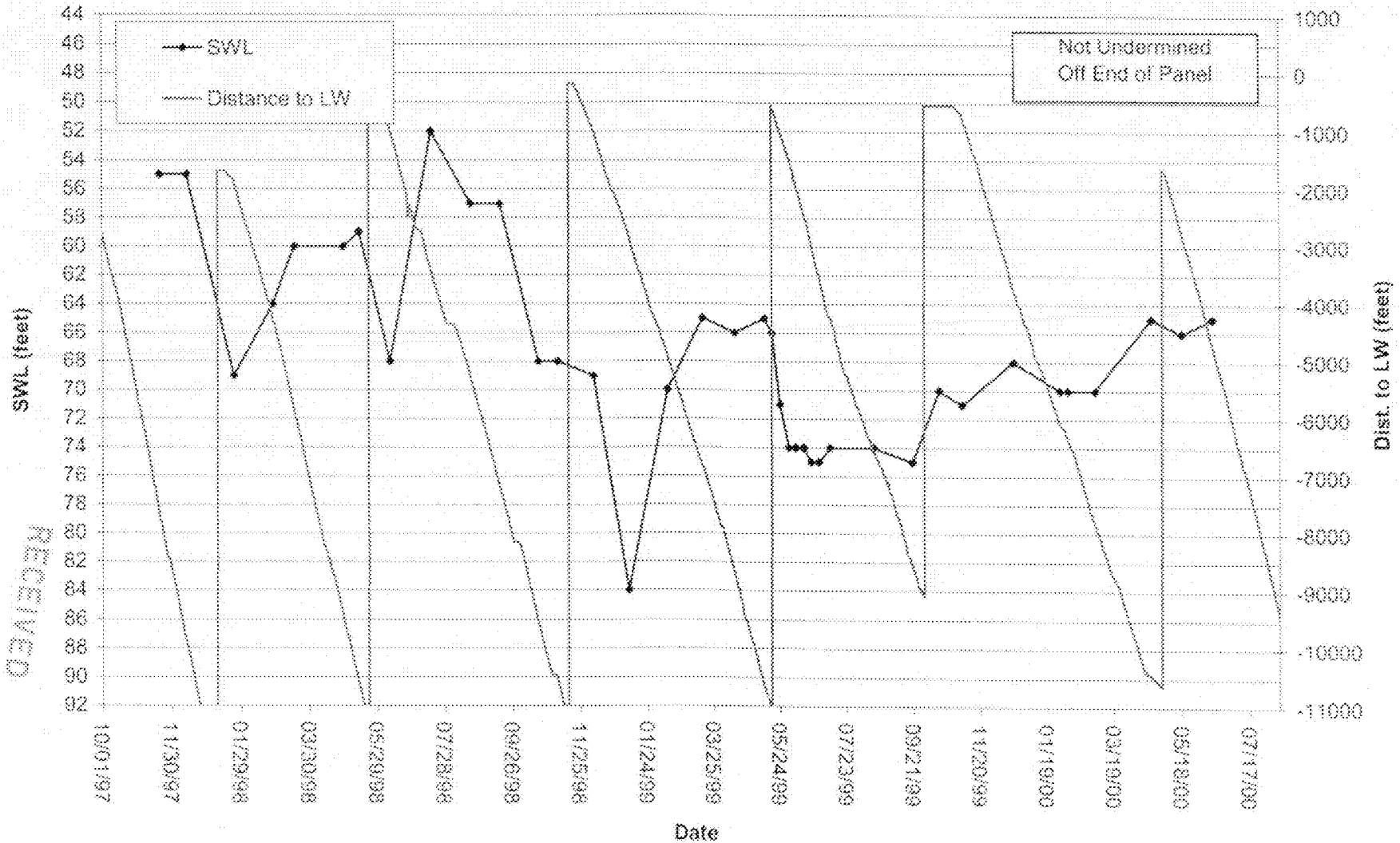

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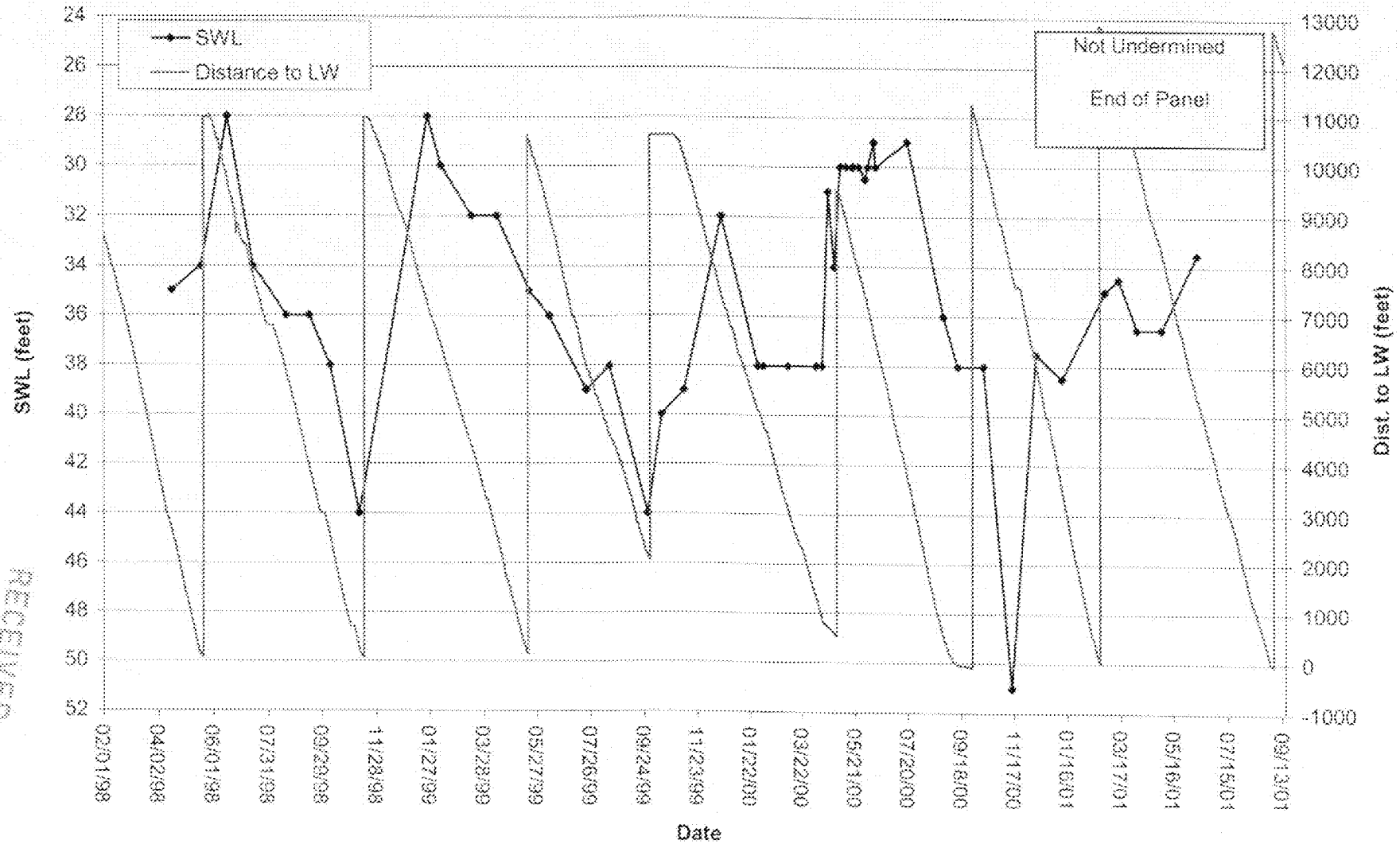

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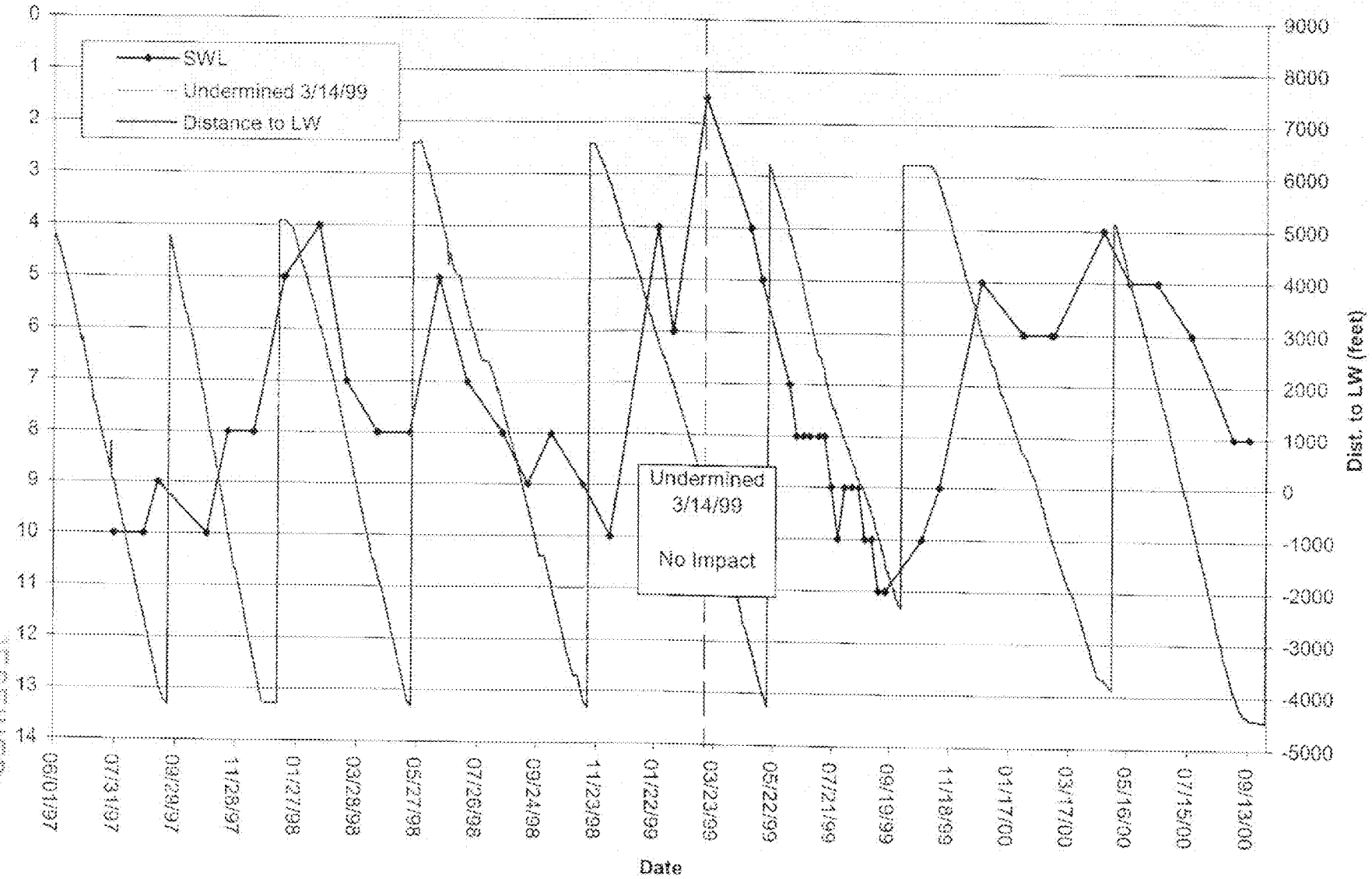

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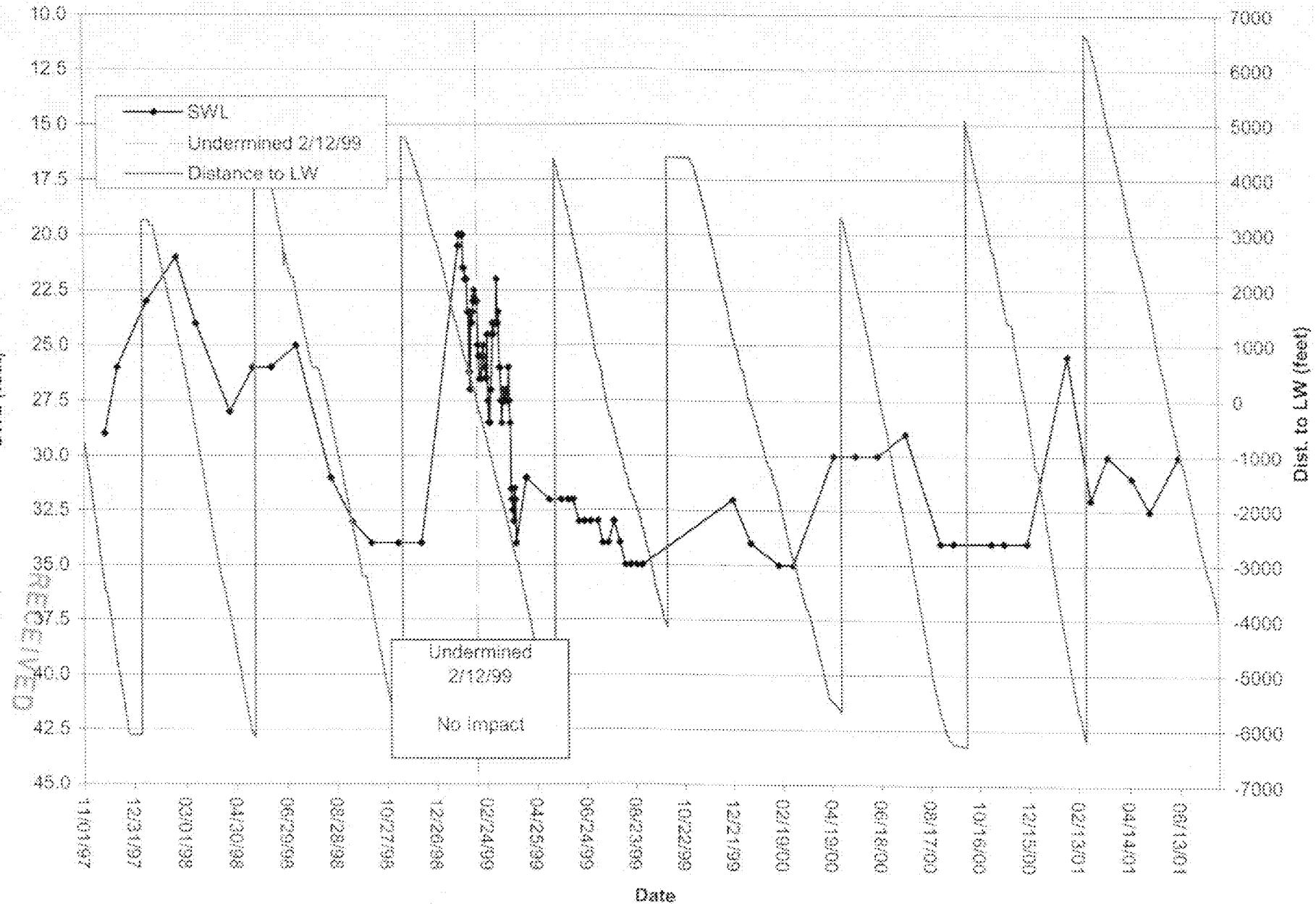

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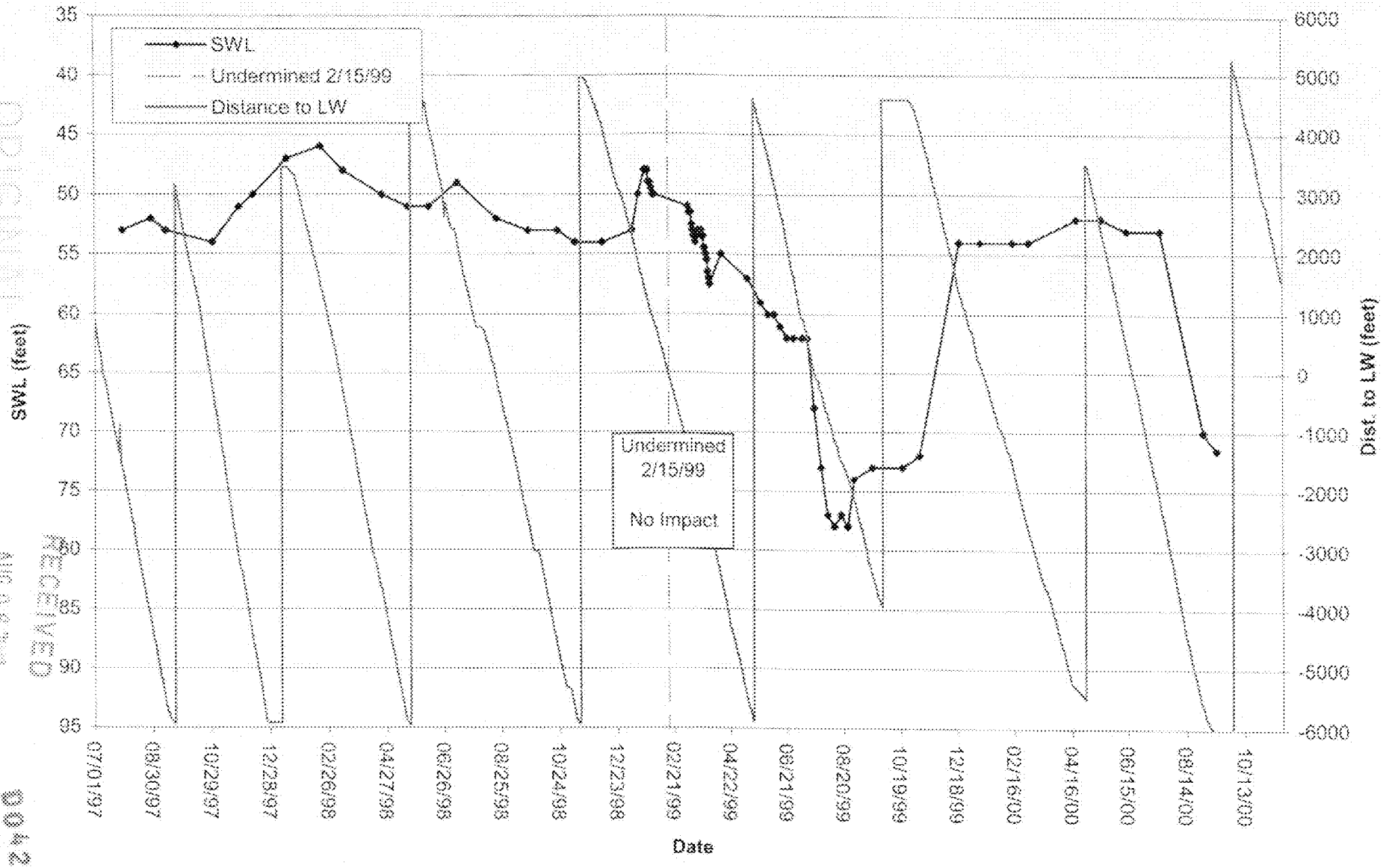

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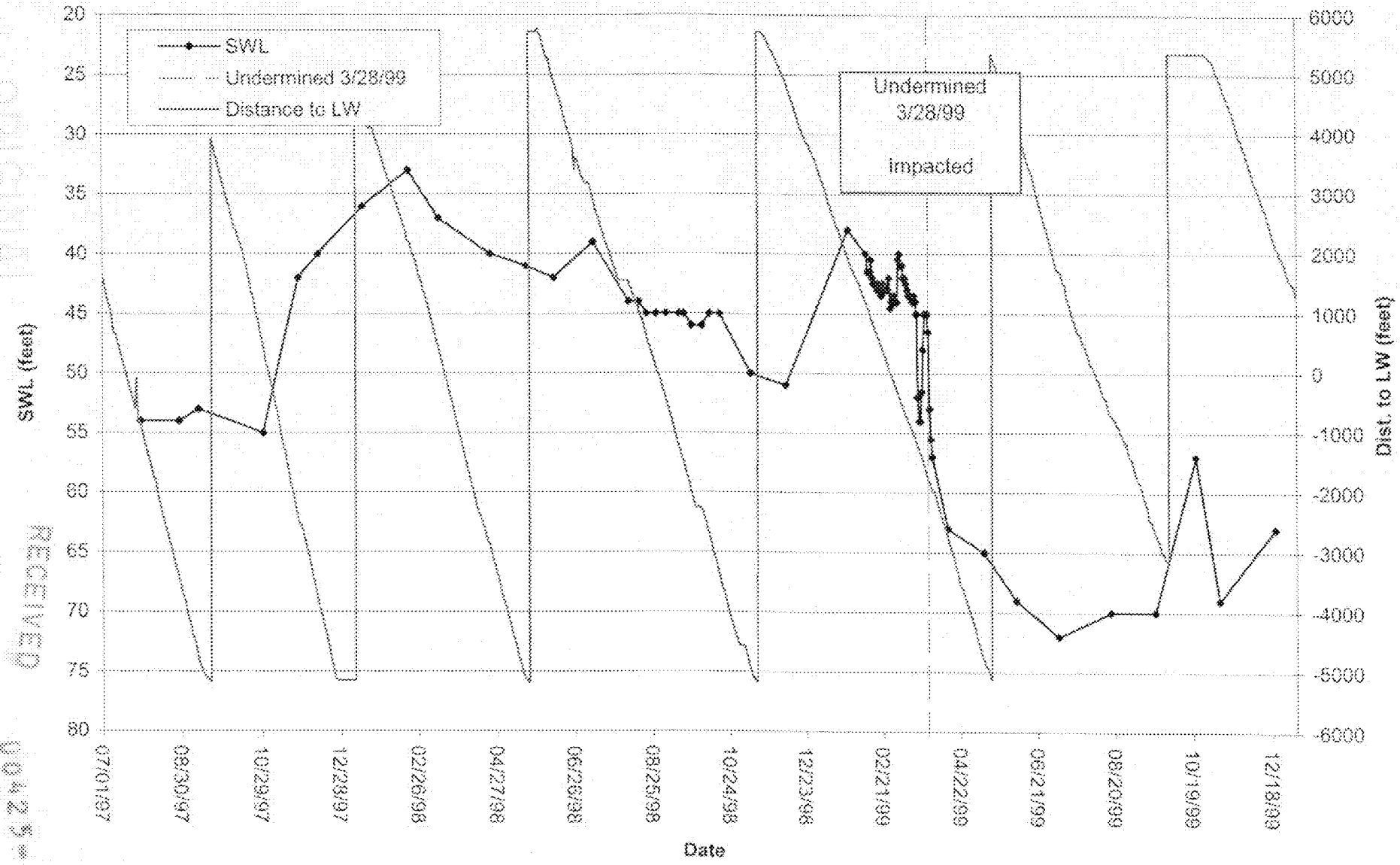

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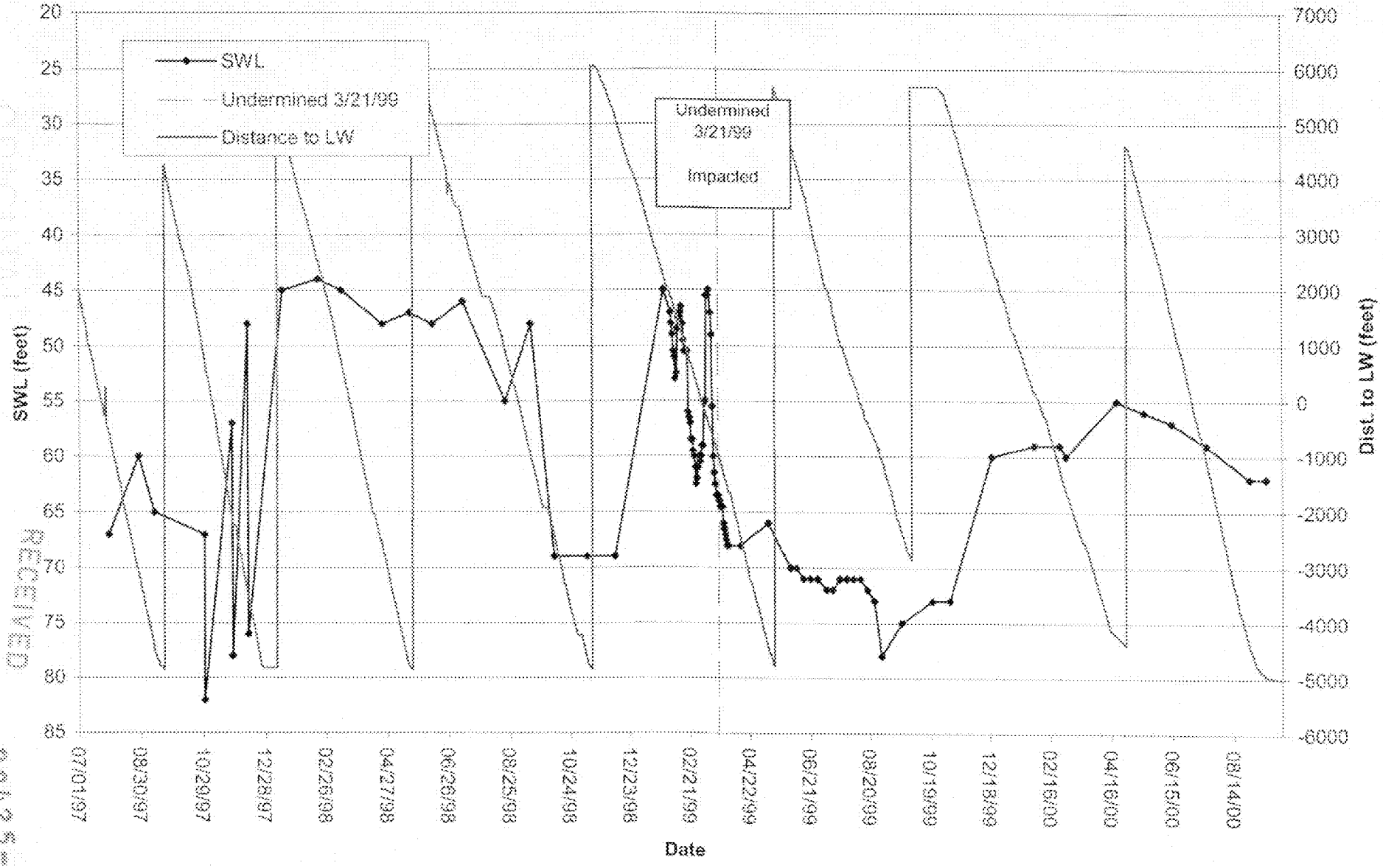

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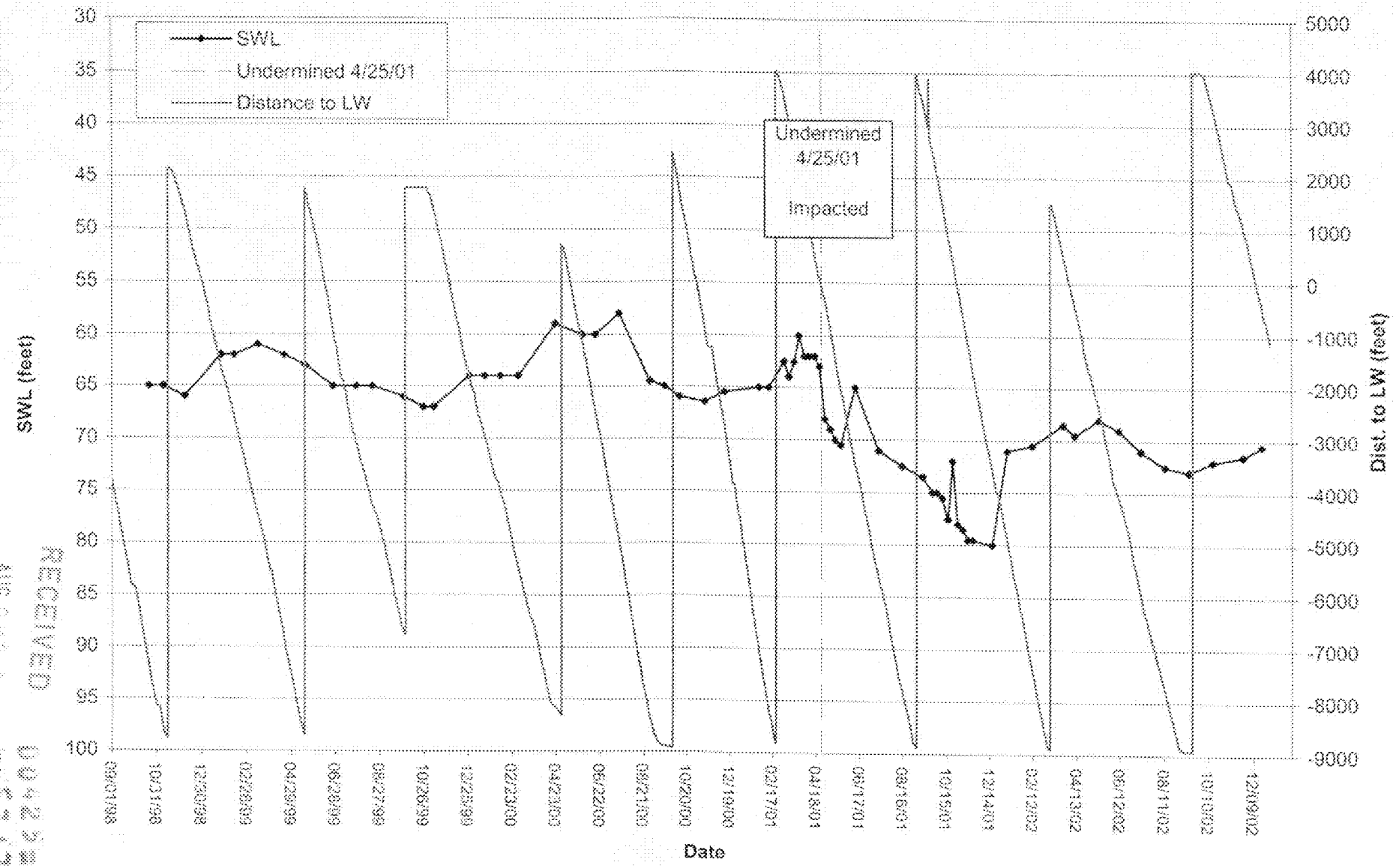

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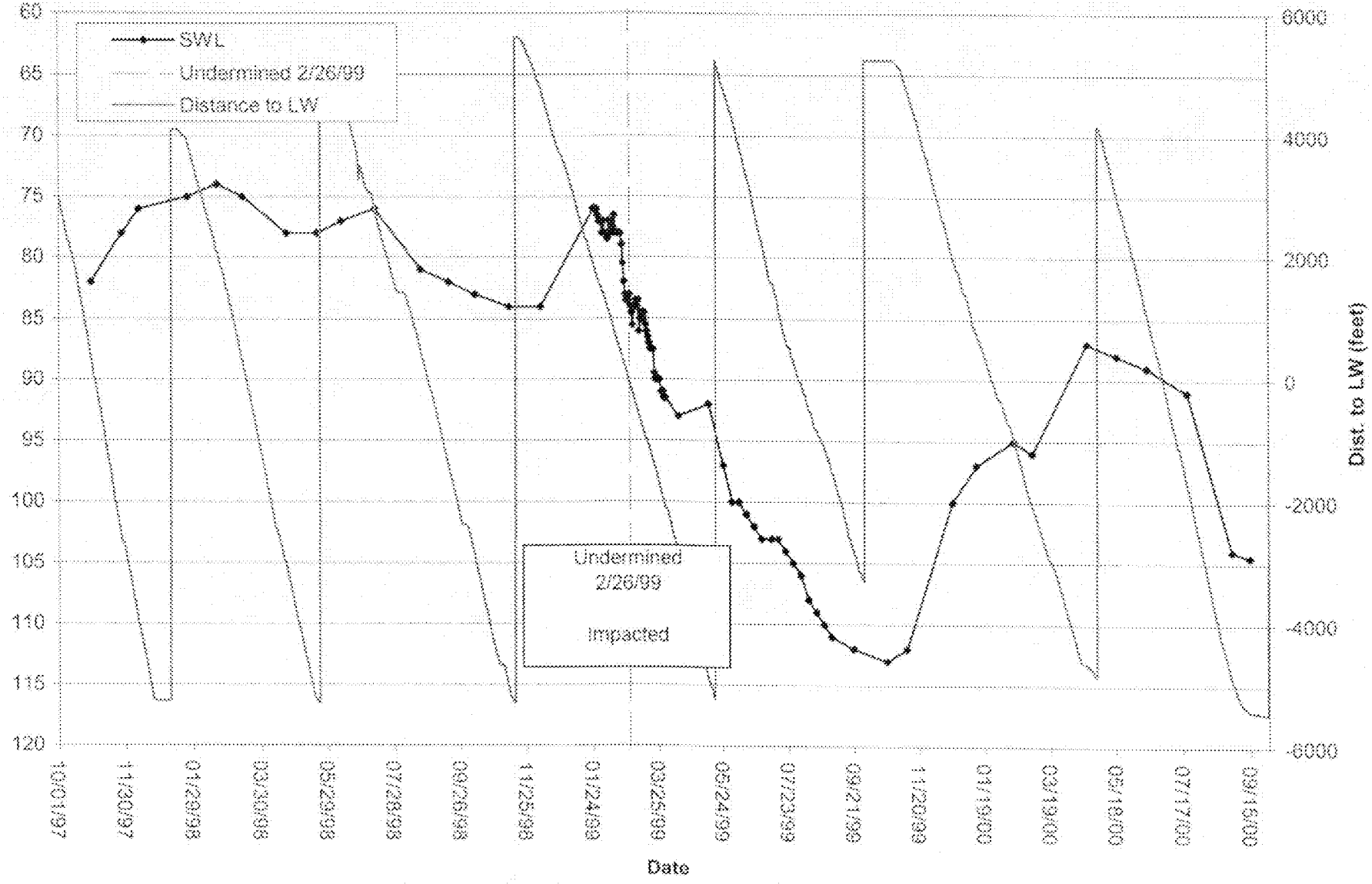

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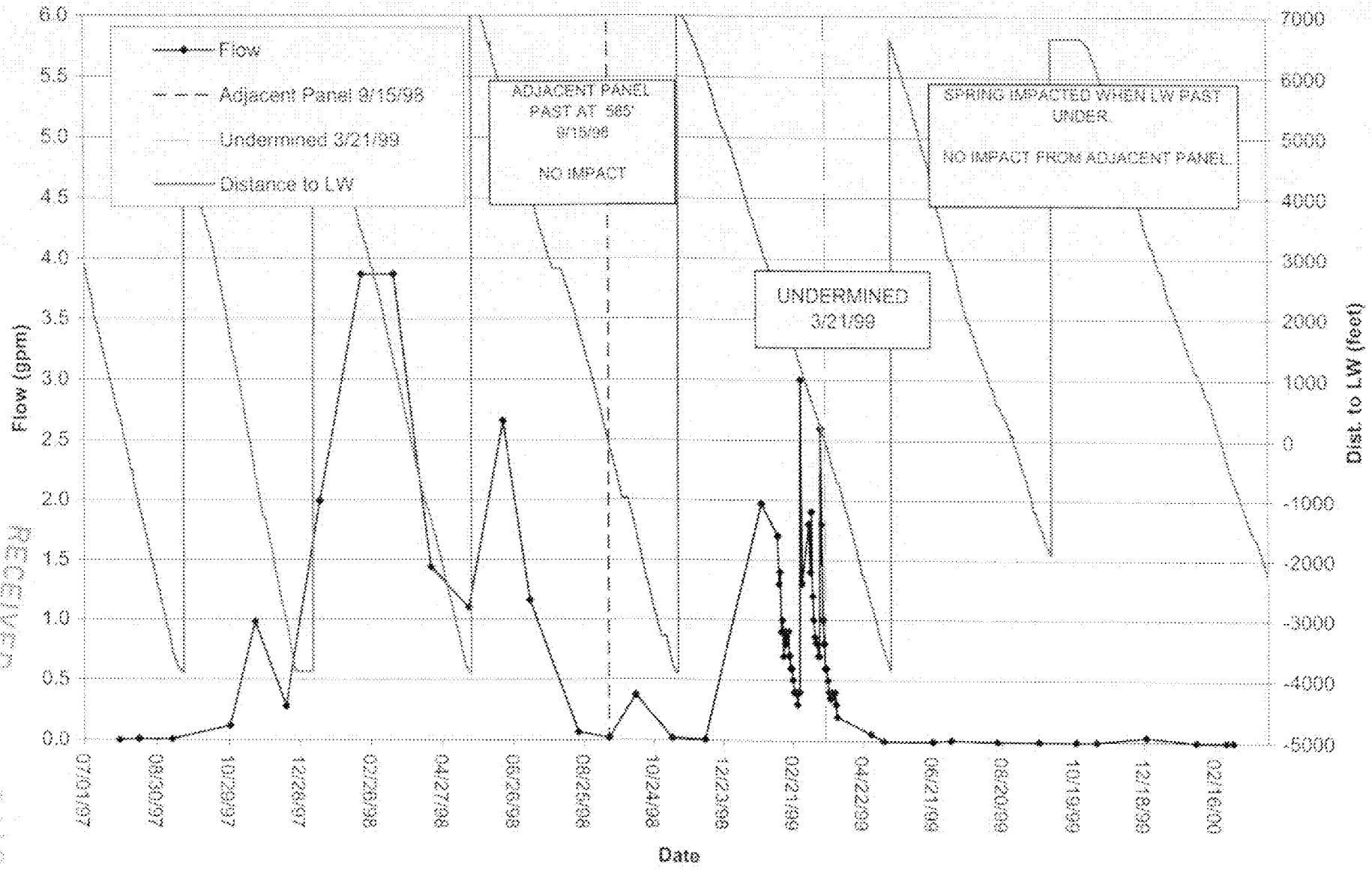

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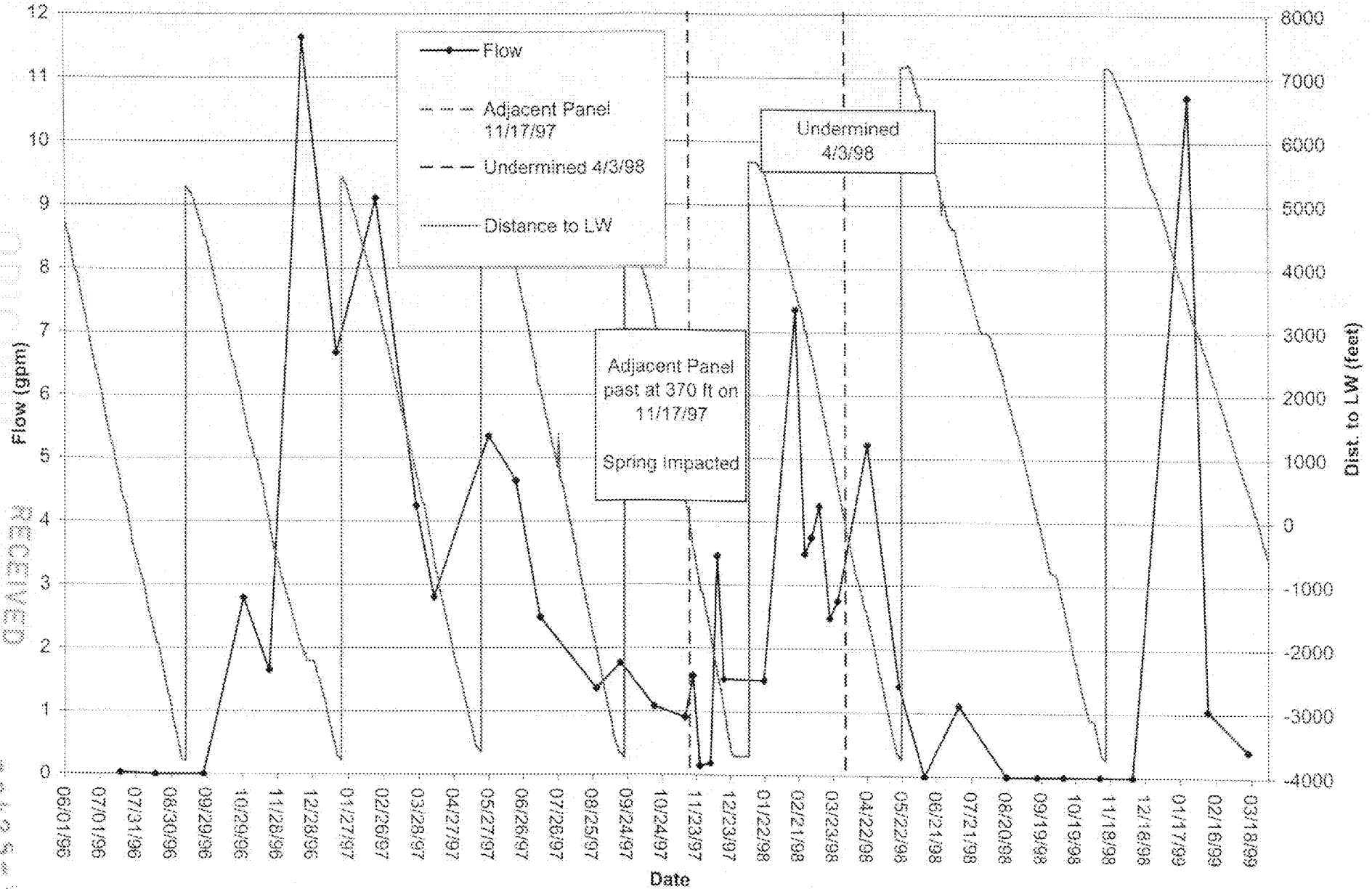

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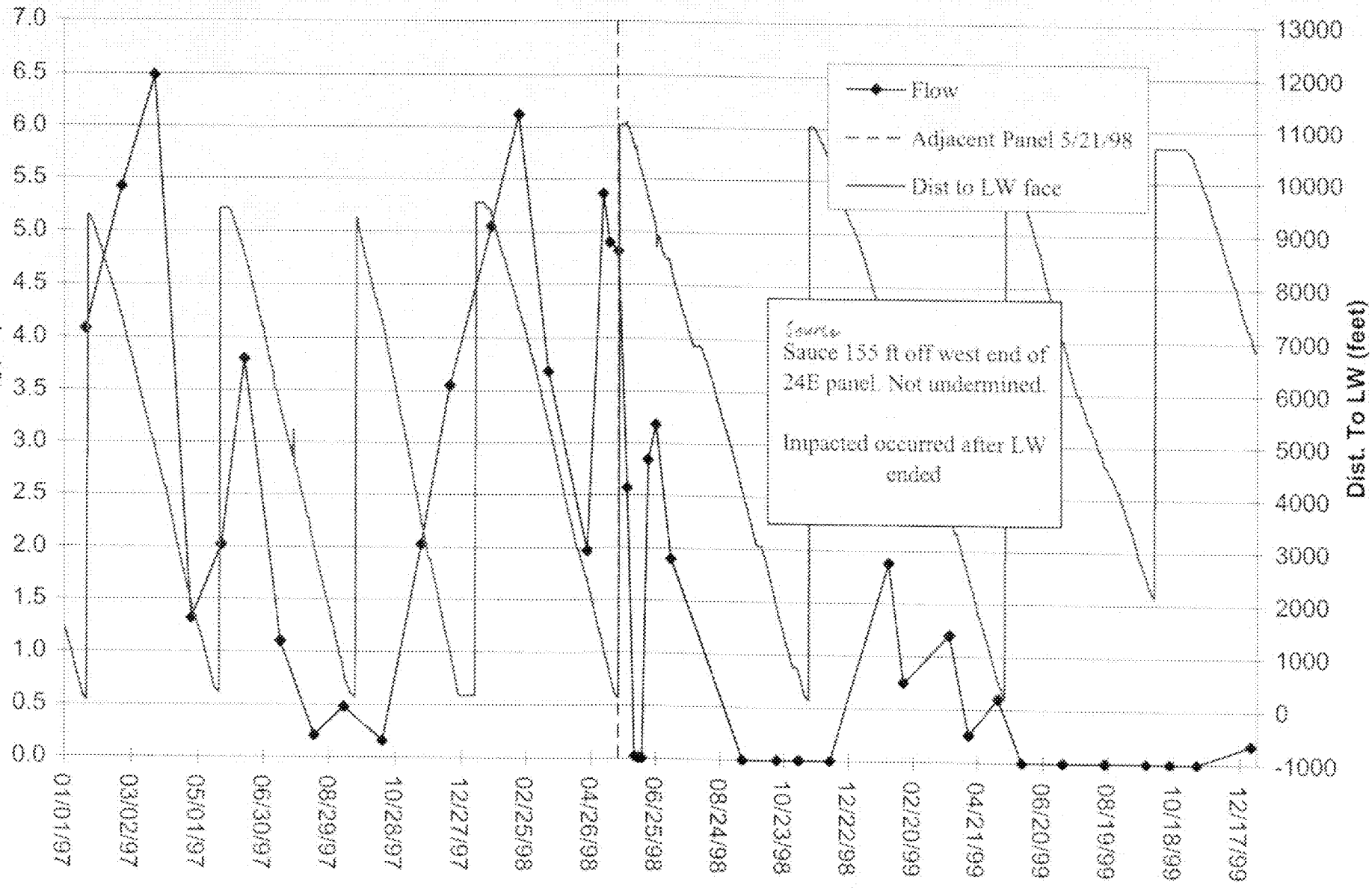

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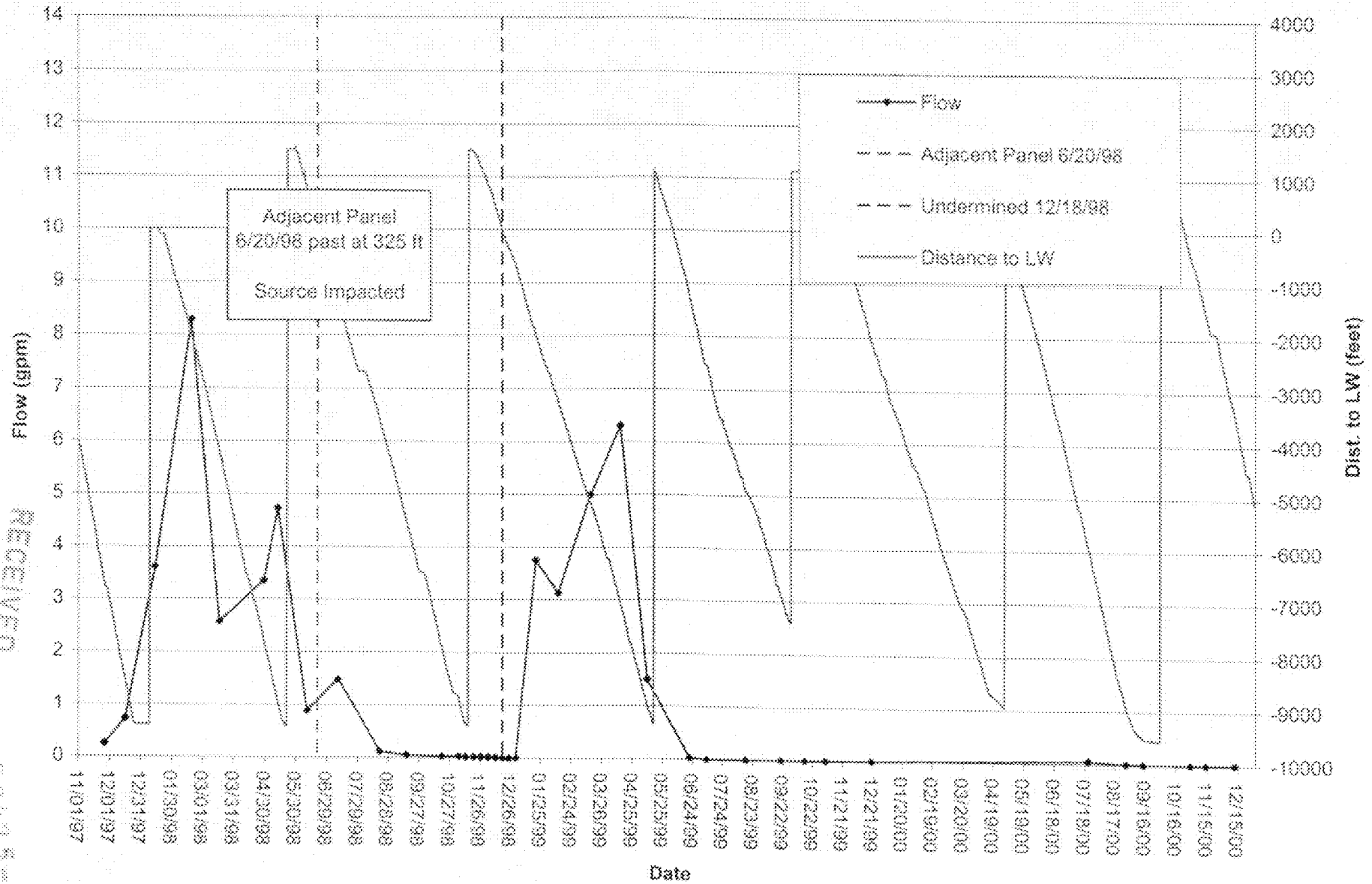
DS - 154 Hydrograph



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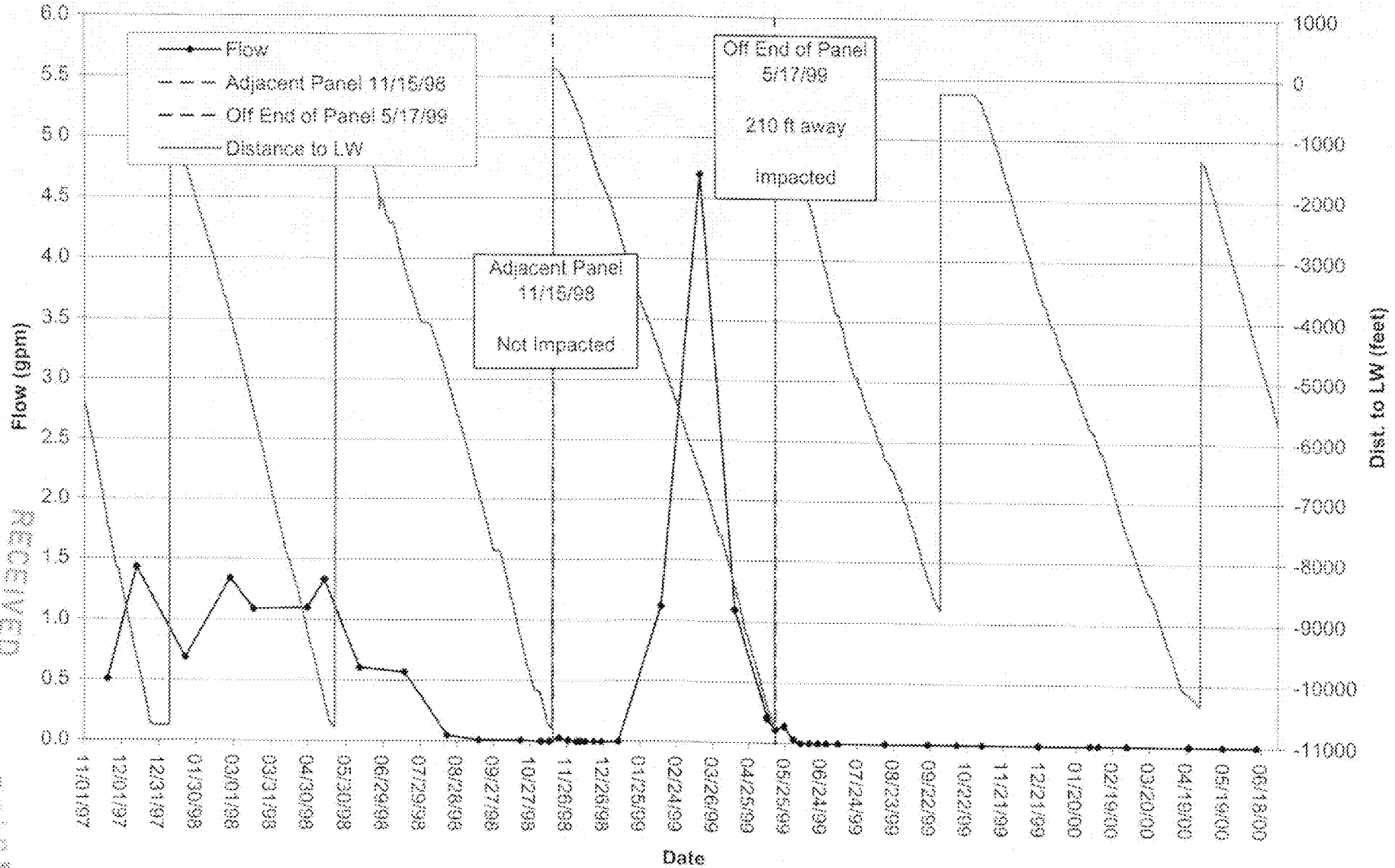
DS - 248 Hydrograph



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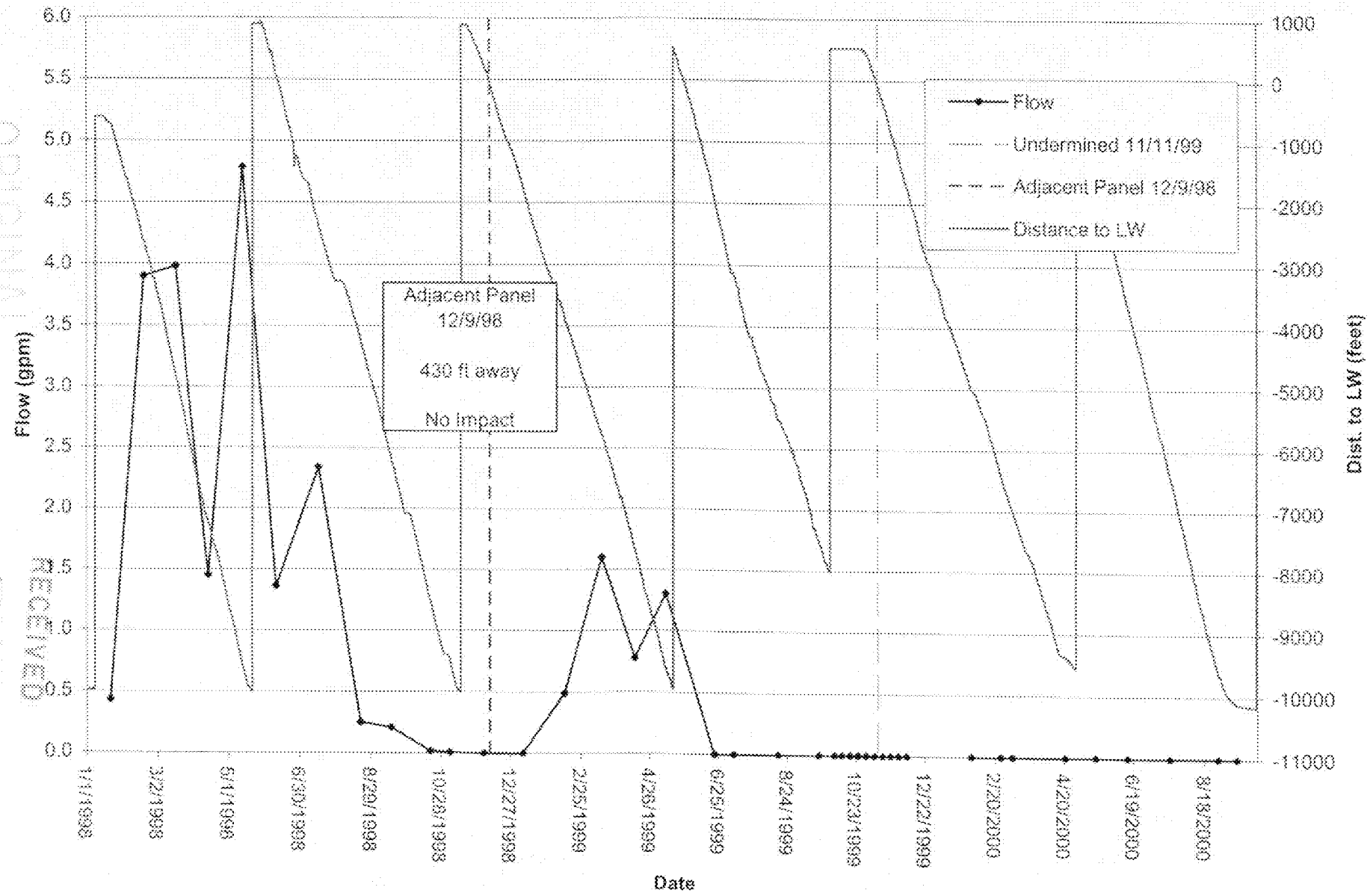
DS - 254 Hydrograph



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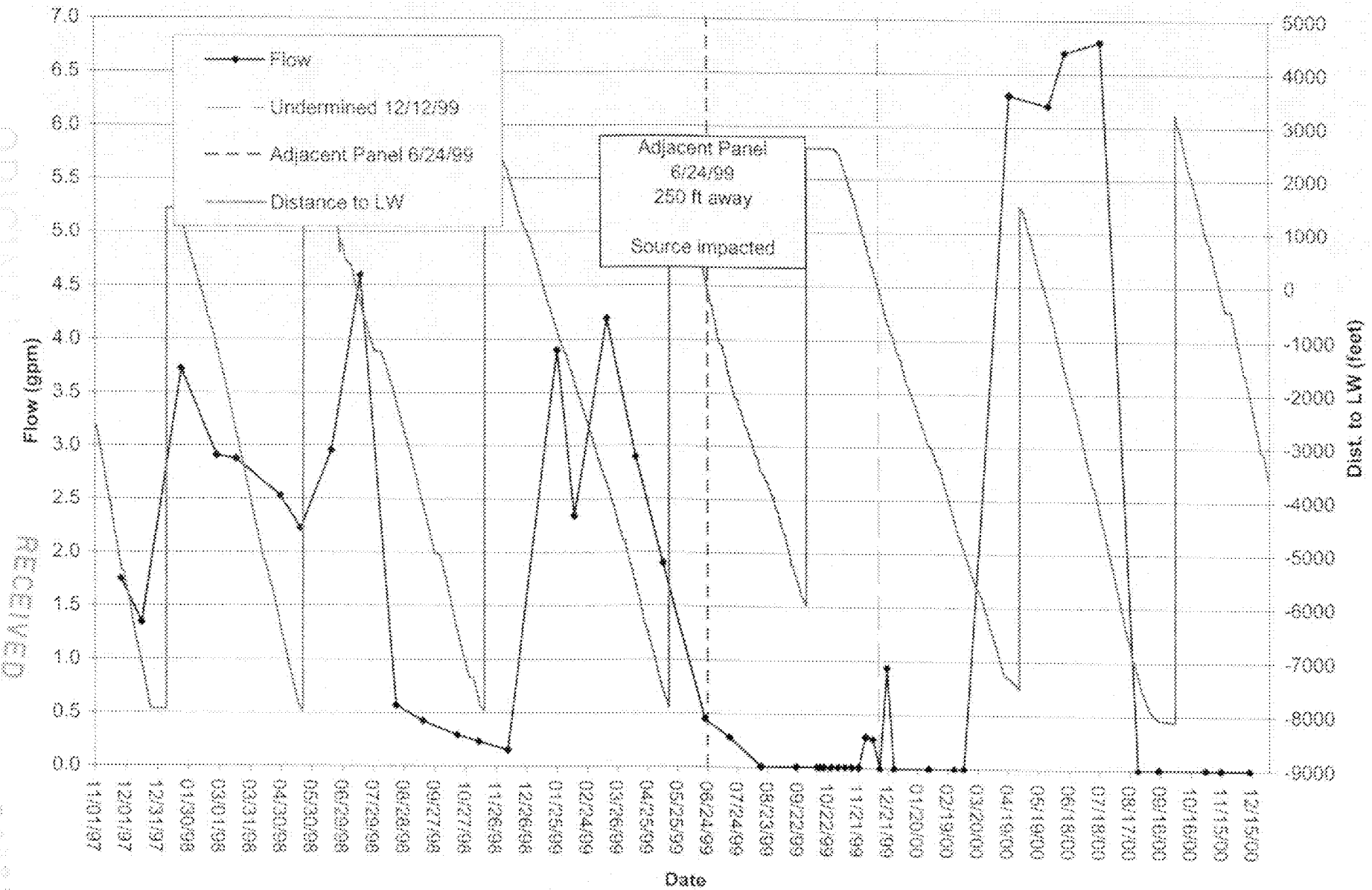
DS - 258 Hydrograph



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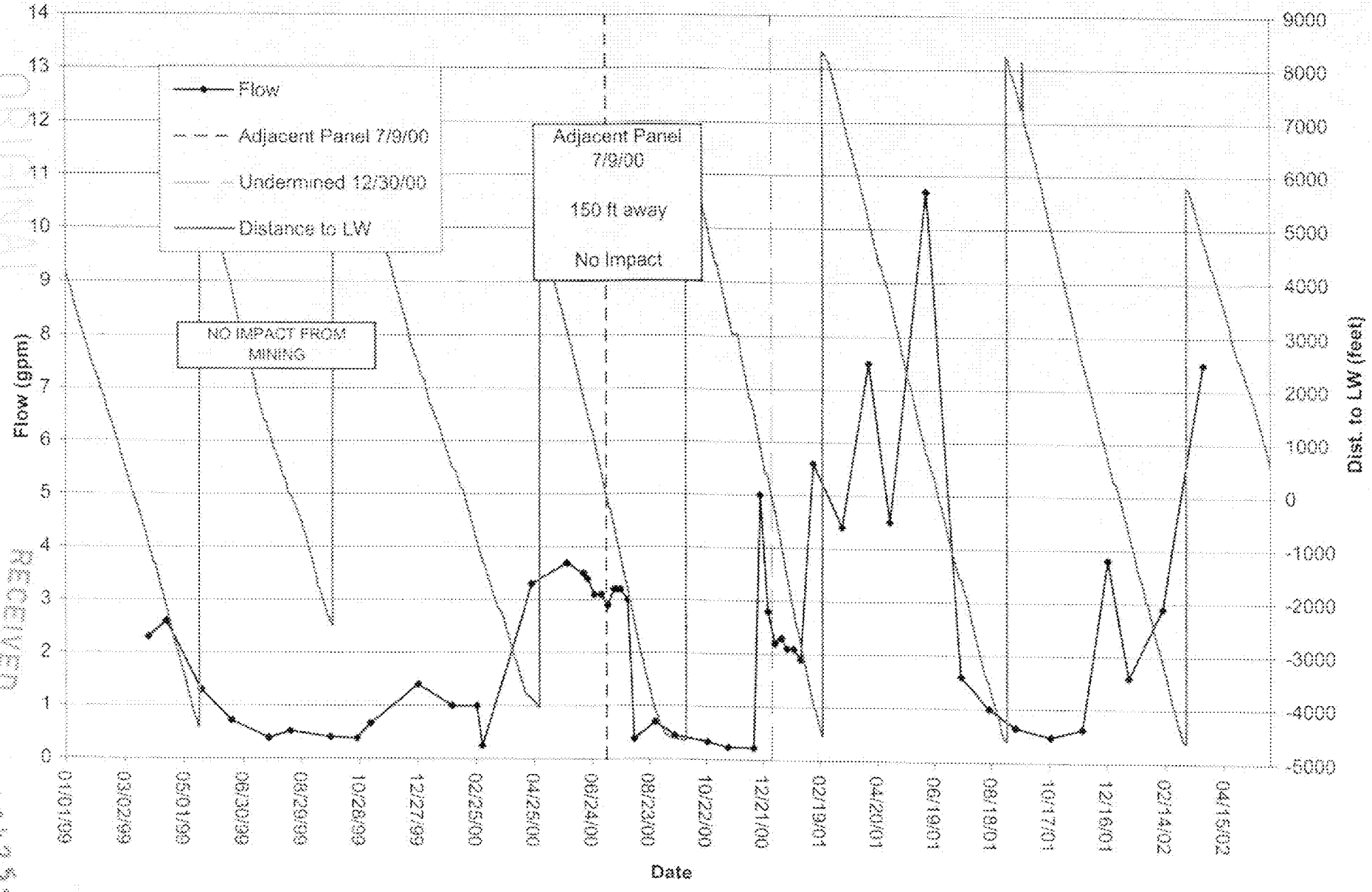
DS - 269 Hydrograph



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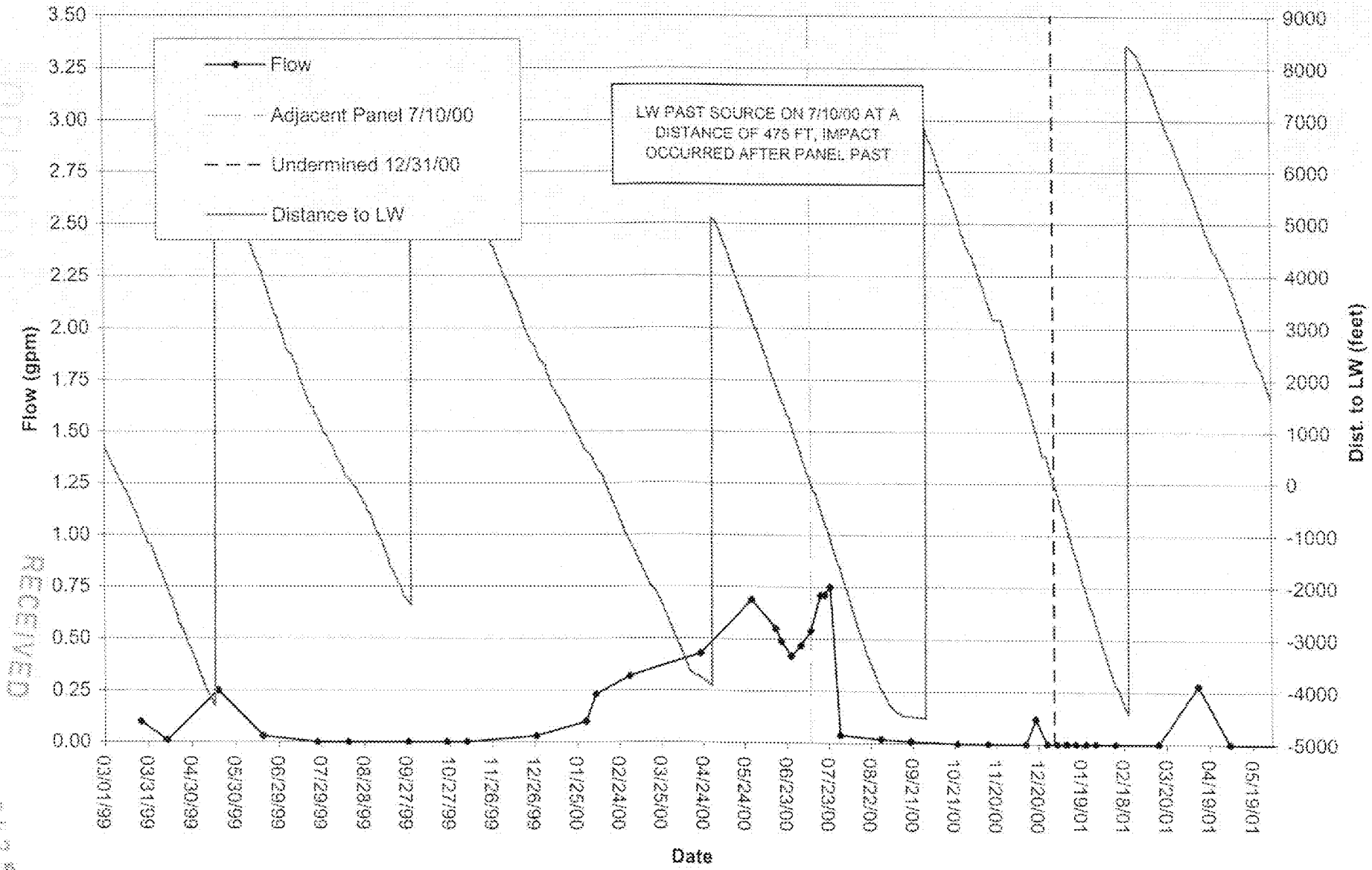
DS - 270 Hydrograph



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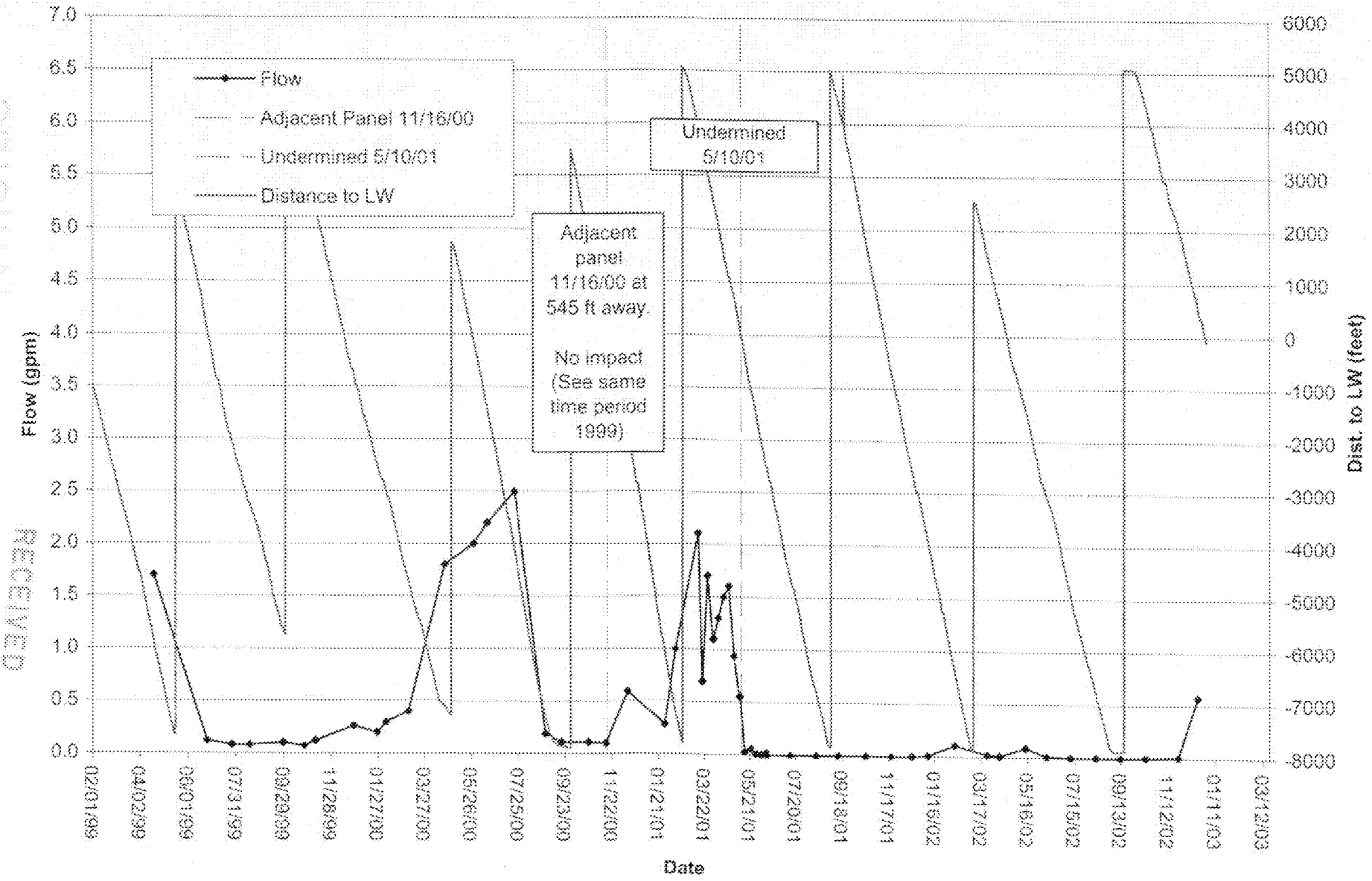
DS-274 Hydrograph



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ADDENDUM TO PAGE 18, PART 2, F(2)
PAGE 1 OF 4

CENTURY MINE
PERMIT D-0425

ALTERNATIVE WATER SUPPLY INFORMATION

Adjacent Areas Above Full Recovery Mining

Notwithstanding its mining rights and without waiving any of its mining rights, where such diminution or interruption results from its mining, AMERICAN ENERGY CORPORATION (AEC) will repair or install a replacement source in the adjacent area at its own expense in a manner mutually satisfactory to AMERICAN ENERGY CORPORATION, the water user, and the Division of Mineral Resources Management, and to a level sufficient to meet the water user's pre-mining quantity and quality levels which will be determined by monitoring information gathered in accordance with the Monitoring Plan.

The steps which AMERICAN ENERGY CORPORATION would take to repair or replace affected water sources in the adjacent area include:

1. Repair damaged cisterns after AMERICAN ENERGY CORPORATION has determined that damage is complete;

2. On a site-specific basis, re-drill existing wells (there is no evidence to indicate that this method of water replacement is a viable option in this area), drill new wells, or connect the water user to public water supplies (if no public water supply exists, AMERICAN ENERGY CORPORATION may install a line of sufficient size to service those affected by AEC's mining operation);

3. On a site specific basis, developed springs will be replaced by a farm pond built according to accepted engineering practices, drilling of a new well, development of another spring in close proximity to the original spring, or connect the water user to public water supplies (if no public water supply exists, AEC may install a line of sufficient size to service those affected by AEC's mining operation);

4. Repair damaged farm ponds so as to be comparable to their pre-mining conditions;

5. Install an interim water supply until affected water supplies are replaced. Interim supplies may include hauled water or a tap to public water. AMERICAN ENERGY CORPORATION will only install temporary, replacement water using a public water supply if it can be connected within 48 hours. AMERICAN ENERGY CORPORATION will use the local fire department to haul county water for

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temporary replacement supplies. The local fire department can haul water within a matter of hours after receiving a request. Temporary tanks and water troughs for livestock are kept in stock to facilitate quick installations.

6. Such other proven, cost effective, and reasonable techniques as AMERICAN ENERGY CORPORATION may now, or in the future, deem appropriate.

It is AEC's intention to bear the cost of the installation of both interim and permanent replacement of developed water sources being used at the time of undermining. A temporary inactive supply undergoing repair or maintenance, or used as a backup supply is considered a used supply, as well as any source that has been fully developed (i.e., water delivery system and drinking facilities) and is well maintained such that it is usable at the time of undermining. If contamination, diminution, or interruption of a water user's ground or surface water supply used occurs as a proximate result of the mine's operation, AMERICAN ENERGY CORPORATION will repair such water supply or install a replacement supply at AEC's expense. AMERICAN ENERGY CORPORATION will not be responsible for non-developed sources.

AMERICAN ENERGY CORPORATION will install, at AMERICAN ENERGY CORPORATION's expense, an alternate water supply system (within 48 hours) to be used until repair or replacement is completed or will reimburse the water user for the reasonable cost of obtaining a water supply from the date of any such contamination, diminution, or interruption until the supply is repaired or replaced. In cases where temporary water cannot be provided within 48 hours, AMERICAN ENERGY CORPORATION will immediately notify the Chief of the Division of Mineral Resources Management who will determine if the circumstances warrant an extension of the 48 hours.

AMERICAN ENERGY CORPORATION will provide the affected water user with no less of an available water supply than the water user had before mining, based on the pre-mining measurements. If required, AMERICAN ENERGY CORPORATION will notify the Division of Mineral Resources Management immediately after it has been informed of the loss of developed water (ground or surface water) due to its mining activities.

As previously stated, the elevation of alternative water sources is unpredictable until the water system in the area again attains equilibrium after mining. Therefore, the alternative water supplies to be developed will be identified when the need arises.

Those supplies may include but not be limited to re-development of an existing well, spring, or pond, or replacement of the source with the County Water System. The County Water System has been contacted by AMERICAN ENERGY CORPORATION and has assured us that there is capacity to replace each developed source with county water. A letter to that effect is enclosed.

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ADDENDUM TO PAGE 18, PART 2, F(2)
PAGE 3 OF 4

If a water user believes that his or her underground or surface water source has been contaminated, diminished, or interrupted as a proximate result of the mine's operation, he or she should notify AMERICAN ENERGY CORPORATION by calling (740) 926-9152. AMERICAN ENERGY CORPORATION will make a determination of liability no later than sixty (60) days after notification of the contamination, diminution, or interruption of a water supply as a proximate result of the mine's operation.

Work on installing a temporary alternate water supply will be complete within 48 hours (unless an extension of the 48 hour time frame is granted by the Chief) after AEC learns of the contamination, diminution, or interruption to a water supply proximately caused by the mining operation. AMERICAN ENERGY CORPORATION will pay for installation costs only for a temporary, alternate water supply. Permanent repair or the installation of a replacement water supply for an affected water supply shall be completed no later than eighteen (18) months after it has been determined that the supply has been contaminated, diminished, or interrupted as a proximate result of the mine's operation. The costs of repair of the original water supply and/or the installation of a replacement supply system to provide the affected water user with no less of an available water supply than was being used before mining, based on the pre-mining measurements, shall be paid for by AMERICAN ENERGY CORPORATION. If the water user opts to do so, he may install his own temporary water supply system. AMERICAN ENERGY CORPORATION will reimburse the water user for the costs of installing a temporary water supply system.

In repairing or replacing a water user's ground or surface water supply which is damaged as a proximate result of the mine's operation, AMERICAN ENERGY CORPORATION's first preference is to repair the affected supply system. If that is neither effective nor feasible, AMERICAN ENERGY CORPORATION's second preference is to replace the affected supply system with a like supply system. For example, a damaged pond, if not repairable, would be replaced with a new pond. If that is not feasible, AMERICAN ENERGY CORPORATION will replace the affected supply system with a similar supply system. For example, a damaged dug well, if not repairable or replaceable with another dug well, would be replaced by a potable-type cistern, a drilled well or a similar supply system.

It should be recognized that property sites differ in such elements as geologic and hydrologic composition. Thus, the determination of whether repair of an affected water supply system is feasible or whether replacement by a specific type of water supply system is feasible must be made on a case-by-case, site-specific basis by AMERICAN ENERGY CORPORATION. AMERICAN ENERGY CORPORATION, in the past, has always attempted to consult and negotiate with the affected water user concerning the selection of the type of water replacement system and its site. This is done at the request of water users who prefer this procedure to that of AMERICAN ENERGY CORPORATION making unilateral decisions about replacement supplies and sites. However, AMERICAN ENERGY CORPORATION if required by the Division of Mineral Resources Management, will make these decisions unilaterally.

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ADDENDUM TO PAGE 18, PART 2, F(2)
PAGE 4 OF 4

In some cases, AMERICAN ENERGY CORPORATION reaches pre-subsidence agreements with water users, who are normally represented by counsel and in all cases, have full opportunity to consult with counsel or anyone else of their choosing. These agreements, which are typically negotiated by AMERICAN ENERGY CORPORATION employees, normally cover all potential damage claims. In situations where such an agreement is reached, AMERICAN ENERGY CORPORATION will comply with the water replacement terms contained in the agreement. Such an agreement will satisfy, at a minimum, this permit and ORC 1513.162.

In any situation where AMERICAN ENERGY CORPORATION determines that the contamination, diminution, or interruption of a water supply was not proximately caused by the mining operation, based on evidence such as the proximity of the supply to the mining operation, site specific geologic and surface conditions, or climatological conditions, AMERICAN ENERGY CORPORATION will provide the Division of Mineral Resources Management with notice of its determination and the proof in support of that determination to allow the Division of Mineral Resources Management to issue a Chief's Order deciding the issue. This Chief's Order is then appealable in accordance with O.R.C. §1513.13. The water user's water supply system will continue in operation during the time AMERICAN ENERGY CORPORATION seeks review of this matter pursuant to O.R.C. §1513.13. If it is determined that contamination, diminution, or interruption of a supply is the proximate result of the mine's operation, AMERICAN ENERGY CORPORATION shall bear the costs of installing temporary water system. AMERICAN ENERGY CORPORATION reserves the right to proceed against the water user to recover costs incurred if it is determined that AMERICAN ENERGY CORPORATION is not liable for the contamination, diminution, or interruption of the affected water supply.

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AMERICAN ENERGY CORPORATION

43521 Mayhugh Hill Road • Twp. Hwy. 88 • Beallsville, OH 43716

PHONE: (740) 926-9152
FAX: (740) 926-9138

12 April 2002

Bill Morgan, Village Administrator
Village of Barnesville
132 North Arch Street
Barnesville, Ohio 43716

RE: Water System Capacity

Dear Mr. Morgan,

American Energy Corporation is investigating the possibility of permitting mining acres in Belmont County, Wayne Township, Sections 1, 7, Washington Township, Sections 31, 25, 14, 19, 13, 32, 26, 20 and Monroe County, Sections 6, 12, 30, 36 in Sunsbury Township. One option AEC is considering is the extension of the Barnesville water district lines into this area as a replacement water source. Please inform us as to whether Village of Barnesville has enough capacity to service this additional area.

We look forward to hearing from you in the near future. Please do not hesitate to contact me for further information.

Sincerely,

Melanie Homan
Civil and Environmental Engineer
American Energy Corporation

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Village of Barnesville

An Equal Opportunity Employer

Administrator's Office

126 East Church Street
Barnesville, Ohio 43713

Phone: (740) 425-1880
Fax: (740) 425-3673

April 22, 2002

American Energy Corporation
Attn: Melanie Homan
4352 Mayhugh Hill Road
Beallsville, OH 73716

Dear Ms. Homan:

The Village of Barnesville sells water to the Switzerland of Ohio Water District. Our new water plant is scheduled to be completed in July, 2002. This will increase our finished water capacity from 1.0 MGD to 1.7 MGD. At that time, we will be able to increase Switzerland of Ohio Water District's capacity substantially.

We do not see any problem with Switzerland of Ohio Water District providing service to the customers described in your letter.

If you have any questions, please feel free to call.

Sincerely,

Bill Morgan, Administrator
Village of Barnesville

BM/rh

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e-mail: hamilton@1st.net

JACK A. HAMILTON & ASSOCIATES, INC.

www.hamiltonandassoc.com

CONSULTING ENGINEERS & SURVEYORS

Box 471, 342 High Street, Flushing, Ohio 43977 • Phone (740) 968-4947 • Fax (740) 968-4225

November 10, 1998

John R. McCort, Village Administrator
Village of Barnesville
132 North Arch Street
Barnesville, OH 43713

RE: Water System Capacity

Dear Mr. McCort:

I am writing to you on behalf on Bennoc, Inc. who, at this time, is investigating the possibility of permitting mining areas in Belmont County, Wayne Township, Sections 1, 2, 3, 13, 14, 15, 19, 20, and 21, and Washington Township, Sections, 26, 27, 31, 32, and 33. We would propose to extend your water district lines into these areas for replacement water sources. Please inform us if the Village of Barnesville's system has enough capacity to service this additional area.

We look forward to hearing from you in the near future. Please don't hesitate to contact me at the number shown above if you have any questions concerning this matter.

Sincerely,

Jack A. Hamilton & Associates, Inc.
Consultants for Bennoc, Inc.

Ellen M. Loper

Ellen M. Loper, Permitting

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Cathy M. Bihlman, P.S. • Donald M. Brafford, P.E. • Jack A. Hamilton, P.S. • Charles W. Johnson, P.S. • David J. Siembab, P.S. • Terry L. Steffl, P.S.

Village Administrator
John R. McCort
126 E. Church
425-1880

Clerk-Treasurer
Marie McCrate
425-3444

Village of Barnesville

An Equal Opportunity Employer

132 North Arch Street
Barnesville, Ohio 43713

Police Chief
Christopher Hitto
425-1978

Mayor
Thomas E. Mahelli
425-3444 • 425-1978

11-5-98

Jack Hamilton & Associates, Inc.
Box 471; 342 High Street
Flushing, Oh 43977
ATTN: Ellen M. Loper

RE: WATER SYSTEM CAPACITY

Dear Ms. Loper:

The Village of Barnesville sells water to the Switzerland of Ohio Water District. We have plans to build a new water treatment plant in the year 2000. This will increase our finished water capacity from 1.0 MGD to 1.5 MGD. At that time, we will be able to increase Switzerland of Ohio Water Districts capacity substantially.

We do not see any problem with Switzerland of Ohio Water District providing service to the customers described in your letter.

If you have any questions, please feel free to call.

Sincerely,

John R. McCort

John R. McCort
Village Administrator

JRM/sc

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G. LAND USE INFORMATION - **Permit Area**

(1) Describe the uses of the land within the proposed permit area existing at the time of the filing of this permit application and provide a map which delineates the area of each land use.

N/A, NO PERMIT AREA

(2) Was the land use described in item G(1) above changed within five years before the anticipated date of beginning this proposed mining operation? Yes, No. If yes, submit an addendum describing the historic use of the land.

N/A, NO PERMIT AREA

(3) Analyze the capability of the land within the proposed permit area before any mining to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover, and hydrology of the proposed permit area.

N/A, NO PERMIT AREA

(4) Analyze the productivity of the land within the proposed permit area before any mining to include average yields obtained under high level of management.

N/A, NO PERMIT AREA

(5) Is any land within the proposed permit area classified as prime farmland? _____ Yes, _____ No.

N/A, NO PERMIT AREA

(6) Submit an addendum describing the use of the land within the permit area, including the creation of permanent water impoundments, that is proposed to be made of the land following reclamation, including information regarding the utility and capacity of the reclaimed land to support a variety of alternative uses.

N/A, NO PERMIT AREA

(7) Are there existing land use classifications under local law of the proposed permit area? _____ Yes, _____ No. If yes, describe the land use classification and submit as an addendum to the permit application, the comments of the governmental agency which would have to initiate, implement, approve or authorize the proposed use of the land following reclamation. If "no," describe the sources of information on which the determination was made.

N/A, NO PERMIT AREA

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G. (8) Submit as an addendum a copy of the comments from the legal or equitable owner of record of the surface of the proposed permit area concerning the proposed land use.

N/A, NO PERMIT AREA

(9) Describe the consideration which has been given to making all of the proposed coal mining activities consistent with surface owner plans and applicable state and local land use plans and programs.

N/A, NO PERMIT AREA

(10) Describe how the proposed land use is to be achieved and the necessary support activities that may be needed to achieve the proposed land use.

N/A, NO PERMIT AREA

(11) Is the postmining land use to be different from the premining land use? _____ Yes, _____ No. If yes, submit as an addendum to the permit application, the plans and findings required by paragraph (D) of rule 1501:13-9-7 of the Administrative Code.

N/A, NO PERMIT AREA

(12) Has the proposed permit area been previously mined?_____ Yes,_____ No. If yes, provide the following information, if available.

(a) Type of mining method
(b) Coal seam mined
(c) Non coal mineral mined
(d) Extent of mining (acres)
(e) Approximate dates
(f) Land use preceding mining

N/A, NO PERMIT AREA

H. PRIME FARMLAND INVESTIGATION-**Permit Area**

(1) Does the proposed permit area include any land that is prime farmland, taking into consideration the negative determinations listed in paragraph (L)(2) of rule 1501:13-4-13 of the Administrative Code?
Yes, No.

N/A, NO PERMIT AREA

(2) If the response to item H. (1) is yes, submit Attachment 15.

(3) If the response to item H. (1) is no, submit Attachment 16.

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PART 3 RECLAMATION AND OPERATIONS PLAN

A. GENERAL REQUIREMENTS-**Permit Area** (Items A. (1) and A. (2) - **Permit and Underground Workings)**

Submit an addendum describing the type and method of coal mining procedures for this application. Explain how these procedures will maximize the use and conservation of the coal resources.

SEE ADDENDUM TO PART 3, PAGE 21, ITEM A(1)

(2) Indicate the anticipated annual and total production of coal from this proposed operation.

Annual **5.6 MILLION TONS PER YEAR** Total **22.9 MILLION TONS**

(3) Will this operation be combined with surface coal mining activities to the extent that contemporaneous reclamation of areas disturbed by surface mining will be delayed or such that the underground workings will be within 500 feet of the surface mining activities? Yes, No. If yes, submit Attachment 30.

N/A, NO PERMIT AREA

(4) Are experimental mining practices to be employed in the proposed mining operations? Yes, No. If yes, submit as an addendum to the permit application, the description, maps, and plans required by paragraph (B) of rule 1501:13-4-12 of the Administrative Code.

N/A, NO PERMIT AREA

(5) Are mountaintop removal mining practices to be employed in the proposed mining operations? Yes, No. If yes, submit as an addendum to the permit application the information required by paragraph (C) of rule 1501:13-4-12 of the Administrative Code.

N/A, NO PERMIT AREA

(6) Are the natural pre-mining slopes within the permit area in excess of twenty (20) degrees? Yes, No. If yes, submit an addendum demonstrating compliance with the steep slope mining provisions of paragraph (D) of rule 1501:13-4-12 and 1501:13-13-05 of the Administrative Code.

N/A, NO PERMIT AREA

(7) Is augering proposed within the permit area? Yes, No. If yes, submit Attachment 18.

N/A, NO PERMIT AREA

(8) Are variances from approximate original contour to be employed for the proposed underground mining surface operations? Yes, No. If yes, submit an addendum to the permit application demonstrating compliance with paragraph (E) and/or (K) of rule 1501:13-4-12 of the Administrative Code.

N/A, NO PERMIT AREA

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ADDENDUM TO PART 3, PAGE 21, A(1)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

MINING METHODS

This application area will be mined by the longwall method of mining. Longwall mining is a method by which large panels of coal are surrounded by entries and are then extracted. The roof is temporarily supported by shields as the longwall machinery cuts the coal. The shields are then hydraulically moved forward, allowing the roof to collapse behind them. Subsidence of the surface occurs as the strata above the mine first collapses into the void left from the extracted coal, then the overlying strata deforms and comes to rest atop the rubble. Monitoring at a nearby longwall mine in the Pittsburgh No. 8 coal seam shows that the surface subsides approximately 60 to 65 percent of the seam thickness of about 60 inches. This mining method maximizes the recovery of the reserve by leaving coal only in the development entries (main and gate entries) and barrier pillars to protect the main entries.

The mining will progress from existing travelways in the D-0425 mine areas to this application area through main entries that will carry the ventilation currents and contain the haulage entries. These main entries will branch down into the gate entries that will surround the longwall panels. While continuous miners are used for these development entries, they are not considered production sections. These mining units are considered part of the longwall mining to be conducted at the CENTURY MINE. Full coal recovery (longwall mining) methods are planned for the entire application area.

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A. (9) Will access to the underground workings be gained through a drift entry _____ Yes, __X__ No. If yes, provide as an addendum sufficient information to determine the location of the entry relative to the highest elevation of the coal reserve. Is the drift entry located so as to eliminate the potential for a gravity discharge? _____ Yes, _____ No. If no, the applicant must demonstrate that the coal seam is not acid or iron producing. Provide an analysis of the strata immediately above and below the coal, and the coal seam itself, sufficient to demonstrate that the water quality from the entry will meet effluent limitations without treatment.

(10) For entries to underground workings other than drift entries, provide as an addendum sufficient information to determine the location of the entry relative to the coal reserve. Are the entries located so as to eliminate the potential for a gravity discharge?
__X__ Yes, _____ No. If no, provide the following demonstration:

(a) the gravity discharge will meet effluent limitations without treatment, or

(b) the water will be treated to meet effluent limitations and provisions will be made for consistent limitations of the treatment facility throughout the anticipated period of gravity discharge.

(11) Will the permanent entry seals be designed to withstand the maximum anticipated hydraulic head when the operations are abandoned? _____ Yes, _____ No. If yes, submit the appropriate information demonstrating that this will be accomplished. If no, provide a typical plan for the seals to be used to close the mine entries pursuant to applicable state and federal regulations.

N/A, NO PERMIT AREA

(12) Submit an addendum describing the construction, modification, maintenance, and removal (unless to be retained for postmining land use), including the proposed engineering techniques and major equipment to be used, of the following facilities:

(a) dams, embankments, and other impoundments. Do any of the plans for water, sediment or slurry impoundments meet the requirements of 30 CFR 77.216? _____ Yes, _____ No. If yes, submit as an addendum a plan that addresses each of the requirements in 30 CFR 77.216-2.

N/A, NO PERMIT AREA

(b) overburden and topsoil handling and storage areas and structures.

N/A, NO PERMIT AREA

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ADDENDUM TO PART 3, PAGE 22, A(10)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

LOCATION OF ENTRY RELATIVE TO THE COAL RESERVE

The slope entry is located at a surface elevation of 948 feet. The bottom of the shaft is located at 703 feet. The shaft entry is located at an elevation of 948 feet, with a bottom elevation of 710 feet. The highest point in the coalmine has an elevation 800 feet (from application D-0425-1).

The entry to the coal mine is located in the original D-0425 permit area, located in Section 3, Wayne Township, Belmont County, Ohio.

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A. (12) (c) coal removal, handling, storage, cleaning, and transportation areas and structures; including, but not limited to, preparation plants, beltlines, tipples, rail sidings, and primary roads. For roads, conveyors and rail systems, submit an addendum describing the information required pursuant to paragraph (L) of rule 1501:13-4-14 and 1501:13-10-01 of the Administrative Code.

N/A, NO PERMIT AREA

(d) spoil removal, handling, storage, transportation, and disposal areas and structures, including underground development waste or excess spoil disposal sites. If underground development waste or excess spoil is to be generated, submit an addendum describing the information required by paragraph (O) and (P) of rule 1501:13-4-14 and 1501:13-9-07 of the Administrative Code.

N/A, NO PERMIT AREA

(e) mine facilities such as portal/shaft development, boreholes, de-gas holes, vents, office or shop buildings and maintenance facilities.

N/A, NO PERMIT AREA

(f) water and air pollution control facilities.

N/A, NO PERMIT AREA

(13) Provide an estimate of the cost per acre to reclaim the permit area.

N/A, NO PERMIT AREA

(14) Will the proposed operation include any of the following:

N/A, NO PERMIT AREA. THE REFUSE FROM THE APPLICATION AREA WILL BE DISPOSED OF IN D-0425-2

(a) disposal of coal mine waste from a wash plant, tipple, or other source? _____ Yes, _____ No. If yes, submit Attachment 28 and, if applicable, the information required by paragraph (H) of rule 1501:13-4-14 of the Administrative Code.

(b) disposal of fly ash or other noncoal wastes? _____ Yes, _____ No. If yes, submit an addendum which addresses the disposal material and a detailed disposal plan, pursuant to paragraph (E) of rule 1501:13-9-09 of the Administrative Code.

(c) return of slurry or other mine waste or material into the abandoned underground workings? _____ Yes, _____ No. If yes, comply with provisions contained in paragraph (N) of rule 1501:13-4-14 and paragraph (Q) of 1501:13-9-04 of the Administrative Code, and submit copies of the required MSHA approvals as an addendum.

B. <u>EXISTING STRUCTURES-Permit Area</u>

(1) Are any existing structures proposed to be used in connection with or to facilitate the coal mining and reclamation operation? _____ Yes, _____ No. If yes, submit as an addendum to the permit application a description of each structure. The description shall include the information required by paragraph (B)(1) of rule 1501:13-4-14 of the Administrative Code.

N/A, NO PERMIT AREA

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B. (2) Are any existing structures proposed to be modified or reconstructed for use in connection with or to facilitate the coal mining and reclamation operation? _____ Yes, _____ No. If Yes, submit as an addendum to the permit application, a compliance plan for each structure. The plan shall include the information required by paragraph (B)(2) of rule 1501:13-4-14 of the Administrative Code.

N/A, NO PERMIT AREA

C. BLASTING-**Permit Area**

Will blasting occur within 25 feet of the surface during shaft and portal development or other on-site development?

_____ Yes, _____ No. If yes, submit Attachment 29.

N/A, NO PERMIT AREA

D. RECLAMATION PLAN - GENERAL REQUIREMENTS-**Permit Area** (Item D.12) -**Permit, Shadow, and Adjacent Area**)

(1) Provide a detailed timetable for the completion of backfilling and grading for each mining year.

N/A

(2) Provide a detailed timetable for completion of resoiling for each year.

N/A

(3) Provide a detailed timetable for completion of planting for each mining year.

N/A

(4) Describe the plan for backfilling, compacting and grading of the disturbed permit area, including the disposal of all mine generated debris.

N/A

(5) Submit an addendum describing the plan for the removal, storage, redistribution and stabilization of topsoil, subsoil, or approved alternative resoiling material to meet the requirements of rule 1501:13-9-03 of the Administrative Code. If an alternative resoiling material is to be used, submit Attachment 19.

N/A

(6) Provide the following information for the revegetation plan:

(a) Schedule for revegetation to include planting of temporary vegetation.

N/A

D. (6) (b) List the species and amounts per acre of seeds and seedlings to be used.

N/A, NO PERMIT AREA

(c) Describe the methods to be used in planting and seeding.

N/A, NO PERMIT AREA

(d) Describe the mulching techniques.

N/A, NO PERMIT AREA

(7) Describe the soil testing plan for evaluation of the results of topsoil handling and reclamation procedures related to revegetation.

N/A, NO PERMIT AREA

(8) Submit an addendum describing the measures to be employed to handle and place acid or toxic-forming materials in accordance with paragraph (J) of rule 1501:13-9-04 and paragraph (J) of rule 1501:13-9-14 of the Administrative Code.

N/A, NO PERMIT AREA

(9) Describe the measures, including appropriate cross sections and maps, to be used to plug, case or manage mine openings or bore holes other than those entries utilized to gain access to the underground workings, pursuant to rule 1501:13-9-02 of the Administrative Code.

N/A, NO PERMIT AREA

(10) Is the reclamation plan consistent with local physical, environmental, and climatological conditions?

_____ Yes, _____ No.

N/A, NO PERMIT AREA

(11) Identify any other applicable air and water quality laws and regulations and health and safety standards and describe the steps to be taken to comply with each.

N/A, NO PERMIT AREA

(12) Submit an addendum describing the plan for minimizing to the extent possible and using the best technology currently available, disturbances and adverse impacts of the operation on fish and wildlife and related environmental values and achieving enhancement of such resources where practical for the permit, shadow, and adjacent areas.

SEE ADDENDUM TO PART 3, PAGE 25, D(12)

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ADDENDUM TO PART 3, PAGE 25, D(12)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

RECLAMATION PLAN - FISH, WILDLIFE, ENVIRONMENTAL VALUES

The proposed longwall mining operation is not expected to impact fish, wildlife, and other related environmental values. Minnows have been found in some of the larger stream segments within the application area. However, the normal annual cycle shows that during the summer and fall months, when the stream flow is minimal, the minnows swim downstream, only to return again. Observations show that stream segments that go dry following subsidence have returned to near their normal flow, and will again support minnows. The larger streams will return to normal flow faster than smaller streams because more sediment is carried in larger streams and help fill any residual cracks that may be found. There are several ponds overlying the application area, and larger fish live in them. Our experience at the CENTURY MINE is that ponds are not greatly influenced by subsidence due to the amount of cover. Wildlife has never been shown to be affected by longwall mining. If surface slips are caused by mining activities, over the mining area, AMERICAN ENERGY CORPORATION will restore the land to a condition equal to its original value and reasonably foreseeable use. Undeveloped springs that are found above the application area may be dewatered and usually reposition themselves downstream. AEC will replace undeveloped springs if they are legitimately used according to our water replacement plan.

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E. RECLAMATION PLAN PROTECTION OF HYDROLOGIC BALANCE-**Permit and Adjacent Area**

Submit an addendum describing the measures to be taken during and after the proposed mining operations to:

(1) minimize disturbance to the hydrologic balance, including quality and quantity, within the permit and adjacent areas and to prevent material damage outside the permit area;

(2) protect the rights of present users of surface and ground water;

(3) avoid acid or toxic drainage.

SEE ADDENDUM TO PART 3, PAGE 26, E(1-3)

F. GROUND WATER AND SURFACE WATER MONITORING PLAN-**Permit and Shadow Area**

Based upon the probable hydrologic consequences determination and analysis of all baseline hydrologic, geologic, and other information submitted in this application, address the following items in accordance with paragraph (F) of rule 1501:13-4-14 and paragraph (N) of rule 1501:13-9-04 of the Administrative Code.

(1) In addition to the quality and quantity parameters required for quarterly monitoring and NPDES monitoring, will any other parameters be monitored? _____Yes, __X__ No. If yes, indicate the parameter(s)and the site(s) where such monitoring will occur.

(2) Do you propose or anticipate the need for a variation in the required monitoring frequency for ground and surface water sites and monthly sites to be affected?_____Yes, __X__ No. If yes, describe the variation in frequency and the monitoring sites to be affected.

(3) Describe the plan for collection, recording, and reporting of all surface and ground water quality and quantity monitoring data, including data collected for the NPDES program.

SEE ADDENDUM TO PART 3, PAGE 26, F(3)

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ADDENDUM TO PART 3, PAGE 26, E(1-3)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

RECLAMATION PLAN - PROTECTION OF HYDROLOGIC BALANCE

The hydrologic balance is expected to change as a result of the proposed longwall mining operation in the long term. Temporarily, the depth below the surface of ground water will increase as a result of increasing the number of cracks in the local rock units. The static level of the ground water should re-establish itself, usually at a lower elevation, within 18 months to 2 years after mining. At that time, ground water will be available in quantity at least as great as before mining. Because of increased porosity due to the cracking caused by longwall mining, the quantity of ground water that is available to users will probably increase. Minor surface cracking over longwall areas will eventually heal or be repaired, causing the ground to capture approximately the same percentage of rainfall as before. It is anticipated that stream flow in selected sections of first order streams where overburden thickness exceeds 200 ft may be temporarily reduced over relatively short stream segments. This impact is anticipated due to the fact that the headwaters of streams occasionally relocate to lower elevations following subsidence that results in the dewatering of hillside/hilltop springs. The monitoring data obtained for the ground and surface water sources over the longwall areas at the nearby Powhatan No. 6 Mine there have been no lasting deleterious effects of the longwall mining on water quality, and no lasting effects are anticipated at the Century Mine. Therefore, the hydrologic balance outside the permit area will be protected.

The rights of present users of surface and ground water will be maintained through the water replacement plan found in the Addendum to Part 2, Page 18, F(2). It is anticipated that within two years, ground water will re-establish itself so that wells and springs can be replaced. Surface water drainage is not expected to be impacted seriously by longwall mining.

Acid or toxic drainage are not expected to be a problem at the CENTURY MINE. The No. 8 seam is entirely below drainage, and the openings to the surface are located high enough above the seam that they will not experience hydraulic pressure from the seam. The major watershed of this area, Captina Creek, is at elevations ranging from 860 to 790 feet msl over the area of the mine, whereas the coal seam has elevation ranging from 720 to 640 feet, and is therefore below the creek at all times. Captina is located at a distance of approximately 2.5 miles from the mine. Acid or toxic drainage is not expected to enter the waters of the State. We do not anticipate the affects of mmig to have an impact on Sunfish Creek either.

American Energy Corporation will research the potential of oil/gas wells prior to mining. This will be done through the use of both Ohio Department of Natural Resources records, as well as fieldwork. We will then plug the wells in the active mining areas with cement, prior to mining through them.

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ADDENDUM TO PART 3, PAGE 26, F
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

GROUND WATER AND SURFACE WATER MONITORING PLANS

1. Ground Water Monitoring Plan

All legitimately developed, used ground water supplies will be monitored quarterly for quality and monthly for quantity for at least one year prior to full recovery mining, and at least one year subsequent to mining unless access is denied by the land owner. This monitoring will include wells and springs used for domestic purposes. Weekly quantity monitoring will be conducted whenever the longwall face is within three weeks of undermining the supply and no less than three weekly pre-mining and post-mining measurements will be made. Ground water supplies located within 500 feet (measured horizontally) of the perimeter of the active longwall panel will be monitored as if they were located on the panel. Monitoring will be continued for at least one year subsequent to full recovery mining contingent upon review by the Division of Mines and Reclamation. Daily precipitation data will be submitted quarterly to evaluate spring flow.

2. Surface Water Monitoring Plan

Various surface water locations depicted on the application/hydrology map will be sampled monthly for flow and quarterly for quality. The quality requirements of OAC 1501:13-3-14(F)(2) and the other QMR parameters as stated on the QMR report sheets will apply to the surface water analysis. Each surface monitoring station will be monitored for at least one year prior to full coal recovery mining. Monitoring will be continued for at least one year subsequent to full recovery mining contingent upon review by the Division of Mines and Reclamation. Daily precipitation data will be submitted quarterly to evaluate stream flow.

With each quarterly monitoring report of ground and surface water, a map depicting the progression of the longwall face will be attached to indicate the sampling points in the full recovery areas. Notes will be submitted indicating the position relative to the longwall face, with "+" indicating the station is in advance of the face and a "-" indicating a position behind the face. An attempt will be made to monitor and sample as outlined above, however, some sources may not be accessible. These locations, if encountered, will be documented in the quarterly reports. All samples will be taken as outlined to the extent that existing well construction allows. Any samples that are unobtainable will be documented as such in the quarterly report. Quarterly sampling will include analysis for nitrates.

AMERICAN ENERGY CORPORATION will monitor all ground and surface locations in accordance with the quarterly monitoring plan outlined above regardless of the saturated zones that they access. All developed supplies have been identified and have been indicated on the

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application/hydrology map.

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GROUND AND SURFACE WATER MONITORING

Ground water and surface water monitoring as previously proposed for CENTURY MINE will continue with respect to the future surface operations. Ground water and surface water monitoring over longwall areas of the underground operations is proposed to determine the impacts of underground mining on these areas. The proposed plan presented below is to be used in lieu of all previously proposed and existing plans for such areas.

Intermittent and perennial streams originating within the mining area will be monitored where the stream leaves the area; and the streams crossing through the mining area will be monitored both upstream and downstream of the area currently being mined.

Ground water monitoring will consist of sampling all developed water sources, with the permission of the landowner, in the following manner:

1. Monthly monitoring will be done for quantity (static water level/flow) for a one year period before and after mining for developed springs, wells, and stream monitoring points. This information will be reported quarterly but will be available at the AMERICAN ENERGY CORPORATION office.

2. Quarterly monitoring will be conducted for quality for a one year period before and after mining for developed springs, wells, and stream monitoring points. This information will be reported quarterly.

3. Daily precipitation data from the mining area will be submitted to evaluate its impact on spring and stream flow. This information will be submitted quarterly but will be available at the AMERICAN ENERGY CORPORATION office.

An attempt will be made to sample as outlined above, however, some sources may not be accessible should a landowner deny permission to sample, a well may be buried, etc.. These locations, if encountered, will be documented in the quarterly reports.

All samples will be taken as outlined to the extent that existing well construction allows. Any samples that are unobtainable will be documented as such in the quarterly report. Sampling will include analyses for nitrates.

AMERICAN ENERGY CORPORATION will monitor all developed supplies in accordance with the monitoring plan outlined above regardless of the aquifers and/or saturated zones that they access. All developed supplies have been identified and have been indicated on the Application Map. All wells, both drilled and dug have been identified. Developed springs, consisting of a french drain and catchment basin, have been shown. A map will be included in the quarterly monitoring report showing the location of the wells, streams, and springs monitored and their position relative to the active mining areas of AMERICAN ENERGY CORPORATION

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G. DIVERSION AND DRAINAGE CONTROLS-**Permit Area**

(1) Will the proposed coal mining activities result in diversions of overland flow away from the disturbed areas? _____ Yes, _____ No. If yes, describe, including maps and cross sections, the diversion to be constructed to achieve compliance with paragraph (I) of rule 1501:13-4-14 of the administrative code.

N/A, NO PERMIT AREA

(2) Will the proposed coal mining activities result in the diversion of intermittent or perennial streams within the proposed permit area? ___ Yes, _____ No. If yes, describe, including maps and cross sections, the paragraph (I) of rule 1501:13-4-14 of the Administrative Code.

N/A, NO PERMIT AREA

(3) Will the proposed coal mining activities result in construction of diversions to direct runoff through a sediment pond or a series of sediment ponds?

Yes, _____ No. If yes, submit an addendum to describe, including maps and cross sections, the paragraph (I) of rule 1501:13-4-14 of the Administrative Code.

N/A, NO PERMIT AREA

(4) Indicate which of the following are proposed to be constructed within the proposed permit area and submit as an addendum the detailed design plans for each structure in accordance with paragraph (H) of rule 1501:13-4-14 and 1501:13-9-04 of the Administrative Code.

N/A, NO PERMIT AREA

_____ sedimentation pond(s) (submit Attachment 20)

_____ water impoundment(s) (submit Attachment 20)

_____ other (specify)

(5) Submit an addendum describing the plan for the control of water drainage into, through, and out of the proposed permit area. If applicable, submit as an addendum any request for variances pursuant to paragraphs (B) and (E) of rule 1501:13-9-04 of the Administrative Code.

N/A, NO PERMIT AREA

(6) Describe the treatment, when required, of ground and surface water drainage from the area to be disturbed by the proposed coal mining activities.

N/A, NO PERMIT AREA

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H. PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES-**Permit and Planned Subsidence Area**

Will the proposed coal mining activities adversely affect any public parks and places listed on the National Register of Historic Places? _____ Yes, __X__ No. If yes, submit an addendum describing the measures to minimize or prevent these impacts.

I. MINING NEAR OR THROUGH A PUBLIC ROAD-**Permit Area**

If the response to Part 1, item D(6) of the permit application is yes, submit an addendum describing the measures to be used to ensure that the interests of the public and land owners are protected.

N/A, NO PERMIT AREA

J. SUBSIDENCE CONTROL SURVEY-**Shadow Area**

(1) Is this a full coal recovery operation?
__X__ Yes, _____ No. If yes, complete Attachment 31, Subsidence Control Survey, and following items J(2) and (3).

SEE ATTACHMENT 31

(2) Does the shadow area contain any of the structures or facilities listed in 1501:13-12-03(J)(1-3)?
_____ Yes, __X__ No. If yes, complete Attachment 32, Protection of Specific Structures, and specifically identify the structures or facilities on the application map.

(3) Are any aquifers or bodies of water that serve as a significant water source for any public water supply present in the shadow area?
_____ Yes, __X__ No. If yes, complete Attachment 32, Protection of Specific Structures, and specifically identify the areas on the application map.

K. SUBSIDENCE CONTROL PLAN-**Shadow Area**

(1) Submit an addendum which describes the method of coal removal, and indicates the size, sequence, and timing of the development of the underground workings.

SEE ADDENDUM TO PART 3, PAGE 28, K(1)/ TIMING, STRUCTURE, CONTOUR, AND PARCEL MAP

(2) Utilizing the application map, specifically indicate areas where planned subsidence mining methods (i.e. longwall or pillar extraction) will be used.

SEE APPLICATION MAP AND TIMING, STRUCTURE, CONTOUR, AND PARCEL MAP

(3) Utilizing the application map, specifically indicate room-and-pillar mining areas where subsidence will be prevented or minimized.

SEE APPLICATION MAP AND TIMING, STRUCTURE, CONTOUR, AND PARCEL MAP

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
20 Buckhorn Club Inc.		Belmont		Washington	31		Woodland		House		3s-46
20 Buckhorn Club Inc.		Belmont		Washington	31		Stream				unnamed intermittent
20 Buckhorn Club Inc.		Belmont		Washington	31		Stream		Outbuildings-2		U-1A
20 Buckhorn Club Inc.		Belmont		Washington	31		Well		Privy		W-592
American Electric Power		Belmont		Washington	19, 25, 31, 32				high voltage transmission towers		
Baker, B.& L.		Monroe		Sunsbury	5		devel. Spring				DS-445, 446, 447
Baker, B.& L.		Monroe		Sunsbury	5		Well				DW-582
Baker, B.& L.		Monroe		Sunsbury	5		8 OUT BUILDINGS				
Baker, B.& L.		Monroe		Sunsbury	6		Undev. Springs		House		3s-154
Baker, B.& L.		Monroe		Sunsbury	6		Cropland		Pole Barn		DS-154A
Baker, B.& L.		Monroe		Sunsbury	6		Woodland		Barn		
Baker, B.& L.		Monroe		Sunsbury	6		Pasture land				
Baker, B.& L.		Monroe		Sunsbury	6		Well				DW-581
Baker, B.& L.		Monroe		Sunsbury	6		Stream				U42-04
Baker, B.& L.		Monroe		Sunsbury	6		devel. Spring				DS-154A

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Beckett M.& C.		Belmont		Washington	32		Woodland				3s-12
Beckett M.& C.		Belmont		Washington	32		Cropland				
Beckett, M.&C.		Belmont		Washington	31		Woodland				3s-33
Beckett, M.&C.		Belmont		Washington	31		Stream				D-11
Belmont County		Belmont		Washington	25, 26				County Road 86		
Bier,T.& P.		Monroe		Sunsbury	36				Outbuilding		3s-148
Bier,T.& P.		Monroe		Sunsbury	36		Stream		Garage		U42-01
Bier,T.& P.		Monroe		Sunsbury	36		SPRING		House		DS-148A
Boan,L.&L.		Belmont		Wayne	1		Woodland		House		3s-50
Boan,L.&L.		Belmont		Wayne	1		Well		Garage		W-435
Bondy, C.		Belmont		Washington	31		Pasture land		House		3s-44
Bondy, C.		Belmont		Washington	31		Woodland				
Bondy, C.		Belmont		Washington	31		Well				W-23,23A
Bondy, C.		Belmont		Washington	31		Undev. Springs				
Bondy, C.		Belmont		Washington	31		Stream				U-1A

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Bondy,J.&M.		Belmont		Washington	31		Woodland		House		3s-45
Bondy,J.&M.		Belmont		Washington	31		Wells (2)		Trailer		W-590, 591
Bondy,J.&M.		Belmont		Washington	31		Undev. Springs		Pool		
Brooks,C.& H.		Belmont		Wayne	1				House		3s-57
Brooks,C.& H.		Belmont		Wayne	1				Outbuilding		
Brooks,C.& H.											
Brown, J and K Lichtkoppler		Belmont		Washington	19		Woodland		House, occupied		3s-18
Brown, J and K Lichtkoppler		Belmont		Washington	19		Cropland		Barn		
Brown, J and K Lichtkoppler		Belmont		Washington	19		Well		Privy		DW-421
Brown, J and K Lichtkoppler		Belmont		Washington	19		Dev. Spring (3)		2 Outbuildings		DS-420, 18A, 18B
Brown, J and K Lichtkoppler		Belmont		Washington	19		Stream		Cemetary		U40-02,03, 2 unnamed intermittant
Brown, J and K Lichtkoppler		Belmont		Washington	19		Undev. Springs				
Brown,C.& K.		Belmont		Washington	31		Woodland		Trailer		3s-40
Brown,C.& K.		Belmont		Washington	31		Wells				W-22
Butler, C.		Belmont		Washington	19		Woodland		House		3s-17

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Butler, C.		Belmont		Washington	19		Wells		Garage		WL-161, DW-422
Butler, C.		Belmont		Washington	19		Undev. Springs		Barn		
Butler, C.		Belmont		Washington	19		Dev. Springs		Outbuilding		Ds-423,424
Butler, C.		Belmont		Washington	19				Cistern		
Crooks, H Jr.		Monroe		Sunsbury	6		Woodland		1 outbuilding		3s-150A
Crooks, H Jr.		Monroe		Sunsbury	6		Pasture				
Crooks, H Jr.		Monroe		Sunsbury	6		dev. Spring				DS-100
Crooks, H Jr.		Monroe		Sunsbury	6		2 oil/gas wells				
Crooks, H Jr.		Monroe		Sunsbury	6		undev springs				several
Crooks, R		Monroe		Sunsbury	6		undeveloped springs		Barn		3s-150
Crooks, R		Belmont		Sunsbury	6		devel. Spring				DS-150A
Crooks, R		Monroe		Sunsbury	6		Well		Cistern		W-427
Crooks,H.		Belmont		Wayne	1				House		3s-64
Crooks,H.		Belmont		Wayne	1				Garage		
Dalton, V & C.		Monroe		Sunsbury	36				House		3s-141

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DIVISION OF RECLAMATION

ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Dalton, V.& C.		Monroe		Sunsbury	36				Garage		
Dalton, V.& C.		Monroe		Sunsbury	36				Outbuildings-2		
Dalton,L.		Monroe		Sunsbury	36		Woodland		House, UNOCCUPIED		3s-140
Dalton,L.		Monroe		Sunsbury	36		Undev.Spring		Trailer		SEVERAL
Dalton,L.		Monroe		Sunsbury	36		Pasture land		Outbuilding		DW-140A
Dalton,L.		Monroe		Sunsbury	36		Stream				U1-11, 3 UNNAMED INTERMITTENT
Dalton,L.		Monroe		Sunsbury	36		Dev. SPRING				DS-103, 140A
Datkuliak,C.& B.		Monroe		Sunsbury	36		Pasture land		Trailer		3s-146
Datkuliak,C.& B.		Monroe		Sunsbury	36		Pond		Barns-3		P-40
Datkuliak,C.& B.		Monroe		Sunsbury	36		Cropland		Privy		DS-146A, 146B, 146C, 146D, 146E
Datkuliak,C.& B.		Monroe		Sunsbury	36		Well (2)		Outbuildings-3		DW-268, W-146A
Datkuliak,C.& B.		Monroe		Sunsbury	36		Dev. Springs		UNoccupied house		DS-251,267,269,
Datkuliak,C.& B.		Monroe		Sunsbury	36				Aircraft landing strip		DS-270,271,272
Datkuliak,C.& B.		Monroe		Sunsbury	36				GARAGE		DS-273,274, 144A
Datkuliak,C.& B.		Monroe		Sunsbury	36		STREAMS				U42-01, 3 UNNAMES INTERMITTENT

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Datkuliak,C.& B.		Monroe		Sunsbury	36		Undev. Springs				
Datkuliak,C.& B.		Monroe		Sunsbury	36		Stream				U42-03
Datkuliak,C.& B.		Monroe		Sunsbury	36		Stream				U1-11
Datkuliak,C.& B.		Monroe		Sunsbury	36		oil/gas well(1)				
Datkuliak,C.& B.		Monroe		Sunsbury	35		STREAM				U42-02
Datkuliak,C.& B.		Monroe		Sunsbury	35		DEVEL SPRINGS				DS-261, 262, 260, 258, 256
Datkuliak,C.& B.		Monroe		Sunsbury	35		UNDEV SPRINGS				SEVERAL
Datkuliak,C.& B.		Monroe		Sunsbury	35		well				DW-259
Datkuliak,M.		Monroe		Sunsbury	36		Cropland		House, unoccupied		3s-144
Datkuliak,M.		Monroe		Sunsbury	36		Woodland		Privy		
Datkuliak,M.		Monroe		Sunsbury	36		Pasture land				
Datkuliak,M.		Monroe		Sunsbury	36		Wells				W-281,283, DW-423A
Datkuliak,M.		Monroe		Sunsbury	36		Undev. Spring				SEVERAL
Datkuliak,M.		Monroe		Sunsbury	36		Dev. Springs				DS-284,285
Datkuliak,M.		Monroe		Sunsbury	36		cistern				

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Datkuliak,M.		Monroe		Sunsbury	36		Streams				U1-12,13
Davis,J.		Belmont		Washington	19		cistern		Trailer		3s-19
Davis,J.		Belmont		Washington	19		Woodland				
Davis,J.		Belmont		Washington	19		Cropland				
Davis,J.		Belmont		Washington	19		Dev. Spring				DS-422
Davis,J.		Belmont		Washington	19		undev. Spring				several
Davis,J.		Belmont		Washington	19		Well				W-423, DW-423A
Davis,J.		Belmont		Washington	19		Dug Well				
Davis,J.		Belmont		Washington	19		Stream				2 unnamed intermittent
Davis,J.		Belmont		Washington	19		Stream				1 perennial, U40-05
Dornon,D.& K.		Monroe		Sunsbury	36		Pasture land		House		3s-139
Dornon,D.& K.		Monroe		Sunsbury	36		Cropland		Garage		
Dornon,D.& K.		Monroe		Sunsbury	36		Woodland		3 Outbuilding		
Dornon,D.& K.		Monroe		Sunsbury	36		Wells				W-179,180A
Dornon,D.& K.		Monroe		Sunsbury	36		Dev. Spring				DS-94

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ATTACHMENT 31
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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Edge, J.& T.		Belmont		Washington	26		Woodland		Garage		3s-11
Edge, J.& T.		Belmont		Washington	26		Well		Outbuilding		DW-14
Elrod,D.		Belmont		Washington	31		Woodland		House		3s-37
Elrod,D.		Belmont		Washington	31		devel. Spring		Outbuilding(4)		DS-117A
Elrod,D.		Belmont		Washington	31				Garage		
Elrod,D.		Belmont		Washington	31				Privy		
Elrod,D.		Belmont		Washington	31		Stream		concrete bridge at Crabapple Creek		U1-09, UNNAMED INTERMITENT
Erchak, J., etal		Belmont		Washington	31		Woodland				3s-36
Erchak, J., etal		Belmont		Washington	31		Streams		Barn Ruins		
Erchak, J., etal		Belmont		Washington	31		undev. Spring		Outbuilding Ruins-6		several
Erchak, J., etal		Belmont		Washington	31		Streams		House Ruins		2 perennial
Fisher,B.& B.		Belmont		Wayne	1				House		3s-62
Fisher,B.& B.		Belmont		Wayne	1		Well		Garage		W-593
Haines, D.& B.		Belmont		Washington	19		Woodland				3s-21
Haines, D.& B.		Belmont		Washington	19		Stream				2 Unnamed intermittent, U-40

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Haines, D.& B.		Belmont		Washington	19		Stream				perennial stream
Haines, D.& B.		Belmont		Washington	19		undeveloped springs				several
Hall,D &.J.		Monroe		Sunsbury	30				House		3s-134
Hall,D &.J.		Monroe		Sunsbury	30				Outbuilding		
Hamilton,J. W, II		Monroe		Sunsbury	6		CISTERN		HOUSE		3s-149A
Hamilton,J. W, II		Monroe		Sunsbury	6		WELL		OUTBUILDINGS -5		W-427
Hamilton,J.& A.		Monroe		Sunsbury	6		Cropland				3s-149
Hamilton,J.& A.		Monroe		Sunsbury	6		Woodland		House		
Hamilton,J.& A.		Monroe		Sunsbury	6		Well				W-181A
Hamilton,J.& A.		Monroe		Sunsbury	6		Dev. Springs		Outbuildings-3		DS-101
Hamilton,J.& A.		Monroe		Sunsbury	6		Undev. Springs				SEVERAL
Hamilton,J.& A.		Monroe		Sunsbury	6		STREAMS				2 unnamed intermittent
Hibbits,W.&N.		Belmont		Washington	25		Woodland				3s-32
Hibbits,W.&N.		Belmont		Washington	25		Cropland				
Hibbits,W.&N.		Belmont		Washington	25		Stream				U1-01

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Hibbits,W.&N.		Belmont		Washington	25		undeveloped springs				several
Hibbits,W.&N.		Belmont		Washington	25				pole building		
Hibbits,W.&N.		Belmont		Washington	25		SPRINGS				DS-32A, DS-32B
Hoover, G. Jr.		Monroe		Sunsbury	6				Pool		3s-157
Hoover, G. Jr.		Monroe		Sunsbury	6		well		Garage		W-603
Hoover, G. Jr.		Monroe		Sunsbury	6				House		
Hoover, G. Jr.		Monroe		Sunsbury	6				Outbuilding		
Hoover, G.& P.		Monroe		Sunsbury	6		Cropland		Outbuildings-3		3s-156
Hoover, G.& P.		Monroe		Sunsbury	6		Woodland		House		
Hoover, G.& P.		Monroe		Sunsbury	6		Pasture land		Barn		
Hoover, G.& P.		Monroe		Sunsbury	6		Stream				2 unnamed intermittent, U1A-05
Hoover, G.& P.		Monroe		Sunsbury	6		oil/gas wells (2)				
Hoover, G.& P.		Monroe		Sunsbury	6		well				W-601, 602, 603
Hoover, G.& P.		Monroe		Sunsbury	6		cistern(2)				
Hoover, G.& P.		Monroe		Sunsbury	6		pond				P-80

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Hoover, G.& P.		Monroe		Sunsbury	6		STREAM				U1A-05
Hoover, G.& P.		Monroe		Sunsbury	6		devel spring				DS-463, 461, 460
Hoover, G.& P.		Monroe		Sunsbury	6		undev spring				several
Hoover,G.& P.		Belmont		Wayne	1		Woodland		Barn		3s-53
Hoover,G.& P.		Belmont		Wayne	1		Stream		Outbuilding		2 UNNAMED INTERMITTENT
Hoover,G.& P.		Belmont		Wayne	1		devel spring (2)		foundation		DS-53A, DS-462
Hoover,G.& P.		Belmont		Wayne	1		well				W-604
Hoover,G.& P.		Belmont		Wayne	1				cistern		W-604
Hoover,G.& P.		Belmont		Wayne	1		undevel spring		foundation		
Hughes,D. & J.		Belmont		Wayne	1		Woodland		Trailer		3s-63
Huml,J.& R.		Belmont		Washington	31		Woodland				3s-38
Huml,J.& R.		Belmont		Washington	31		Undev. Springs				several
Inharst,R.& M.		Monroe		Sunsbury	30		Pond		Garage		P-27
Inharst,R.& M.		Monroe		Sunsbury	30		Pasture land		Barn		3S-132
Inharst,R.& M.		Monroe		Sunsbury	30		Cropland		Silos-2		

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Inherst.R.& M.		Monroe		Sunsbury	30		Dev. Spring		Outbuildings-7		DS-91,92,93, 132A
Inherst.R.& M.		Monroe		Sunsbury	30		Streams		HOUSE		U1-05,06, UNNAMED INTERMITTENT
Jarrett,R.& T.		Belmont		Wayne	1		Woodland		Garage		3s-54
Jarrett,R.& T.		Belmont		Wayne	1		Pasture land		House		
Jarrett,R.& T.		Belmont		Wayne	1		Cropland				
Jarrett,R.& T.		Belmont		Wayne	1		Pond				P-26
Jarrett,R.& T.		Belmont		Wayne	1		DEV SPRING				DS-54A
Jarrett,R.& T.		Belmont		Wayne	1		Stream (2)				U1A-02, U1A-01
Ledney, T.ANO		Monroe		Sunsbury	6		Woodland				3s-160
Ledney, T.ANO		Monroe		Sunsbury	6		Ponds				P-51,39
Ledney, T.ANO		Monroe		Sunsbury	6		Undev. Springs				several
Ledney, T.ANO		Monroe		Sunsbury	6		Stream				intermittent
Littleton, T.& T.		Belmont		Washington	25		Woodland		House		3s-30
Littleton, T.& T.		Belmont		Washington	25		Cropland		Barns-2		
Littleton, T.& T.		Belmont		Washington	25		Well		Outbuildings-11		W-436

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Littleton, T.& T.		Belmont		Washington	25		stream				U-1
Littleton, T.& T.		Belmont		Washington	25		Undev. Springs				several
Littleton, T.& T.		Belmont		Washington	25		stream				1 perennial, 1 intermittent
Littleton,T.& N.		Belmont		Washington	31		Woodland				3s-41
Littleton,T.& N.		Belmont		Washington	31		Stream				U1-02, intermittent
Littleton,T.& N.		Belmont		Washington	31		Undev. Springs				several
Louden,G.		Belmont		Wayne	1		residential land		House		3s-217
Louden,G.		Belmont		Wayne	1				outbuilding		
Louden,G.& C.		Belmont		Wayne	1		Pasture land		House		3s-59
Louden,G.& C.		Belmont		Wayne	1		Pond		Garage		P-59
Louden,G.& C.		Belmont		Wayne	1		Woodland		Outbuildings-3		
Louden,G.& C.		Belmont		Wayne	1		Cropland				
Louden,G.& C.		Belmont		Wayne	1		Well				W-196
Louden,G.& C.		Belmont		Wayne	1		Spring				DS-442
Louden,G.& C.		Belmont		Wayne	1		Stream				unnamed intermittent

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Louden,M.		Belmont		Wayne	1				House		3s-61
Louden,M.		Belmont		Wayne	1		Stream		Outbuilding		U2-07
Louden, M II		Monroe		Sunsbury	30		well		House		W-184
Louden,R.& C.		Belmont		Wayne	1				House		3s-60
Louden,R.& C.		Belmont		Wayne	1		Well				W-197
Lucas, M.& D.		Belmont		Wayne	1		Woodland				3s-158
Lucas, M.& D.		Belmont		Wayne	1		Stream				Perennial
Lucas,N.		Belmont		Wayne	1		Cropland		House,unoccupied		3s-51
Lucas,N.		Belmont		Wayne	1		Pasture land		Outbuildings-3		
Lucas,N.		Belmont		Wayne	1		Woodland				U1A-07, U1-01A
Lucas,N.		Belmont		Wayne	1		Stream (5)				2 unnamed intermittent, U1A-01
Lucas,N.		Belmont		Wayne	1		DEV SPRINGS				DS-51A, 51B, 51C
Lucas,N.		Belmont		Wayne	1		UNDEV SPRINGS				SEVERAL
Lund, R. E.		Belmont		Washington	31		Woodland		1 occupied dwelling		3s-48
Lund, R. E.		Belmont		Washington	31		Undev. Springs		1 unoccupied dwelling		several

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Lund, R. E.		Belmont		Washington	31		stream		CAMPER		1 unnamed intermittent
Lund, R. E.		Belmont		Washington	31		stream		NEW HOUSE		U1-12, U1-13
Lund, R. E.		Belmont		Washington	31		well				w-427A
Lund, R. E.		Belmont		Washington	31		Stream (3)				U1-13, U1-12, U1-02
Lund, R. E.		Belmont		Washington	31		Stream (2)				unnamed intermittent
Macko, G.etal		Belmont		Washington	13		Woodland		Trailer		3s-218
Macko, G.etal		Belmont		Washington	13		Well		Woodshed		W-438
McGilton, J.		Belmont		Wayne	1				House		3s-69
McGilton, J.		Belmont		Wayne	1				Garage		
Mellott, B.		Monroe		Sunsbury	6		Pasture land				3s-155
Mellott, B.		Monroe		Sunsbury	6		Well				W-325
Mellott, B.		Monroe		Sunsbury	6		Dev. Spring				
Mellott, B.		Monroe		Sunsbury	6		Cropland		Pond		P-39
Mellott, B.		Monroe		Sunsbury	6		Woodland				
Mellott, B.		Monroe		Sunsbury	6		Stream				U1A-05, UNNAMED INTERMITTENT

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Mellott, B.		Monroe		Sunsbury	6		OIL/GAS WELLS (5)				U1A-05, UNNAMED INTERMITTENT
Mellott, H		Monroe		Sunsbury	36		Woodland				3s-138
Mellott, H		Monroe		Sunsbury	36		Pasture land				
Mellott, H		Monroe		Sunsbury	36		Dev. Spring				DS-116
Mellott, H		Monroe		Sunsbury	36		Cropland				
Mellott, H		Monroe		Sunsbury	36		undev spring				several
Mellott, H		Monroe		Sunsbury	36		Stream				unnamed intermittent
Mellott,C.&P.		Monroe		Sunsbury	36				Garage		3s-143
Mellott,C.&P.		Monroe		Sunsbury	36		Well		House		WL-180
Mellott,C.&P.									Outbuilding (3)		
Mellott,G.& D.		Monroe		Sunsbury	36/35				House		3s-137
Mellott,G.& D.		Monroe		Sunsbury	36/35		Well		Outbuildings-2		W-204
Mellott,H.		Belmont		Washington	31		Woodland				3s-43
Mellott,H.		Belmont		Washington	31		Pasture land				
Mellott,H.		Belmont		Washington	31		Dev. Spring				DS-117

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Mellott,H.		Monroe		Sunsbury	36		Cropland		House-2 (1 unoccupied)		3s-136
Mellott,H.		Monroe		Sunsbury	36		Pond		Garage		P-30
Mellott,H.		Monroe		Sunsbury	36		Woodland		Silo		
Mellott,H.		Monroe		Sunsbury	36		Pasture land		Corn Crib		
Mellott,H.		Monroe		Sunsbury	36		Dev. Springs		Barn (2)		DS-112,113,114,95
Mellott,H.		Monroe		Sunsbury	36		undev. Springs				SEVERAL
Mellott,H.		Monroe		Sunsbury	36		Streams		Sheds-2		U1-07,08,09,10, U41-04, 2 UNNAMED INT
Mellott,H.		Monroe		Sunsbury	36		well		Machine sheds-3		W-600
Mellott,H.		Monroe		Sunsbury	36		undeveloped springs		milk house		several
Mellott,H.		Monroe		Sunsbury	36		Oil/gas wells-2		Outbuildings-6		
Meyer,M.etal		Belmont		Wayne	1		Pasture land		House		3s-68
Meyer,M.etal		Belmont		Wayne	1		Cropland		Barn		
Meyer,M.etal		Belmont		Wayne	1		Well		Garage		W-583
Meyer,M.etal		Belmont		Wayne					Outbuildings-8		

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Mobley,R.& C.		Belmont		Wayne	1		Cropland		Outbuilding		3s-49
Mobley,R.& C.		Belmont		Wayne	1		Woodland				
Mobley,R.& C.		Belmont		Wayne	1		Undev.Springs				
Mobley,R.& C.		Belmont		Wayne	1		stream				2 intermittent
Mobley,R.& C.		Belmont		Wayne	1		well				DW-19
Monroe County		Monroe		Sunsbury					County Road 23		
Moore P.& G.		Belmont		Washington	20		Woodland				3s-6
Moore P.& G.		Belmont		Washington	20		intermittent stream				U42-02
Moore P.& G.		Belmont		Washington	20		spring				DS-113
Moore, N.D.		Belmont		Washington	25		Pasture		Houses-3, structure, barn, milk house		3S-27
Moore, N.D.		Belmont		Washington	25		Woodland		Garage		
Moore, N.D.		Belmont		Washington	25		Undev. Springs		Barn Complex		
Moore, N.D.		Belmont		Washington	25		Cropland		Silos-2		
Moore, N.D.		Belmont		Washington	25		Pond		Corn Crib		P-63
Moore, N.D.		Belmont		Washington	25		Wells		Feed Bins-2		W-407, DW-408

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Moore, N.D.		Belmont		Washington	25		Perennial stream		Outbuildings-12		W-409, W-410
Moore, N.D.		Belmont		Washington	25		Dev. Springs		Large Concrete Waste		DS-411,412,413,
Moore, N.D.		Belmont		Washington	25				Disposal Tank 30' dia.		414, 416, 426, 27A, 27B, 27C
Moore, N.D.		Belmont		Washington	25		Stream				U1-05, U1-04, 3 unnamed intermittent
Moore, N.D.		Belmont		Washington	25		undeveloped springs				U1-16, U1-17, 1 PERENNIAL
Moore, P.& G.		Belmont		Washington	26		Woodland				3s-7
Moore, P.& G.		Belmont		Washington	26		undeveloped springs				several
Moore, P.& G.		Belmont		Washington	26		stream				unnamed intermittent
Moore,N.& D.		Belmont		Washington	19		Pasture land		House,Unoccupied		3s-22
Moore,N.& D.		Belmont		Washington	19		Woodland		Barn		
Moore,N.& D.		Belmont		Washington	19		Cropland		Outbuildings-3		
Moore,N.& D.		Belmont		Washington	19		Dev. Springs				DS-402,403, 404, 405, 406
Moore,N.& D.		Belmont		Washington	19		undeveloped springs				several
Moore,N.& D.		Belmont		Washington	19		Well				DW-400, W-401, W-409

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Moore,N.& D.		Belmont		Washington	19		Stream				unnamed, intermittent, U43-01
Moore,P.& G.		Belmont		Washington	25		Woodland				3s-24
Orum C.		Belmont		Washington	20		Woodland				3s-4
Orum C.		Belmont		Washington	20		Stream (2)				unnamed, intermittent, U43-06
Perkins, M.		Belmont		Washington	25				House		3s-26
Perkins, O.& N.		Belmont		Washington	25		Woodland				3s-28
Perkins, O.& N.		Belmont		Washington	26		Woodland		2 Houses		3s-10
Perkins, O.& N.		Belmont		Washington	26		Wells		Privy		WL-1, WL-2, W-3
Perkins, O.& N.		Belmont		Washington	26				Summer Kitchen		
Perkins, O.& N.		Belmont		Washington	26		Undev. Spring		Barn		
Perkins, O.& N.		Belmont		Washington	26				3 Building Ruins		
Perkins, O.& N.		Belmont		Washington	26				5 Out Buildingings		
Perkins,M.& A.		Belmont		Wayne	1		Pasture land		House		3s-67
Perkins,M.& A.		Belmont		Wayne	1		Woodland		Stream		unnamed intermittent
Perkins,M.& A.		Belmont		Wayne	1		undeveloped springs				several

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Perkins,M.& A.		Belmont		Wayne	1		Well		Outbuildings-3		W-194
Perkins,N.		Belmont		Washington	25		Woodland				3s-20
Perkins,N.		Belmont		Washington	19		undeveloped springs				several
Perkins,N.		Belmont		Washington	19		Stream (5)				unnamed intermittent, PERENNIAL U43-01
Perkins,N.		Belmont		Washington	19		Cropland		trailer		3s-20a
Perkins,N.		Belmont		Washington	19		Pasture land		Outbuildings-5		
Perkins,N.		Belmont		Washington	19		Stream				unnamed intermittent, U43-01, U40-02A
Perkins,N.		Belmont		Washington	19		undeveloped springs				several
Perkins,N.		Belmont		Washington	19		well				DW-23A
Perkins,N.		Belmont		Washington	25		Dev. Spring (2)				3s-23
Perkins,N.		Belmont		Washington	25		Pasture land		Garage		DS-98, DS-23B
Perkins,N.		Belmont		Washington	25		Stream				U40-02A
Perkins,N.		Belmont		Washington	25		Stream(3)				Unnamed intermittent
Perkins,N.		Belmont		Washington	25		undeveloped springs				several
Perkins,N.		Belmont		Washington	25		Wells		Lone Gravesite		W-224,DW-420

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Perkins,N.		Belmont		Washington	25		Woodland		House		
Perkins,W.		Belmont		Washington	25		SUBMARINE BRIDGE				3s-31
Perkins,W.		Belmont		Washington	25		Stream				u-1
Phillips,D.& Smith J.		Belmont		Wayne	1		Woodland				3s-52
Phillips,D.& Smith J.		Belmont		Washington	31		Woodland		House		3s-47
Phillips,D.& Smith J.		Belmont		Washington	31		Cropland		Trailer		
Phillips,D.& Smith J.		Belmont		Washington	31		drilled well				DW-435B, W-435A
Phillips,D.& Smith J.		Belmont		Washington	31		Undev.Springs				several
Phillips,D.& Smith J.		Belmont		Washington	31		stream				unnamed, intermittent
Raven Rock Inc.		Belmont		Wayne	1		Woodland		House		3s-65
Raven Rock Inc.		Belmont		Wayne	1		Wells		Barn		DW-35,W-36
Raven Rock Inc.		Belmont		Wayne	1		Undev.Springs		Outbuildings-4		
Raven Rock Inc.		Belmont		Wayne	1		Ponds				P-4,5
Raven Rock Inc.		Belmont		Wayne	7		Woodland				3s-71
Raven Rock Inc.		Belmont		Wayne	7		spring				DS-32

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Raven Rock Inc.		Belmont		Wayne	7		well				DW-83
Reed T.& J.		Monroe		Sunsbury	6		Woodland		Houses-2		3s-152
Reed T.& J.		Monroe		Sunsbury	6		Pasture land		Barns-2		
Reed T.& J.		Monroe		Sunsbury	6		Cropland		Outbuildings-5		
Reed T.& J.		Monroe		Sunsbury	6		Wells (2)		Garage		W-594, 595
Reed, W.& B.		Monroe		Sunsbury	12		Woodland		Outbuildings-4		3s-188
Reed, W.& B.		Monroe		Sunsbury	12		Pond				P-55
Reed, W.& B.		Monroe		Sunsbury	12		Pasture land				
Reed, W.& B.		Monroe		Sunsbury	12		Dev. Springs				DS-438,439
Reed, W.& B.		Monroe		Sunsbury	12		Stream				unnamed intermittent
Reed,T.& J.		Monroe		Sunsbury	6		Stream				unnamed intermittent, U1-14
Reed,T.& J.		Monroe		Sunsbury	6		SPRING				DS-152A
Reed,T.& J.		Monroe		Sunsbury	36		Cropland				3s-145
Reger R. Sr & S.		Belmont		Washington	19		Woodland				3s-15

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Reger R. Sr & S.		Belmont		Washington	19		Stream				unnamed intermittent
Reger, R. Sr.& S.		Belmont		Washington	14		Woodland		House, unoccupied		3s-2
Reger, R. Sr.& S.		Belmont		Washington	14		Dev. Spring		Trailer, unoccupied		DS-441
Reger, R. Sr.& S.		Belmont		Washington	14		Well		Outbuildings (3)		DW-437
Reger, R. Sr.& S.		Belmont		Washington	14				Trailer (2)		
Reger, R. Sr.& S.		Belmont		Washington	14		Stream				unnamed
Reger, R. Sr.& S.		Belmont		Washington	20		Woodland				3s-3
Reger, R. Sr.& S.		Belmont		Washington	20		Stream (2)				unnamed
Riley,G.,Sr.& M.,etal		Monroe		Sunsbury	30		Woodland		House		3s-133
Riley,G.,Sr.& M.,etal		Monroe		Sunsbury	30		Pasture land		Garage		
Riley,G.,Sr.& M.,etal		Monroe		Sunsbury	30		Dev. Springs		Pole Barn		DS-209,210
Riley,G.,Sr.& M.,etal		Monroe		Sunsbury	30		Cropland		4 Outbuilding		
Riley,G.,Sr.& M.,etal		Monroe		Sunsbury	30		Stream		Corn Crib		
Riley,G.,Sr.& M.,etal		Monroe		Sunsbury	30		oil/gas well (7)		occupied structure		U41-01
Riley,G.,Sr.& M.,etal		Monroe		Sunsbury	30		undev. Springs				several

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ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Riley,J.		Monroe		Sunsbury	30		Streams		Houses-2		3s-135
Riley,J.		Monroe		Sunsbury	30		Woodland		Garages-2		
Riley,J.		Monroe		Sunsbury	30		Springs		Pole Barn		
Riley,J.		Monroe		Sunsbury	30		Dev. Spring (2)		Outbuildings-2		DS-206, 135A
Riley,J.		Monroe		Sunsbury	30		Pasture land		WINDMILL		
Riley,J.		Monroe		Sunsbury	30		Cropland				
Riley,J.		Monroe		Sunsbury	30		Well				WL-205
Riley,J.		Monroe		Sunsbury	30		Stream				U1-09, 4 UNNAMED INTERMITTENT
Riley,J.& L.		Monroe		Sunsbury	6				House		3s-153
Riley,J.& L.		Monroe		Sunsbury	6				Garage		
Rote,F.		Belmont		Washington	31		Woodland				3S-39
Rote,F.		Belmont		Washington	31		Well				DW-132
Rote,F.		Belmont		Washington	31		Stream				U-1A
Rote,F.		Belmont		Washington	32		Stream				U-1A, D1-1A, U11B
Routh,S.		Belmont		Wayne	1		Woodland		Outbuildings-2		3s-56

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SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Routh,S.		Belmont		Wayne	1		Stream				unnamed intermittent
State of Ohio		Belmont		Wayne	1				State Route 145		
State of Ohio		Belmont		Sunsbury	5, 6, 30, 36				State Route 556		
State of Ohio		Monroe		Sunsbury	6				State Route 145		
Smith, S		Monroe		Sunsbury	6				HOUSE		
Smith, S		Monroe		Sunsbury	6				2 outbuildings		
Strapp, I & Schnagg, D.		Monroe		Sunsbury	36				Barn		3s-142
Strapp, I & Schnagg, D.		Monroe		Sunsbury	36				HOUSE		w-142A
Sunsbury Township		Monroe		Sunsbury	6				Township Road 107		
Sunsbury Township		Monroe		Sunsbury	36				Township Road 104		
Sunsbury Township		Monroe		Sunsbury	6, 36				Township Road 904		
T.& P. Otto		Belmont		Wayne	1						3s-216
Taylor, D.etal		Belmont		Washington	32		Pasture land				3s-13
Taylor, D.etal		Belmont		Washington	32		Stream				D-11
Taylor, D.etal		Belmont		Washington	32		well				W-11, 12

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(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Taylor,D.,etal		Belmont		Washington	25		Woodland		House		3s-29
Taylor,D.,etal		Belmont		Washington	25		Well		Outbuildings-2		W-85
Taylor,D.,etal		Belmont		Washington	25		Undev. Spring		Privy		
Taylor,D.,etal		Belmont		Washington	25		Stream				U-1, unnamed intermittent
Taylor,D.etal		Belmont		Washington	25		well				DW-13
Taylor,D.etal		Belmont		Washington	31		Woodland				3s-34
Taylor,D.etal		Belmont		Washington	31		Undev. Springs				
Taylor,D.etal		Belmont		Washington	31		Stream				D-11
Thomas, P. ANO		Monroe		Sunsbury	6						3s-186
Thomas, P. ANO		Monroe		Sunsbury	6		oil/gas well				
Thomas,R.		Belmont		Wayne	1		Pasture land		House		3s-58
Thomas,R.		Belmont		Wayne	1		Pond		Garage		P-1
Thomas,R.		Belmont		Wayne	1		Well		Pool		W-18
Truax,L.& E.		Monroe		Sunsbury	36				House,unoccupied		3s-147

AEC 18667
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DIVISION OF RECLAMATION

ATTACHMENT 31
(Subsidence Control Survey)

SURFACE OWNER		COUNTY		TOWNSHIP/ SECTION			RENEWABLE RESOURCES		STRUCTURES-USE		MAP LOC. KEY (Structures)
Truax,L.& E.		Monroe		Sunsbury	36				Privy		
Truax,L.& E.		Monroe		Sunsbury	36				Log Home,unoccupied		
Walker,F.		Belmont		Washington	31		Woodland				3s-35
Walker,F.		Belmont		Washington	31		Stream				U-1, intermittentU1-02A, U1-02B
Walker,F.		Belmont		Washington	31		undev springs				several
Ward,D.& V.		Belmont		Washington	31		Woodland				3s-42
Ward,D.& V.		Belmont		Washington	31		oil/gas				
Ward,D.& V.		Belmont		Washington	31		Stream		1 PERENNIAL, 2 INTERMITTENT		U1-02, U1-02C, U1-02D
Ward,J.& M.		Belmont		Wayne	1		Woodland		House		3s-66
Ward,J.& M.		Belmont		Wayne	1		Ponds		Garage		P-57,58
Ward,J.& M.		Belmont		Wayne	1		Stream		Outbuildings-4		U-2
Ward,J.& M.		Belmont		Wayne	1		Dev. Spring				DS-145

AEC 18668
00425-3

ADDENDUM TO PART 3, PAGE 28, (K)(1)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

ANNUAL MAP

In accordance with PPD Underground 91-1, a mine map will be submitted to coincide with the permit anniversary date. For ground water monitoring, the face location of the active panel will be provided quarterly with the monitoring data. The maps will contain the following:

1. Scale the same as the Division of Mines submittal, or 1 in. = 500 ft.
2. All base map requirements pursuant to ORC 4153.03.
3. Surface owner names and property lines.
4. Streams and other bodies of water.
5. Section lines and numbers.
6. Buildings and other surface structures.
7. Public roads and railroad tracks.
8. Mine openings and surveyed workings, showing pillar and entry size, configuration and location.
9. Survey extension dates for all workings, including longwall face or pillar recovery lines.
10. Areas of full extraction.
11. Coal elevations and extraction height.
12. Completion dates for individual sections (if sealed, date and location of seal).
13. Maximum extraction ratios for completed sections.
14. Ground water and subsidence monitoring stations.
15. The boundaries of the authorized mining area.
16. The location and extent of any other mine excavation (surface or underground) within the same seam being mined.
17. A map title block and notarized map certification.

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ADDENDUM TO PAGE 28, PART 3, K(1)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425

ENGINEERING AND MINING TECHNIQUES

The CENTURY MINE is an operation that uses the longwall method of mining. The engineering and mining techniques for longwall mining are as follows:

Longwall Mining

1. Longwall mining removes long panels of coal that are 600 to 900 ft. wide and a maximum of approximately 15,000 ft. long. A longwall shearer, a double-drum machine, removes the panel by cutting slices of coal along the width of the face. The roof is temporarily supported by hydraulic supports called shields. The shields are moved forward each time that a slice is cut from the face. The coal is transported from the face by an armored, chain conveyor.

The roof behind the shields is allowed to collapse. Surface subsidence on the order of approximately 66 percent of the mining height occurs when the roof falls.

2. The longwall face is outlined by three or four entries on each side called gate entries, on the end where the panel starts by several entries called bleeder entries, and on the panel end by the main entries or by recovery rooms (entries developed to remove the longwall mining equipment). These entries are developed using a continuous miner, shuttle cars, and roof bolters. Pillars and concrete block stoppings separate each entry from the next. These entries provide ventilation and belt haulage for the longwall mining section, with a maximum recovery of less than 50 percent of the coal. Coal pillars between the longwall panels crush after both adjacent longwall panels are extracted. Subsidence of the surface occurs over these panels and pillars during longwall mining as a result of the pillars crushing and from the extraction of both adjacent longwall panels.

Partial Recovery Mining Sections - Longwall Access Areas

There will be one set of main entries driven in a general north-south direction. The main entries consist of approximately seven entries, driven with continuous miners and are primarily used for ventilation, transportation of men and materials, and haulage. These entries are designed for long-life with the pillars providing roof support. The maximum recovery factor for mains and submains is below 50 percent and is much less if one considers the barrier blocks left in place at the approaches to butt and longwall sections.

This area of Ohio contains many slip-prone soil types. In fact, the topography of this area was formed from slippage, which still occurs today. Slip-prone soil types have been identified in the Addendum to Item K(5)(b). After mining occurs in an area, personnel examine the mining areas for damage to land. As stated in the Addendum to Item K(5)(c), damage to land will be repaired as soon as discovered and as soon as practical given weather and other conditions. If a

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slip is caused by subsidence from full coal recovery mining, it likely will occur within several months of subsidence. If a slip is discovered, the time frame that the area was undermined (if at all) will be determined, and if the slip occurs relatively soon after mining (within several months), it generally can be assumed to be related to the mining. However, due to the fact that the area is slip prone, there are other circumstances that may cause slippage, such as heavy rainfall, loading of the soil (with structures or other materials), and these occurrences will also be taken into consideration. In addition, recent slippage, prior to mining, may be an indicator that a slip was not mining induced. If a slip is found to be mining related, a mitigation plan will be submitted within 30 days of discovery and determination that the slip is mining related. That time period may be expedited if significant environmental harm is possible, or public safety is compromised.

Loss of stream base flow is not identified as a "significant problem" on the adjacent D-0360 permit area. Their observations show that in large streams the flow returns within several months, even in low cover. In small streams, that time period for flow to return increases due to lower flows and lower sediment loads. Some stream base flow loss has been observed, but within several years, without any mitigation, streams have returned to normal flows. The mechanism for such natural remediation is believed to be through sediment that fills cracks induced by mining. If flow does not naturally return within five years, cracks will be filled manually. Material such as soil containing high clay content, or a bentonite clay powder could be used to fill the cracks. Generally, grouting is not recommended, as the stream is the indicator of the top of the water table and if the water table is unable to reach the stream bed, it may relocate elsewhere. If a stream is needed to provide water to livestock, temporary water is usually installed prior to undermining or shortly thereafter according to the water replacement plan.

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K. (4) Submit as an addendum, for those areas mapped as room-and-pillar mining, the following information:

See D-0425-1

(a) the maximum and average overburden thickness.

(b) the projected maximum extraction ratios for mains, submains, and butt sections, as well as the existing ranges of values for the same areas.

(c) projected maximum width of entries and cross cuts throughout the mine, as well as the existing ranges of values for the same areas.

(d) the center spacing for entries and cross cuts.

(e) minimum pillar dimensions for mains, submains, and butt sections, as well as the existing ranges of values for these areas.

(f) the barrier pillar width between butt sections, as well as the existing ranges of values for the same areas.

(g) the engineering properties of the clay/shale, or other soft rock material in the roof and floor or the mine.

(h) measures to be taken on the surface to prevent damage or lessening of the value or reasonably foreseeable use of the surface, if any.

(i) the minimum pillar safety factor, for protected structures, based upon coal strength and load.

(j) methods and calculations used to determine the safety factor.

(5) Submit as an addendum for those areas mapped as full coal recovery mining, the following information:

SEE ADDENDUM TO PART 3, PAGE 29, ITEM K(5)(a)

(a) for each method to be employed (i.e. longwall or pillar extraction), provide the following:

i) rate and direction of dip for the coal seam.
ii) dimensions of panels or butt sections.
iii) thickness of coal to be extracted (mining heights).
iv) maximum angle of draw.
v) maximum anticipated subsidence.
vi) width of barrier pillars or chain pillars between sections or panels.
vii) the maximum extraction ratio within a pillaring section.

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FULL RECOVERY MINING PLAN

All of AEC's "full coal recovery" mining will be by method of longwall mining. Longwall panels will be developed with a 3-entry gate system. The following characteristics shall apply for those areas mapped as "full coal recovery" mining:

i) The dip of the coal is 0.5% in a direction South 35 Degrees East.
ii) The longwall panel dimensions range from 600 to 900-ft wide and as long as 15,000-ft.
iii) AEC will mine the Pittsburgh No. 8 Seam having an average thickness of 64 inches within the application area.
iv) Data from an adjacent longwall mine in the same coal seam shows that the maximum angle of draw is 13 degrees (see attached study for the Powhatan No. 6 Mine).
v) Data from an adjacent longwall mine in the same coal seam shows that the maximum anticipated subsidence is 66% of the average seam height (see attached study for the Powhatan No. 6 Mine).
vi) Gate pillars will be 50-ft wide. Barrier pillars at the longwall panel neck will be 400-ft wide.
vii) The anticipated overall extraction ratio of the longwall system, with gates included, is 92%.

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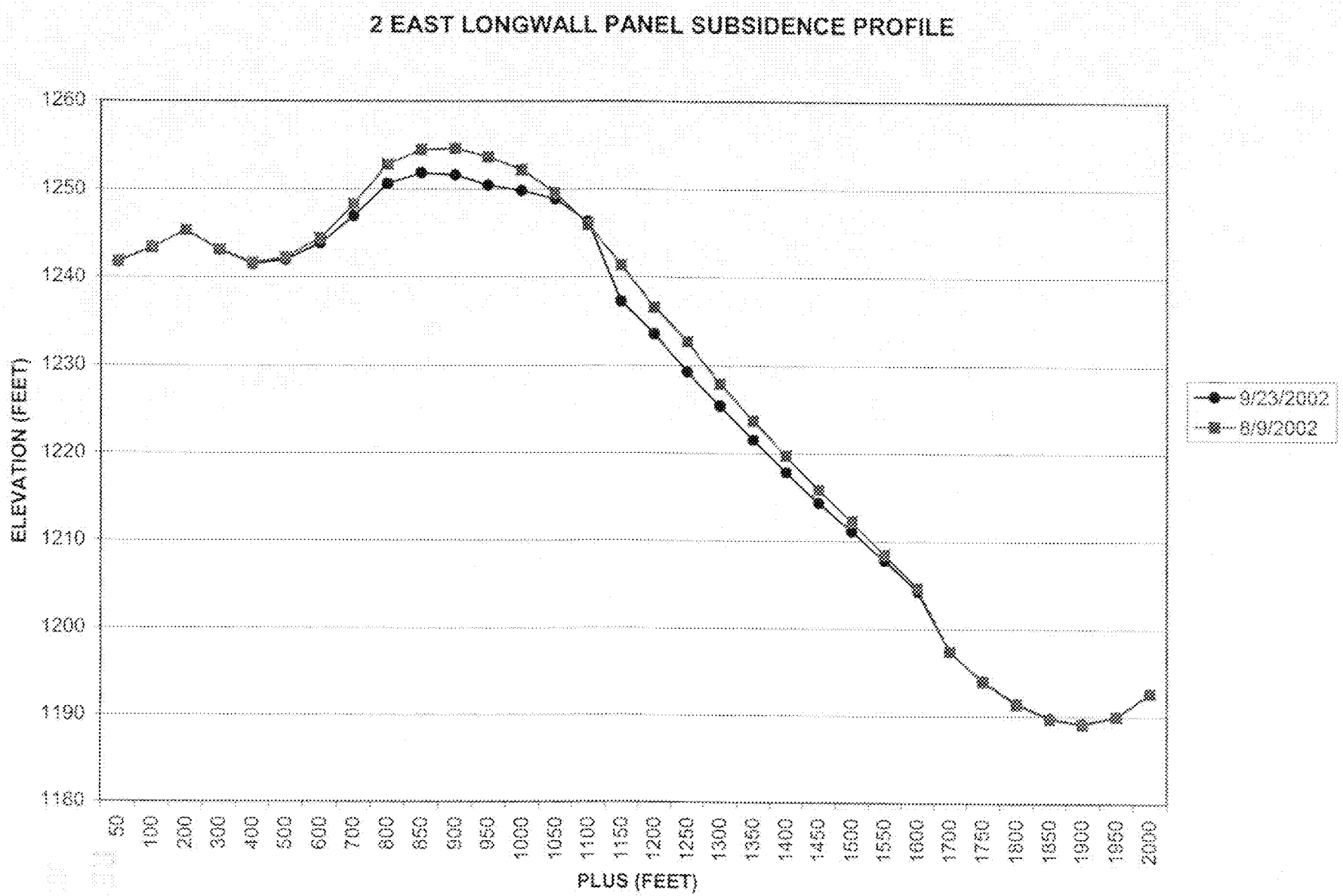
2 EAST LONGWALL PANEL SUBSIDENCE PROFILE
ELEVATION (FEET)
1260
1250
1240
1230
1220
1210
1200
1190
1180
PLUS (FEET)
50
100
200
300
400
500
600
700
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1700
1750
1800
1850
1900
1950
2000
9/23/2002
8/9/2002

AEC 18674

Panel	Plus	After	Before	Diff.
	PLUS	9/23/2002	8/9/2002	
2 EAST	50	1241.73	1241.81	-0.08
2 EAST	100	1243.4	1243.38	0.02
2 EAST	200	1245.32	1245.33	-0.01
2 EAST	300	1243.1	1243.14	-0.04
2 EAST	400	1241.52	1241.65	-0.13
2 EAST	500	1241.99	1242.27	-0.28
2 EAST	600	1243.85	1244.46	-0.61
2 EAST	700	1246.95	1248.32	-1.37
2 EAST	800	1250.63	1252.85	-2.22
2 EAST	850	1251.86	1254.5	-2.64
2 EAST	900	1251.65	1254.65	-3
2 EAST	950	1250.48	1253.7	-3.22
2 EAST	1000	1249.87	1252.26	-2.39
2 EAST	1050	1248.93	1249.64	-0.71
2 EAST	1100	1246.29	1245.95	0.34
2 EAST	1150	1237.25	1241.38	-4.13
2 EAST	1200	1233.65	1236.62	-2.97
2 EAST	1250	1229.33	1232.82	-3.49
2 EAST	1300	1225.46	1227.97	-2.51
2 EAST	1350	1221.57	1223.79	-2.22
2 EAST	1400	1217.81	1219.7	-1.89
2 EAST	1450	1214.31	1215.84	-1.53
2 EAST	1500	1211.14	1212.26	-1.12
2 EAST	1550	1207.79	1208.49	-0.7
2 EAST	1600	1204.28	1204.62	-0.34
2 EAST	1700	1197.45	1197.44	0.01
2 EAST	1750	1194.03	1193.96	0.07
2 EAST	1800	1191.45	1191.37	0.08
2 EAST	1850	1189.77	1189.71	0.06
2 EAST	1900	1189.16	1189.07	0.09
2 EAST	1950	1190.01	1189.96	0.05
2 EAST	2000	1192.69	1192.63	0.06

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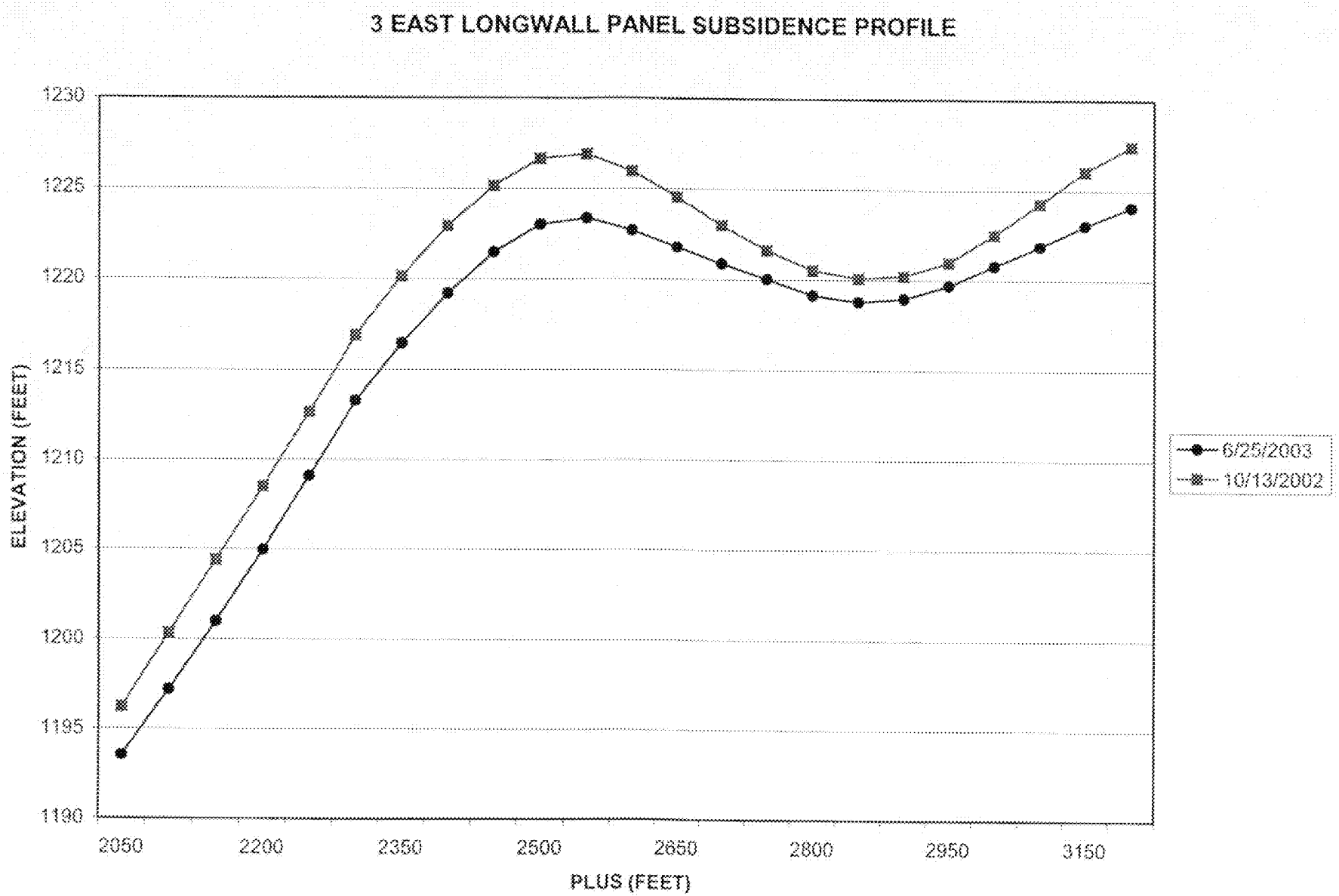

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Panel	Plus	After	Before	Diff.
		6/25/2003	10/13/2002	
3 EAST	2050	1193.54	1196.23	-2.69
3 EAST	2100	1197.2	1200.35	-3.15
3 EAST	2150	1200.98	1204.4	-3.42
3 EAST	2200	1204.96	1208.5	-3.54
3 EAST	2250	1209.09	1212.66	-3.57
3 EAST	2300	1213.27	1216.9	-3.63
3 EAST	2350	1216.45	1220.15	-3.7
3 EAST	2400	1219.2	1222.93	-3.73
3 EAST	2450	1221.47	1225.16	-3.69
3 EAST	2500	1223.02	1226.67	-3.65
3 EAST	2550	1223.36	1226.92	-3.56
3 EAST	2600	1222.68	1225.96	-3.28
3 EAST	2650	1221.76	1224.55	-2.79
3 EAST	2700	1220.87	1223	-2.13
3 EAST	2750	1220.03	1221.62	-1.59
3 EAST	2800	1219.15	1220.52	-1.37
3 EAST	2850	1218.8	1220.1	-1.3
3 EAST	2900	1218.98	1220.23	-1.25
3 EAST	2950	1219.71	1220.99	-1.28
3 EAST	3050	1220.8	1222.54	-1.74
3 EAST	3100	1221.88	1224.26	-2.38
3 EAST	3150	1223.06	1226.08	-3.02
3 EAST	3200	1224.07	1227.46	-3.39

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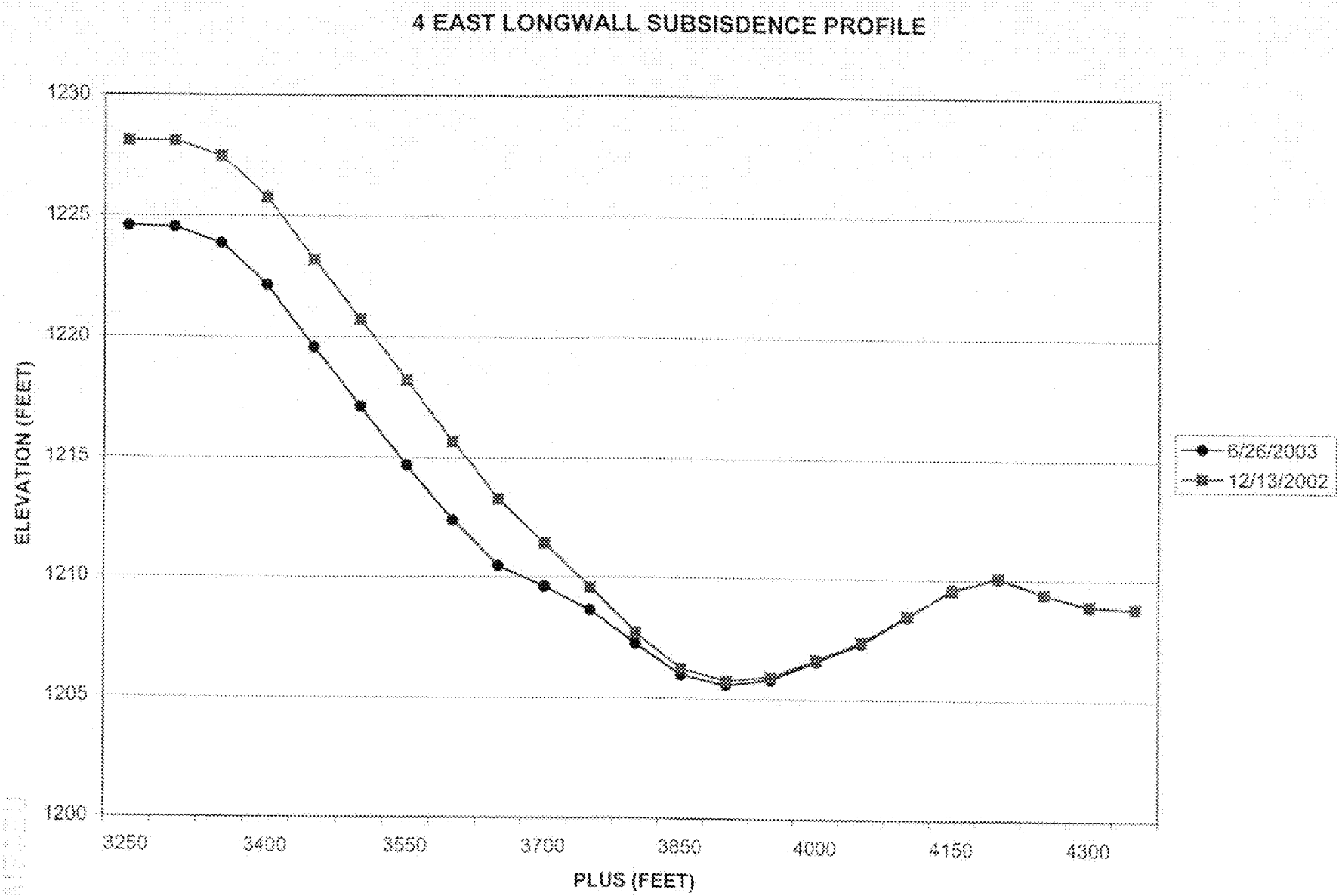
4 EAST LONGWALL SUBSISDENCE PROFILE
ELEVATION (FEET)
1230
1225
1220
1215
1210
1205
1200
3250
3400
3550
3700
3850
4000
4150
4300
PLUS (FEET)
6/26/2003
12/13/2002

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Panel	Plus	After	Before	Diff.
		6/26/2003	12/13/2002	
4 EAST	3250	1224.58	1228.14	-3.56
4 EAST	3300	1224.53	1228.13	-3.6
4 EAST	3350	1223.87	1227.5	-3.63
4 EAST	3400	1222.15	1225.8	-3.65
4 EAST	3450	1219.58	1223.19	-3.61
4 EAST	3500	1217.14	1220.74	-3.6
4 EAST	3550	1214.69	1218.22	-3.53
4 EAST	3600	1212.37	1215.7	-3.33
4 EAST	3650	1210.47	1213.28	-2.81
4 EAST	3700	1209.61	1211.44	-1.83
4 EAST	3750	1208.64	1209.58	-0.94
4 EAST	3800	1207.28	1207.73	-0.45
4 EAST	3850	1205.99	1206.27	-0.28
4 EAST	3900	1205.58	1205.75	-0.17
4 EAST	3950	1205.8	1205.93	-0.13
4 EAST	4000	1206.57	1206.65	-0.08
4 EAST	4050	1207.34	1207.42	-0.08
4 EAST	4100	1208.45	1208.5	-0.05
4 EAST	4150	1209.59	1209.54	0.05
4 EAST	4200	1210.06	1210.1	-0.04
4 EAST	4250	1209.41	1209.42	-0.01
4 EAST	4300	1208.9	1208.94	-0.04
4 EAST	4350	1208.82	1208.83	-0.01

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SUBSIDENCE STUDY – POWHATAN NO. 6 MINE

General Information

The anticipated surface effects of subsidence during and following coal extraction by the longwall method at the Powhatan No. 6 Mine are related to the following movements of the ground surface:

1. Vertical subsidence
2. Horizontal movement

The combination of vertical and horizontal movements of points on the ground surface leads to tensile (or extension) and compression strains from curvature of the ground surface and tilt. Extension and compression of the ground surface, in the direction of the movement of the longwall face, occur as the face moves in the direction of mining. The extension and compression effects develop after passage of the longwall face. The surface curvature, with resulting extension and compression and the tilt near the ends and along the sides of a mined panel, represent the permanent effects of subsidence.

There are temporary effects of subsidence from what is known as the dynamic subsidence wave. This wave begins about five days prior to undermining. As the surface begins to subside, the land goes into tension. Tension cracks result on the land surface in some locations (depending on the soil type and topography). Immediately after undermining, the land begins to subside rapidly and goes into compression. Generally, the magnitude of the compressive forces do not reach the magnitude of the tensile forces, and some cracks remain open until the weather (usually rain) fills them. These temporary effects pass very quickly due to the speed of the mining.

Background

The dip of the coal seam in the Powhatan No. 6 Mine is 40-ft per mile, and the strike is north 55 degrees east. The panel dimensions are approximately 600 to 900-ft wide and up to 15,000-ft long. The gates are approximately 140 to 200-ft wide between panels (typically 156-ft). The coal thickness averages 64-in throughout the study area. Approximately 19 to 49 percent of the overburden is classified as hard rock according to the test hole data.

Time of Subsidence

The surface effects of mining occur at times generally related to the advance of the longwall face. Subsidence movements are divided into three categories:

1. Movements which develop over a panel being mined with passage of the face, which

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represent the most significant movements, start soon after the face passes, and are generally complete within thirteen (13) days of passage of the face. Approximately 99 percent of the subsidence is complete when the face is located at a distance equal to the depth of cover from any point on the surface.

2. Movements which occur over a previously mined panel as an adjacent panel is mined are relatively insignificant, being in the range of about 0.2-ft at the center of the previously mined panel. Such super-incumbent movements at this location are caused by the collapse of the pillars between the two panels and the subsequent subsidence. Therefore, it is evident that the gate entries are part of the full coal recovery mining method.

3. Movements over a long period of time occur due to the consolidation of the gob and time dependent stress readjustment. Long-term subsidence of the ground surface is not measurable, and is insufficient to cause surface damage.

Predicted Movements

The surface movements indicated below are derived from measurements made during subsidence over the first longwall panel (5 West) and over the 10 West and 11 West panels in the Powhatan No. 6 Mine.

Monitoring Over First Longwall Panel (5 West)

In February, 1990, the first longwall panel progressed beneath Smith Township Road 116. Subsidence monuments were placed at 25 and 50 foot intervals along the road and their elevations were measured prior to mining and, on several occasions, after the mining was past the road. Figure 1 shows the plan view of the subsidence monuments. The longwall gate section entries are also shown in Figure 1. Figure 2 shows the subsidence profile that developed. Table 1 shows the monitoring data. The longwall face was 600 ft wide (center-to-center), at a depth of 497 ft, and had a mining height of 5.2 ft (62 in).

The maximum angle of draw (measured to 0.02-ft of displacement) was approximately 13 degrees. The angle of draw on the headgate side was identical to the angle on the tailgate side. It should be noted that the surface at the headgate showed signs of some horizontal movement that caused the monuments on the surface to move downhill. This situation caused some of the displacement of the monuments to the north of the angle of draw. However, it was minimal as measured with surveying instruments capable of an accuracy to the nearest 0.02-ft.

The longwall panel passed under the road on February 20, 1990. The first subsidence was observed on February 21, with 99 percent of the maximum subsidence occurring by March 5, 1990

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(within 13 days).

The second longwall panel was initially instrumented and the pre-mining elevations were determined. Subsequent measurements were not made, and a search for the monuments revealed that most of the monuments could not be found. However, measurements of the monuments over the first panel showed that the ground had experienced displacements as far south as the middle of the first panel. It was attributed to the collapse of the pillars between the panels, although some movement probably occurred in a downhill direction.

The maximum subsidence occurred near the center of the panel being mined and was measured at approximately 64 percent of the extracted seam thickness. Normally, this represents about 40 in. of subsidence.

Monitoring Over Sixth (10 West) and Seventh (11 West) Panels

State Route 9 south of Centerville, Ohio was targeted for the next subsidence monitoring program. This program monitored subsidence over two subsequent panels to further show the effect of the surface movement relative to subsequent longwall panels (See Figure 3).

The results for the first panel mined in this set (10 West) was identical to the results for the 5 West panel, except that there were indications that subsidence occurred well into the previous panel as a result of the pillar failure and related vertical movement. Since the 9 West panel was not instrumented or monitored, the initial subsidence is not indicated over the 8 West gate entries. Graphs 1 and 2 show the time dependent subsidence during the monitoring program.

Graph 3 shows the subsidence over the common gate section when the first and second panels passed. When the second panel passed, over 1-ft of subsidence occurred as the second panel subsided. If the pillars had not failed, only minor vertical movement would have occurred, similar to when the first panel passed. The maximum angle of draw was found to be 13 degrees over the solid coal to the north of the 11 West gate entries. Subsidence again extended to the middle of the 10 West panel, thus showing the predictable nature of longwall mining subsidence. In addition, the magnitude of the subsidence over the 10 and 11 West Panels was 67 and 65 percent, respectively, nearly the same as for the 5 West panel. The data shows that longwall mining subsidence also is controlled and planned as to the location and timing of the subsidence. Graph 4 shows the longwall subsidence profile similar to the one produced for the first longwall panel (5 West).

Generally, horizontal movement is minimal. Graph 5 shows the horizontal displacement factor (horizontal movement/vertical movement) for each of the panels. The effect of mining against solid coal versus against a previously mined panel can be seen.

There were some small (less than 1-in) surface cracks observed during the monitoring

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program. These occurred in the soil and in the pavement of Route 9. These cracks closed very quickly due to the compressive forces on the road pavement and to rainfall on the soil areas. No remedial work was required.

Other Observations

Some horizontal movement occurred in steeply sloping ground where several slips occurred. These slips were mainly in slip-prone soils. Near the center of the panel, the ground moved upwards in several small areas after subsidence as the compressive strain caused the soils to heave upward. Surface cracking up to about six inches wide occurred during the time the areas were put under tension. This surface cracking has been limited to only a few small isolated areas, where they generally closed due to compressive forces and to rainfall. Most cracks were less than 1-in wide. Where cracks in soil were found that were wide enough to be considered hazardous, they were repaired immediately.

Shear and twisting strains have never been observed on any structure at the Powhatan No. 6 Mine. Twisting and shearing occur when a structure is located immediately adjacent to a corner of a longwall panel within the angle of draw according to Dr. Syd S.Peng, Professor of Mining Engineering at West Virginia University. According to Dr. Peng, "If the structure is inclined to the permanent panel edge, it will be subjected to twisting and shearing resulting in damage." There have been no structures in this position to date at the No. 6 Mine.

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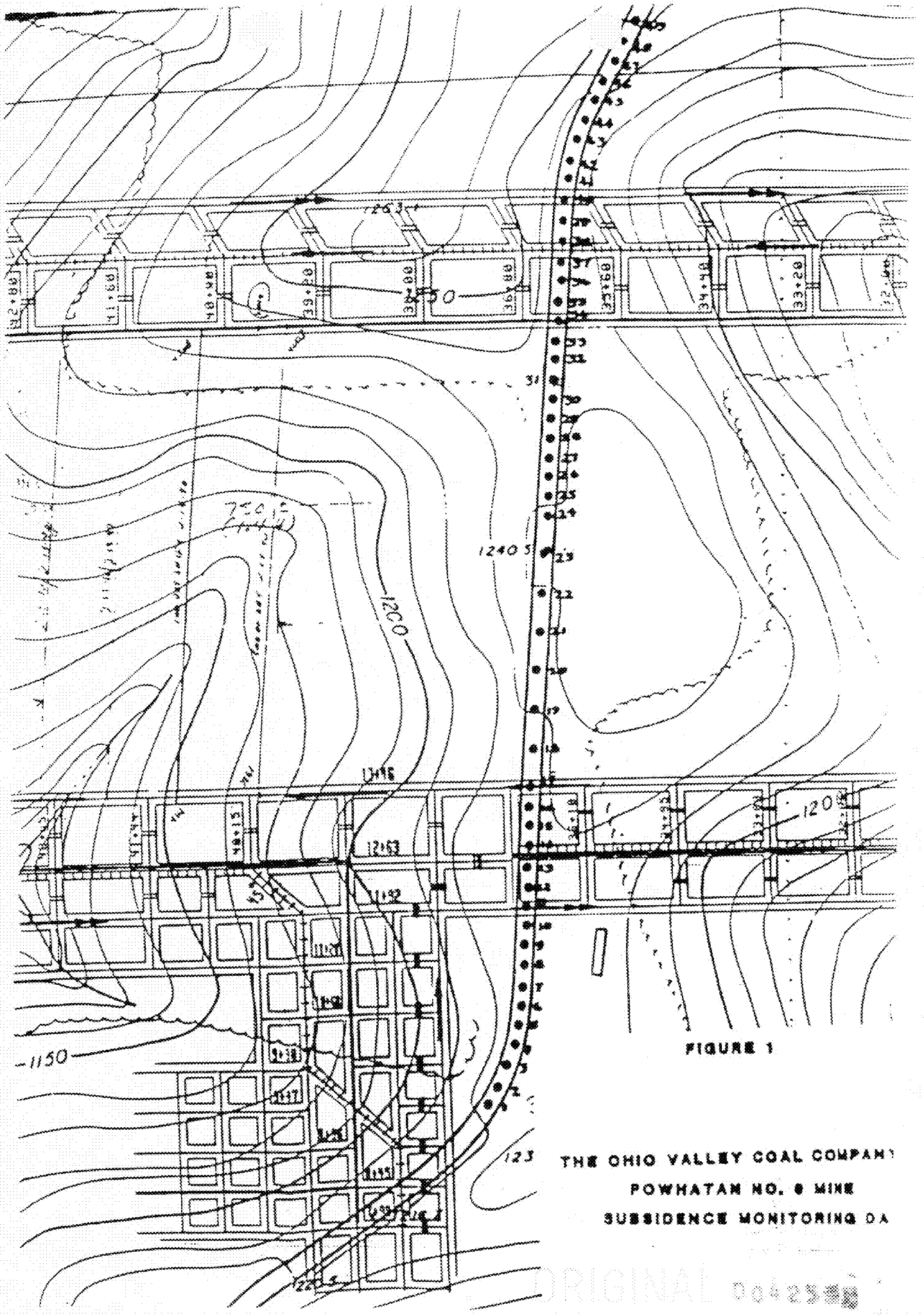

FIGURE 1

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 8 MINE
SUBSIDENCE MONITORING DA

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FIGURE 2

SUBSIDENCE PROFILE

FIRST LONGWALL PANEL

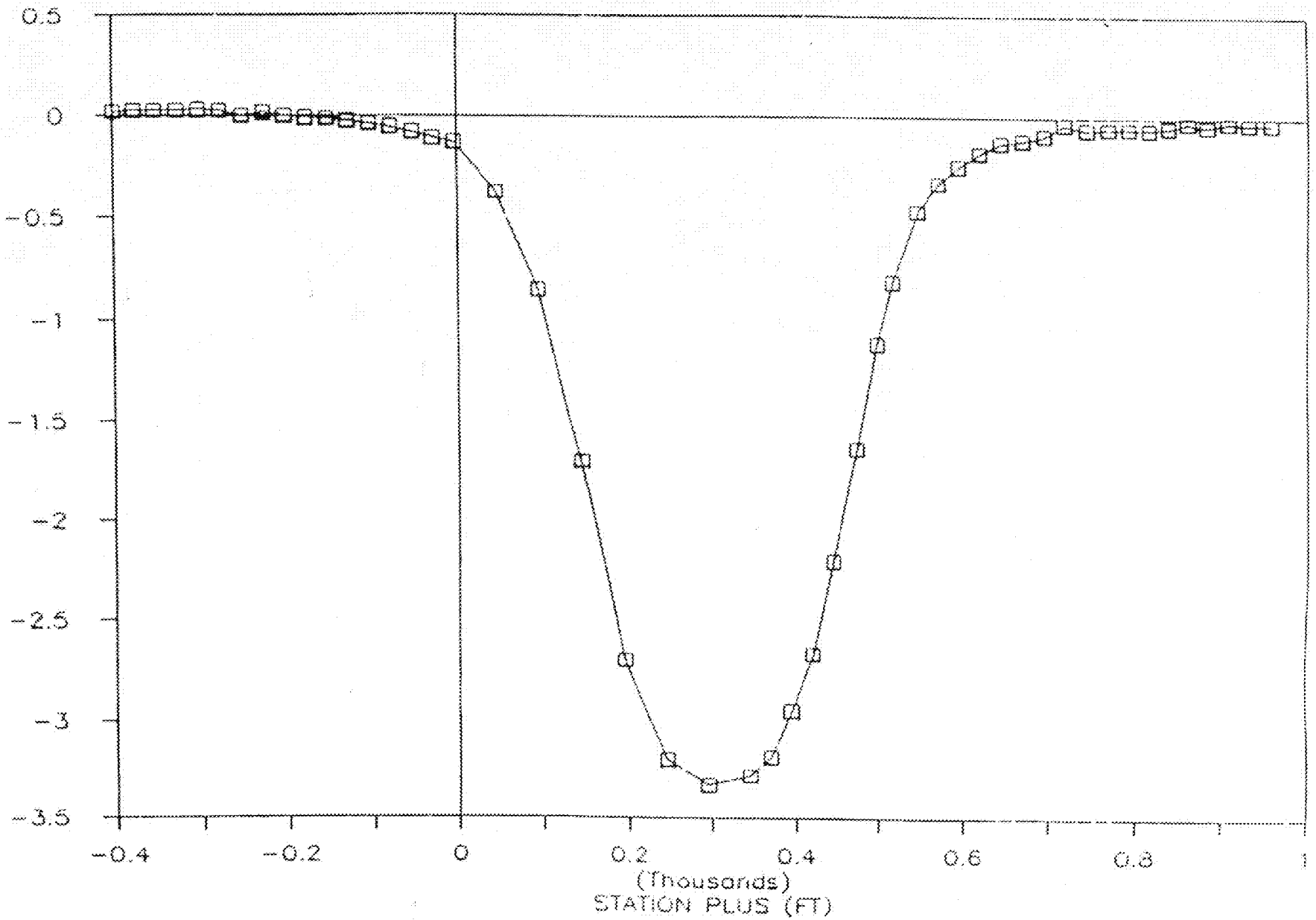

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TABLE 1

SUBSIDENCE DATA COLLECTED OVER "FIRST" PANEL

LOCATION IN PANEL	SUBSIDENCE STATION	STATION PLUS	AVERAGE SINCE 03-05-90
*******	********	********	********
	1	-399.88	0.02
	2	-376.10	0.02
	3	-352.31	0.02
	4	-327.81	0.02
	5	-302.74	0.03
	6	-277.67	0.02
	7	-252.91	0.00
	8	-228.06	0.02
	9	-203.22	0.00
	10	-178.02	-0.01
	11	-152.98	-0.01
	12	-128.17	-0.02
	13	-103.76	-0.04
	14	-79.23	-0.05
	15	-53.91	-0.08
	16	-29.53	-0.11
T. G.	17	-4.67	-0.13
	18	44.98	-0.37
	19	94.67	-0.86
	20	144.40	-1.71
	21	194.26	-2.70
	22	244.94	-3.20
CENTER	23	295.08	-3.33
	24	344.43	-3.28
	25	369.29	-3.19
	26	394.09	-2.95
	27	418.96	-2.67
	28	443.77	-2.21
	29	472.83	-1.64
	30	497.74	-1.12
	31	517.68	-0.81
	32	547.66	-0.47
	33	572.62	-0.33
H. G.	34	597.63	-0.24
	35	622.37	-0.18
	36	647.21	-0.13
	37	672.17	-0.11
	38	697.21	-0.09
	39	722.39	-0.03
	40	747.40	-0.06
	41	771.54	-0.05
	42	794.95	-0.06
	43	818.47	-0.06
	44	841.35	-0.05
	45	864.06	-0.03
	46	886.73	-0.04
	47	909.96	-0.02
	48	933.35	-0.03
	49	960.15	-0.03

Values shown in ft.
Negative value indicates downward movement.

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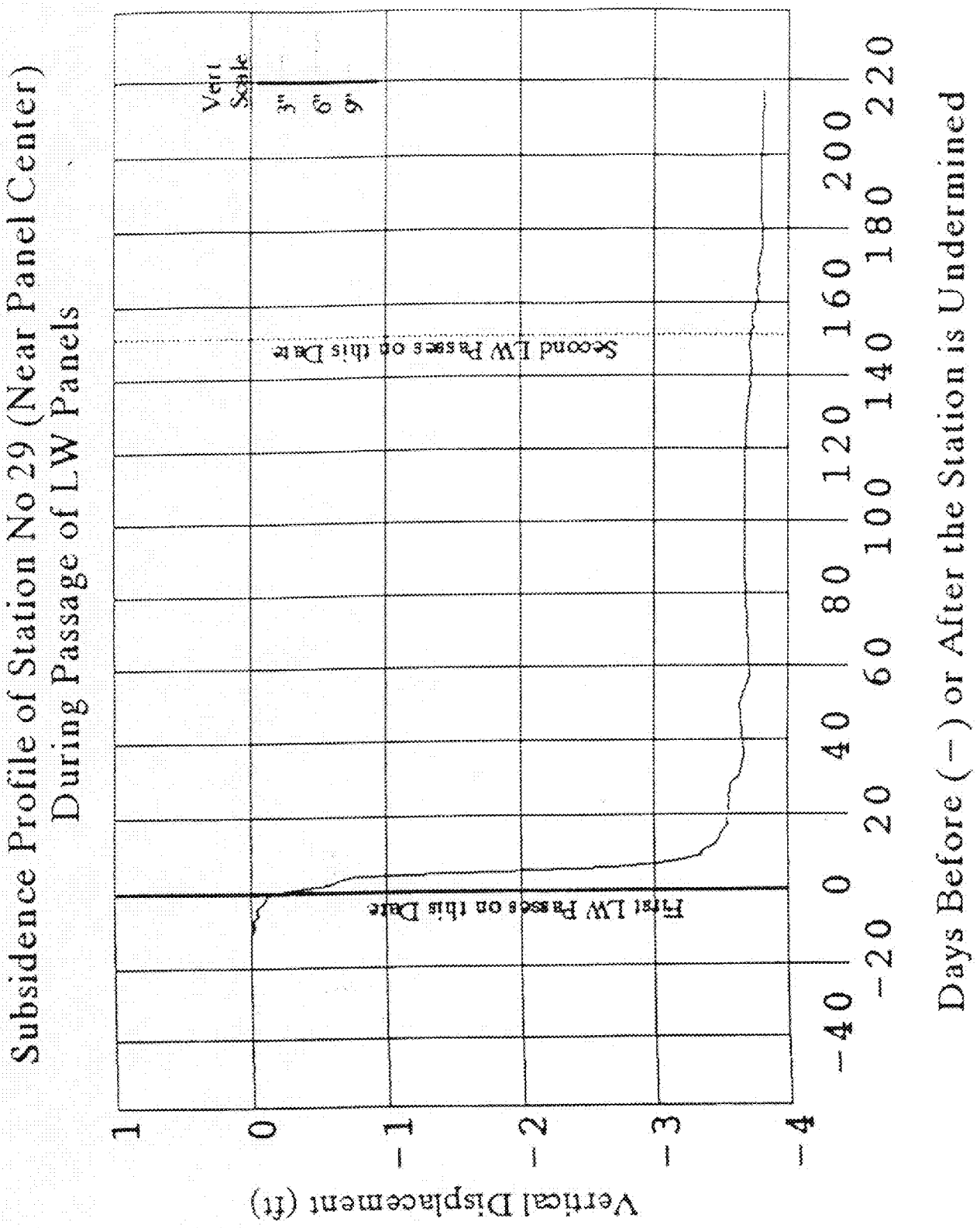
GRAPH #1



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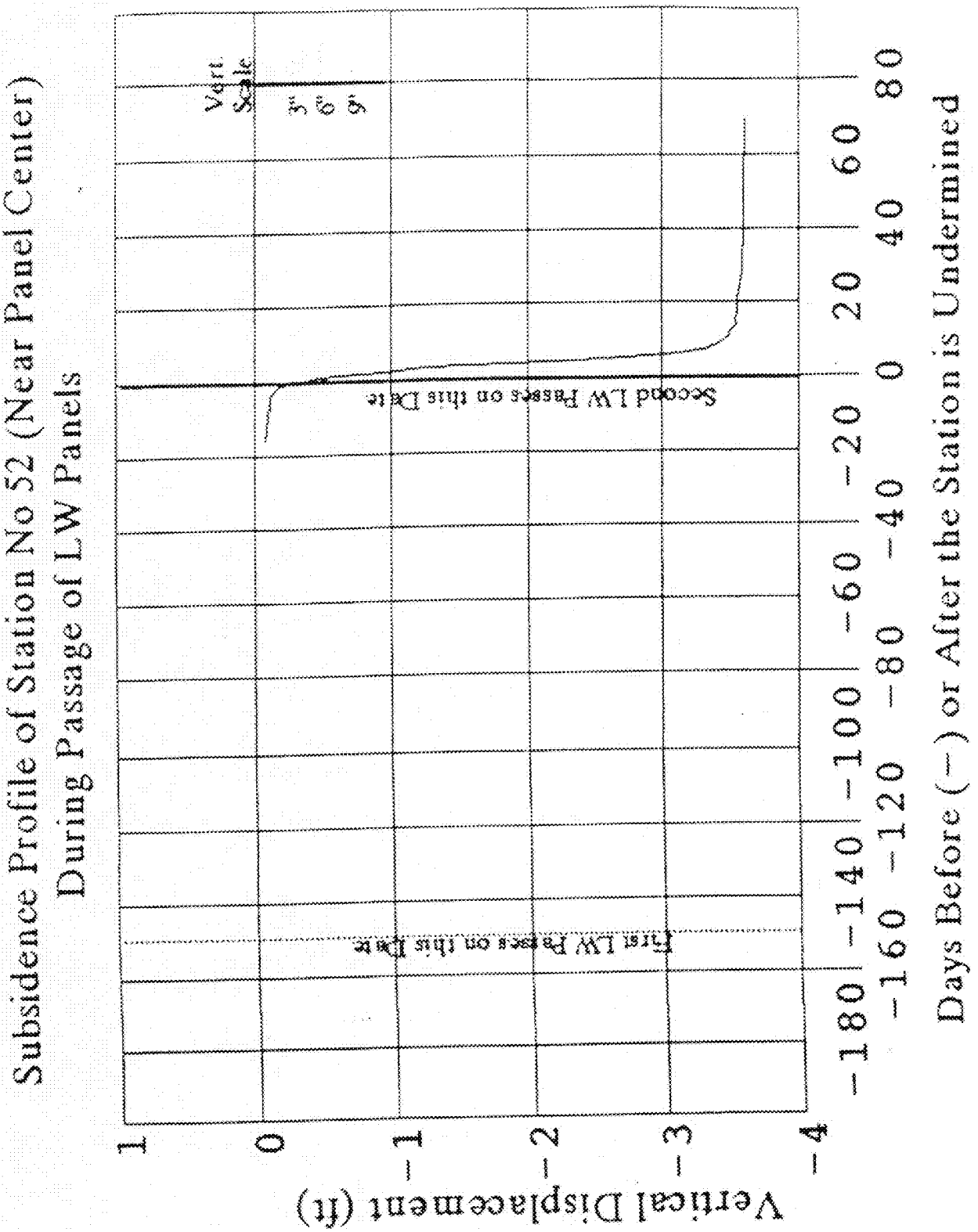
GRAPH #2



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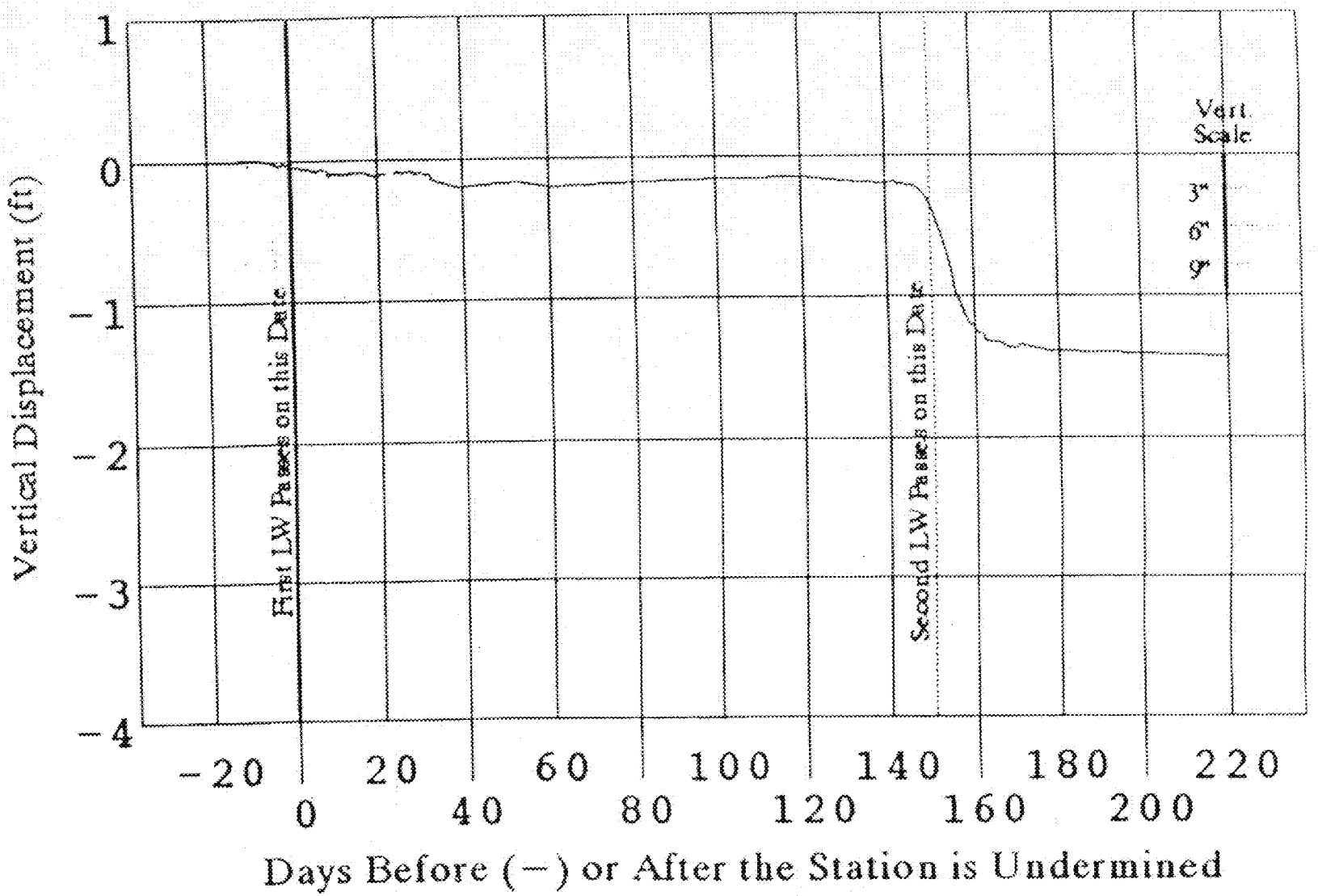
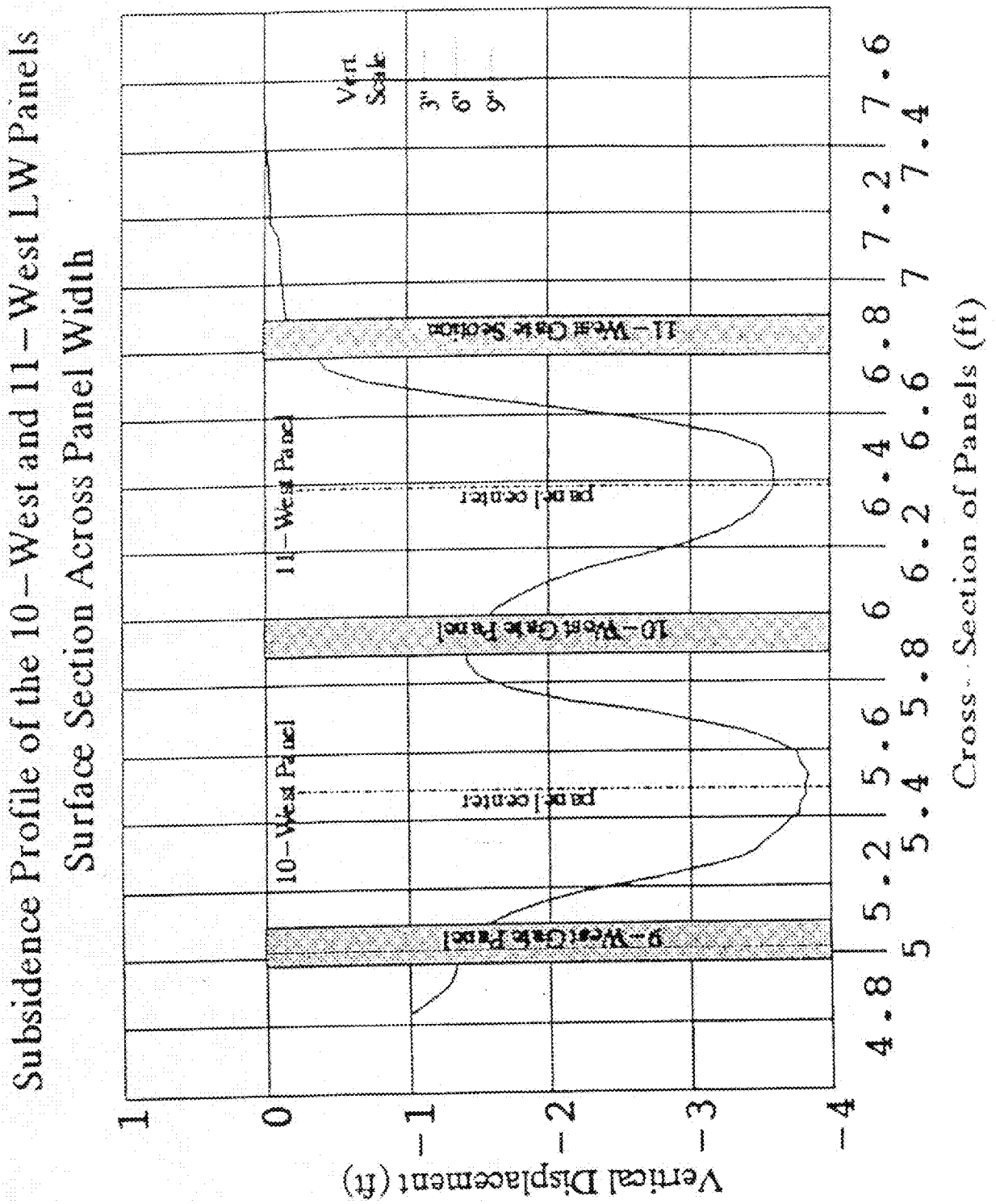
GRAPH #3

Subsidence Profile of Station No 41 (Cmmon Gate)
During Passage of LW Panels



GRAPH #4



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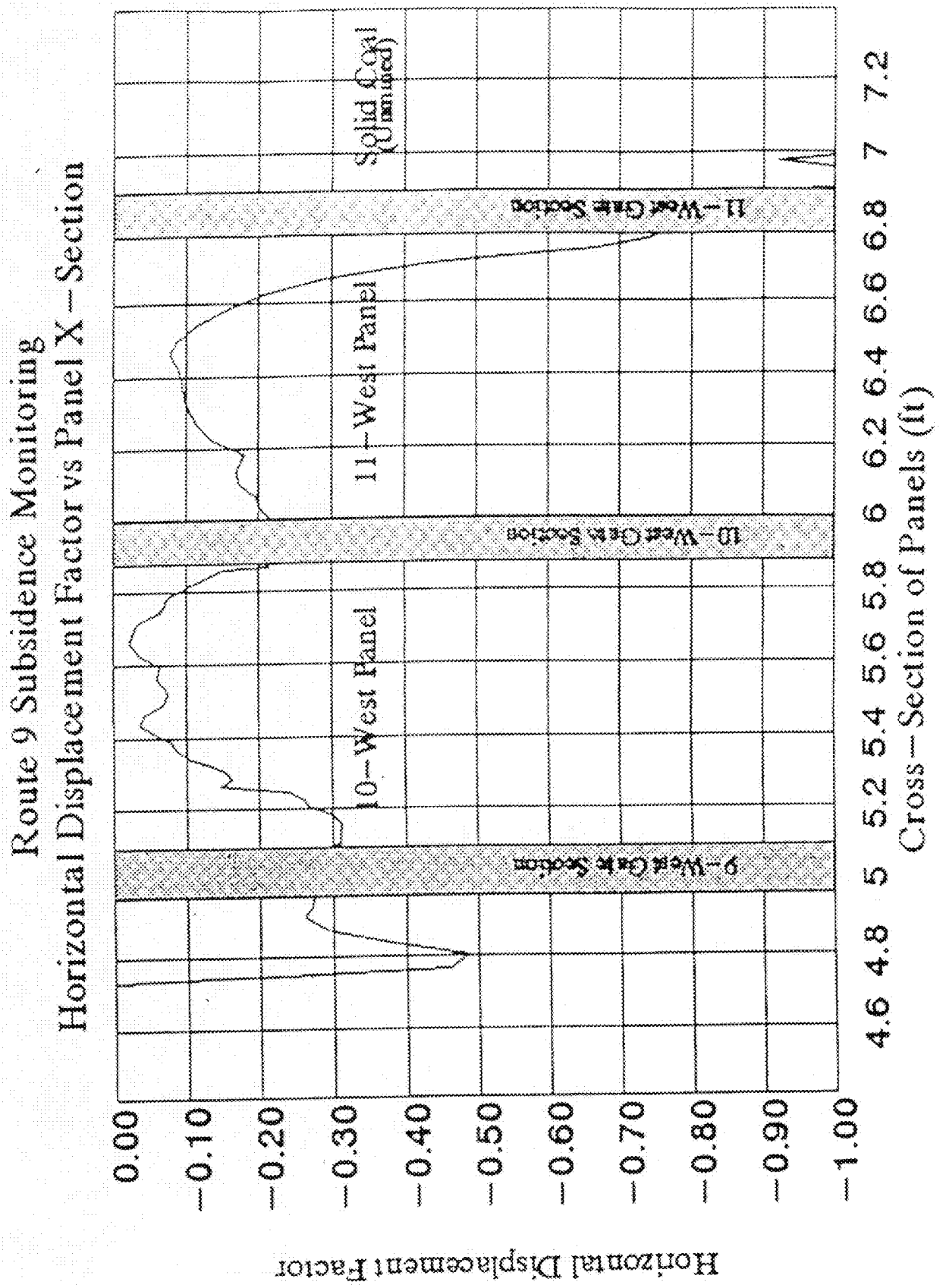
GRAPH #5



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(5) (b) the anticipated effects of planned subsidence upon the land and water resources identified in the subsidence control survey and survey of ground and surface water resources.

SEE ADDENDUM TO PART 3, PAGE 30, ITEM K(5)(b), AND ATTACHMENT 31

(c) the measures to be taken to mitigate the anticipated effects of planned subsidence to the land and water resources.

SEE ADDENDUM TO PART 3, PAGE 30, ITEM K(5)(c)

(d) the anticipated effects of planned subsidence upon the structures identified in the subsidence control survey.

SEE ADDENDUM TO PART 3, PAGE 30, ITEM K(5)(d)

(e) the proposed measures to be taken to mitigate anticipated effects to structures.

SEE ADDENDUM TO PART 3, PAGE 30, ITEM K(5)(e)

(f) the proposed measures to determine the extent of mining related damages including a presubsidence survey with an indication of the timing of the survey.

SEE ADDENDUM TO PART 3, PAGE 30, ITEM K(5)(f)

(g) the provisions for repair and/or compensation for damages to structures.

SEE ADDENDUM TO PART 3, PAGE 30, ITEM K(5)(g)

(h) describe the monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage in accordance with rule 1501:13-12-03 of the Administrative Code.

SEE ADDENDUM TO PART 3, PAGE 30, ITEM K(5)(h)

(6) Will planned subsidence operations be conducted within the angle of draw of urbanized areas, cities, towns, communities, industrial or commercial buildings, major impoundments, or **perennial streams?**
__X__ Yes, _____ No. If yes, describe any measures or activities that will prevent a condition or practice that could result in an imminent danger to the health or safety of the public.

MINING UNDER THREE PERENNIAL STREAMS LOCATED WITHIN THE APPLICATION AREA WILL NOT RESULT IN IMMINENT DANGER TO THE HEALTH OR SAFETY OF THE PUBLIC. EVEN IF THE STREAM BEDS DRY UP, THERE WILL BE NO IMMINENT DANGER TO THE HEALTH AND SAFETY OF THE PUBLIC.

(7) Will planned subsidence operations be conducted within the angle of draw of transmission pipelines? Yes, __X__ No. If yes, describe the procedural plan to avoid the creation of a situation of imminent danger to the health and safety of the public.

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ADDENDUM TO PAGE 29, PART 3, K(5)(a)
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ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

General

The anticipated surface effects of subsidence during and following coal extraction by the longwall method at the Powhatan No. 6 Mine are related to the following movements of the ground surface:

1. Vertical subsidence
2. Horizontal movement

The combination of vertical and horizontal movements of points on the ground surface leads to tensile (or extension) and compression strains from curvature of the ground surface and tilt. Extension and compression of the ground surface, in the direction of the movement of the longwall face, occur as the face moves in the direction of mining. The extension and compression effects develop after passage of the longwall face. The surface curvature, with resulting extension and compression, and the tilt near the ends of a mined panel and along the sides of a mined panel, represent the permanent effects of subsidence.

There are temporary effects of subsidence from what is known as the dynamic subsidence wave. This wave begins about five days prior to undermining. As the surface begins to subside, the land goes into tension. Tension cracks result on the land surface in some locations (depending on the soil type and topography). Immediately after undermining, the land begins to subside rapidly and goes into compression. Generally, the magnitude of the compressive forces do not reach the magnitude of the tensile forces, and some cracks remain open until the weather (usually rain) fills them. These temporary effects pass very quickly due to the speed of the longwall mining at the CENTURY MINE.

Background

The dip of the coal is 40 ft. per mile at South 35 Degrees East. The strike is North 55 Degrees East. The panel dimensions are approximately 600 to 900 ft. wide and up to 15,000 ft. long. The gates are approximately 140 to 200 ft. wide between panels (typically 156 ft). The coal thickness to be extracted is approximately 64 in. throughout most of the application area. There is approximately 25.22 to 60.93 percent of the overburden classified as hard rock according to the test hole data.

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ADDENDUM TO PAGE 29, PART 3, K(5)(a)
PAGE TWO

Time of Subsidence

The surface effects of mining occur at times generally related to the advance of the longwall face.

1. Movements which develop over a panel being mined with passage of the face: these represent the most significant movements, start soon after the face passes, and are generally complete within thirteen (13) days of passage of the face. Approximately 99 percent of the subsidence is complete when the face is located at a distance equal to the depth of cover from any point on the surface.

2. Movements which occur over a previously mined panel as an adjacent panel is mined: such super-incumbent movements are relatively insignificant, being in the range of about 0.2 ft at the center of the previously mined panel. Such movement at this location is caused by the collapse of the pillars between the two panels and the subsequent subsidence. Therefore, it is evident that the gate entries are part of the full coal recovery mining method.

3. Movements over a long period of time due to consolidation of the gob and time dependent stress readjustment: long-term subsidence of the ground surface is not measurable, and is insufficient to cause surface damage.

Predicted Movements

The surface movements indicated below are derived from measurements made during subsidence over an adjacent mine's first longwall panel (5 West) and over the 10 West and 11 West panels. Similar movements are anticipated within this application area.

Monitoring Over First Longwall Panel (5 West)

In February, 1990, the first longwall panel progressed beneath Smith Township Road 116. The adjacent mine placed subsidence monuments at 25 and 50 foot intervals along the road, measured their elevations prior to mining, and on several occasions after the mining was past the road. Figure 1 shows the plan view of the subsidence monuments. The longwall gate section entries are shown on the figure also. Figure 2 shows the subsidence profile that developed. Table 1 shows the monitoring data. The longwall face was 600 ft wide (center-to-center), at a depth of 497 ft, and had a mining height of 5.2 ft (62 in).

The maximum angle of draw (measured to .02 ft of displacement) was approximately 15 degrees. The angle of draw on the headgate side was identical to the angle on the tailgate side. It should be noted that the surface at the headgate showed signs of some horizontal movement that caused the monuments on the surface to move downhill. This situation caused some of the displacement of the monuments to the north of the angle of draw. However, with the surveying instruments that were used, an accuracy of 0.02 ft. was used, and the displacement north of the angle of draw was minimal.

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The longwall panel passed under the road on February 20, 1990. The first subsidence was observed on February 21, with 99 percent of the maximum subsidence occurring by March 5, 1990 (within 13 days).

The second longwall panel was initially instrumented and the pre-mining elevations were determined. Subsequent measurements were not made, and a search for the monuments revealed that most of the monuments could not be found. However, measurements of the monuments over the first panel showed that the ground had experienced displacements as far south as the middle of the first panel. It was attributed to the collapse of the pillars between the panels, although some movement probably occurred in a downhill direction.

The maximum subsidence occurred near the center of the panel being mined and was measured at approximately 64 percent of the extracted seam thickness. Normally, this represents about 40 in. of subsidence.

Monitoring Over Sixth (10 West) and Seventh (11 West) Panels

State Route 9 south of Centerville, Ohio was targeted for the next subsidence monitoring program. This program monitored subsidence over two subsequent panels to further show the effect of the surface movement relative to subsequent longwall panels.

The results for the first panel mined in this set (10 West) was identical to the results for the 5 West panel, except that there were indications that subsidence occurred well into the previous panel as a result of the pillar failure and related vertical movement. Since the 9 West panel was not instrumented or monitored, the initial subsidence is not indicated over the 8 West gate entries. Graphs 1 and 2 show the time dependent subsidence during the monitoring program.

Graph 3 shows the subsidence over the common gate section when the first and second panels pass. When the second panel passes, over one ft. of subsidence occurs when the second panel subsides. If the pillars had not failed, only minor vertical movement would have occurred, similar to when the first panel passed. The maximum angle of draw was found to be 15 degrees over the solid coal to the north of the 11 West gate entries. Subsidence again extended to the middle of the 10 West panel, thus showing the predictable nature of longwall mining subsidence. In addition, the magnitude of the subsidence over these two panels was 67 and 65 percent, nearly the same as for the 5 West panel. The data shows that longwall mining subsidence also is controlled and planned as to the location and timing of the subsidence. Graph 4 shows the longwall subsidence profile similar to the one produced for the first longwall panel (5 West).

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ADDENDUM TO PAGE 29, PART 3, K(5)(a)
PAGE FOUR

Generally, horizontal movement is minimal. Graph 5 shows the horizontal displacement factor (horizontal movement/vertical movement) for each of the panels. The effect of mining against the solid coal versus against the mined panel can be seen.

There were some small (less than 1 in.) surface cracks observed during the monitoring program. These occurred in the soil and in the pavement of Route 9. These cracks closed very quickly due to the compressive forces on the road pavement and to rainfall on the soil areas. No remedial work was required.

Other Observations

Some horizontal movement occurred in steeply sloping ground where several slips occurred. These slips were mainly in slip-prone soils. Near the center of the panel, the ground moved upwards in several small areas after subsidence as the compressive strain caused the soils to heave upward. Surface cracking up to about six inches wide occurred during the time the areas were put under tension. This surface cracking has been limited to only a few small isolated areas, where they generally closed due to compressive forces and to rainfall. Most cracks were less than 1 in. wide. Where cracks in soil were found that were wide enough to be considered hazardous, they were repaired immediately by the coal mining comany.

Shear and twisting strains have never been observed on any structure at the adjacent mine. Twisting and shearing occur when a structure is located immediately adjacent to a corner of a longwall panel within the angle of draw according to Dr. Syd S.Peng, Professor of Mining Engineering at West Virginia University. According to Dr. Peng, "If the structure is inclined to the permanent panel edge, it will be subjected to twisting and shearing resulting in damage." There have been no structures in this position to date in the area.

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ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Based on experience from the adjacent Powhatan No. 6 Mine, the following effects of planned subsidence are anticipated:

Surface Lands

1. Tension cracking of the ground surface may occur. These cracks in the surface may vary in width from hairline, up to several inches wide.

2. AEC believes that there will be no effect on the crop production as a result of mining. This fact is supported by a paper written by Dr. Frank L. Himes, Ph.D., entitled "Agronomic Evaluation of the Land in the Southern Ohio Coal Company Area", June, 1983. A copy is attached. Furthermore, research conducted since 1990 above the Powhatan No. 6 Mine have shown that soil moisture, vegetation, trees, or other plant are unaffected by subsidence.

3. Slip-Prone Soils - A search of the Belmont County Soils Maps (Soil Survey of Belmont County, ODNR, USDA March, 1974), and Monroe County Soils Maps (Soil Survey of Monroe County, ODNR, USDA March 1974) revealed several potential slide/slip areas within the following soil types:

Soil Type	Slope	No. of Potential Slide/Slip Areas
LoE	25-40	13
LoF	40-70	16
BsD	15-25	1
BsE	25-40	1
GkD2	12-18	1
GkE2	18-35	7
GkC2	6-12	7
GkE3	18-35	1
UrC3	6-12	2
SsD	12-18	1
SsE	18-35	1
GkG	35-70	1

These areas are shown on the enclosed map (See Slip-Prone Soils Map) showing the limits of the application area and slip prone soils. Please note - the Soil Survey of Belmont County does not describe subsidence as a source of potential slippage. Rather, it notes soil types that are slip prone for construction sites. Of the types of slip-prone soils identified, only LpF (Lowell-Westmoreland silt loam) has been known to be slip prone during longwall mining-induced

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subsidence in some areas. Other soil types have been undermined before without slippage occurring.

During the pre-subsidence survey, areas known to be slip prone during subsidence, as well as other similar sites that may have a significant impact to existing structures, may be inspected. Should conditions dictate, site-specific measures, not limited to but including installation of cut-off trenches, drainage systems, and retaining walls, may be taken to minimize adverse effects.

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AGRONOMIC EVALUATION OF LAND

IN THE

SOUTHERN OHIO COAL COMPANY AREA

AMERICAN ELECTRIC POWER
SERVICE CORPORATION

JUNE, 1983

FRANK L. HIMES, Ph.D.
Professor of Agronomy
Ohio State University

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INTRODUCTION

Areas considered typical of different surface effects of the Meigs County Mine #2 were observed on May 26, 1983. Mr. Keith Peluchette assisted me in reading the detailed mining map in respect to surface locations and data of mining. The dates of mining varied from three (3) years to present.

OBSERVATIONS

The areas of observation made by walking, included a small corn field (fallow this year) and the adjacent woods, an orchard, and a meadow area near a road. Additional areas were observed by driving around the area.

1. Subsidence with associated cracking did not result in mixing of soil layers except possibly for some sloughing at the cracks.

2. The trees in the subsided areas did not show damage when compared to those in the areas that had not been subsided.

3. After the cracks close in the later stages of subsidence, they are difficult to locate in densely vegetated meadows and woods.

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DISCUSSION

1. No evidence was obtained that the subsidence would alter soil management practices. Since the soil horizons (topsoil, subsoil, and parent material) have the same respective locations, the chemical properties of the soil have not been changed. Therefore, fertilizer and liming recommendations would not change with subsidence. After any cracks have closed, the same equipment could be used on both the subsided and the non-subsided areas. The surface slopes were not altered appreciably in respect to equipment use.

2. Although no sloughing was observed on the cracks, common sense would indicate that plant residues and a little topsoil would enter any such cracks. The extent of sloughing would depend upon the surface conditions and activities. The coating of the surface of the cracks with the surface "debris" would produce a plane of weakness. By this is meant, during very dry periods when the soil contracts, shrinkage cracks would be along these faces. Also, plant roots would grow more extensively in the remnant of the crack than in the adjacent zone because the fertility and aeration are better. Plant roots

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are not drill bits and penetrate the soil only by entering pores (or voids) that are larger than the root.

As indicated on the map included, the Monongahela soils (and likewise for the Latham soils) have a compact layer at 20 to 30 inches that impedes root penetration and percolation of water. The fracturing of this layer and partial filling with debris would increase the rooting depth of and available water to the plants growing within a few inches of the crack. In some areas of Ohio, farmers subsoil their land which is a practice to fracture the dense layers 15 to 24 inches below the surface. The practice called vertical mulching is more effective because plant residues are incorporated. It improves both root penetration and the infiltration and percolation of water. In most instances, the additional infiltration results in less runoff and less erosion.

Erosion is a natural hazard for the Gilpin, Dekalb, Latham, Monongahela, and Upshur soils. These soils usually occur on slopes exceeding six (6) percent. Therefore, practices or occurrences that decrease the amount of water runoff will decrease erosion. Because these soils are rated highly erosive (see map

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and Table 1), farming practices should be selected for erosion control to hold erosion to a minimum. Although no waterways were observed, if subsidence caused a shift in a waterway, the farmer would need to make minor changes in his tillage practices.

3. Tables 2, 3, and 4 summarize other properties of the soils and the type of agriculture in Meigs County. The productivity of these soils is often limited by fairly acid subsoils, low fertility, shallow (less than 36 inches) rooting, low moisture holding capacity, and steep slopes. The soil management practices needed to make these soils productive do not change with subsidence. Although a detailed soil survey of the area is not available, a generalized map and publications containing additional information about these soils are included.

CONCLUSION

The fertility of the soils was not altered by subsidence except within cracks if sloughing occurred. The fracturing of layers that restrict water movement and root penetration should be beneficial to the plants growing near the fractures. The maintenance of the farmer's erosion control waterways may have to be adjusted accordingly if subsidence were to change the flow in them.

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The soils in this area are difficult to maintain on a high state of productivity, and subsidence has little impact on the chemical and physical properties of the soils. Based on practices in other areas of the world, the fracturing of the layers inhibiting root development will be beneficial to plant growth. The agronomic uses of the soils are not influenced by longwalling.

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TABLE 1[1]

Soil Series	K*
Dekalb	0.24
Gilpin	0.32
Latham	0.43
Monongahela	0.43
Upshur	0.43

*K is the soil erodibility factor. The highest value for Ohio soils is 0.49 and most are below 0.40.

[1]"Ohio Erosion Control and Sediment Pollution Abatement Guide." Bulletin 594, Cooperative Extension Service, The Ohio State University.

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TABLE 2

Meigs County - Soil and Water Conservation Needs - 1967

Total Land Area	277,610 A
Non-Inventory Acreage (Urban, etc.)	13,058 A
Inventory Acreage	264,552 A
Cropland[2]	48,263 A
Pasture[2]	41,251 A
Forest[2]	168,100 A
Other Land[2]	6,938 A

IRRIGATED AND NON-IRRIGATED CROPLAND
BY LAND CAPABILITY CLASSES, 1967[3]

LAND CAPABILITY CLASS SUB-CLASS	TILLAGE ROTATION ALL ROW CROPS	FIELD CROPS CLOSE GROWN	ROTATION HAY AND PASTURE	HAY-LAND	CONSER-VATION USE ONLY	TEMPORAR-ILY IDLE CROPLAND	ORCHARDS VINEYARDS AND BUSH FRUITS	TOTAL CROPLAND
1	867	434	2842	908	864	1246	0	7161
2E	1127	217	1516	909	2013	1091	0	6873
3E	1084	651	1326	2181	2589	623	160	8614
4E	2212	217	2463	2181	576	1246	0	8895
6E	1864	217	2652	3635	575	312	0	9255
2W	867	1301	1894	182	290	779	0	5313
3W	434	217	757	0	0	0	0	1408
7S	0	0	380	364	0	0	0	744
TOTAL	8455	3254	13830	10360	6907	5297	160	48263

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PASTURE, FOREST, AND OTHER LAND ACRES
BY LAND CAPABILITY CLASSES, 1967[4]

LAND CAPABILITY CLASS SUB-CLASS	PASTURE & RANGE			FOREST			
	PASTURE	COMMER-CIAL	NON-COMMER-CIAL	COMMER-CIAL GRAZED	IN FARMS	NOT IN FARMS	TOTAL LAND IN INVENTORY
1	2633	5433	0	217	867	0	16094
2E	1229	1654	0	0	651	0	10407
3E	4740	5433	0	867	867	0	19654
4E	8601	25042	200	7156	217	0	42955
6E	13692	49612	0	9541	867	0	73426
7E	4213	11341	0	1735	217	0	15771
2W	1404	1181	0	217	0	0	7898
3W	351	945	0	0	0	0	2704
6S	175	2[illegible]	0	0	0	0	412
7S	4213	66622	200	9107	1084	1301	74164
8S	0	0	200	0	0	867	1067
TOTAL	41251	167500	600	28840	4770	2168	264552

Ohio Soil and Water Conservation Needs Inventory, Sponsored by USDA, 1971.

1. Page 12
2. Page 14
3. Page 29
4. Page 48

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TABLE 3

MEIGS COUNTY - AGRICULTURAL STATISTICS

	1980	1981
Number of Farms[1]	620	610
Average Size of Farm[1]	177 A	182 A
Land in Farms[1]	110,000 A	111,000 A
Corn for Grain[2]	3,700 A	5,200 A
Yield[2]	130 bu./A	85 bu./A
Soybeans[3]	(Less than 1,000 A)	
Wheat[4]	(Less than 1,000 A)	
Oats[5]	(Less than 1,000 A)	
Hay (all)[6]	16,800 A	15,800 A
Yield[6]	2.2 T/A	2.2 T/A
All Cattle and Milk Cows[7]	13,000	14,000
Hogs and Pigs[8]	2,000	1,900
Stock Sheep[8]	(Less than 1,000)	
Hens and Pullets, Laying Age[8]	30,000	30,000

Published by Ohio Co-op Reporting Service, June 1981-1982, Ohio Agricultural Statistics.

1. Page 7
2. Page 9
3. Page 11
4. Page 13
5. Page 15
6. Page 17
7. Page 37
8. Page 43

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TABLE 4

Available Moisture Capacity for the Surface Layer[1]

Dekalb Soil	0.13-0.17 in./in. of soil
Gilpin Soil	0.17-0.22 in./in. of soil
Latham Soil	0.18-0.22 in./in. of soil
Upshur Soil	0.18-0.22 in./in. of soil

[1]Soil Survey of Monroe County, Ohio. Published by USDA, 1974, pp. 39-43.

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Frank L. Himes: Professor, Department of Agronomy, The Ohio State University, 1885 Neil Avenue, Columbus, Ohio 43210.
Phone: (614)422-2002

Date of Birth: July 30, 1927. Place of Birth: Crawfordsville, Indiana.

Education:

A.B. Wabash College (Chemistry), 1949.
M.Sc. Purdue University (Organic Chemistry), 1951.
Massachusetts Institute of Technology (Westinghouse Science Teacher Institute), Summer 1952.
Ph.D. Purdue University (Soil Fertility and Chemistry), 1956.

Professional and Technical Societies:

American Society of Agronomy, Soil Science Society of America, International Soil Science Society, American Chemical Society, Sigma Xi, Gamma Sigma Delta.

Professional Experience:

1949-1951	Teaching Assistant, Department of Chemistry, Purdue University.
1951-1953	High School Science Teacher, Remington High School, Remington, Indiana.
1953-1955	Fellowship, Department of Agronomy, Purdue University.
1955-1957	Assistant Professor in the Departments of Agriculture and Chemistry, Middle Tennessee State University, Murfreesboro, Tennessee.
1957-present	Assistant Professor, Associate Professor, Professor, Department of Agronomy, Ohio State University.

Publications:

Books written

Himes, F. L. 1969. Audio Tutorial Notes for Soils, 1st ed. Bugess Publishing Co.

Himes, F. L. 1972. ibid, 2nd ed.

Himes, F. L. 1975. ibid, 3rd ed.

Himes, F. L. 1979. ibid, 4th ed.

Chapters of books written:

Himes, F. L. 1974. Inventorying Soil Resources. Chapter 28 of "Man's Finite Earth", R. O. Utgard and C. D. McKenzie, eds.

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Mortensen, J. L., and F. L. Himes. 1964. Soil Organic Matter. Chapter 5 of "Chemistry of Soils", F. F. Bear ed.

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Himes, F. L. and S. A. Barber. 1957. Chelating ability of soil organic matter. Soil Sci. Soc. Amer. Proc. 21:368-373.

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De Datta, S. K., R. E. Franklin and F. L. Himes. 1965. Partial Characterization of Soil Polysaccharide-Strontium 90-Yttrium 90 Complexes. Soil Sci. 103:(1)47-55.

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De Datta, S. K., F. L. Himes and R. E. Franklin. 1966. Partial Characterization of Some Strontium 90 and Yttrium 90 Soil Organic Matter Complexes. Soil Sci. 12:(6)207-212.

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Thomas, R. L., J. L. Mortensen and F. L. Himes. 1967. Fractionalition and Characterization of a Soil Polysaccharide Extract. Soil Sci. Soc. Amer. Proc. 31:(4)568-570.

Himes, F. L. and C. Bloomfield. 1967. Extraction of Triacontyl Sterate from a Soil. Plant and Soil 24:383-384.

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Street, J. R., P. R. Henderlong and F. L. Himes. 1974. The Silica Content of Merion Kentucky Bluegrass Under Several Cultural Regimes and Its Relation to Thatch Accumulation. Turf and Landscape Research. OARDC Res. Sum 79. Sept. pp 9-12.

Street, J. R., P. R. Henderlong and F. L. Himes. 1977. Influence of silica on chemical composition and decomposition of turfgrass tissue. Proceed. III International Turfgrass Res. Conf. Chapt. 38, pp. 329-336.

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Lueking, M. A., J. W. Johnson, and F. L. Himes. 1983. Effects of Increasing the Rates of Potassium and Nitrapyrin on Nitrogen Uptake by Corn. Agron. J. 75:247-249.

Non-Technical Papers

Himes, F. L. 1963. Careers in Agronomy. The Ohio Farmer.

Himes, F. L. 1964. Radioactive isotope demonstration for improved teaching of soil chemistry. Agron. J. 56:239.

Himes, F. L. 1972. Inventorying Soil Resources. The Science Teacher. 39:2.

Himes, F. L. 1976. Use of the Overhead Projector to Illustrate Ion Exchange Reactions. J. of Agron. Educ. 5:33-34.

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Water Resources

The effect of subsidence on water resources varies greatly. The effect on wells, streams, streams, and other surface water each differ in the type and duration of effects. Each will be discussed below.

Wells

Depending upon the depth of the well, its location within the longwall subsidence area, and its surface elevation compared to the elevation of the coal, the effect of subsidence on wells may vary from complete de-watering to some de-watering to no de-watering. Generally, as the subsidence opens new places for the ground water to go, the elevation of the water decreases. The ground water is still present, but at a lower elevation. Aquicludes prevent further downward migration of water into the mine. In addition, the soft rock, particularly the clay stones in the strata, tend to swell, erode, and fill voids, causing some recovery in the elevation of the water. Wells may become completely dry permanently, may become completely dry temporarily, may hold less water, or as has been experienced in some instances, may not be affected. In some cases, the water level actually increases temporarily. This effect is caused by the strata being placed in compression and closing some of the joints, cracks, or bedding planes (secondary porosity features) that hold the water. However, as a general rule, the water level in wells decreases. As new surfaces are opened that water begins to flow over, the quality of the water also varies, usually temporarily. Normally, some increase in suspended solids, iron, manganese, and sulfates has been observed. These effects usually return to near normal after the water "washes" out the new chemicals.

Springs

Springs, given the fact that they are located on the surface, generally decrease in flow and usually dry completely with little or no recovery. The water stops flowing because it is no longer at the elevation of the surface installation. The water begins to flow horizontally through different bedding planes and can be developed successfully into a spring at a lower elevation, as witnessed in past experiences. Water quality varies as with wells. However, because of the increased porosity of the strata, springs developed over longwall panels, generally have higher flows.

Streams

Generally, streams are temporarily affected by subsidence, decreasing in flow as cracks open in the stream bed. However, because the streams contain a high concentration of sediment during rains, the cracks fill quickly and the effect is short lived. The water re-establishes itself within several years.

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Streams in this area begin as undeveloped or developed springs near the head of hollows and are fed throughout its length by springs and surface runoff. Streams that are fed by springs near the head of hollows continue to receive this groundwater, but at a lower elevation. Since rainfall is unaffected by subsidence, runoff continues to supply the water for streams.

Other Surface Water Features

Ponds primarily are the other surface water feature in this area. Prior experience dictates that ponds are not substantially affected by subsidence in this area. Several ponds have been undermined with no visible effects. Cisterns, catch basins, etc. have also remained unaffected to date.

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ADDENDUM TO PAGE 30, PART 3, K(5)(c)
AMERICAN ENERGY CORPORATION
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PAGE ONE

MITIGATION MEASURES – SURFACE LANDS AND WATER RESOURCES

Damage Repairs - Surface Lands

If subsidence due to mining operations causes slippage which reduces the value or reasonably foreseeable use of the surface land, AEC will restore the land to a condition capable of supporting uses it was capable of supporting before subsidence. If slips are triggered by mining activities, these areas would be stabilized in accordance with accepted site specific procedures for such work if technologically and economically feasible. If not feasible, AEC will arrange alternative measures to mitigate the damage.

1. Notwithstanding its mining rights and without waiving nor releasing any of its rights, AEC will make repairs of damage caused to surface lands by AEC's mining operations if the damage reduces the foreseeable use or value of the surface lands. If such damage occurs, AEC will submit to the Chief within thirty days after the damage occurs:

   a. Site specific plans for the repair or mitigation of the damage, including a time schedule for performance of the remedial action.

   b. A request for more time to prepare such plans; or

   c. Written notification that AEC believes that repair or restoration measures are not technologically feasible. If repair or restoration measures are not desired by the owner or if repair or restoration measures are not technologically feasible, other measures will be described.

2. Damage to surface lands will be repaired by local contractors. As surface damage occurs, the landowner will be notified and permission to repair the damage will be requested. Surface cracks will usually be repaired by the following method: After the length of the subsidence crack has been determined, a trench will be made in the crack. During the excavation topsoil will be segregated from subsoil and rock. Upon completion of the excavation, the material will be compacted using the track of the bulldozer or the wheel of the backhoe. Once the soil material has been replaced, the area will be seeded in a hayfield, pasturefield, or a yard.

   AEC will employ a program to monitor surface cracking and settling resulting from subsidence. Areas being mined will be inspected at various intervals, ranging from daily to weekly. These areas will be visually inspected for any subsidence related problems. If a problem is found, the landowner will be notified immediately.

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In most cases, surface cracks are expected to open and close relatively rapidly, however, some surface cracks may take weeks to close. For this reason, most cracks will not be repaired until AEC determines that the cracks are not going to close themselves. If the surface cracks are in an area that is commonly traveled by man or livestock, the cracks will be repaired immediately. Surface cracking that is found in areas not commonly traveled, may be marked by brightly colored tape. This tape alerts anyone in the area of the depression or opening. If the cracks do not close within the period of time AEC determines is adequate, a contractor will repair the cracks.

Monitoring of these areas will continue for up to six months after mining, and if the cracks reopen, they will once again be repaired. Monitoring of panel areas before mining consists of visual inspection or aerial photo review. AEC's subsidence control program will adequately assure that the value and reasonably foreseeable use of the surface land is maintained.

3. Prior to the introduction of farm equipment into fields that have been undermined, AEC will inspect the field for cracks or slips if requested by the landowner. Repairs needed (to maintain access into the fields) will be made at appropriate times. Crop lands damaged by subsidence will be repaired at appropriate times to permit harvest or cultivation without damage to personnel or equipment. Note: "appropriate times" indicates that the repairs will be made (1) at a time when access is needed and (2) when damage to adjacent plants will be minimized.

Damage Repairs – Water Resources

Generally, streams are temporarily affected by subsidence, decreasing in flow as cracks open in the stream bed. However, because the streams contain a high concentration of sediment during rains, the cracks fill quickly and the effect is short lived. The water re-establishes itself within several years.

The effects of temporary water loss in streams on wildlife is not a mystery. A large percentage of the streams in the area are intermittent, meaning that there is no detectable flow during the dry seasons of the year. In it's adaptation to the climate in the area, the local wildlife tends to migrate as these streams experience changes in flow throughout the year.

AEC will monitor all streams as outlined in the addendum to page 26, part 3, F(3). In the event that a stream's flow is reduced or diminished due to longwall subsidence, AEC will monitor the stream bed over a five-year period. If normal flow is not re-established in this time frame, AEC will, at it's expense, fully grout or line the stream bed to mitigate the subsidence damage and restore normal flow to the stream.

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ADDENDUM TO PAGE 30, PART 3, K(5)(e)
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PAGE THREE

In the event that other water resources such as springs and wells are diminished due to longwall subsidence, AEC will take measures to restore the water supply as outlined in the Addendum to Page 18, Part 2, F.

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ADDENDUM TO PAGE 30, PART 3, K(5)(d)
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ANTICIPATED EFFECTS - SURFACE STRUCTURES

Structures situated over a panel or within the angle of draw may be damaged due to subsidence. When the longwall passes directly under a structure, the structure experiences first moderate tensile stress, then moderate compressive stress. As the structure subsides, the end that was undermined first subsides first, causing some tilting away from the advancing face. As the surface over the panel subsides, it takes on the shape of a trough, with the edges remaining in tension and the center in compression. Because the Century Mine longwall face moves quickly, damage to structure from this type of movement is minimized.

The damage that may be expected may involve cracking of plaster, cracking of concrete block or brick, cracking of dirt and cement floors, cracking along mortar joints, and separation of existing cracks. Cracks may close partially or completely after subsidence is complete. Additions to houses may separate away from the original structure. Cracks that occur during separation may close partially or completely after subsidence is complete.

The anticipated effects of planned subsidence on the underground houses at the Raven Rocks community are minimal as the mining plan has been designed to avoid these structures. In addition, the wind generator and geothermal wells will be avoided as well.

Geologic survey marker - anticipated effects are that the marker will subside and possibly move horizontally due to subsidence. The marker will not be re-positioned, but can be relocated by survey methods, should the geologic survey require such relocation.

Ponds may become partially dry temporarily as a result of subsidence-induced surface cracks. However, cracks in ponds have not caused de-watering to date at the CENTURY MINE.

There are no anticipated affects of subsidence on the high-voltage power lines. Several towers were subsided in D-0425-1, with little effect.

From the experience at the adjacent Powhatan No. 6 Mine, it is understood that dairy farming will experience minor disruptions. The floors and walls may crack, and some of the gravity flow lines may be disrupted. AEC will excavate a kidney around the 500,000-gallon storage tank in order to collect spillage should the tank be damaged. AEC will repair or replace the liquid manure tank as necessary. No effects are expected on the silos. AEC will maintain, at AEC's expense, the dairy farm in full operation by taking the measures specified in the Addendum to Page 30, Part 3, K(5)(e).

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MITIGATING MEASURES – SURFACE STRUCTURES

Damage to Public Roads

AEC will notify the appropriate road authority at least six months prior to undermining the road. In the event that roadways are permanently damaged by subsidence, AEC, at the request of the road authority, will pay to repair the road surface to its pre-mining condition.

Damage to Public Water Lines

AEC will notify the owner of public water lines at least six months prior to undermining the lines. In the event that the pipelines are damaged by subsidence, AEC, at the request of the public water line authority, will pay to repair the pipeline to its pre-mining conditions.

Damage to Public Sewer Lines

AEC will notify the owner of public sewer lines at least six months prior to undermining the lines. In the event that the pipelines are damaged by subsidence, AEC, at the request of the public sewer line authority, will pay to repair the pipeline to its pre-mining conditions.

Damage to Other Utility Lines

AEC will notify the owner of other utility lines (electric lines and sub-stations) at least six months prior to beginning work at the proposed permit area and will take measures to protect the lines that traverse the proposed permit area. At least six months prior to undermining the lines to allow the utility to take measures that they deem necessary and proper to protect their property and the public health and safety.

Damage to Sewage Treatments Plants

AEC will not subside the wastewater treatment lift station.

Damage to Dairy Operation

1. This section covers any dairy operations that will be affected by AEC's mining operations. If the dairy barn and milk house will experience subsidence, some surface and structural damage will be anticipated. It is the intention of AEC to remove the coal under all structures, including the dairy barn and milk house on the dairy farm as rapidly as possible to minimize damage.

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It is predicted that dairy farming, and especially milking, will not be interrupted by longwall mining subsidence. Nonetheless, AEC will maintain, at AEC's expense, the dairy farm in full operation by taking the following measures prior to undermining the dairy structures, most particularly, the barn/milk house:

a. A water supply line from the County water line will be installed prior to mining in order to provide water on a continuous basis. This water line will be installed in such a manner that subsidence will not interrupt the flow of water.

b. The electrical supply to the barn/milk house will be inspected and, if necessary, changed to permit the downward movement of the structure.

c. The framework structure of the barn will be inspected to determine its ability to withstand the forces caused by subsidence. The barn will be shored and braced as necessary to allow the barn to undergo subsidence. Reinforcement measures will be used where practical in order to return the barn to pre-mining conditions after subsidence is complete.

d. The milking system will be inspected to determine its ability to withstand the forces caused by subsidence. If necessary, rigidly held lines will be fastened with flexible couplings to permit movement of the barn and still permit the normal flow of milk to the bulk tank. All modifications will comply with State and County Health Department guidelines.

e. If necessary, the bulk milk tank will be placed on a low-profile platform that permits easy, ongoing leveling. The tank will be re-certified after this change is made at the expense of AEC. The platform will be arranged to maintain adequate clearance over the tank.

f. If necessary, the compressors and coolant lines for the bulk tank will be inspected and retro-fitted with flexible connections to permit the downward movement of the structure.

2. During mining under the barn/milk house, AEC will provide the following services at AEC's expense:

a. The barn/milk house will be inspected at least 2 hours prior to milking for damage that may impede normal milking operations. Minor repairs will be made to insure that the milking processes will occur normally. Specifically, the barn and related facilities (e.g., stanchions) will be maintained in a usable condition. Milk lines will be inspected for breakage and flow direction and any repairs will be made prior to milking. Compressors and refrigerant lines will be inspected and repairs will be

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made if necessary. The bulk tank will be re-leveled and re-certified prior to pick-up of the milk at AEC's expense. The integrity of both the water and the electrical systems will be inspected and repaired prior to milking. Sufficient numbers of personnel qualified to do the inspection and repair work will be present before the milking begins. During milking, any necessary repairs will be made to allow the milking process to continue.

b. Following the milking, any additional repairs to the facilities not needed for milking will be completed. The requirements of the County and State

c. Health Service Departments for a Grade A dairy farm will be maintained during subsidence at AEC's expense, including the repair of doors, the barn floor, the barn cleaner, and the water system. If the barn cleaners cannot be maintained in operation, manual labor will be used to keep the barn clean.

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ADDENDUM TO PAGE 30, PART 3, K(5)(f)
AMERICAN ENERGY CORPORATION
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NOTICE OF MINING,
PRE-SUBSIDENCE SURVEY, MONITORING OF STRUCTURES

Notice of Mining

AEC will mail written notice to owners and occupants of surface property or structures of AEC's intent to mine under such property or structures at least six months prior to any mining by AEC under their property.

Pre-Subsidence Survey

A pre-subsidence survey of all structures to be undermined will be conducted by AEC personnel or by someone contracted to do this work and will be used to determine the condition of the structures and facilities prior to the mining unless a private agreement exists between AEC and the landowner. This survey may include, but not be limited to: still and video photography, land surveying, making various measurements, interviewing landowners, tenants, or other individuals, and making various drawings. This survey will be performed in accordance with Underground PPD 90-3. Refusal of the landowner to allow a pre-subsidence survey will result in the amount of damage caused by subsidence to be indeterminate. In such cases, AEC will enforce the terms of its deed language, which deeds represent valid agreements between the coal owner and the owner of the surface estates and address all damage that may occur due to the removal of all coal. Such agreements vary from tract to tract, but are shown in the Addendum to Part 1, Page 10, C.(8)(b).

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ADDENDUM TO PAGE 30, PART 3, K(5)(g)
AMERICAN ENERGY CORPORATION
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REPAIRS TO STRUCTURES

After mining, structures will be repaired or replaced as required by law or the owner will be compensated for the diminution in value to the extent required by law. A private agreement may be used to satisfy the requirements of OAC 1501:13-12-03. If repaired, structures will be returned to their pre-mining condition.

Repair of and compensation for damage under the terms and conditions of OAC 1501:13-12-03(F) and (H) can be determined only after review and analysis of the damage in each particular situation. AEC will comply with all legal requirements if subsidence damage occurs.

As required by OAC 1501:13-12-03(I), all remedial, restorative and mitigatory actions required under this rule will be performed as soon as practicable.

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ADDENDUM TO PAGE 30, PART 3, K(5)(h)
AMERICAN ENERGY CORPORATION
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Monitoring of Structures

After AMERICAN ENERGY CORPORATION has completed its pre-subsidence survey, AMERICAN ENERGY CORPORATION will notify the Division of Mineral Resource Management if a private agreement (pursuant to OAC 1501:13-12-03(E)) between AMERICAN ENERGY CORPORATION and the landowner exists. If no agreement exists, the Division of Mines and Reclamation, after discussions with AMERICAN ENERGY CORPORATION, will decide the need for any monitoring of the structure(s). If monitoring is required, AMERICAN ENERGY CORPORATION will submit a plan for the monitoring. If, prior to subsidence, a private agreement is reached, AMERICAN ENERGY CORPORATION shall be released from any and all monitoring requirements.

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PART 4 FORMAT AND CONTENT

FILING OF ADDENDA

If an addendum is needed to present the information required by the items in the permit application, the addendum is to be submitted with the permit application and each page, map, plan or other document in the addendum should include the applicants name and indicate to what item the addendum applies. For example, Addendum to Part 3, item K(2),Zebco Coal Company.

Provide the information requested below for all technical data submitted in the application.

Identification of Technical Data (1)	Person/Organization that Collected Data and Date	Methodology for Collecting Data	Person/Organization that Collected Data and Date	Methodology Used to Analyze Data
PART 2, C ATTACHMENT 27, 31, 14	FRED BLACKMAN, QUALITY ENVIRONMENTAL SERVICES	GRAB SAMPLES AND INTERVIEWS	FRED BLACKMAN, QUALITY ENVIRONMENTAL SERVICES	ANALYZE AS NECESSARY FOR PARAMETERS
ATTACHMENT 14	~~MOODY AND ASSOCIATES~~ Trader, Inc.	GRAB SAMPLES, AND INTERVIEWS	DAVE ANDERSON, ? MOODY AND ASSOCIATES Date	ANALYZE AS NECESSARY FOR PARAMETERS
ATTACHMENT 13	KEROGEN RESOURCES, INC	CORE DRILL	KIM CECIL, KEROGEN RESOURCES, INC Date	ANALYZE AS NECESSARY FOR PARAMETERS

(1) The technical data is to be identified by referencing the particular item in the application for which the data was used in preparing the response (e.g. Part 2, B(1); Attachment 14; Part 4, A).

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Provide the name, address, and position of officials of each private or academic research organization or governmental agency contacted in the preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, air quality, and archeological, cultural, and historic features.

Name and Address of Official	Position of Official	Name of Agency/ Organization	Type of Information (e.g. Geology)
BILL HAIKER 1855 FOUNTAIN SQUARE COURT, COLUMBUS, OHIO 43224	HYDROGEOLOGIST	ODNR, DIVISION OF WATER	Groundwater Inventory
RICHARD WHITT P. O. BOX 2019 WHEELNG, WV 26003	ANALYSIST	TRA-DET, INC	Water Sample Analysis

APPLICATION FOR ABANDONED MINED LAND DIRECT NEGOTIATED CONTRACT (IF APPLICABLE)

N/A

In accordance with Section 1513.27 of the Ohio Revised Code, the chief of the Division of Reclamation has been granted the authority to enter into contracts with licensed operators for reclamation of abandoned mined lands affected by coal mining prior to April 10, 1972 and located adjacent to a permit area. To be eligible for reclamation funding, the abandoned mined land must be causing offsite environmental problems, will not be affected by the operator during the normal course of mining, and is not likely to be mined in the foreseeable future. If such lands exist adjacent to your permit area and you are interested in contracting for reclamation of the lands, complete this application , detach and send directly to:

Robert S. Baker, Manager
Mined Land Reclamation
Division of Reclamation
Fountain Square, H-2
Columbus, Ohio 43224

Upon receipt, a representative from the Mined Land Reclamation section will contact you.

Applicant:

Address:

City: _____ State: _____ Zip:

Business Telephone:

Contact Person:

Description of Abandoned Mined Land:

County:
Township:
Section/Lot:
Approximate Acreage:

Environmental Problems Associated with Site:

ORIGINAL