12/95

Permit No. D-0360-6

STATE OF OHIO

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

COAL MINING & RECLAMATION PERMIT

*CONDITIONAL ISSUANCE

Issued to: THE OHIO VALLEY COAL COMPANY
56854 PLEASANT RIDGE ROAD
ALLEDONIA OH 43902

Application No. D-0360-6
Acreage 1361.2 (UNDERGROUND)
Effective OCTOBER 6, 1997
Expires JUNE 5, 1999

Telephone (614) 926-1351
AREA CODE

Type of Operation: _____ Surface, X Underground, _____ Other (indicate) _____

LOCATION OF PERMIT AREA

Names of Landowners	T-__,R-_	Sec.	Lot	Township	County
UNDERGROUND MINING OPERATIONS ONLY. NO SURFACE AFFECTMENT.					
*1) A Phase I historic archaeological survey of the several historic properties in the application area is necessary. Prior to any full coal recovery mining below the locations of these historic properties the applicant must have conditional clearance from the Division after comment is received from the Ohio Historic Preservation office.					
2) Any and all surface affectment and/or repairs is permitted only after review and clearance by the Division archaeologist with OHPO comment considered. Applicant will submit appropriate information well in advance of the scheduled surface affectment and/or repairs.					

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 approved water monitoring plan for this permit is:

Monitor for quality at: SEE PART 3, PAGE 26, F OF THIS PERMIT

Monitor for quantity at: SEE PART 3, PAGE 26, F OF THIS PERMIT

OCTOBER 6, 1997
Date

Chief, Division of Mines & Reclamation

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

APPROVAL OF UNDERGROUND COAL MINING PERMIT APPLICATION

1. Name of Applicant THE OHIO VALLEY COAL COMPANY
2. Address of Applicant 56854 PLEASANT RIDGE ROAD
   City ALLEDONIA State OH Zip 43902
3. Application Number D-0360-6
4. Number of acres in underground workings 1361.2
5. Number of surface acres to be affected N/A
6. The water monitoring plan for this permit shall be:
   SEE PART 3, PAGE 26, F OF THIS PERMIT APPLICATION.

   Note: These monitoring requirements are separate from NPDES monitoring requirements.
7. 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.

Date OCTOBER 6, 1997 Signed

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

Written Findings

Applicant: The Ohio Valley Coal Company

Application No.: D-0360-6

This application has been reviewed by the Division and these findings, as required by 1501: 13-5-01 (E) of the Ohio Administrative Code, are being made.

1. The permit area is not within an area designated as unsuitable for mining pursuant to 1501:13-3-07 of the Ohio Administrative Code. As of this date two areas within the state have been designated as unsuitable: Guernsey County, Valley Township, Section 8 (for all coal mining operations) and 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).

2. The permit area is not within an area under study for designation as unsuitable for mining based on review of the petitions filed with and being processed by the Division.

3. The permit area is not within one hundred feet of a cemetery based on a field review and map review of the application area and Part 1, D(9) of the permit application.

4. The permit area is not within one hundred feet of the outside right-of-way of a public road based on the field review and map review of the application area and Part 1, D(6) of the permit application.

5. The permit area is not within three hundred feet of an occupied dwelling based on the field review and map review of the application area and Part 1, D(7) of the permit application.

6. The proposed mining operation will not adversely affect publicly owned parks or places included on the National Register of Historic Places based on review of the sites listed in the federal register and Part 1, D(5) of the permit application.

7. The permit area is not within three hundred feet of a public building, school, church, community or institutional building, or public park based on a field review and map review of the application area and Part 1, D(8) of the permit application.

8. The permit area does not include any lands within the boundaries of the National Park System, The National Wildlife Refuge System, The National System of Trails, The National Wilderness Preservation System, The Wild and Scenic Rivers System, including study rivers designated under Section 5(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1276 (a)), or study rivers or study river corridors as established in any guidelines pursuant to that act, National Recreation Areas designated by Acts of Congress, or any nature preserve dedicated pursuant to Chapter 1517. of the Revised Code. This finding is based on review of documents prepared by the National Park Service and the Office of Outdoor Recreation, O.D.N.R., and Part 1, D(1) and D(3) of the permit application.

9. The permit area does not include any federal lands within the boundaries of any National Forest.

10. The permit area is not within one thousand feet of the waterlines of any wild, scenic, or recreational river dedicated pursuant to Chapter 1501., Ohio Revised Code. This finding is based upon the field review and Part 1, D(2) of the permit application.

11. The coal mining operations proposed by this application are not likely to jeopardize the continued existence of threatened or endangered species or are not likely to 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.). The Indiana bat is the only species on the federal list that is in the coal mining region of the state, but per Kent Kroonemeyer's (U.S. Fish & Wildlife) 4-29-85 letter the bat is not in Belmont County and there is no critical habitat in Ohio for any of the federally listed species.

12. The private mineral estate has been severed from the private surface estate on the surface properties owned by: See permit. The following documents were submitted by the applicant to allow for extraction of the coal: Deed Affidavit.

13. 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 and has no unpaid final demand civil penalty assessments. This finding is based on verification of Division issued N.O.V.'s, review of information through the Applicant Violator System, and letters sent to other regulatory agencies. Those letters and documentation of the reviews are included within the permit application file.

14. The applicant is required to submit the acreage fees prior to issuance of the permit. 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 Applicant Violator System.

15. The applicant is required to submit the performance bond prior to issuance of the permit. The receipt for payment of bond is part of the permit file.

16. 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 from the Inspection and Enforcement Section on 10-6-97 .

17. The chief has made the following specific approvals required by Chapter 1501: 13-01 through 1501: 13-14 of the Ohio Administrative Code: Test Hole Variance Request.

18. The postmining land uses are the same as the premining land uses. The finding is based on review of Part 2, H(1) and H(6) of the permit application.

19. Coal mining and reclamation operations to be performed under the permit will not be inconsistent with other such operations anticipated to be performed during the same permit term in areas adjacent to the proposed permit area.

20. Based on 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, it is found that the proposed operations have been designed to prevent damage to the hydrologic balance outside the permit area.

21. The probable cumulative hydrologic impact assessment for this application area and adjacent areas on the hydrologic regime and water availability is based on review of the Attachment 14's, analysis of existing ground water file data by the Division of Water, and other hydrological and geological data which is part of this application. The impact assessment is as follows: See attached CHIA

22. The applicant has demonstrated and the chief has found that the mining and reclamation plans contained in Parts 2, 3, and 4 of the permit application can be feasibly accomplished.

23. The permit application does not propose to use an existing structure in connection with or to facilitate the proposed coal mining and reclamation operation based on a field review of the site and Part 3, B(1) of the permit application.

24. The permit application does not contain any special categories of mining based on a field review of the site and Part 4 of the permit application.

25. The chief has accounted for the possible effect of the proposed permit on properties listed or eligible for listing on the National Register of Historic Places. Consideration was given to, but not limited to, the following: (a) imposing permit conditions which protect the historic resource, (b) requiring revision of the proposed operation plan before application approval, or (c) concluding in a written finding that no protection measures are necessary.

26. The Division of Mines and Reclamation has determined that permit application number D-0360-6 submitted on 2-11-97 and revised 6-27-97 and 8-4-97, is accurate and complete and that it complies with the requirements of Chapter 1513 of the Revised Code and all rules adopted thereunder.

R. Scott Stalnaker — 10-6-97
(application manager) (date)

Leo Moni — 10-6-97
(Chief, Division of Mines and Reclamation) (date)

Final Draft Cumulative Hydrologic Impact Assessment for
OVC D-0360-6 Powhatan #6 Deep Mine

Geologist: George Mychkovsky **Date**: August 28, 1997

The proposed full-coal recovery underground mining operation is located beneath 1361.2 acres in Sections 11, 17, and 23 of Smith Township, Belmont County. The #8 Pittsburgh Coal seam of the lower Monongahela Group of the Pennsylvanian System operation will be longwall-mined beneath five east-west panels, each of which is approximately two miles long and 750 feet wide. Full coal recovery will not be permitted within 375 feet of McMahon Creek, as this is a watershed perennial stream which is as little as 90 feet above the #8 Coal seam. Furthermore the unconsolidated aquifer formed in alluvial deposits along this stream is a source of water for several dug wells that are used for domestic and livestock purposes. The #8 Pittsburgh Coal seam is located between the approximate elevations of 765 ft. Msl and 825 ft. Msl. No additional permit area is proposed.

The underground workings area (UWA) lies within the Unglaciated Plateau Physiographic Province of Ohio. Surface elevations within the hydrology review area range from approximately 920 ft. Msl, along McMahon Creek in the northeast quarter of Section 17 (northcentral portion of the UWA), to 1349 ft. Msl, in the southeast quarter of Section 23 (southeast corner of the UWA). As a result maximum relief is 429 feet. Narrow V-shaped valleys and narrow ridges characterize the topography. The UWA is located within the McMahon Creek Drainage Basin; in general the northern portion of the UWA drains northeastward directly to McMahon Creek, while the southern portion of the UWA drains southeastward to perennial Williams Creek. The latter stream discharges into McMahon Creek approximately one mile to the east of the UWA. Extensive surface mining and deep mining for various coal seams has taken place with this drainage basin, although the proposed UWA has not been previously affected by mining.

Overburden thickness averages approximately 320 feet and varies from approximately 130 feet in the northcentral portion of the UWA to approximately 550 feet in southwest corner of the UWA. Strata above the mid-ridge level belong to the Permian Dunkard Group, with the underlying Pennsylvanian Monongahela Group comprising the bedrock at the lower levels. The #8 Coal seam ranges from 3.2 feet to 7.7 feet in thickness, with an average thickness of approximately 6.2 feet thick. Total sulfur content ranges from 3.8% to 8.6%, while pyritic sulfur content ranges from 1.7% to 7.0%. The approximate average total sulfur and pyritic sulfur content values are 5.2% and 2.9%, respectively. The general dip of the #8 Coal seam is to the southeast at approximately 20 feet per mile. The structure contour map of the top of the #8 Coal seam shows a series of small amplitude folds within the UWA.

The subsurface geology of the UWA is very heterogeneous, and except for the major coal seams, very few strata can be correlated across significant distances. Soft rocks, which are comprised of shale, mudstone, claystone, sandy shale, and clay, constitute 39% to 77 % of the overburden. The remainder of the overburden is comprised of hard rocks, which includes sandstone, limestone, and siltstone. The abundance of soft rocks, which are typically very fine-grained, is significant, since

these rocks tend to have very low permeabilities and are typically aquitards or aquicludes. Furthermore because of the relatively rapid facies changes in the area, these clay-rich rock units tend to limit the vertical and horizontal extents of the saturated water-bearing zones. As a result there are no regional aquifers in the area. Instead several saturated water-bearing zones of rather limited horizontal and vertical extent, addressed in greater detail below, characterize the ground-water system. The highly discontinuous nature of the strata and their hydrologic characteristics serve to minimize adverse hydrologic impacts caused by longwall mining-induced subsidence. The reason for this is that adverse impacts are more localized due to the limited hydrologic communication across and along stratigraphic units. By the same token, predictability of impact on a specific supply is less certain. Another significant characteristic of these soft rocks is that they tend to heal when fractured; consequently impacts due to subsidence-induced fracturing will be mitigated.

Ground-water resources in the immediate area are meager, with the submitted "Analysis of Existing Ground Water File Data," prepared by the Division of Water, indicating yields ranging from one to 20 gallons per minute. The Division of Water's Ground-Water Resources of Belmont County map indicates that yields in the area are typically less than 2 gallons per minute. To supplement the meager ground-water supplies, cisterns are occasionally used. In addition a public water line provides water for residents immediately to the southwest of the UWA. Water wells are developed in alternating sandstone, shale, and limestone units at depths ranging from 25 feet to 124 feet. The Division of Water's report expressed concern that subsidence to longwall mining would alter ground-water flow to wells within the hydrologic limits and recommended monitoring of these wells. This concern is addressed by the monitoring plan proposed by the applicant.

The inventory compiled by the applicant includes approximately 62 wells and 19 developed springs within or just beyond the hydrology review area, virtually all of which were sampled over six-month periods. Of these supplies, approximately 45 wells and 12 developed springs are legitimately used as domestic and/or livestock supplies. Approximately 31 used wells and 9 used developed springs are located in the UWA. Several undeveloped springs, which were not sampled or inventoried, are also located within the hydrology review area.

As was previously mentioned, there are no regional aquifers within the hydrology review area. The applicant has identified 5 aquifers of limited areal extent, labeled zones A through E with increasing depth, within the hydrology review area. For the most part, ground-water occurs within 100 feet of the land surface, as fractures which transmit ground-water are closed-off at greater depths. Furthermore ground-water more than 250 feet below valley bottoms is generally brackish. Background sampling revealed generally good ground-water quality, although occasionally high specific conductivity, and total iron and total sulfates concentrations were reported. The ground-water is generally slightly alkaline, with pH values typically in the range of 7.3 to 7.8 standard units. Stream and pond water quality is similar to that of ground-water.

The shallowest aquifer in the area, identified as zone A, is formed in the unconsolidated deposits. This aquifer is located primarily along McMahon Creek and its tributary, Hutchison Run, to the north of the UWA. A total of 11 used wells, most of which are dug wells, are developed in this

aquifer at depths usually less than 30 feet. The Ohio Water Plan Inventory Project for McMahon Creek, prepared in 1959 by the Ohio Division of Water, states that "wells drilled or dug on the broader flood plains of McMahon, Captina, and Sunfish Creeks may yield as much as 25 gpm." Approximately 34 used wells are developed in bedrock aquifers, which range in elevation from 795 ft. msl to 1245 ft. msl.

Impacts observed by previous monitoring at D-0360-2 and D-0360-3 of the Powhatan #6 Mine are predicted to occur at the proposed operation. This previous monitoring has shown that the greatest risk is posed to wells developed in the zone of fracturing, in which extensive fracturing takes place that extends upwards from the mined-out zone to a height approximately 30 times the coal seam thickness. Therefore it is calculated that the zone of fracturing above the deep mine would extend upwards approximately 190 feet (30 x 6.2 = 186). For the sake of simplicity and in keeping with the monitoring results at D-0360-2 and D-0360-3 of the Powhatan #6 Deep Mine, 200 feet was used as the height of the anticipated zone of fracturing. Furthermore wells immediately above the panels and gates are at a greater risk than those located beyond the UWA, i.e. wells within the adjacent area. This previous monitoring has shown that 97% of supplies located over 700 feet from a panel boundary were not impacted. Finally wells located along hillsides and hilltops were more likely to be adversely affected than wells located along valley bottoms.

Within the UWA the top of the anticipated fracture zone varies in elevation from 970 ft. msl to 1030 ft. msl. Aquifers A, D, and E are located within the anticipated zone of fracturing. Two used wells within the UWA and four used wells that are in the adjacent area within 700 feet of a panel edge have bottom elevations that are within the anticipated zone of fracturing. These wells will probably undergo severe dewatering, to the extent that replacement supplies may be necessary. It should be noted that four wells have bottom elevations within approximately 100 feet of the #8 Coal seam. Based on monitoring data in the area, any recovery that does occur usually commences within six months of the undermining. Wells that are developed in the zone of fracturing have a greater than 75% chance of significant dewatering for periods greater than 6 months. There are no used developed springs within the anticipated zone of fracturing that are within 700 feet of a panel edge.

Aquifers B and C are located in the intermediate zone of the post-subsidence profile, also called the constrained zone by the applicant. Wells developed in these aquifers may undergo partial dewatering on a short-term basis. It is also possible that the loss of water in one well may result in a gain for another well, as monitoring data has shown instances of static water level rise in wells in the intermediate zone following subsidence. Similarly, the loss of flow in one developed spring may appear as increased flow at a spring developed at a lower elevation. Twenty-six used wells that are supplied by the intermediate zone aquifers are located within the UWA, while no wells developed in these aquifers are located within the adjacent area. Previous monitoring at D-0360-2 and D-0360-3 has shown that of the wells developed in the intermediate zone and located within 700 feet of a panel edge, 45% underwent significant impact, 13% underwent moderate impact, and 42% underwent minimal impact. Significant impact is defined as water level declines or reduced flow rates that persist for more than six months; moderate impact is defined as water level decline or

reduced flow rates that recover within six months; minimal impact is defined as water level decline or reduced flow rates that recover within two months.

The third impact zone resulting from longwall mining is the near-surface fracture zone, which extends from the landsurface to depths of about 100 feet. By their very nature, dug wells, shallow drilled wells, and developed springs are located within this zone. Nine used developed springs and approximately 27 used wells that are supplied by the near-surface fracture zone aquifers are located within the UWA. Four wells and no used developed springs that are supplied by the near-surface fracture zone aquifers are located in the adjacent area within 700 feet of a panel. Note that for several of these wells the near-surface fracture zone also coincides with the zone of fracturing due to the areas of low cover. Previous monitoring at D-0360-2 and D-0360-3 has shown that of the developed springs located within 700 feet of a panel edge, 76% underwent significant impact, 21% underwent moderate impact, and 3% underwent minimal impact, even though these developed springs were over 200 feet above the deep-mined coal seam.

The applicant has described a temporary and permanent water replacement plan that will be implemented as necessary. The monitoring plan outlined in the application will help the operator prepare for a timely response to dewatering complaints from affected landowners and to assess the hydrologic impacts resulting from the longwall mining operation. Furthermore this monitoring plan should address the concerns of the Division of Water that were mentioned previously.

According to the Soil Conservation Survey of Belmont County, the only perennial stream in the area is McMahon Creek, into which all the drainage from the UWA ultimately flows. Streamflows along McMahon Creek ranged from 25.6 to 111 cubic feet per second. Hutchison Run, which is located to the north and northeast of the UWA, is a prominent intermittent tributary of McMahon Creek. Over 40 intermittent streams and their tributaries were inventoried in the application. Monitoring at the Powhatan #6 Mine reveals minimal to no impact on stream dewatering. It should be noted, however that overburden at D-360-2 and D-0360-3 was in excess of 200 feet. The proposed UWA is at least 200 feet from McMahon Creek, and full coal recovery will not take place within 375 feet of this perennial stream. As a result the possibility of any subsidence damage to this stream and the alluvial aquifer located along the banks of this stream will be minimized. In the unlikely event that subsidence fractures lead to water loss from McMahon Creek, the abundant soft rocks, which range from 39% to 77% of the overburden, should heal adequately and relatively quickly, so as to minimize water loss to the deep mine. The upper reaches of first-order intermittent streams may experience minor dewatering due to near-surface fracturing.

Two ponds are located within the UWA and six are located within the adjacent area. Pond P-1, which is located above a proposed gate of the deep mine, and P-2, which is over 1700 feet from a proposed panel edge, are used for livestock purposes. No impact is anticipated to either of these ponds, both of which are over 350 feet above the proposed deep mine. Nevertheless short-term temporary dewatering due to near-surface fracturing is possible, as was discussed previously.

Insofar as the deep mine is approximately 130 feet beneath the landsurface, no acid discharge

at the surface will occur. With the exception of a possible temporary, small increase in turbidity, longwall mining will not affect the quality of any water supplies in the hydrology review area, as supplying aquifers are at least 30 feet above the level of proposed mining. Monitoring of water supplies to-date at the Powhatan #6 Mine has not revealed any significant quality impacts due to longwall mining. It should be noted that neither coal wastes nor non-coal wastes will be disposed within the proposed UWA.

Shale and claystone generally underlie the #8 Coal seam, however limestone is also reported to immediately underlie this coal seam. These underlying strata will not be disturbed by the proposed operation. Consequently they will remain intact following mining as lower confining strata upon which a saturated water-bearing zone may develop in the rubble zone. Furthermore these underlying units will serve as a barrier to downward percolation of ground-water from the deep mine, thereby protecting any lower saturated zones from contamination originating in the deep mine. It should be noted that no used water supplies are developed in aquifers in or below the #8 Coal seam, and it is possible these aquifers are brackish.

In summary, the proposed longwall mining operation will not result in material damage to the hydrologic balance.

June 11, 1996

Ms. Lisa Morris, Chief
Division of Mines and Reclamation
Ohio Department of Natural Resources
1855 Fountain Square Court
Columbus, Ohio 43224

Dear Ms. Morris:

The Ohio Valley Coal Company is preparing an application to add approximately 1563 acres of underground full-recovery reserves in the Pittsburgh (No. 8) seam adjacent to our currently approved underground mining area. In accordance with OAC 1501:13-4-13, ten (10) test holes are required. Within this area are currently five (5) test holes, with an additional seven (7) holes located immediately adjacent to the proposed area. We propose to install another three (3), bringing the total to eight (8), test holes within the area and hereby request a test hole variance in accordance with OAC 1501:13-4-13(C)(3).

Some of the existing 12 test holes submitted herein do not contain all of the data required. These holes were installed years ago by other companies or were installed prior to the requirement to submit complete test holes or acid/base accounting data. All of the data that is currently in the possession of OVCC is included with this request. The three additional test holes will contain the entire stratigraphic column and the acid/base accounting information. This additional information will supply the chief with the information needed for an application approval. The following information is submitted in support of this request:

1. A map showing the existing test holes, their surface elevations, and their coal elevations and the structural contours based on these holes and the surrounding mines. The proposed mining area boundary and hydrologic boundary are also shown on the map.

2. Logs of the test holes and modified Attachment 13's for each hole.

3. A cross section of the holes from the northwest to the southeast corners of the proposed area. A second cross section using the existing holes, and the proposed holes, will accompany the permit application.

4. Logs and Attachment 13's for test holes in the D-0360-3 adjacent area, found immediately to the south of the proposed area. We contend that the geology in this proposed area is identical to the geology in the D-0360-3 area, and the other

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56854 PLEASANT RIDGE ROAD • ALLEDONIA OHIO 43902 • (614) 926-1351 • FAX (614) 926-1615

approved adjacent areas. The other adjacent area applications are on file with the Division of Mines and Reclamation and are available for your review.

5. A map showing the known sources of water in the area and the depth of each well, showing the extent of the regional, near-surface water table that is the source of the domestic and agricultural wells.

6. A statement from our hydrologist, Mr. Burt Waite, who will prepare the Probable Hydrologic Consequences for this area, addressing the location of the water bearing zone, the regional hydrology, and the regional geology.

Based on the information available, we are confident that this test hole variance request should be approved. Since we are planning to drill the test holes this summer, please contact us as soon as possible in order for us to define the scope of the drilling program. Should you have any questions, please contact me.

Sincerely,
THE OHIO VALLEY COAL COMPANY

David L. Bartsch

David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator

cc: J. R. Forrelli
B. A. Waite
B. Binon
File

APPROVED ☒
DISAPPROVED ☐
DATE: 10-22-96
SIGNED Lisa J. Morris / by B. Sterling
Chief

D0360-6

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

UNDERGROUND COAL MINING AND RECLAMATION
PERMIT APPLICATION

Applicant The Ohio Valley Coal Company

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

_____ Shaft, _____ Slope, _____ Drift,
__X__ 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) _____ Additional Underground Workings

C. Address the following if applicable:

(1) Permit Number D-0360
(2) Date Issued 6/20/84

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 E. Murray; Title President and Chief Executive Officer

Signature Robert E. Murray; Date Jan. 28, 1997

Sworn before me and subscribed in my presence this

28th day of January, 1997.

Marsha Kocinski Baker
Notary Public D0360-5

MARSHA KOCINSKI BAKER
Notary Public, State of Ohio
My Commission Expires 12-21-2000
(Recorded in Cuyahoga County)

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F. For Revision Review Only. This item is to be completed after revisions, 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 David L. Bartsch ; Title Permit Administrator

Signature David L. Bartsch ; Date 6-25-97

Sworn before me and subscribed in my presence this

25 day of JUNE, 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

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

A. IDENTIFICATION OF INTERESTS

(1) Applicant's Name The Ohio Valley Coal Company

Address 56854 Pleasant Ridge Road

City Alledonia State Ohio Zip 43902

Telephone 614 - 926 - 1351

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) 5/25/88,
_____ 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 _____

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D0360-6 JUN 27 1997

F. For Revision Review Only. This item is to be completed after revisions, 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 David L. Bartsch ; Title Permit Administrator

Signature David L. Bartsch ; Date 7-28-97

Sworn before me and subscribed in my presence this

28th day of July, 1997.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

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DIVISION OF MINES
AND RECLAMATION

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

A. IDENTIFICATION OF INTERESTS

(1) Applicant's Name The Ohio Valley Coal Company

Address 56854 Pleasant Ridge Road

City Alledonia State Ohio Zip 43902

Telephone 614 - 926 - 1351

Employer Identification No. (EIN) 3 , 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) 5/25/88,
____ 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 _____

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Robert E. Murray
President & Chief Executive Officer

January 27, 1997

Ms. Lisa Morris, Chief
Division of Mines and Reclamation
Ohio Department of Natural Resources
1855 Fountain Square Court
Columbus, Ohio 43224

Dear Ms. Morris:

This letter is to certify that

David L. Bartsch, P.E.

is authorized to sign application revisions for The Ohio Valley Coal Company. Permit D-0360 will be the subject of applications to add underground mining areas. In his job as the Environmental Coordinator and Permit Administrator, Mr. Bartsch acts as a responsible official of this company. If you have any questions, please contact me.

Sincerely,
THE OHIO VALLEY COAL COMPANY

Robert E. Murray

Robert E. Murray
President and
Chief Executive Officer

ORIGINAL

D0360-6

56854 PLEASANT RIDGE ROAD • ALLEDONIA OHIO 43902
(614) 926-1351 • FAX (614) 926-1615

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

Agent's Name A & H Statutory

Address 1100 Huntington Building

City Cleveland State Ohio Zip 44115

Telephone 216 - 696 - 1100

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 The Ohio Valley Coal Company

Address 56854 Pleasant Ridge Road

City Alledonia State Ohio Zip 43902

Telephone 614 - 926 - 1351

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.

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(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 E. Murray

(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's

(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's

(12) Indicate name of mine Powhatan No. 6 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.

33-01159
1210-0H8-0025-003
1210-0H8-0025-004
1210-0H8-0025-005

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

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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 data 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.

(3) Have any unabated federal or state cessation orders (COs) and unabated air and water quality notices of violations (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.

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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. _____

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

Name R.G. & P.M. ANDERSON

Address 4169 FRANKLIN ST.

City BELLAIRE **State** OH **Zip** 43906

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name C.G. III ET AL. BAKER

Address 63121 OK RD CH 56

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name J.C. BATCHANOWICZ

Address 67060 WARNOCK ST. CLAIRSVILLE RD.

City ST. CLAIRVILLE **State** OH **Zip** 43950

Surface X **Coal** **Noncoal**

Deed Parcel No. 39

Name BOROUGH COMPANY

Address 4470 INDIANOLA AVE.

City COLUMBUS **State** OH **Zip** 43214

Surface X **Coal** **Noncoal**

Deed Parcel No. Y1, 34, 35

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

Name H.K., SR. & J.J. BOYD

Address 63269 OK RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name M. BUMGARDENER

Address 48935 WARNOCK GLENCOE RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 2

Name CSX TRANSPORTATION (B & O RR FORMERLY)

Address 500 WATER STREET

City JACKSONVILLE **State** FL **Zip** 32202

Surface X **Coal** **Noncoal**

Deed Parcel No. 14, 15, 18

Name J.K. & V.J. CIMINI

Address 63690 CENTERVILLE-WARNOCK RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

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Deed Parcel No. 41

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

Name COLUMBIA GAS TRANS. CO.

Address 4111 EXECUTIVE PARKWAY, PO BOX 6164

City WESTERVILLE **State** OH **Zip** 43081-61

Surface X **Coal** **Noncoal**

Deed Parcel No. 2

Name EAST OHIO GAS COMPANY

Address 7015 FREEDOM AVENUE, N.W.

City NORTH CANTON **State** OH **Zip** 44720-73

Surface X **Coal** **Noncoal**

Deed Parcel No. 2,34,36,37,38,40

Name M. G. FEISLEY

Address 111 PINE KNOLL TERRACE

City ST. CLAIRSVILLE **State** OH **Zip** 43950

Surface X **Coal** **Noncoal**

Deed Parcel No. 15

Name W. F. & M. J. FOX

Address 48681 GLENCOE-WHITNEY RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 10, 12, 19

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

Name A. P. II ET AL. FULTON

Address PO BOX 224

City ST. CLAIRSVILLE **State** OH **Zip** 43950

Surface X **Coal** **Noncoal**

Deed Parcel No. 17

Name A. P. II & P. FULTON

Address PO BOX 224

City ST. CLAIRSVILLE **State** OH **Zip** 43950

Surface X **Coal** **Noncoal**

Deed Parcel No. 17

Name B. FULTON

Address 630 BURKLEY BLDG.

City CLEVELAND **State** OH **Zip** 44115

Surface X **Coal** **Noncoal**

Deed Parcel No. 18

Name C. & B. FULTON

Address 61260 PIPE CREEK RD.

City SHADYSIDE **State** OH **Zip** 43947

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

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

Name C. L. & R. J. FULTON

Address PO BOX 11

City WARNOCK **State** OH **Zip** 43967

Surface X **Coal** **Noncoal**

Deed Parcel No. 17

Name C. W. & B. J. FULTON

Address PO BOX 63

City WARNOCK **State** OH **Zip** 43967

Surface X **Coal** **Noncoal**

Deed Parcel No. 17

Name K. J. FULTON

Address 518 MULBERRY LN

City OLD WASHINGTON **State** OH **Zip** 43768

Surface X **Coal** **Noncoal**

Deed Parcel No. 17

Name J. H. II GOODMAN

Address 250 W MAIN STREET

City ST. CLAIRSVILLE **State** OH **Zip** 43950

Surface X **Coal** **Noncoal**

Deed Parcel No. 11, 16

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

Name G. & A. JONES

Address RT 2

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name G. F. & A. M. JONES

Address RT 2

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name G.T. & K.M. JONES

Address RT 2

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name D. M. KINDLER

Address C/O LE DORSEY B. KINDLER SR 45810 LUCAS-LASH RD

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 37,41

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

Name T. L. KOVALY

Address 63157 OK ROAD

City BEKMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name G. J. LANCASTER

Address 47840 WARNOCK-WHITNEY RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 15

Name C. E. & B. F. MALONEY

Address 63481 CENTERVILLE-WARNOCK RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 41

Name MARIETTA COAL COMPANY

Address FRIENDS CHURCH RD.

City ST. CLAIRSVILLE **State** OH **Zip** 43950

Surface X **Coal** **Noncoal**

Deed Parcel No. 36

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

Name C. A. & D. L. MCGUIRE

Address 63277 OK RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name M. P. MCMAHON

Address 62095 GLENCOE RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 14

Name E. E. MILLER

Address CR 56

City WARNOCK **State** OH **Zip** 43967

Surface X **Coal** **Noncoal**

Deed Parcel No. 15

Name R. R. PARISH

Address RT 2 63421 LASH RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 38

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ORIGINAL

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

Name R. L. PHILLIPS

Address 62540 OK RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 38, 40

Name O. C. RUMSKEY

Address 63142 ERWIN HIGGIN RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 11

Name J. L. ET AL. SANDERS

Address 63123 OK ROAD

City BELMONT **State** OH **Zip** 43178

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name J. L. & C. L. SANDERS

Address 63123 OK ROAD

City BELMONT **State** OH **Zip** 43178

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

ORIGINAL

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

Name M. H. SARGUS

Address 146 N SUGAR STREET

City ST. CLAIRSVILLE **State** OH **Zip** 43950

Surface X **Coal** **Noncoal**

Deed Parcel No. 13

Name R. J. & D. L. SCHIMMEL

Address BOX 76

City WARNOCK **State** OH **Zip** 43967

Surface X **Coal** **Noncoal**

Deed Parcel No. 15

Name A. L. & D.M. SHUNK

Address 63521 LASH RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 38

Name SO. CENTRAL POWER CO

Address 37801 BARNESVILLE-BETHESDA ROAD

City BARNESVILLE **State** OH **Zip** 43713

Surface X **Coal** **Noncoal**

Deed Parcel No. 2,14,15,18,36

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

Name R.K. STACHYRA JR.

Address 63135 OK RD

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name J. D. JR. & B. A. STATLER

Address 47940 STATLER RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

Name J. D. JR. & R. S. STATLER

Address C/O J. & S. STATLER RT. 2 BOX 292AA

City FAIRVIEW **State** WV **Zip** 26570

Surface X **Coal** **Noncoal**

Deed Parcel No. 14

Name J. D., S. V., & R. S. STATLER

Address RT #2 BOX 292-AA

City FAIRVIEW **State** WV **Zip** 26570

Surface X **Coal** **Noncoal**

Deed Parcel No. 16

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

Name D. E. WALLS

Address RT# 2 MCGEE ROAD

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 14

Name G. R. WALLS

Address 63121 ERWIN-HIGGINS RD.

City BELMONT **State** OH **Zip** 43718

Surface X **Coal** **Noncoal**

Deed Parcel No. 14

Name THE OHIO VALLEY COAL COMPANY

Address 56854 PLEASANT RIDGE ROAD

City ALLEDONIA **State** OH **Zip** 43902

Surface **Coal** NO. 8 X **Noncoal**

Deed Parcel No. ALL DEEDS SHOWN ON DEED PARCEL MAP

Name

Address

City **State** **Zip**

Surface **Coal** **Noncoal**

Deed Parcel No.

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C. (2) Provide 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 The Ohio Valley Coal Company

Address 56854 Pleasant Ridge Road

City Alledonia State Ohio Zip 43902

Surface X, Coal X, Noncoal _____

Name Consoldiated Rail Corporation

Address P. O. Box 8538 - 230

City Philadelphia State PA Zip 19171

Surface X, Coal _____, 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, _____ No. If "yes," submit Attachment 4. N/A No Permit Area

(6) Does the applicant hold lands, interests in lands, options, or pending bids on interests for lands which are contiguous to the property to be mined?
X Yes, _____ No. If "yes," provide a description of the lands. See Map - Future Application Areas

(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)(29), Ohio Administrative Code.

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ADDENDUM TO PAGE 8, PART 1, (C)(2)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Other leasehold interests:

Oglebay Norton Company
1100 Superior Avenue
Cleveland, Ohio 44144
Surface_____Coal__X__Noncoal_____

The North American Coal Royalty Corporation
1314 Colt Road, Suite 400
Dallas, TX 25240-5784
Surface_____Coal__X__Noncoal_____

Consolidation Coal Company
1800 Washington Road
Pittsburgh, PA 15214
Surface_____Coal__X__Noncoal_____

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

Type 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 _____, 19_____.

_____
Notary Public

D0360-6
ORIGINAL

C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 04/30/96

Expiration Date 06/30/11

Parties: From BOROUGH CO. to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 23 Lots

Parcel # Y1

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 21

Pending litigation_____yes ___X___no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

ORIGINAL D0360-6 JUN 2 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 2

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 18

Pending litigation_____yes __X__no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 1997.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

ORIGINAL

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C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 10

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 2

Pending litigation_____yes __X__no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

D0360-6

ORIGINAL JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 11

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 3

Pending litigation _____ yes ___X___ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE, 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

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ORIGINAL JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 12

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 13

Pending litigation_____yes __X__ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 1997.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

ORIGINAL

D0360-6

JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 40

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 8

Pending litigation _____ yes ____X____ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of June 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

ORIGINAL JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 13

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 15

Pending litigation_____yes __X__no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 1997.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

ORIGINAL JUN 27 1997

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(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.

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 34

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 19

Pending litigation_____yes ___X___no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE, 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

ORIGINAL JUN 2 7 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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.

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 35

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 12

Pending litigation_____yes __X__ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

JUN 27 1997

ORIGINAL D0360-6

C.(8)(b) Provide either of the following to allow for coal mining operations on 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.

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 39

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 9

Pending litigation_____yes ___X___no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

D0360-6

ORIGINAL JUN 2 - 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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.

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 37

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 11

Pending litigation _____ yes ___X___ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of June 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

ORIGINAL JUN 27 1997

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 19

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 4

Pending litigation_____yes __X__no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

D0360-6

ORIGINAL

JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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.

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 38

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 10

Pending litigation_____ yes __X__ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE, 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

ORIGINAL

D0360-6
JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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.

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 15

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 14

Pending litigation _____ yes ___X___ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

ORIGINAL

D0360-6

JUN 27 1997

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

(i) A copy of the documents, or
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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 18

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 17

Pending litigation_____yes ___X___no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

JUN 27 1997

ORIGINAL

C.(8)(b) Provide either of the following to allow for coal mining operations on 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

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 16

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 16

Pending litigation_____yes __X__ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

D0360-6

ORIGINAL JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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.

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 17

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 5

Pending litigation_____ yes __X__ no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke
Notary Public

D0360-6

ORIGINAL

JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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

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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11 Lots

Parcel # 14

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 20

Pending litigation_____yes __X__no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

ORIGINAL JUN 27 1997

C.(8)(b) Provide either of the following to allow for coal mining operations on 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. David L. Bartsch 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 WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 17 Lots

Parcel # 36

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 1

Pending litigation_____yes ___X___no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 1997.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

ORIGINAL JUN 27 1997

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

(i) A copy of the documents, or
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Type of Document WARRANTY DEED

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres

County Belmont Township Smith

Sections 11,17,23 Lots

Parcel # 41

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b), Item 6

Pending litigation_____yes __X__no.

David L. Bartsch 6-25-97
Signature of Affiant Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and suscribed in my presence this 25 day of JUNE 19 97.

STATE OF OHIO
NOTARY PUBLIC
CLAUDE L. LUKE
My Commission Expires Aug. 21, 2001

Claude L. Luke D0360-6
Notary Public

ORIGINAL JUN 2 7 1997

ADDENDUM TO PAGE 10, PART 1, C(1)(b)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

The following items describe the deed rights claimed by The Ohio Valley Coal Company for the Pittsburgh (No. 8) Coal Seam:

Item 1: Deed Rights to Tract 36

Mining Rights: Party of second part are to have 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, 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

Item 2: Deed Rights to Tract 10

Mining Rights: Party of the Second part are to have 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, 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 said party of the second party, his heirs and assigns or which may hereafter be acquired.

Item 3: Deed Rights to Tract 11

Mining Rights: Party of the second part are to have 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, 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

Item 4: Deed Rights to Tract 19

Mining Rights: Party of the second part are to have 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, draining and ventilating and carrying away said coal, (hereby waiving all surface damages or damages of any sort arising therefrom, of from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part his heirs and assigns or which may hereafter be acquired.

ORIGINAL D0360-6

ADDENDUM TO PAGE 10, PART 1, C(1)(b)
PAGE 2

Item 5: Deed Rights to Tract 17

Mining Rights: Parties of Second part are to have the 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, draining and ventilating and carrying away said coal, (hereby waiving all surface damages, arising from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired.

Item 6: Deed Rights to Tract 41

Mining Rights: Together with the free and uninterrupted right of way into, upon, and under the lands hereinbefore described in which said vein of coal is located 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, and the right and privilege of mining and removing through said described premises other coal belonging to or which may hereafter be acquired by the said Grantee, its successors and assigns.

Item 7: Mining Rights to Tract 33

Mining Rights: Party of Second part are to have 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, 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

Item 8: Mining Rights to Tract 40

Mining Rights: Party of Second part are to have 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, 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 said party of the second part, its successors and assigns, or which may hereafter be acquired.

D0360-6

ORIGINAL

Item 9: Mining Rights to Tract 39

Mining Rights: Together with the right to mine and remove the same from under said above described premises, also the right to transport and remove coal from other premises through and under the above described premises.

Item 10: Mining Rights to Tract 38

Mining Rights: Party of Second part are to have 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, 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 said party of the second part his heirs and assigns, or which may hereafter be acquired.

Item 11: Mining Rights to Tract 37

Mining Rights: Party of Second part are to have 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, 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

Item 12: Mining Rights to Tract 35

Mining Rights: Party of Second part are to have 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, 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 said party of the Second part his heirs and assigns, or which may hereafter be acquired.

Item 13: Mining Rights to Tract 12

Mining Rights: Party of Second part are to have 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, 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

ORIGINAL

D0360-6

TOVCC 04728

Item 14: Mining Rights to Tract 15

Mining Rights: Party of second part are to have 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, 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

Item 15: Mining Rights to Tract 13

Mining Rights: Party of second part are to have 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, 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

Item 16: Deed Rights to Tract 16

Mining Rights: Party of the second part are to have the free and uninterrupted right of way into, upon and under said land as such points and in such manner as may be proper and necessary for the purpose of digging, mining, 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 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 said party of the second part his heirs and assigns or which may hereafter be acquired.

Item 17: Deed Rights to Tract 18

Mining Rights: The Grantee shall have the free and uninterrupted right of way into and under said land 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 damage 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 the above described premises other coal belonging to Grantee, its successors and assigns, or which may hereafter be acquired.

D0360-6

ORIGINAL

Item 18: Deed Rights to Tract 2

Mining Rights: Party of second part are to have 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, draining and ventilating and carrying away said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part his heirs and assigns, or which may hereafter be acquired.

Item 19: Deed Rights to Tract 34

Mining Rights: Party of Second part are to have 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, 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 said party of the second part, his heirs and assigns, or which may hereafter be acquired.

Item 20: Deed Rights to Tract 14

Mining Rights: Party of Second part are to have 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, 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 said party of the second part his heirs and assigns, or which may hereafter be acquired.

Item 21: Deed Rights to Tract Y1

Mining Rights: Together with the full right to explore for, test, work, mine, produce, develop, clean, process, sell and remove any or all of the coal and coal seam gas incidental thereto in, on and underlying the Premises and other coal now or hereafter owned, leased or otherwise controlled by Lessee, by any underground mining method or machinery, whether now or hereafter known, including but not limited to the continuous mining process and longwall mining process; and the right of ingress, egress and regress to, from, over and across said Premises for the purpose of removing and transporting coal from within or without said Premises without additional charge; and the right to bring upon said Premises men, machinery, materials and equipment necessary, convenient or useful for the exploring, testing, mining and marketing of said coal by the methods hereunder authorized; and the right to construct, erect, use, maintain, repair, replace, move, remove, and relocate in or under the Premises roads, conveyor systems, machinery, railroad tracks, shops, power and communications lines and

other equipment and facilities; and the right to transport personnel, supplies, equipment, coal and other materials into, through and under said Premises; and the right to mine said coal without any requirement to provide any lateral or subjacent support to the Premises, or any liability to Lessor for any damage which may result either to the surface of, or any strata in, on and under said Premises or to any surface or underground water supplies or sources located thereon or therein or to any structures now on or hereafter constructed on said Premises; and all such other rights, powers and privileges as may be necessary, useful or incidental thereto, including without limitation the right to make and use openings and underground passages for any purposes, including but not limited to ventilation and drainage, and to disturb so much of the surface and subsurface of the Premises as may be useful or incidental in accordance with the mining methods adopted by Lessee.

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

OWNER NAME		CO.	TWP.	SEC	T-	,R-
R.G. & P.M.	ANDERSON	BELMONT	SMITH	17	T-6N	R-4W
C.G. III ETAL	BAKER	BELMONT	SMITH	17	T-6N	R-4W
J.C.	BATCHANOWICZ	BELMONT	SMITH	17	T-6N	R-4W
	BOROUGH COMPANY	BELMONT	SMITH	17, 23	T-6N	R-4W
H.K. SR. & J.J.	BOYD	BELMONT	SMITH	17	T-6N	R-4W
M.	BUMGARDENER	BELMONT	SMITH	11	T-6N	R-4W
CSX TRANSPORTATION	B&O RAILROAD (FORMERLY)	BELMONT	SMITH	11	T-6N	R-4W
C.K. & V.J.	CIMINI	BELMONT	SMITH	23	T-6N	R-4W
	COLUMBIA GAS TRANS. CO.	BELMONT	SMITH	11	T-6N	R-4W
	EAST OHIO GAS COMPANY	BELMONT	SMITH	11,17	T-6N	R-4W
M.G.	FEISLEY	BELMONT	SMITH	11,17	T-6N	R-4W
W.F. & M.J.	FOX	BELMONT	SMITH	11	T-6N	R-4W
A.P. II ETAL	FULTON	BELMONT	SMITH	11	T-6N	R-4W
A.P. II & P.	FULTON	BELMONT	SMITH	11	T-6N	R-4W
B.	FULTON	BELMONT	SMITH	11	T-6N	R-4W
C & B	FULTON	BELMONT	SMITH	17	T-6N	R-4W
C.L. & R.J.	FULTON	BELMONT	SMITH	11	T-6N	R-4W
C.W. & B.J.	FULTON	BELMONT	SMITH	11	T-6N	R-4W
K. J.	FULTON	BELMONT	SMITH	11	T-6N	R-4W
J.H. II	GOODMAN	BELMONT	SMITH	11, 17	T-6N	R-4W
G. & A.	JONES	BELMONT	SMITH	17	T-6N	R-4W
G.F. & A.M.	JONES	BELMONT	SMITH	17	T-6N	R-4W
G.T. & K.M.	JONES	BELMONT	SMITH	17	T-6N	R-4W
D.M.	KINDLER	BELMONT	SMITH	17	T-6N	R-4W
T.L.	KOVALY	BELMONT	SMITH	17	T-6N	R-4W
G.J.	LANCASTER	BELMONT	SMITH	17	T-6N	R-4W
C.E. & B.F.	MALONEY	BELMONT	SMITH	23	T-6N	R-4W
	MARIETTA COAL COMPANY	BELMONT	SMITH	17	T-6N	R-4W
C.A. & D.L.	MCGUIRE	BELMONT	SMITH	17	T-6N	R-4W
M.P.	MCMAHON	BELMONT	SMITH	11	T-6N	R-4W
E.E.	MILLER	BELMONT	SMITH	11	T-6N	R-4W
R.R.	PARISH	BELMONT	SMITH	17	T-6N	R-4W
R.L.	PHILLIPS	BELMONT	SMITH	17	T-6N	R-4W
O.C.	RUMSKEY	BELMONT	SMITH	11	T-6N	R-4W
J.L. ET AL.	SANDERS	BELMONT	SMITH	17	T-6N	R-4W
J.L. & C.L.	SANDERS	BELMONT	SMITH	17	T-6N	R-4W
M.H.	SARGUS	BELMONT	SMITH	11	T-6N	R-4W
R.J. & D.L.	SCHIMMEL	BELMONT	SMITH	17	T-6N	R-4W
A.L. & D.M.	SHUNK	BELMONT	SMITH	17	T-6N	R-4W
	SO. CENTRAL POWER CO.	BELMONT	SMITH	11,17	T-6N	R-4W
R.K. JR.	STACHYRA	BELMONT	SMITH	17	T-6N	R-4W
J.D. JR. & B.A.	STATLER	BELMONT	SMITH	17	T-6N	R-4W
J.D. JR. & R.S.	STATLER	BELMONT	SMITH	11	T-6N	R-4W
J.D. S.V. & R.S.	STATLER	BELMONT	SMITH	17	T-6N	R-4W
D.E.	WALLS	BELMONT	SMITH	11	T-6N	R-4W
G.R.	WALLS	BELMONT	SMITH	11	T-6N	R-4W

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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 places 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. <u>AREAS WHERE MINING IS PROHIBITED OR LIMITED-**Permit and Shadow Area**</u>

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. N/A

(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.

N/A

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F. PERMIT TERM AND EXTENT-**Permit and Underground Workings**

(1) Anticipated/actual date for:

(a) Starting mining operations 9/1/97

(b) Terminating mining operations N/A

(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 0 (Permit area)

(b) Total Acres 1361.2 (Underground Workings)

(4) Horizontal extent of underground workings over life of permit in acres:

(a) Full Coal Recovery 1226.2

(b) Room and Pillar 135 acres

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.

Recorder's Office
Belmont County Court House
Main Street
St. Clairsville, Ohio 43950

(2) In the space below, list the 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 S. Fourth Street
Martins Ferry, Ohio 43935

See Public Notice Addendum

D0360-6

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PROOF OF PUBLICATION

he State of Ohio
ounty of Belmont, ss:

The undersigned, being sworn, says that he or she is an employee of Eastern Ohio Newspapers, Inc., A Corporation, publisher of the Times Leader a newspaper published in Martins Ferry, Belmont County, Ohio, each day of the week except Saturday and of general circulation in said city and county; that it is a newspaper meeting the requirements of sections 7.12 and 5721.01 Ohio Revised Code as amended effective September 14, 1957; that affiant has custody of the records and files of said newspaper; and that the advertisement of which the annexed is a true copy, was published in said newspaper on each of the days in the month and year stated, as follows:

February 14, 21, 28
March 6 19 97
Audrey Blanco

Subscribed by Affiant and sworn to before me, this 6th day of March A.D. 19 97

Rebecca L Anderson
Notary Public

REBECCA L. ANDERSON
Notary Public, State of Ohio
My Commission Expires Nov. 25, 2001

Printer's Fees $ 113.92
Notary's Fees $

THE TIMES LEADER
Martins Ferry, Ohio
Bellaire, Ohio

PUBLIC NOTICE

The Ohio Valley Coal Company, 56854 Pleasant Ridge Road, Alledonia, Ohio 43902, has submitted an underground coal mining application designated as D-0360-6 to the Ohio Department of Natural Resources, Division of Mines and Reclamation. The proposed additional underground acreage for Permit D-0360 is located in Belmont County, Smith Township, Sections 11, 17, and 23. The area is located on the Armstrong Mills and St. Clairsville 7 1/2 minute USGS quadrangle map, approximately 1 1/2 miles northeast of Centerville, Ohio. The proposed underground workings encompass 1361.2 acres. Coal in this underground area will be removed using full and partial recovery methods.

This application is on file at the Belmont County Recorder's Office, located at the County Court House on Main Street in St. Clairsville for public viewing. Written comments or requests for an informal conference may be sent to the Division of Mines and Reclamation, 1855 Fountain Square Court, Columbus, Ohio 43224 within 30 days of the last date of publication of this notice.

T-Adv. Feb. 14, 21, 28, March 6

D0360-6

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TOVCC 04737

ADDENDUM TO PAGE 15, PART 1, G(2)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Public Notice

The Ohio Valley Coal Company, 56854 Pleasant Ridge Road, Alledonia, Ohio 43902, has submitted an underground coal mining application designated as D-0360-6 to the Ohio Department of Natural Resources, Division of Mines and Reclamation. The proposed additional underground acreage for Permit D-0360 is located in Belmont County, Smith Township, Sections 11, 17, and 23. The area is located on the Armstrong Mills and St. Clairsville 7 ½ minute USGS quadrangle map, approximately 1 ½ miles northeast of Centerville, Ohio. The proposed underground workings encompass 1361.2 acres. Coal in this underground area will be removed using full and partial recovery methods.

This application is on file at the Belmont County Recorder's Office, located at the County Court House on Main Street in St. Clairsville for public viewing. Written comments or requests for an informal conference may be sent to the Division of Mines and Reclamation, 1855 Fountain Square Court, Columbus, Ohio 43224 within thirty days of the last date of publication of this notice.

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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.

(2) Are there any known 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, __X__ No. If "yes," submit an addendum listing each property identified.

(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, Part 2, 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 Addendum to Page 16, Part 2, 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 Addendum to Page 16, Part 2, B (2)

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ADDENDUM TO PAGE 16, PART 2, A(4)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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 the SHPO and will be noted as such by OVCC. As mining progresses, OVCC will identify properties to be undermined and proper mitigative efforts will be implemented.

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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 Attachment 13's

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

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

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. McMahon 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 Attachments 14A, 14D and Hydrology Map.

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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;

See Addendum to Page 18, Part 2, E

(2) Whether adverse impacts may occur to the hydrologic balance; and

See Addendum to Page 18, Part 2, E

(3) The impact the proposed operation will have on:

(a) sediment yield from the disturbed area,

(b) flooding and stream flow alteration or diminution,

(c) ground water and surface water availability.

See Addendum to Page 18, Part 2, 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 Page 18, Page 2, F

(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 Page 18, Part 2, F

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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 1501:13-9-17 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. N/A No Permit Area

(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 _____

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)**

(1) 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 Page 21, Part 3, A (1)

(2) Indicate the anticipated annual and total production of coal from this proposed operation.

Annual 5.0 million Total 25 million

(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 PAGE 21, PART 3, A(1)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

MINING METHODS

This application area will be mined primarily 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 shows that the surface subsides approximately 60 to 65 percent of the seam thickness of about 64 inches. This mining method maximizes the recovery of the reserve by leaving coal only in the access entries (main and gate entries) and barrier pillars to protect the main entries.

In areas where longwall mining is not possible, eg., low cover areas (less than about 200 ft of cover), the coal may be mined using room and pillar methods, where only about 50 percent of the seam is extracted. This method involves driving entries and then rooms off the entries with a continuous miner. Roof bolts are drilled into the roof for support. The remaining coal also adds support for the overlying strata. No subsidence of the surface is anticipated from this mining method. This mining method maximizes the recovery of the reserve where longwall mining or other methods of mining that provide for planned subsidence cannot be used.

Full coal recovery (longwall mining) methods are planned for the entire application area, and it is our intention to determine the minimum amount of cover needed for full recovery mining. Therefore, longwall mining is projected for areas of low cover. The decision to mine using room and pillar methods will be made at some later date once experience is gained with mining low cover areas.

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A. (9) Will access to the underground workings be gained through a drift entry? _____ Yes, _____ 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.

N/A - No Permit Area

(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? _____ Yes, _____ No. If "no," provide the following demonstration: N/A - No Permit Area

(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 maintenance 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.

(b) overburden and topsoil handling and storage areas and structures.

N/A - No Permit Area

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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 paragraphs (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

(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 the completion of resoiling for each mining year.

N/A

(3) Provide a detailed timetable for the 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

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D. (6) (b) List the species and amounts per acre of seeds and seedlings to be used.

N/A

(c) Describe the methods to be used in planting and seeding.

N/A

(d) Describe the mulching techniques.

N/A

(7) Describe the soil testing plan for evaluation of the results of topsoil handling and reclamation procedures related to revegetation.

N/A

(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. See Addendum to Part 3, Page 25, D 8

(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

(10) Is the reclamation plan consistent with local physical, environmental, and climatological conditions?
_____ Yes, _____ No.

N/A

(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

(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 Page 25, Part 3, D(12)

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ADDENDUM TO PAGE 25, PART 3, D(12)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

PLAN FOR MINIMIZING TO THE EXTENT POSSIBLE AND USING THE BEST TECHNOLOGY CURRENTLY AVAILABLE DISTURBANCES AND ADVERSE IMPACTS OF THE CURRENT OPERATION ON FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES AND ACHIEVING ENHANCEMENT OF SUCH RESOURCES WHERE PRACTICAL

The proposed operation, longwall mining, minimizes to the extent possible and is the best technology currently available, impacts on fish, wildlife, and environmental values because it occurs in a planned, predictable and controlled manner. There are no impacts anticipated to fish, wildlife, and environmental values. Areas where longwall mining have occurred do not show any impacts on such resources. Areas of room and pillar mining will have no impacts to these resources due to its design to prevent subsidence.

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ADDENDUM TO PAGE ~~25~~ 23, PART 2, A(14)(a) AND PAGE ~~27~~ 25, PART 2, D(8)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Refuse from Area to be Mined

The refuse from the area to be mined will be disposed of according to the plans previously submitted and approved in the original submittal of Permit D-0360 (on file at the Division of Mines and Reclamation Office). In particular, see Addendum 20 and Appendix IV-9.

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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:

See Addendum to Page 26, Part 3E (1-3)

(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.

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.

See Addendum to Page 29, Part 3, F

(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 monitoring for NPDES?
_____ 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.

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ADDENDUM TO PAGE 26, PART 3, E(1-3)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

RECLAMATION PLAN - PROTECTION OF HYDROLOGIC BALANCE

The hydrologic balance is not 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 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. Surface water drainage and evaporation are not expected to be impacted by longwall mining. The monitoring data obtained for the ground and surface water sources over the longwall areas at the Powhatan No. 6 Mine indicate there will be no lasting deleterious effects of the longwall mining on water quality. 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 Page 18, Part 2, 19(F). 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 Powhatan No. 6 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 watersheds of this area, Captina and McMahon Creeks, are at the elevation of the mining for the application area at a distance of over 5 miles from the mine. Acid or toxic drainage is not expected to enter the waters of the State.

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G. DIVERSIONS 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 diversions to be constructed to achieve compliance with 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 diversions to be constructed to achieve compliance with 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.

_____ sedimentation pond(s) (submit Attachment 20)

_____ water impoundment(s) (submit Attachment 20)

_____ other (specify) _____

N/A - No Permit Area

(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 landowners 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 system 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 Page 28, Part 3, K(1)/Timing, Struc. Cont., 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, Struc. Cont., 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, Struc. Cont., and Parcel Map.

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K. (4) Submit as an addendum, for those areas mapped as room-and-pillar mining, the following information:

See Addendum to Page 29, Part 3, K(4)

(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 of 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 Page 29, Part 3, 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 height).

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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K. (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 Page 30, Part 3, 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 Page 30, Part 3, K(5)(c)

(d) **the anticipated effects of planned subsidence upon the structures identified in the subsidence control survey.**

See Addendum to Page 30, Part 3, K(5)(d)

(e) **the proposed measures to be taken to mitigate anticipated effects to structures.**

See Addendum to Page 30, Part 3, 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 Page 30, Part 3, K(5)(f)

(g) **the provisions for repair and/or compensation for damages to structures.**

See Addendum to Page 30, Part 3, 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 Page 30, Part 3, 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.

See Addendum to Page 30, Part 3, K(6)

(7) **Will planned subsidence operations be conducted within the angle of draw of transmission pipelines?**

__X__ Yes, _____ 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.

See Addendum to Page 30, Part 3, K(7)

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PART 4 FORMAT AND CONTENT

A. 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 applicant's name and indicate to what item the addendum applies. For example, "Addendum to Part 3, item K(2) Zebco Coal Company."

B. 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
Attachments, Addenda	D. Bartsch (OVCC)	N/A	Quality Environmental Services, Tra-Det, Inc.	Water Sampling Lab Analysis Field Analysis

(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).

C. 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)
Tim Jackson	Hydrogeologist	ODNR, Division of Water	Ground Water Inventory Report
		USGS	Water Resources Data

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D. APPLICATION FOR ABANDONED MINED LAND DIRECT NEGOTIATED CONTRACT (IF APPLICABLE)

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:

_____

_____

_____

_____

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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
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ADDENDUM TO ATTACHMENT 27A

HISTORIC INVENTORY REFERENCE LIST

REF. NO.	OWNER	APPROX. CONSTRUCTION DATE	APPROX. MODIFICATION DATE	TYPE
85	BOROUGH CO.	PRIOR TO 1902		FARMSTEAD
86	BARRETT	1893	1950'S AND 1970'S	FARMSTEAD
87	BOROUGH CO.	1850'S	LATE 1800'S	RUINS
88	PARISH	APPROX. 1900		HOUSE
89	SANDERS	1836	1993	FARMSTEAD
90	SHUNK	1948		HOUSE
91	WESPRIMI	LATE 1800'S		HOUSE
92	BATCHANOWICZ	1850'S	1910	HOUSE
93	MILLER	1905		HOUSE
94	FULTON	1932 OR 1933		HOUSE
95	FOX	1932	1970	FARMSTEAD
96	FOX	1913	1992	FARMSTEAD
97	RUMSKEY	APPROX. 1860'S		RUINS

NOTES: NO. 85 - KNOWN AS "SEARS HOUSE"
NO. 87 - KNOWN AS "LASH HOUSE"
NO. 91 - PART LOG CONSTRUCTION
NO. 94 - MOVED FROM WARNOCK IN 1938

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ADDENDUM TO PART 2, PAGE 16, B(1)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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, siltstone, shale, claystone, 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 Powhatan No. 6 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.

The rock strata of Belmont County typically form a gentle monocline that dips southeasterly at grades less than one percent (Figure 2) and in the application area is southward to southeasterly. The base

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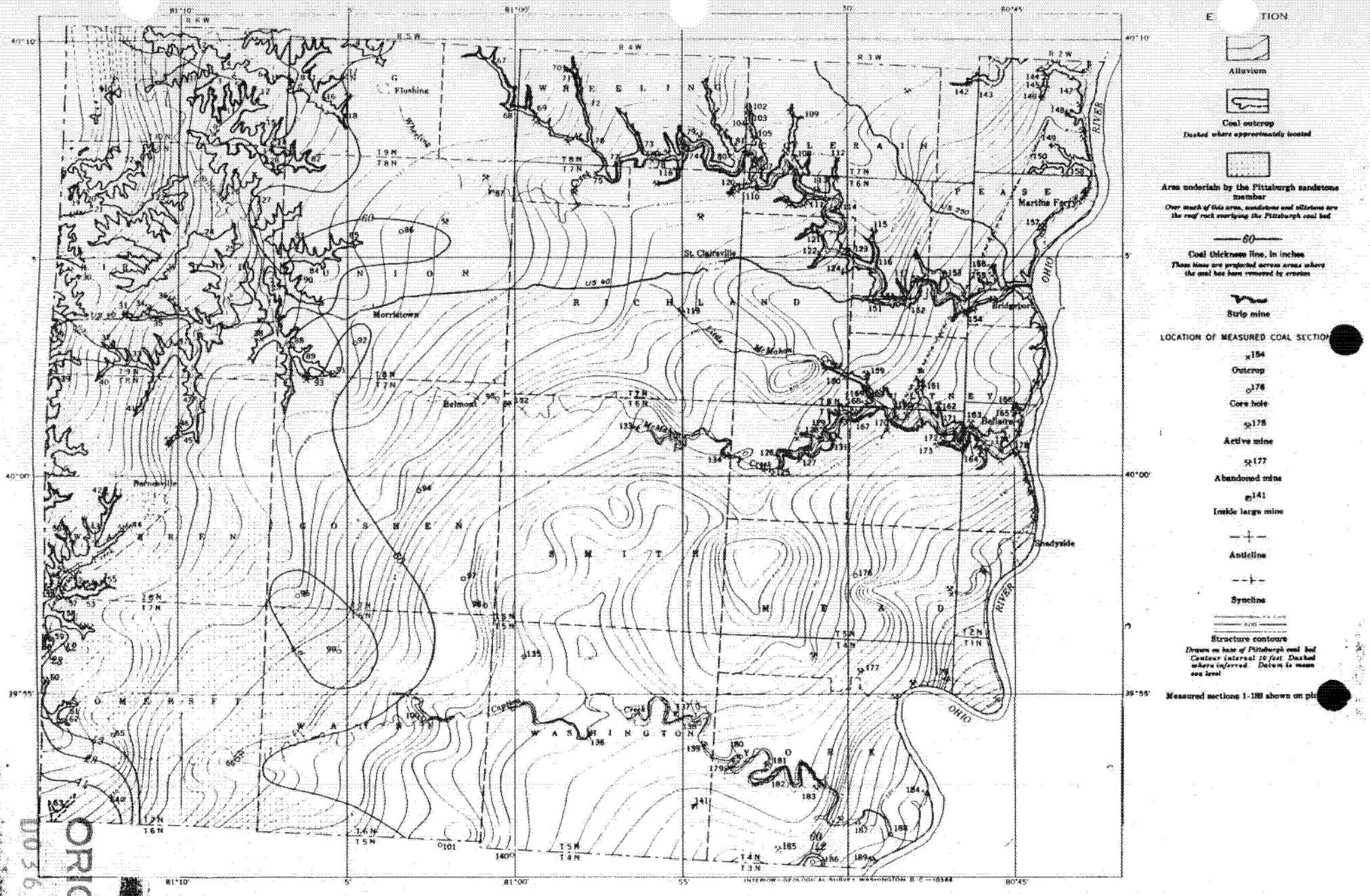

MAP OF THE PITTSBURGH (NO. 8) COAL BED SHOWING DISTRIBUTION AND THE STRUCTURE AND THICKNESS OF THE LOWER BENCH OF THE BED IN BELMONT COUNTY, OHIO

FIGURE 2

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elevation of the No. 8 seam ranges from approximately 765 ft. in the south of the application area to approximately 825 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 three miles east of the Powhatan No. 6 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 the Powhatan No. 6 Mine Reserve. 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 mine property. The graben is located to the south of the application area and is not expected to have an impact on the ground water flow in the area.

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. Locally, these effects may be seen as areas where incidental water pools in the mine. This water is generally only a nuisance and does not require pumping. Most of the water found underground at the No. 6 mine is man-made during the mining cycle from water sprays (used for dust supression) and cooling water for motors.

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ADDENDUM TO PAGE 16, B(2)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Geological Impact of Coal Removal Upon Ground Water

The areal and structural geology are not expected to change the occurrence, availability, movement, quantity and quality of surface and ground waters. The western portion of the application area is underlain by an east-plunging anticline, while the eastern protion of the application area is underlain by a southeast-plunging syncline. Neither structure is expected to have any impact on ground water occurrence before or after undermining by full recovery mining. In fact, the anticline projects through the current mining area of the No. 6 mine with no observable effects to date.

Furthermore, the coal removal is expected to impact the surface and ground water in the application and adjacent area. The impacts are described in the PHC and in the Addendum to Page 18 F(1).

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DIVISION OF MINES
AND RECLAMATION

D0360-6

ORIGINAL

OHIO Department of Natural Resources

George V. Voinovich • *Governor*
Donald C. Anderson • *Director*

October 22, 1996

Mr. David L. Bartsch, P.E.
Environmental Coordinator and Permit Administrator
The Ohio Valley Coal Company
56854 Pleasant Ridge Road
Alledonia, Ohio 43902

Dear Mr. Bartsch:

Enclosed is the approved test hole variance request for D-0360. The division will keep the one copy of the test hole variance material that you submitted. When you submit the application, please submit a complete copy of the test hole variance request packet. One correction that you need to make before submitting the packet with the application concerns the acid-base accounting for test holes N96-01, N96-02, N96-03, and N92-6. The signs for the $CaCO_3$ deficiency values for the coal and the stratum below the coal are reversed in all four test holes. I have made the correction on the copy that the Columbus office is retaining.

If you have any questions or need additional information, please feel free to contact me at (614) 265-6628.

Sincerely,

Mike Dillman

Mike Dillman, Geologist
Division of Mines and Reclamation

cc: Dave Nicklaus
Vanessa Tolliver
file

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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
DMR PERMIT NO. D-0360

TEST HOLE VARIANCE REQUEST
APPLICATION AREA D-0360-6

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Description of Regional Hydrology, Geology, and Water Bearing Zone
D-0360-6 Application Area

By

Burt A. Waite, P.G.

Topographic Setting

The Powhatan No. 6 Mine (DMR Permit No. D-0360) is located in Belmont County, which is situated 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. Topographic relief within the application area is approximately 460 ft. The elevation varies between 1349 ft in the western portion is the application area to 890 ft. in the northeastern portion , near McMahon Creek.

Williams Creek, located to the south of the application area, a tributary of McMahon Creek, and McMahon Creek are the dominant surface water features in this area. Both streams flow in an easterly direction, and headwaters from both streams occur within this area. McMahon Creek flows to the Ohio River, approximately 12 miles away.

Geologic Setting

The bedrock units that outcrop in the application area belong to the Dunkard Group, which is Upper Pennsylvania to Permian in age. The rocks consist of the interbedded sandstone, siltstone, shale, mudstone, claystone, fresh-to brackish-water limestone, and coal. The Monongahela Formation (Pennsylvania) 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 the Ohio Department of Natural resources, water below 250 ft beneath the stream bottoms is brackish.

Based on test hole data previously presented in applications to the DMR, plus those to be presented in this application, soft rocks constitute approximately 50 to 80 percent of the rock column. Soft rocks are defined as shale, mudstone, claystone, sandy shale, limey shale, and claystone. The relatively high percentage of soft rocks is significant as these units have very 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, are less susceptible to subsidence fracturing due to the mining and, when fractured, tend to close in response to lithostatic pressures or plug with fine-grained sediment and may contain clays that swell when wetted.

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In addition, there is a great horizontal and vertical **hydraulic properties** variability of the rock units. Rapid facies changes limit the horizontal continuity of the rock units. Horizontal facies changes and corresponding changes in hydrologic properties of the rocks tend to produce localized subsurface flow systems. In addition, laboratory studies of core samples from similar rocks indicate that vertical permeability is several orders of magnitude lower than horizontal permeability (Brown, et at., 1971). This condition again results in hydrologically localized flow systems that are not continuous across the application area.

The rocks in the application area are nearly horizontal with a dip of less than one degree to the southeast. Overburden thickness above the No. 8 Coal seam ranges from a low of about 90 ft. at the point where McMahon creek exits the northeast corner of the application area to nearly 550 ft. in the southwestern quadrant of the area.

General Hydrologic Setting

The source of all ground and surface water in the application area is precipitation. Upon reaching the land surface, water that is not part of the surface runoff or evapotranspiration infiltrates into the subsurface to become part of the ground water flow system or soil moisture. Shallow subsurface water is important to soil moisture and plant growth, **and supplies water to dug wells in the application area and surrounding areas.**

Secondary porosity and permeability is formed by fractures or parting in the rock mass. Most usable ground water in the application area occurs in secondary openings and the success of a water well in terms of yield potential is dependent upon the well penetrating a water-filled fracture zone that transmits enough water to the well bore to meet its intended use (Schmidt, et al., 1983; Waite, 1987). **Geologic rock units such as the Washington Cyclothem, the Waynesburg Cyclothem, the Sewickley Cyclothem and the Redstone Cyclothem produce water in usable quantities and are considered aquifers in the application area. However, most available ground water is found at relatively shallow depths in these rocks units and they are recognized as aquifers primarily where they occur within 100 feet of the land surface where secondary porosity and permeability is greatest.**

In addition, fractures tend to close at increasing depths due to the overlying lithostatic pressures, thereby limiting the effective depth of the ground water flow system (Stoner, 1983). This condition is evident throughout the Powhatan No. 6 Mine. The mine, in general, is very dry with even minor amounts of water inflow limited to the low cover areas (generally less than 200 ft.). As discussed above, the overburden thickness in the application area ranges from about 90 ft. to nearly 550 ft., with 90 ft. being located in the extreme northeastern portion of the area. In this

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area, **longwall mining is shown but** mining is expected to be limited to **partially recovery mining including** bleeder entries. Therefore, very little water inflow into the mine is expected. No pumping to remove water for the application area is expected.

Conclusions

The topography, geology, and the hydrology of the application area is essentially identical to the areas previously permitted at the Powhatan No. 6 Mine. The existing test holes in the application area show the same rock types as in test holes drilled in previously permitted areas, and the water bearing zones in the application area are expected to remain consistent with other areas of the mine. Two or three additional test holes are expected to confirm this belief, and should be adequate to further define the conditions within the application area.

References

Brown, R.L., Parizek, R.R., 1971, "Shallow Ground Water Flow Systems Beneath Strip and Deep Coal Mines at Two Sites," Clearfield, PA, The Pennsylvania State University, Special Report SR-84, 208 p.

Schmidt, R.D. and G.A. Hnell, 1983, "A Fracture Dewatering Approach to Controlling Ground Water Infiltration in Underground Coal Mines," Interim Report of U.S. Bureau of Mines, 55 p.

Siplivy, W.J., 1992, Probable Hydrologic Consequences, The Ohio Valley Coal Company Powhatan No. 6 Mine, Permit Application D-0360-2.

Stoner, T.D., 1983, "Probable Hydrologic Effects of Subsurface Mining," Ground Water Monitoring Review, Vol. 3, No. 1, pp. 128-137.

Waite, B.A., 1987, Probable Hydrologic Consequences, The Ohio Valley Coal Company Powhatan No. 6 Mine, Permit Application R-0360-1.

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APPLICATION D-0360-6
WELL DATA SHOWING
SATURATED ZONES

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SITE ID	MON DATE	FLOW	SWL	SWL ELEV.	LAST RAIN	SURF. ELEV	BWELLELEV
DW-324	11/14/95		1	999	11/14/95	1000	991
DW-324	12/18/95		2	998	12/18/95	1000	991
DW-324	01/03/96		2	998	01/03/96	1000	991
DW-324	02/03/96		3	997	02/01/96	1000	991
DW-324	03/04/96		2	998	03/03/96	1000	991
DW-324	04/18/96		2	998	04/18/96	1000	991
W-325	11/14/95		30	945	11/14/95	975	846
W-325	12/15/95		40	935	12/14/95	975	846
W-325	01/18/96		28	947	01/16/96	975	846
W-325	02/06/96		32	943	02/01/96	975	846
W-325	03/14/96		31	944	03/07/96	975	846
W-325	04/23/96		30	945	04/23/96	975	846
W-326	11/17/95	BURIED		910	11/16/95	910	892
W-326	12/18/95	BURIED		910	12/18/95	910	892
W-326	01/26/96	BURIED		910	01/26/96	910	892
W-326	02/06/96	BURIED		910	02/01/96	910	892
W-326	03/18/96	BURIED		910	03/17/96	910	892
W-326	04/24/96	BURIED		910	04/23/96	910	892
W-327	11/17/95		8	902	11/16/95	910	910
W-327	12/18/95		6	904	12/18/95	910	910
W-327	01/26/96		6	904	01/26/96	910	910
W-327	02/06/96		7	903	02/01/96	910	910
W-327	03/18/96		7	903	03/17/96	910	910
W-327	04/24/96		7	903	04/23/96	910	910
W-328	11/17/95	BURIED		1218	11/16/95	1218	1118
W-328	12/26/95	BURIED		1218	12/26/95	1218	1118
W-328	01/30/96	BURIED		1218	01/30/96	1218	1118
W-328	02/28/96	BURIED		1218	02/28/96	1218	1118
W-328	03/27/96	BURIED		1218	03/21/96	1218	1118
W-328	04/24/96	BURIED		1218	04/23/96	1218	1118
W-329	11/17/95	BURIED		955	11/16/95	955	955
W-329	12/26/95	BURIED		955	12/26/95	955	955
W-329	01/03/96	BURIED		955	01/03/96	955	955
W-329	02/12/96	BURIED		955	02/12/96	955	955
W-329	03/04/96	BURIED		955	03/03/96	955	955
W-329	04/22/96	BURIED		955	04/18/96	955	955
DW-330	11/17/95		4	956	11/16/95	960	952
DW-330	12/26/95		5	955	12/26/95	960	952
DW-330	01/03/96		4	956	01/03/96	960	952
DW-330	02/11/96		4	956	02/11/96	960	952
DW-330	03/04/96		4	956	03/03/96	960	952
DW-330	04/15/96		5	955	04/15/96	960	952
DW-331	11/20/95		7	928	11/20/95	935	924
DW-331	12/15/95		9	926	12/14/95	935	924
DW-331	01/03/96		7	928	01/03/96	935	924
DW-331	02/05/96		9	926	02/01/96	935	924
DW-331	03/04/96		8	927	03/03/96	935	924
DW-331	04/15/96		8	927	04/15/96	935	924
W-332	11/20/95		21	894	11/20/95	915	894

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SITE ID	MON DATE	FLOW	SWL	SWL ELEV.	LAST DATE	SURF. ELEV	BWELLELEV
W-332	12/15/95		21	894	12/15/95	915	894
W-332	01/29/96		21	894	01/27/96	915	894
W-332	02/27/96		21	894	02/27/96	915	894
W-332	03/25/96		21	894	03/21/96	915	894
W-332	04/24/96		21	894	04/23/96	915	894
W-333	11/20/95		4	904	11/20/95	908	885
W-333	12/22/95		4	904	12/22/95	908	885
W-333	01/29/96		3	905	01/27/96	908	885
W-333	02/27/96		3	905	02/27/96	908	885
W-333	03/25/96		4	904	03/21/96	908	885
W-333	04/24/96		4	904	04/23/96	908	885
W-334	11/20/95		6	907	11/20/95	913	901
W-334	12/22/95		6	907	12/22/95	913	901
W-334	01/29/96		5	908	01/27/96	913	901
W-334	02/27/96		5	908	02/27/96	913	901
W-334	03/25/96		6	907	03/21/96	913	901
W-334	04/24/96		7	906	04/23/96	913	901
W-335	11/20/95		9	909	11/20/95	918	893
W-335	12/22/95		15	903	12/22/95	918	893
W-335	01/29/96		10	908	01/27/96	918	893
W-335	02/27/96		9	909	02/27/96	918	893
W-335	03/25/96		10	908	03/21/96	918	893
W-335	04/24/96		10	908	04/23/96	918	893
W-336	11/20/95		14	904	11/20/95	918	888
W-336	12/22/95		20	898	12/22/95	918	888
W-336	01/29/96		13	905	01/27/96	918	888
W-336	02/27/96		14	904	02/27/96	918	888
W-336	03/25/96		14	904	03/21/96	918	888
W-336	04/24/96		14	904	04/23/96	918	888
W-337	11/20/95		22	896	11/20/95	918	888
W-337	12/22/95		26	892	12/22/95	918	888
W-337	01/29/96		16	902	01/27/96	918	888
W-337	02/27/96		20	898	02/27/96	918	888
W-337	03/25/96		22	896	03/21/96	918	888
W-337	04/24/96		18	900	04/23/96	918	888
WL-338	11/20/95		9	881	11/20/95	890	865
WL-338	12/26/95		9	881	12/26/95	890	865
WL-338	01/23/96		9	881	01/19/96	890	865
WL-338	02/06/96		9	881	02/01/96	890	865
WL-338	03/26/96		9	881	03/21/96	890	865
WL-338	04/22/96		9	881	04/18/96	890	865
W-339	11/21/95		16	939	11/20/95	955	927
W-339	12/18/95		16	939	12/18/95	955	927
W-339	01/03/96		15	940	01/03/96	955	927
W-339	02/05/96		18	937	02/01/96	955	927
W-339	03/04/96		15	940	03/03/96	955	927
W-339	04/15/96		16	939	04/15/96	955	927
W-340	11/21/95		8	912	11/20/95	920	900
W-340	12/26/95		9	911	12/26/95	920	900

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SITE ID	MON DATE	FLOW	SWL	SWL ELEV.	LAST RAIN	SURF. ELEV	BWELLELEV
W-340	01/23/96		8	912	01/[illegible]/96	920	900
W-340	02/21/96		8	912	02/21/96	920	900
W-340	03/22/96		18	902	03/21/96	920	900
W-340	04/22/96		8	912	04/18/96	920	900
W-341	11/21/95		28	892	11/20/95	920	872
W-341	12/26/95		27	893	12/26/95	920	872
W-341	01/23/96		27	893	01/19/96	920	872
W-341	02/21/96		28	892	02/21/96	920	872
W-341	03/22/96		28	892	03/21/96	920	872
W-341	04/22/96		29	891	04/18/96	920	872
W-342	11/21/95		6	879	11/20/95	885	843
W-342	12/22/95	NA		885	12/22/95	885	843
W-342	01/04/96	NA		885	01/04/96	885	843
W-342	02/14/96	N/A		885	02/14/96	885	843
W-342	03/22/96	N/A		885	03/21/96	885	843
W-342	04/22/96	N/A		885	04/18/96	885	843
W-343	11/22/95		82	1163	11/20/95	1245	1137
W-343	12/26/95		81	1164	12/26/95	1245	1137
W-343	01/26/96		80	1165	01/26/96	1245	1137
W-343	02/12/96		79	1166	02/12/96	1245	1137
W-343	03/26/96		80	1165	03/21/96	1245	1137
W-343	04/25/96		77	1168	04/23/96	1245	1137
W-344	11/22/95		22	1163	11/20/95	1185	1131
W-344	12/26/95		21	1164	12/26/95	1185	1131
W-344	01/26/96		20	1165	01/26/96	1185	1131
W-344	02/12/96		21	1164	02/12/96	1185	1131
W-344	03/26/96		21	1164	03/21/96	1185	1131
W-344	04/25/96		19	1166	04/23/96	1185	1131
W-345	11/22/95		31	1239	11/20/95	1270	1184
W-345	12/18/95		33	1237	12/18/95	1270	1184
W-345	01/26/96		30	1240	01/26/96	1270	1184
W-345	02/05/96		32	1238	02/01/96	1270	1184
W-345	03/14/96		30	1240	03/07/96	1270	1184
W-345	04/18/96		31	1239	04/18/96	1270	1184
W-346	11/24/95		9	921	11/20/95	930	915
W-346	12/15/95		11	919	12/14/95	930	915
W-346	01/18/96		8	922	01/16/96	930	915
W-346	02/05/96		12	918	02/01/96	930	915
W-346	03/14/96		11	919	03/07/96	930	915
W-346	04/15/96		10	920	04/15/96	930	915
W-347	11/24/95		113	1137	11/20/95	1250	1120
W-347	12/15/95		83	1167	12/14/95	1250	1120
W-347	01/23/96		88	1162	01/19/96	1250	1120
W-347	02/15/96		105	1145	02/14/96	1250	1120
W-347	03/19/96		110	1140	03/19/96	1250	1120
W-347	04/19/96		110	1140	04/18/96	1250	1120
WL-348	11/29/95		113	1137	11/28/95	1250	1130
WL-348	12/18/95		99	1151	12/18/95	1250	1130
WL-348	01/26/96		95	1155	01/26/96	1250	1130

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WL-348	02/16/96		93	1157	02/14/96	1250	1130
WL-348	03/19/96		95	1155	03/19/96	1250	1130
WL-348	04/19/96		100	1150	04/18/96	1250	1130
WL-349	11/24/95		83	1122	11/20/95	1205	1100
WL-349	12/15/95		86	1119	12/14/95	1205	1100
WL-349	01/23/96		82	1123	01/19/96	1205	1100
WL-349	02/15/96		82	1123	02/14/96	1205	1100
WL-349	03/19/96		79	1126	03/19/96	1205	1100
WL-349	04/18/96		80	1125	04/18/96	1205	1100
W-350	11/24/95		74	1144	11/20/95	1218	1118
W-350	12/15/95		85	1133	12/14/95	1218	1118
W-350	01/23/96		78	1140	01/19/96	1218	1118
W-350	02/15/96		74	1144	02/14/96	1218	1118
W-350	03/18/96		75	1143	03/17/96	1218	1118
W-350	04/19/96		74	1144	04/18/96	1218	1118
WL-351	11/24/95		31	1194	11/20/95	1225	1152
WL-351	12/15/95		33	1192	12/14/95	1225	1152
WL-351	01/23/96		22	1203	01/19/96	1225	1152
WL-351	02/15/96		25	1200	02/14/96	1225	1152
WL-351	03/18/96		24	1201	03/17/96	1225	1152
WL-351	04/18/96		26	1199	04/18/96	1225	1152
W-352	11/24/95	BURIED		1160	11/20/95	1160	1060
W-352	12/28/95	BURIED		1160	12/28/95	1160	1060
W-352	01/26/96	BURIED		1160	01/26/96	1160	1060
W-352	02/28/96	BURIED		1160	02/28/96	1160	1060
W-352	03/26/96	BURIED		1160	03/21/96	1160	1060
W-352	04/24/96	BURIED		1160	04/23/96	1160	1060
W-353	11/24/95		74	1136	11/20/95	1210	1125
W-353	12/26/95		73	1137	12/26/95	1210	1125
W-353	01/26/96		72	1138	01/26/96	1210	1125
W-353	02/28/96		74	1136	02/28/96	1210	1125
W-353	03/27/96		75	1135	03/21/96	1210	1125
W-353	04/24/96		72	1138	04/23/96	1210	1125
DW-354	11/25/95		19	916	11/20/95	935	913
DW-354	12/16/95		18	917	12/16/95	935	913
DW-354	01/24/96		18	917	01/24/96	935	913
DW-354	02/06/96		19	916	02/01/96	935	913
DW-354	03/14/96		19	916	03/07/96	935	913
DW-354	04/23/96		19	916	04/23/96	935	913
WL-355	11/25/95	SEALED		970	11/20/95	970	915
WL-355	12/27/95	SEALED		970	12/27/95	970	915
WL-355	01/18/96	SEALED		970	01/16/96	970	915
WL-355	02/06/96	SEALED		970	02/01/96	970	915
WL-355	03/05/96	SEALED		970	03/05/96	970	915
WL-355	04/23/96	SEALED		970	04/23/96	970	915
DW-356	11/28/95		8	1092	11/28/95	1100	1088
DW-356	12/15/95		9	1091	12/14/95	1100	1088
DW-356	01/18/96		7	1093	01/16/96	1100	1088
DW-356	02/05/96		8	1092	02/01/96	1100	1088

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SITE ID	MON DATE	FLOW	SWL	SWL ELEV.	LAST RAIN	SURF. ELEV	BWELLELEV
DW-356	03/18/96		7	1093	03/17/96	1100	1088
DW-356	04/23/96		8	1092	04/23/96	1100	1088
W-357	11/28/95		33	967	11/28/95	1000	962
W-357	12/15/95		33	967	12/14/95	1000	962
W-357	01/18/96		32	968	01/16/96	1000	962
W-357	02/05/96		33	967	02/01/96	1000	962
W-357	03/14/96		33	967	03/07/96	1000	962
W-357	04/23/96		31	969	04/23/96	1000	962
W-358	11/28/95		31	1194	11/28/95	1225	1190
W-358	12/27/95		33	1192	12/27/95	1225	1190
W-358	01/26/96		30	1195	01/26/96	1225	1190
W-358	02/16/96		26	1199	02/14/96	1225	1190
W-358	03/18/96		27	1198	03/17/96	1225	1190
W-358	04/18/96		24	1201	04/18/96	1225	1190
W-359	11/29/95		14	1104	11/28/95	1118	1100
W-359	12/26/95		14	1104	12/26/95	1118	1100
W-359	01/29/96		13	1105	01/27/96	1118	1100
W-359	02/09/96		13	1105	02/08/96	1118	1100
W-359	03/26/96		10	1108	03/21/96	1118	1100
W-359	04/19/96		5	1113	04/18/96	1118	1100
W-360	11/30/95		59	899	11/28/95	958	891
W-360	12/28/95		46	912	12/28/95	958	891
W-360	01/24/96		43	915	01/24/96	958	891
W-360	02/06/96		43	915	02/01/96	958	891
W-360	03/14/96		55	903	03/07/96	958	891
W-360	04/23/96		56	902	04/23/96	958	891
W-361	11/30/95		100	870	11/28/95	970	868
W-361	12/28/95		99	871	12/28/95	970	868
W-361	01/24/96		55	915	01/24/96	970	868
W-361	02/06/96		59	911	02/01/96	970	868
W-361	03/14/96		65	905	03/07/96	970	868
W-361	04/23/96		75	895	04/23/96	970	868
DW-362	11/30/95		7	993	11/28/95	1000	989
DW-362	12/15/95		7	993	12/14/95	1000	989
DW-362	01/18/96		6	994	01/16/96	1000	989
DW-362	02/05/96		7	993	02/01/96	1000	989
DW-362	03/18/96		7	993	03/17/96	1000	989
DW-362	04/23/96		7	993	04/23/96	1000	989
W-363	11/30/95		96	999	11/28/95	1095	965
W-363	12/18/95		95	1000	12/18/95	1095	965
W-363	01/24/96		94	1001	01/24/96	1095	965
W-363	02/27/96		95	1000	02/27/96	1095	965
W-363	03/14/96		94	1001	03/07/96	1095	965
W-363	04/18/96		95	1000	04/18/96	1095	965
W-364	11/30/95		51	1187	11/28/95	1238	1148
W-364	12/28/95		50	1188	12/28/95	1238	1148
W-364	01/26/96		48	1190	01/26/96	1238	1148
W-364	02/21/96		50	1188	02/21/96	1238	1148
W-364	03/18/96		49	1189	03/17/96	1238	1148

ORIGINAL
AUG 4 1997
D0360-6

TOVCC 04777

SITE ID	MON DATE	FLOW	SWL	SWL ELEV.	LAST RAIN	SURF. ELEV	BWELLELEV
W-364	04/19/96		51	1187	04/18/96	1238	1148
W-365	11/30/95		61	1179	11/28/95	1240	1140
W-365	12/29/95		60	1180	12/29/95	1240	1140
W-365	01/26/96		51	1189	01/26/96	1240	1140
W-365	02/23/96		57	1183	02/21/96	1240	1140
W-365	03/29/96		60	1180	03/28/96	1240	1140
W-365	04/26/96		56	1184	04/26/96	1240	1140
W-366	04/25/96		26	1034	04/23/96	1060	1003
W-366	05/29/96		23	1037	05/29/96	1060	1003
W-366	06/26/96		23	1037	06/24/96	1060	1003
W-366	07/26/96		23	1037	07/24/96	1060	1003
W-366	08/20/96		26	1034	08/20/96	1060	1003
W-366	09/12/96		25	1035	09/12/96	1060	1003
W-367	04/26/96		38	1160	04/26/96	1198	1121
W-367	05/29/96		40	1158	05/29/96	1198	1121
W-367	06/26/96		37	1161	06/24/96	1198	1121
W-367	07/26/96		40	1158	07/24/96	1198	1121
W-367	08/19/96		45	1153	08/15/96	1198	1121
W-367	09/13/96		48	1150	09/13/96	1198	1121
W-368	04/26/96		45	1140	04/26/96	1185	1100
W-368	05/29/96		47	1138	05/29/96	1185	1100
W-368	06/26/96		45	1140	06/24/96	1185	1100
W-368	07/26/96		46	1139	07/24/96	1185	1100
W-368	08/19/96		65	1120	08/15/96	1185	1100
W-368	09/13/96		68	1117	09/13/96	1185	1100

D0360-6

ORIGINAL

AUG 4 1997

ADDENDUM TO PAGE 17, C
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

GROUNDWATER INFORMATION

Naturally occurring groundwater in this area resides primarily in consolidated (rock) aquifers that are partially or wholly confined and lie within the geologic interval above the Pittsburgh No. 8 Coal.

The rock aquifers are primarily sandstones, limestones and coals, but may also include shales, claystones, and siltstones. All units transmit water primarily by secondary porosity and permeability (joints and other fractures, bedding partings). In general, primary permeabilities are low to very low for these materials. Larger openings in the rock strata saturated zones may be identified by limonitic (iron) stained or alkaline stained rocks in the test holes. Ohio Valley has identified five saturated zones (aquifers) and related them to their distance above the No. 8 (Pittsburgh) coal seam (see Attachment 14B). One zone is an unconsolidated aquifer located primarily along McMahon Creek. The other zones are consolidated with the saturated zones for each aquifer located within approximately 100 ft of the surface. The saturated zone is recharged through infiltration and percolation at outcrop zones and by vertical flows through discontinuities and locally permeable overlying strata. The stratigraphy identified in the Geology Description section shows numerous lithologic units that are probably capable of transmitting water. However, confining pressures tend to keep lower strata rock secondary openings closed or "tight" so that useful aquifers tend to lie close to the ground surface. Wells penetrating near surface rock aquifers typically exhibit yields of less than five gallons per minute and according to James M. Raab of the Ohio Division of Water, Ground-Water Resources Section, long term yields rarely exceed three gallons per minute. The secondary openings in consolidated aquifers are generally larger in valleys, and well yield in consolidated aquifers tends to be higher in the valleys than on the ridge tops.

Numerous aquicludes comprised of claystones, mudstones, underclays, limestones with clay lenses, and some shales and siltstones are interbedded with the more permeable water bearing units. These less permeable strata strongly influence horizontal and vertical water movements. A portion of the springs flowing from valley walls below the ridgelines probably originate in the saturated zone and many can probably be identified as adjacent to (usually above) the less permeable strata.

Groundwater quality data obtained from these rock aquifer springs and the wells generally indicate pH ranges from 6.1 to 9.0, alkalinities in excess of acidities, high hardness, and low metals concentrations.

Wells and springs located within the application area are identified on the Attachment 14 forms included with this application. Their locations are shown on the Application Map.

ORIGINAL
D0360-6
AUG 4 1997

OHIO Department Natural Resources

George V. Voinovich • *Governor*
Donald C. Anderson • *Director*

DATE February 4, 1997

ANALYSIS OF EXISTING GROUND WATER FILE DATA

PREPARED BY: Tim Jackson TJ , HYDROGEOLOGIST

OPERATOR: The Ohio Valley Coal Company

COUNTY: Belmont

TOWNSHIP: Smith
SECTION (S): 11, 17 and 23
NUMBER OF WATER WELL LOGS WITHIN 1,000 FOOT RADIUS OF SITE (COPIES ATTACHED) 8 : FIELD LOCATED: 15

GENERAL DESCRIPTION OF LOCAL HYDROLOGY:
(USE ADDITIONAL SHEET IF NECESSARY)

Limited, and often inadequate, supplies of ground water are obtained from thin beds of sandstone, shale and limestone. According to the attached well logs, well depths range from 25 to 124 feet with yields that range from 1 to 20 gallons per minute.

AREAS OF PARTICULAR CONCERN:
(USE ADDITIONAL SHEET IF NECESSARY

Mining the Pittsburgh #8 coal seam at elevations from 765ft to 830ft M.S.L. could impact wells in the area. Longwall mining with total extraction could cause subsidence of the overlying cover, this subsidence can significantly change natural ground water flow through the local aquifer. Any well within the hydrologic boundary should be located and monitored before, during and after mining operations.

D0360-6

ORIGINAL

January 17, 1997

Division of Ground Water Resources
Fountain Square
Columbus, Ohio 43224

Dear Sirs:

The Ohio Valley Coal Company is planning to submit an application for additional underground acreage in Smith Township, Sections 11, 17, and 23 in Belmont County, Ohio. Enclosed is a map showing the northern part of the Armstrong Mills, Ohio and the southern portion of the St. Clairsville, Ohio USGS 7 ½ minute quadrangle maps. The Permit and Hydrologic boundaries are shown. The Pittsburgh (No. 8) seam will be mined using the longwall method of mining.

In this area, the coal ranges from an elevation of approximately 765 ft to 830 ft, msl. Copies of the well logs from this area are included, with a copy of the index map from your office that I obtained when I was there recently. Please prepare and send me a report on the impacts to the wells in this area that I can include in our application. We need this information as soon as possible due to changes in our mining plans. We would like to submit this application before the end of January. If I can be of any assistance, please call me.

Sincerely,
THE OHIO VALLEY COAL COMPANY

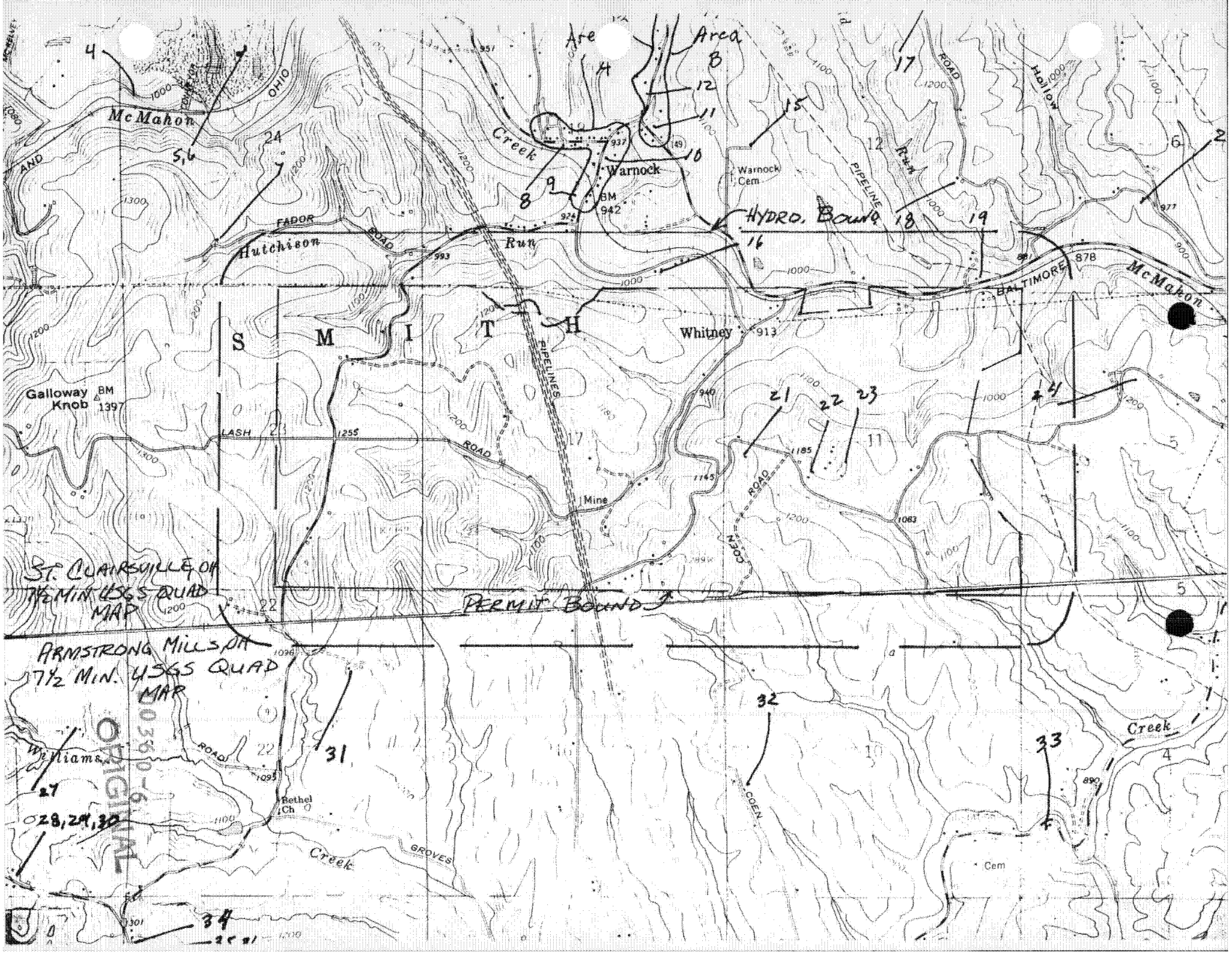
David L. Bartsch

David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator

D0360-6

ORIGINAL

56854 PLEASANT RIDGE ROAD • ALLEDONIA OHIO 43902 • (614) 926-1351 • FAX (614) 926-1615



TOVCC 047882

WELL LOG AND DRILLING REPORT

ORIGINAL

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

No. 185216

County BELMONT Township SMITH Section of Township

Owner JOHN DELANEY Address BELMONT OHIO RT

Location of property 4 MI NORTH OF ST RT 147 ON ST. RT #9

CONSTRUCTION DETAILS

Casing diameter 8 1/4 Length of casing 20

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion SEPT 26 1956

BAILING OR PUMPING TEST

Pumping rate COULD NOT TOWER G.P.M. Duration of test hrs.

Drawdown ft. Date

Developed capacity

Static level—depth to water ft.

Pump installed by

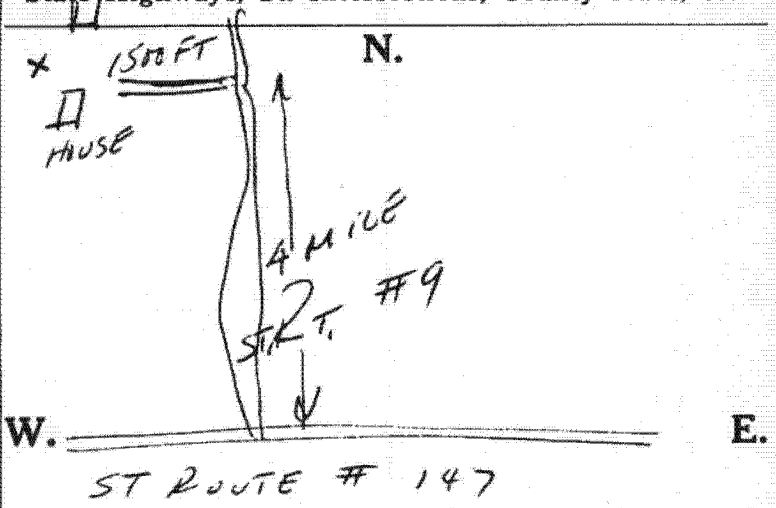
WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
CLAY	0 Feet	15 Ft.
SANDSTONE	15	18
CLAY	18	20
SHALE	20	28
SANDSTONE	28	37
SLATE	37	43
SANDSTONE	43	46
SLATE	46	51
COAL	51	52
SLATE	52	58
LIME	58	61
SLATE	61	65
SHALE	65	70
SLATE	70	71

RECEIVED

SKETCH SHOWING LOCATION

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



S.

See reverse side for instructions

Drilling Firm [redacted] DRILLING Co. Date SEPT 28 1956

Address [redacted] Signed [signature]

ORIGINAL

D0360-6

31

TOVCC 04783

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

No. 404719

County BELMONT Township SMITH Section of Township 18

Owner DANIEL W. CASE Address R.#2 BELMONT, OHIO

Location of property 1 M. S. E. WARNOCK ON TWP RD # 251

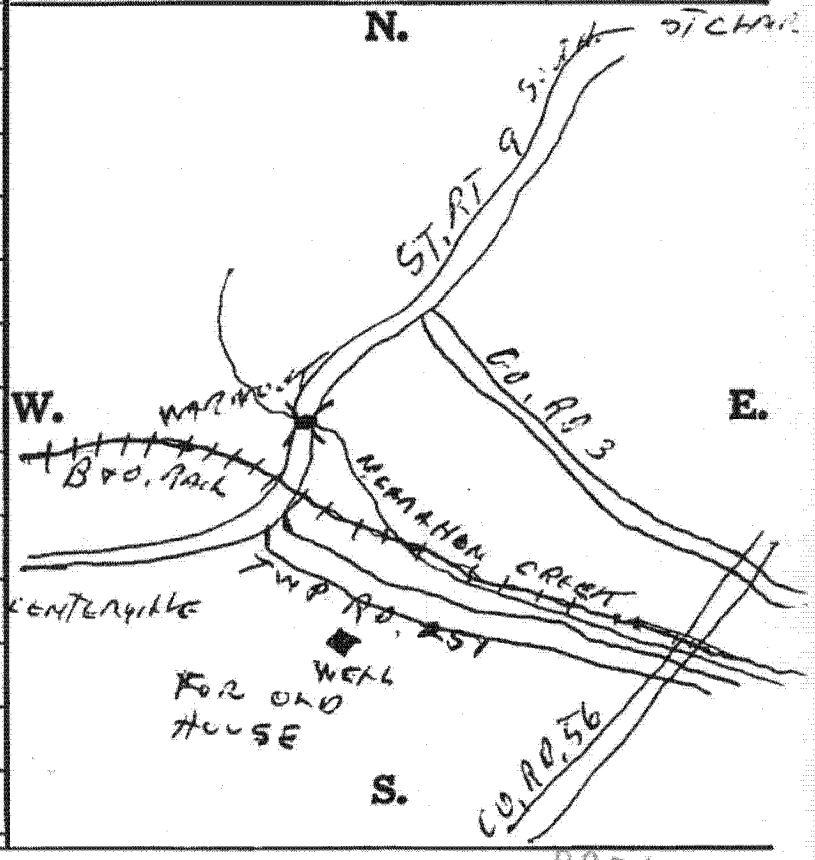
CONSTRUCTION DETAILS (120' 10" Hole)	BAILING OR PUMPING TEST (Specify one by circling)
Casing diameter 8 Length of casing 22	Test Rate 6 G.P.M. Duration of test ____ hrs.
Type of screen — Length of screen —	Drawdown — ft. Date —
Type of pump 1/2 H.P. SUBMERSIBLE	Static level-depth to water 70 ft.
Capacity of pump 8 G.P.M.	Quality (clear, cloudy, taste, odor) CLEAR,
Depth of pump setting 115	SLIGHT CO2 GAS
Date of completion 11-15-75	Pump installed by DUNCAN DRILLING

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
TOPSOIL	0 Feet	4 Ft.
BROWN SANDSTONE	4	8
LIMESTONE BUNDERS	8	10
SANDSTONE	10	13
LIMESTONE	13	19
SHALE	19	23
LIMESTONE	23	28
SHALE	28	32
LIMESTONE	32	40
SHALE	40	45
LIMESTONE	45	48
SHALE	48	52
LIMESTONE	52	63
LIMESTONE	63	66
GRAY SHALE	66	69
~~GRAY SHALE~~ LIMESTONE	69	82
BLUE CLAY	82	83
LIMESTONE	83	90
SHALE	90	93
COAL	93	97
LIMESTONE	97	99
SHALE	99	107
LIMESTONE	107	117
LIMESTONE (BUT)	117	120

SKETCH SHOWING LOCATION

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



Drilling Firm DUNCAN DRILLING Date 11-17-75

Address 17 GLENWOOD RD Signed [signature]

D0360-A

ORIGINAL

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

16

TOVCC 04784

WE LOG AND DRILLING RPORT

ORIGINAL

NO CARBON PAPER NECESSARY– SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

498493

COUNTY Belmont TOWNSHIP Smith SECTION OF TOWNSHIP 12

OWNER Marvin Baumgardner ADDRESS R#2, Belmont, Ohio

LOCATION OF PROPERTY County Rd #3 1.8 miles off CR. #5

CONSTRUCTION DETAILS

Casing diameter 6" Length of casing 14'

Type of screen NO Length of screen

Type of pump NO

Capacity of pump

Depth of pump setting

Date of completion

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 100 gal per hr. gpm Duration of test 24 hrs

Drawdown 23' ft Date 7/11/77

Static level (depth to water) ft

Quality (clear, cloudy, taste, odor) clear

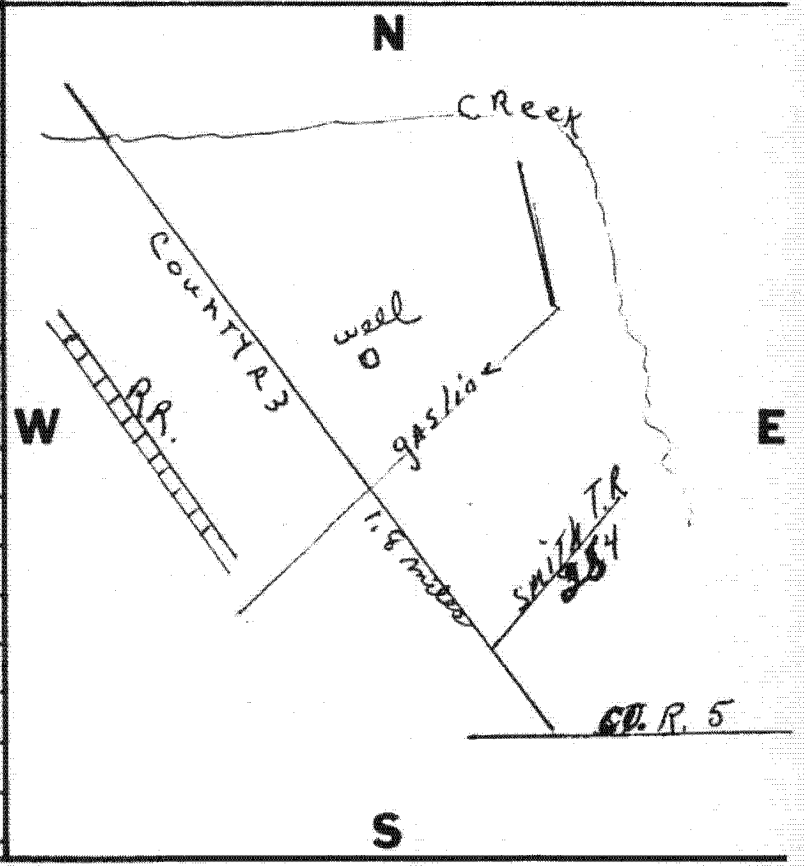
Pump installed by owner

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
clay	0 ft	3 ft
shale	3'	8'
sandstone	8'	13'
lime stone	13'	25'

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



DRILLING FIRM Crozier well Drilling DATE 7/20/77

ADDRESS R#2 Jacobsburg O SIGNED C.B. Crozier

ORIGINAL

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

D0360-6 19

TOVCC 04785

WE LOG AND DRILLING R ORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

NO CARBON PAPER NECESSARY– SELF-TRANSCRIBING

611605

COUNTY BELMONT TOWNSHIP SMITH SECTION OF TOWNSHIP 11

OWNER KELLY S. FULTON ADDRESS BOX 63 WARNOCK OHIO

LOCATION OF PROPERTY 1/10 MILE ON RIGHT ON #805 OFF CO. RD. 36

CONSTRUCTION DETAILS

10" HOLE

Casing diameter 8" STEEL Length of casing 27'

Type of screen — Length of screen —

Type of pump —

Capacity of pump —

Depth of pump setting —

Date of completion 9-29-81

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 12 gpm Duration of test 4 hrs

Drawdown 85 ft Date 9-27-81

Static level (depth to water) 29 ft

Quality (clear, cloudy, taste, odor) CLEAR GOOD

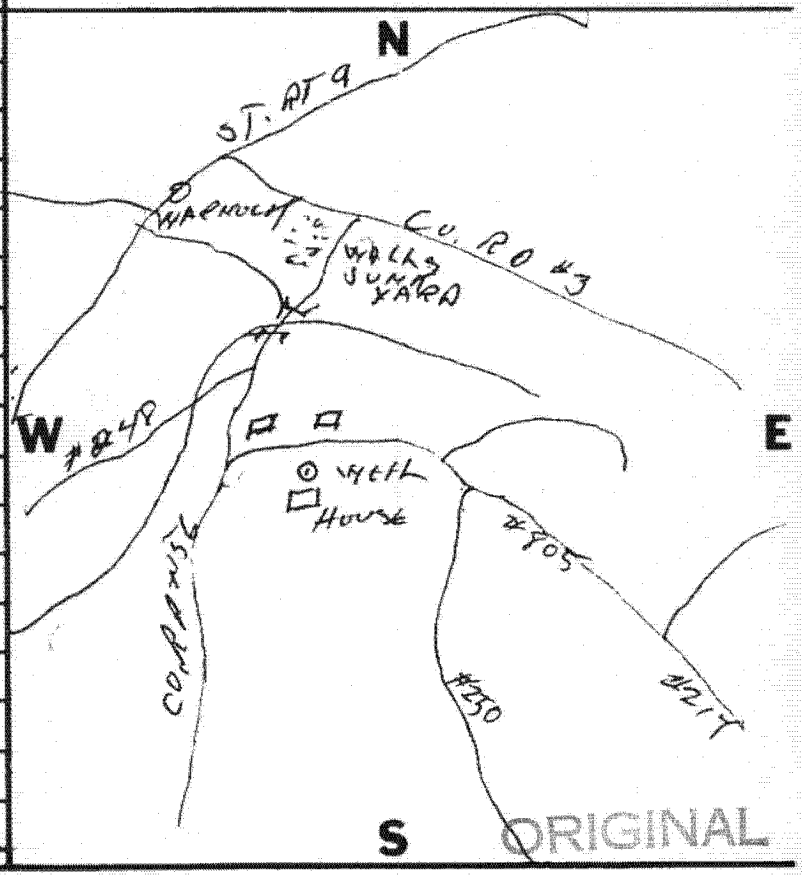
Pump installed by —

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
BROWN TOPSOIL	0 ft	4 ft
YELLOW CLAY	4	16
SANDSTONE	16	23
YELLOW SHALE	23	25
SANDSTONE (WATER)	25	34
GRAY SHALE	34	36
BLUE CLAY	36	38
GRAY SHALE	38	46
LIMESTONE	46	50
RED ROCK	50	54
LIMESTONE	54	60
GREEN SHALE	60	63
LIMESTONE	63	71
GREEN SHALE	71	73
GRAY CLAY	73	74
LIMESTONE	74	79
GRAY SHALE	79	84
BLACK SHALE	84	85

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



ORIGINAL

DRILLING FIRM DUNN DRILLING DATE 10-15-81

ADDRESS 305 BOW ST. WHC. W. VA SIGNED [signature]

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

D0360-6

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

TOVCC 04786

WELL LOG AND DRILLING REPORT

ORIGINAL

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

No. 195460

County Belmont Township Smith Section of Township Sec. 11.

Owner Charles Fulton Address Warnock Ohio.

Location of property Along county rd - No. 200, 2 mi. east of St. Rt. No. 9.

CONSTRUCTION DETAILS

Casing diameter 8 in Length of casing 16 ft

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 4 G.P.M. Duration of test ..... hrs.

Drawdown ..... ft. Date .....

Developed capacity .....

Static level—depth to water 22 ft.

Pump installed by .....

WELL LOG

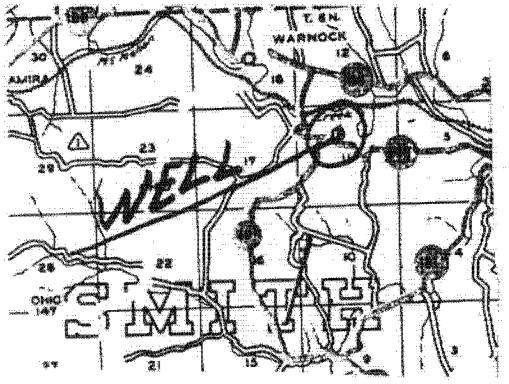
Formations Sandstone, shale, limestone, gravel and clay	From	To
	0 Feet	..... Ft.
Clay	1	8
Sandstone	8	18
Lime	18	20
Red Rock	20	24
Sandstone	24	26
Sandy Shale	26	28
Sandstone	28	48
Slate	48	52
Sandstone	52	59
Coal	59	61
	61	67

SKETCH SHOWING LOCATION

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

N.

W.



E.

S.

See reverse side for instructions

ORIGINAL

Drilling Firm R. B. Ault Date 10-31-56

Address 310 Clinton St. Bellaire O. Signed R. B. Ault

D0360-6

22

TOVCC 04787

WEL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

NO CARBON PAPER NECESSARY– SELF-TRANSCRIBING

611602

COUNTY BELMONT TOWNSHIP SMITH SECTION OF TOWNSHIP 11

OWNER ALBERT P. FULTON II ADDRESS 112 PARK VIEW DRIVE ST. CLAIRS.

LOCATION OF PROPERTY 1ST P. DRIVE OFF #805 TO LEFT, OFF CO RD. #56

CONSTRUCTION DETAILS

10" Hole

Casing diameter 8" Length of casing 50'

Type of screen — Length of screen —

Type of pump —

Capacity of pump —

Depth of pump setting —

Date of completion 7-23-81

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 30 gpm Duration of test 6 hrs

Drawdown 20 ft Date 7-20-81

Static level (depth to water) 79 ft

Quality (clear, cloudy, taste, odor) CLEAR, GOOD

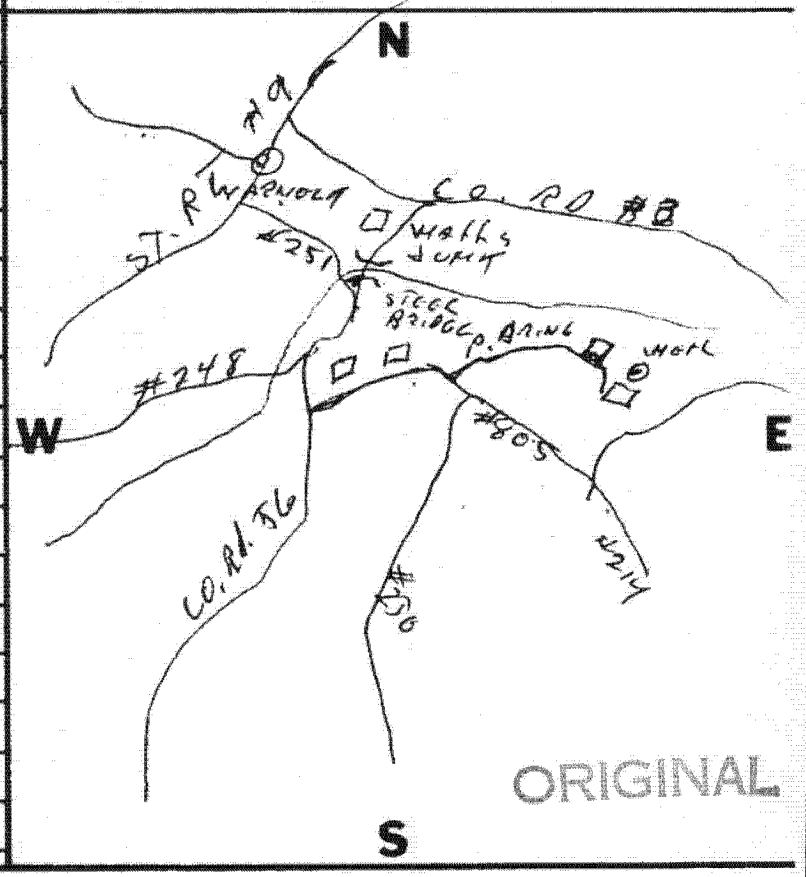
Pump installed by LATER

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
YELLOW TOPSOIL	0 ft	6 ft
YELLOW SHALE	6	10
YELLOW CLAY	10	13
YELLOW SANDSTONE	13	45
GRAY CLAY (WATER)	45	47
LIMESTONE	47	56
GRAY SHALE	56	60
YELLOW SANDSTONE	60	66
BLUE CLAY	66	68
LIMESTONE	68	73
BLUE CLAY	73	75
GRAY SHALE	75	77
COAL (WATER)	77	80
GRAY SHALE	80	83
LIMESTONE	83	89
GRAY SHALE	89	92
LIMESTONE	92	110

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



ORIGINAL

DRILLING FIRM DUNN DRILLING DATE 10-13-81

ADDRESS 305 BOW ST. WHEE. W. VA SIGNED [signature]

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

D0360-6

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

23

TOVCC 04788

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus 12, Ohio

PLEASE USE PENCIL OR TYPEWRITER DO NOT USE INK.

№ 298517

County Belmont Township Smith Section of Township 16

Owner Desia Frasot Address [illegible]

Location of property [illegible]

CONSTRUCTION DETAILS

Casing diameter 8 Length of casing 21

Type of screen Length of screen

Type of pump [illegible]

Capacity of pump [illegible]

Depth of pump setting [illegible]

Date of completion 5/25/64

BAILING OR PUMPING TEST

Pumping Rate 1 G.P.M. Duration of test 16 hrs.

Drawdown 25 ft. Date

Static level-depth to water 75 ft. ft.

Quality (clear, cloudy, taste, odor)

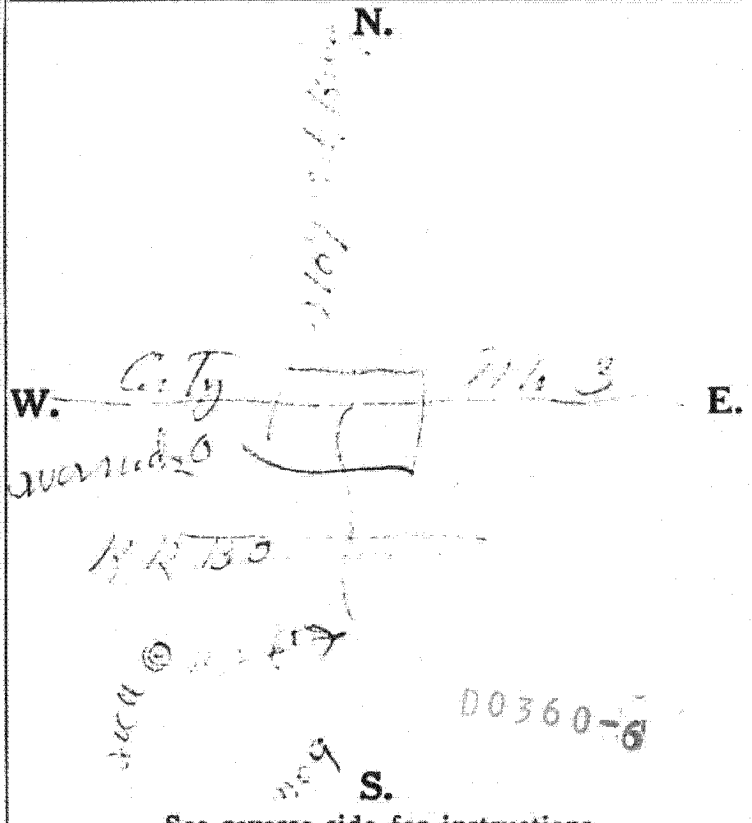
Pump installed by [illegible]

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
	0 Feet	18 Ft.
	18	28
	28	35
	35	98

SKETCH SHOWING LOCATION

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



See reverse side for instructions

Drilling Firm [illegible] Date 5/25/64

Address [illegible] Signed [illegible]

ORIGINAL

TOVCC 04789

X: 2,431,000 :1,000
Y: 131,500

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
OHIO WATER RESOURCES BOARD
Department of Public Works
553 E. Broad St., Columbus 15, Ohio

3

№ 66524

7

County BELMONT Township 9 SMITH Section of Township or Lot Number 24

Owner STanley JUZWIAK Address Box 77 Lamira Ohio

Location of property 1 MILE S.E. OF LAMIRA, OHIO

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 14'

Type of screen ..... Length of screen .....

Type of pump .....

Capacity of pump .....

Depth of pump setting .....

PUMPING TEST

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

Drawdown ..... ft. Date .....

Developed capacity .....

Static level of completed well 47 ft.

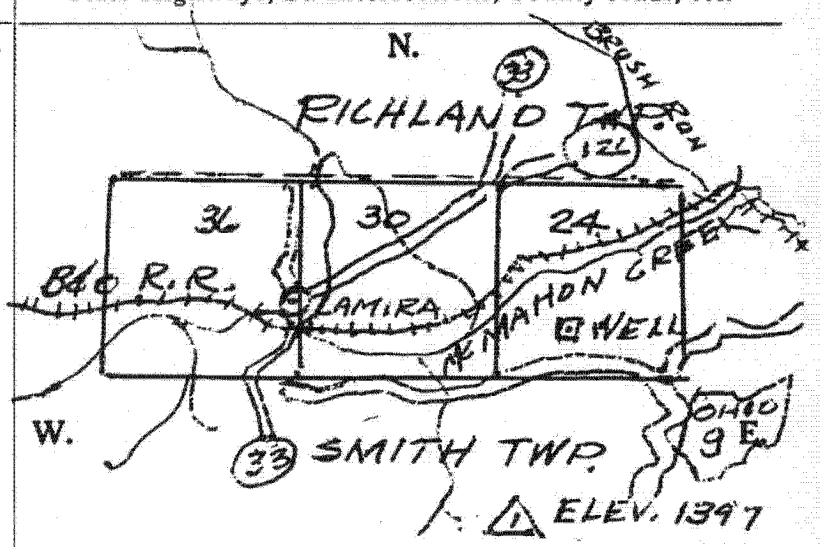
Pump installed by .....

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
CLAY	0 Feet	10 Ft.
SANDSTONE	10	22
SHALE	22	45
SANDSTONE	45	60
LIMESTONE	60	81
SHALE	81	98
SOAPSTONE	98	110
SHALE	110	117
LIMESTONE	117	124
WATER 50'		
" 98'		

SKETCH SHOWING LOCATION

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



D0360-6

See reverse side for instructions

Drilling Firm .....

Address .....

Date 9/5/55

Signed Gifford Green
By H. O. Green

ORIGINAL

TOVCC 04790

PAGE # 1
County ~~Permit No.~~

NO CARBON PAPER NECESSARY– SELF-TRANSCRIBING

WE' LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

ORIGINAL

546401

COUNTY BELMONT TOWNSHIP Pyrites SECTION OF TOWNSHIP

OWNER R. & F. COAL CO. ADDRESS P.O. BOX 247 CADIZ, OHIO

LOCATION OF PROPERTY WARNOCK, OHIO

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 96'

Type of screen Length of screen

Type of pump MYERS SUB 3/4 h.p.

Capacity of pump 10 gal

Depth of pump setting 250

Date of completion 10-25-78

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 6 gpm Duration of test 4 hrs

Drawdown 150' ft Date 10-19-78

Static level (depth to water) 100 ft

Quality (clear, cloudy, taste, odor) 2 grain hard

8.7 PH 2.5 PPM IRON

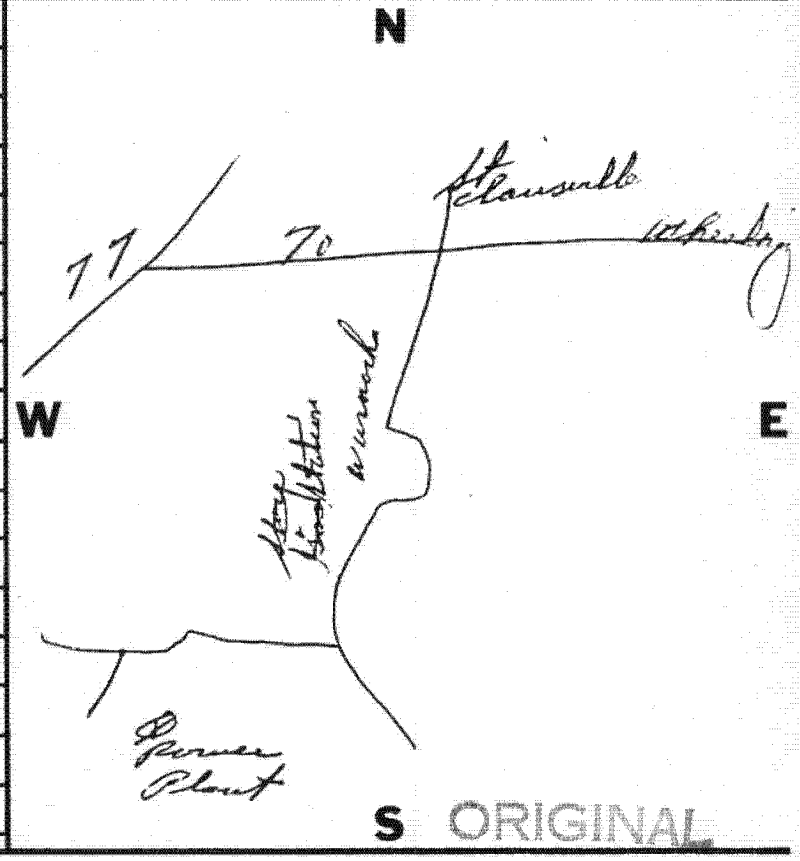
Pump installed by STOCKERT DRILLING CO.

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
BROWN SHALE	0 ft	2 ft
BROWN SANDROCK	2	3
BROWN SHALE	3	5
BROWN SANDSTONE	5	6
BROWN SANDY SHALE	6	7
GRAY SANDSTONE	7	10
LIMESTONE	10	10'4"
BROWN SANDSTONE & SHALE	10'4"	10'6"
GRAY SANDSTONE & SHALE	10'6"	12
BROWN SANDSTONE & SHALE	12	24
GRAY SANDSTONE & SHALE	24	26
GRAY SANDY STONE	26	28
LIMESTONE	28	28'6"
COAL	28'6"	29
GRAY-GREEN SHALE	29	30
GRAY SANDY SHALE	30	35
BLACK SHALE	35	37'6"

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



ORIGINAL

DRILLING FIRM STOCKERT DRILLING CO. DATE OCTOBER 30, 1978

ADDRESS STRASBURG, OHIO SIGNED [signature]

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

D0360-6

TOVCC 04791

ORIGINAL

WELL LOG AND DRILLING REPORT

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. 233693

County Belmont Township ~~Richland~~ Smith Section of Township Smith

Owner Fred Brockelhurst Address Warnock Ohio

Location of property St Clairsville Route 9

CONSTRUCTION DETAILS

Casing diameter 8 in Length of casing 40

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 15 G.P.M. Duration of test 24 hrs.

Drawdown ft. Date

Developed capacity

Static level—depth to water 35 ft.

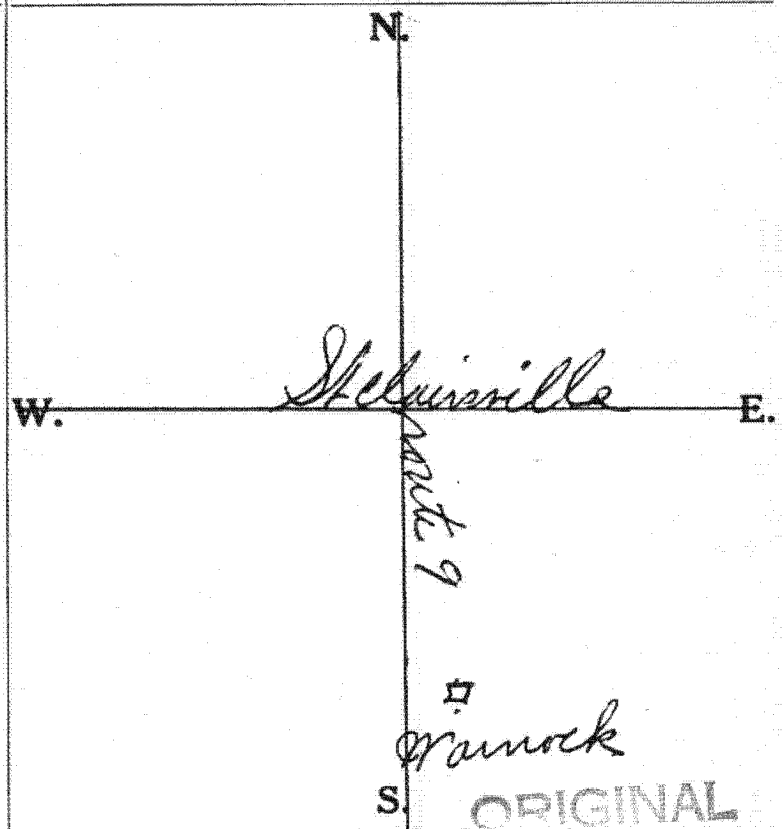
Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Yellow Clay	0 Feet	20 Ft.
Grey clay	20	29
Sand stone	29	33
Gravel & sand	33	38
Sandstone	38	45
lime stone	45	50
Grey Clay	50	62
White lime	62	70
Blue Core	70	74
lime stone	74	77
Water at 40 ft.		

SKETCH SHOWING LOCATION

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



See reverse side for instructions

ORIGINAL

Drilling Firm Holliday drilling Co Date Sept. 22 1965

Address St Clairsville O Signed J. T. Holliday

D0360-6

TOVCC 04792

WELL LOG AND DRILLING RL. ORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

NO CARBON PAPER NECESSARY– SELF-TRANSCRIBING

623554

COUNTY BELMONT TOWNSHIP SMITH. SECTION OF TOWNSHIP

OWNER MARGARET CASE ADDRESS WARNOCK, OHIO.

LOCATION OF PROPERTY OFF RT 9

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 26'

Type of screen N/A Length of screen N/A.

Type of pump SUBMERSIBLE.

Capacity of pump 7 GPM.

Depth of pump setting 104'

Date of completion 27 SEPT. 84

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 1.34 gpm Duration of test 1 hrs

Drawdown 110 ft Date 24 SEPT. 84

Static level (depth to water) 73.5 ft

Quality (clear, cloudy, taste, odor) ODOR (SULPHUR)

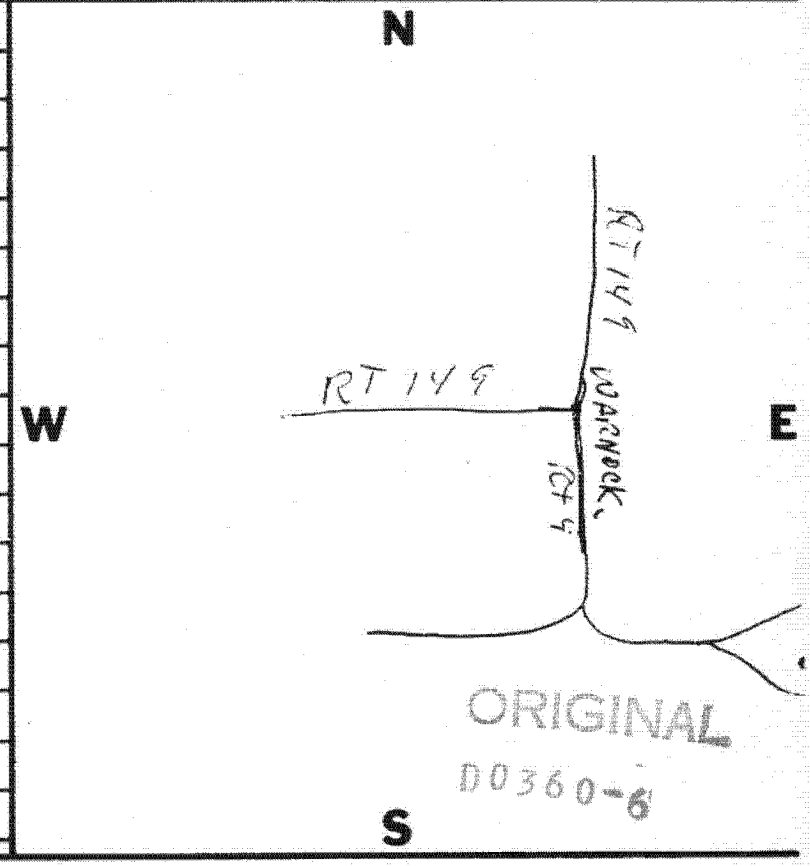
Pump installed by PARKHURST DRILLING.

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
CLAY	0 ft	11 ft
SANDSTONE	11	22
SHALE/LIMESTONE	22	39
LIMESTONE	39	72
SHALE/COAL	72	76
GRAY LIMESTONE	76	98
SHALE	98	102
LIMESTONE.	102	120

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



ORIGINAL
D0360-6

DRILLING FIRM PARKHURST DRILLING. DATE 29 Sept. 84

ADDRESS BARNESVILLE, OHIO. SIGNED [signature]

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

ORIGINAL COPY - ODNR DIVISION OF WATER FOUNTAIN SQ COLS OHIO 43224

TOVCC 04793

W[illegible]L LOG AND DRILLING REPORT

723681

TYPE OR USE PEN
SELF TRANSCRIBING
PRESS HARD

Of[illegible]epartment of Natural Resources, Divisor[illegible] Water
1939 Fountain Square Drive, Columbus, Ohio 43224 Phone (614) 265-6739

Permit Number 6

COUNTY BELMONT TOWNSHIP SMITH SECTION/LOT No. 17 (CIRCLE ONE)

[illegible]R/BUILDER (CIRCLE ONE OR BOTH) CHARLES M^cGUIRE PROPERTY ADDRESS CO RD 56 WARNER OHIO (ADDRESS OF WELL LOCATION A)

LOCATION OF PROPERTY 1 1/4 MI SOUTH OF STATE ROUTE 147 ON CO RD. 56, EAST SIDE

CONSTRUCTION DETAILS

CASING Borehole Diameter 10 in.

[1] Diameter 8 in. Length 22 ft. Wall Thickness ____ in.

[2] Diameter ____ in. Length ____ ft. Wall Thickness ____ in.

Type: [1] Steel [2] ; [1] Galv. [2] ; [☑] PVC [2] ; [1] [2] Other ____

Joints: [1] Threaded [2] ; [1] Welded [2] ; [☑] Solvent [2] ; [1] [2] Other ____

Liner: Length ____ Type ____ Wall Thickness ____ in.

SCREEN

Type (wire wrapped, louvered, etc.) ____ Material ____

Length ____ ft. Diameter ____ in.

Set between ____ ft. and ____ ft. Slot ____

GROUT

Material CEMENT FORM MUD Volume used 800 LB.

Method of installation AIR

Depth: placed from 25 ft. to SURFACE ft.

GRAVEL PACK (Filter Pack)

Material ____ Volume used ____

Method of installation ____

Depth: placed from ____ ft. to ____ ft.

Pitless Device ☑ Adapter ☐ Preassembled unit

Use of Well SINGLE FAMILY

☐ Rotary ☑ Cable ☐ Augered ☐ Driven ☐ Dug ☐ Other ____

Date of Completion ____

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Show color, texture, hardness, and formation: sandstone, shale, limestone, gravel, clay, sand, etc.	From	To
BROWN SANDY SOIL	0	3
BROWN SANDSTONE SHALE	3	6
BROWN SANDSTONE	6	21
GRAY LIMESTONE	21	22
YELLOW LIMESTONE	22	28
RED LIMESTONE	28	28.5
GRAY LIMESTONE	28.5	54
BROWN SANDSTONE	54	58
MED HARD GRAY LIMESTONE	58	65
HARD GRAY LIMESTONE	65	100
H^2O 54 - 58		

[illegible]ditional space is needed to complete well log, use next consecutively numbered form.

WELL TEST

☑ Bailing ☐ Pumping* ☐ Other ____

Test rate 10 gpm Duration of test 1 hrs.

Drawdown 48 ft.

Measured from: ☐ top of casing ☑ ground level ☐ Other ____

Static Level (depth to water) 49 ft. Date: 4-17-91

Quality (clear, cloudy, taste, odor) CLOUDY NO TASTE - ODOR

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

PUMP

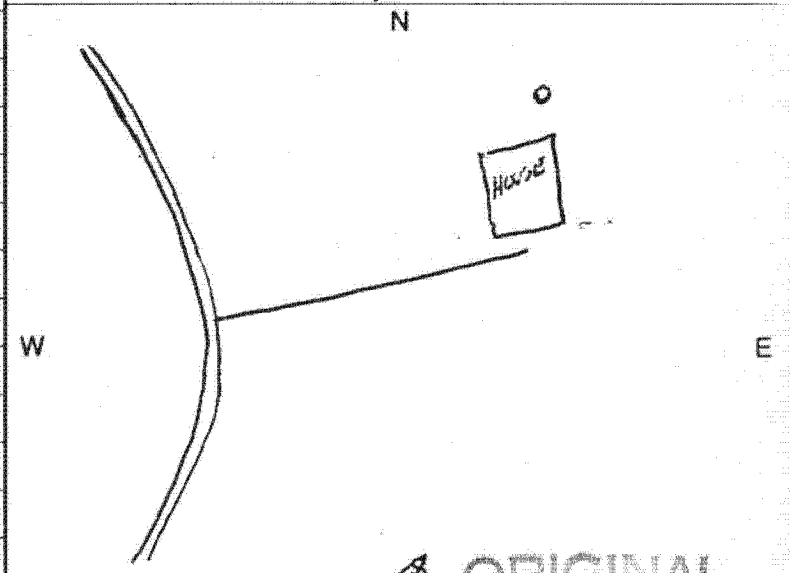
Type of pump SUB Capacity 10 gpm

Pump set at 96 ft.

Pump installed by GREEN'S WELL DRILLING

SKETCH SHOWING WELL LOCATION

Show distances well lies from numbered state highways, street intersections, county roads, etc.



ORIGINAL

DNR 7802.90

Drilling Firm GREEN'S WELL DRILLING Signed [signature]

Address 429 S. MAIN ST Date 4-28-91

City, State, Zip BETHESDA OHIO 43719 ODH Registration Number 1572

00360-6

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.

ORIGINAL COPY TO - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224

Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

TOVCC 04794

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1939 Fountain Square Drive
Columbus, Ohio 43224

686565

TYPE OR USE PEN
SELF-TRANSCRIBING
PRESS HARD!

Permit Number 07

COUNTY BELMONT TOWNSHIP SMITH SECTION OF TOWNSHIP 16

OWNER JOHN UNDERWOOD PROPERTY ADDRESS OK RD BELMONT OH

LOCATION OF PROPERTY 2 MI S. ON Co Rd 56 on R. side.

CONSTRUCTION DETAILS

CASING

Casing Diameter 8 in. Length of Casing 27 ft.

Type: ☐ Steel ☐ Galv. ☑ PVC ☐ Other

Joints: ☐ Threaded ☐ Welded ☑ Solvent ☐ Other

SCREEN

Type (wire wrapped, louvered, etc.) Material

Length ft. Diameter in.

Set between ft. and ft. Slot

GROUT

Material CEMENT + DRILL MUD Volume used 350 lbs

Method of installation POUR

Depth: placed from 27 ft. to Surface ft.

☐ Rotary ☑ Cable ☐ Augered ☐ Driven ☐ Dug ☐ Other

BAILING OR PUMPING TEST

(specify one by circling)

WELL TEST

Test rate 20 gpm Duration of test 1 1/2 hrs.

Drawdown (water level during pumping) 37 ft.

Measured from: ☐ top of casing ☑ ground level ☐ Other

Static Level (depth to water) 33 ft. Date: 5/3/89

Quality (clear, cloudy, taste, odor) CLOUDY

PUMP

Type of pump [redacted] Capacity [redacted] gpm

Pump set at ft.

Pump installed by

Pitless Device ☑ Adapter ☐ Preassembled unit

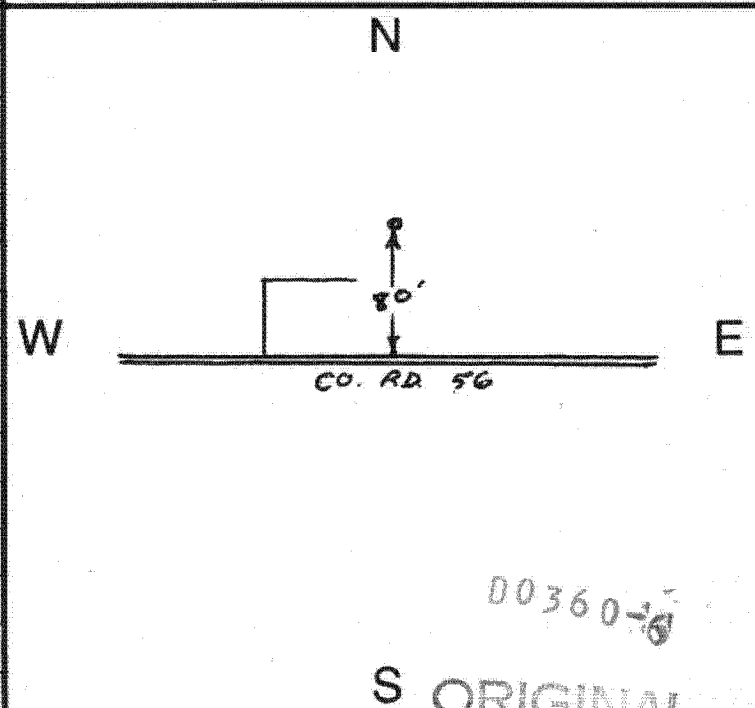
Use of Well SINGLE FAMILY DWELLING

WELL LOG*

Show color, texture, hardness, and formation: sandstone, shale, limestone, gravel, clay, sand	From	To
CLAY SOIL	0 ft.	2 ft.
BROWN SHALE	2	6
H2O .25 gpm	6	
BROWN SHALE	6	12
BROWN SAND STONE	12	40
H2O 20 gpm	40	
LIMESTONE (LIGHT)	40	57

SKETCH SHOWING LOCATION

Show distances well lies from numbered state highways, street intersections, county roads, etc.



00360-16

ORIGINAL

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

DNR 7802.88

DRILLING FIRM GREEN'S WELL DRILLING SIGNED [signature]

ADDRESS 429 S MAIN DATE 5/8/89

CITY, STATE, ZIP BETHESDA OHIO 43719 ODH REGISTRATION NUMBER 1572

Completion of this form is required by 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.

ORIGINAL COPY - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224

TOVCC 04795

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

NO CARBON PAPER NECESSARY– SELF-TRANSCRIBING

623560

COUNTY BELMONT TOWNSHIP Smith SECTION OF TOWNSHIP 9

OWNER ETHEL WILSON ADDRESS 61424 GLENCOE RD, BELM

LOCATION OF PROPERTY 61424 GLENCOE RD.

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 26'

Type of screen N/A Length of screen N/A.

Type of pump SUBMENSIBLE

Capacity of pump 7 GPM.

Depth of pump setting 35'

Date of completion 11-21-84

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 5 gpm Duration of test 2 hrs

Drawdown 24 ft Date 11-21-84

Static level (depth to water) 18' ft

Quality (clear, cloudy, taste, odor) ODOR.

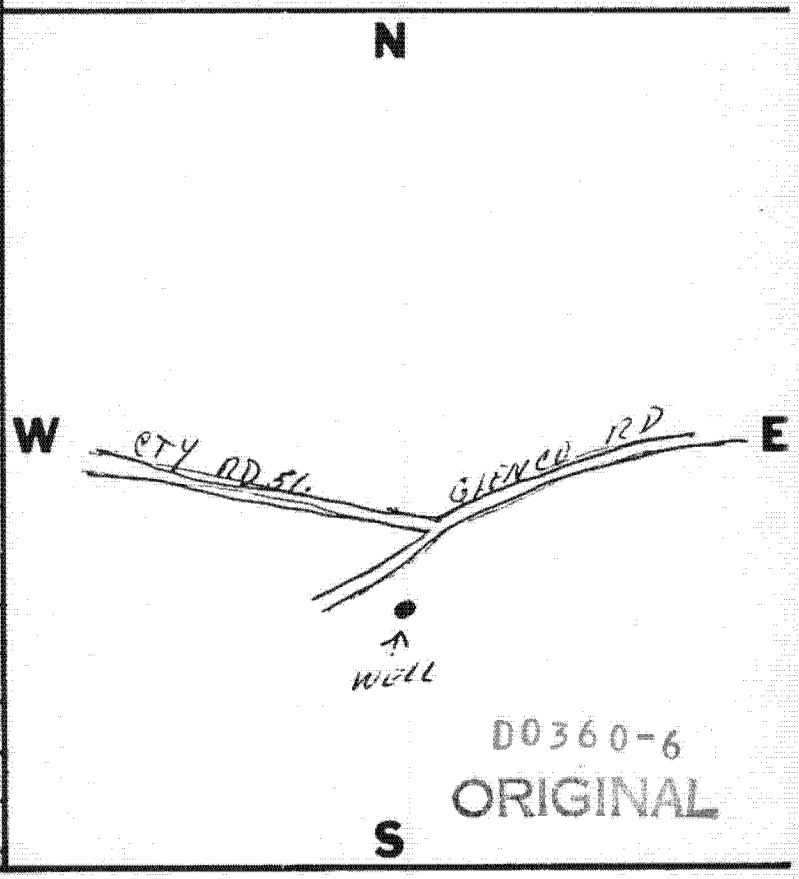
Pump installed by PARKHURST DRILLIN

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
SUB-SOIL	0 ft	3 ft
CLAY.	3	11
SANDSTONE	11	23
SHALE/GRAVEL	23	27
LIMESTONE	27	38

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



D0360-6
ORIGINAL

DRILLING FIRM PARKHURST DRILLING DATE 11-21-84

ADDRESS 234 LAWS ST. BARNESVILLE SIGNED [signature]

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

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

TOVCC 04796

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

No. 404745

County BELMONT Township Smith Section of Township 16

Owner GARY JONES Address

Location of property 2½ miles SOUTH on CO. RD 56 FROM CO RD. 3 LAST HOUSE ON LEFT IN GOODMAN ADDITION.

CONSTRUCTION DETAILS

10" Hole

Casing diameter 8 Length of casing 15

Type of screen — Length of screen —

Type of pump 1/2 HP SUB

Capacity of pump 5 GPM

Depth of pump setting 65'

Date of completion 11-25-77

BAILING OR PUMPING TEST
(Specify one by circling)

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

Drawdown LOG ft. Date

Static level-depth to water NOT ft.

Quality (clear, cloudy, taste, odor) AVIABLE

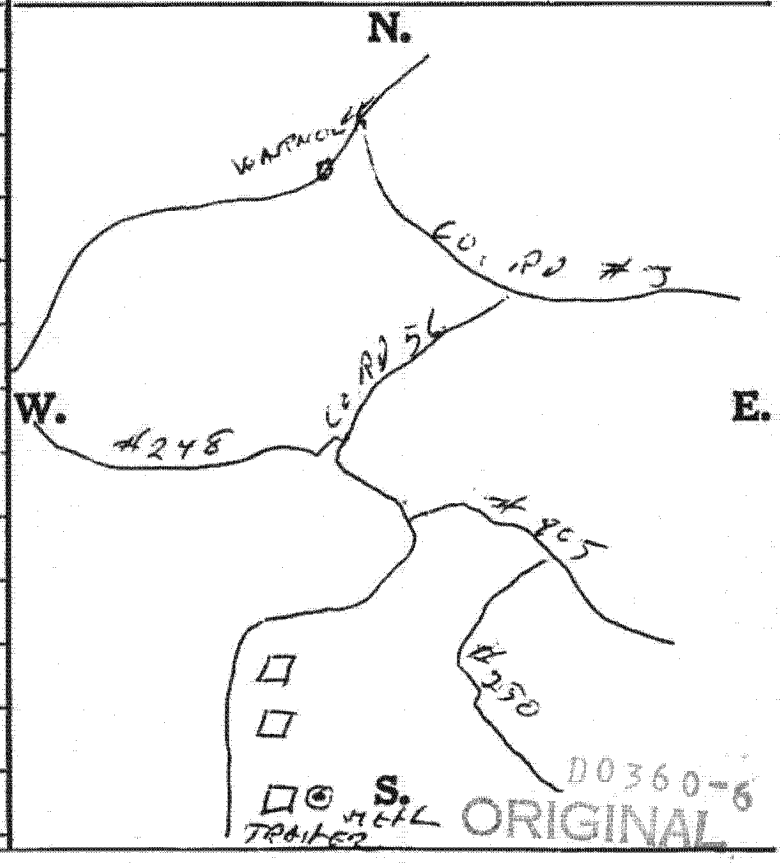
Pump installed by DUNN DRILLING

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
	0 Feet	Ft.
LOG		
NOT		
AVIABLE		

SKETCH SHOWING LOCATION

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



D0360-6 ORIGINAL

Drilling Firm DUNN DRILLING Date 11-25-77

Address 171 GLEN WOOD Signed Charles Dunn

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

TOVCC 04797

ADDENDUM TO PAGE 17, PART 2, D
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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 zone 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 influences the dissolved solids contents of groundwater which, in most cases, become more dilute during periods of prolonged precipitation. Rainfall data collected at or near the Powhatan No. 6 Mine has been included in this application.

Included with the water data collected by OVCC is water quality and quantity documented by the Ohio EPA and the USGS.

All the data will show that an increased water quantity and a decrease in chemical constituent levels is realized during times of increased precipitation and snow melt of winter and spring seasons; while a decrease in water quantity and increase in chemical constituent levels is realized in dry summer and early autumn seasons.

D0360-6

ORIGINAL

ADDENDUM TO PAGE 18, PART 2, E
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

HYDROLOGIC DETERMINATION

Based on the information submitted in this application, the enclosed probable hydrologic consequences may be expected. Although the overall hydrologic regime will not be affected, individual sources of ground and surface water may be temporarily disrupted. That is, individual wells, springs, or streams may experience significant water loss. However, this effect is expected to be temporary in some cases. Supplies that are affected permanently will be replaced by OVCC at its own expense by connecting the water user to another supply. The cost of domestic water will be the responsibility of the water user unless otherwise agreed upon by OVCC and the water user. The quality of the surface and ground water in the application area is not expected to be changed in the long term as a result of the proposed mining activities. Specifically, the levels of pH, iron, manganese, total suspended solids, and total dissolved solids are not expected to vary from their original levels. However, these parameters may be temporarily changed.

Some temporary changes to individual ground water and surface water source availability are anticipated. Wells and springs may go dry, streams may flow less, ponds may de-water. However, the effect on sediment yield, acidity, total suspended and dissolved solids, and flooding are expected to be minimal if any.

The effects are expected to stabilize within about two years as the localized water table reaches equilibrium again. Ponds and streams with visible cracks that are draining water will be repaired. Permanent replacement supply systems will be provided if an individual source is permanently affected.

D0360-6

ORIGINAL

ADDENDUM TO ATTACHMENT 14A
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

The reason for the "anomalies" in the values of manganese for U34-19 on 3/8/91 and total hardness for U35-C on 2/19/91 is unknown. These samples were analyzed over six years ago and the samples no longer exist to re-check the values.

D0360-6

AUG 1997

[redacted] 1997

ORIGINAL

P[illegible]IPITATION RECORD FOR USE WITH YO[illegible]
Taylor 11" CLEAR-VU RAIN GAGE

LOCATION TraDat, Inc.

COUNTY Ohio STATE West Virginia

TIME OF OBSERVATION 8:30 AM YEAR 1990

ADDENDUM TO PAGE 19, PART 2, D(3)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Remarks
1	0.01	0.16	0.00	0.69	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	s - melted snow
2	Trace	0.10	0.00	0.10	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.54	
3	0.10	0.70	0.00	0.07	0.12	0.13	0.00	0.00	0.00	0.00	0.00	0.15	
4	0.16	0.35	0.00	0.05	0.43	0.00	0.00	0.00	0.00	0.37	0.00	Trace	
5	0.00	0.00	0.00	0.12	0.30	0.00	0.19	0.05	0.20	0.00	0.53	0.00	
6	0.00	Trace	0.00	0.25	0.00	0.43	0.00	0.00	0.23	0.00	0.00	0.00	
7	0.00	0.10	0.00	0.06	0.00	0.00	0.00	0.00	1.25	0.00	Trace	0.00	
8	0.00	0.00	0.07	0.00	0.00	0.[illegible]	0.15	0.00	0.20	0.00	0.00	0.00	
9	Trace	0.60	0.08	Trace	0.04	0.38	0.47	0.70	0.91	0.05	0.28	0.00	
10	0.00	0.00	0.00	0.90	0.22	0.00	0.27	0.00	0.00	0.00	0.00	0.00	
11	0.04	0.15	0.07	0.16	0.00	0.00	2.33	0.00	0.00	0.32	0.00	0.00	
12	Trace	0.00	0.00	0.00	0.25	0.00	0.22	0.00	0.00	0.00	0.00	0.00	
13	0.00	0.04	0.00	0.17	0.21	0.00	0.77	0.20	0.00	0.01	0.00	0.00	
14	0.00	0.54	0.00	0.30	0.00	0.95	0.17	0.00	0.71	0.00	0.00	0.10	
15	0.09	0.41	0.00	0.00	0.05	0.00	0.13	0.00	0.00	0.00	0.00	0.67	
16	0.00	0.06	0.80	0.00	1.12	0.00	0.00	0.00	0.21	0.00	0.40	0.00	
17	0.12	0.00	0.00	0.09	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.79	
18	0.00	0.00	Trace	0.00	0.00	0.00	0.00	Trace	0.02	0.00	0.00	0.93	
19	0.08	0.00	0.25	Trace	0.15	0.00	0.00	1.45	0.40	0.50	0.00	0.00	
20	0.93	0.00	0.00	0.30	0.15	0.00	0.48	0.00	0.00	0.00	0.00	0.00	
21	0.03	0.00	0.00	0.04	0.00	0.02	0.27	0.00	0.18	0.00	0.00	0.00	
22	0.00	0.12	0.00	0.00	0.00	0.18	0.74	0.20	0.00	0.00	0.53	0.15	
23	0.08	0.14[s]	0.20	0.00	0.00	0.06	0.02	0.40	0.27	0.40	0.00	0.47[s]	
24	0.01[s]	0.06[s]	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.20	0.00	0.02	
25	0.09	0.00	0.00	0.16	1.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
26	0.01[s]	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.09	0.00	
27	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.13[s]	
28	0.40	0.00	0.00	0.00	1.09	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
29	0.74	—	0.02	0.00	0.39	0.00	0.00	0.18	0.53	0.00	0.00	0.09	
30	0.00	—	0.08	0.00	0.00	0.00	0.08	0.00	0.12	0.00	0.00	1.40	
31	0.00	—	0.21	—	0.00	—	0.00	0.00	—	0.00	—	0.00	
Total	2.87	3.63	1.78	3.46	5.84	3.94	6.29	3.18	6.03	1.84	2.45	5.41	

SYBRON Taylor

Total Annual 46.72

D0360-6

JUN 27 1997

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TOVCC 04802

CIPITATION RECORD FOR USE WITH [illegible]R
Taylor 11" CLEAR-VU RAIN GAGE

LOCATION TraDet, Inc.

COUNTY Ohio STATE West Virginia

TIME OF OBSERVATION YEAR 1991

ADDENDUM TO PAGE 19, PART 2, D(3)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Remarks
1	0.00	0.00	0.05s	0.00	0.11	0.00	0.40						s - melted snow
2	0.00	0.00	0.02s	0.00	0.00	0.00	0.20						
3	0.00	0.00	0.67	0.00	0.00	0.00	0.00						
4	0.02	0.00	0.00	0.00	0.00	0.00	0.84						
5	0.15	0.31	0.00	0.13	0.93	0.00	0.00						
6	0.00	0.30	0.65	0.00	0.08	0.00	0.00						
7	0.18	0.02	0.00	0.00	0.00	0.00	1.18						
8	0.18	0.00	0.00	0.09	0.00	0.00	0.19						
9	0.02	0.00	0.01	0.55	0.00	0.00	0.00						
10	0.49	0.21	Trace s	0.00	0.00	0.00							
11	Trace	0.00	0.00	0.00	0.10	1.63							
12	0.00	0.00	0.12	Trace	0.00	0.00							
13	Trace	0.22	0.25	0.86	0.10	0.00							
14	Trace	0.29	0.00	0.24	0.00	0.00							
15	0.36	0.04s	0.00	0.00	0.00	0.00							
16	0.19	0.06s	0.00	0.00	0.00	0.25							
17	0.01	0.05	0.09	0.10	0.02	0.00							
18	0.00	0.00	0.19	0.00	0.10	0.00							
19	Trace	0.20	0.00	0.05	0.00	0.00							
20	0.28s	0.00	0.01	0.00	0.00	0.00							
21	0.02s	0.00	0.00	0.02	0.00	0.00							
22	0.00	0.00	0.03	0.02	0.00	0.00							
23	0.00	0.00	0.02	0.00	0.00	0.00							
24	0.01s	0.00	0.11	0.02	0.00	0.00							
25	0.00	0.00	0.16	0.00	0.00	0.00							
26	0.01	0.31s	0.14	0.00	Trace	0.00							
27	0.30s	Trace s	0.02	0.00	0.07	0.00							
28	0.00	0.00	0.00	0.07	0.07	0.00							
29	0.40	-	0.00	0.13	0.00	0.00							
30	0.17	-	0.05s	0.00	0.65	0.25							
31	0.01s	-	0.04	-	0.04	-							
Total	2.74	1.51	2.63	2.18	1.97	2.13							

SYBRON Taylor

Total Annual

D0360-6

JUN 27 1997

ORIGINAL

ANNUAL RAINFALL REPORT

Location No. 6 MINE Year 1991

DATE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1						0	0.20	0	0.15	0	0	0
2						0	0.50	0	0	0	0	0.40
3						0	0	0	0	0	0	1.90
4						0	0	0.30	0	TRACE	0	TRACE MS
5						0	0.25	0	0.50	0	0	TRACE MS
6						0	0.25	0	0	0	0	0
7						0	0.25	0	0	0	0	0
8					A	0	0	0	0	0	0	0
9					W	0	0	0.38	0	0	0	0.10
10					A	0	0	0.10	0.95	0	0	0.25
11	A	A	A	A	R	0	0	0	0.20	.20	.40	0
12	W	W	W	W	D	0.30	0	0	0	.25	0	0
13	A	A	A	A	E	0	0.10	0	0	.05	.40 MS	0
14	R	R	R	R	W	0	0	0	0	0	TRACE	0
15	D	D	D	D	R	0	0	0	0	.25	0	1.00
16	E	E	E	E		0	0	0	0	0	0.05	0.30 MS
17	W	W	W	W	T	1.00	0	0.50	0	0	0	0
18	R	R	R	R	O	0	0	0	0	0	0	TRACE MS
19					N	0.10	0	0	0.20	0	0	0
20	T	T	T	T		0	0	1.80	0	0	0.22	0
21	O	O	O	O		0	0	0.10	0	0	0.10	0
22	N	N	N	N	O	0	0	0	0	0	0.40	0
23					0	0	0.30	0	0.23	0	1.00	0.40
24					0	0	0.40	0	TRACE	0	0	0
25					0	0	TRACE	0	1.40	0	0	0
26					0	0	0	0	0.10	TRACE	0	0
27					0	0	0	0	0	0	0	TRACE
28					0.10	0	0	0	0	0	0	0
29					0.10	0	0	0	0	0	0	0
30		X			0	0	1.50	0	0	0	0	0.50
31		X		X	0.16	X	0.15	0	X	0	X	0
Total						1.40	3.90	3.18	3.73	0.75	2.57	4.85

D0360-6

TOTAL FOR YEAR

ORIGINAL

JUN 27 1997

TOVCC 04804

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
RAINFALL RECORD – 1995

MONTH

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.19	0.03	0.00	0.00	0.70	0.36	0.00	0.00	0.00	0.00	0.29	0
2	T	0.00	0.00	0.00	0.39	0.09	0.00	0.00	0.00	0.00	0.08	0.01
3	0.00	0.40	0.00	0.22	0.00	0.75	0.00	0.00	0.00	0.60	0.00	0.09
4	0.00	T	0.00	0.00	0.20	0.00	0.00	0.09	0.00	0.14	0.00	0
5	0.00	T	0.38	0.00	0.07	0.00	0.10	1.05	0.00	1.00	0.00	0.01
6	0.00	0.00	0.00	0.05	0.00	0.00	0.00	T	0.00	0.12	0.00	0
7	T	0.00	0.30	0.00	0.00	0.38	0.01	0.00	0.00	0.00	0.34	0
8	T	0.00	0.22	0.10	0.00	0.00	0.00	0.00	0.08	0.00	0.02	0
9	T	0.00	0.00	0.99	0.00	0.00	0.00	T	0.01	0.00	0.00	T
10	T	0.00	0.00	0.29	0.68	0.50	0.00	0.00	0.00	0.00	0.40	T
11	0.10	0.00	0.00	0.00	T	0.44	0.00	1.09	0.00	0.00	0.40	0.03
12	T	T	0.00	0.07	0.00	0.01	0.00	0.00	0.70	0.00	0.10	0.09
13	T	0.00	0.00	0.01	0.00	0.00	T	0.00	0.20	0.00	0.09	0.13
14	0.00	0.10	0.00	0.00	0.60	T	0.00	0.00	0.00	2.01	0.29	0.06
15	0.62	0.70	0.00	0.00	0.00	0.00	T	0.00	0.00	0.00	0.05	0
16	T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.03	T
17	0.00	0.00	0.00	0.10	0.29	0.00	1.79	0.03	0.09	0.00	0.00	T
18	T	0.00	0.00	0.11	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.14
19	0.60	0.00	0.00	0.00	T	0.00	0.00	0.00	0.00	0.00	0.00	0.69
20	0.00	T	0.00	0.09	0.00	0.00	0.30	0.00	0.00	0.51	0.31	0.2
21	0.10	0.00	0.20	0.05	0.00	0.31	0.08	0.00	0.60	0.00	0.00	0.01
22	0.10	T	0.00	T	0.00	0.00	0.00	0.00	T	0.00	0.00	T
23	T	0.43	0.00	0.08	0.00	0.00	0.10	0.00	0.00	0.00	0.00	T
24	T	0.00	0.00	T	1.05	0.42	T	0.00	0.00	0.00	0.00	T
25	0.00	0.00	0.00	T	T	0.00	0.40	0.00	0.00	0.00	0.00	T
26	0.00	0.05	0.00	0.00	0.00	0.50	0.02	0.00	0.00	0.00	0.00	T
27	0.00	0.43	0.09	0.11	0.00	0.10	0.00	0.00	0.00	T	T	T
28	0.00	0.00	T	0.00	0.05	0.00	0.00	0.00	0.00	0.20	0.05	T
29	0.00		T	0.00	T	0.60	0.00	0.00	0.00	0.08	0.00	T
30	0.00		T	0.21	0.00	0.28	0.00	0.00	0.00	0.00	0.00	T
31	T		0.00		0.00		0.00	0.00		0.00		T
TOT.	1.71	2.14	1.19	2.48	4.81	4.74	2.80	2.26	2.08	4.66	2.45	1.46

T = TRACE

ANNUAL TOTAL: 32.78

ORIGINAL JUN 27 1997

D0360-9

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
RAINFALL - 1996

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	T	0.08	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	T	
2	0.20	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.02	0.00	0.00	
3	0.01	0.00	T	0.00	0.00	0.20	T	0.00	0.02	0.00	0.00	T	
4	0.03	0.00	0.00	0.00	0.60	0.21	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.00	1.10	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.30	
6	0.00	0.00	0.45	0.00	0.00	0.27	0.00	0.00	1.60	0.00	0.11	0.00	
7	1.20	0.08	0.15	T	0.21	0.07	0.00	0.00	0.10	0.00	1.30	0.00	
8	0.10	T	0.00	T	0.40	0.10	0.00	0.41	0.00	0.00	0.21	0.05	
9	0.14	0.00	0.00	T	0.00	0.10	0.00	0.00	T	0.28	0.20	0.00	
10	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.01	0.07	0.00	
11	0.00	0.10	0.00	0.00	0.69	0.41	0.00	0.00	0.00	0.00	T	0.09	
12	0.10	0.19	0.00	0.00	0.00	T	0.00	0.16	0.05	0.00	0.00	0.29	
13	0.00	T	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	T	0.00	
14	0.00	0.02	0.00	0.00	0.00	T	0.00	0.00	0.00	0.00	T	0.00	
15	0.00	0.00	0.54	0.92	0.90	0.00	0.75	0.40	0.00	0.00	0.00	0.00	
16	0.13	0.00	0.00	0.10	0.50	0.00	0.00	0.00	1.69	0.00	0.00	0.22	
17	0.00	0.00	0.27	0.00	0.00	0.00	0.36	0.00	0.02	0.00	0.10	0.00	
18	0.00	0.02	0.00	0.04	0.00	0.95	1.64	0.00	0.00	0.92	0.20	0.02	
19	0.56	0.45	1.61	0.00	0.00	T	0.00	0.00	0.00	0.22	0.00	T	
20	0.00	0.25	0.29	0.00	0.00	0.00	0.00	0.04	0.00	0.20	0.00	0.00	
21	0.00	T	0.08	0.00	0.30	0.00	0.44	0.00	T	0.15	0.00	0.00	
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	T	0.00	0.10	
23	0.00	0.00	0.00	0.72	0.00	0.00	0.01	0.10	0.04	0.00	0.00	0.40	
24	0.09	0.00	0.00	0.00	0.00	0.89	0.10	0.00	T	0.00	0.05	0.00	
25	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	T	0.00	0.50	0.00	
26	0.16	0.35	0.00	T	0.25	0.00	0.00	0.00	T	0.00	0.00	0.00	
27	T	1.30	0.00	0.00	0.19	0.00	0.00	0.00	1.64	0.01	0.00	0.09	
28	0.00	T	0.20	1.00	0.71	0.00	0.00	0.00	T	0.24	0.00	0.20	
29	0.00	0.00	0.00	0.20	0.26	0.00	0.20	0.00	0.00	0.00	0.36	0.20	
30	0.06		0.00	0.46	0.00	0.32	0.02	0.00	0.00	0.00	0.61	0.00	
31	0.00		T		0.00		0.00	0.00		0.00		0.00	
TOTAL	2.78	3.01	4.69	3.44	5.69	3.81	3.52	1.11	5.23	2.05	3.71	1.96	41.00

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ADDENDUM TO ATTACHMENT 14C
THE OHIO VALLEY COAL COMPANY
POWHATAN NOL 6 MINE
PERMIT D-0360

Flows for springs DS-248 and DS-250 were not obtainable. The springs were constructed in such a manner that flow into and out of the catch basin could not be measured.

Spring DS-247 is used to supply water to well W-325. The well is unable to provide enough capacity for the intended use, and the spring is used to supplement the well.

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ADDENDUM TO ATTACHMENT 14C
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

There is an apparent discrepancy between the well logs for WL-355 and WL-349 and their field depths. This source of this discrepancy is unknown.

D0360-6

AUG 4 1997

ORIGINAL

TOVCC 04808

Probable Hydrologic Consequences

Ohio Valley Coal Company
Powhatan No. 6 Mine
Application Area D-0360-6

Prepared For:

The Ohio Valley Coal Company
56854 Pleasant Ridge Road
Alledonia, Ohio 43902

August 12, 1997

Submitted By:

David M. Anderson, P.G.
Project Geologist

Burt A. Waite, P.G.
Senior Geologist

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AUG 18 1997

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INTRODUCTION

Since 1987 six longwall application areas of the Powhatan No. 6 Mine have been evaluated relative to potential hydrologic consequences of mining activities. These areas, which are contiguous, are illustrated on the past and future application map of the permit application and include:.

R-360-2	1987	Moody and Associates, Inc.
D-0360-1	1990	Moody and Associates, Inc.
D-0360-2	1991	Moody and Associates, Inc.
D-0360-3	1992	William Siplivy P.E. & C.P.G. (Two additional applications were prepared by OVCC using this PHC for two small areas within the D-0360-3 area. They were identified as D-0360-4 and D-0360-5).

This PHC utilized the available monitoring data from these previous studies to refine and improve the predicative capabilities.

This fifth PHC has been prepared for Application Area D-0360-6 on behalf of the Ohio Valley Coal Company by Moody and Associates, Incorporated. Through the efforts of OVCC, an extensive water well and spring monitoring program has been developed and it is now possible to evaluate the impacts of past mining activities on water supplies in detail to improve the predictive capabilities of the PHC. This improvement is reflected herein.

TOPOGRAPHIC SETTING

The Powhatan No. 6 Mine is located in Belmont County, which is situated in southeastern Ohio. The topography of the entire Application Area evaluated is typical of the Appalachian Plateau Province and is characterized by narrow rounded ridges and deep V-shaped valleys dissecting the terrain. Topographic relief within the Application Area D-0360-6 is approximately **429** feet. The surface elevation varies between 1349 feet above sea level, at the southwestern portion of the area to **920** feet in the north**central** portion of the **Application Area**.

McMahon Creek is the dominant surface water drainage in the application area. This stream flows in an easterly direction with the headwaters north and west of the application area. Unnamed tributaries to McMahon Creek (and to Hutchinson Run which is in itself a tributary of McMahon Creek) drain the western and northern portions of the Application Area and an

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unnamed tributary to Williams Creek (which then drains to McMahon Creek) drains the southwestern portion of the application area.

Most water supplies are located along the major roads in the area. A concentration of wells and springs are located along Route 9 in the western portion of the property, along Lash Road which enters at the west central portion of the property and proceeds first southeast and then northeast to Warnock, Township Road 214 which loops through the southeast quarter of the Application Area, Township Road 805 which crosses the east central portion of the area and Route 149 which borders the northern Application Area boundary. A total of **45** used wells and **12** used developed springs were identified in the area. **Fourteen (14)** of the inventoried used wells and three (3) of the inventoried used springs are outside the planned mining area but are within the hydrologic boundary. There are several unused wells and unused developed springs within the hydrologic boundary.

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 Bed, which is the seam to be mined, marks the bottom of the Monongahela Formation. According to Mr. James M. Raab, hydrogeologist with the Ohio Department of Natural Resources in correspondence to Dave Bartsch of the Ohio Valley Coal Co. 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 39 to 77 percent of the rock column. 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 very 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, are less susceptible to

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subsidence fracturing due to mining and, when fractured, 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 great horizontal and vertical variability of the rock units. Rapid facies changes limit the horizontal continuity of the rock units. Horizontal facies changes and corresponding changes in hydrologic properties of the rocks tend to produce localized subsurface flow systems. In addition, laboratory studies of core samples from similar rocks indicate that vertical permeability is several orders of magnitude lower than horizontal permeability (Brown, et al, 1971). This again results in hydrologically localized flow systems that are not continuous across the Application Area.

The geologic structures in the Application Area consist of gently folded rocks that, in general, dip to the southeast at approximately 20 feet per mile. Overburden thickness ranges from a low of **about 135** feet at the north**central** section of the area to over 550 feet in the southwestern area. While geologic structure can influence regional ground water flow patterns, local variations in hydraulic properties of the rocks tends 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 to become part of the ground water flow system or soil moisture. Shallow subsurface water is important to soil moisture and plant growth, and supplies approximately **9** dug wells in the application area and hydrologic boundary surrounding the area.

Within the bedrock 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). Primary porosity and permeability within the Application Area is very low.

Secondary porosity and permeability is formed by fractures or partings in the rock mass. Most usable ground water in the subject area occurs within the first 100 feet below the surface in secondary openings and the success of a water well in terms of yield potential is dependent upon

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the well penetrating water filled fracture zone(s) that transmit enough water to the well bore to meet its intended use (Schmitt et al, 1983; Waite, 1987).

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 entities. 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). In general, the near surface saturated zone has the highest ground water availability for well supplies in this area.. This condition is evident throughout the Powhatan No. 6 Mine. The mine, in general, is very dry with even minor amounts of water inflow limited to the low cover areas (generally less than 200 feet). As discussed above, the overburden thickness in the study area ranges from about **135** to 550 feet. Very little water inflow into the mine is expected in the deeper setting. An undetermined amount of ground water flow into the mine is expected in the lower cover areas.

During full recovery mining, where the roof is allowed to collapse, existing natural fractures are often re-opened 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). This condition is evidenced by the fact that recent longwall mining to the south and southeast has not resulted in large volumes of water in-flow in the longwall or adjacent areas in the Powhatan No. 6 Mine (Bartsch, 1994).

The soft rocks (which account for 39 to 77 percent of the rock column) 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 clogging or clay swelling. This process limits the amount of water that would tend to migrate downward. The mining conditions experienced in the longwall panels immediately south of this Application Area where cover thickness was in excess of 300 feet substantiates this interpretation of the subsidence affected flow systems. On two separate occasions, in-mine inspections were made to observe water conditions. It was noted that no water was accumulating in the completed longwall panel in Application Areas D-0360-2 or -3 and no water was being pumped from the sections. An inspection of the chain pillar areas, including

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close inspection of the accessible areas of the gob in three completed panels, did not reveal any ground water in-flow. Interviews with several mine foremen, who directed mine operations of the longwall panel areas, verified generally dry conditions prevailed throughout the mining and post-mining phases of the analog areas.

A re-adjustment of the subsurface flow system, however, does occur even in areas of high cover (>200 feet) resulting in some changes in ground water levels and a re-positioning of some hillside springs. The net hydrologic balance in these areas, however, is nearly unchanged. The water that infiltrates from the land surface remains in the flow system and does not, to a major degree, enter the mine. The re-positioning of the static water levels, however, often results in inconvenience (usually temporary) to the ground water users in the area. In the areas of low cover (<200 feet) more substantial impacts to the subsurface flow system are expected.

Based on an evaluation of the geologic units presently supplying water to wells or springs in the Application Area, a total of five aquifers have been identified. These units, which are also outlined on Form 14 B of this application, are summarized below.

Aquifer A: Unconsolidated Material

Limited to stream valleys and includes alluvial and colluvial sand and gravel deposits.

Aquifer B: Washington No. 12 Cyclothem

Includes the rock sequence from the Washington Coal Bed to the Middle Washington Limestone Member. Occurs from approximately 350 feet to 420 feet above the No. 8 Pittsburgh Coal Bed.

Aquifer C: Waynesburg No. 11 Cyclothem

Includes the rock sequence from the Waynesburg No. 11 Coal Bed to the Washington No. 12 Coal Bed. Occurs from approximately 250 feet to 350 feet above the No. 8 Pittsburgh Coal Bed.

Aquifer D: Sewickley No. 9 Cyclothem

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Includes the rock sequence from the Sewickley No. 9 Coal Bed to the Waynesburg No. 11 Coal Bed. Occurs from approximately 90 feet to 250 feet above the No. 8 Pittsburgh Coal Bed.

Aquifer E: Redstone No. 8A Cyclothem

Includes the rock sequence from the Redstone No. 8A Coal Bed to the Sewickley No. 9 Coal Bed. Occurs from approximately 30 feet to 90 feet above the No. 8 Pittsburgh Coal Bed.

These units are only recognized as aquifers where they occur within 200 feet of the surface where secondary porosity and permeability is greatest.

WATER SUPPLIES

A total of **57** water supplies that serve domestic and agricultural needs have been inventoried in the Application Area. This includes **45** wells and **12** developed spring supplies. The Application Map illustrates the location of all of these supplies. ~~**Eighteen (18) of the inventoried wells and fourteen (14) of the inventoried springs are outside the planned mining area but are within the hydrologic boundary**~~.

TABLE 1 presents a summary of the pertinent data for wells currently in use in Application Area D-0360-6. In general, the average well in the Application Area is **63** feet deep. The average overburden (between bottom of well and surface) is **261** feet and the rock column contains about **63** percent of soft rocks (shale, clay, mudstone, sandy shale). There are **11** wells located in the valley bottoms, 19 wells located on hillsides and 15 wells located on hilltops. About **31** of the wells are located over planned longwall panels or the gate entries and about **14** wells are outside the panel or gate areas.

TABLE 2 also presents a summary of the pertinent spring data. Similar overburden, lithologic, and topographic settings are associated with the springs. The average flow of the springs is 3.7 gallons per minute and flows below one gallon per minute are common. High flow (i.e. > 2 gpm) normally indicates field tile systems that drains the ground water out of the soil before it reaches bedrock. Most of the inventoried springs occur as hillside seeps. This is a common phenomenon

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in this hydrogeologic setting and it reflects the presence of low permeability units that act as aquitards which promotes horizontal flow to the side of the hills.

In addition, two ponds **have** been recognized as an agricultural water **supplies**.

EVALUATION OF HYDROLOGIC IMPACTS IN PREVIOUSLY MINED AREAS

Literature Review

Since 1972, when the Powhatan No. 6 Mine was opened, considerable research has been conducted relative to the impacts on the ground water flow system by longwall mining in the western Pennsylvania, northern West Virginia and southeastern Ohio areas. This literature database was 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.

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 about 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.

Quantity Impacts In Previously Mined Areas

In November 1992, the Ohio Valley Coal Company submitted a PHC prepared by Mr. William J. Siplivy, P.E., C.P.G., for Application Area No. D-0360-3. This report included a detailed summary of the effects of mining on well and spring water supplies in the R-0360-2 and D-0360-1 Application Areas. At the time of the report, no mining had occurred in the D-0360-2 Application Area. The data for the D-0360-2 area has been reviewed and considered in the preparation of this PHC. In addition, because mining is now complete in the D-0360-2 area and has begun in the D-0360-3 area, the data generated by OVCC in these areas is reviewed in detail here to improve the predictive capabilities of the PHC.

As part of the detailed review of the water supplies in Areas D-0360-2 and D-0360-3 that have been undermined and have detailed monitoring data, hydrographs of water levels in wells and flow rates in springs have been prepared and are presented here as FIGURES 1 and 2. A total of 47 well hydrographs and 34 spring hydrographs are presented. It has been OVCC's policy to measure water levels and flow rates 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

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frequency is increased to a weekly basis. Monitoring is reduced to a monthly basis 3 weeks after undermining and discontinued after one year. The distance to and from the face is represented on the graphical data by positive numbers (distance from water supply to advancing face) and by negative numbers (distance in feet to face after it passes the water supply).

Each of the 47 graphs presented as FIGURE 1 for well supplies and 34 graphs presented as FIGURE 2 for spring supplies includes both static water level measured in feet from the top of casing or 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 listed above that 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.

For these discussions the following definitions are used:

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 decline during mining but return to premining ranges within six months after mining.

Severe Impacts - Water levels for wells or flow rates for springs decline during mining and do not return to premining ranges within six months (or the duration of the monitoring period) after undermining.

A total of 47 wells met the criteria for detailed analysis, which included static water level measurements prior to, during and after mining operations. Of these 47 wells, 20 (42%) had minimal impacts as a result of mining; 6 (13%) were moderately impacted by mining and 21 (45%) 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.

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This may be attributed to the relatively narrow range of difference in these variables in the areas previously mined. All of the water wells in areas D-0360-2 and D-0360-3 that have currently been undermined have similar characteristics of overburden, lithology, panel position and well depth.

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 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". However, in both Mr. Leavitt's findings and in the findings of the OVCC monitoring, overburden thickness was generally in excess of 300 feet. The impacts on valley setting wells - and in fact all wells regardless of topographic position - are intuitively expected to increase in severity when overburden thickness is less than 200 to 300 feet.

The conclusion derived from this data analysis is that of the wells in Application Area D-0360-6 with geologic settings similar to those described above; 42% will be minimally impacted by mining with no changes in water levels or water levels that recover within two months of undermining, 13% will be moderately impacted with water level declines that recover within six months and 45% will be severely affected with water level declines that do not recover within six months. Although the wells in the analog areas D-0360-2 and D-0360-3 do not adequately represent areas of low cover (<200 feet), it is intuitively expected from the literature review that wells of this type in Application Area D-0360-6 will be severely impacted.

A similar analysis was performed for the developed springs that were undermined in the D-0360-2 and D-0360-3 areas. A total of 34 springs met the criteria for detailed analysis, which included flow measurements prior to, during and after mining operations. Of these 34 springs, 1 (3%) had minimal decreases in flow rates(no decrease or recovery within two months); 7 (21%) had moderate decreases in flow rates(decreased flow rates with recovery within six months), and 26 (76%) had severe decreases in flow rates(decreased flow rates that do not recover to pre-mining levels within six months). Table 4 summarizes the pertinent data presented in FIGURE 2.

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Like the water wells discussed above, there is not a discernible correlation between the unaffected springs, the marginally affected springs and the affected springs and the variables of overburden thickness, overburden lithology, position over the panel, discharge rates and also topographic position. This again is attributed to the very narrow range in the evaluation variables. All of the springs in the D-0360-2 and D-0360-3 areas that have currently been undermined have similar characteristics of overburden thickness, lithology, topographic position, panel position and depth.

The conclusion based on this data analysis is that of the springs in the Application Area with hydrogeologic settings similar to those described above; only 3% of the springs will be minimally impacted by mining; 21% will be moderately impacted by mining with temporary decreases in flow rates that persist for less than six months and 76% will be severely impacted by mining with decreased flow rates that do not recover within six months. Most springs in Application Area D-0360-6 with overburden thicknesses of less than 200 feet are expected to be severely impacted.

The data base was also reviewed specifically to quantify the distance outside the mine plan area that measurable impacts on ground water occur in terms of reduced water levels in wells or reduced spring flow rates. This was done by evaluating static water levels in wells and flow rates in springs of water supplies located adjacent to long wall panels. Data was evaluated for 22 wells and 10 springs in Application Areas D-0360-2 and D-0360-3. The single values that appear in the following TABLE 5 are distances in feet at which no impact had occurred to the supply. The values were derived by noting the last recorded position of the long wall panel relative to the well or spring before any impact occurred. These values are listed as a less than (<) sign in the table. If no impact to ground water occurred as an adjacent panel passed by the supply, the distance to the panel at its closest position to the supply was recorded. These values are also listed with a less than sign. These values indicate that no impact to the supply had occurred at the corresponding distance but an impact may or may not have occurred at a distance less than that given. If data were available, the distance of impact is given as a range indicating that the impact to the supply occurred at a distance greater than

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and less than the corresponding values. In all cases, the distances are from the edge of the longwall panel and not the adjacent chain pillars.

The following conclusions are drawn from this data.

1. In 13 percent of the cases, no ground water impacts were observed at a distance of 50 feet from the long wall panel.
2. In 97 percent of the cases, no ground water impacts were observed at a distance of 700 feet from the long wall panels.
3. In only one case were impacts documented at a distance greater than 745 feet.

In the February 1992 publication by the National Ground Water Association, "Effects of Long Wall Mining on Surface Soil Moisture and Tree Growth" it was noted that long wall mining produced no general impacts on soil moisture or tree growth.

Quality Impacts In Previously Mined Areas

In addition to the water quantity evaluations in previously mined area presented above, water quality affects of longwall mining on the ground water flow system have been reviewed. A total of 28 wells and 22 springs were evaluated. Each of these **50** water supplies are located over previously mined sections of the D-0360-2 and D-0360-3 areas. 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. The wells and springs used in this evaluation include:

A summary of the water quality data for those supplies is presented in TABLE 6 This table 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

7 of the 16 wells tested for manganese exhibited increasing levels of manganese

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in the post-mining phase

For Springs:

10 of the 22 springs exhibited increased iron levels in the post-mining phase

7 of the 22 springs exhibited increased manganese levels in the post-mining phase

7 of the 22 springs exhibited increased hardness levels in the post-mining phase

Typically the iron and manganese increases were temporary and not persistent for more than a year.

PROBABLE HYDROLOGIC CONSEQUENCES-SUMMARY

Surface Water

McMahon Creek is the primary drainage way in this Application Area. McMahon drains toward the east and is located along the northern boundary of the application area. Unnamed tributaries to McMahon Creek drain in a northerly and northeastern direction in most of the Application Area. A small portion of southeastern area and a small portion of the southwestern area drain to the south in unnamed tributaries of Williams Creek, which is itself a tributary of McMahon Creek. All of these streams have a dendritic drainage pattern which reflects a lack of structural control from the underlying nearly flat bedrock units.

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 enters the mine, any stream water loss that may occur is not expected to drain into the mine.

This generalized theory for areas with 200 feet or more of cover is supported by the data generated by the OVCC in the D-0360-2 and D-0360-3 areas where undermining has occurred and hydrologic changes have been monitored. These areas are in very similar hydrogeologic settings and a temporary lowering of the water table under the hilltops and higher elevations is documented in water wells and spring flows. It is expected that any reduction in stream flows will be limited to the upper elevations (primarily in the first order streams).

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Four stream segments that were monitored in the pre and post mining phases in Application Area D-0360-3 were selected at random for detailed evaluation. Hydrographs of these four data sets are presented on TABLE 7 at the end of this report. These data verify the general predictions listed above are verbalized as follows

Monitoring Point U-038-067

This unnamed tributary to Williams Creek was monitored for flow rates on six separate occasions prior to undermining and 14 times post undermining. This first order stream is shown on the U.S.G.S. 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 U-034-144

This unnamed tributary to Williams Creek was monitored for flow rates on nine separate occasions prior to undermining and 12 times post undermining. Thus is a first order stream and is shown as intermittent on the U.S.G.S. 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 U-034-038

This point on Williams Creek was monitored for flow rates on 12 occasions prior to mining and three 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 U-29-C

Flow in this first order intermittent stream was monitored on three 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.

Overburden thickness is less than 200 feet in sections of the northeast quarter of the Application Area D-0360-6. The potential exists for more substantial surface water impacts.

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Probable Hydrologic Consequences

McMahon Creek is located north of Application Area D-0360-6. The cover thickness between the No. 8 Coal Seam and McMahon Creek is less than 200 feet immediately northeast of the mine boundary. As indicated above, hydrologic impacts from longwall mining in the analog areas were significantly reduced in lowland or valley setting areas and as such significant impacts to McMahon Creek by mining are not considered likely.

No longwall mining will occur closer than 375 feet from the Creek in this area. This isolation distance is considered adequate to protect McMahon Creek and prevent unwanted water inflow into the mine. In a similar low cover setting along William's Creek in Application Area D-0360-3, these procedures were followed and no negative impacts on the stream by mining were detected even when longwall mining occurred as close as 105 feet from William's Creek. (see Addendum to Page 30, Part 3,K (6))

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Ground Water

The data generated in the D-0360-2 and D-0360-3 areas indicate that ground water levels will decline in some areas within Application Area 6 as mining occurs. Porosity and permeability in the near surface saturated zone may increase due to subsidence opening of existing rock fractures and creation of new fractures. In the northeast section of the application area, overburden is less than 200 feet thick and thus more substantial ground water impacts are likely.

Post Mining Water Breakouts

The area with the lowest cover is located in the north**central** section of Application Area D-0360-6. The lowest surface elevation in the Application Area is approximately **920** feet msl. The lowest surface opening elevation for the Powhatan No. 6 Mine is 847 feet msl. The maximum coal elevation in Application Area D-0360-6 is approximately 825 feet msl or **95** feet below the lowest surface elevation. The maximum elevation in the Powhatan No. 6 Mine is approximately 825 msl or 22 feet below the lowest surface opening in the Powhatan No. 6 Mine. For these reasons no post mining water breakouts are predicted.

Water Supplies

A total of **57** water supplies (**45** wells and **12** springs) have been inventoried in Application Area D-0360-6, including the hydrologic boundary area.. The potential impacts on these water supplies by mining have been evaluated based on monitoring of springs and wells in mined out sections of the D-0360-2 and D-0360-3 areas and a review of pertinent literature.

For areas with high cover (>200 feet overburden) the predicted impact on wells and springs are exactly as they were documented in the mined sections of Application Areas D-0360-2 and D-0360-3. The notable exception is the limited impact observed in wells in valley settings (this may reflect the limited data base for wells of this type). When cover thickness exceeds 200 feet in valley bottom settings, an 11% likelihood of severe impacts, an 11% likelihood of moderate impacts and a 78% likelihood of minimal impacts is used to be consistent with the findings of the analog areas. These impacts are summarized on TABLE 3 for wells and TABLE 4

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for springs and are expressed as a percent of the wells that experienced significant, moderate or no impacts. As outlined above, for the purposes of these predictions:

- Severe indicates water level declines or reduced flow rates that persist for more than six months.
- Moderate indicates water level decline or reduced flow rates that recover within six months.
- Minimal indicates a water level decline or reduced flow rates that recover within two months.

Although the analog areas D-0360-2 and D-0360-3 did not include low cover (<200') situations, it is recognized from the literature review that significant water level declines or diminished spring flow rates are likely in those settings. Thus all water wells and springs with less than 200 feet of cover are predicted to have a greater than (>) 75% chance of significant water level declines or dewatering for a period of six months or more.

In addition, water wells and springs located 700 or more feet outside the limit of longwall mining (but within the hydrologic boundary) are not expected to be impacted by mining operations. Based on evaluations in the analog areas -2 and -3, 97 percent of the wells and springs 700 or more feet from the panel boundaries were not impacted. This is reflected in the current evaluation.

Previous PHC's

As outlined above , OVCC has prepared four previous PHC's in the past for various areas in the Powhatan No. 6 Mine area. Since 1987 there has been a concerted effort to improve the predicative capabilities of mining impacts on surface water and ground water. This has included an extensive premining and postmining quantity and quality monitoring of wells and springs. This PHC reflects the data base now available and represents an improved method of evaluation. However, the data base has not matured sufficiently to allow a detailed analysis of the accuracy of previous PHC's.

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TABLE 1
Water Well Data Summary
Application Area D-0360-6

Total Number of Wells	45
Number of Dug Wells (<30')	9
Number of Drilled Wells (>30')	36
Number of Wells with unknown depths*	1
Average Well Depth	63 feet
Depth Range	8 to 130 feet
Average Overburden Thickness (Between bottom of well and **the bottom of the #8 Pittsburgh Coal Seam**)	261 feet
Range of Overburden Thickness (Between bottom of well and **the bottom of the #8 Pittsburgh Coal Seam**)	47 to 444 feet
Number of Wells on Hilltops	15
Number of Wells on Hillsides	19
Number of Wells in Valley Bottoms	11
Number of Wells Outside Panels	14
Number of Wells Over Gates	7
Number of Wells Over Quarter Panel	13
Number of Wells Over Middle Panel	11
Average Percent Soft Rocks	63
Range of Percent of Soft Rocks	51-77

*Sealed, covered or buried (inaccessible)

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TABLE 2
Developed Spring Data Summary
APPLICATION AREA D-0360-6

Total Number of Developed Springs	**12**
Average Overburden Thickness	364 feet
Range of Overburden Thickness	97-431 feet
Number of Springs on Hilltops	0
Number of Springs on Hillsides	**12**
Number of Springs in Valley Bottoms	0
Number of Springs Outside Panels	**3**
Number of Springs Over Gates	3
Number of Springs Over Quarter Panel	4
Number of Springs Over Middle Panel	2
Average Percent Soft Rocks	**62**
Range of Percent of Soft Rocks	39-**75**
Average Flow	3.7 gpm

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TABLE 3

Wells

APPLICATION AREA D-0360-2-3

Category	No. of Wells	Percentage of Wells	Overburden	Percentage of Soft Rocks	Topo Position	Panel Position*1	Well Depth
Minimally impacted Wells	20	42%	203-582 avg=419	59-84 avg=72	9 Hilltop 4 Hillside 7 Valley	5 Wells over Gates 5 Wells In Midpanel 7 Wells over Quarter Panel 3 Outside Panel	12-208 avg=67
Moderate Impacted Wells	6	13%	292-577 avg=497	66-84 avg=71	5 Hilltop 1 Valley	3 Wells over Gates 1 Wells over Quarter Panel 1 Wells over Midpanel 1 Off Panel	31-102 avg=63
Severely Impacted Wells	21	45%	260-588 avg=492	69-84 avg=72	13 Hilltop 7 Hillside 1 Valley	4 Gate 9 Quarter 7 Midpanel 1 Off [panel	15-138 avg 73

(1 NOTE: Panel position refers to the position of the water supply over the panel. Off Panel indicates supply is outside the chain pillars, Gate indicates supply is over the gate entries, Quarter Panel indicates supply is close to the edge of a panel, Mid Panel indicates supply is over middle half of the panel.)

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TABLE 4

Springs

APPLICATION AREA D-0360-2-3

Category	No. of Springs	Percentage of Springs	Overburden	Percentage of Soft Rocks	Topo Position	Panel Position *1	Discharge Range (GPM)
Unaffected Springs	1	3%	472	59	1 Hillside	1-Off Panel	0.2-1.2
Marginally Affected Springs	7	21%	405-479 Av g=417	72-84 Avg=67	7 Hillside	3 Quarter 4 Midpanel	0-18
Severely Affected Springs	26	76%	285-532 Avg=447	57-84 Avg=75%	26 Hillside	3 Gate 11 Quarter 12 Midpanel	0-18

*1 NOTE: Panel position refers to the position of the water supply over the panel. Off panel indicates supply is outside the mine area, gate indicates supply is over the gate entries, quarter panel indicates supply is close to the edge of the panel and mid-panel indicates supply is over the middle half of the panel.

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TABLE 5
DISTANCE FROM MINE FACE
WHEN IMPACTS WERE NOTED
For Previously Mined Areas D-0360-2-3

Supply Number	Measureable Ground Water Impacts
W-50	<600'
W-51	<538'
W-52	<343'
W-53	>60 but <133'
W-54	>270' but <570'
W-55	>270' but <440'
W-56	<15'
W-60	<640'
W-61	>745' but <1285'
W-62	<483'
W-73	<270'
W-74	<240'
W-75	<240'
W-77	<270'
W-78	<200'
W-82	<170'
W-83	<470'
W-84	<440'
W-85	<380'
W-282A	<570'
W-283	<610'
W-285	<500'
SP-38	<260'
SP-41	<210'
SP-45	>70' but <105'
SP-52	<700'
SP-175	<50'
SP-176	<200'
SP-177	>290' but <428'
SP-180	<50'
SP-198	<290'
SP-226	<50'

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TABLE 6
Ground Water Quality Summary
Pre and Post Mining
R-0360-2, D-0360-1,D-0360-2 & D-0360-3

	pH		Acid		Alk.		Iron		Manganese		Hardness		Sulfate	
Supply No.	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
SP-21	7.3-8.26	7.2-8	3.5-47.4	7.2-30.4	39.1-90.9	74-186.77	0.03-0.08	<0.04-.28			100-106	101-218	37-41	24-47
SP-22	7.7-7.83	7.1-7.7	5.3-8.1	2-7.03	47-88.7	58.9-94.5	0.04-0.06	0.08-0.76			105-0119	95-136	55.2-66	10-78
SP-23	6.3-7.1	6.86-7.9	15.3-40.47	22.6-68.4	98.42-112	150-304.6	0.11-0.97	2.04-6.2			127-357	294-778	70-81	105-220
SP-24	6.4-7.4	6.9-7.3	11.4-27.5	2.2-15.4	82.46-118	44.6-91.8	<0.04-0.18	<0.04-1.15			198-276	144-267	50-84	42-83
SP-30	6.74-7.3	6.9-7.5	3.1-61.4	0-29.83	26.5-100.5	129.6-226.67	0.01-0.18	<0.04-0.34			193-217	166-320	89-97	26-61
SP-31	6.61-7	6.2-7.1	0-81.6	11.4-34.39	70-166	38.4-224.39	<0.02-0.24	<0.04-3.95			114-263	100-319	44-89	41-50
SP-35	7.3-7.7	7.3-7.6	8.4-11.6	10.8-15	139.4-216.2	110-251.4	<0.04-0.52	0.07-0.94			176-276	180-276	24-56	36-41
SP-36	6.9-7.5	7.4	0-24.32	14.6	46.6-176	174.6	0.06-2.12	1.67			22-262	200	33-54	46
SP-38	7.3-7.9	7.5-7.8	0-24.8	2.8-13.4	136-212	142.4-178.6	0.05-0.64	0.09-0.22			100-215	151-229	12-61	20-44
SP-39	7.27-7.6	7.7-8.4	7-15.6	<1.5-8	155.8-169.6	47-190	<0.04-34.7	0.07-0.33			0.06-184	136-230	<10.0-36	17-50
SP-41	6.6-7.3	7.6	9-14	17	60-178	167	.02-.23	0.53	<.02-.06	.03	80-216	172	20-42	32
SP-44	7.0-7.4	7.3	24-46	0	188-206	173	<0.4-.08	0.18	<0.2-.02	<0.02	235-251	301	36-43	45
SP-45	66.7-7.1	6.7-6.8	15.77-56.24	4.4-11.2	115.8-168.91	53.4-127	<0.04-4	0.09-0.24			160-236	76-120	34-49	16-43
SP-93	7.2-7.8	7.2-7.6	0-52	5.8-9.6	63.65-324.8	122.6-160	0.01-4.5	0.16-0.95			80.4-240	142-190	17-37	33-34
SP-172	7.3-7.7	7.1-7.9	7.6-19.4	7.2-16.8	165-212.4	170-200	0.09-1.27	0.04-0.24			261-280	239-310	23-42	29-42
SP-173	6.8-8.2	7.4-7.8	6-21	6-8	79-132	96-133	<0.4-.25	.04-.13	<0.2-.02	<0.02	124-168	146-182	21-44	31-49
SP-174	7.2-7.9	6.1	16-40	9	20-204	30	<0.4-.15	.26	<0.02	<0.02	186-200	182	10-38	18
SP-175	7.4-7.7	7	17-47	5-8	166-238	31	.1-7	.41	.05-2.0	.03	272-401	66	24-51	12
SP-176	7.1-7.6	6.9	11-31	4-9	150-201	131-166	<0.4-.18	.07-.15	<0.02-.04	<0.02	216-304	210-252	33-49	25-49
SP-198	7.8-77.7	6.9-7.4	5.8-31.8	7.2-20	159.6-198.6	123.6-280	<0.04-0.15	0.04-0.6			173-252	216-378	24-43	53-70
SP-216	6.8-7.7	6.7-6.8	4-74	5-10	70-119	51-53	.05-.52	.14-.17	<.02-.06	<0.02	90-147	75-81	15-38	23-27
SP-220	6.8-7.7	7.6	5.6-25.4	4.4	20.4-196.8	150	0.08-1.66	5.2			58-264	188	10-54	44
W-24	7.1-7.93	6.9-8.2	9.4-18.3	6.27-27.6	96-148	116.47-169.86	<0.02-0.09	0.08-10.5	0.02-0.04	0.02-0.69	121-163	154-200	37.6-61	39-77
W-25	6.88-7.7	7.4-7.7	4.2-67.3	10.26-38.8	83-112	114.21-166	0.04-.14	<0.04-2.78	<0.02-0.04	<0.02-0.56	139-157	188-215	76-80	30-40
W-26	7.28-7.57	7.3-7.5	16.2-37.5	22.23-51.2	186-214	204.2-229.6	0.04-0.1	0.06-0.74	0.03	<0.02-0.07	217-308	258-280	61-75.2	23-49
W-28	7.2-7.41	7-7.5	18-23.4	7.6-62.8	163-189	25.3-266.8	1.03-1.34	<0.04-7.9	0.18-0.27	<0.02-0.41	238-261	266-304	56-69	14-35

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W-30	7.49-7.65	7.3-7.6	8.3-11.6	10-20.71	14-206	108-248.4	0.04-0.09	0.04-1.24	0.01-0.03	<0.02-0.07	259-289-	296-312	56-59	43-59
W-33	6.9-7.61	7.1-7.8	14.52-53.2	20.2-34.8	150.1-196	22.23-186.6	<0.04-0.17	<0.04-0.11	<0.02-0.03	<0.02-0.06	214-242	155-240	34-58	32-115
W-34	6-8.09	6.5-7.1	12.2-24.13	0-33	29.64-160.17	48.6-113	0.11-3.01	<0.02-1.41	<0.02-0.85	<0.02-10.05	136-282	155-190	49-67	52-56
W-38	7.3-7.57	6.9-7.6	9.05-17.3	11.4-43.2	19.4-231	171-223.4	0.09-8.54	0.07-5.62	<0.02-0.26	0.02-0.2	198-233	196-272	37.6-46.4	29-46
W-44	7.1-7.5	7.3-8.9	1.2-71.4	0-40.8	76-343.9	29.8-268	0.04-1.98	<0.04-2.09	<0.02-0.45	<0.02-0.07	219-371	111-264	<10-140	33-100
W-51	7.3-7.8	7.8	0-40	14	158-243	286	.04-.65	0.77	<0.02-.23	0.05	84-277	97	26-68	44
W-52	7.4-7.8	7.4-8.2	0-28.4	4.2-20.0	141-255.6	192-213	<0.04--0.22	0.06-0.25			91-280	256-303	31-62	47-63
W-53	7.4-7.8	7.4-7.8	0-16	8-16	96-214	171-213	<.04-1.3	.16-.75	<0.02-.05	.06-.08	84-256	228-242	11-56	35-49
W-54	7.3-7.7	7.4	0-19.2	8.8-12	94-268	192-240	<0.04-3.06	0.91-2.7			76-232	56-120	11-71	86-109
W-55	7.3-7.6	7.7-8.3	0-54	4-11	184-214	177-221	<0.04-.24	.07-1.4	<.02-.09	<0.2-4.2	71-272	120-232	35-63	24-67
W-56	7-7.6	7.5-7.8	0-86.4	10.6-13	156-300	207-250	0.02-1.73	0.10-5.8			24-403	244-313	31-84	35-72
W-57	6.8-7.8	7.3-7.8	0-22	11-17	87-261	179-206	.04-.45	.15-.46	<0.2-.02	.02-.06	63-184	200-252	31-46	12-77
W-58	7.2-7.8	7.7	0-15	9	150-335	215	<0.4-.08	0.06	<0.2-0.3	<0.02	72-196	112	41-61	43
W-92	6.9-7.0	7.2-7.4	16-72	32-131	66-127	.83-100	.65-2.2	<0.2-2.9	<.02-.02	.02-11	162-239	72-250	93-100	70-819
W-214	6.4-6.8	6.6-7.6	0--37.24	7.36	116-172	33-50	0-.30	<0.02-.71			100-276	72-260	44-216	17-110
W-215	7.5-8.3	6.8-7.36	0-20.3	4.2-19	189-380	68-150	1.21-0.12	0.6-3.8			20-200	72-160	14-186	89-41
W-216	7.2-7.6	7.39-8.4	11.4-28.5	8.8-34	236-270	300-380	0.0-0.3	.48-.95			248-360	160-620	130-183	77-520
W-260	6.9-7.3	7.2-7.3	0-39.71	33-46	315-380	310-360	0.02-.87	.07-.41			168-446	380-470	40-165	50-95
W-282	7.4-7.9	7.4-8.1	2.4-17	3.2-25	182-250	169-335	.17-2.3	.11-5.5	<0.2-0.1	.02-.16	199-227	60-253	38-43	40-84
W-282A	7.3-7.7	7.4-8.4	12.54-30.4	9.6-17.1	154.6-225.71	176-279	0.21-0.6	0.02-1.91			189-204	115-262	37-44	30-116
W-283	7.5-7.9	7.4-7.9	2.4-32	3.2-15.4	182-191	218-334	0.17-2.27	0.11-2.38			199-216	60-253	38-43	44-80
W-285	6.8-7.7	7.3-7.8	8.8-16.6	15.8-27	185-196	170-234	0.86--2.86	10.2			262-320	12-160	52-120	76
W-288	7.2-8.3	7.2-7.57	3.3-32.6	16-17	150-240	150-180	0.15-2.55	0.07-.13			180-423	210-380	36-91	44-55
W-72	7.2	7.4-7.5	21-29	11-21	120-138	120	0.17-2.82	0.06-0.22			330-400	290-300	11-92	59-100

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TABLE 7

REPRESENATIVE STREAM HYDROGRAPHS
OF PERMIT AREA D-0360-3

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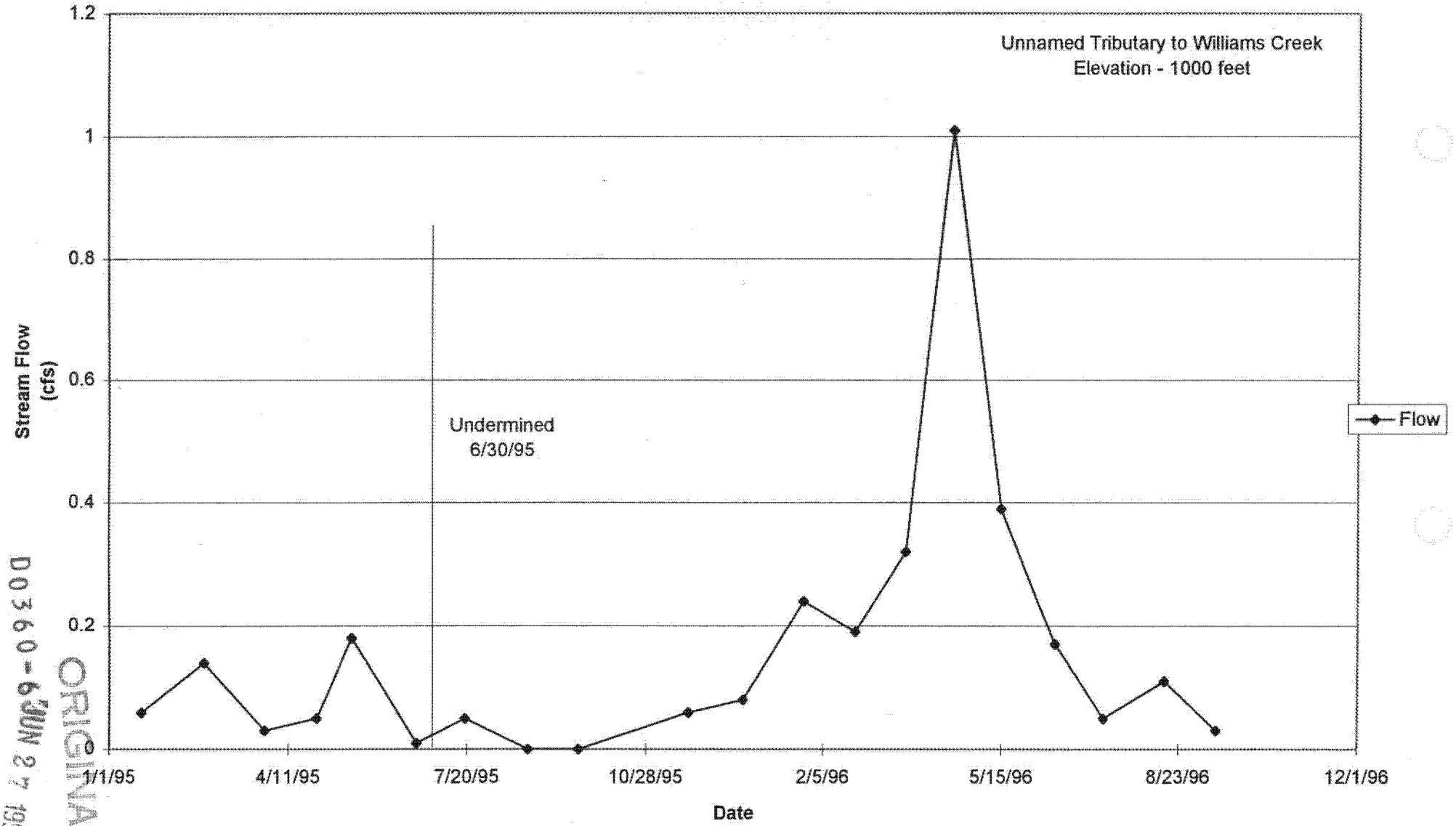
Ohio Valley Coal Company
Permit Area D - 0360 - 3

Upstream Monitoring Point
U - 038 - 067
Stream Flow Hydrograph



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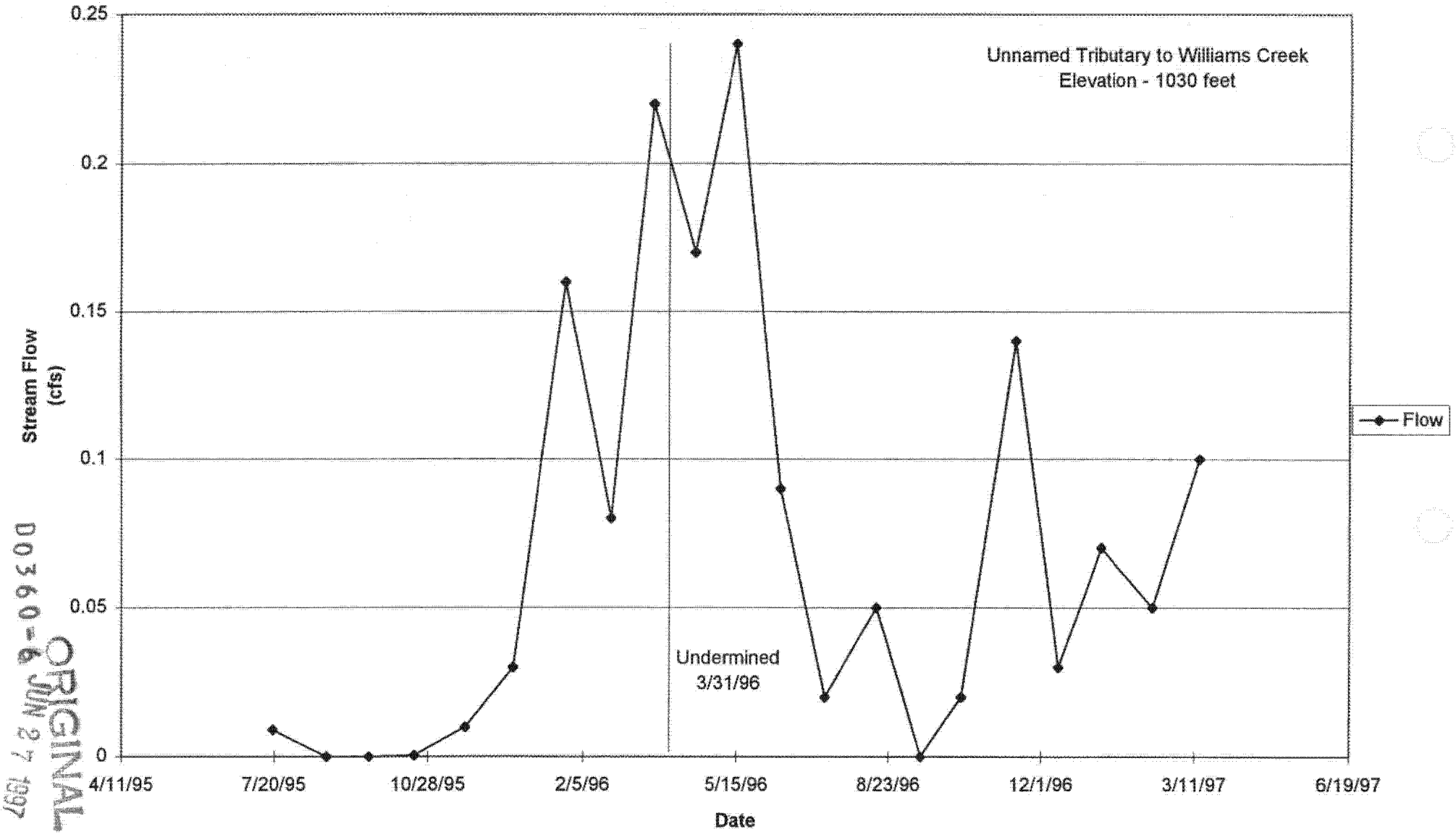
Ohio Valley Coal Company
Permit Area D - 0360 - 3

Upstream Monitoring Point
U - 034 - 144
Stream Flow Hydrograph



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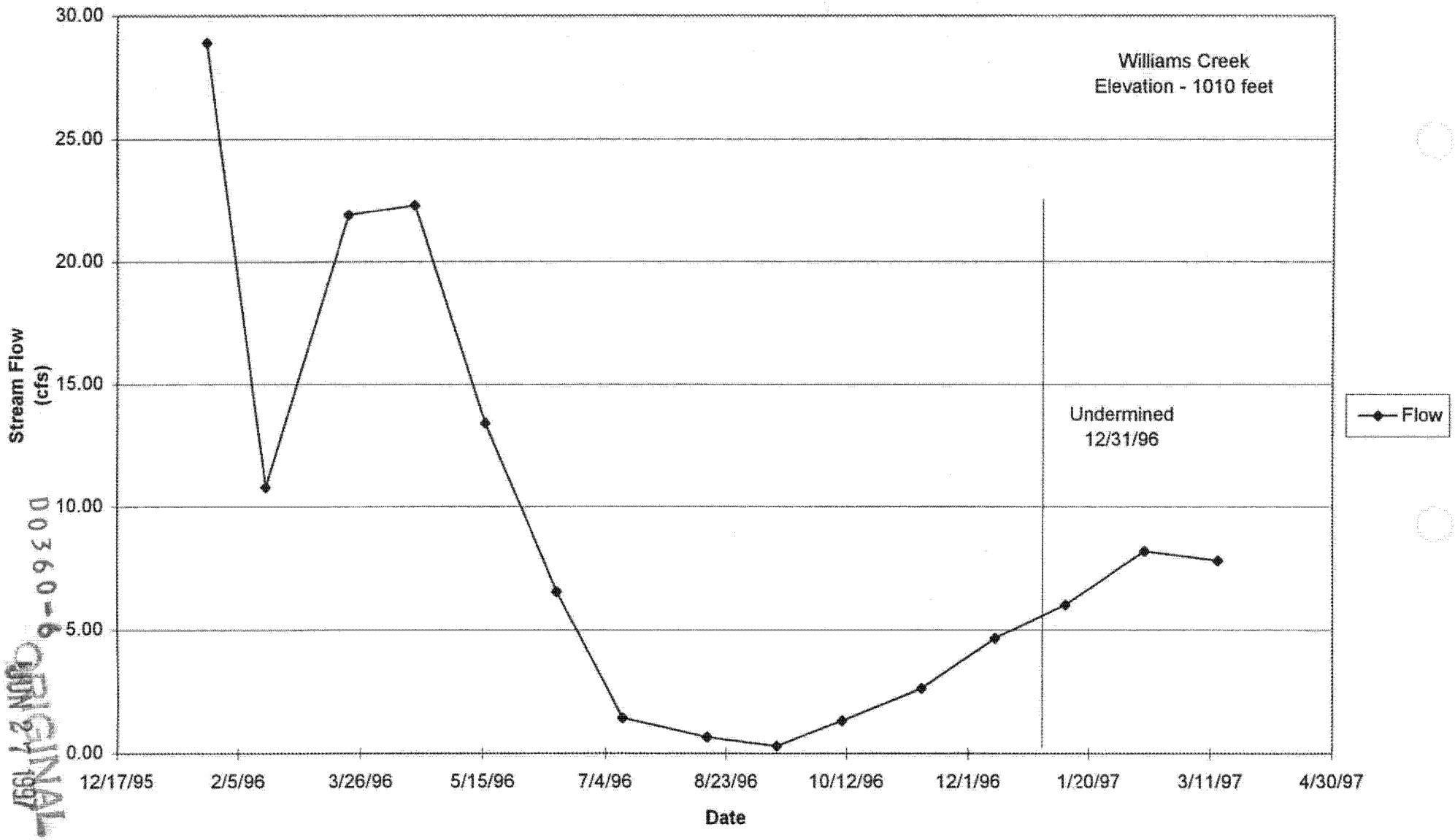
Ohio Valley Coal Company
Permit Area D - 0360 - 7

Upstream Monitoring Point
U - 034 - 038
Stream Flow Hydrograph



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Ohio Valley Coal Company
Permit Area D - 0360 -3

Upstream Monitoring Point
U - 29 - C
Steam Flow Hydrograph

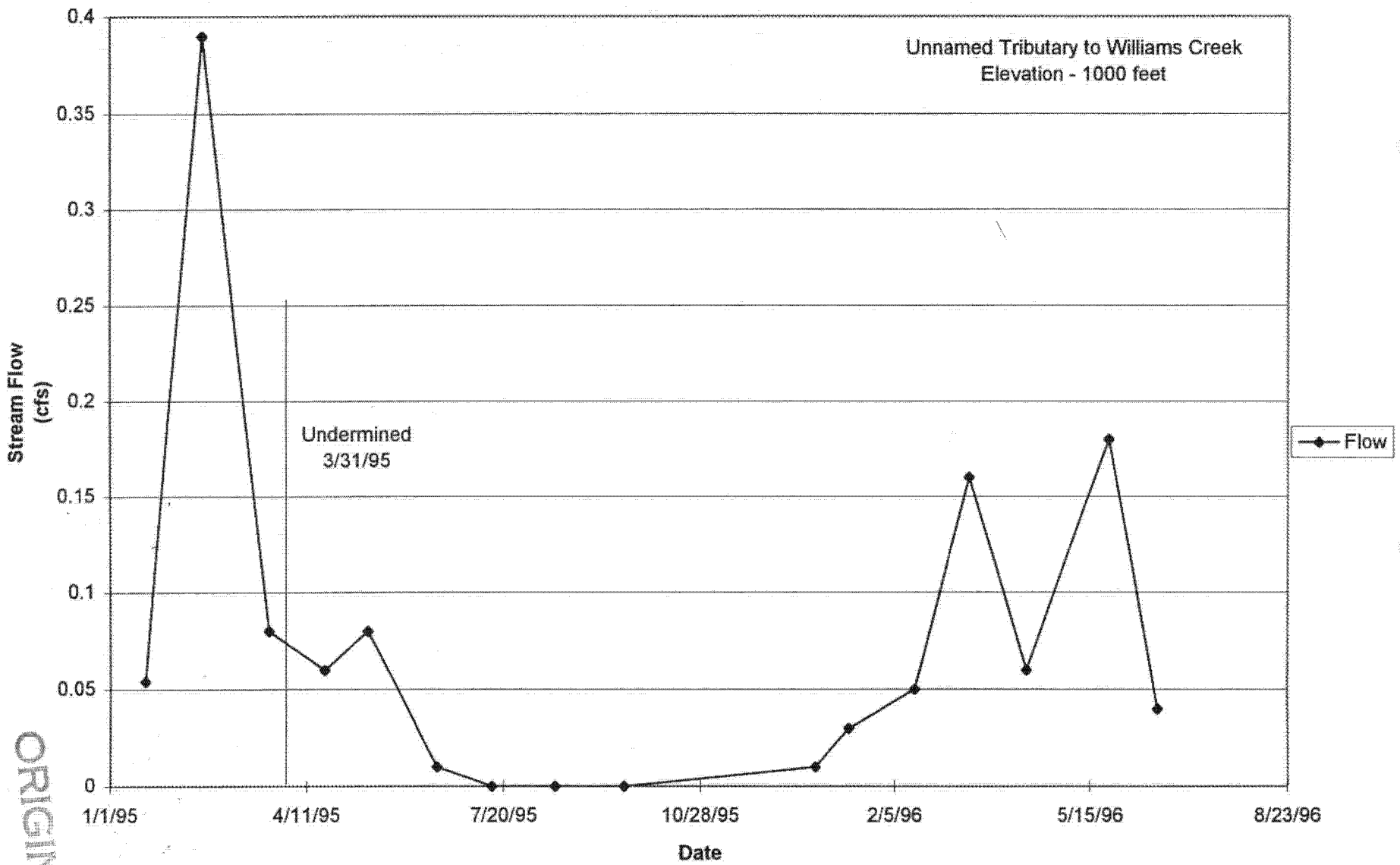

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FIGURE 1

Graphs of water well static water levels for Areas D-0360-2 & D-0360-3

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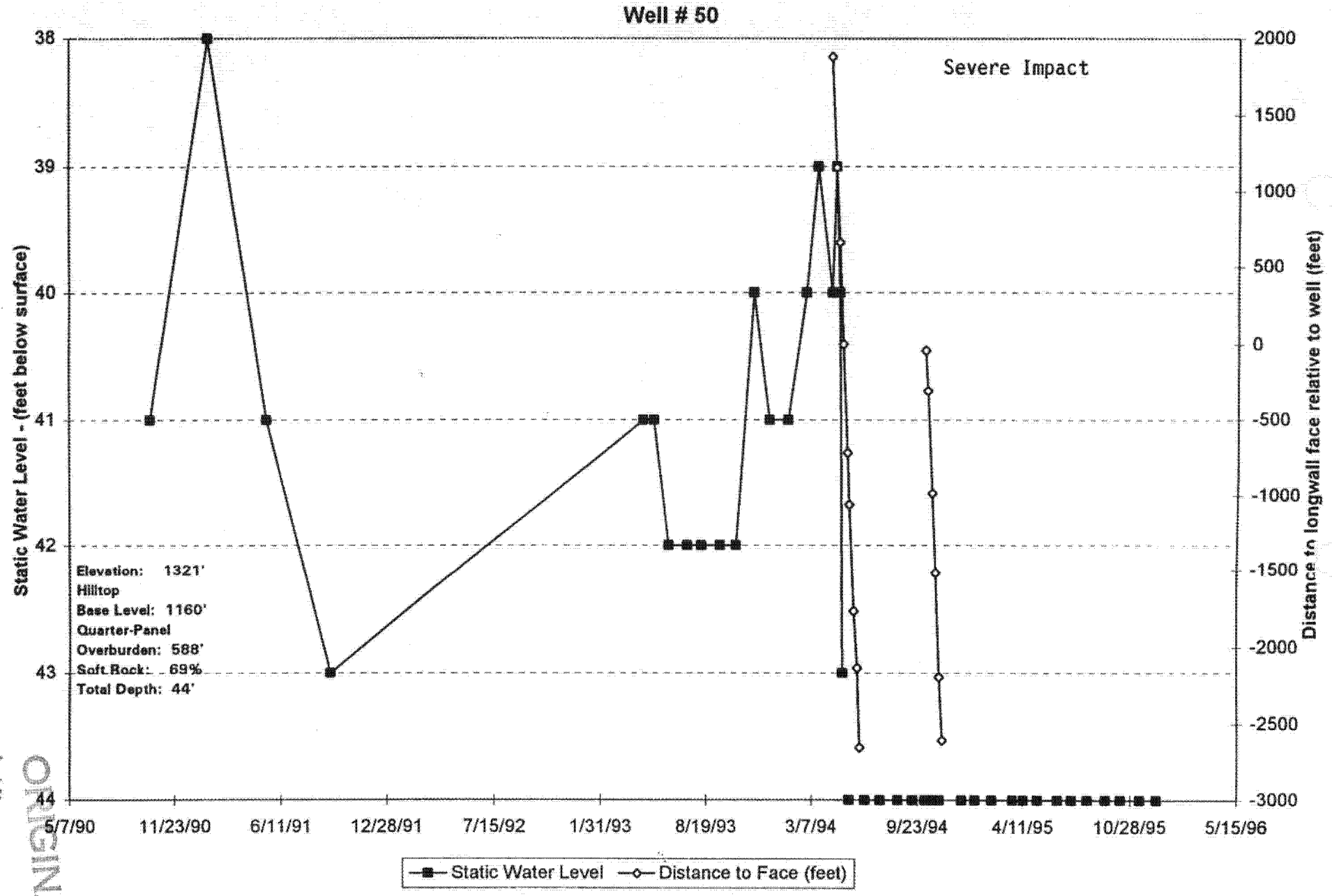

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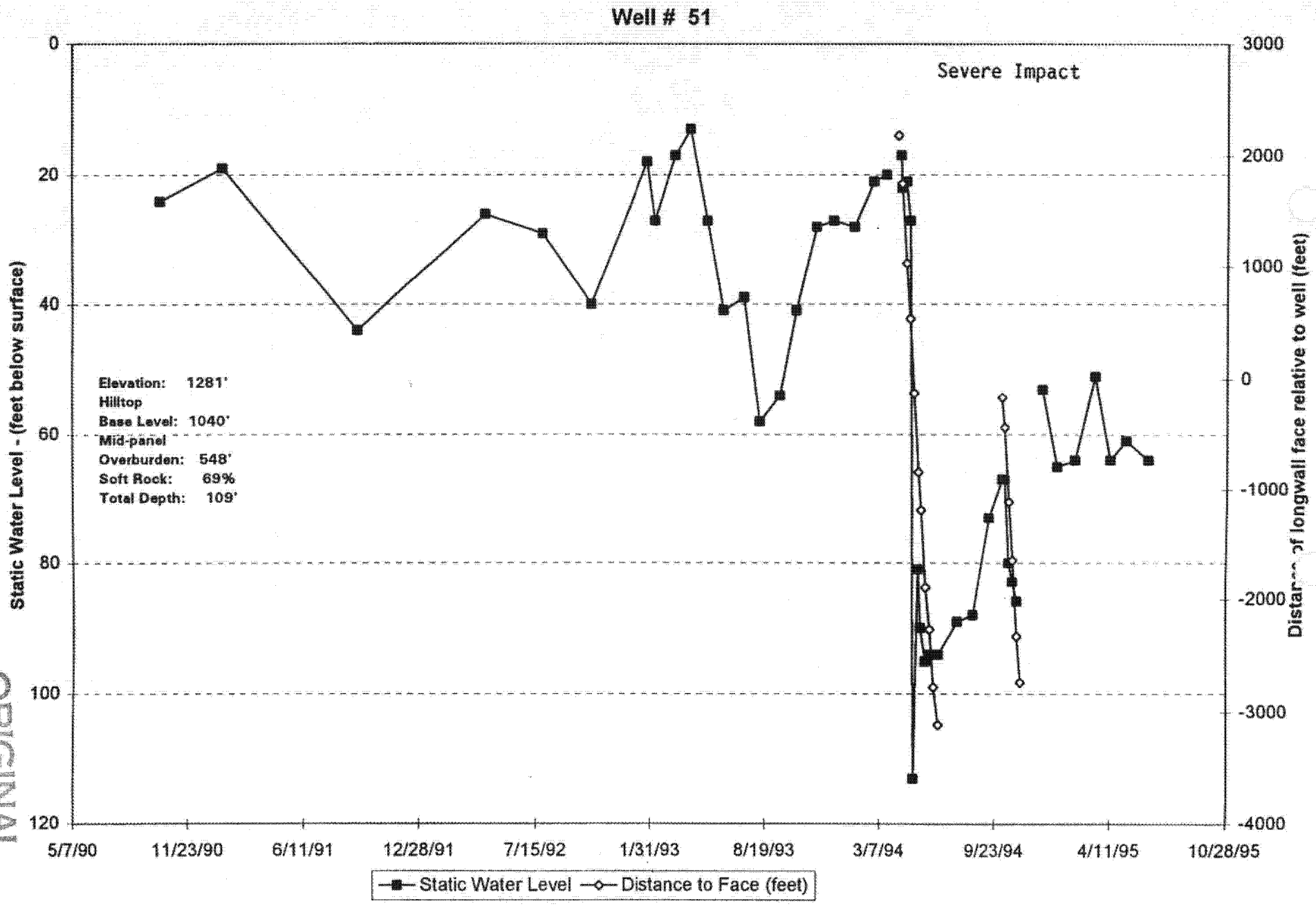

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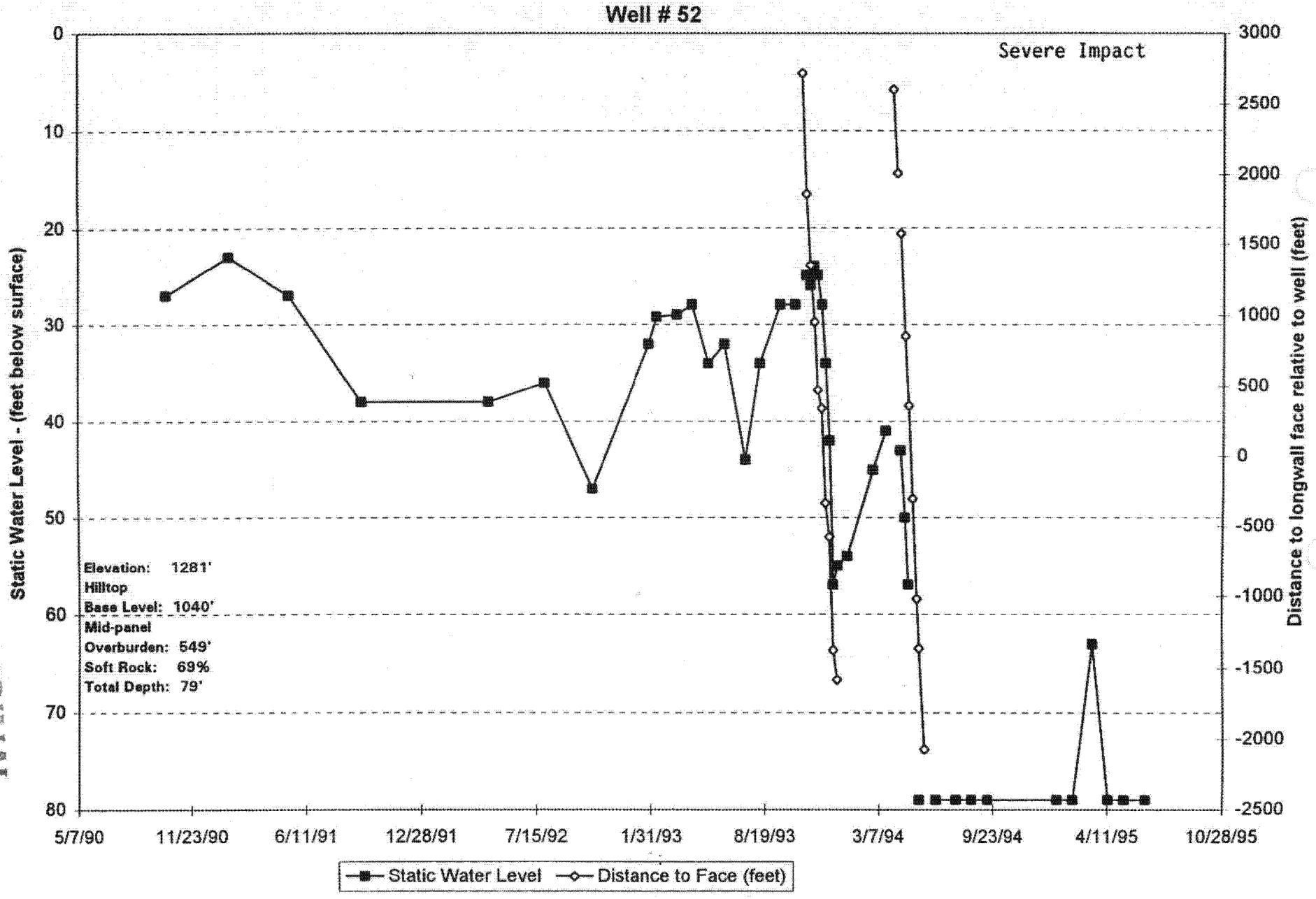

Prepared by: Moody and Assoc. Inc. 12/5/96

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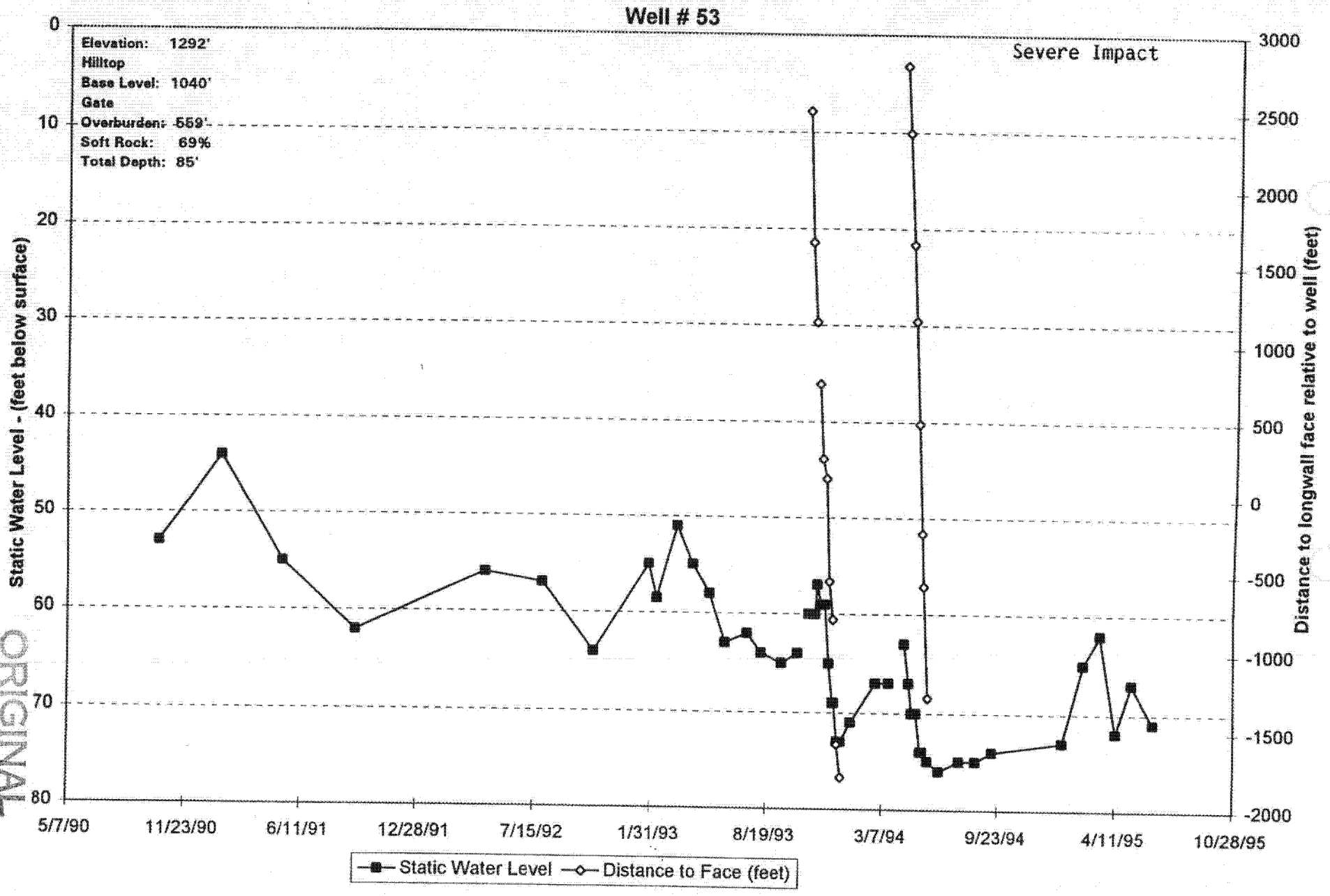
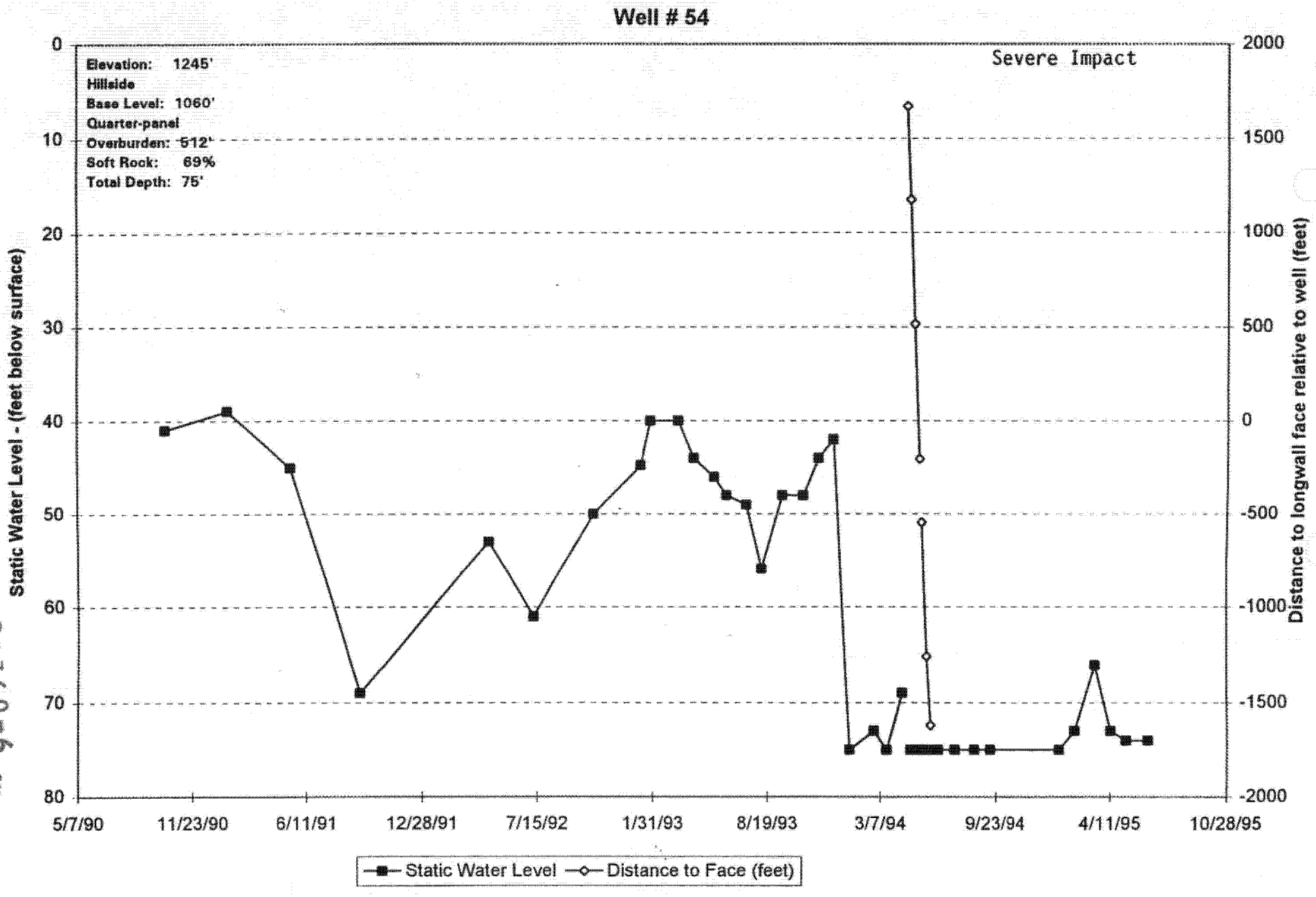


Prepared by: Moody and Assoc., Inc. 12/5/96

D0360-6 ORIGINAL JUN 27 1997



Prepared by: Moody and Assoc. Inc. 12/5/96

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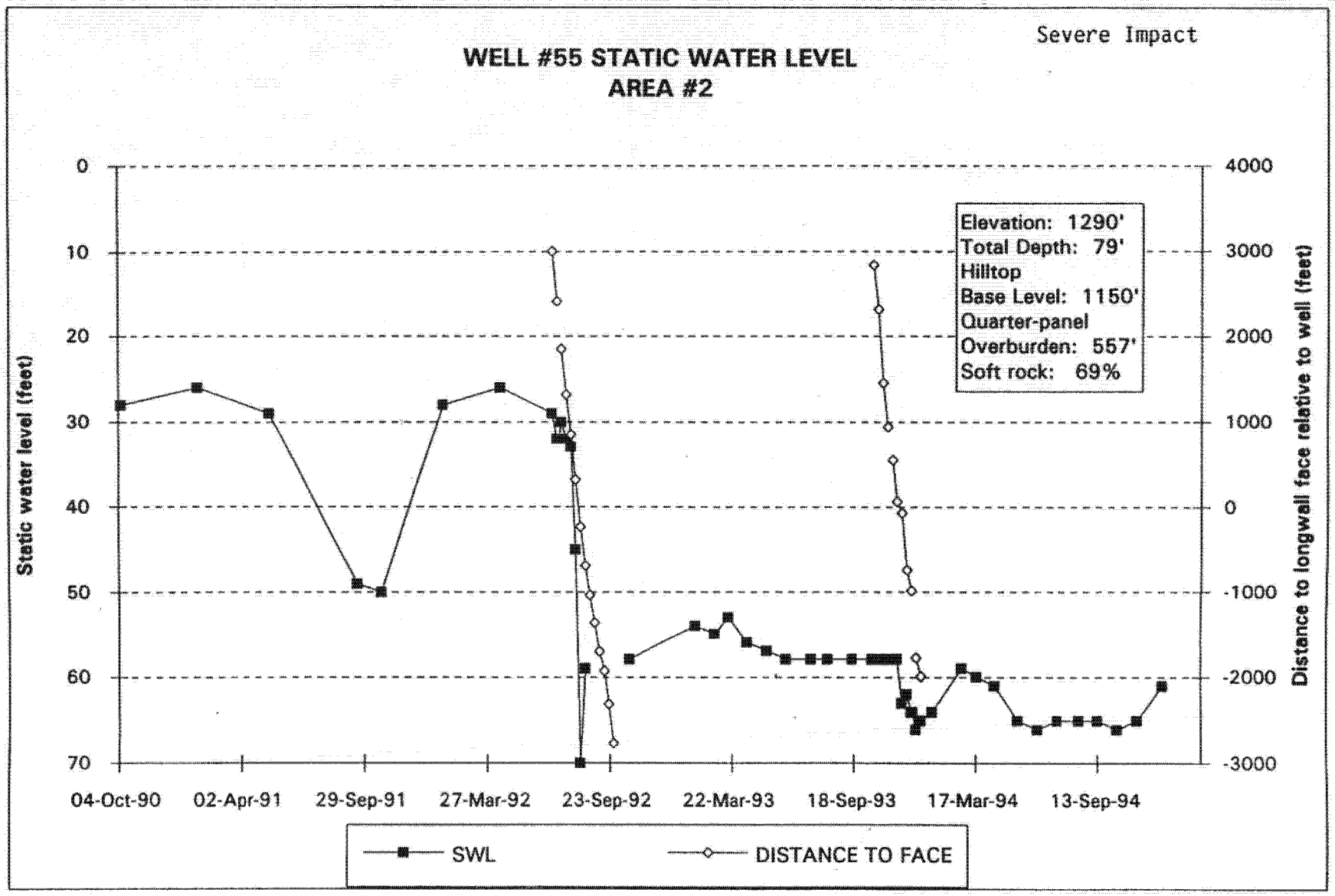
TOVCC 04846

Severe Impact



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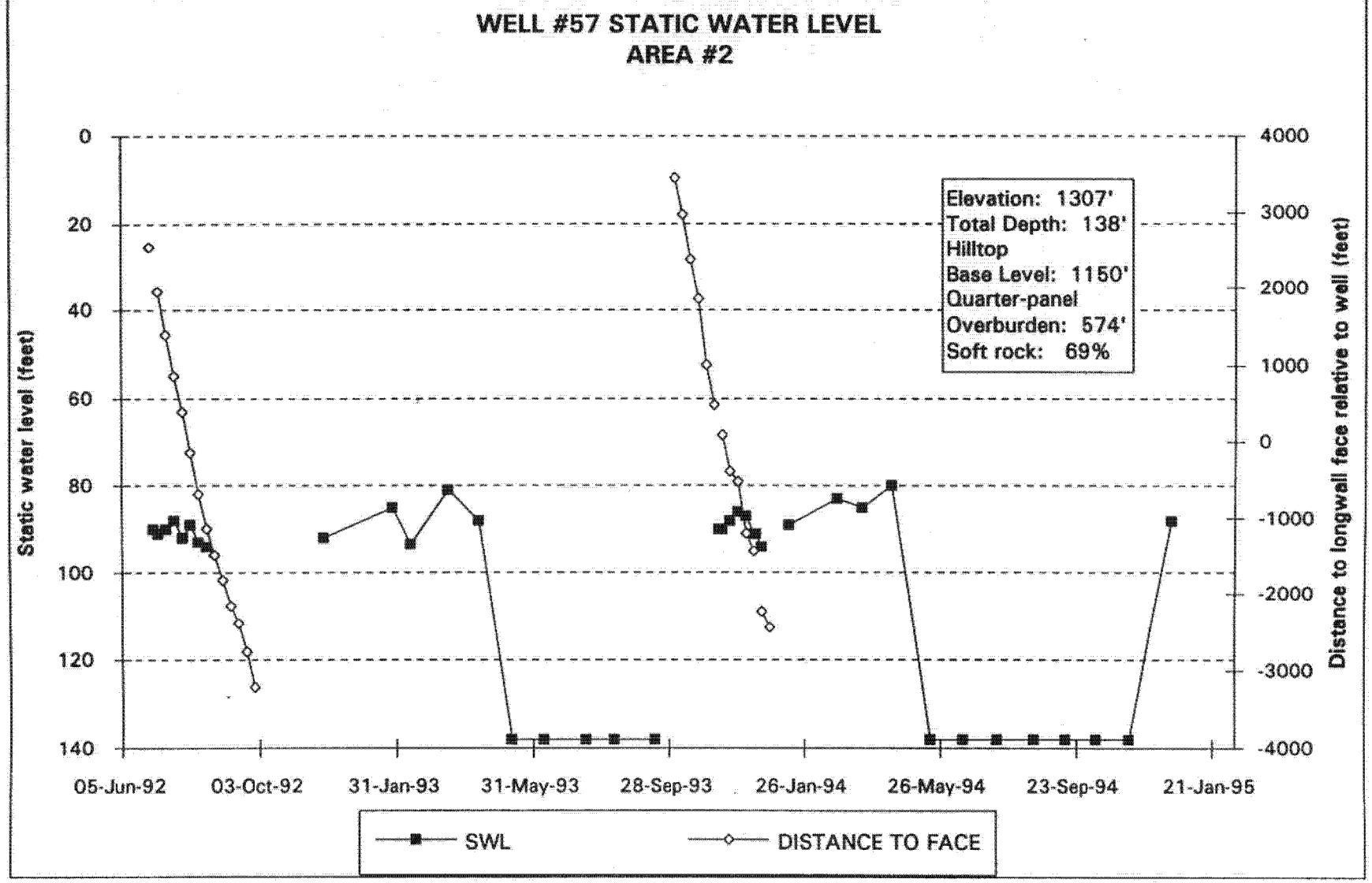
Severe Impact



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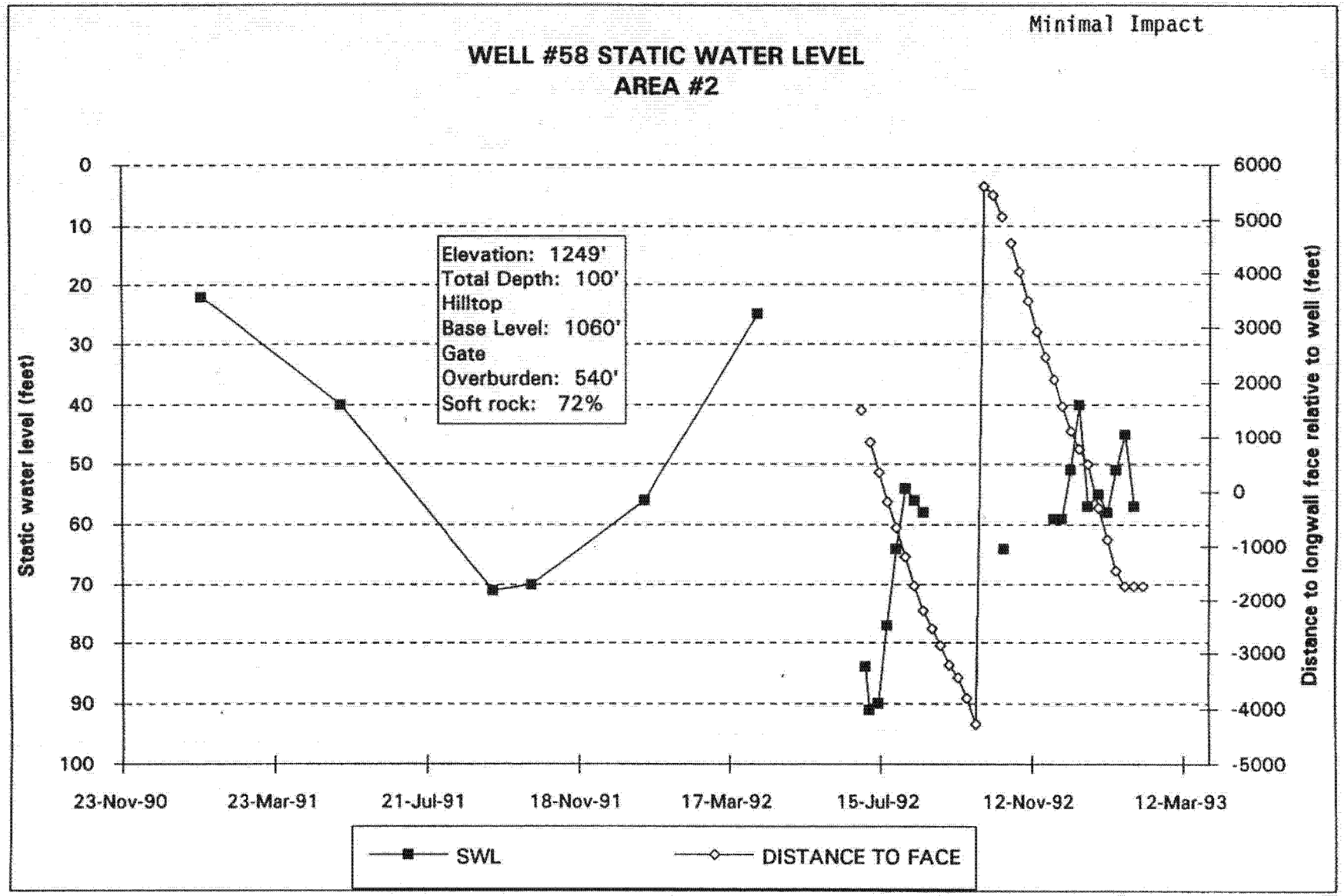

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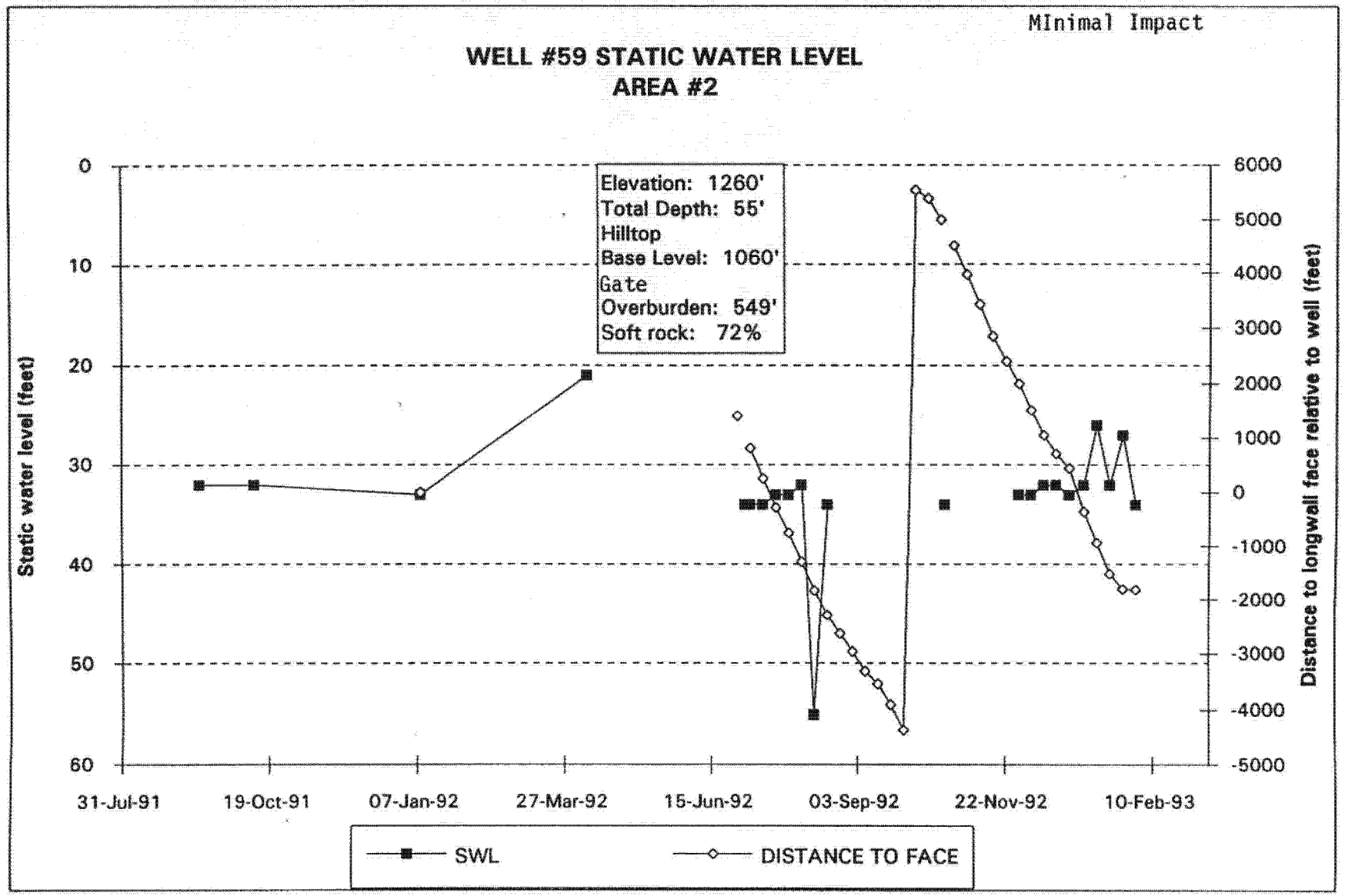

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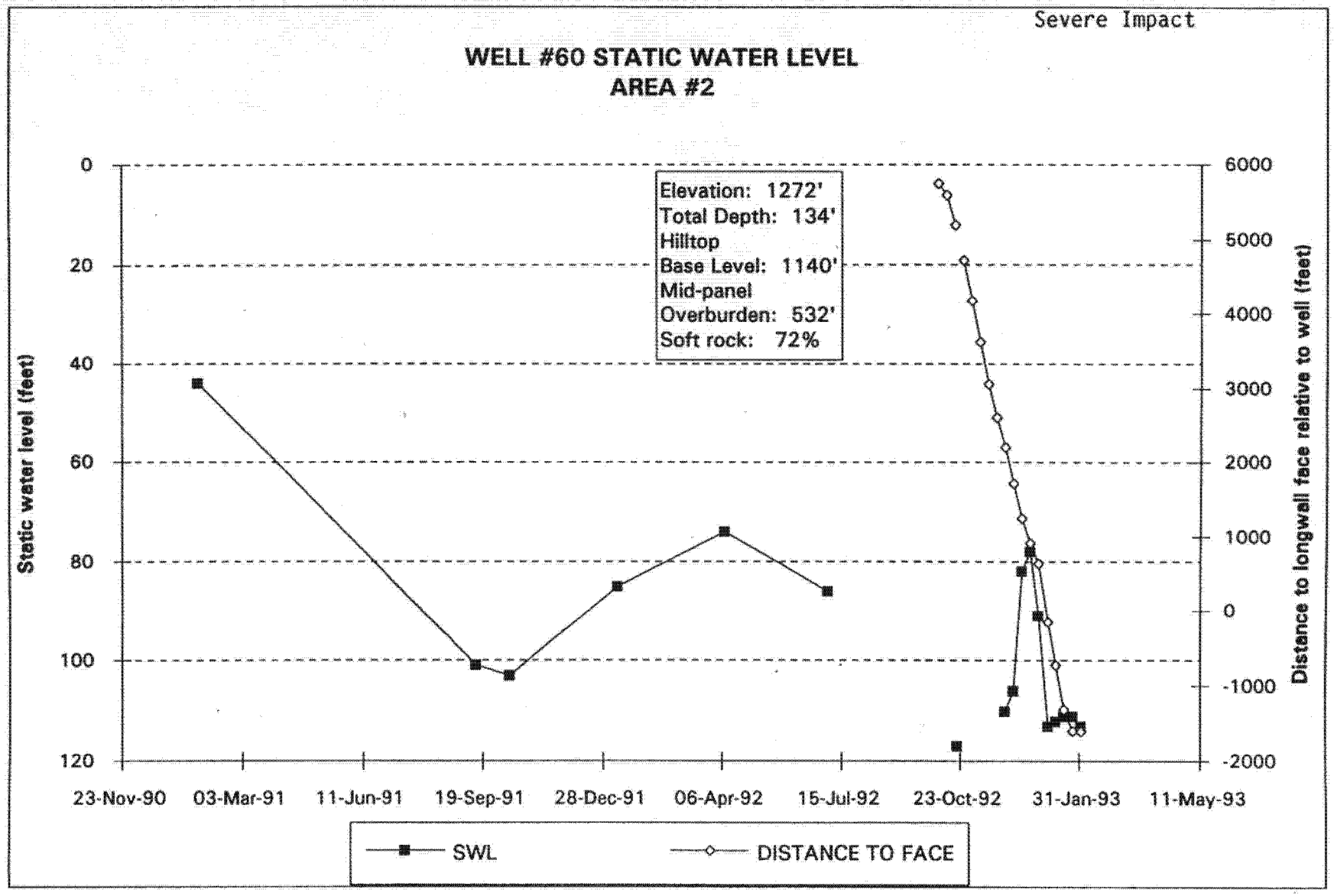
JUN 27 1997

Severe Impact



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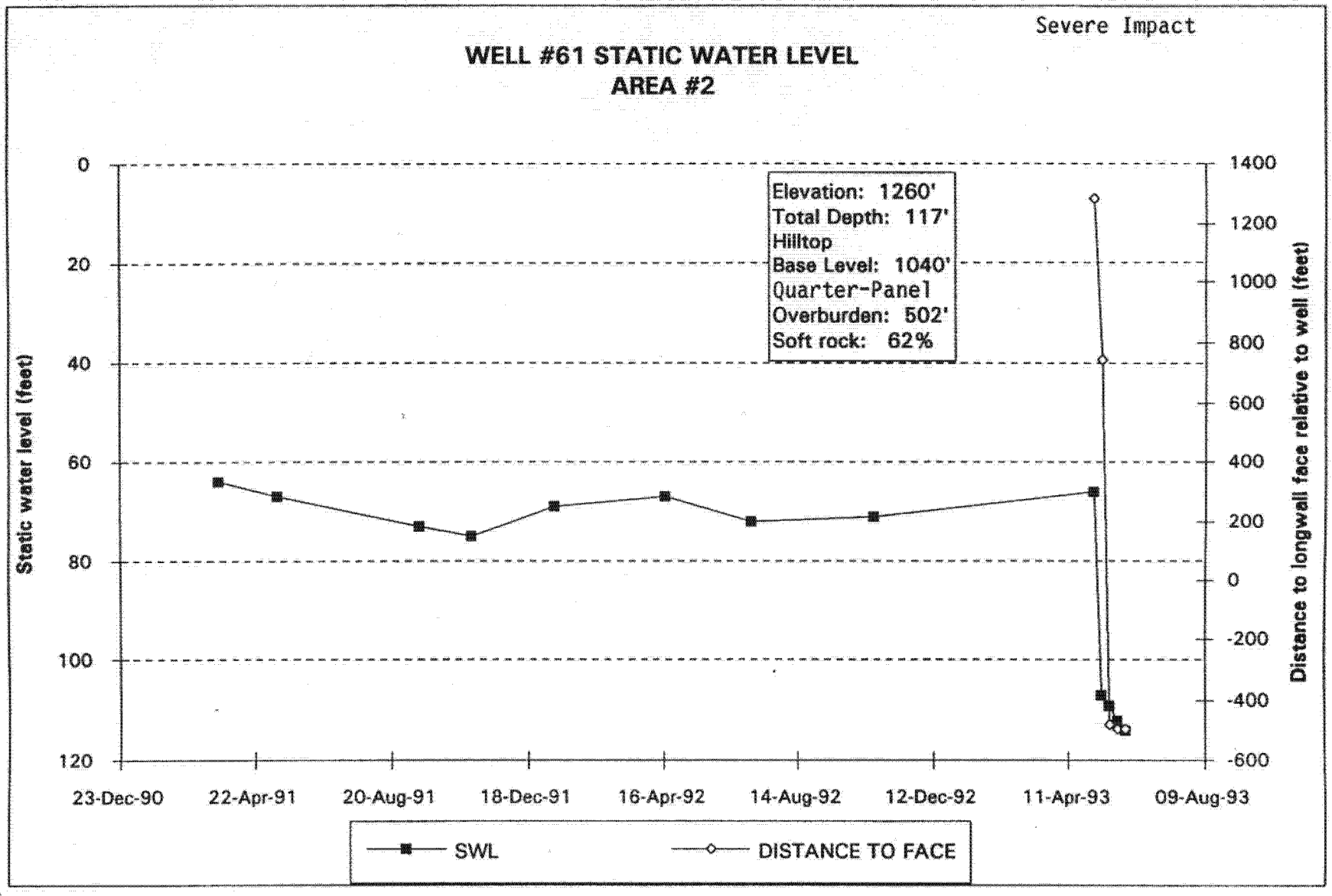
D0360-6

Severe Impact



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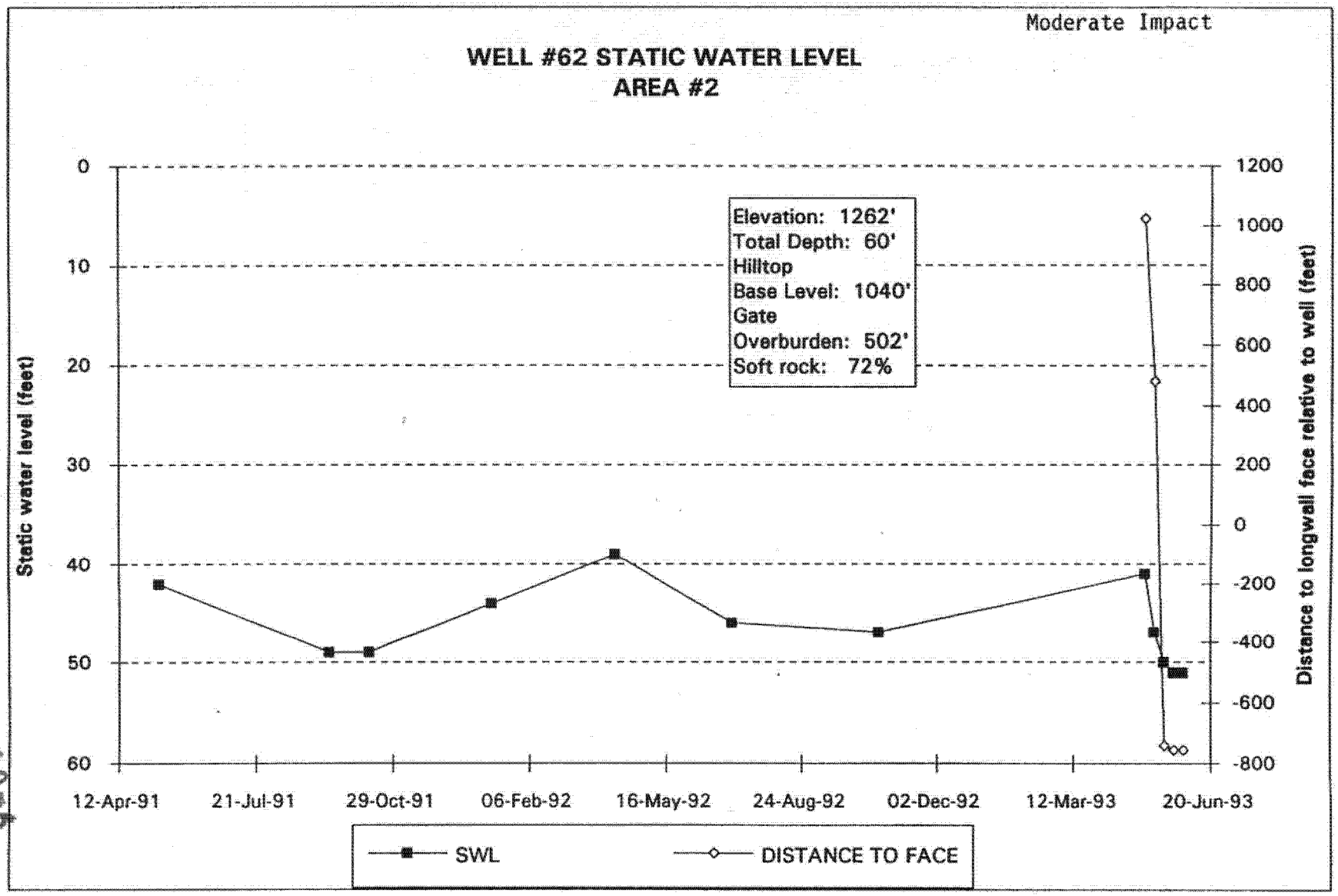
Moderate Impact



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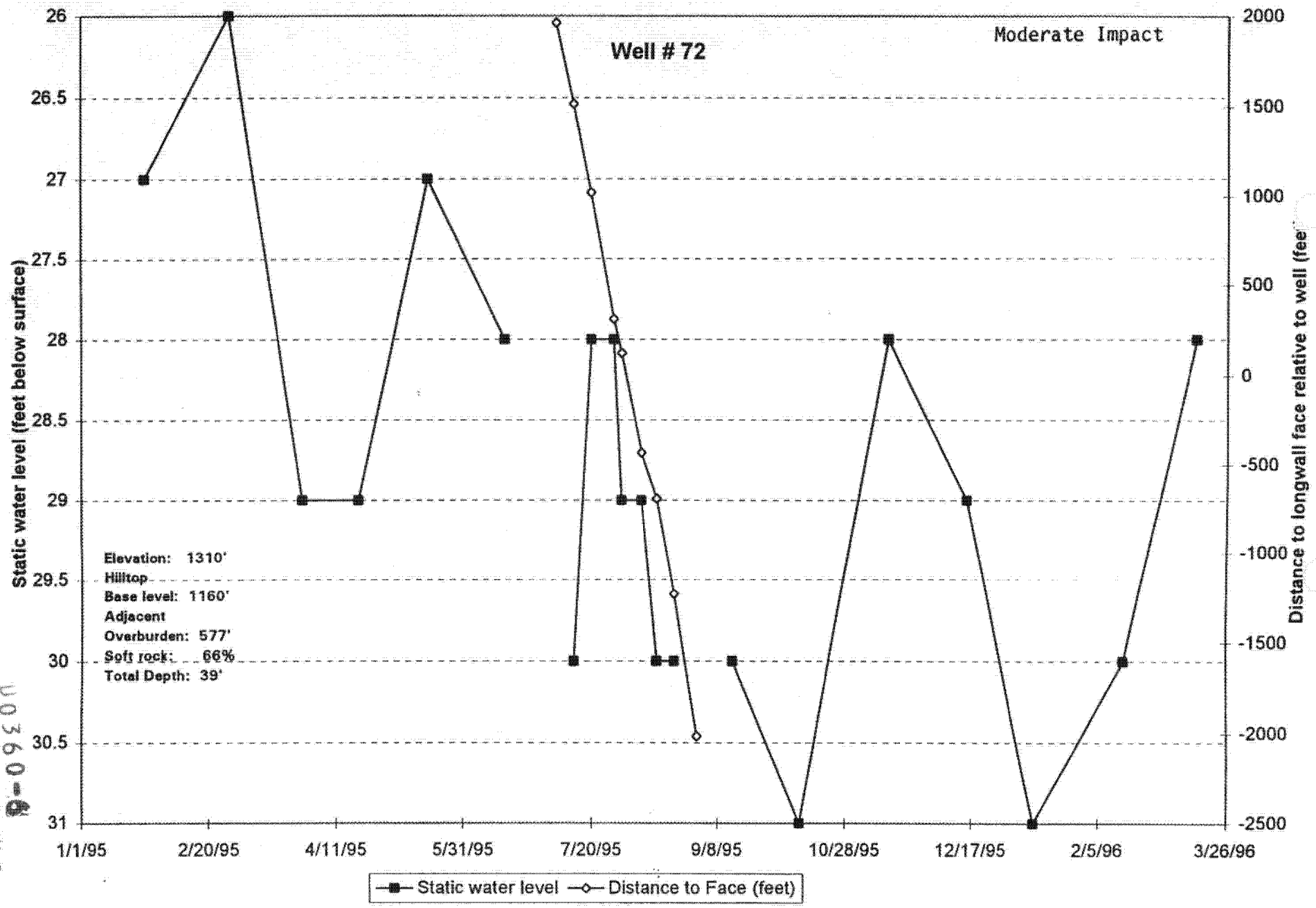

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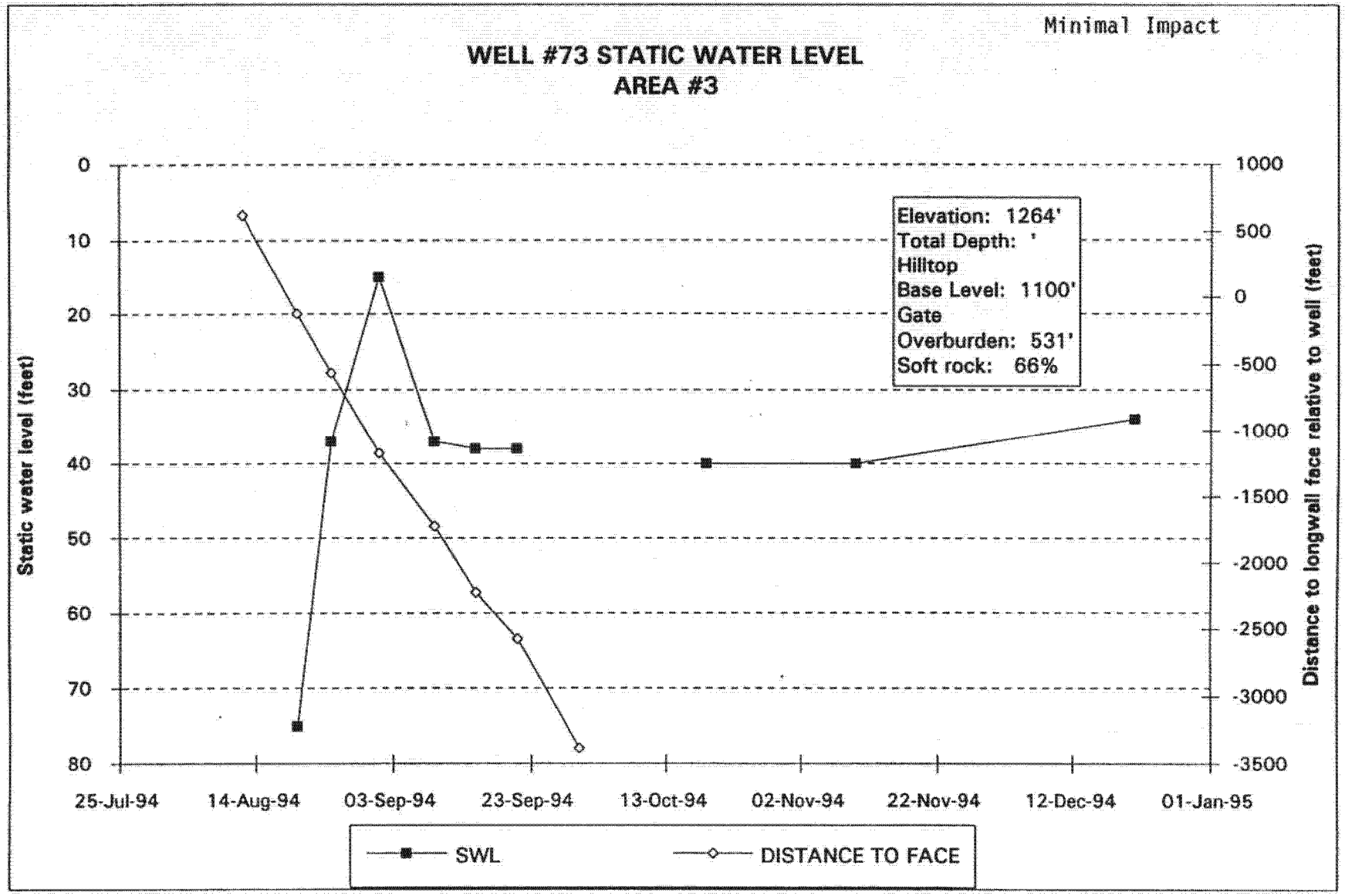
Minimal Impact



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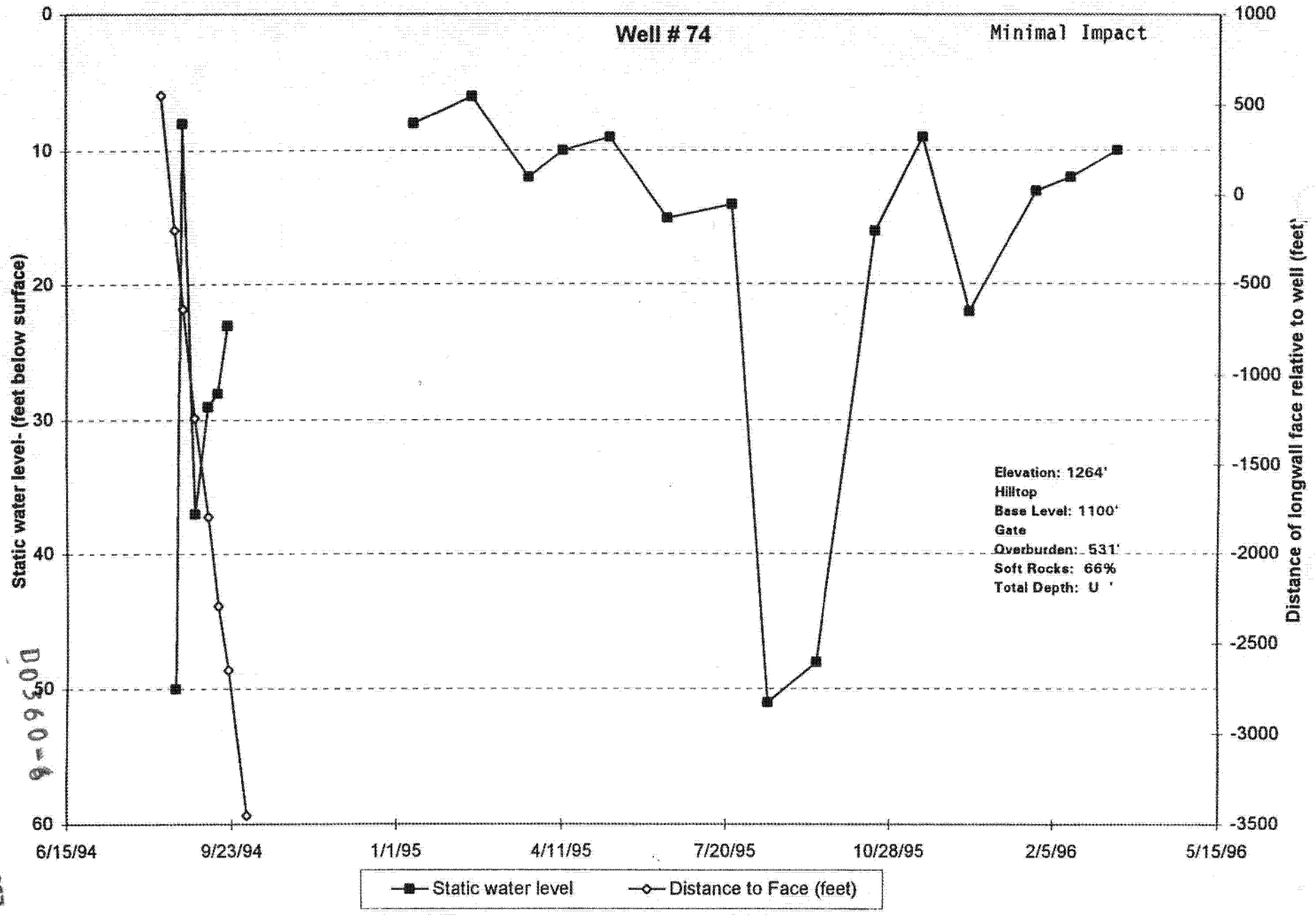

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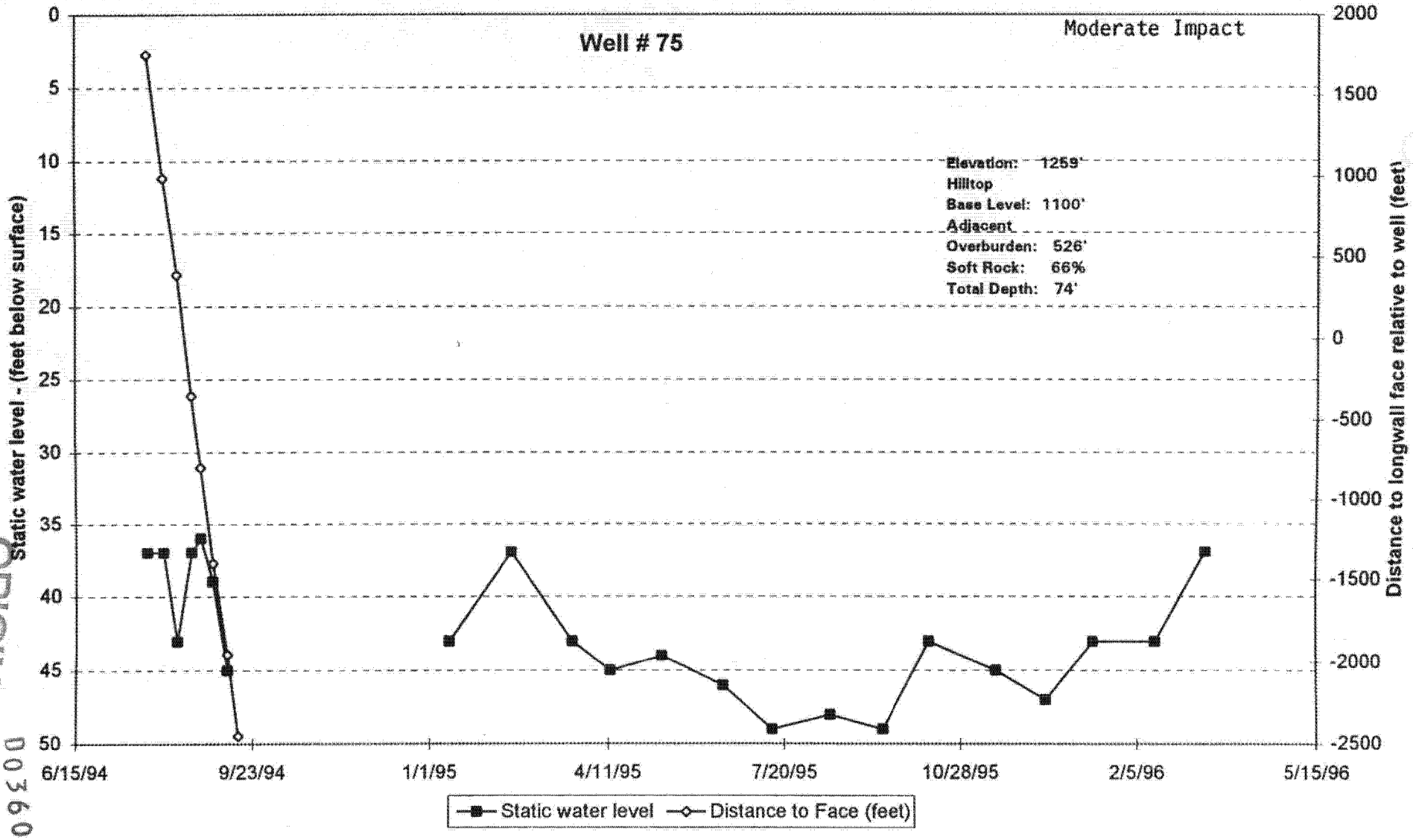

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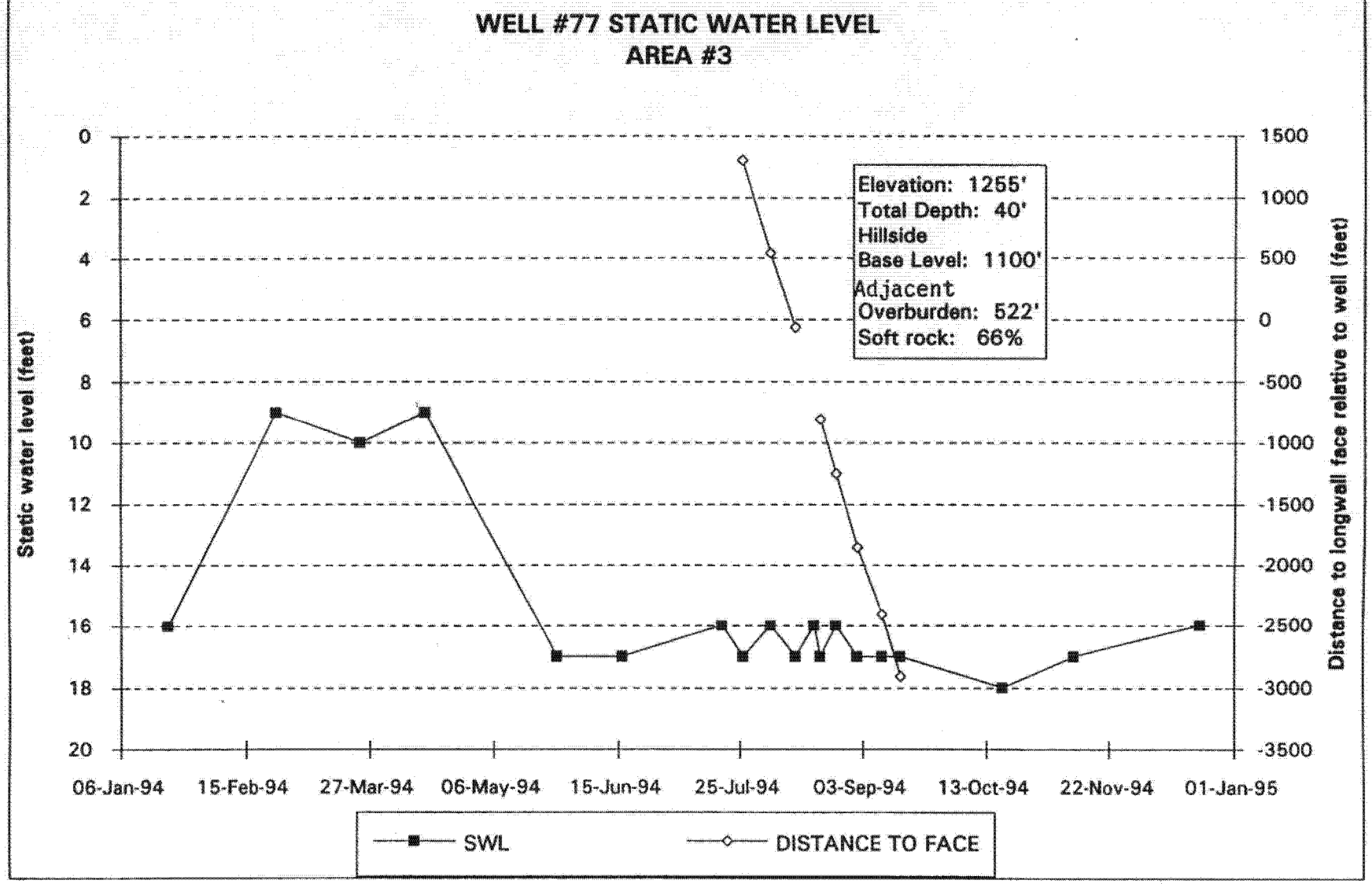
Prepared by: Moody and Assoc. Inc 12/5/96

Minimal Impact



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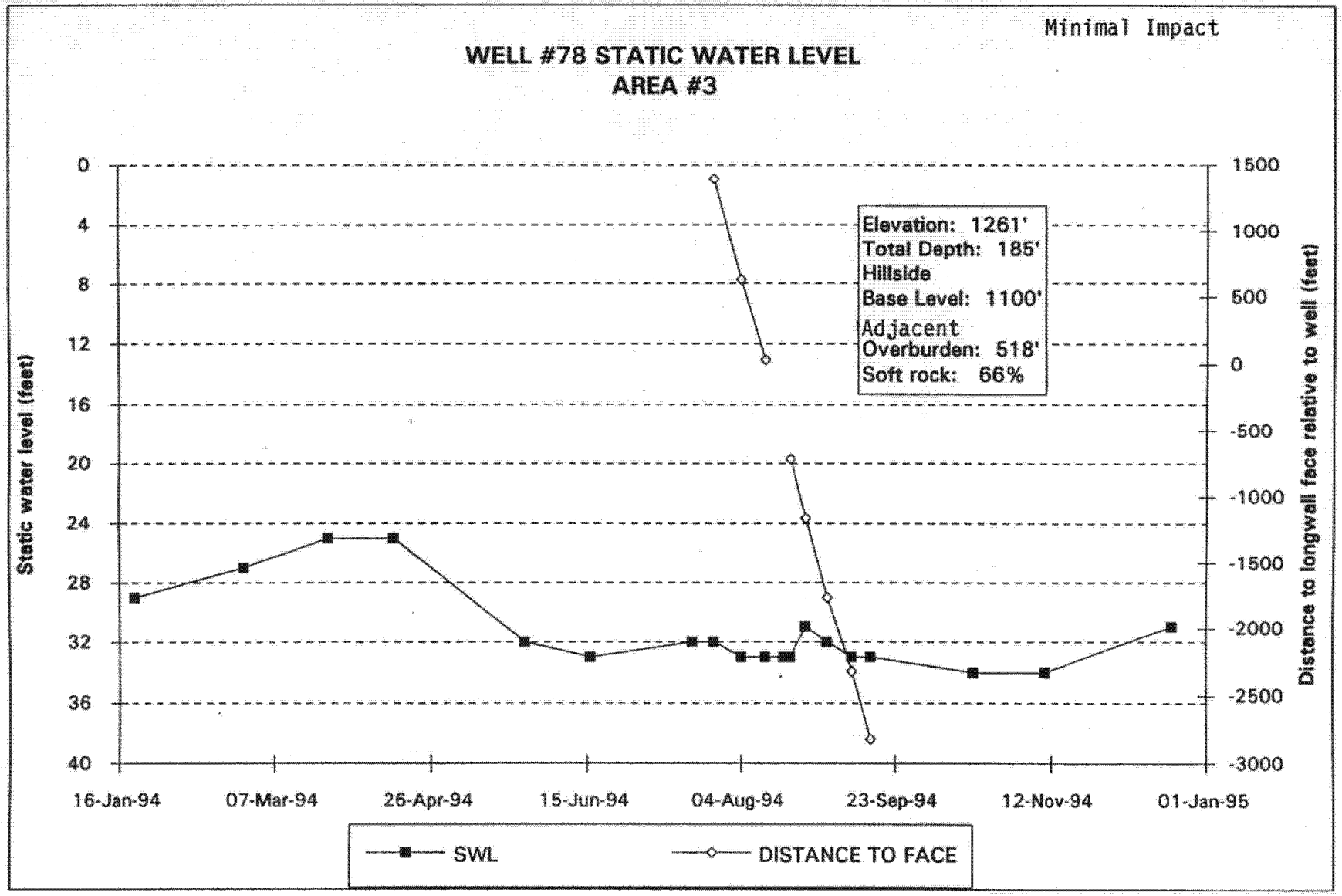

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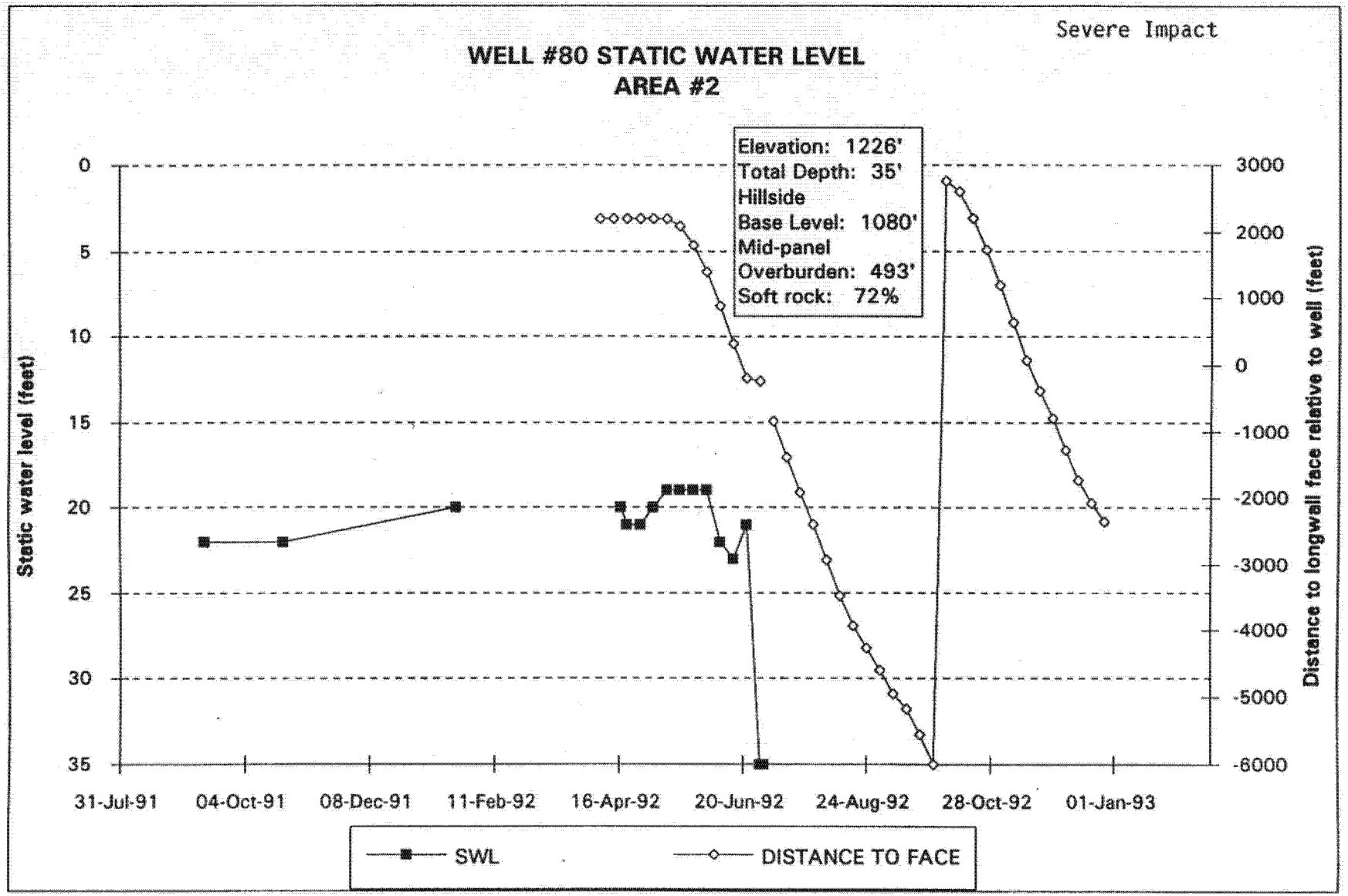
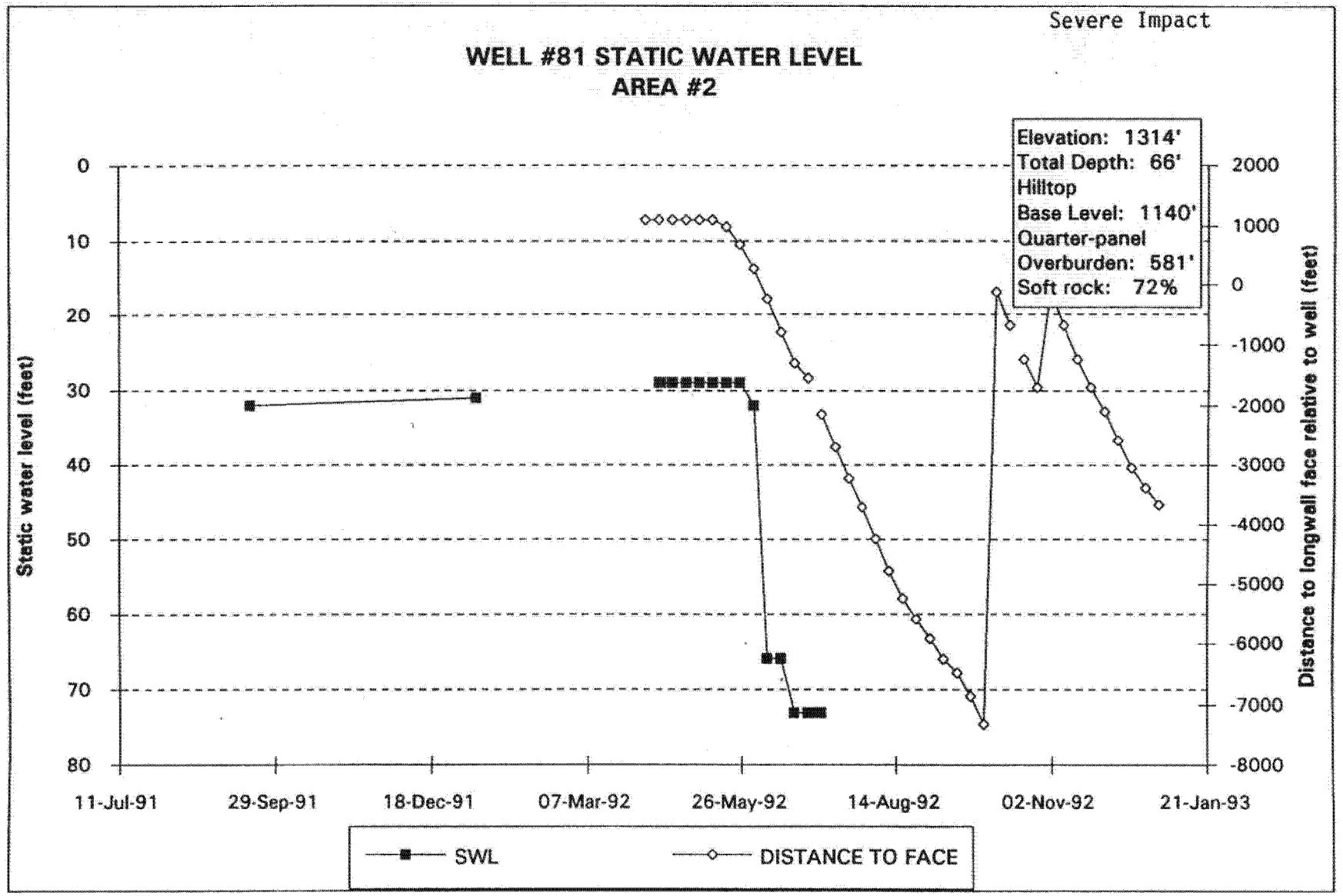
D0360-6 JUN 27 1997



ORIGINAL

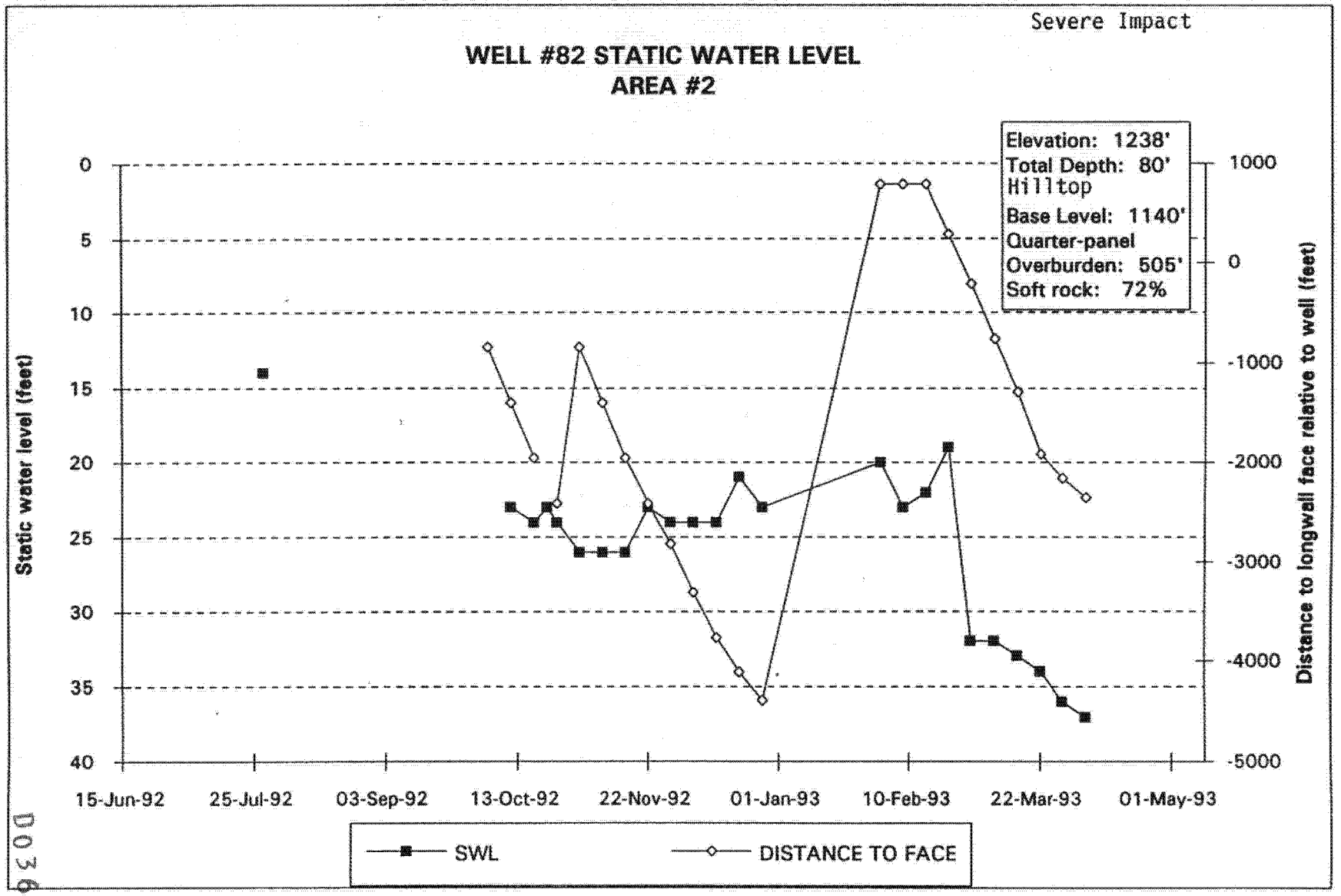
D0360-6

JUN 27 1997



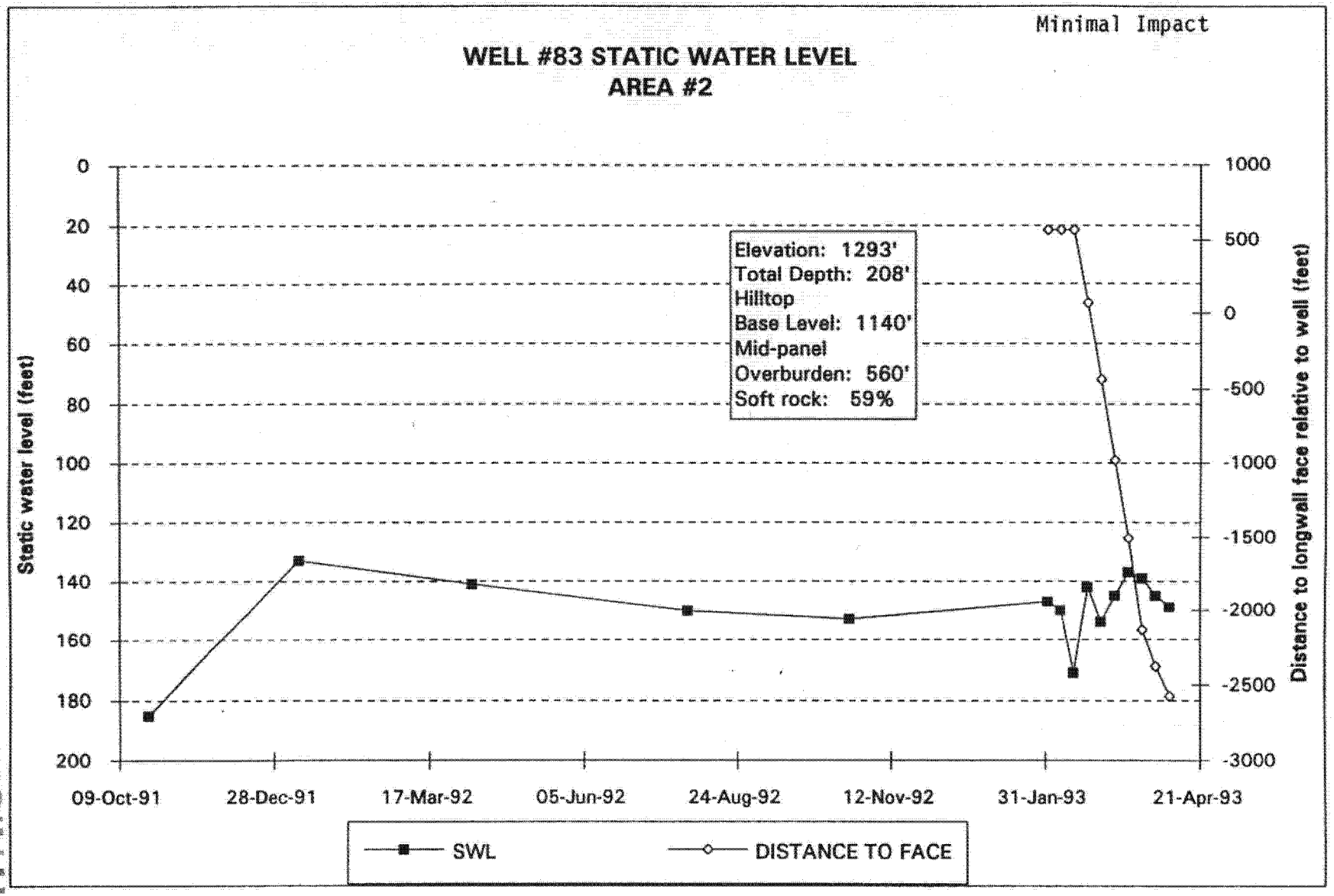
ORIGINAL
JUN 27 1997

Severe Impact



D03 60-6

ORIGINAL
JUN 27 1997



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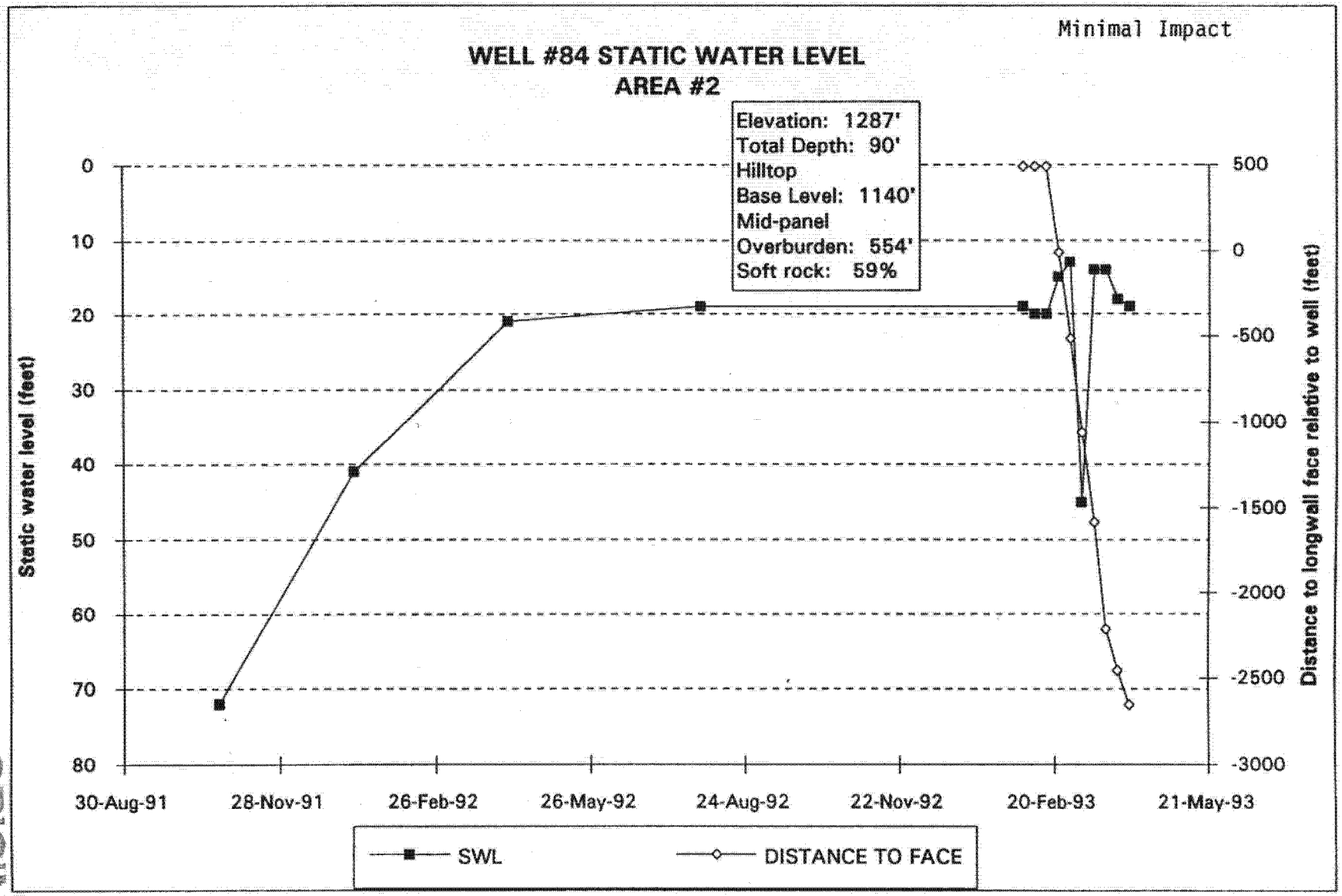
D0360-6 JUN 27 1997



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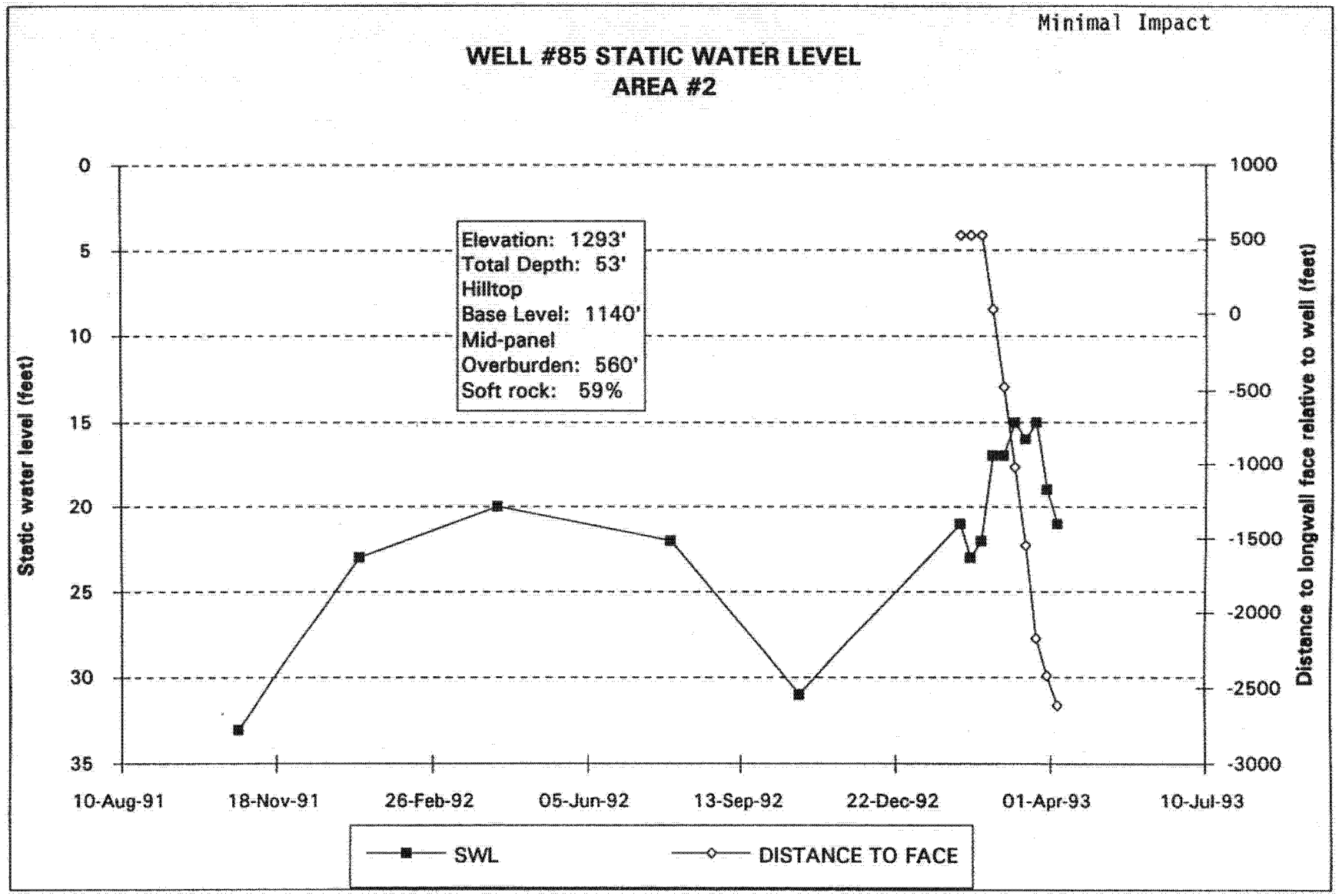
D0360-6
JUN 27 1997

Minimal Impact



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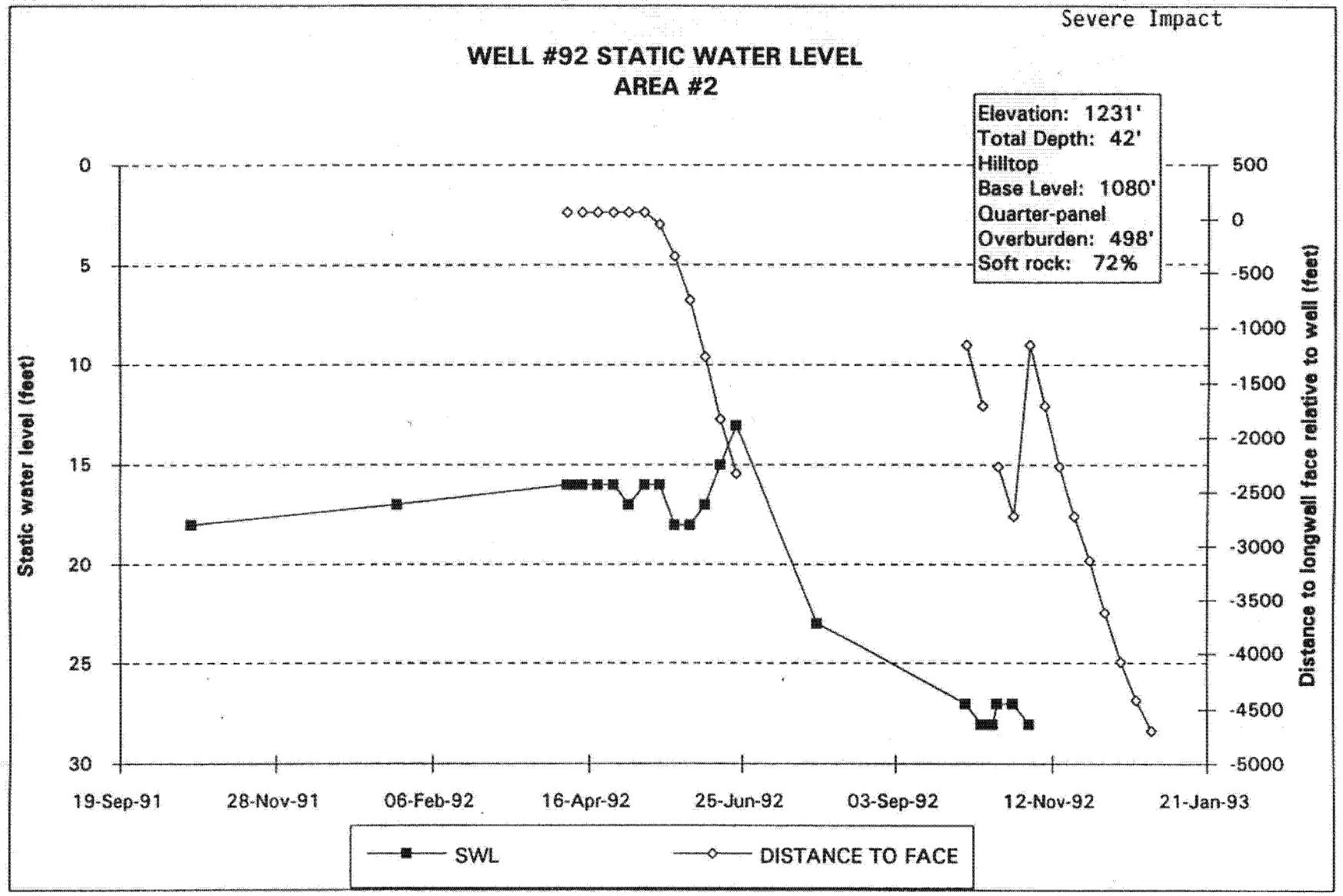
D0360-6 JUN 2 7 1997

Severe Impact



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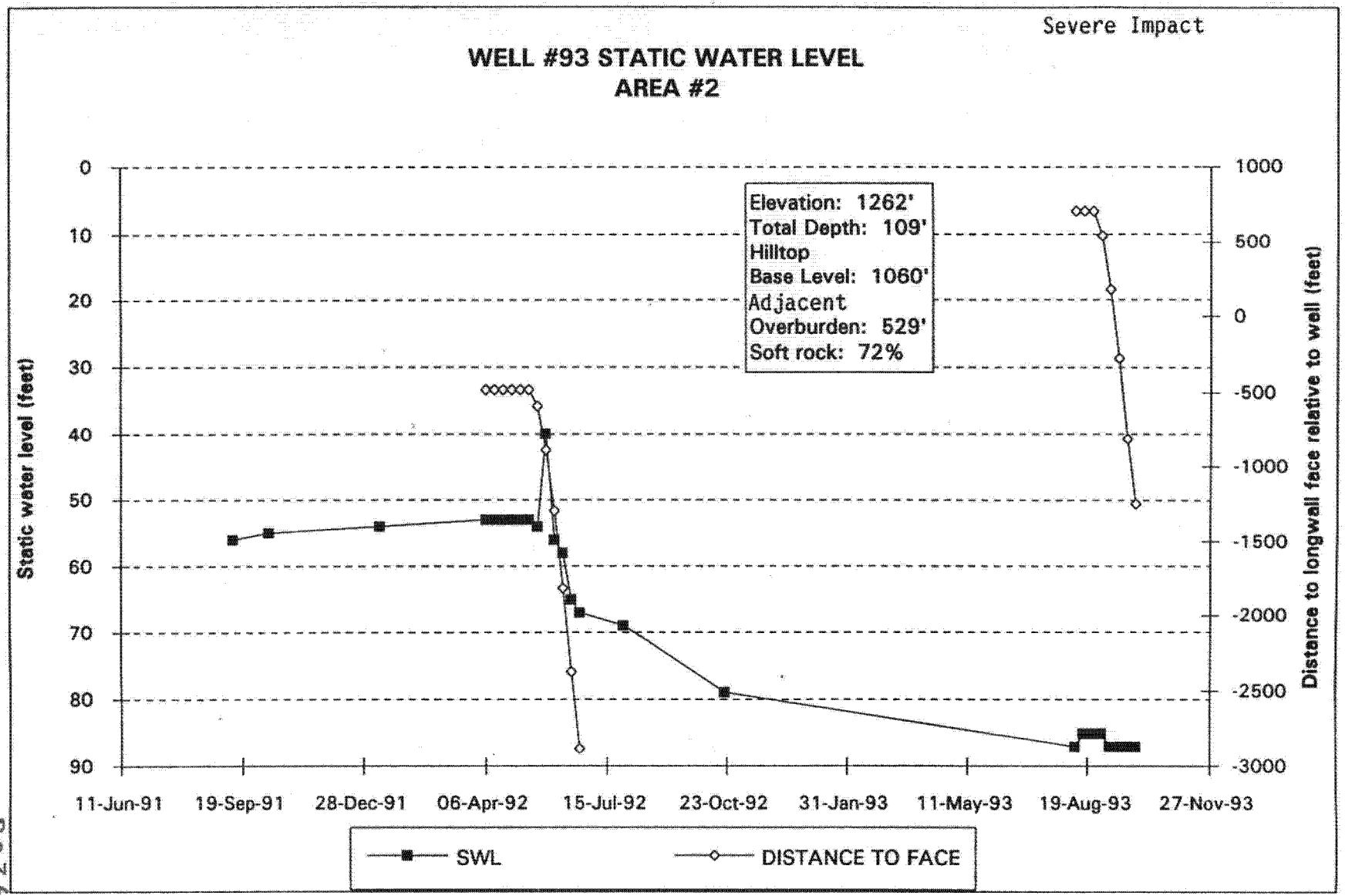
D0360-6 JUN 27 1997

Severe Impact



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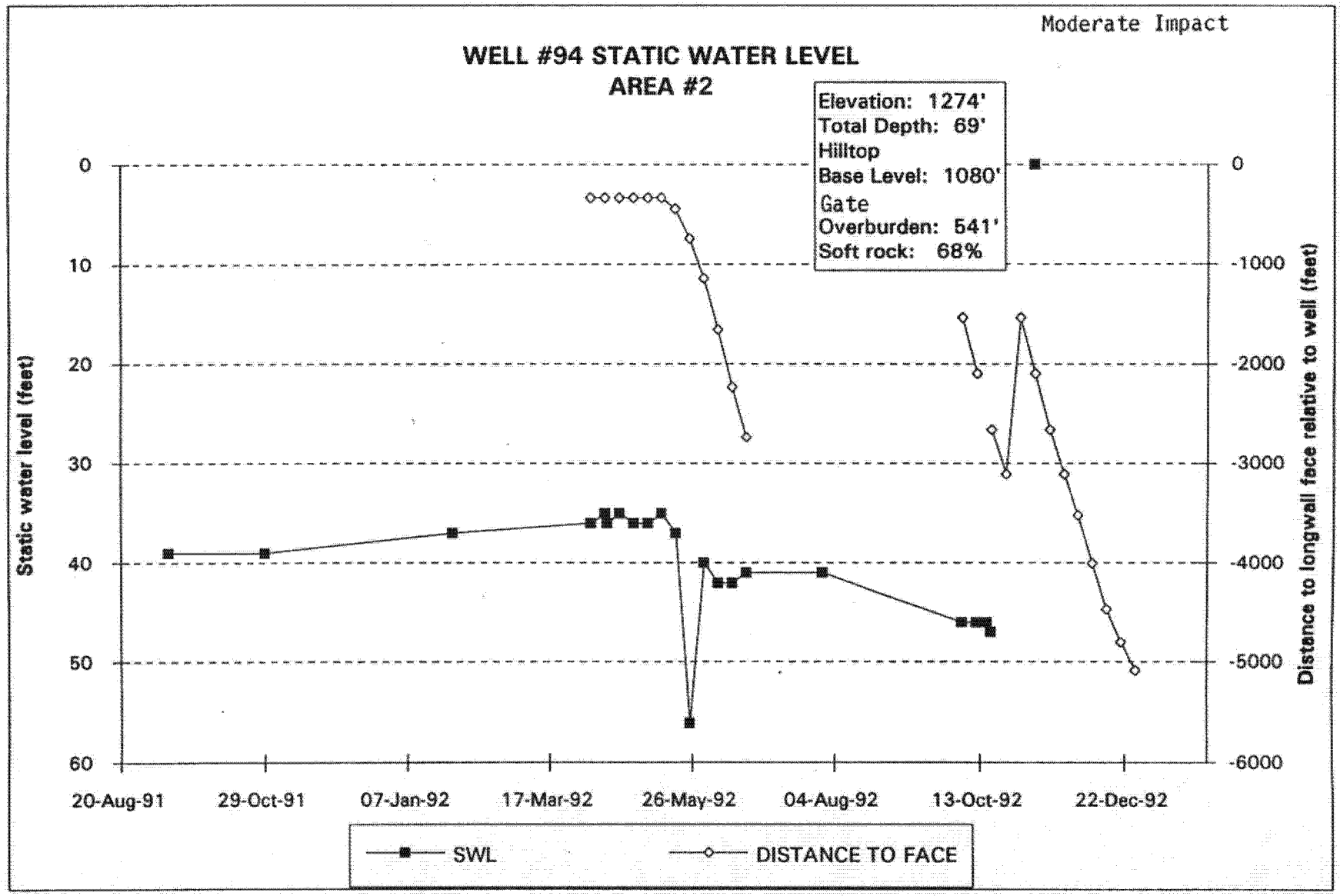

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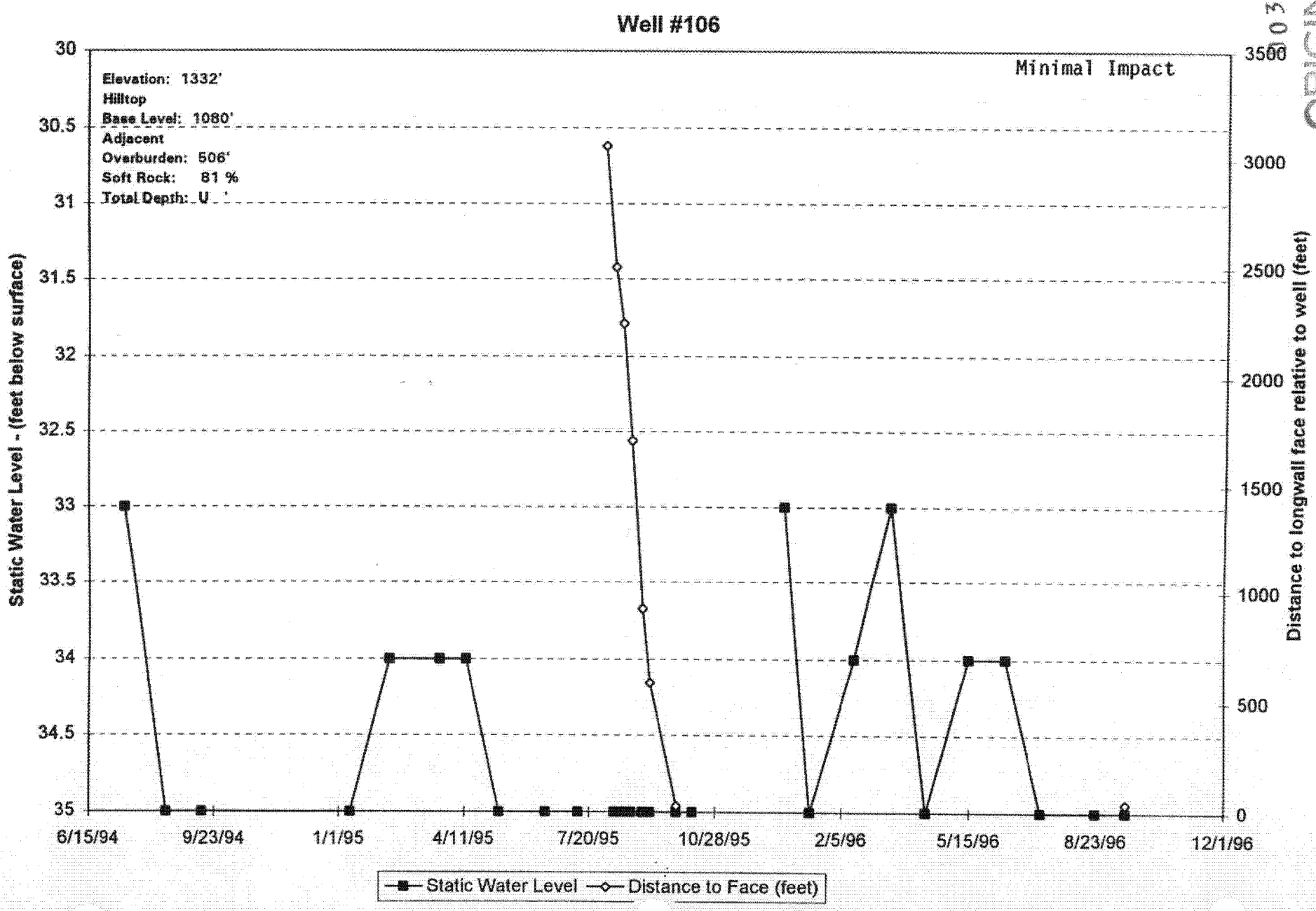
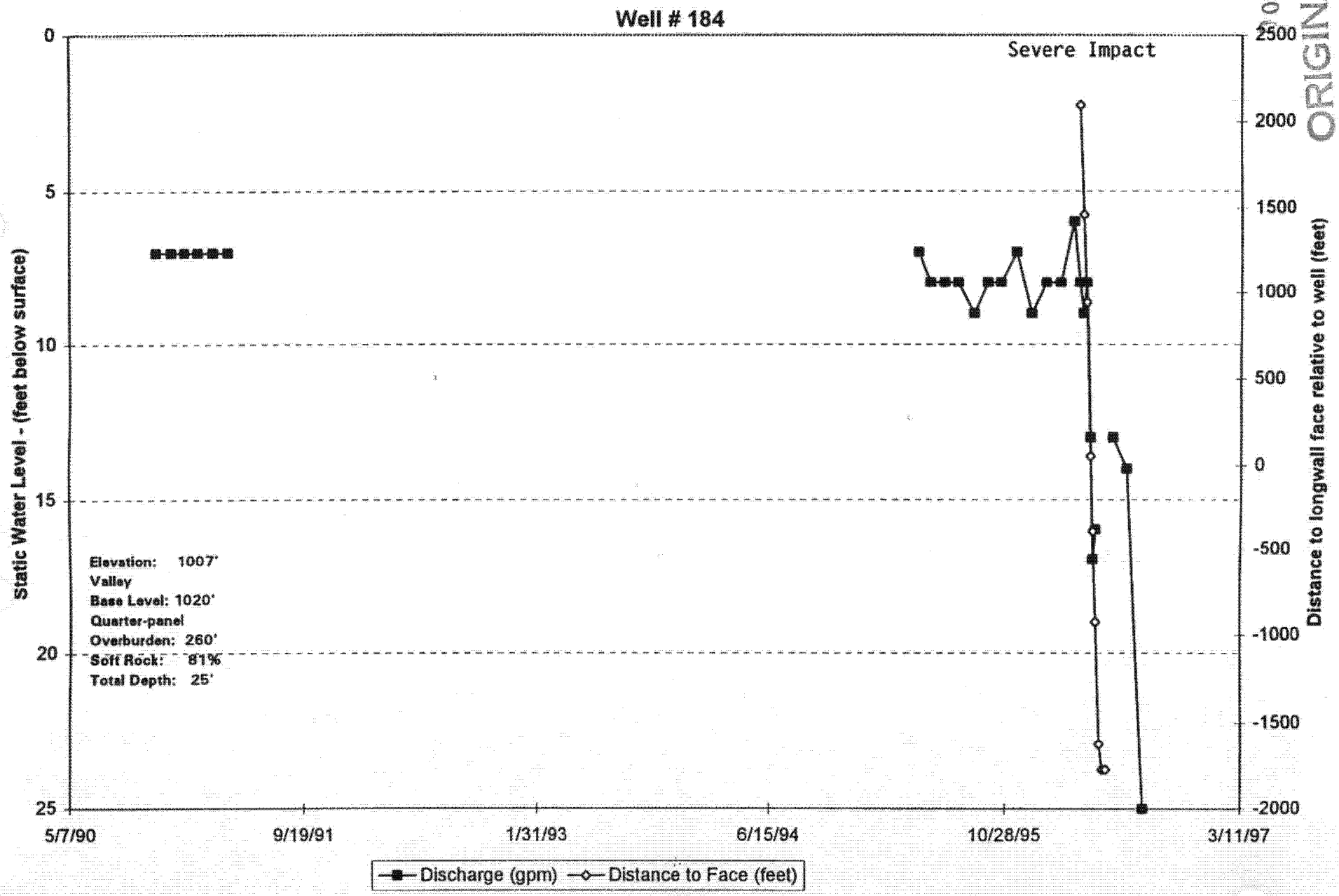
D0360-6

ORIGINAL
JUN 27 1997
0360-6



Prepared by: Moody and Assoc., Inc. 12/5/96

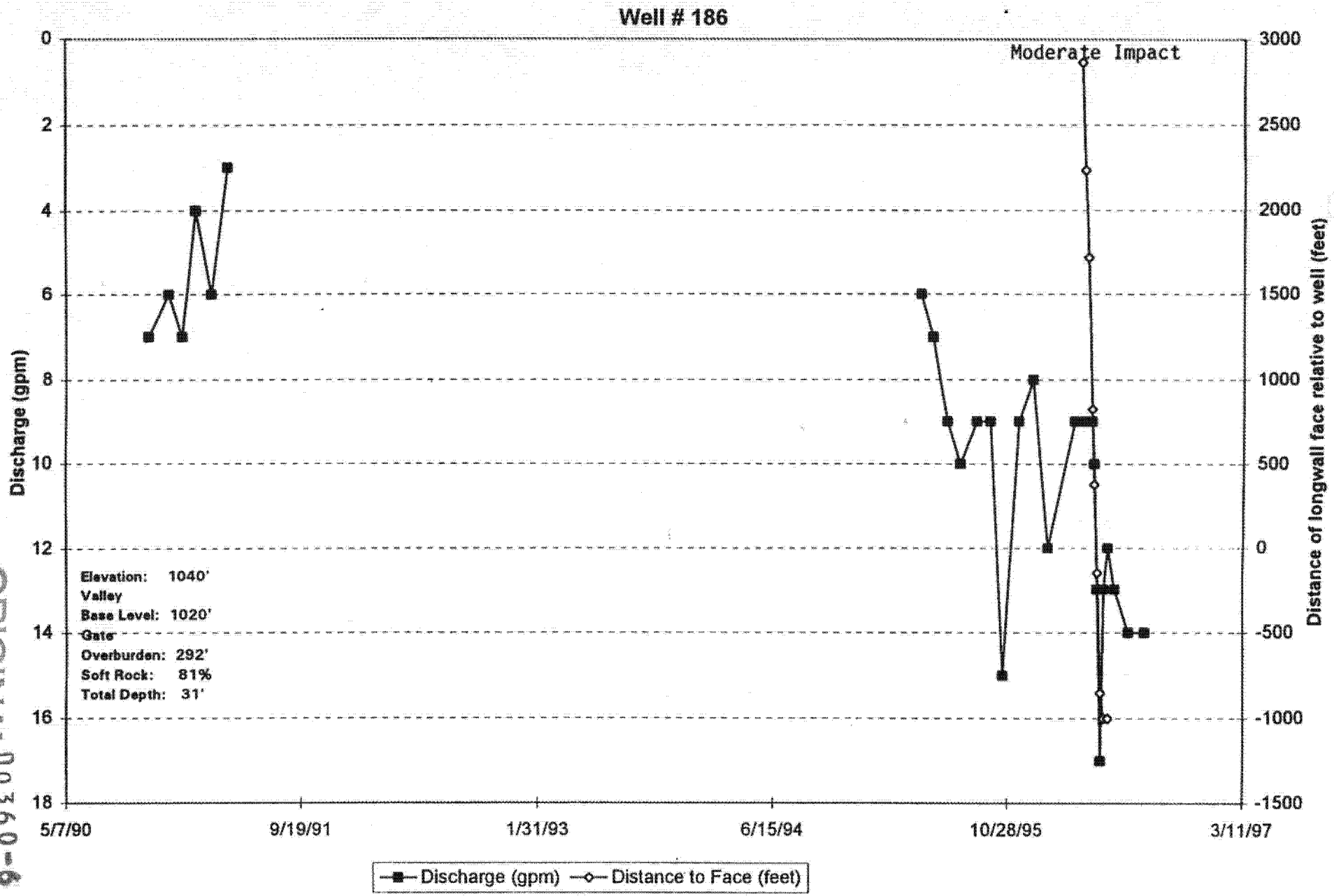


Prepared by: Moody and Assoc., Inc. 12/5/96

ORIGINAL

JUN 2 4 1997

TOVCC 04870



Prepared by: Moody and Assoc., Inc. 12/5/96

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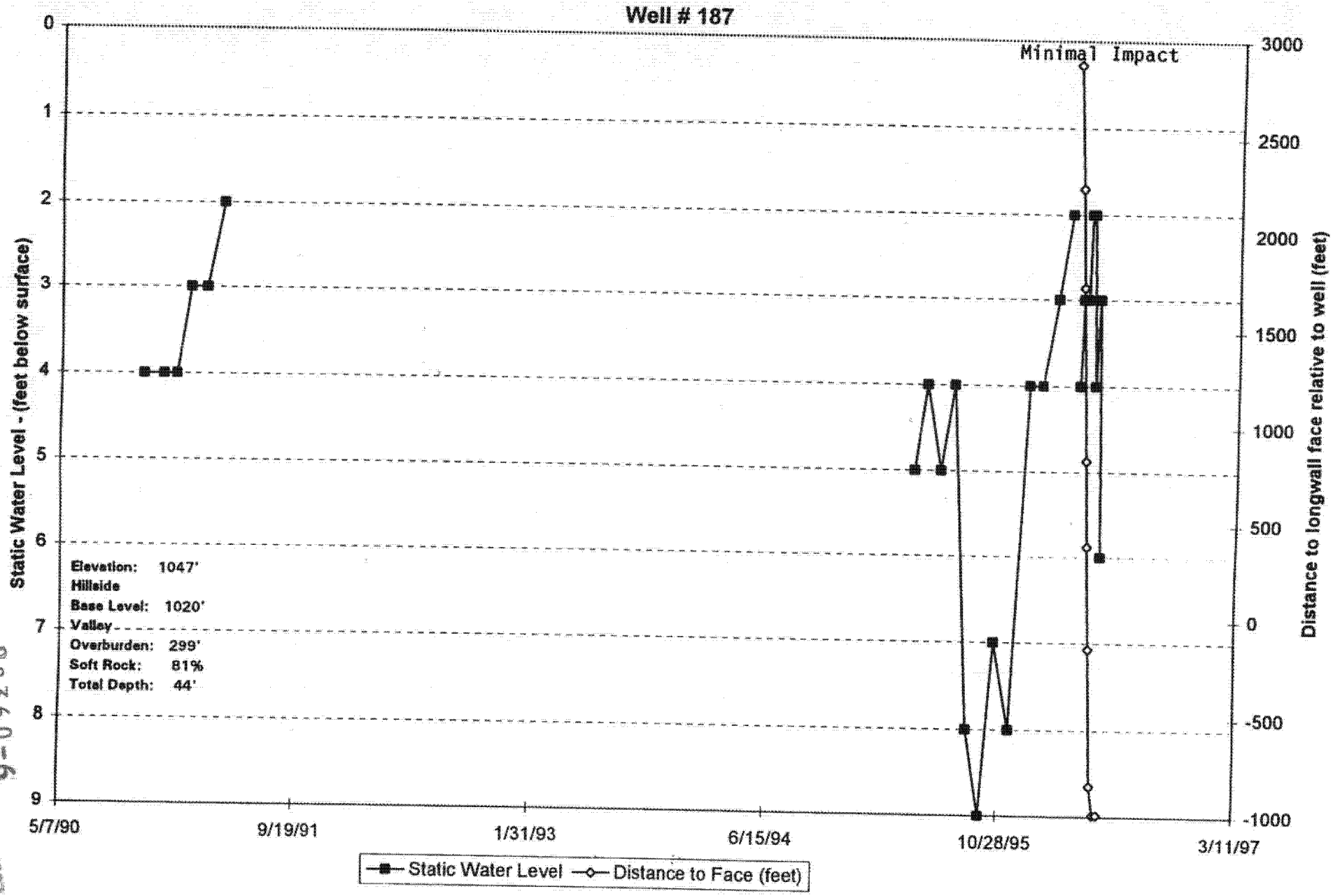

Prepared by: Moody and Assoc., Inc., 12/5/96

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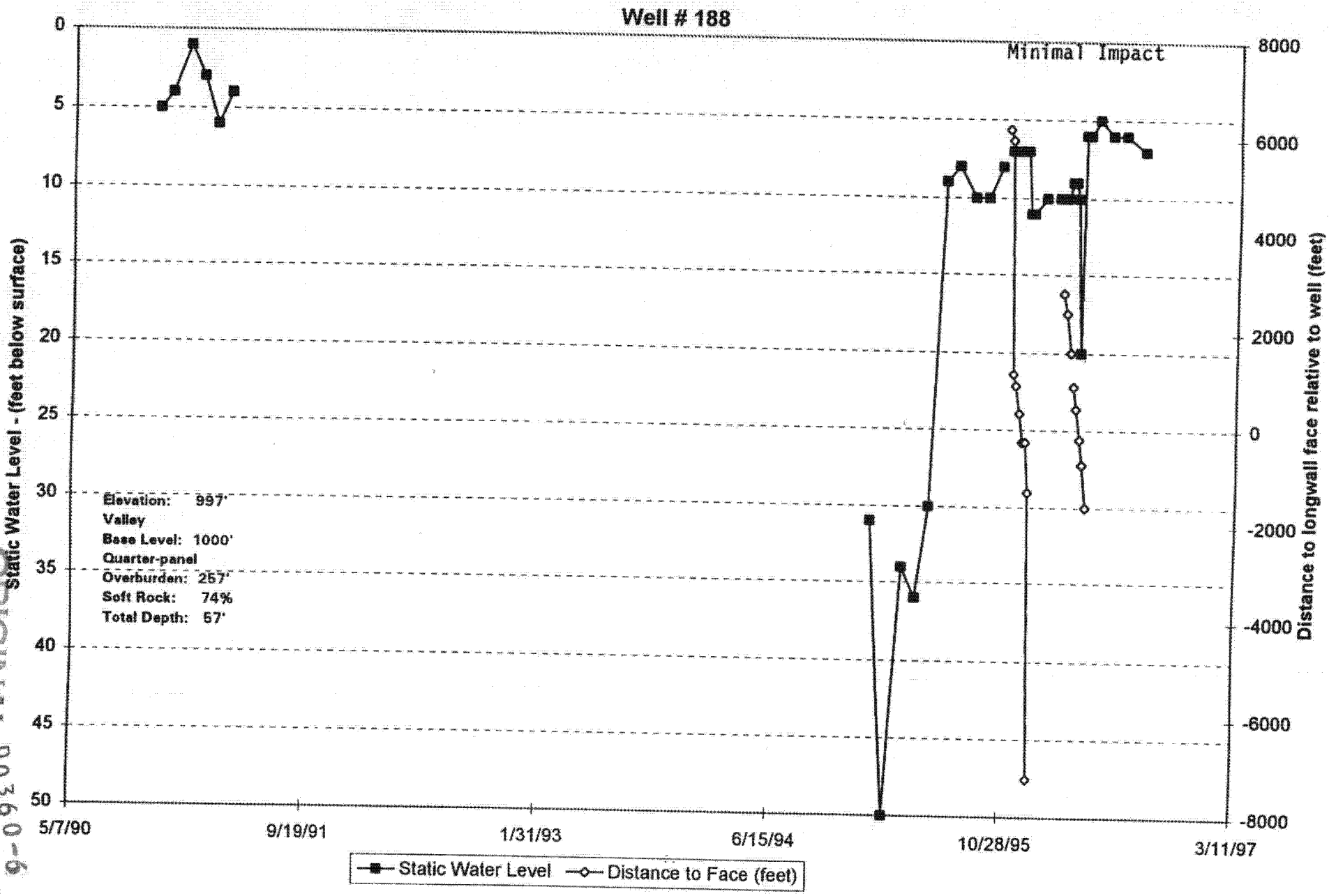
JUN 27 1997



Prepared by: Moody and Assoc., Inc. 12/5/96

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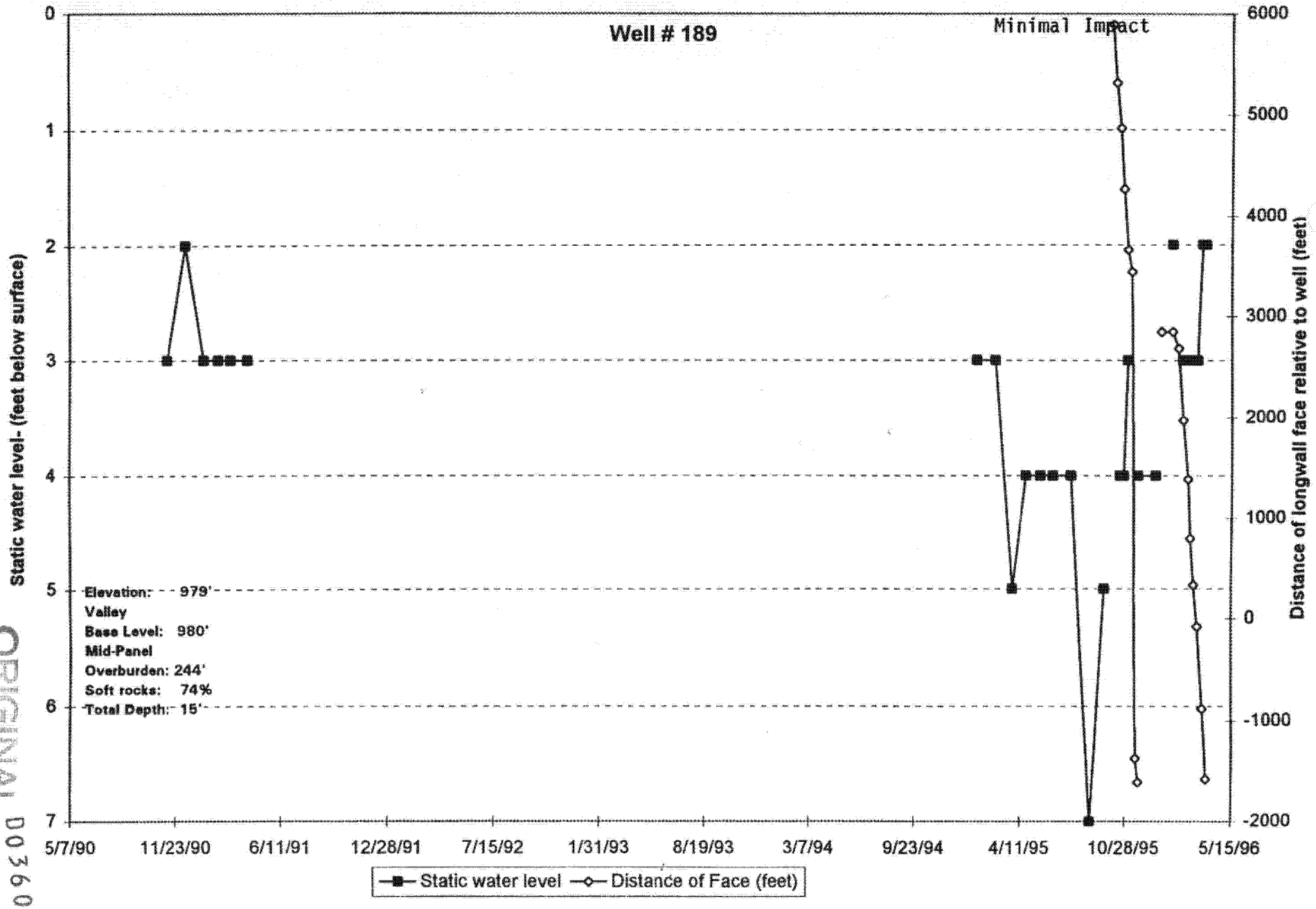

Prepared by: Moody and Assoc., Inc.12/5/96

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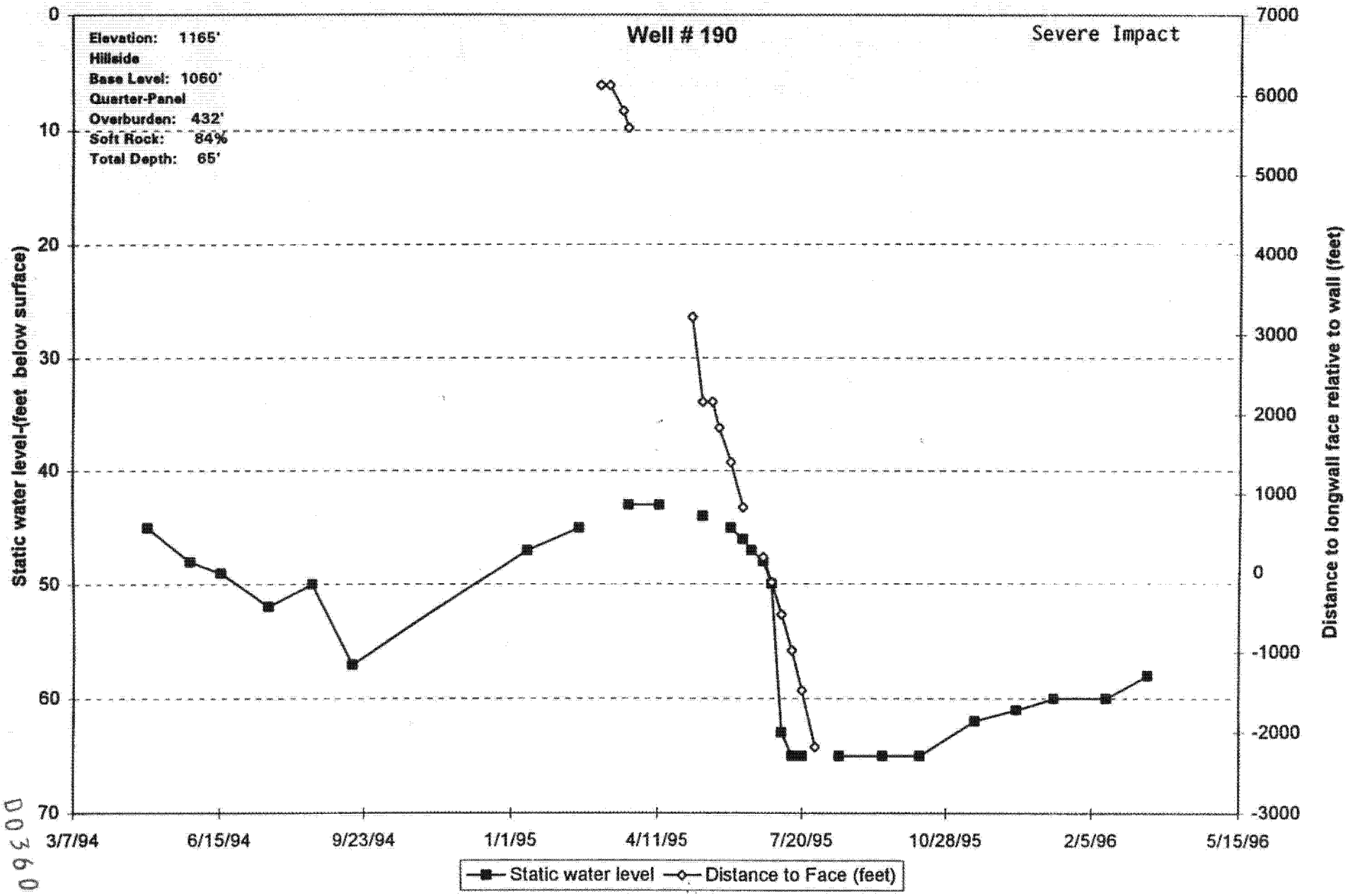

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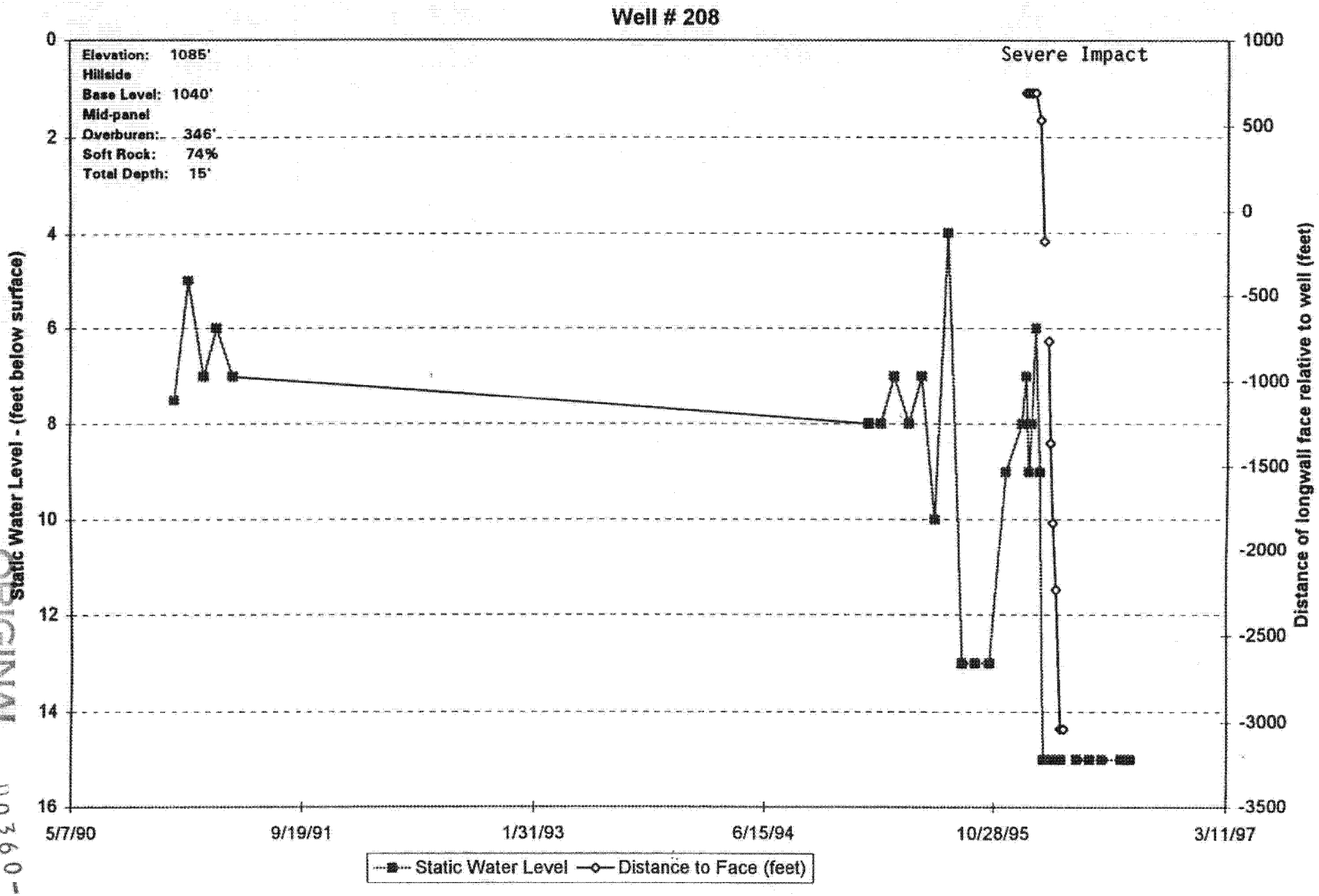

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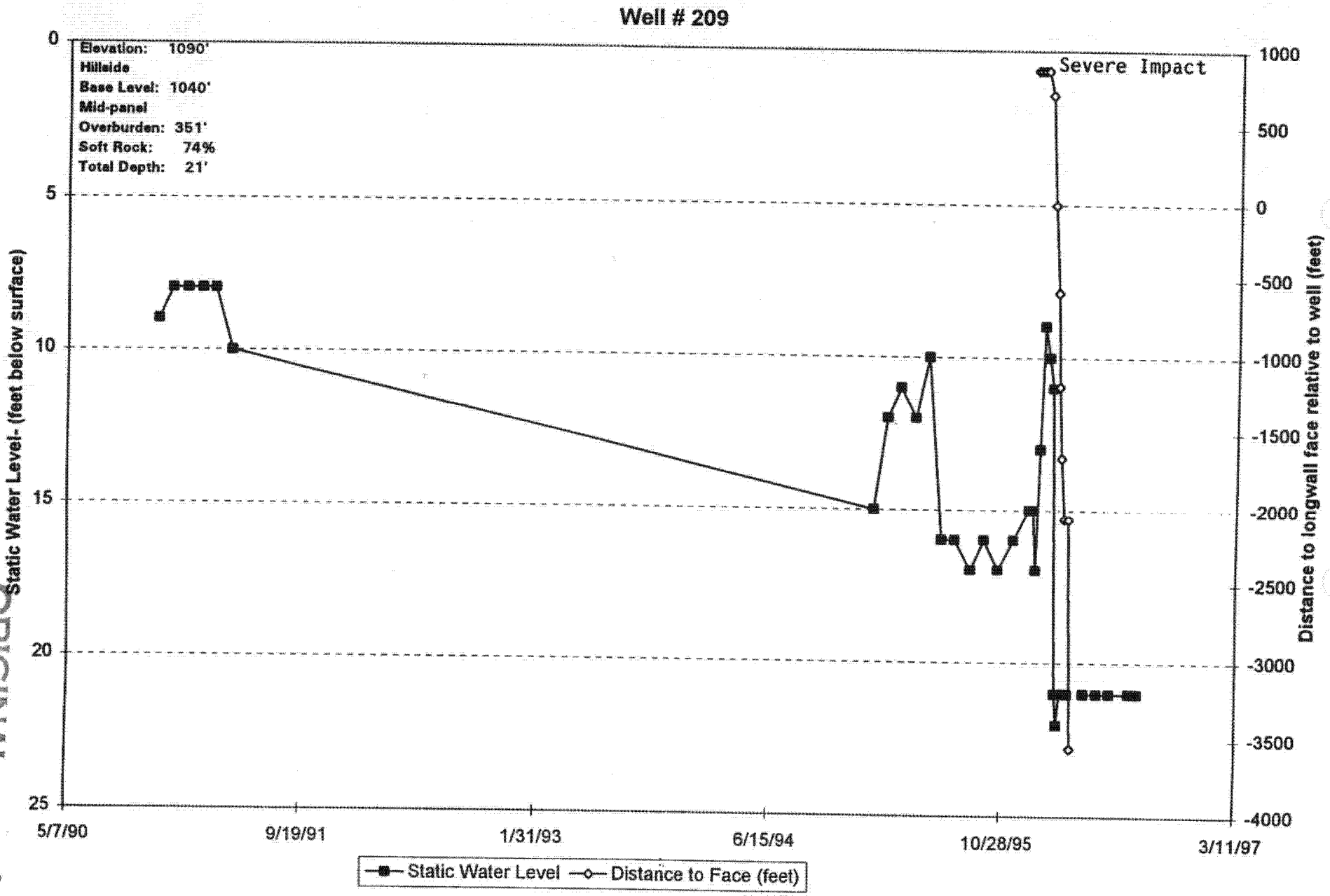

Prepared by: Moody and Assoc., Inc. 12/5/96

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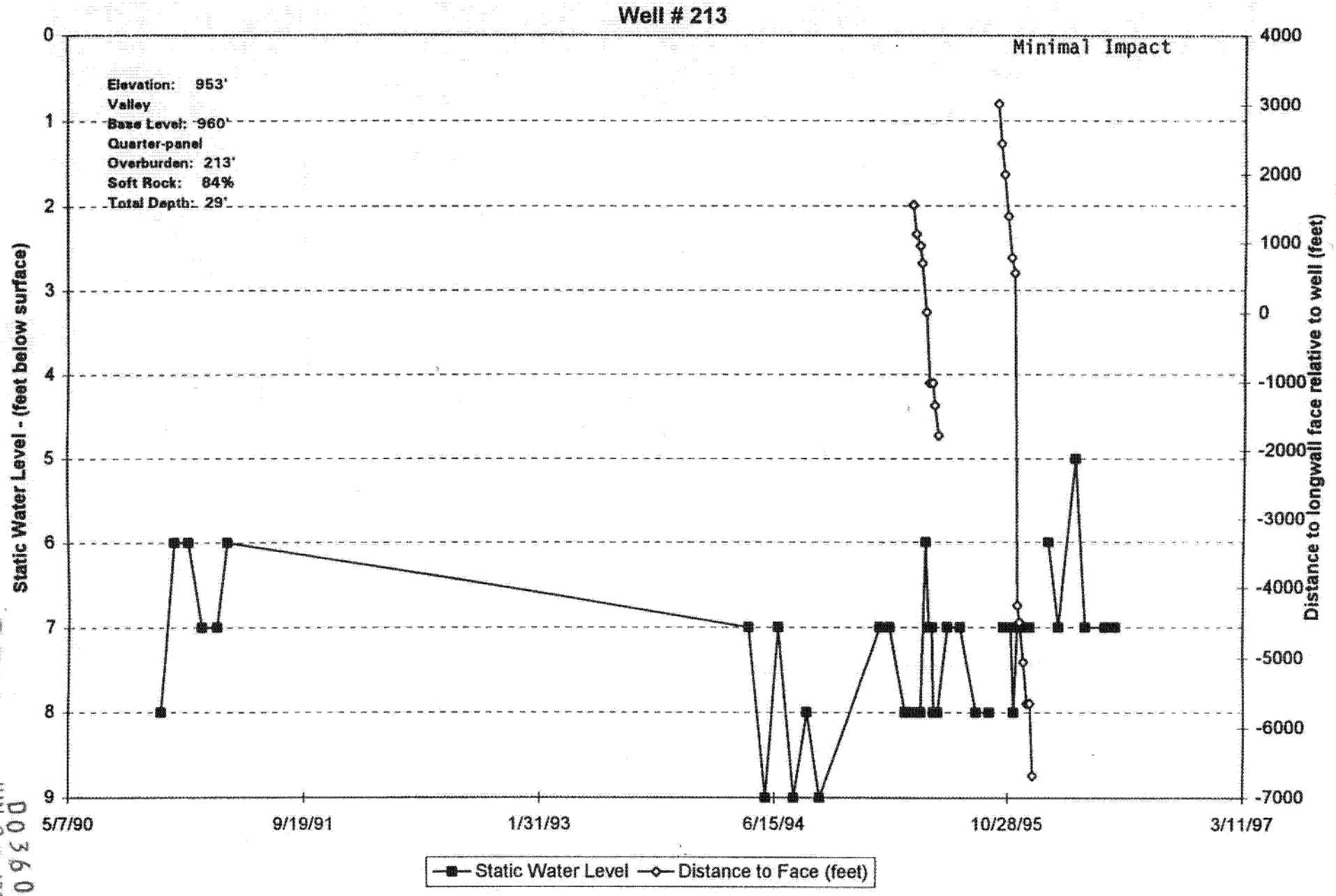

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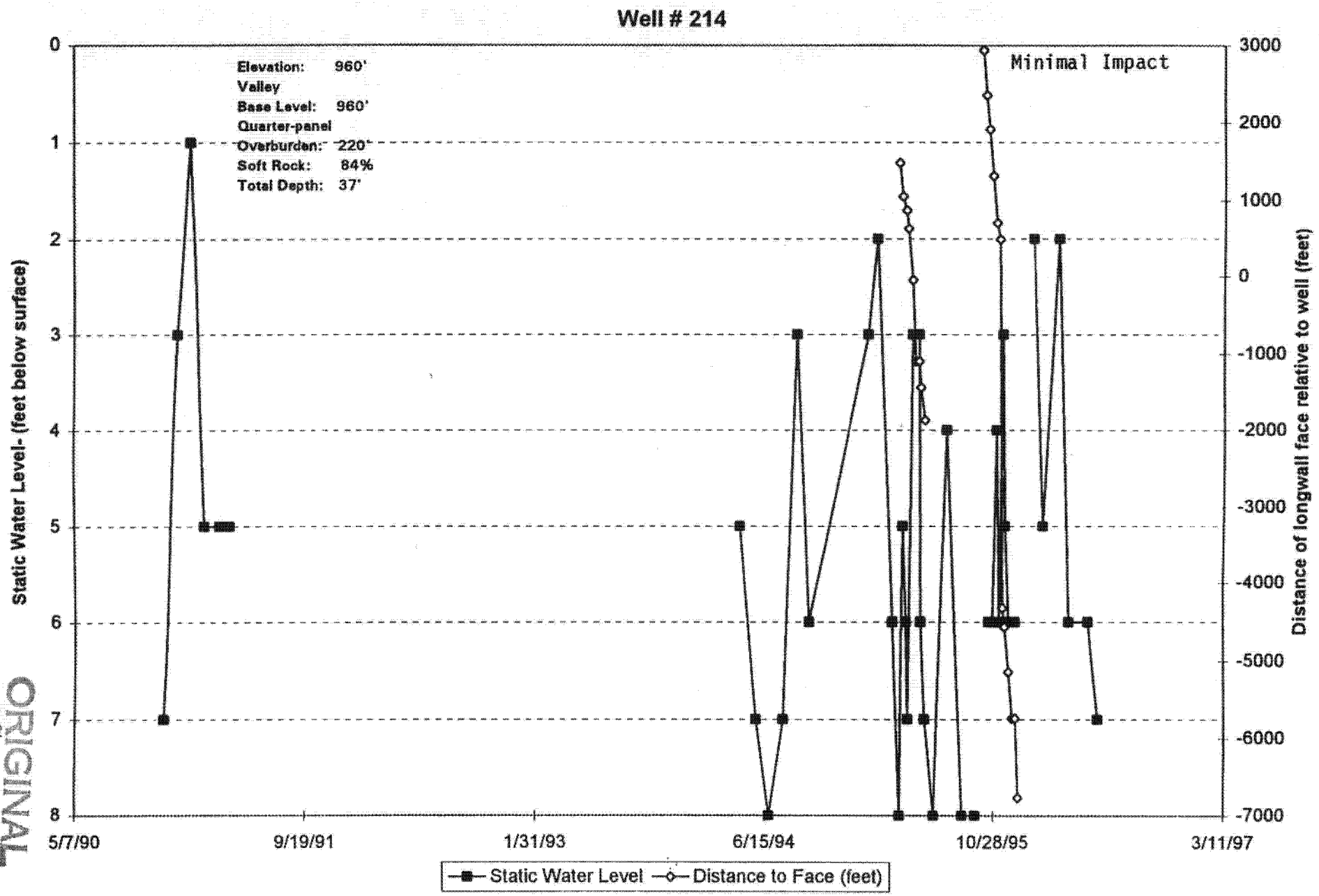

Prepared by: Moody and Assoc., Inc. 12/5/96

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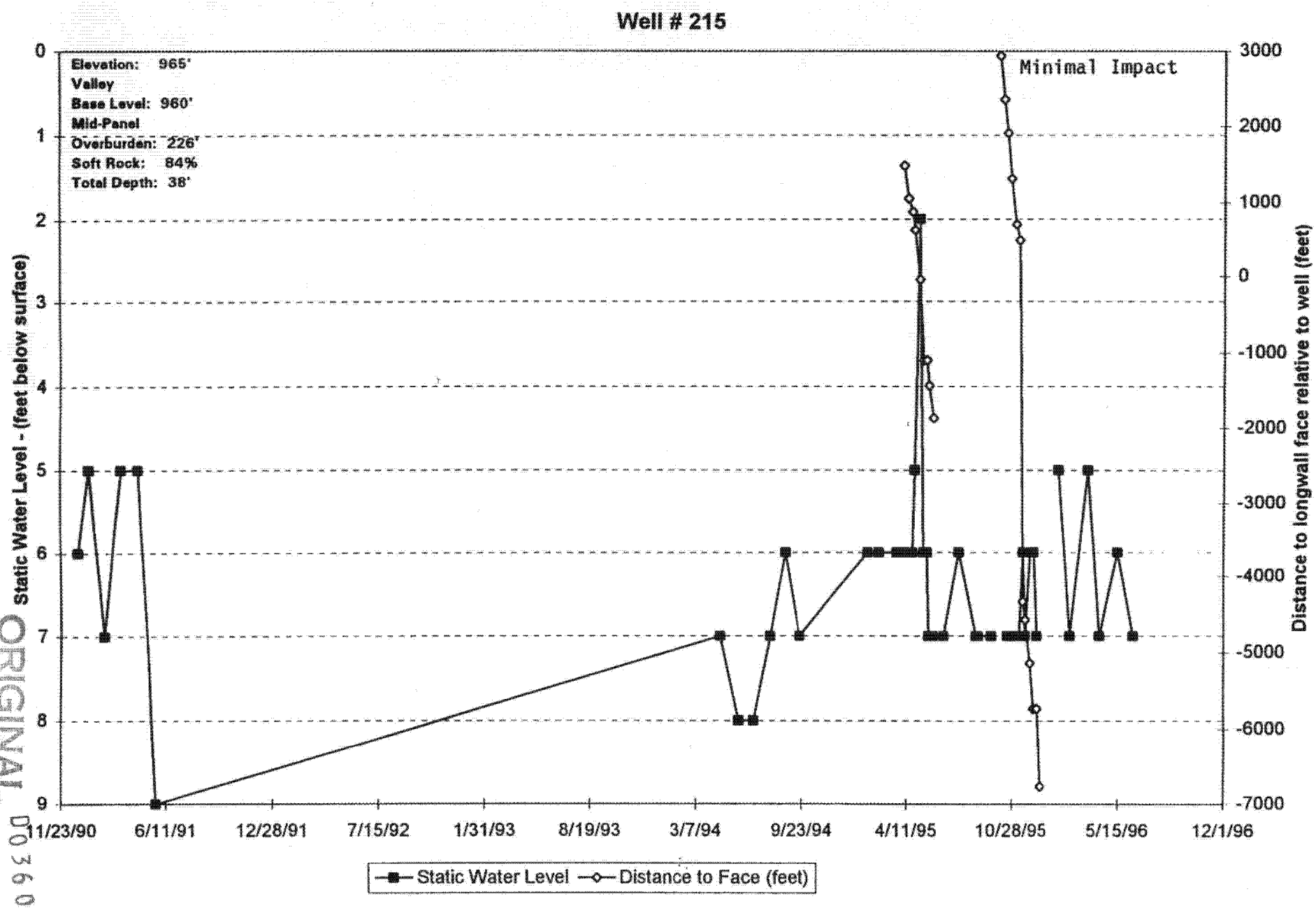

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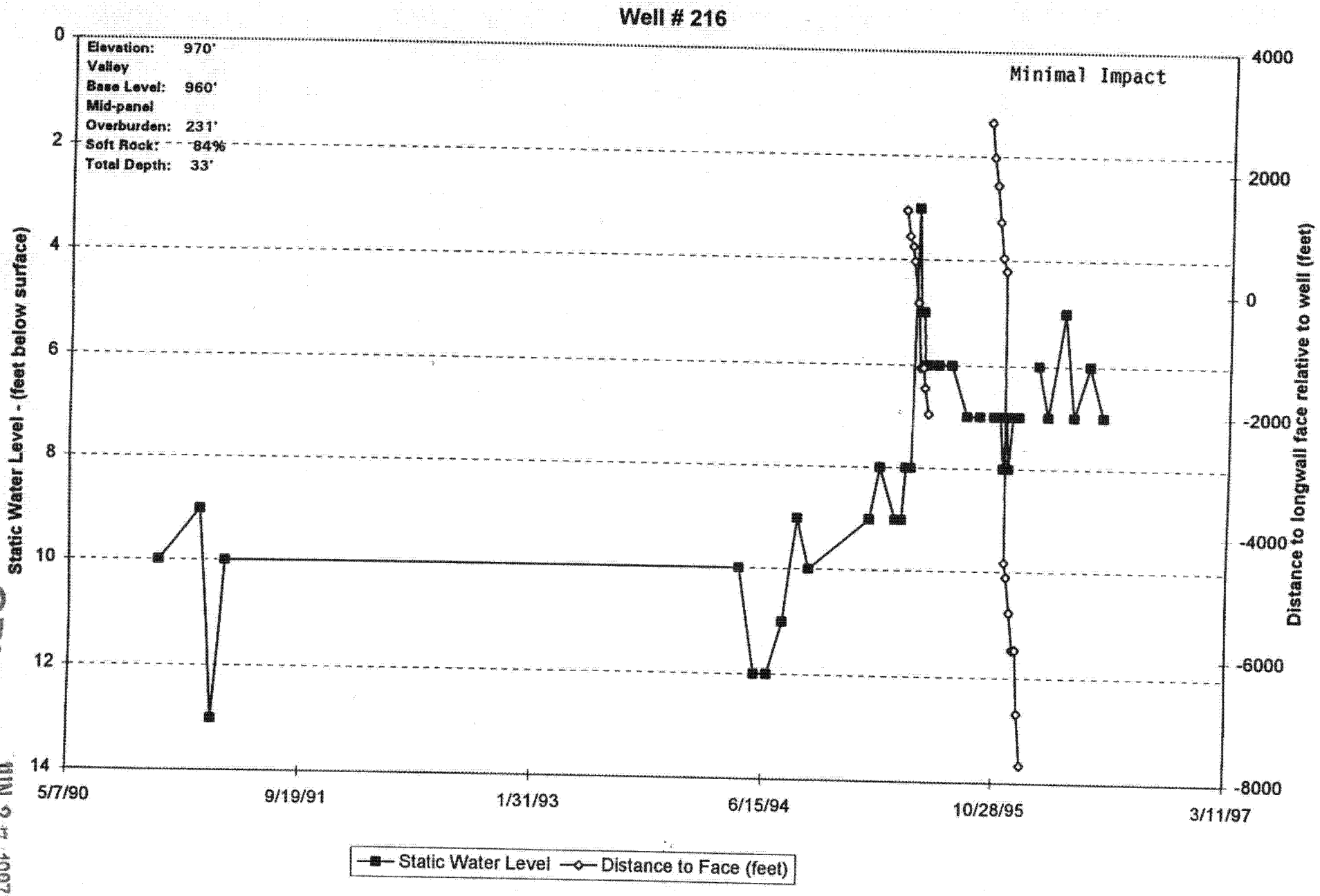

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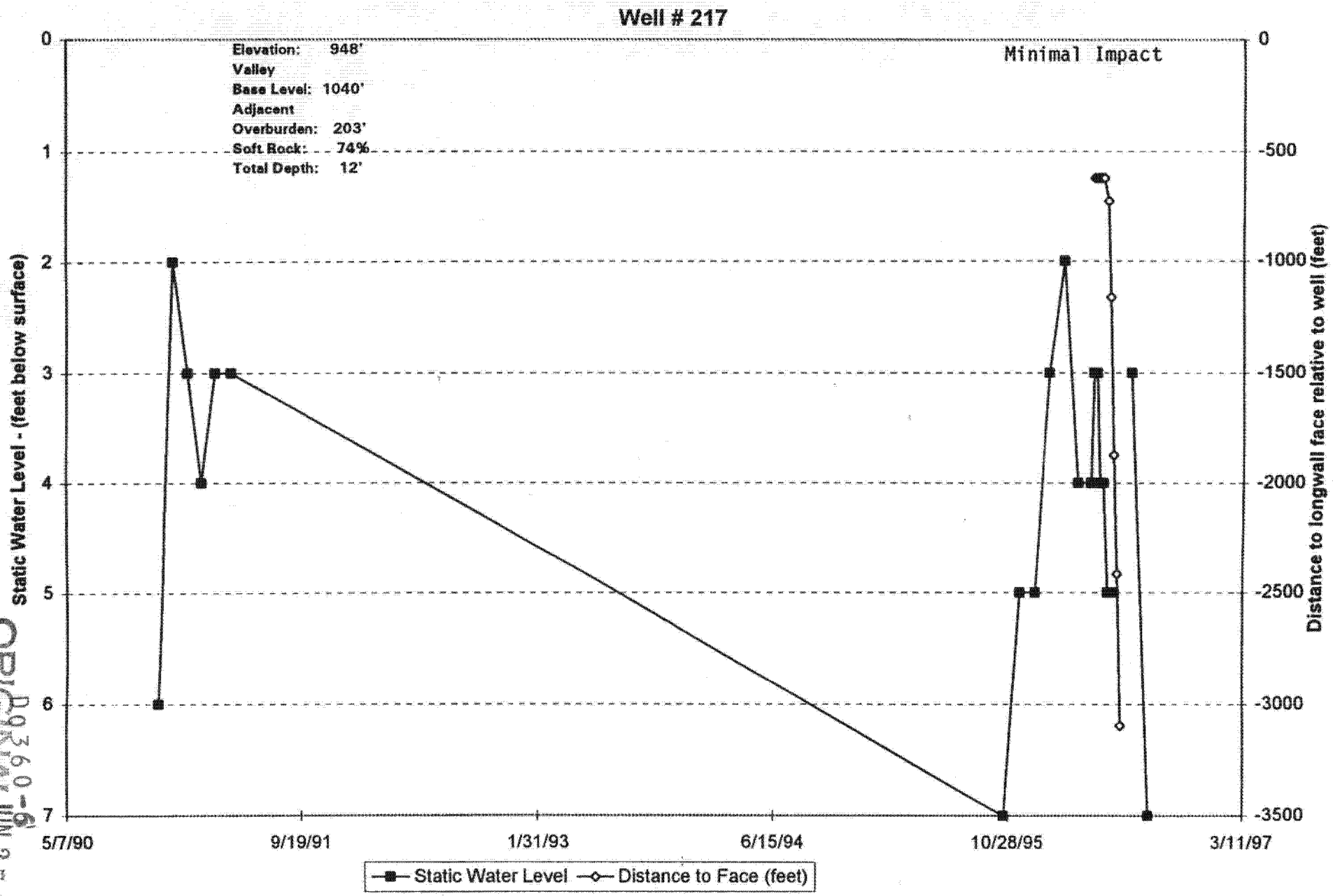

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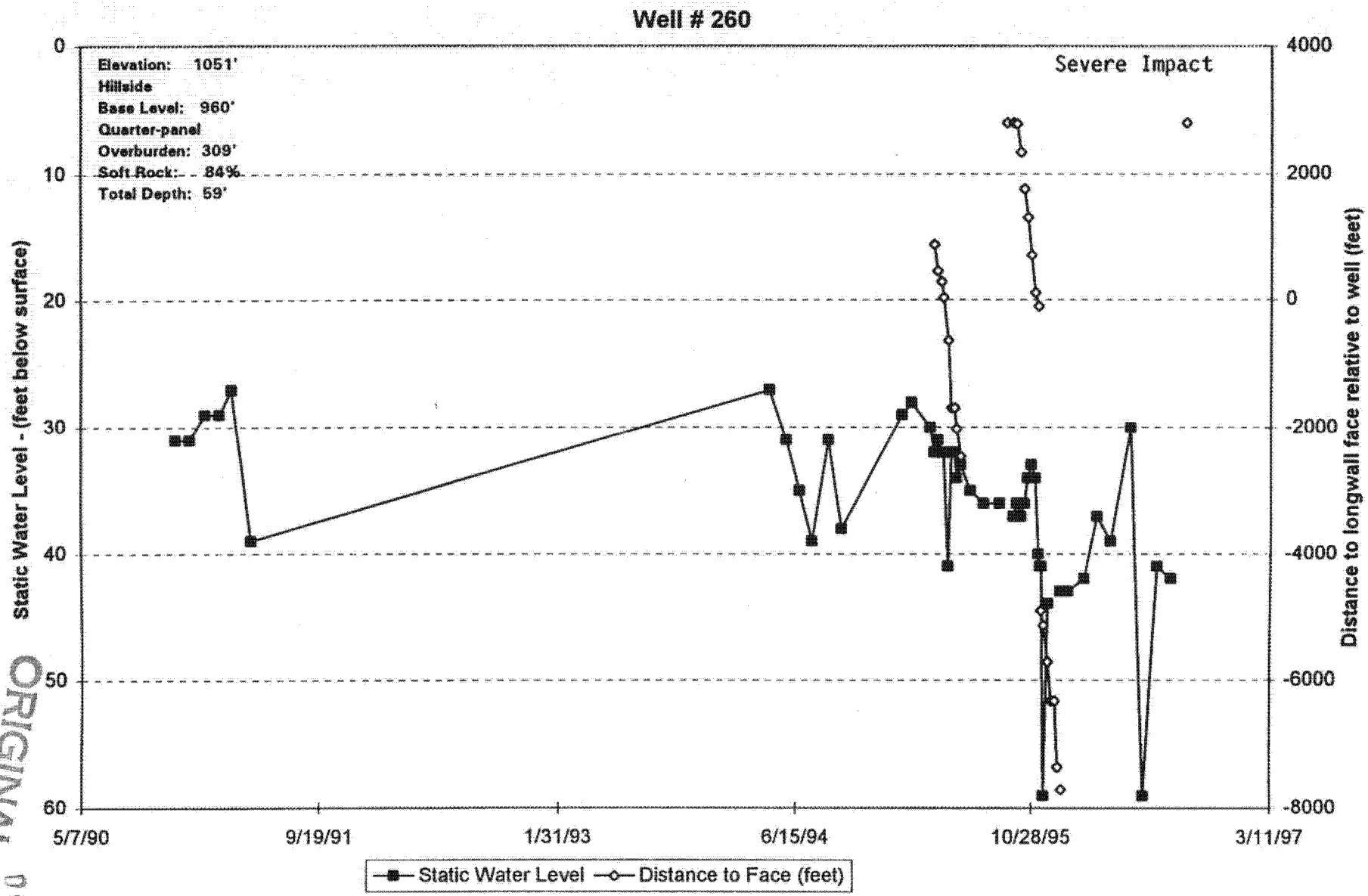

Prepared by: Moody and Assoc., Inc. 12/5/96

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00360-6

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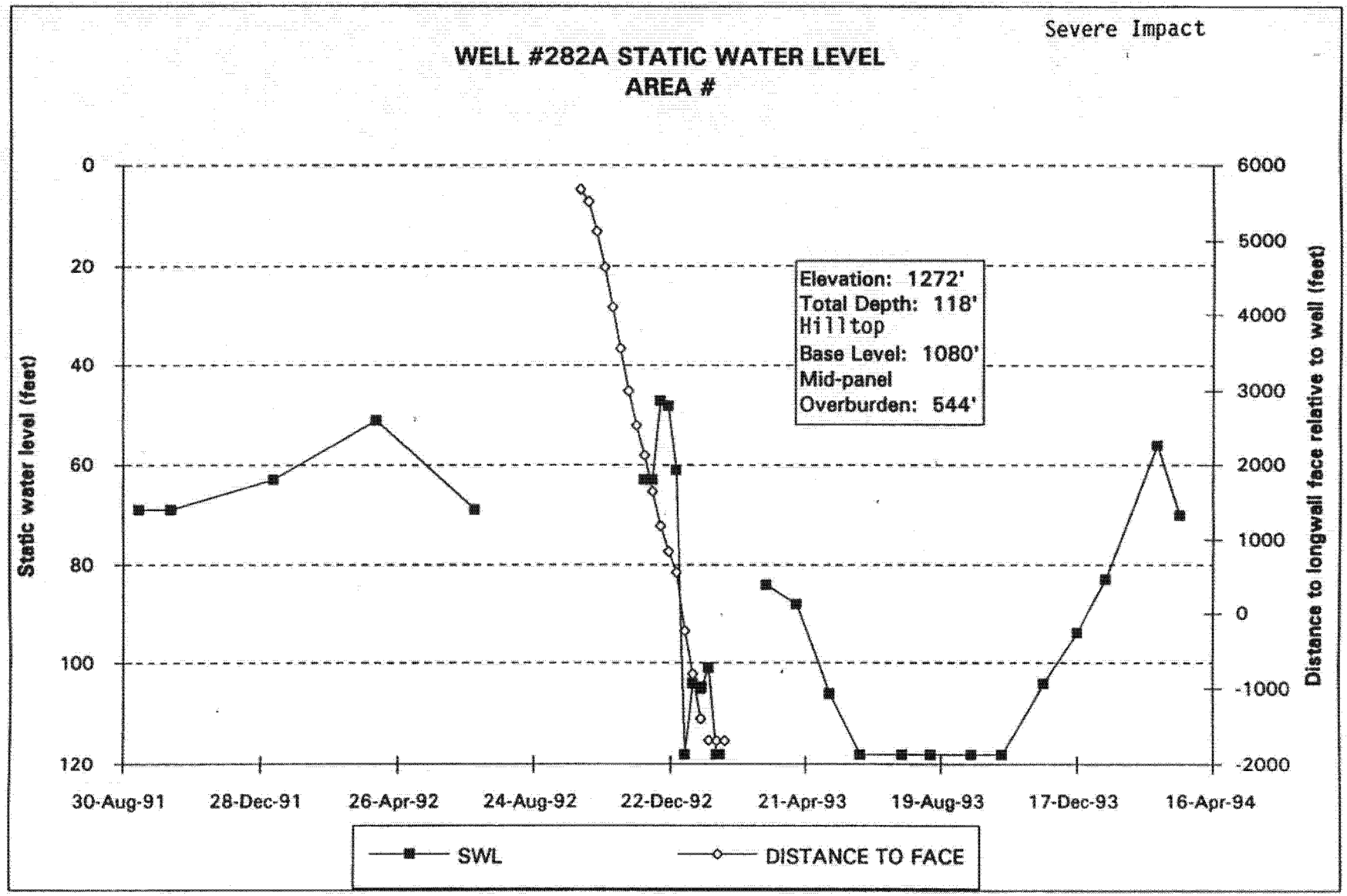

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JUN 27 1987

D0360-6

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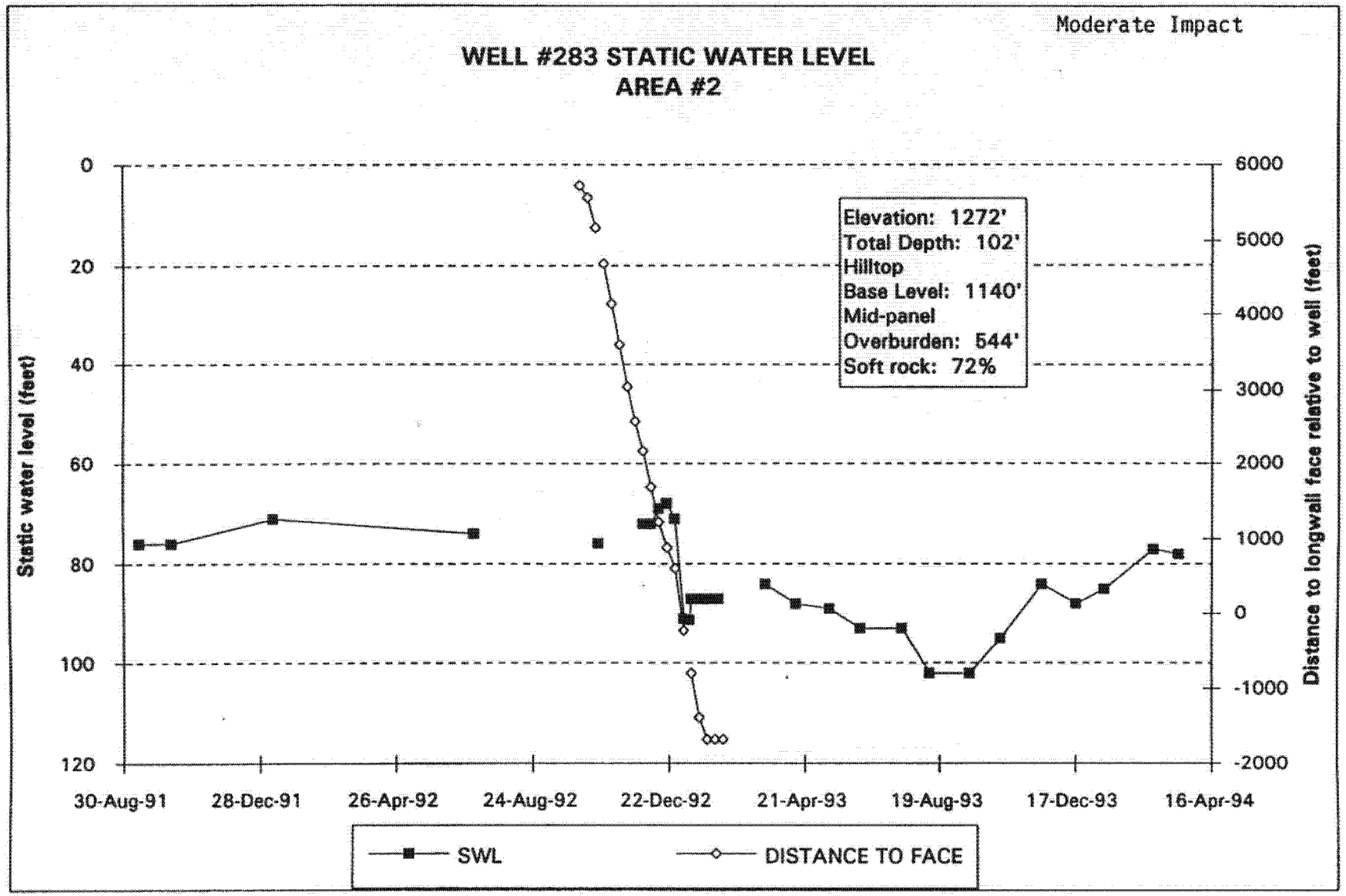
Moderate Impact



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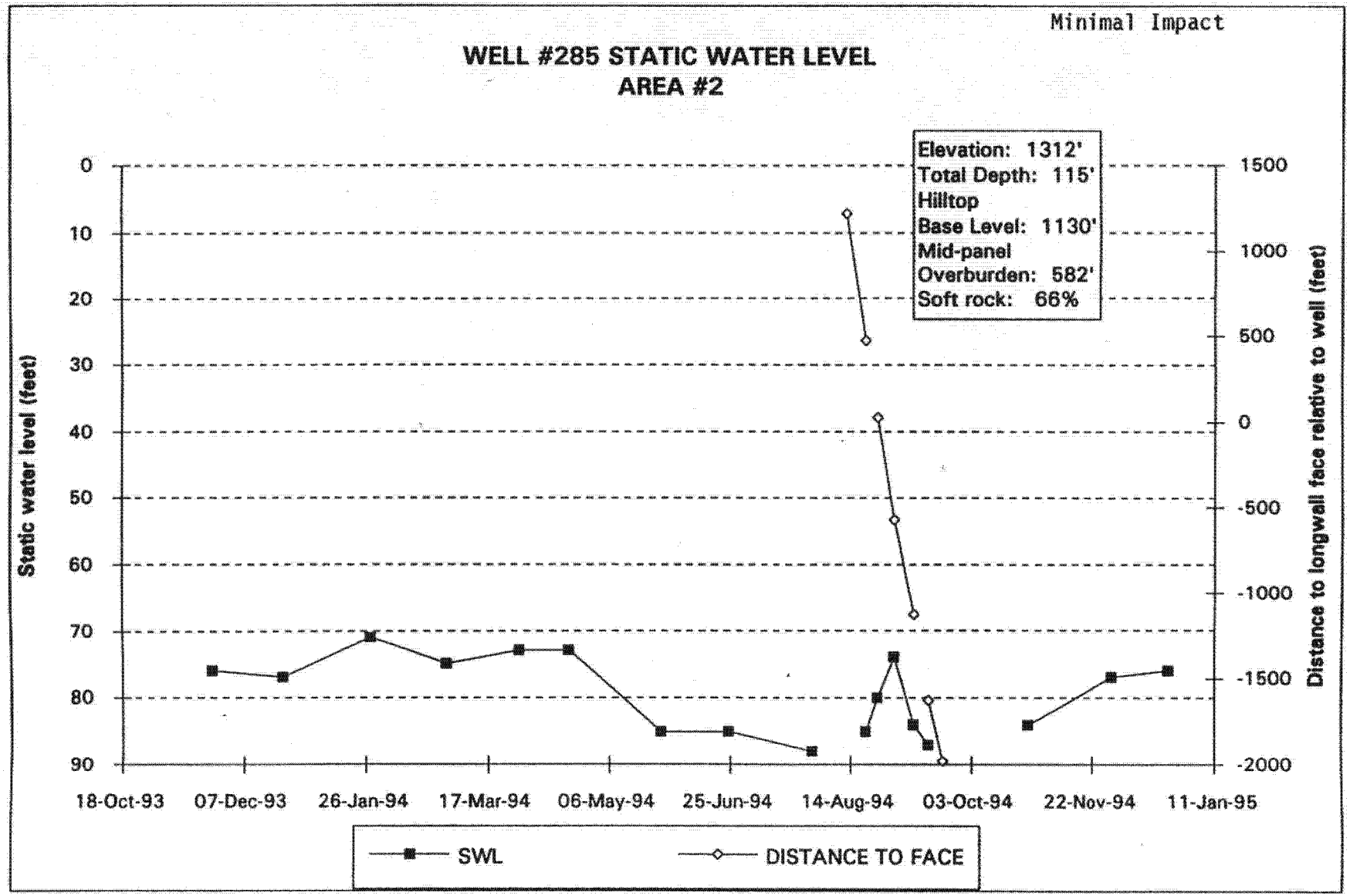
D0360-6
JUN 21 1997

Minimal Impact



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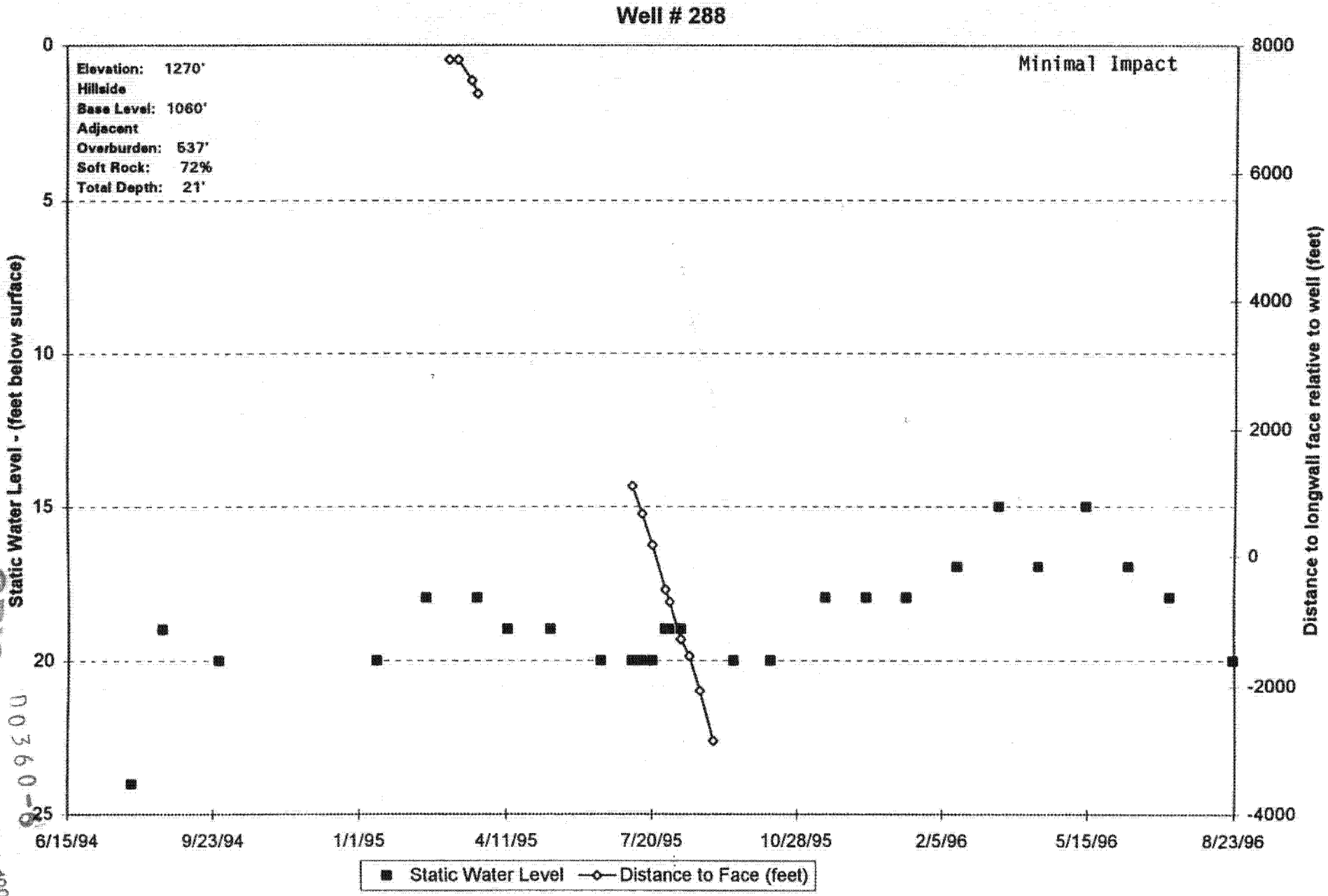

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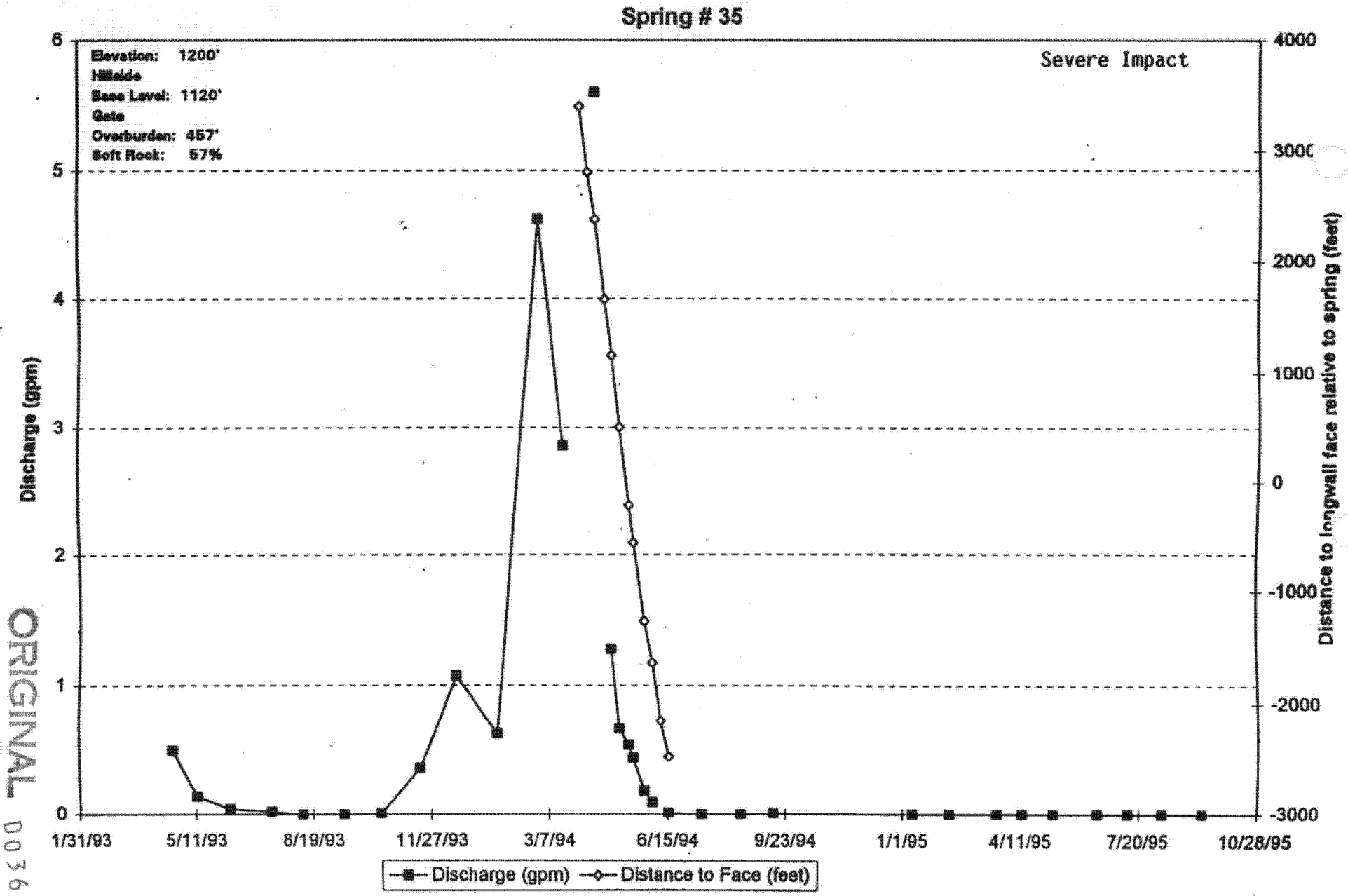
ORIGINAL
D0360-8
JUN 27 1997

FIGURE 2

Graphs of spring discharge rates - Areas D-0360-2 and D-0360-3

ORIGINAL D-0360-6
JUN 27 1997



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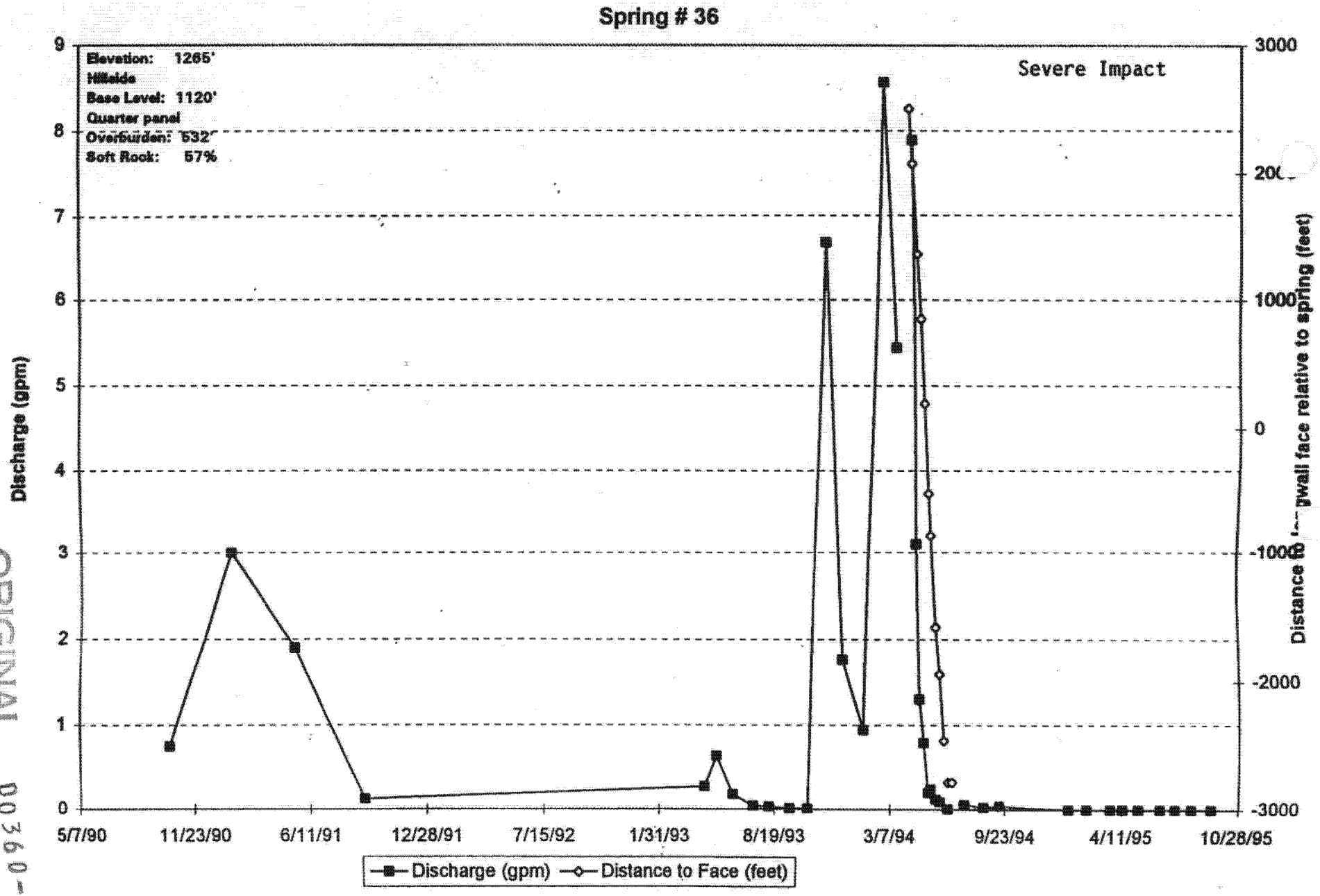

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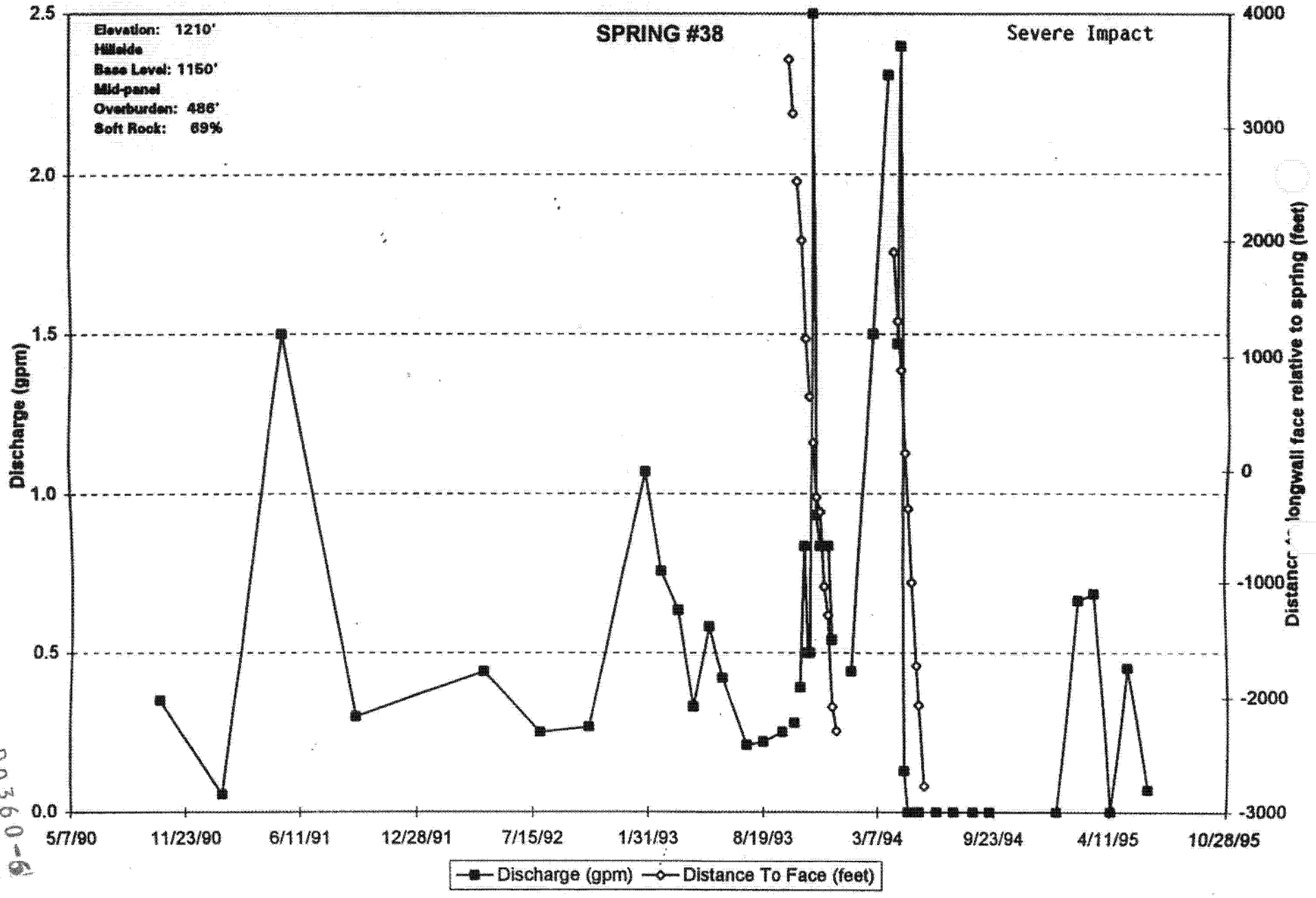

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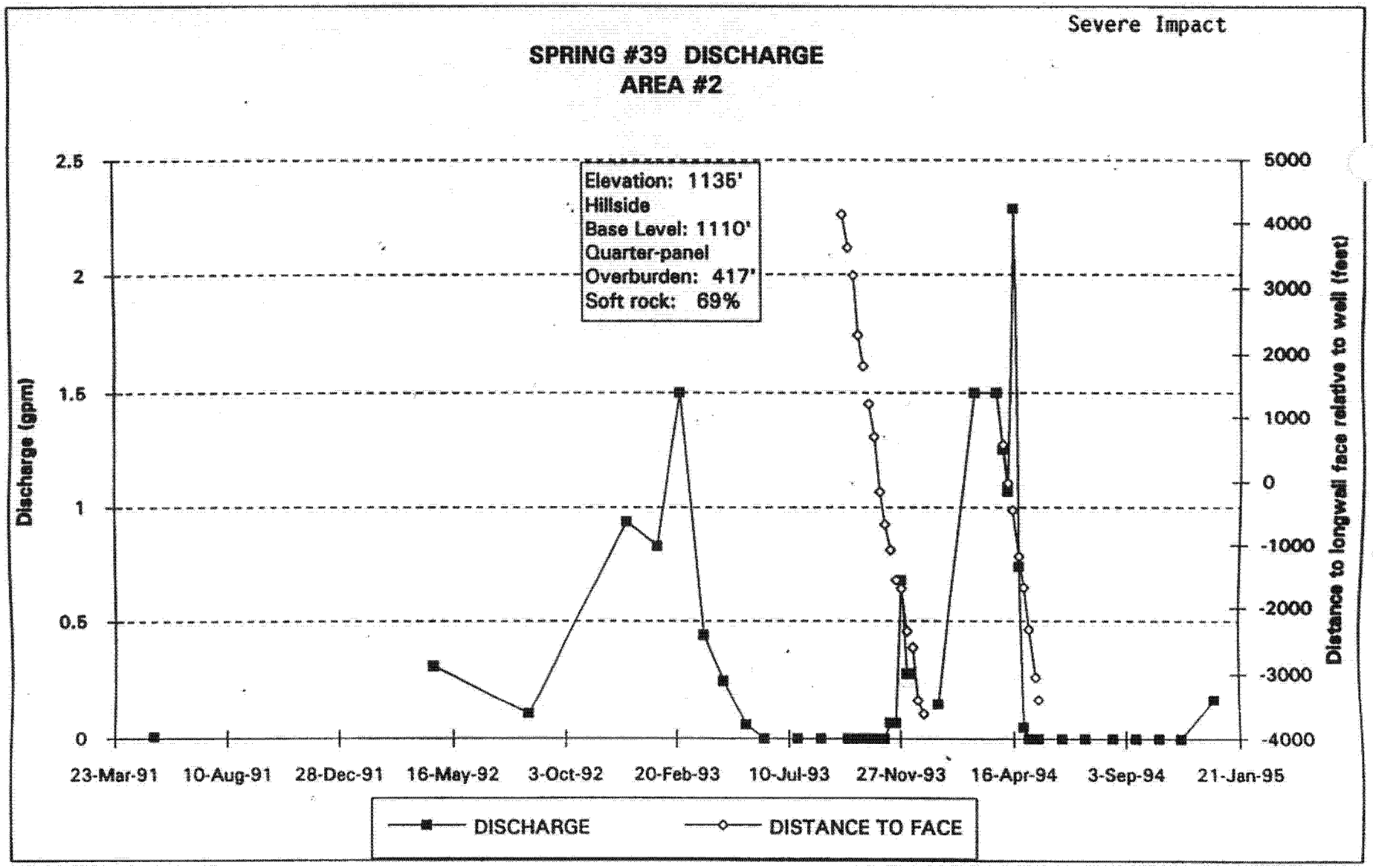
D0360-6

JUN 27 1997

Severe Impact



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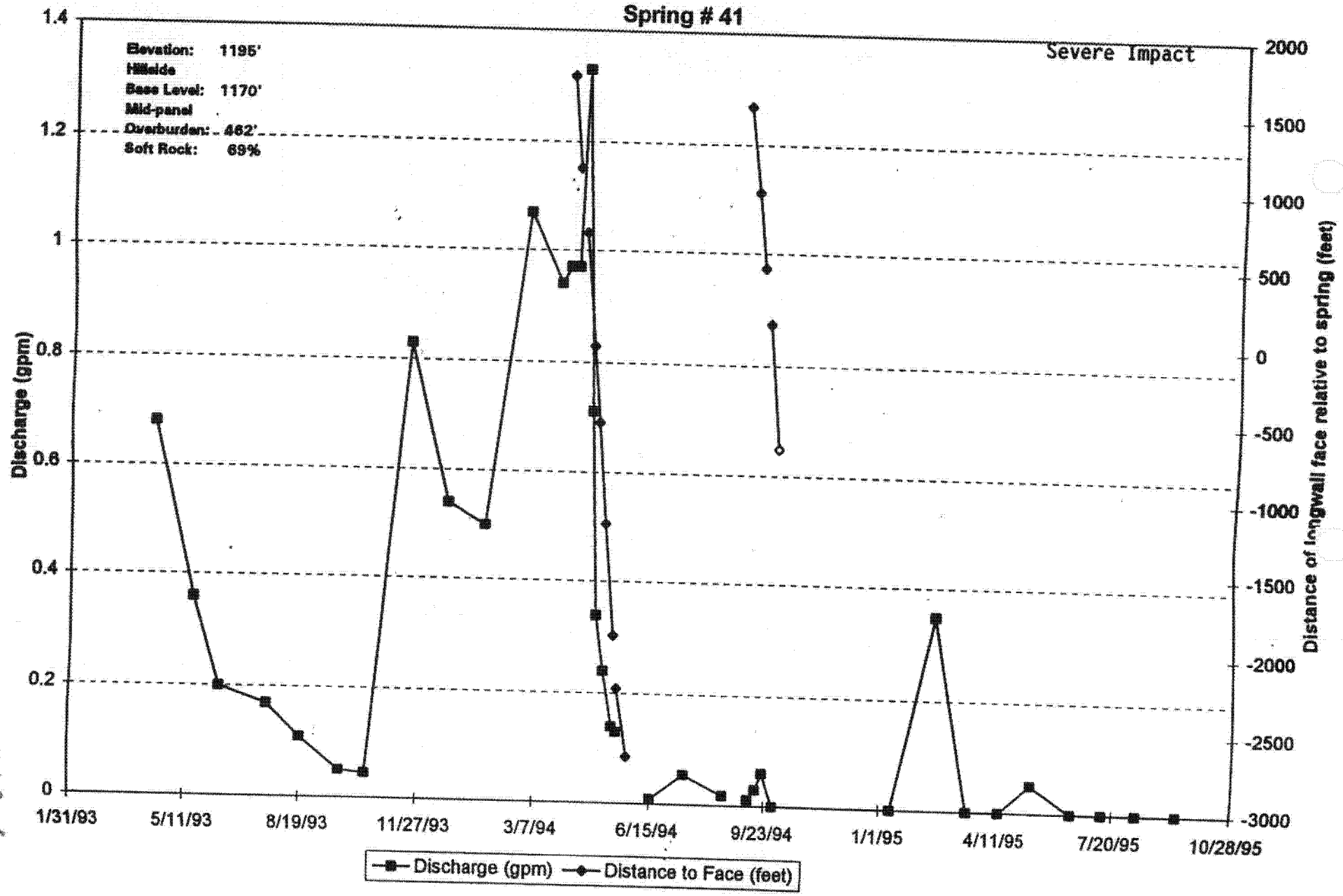

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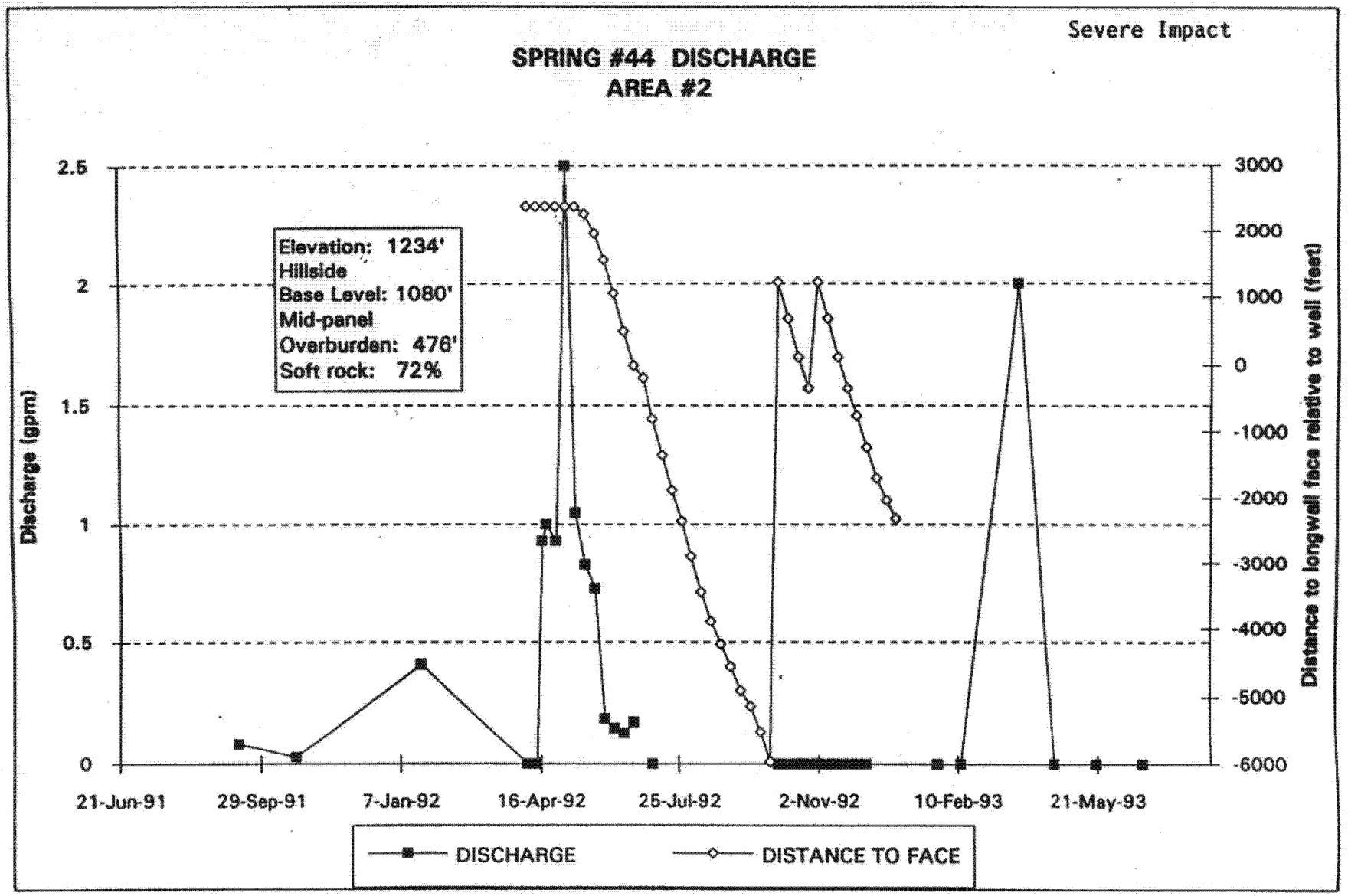
Severe Impact



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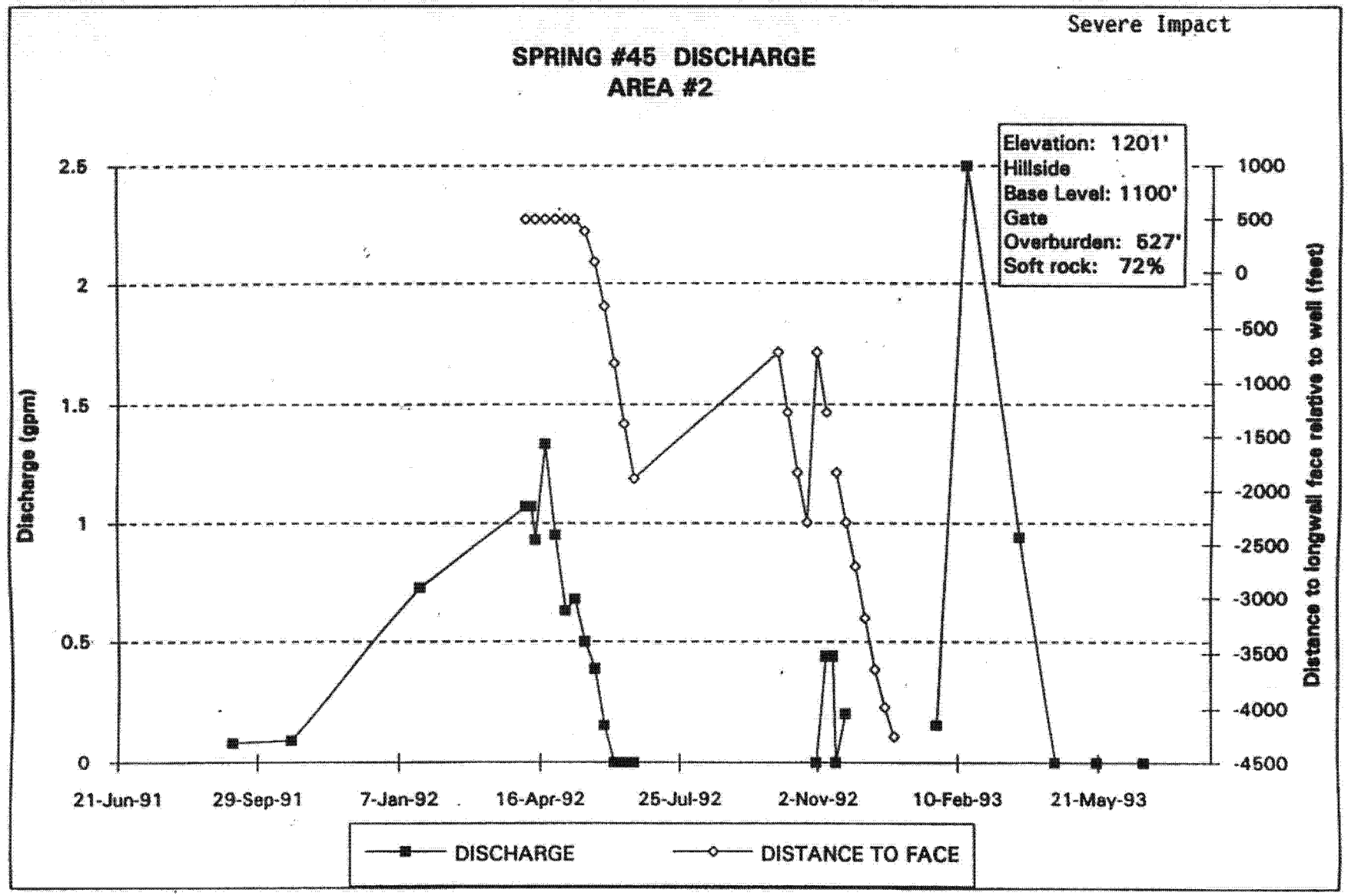

ORIGINAL JUN 27 1997

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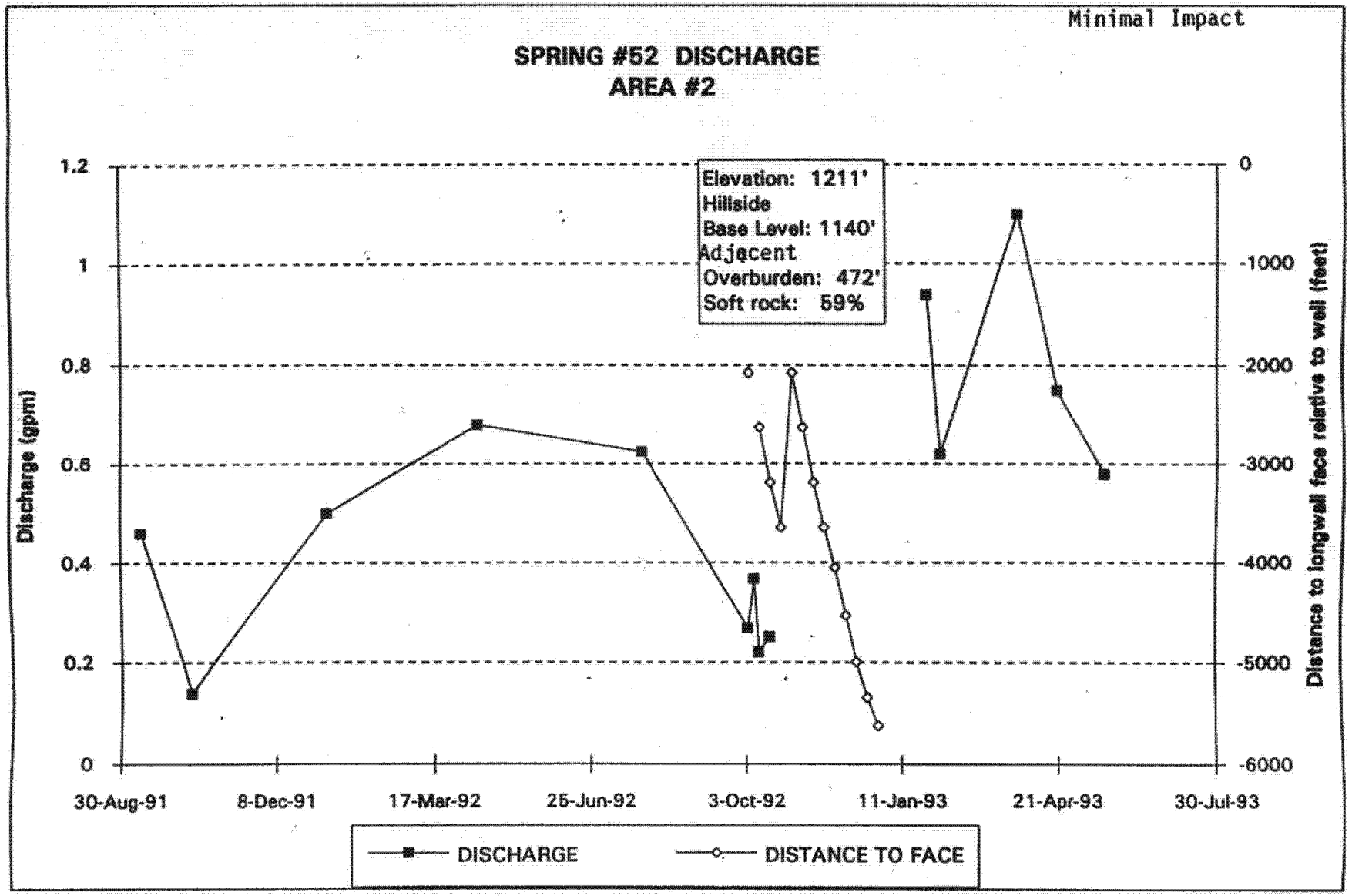
Minimal Impact



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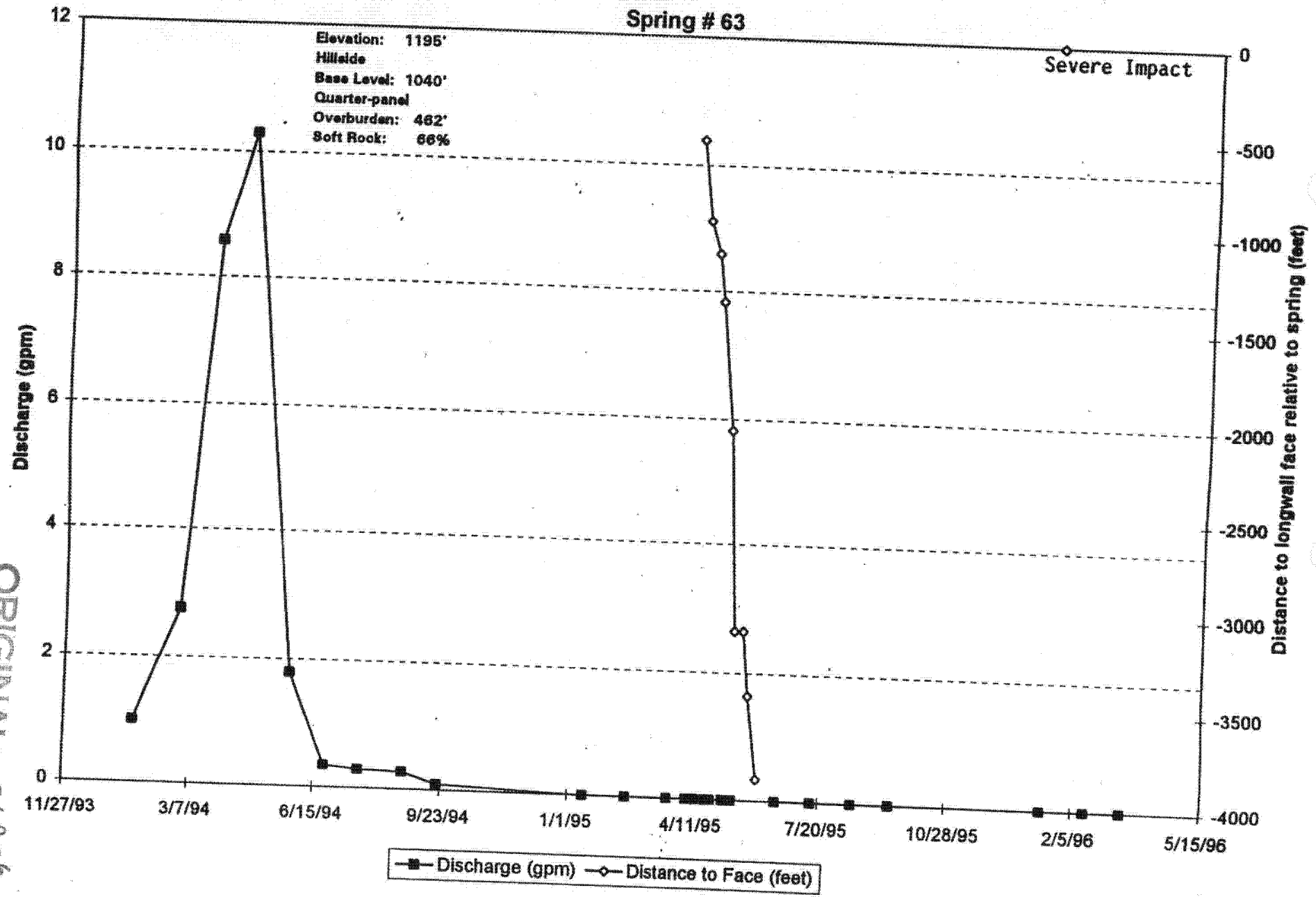

ORIGINAL 0360-6

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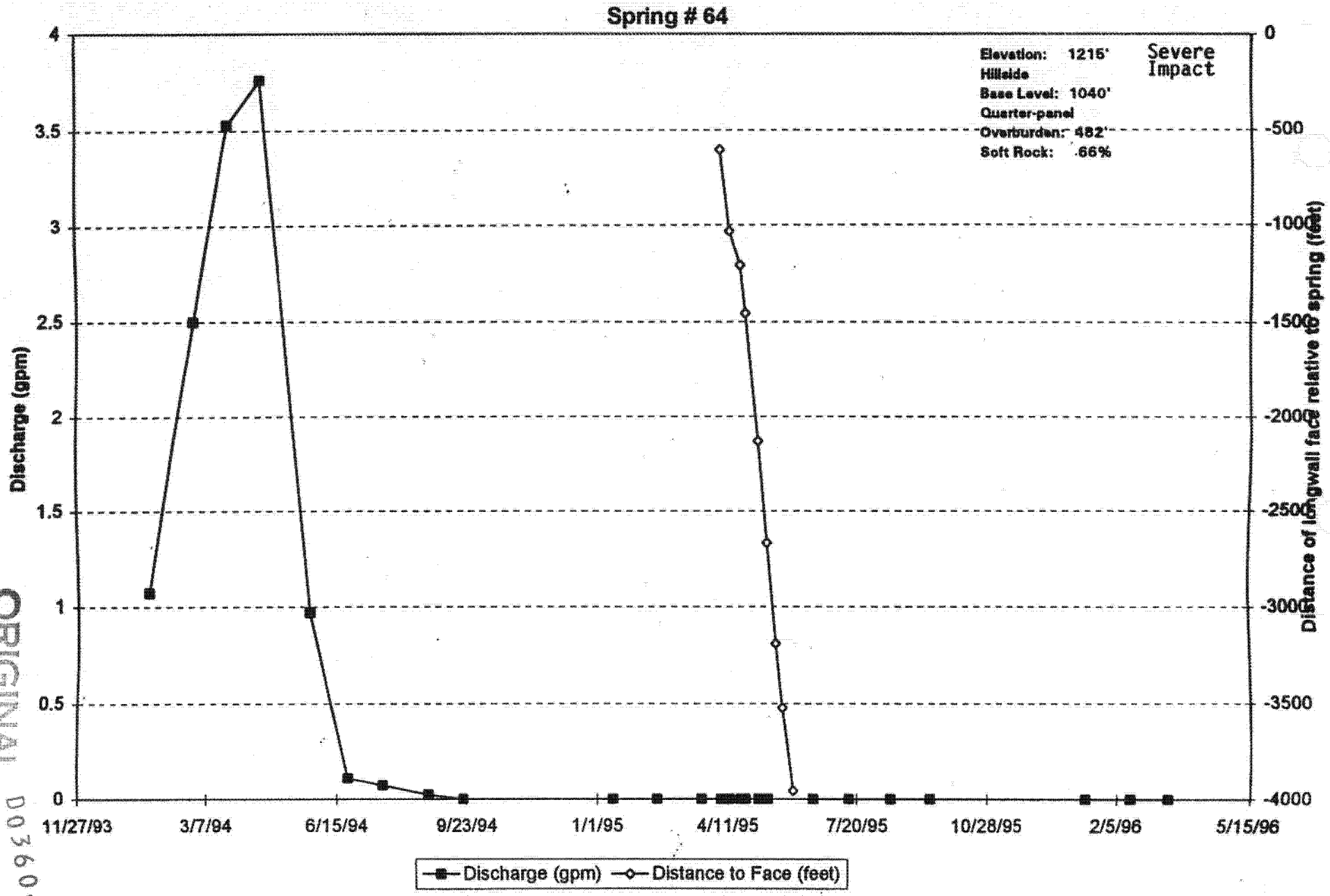

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D0360-6

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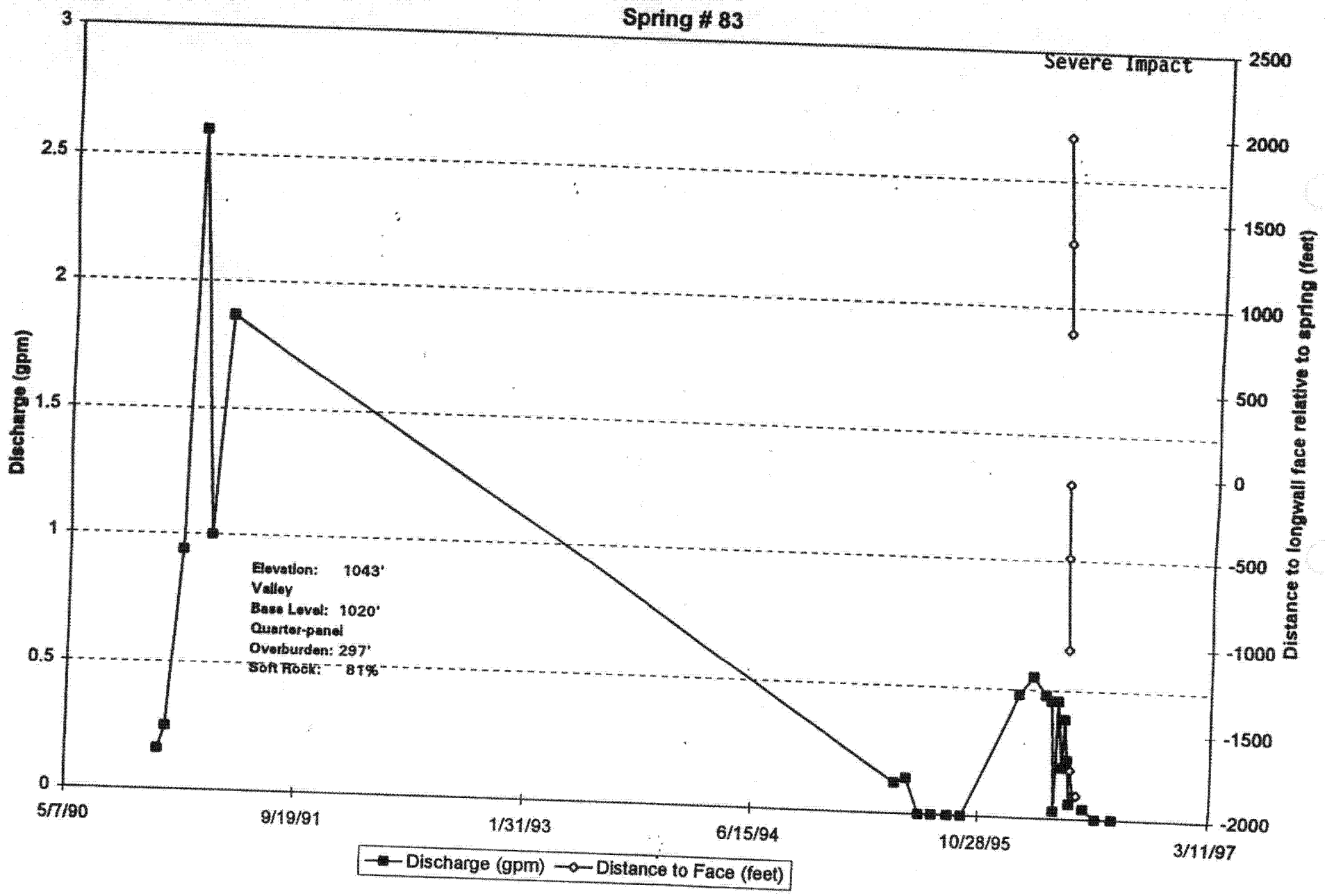

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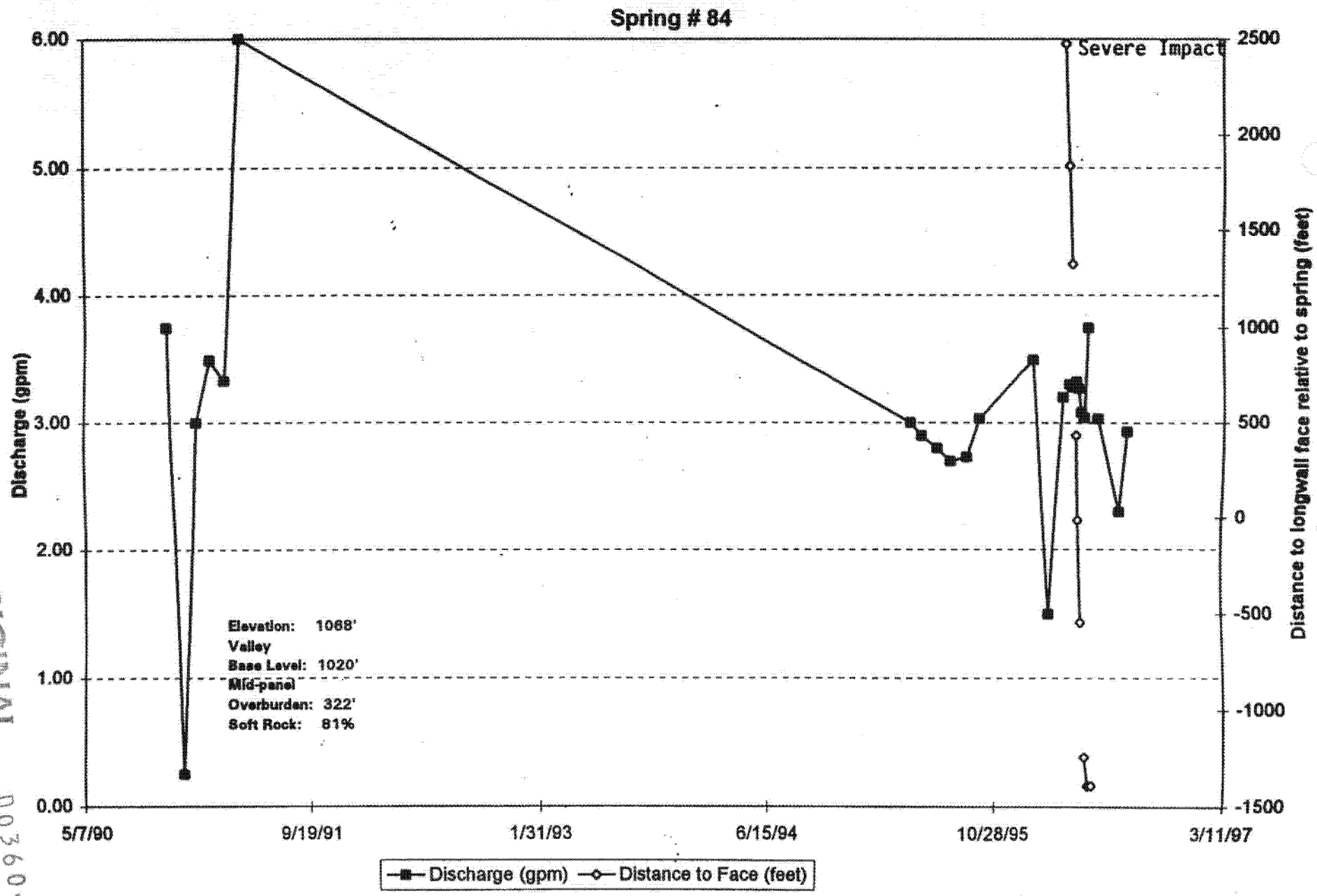

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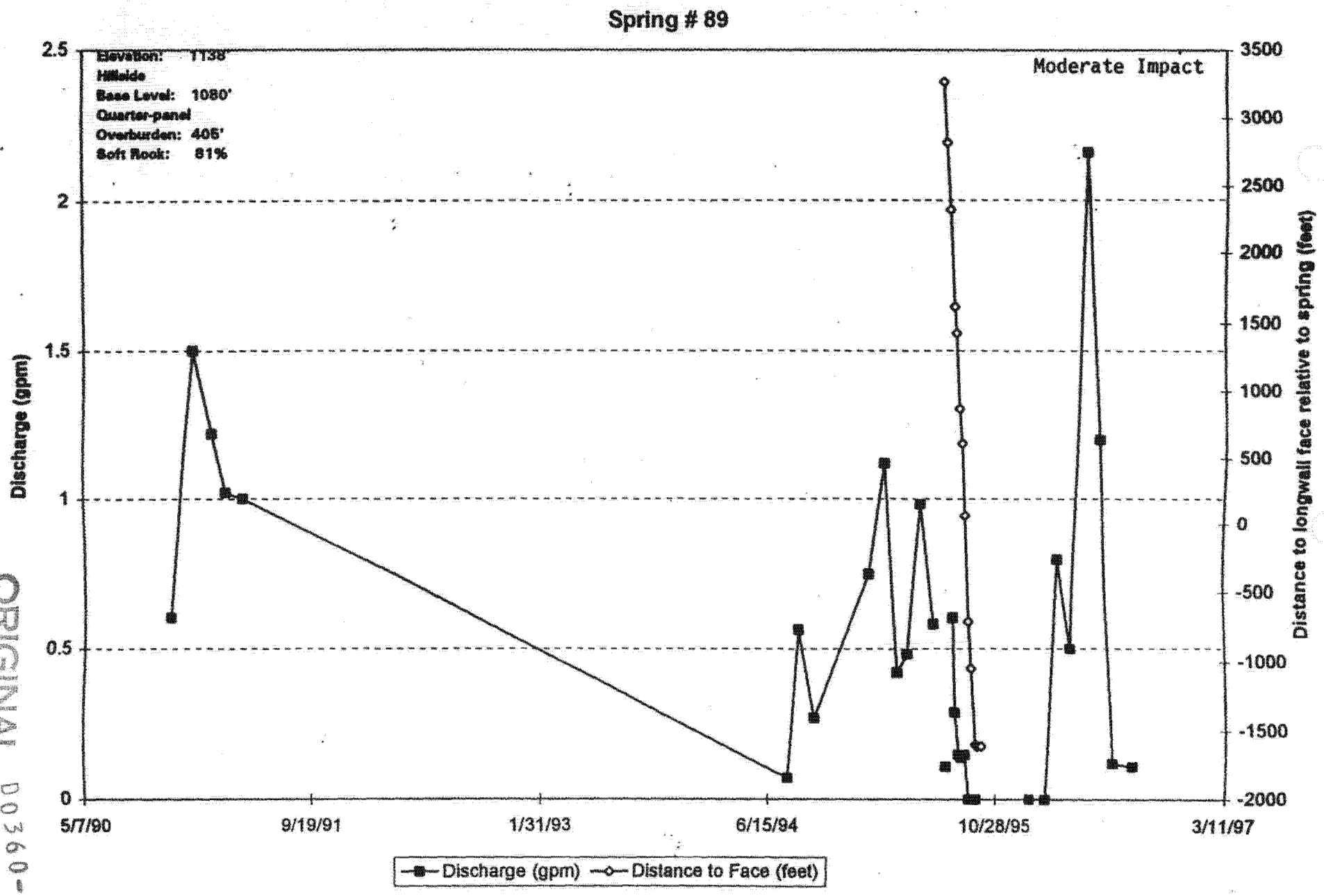
D0360-6



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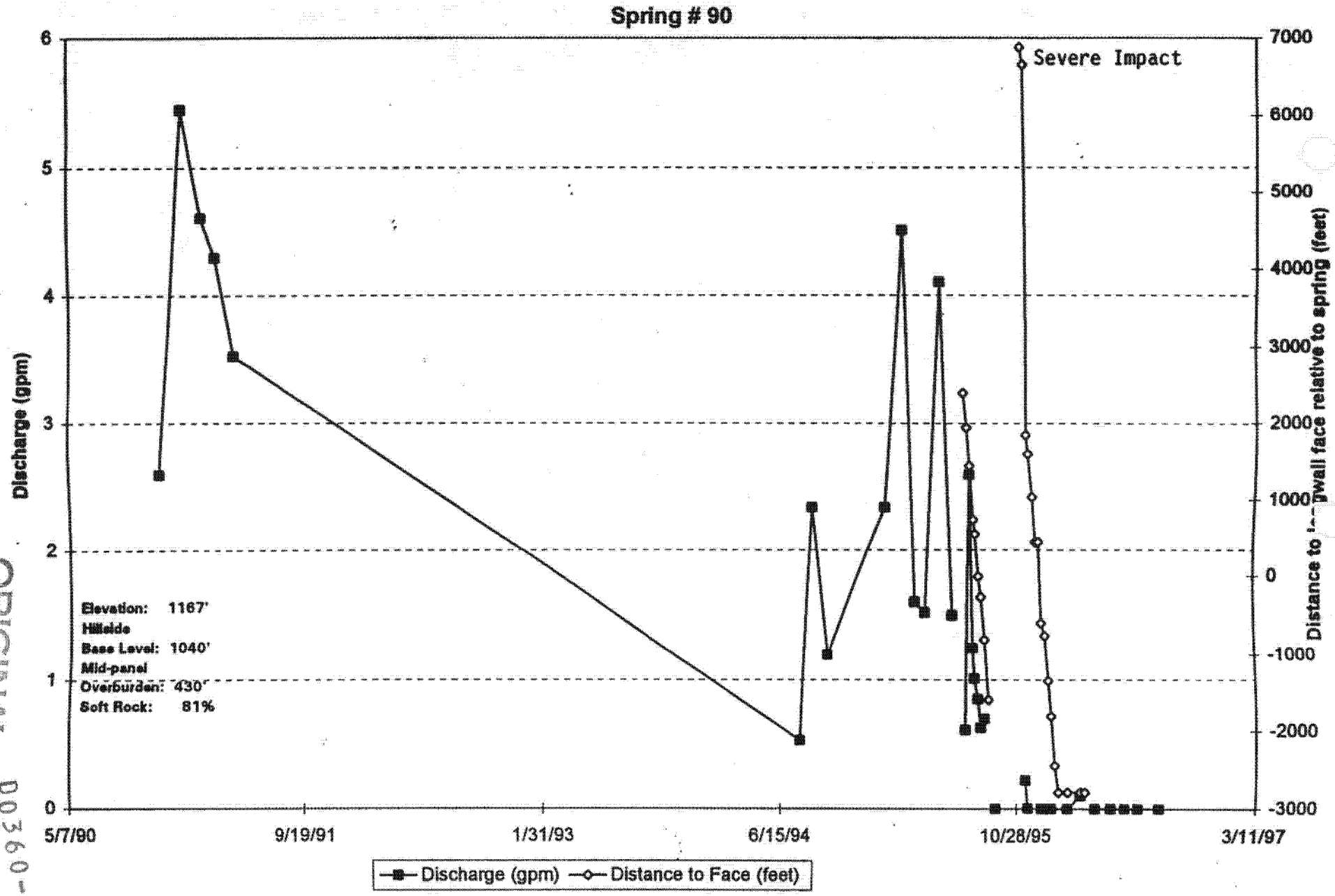

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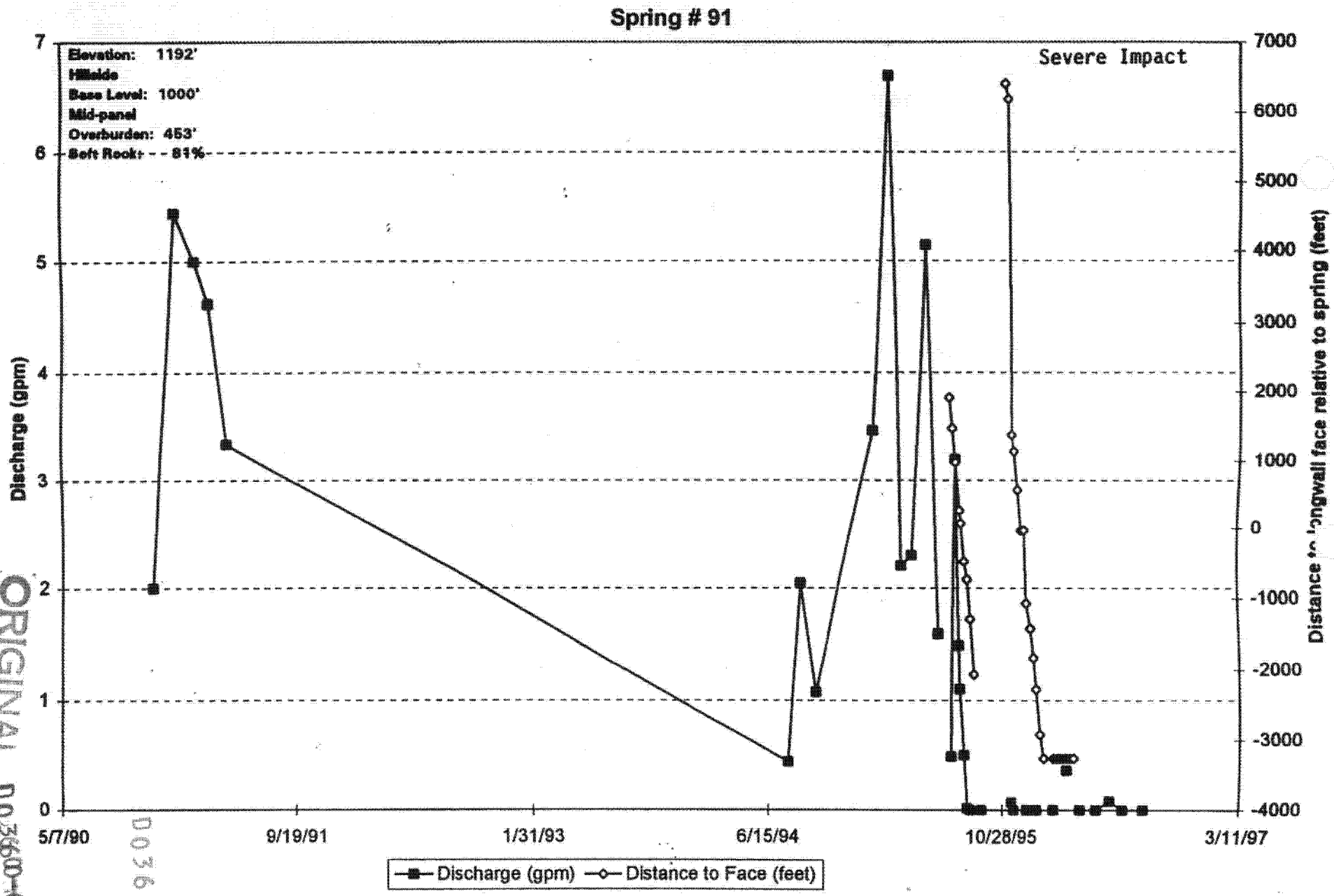

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JUN 2 1 1997

D03600-6

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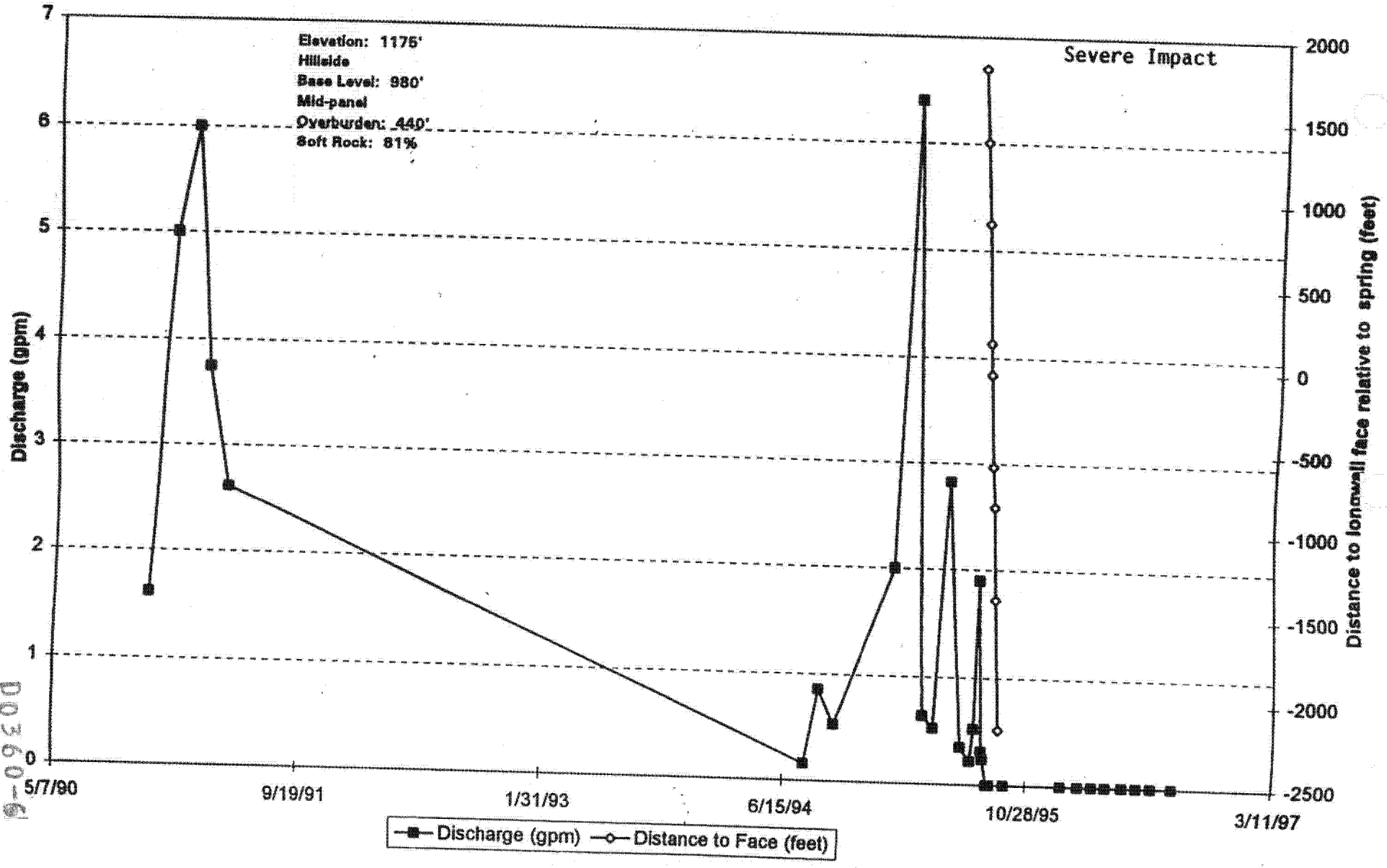
Spring # 92



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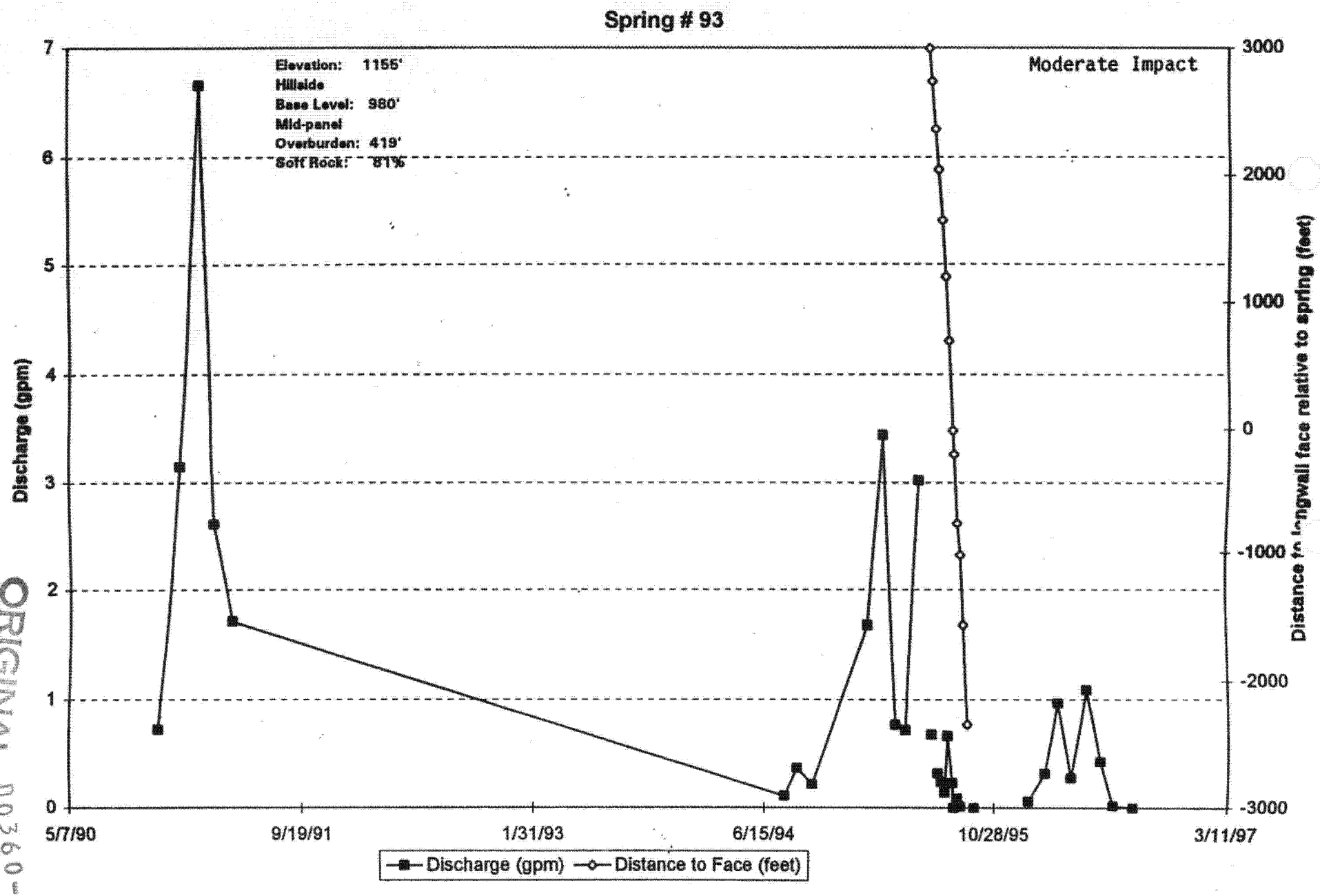

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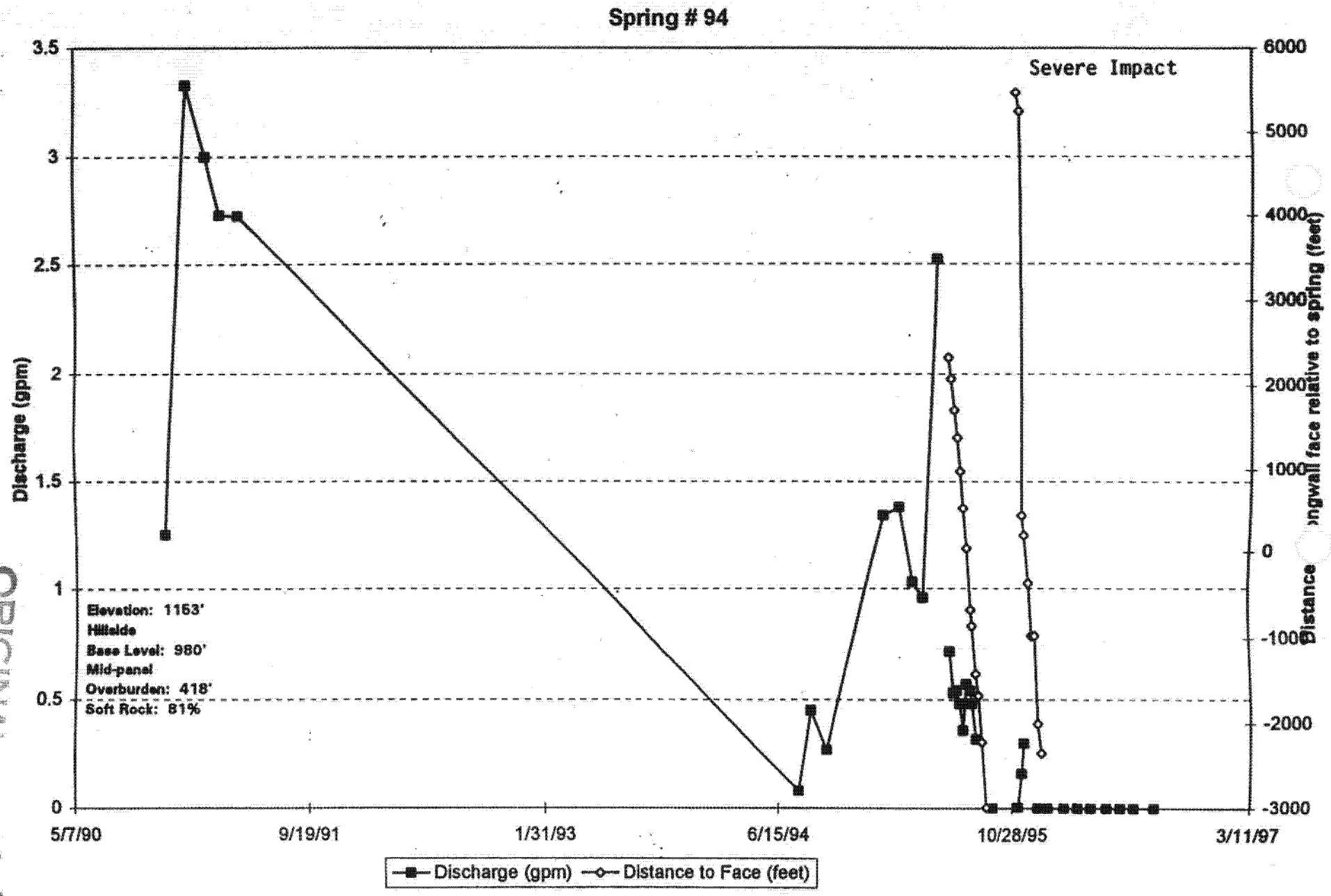

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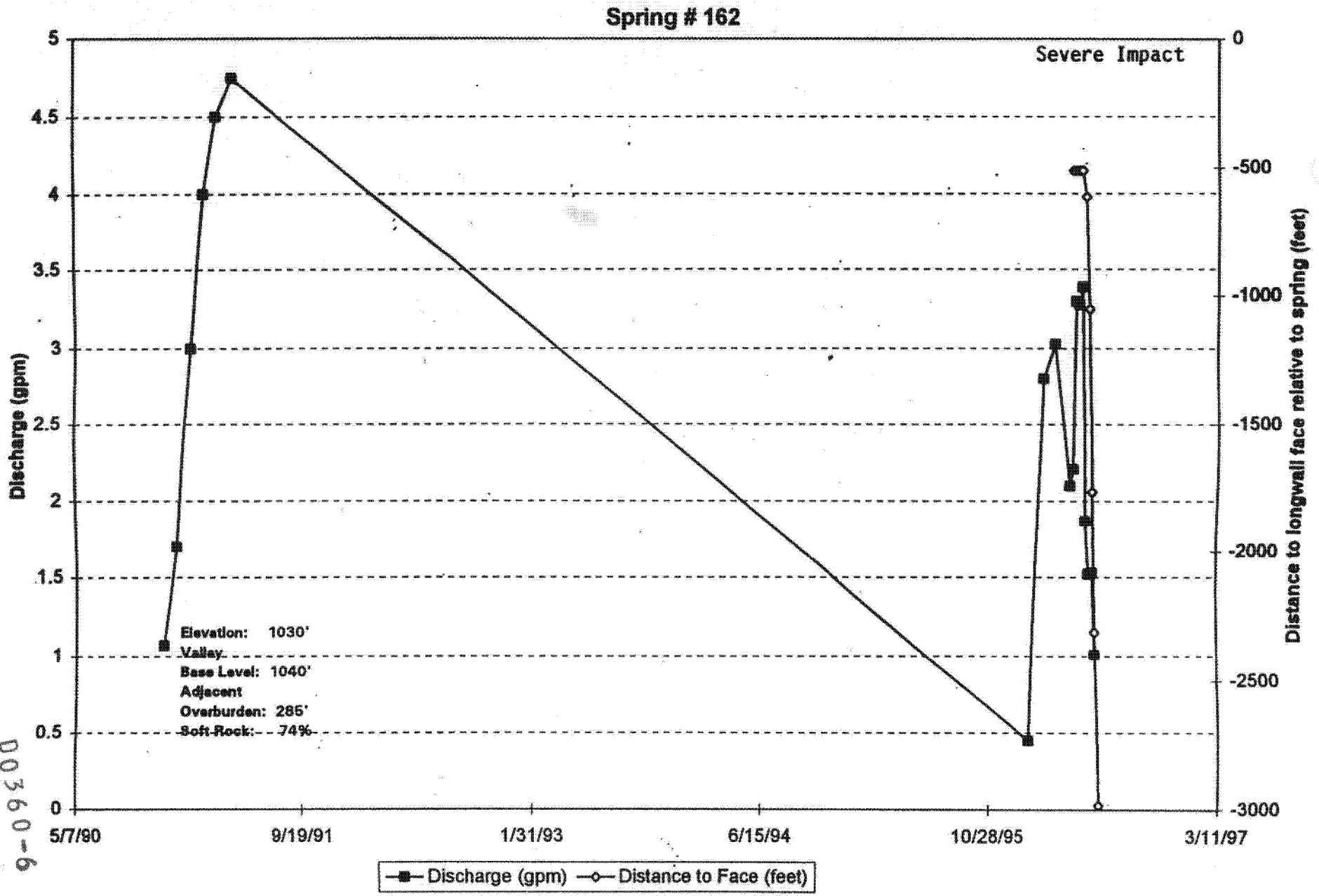

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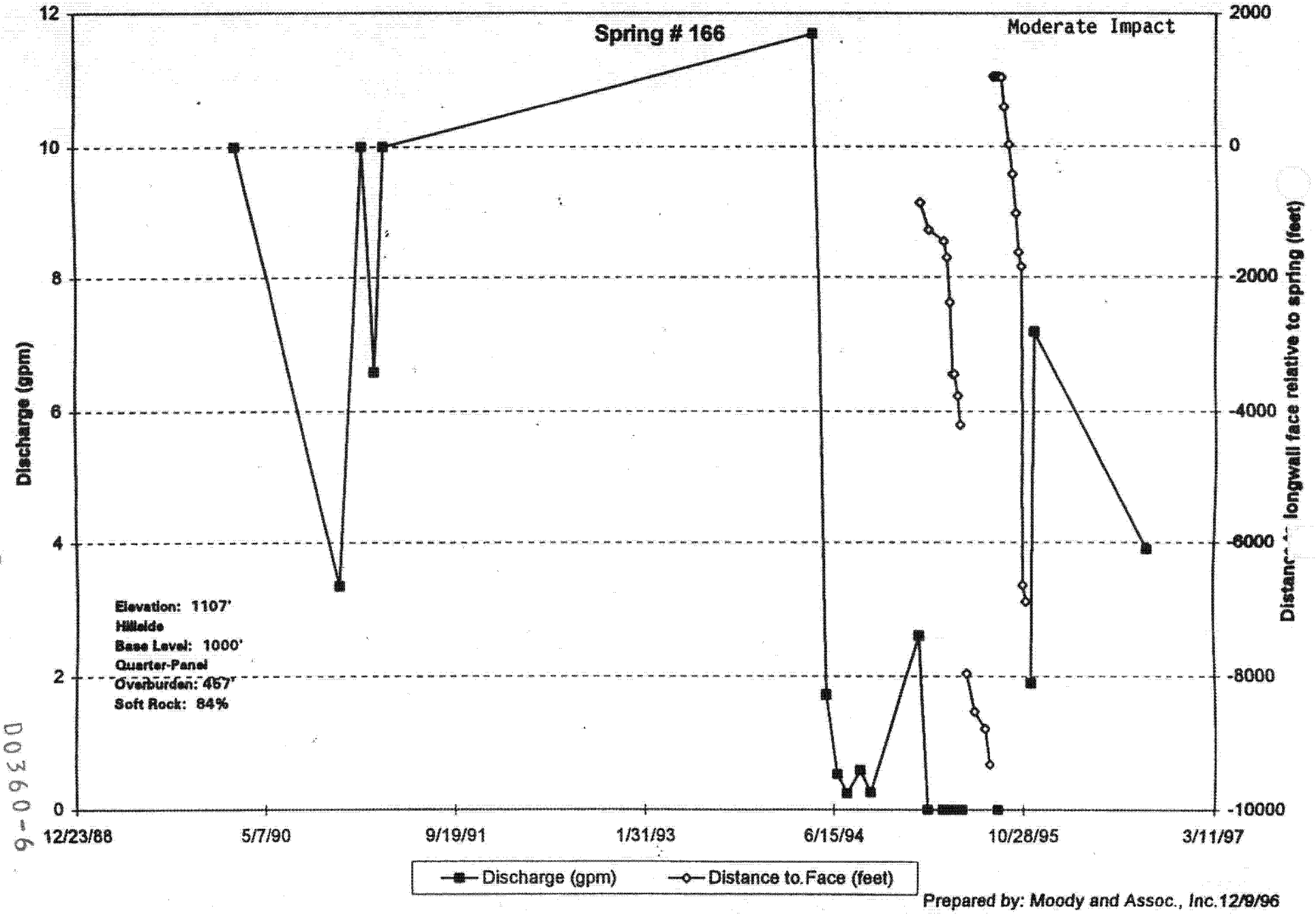

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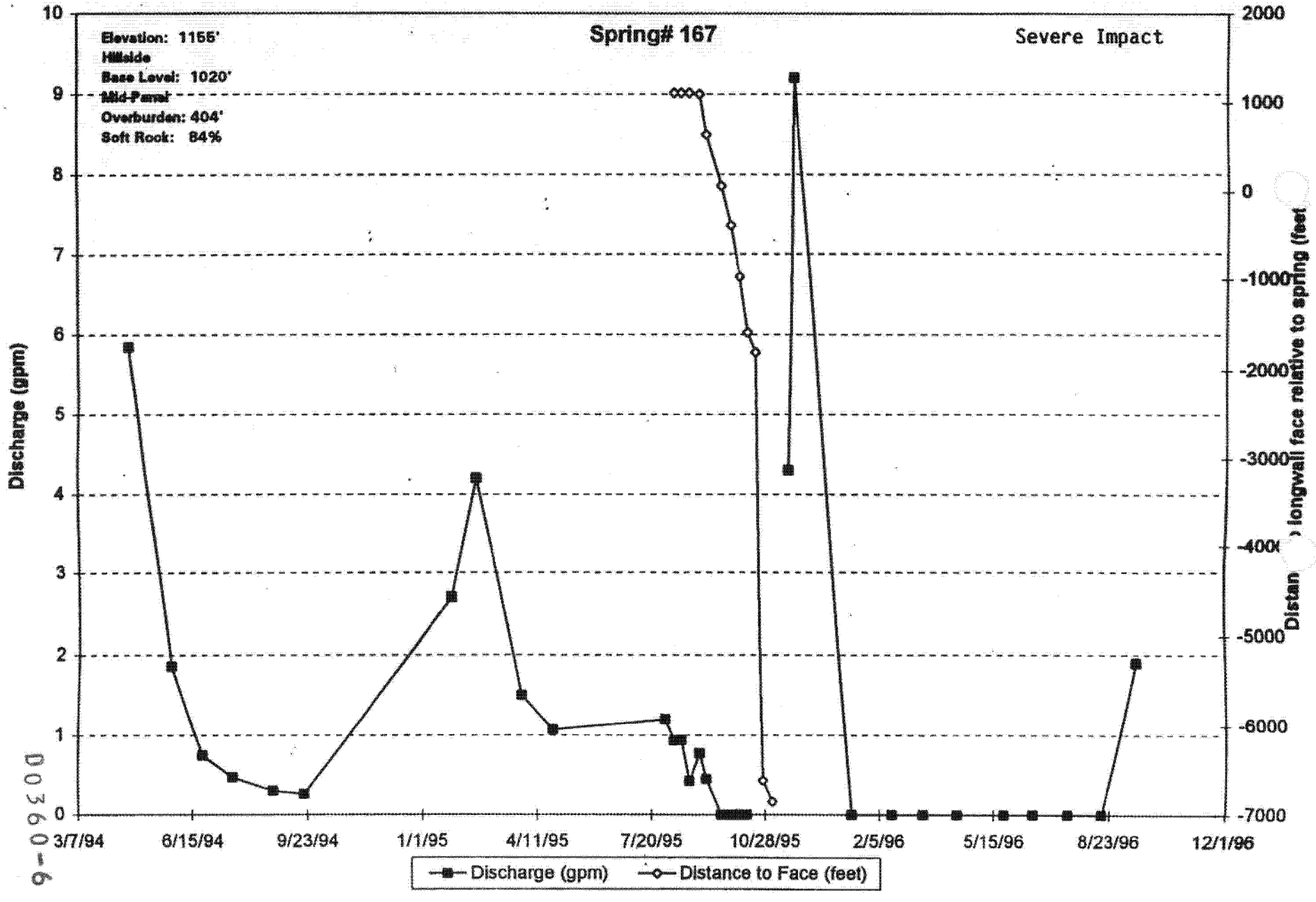
ORIGINAL

D0360-6

1997

TOVCC 04908



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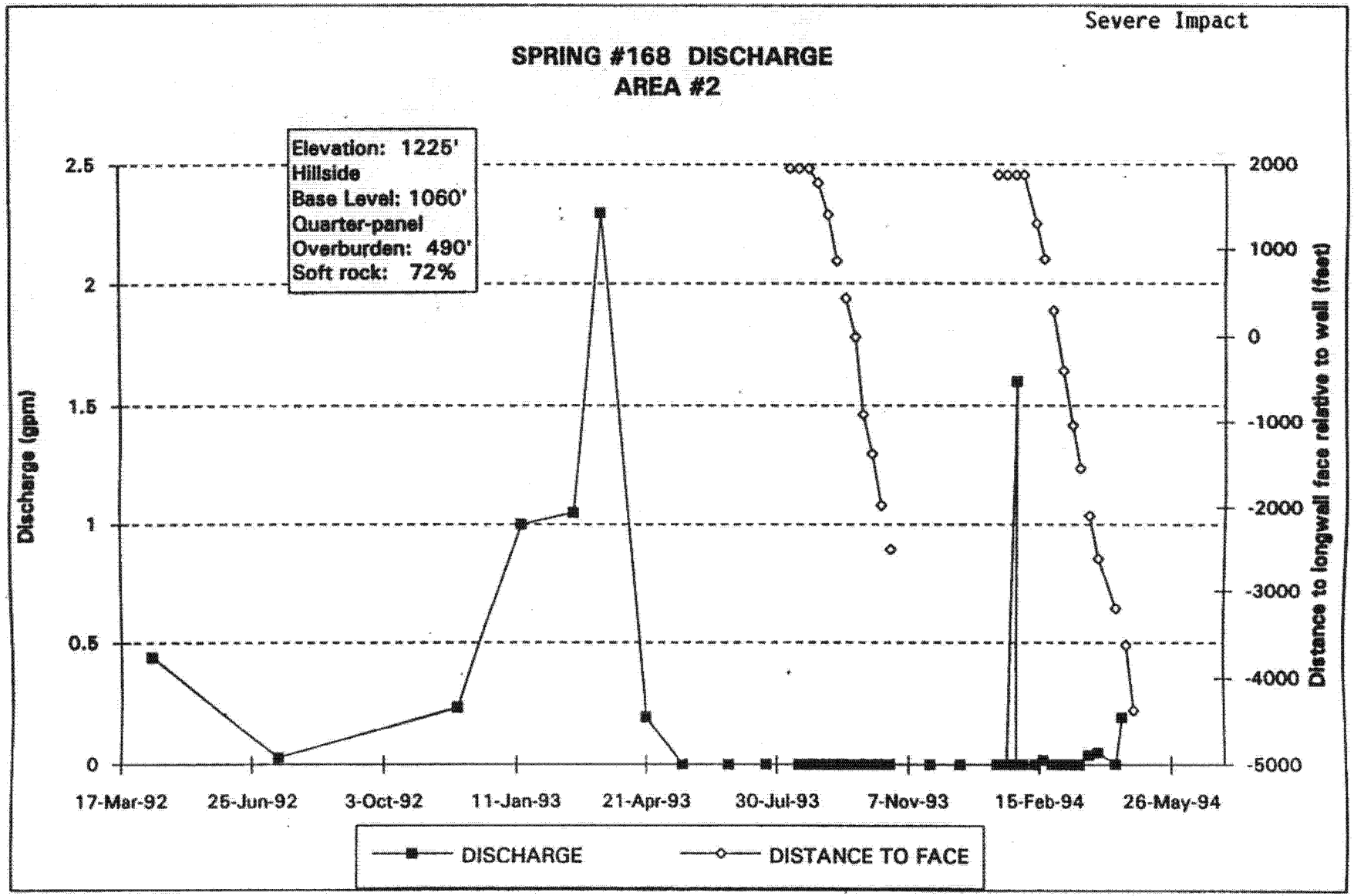
JUN 27 1997

D0360-6

Severe Impact



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D0360-6

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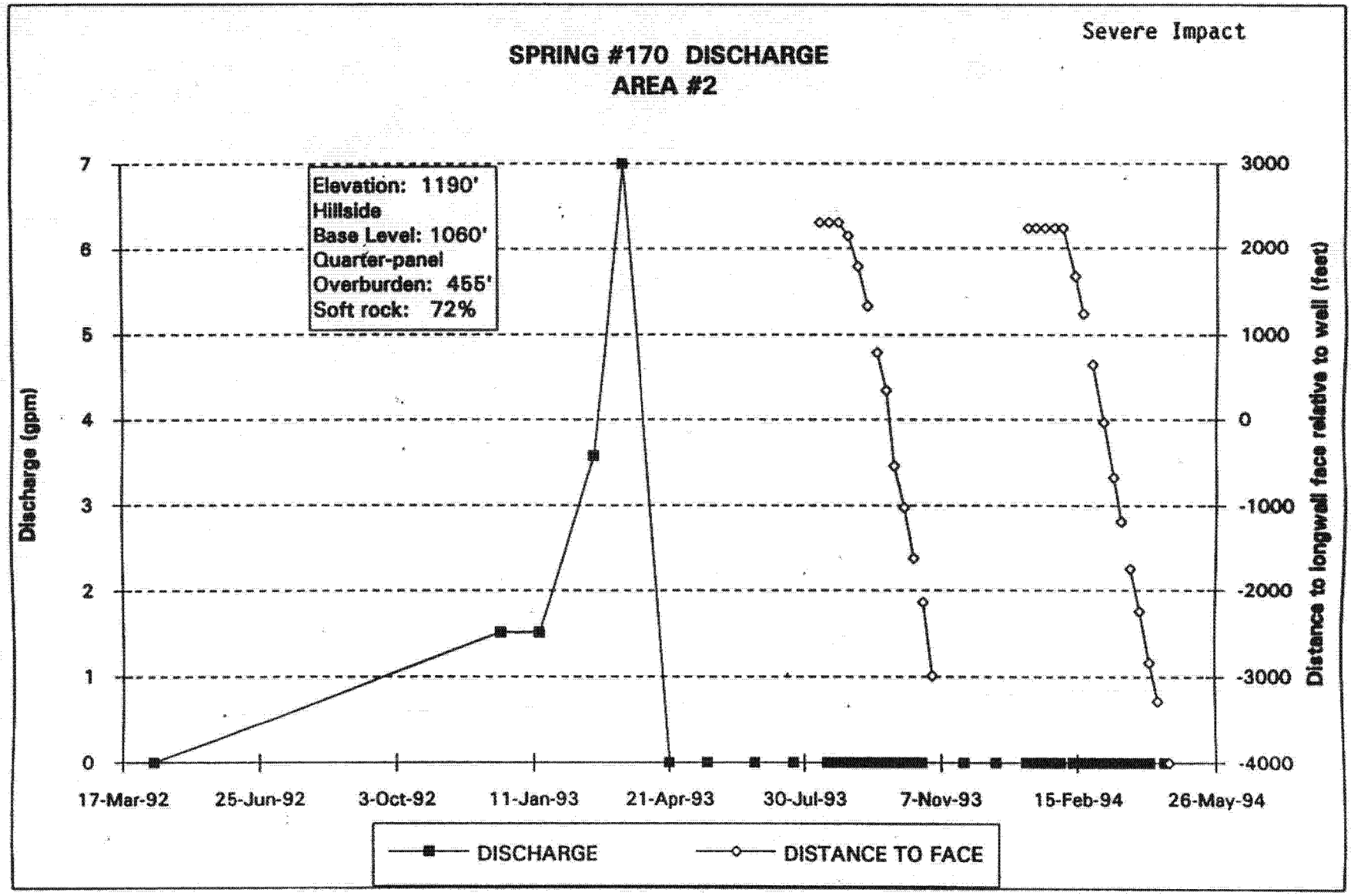
Severe Impact



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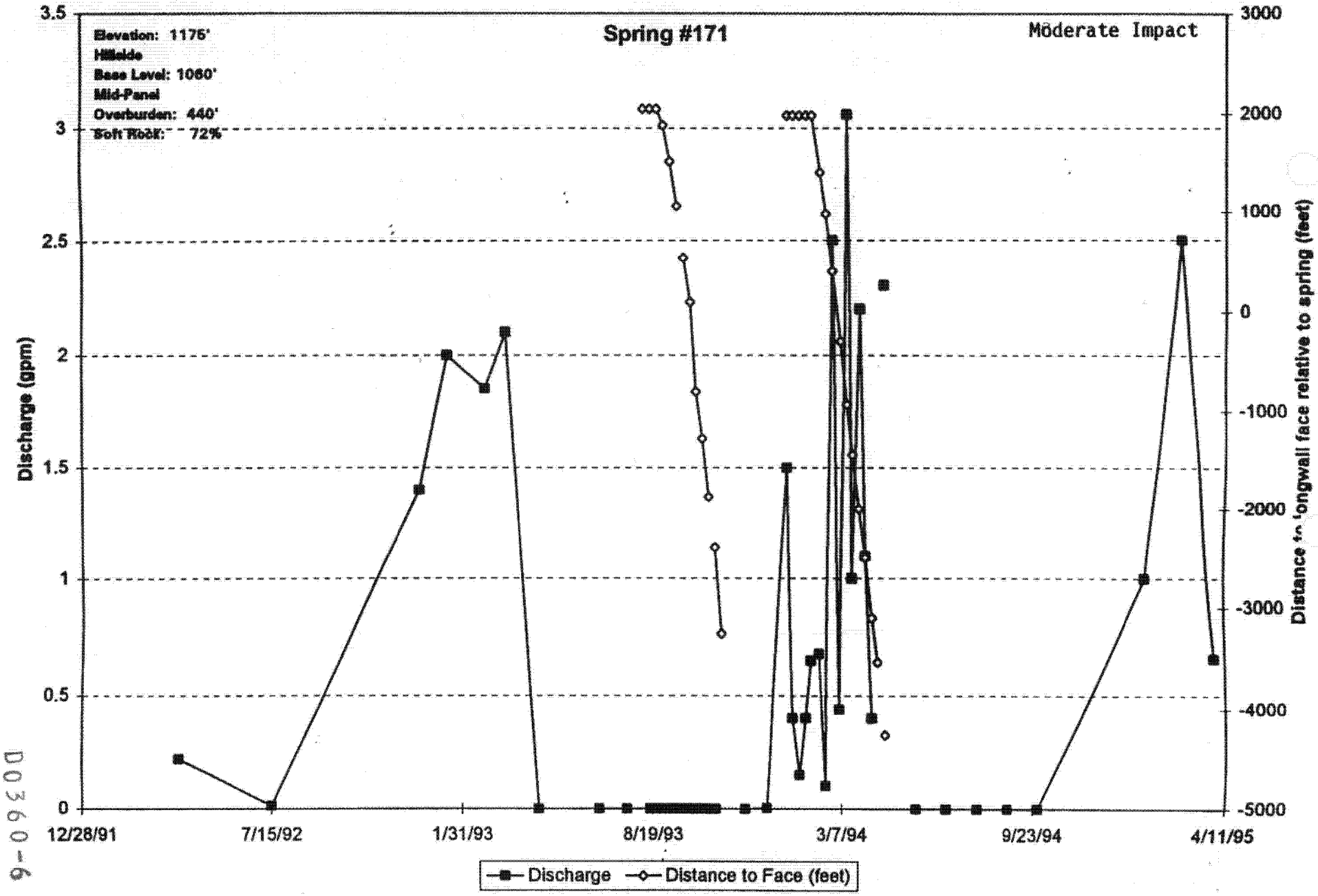

ORIGINAL

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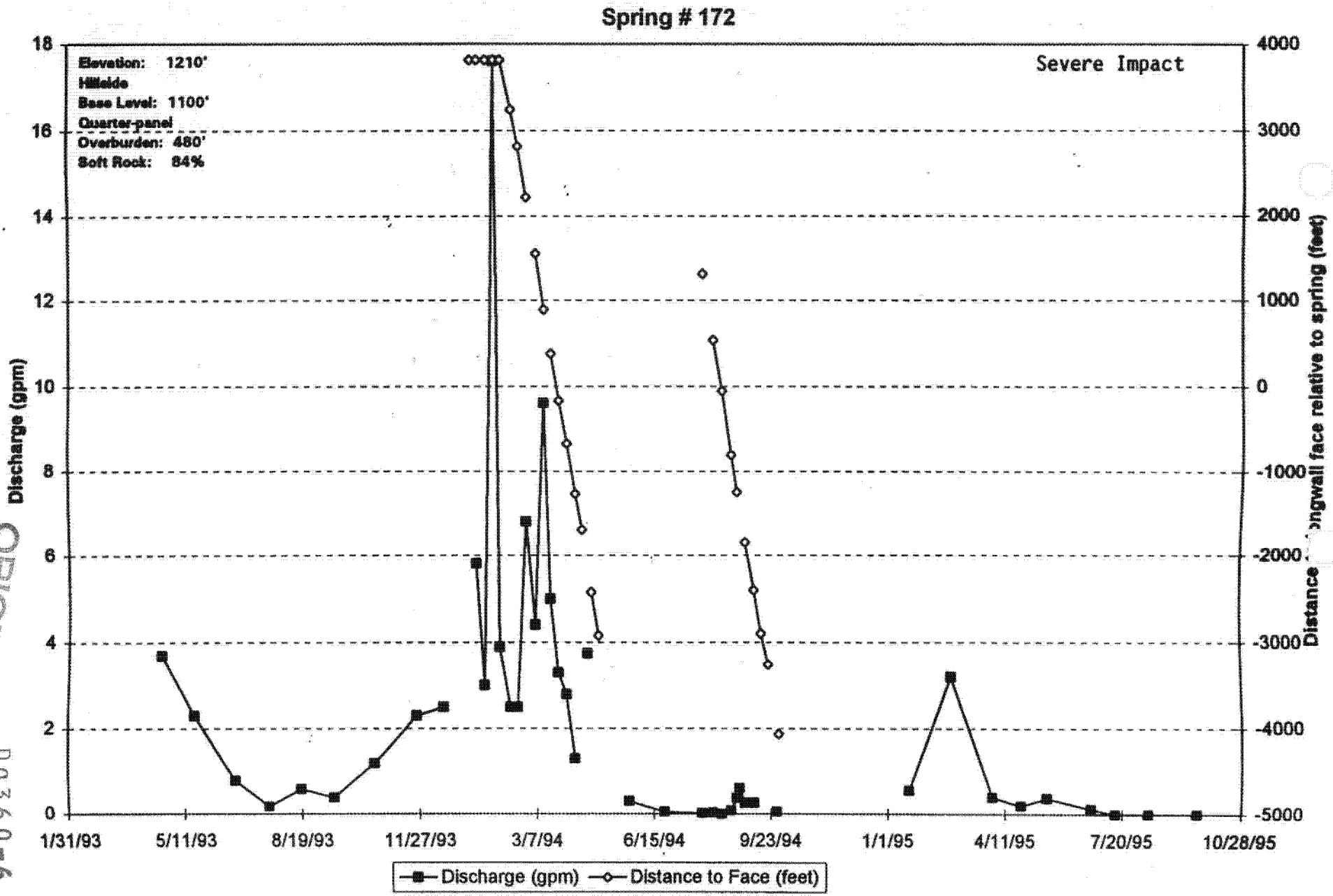

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Prepared by: Moody and Associates, Inc. 12/2/95

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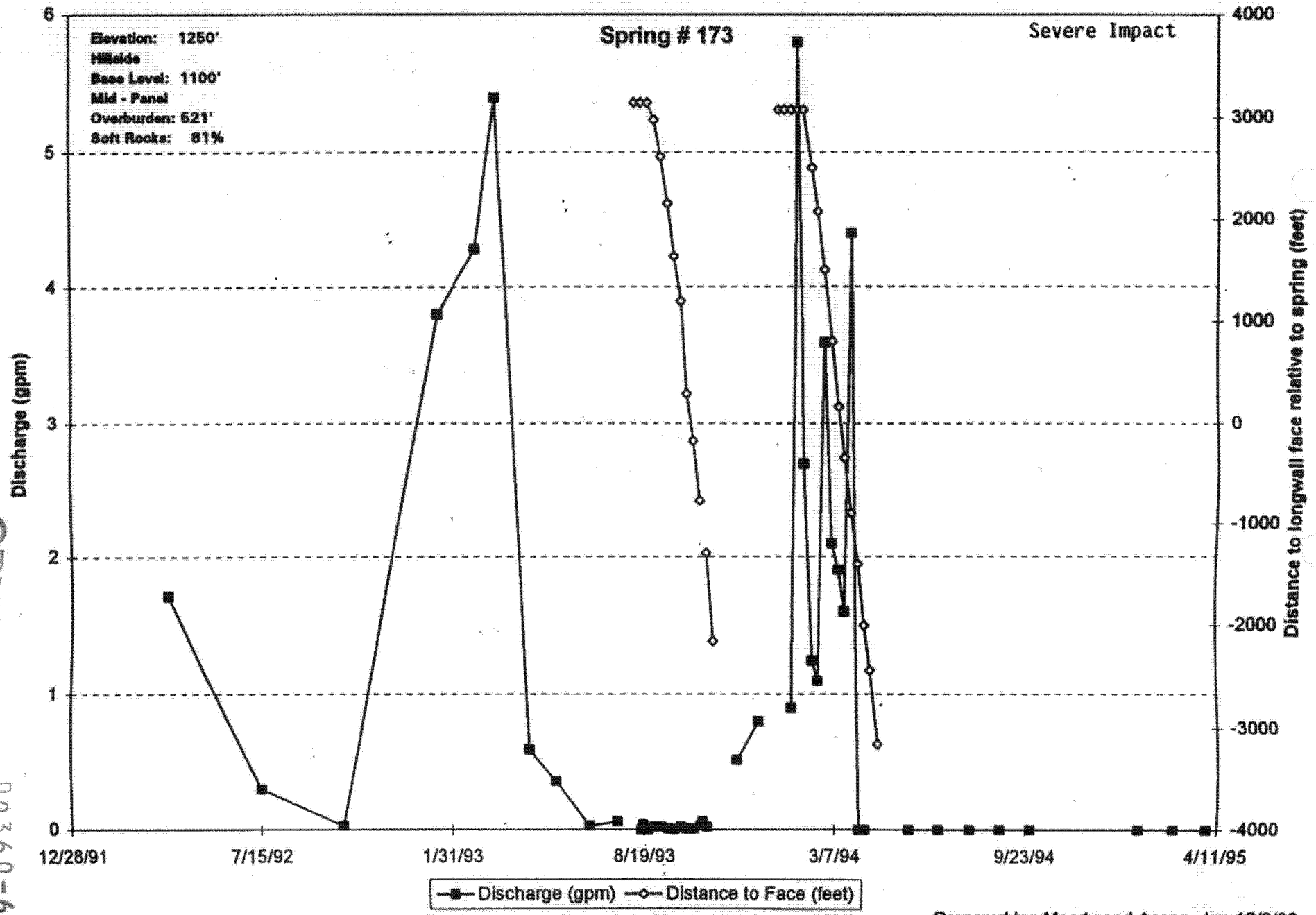

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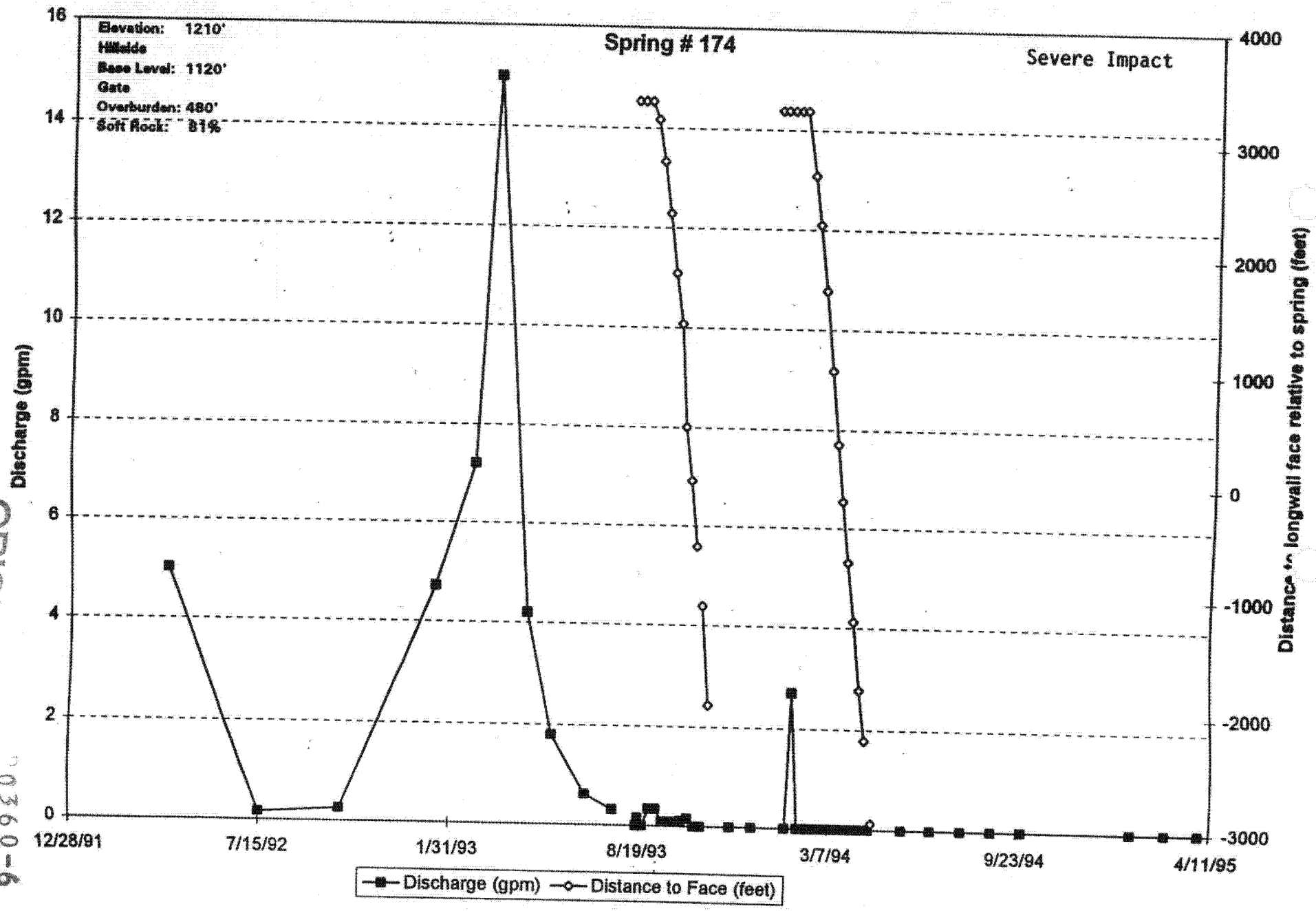

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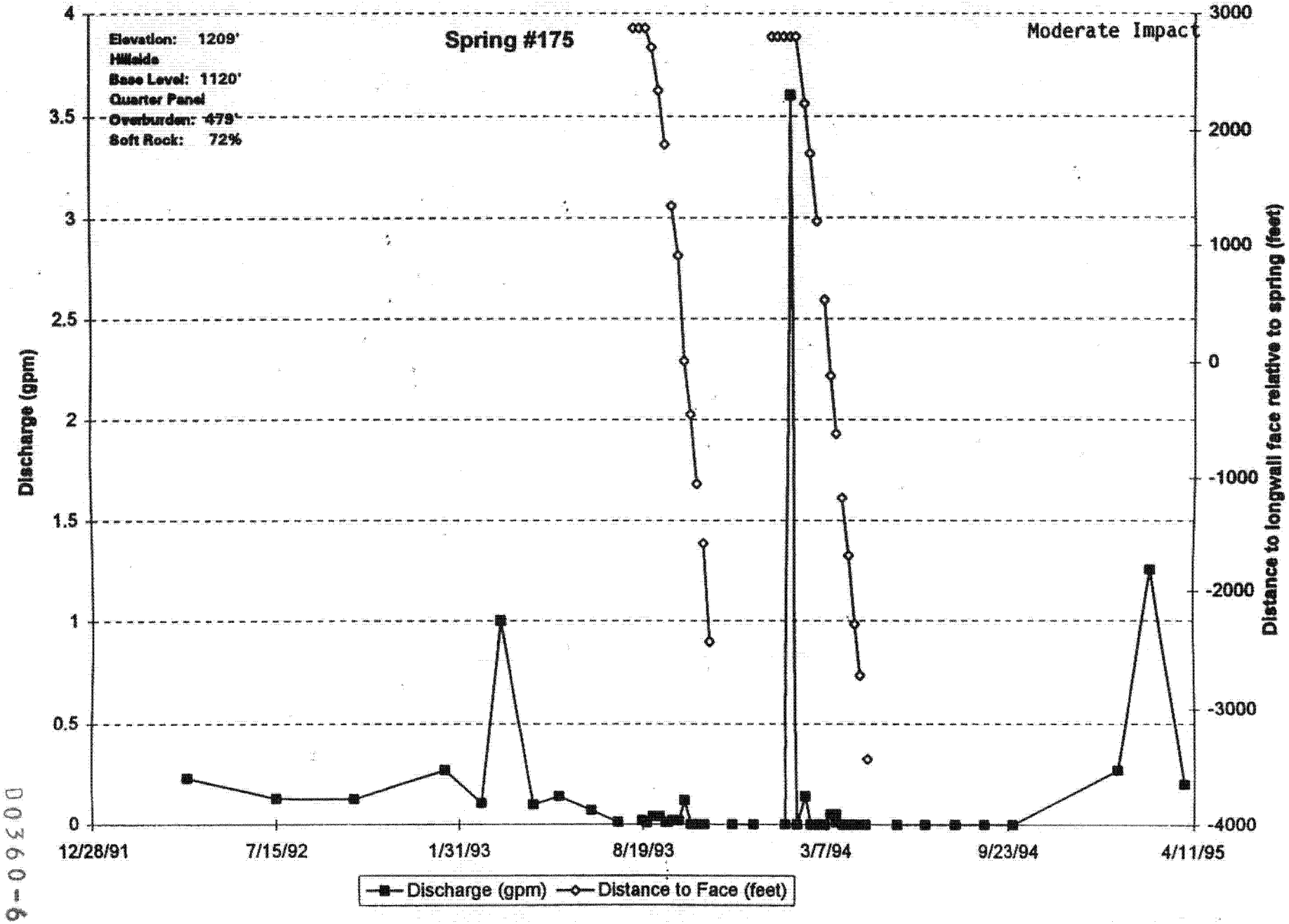

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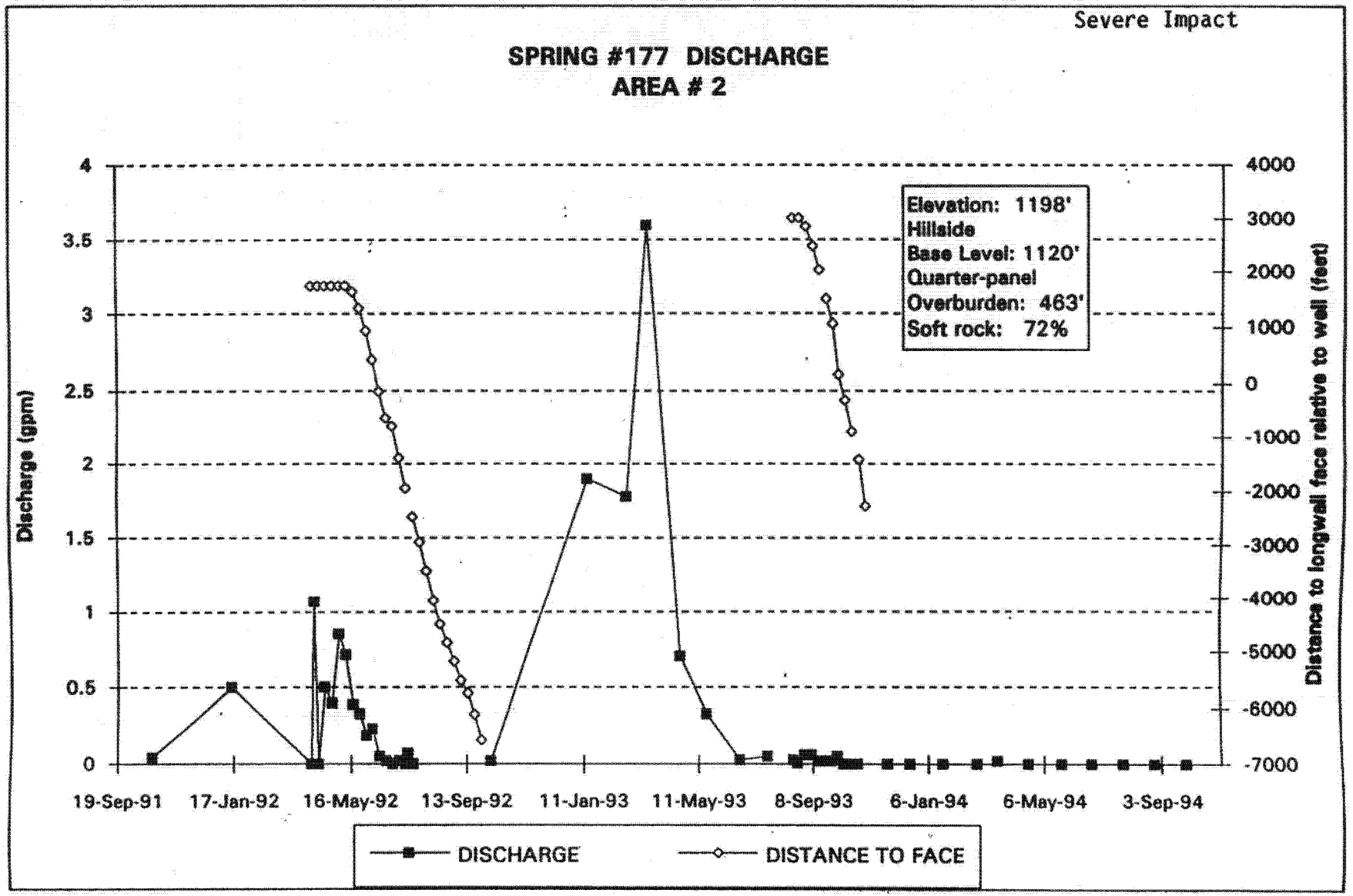
Severe Impact



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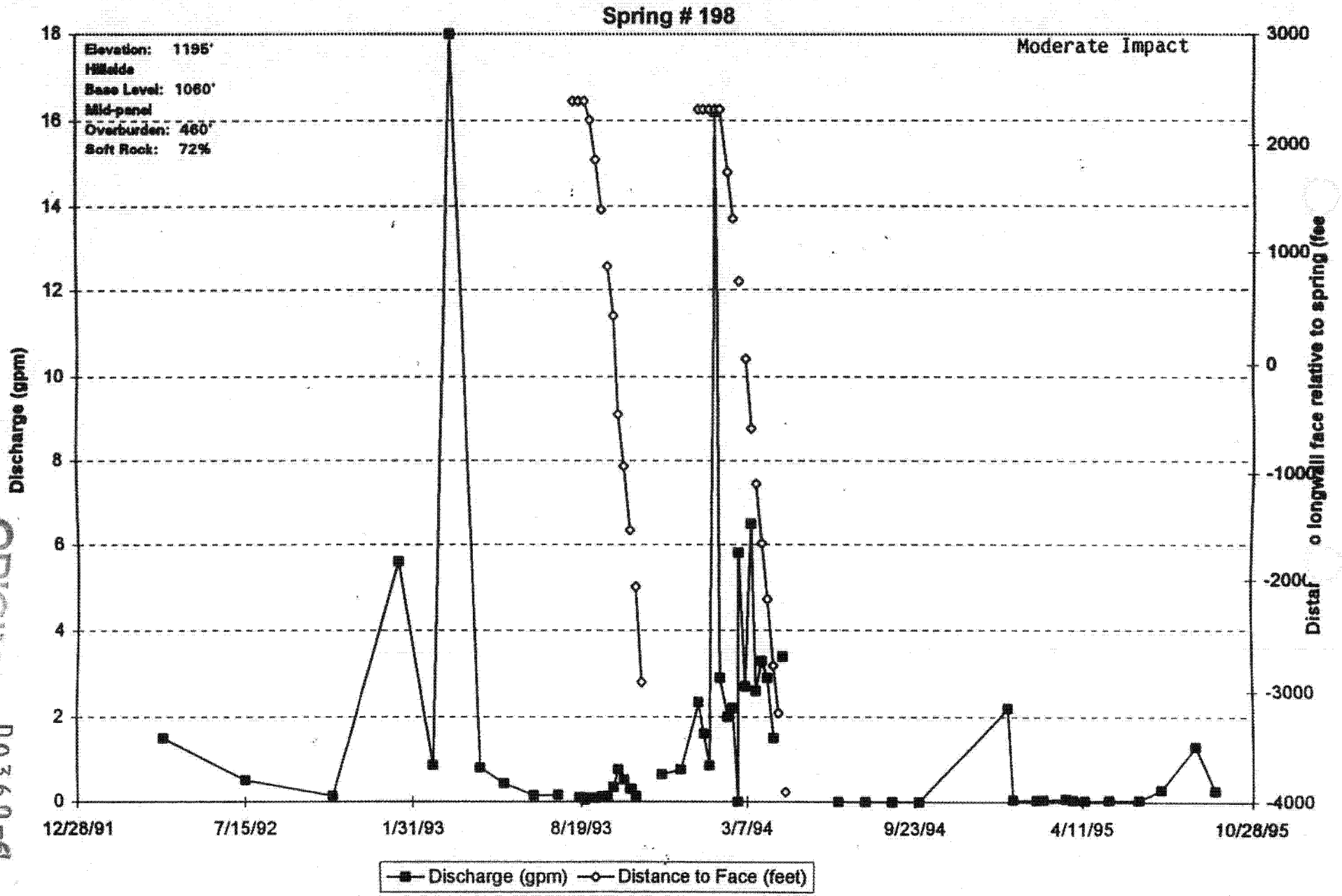

Prepared by: Moody and Assoc., Inc. 12/9/96

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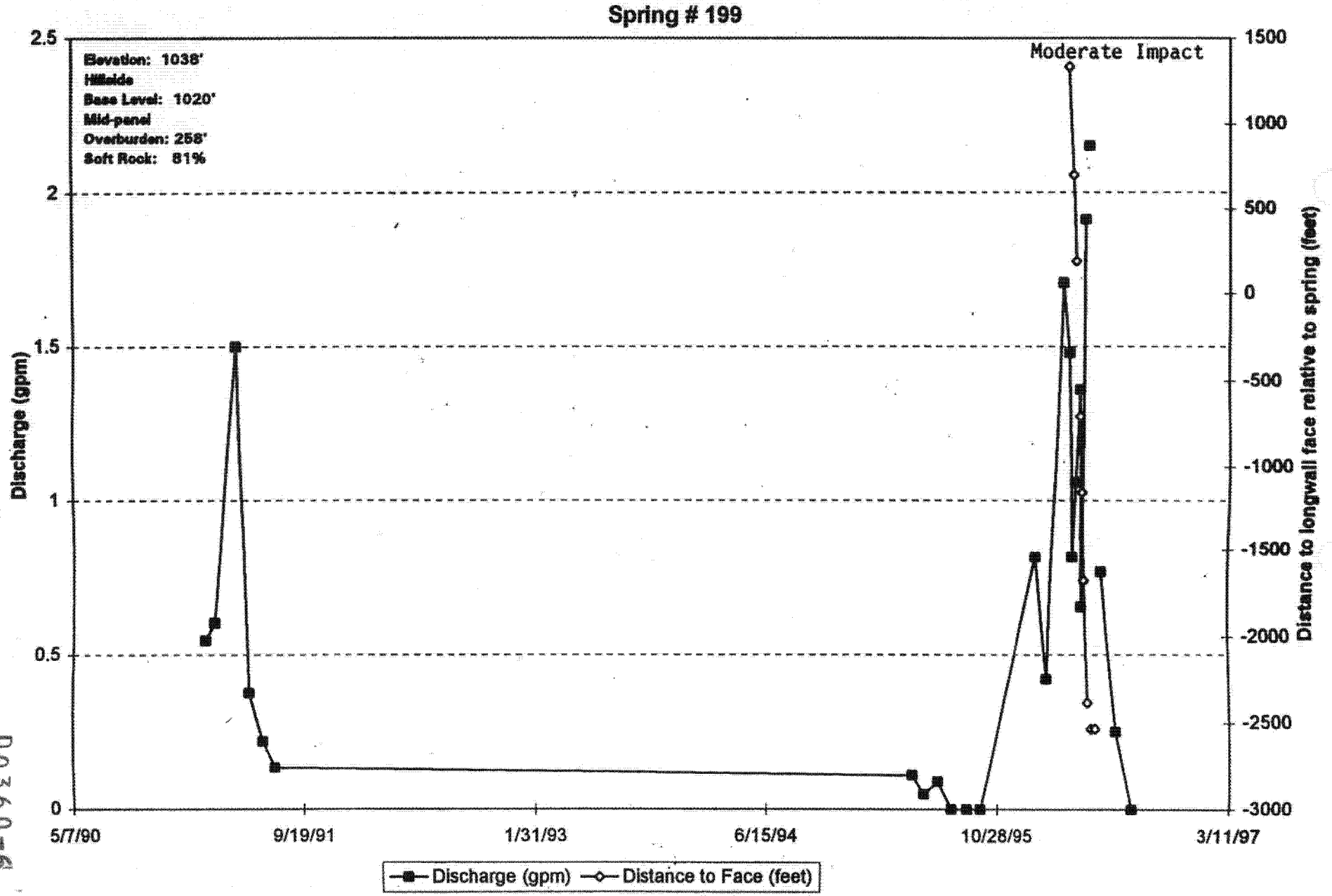

Prepared by: Moody and Assoc. Inc 12/9/96

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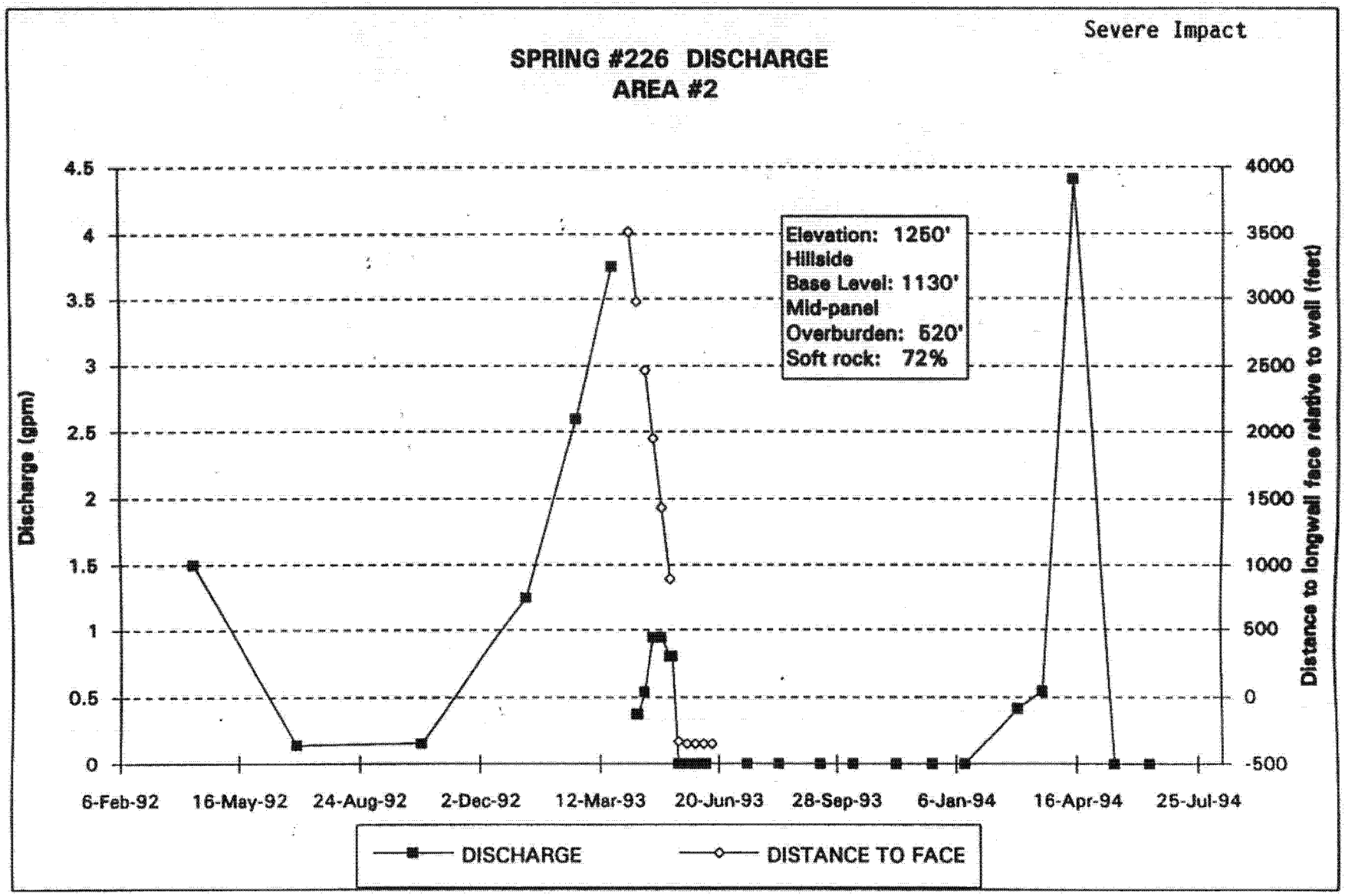
Severe Impact



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Annotated Bibliography

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Bartsch, D.L., 1994, Personal Communication.

In-mine inspections in 1994 indicated significant water inflow in the longwall panel areas has not occurred. The completed panels and adjacent chain pillar areas in Permit Areas D-0360-1, D-0360-2 and D-0360-3 are essentially dry and no water is pumped from these sections of the mine.

Berryhill, H.L., 1963, Geology and Coal Resources of Belmont County, Ohio, U.S. Geological Survey Professional Paper 380, 113 p.

Describes the geology and stratigraphy of the rocks and coal seams underlying Belmont County.

Brown, R.L., Parizek, R.R., 1971, Shallow Ground Water Flow Systems Beneath Strip and Deep Coal Mines at Two Sites, Clearfield, PA, Penn State University, Special Report SR-84, 208 p.

The objective of the study was to describe the ground water flow systems in rock units associated with coals so that acid mine drainage could be more effectively understood and prevented. Flow nets analysis of vertically separated flow systems are described and proved useful in understanding flow systems at the Powhatan Mines.

Cifelli, R.C., and H.W. Rauch, 1986, Dewatering Effects From Selected Underground Coal Mines in North-Central West Virginia, Proceedings: Second Workshop on Surface Subsidence Due to Underground Mining, Morgantown, WV, p. 249-263.

Studied the effects of underground mining on ground water at four mines in West Virginia. Determined that strata were dewatered up to at least 288 feet above the coal seam and partially dewatered up to 400 feet. Amount of stream loss depends upon depth of cover and amount of recharge area that is affected by mining.

Dixon, D.Y., and H.W. Rauch, 1988, Study of Quantitative Impacts to Ground Water Associated With Longwall Coal Mining at Three Mine Sites in the Northern West Virginia Area, Proceedings: Seventh International Conference on Ground Control in Mining, West Virginia University, Morgantown, WV, p. 321-335.

Study of effects of longwall mining on ground water at three mines. Determined that the amount of dewatering and subsequent recovery depends upon; thickness of overburden and proximity to surface streams.

Dixon, D.Y. and H.W. Rauch, 1990, The Impacts of Three Longwall Coal Mines on Stream Flow in the Appalachian Coal Field, Proceedings: Ninth International Conference on Ground Control in Mining, West Virginia University, Morgantown, WV, p. 169-182.

Continuation of Dixon and Rauch (1988) examines effect of longwall mining on surface water. Determined that the amount of stream loss depends upon depth of cover and presence of surface fractures. Streams where lost water didn't drain to the mine recovered quicker than those that drained to the mine.

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Leavitt, B.R., and J.F. Gibbons, 1992, Effects of Longwall Coal Mining on Rural Water Supplies and Stress Relief Fracture Flow Systems, Proceedings: Third Workshop on Subsurface Subsidence Due to Underground Mining, Morgantown, WV, p. 228-234.

Evaluated variables that effect impacts on water supplies by longwall mining in eastern Ohio, western Pennsylvania and WV. Placed great importance on topographic position when overburden thickness exceeded 300 feet. Most water loss or diminution problems occurred in springs and wells on hilltops or high hillsides.

Lovell, H.L., and J.W. Gunnett, 1974, Hydrogeological Influences in Preventative Control of Mine Drainage From Deep Coal Mining; Research Report No. SR-100, Pennsylvania State University, 89 p.

This study evaluated major avenues of ground water infiltration into deep mine environments.

McCurry, G.N., and H.W. Rauch, 1986, Characterization of Ground Water Contamination Associated With Coal Mines in West Virginia, Proceedings of the Sixth National Symposium and Exposition on Aquifer Restoration and Ground Water Monitoring, National Water Well Association, Columbus, Ohio, p. 669-685.

Used sulfate concentrations to determine the effects of surface and deep coal mining on water supplies. Found that coal mines did not affect the quality of water stratigraphically above the mined coal. Surface mines have a greater impact on water quality than deep mines.

National Ground Water Association, 1991, Hydrologic Evaluation of Longwall Mining at the Powhatan No. 6 Mine and the Potential Impact To Dysart Woods, Prepared for the Ohio Valley Coal Company.

Evaluated hydrologic impacts of longwall mining.

National Ground Water Association, 1992, Effects of Longwall Mining on Surface Soil Moisture and Tree Growth, Unpublished report prepared for the Ohio Valley Coal Company.

No impacts on soil moisture or tree growth was detected over longwall panels.

Parizek, R.R., 1971, Prevention of Coal Mine Drainage Formation by Well Dewatering, Pennsylvania State University, Special Report No. SR-82, 73 p.

Ground water flow systems in coal-bearing strata are discussed in relation to the feasibility of dewatering by vertical wells in advance of mining. Minimization of acid water generation by this concept appears possible. The analysis of the subsurface flow concepts before, and during mining, is helpful.

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Pennington, D., et al, 1984, Effects of Longwall Mine Subsidence on Overlying Aquifers in Western Pennsylvania, U.S. Bureau of Mines Open File Report 142-84, 129 p.

Monitor changes in ground water levels above an active longwall panel. Shallow domestic wells encountered no significant impact from longwall mining during the monitoring period. Dewatering of the shallow aquifer zone was minimized by aquitardal layers.

Rauch, H.W., et al, 1984, Predictions For Aquifer Dewatering Over Underground Mines in the Pittsburgh, Sewickley, and Upper Freeport Coals of Northern West Virginia, Proceedings: Surface Mining and Water Quality, Fifth Annual West Virginia Surface Mine Drainage Task Force Symposium, Morgantown, WV, 11 p.

Results of site specific studies conducted to determine what variables affect the amount of dewatering above underground mines. Variables studied were: overburden thickness between a well bottom or spring and the underlying coal mine, horizontal distance to mined area, and overburden lithology determine that a high percentage of shale and clay in the overburden can reduce the impacts of mining on overlying ground water supplies.

Rauch, H.W., 1985, A Summary of the Effects of Underground Coal Mines on Quantity of Ground Water and Stream Flow in North-Central Appalachians: Proceedings of Special Institute on Coal Mine Subsidence, Eastern Mineral Law Foundation, WVU Law Center, Morgantown, WV, p. 2.01-2.33.

Review article summarizes information from published literature and past research report concerning the ground water quantity effects of underground mines.

Rauch, H.W., 1987, Ground Water Impacts From Surface and Underground Coal Mining, Proceedings, West Virginia Water 1987: Status and Future Directions, Morgantown, WV, p. 1-21.

Review article. Discusses factors which control the amount of strata dewatering above longwall mines.

Rauch, H.W., 1989, A Summary of the Ground Water Impacts From Underground Mine Subsidence in the North-Central Appalachians, Proceedings of Special Institute on Coal Mine Subsidence, Eastern Mineral Law Foundation, WVU Law Center, Morgantown, WV, p. 2.01-2.31.

Review article summarizes information from published literature and past research reports concerning the quantitative hydrologic impacts of underground mining. Update of Rauch, 1985.

Schmidt, R.D. and G.A. Hnell, 1983, A Fracture Dewatering Approach to Controlling Ground Water Infiltration in Underground Coal Mines, Interim Report of U.S. Bureau of Mines, 55 p.

Ground water flow conditions are evaluated around deep coal mines for the purpose of controlling acid mine drainage.

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Schubert, Jeffrey P., 1980, Fracture Flow of Ground Water in Coal Bearing Strata, Symposium on Surface Mining Hydrology, Sedimentology and Reclamation.

Fracture flow concepts in coal bearing strata is discussed. Core testing of rock permeability and the importance of secondary permeability is discussed.

Siplivy, W.J., 1992, Powhatan No. 6 Mine - Probable Hydrologic Consequences, Permit Application D-0360-3.

Stoner, T.D., 1983, Probable Hydrologic Effects of Subsurface Mining, Ground Water Monitoring Review, V3, #1., p. 128-137.

Determined factors controlling the hydrology of Green County, Pennsylvania. Used this information to develop model for predicting hydrologic impacts of underground mining.

Tieman, G.E., and H.W. Rauch, 1986, Study of Dewatering Effects at an Underground Longwall Mine Site in Pittsburgh Seam of the Northern Appalachian Coal Field, U.S. Bureau of Mines Information Circular 9137, p. 72-89.

Monitor the changes in ground water levels and stream flow above a longwall mine. Wells and springs located within 50 (vertical) of regional base level were not dewatered. Most affected water supplies recovered partially, and all streams recovered fully within one to three years following longwall mining.

Waite, B.A., 1987, Powhatan No. 6 Mine - Probable Hydrogeologic Consequences, Permit Application D-0360-1.

Waite, B.A., 1991, Powhatan No. 6 Mine - Probable Hydrogeologic Consequences, Permit Application D-0360-2.

Walker, J.S., 1988, Case Study of the Effects of Longwall Mining Induced Subsidence on Shallow Ground Water sources in the Northern Appalachian Coal Field, U.S. Bureau of Mines Report of Investigations, 9198, 17 p.

This study attempted to correlate the changes in water levels within observation wells to measured amounts of mine induced ground subsidence. Results indicate that water level fluctuations appear to be a function of the well location relative to the mine layout and the proximity of the active mine face. Wells closest to the centerline of the longwall panel showed greatest fluctuations and head loss. Wells located outside the angle of draw for a panel were unaffected by mining. Concluded that water levels in shallow wells will generally return to or near pre-mining levels after completion of mining.

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PROBABLE HYDROLOGIC CONSEQUENCES
SUMMARY TABLE
APPLICATION AREA D-0360-6
TABLE A
Addendum to page 18 F (1)

Site ID	Surface Elev. MSL	Well Depth	Topo Position	% Soft Rock	Panel Position	Bottom of coal to bottom of supply	Aquifer (see attachment 14B)	Coal Elev.	Significant Impact	Moderate Impact	Minimal Impact
									(Probability of Indicated Impact Expressed As A Percent)		
W	176	1142	43	Valley Bot	51	Quarter	324	C	775	11%	11%	78%
W	177	1183	95	Hilltop	51	Quarter	311	C	777		3%	97%
DW	178	1225	44	Hilltop	75	Quarter	402	B	779	45%	13%	42%
DW	196	1240	21	Hillside	64	Mid	444	A	775	45%	13%	3%
W	199	1200	67	Hilltop	64	Mid	353	B	780	45%	13%	42%
W	201	1210	62	Hilltop	64	Mid	370	B	778	45%	13%	42%
W	202	1210	78	Hilltop	64	Mid	354	C	778	45%	13%	42%
W	203	1208	66	Hilltop	64	Mid	364	B	778	45%	13%	42%
W	204	1200	64	Hilltop	64	Mid	358	B	778	45%	13%	42%
W	205	1195	57	Hilltop	64	Mid	360	B	778	45%	13%	42%
W	226	1080	40	Valley Bot.	64	Quarter	271	C	769	11%	11%	78%
DW	282	1098	12	Valley Bot	64	Gate	311	A	775	11%	11%	78%
W	325	975	129	Hillside	54	Outside	47	E	799		3%	97%
W	326	910	18	Valley Bot.	54	Outside	102	E	790	>75 %		
W	328	1218	100	Hillside	64	Gate	335	C	783	45 %	13 %	42 %
W	329	955	Buried	Valley Bot.	77	Outside			809		3%	97%

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PG. # 1

PROBABLE HYDROLOGIC CONSEQUENCES
SUMMARY TABLE
APPLICATION AREA D-0360-6
TABLE A
Addendum to page 18 F (1)

(Probability of Indicated Impact Expressed As A Percent)

Site ID	Surface Elev. MSL	Well Depth	Topo Position	% Soft Rock	Panel Position	Bottom of coal to bottom of supply	Aquifer (see attachment 14B)	Coal Elev.	Significant Impact	Moderate Impact	Minimal Impact
DW	330	960	8	Hillside	77	Outside	143	A	809		3%	97%
DW	331	935	11	Hillside	77	Outside	116	A	808		3%	97%
W	335	918	25	Valley Bot.	54	Outside	98	A	795	>75 %		
W	336	918	30	Valley Bot.	54	Outside	93	A	795	>75 %		
W	337	918	30	Valley Bot.	54	Outside	93	A	795	>75 %		
W	339	955	28	Hillside	77	Outside	118	A	809		3%	97%
W	344	1185	54	Hilltop	75	Quarter	323	C	808	45 %	13 %	42 %
W	345	1270	86	Hilltop	75	Quarter	392	B	792	45 %	13 %	42 %
W	346	930	15	Valley Bot.	54	Gate	128	A	787	>75 %		
W	347	1180	130	Hillside	64	Mid	270	C	780	45 %	13 %	42 %
WL	348	1210	120	Hillside	64	Mid	310	C	780	45 %	13 %	42 %
WL	349	1190	105	Hillside	64	Quarter	310	C	775	45 %	13 %	42 %
W	350	1218	100	Hilltop	54	Gate	336	C	782	45 %	13 %	42 %
WL	351	1225	73	Hilltop	54	Quarter	372	B	780	45 %	13 %	42 %
W	352	1160	100	Hilltop	64	Mid	278	C	782	45 %	13 %	42 %
W	353	1210	85	Hillside	64	Gate	342	C	783	45 %	13 %	42 %
WL	355	970	55	Hillside	54	Outside	116	D	799		3%	97%

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PG. # 2

PROBABLE HYDROLOGIC CONSEQUENCES
SUMMARY TABLE
APPLICATION AREA D-0360-6
TABLE A
Addendum to page 18 F (1)

Site ID	Surface Elev. MSL	Well Depth	Topo Position	% Soft Rock	Panel Position	Bottom of coal to bottom of supply	Aquifer (see attachment 14B)	Coal Elev.	Significant Impact	Moderate Impact	Minimal Impact
									(Probability of Indicated Impact Expressed As A Percent)		
DW	356	1100	12	Hillside	75	Quarter	299	A	789	45 %	13 %	42 %
W	357	1000	38	Valley Bot.	54	Quarter	177	D	785	>75 %		
W	358	1225	35	Hilltop	64	Quarter	412	B	778	45 %	13 %	42 %
W	360	958	67	Hillside	54	Outside	92	D	799		3%	97%
W	361	970	102	Hillside	54	Outside	69	E	799		3%	97%
DW	362	1000	11	Valley Bot.	64	Quarter	204	A	785	11 %	11 %	78 %
W	363	1095	130	Hillside	77	Outside	158	D	807		3%	*97%
W	364	1238	90	Hilltop	64	Gate	373	B	775	45 %	13 %	42 %
W	365	1240	100	Hillside	64	Quarter	368	B	772	45 %	13 %	42 %
W	366	1060	57	Hillside	77	Outside	198	D	805		3%	97%
W	367	1210	77	Hillside	54	Mid	351	C	782	45 %	13 %	42 %
W	368	1185	85	Hillside	54	Gate	320	C	780	45 %	13 %	42 %
DS	154	1140		Hillside	64	Mid	372	B	768	76%	21%	3%
DS	155	1110		Hillside	64	Mid	350	C	760	76%	21%	3%
DS	157	1160		Hillside	64	Gate	400	B	760		3%	97%
DS	247	1000		Hillside	54	Outside	210	C	790		3%	97%

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PROBABLE HYDROLOGIC CONSEQUENCES
SUMMARY TABLE
APPLICATION AREA D-0360-6
TABLE A
Addendum to page 18 F (1)

Site ID	Surface Elev. MSL	Well Depth	Topo Position	% Soft Rock	Panel Position	Bottom of coal to bottom of supply	Aquifer (see attachment 14B)	Coal Elev.	Significant Impact	Moderate Impact	Minimal Impact
									(Probability of Indicated Impact Expressed As A Percent)		
DS	248	1195		Hillside	64	Gate	413	B	782	76 %	21 %	3 %
DS	249	1150		Hillside	64	Quarter	370	B	780	76 %	21 %	3 %
DS	251	885		Hillside	39	Outside	97	D	788		3%	97%
DS	254	1175		Hillside	64	Quarter	390	B	785	76 %	21 %	3 %
DS	256	1180		Hillside	75	Quarter	385	B	795	76 %	21 %	3 %
DS	257	1020		Hillside	54	Outside	225	C	795		3%	97%
DS	263	1155		Hillside	64	Gate	375	B	780	76%	21%	3%
DS	297	1210		Hillside	75	Quarter	431	B	779	76%	21%	3%
P	1	1205		Hillside	75	Gate	405	NA	800	No	Impact	Expected
P	2	**1190**		**Hillside**	**75**	**Outside**	**400**	**NA**	**790**	**No**	**Impact**	**Expected**

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TABLE A EXPLANATION

The predicted impacts presented in the last three columns of Table A are based on observations of wells and springs in similar physical settings in Application Areas D-0360-2 and -3. For wells and springs located 700 feet or more from the edge of the panels, a minimal impact is predicted in 97% of the cases. For wells or springs located within 700 feet of a panel and with less than 200 feet of cover, a significant impact in more than 75% of the cases is predicted.

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ADDENDUM TO PAGE 18, PART 2, F(2)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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ALTERNATIVE WATER SUPPLY INFORMATION

Adjacent Areas Above Full Recovery Mining

The PHC statement contained in this application indicates a potential for diminution and/or interruption of surface and ground water supplies in areas above and contiguous to full recovery mining operations. However, no contamination of such water supplies is expected.

Notwithstanding its mining rights and without waiving any of its mining rights, where such diminution or interruption results from full recovery mining, The Ohio Valley Coal Company will repair or install a replacement source in the adjacent area at its own expense in a manner mutually satisfactory to OVCC, the water user, and the Division of Mines and Reclamation, 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. While it will be the policy of OVCC to replace a water source, payment of water bills will be a private matter between OVCC and the water user.

Past experience indicates that the majority of subsidence (that detectable with surveying equipment) is complete within about 45 days after the longwall passes under the area. Water losses generally occur within that time period.

The steps which OVCC would take to repair or replace affected water sources in the adjacent area include:

1. Repair or replace damaged cisterns after OVCC has determined that subsidence is complete;

2. On a site specific basis, re-drill existing wells, drill new wells, or connect the water user to public water supplies (if no public water supply exists, OVCC may install a line of sufficient size to service those affected by OVCC's mining operation);

3. On a site specific basis, developed springs may 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, OVCC may install a line of sufficient size to service those affected by OVCC's mining operation);

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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 permanently. Interim supplies may include hauled water or a tap to public water. OVCC will only install temporary, replacement water using a public water supply if it can be connected within 48 hours. OVCC routinely uses the local fire department to haul county water for temporary replacement supplies. This practice is expected to continue. 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. Payment of interim water bills for hauled water will be handled by OVCC.

6. Such other proven, cost effective, and reasonable techniques as OVCC may now, or in the future, deem appropriate.

It is OVCC's intention to bear the cost of the installation only of both interim and permanent replacement of developed water sources being legitimately used at the time of undermining. If contamination, diminution, or interruption of a legitimately used ground or surface water supply occurs as a proximate result of the mine's operation, OVCC will repair such water supply or install a replacement supply at OVCC's expense. OVCC will not be responsible for non-developed sources or developed sources not being used at the time of undermining. A source is considered to be developed if it has been fully developed (i.e., water delivery system and drinking facilities) and is well maintained such that it is in use at the time of undermining.

OVCC will install, at OVCC's expense, an alternate water supply system (interim water replacement will be installed within 48 hours of notification by the Division to provide interim water replacement) to be used until permanent 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 permanently repaired or replaced. In cases where temporary water cannot be provided within 48 hours, OVCC will immediately notify the Chief of the Division of Mines and Reclamation who will determine if the circumstances warrant an extension of the 48 hours.

OVCC will provide the affected water user with no less of an available water supply (in water quality and duration) than the water user had before mining, based on the pre-mining measurements. If required, OVCC will notify the Division of Mines and Reclamation 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.

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ADDENDUM TO PAGE 18, PART 2, F(2)
PAGE THREE

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 OVCC and has assured us that there is capacity to replace each developed source with county water. A letter to that effect is enclosed.

If a water user believes that his or her underground or surface water source which is legitimately used has been contaminated, diminished, or interrupted as a proximate result of the mine's operation, he or she should notify OVCC by calling (614) 926-1351. OVCC 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 OVCC is notified by the Division to provide interim water replacement. OVCC 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 at OVCC's expense. 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 OVCC. If the water user opts to do so, he may install his own temporary water supply system. OVCC will reimburse the water user for the costs of installing a temporary water supply system. Payment for domestic water will be a private matter between OVCC and the water user.

In repairing or replacing a legitimately used, ground or surface water supply system which is damaged as a proximate result of the mine's operation, OVCC's first preference is to repair the affected supply system. If that is neither effective nor feasible, OVCC'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, OVCC 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, including the County water 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 OVCC. OVCC, 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 OVCC making unilateral decisions about replacement supplies and sites. However, OVCC, if required by the Division of Mines and Reclamation, will make these decisions unilaterally.

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ADDENDUM TO PAGE 18, PART 2, F(2)
PAGE FOUR

In some cases, OVCC 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 OVCC employees, normally cover all potential damage claims. In situations where such an agreement is reached, OVCC 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 OVCC 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, OVCC will provide the Division of Mines and Reclamation with notice of its determination and the proof in support of that determination to allow the Division of Mines and Reclamation 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 OVCC 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, OVCC shall bear the costs of installing temporary and permanent water system(s). OVCC reserves the right to proceed against the water user to recover costs incurred if it is determined that OVCC is not liable for the contamination, diminution, or interruption of the affected water supply.

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Belmont County
COMMISSIONERS
Anita Wiley
John Pollock
Michael Bianconi
DIRECTOR
David Grum

BELMONT COUNTY
SANITARY SEWER DISTRICT

P. O. BOX 457
ST. CLAIRSVILLE, OHIO 43950
Phone: (614) 695-3144
Fax: (614) 695-3411

November 20, 1996

David Bartsch
Ohio Valley Coal
56854 Pleasant Ridge Road
Alledonia, Ohio 43902

Dear Mr. Bartsch:

As per your inquire concerning the availability of potable water by the Belmont County Sanitary Sewer District to serve portion of Section 11, 17 and 23, Smith Township.

The District does have a sufficient supply to meet the needs of residents in the area.

If you have additional questions, please give me a call.

Sincerely,

David Grum
Director

DG:jm

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ADDENDUM TO PART 3, PAGE 25, D(12)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

RECLAMATION PLAN - FISH, WILDLIFE, ENVIRONMENTAL VALUES

The proposed longwall mining operation is not expected to impact fish, wildlife, and other related environmental values. The longwall will not undermine any streams where fish live. Wildlife has never been shown to be affected by longwall mining. If surface slips are caused by mining activities, over the mining area, The Ohio Valley Coal Company will restore the land to a condition equal to its original value and reasonably foreseeable use.

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ADDENDUM TO PAGE 26, PART 3, E(1-3)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

RECLAMATION PLAN - PROTECTION OF HYDROLOGIC BALANCE

The hydrologic balance is not expected to change as a result of the proposed longwall mining operation in the long term. Generally, 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 somewhat within 18 months to 2 years after mining. At that time, ground water is expected to be as 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. Surface water drainage and evaporation are not expected to be impacted by longwall mining. The monitoring data obtained for the ground and surface water sources over the longwall areas at the Powhatan No. 6 Mine indicate there will be no lasting deleterious effects of the longwall mining on water quality. Therefore, the hydrologic balance outside the permit area will be protected. Furthermore, any changes to the hydrologic balance are not expected to lead to material damage.

The rights of present users of surface and ground water will be maintained through the water replacement plan found in the Addendum to Page 18, Part 2, 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 Powhatan No. 6 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 watersheds of this area, Captina and McMahon Creeks, are at the elevation of the mining for the application area at a distance of over 5 miles from the mine. Acid or toxic drainage is not expected to enter the waters of the State.

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ADDENDUM TO PART 3, PAGE 26, F
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

GROUND WATER AND SURFACE WATER MONITORING PLANS

1. Ground Water Monitoring Plan

All legitimately used, developed 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. 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. 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.

3. Water Quality Analysis

The quality requirements of OAC 1501:13-4-14(F)(2) and the other QMR parameters as stated on the QMR report sheets will apply to the ground and surface water sample analysis. The parameters to be included are pH, acidity, alkalinity, iron, manganese, total suspended solids, hardness, sulfates, conductance, and for ground water sources within 500 ft. of a septic system, nitrates.

4. Weekly Monitoring

With each quarterly monitoring report, a map depicting the progression of the longwall face will be attached to indicate the sampling points in the full recovery areas. Ground water sources will be monitored for a minimum of three weeks before undermining and three weeks after. 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. (Note: this is

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backwards from the convention used in Underground PPD 93-1 because it is consistent with earlier monitoring done at this mine.)

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.

OVCC will monitor all legitimately used 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 application/hydrology map.

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ADDENDUM TO PAGE 26, F(3)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

GROUND AND SURFACE WATER MONITORING

Ground water and surface water monitoring as previously proposed for Powhatan No. 6 Mine will continue with respect to the 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 per the Application Map.

Ground water monitoring will consist of sampling all legitimately used 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 legitimately used developed springs, wells, and stream monitoring points. This information will be reported quarterly but is available at the OVCC office.

2. Quarterly monitoring will be conducted for quality for a one year period before and after mining for legitimately used 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 OVCC 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 for domestic supplies that are within 500 ft of a septic system.

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ADDENDUM TO PAGE 26, F(3)
PAGE TWO

OVCC will monitor all legitimately used, 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 OVCC.

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ADDENDUM TO PAGE 29, PART 3, K(1)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ENGINEERING AND MINING TECHNIQUES

The Powhatan No. 6 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 800 ft. (typically 765 ft. center to center) 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.

Room-and-Pillar Mining

1. Butt Mining

Mining with continuous miners begins at the submain with 5 entries. When the mining progresses approximately 500 ft., a set of rooms is mined at 90 degree angles on the return (air) side for a distance of approximately 300 ft. When the section has been advanced its full length, rooms are mined on the intake side to the approximate location where the return rooms were started.

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ADDENDUM TO PAGE 29, PART 3, K(1)
PAGE TWO

Blocks of coal are left for roof support. A maximum of 50 percent of the coal will be mined in butt sections. No butt mining is currently planned for this application area. However, if circumstances warrant, butts may be driven and are not expected to cause subsidence.

Main Entry Development

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.

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ADDENDUM TO PART 3, PAGE 28, (K)(1)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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 PART 3, PAGE 29, (K)(4)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ENGINEERING PROPERTIES FOR ROOM-AND-PILLAR MINING

There are several areas where room-and-pillar mining may be conducted: Main North and the areas to the north of the last longwall mining panel. In these areas, the maximum overburden is 285 ft. and the average is 185 ft. The projected maximum extraction ratio is 50 percent for all areas. Entries and rooms are to be driven a maximum of 20 ft. wide with room and cross cut centers projected to be 65 ft. x 65 ft. Barrier pillar width between sections will be approximately 50 ft.

The structural contour map with this application indicates the coal elevation (bottom) in the application area to be 760 to 822 ft. (msl). Table 13 shows typical compressive strengths for the immediate floor in the application area. The floor primarily consists of shale or calcareous shale, with an occasional thin bed of claystone. The compressive strength of the shale is 5,034 to 9,453 psi and for the calcareous shale, 9,444 to 12,590 psi. These shale units frequently contain limestone nodules, which makes excavating the mine floor particularly difficult and costly.

The compressive strength of the coal is generally accepted to be 4,330±600 psi. The strength of the Pittsburgh (No. 8) coal in this area was determined by Professor Charles Holland years ago with the use of 3 in. cube specimens. The design strength was found to be 4330 psi. Professor Holland and others have found that, due to the cleavage planes and other natural seam defects, the in-situ compressive strength for a 6½ ft. seam is 850 psi.

There will be no measures taken on the surface to prevent damage or lessening of the value or reasonably foreseeable use of the surface since extraction ratios will be low. No surface damage is anticipated.

Pillars have been designed with minimum safety factors of 1.3 for butt sections. In mains, a minimum safety factor of 2.0 is used. The following data was used to design the pillars in the application area:

Coal Constant	7,500
Coal specimen size	3 in. cube
Anticipated Maximum Mining Height	6.5 ft.
Worst case safety factor	
Mains	2.0
Butts	1.3
Maximum Depth	600 ft.

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Pillar design at the Powhatan No. 6 Mine is performed with the use of computer software. This program makes use of a modified Holland-Gaddy formula with data input that is specific for the No. 6 Mine. No actual calculations are performed by hand because they are long and complicated with much room for error. The Holland-Gaddy formulae shown in the guidelines for Attachment 32 may be used to determine the pillar strength, load on the pillar, and the safety factor. These formulae are shown below.

$$\text{Pillar Strength} = P_s = \frac{KL^{1/2}}{H}$$

$$\text{Pillar Load} = P_l = \frac{At}{Ap} = \frac{RD}{144}$$

$$\text{Safety Factor} = SF = \frac{P_s}{P_l}$$

The Powhatan No. 6 Mine is an extremely dry mine, with nearly all of the water that is found underground resulting from the mining process. There is no water pumped outside from the active mining areas of the No. 6 Mine, although some water is pumped from the bottom of air shafts. This water is essentially ground water collected behing the lining of the shaft. Therefore, water is not expected to impact the roof, floor, or coal strata. This condition is expected to continue indefinitely. If water does inundate the mine at some time in the future, it is not expected to cause ground control problems due to the large size of the pillars that will remain. Past problems with unplanned subsidence resulted from small pillar size and large quantities of water around very soft bottom rock. If the mine becomes flooded and inundates the roof rock, the immediate roof members will swell and collapse into the mine void. However, the falls of immediate roof does not adversely affect the surface. Above the immediate roof is the Redstone Limestone averaging 15 ft. in thickness. This member consists of multiple beds of limestone separated by shale and claystone partings. The limestone beds are hard, fairly massive in texture (without stratification) ranging in thickness from 2 to 11 ft. each. The partings are commonly 3 to 13 in. thick, with some reaching 24 in. The partings occur randomly throughout the application area. This member will provide long term support if the immediate roof should collapse into the mine void. The coal is not affected by the presence of water.

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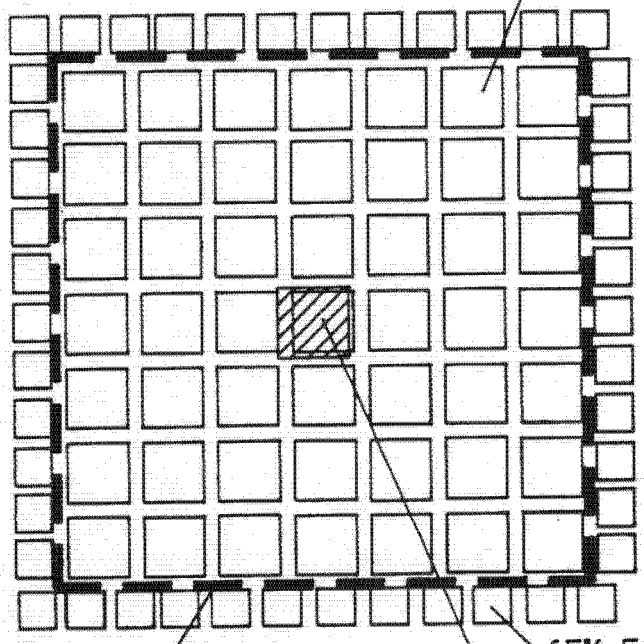
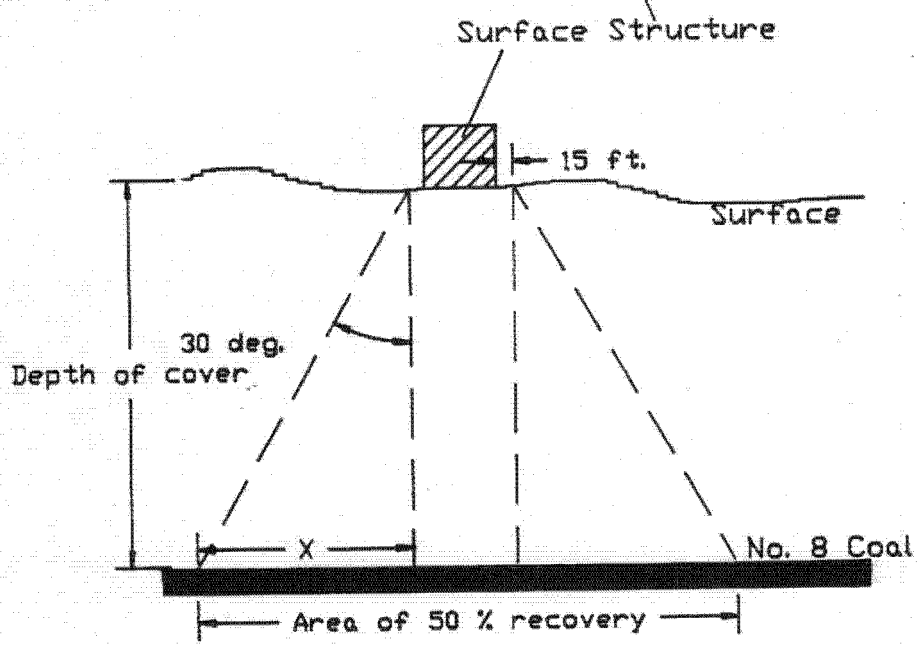
FIGURE 1

The Ohio Valley Coal Company
Powhatan No. 6 Mine (Permit D-0360)
Surface Structure Protection Detail



Plan View



Elevation View

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X = Depth x tan30
Area = 2X + 30 + Structure Width

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TABLE 13

COMPRESSIVE STRENGTH

PITTSBURGH (NO. 8) FLOOR

ROCK CORE COMPRESSIVE STRENGTH TEST RESULTS				
OHIO VALLEY COAL COMPANY				
Boring N91-3				
Sample No.	Depth (ft.)	Unit Wt. (pcf)	Compressive Strength (psi)	LITHOLOGIC DESCRIPTION
1	580.6 - 580.9	165.7	9444	Calcareous Shale
2	582.3 - 582.6	163.2	3930	Claystone
3	585.1 - 585.4	168.9	9453	Shale
4	587.2 - 587.5	162.9	3767	Shale
5	589.3 - 589.6	168.9	2995	Shale
Boring N91-4				
Sample No.	Depth (ft.)	Unit Wt. (pcf)	Compressive Strength (psi)	
1	596.2 - 596.5	183.2	10272	Claystone*
2	600.4 - 600.7	165.1	6535	Shale
3	602.9 - 603.2	163.9	5034	Shale
4	604.2-604.5	158.3	9643	Shale
Boring N91-6				
Sample No.	Depth (ft.)	Unit Wt. (pcf)	Compressive Strength (psi)	
1	453.6 - 453.9	165.9	5288	Shale
2	454.0 - 454.3	170.9	12590	Calcareous Shale
3	455.0 - 455.3	161.6	9918	Calcareous Shale
4	455.3 - 455.6	163.0	9752	Calcareous Shale
5	456.8 - 457.1	161.0	6903	Shale
6	457.3 - 457.6	163.3	6220	Shale
7	458.0 - 458.3	161.4	7585	Shale
8	464.3 - 464.7	160.6	5699	Shale

* Strength and density too high for claystone, may have had limestone nodule in prepared sample.

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ADDENDUM TO PAGE 29, PART 3, K(5)(a)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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 Powhatan No. 6 Mine.

Background

The dip of the coal is 19 ft. per mile at South 63 Degrees East. The strike is North 27 Degrees East. The panel dimensions are approximately 600 to 800 ft. wide, usually about 765 ft. wide, and up to 15,000 ft. long. The gates are approximately 140 to 200 ft. wide between panels. 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.

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 OVCC's first longwall panel (5 West) and over the 10 West and 11 West panels. Similar movements are anticipated within the application area.

Monitoring Over First Longwall Panel (5 West)

In February, 1990, the first longwall panel progressed beneath Smith Township Road 116. The Ohio Valley Coal Company 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 angle of draw (measured to .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

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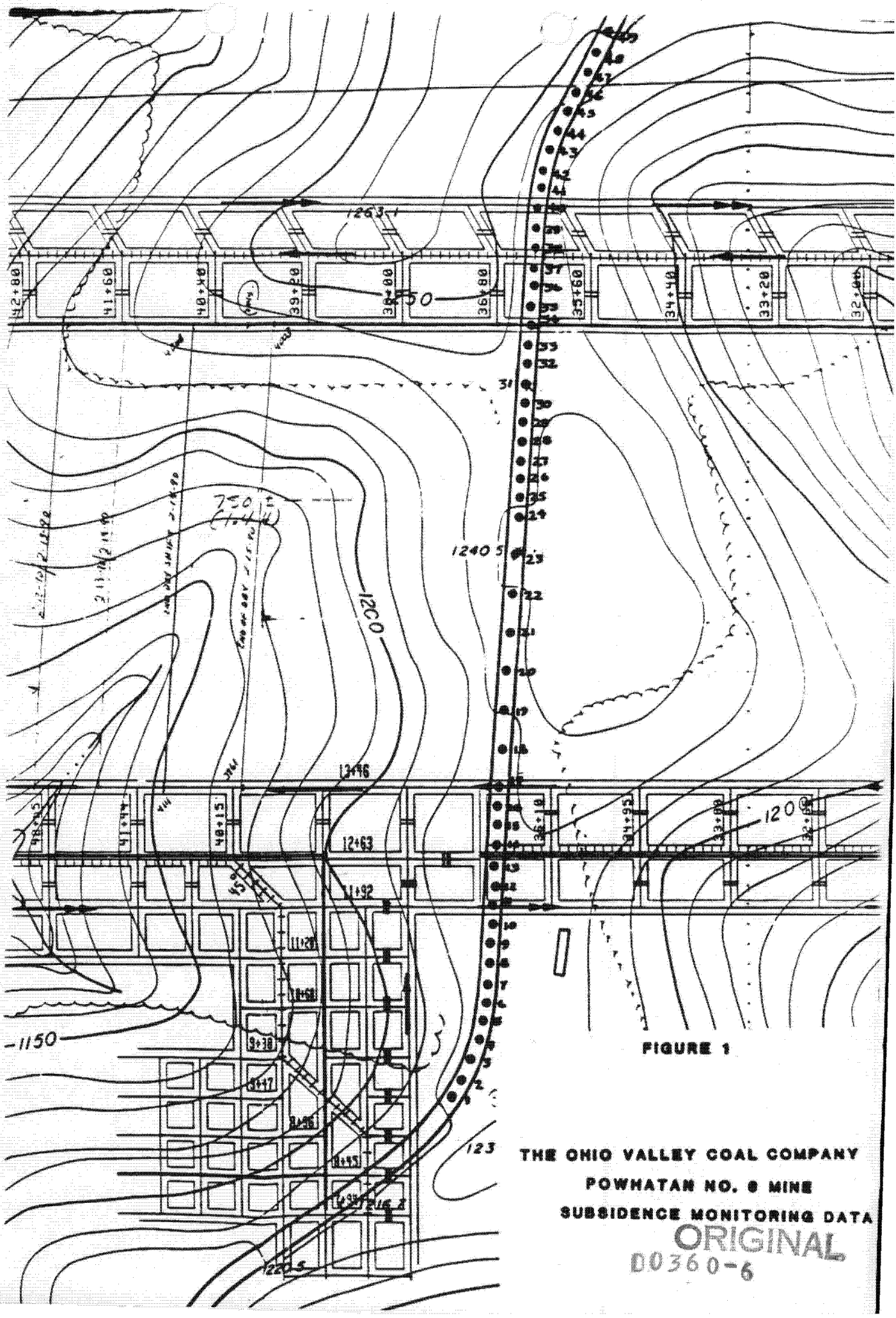

FIGURE 1

THE OHIO VALLEY COAL COMPANY

POWHATAN NO. 6 MINE

SUBSIDENCE MONITORING DATA

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FIGURE 2

SUBSIDENCE PROFILE

FIRST LONGWALL PANEL

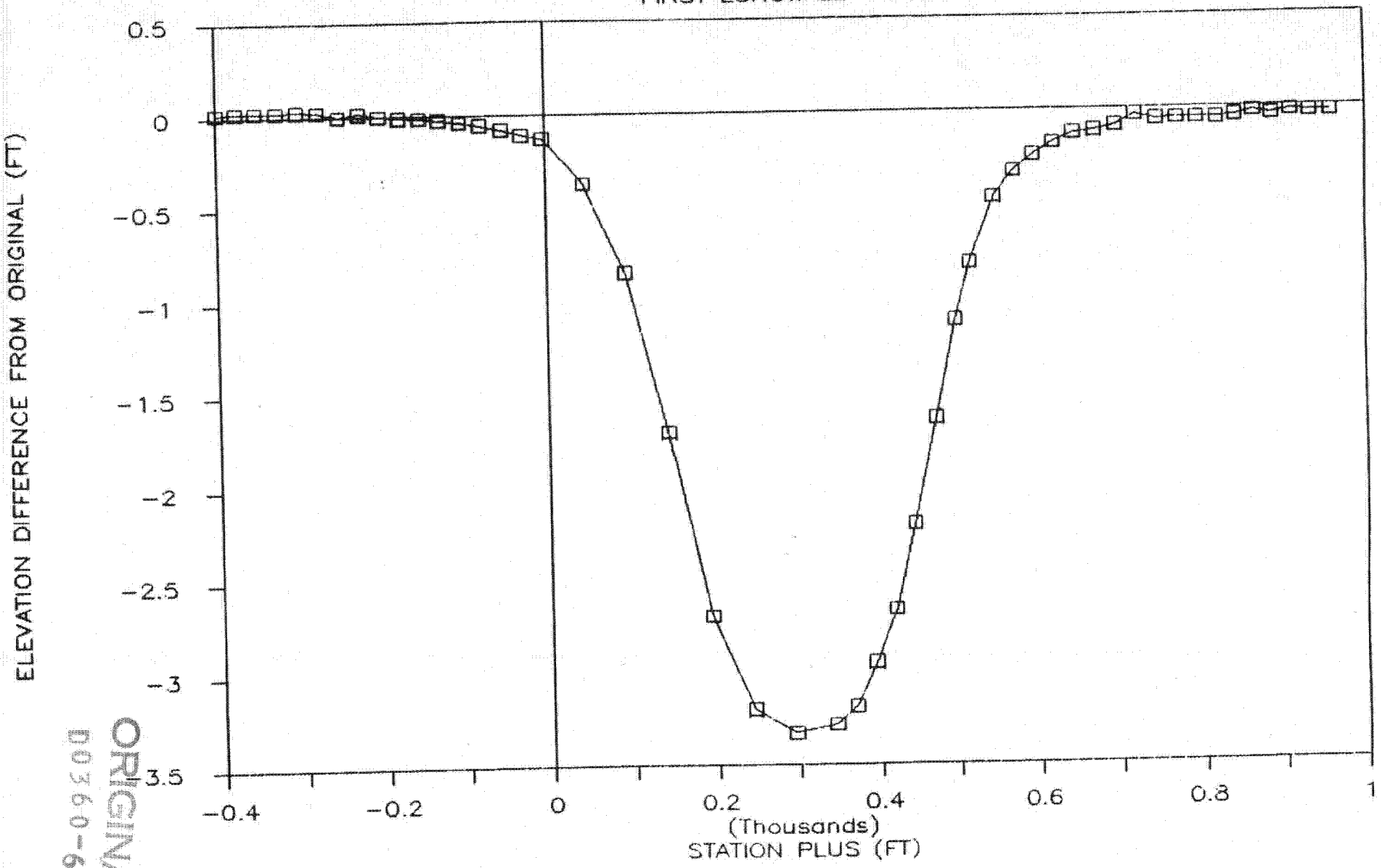

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TABLE 1

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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TABLE 2

II. DIFFERENCE IN GROUND ELEVATIONS: First LN Panel

STATION NUMBER	02-14-90	02-16-90	02-21-90	02-23-90	02-26-90	02-28-90	03-02-90	03-05-90	03-12-90	03-19-90	04-12-90	06-11-90	AVERAGE SINCE 03-05-90 *******
	SURVEY DATE												
1	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.03	0.05	-0.01	0.00	0.02
2	0.00	0.02	0.01	-0.02	0.00	0.01	0.01	0.02	0.02	0.05	0.01	0.07	0.02
3	0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.02	0.02	0.05	0.01	0.08	0.02
4	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0.03	0.05	0.01	0.04	0.02
5	0.03	0.02	0.03	0.02	0.02	0.02	0.04	0.04	0.01	0.06	0.01	0.07	0.03
6	0.02	0.01	0.01	0.01	0.04	0.01	0.03	0.02	0.02	0.05	0.01	0.07	0.02
7	-0.03	-0.01	0.00	-0.02	-0.01	-0.00	0.01	0.00	0.00	0.03	-0.02	0.05	0.00
8	0.01	0.01	0.02	0.00	0.01	0.01	0.02	0.01	0.02	0.04	0.00	0.06	0.02
9	0.01	0.01	0.00	0.00	0.00	-0.00	0.01	-0.01	0.00	0.03	-0.01	-1.96	0.00
10	0.01	0.01	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	-0.03	0.00	-0.01
11	0.08	0.01	0.00	-0.01	0.01	-0.01	-0.01	-0.01	-0.03	0.01	-0.02	0.03	-0.01
12	0.08	0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	0.00	-0.03	0.02	-0.02
13	-0.04	0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.04	-0.01	-0.06	0.00	-0.04
14	0.07	0.00	-0.01	-0.04	-0.03	-0.07	-0.05	-0.06	-0.06	-0.02	-0.07	-0.01	-0.05
15	0.08	-0.01	-0.02	-0.05	-0.07	-0.08	-0.08	-0.06	-0.08	-0.06	-0.11	-0.05	-0.08
16	0.07	0.00	-0.03	-0.08	-0.09	-0.10	-0.10	-0.11	-0.11	-0.08	-0.13	-0.07	-0.11
T.G. 17	0.11	0.05	0.01	-0.06	-0.09	-0.11	-0.12	-0.13	-0.13	-0.10	-0.15	-0.09	-0.13
18	0.03	0.01	-0.06	-0.21	-0.29	-0.34	-0.35	-0.36	-0.36	-0.34	-0.43	-0.36	-0.37
19	0.08	0.02	-0.07	-0.49	-0.68	-0.81	-0.83	-0.84	-0.85	-0.83	-0.90	-0.86	-0.86
20	0.09	0.00	-0.13	-1.13	-1.47	-1.65	-1.68	-1.69	-1.71	-1.69	-1.75	-1.73	-1.71
21	0.10	-0.01	-0.18	-1.97	-2.41	-2.60	-2.65	-2.68	-2.70	-2.67	-2.74	-2.71	-2.70
22	0.08	-0.01	-0.22	-2.43	-2.90	-3.09	-3.11	-3.17	-3.22	-3.18	-3.22	-3.21	-3.20
Center 23	0.11	0.01	-0.21	-2.54	-3.01	-3.23	-3.23	-3.31	-3.36	-3.30	-3.34	-3.34	-3.33
24	0.09	0.00	-0.21	-2.48	-2.96	-3.19	-3.20	-3.28	-3.30	-3.25	-3.30	-3.30	-3.28
25	0.08	-0.01	-0.20	-2.37	-2.85	-3.08	-3.09	-3.18	-3.21	-3.15	-3.20	-3.20	-3.19
26	0.09	-0.01	-0.17	-2.13	-2.62	-2.85	-2.87	-2.93	-2.97	-2.92	-2.98	-2.97	-2.95
27	0.06	-0.03	-0.18	-1.84	-2.32	-2.56	-2.57	-2.66	-2.70	-2.63	-2.68	-2.68	-2.67
28	0.07	-0.03	-0.15	-1.41	-1.88	-2.11	-2.13	-2.20	-2.24	-2.17	-2.22	-2.22	-2.21
29	0.08	0.00	-0.06	-0.71	-1.24	-1.52	-1.53	-1.65	-1.66	-1.60	-1.66	-1.64	-1.64
30	0.09	0.00	-0.04	-0.44	-0.79	-1.02	-1.03	-1.12	-1.15	-1.08	-1.14	-1.13	-1.12
31	0.07	-0.01	-0.05	-0.33	-0.55	-0.72	-0.73	-0.81	-0.84	-0.78	-0.83	-0.82	-0.81
32	0.09	0.00	-0.04	-0.21	-0.32	-0.40	-0.38	-0.47	-0.49	-0.42	-0.48	-0.46	-0.47
33	0.08	-0.02	-0.05	-0.16	-0.24	-0.28	-0.25	-0.33	-0.36	-0.28	-0.34	-0.31	-0.33
H.G. 34	0.08	-0.02	-0.03	-0.12	-0.18	-0.19	-0.16	-0.24	-0.30	-0.19	-0.25	-0.23	-0.24
35	0.08	-0.02	-0.02	-0.08	-0.13	-0.14	-0.11	-0.18	-0.21	-0.14	-0.19	-0.16	-0.18
36	0.09	0.00	0.01	-0.06	-0.09	-0.09	-0.06	-0.14	-0.16	-0.08	-0.13	-0.11	-0.13
37	0.07	-0.01	-0.01	-0.06	-0.09	-0.08	-0.05	-0.12	-0.15	-0.07	-0.12	-0.09	-0.11
38	0.06	-0.01	-0.03	-0.05	-0.07	-0.06	-0.03	-0.10	-0.11	-0.05	-0.10	-0.07	-0.09
39	0.10	0.03	0.05	-0.01	-0.02	0.00	0.03	-0.04	-0.06	0.01	-0.04	-0.01	-0.03
40	0.08	0.01	0.03	-0.02	-0.06	-0.03	0.00	-0.07	-0.08	-0.02	-0.07		-0.06
41	0.09	0.00	0.01	-0.03	-0.05	-0.03	0.01	-0.07	-0.08	-0.01	-0.06		-0.05
42	0.10	0.00	0.01	-0.01	-0.03	-0.02	0.01	-0.07	-0.08	-0.01	-0.06	-0.02	-0.06
43	0.06	0.00	0.03	-0.02	-0.04	-0.02	0.01	-0.07	-0.09	-0.01	-0.06	-0.03	-0.06
44	0.08	-0.01	0.03	-0.02	-0.03	-0.01	0.02	-0.08	-0.08	0.01	-0.04	-0.01	-0.05
45	0.07	-0.01	0.03	-0.01	-0.01	-0.00	0.04	-0.04	-0.05	0.02	-0.03		-0.03
46	0.07	-0.01	0.02	-0.01	-0.05	-0.01	0.02	-0.05	-0.07	0.00	-0.05	-0.01	-0.04
47	0.05	0.01	0.05	-0.01	-0.02	0.00	0.03	-0.03	-0.06	0.02	-0.03	0.01	-0.02
48	0.07	-0.01	0.00	0.00	-0.02	-0.00	0.02	-0.04	-0.06	0.01	-0.03	0.01	-0.03
49	0.06	-0.02	0.03	0.00	-0.05	0.00	-2.97	-0.03	-0.07	0.01	-0.03	0.01	-0.03
Distance LN face is from road (in feet):	-430	-248	+58	+253	+340	+516	+678	+809					

- sign means West of road + sign means East of road

Values shown in ft.
Negative value indicates

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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.

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 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 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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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 OVCC.

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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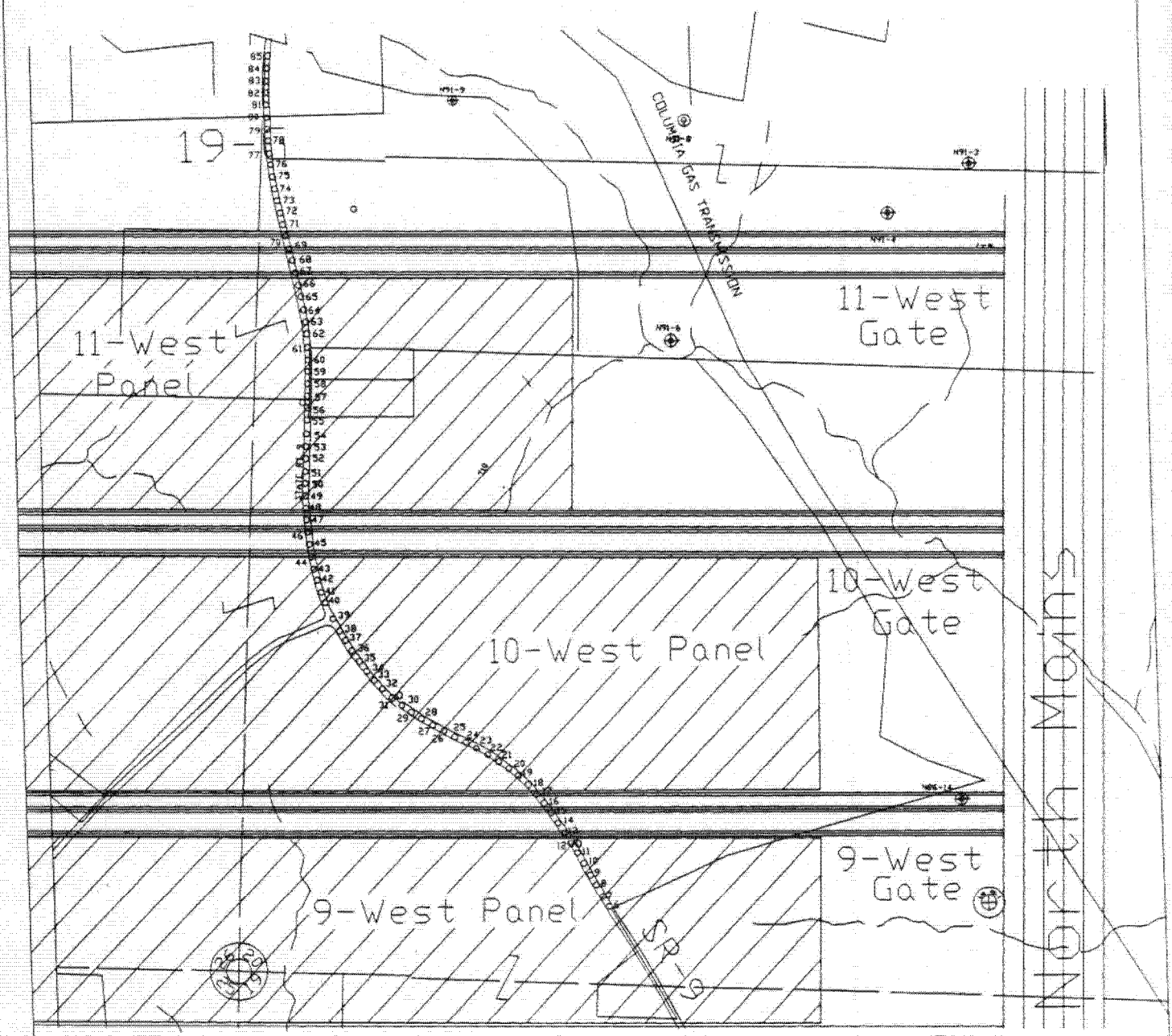
The Ohio Valley Coal Company
Powhatan No. 6 Mine
Permit D-0360
Location of Monitoring Points Along State Route 9
(Scale 1"= 500')



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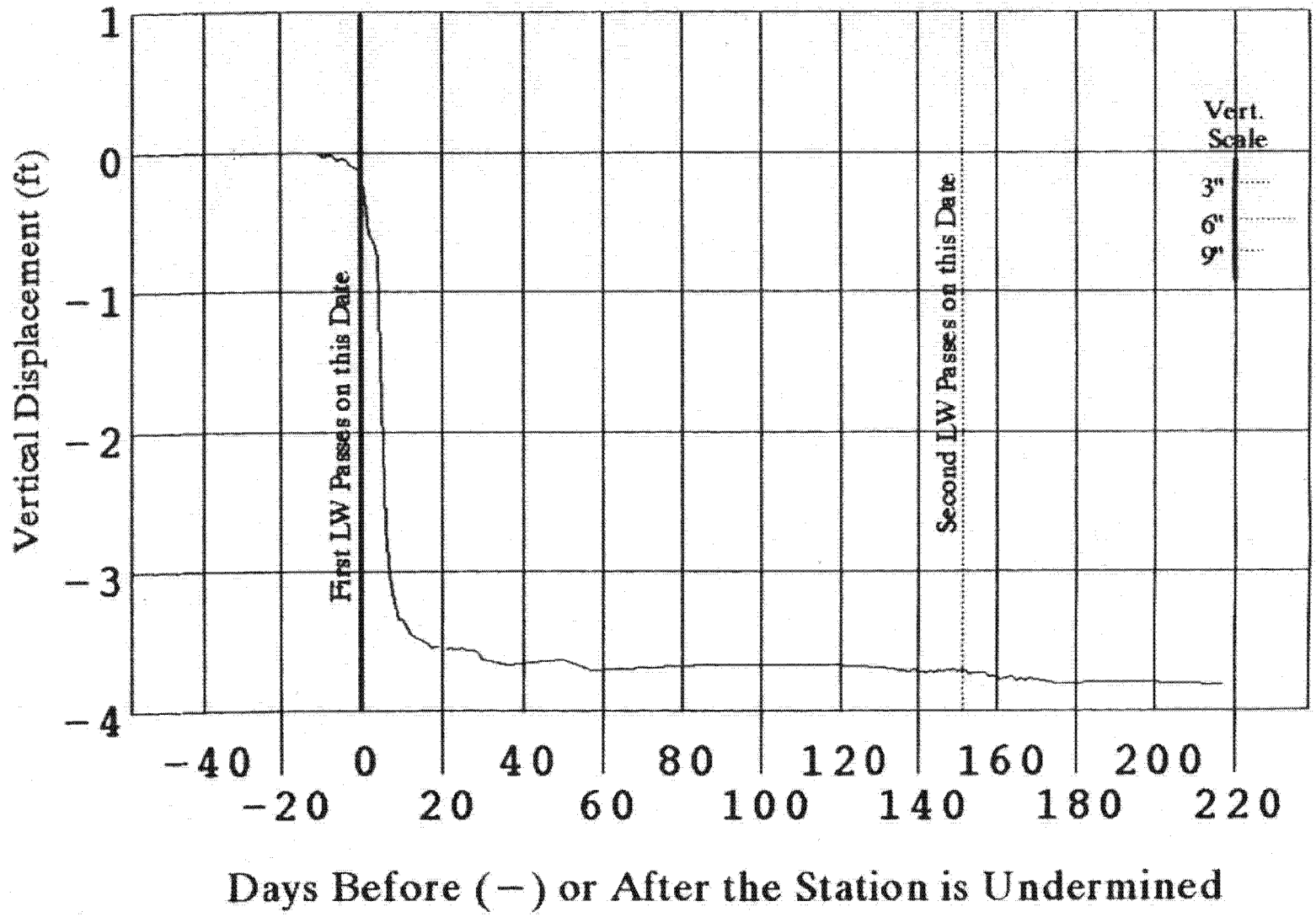
Subsidence Profile of Station No 29 (Near Panel Center) During Passage of LW Panels



GRAPH #1

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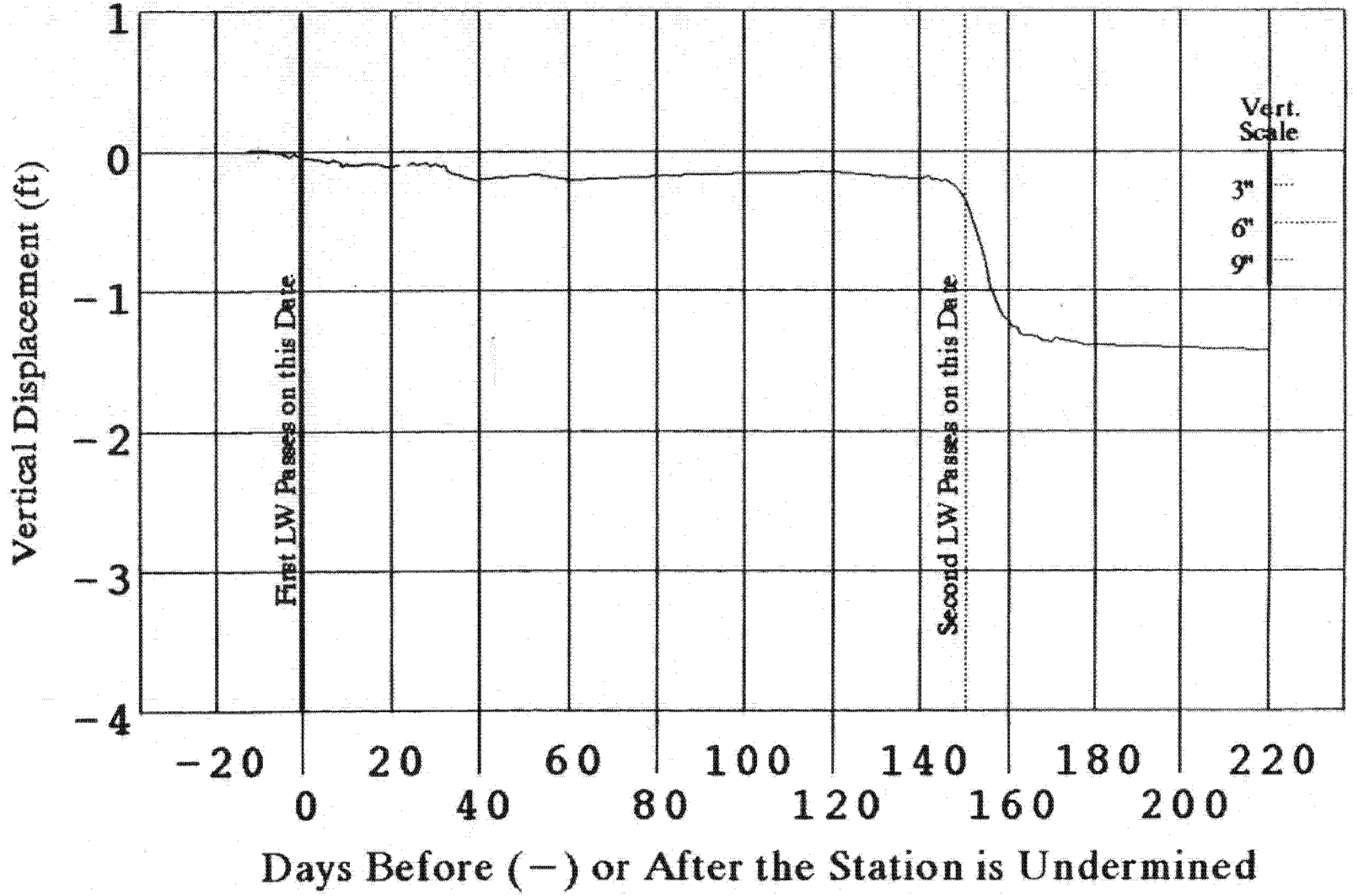
Subsidence Profile of Station No 41 (Cmmon Gate) During Passage of LW Panels

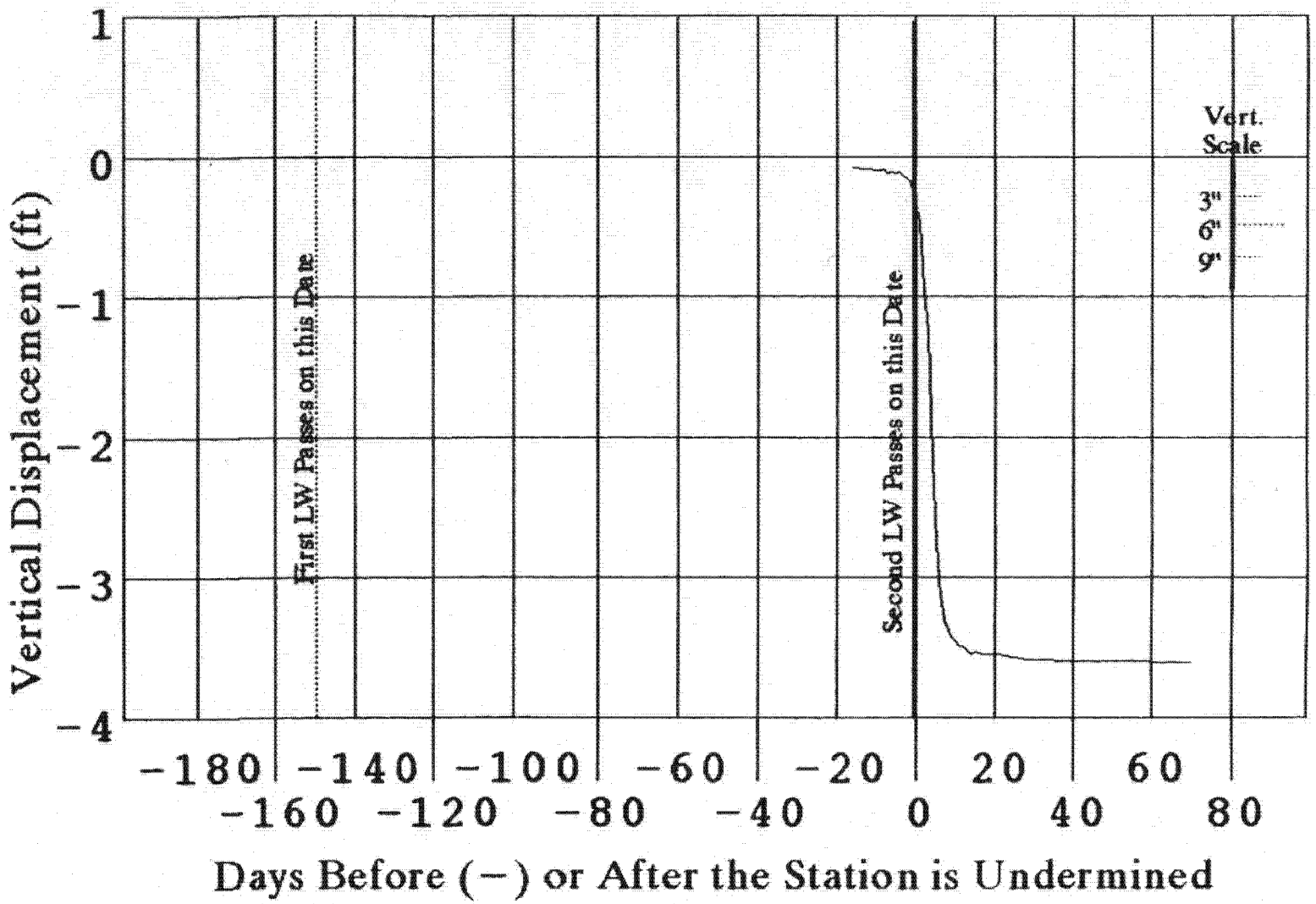


GRAPH #3

D0360-6

ORIGINAL

Subsidence Profile of Station No 52 (Near Panel Center) During Passage of LW Panels



GRAPH #2

D0360-6

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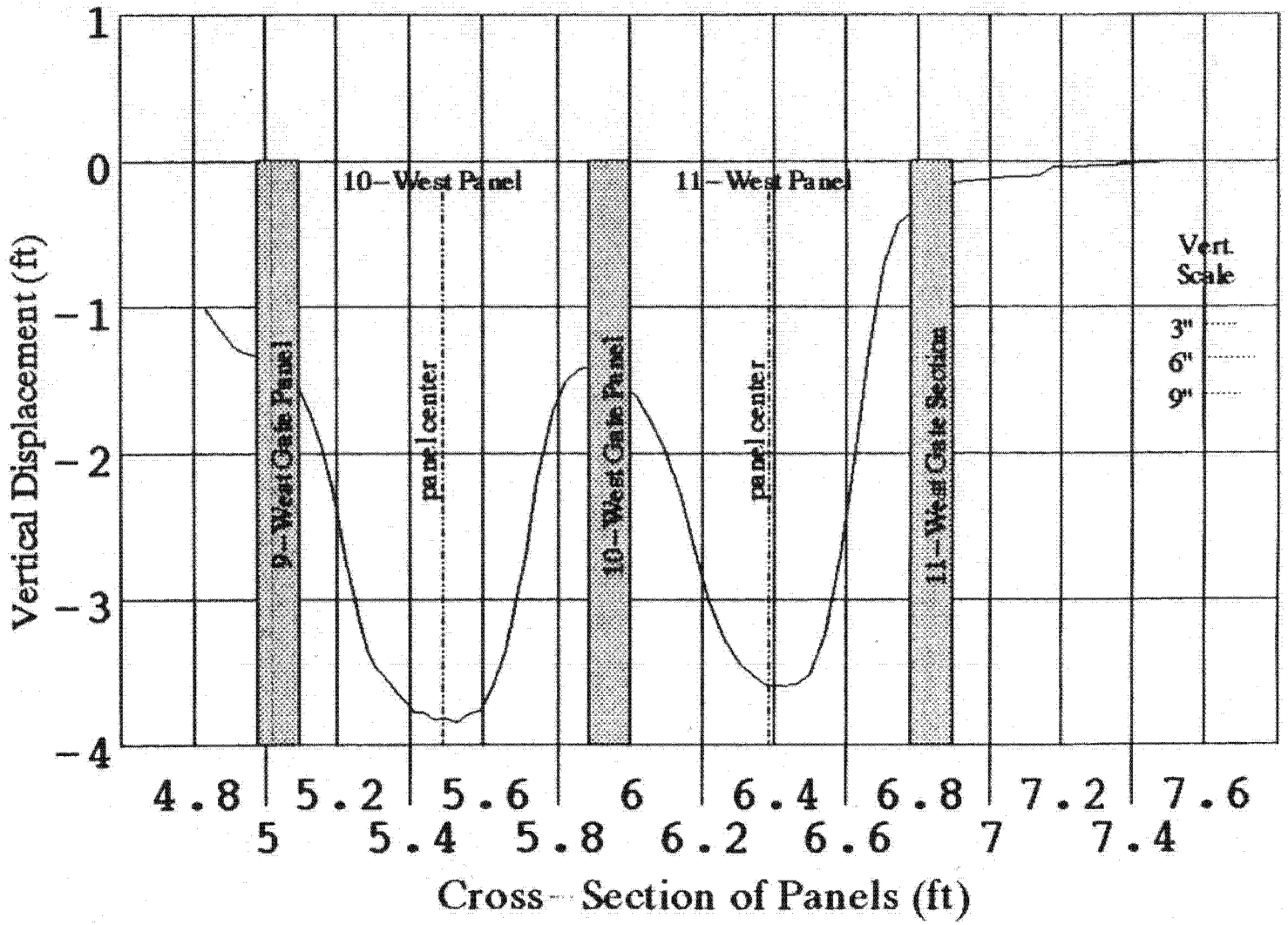
Subsidence Profile of the 10–West and 11–West LW Panels
Surface Section Across Panel Width



GRAPH #4

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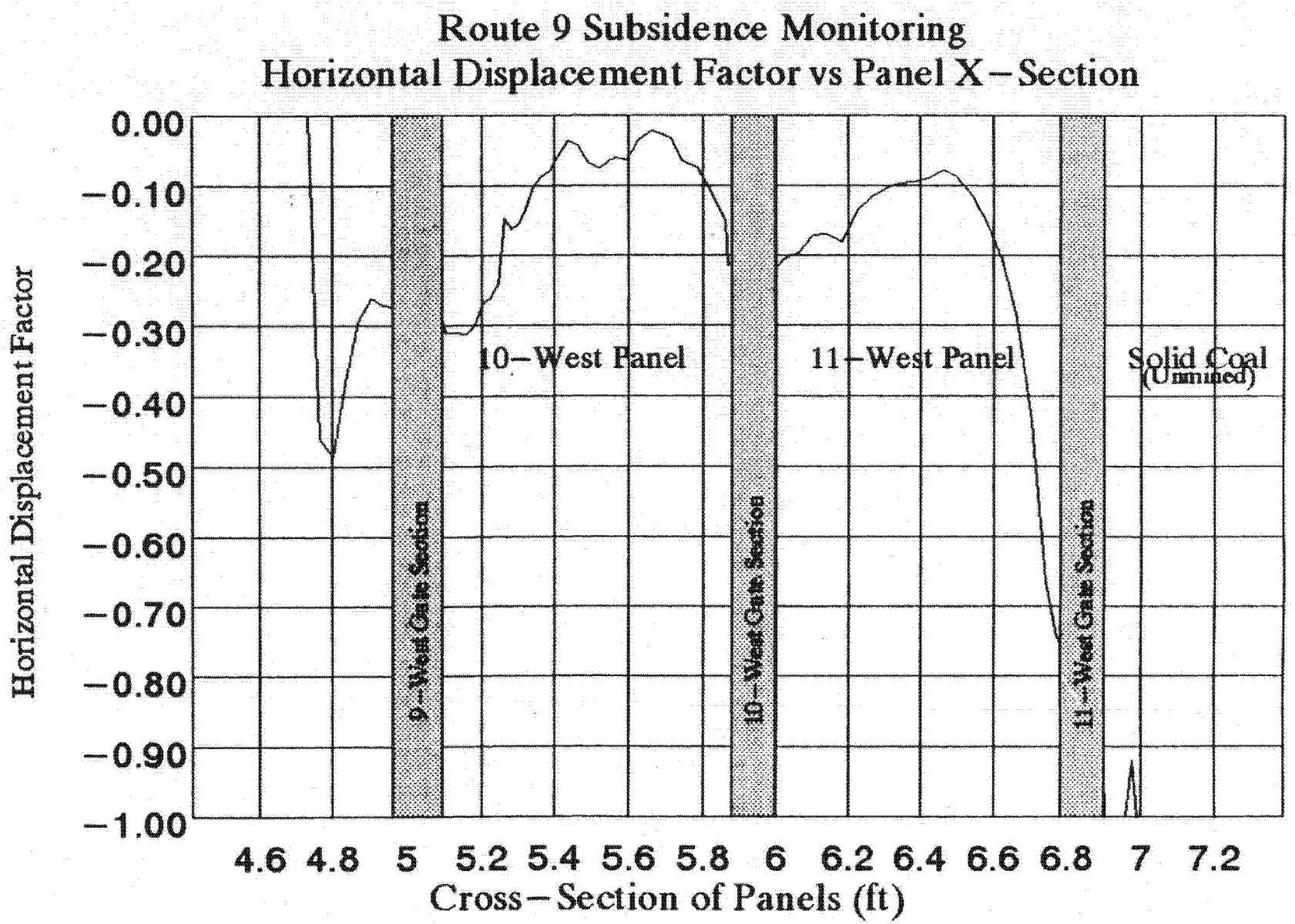

GRAPH #5

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	10-WEST (FIRST PANEL)										
SURVEY NUMBER>	0	1	2	3	4	5	6	7	8	9	10
SURVEY DATE>	10-18-91	10-28-91	10-30-91	10-31-91	11-01-91	11-02-91	11-03-91	11-04-91	11-05-91	11-06-91	11-07-91
LONGWALL STATUS>	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING
DAYS AFTER 1st SURVEY>	0	10	12	13	14	15	16	17	18	19	20
FACE PLUS @ SURVEY>	3440	2842	2693	2658	2581	2500	2446	2439	2360	2288	2255
STATION NUMBER:											
4	0.00	0.00	-0.03	-0.02	-0.04	-0.06	-0.03	-0.01	-0.05	-0.05	-0.01
5	0.00	0.03	-0.03	0.00	-0.02	-0.02	0.01	0.03	-0.03	-0.02	0.00
6	0.00	-0.01	-0.04	-0.02	-0.06	-0.06	-0.02	0.01	-0.04	-0.07	-0.04
7	0.00	-0.01	-0.03	-0.03	-0.04	-0.06	-0.03	-0.01	-0.05	-0.07	-0.03
8	0.00	0.01	-0.02	-0.01	-0.03	-0.04	-0.01	0.01	-0.04	-0.06	-0.03
Edge of Gob>											
9	0.00	0.01	-0.03	-0.02	-0.04	-0.05	-0.04	-0.01	-0.04	-0.07	-0.03
10	0.00	0.01	-0.03	-0.02	-0.04	-0.05	-0.07	-0.01	-0.04	-0.07	-0.03
11	0.00	0.00	-0.04	-0.03	-0.06	-0.08	-0.06	-0.01	-0.06	-0.07	-0.04
Edge of Gob>											
12	0.00	0.02	-0.03	-0.02	-0.04	-0.05	-0.05	0.00	-0.05	-0.07	-0.03
13	0.00	0.00	-0.04	-0.03	-0.05	-0.06	-0.06	-0.02	-0.07	-0.08	-0.05
14	0.00	0.00	-0.03	-0.02	-0.05	-0.06	-0.05	-0.02	-0.08	-0.08	-0.05
15	0.00	0.00	-0.04	-0.03	-0.06	-0.07	-0.04	-0.02	-0.07	-0.08	-0.05
16	0.00	0.00	-0.03	-0.03	-0.05	-0.07	-0.05	-0.02	-0.07	-0.08	-0.05
17	0.00	0.00	-0.03	-0.03	-0.05	-0.07	-0.05	-0.03	-0.07	-0.08	-0.05
18	0.00	0.00	-0.04	-0.03	-0.05	-0.08	0.18	-0.03	-0.07	-0.08	-0.05
19	0.00	0.00	-0.04	-0.03	-0.05	-0.07	-0.06	-0.02	-0.07	-0.08	-0.06
20	0.00	0.00	-0.04	-0.03	-0.04	-0.06	-0.05	-0.01	-0.07	-0.08	-0.04
21	0.00	0.00	-0.03	-0.02	-0.04	-0.06	0.57	-0.02	-0.06	-0.07	-0.04
22	0.00	0.01	-0.02	-0.01	-0.03	-0.05	-0.03	-0.01	-0.06	-0.06	-0.03
23	0.00	0.00	-0.03	-0.02	-0.04	-0.06	-0.04	-0.02	-0.07	-0.07	-0.06
24	0.00	0.01	-0.03	-0.02	-0.04	-0.05	-0.04	-0.03	-0.07	-0.07	-0.07
25	0.00	0.00	-0.03	-0.02	-0.04	-0.06	-0.05	-0.04	-0.09	-0.08	-0.08
26	0.00	0.01	-0.02	-0.01	-0.03	-0.06	-0.03	-0.04	-0.08	-0.08	-0.09
27	0.00	0.02	-0.03	-0.02	-0.04	-0.06	-0.04	-0.04	-0.09	-0.09	-0.10
28	0.00	0.00	-0.02	-0.01	-0.03	-0.06	-0.03	-0.04	-0.08	-0.09	-0.10
Near Panel Center> 29	0.00	0.00	-0.03	-0.01	-0.03	-0.06	-0.04	-0.05	-0.09	-0.10	-0.12
30	0.00	0.00	-0.03	-0.02	-0.04	-0.06	-0.04	-0.05	-0.10	-0.11	-0.13
31	0.00	0.00	-0.03	-0.02	-0.04	-0.06	-0.04	-0.06	-0.09	-0.13	-0.15
32	0.00	-0.05	-0.08	-0.08	-0.09	-0.11	-0.10	-0.11	-0.15	-0.19	-0.22
33	0.00	0.01	-0.04	-0.02	-0.04	0.66	-0.05	-0.07	-0.10	-0.15	-0.19
34	0.00	0.00	-0.03	-0.03	-0.04	-0.05	-0.05	-0.07	-0.10	-0.15	-0.20
35	0.00	-0.01	-0.04	-0.04	-0.06	-0.07	-0.14	-0.07	-0.11	-0.16	-0.20
36	0.00	0.00	-0.03	-0.03	-0.04	-0.06	-0.05	-0.07	-0.10	-0.14	-0.18
37	0.00	0.01	-0.01	-0.02	-0.02	-0.05	-0.03	-0.04	-0.08	-0.11	-0.13
38	0.00	0.00	-0.02	-0.02	-0.03	-0.06	-0.04	-0.05	-0.08	-0.11	-0.12
39	0.00	0.01	-0.01	-0.02	-0.02	-0.04	-0.03	-0.04	-0.07	-0.08	-0.09
Edge of Gob>											
40	0.00	0.00	-0.02	0.08	-0.03	-0.05	-0.02	-0.04	-0.07	-0.07	-0.08
41	0.00	0.01	-0.01	-0.01	-0.02	-0.04	-0.02	-0.03	-0.06	-0.05	-0.05
42	0.00	0.02	0.00	-0.01	-0.01	-0.03	0.00	-0.02	-0.05	-0.03	-0.03
Edge of Gob>											
43	0.00	0.03	0.00	0.00	-0.02	-0.02	-0.01	-0.02	-0.04	-0.03	-0.01
44	0.00	0.02	0.00	-0.01	-0.01	-0.02	-0.01	-0.03	-0.03	-0.02	-0.03
45	0.00	0.03	0.01	0.00	0.00	-0.02	0.01	0.00	-0.03	-0.01	0.00
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
Near Panel Center> 52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
62	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
65	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-

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ORIGINAL

THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	10-WEST (FIRST PANEL)										
SURVEY NUMBER>	11	12	13	14	15	16	17	18	19	20	21
SURVEY DATE>	11-08-91	11-09-91	11-10-91	11-11-91	11-12-91	11-13-91	11-14-91	11-15-91	11-16-91	11-17-91	11-18-91
LONGWALL STATUS>	RUNNING	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING
DAYS AFTER 1st SURVEY>	21	22	23	24	25	26	27	28	29	30	31
FACE PLUS @ SURVEY>	2180	2129	2090	2090	2061	1980	1911	1868	1800	1754	1722
STATION NUMBER:											
4	0.00	0.01	-0.04	-0.07	0.01	-0.05	-0.01	-0.02	-0.04	-0.05	-0.03
5	0.02	0.03	-0.01	-0.03	0.02	-0.02	0.01	0.00	-0.04	-0.04	-0.01
6	-0.01	0.01	-0.06	-0.07	0.01	-0.05	-0.03	-0.03	-0.06	-0.07	-0.04
7	-0.02	-0.01	-0.04	-0.06	-0.01	-0.05	-0.02	-0.04	-0.05	-0.07	-0.06
8	0.00	0.01	-0.03	-0.05	0.00	-0.04	-0.01	-0.02	-0.05	-0.06	-0.04
Edge of Gob>											
9	0.09	0.00	-0.04	-0.05	-0.01	-0.05	-0.02	-0.02	-0.06	-0.07	-0.05
10	-0.01	-0.01	-0.04	-0.06	-0.01	-0.05	-0.02	-0.04	-0.06	-0.07	-0.05
11	-0.02	0.00	-0.05	-0.07	-0.02	-0.06	-0.03	-0.04	-0.07	-0.08	-0.06
Edge of Gob>											
12	-0.01	0.00	-0.04	-0.05	-0.01	-0.05	-0.02	-0.03	-0.06	-0.07	-0.06
13	-0.02	-0.01	-0.06	-0.07	-0.02	-0.07	-0.03	-0.05	-0.07	-0.09	-0.08
14	-0.02	-0.01	-0.05	-0.07	-0.02	-0.07	-0.03	-0.04	-0.08	-0.10	-0.10
15	-0.03	-0.02	-0.06	-0.07	-0.03	-0.07	-0.04	-0.05	-0.09	-0.12	-0.13
16	-0.03	-0.02	-0.06	-0.07	-0.03	-0.07	-0.04	-0.06	-0.10	-0.15	-0.17
17	-0.03	-0.02	-0.06	-0.08	-0.03	-0.08	-0.05	-0.07	-0.14	-0.23	-0.29
18	-0.03	-0.02	-0.06	-0.08	-0.03	-0.09	-0.06	-0.10	-0.20	-0.37	-0.48
19	-0.03	-0.03	-0.07	-0.08	-0.04	-0.09	-0.08	-0.13	-0.30	-0.59	-0.77
20	-0.03	-0.03	-0.06	-0.08	-0.03	-0.09	-0.10	-0.19	-0.49	-0.94	-1.68
21	-0.04	-0.03	-0.07	-0.12	-0.04	-0.11	-0.14	-0.30	-0.75	-1.36	-1.63
22	-0.04	-0.03	-0.07		-0.04	-0.12	-0.21	-0.49	-1.11	-1.80	-2.03
23	-0.06	-0.06	-0.09	-0.11	-0.07	-0.18	-0.40	-0.87	-1.60	-2.24	-2.41
24	-0.07	-0.07	-0.11	-0.14	-0.10	-0.26	-0.67	-1.32	-2.08	-2.58	-2.69
25	-0.08	-0.10	-0.15	-0.18	-0.15	-0.39	-1.07	-1.81	-2.44	-2.81	-2.88
26	-0.09	-0.12	-0.20	-0.23	-0.22	-0.62	-1.58	-2.30	-2.80	-3.09	-3.12
27	-0.11	-0.17	-0.30	-0.33	-0.35	-1.01	-2.07	-2.64	-2.97	-3.18	-3.21
28	-0.13	-0.23	-0.40	-0.45	-0.51	-1.43	-2.44	-2.90	-3.13	-3.29	-3.31
Near Panel Center> 29	-0.16	-0.33	-0.58	-0.64	-0.75	-1.82	-2.69	-3.02	-3.21	-3.34	-3.34
30	-0.20	-0.43	-0.79	-0.88	-1.02	-2.15	-2.85	-3.10	-3.24	-3.33	-3.35
31	-0.26	-0.58	-1.05	-1.15	-1.32	-2.39	-2.94	-3.14	-3.25	-3.31	-3.34
32	-0.38	-0.76	-1.33	-1.44	-1.61	-2.54	-2.98	-3.14	-3.23	-3.29	-3.32
33	-0.37	-0.83	-1.43	-1.54	-1.70	-2.48	-2.84	-2.97	-3.06	-3.10	-3.13
34	-0.41	-0.88	-1.44	-1.54	-1.67	-2.24	-2.53	-2.64	-2.71	-2.75	-2.81
35	-0.37	-0.70	-1.03	-1.11	-1.17	-1.48	-1.67	-1.73	-1.78	-1.80	-1.82
36	-0.30	-0.48	-0.64	-0.70	-0.72	-0.88	-1.00	-1.03	-1.07	-1.08	-1.09
37	-0.20	-0.28	-0.34	-0.37	-0.37	-0.42	-0.49	-0.50	-0.52	-0.53	-0.53
38	-0.15	-0.19	-0.22	-0.24	-0.23	-0.26	-0.31	-0.30	-0.32	-0.32	-0.32
39	-0.10	-0.12	-0.14	-0.16	-0.14	-0.16	-0.20	-0.18	-0.20	-0.20	-0.20
Edge of Gob>											
40	-0.07	-0.09	-0.10	-0.13	-0.10	-0.11	-0.15	-0.13	-0.14	-0.14	-0.14
41	-0.06	-0.06	-0.07	-0.08	-0.06	-0.07	-0.11	-0.09	-0.10	-0.10	-0.10
42	-0.01	-0.03	-0.04	-0.06	-0.03	-0.04	-0.08	-0.06	-0.07	-0.07	-0.06
Edge of Gob>											
43	-0.01	-0.01	-0.03	-0.04	-0.02	-0.03	-0.06	-0.04	-0.05	-0.05	-0.05
44	-0.02	-0.01	-0.02	-0.04	-0.01	-0.02	-0.05	-0.04	-0.03	-0.04	-0.04
45	-0.01	0.00	-0.01	-0.03	-0.01	-0.01	-0.04	-0.02	-0.03	-0.03	-0.02
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
Near Panel Center> 52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
62	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
65	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-

D0360-6

ORIGINAL

THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	10-WEST (FIRST PANEL)										
SURVEY NUMBER>	22	23	24	25	26	27	28	29	30	31	32
SURVEY DATE>	11-19-91	11-20-91	11-21-91	11-22-91	11-23-91	11-24-91	11-25-91	11-26-91	11-27-91	11-28-91	11-29-91
LONGWALL STATUS>	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	IDLE HOLIDAY	IDLE HOLIDAY
DAYS AFTER 1st SURVEY>	32	33	34	35	36	37	39	39	40	41	42
FACE PLUS @ SURVEY>	1669	1625	1540	1465	1431	1404	1369	1283	1259	1236	1236
STATION NUMBER:											
4	-0.05	-0.09	-0.11	-0.13	-0.19	-0.28	-0.34	-0.41	-0.50		-0.57
5	-0.03	-0.08	-0.10	-0.17	-0.23	-0.33	-0.36	-0.49	-0.58		-0.67
6	-0.09	-0.13	-0.14	-0.21	-0.32	-0.37	-0.47	-0.56	-0.66		-0.76
7	-0.10	-0.11	-0.15	-0.23	-0.33	-0.43	-0.49	-0.61	-0.71		-0.81
8	-0.08	-0.12	-0.15	-0.24	-0.35	-0.45	-0.52	-0.64	-0.74		-0.84
Edge of Gob>											
9	-0.09	-0.12	-0.16	-0.27	-0.39	-0.48	-0.55	-0.68	-0.80		-0.89
10	-0.10	-0.13	-0.18	-0.31	-0.41	-0.52	-0.60	-0.74	-0.85		-0.94
11	-0.10	-0.14	-0.21	-0.34	-0.48	-0.59	-0.66	-0.81	-0.93		-1.02
Edge of Gob>											
12	-0.10	-0.14	-0.22	-0.39	-0.52	-0.67	-0.75	-0.91	-1.02		-1.12
13	-0.13	-0.19	-0.31	-0.53	-0.69	-0.83	-0.94	-1.10	-1.22		-1.31
14	-0.16	-0.24	-0.44	-0.73	-0.91	-1.08	-1.18	-1.34	-1.45		-1.54
15	-0.21	-0.32	-0.63	-1.00	-1.21	-1.36	-1.46	-1.61	-1.70		-1.78
16	-0.30	-0.47	-0.94	-1.36	-1.55	-1.70	-1.79	-1.92	-2.01		-2.07
17	-0.49	-0.79	-1.41	-1.82	-2.00	-2.12	-2.20	-2.30	-2.38		-2.43
18	-0.82	-1.23	-1.85	-2.20	-2.34	-2.46	-2.51	-2.58	-2.65		-2.70
19	-1.24	-1.68	-2.24	-2.53	-2.63	-2.74	-2.79	-2.83	-2.89		-2.93
20	-1.69	-2.11	-2.54	-2.76	-2.86	-2.93	-2.97	-3.00	-3.05		-3.09
21	-2.12	-2.46	-2.77	-2.94	-3.01	-3.08	-3.11	-3.12	-3.16		-3.20
22	-2.42	-2.69	-2.91	-3.04	-3.10	-3.15	-3.18	-3.18	-3.22		-3.25
23	-2.70	-2.90	-3.06	-3.16	-3.20	-3.24	-3.28	-3.27	-3.31		-3.33
24	-2.89	-3.06	-3.18	-3.25	-3.30	-3.33	-3.35	-3.35	-3.38		-3.40
25	-3.04	-3.16	-3.25	-3.30	-3.35	-3.38	-3.41	-3.39	-3.42		-3.44
26	-3.24	-3.33	-3.39	-3.43	-3.46	-3.48	-3.51	-3.50	-3.52		-3.54
27	-3.30	-3.36	-3.40	-3.44	-3.47	-3.48	-3.51	-3.50	-3.51		-3.53
28	-3.38	-3.43	-3.47	-3.49	-3.52	-3.53	-3.56	-3.55	-3.56		-3.57
Near Panel Center> 29	-3.40	-3.45	-3.47	-3.49	-3.50	-3.52	-3.56	-3.54	-3.54		-3.56
30	-3.40	-3.43	-3.45	-3.48	-3.48	-3.49	-3.52	-3.51	-3.52		-3.53
31	-3.36	-3.40	-3.42	-3.44	-3.45	-3.46	-3.48	-3.47	-3.48		-3.48
32	-3.34	-3.36	-3.38	-3.40	-3.44	-3.43	-3.44	-3.43	-3.43		-3.44
33	-3.15	-3.17	-3.19	-3.20	-3.20	-3.22	-3.24	-3.23	-3.24		-3.24
34	-2.78	-2.80	-2.81	-2.82	-2.84	-2.85	-2.87	-2.86	-2.87		-2.86
35	-1.83	-1.84	-1.85	-1.86	-1.87	-1.88	-1.90	-1.89	-1.89		-1.90
36	-1.10	-1.11	-1.12	-1.13	-1.13	-1.14	-1.16	-1.15	-1.15		-1.15
37	-0.54	-0.54	-0.55	-0.56	-0.56	-0.57	-0.59	-0.58	-0.58		-0.58
38	-0.32	-0.32	-0.33	-0.43	-0.34	-0.34	-0.37	-0.36	-0.36		-0.34
39	-0.20	-0.19	-0.20	-0.20	-0.19	-0.22	-0.24	-0.22	-0.22		-0.21
Edge of Gob>											
40	-0.14	-0.14	-0.14	-0.14	-0.18	-0.15	-0.17	-0.15	-0.16		-0.15
41	-0.09	-0.09	-0.09	-0.09	-0.10	-0.11	-0.12	-0.10	-0.10		-0.10
42	-0.06	-0.06	-0.06	-0.05	-0.06	-0.07	-0.08	-0.07	-0.07		-0.06
Edge of Gob>											
43	-0.04	-0.04	-0.04	-0.03	-0.04	-0.04	-0.06	-0.04	-0.05		-0.04
44	-0.03	-0.03	-0.03	-0.03	-0.02	-0.03	-0.05	-0.04	0.01		-0.03
45	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	-0.02	-0.02		-0.02
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
Near Panel Center> 52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
62	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
65	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	10-WEST (FIRST PANEL)										
SURVEY NUMBER>	33	34	35	36	37	38	39	40	41	42	43
SURVEY DATE>	11-30-91	12-01-91	12-02-91	12-03-91	12-04-91	12-05-91	12-06-91	12-07-91	12-08-91	12-14-91	12-20-91
LONGWALL STATUS>	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RECOVERI	RECOVERI
DAYS AFTER 1st SURVEY>	43	44	45	46	47	48	49	50	51	57	63
FACE PLUS @ SURVEY>	1227	1227	1195	1146	1078	1033	983	951	924	734	715
STATION NUMBER:											
4	-0.60	-0.61	-0.59	-0.62	-0.67	-0.68	-0.71	-0.75	-0.83	-0.92	-0.89
5	-0.68	-0.68	-0.70	-0.71	-0.78	-0.79	-0.83	-0.87	-0.95	-1.04	-1.00
6	-0.77	-0.77	-0.78	-0.81	-0.87	-0.90	-0.94	-0.98	-1.07	-1.13	-1.11
7	-0.82	-0.82	-0.83	-0.87	-0.94	-0.96	-0.99	-1.02	-1.10	-1.18	-1.16
8	-0.85	-0.86	-0.89	-0.90	-0.97	-0.98	-1.01	-1.05	-1.13	-1.20	-1.20
Edge of Gob>											
9	-0.89	-0.90	-0.92	-0.95	-1.01	-1.03	-1.07	-1.09	-1.18	-1.25	-1.24
10	-0.95	-0.96	-0.98	-1.00	-1.06	-1.08	-1.11	-1.14	-1.21	-1.29	-1.28
11	-1.03	-1.03	-1.04	-1.08	-1.14	-1.16	-1.19	-1.21	-1.29	-1.27	-1.36
Edge of Gob>											
12	-1.12	-1.12	-1.14	-1.17	-1.24	-1.24	-1.28	-1.30	-1.37	-1.47	-1.42
13	-1.32	-1.32	-1.33	-1.36	-1.42	-1.43	-1.46	-1.48	-1.55	-1.63	-1.60
14	-1.54	-1.54	-1.56	-1.58	-1.64	-1.65	-1.67	-1.69	-1.76	-1.84	-1.80
15	-1.79	-1.79	-1.80	-1.82	-1.87	-1.87	-1.90	-1.92	-1.98	-2.05	-2.02
16	-2.08	-2.07	-2.09	-2.09	-2.15	-2.15	-2.17	-2.19	-2.25	-2.31	-2.28
17	-2.43	-2.43	-2.44	-2.44	-2.50	-2.49	-2.51	-2.53	-2.59	-2.65	-2.62
18	-2.70	-2.69	-2.70	-2.70	-2.75	-2.74	-2.76	-2.78	-2.84	-2.89	-2.86
19	-2.93	-2.93	-2.93	-2.93	-2.98	-2.97	-2.98	-3.00	-3.06	-3.11	-3.08
20	-3.08	-3.08	-3.09	-3.08	-3.12	-3.11	-3.12	-3.14	-3.20	-3.25	-3.21
21	-3.19	-3.19	-3.19	-3.18	-3.21	-3.21	-3.22	-3.23	-3.29	-3.35	-3.30
22	-3.25	-3.24	-3.24	-3.23	-3.27	-3.25	-3.26	-3.28	-3.34	-3.39	-3.34
23	-3.33	-3.24	-3.32	-3.31	-3.35	-3.33	-3.35	-3.35	-3.42	-3.47	-3.42
24	-3.40	-3.39	-3.39	-3.38	-3.41	-3.40	-3.41	-3.42	-3.48	-3.52	-3.49
25	-3.44	-3.44	-3.43	-3.42	-3.46	-3.44	-3.46	-3.46	-3.52	-3.57	-3.55
26	-3.53	-3.54	-3.53	-3.53	-3.56	-3.54	-3.55	-3.56	-3.62	-3.66	-3.63
27	-3.52	-3.52	-3.53	-3.52	-3.54	-3.54	-3.54	-3.55	-3.60	-3.64	-3.63
28	-3.56	-3.57	-3.57	-3.56	-3.59	-3.58	-3.58	-3.60	-3.65	-3.69	-3.65
Near Panel Center> 29	-3.56	-3.56	-3.56	-3.55	-3.57	-3.57	-3.57	-3.58	-3.63	-3.67	-3.66
30	-3.52	-3.53	-3.53	-3.52	-3.54	-3.53	-3.54	-3.55	-3.60	-3.64	-3.62
31	-3.48	-3.49	-3.48	-3.48	-3.50	-3.50	-3.50	-3.51	-3.56	-3.62	-3.57
32	-3.43	-3.45	-3.44	-3.43	-3.45	-3.45	-3.46	-3.46	-3.51	-3.58	-3.54
33	-3.23	-3.25	-3.23	-3.23	-3.25	-3.25	-3.26	-3.26	-3.31	-3.36	-3.33
34	-2.86	-2.87	-2.86	-2.85	-2.88	-2.87	-2.88	-2.88	-2.93	-3.00	-2.96
35	-1.88	-1.90	-1.89	-1.88	-1.91	-1.90	-1.91	-1.91	-1.96	-2.03	-1.98
36	-1.14	-1.16	-1.15	-1.14	-1.17	-1.15	-1.17	-1.17	-1.22	-1.27	-1.23
37	-0.56	-0.58	-0.57	-0.56	-0.59	-0.58	-0.59	-0.59	-0.64	-0.70	-0.66
38	-0.33	-0.34	-0.34	-0.32	-0.35	-0.34	-0.35	-0.35	-0.40	-0.46	-0.41
39	-0.19	-0.22	-0.21	-0.20	-0.22	-0.21	-0.22	-0.22	-0.27	-0.37	-0.29
Edge of Gob>											
40	-0.13	-0.15	-0.14	-0.13	-0.15	-0.14	-0.15	-0.15	-0.20	-0.25	-0.23
41	-0.08	-0.10	-0.09	-0.08	-0.11	-0.09	-0.11	-0.10	-0.15	-0.21	-0.19
42	-0.05	-0.08	-0.05	-0.04	-0.08	-0.06	-0.07	-0.06	-0.12	-0.19	-0.15
Edge of Gob>											
43	-0.03	-0.04	-0.03	-0.02	-0.04	-0.03	-0.04	-0.04	-0.10	-0.16	-0.12
44	-0.02	-0.04	-0.03	-0.01	-0.03	-0.03	-0.04	-0.04	-0.09	-0.15	-0.09
45	0.00	-0.02	-0.01	-0.01	-0.02	-0.01	-0.02	-0.01	-0.07	-0.13	-0.08
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
Near Panel Center> 52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGINATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	10-WEST (FIRST PANEL)			
SURVEY NUMBER>	44	45	46	47
SURVEY DATE>	12-28-91	01-04-92	02-03-9	03-04-92
LONGWALL STATUS>	RECOVERI	RECOVERI	RECOVERI	RECOVERED
DAYS AFTER 1st SURVEY>	71	78	108	138
FACE PLUS @ SURVEY>	715	715	715	715
STATION NUMBER:				
4	-0.96	-0.99	-0.96	-1.00
5	-0.97	-1.11	-1.07	-1.12
6	-1.10	-1.21	-1.19	-1.23
7	-1.14	-1.25	-1.22	-1.27
8	-1.17	-1.28	-1.26	-1.30
Edge of Gob>				
9	-1.20	-1.33	-1.30	-1.34
10	-1.25	-1.37	-1.33	-1.38
11	-1.31	-1.43	-1.40	-1.44
Edge of Gob>				
12	-1.41	-1.52	-1.47	-1.52
13	-1.57	-1.69	-1.64	-1.69
14	-1.77	-1.89	-1.84	-1.89
15	-1.99	-2.11	-2.06	-2.11
16	-2.25	-2.37	-2.32	-2.36
17	-2.59	-2.70	-2.65	-2.68
18	-2.83	-2.94	-2.89	-2.91
19	-3.05	-3.16	-3.11	-3.13
20	-3.19	-3.30	-3.25	-3.27
21	-3.27	-3.39	-3.34	-3.36
22	-3.32	-3.43	-3.38	-3.40
23	-3.39	-3.49	-3.46	-3.47
24	-3.46	-3.57	-3.53	-3.54
25	-3.50	-3.60	-3.57	-3.58
26	-3.61	-3.70	-3.66	-3.67
27	-3.59	-3.68	-3.65	-3.65
28	-3.63	-3.73	-3.69	-3.69
Near Panel Center> 29	-3.63	-3.71	-3.67	-3.67
30	-3.59	-3.68	-3.64	-3.65
31	-3.55	-3.63	-3.61	-3.61
32	-3.51	-3.59	-3.55	-3.56
33	-3.31	-3.39	-3.35	-3.36
34	-2.93	-3.01	-2.98	-2.98
35	-1.96	-2.04	-2.00	-2.00
36	-1.20	-1.29	-1.25	-1.25
37	-0.64	-0.71	-0.66	-0.66
38	-0.38	-0.46	-0.41	-0.40
39	-0.26	-0.33	-0.28	-0.28
Edge of Gob>				
40	-0.20	-0.26	-0.22	-0.20
41	-0.17	-0.21	-0.17	-0.15
42	-0.12	-0.17	-0.13	-0.12
Edge of Gob>				
43	-0.10	-0.15	-0.11	-0.10
44	-0.06	-0.14	-0.10	-0.09
45	-0.05	-0.13	-0.08	-0.08
46	-	-	-	-
47	-	-	-	-
48	-	-	-	-
49	-	-	-	-
50	-	-	-	-
51	-	-	-	-
Near Panel Center> 52	-	-	-	-
53	-	-	-	-
54	-	-	-	-
55	-	-	-	-
56	-	-	-	-
57	-	-	-	-
58	-	-	-	-
59	-	-	-	-
60	-	-	-	-
61	-	-	-	-
Edge of Gob>	-	-	-	-
62	-	-	-	-
63	-	-	-	-
64	-	-	-	-
Edge of Gob>	-	-	-	-
65	-	-	-	-
66	-	-	-	-
67	-	-	-	-
68	-	-	-	-
69	-	-	-	-
70	-	-	-	-
71	-	-	-	-
72	-	-	-	-
73	-	-	-	-
74	-	-	-	-
75	-	-	-	-
76	-	-	-	-
77	-	-	-	-
78	-	-	-	-
79	-	-	-	-
80	-	-	-	-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10–WEST and 11–WEST

PANEL DESIGNATION>	11–WEST (SECOND PANEL)										
SURVEY NUMBER>	48	49	50	51	52	53	54	55	56	57	58
SURVEY DATE>	03/18/92	03/25/92	03/26/92	03/27/92	03/28/92	03/29/92	03/30/92	03/31/92	04/01/92	04/02/92	04/03/92
LONGWALL STATUS>	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	SUNDAY	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING
DAYS AFTER 1st SURVEY>	152	159	160	161	162	163	164	165	166	167	168
FACE PLUS @ SURVEY>	3285	2961	2881	2785	2694	2646	2649	2546	2482	2430	2347
STATION NUMBER:	–	–	–	–	–	–	–	–	–	–	–
4	–	–	–	–	–	–	–	–	–	–	–
5	–	–	–	–	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–
8	–	–	–	–	–	–	–	–	–	–	–
Edge of Gob>											
9	–	–	–	–	–	–	–	–	–	–	–
10	–	–	–	–	–	–	–	–	–	–	–
11	–	–	–	–	–	–	–	–	–	–	–
Edge of Gob>											
12	–	–	–	–	–	–	–	–	–	–	–
13	–	–	–	–	–	–	–	–	–	–	–
14	–	–	–	–	–	–	–	–	–	–	–
15	–	–	–	–	–	–	–	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–
17	–	–	–	–	–	–	–	–	–	–	–
18	–	–	–	–	–	–	–	–	–	–	–
19	–	–	–	–	–	–	–	–	–	–	–
20	–	–	–	–	–	–	–	–	–	–	–
21	–	–	–	–	–	–	–	–	–	–	–
22	–	–	–	–	–	–	–	–	–	–	–
23	–	–	–	–	–	–	–	–	–	–	–
24	–	–	–	–	–	–	–	–	–	–	–
25	–	–	–	–	–	–	–	–	–	–	–
26	–	–	–	–	–	–	–	–	–	–	–
27	–	–	–	–	–	–	–	–	–	–	–
28	-3.71	-3.74	-3.72	-3.75	-3.74	-3.74	-3.73	-3.75	-3.73	-3.74	-3.73
Near Panel Center> 29	-3.69	-3.72	-3.70	-3.73	-3.72	-3.73	-3.71	-3.73	-3.71	-3.72	-3.71
30	-3.68	-3.69	-3.67	-3.71	-3.69	-3.70	-3.69	-3.70	-3.69	-3.70	-3.69
31	-3.62	-3.65	-3.63	-3.66	-3.65	-3.66	-3.64	-3.66	-3.65	-3.66	-3.64
32	-3.57	-3.60	-3.58	-3.61	-3.60	-3.60	-3.59	-3.61	-3.60	-3.61	-3.60
33	-3.37	-3.40	-3.38	-3.40	-3.39	-3.40	-3.39	-3.40	-3.40	-3.41	-3.41
34	-2.99	-3.02	-3.00	-3.03	-3.01	-3.02	-3.01	-3.03	-3.03	-3.04	-3.05
35	-2.02	-2.04	-2.02	-2.05	-2.04	-2.05	-2.05	-2.08	-2.06	-2.08	-2.11
36	-1.27	-1.29	-1.27	-1.31	-1.29	-1.31	-1.30	-1.31	-1.32	-1.34	-1.39
37	-0.68	-0.70	-0.69	-0.73	-0.70	-0.72	-0.71	-0.73	-0.74	-0.77	-0.81
38	-0.43	-0.44	-0.43	-0.46	-0.45	-0.46	-0.46	-0.49	-0.49	-0.52	-0.57
39	-0.31	-0.32	-0.31	-0.34	-0.33	-0.34	-0.33	-0.36	-0.37	-0.40	-0.45
Edge of Gob>											
40	-0.23	-0.24	-0.23	-0.26	-0.25	-0.26	-0.25	-0.27	-0.29	-0.32	-0.37
41	-0.19	-0.20	-0.18	-0.21	-0.20	-0.22	-0.21	-0.23	-0.24	-0.27	-0.33
42	-0.15	-0.16	-0.14	-0.17	-0.16	-0.18	-0.17	-0.19	-0.20	-0.23	-0.29
Edge of Gob>											
43	-0.12	-0.13	-0.12	-0.14	-0.13	-0.15	-0.14	-0.16	-0.17	-0.20	-0.26
44	-0.11	-0.12	-0.11	-0.13	-0.12	-0.14	-0.13	-0.15	-0.16	-0.19	-0.25
45	-0.09	-0.11	-0.09	-0.11	-0.10	-0.12	-0.11	-0.13	-0.14	-0.16	-0.23
46	-0.08	-0.10	-0.08	-0.11	-0.10	-0.11	-0.10	-0.12	-0.13	-0.16	-0.24
47	-0.08	-0.10	-0.08	-0.10	-0.10	-0.11	-0.10	-0.12	-0.13	-0.16	-0.25
48	-0.08	-0.10	-0.08	-0.11	-0.10	-0.11	-0.10	-0.12	-0.14	-0.17	-0.27
49	-0.08	-0.11	-0.09	-0.11	-0.11	-0.12	-0.11	-0.13	-0.15	-0.18	-0.29
50	-0.08	-0.10	-0.09	-0.11	-0.11	-0.12	-0.11	-0.13	-0.15	-0.19	-0.30
51	-0.08	-0.10	-0.08	-0.11	-0.10	-0.11	-0.11	-0.13	-0.15	-0.19	-0.30
Near Panel Center> 52	-0.08	-0.10	-0.09	-0.12	-0.11	-0.12	-0.11	-0.14	-0.16	-0.20	-0.33
53	-0.07	-0.09	-0.07	-0.10	-0.10	-0.10	-0.10	-0.12	-0.14	-0.18	-0.30
54	-0.09	-0.11	-0.10	-0.12	-0.12	-0.12	-0.12	-0.14	-0.16	-0.20	-0.31
55	-0.09	-0.10	-0.09	-0.11	-0.11	-0.11	-0.11	-0.13	-0.14	-0.18	-0.29
56	-0.10	-0.10	-0.09	-0.11	-0.11	-0.12	-0.11	-0.13	-0.14	-0.18	-0.26
57	-0.09	-0.05	-0.09	-0.11	-0.10	-0.11	-0.11	-0.12	-0.14	-0.16	-0.24
58	-0.09	-0.10	-0.08	-0.10	-0.10	-0.11	-0.10	-0.12	-0.13	-0.15	-0.22
59	-0.09	-0.09	-0.08	-0.10	-0.10	-0.11	-0.10	-0.11	-0.12	-0.15	-0.20
60	-0.08	-0.09	-0.08	-0.09	-0.09	-0.10	-0.10	-0.11	-0.12	-0.14	-0.17
61	-0.08	-0.09	-0.08	-0.09	-0.09	-0.10	-0.09	-0.11	-0.11	-0.13	-0.16
Edge of Gob>											
62	-0.07	-0.08	-0.07	-0.09	-0.09	-0.09	-0.09	-0.10	-0.10	-0.11	-0.13
63	-0.07	-0.09	-0.08	-0.09	-0.09	-0.09	-0.10	-0.10	-0.10	-0.11	-0.12
64	-0.08	-0.10	-0.09	-0.10	-0.10	-0.10	-0.11	-0.10	-0.11	-0.11	-0.12
Edge of Gob>											
65	-0.07	-0.09	-0.08	-0.09	-0.09	-0.09	-0.09	-0.10	-0.10	-0.10	-0.11
66	-0.07	-0.09	-0.08	-0.10	-0.09	-0.09	-0.10	-0.10	-0.10	-0.10	-0.11
67	-0.08	-0.09	-0.09	-0.10	-0.10	-0.09	-0.09	-0.10	-0.10	-0.10	-0.11
68	-0.07	-0.09	-0.08	-0.09	-0.09	-0.09	-0.08	-0.09	-0.09	-0.09	-0.10
69	-0.08	-0.09	-0.09	-0.10	-0.10	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10
70	-0.09	-0.10	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.11	-0.11
71	-0.08	-0.09	-0.08	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.10	-0.10
72	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
73	-0.02	-0.02	-0.02	-0.02	-0.03	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03
74	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.03	-0.03
75	-0.02	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03
76	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01	-0.02	-0.02
77	-0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	-0.00	-0.01	-0.01
78	-0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.00
79	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
80	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	11-WEST (SECOND PANEL)										
SURVEY NUMBER>	59	60	61	62	63	64	65	66	67	68	69
SURVEY DATE>	04/04/92	04/05/92	04/06/92	04/07/92	04/08/92	04/09/92	04/10/92	04/11/92	04/12/92	04/13/92	04/14/92
LONGWALL STATUS>	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING	RUNNING
DAYS AFTER 1st SURVEY>	169	170	171	172	173	174	175	176	177	178	179
FACE PLUS @ SURVEY>	2307	2251	2221	2158	2094	2006	1926	1874	1843	1802	1725
STATION NUMBER											
4	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
9	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>											
12	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-
28	-3.73	-3.72	-3.74	-3.73	-3.73	-3.75	-3.74	-3.75	-3.74	-3.74	-3.76
Near Panel Center> 29	-3.71	-3.70	-3.72	-3.71	-3.71	-3.74	-3.73	-3.73	-3.73	-3.73	-3.76
30	-3.69	-3.68	-3.70	-3.69	-3.69	-3.72	-3.71	-3.72	-3.71	-3.72	-3.75
31	-3.66	-3.64	-3.66	-3.66	-3.66	-3.69	-3.68	-3.69	-3.68	-3.69	-3.72
32	-3.60	-3.59	-3.62	-3.61	-3.62	-3.65	-3.65	-3.66	-3.65	-3.66	-3.69
33	-3.41	-3.40	-3.43	-3.43	-3.44	-3.48	-3.47	-3.49	-3.50	-3.50	-3.53
34	-3.05	-3.07	-3.10	-3.12	-3.14	-3.19	-3.20	-3.22	-3.23	-3.24	-3.27
35	-2.14	-2.18	-2.23	-2.30	-2.35	-2.44	-2.48	-2.52	-2.54	-2.56	-2.60
36	-1.43	-1.48	-1.54	-1.63	-1.71	-1.83	-1.89	-1.94	-1.96	-1.98	-2.03
37	-0.87	-0.94	-1.00	-1.10	-1.20	-1.33	-1.40	-1.46	-1.49	-1.52	-1.56
38	-0.63	-0.70	-0.78	-0.87	-0.97	-1.11	-1.18	-1.24	-1.28	-1.31	-1.35
39	-0.51	-0.59	-0.66	-0.77	-0.88	-1.02	-1.10	-1.16	-1.20	-1.23	-1.28
Edge of Gob>											
40	-0.44	-0.52	-0.59	-0.71	-0.82	-0.97	-1.05	-1.12	-1.16	-1.19	-1.24
41	-0.39	-0.48	-0.56	-0.69	-0.81	-0.97	-1.08	-1.13	-1.18	-1.21	-1.26
42	-0.36	-0.46	-0.54	-0.70	-0.84	-1.02	-1.12	-1.19	-1.24	-1.27	-1.32
Edge of Gob>											
43	-0.34	-0.45	-0.56	-0.74	-0.91	-1.12	-1.23	-1.31	-1.36	-1.39	-1.46
44	-0.32	-0.46	-0.57	-0.82	-1.04	-1.28	-1.41	-1.49	-1.54	-1.57	-1.62
45	-0.30	-0.48	-0.60	-0.93	-1.20	-1.48	-1.62	-1.71	-1.76	-1.79	-1.84
46	-0.31	-0.55	-0.69	-1.11	-1.34	-1.76	-1.92	-2.00	-2.05	-2.08	-2.13
47	-0.35	-0.65	-0.84	-1.39	-1.81	-2.17	-2.33	-2.41	-2.46	-2.49	-2.53
48	-0.39	-0.75	-0.98	-1.65	-2.15	-2.52	-2.69	-2.76	-2.81	-2.84	-2.89
49	-0.41	-0.83	-1.10	-1.88	-2.42	-2.80	-2.96	-3.04	-3.08	-3.11	-3.15
50	-0.43	-0.88	-1.16	-1.98	-2.57	-2.97	-3.13	-3.21	-3.25	-3.28	-3.32
51	-0.44	-0.90	-1.20	-2.06	-2.66	-3.05	-3.22	-3.29	-3.34	-3.37	-3.41
Near Panel Center> 52	-0.47	-0.95	-1.25	-2.15	-2.75	-3.13	-3.30	-3.37	-3.42	-3.45	-3.49
53	-0.45	-0.93	-1.23	-2.17	-2.78	-3.15	-3.31	-3.38	-3.43	-3.46	-3.50
54	-0.44	-0.91	-1.21	-2.15	-2.75	-3.14	-3.30	-3.37	-3.42	-3.44	-3.48
55	-0.41	-0.84	-1.13	-2.06	-2.67	-3.07	-3.23	-3.30	-3.35	-3.37	-3.41
56	-0.37	-0.72	-0.96	-1.80	-2.39	-2.79	-2.96	-3.03	-3.07	-3.10	-3.13
57	-0.31	-0.57	-0.75	-1.40	-1.89	-2.20	-2.42	-2.49	-2.53	-2.55	-2.59
58	-0.27	-0.44	-0.57	-0.99	-1.35	-1.65	-1.79	-1.84	-1.88	-1.90	-1.93
59	-0.23	-0.33	-0.40	-0.61	-0.82	-1.01	-1.10	-1.15	-1.17	-1.19	-1.21
60	-0.19	-0.24	-0.28	-0.36	-0.44	-0.53	-0.56	-0.59	-0.61	-0.61	-0.62
61	-0.16	-0.20	-0.21	-0.25	-0.28	-0.32	-0.34	-0.32	-0.36	-0.36	-0.37
Edge of Gob>											
62	-0.14	-0.15	-0.16	-0.19	-0.20	-0.22	-0.23	-0.24	-0.25	-0.24	-0.25
63	-0.12	-0.14	-0.14	-0.16	-0.16	-0.18	-0.18	-0.19	-0.19	-0.18	-0.19
64	-0.12	-0.10	-0.12	-0.14	-0.14	-0.16	-0.16	-0.17	-0.17	-0.16	-0.17
Edge of Gob>											
65	-0.10	-0.10	-0.12	-0.12	-0.12	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13
66	-0.10	-0.11	-0.11	-0.11	-0.11	-0.12	-0.11	-0.12	-0.12	-0.11	-0.12
67	-0.10	-0.10	-0.11	-0.11	-0.11	-0.12	-0.11	-0.12	-0.12	-0.11	-0.12
68	-0.09	-0.09	-0.10	-0.10	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10
69	-0.09	-0.10	-0.10	-0.10	-0.10	-0.11	-0.10	-0.10	-0.11	-0.10	-0.10
70	-0.10	-0.10	-0.10	-0.10	-0.10	-0.11	-0.10	-0.10	-0.10	-0.10	-0.10
71	-0.09	-0.09	-0.09	-0.09	-0.09	-0.10	-0.09	-0.09	-0.09	-0.09	-0.09
72	-0.02	-0.02	-0.03	-0.03	-0.02	-0.03	-0.02	-0.03	-0.03	-0.02	-0.03
73	-0.02	-0.02	-0.03	-0.02	-0.02	-0.03	-0.02	-0.03	-0.03	-0.02	-0.03
74	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	-0.03	-0.02	-0.02
75	-0.01	-0.02	-0.02	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01	-0.02
76	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.00	-0.01
77	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
78	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.01	0.00
79	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	11-WEST (SECOND PANEL)									
SURVEY NUMBER>	70	71	72	73	74	75	76	77	78	79
SURVEY DATE>	04/15/92	04/16/92	04/17/92	04/18/92	04/20/92	04/21/92	04/22/92	04/23/92	04/24/92	05/01/92
LONGWALL STATUS>			RECOVERING	RECOVERING	RECOVERING	RECOVERING	RECOVERING	RECOVERED	RECOVERED	RECOVERED
DAYS AFTER 1st SURVEY>	180	181	182	183	185	186	187	188	189	196
FACE PLUS @ SURVEY>	1671	1575	1545	1537	1536	1528	1525	1525	1525	1525
STATION NUMBER										
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
Edge of Gob>										
9	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
Edge of Gob>										
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-
28	-3.76	-3.79	-3.80	-3.78	-3.78	-3.80	-3.78	-3.80	-3.78	-3.81
Near Panel Center> 29	-3.75	-3.77	-3.79	-3.77	-3.76	-3.79	-3.77	-3.79	-3.77	-3.81
30	-3.73	-3.76	-3.77	-3.75	-3.75	-3.78	-3.76	-3.78	-3.75	-3.79
31	-3.70	-3.73	-3.75	-3.73	-3.73	-3.75	-3.74	-3.75	-3.73	-3.76
32	-3.68	-3.71	-3.72	-3.71	-3.71	-3.73	-3.72	-3.73	-3.71	-3.74
33	-3.52	-3.55	-3.56	-3.55	-3.55	-3.57	-3.56	-3.57	-3.56	-3.58
34	-3.25	-3.29	-3.30	-3.30	-3.30	-3.31	-3.31	-3.31	-3.30	-3.32
35	-2.58	-2.63	-2.64	-2.64	-2.64	-2.66	-2.66	-2.66	-2.65	-2.68
36	-2.02	-2.07	-2.08	-2.08	-2.08	-2.10	-2.10	-2.11	-2.09	-2.12
37	-1.55	-1.60	-1.61	-1.61	-1.62	-1.64	-1.64	-1.65	-1.63	-1.67
38	-1.35	-1.40	-1.41	-1.41	-1.42	-1.44	-1.44	-1.45	-1.43	-1.47
39	-1.26	-1.32	-1.33	-1.33	-1.34	-1.36	-1.36	-1.37	-1.36	-1.39
Edge of Gob>										
40	-1.24	-1.29	-1.30	-1.30	-1.31	-1.33	-1.33	-1.34	-1.32	-1.36
41	-1.26	-1.31	-1.32	-1.32	-1.33	-1.35	-1.35	-1.36	-1.34	-1.38
42	-1.33	-1.38	-1.39	-1.40	-1.40	-1.42	-1.42	-1.43	-1.42	-1.45
Edge of Gob>										
43	-1.46	-1.50	-1.52	-1.52	-1.53	-1.55	-1.55	-1.55	-1.54	-1.57
44	-1.63	-1.68	-1.69	-1.70	-1.71	-1.72	-1.73	-1.73	-1.72	-1.75
45	-1.85	-1.89	-1.91	-1.91	-1.92	-1.93	-1.93	-1.94	-1.93	-1.96
46	-2.14	-2.17	-2.20	-2.19	-2.21	-2.22	-2.21	-2.23	-2.21	-2.24
47	-2.54	-2.57	-2.60	-2.59	-2.60	-2.61	-2.61	-2.62	-2.61	-2.63
48	-2.89	-2.92	-2.95	-2.94	-2.95	-2.96	-2.96	-2.97	-2.95	-2.98
49	-3.16	-3.19	-3.22	-3.20	-3.21	-3.23	-3.22	-3.23	-3.22	-3.25
50	-3.33	-3.36	-3.39	-3.37	-3.38	-3.39	-3.39	-3.40	-3.39	-3.42
51	-3.41	-3.44	-3.47	-3.46	-3.47	-3.48	-3.47	-3.48	-3.47	-3.50
Near Panel Center> 52	-3.49	-3.52	-3.55	-3.53	-3.55	-3.55	-3.55	-3.56	-3.55	-3.58
53	-3.50	-3.52	-3.55	-3.53	-3.55	-3.55	-3.56	-3.56	-3.55	-3.58
54	-3.48	-3.50	-3.53	-3.52	-3.53	-3.54	-3.54	-3.55	-3.54	-3.57
55	-3.41	-3.43	-3.46	-3.45	-3.46	-3.47	-3.46	-3.48	-3.46	-3.49
56	-3.14	-3.16	-3.19	-3.17	-3.19	-3.19	-3.19	-3.20	-3.19	-3.22
57	-2.59	-2.62	-2.64	-2.63	-2.64	-2.65	-2.64	-2.66	-2.65	-2.67
58	-1.93	-1.96	-1.98	-1.97	-1.98	-1.99	-1.98	-1.99	-1.98	-2.01
59	-1.20	-1.23	-1.25	-1.24	-1.25	-1.25	-1.25	-1.26	-1.25	-1.27
60	-0.62	-0.64	-0.66	-0.65	-0.66	-0.66	-0.66	-0.67	-0.65	-0.67
61	-0.38	-0.38	-0.40	-0.39	-0.40	-0.40	-0.40	-0.41	-0.39	-0.41
Edge of Gob>										
62	-0.26	-0.27	-0.28	-0.27	-0.28	-0.28	-0.28	-0.29	-0.26	-0.29
63	-0.20	-0.20	-0.22	-0.21	-0.21	-0.22	-0.21	-0.22	-0.19	-0.22
64	-0.17	-0.18	-0.19	-0.18	-0.19	-0.19	-0.19	-0.19	-0.17	-0.19
Edge of Gob>										
65	-0.13	-0.14	-0.15	-0.14	-0.15	-0.15	-0.15	-0.15	-0.13	-0.16
66	-0.12	-0.12	-0.14	-0.13	-0.14	-0.13	-0.13	-0.14	-0.12	-0.14
67	-0.12	-0.12	-0.13	-0.12	-0.13	-0.13	-0.12	-0.13	-0.11	-0.14
68	-0.10	-0.10	-0.12	-0.10	-0.11	-0.11	-0.11	-0.12	-0.09	-0.12
69	-0.10	-0.10	-0.12	-0.10	-0.11	-0.11	-0.11	-0.12	-0.09	-0.12
70	-0.10	-0.10	-0.11	-0.10	-0.11	-0.11	-0.10	-0.12	-0.09	-0.12
71	-0.09	-0.09	-0.10	-0.09	-0.10	-0.10	-0.09	-0.10	-0.08	-0.11
72	-0.02	-0.03	-0.04	-0.03	-0.04	-0.03	-0.03	-0.04	-0.02	-0.04
73	-0.02	-0.02	-0.04	-0.03	-0.03	-0.04	-0.03	-0.04	-0.02	-0.04
74	-0.02	-0.02	-0.03	-0.03	-0.04	-0.03	-0.03	-0.04	-0.01	-0.04
75	-0.01	-0.01	-0.03	-0.02	-0.03	-0.03	-0.02	-0.03	-0.01	-0.03
76	-0.01	-0.01	-0.03	-0.02	-0.02	-0.02	-0.02	-0.03	-0.01	-0.02
77	-0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	0.00	-0.01
78	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.00	-0.01	0.00	-0.01
79	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.01	-0.01	0.01	-0.00
80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

PANEL DESIGNATION>	11-WEST (SECOND PANEL)		
SURVEY NUMBER>	80	81	82
SURVEY DATE>	05/15/92	05/22/92	06/12/92
LONGWALL STATUS>	RECOVERED	RECOVERED	RECOVERED
DAYS AFTER 1st SURVEY>	210	217	238
FACE PLUS @ SURVEY>	1525	1525	1525
STATION NUMBER			
4	-	-	-1.02
5	-	-	-1.15
6	-	-	-1.26
7	-	-	-1.31
8	-	-	-1.33
Edge of Gob>			
9	-	-	-1.38
10	-	-	-1.42
11	-	-	-1.49
Edge of Gob>		-	
12	-	-	-1.57
13	-	-	-1.74
14	-	-	-1.94
15	-	-	-2.16
16	-	-	-2.43
17	-	-	-2.75
18	-	-	-3.00
19	-	-	-3.22
20	-	-	-3.36
21	-	-	-3.46
22	-	-	-3.51
23	-	-	-3.58
24	-	-	-3.64
25	-	-	-3.69
26	-	-	-3.78
27	-	-	-3.78
28	-3.80	-3.81	-3.83
Near Panel Center> 29	-3.80	-3.80	-3.82
30	-3.79	-3.79	-3.84
31	-3.76	-3.76	-3.79
32	-3.74	-3.75	-3.77
33	-3.58	-3.59	-3.61
34	-3.33	-3.34	-3.36
35	-2.68	-2.70	-2.71
36	-2.13	-2.15	-2.17
37	-1.68	-1.69	-1.71
38	-1.47	-1.49	-1.51
39	-1.40	-1.42	-1.43
Edge of Gob>			
40	-1.37	-1.38	-1.40
41	-1.39	-1.40	-1.42
42	-1.46	-1.48	-1.50
Edge of Gob>			
43	-1.59	-1.60	-1.62
44	-1.77	-1.78	-1.80
45	-1.97	-1.99	-2.00
46	-2.26	-2.27	-2.28
47	-2.65	-2.66	-2.68
48	-2.99	-3.00	-3.01
49	-3.26	-3.27	-3.28
50	-3.43	-3.44	-3.44
51	-3.51	-3.52	-3.53
Near Panel Center> 52	-3.59	-3.59	-3.60
53	-3.59	-3.60	-3.60
54	-3.57	-3.58	-3.59
55	-3.00	-3.51	-3.52
56	-3.22	-3.24	-3.24
57	-2.68	-2.69	-2.70
58	-2.02	-2.02	-2.04
59	-1.28	-1.29	-1.30
60	-0.68	-0.68	-0.70
61	-0.41	-0.41	-0.43
Edge of Gob>			
62	-0.29	-0.28	-0.29
63	-0.21	-0.22	-0.22
64	-0.19	-0.18	-0.20
Edge of Gob>			
65	-0.15	-0.15	-0.15
66	-0.13	-0.13	-0.14
67	-0.13	-0.12	-0.13
68	-0.11	-0.11	-0.12
69	-0.11	-0.11	-0.11
70	-0.11	-0.10	-0.11
71	-0.10	-0.09	-0.10
72	-0.03	-0.03	-0.04
73	-0.04	-0.03	-0.04
74	-0.03	-0.03	-0.04
75	-0.03	-0.02	-0.03
76	-0.03	-0.02	-0.03
77	-0.01	-0.01	-0.02
78	-0.00	-0.00	-0.01
79	-0.00	-0.00	-0.01
80	-0.00	-0.00	-0.00

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ADDENDUM TO PAGE 30, PART 3, K(5)(b)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Effect on 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. OVCC 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 included in previous applications available to the Chief.

3. Slip-Prone Soils - A search of the Belmont County Soils Maps (specifically Map No. 45)* revealed several potential slide/slip areas within the following soil types:

Soil Type	Slope	No. of Potential Slide/Slip Areas
LpF	30-70	1
LoE	25-40	14
LoF	40-70	6
BsD	15-25	2
BsE	25-40	3
BsC	8-15	1
RcD	15-25	1

These areas have been mapped on the enclosed 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 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.

*Soil Survey of Belmont County
ODNR, USDA March, 1974

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BELMONT COUNTY, OHIO — SHEET NUMBER 45

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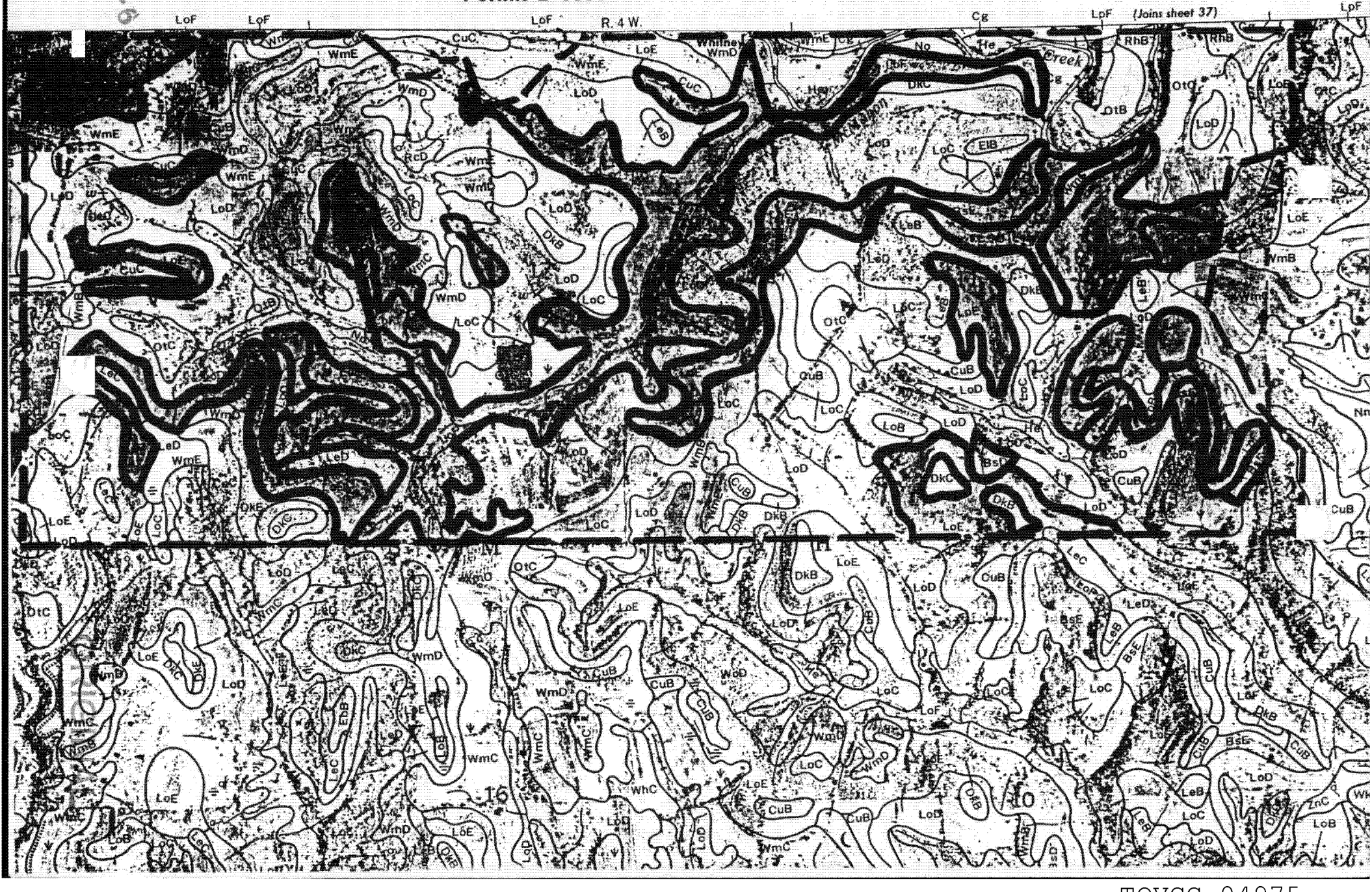
Slip Prone Soil Areas
Addendum to Page 32 and 33, Part 3, K(5) (b)
The Ohio Valley Coal Company
Powhatan No. 6 Mine
Permit D-0360



ADDENDUM TO PAGE 30, K(5)(b)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Effect on 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 dewatering to some dewatering to no dewatering. 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, than before subsidence, and can and has been developed, successfully, as a spring at a lower elevation. 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 months.

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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. Our experience at the Powhatan No. 6 Mine has been 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 been unaffected to date.

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ADDENDUM TO PAGE 30, PART 3, K(5)(c)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Damage Repairs - Surface Lands

If subsidence due to mining operations causes slippage which reduces the value or reasonably foreseeable use of the surface land, OVCC 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, OVCC will arrange alternative mitigatory measures.

1. Notwithstanding its mining rights and without waiving nor releasing any of its rights, OVCC will make repairs of damage caused to surface lands by OVCC's mining operations if the damage reduces the foreseeable use or value of the surface lands. If such damage occurs, OVCC 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 OVCC 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 mitigatory measures will be described.

2. Damage to surface land 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.

   OVCC 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 OVCC 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 OVCC 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. OVCC'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, OVCC 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.

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ADDENDUM TO PAGE 30, PART 3, K(5)(d)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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 Powhatan No. 6 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.

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 Powhatan No. 6 Mine.

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ADDENDUM TO PAGE 30, PART 3, K(5)(d)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
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ANTICIPATED EFFECTS - UTILITY INSTALLATIONS

With respect only to utility installations passing over, under, or through a "permit area," Ohio Administrative Code 1501:13-11-02(B) requires that coal mining operations be conducted in a manner which minimizes damage, destruction, or disruption of services provided by such utility installations, unless otherwise approved by the Chief and installation owner. (See e. g., The East Ohio Gas Company v. Division of Reclamation, Case No. RBR-5-91-072 (March 19, 1992)). However, this application area does not include any "permit area." Gas pipelines which traverse the application area will be subject to tensile and compressive strains and, according to one pipeline expert, the pipeline coating (if any) could be damaged. Conceivably, the lines could break if left unprotected. If the lines remain buried during subsidence, the friction between the soil and the pipe may not allow the pipe to move freely as the subsidence trough develops. Some areas of the pipe will be placed in tension, others in compression. Protection of these lines is addressed in Section K(5)(e) of this Addendum. Other utility .lines (water, electric, etc.), are generally unaffected by subsidence

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ADDENDUM TO PAGE 30, PART 3, K(5)(e)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
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MITIGATING MEASURES

Damage to Dairy Operation

1. This section covers any dairy operations that will be affected by OVCC'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 OVCC 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.

   It is OVCC's experience that dairy farming, and especially milking, will not be interrupted by longwall mining subsidence. Several dairy operations have been undermined by OVCC without interruption of dairy farming. Nonetheless, OVCC will maintain, at OVCC'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, OVCC will prepare the structure at OVCC's expense as follows:

   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.

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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 OVCC. 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, OVCC will provide the following services at OVCC'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 made if necessary. The bulk tank will be re-leveled and re-certified prior to pick-up of the milk at OVCC'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 Health Service Departments for a Grade A dairy farm will be maintained during subsidence at OVCC'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.

Damage to Public Roads

OVCC 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, OVCC, at the request of the road authority, will pay to repair the road surface to its pre-mining condition.

Damage to Gas Pipelines

Several gas pipelines traverse the application area and will be subject to potential damage by subsidence if left unprotected during mining. However, because the easement rights of the

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pipeline operators post-date The Ohio Valley Coal Company's superior mining rights, the pipeline operators are obligated as a matter of law to implement measures necessary to protect their pipelines and the public and avoid any interference with OVCC's right to safely mine without interruption. See, The Ohio Valley Coal Company, et al. v. The East Ohio Gas Company, Case No. 91-CIV-210 (Judgement Entry, February 12, 1992). Gas pipeline operators also are responsible for safeguarding their lines consistent with the federal Natural Gas Pipeline Safety Act, 49 U.S.C. §§1671 et seq., and its implementing regulations.

Without waiving any of its legal rights, The Ohio Valley Coal Company will contact the appropriate persons responsible for each pipeline at least six months prior to undermining to communicate the timing and location of our mining activities in order to allow them to coordinate their mitigation efforts, if needed. In addition, OVCC will notify gas pipeline companies by phone prior to the time when the longwall mining will pass beneath the gas lines and throughout subsidence. OVCC has provided and will continue to provide information and assistance as good neighbors to allow the gas companies to formulate and initiate their monitoring or mitigation program, as they deem necessary, to maintain the integrity of their pipelines, protect the public, and avoid any interference with OVCC's right to safely mine without interruption.

The potential loss of use of agricultural lands crossed by the gas pipelines during the time that such lines may be uncovered is a question of surface owners right-of-way agreements with the gas companies and an issue over which OVCC has no control.

Damage to Public Water Lines

OVCC 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, OVCC, at the request of the public water line authority, will pay to repair the pipeline to its pre-mining conditions.

Damage to Other Utility Lines

OVCC will notify the owner of other utility lines (electric lines) at least six months prior to undermining the lines. In the event that the lines or structures are damaged by subsidence, OVCC, at the request of the utility owner, will pay to repair the structures to their pre-mining conditions.

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ADDENDUM TO PAGE 30, PART 3, K(5)(f)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
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NOTICE OF MINING, PRE-SUBSIDENCE SURVEY, MONITORING OF STRUCTURES

Notice of Mining

OVCC will mail written notice to owners and occupants of surface property or structures of OVCC intent to mine under such property or structures at least six months prior to any mining by OVCC under their property.

Pre-Subsidence Survey

A pre-subsidence survey of all structures to be undermined will be conducted by OVCC 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 OVCC 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. Refusal of the landowner to allow a pre-subsidence survey will release OVCC from the requirement to conduct the survey and repair damage. This survey will be performed in accordance with Underground PPD 90-3.

Monitoring of Structures

After OVCC has completed its pre-subsidence survey, OVCC will notify the Division of Mines and Reclamation if a private agreement (pursuant to OAC 1501:13-12-03(E)) between OVCC and the landowner exists. If no agreement exists, the Division of Mines and Reclamation, after discussions with OVCC, will decide the need for any monitoring of the structure(s). If monitoring is required, OVCC will submit a plan for the monitoring. If, prior to subsidence, a private agreement is reached, OVCC shall be released from any and all monitoring requirements.

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ADDENDUM TO PAGE 30, PART 3, K(5)(g)
THE OHIO VALLEY COAL COMPANY
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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. OVCC will comply with all legal requirements if subsidence damage occurs.

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ADDENDUM TO PAGE 30, PART 3, K(5)(h)
THE OHIO VALLEY COAL COMPANY
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PERMIT D-0360

Monitoring of Structures

After OVCC has completed its pre-subsidence survey, OVCC will notify the Division of Mines and Reclamation if a private agreement (pursuant to OAC 1501:13-12-03(E)) between OVCC and the landowner exists. If no agreement exists, the Division of Mines and Reclamation, after discussions with OVCC, will decide the need for any monitoring of the structure(s). If monitoring is required, OVCC will submit a plan for the monitoring. If, prior to subsidence, a private agreement is reached, OVCC shall be released from any and all monitoring requirements.

D0360-6

ORIGINAL

ADDENDUM TO PAGE 30, PART 3, K(6)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

MEASURES TO BE TAKEN TO AVOID A CONDITION OF
IMMINENT DANGER TO THE HEALTH OR SAFETY
IF THE PUBLIC

Longwall mining has not been projected beneath McMahon Creek in Smith Township, Section 11. The longwall mining has been located no closer that 375 ft from the stream in our latest mining plan. It is believed that this distance is sufficient to prevent dewatering and inflow of surface water into the mine. In Smith Township Section 9, the longwall mining came within 105 ft of Williams Creek without dewatering the stream or causing water inflow into the mine. Similar conditions are expected for McMahon Creek.

0036046

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ORIGINAL

ADDENDUM TO PAGE 30, PART 3, K(7)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Damage to Gas Pipelines

Several gas pipelines traverse the application area and will be subject to potential damage by subsidence if left unprotected during mining. However, because the easement rights of the pipeline operators post-date The Ohio Valley Coal Company's superior mining rights, the pipeline operators are obligated as a matter of law to implement measures necessary to protect their pipelines and the public and avoid any interference with OVCC's right to safely mine without interruption. See, The Ohio Valley Coal Company, et al. v. The East Ohio Gas Company, Case No. 91-CIV-210 (Judgement Entry, February 12, 1992). Gas pipeline operators also are responsible for safeguarding their lines consistent with the federal Natural Gas Pipeline Safety Act, 49 U.S.C. §§1671 et seq., and its implementing regulations.

Without waiving any of its legal rights, The Ohio Valley Coal Company will contact the appropriate persons responsible for each pipeline at least six months prior to undermining to communicate the timing and location of our mining activities in order to allow them to coordinate their mitigation efforts, if needed. In addition, OVCC will notify gas pipeline companies by phone prior to the time when the longwall mining will pass beneath the gas lines and throughout subsidence. OVCC has provided and will continue to provide information and assistance as good neighbors to allow the gas companies to formulate and initiate their monitoring or mitigation program, as they deem necessary, to maintain the integrity of their pipelines, protect the public, and avoid any interference with OVCC's right to safely mine without interruption.

The potential loss of use of agricultural lands crossed by the gas pipelines during the time that such lines may be uncovered is a question of surface owners right-of-way agreements with the gas companies and an issue over which OVCC has no control.

ORIGINAL

D0360-6

11/92

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

132839

Applicant's Name THE OHIO VALLEY COAL COMPANY

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 entity.

Name of business entity OHIO VALLEY RESOURCES INC.

Name MICHAEL D. LOIACONO
Street address SUITE 111 29525 CHAGRIN BOULEVARD
City PEPPER PIKE State OH Zip 44122
EIN SSN (Optional)
Title of position within entity ASST. SECY, CORP. COMPTROLLER
Date position assumed/ended (if appropriate) 05/25/88
Percent of ownership 0 Date of ownership
Location in organizational structure OFFICER

Name ROBERT E. MURRAY
Street address SUITE 111 29525 CHAGRIN BOULEVARD
City PEPPER PIKE State OH Zip 44122
EIN SSN (Optional)
Title of position within entity PRESIDENT, CEO, TREASURER
Date position assumed/ended (if appropriate) 05/25/88
Percent of ownership 100 Date of ownership 05/25/88
Location in organizational structure OFFICER

Name STEPHEN C. ELLIS
Street address 1100 HUNTINGTON BLDG
City CLEVELAND State OH Zip 44115
EIN SSN (Optional)
Title of position within entity SECRETARY
Date position assumed/ended (if appropriate) 05/25/88
Percent of ownership 0 Date of ownership
Location in organizational structure OFFICER

Name
Street address
City State Zip
EIN SSN (Optional)
Title of position within entity
Date position assumed/ended (if appropriate)
Percent of ownership Date of ownership
Location in organizational structure

D0360-6

Submit and identify additional pages necessary to complete response.

ORIGINAL

11/92

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

Applicant's Name THE OHIO VALLEY COAL COMPANY

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 entity.

Name of business entity THE OHIO VALLEY COAL COMPANY

Name STEPHEN C. ELLIS
Street address 1100 HUNTNGTON BLDG
City CLEVELAND State OH Zip 44115
EIN SSN (Optional)
Title of position within entity SECRETARY
Date position assumed/ended (if appropriate) 05/25/88
Percent of ownership 0 Date of ownership
Location in organizational structure OFFICER

Name OHIO VALLEY RESOURCES INC.
Street address SUITE 111 29525 CHAGRIN BOULEVARD
City PEPPER PIKE State OH Zip 44122
EIN SSN (Optional)
Title of position within [illegible]RPORATION
Date position assumed/ended (if appropriate) 05/25/88
Percent of ownership 100 Date of ownership 05/28/88
Location in organizational structure CORPORATION

Name ROBERT E. MURRAY
Street address SUITE 111 29525 CHAGRIN BOULEVARD
City PEPPER PIKE State OH Zip 44122
EIN SSN (Optional)
Title of position within entity PRESIDENT, CEO, TREASURER
Date position assumed/ended (if appropriate) 05/25/88
Percent of ownership 0 Date of ownership
Location in organizational structure OFFICER

Name MICHAEL D. LOIACONO
Street address SUITE 111 29525 CHAGRIN BOULEVARD
City PEPPER PIKE State OH Zip 44122
EIN SSN (Optional)
Title of position within entity ASST SECY & CORP. COMPT.
Date position assumed/ended (if appropriate) 05/25/88
Percent of ownership 0 Date of ownership
Location in organizational structure OFFICER

D0360-6

Submit and identify additional pages necessary to complete response.

ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 Borough Company

Statutory agent This is a partnership

Street Address 4470 Indianola

City Columbus State Ohio Zip 43214

Person's name John R. Thornborough Position

Street Address 4470 Indianola

City Columbus State OH Zip 43214

Person's name Stephen N. Thornborough Position

Street Address 4470 Indianola

City Columbus State OH Zip 43214

Person's name Position

Street Address

City State Zip

Person's name Position

Street Address

City State Zip

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ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 CSX Transportations (formerly B & O Railroad)

Statutory agent _____

Street Address _____

City _____ State _____ Zip _____

Person's Name A. R. Carpenter Position President

Street Address 500 Water Street

City Jacksonville State Florida Zip 32202

Person's Name Pat Aftorra Position V. P./Secretary

Street Address 500 Water Street

City Jacksonville State Florida Zip 32202

Person's Name Mike J. Ward Position Exe. V. P. of Finance

Street Address 500 Water Street

City Jacksonville State Florida Zip 32202

Person's Name _____ Position _____

Street Address _____

City _____ State _____ Zip _____

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 The East Ohio Gas Company

Statutory agent Kenneth R. Long, Esq.

Street Address P. O. Box 5759

City Cleveland State Ohio Zip 44101-0759

Person's name Russell Gifford Position President

Street Address P. O. Box 5759

City Cleveland State Ohio Zip 44101-0759

Person's name Tom D. Newland Position Vice President-Operations

Street Address P.O. Box 5759

City Cleveland State Ohio Zip 44101-0759

Person's name _____ Position _____

Street Address _____

City _____ State _____ Zip _____

Person's name _____ Position _____

Street Address _____

City _____ State _____ Zip _____

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 North American Coal Corporation

Statutory agent C T Corporation System

Street Address 815 Superior Avenue, N.E.

City Cleveland State Ohio Zip 44114

Person's name Thomas A. Koza Position President

Street Address 14785 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

Person's name H. Dean Jacot Position Vice President

Street Address 2000 Schafer STreet, Box No. 5500

City Bismarck State ND Zip 58502-5500

Person's name K. Donald Grischow Position Treasurer

Street Address 14875 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

Person's name Andrew S. Good Position Secretary

Street Address 14785 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 North American Coal Corporation

Statutory agent C T Corporation System

Street Address 815 Superior Avenue, N.E.

City Cleveland State Ohio Zip 44114

Person's name Thomas A. Koza Position Director

Street Address 14785 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

Person's name James F. Melchior Position Director

Street Address 2000 Schafer Street, Box No. 5500

City Bismarck State ND Zip 58502-5500

Person's name Clifford R. Miercort Position Director

Street Address 14785 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

Person's name _____ Position _____

Street Address _____

City _____ State _____ Zip _____

ORIGINAL

D0360-6

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 North American Coal Corporation

Statutory agent C T Corporation System

Street Address 815 Superior Avenue, N.E.

City Cleveland State Ohio Zip 44114

Person's name Daniel G. Mitchell Position Assistant Secretary

Street Address 14785 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

Person's name Herschell A. Cashion Position Director

Street Address 14785 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

Person's name K. Donald Grischow Position Director

Street Address 14785 Preston Road, Suite 100

City Dallas State Texas Zip 75240-7891

Person's name H. Dean Jacot Position Director

Street Address 2000 Schafer Street, Box No. 5500

City Bismarck State ND Zip 58502-5500

ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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

Name of business entity The Ohio Valley Coal Company

Statutory Agent A. & H. Statutory

Address 1100 Huntington Building

City Cleveland State Ohio Zip 44115

Person's Name Robert E. Murray Position President & C.E.O.

Address 56854 Pleasant Ridge Road

City Alledonia State Ohio Zip 43902

Person's Name Stephen C. Ellis Position Secretary

Address 56854 Pleasant Ridge Road

City Alledonia State Ohio Zip 43902

Person's Name _____ Position _____

Address _____

City _____ State _____ Zip _____

Person's Name _____ Position _____

Address _____

City _____ State _____ Zip _____

ORIGINAL

D0360-6

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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

Name of business entity Oglebay Norton Company

Statutory Agent David A. Khun

Address 1100 Superior

City Cleveland State Ohio Zip 44114

Person's Name Renold D. Thopson Position President & C.E.O.

Address 1100 Superior

City Cleveland State Ohio Zip 44114

Person's Name August F. Bradfish Position V.P., Coal & Non-Ferrus

Address 1100 Superior

City Cleveland State Ohio Zip 44114

Person's Name David A. Khun Position Corporate Secretary

Address 1100 Superior

City Cleveland State Ohio Zip 44114

Person's Name Richard J. Kessler Position V.P. Treas. & Finance

Address 1100 Superior

City Cleveland State Ohio Zip 44114

ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

This attachment is to be completed and submitted with the permit application if the response to item A. (11) 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 Rail Corporation

Statutory Agent C.T. Corporation

Address 1578 Union Commerce Building

City Cleveland State Ohio Zip 44115

Person's Name L. S. Cranz Position Chairman

Address Penn Center Plaza

City Philadelphia State PA Zip 19104

Person's Name R. D. Sanborn Position President & C.O.D.

Address Penn Center Plaza

City Philadelphia State PA Zip 19104

Person's Name H. W. Brown Position Sr. V.P. Finance

Address Penn Center Plaza

City Philadelphia State PA Zip 19104

Person's Name B. B. Wilson Position Sr. V.P., Law

Address Penn Center Plaza

City Philadelphia State PA Zip 19104

ORIGINAL

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11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 Marietta Coal Company

Statutory agent George Nicolozakes, President/Chairman of Board

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Vernon P. Gerst Position Vice President Engineering

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Paul Gill Position Vice President Operations

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Steve Gant Position Vice President of Preparation

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Kiki Nicolozakes Position Vice President Administration

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 Marietta Coal Company

Statutory agent George Nicolozakes, President/Chairman of Board

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name John Nicolozakes Position Vice President Planning/Director

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Kiki DeLancey Position Executive Vice President/Director

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Marika Nicolozakes Position Secretary/Treasurer

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Russell Nicolozakes Position Director

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name The Ohio Valley Coal Company

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 Marietta Coal Company

Statutory agent George Nicolozakes, President/Chairman of Board

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Russell Mobley, Jr. Position Shareholder

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Estate for the Benefit of Wilma Gay Mobley Position

Street Address 67705 Friends Church Road

City St. Clairsville State Ohio Zip 43950

Person's name Position

Street Address

City State Zip

Person's name Position

Street Address

City State Zip

ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 3
(IDENTIFICATION OF OTHER BUSINESS ENTITIES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

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 CONSOLIDATION COAL COMPANY

Statutory agent C. T. CORPORATION SYSTEMS

Street Address 815 SUPERIOR AVENUE

City CLEVELAND State OHIO Zip 44114

Person's Name B.R. BROWN Position PRESIDENT

Street Address 1800 WASHINGTON ROAD

City PITTSBURGH State PENNSYLVANIA Zip 15241

Person's Name W.C. KARRAS Position VICE PRESIDENT

Street Address 1800 WASHINGTON ROAD

City PITTSBURGH State PENNSYLVANIA Zip 15241

Person's Name D.L. FAZIO Position SEC./TREA.

Street Address 1800 WASHINGTON ROAD

City PITTSBURGH State PENNSYLVANIA Zip 15241

Person's Name _____ Position _____

Street Address _____

City _____ State _____ Zip _____

ORIGINAL
D0360-6

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name The Ohio Valley Coal Company

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 614 - 926 - 1351
EIN _____ SSN (Optional) _____

Permit No.	State	Name of Regulatory Agency	MSHA No. and Date Issued
D-0360	OH	Div. Of Mines and Reclamation	33-01159 5/25/88

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:

Same as Applicant

D0360-6

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name The Ohio Valley Coal Company

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 Energy Resources, Incorporated
Address P.O. Box 259
City Brockway State PA Zip 15824
Telephone 814 - 265 - 8021
EIN _____ SSN (Optional) _____

Permit No.	State	Name of Regulatory Agency	MSHA No. and Date Issued
33840125	PA	Department of Environmental Protection	36-02695 5/25/88
33860102	PA	Department of Environmental Protection	36-02695 5/25/88
17880102	PA	Department of Environmental Protection	36-02695 5/25/88
33870113	PA	Department of Environmental Protection	36-02695 5/25/88
33830115	PA	Department of Environmental Protection	36-02695 5/25/88
24880101	PA	Department of Environmental Protection	36-02695 5/25/88
24880103	PA	Department of Environmental Protection	36-02695 5/25/88
24890108	PA	Department of Environmental Protection	36-02695 5/25/88
24900102	PA	Department of Environmental Protection	36-02695 5/25/88
24900104	PA	Department of Environmental Protection	36-02695 5/25/88
24900103	PA	Department of Environmental Protection	36-02695 5/25/88
24890101	PA	Department of Environmental Protection	36-02695 5/25/88
24890102	PA	Department of Environmental Protection	36-02695 5/25/88
24960101	PA	Department of Environmental Protection	36-02695 5/25/88

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:

Owned by Parent Entity

D0360-6

ORIGINAL JUN 27 1997

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name The Ohio Valley Coal Company

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 Incorporated
Address 29525 Chagrin Blvd., Suite 111
City Pepper Pike State OH Zip 44122
Telephone 216 - 765 - 1240
EIN _____ SSN (Optional) _____

Permit No.	State	Name of Regulatory Agency	MSHA No. and Date Issued
63841302	PA	PA Dept of Env. Protection	36-00970 1970
63733706	PA	PA Dept of Env. Protection	1211-PA20-0058-03 1970
63723707	PA	PA Dept of Env. Protection	1211-PA20-0058-04 1970

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:

Owned by Same Parent Entity

JUN 27 1997
ORIGINAL

D0360-6

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11/92

O) DEPARTMENT OF NATURAL R)URCES
DIVISION OF RECLAMATION

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name The Ohio Valley Coal Company

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 Suite 111, 29525 Chagrin Blvd
City Pepper Pike State Ohio Zip 44122
Telephone 216 - 765 - 1240
EIN ___ SSN (Optional) ___

Permit No.	State	Regulatory Authority	MSHA No. and Date Issued
D-0230	OH	Division of Reclamation	N/A

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

Owned by Same Parent Entity

D0360-6 ORIGINAL JUN 2 7 1997

11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name The Ohio Valley Coal Company

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 Avenue
City Glassport State PA Zip 15045
Telephone 412 - 672 - 1411
EIN _____ SSN (Optional) _____

Permit No.	State	Name of Regulatory Agency	MSHA No. and Date Issued
02851602	PA	Dept. of Env. Protection	n/a

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:

Owned by Same Parent Entity

ORIGINAL

D0360-6
JUN 2 ~ 1997

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11/92

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 5
(PERMIT LISTING)

Applicant's Name The Ohio Valley Coal Company

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 Oneida Coal Company, Inc
Address 680 Wolf Creek Road
City Sutton State WV Zip 26601
Telephone 304 - 765 - 7338
EIN _____ SSN (Optional) _____

Permit No.	State	Name of Regulatory Agency	MSHA No. and Date Issued
P-154-81	WV	Dept. Of Environmental Protection	n/a
P-62-81	WV	Dept. Of Environmental Protection	n/a
P-2043-89	WV	Dept. Of Environmental Protection	n/a
S-2004-87	WV	Dept. Of Environmental Protection	46-06766 2/28/92
S-71-85	WV	Dept. Of Environmental Protection	46-06766 2/28/92

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:

Formerly owned and controlled by WV Resources, Inc.

D0360-6

ORIGINAL

TOVCC 05010

OHIO DEPARTMENT C ATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 7A
(NOTICES OF VIOLATION)

Applicant's Name: The Ohio Valley Coal Company
Violations for Energy Resources, Inc.; Brockway, PA

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. (1)
SMP 24890108	01/25/94	DER	PA	Failure to maintain adequate erosion and sedimentation controls.	E & S controls were repaired.	Compliance attained and violation abated.
SMP 24600104	02/04/94	DER	PA	Failure to properly dispose of flyash.	Flyash was properly disposed.	Compliance attained and violation abated.
SMP 24880101	06/15/94	DER	PA	Discharge of water exceeding effluent limints.	Treatment was upgraded.	Compliance attained and violation abated.
SMP 33870113	07/25/94	DER	PA	Conducted mining without proper bonding..	Proper bonding was approved.	Compliance attained and violation abated.
PA0102199	04/27/94	DEP	PA	Allowing fugitive dust emissions to pass outside of facility.	Dust control measures were implemented.	Compliance attained and violation abated.
SMP 24980108	04/27/95	DER	PA	Failure to maintain adequate erosion and sedimentation controls.	E & S Controls were repaired.	Compliance attained and violation abated.
SMP 24890101	05/31/95	DER	PA	Operating equipment within 50 ft of loaded blastholes.	Equipment was removed.	Compliance attained and violation abated.
SMP 63723707	08/16/95	DER	PA	Discharge of water exceeding effluent limits.	Treatment was upgraded.	Compliance attained and violation abated.

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

ORIGINAL

D0360-6

OHIO DEPARTMENT O ATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 7A
(NOTICES OF VIOLATION)

Applicant's Name: The Ohio Valley Coal Company
Violations for Oneida Coal Company

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. (1)
S-2004-87(04)	01/28/94	DEP	WV	Failure to pass all runoff from disturbed areas through approved sediment control structure.	Constructed drainage controls.	Compliance attained and violation abated.
UO-359(04)	02/03/94	DEP	WV	Discharge of water exceeding effluent limits affecting areas adjacent to permit.	Constructed additonal ponds.	Compliance attained and violation abated.
D-7-82(05)	02/16/94	DEP	WV	Failure to comply with provisions of subsidence control plan resulting in off site damage.	Boundary applied for.	Compliance attained and violation abated.
UO-620(05)	05/18/94	DEP	WV	Failure to maintain effluent limits.	Treated water.	Compliance attained and violation abated.
S-71-85(27)	06/13/94	DEP	WV	Failure to maintain effluent limits on seep developed outside of containment area.	Submitted modification plan to capture and treat seeps.	Compliance attained and violation abated.
U-1026-91(01)	09/08/94	DEP	WV	Failure to install temporary drainage.	Installed haybails around drainage area.	Compliance attained and violation abated.

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

ORIGINAL D0360-9

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 7A
(NOTICES OF VIOLATION)

Applicant's Name: The Ohio Valley Coal Company
Violations for Oneida Coal Company

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. (1)
D-7-82(6)	08/09/95	DEP	WV	Failure to maintain diversion ditches.	Cleaned ditches.	Compliance attained and violation abated.
D-0047-81(4)	01/28/95	DEP	WV	Failure to maintain effluent standards.	Maintain chemical treatment.	Compliance attained and violation abated.

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

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 7A
(NOTICES OF VIOLATION)

Applicant's Name: The Ohio Valley Coal Company
Violations for Maple Creek Mining, Inc.

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. (1)
961028	03/19/96	DEP	PA	Discharge of water from area disturbed by mining activities on 12/14/95 with an iron content of 179 mg/L.	Ceased discharge.	Compliance attained and violation abated.
951128	08/16/95	DEP	PA	Non-complying discharge from silt pond "A", outfall 003.	Brought discharge into compliance.	Closed.
961061	05/16/96	DEP	PA	Discharge of water from area disturbed by mining activities on 4/2/96 with suspended solids of 192 mg/L.	Ceased discharge immediately.	Compliance attained and violation abated.
961113	09/09/96	DEP	PA	Monitoring point 15 had suspended solids exceeding effluent limits.	System was maintained.	Compliance attained and violation abated.

D0360-6

ORIGINAL

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

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 7A
(NOTICES OF VIOLATION)

Applicant's Name: The Ohio Valley Coal Company

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. (1)

D0360-6

ORIGINAL

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

TEST HOLE LOGS AND ATTACHMENT 13'S
APPLICATION AREA

RECEIVED
JUN 17 1996
DIVISION OF MINES
AND RECLAMATION

JUN 27 1997
D0360-6

ORIGINAL

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE ABREVIATIONS

C	COAL
SH	SHALE
SS	SANDSTONE
LS	LIMESTONE
CL	CLAYSTONE

ORIGINAL

JUN 27 1997

D0360-6

STATE PLANE COORDS
X- 2,439,900
Y- 737,200
ELEV = 910 (EST).

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC		[illegible]
B-2	300.00	CHIPPED		Y				Y
(2072)	8.00	SS	Y					
OGS	12.00	LS	Y			Y		
	4.00	C #8		Y	Y			
	1.00	SH		Y				Y
	6.00	LS	Y			Y		
	9.00	SH/LS		Y		Y		
	3.00	SH		Y				Y
	4.00	SS	Y					
	2.00	SH/SS			Y			Y
	8.00	LS	Y			Y		
	8.00	SH/SS		Y				
	6.00	SS	Y					
	8.00	SH/LS		Y		Y		
	4.00	SH		Y				Y
	7.00	LS	Y			Y		
	8.00	SH/LS		Y		Y		
	3.00	SH		Y				Y
	3.00	SH		Y				Y
	7.00	C #8		Y	Y			
	4.00	SH		Y				Y

FINAL

JUN 27 199

D0360 PAGE

TOVCC 05018

X 2 439,900
Y 200

GEOLOGICAL SURVEY OF OHIO

CORE RECORD

File No. 2072

County Belmont Twp. Smith Quad. St. Clairsville 15' St. Clairsville 7-1/2'

Quarter Tract Section 11

Measured 575 Ft. From North line and 425 Ft. from West line of NW-1/4 NW-1/4

Sec 11, T6N, R4W, On North side of County Rt 56 and McMahon Creek about 50' North of the bridge over the latter

Property owner

Hole No. B-2 Purpose of core Coal Investigation

Driller

Drilling company

Drilled for Atlantic Richfield

Logged by R. J. Lehmann

Elev. EST. 910 Datum for elevation S.L. Date 9-67

Diam. of core

Direction of hole: Vertical ✓ Angle Started Completed 8-21-67

Elev. of ground water Samples: Washed Dry Other

No. of core boxes Disposition of core

Remarks "Chipped" to 580' (Drillers' log)

THE DIVISION OF GEOLOGICAL SURVEY MAKES NO AFFIRMATION CONCERNING THE VALIDITY AND ACCURACY OF THIS INFORMATION

TOP	BOTTOM	THICKNESS	DESCRIPTION
	8'	8'	SAND, Clay and gravel
	20'	12'	Limestone with shale streaks
	24'	4'	Coal Sewickley
	25'	1'	Shale: dark gray
	31'	6'	Limestone
	40'	9'	Shale: Gray with limestone streaks
	43'	3'	Dark shale
	47'	4'	Sandstone
	49'	2'	Shale with coal streaks, gray, soft
	57'	8'	Limestone
	65'	8'	Shale with sandstone streaks, gray
	71'	6'	Sandstone
	79'	8'	Shale with limestone streaks,gray
	83'	4'	Shale: gray, soft
	90'	7'	Limestone
	98'	8'	Shale with limestone streaks, gray
	101'	3'	Shale: gray
	104'	3'	Shale: dark gray
	111'	7'	Coal Pittsburgh
	115'	4'	Shale: gray
	144'	29'	Shale; gray, with limestone streaks
	146'	2'	Shale: red
	180'	34'	Shale: gray with limestone streaks
	197'	17'	Shale: red with gray streaks
	235'	38'	Shale: red
	249'	14'	Shale: sandy, gray
	285'	36'	Shale: red with gray streaks
	296'	11'	Shale: sandy, gray with red streaks
	309'	13'	Sandstone: gray with red shale streaks
	370'	61'	Shale: red with gray shale streaks
	410'	40'	Shale: sandy, gray with red streaks
	422' 6"	12' 6"	Shale: sandy, dark gray
	424'	1' 6"	Coal
	[illegible]	[illegible]	Shale [illegible]

D0360-6

ORIGINAL
JUN 27 1997

TOVCC 05019

EXCHANGE COORDS -
E - 63,082.88
N - 5,059.06

STATE PLANE COORDS -
X - 2,430,208.38
Y - 735,469.79

ELEV = 1172'

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
DG-50	343.50	CHIPPED		Y			Y	Y
	3.00	C #12		Y	Y		Y	Y
	2.00	C @34'		Y	Y		Y	Y
	2.20	C@ 110'		Y	Y		Y	Y
	2.80	C@161'		Y	Y		Y	Y
	4.10	C@287'		Y	Y		Y	Y
	7.33	SH/LS	Y			Y	Y	Y
	1.00	CL		Y			Y	Y
	5.92	SH/LS	Y			Y	Y	Y
	0.67	CL		Y			Y	Y
	0.42	LS	Y			Y		
	1.25	LS/CL		Y		Y	Y	Y
	1.50	SH/LS	Y			Y	Y	Y
	0.33	CL		Y			Y	Y
	0.92	LS	Y			Y		
	4.42	SH/LS/CL		Y		Y	Y	Y
	1.42	C #8		Y	Y		Y	Y
	1.00	C/CL		Y	Y		Y	Y
	5.12	C #8		Y	Y		Y	Y
	2.00	SH/LS	Y			Y	Y	Y

D0360-6

AUG 4 1997

ORIGINAL

Sec 23
T 6
R 4

DUNCAN BROS. DRILLING INC.
New Galilee, Pa. 16141

For Ranco Coal Company, Jadiz, Ohio Tract Barnetth

Hole No. DG-50 Twp. Smith Sec. 23 County Belmont State OHIO

Hole Completed Oct. 28-29, 1971 Driller Harold Himes Surf. El. 1172'

No.	Description of Strata	Thickness Feet	Thickness Inches	Depth from Surface Feet	Depth from Surface Inches
DG-50	#12 coal & shale 3' 0"				
	Little Washington coal 2' 0" at 34' 0"				
	#11 coal 2' 2" at 110' 0"				
	#10 coal 2' 10" at 161' 0"				
	#9 coal 4' 1" at 237' 00				
	#8 coal				
	Top of coal			369	0
	coal	5	2	374	2
	Bottom	1	11	376	1

D0360-6

ORIGINAL

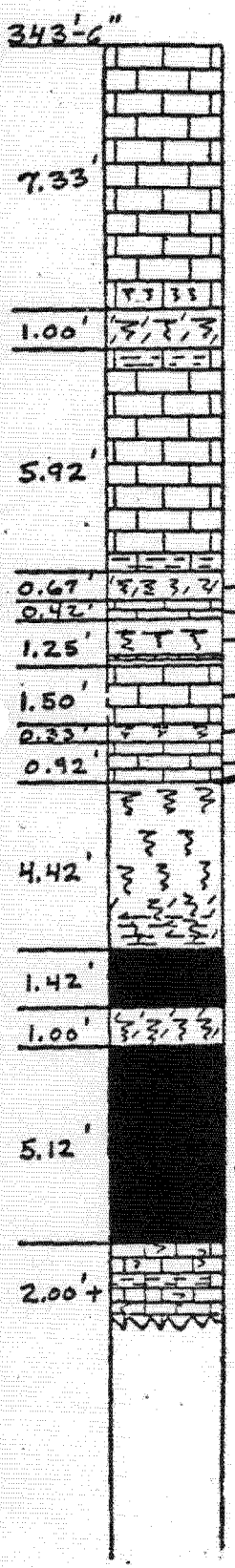
AUG 4 1997

TOVCC 05021

HOLE DG-50 COUNT BELMONT TOWNSHIP S 1TH SECTION 23

ELEVATION 1172 DEPTH 376'-10" DATE 11/11/71 GEOLOGIST Paul A. DePaulis

SCALE 1"= 5.0'



Limestone: Grey-buff, very hard, dense, last 0'-8" sl./shaley

Clay: Grey-green, slickened, soft

Limestone: Dr. to lt. grey, sl./shaley to very hard, dense

Clay: Grey-green, slickened, soft

Limestone: Dk. grey, dense, hard

Clay: Grey-green, soft, limey, w/hard 3" limestone bed

Limestone: Dk.grey,hard,w/sl.shaley zone

Clay: Dark grey, soft

Limestone: Dk. grey, hard, dense

Clay: Grey-green at top to dk. grey-blk. at bottom, soft, loose at top to shaley, slick, firm at bottom. Carbonaceous streaks at bottom

Coal: Sl./shaley and boney at top

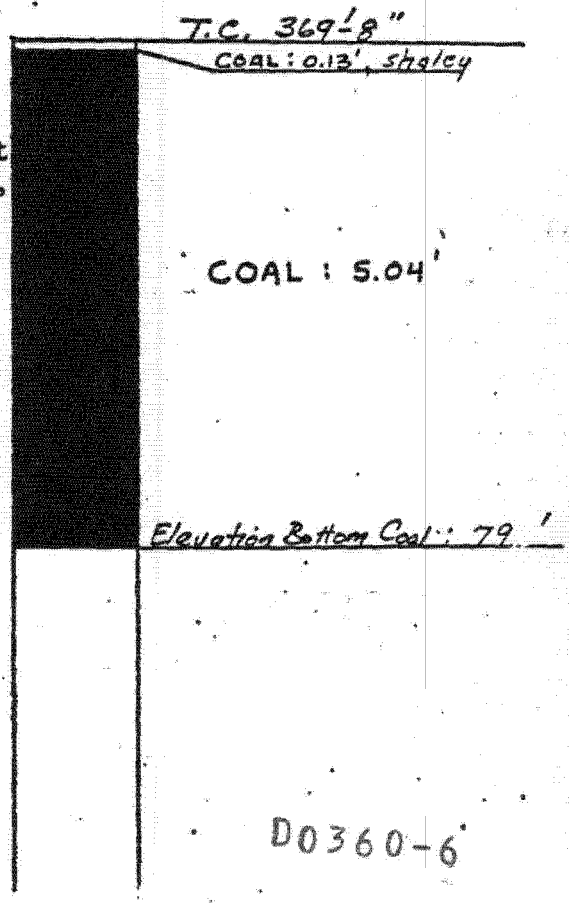
Clay: Dk.grey, slickened, carbon at top

Coal: Pittsburgh #8

Limestone: Blk.-dark grey, c.ayey, firm to hard, 0'-5" sl./shaley zone in middle

COAL

SCALE 1"= 2.0



D0360-6

AUG 4 1997

ORIGINAL

TOVCC 05022

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
DG-51	161.00	CHIPPED		Y			Y	Y
	4.20	C#9@110'		Y	Y		Y	Y
	1.67	LS	Y			Y		
	1.17	SH/LS/CL		Y		Y	Y	Y
	5.00	SH/LS	Y			Y		
	1.67	C/CL		Y	Y		Y	Y
	16.75	SH/LS	Y			Y		
	1.33	CL		Y			Y	Y
	2.08	SH/CL/LS	Y			Y		
	1.92	CL		Y				
	0.92	SH/C/CL		Y	Y		Y	Y
	0.75	CL		Y			Y	Y
	5.04	C #8		Y	Y		Y	Y
	1.54	SH/LS	Y			Y		
	0.67	CL		Y			Y	Y

D0360-6
ORIGINAL
JUN 27 1997

D NCAN BROS. DRILLING IC.

New Galilee, Pa. 16141

For Jenna Coal Company, Cadiz, Ohio Tract [illegible]

Hole No. DG-51 Twp. Smith County [illegible] State [illegible]

Hole Completed 11/4/71 11/-10/71 Driller [illegible] Surf. El. [illegible]

No.	Description of Strata	Thickness Feet	Thickness Inches	Depth from Surface Feet	Depth from Surface Inches
DG-51					
11/4-5-	#9 coal 4' 2" at 110' 0"				
T.O. Property #9	Top of coal			195	0
	Coal #8	5	0	200	0
	Bottom	3	0	203	0
	Sec 18 T 6 R 4				
DG-54	Sec 11 T 6 R 4				
11/2-9-10					
Switch Property					
	#11 coal 3' 0" at 60' 0"				
	#10 coal 1' 7" at 112' 0"				
	#9 Coal 5' 10" at 231' 0"				
	#8 Top of coal			315	0
	Roof	0	7	315	7
	Under	0	10½	316	5½
	Coal #8	4	9½	321	3½
	Bottom	3	0	324	3½

D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05024

DUNCAN BROS. DRILLING INC.

New Galilee, Pa. 16141

For Tenna Coal Company, Cadiz, Ohio Tract [illegible] - [illegible]

Hole No. [illegible] Twp. Smith County ..... State .....

Hole Completed [illegible] Driller [illegible] Surf. El. .....

No.	Description of Strata	Thickness Feet	Thickness Inches	Depth from Surface Feet	Depth from Surface Inches
09-51					
11/4-3-	#9 coal 4' 3" at 110' 0"				
T.D. Frequency [illegible]	Top of coal			195	0
	Sec 18. Coal #8	5	0	200	0
	T 6 Bottom	3	0	203	0
	R 4				
09-54	Sec 11				
	T 6				
11/2-9-10	R 4				
[illegible] County					
	#11 coal 3' 0" at 60' 0"				
	#10 coal 1' 7" at 112' 0"				
	#9 Coal 5' 10" at 231' 0"				
	#8 Top of coal			315	0
	Roof	0	7	315	7
	Binder	0	10½	316	5½
	Coal #8	4	9½	321	3½
	Bottom	3	0	324	3½

D0360-6

JUN 27 1997

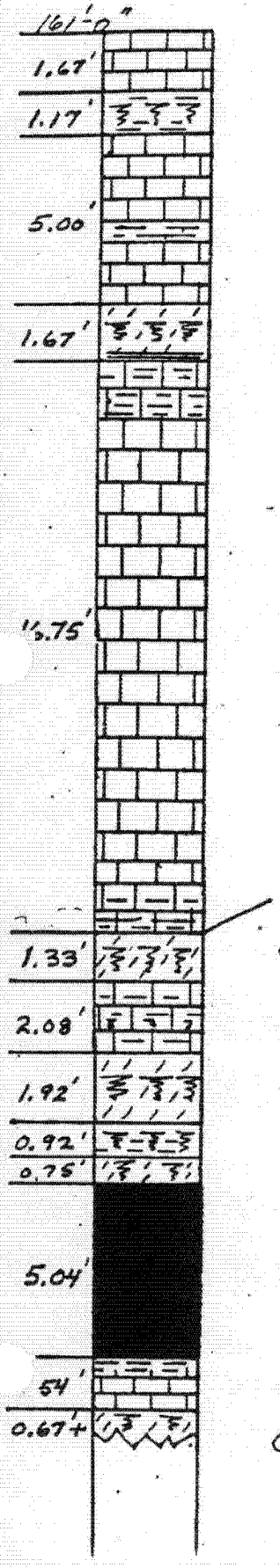
ORIGINAL

TOVCC 05025

HOLE DG-51 COUNT BELMONT TOWNSHIP S. 1TH SECTION 18

ELEVATION 1004.46' DEPTH 202' DATE 11/15/71 GEOLOGIST Paul A. DePaulis

SCALE 1"= 5'



LIMESTONE: dark grey, dense, hard.

CLAY: green, shaley, limey.

LIMESTONE: grey, hard, dense, w/ dk grey, sl./shaley zone.

CLAY: green-grey, soft, broken, slickened @ top to blk., firm/carbonaceous at bottom.

LIMESTONE: dk. grey, hard, dense, upper & lower parts shaley, broken.

CLAY: dark grey, soft, broken, slickened

LIMESTONE: dark grey, shaley, with some clay zones

CLAY: green-brown, soft, broken, slickened.

CLAY: black, sl./coaly, slickened, shaley; soft to firm

CLAY: grey, firm, slickened.

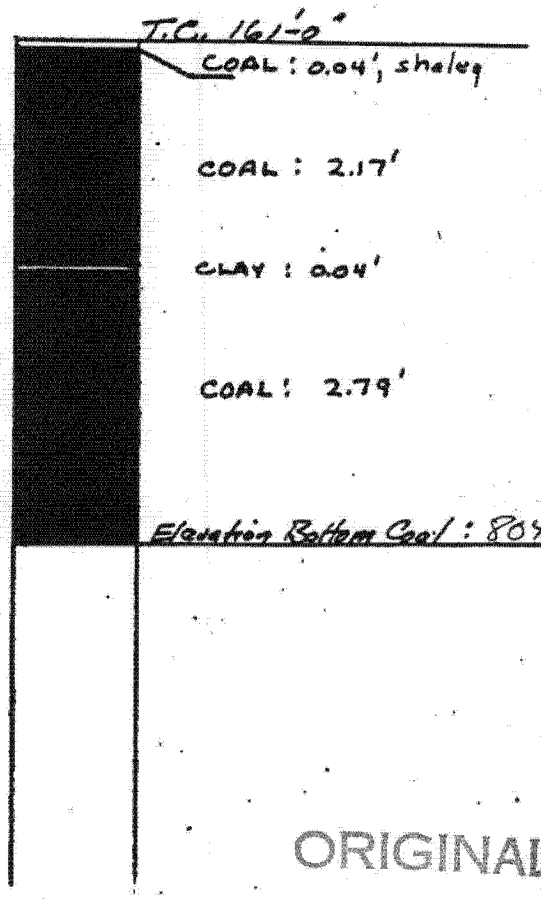
COAL: Pittsburgh #8.

LIMESTONE: black, shaley @ top to grey, massive @ bottom

CLAY: dk. grey, broken, slickened.

COAL

SCALE 1"= 2.0'



ORIGINAL

JUN 27 1997

D-0360-6

TOVCC 05026

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
DG-52	289.00	CHIPPED		Y			Y	Y
	3.00	C #11@ 77'		Y	Y		Y	Y
	0.50	C#10@120'		Y	Y		Y	Y
	4.00	C#9@238'		Y	Y		Y	Y
	0.33	LS	Y			Y		
	0.58	SH/LS/CL		Y		Y	Y	Y
	3.67	LS	Y			Y		
	0.92	CL		Y			Y	Y
	0.33	C/CL		Y			Y	Y
	1.50	CL		Y			Y	Y
	10.83	SH/LS	Y			Y		
	1.50	SH/CL		Y			Y	Y
	0.67	LS	Y			Y		
	0.92	CL		Y			Y	Y
	0.42	LS	Y			Y		
	2.00	CL		Y			Y	Y
	0.58	LS	Y			Y		
	2.42	SH/C/CL		Y			Y	Y
	1.58	C #8		Y	Y		Y	Y
	0.83	CL		Y			Y	Y
	5.06	C #8		Y	Y		Y	Y
	0.83	LS/SH/CL		Y		Y	Y	Y
	0.75	SH/LS	Y			Y	Y	Y
	1.42	LS/SH/CL		Y		Y	Y	Y
	0.25	LS	Y			Y		

D0360-6

ORIGINAL

JUN 27 1997

DUNCAN BROS. DRILLING INC.

New Galilee, Pa. 16141

For [illegible] Coal Company, Cadiz, Ohio Tract Coolman Property Cabling Tract

Hole No. DG-52 Twp. Smith County State

Hole Completed 11/10-11-12/71 11/15-18-19/71 Driller Harold Hines Surf. El.

No.	Description of Strata	Thickness Feet	Thickness Inches	Depth from Surface Feet	Depth from Surface Inches
11/10-11/12/71	Sec 12 T 6 R 4				
DG-52					
Coolman	#11 coal 3' 0" at 77' 0"				
	#10 coal 0' 6" at 120' 0"				
	# 9 coal 4' 0" at 233' 0"				
	# 8 Top of coal			315	1
	Roof coal	1	7	319	3
	Shale binder	0	10	320	6
	Coal #8	5	¾	325	6¾
	Bottom	3	0	328	6¾
11/15-18-19	Sec 18 T 6 R 4				
DG-49					
Arkalus	#12 coal 0' 4" at 72' 0"				
	#11 3' 5" at 91' 6"				
	#11 3' 10" at 189' 0"				
	#10 2' 2" at 251' 6"				
	# 9 4' 0" at 340' 6"				
	#8 4' 10¾" 422' 2"			422	2
	Bottom	3	0	425	2

D0360-6

ORIGINAL

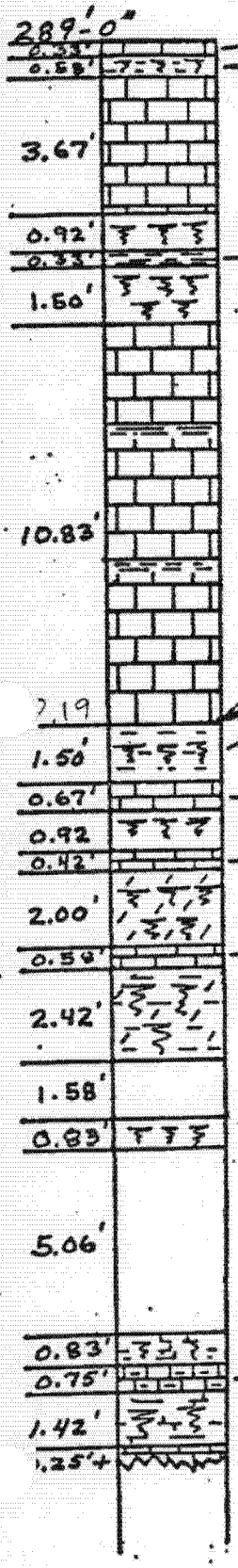
JUN 27 1997

TOVCC 05028

HOLE DG-52 COUNTY BELMONT TOWNSHIP SOUTH SECTION 12

ELEVATION 1125.83' DEPTH 326'-4¾" DATE 11/19/71 GEOLOGIST Paul A. DeFaudis

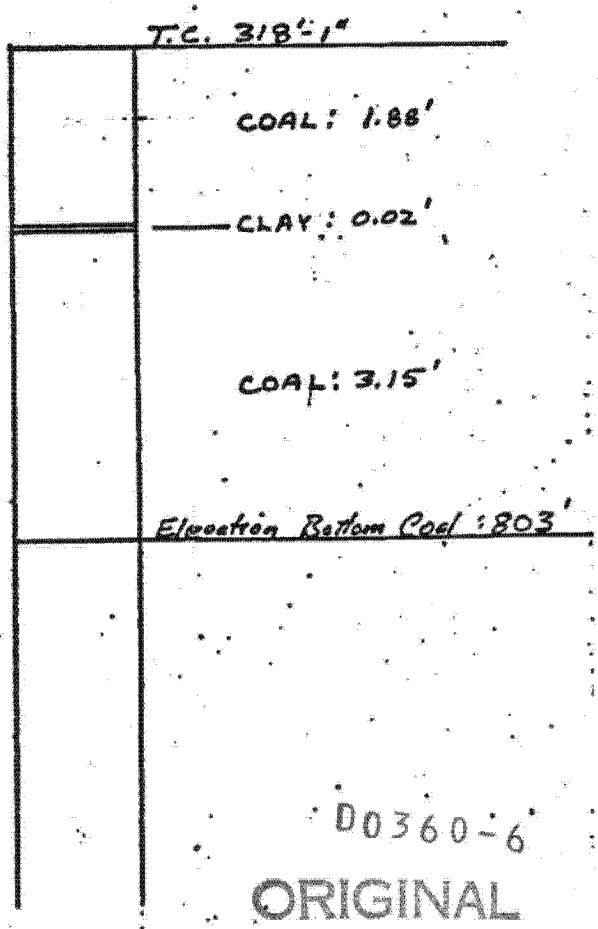
SCALE 1" = 5.0'



Depth	Description
289'-0"	
0.33'	Limestone: Lt. grey, hard, dense
0.58'	Clay: Dk. grey, shaley, firm, calcareous
3.67'	Limestone: Dk. grey, hard, massive
0.92'	Clay: Green, soft, loose
0.33'	Shale: Black, carbonaceous
1.50'	Clay: Dk. grey-black, hard, broken
10.83'	Limestone: Dk. grey, massive, hard, with some shaley zones
2.19	COMPONENT SOLID MATERIAL
1.50'	Clay: Dk. green, loose to firm, slightly shaley
0.67'	Limestone: Dk. grey, hard
0.92	Clay: Green, soft, loose
0.42'	Limestone: Grey, hard, massive
2.00'	Clay: Dk. grey, loose to firm, slickened
0.58'	Limestone: Dk. grey, hard, massive
2.42'	Clay: Grey-green, lose to sl. shaley, slickened with carbonaceous streaks
1.58'	Coal
0.83'	Clay: Grey, firm
5.06'	Coal: #8 Pittsburgh
0.83'	Clay: Dk.grey-blk., firm,shaley, limey
0.75'	Limestone: Dk.grey,hard,sl.shaley
1.42'	Clay: Dark grey,shaley,limey,firm
1.25'+	Limestone: Hard, grey

COAL

SCALE 1" = 2.0'



D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05029

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
DG-53	280.00	CHIPPED		Y			Y	Y
		C @55'		Y	Y		Y	Y
	2.30	C#11@76'		Y	Y		Y	Y
	0.80	C#10@117'		Y	Y		Y	Y
	4.00	C#9@230'		Y	Y		Y	Y
	0.17	CL/SH		Y			Y	Y
	0.67	C #8A		Y	Y		Y	Y
	0.92	CL		Y			Y	Y
	0.42	LS	Y			Y		
	2.83	LS/CL		Y		Y	Y	Y
	3.00	SH/LS	Y			Y		
	2.17	CL		Y			Y	Y
	11.13	LS	Y			Y		
	1.58	CL		Y			Y	Y
	2.38	SH/LS	Y			Y		
	1.08	SH/CL		Y			Y	Y
	3.50	LS	Y			Y		
	1.75	CL		Y			Y	Y
	1.67	SH/LS		Y		Y	Y	Y
	0.42	CL		Y			Y	Y
	5.50	C #8		Y	Y		Y	Y
	0.38	SH/LS	Y			Y		
	2.63	LS/CL		Y		Y	Y	Y

D0360-6

ORIGINAL

JUN 27 1997

Sec 17
T 5
R 4

DUNCAN BROS. DRILLING INC.
New Galilee, Pa. 16141

For Manus Coal Company, Malta, Ohio Tract Thornborough

Hole No. DG ~~#~~ 53 Twp. Smith Sec. 17 County Belmont State Ohio

Hole Completed Nov. 1-2-3, 1971 Driller Harold Hines Surf. El.

No.	Description of Strata			Thickness Feet	Thickness Inches	Depth from Surface Feet	Depth from Surface Inches
	Coal Marker		55' 0"				
	#11 Coal	2' 3"	at 76' 0"				
	#10 Coal	0' 10"	117' 6"				
	#9 Coal	4' 0"	230' 6"				
	#8 Coal		Top of coal			313	8
			Coal	5	6	319	2
			Bottom	3	0	322	2

D0360-6

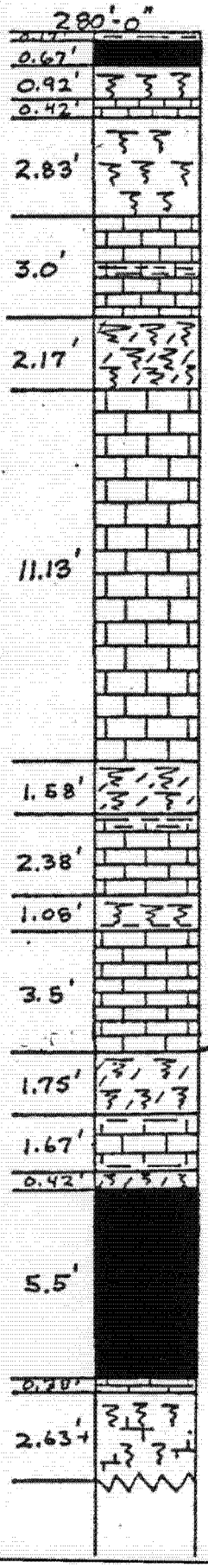
ORIGINAL

JUN 27 1997

HOLE DG-53 COUN BELMONT TOWNSHIP S 1TH SECTION 17

ELEVATION 1112.59' DEPTH 322'-2" DATE 11/12/71 GEOLOGIST Paul A. DePaolo

SCALE 1"= 5.0'



Shale: Dk. grey, clayey, soft
Coal: 8-A, shaley
Clay: Grey, soft, broken
Limestone: Grey, dense, hard

Clay: Green-grey, soft to firm, slightly calcareous

Limestone: Lt. grey-green, dense, very hard, with then black clay, shaley bed

Clay: Grey, soft, broken, slickened

Limestone: Grey, fine, dense, very hard

Clay: Dark grey, slickened, fractured

Limestone: Dark grey, shaley to massive

Clay: Green-grey, soft to shaley

Limestone: Light-dark grey, massive, dense, very hard

Clay: Green-grey, soft, loose, slickened

Limestone: Dark grey, shaley, firm to hard

Clay: Dark grey, soft, slickened

Coal: Pittsburgh #8

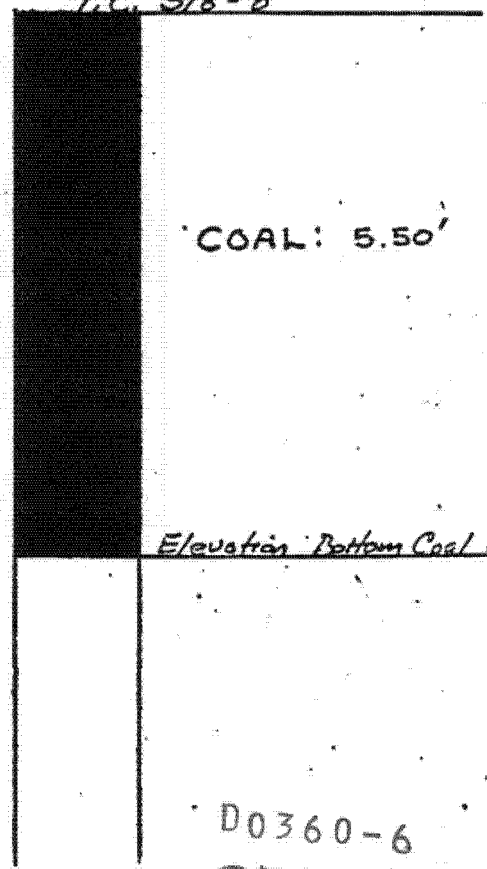
Limestone: Dk. grey, firm to hard, shaley

Clay: Dk. grey, calcareous, firm, silty

COAL

SCALE 1"= 2.0'

T.C. 318'-8"



D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05032

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
DG-54	280.00	CHIPPED		Y			Y	Y
	3.00	C#11@69'		Y			Y	Y
	1.60	C#10@112'		Y			Y	Y
	3.80	C#9@231'		Y			Y	Y
	2.42	LS	Y			Y		
	1.50	LS/SH		Y		Y	Y	Y
	3.08	SH/C/CL		Y	Y		Y	Y
	4.67	LS	Y			Y		
	4.42	SH/LS/CL		Y		Y	Y	Y
	1.83	C/SH		Y			Y	Y
	3.75	SH/CL		Y			Y	Y
	8.00	SH/LS	Y			Y		
	5.75	SH/C/CL		Y	Y		Y	Y
	0.42	C #8		Y	Y		Y	Y
	0.92	CL		Y			Y	Y
	4.75	C #8		Y	Y		Y	Y
	0.33	SH/CL		Y			Y	Y
	2.12	SH/CL/LS	Y			Y		

D0360-6
ORIGINAL
JUN 27 1997

HOLE DG-54 COUNTY BELMONT TOWNSHIP SMITH SECTION 11

ELEVATION 1112.59 DEPTH 323'-7" DATE 11/19/71 GEOLOGIST Paul A. DePaulis

SCALE 1"= 5.0'

280'-0"

2.42'	Limestone: Grey, hard, massive.
1.50'	Shale: Dk. grey, firm, calcareous
3.08'	Clay: Dk. grey, soft, sl. shaley, calcareous
4.67'	Limestone: Grey, hard, dense
4.42'	Clay: Grey-green, broken, slickened, soft to sl. shaley, 3" limestone 6" from top
1.83'	Shale: Black, carbonaceous
3.76'	Clay: Dk. grey, firm, shaley
8.00'	Limestone: Dk. grey-black, hard, massive, dense, slightly shaley zones, bottom broken
	Clay: Green, soft, broken, slickened
5.75	Clay: Grey-dk. grey, soft to firm, sl. shaley, 1" coaly zone 4" from top
0.42'	Coal
0.92'	Clay: Grey, soft
4.75'	Coal: #8 Pittsburgh
0.33'	Clay: Blk., slightly shaley
2.12'+	Limestone: Dk. grey, very shaley to clayey at bottom, bottom slickened and calcareous

COAL

SCALE 1"= 2.0'

T.C. 316'-4"

COAL: 1.92'

CLAY: 0.04'
COAL: 0.46'
CLAY: 0.02'
COAL: 0.42'
CLAY: 0.02'

COAL: 1.88'

Elevation Bottom Coal: 792

ORIGINAL

JUN 27 1997

D0360-6

TOVCC 05034

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-22

*Coordinates: S. 10,293.09 W. 56,694.87 Surface Elevation 1175.46

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		10.0	CM, EM
Claystone		16.6	CV, EV
Sandstone		5.4	CS, ES
Shale		6.5	CM, EM
Coal w/Shale		0.7	AC, CM, EM
Shale		1.6	CM, EM
Limestone		2.0	CS, ES
Claystone		8.0	CV, EV
Coal (No. 12)		2.1	AC, CM, EM
Shale		9.1	CM, EM
Coal		0.2	AC, CM, EM
Claystone		6.8	CV, EV
Shale		25.5	CM, EM
Claystone w/Limestone		12.5	AK, CV, EV
Sandstone w/Shale		17.0	CS, ES
Shale		5.0	CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)

ORIGINAL
JUN 27 1997
D0360-6

TOVCC 05035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-22

*Coordinates: S. 10,293.09 W. 56,694.87 Surface Elevation 1175.46

Lithology	H_2O**	Thickness	Physical Properties
Claystone		7.0	CV, EV
Shale		18.5	CM, EM
Coal w/Shale		3.5	AC, CM, EM
Shale, Calc.		9.1	AK, CM, EM
Sandstone		16.0	CS, ES
Shale		10.0	CM, EM
Claystone		1.4	CV, EV
Coal w/Shale		3.2	AC, CM, EM
Claystone		10.4	CV, EV
Limestone		1.2	AK, CS, ES
Shale, Calc.		15.6	AK, CM, EM
Limestone w/Shale		10.3	AK, CS, ES
Shale, Calc.		6.0	AK, CM, EM
Sandstone		26.0	CS, ES
Limestone w/Shale		45.8	AK, CS, ES
Claystone		4.3	CV, EV
Coal w/Shale (No. 9)		4.2	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6 JUN 27 1997

ORIGINAL

TOVCC 05036

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-22

*Coordinates: S. 10,293.09 W. 56,694.87 Surface Elevation 1175.46

Lithology	H_2O**	Thickness	Physical Properties
Shale w/Limestone		21.5	AK, CM, EM
Claystone		1.1	CV, EV
Black Shale w/Coal		0.3	AC, CM, EM
Limestone w/Shale		24.9	AK, CS, ES
Claystone w/Limestone		11.5	AK, CV, EV
Limestone w/Shale		12.6	AK, CS, ES
Claystone w/Limestone		9.6	AK, CV, EV
Coal w/Claystone		2.0	AC, CM, EM
Coal (No. 8)		5.3	AC, CM, EM
Shale, Calc.		9.1	AK, CS, ES
Claystone		6.0	CV, EV

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	(not analyzed)				
No. 8 Coal	(not analyzed)				
Bottom	(not analyzed)				

*If other than State Plane, indicate coordinate system.

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend

AC = Acid Producing

AK = Alkaline Producing

C = Compactible (V=Very, M=Moderate, S=Slight)

E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6

JUN 27 1997

ORIGINAL

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N86-22	15.00	CASING		Y				
	16.60	CL		Y			Y	Y
	5.35	SS	Y					
	6.45	SH		Y			Y	Y
	0.20	C		Y	Y		Y	
	0.10	SH		Y			Y	Y
	0.40	C		Y	Y		Y	
	1.60	SH		Y			Y	Y
	2.00	LS	Y			Y		
	8.00	CL		Y			Y	Y
	1.10	SH/C		Y	Y		Y	Y
	3.10	C #12		Y	Y		Y	
	9.10	SH		Y			Y	Y
	0.20	C		Y	Y		Y	
	6.80	CL		Y			Y	Y
	25.50	SH		Y			Y	Y
	0.50	LS	Y			Y		
	4.00	CL		Y			Y	Y
	8.00	CL		Y			Y	Y
	17.00	SS/SH		Y			Y	
	5.00	SH		Y			Y	Y
	7.00	CL		Y			Y	Y
	0.50	LS	Y			Y		
	7.50	SH		Y			Y	Y
	5.60	SS/SH		Y			Y	
	4.85	SH		Y			Y	Y
	0.80	C #11		Y	Y		Y	Y
	0.50	SH		Y			Y	Y
	0.20	C #11		Y	Y		Y	Y
	0.25	SH		Y			Y	Y
	0.30	C #11		Y	Y		Y	Y
	1.20	SH		Y			Y	Y
	0.20	C #11		Y	Y		Y	Y
	5.10	SH		Y			Y	Y
	4.00	LS/SH		Y		Y		
	16.00	SS	Y					
	10.00	SS/SH		Y			Y	
	1.40	CL		Y			Y	Y
	2.20	C #10		Y	Y		Y	Y
	0.15	SH		Y			Y	Y
	0.80	C#10		Y	Y		Y	Y
	10.35	CL		Y			Y	Y
	1.20	LS	Y			Y		
	15.60	SS/SH/LS	Y			Y	Y	
	10.30	LS/SH		Y		Y	Y	Y
	6.00	LS/SH		Y		Y	Y	Y
	26.00	SS	Y					
	45.75	LS/SH		Y		Y	Y	Y
	4.25	CL		Y			Y	Y
	0.20	SH		Y			Y	Y
	4.00	C #9		Y	Y		Y	Y
	5.40	LS/SH		Y		Y	Y	Y
	1.90	LS	Y			Y		
	11.50	SH		Y			Y	Y
	2.70	LS	Y			Y		
	1.10	CL		Y			Y	Y
	0.25	SH/C		Y	Y		Y	Y
	24.85	LS/SH		Y		Y	Y	Y
	2.20	CL		Y			Y	Y
	4.50	LS	Y			Y		
	4.80	CL		Y			Y	Y
	12.60	LS/SH		Y		Y	Y	Y
	7.00	CL/LS		Y		Y		
	2.60	CL		Y			Y	Y
	1.00	C #8		Y	Y		Y	Y
	1.00	CL		Y			Y	Y
	2.00	C #8		Y	Y		Y	Y
	0.10	SH		Y			Y	Y
	3.18	C #8		Y	Y		Y	Y
	9.12	LS/SH		Y		Y	Y	

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05038

STATE PLANE COORDS-
X- 436,690.57
Y-730,352.86

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-22 DRILLER: DANIEL HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1175.46 STARTED: NOVEMBER 20, 1986
Coord: S 10,293.09 W 56,694.87 COMPLETED: NOVEMBER 25, 1986

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SECTION 16
NORTHEAST 1/4

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
CASING	15.00		15.00
GREEN CLAYSTONE	16.60		31.60
GRAY SANDSTONE	5.35		36.95
GRAY SHALE	6.45		43.40
COAL	0.20		43.60
GRAY SHALE	0.10		43.70
COAL	0.40		44.10
GRAY SHALE	1.60		45.70
LIMESTONE	2.00		47.70
GRAY CLAYSTONE	8.00		55.70
BLACK SHALE WITH COAL STREAKS	1.10		56.80
COAL	2.10	WASHINGTON (No.12)	58.90
GRAY SHALE	9.10		68.00
COAL	0.20		68.20
GRAY CLAYSTONE	6.80		75.00
GREEN SHALE	25.50		100.50
LIMESTONE	0.50		101.00
GRAY CLAYSTONE	4.00		105.00
GREEN CLAYSTONE	8.00		113.00
GRAY SANDSTONE WITH SHALE PARTINGS	17.00		130.00
GREEN SHALE	5.00		135.00
GREEN CLAYSTONE	7.00		142.00
LIMESTONE	0.50		142.50
GREEN SHALE	7.50		150.00
GRAY SANDY SHALE	5.60		155.60
GRAY SHALE	4.85		160.45
COAL	0.80	WAYNESBURG (No.11) (cont.)	161.25

D0360-6

JUN 27 1997
ORIGINAL

TOVCC 05039

LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-22

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			161.25
GRAY SHALE	0.50	(cont.)	161.75
COAL	0.20		161.95
BLACK SHALE	0.25		162.20
COAL	0.30	WAYNESBURG (No. 11)	162.50
GRAY SHALE	1.20		163.70
COAL	0.20		163.90
GRAY SHALE	5.10		169.00
GREEN LIMY SHALE	4.00		173.00
GRAY SANDSTONE	16.00		189.00
GREEN SANDY SHALE	10.00		199.00
GRAY CLAYSTONE	1.40		200.40
COAL	2.20		202.60
GRAY SHALE	0.15	UNIONTOWN (No. 10)	202.75
COAL	0.80		203.55
GRAY CLAYSTONE	10.35		213.90
LIMESTONE	1.20		214.10
GRAY SANDY SHALE WITH LIME	15.60		229.70
LIMESTONE WITH SHALE	10.30		240.00
GREEN LIMY SHALE	6.00		246.00
GRAY SANDSTONE	26.00		272.00
LIMESTONE WITH SHALE	45.75		317.75
GRAY CLAYSTONE	4.25		322.00
BLACK SHALE	0.20		322.20
COAL	4.00	SEWICKLEY (No. 9)	326.20
GRAY LIMY SHALE	5.40		331.60
LIMESTONE	1.90		333.50
GRAY SHALE	11.50		345.00
LIMESTONE	2.70		347.70
GRAY CLAYSTONE	1.10		348.80
BLACK SHALE WITH COAL	0.25		349.05
LIMESTONE WITH SHALE	24.85		373.90
GREEN CLAYSTONE	2.20		376.10
LIMESTONE	4.50		380.60
GREEN CLAYSTONE	4.80		385.40
LIMESTONE WITH SHALE	12.60		398.00
GRAY CLAYSTONE WITH LIME	7.00		405.00
GRAY CLAYSTONE	2.60		407.60
COAL	1.00	ROOF COAL	408.60
GRAY CLAYSTONE	1.00		409.60
COAL	2.00		411.60
GRAY SHALE	0.10	PITTSBURGH (No. 8)	411.70
COAL	3.18		414.88
GRAY LIMY SHALE	9.12		424.00
GREEN CLAYSTONE	6.00		430.00

TOTAL DEPTH: 430 FEET

16 BAGS CEMENT PLACED IN HOLE

ORIGINAL
D0360-6
JUN 27 1997

TOVCC 05040

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-5

Coordinates: S. 9,530.00 W. 47,390.00 Surface Elevation 1165

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EM
Subsoil		4.0	CV, EM
Weathered Rock		25.0	CM, EM
Shale Dk. w/Coal		12.3	AC, CM, EM
Claystone w/Limestone		17.7	AK, CV, EV
Shale w/Limestone		17.0	AK, CM, EM
Claystone		10.2	AK, CV, EV
Shale w/Sandstone	Yes	7.6	CM, EM,
Sandstone	Yes	8.5	CS, ES
Shale, Sandy		20.7	CM, EM
Shale, Black		5.1	CM, EM
Shale w/LS & SS		11.4	AK, CM, EM
Coal w/Black Shale		2.5	AC, CM, EM
Claystone w/LS & Shale		16.7	AK, CV, EV
Sandstone w/Shale	Yes	20.0	CS, ES
Coal		1.7	AC, CM, EM
Claystone w/Limestone		16.8	AK, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

D0360-6

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

AUG 4 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-5

*Coordinates: S. 9,530.00 W. 47,390.00 Surface Elevation 1165±

Lithology	H_2O**	Thickness	Physical Properties
Shale w/Sandstone		8.2	CM, EM
Claystone w/Limestone		28.9	AK, CV, EV
Shale w/Limestone		52.9	AK, CM, EM
Claystone		7.4	CV, EV
Coal w/Black Shale		4.3	AC, CM, EM
Claystone w/Limestone		22.3	AK, CV, EV
Shale, Black		0.7	AC, CM, EM
Limestone		7.3	AK, CS, ES
Shale w/Limestone		8.1	AK, CM, EM
Claystone w/Limestone		5.3	AK, CV, EV
Shale		5.5	CM, EM
Limestone w/Claystone		5.1	AK, CS, ES
Shale & Claystone, Dk. Gray		2.7	AC, CV, EV
Limestone w/Shale		11.1	AK, CS, ES
Claystone w/Limestone		5.5	AK, CV, EV
Coal & Dk. Shale		3.0	AC, CM, EM
Claystone		1.0	CV, EV

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL
AUG 4 1997
D0360-6

TOVCC 05042

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-5

*Coordinates: S. 9,530.00 W. 47,390.00 Surface Elevation 1165±

Lithology	H_2O**	Thickness	Physical Properties
Coal (No. 8)		5.3	AC, CM, EM
Shale, Dk.		0.2	AC, CM, EM
Claystone w/Limestone		3.1	AK, CV, EV

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	2.63%	2.39%	74.69	20.99	+53.70
No. 8 Coal	8.58%	6.99%	218.40	9.63	+208.80
Bottom	3.40%	3.11%	97.20	131.00	-33.80

*If other than State Plane, indicate coordinate system.
**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL
D0360-6
JUN 27 1997

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N92-5	30.00	CASING		Y				
	1.00	SH		Y			Y	Y
	0.80	C		Y	Y		Y	Y
	3.50	CL		Y			Y	Y
	6.40	SH		Y			Y	Y
	0.60	C		Y	Y		Y	Y
	22.70	SH		Y			Y	Y
	2.00	SH		Y			Y	Y
	13.40	SH		Y			Y	Y
	3.00	SH		Y			Y	Y
	6.60	LS/SH		Y			Y	
Water Bearing Zone	1.70	SS/SH		Y				
Water Bearing Zone	3.00	SS	Y					
Water Bearing Zone	8.30	SS	Y					
	14.00	SH		Y			Y	Y
	4.00	SS/SH		Y				
	3.00	SH		Y			Y	Y
	5.00	SH		Y				
	11.00	SH		Y			Y	Y
	2.40	C		Y	Y		Y	Y
	17.60	SH		Y			Y	Y
	1.70	SS	Y					
	11.30	SS	Y					
	6.50	SH		Y			Y	Y
	0.70	C		Y	Y		Y	Y
	0.60	SH		Y			Y	Y
	0.50	C		Y	Y		Y	Y
	16.70	SH		Y			Y	Y
	2.30	SH		Y			Y	Y
	3.00	SS	Y					
	4.20	SH		Y			Y	Y
	17.30	LS/SH		Y		Y	Y	Y
	3.10	SH		Y			Y	Y
	2.10	LS/SH		Y		Y	Y	Y
	6.40	LS	Y			Y		
	4.00	SH		Y			Y	Y
	49.60	LS/SH		Y		Y	Y	Y
	5.40	SH		Y			Y	Y
	4.30	C		Y	Y		Y	Y
	2.30	SH		Y			Y	Y
	15.70	SH/LS	Y			Y		
	50.50	LS/SH		Y		Y	Y	Y
	7.00	SH		Y			Y	Y
	1.05	C #8		Y	Y		Y	Y
	0.95	SH		Y			Y	Y
	2.15	C#8		Y	Y		Y	Y
	0.10	SH		Y			Y	Y
	3.00	C #8		Y	Y		Y	Y
	5.55	SH		Y			Y	Y

N92-5	pH SU	NEUT. POT. TONS/1000 T AS CACO3	TOTAL SULFUR %	PYRITIC SULFUR %	POT. ACID. TONS/1000T AS CACO3 TOT. SULF.	POT. ACID TONS/1000T AS CACO3 PYR. SULF.	CACO3 DEFICIENCY AS CACO3
ROOF ROCK	7.35	20.99	2.63	2.39	82.19	74.69	53.70
COAL	7.24 ~~7.81~~	9.63 ~~131.00~~	8.58 ~~3.40~~	6.99 ~~3.11~~	268.10 ~~106.00~~	218.40 ~~97.20~~	*208.80 ~~-33.80~~
BOTTOM	7.81 ~~7.24~~	113.00 9.63	3.40 ~~8.58~~	3.11 ~~6.99~~	104.00 ~~268.10~~	97.20 ~~218.40~~	-33.80 ~~208.80~~

* per phone conversation with Dave Bertsch on 8/7/97. GM

* skewed by positive value 208.80

ORIGINAL

AUG 4 1997

D0360-6

STATE PLANE COORDS-
X- 445,98901
Y -731,285.13

DIAMOND DRILL HOLE: N92 - 5

ENGINEER: W. J. SIPLIVY
ELEVATION: 1165±
COORDINATES: S 9,530.00 W 47,390.00

DRILLER: L. J. HUGHES & SONS, INC., LOWELL RITCHIE

TOWNSHIP: SMITH
SECTION: 4, NW 1/4
COUNTY: BELMONT

SURFACE OWNER: JOHN YODER
DATE STARTED: AUGUST 18, 1992
DATE FINISHED: AUGUST 20, 1992

DESCRIPTION

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
30.00	30.00	Non-coring
1.00	31.00	Shale, m. gray
0.85	31.85	Coal WASHINGTON (No. 12)
10.10	41.95	Shale, dk. gray, argillaceous
0.40	42.35	Coal
9.45	51.80	Claystone, m. gray
0.50	52.30	Limestone, l. gray
7.70	60.00	Claystone, m.gray w/Ls nods.
5.10	65.10	Shale, m. gray
2.20	67.30	Shale, red
9.45	76.75	Shale, m. gray w/Ls nods.
0.25	77.00	Limestone, l. gray
2.80	79.80	Claystone, m. gray
7.40	87.20	Claystone, m.gray-red w/Ls nods.
3.70	90.90	Shale, m. gray, sandy
0.35	91.25	Sandstone, l. gray
0.90	92.15	Shale, m. gray w/Fe-stained joints
1.90	94.05	Sandstone, tan w/ Fe-stained joints
0.75	94.80	Shale, m. gray w/Fe-stained joints
8.50	103.30	Sandstone, l. gray-tan w/ Fe-stained joints
5.70	109.00	Shale, m. gray, sandy
3.30	112.30	Shale, m. gray
4.50	116.80	Claystone, m.gray w/Ls nods.
2.45	119.25	Shale, m. gray, silty
1.10	120.35	Sandstone, l. gray w/0.15' Sh ptg.
3.65	124.00	Shale, m. gray, sandy
5.10	129.10	Shale, black
0.80	129.90	Claystone, m. gray
1.05	130.95	Limestone, l. gray
4.10	135.05	Shale, m. gray w/Ls nods.
1.55	136.60	Shale, m. gray, sandy
0.55	137.15	Sandstone, l. gray
2.70	139.85	Shale, m. gray
0.60	140.45	Claystone, dk. gray, calcareous

ORIGINAL

JUN 27 1997

D0360-6

DIAMOND DRILL HOLE: N92 - 5
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.15	140.60	Shale, black, carbonaceous
2.32	142.92	Coal w/occ thin bone ptgs. WAYNESBURG (No. 11)
3.58	146.50	Claystone, m. gray
10.60	157.10	Claystone, m.gray w/Ls nods.
2.50	159.60	Shale, m. gray
1.40	161.00	Sandstone, tan w/ Fe-stained joints
9.85	170.85	Sandstone, l. gray w/occ. Sh. stks.
0.40	171.25	Shale, m. gray
1.80	173.05	Sandstone, l. gray w/occ. Sh. stks.
6.50	179.55	Shale, m. gray
1.76	181.31	Coal UNIONTOWN (No. 10)
		0.50 coal
		0.19 bone
		0.19 shale
		0.07 coal
		0.31 shale
		0.08 bone w/coal
		0.42 coal

		1.76 total seam
10.69	192.00	Claystone, m. gray
1.30	193.30	Limestone, l. gray, nodular
1.50	194.80	Claystone, m.gray w/Ls nods.
1.10	195.90	Limestone, l. gray, no
2.20	198.10	Claystone, m.gray w/Ls nods.
1.20	199.30	Sandstone, l. gray w/occ. Sh. stks.
1.20	200.50	Shale, m. gray, sandy
2.60	203.10	Sandstone, l. gray
3.20	206.30	Shale, m. gray, sandy
2.20	208.50	Claystone, m.gray w/Ls nods.
2.80	211.30	Limestone, l. gray w/ Cs ptgs.
2.20	213.50	Claystone, m. gray
4.10	217.60	Limestone, l. gray w/ Cs ptgs.
1.90	219.50	Claystone, m. gray
1.70	221.20	Limestone, l. gray w/ Cs ptgs.
1.20	222.40	Claystone, m. gray
0.90	223.30	Limestone, l. gray
7.50	230.80	Claystone, m. gray-green
3.30	234.10	Limestone, l. gray
0.45	234.55	Claystone, green
0.65	235.20	Limestone, l. gray
5.20	240.40	Shale, m. gray-green
10.80	251.20	Shale, m. gray w/Ls nods.
0.40	251.60	Limestone, l. gray
8.65	260.25	Shale, m. gray, calcareous
1.80	262.05	Limestone, l. gray
0.75	262.80	Shale, m. gray, calcareous
0.65	263.45	Limestone, l. gray

ORIGINAL

JUN 27 1997

D0360-6

DIAMOND DRILL HOLE: N92 - 5
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.70	264.15	Shale, m. gray
0.65	264.80	Limestone, l. gray
3.85	268.65	Shale, m. gray-green
1.60	270.25	Limestone, l. gray
0.85	271.10	Shale, m. gray
0.50	271.60	Limestone, l. gray
0.80	272.40	Shale, m. gray, calcareous
1.20	273.60	Limestone, l. gray
0.65	274.25	Shale, m. gray, calcareous
2.10	276.35	Limestone, l. gray w/ Cs ptgs.
1.10	277.45	Shale, m. gray
0.90	278.35	Flintclay, m. gray-brown
8.85	287.20	Shale, m. gray, calcareous
0.90	288.10	Limestone, l. gray w/ Cs ptgs.
4.25	292.35	Claystone, dk. gray
0.15	292.50	Shale, m. gray
2.95	295.45	Claystone, dk. gray
4.15	299.60	Coal SEWICKLEY (No. 9)
		2.18 coal
		0.03 pyrite
		0.17 coal
		0.04 bony coal
		0.15 shale
		0.03 coal
		0.04 bony coal
		0.58 coal
		0.04 bone
		0.26 coal
		0.12 bony coal
		0.28 coal
		0.23 bony coal
		4.15 total seam
0.10	299.70	Shale, black, carbonaceous
4.60	304.30	Claystone, m. gray
1.10	305.40	Limestone, l. gray, nodular
5.30	310.70	Claystone, m. gray
7.00	317.70	Shale, dk. gray w/Ls nods.
3.20	320.90	Limestone, l. gray w/ Cs ptgs.
1.10	322.00	Claystone, dk. gray
0.25	322.25	Shale, black, carbonaceous (FISHPOT horizon)
0.45	322.70	Shale, dk. gray
7.30	330.00	Limestone, l. gray
2.80	332.80	Shale, m. gray, calcareous
2.40	335.20	Limestone, l. gray
1.50	336.70	Shale, dk. gray
1.40	338.10	Limestone, l. gray
1.60	339.70	Claystone, m. gray

ORIGINAL

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DIAMOND DRILL HOLE: N92 - 5
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.90	341.60	Limestone, l. gray w/ Cs ptgs.
1.80	343.40	Claystone, dk. gray-green
5.50	348.90	Shale, m. gray
2.90	351.80	Limestone, l. gray w/ Cs ptgs.
2.20	354.00	Claystone, dk. gray-green
0.45	354.45	Shale, dk. gray
1.65	356.10	Claystone, dk. gray
0.20	356.30	Limestone, m. gray, silty
0.40	356.70	Shale, black
1.30	358.00	Limestone, l. gray
0.50	358.50	Shale, m. gray
1.00	359.50	Limestone, m. gray, silty
2.80	362.30	Claystone, m. gray
5.50	367.80	Limestone, l. gray
1.30	369.10	Claystone, m.gray w/Ls nods.
4.20	373.30	Claystone, m. gray
0.30	373.60	Shale, dk. gray
1.60	375.20	Claystone, m. gray
1.04	376.24	ROOF COAL
0.03	376.27	Shale, dk. gray w/pyrite
0.93	377.20	Claystone, m. gray
5.28	382.48	Coal PITTSBURGH (No. 8)
		0.11 bony coal
		1.90 coal
		0.05 fusain
		0.09 coal
		0.12 pyrite
		0.29 coal
		0.05 bone
		1.53 coal
		0.07 bone w/pyrite
		0.89 coal
		0.18 bony coal

		5.28 total seam
0.22	382.70	Shale, dk. gray
1.25	383.95	Claystone, m. gray
1.85	385.80	Claystone, m.gray w/Ls nods.

AMOUNT OF SOFT/HARD ROCK ABOVE PITTSBURGH COAL SEAM

1. SOFT ROCK: 292.3' or 77.50% of core.
2. HARD ROCK: 84.9' or 22.50% of core.

PROJECTED AQUIFERS

1. 91.25' to 103.3'
2. 159.6' to 161'

ORIGINAL

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D0360-6

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-92-5 DRILLER: LOWELL RITCHIE

DRILLING FOR: THE OHIO VALLEY COAL COMPANY, ALLEDONIA, OHIO

SURFACE ELEVATION: STARTED: AUGUST 18, 1992
COMPLETED: AUGUST 20, 1992

LOCATION: OHIO, BELMONT COUNTY

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
CASING	30.00	30.00
GRAY SHALE	1.00	31.00
COAL	0.80	31.80
FIRE CLAY	3.50	35.30
DARK SHALE	6.40	41.70
COAL	0.60	42.30
GRAY SHALE	22.70	65.00
RED AND GREEN SHALE	2.00	67.00
GRAY SHALE	13.40	80.40
RED AND GREEN SHALE	3.00	83.40
GRAY LIMY SHALE	6.60	90.00
SANDY SHALE	1.70	91.70
BROWN SANDSTONE (BROKEN)	3.00	94.70
BROWN AND GRAY SANDSTONE	8.30	103.00
GRAY SHALE	14.00	117.00
SANDY SHALE	4.00	121.00
GRAY SHALE	3.00	124.00
DARK SHALE	5.00	129.00
GRAY SHALE	11.00	140.00
COAL	2.40	142.40
GRAY SHALE	17.60	160.00
BROWN SANDSTONE	1.70	161.70
GRAY SANDSTONE	11.30	173.00
GRAY SHALE	6.50	179.50
COAL	0.70	180.20
GRAY SHALE	0.60	180.80
COAL	0.50	181.30
GRAY SHALE	16.70	198.00

D0360-6

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ORIGINAL

TOVCC 05049

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY

CONTINUATION OF DRILL HOLE NO. N-92-5

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
		198.00
SANDY SHALE	2.30	200.30
GRAY SANDSTONE	3.00	203.30
GRAY SHALE	4.20	207.50
LIMESTONE AND SHALE	17.30	224.80
GREEN SHALE	3.10	227.90
GRAY LIMY SHALE	2.10	230.00
LIMESTONE	6.40	236.40
GRAY SHALE	4.00	240.40
LIMESTONE AND SHALE	49.60	290.00
GRAY SHALE	5.40	295.40
COAL	4.30	299.70
GRAY SHALE	2.30	302.00
GRAY SHALE WITH LIME	15.70	317.70
LIMESTONE AND SHALE	50.50	368.20
GRAY SHALE	7.00	375.20
COAL	1.05	376.25
GRAY SHALE	0.95	377.20
COAL	2.15	379.35
GRAY SHALE	0.10	379.45
COAL	3.00	382.45
GRAY SHALE	5.55	388.00

TOTAL DEPTH: 388 FEET

10 BAGS CEMENT PLACED IN HOLE

ORIGINAL

JUN 27 1997

D0360-6

TOVCC 05050

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-6

*Coordinates: S. 8,430.00 W. 53,560.00 Surface Elevation 1261±

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		15.0	CM, EM
Shale	Yes	7.0	CM, EM
Claystone		14.2	CV, EV
Shale	Yes	6.4	CM, EM
Claystone w/Limestone	Yes	19.4	AK, CV, EV
Shale		6.1	CM, EM
Sandstone	Yes	4.8	CS, ES
Shale		4.0	CM, EM
Claystone w/Limestone		24.6	AK, CV, EV
Shale		2.4	CM, EM
Sandstone w/Shale		11.9	CS, ES
Shale, Dk, w/Coal		4.1	AC, CM, EM
Limestone w/Claystone		9.0	AK, CS, ES
Coal w/Black Shale		4.1	AC, CM, EM
Shale		7.2	CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05051

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-6

*Coordinates: S. 8,430.00 W. 53,560.00 Surface Elevation 1261±

Lithology	H_2O**	Thickness	Physical Properties
Coal w/Black Shale		2.5	AC, CM, EM
Claystone w/Limestone		32.7	AK, CV, EV
Claystone, Black		0.4	AC, CV, EV
Limestone w/Claystone		5.9	AK, CS, ES
Sandstone		6.2	CS, ES
Shale w/Sandstone		15.5	CS, ES
Claystone w/Limestone		5.5	AK, CV, EV
Sandstone		6.0	CS, ES
Shale		2.3	CM, EM
Shale, Black		0.1	AC, CM, EM
Claystone w/Limestone		4.0	AK, CV, EV
Shale		3.2	CM, EM
Shale, w/SS & CS		7.9	CM, EM
Coal w/Black Shale		4.2	AC, CM, EM
Claystone w/Limestone		11.8	AK, CV, EV
Shale w/Sandstone		11.5	CM, EM
Sandstone		25.6	CS, ES

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-6

*Coordinates: S. 8,430.00 W. 53,560.00 Surface Elevation 1261±

Lithology	H_2O**	Thickness	Physical Properties
Black Shale w/Coal		2.1	AC, CM, EM
Claystone w/LS & Shale		13.5	AK, CV, EV
Sandstone		4.4	CS, ES
Shale		5.1	CM, EM
Claystone w/Limestone		30.0	AK, CV, EV
Shale, w/Limestone		58.0	AK, CM, EM
Coal (No. 9)		3.2	AC, CM, EM
Claystone w/Limestone		22.3	AK, CV, EV
Shale, Black		0.5	AC, CM, EM
Limestone w/Claystone		17.9	AK, CS, ES
Claystone w/Shale		6.0	CV, EV
Limestone w/Claystone		18.4	AK, CS, ES
Claystone		3.7	CV, EV
Black Shale w/Claystone		1.0	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL

D0360-6 JUN 27 1997

TOVCC 05053

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-6

*Coordinates: S. 8,430.00 W. 53,560.00 Surface Elevation 1261±

Lithology	H_2O**	Thickness	Physical Properties
Claystone		1.0	CV, EV
Coal (No. 8)		4.6	AC, CM, EM
Claystone w/Shale		5.0	AK, CM, EM

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	1.60%	1.47%	45.94	24.83	+21.11
No. 8 Coal	5.19%	3.27%	102.19	8.86	+93.33
Bottom	0.97%	0.79%	24.69	535.00	-510.31

*If other than State Plane, indicate coordinate system.
**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6 ORIGINAL
JUN 27 1997

ADDENDUM TO APPLICATION/HYDROLOGY MAP
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

There is a minor discrepancy in the actual elevation of test hole N92-06 and the topographic mapping. The surveyed elevation of the test hole is 1261 ft. However, it plots below the 1260 contour line. This discrepancy is not believed to be a problem since the mapping is accurate to within a half contour interval, or ten ft.

D0360-6
ORIGINAL

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N92-6	20.00	CASING		Y				
	20.00	CL		Y			Y	Y
	7.20	SH		Y			Y	Y
	1.00	LS	Y			Y		
	6.80	SH		Y			Y	Y
	5.00	SH		Y			Y	Y
	6.00	SH		Y			Y	Y
	6.50	SH		Y			Y	Y
	4.80	SS/SH		Y			Y	
	31.70	SH		Y			Y	Y
	3.20	SS	Y					
	2.10	SS	Y					
	4.40	SS/SH		Y			Y	
	5.10	SH		Y			Y	Y
	0.60	C		Y	Y		Y	Y
	10.60	LS/SH		Y		Y	Y	Y
	3.00	C		Y	Y		Y	Y
	1.60	SH		Y			Y	Y
	2.60	SS/SH		Y			Y	
	3.60	SH		Y			Y	Y
	1.00	C		Y	Y		Y	Y
	0.80	SH		Y			Y	Y
	40.40	SH		Y			Y	Y
	4.00	SS	Y					
	14.00	SS/SH		Y			Y	
	7.70	SH/LS	Y			Y		
	6.00	SS/SH		Y			Y	
	14.30	SH		Y			Y	Y
	0.30	BC		Y	Y		Y	Y
	2.50	C		Y	Y		Y	Y
	1.20	SH/C		Y	Y		Y	Y
	16.00	SH		Y			Y	Y
	7.60	SS/SH		Y			Y	
	25.50	SS	Y					
	1.50	SH		Y			Y	Y
	0.50	C		Y	Y		Y	Y
	4.80	SH		Y			Y	Y
	8.60	SH/LS	Y			Y	Y	
	4.30	SS	Y					
	2.20	SS/SH		Y			Y	
	2.00	SH		Y			Y	Y
	17.00	LS/SH		Y		Y	Y	Y
	6.00	SH		Y			Y	Y
	60.60	LS/SH		Y		Y	Y	Y
	5.40	SH		Y			Y	Y
	3.30	C		Y	Y		Y	Y
	4.50	SH		Y			Y	Y
	1.80	LS	Y			Y		
	16.40	SH/LS	Y			Y		
	13.80	LS	Y			Y		
	1.50	SH		Y			Y	Y
	7.10	LS						
	2.60	SH		Y			Y	Y
	29.10	LS/SH		Y		Y	Y	Y
	2.60	SH		Y			Y	Y
	0.20	SH		Y			Y	Y
	0.50	SH		Y			Y	Y
	0.30	SH		Y			Y	Y
	1.00	SH		Y			Y	Y
	4.64	C #8		Y	Y		Y	Y
	4.66	SH		Y			Y	Y

N92-6	pH SU	NEUT. POT. TONS/1000 T AS CACO3	TOTAL SULFUR %	PYRITIC SULFUR %	POT. ACID. TONS/1000T AS CACO3 TOT. SULF.	POT. ACID TONS/1000T AS CACO3 PYR. SULF.	CACO3 DEFICIENCY AS CACO3	
ROOF ROCK	9.57	24.83	1.60	1.47	50.00	45.94	21.11	
COAL	7.91	8.86	5.19	3.27	162.19	102.19	+93.33	+
BOTTOM	9.29	535.00	0.97	0.79	30.31	24.69	-510.30	-

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05056

STATE PLANE COORDS -
X - 2,439,791.02
Y - 732,272.68

DIAMOND DRILL HOLE: N92 - 6

ENGINEER: W. J. SIPLIVY
ELEVATION: 1261±
COORDINATES: S 8,430.00 W 53,560.00

DRILLER: L. J. HUGHES & SONS, INC., LOWELL RITCHIE

TOWNSHIP: SMITH
SECTION: 10, NW 1/4
COUNTY: BELMONT

SURFACE OWNER: ANTONIA WIERZBICKI
DATE STARTED: JULY 28, 1992
DATE FINISHED: JULY 31, 1992

DESCRIPTION

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
20.00	20.00	Non-coring
7.00	27.00	Shale, brown w/ Fe-stained joints
14.20	41.20	Claystone, m. gray-red (7' lost)
6.35	47.55	Shale, m. gray w/Fe-stains upper 3'
0.90	48.45	Limestone, l. gray
2.90	51.35	Claystone, m. gray-red
1.00	52.35	Limestone, l. gray
3.60	55.95	Claystone, m. gray w/Fe-stains
4.60	60.55	Claystone, red (2.6' lost)
5.85	66.40	Claystone, m.gray w/Ls nods, Fe-stained
0.50	66.90	Limestone, l. gray
4.45	71.35	Shale, m. gray
1.60	72.95	Shale, m. gray, sandy, Fe-stained upper 0.25'
4.75	77.70	Sandstone, l. gray w/occ. Sh. stks, Fe-stained joints
4.00	81.70	Shale, m. gray
1.60	83.30	Claystone, m. gray-green
1.10	84.40	Limestone, l. gray, Fe-stained
5.00	89.40	Claystone, m. gray-green
0.55	89.95	Limestone, l. gray
1.70	91.65	Claystone, m. gray
1.75	93.40	Limestone, l. gray, Fe-stained
1.50	94.90	Claystone, dk. gray
9.70	104.60	Claystone, m.gray w/Ls nods.
1.70	106.30	Limestone, l. gray, nodular, Fe-stained
2.40	108.70	Shale, m. gray
2.65	111.35	Sandstone, l. gray, Fe-stained
3.50	114.85	Sandstone, l. gray
1.35	116.20	Shale, m. gray, sandy, Fe-stained
1.10	117.30	Sandstone, tan, Fe-stained
0.70	118.00	Shale, m. gray, sandy
0.80	118.80	Sandstone, tan, Fe-stained
1.80	120.60	Shale, m. gray, sandy
3.35	123.95	Shale, dk. gray
0.30	124.25	Bony coal

D0360-6

ORIGINAL

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DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.40	124.65	Shale, black, carbonaceous
0.75	125.40	Limestone, l. gray
1.20	126.60	Claystone, m. gray, carb bott 0.2'
1.15	127.75	Limestone, l. gray, Fe-stained
1.10	128.85	Shale, dk. gray, Fe-stained upper 0.2'
0.20	129.05	Limestone, l. gray
2.00	131.05	Claystone, dk. gray
1.25	132.30	Limestone, m. gray, silty
1.60	133.90	Claystone, m.gray w/Ls nods.
1.00	134.90	Shale, black
0.49	135.39	Shale, black w/coal stks.
2.61	138.00	Coal (WASHINGTON No. 12) upper split
		1.12 bony coal
		0.07 shale
		1.42 coal

		2.61 total seam
1.40	139.40	Shale, m. gray
0.55	139.95	Shale, m. gray, sandy
5.25	145.20	Shale, m. gray w/Ss stks.
0.61	145.81	Shale, black, carbonaceous
0.99	146.80	Coal, WASHINGTON (No. 12) lower split
		0.60 coal
		0.13 bone
		0.26 coal

		0.99 total seam
0.90	147.70	Shale, black
6.15	153.85	Claystone, m. gray
1.15	155.00	Limestone, l. gray, hard
14.20	169.20	Claystone, m.gray w/Ls nods.
8.30	177.50	Shale, m. gray
0.20	177.70	Limestone, l. gray
2.70	180.40	Claystone, m. gray
0.35	180.75	Claystone, black, carbonaceous
2.55	183.30	Claystone, m. gray
3.30	186.60	Limestone, l. gray w/ Cs ptgs.
6.20	192.80	Sandstone, l. gray w/occ. Sh. stks.
2.90	195.70	Shale, m. gray, sandy
2.30	198.00	Sandstone, l. gray
0.45	198.45	Shale, m. gray
1.25	199.70	Sandstone, l. gray w/occ. Sh. stks.
4.15	203.85	Shale, m. gray, sandy
0.40	204.25	Sandstone, l. gray
4.00	208.25	Shale, m. gray, sandy

ORIGINAL
D0360-6
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DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.45	208.70	Claystone, dk. gray
5.00	213.70	Claystone, m. gray w/ occ. limestone nodules
6.00	219.70	Sandstone, l. gray
2.30	222.00	Shale, m. gray
0.10	222.10	Shale, black, carbonaceous
1.80	223.90	Claystone, m. gray
0.35	224.25	Limestone, l. gray
1.80	226.05	Claystone, m. gray
3.20	229.25	Shale, m. gray, sandy
1.70	230.95	Claystone, m. gray
0.90	231.85	Shale, m. gray
0.20	232.05	Sandstone, l. gray
1.90	233.95	Shale, m. gray
0.35	234.30	Shale, black, carbonaceous
2.50	236.80	Coal WAYNESBURG (No. 11)
1.22	238.02	Shale, black, carbonaceous
0.08	238.10	Bony coal
11.80	249.90	Claystone, m.gray w/Ls nods.
2.90	252.80	Shale, m. gray, sandy
4.50	257.30	Sandstone, l. gray w/occ. Sh. stks.
4.10	261.40	Shale, m. gray, sandy
25.60	287.00	Sandstone, l. gray, massive texture
1.57	288.57	Shale, black, carbonaceous
0.53	289.10	Coal UNIONTOWN (No. 10)
4.90	294.00	Claystone, m. gray
1.70	295.70	Limestone, l. gray
6.90	302.60	Shale, m. gray, calcareous
4.35	306.95	Sandstone, l. gray
5.10	312.05	Shale, m. gray, sandy
1.75	313.80	Limestone, l. gray
4.25	318.05	Claystone, m.gray w/Ls nods.
3.90	321.95	Limestone, l. gray w/ Cs ptgs.
14.35	336.30	Claystone, m.gray-greeen w/Ls nods.
3.40	339.70	Shale, m. gray, calcareous
1.25	340.95	Limestone, l. gray
0.70	341.65	Claystone, green
0.40	342.05	Limestone, l. gray
9.10	351.15	Shale, m. gray, calcareous
3.10	354.25	Limestone, l. gray, nodular
1.80	356.05	Shale, m. gray
1.20	357.25	Limestone, l. gray
3.00	360.25	Shale, m. gray, calcareous
2.30	362.55	Limestone, l. gray
3.75	366.30	Shale, m. gray, calcareous
2.50	368.80	Limestone, l. gray
0.90	369.70	Shale, m. gray-green
0.70	370.40	Limestone, l. gray
2.75	373.15	Shale, green

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ORIGINAL
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DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.60	374.75	Limestone, l. gray
0.90	375.65	Shale, m. gray
3.50	379.15	Limestone, l. gray w/ Cs ptgs.
2.90	382.05	Shale, m. gray, calcareous
1.20	383.25	Flintclay, brown
8.10	391.35	Shale, m. gray
2.65	394.00	Limestone, l. gray w/ Cs ptgs.
1.80	395.80	Shale, m. gray
4.20	400.00	Claystone, dk. gray
3.24	403.24	Coal, SEWICKLEY (No. 9)
		1.17 coal
		0.06 bone coal
		0.28 coal
		0.10 bone
		0.15 shale
		1.48 coal

		3.24 total seam
1.56	404.80	Claystone, m. gray, firm
1.15	405.95	Limestone, l. gray
3.00	408.95	Shale, m. gray
1.50	410.45	Limestone, l. gray
3.65	414.10	Shale, m. gray
7.30	421.40	Shale, m. gray, calcareous w/occ. SS stks.
1.40	422.80	Limestone, m. gray, silty
0.30	423.10	Claystone, m. gray, calcareous
1.15	424.25	Limestone, l. gray
1.25	425.50	Claystone, dk. gray
0.45	425.95	Shale, black, carbonaceous (FISHPOT HORIZON)
7.85	433.80	Limestone, l. gray w/ Cs ptgs.
3.00	436.80	Shale, m. gray, calcareous
2.95	439.75	Limestone, l. gray
1.70	441.45	Claystone, dk. gray-green
3.20	444.65	Limestone, l. gray w/ Cs ptgs.
0.60	445.25	Claystone, green
3.40	448.65	Limestone, l. gray
2.55	451.20	Claystone, dk. gray-green, calcareous
3.50	454.70	Limestone, l. gray
1.95	456.65	Claystone, dk. gray-green
0.65	457.30	Shale, dk. gray
3.40	460.70	Claystone, m. gray
9.15	469.85	Limestone, l. gray
0.40	470.25	Claystone, m. gray
2.90	473.15	Limestone, l. gray
0.40	473.55	Claystone, m. gray
2.50	476.05	Limestone, l. gray
0.55	476.60	Claystone, m. gray
1.80	478.40	Limestone, l. gray, nodular

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ORIGINAL

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DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.25	478.65	Claystone, m. gray
0.40	479.05	Limestone, m. gray, silty
1.90	480.95	Claystone, m.gray w/Ls nods.
1.80	482.75	Claystone, m. gray
0.25	483.00	Shale, black
0.44	483.44	Claystone, m. gray
0.29	483.73	Shale, black
1.00	484.73	Claystone, m. gray
4.61	489.34	Coal (PITTSBURGH No. 8)
		0.04 bone
		1.56 coal
		0.01 shale
		2.92 coal
		0.08 bone

		4.61 total seam
0.35	489.69	Shale, dk. gray, calcareous, hard
4.65	494.34	Claystone, dk. gray w/Ls nodules

AMOUNT OF SOFT/HARD ROCK ABOVE PITTSBURGH COAL SEAM

1. SOFT ROCK: 336.73' or 69.5% of core.
2. HARD ROCK: 148' or 30.5% of core.

PROJECTED AQUIFERS

1. 20' to 27'.
2. 41.2' to 44.2'.
3. 52.35' to 55.95' (minor).
4. 60.55' to 66.4' (minor).
5. 71.35 to 77.7'.
6. 83.3' to 84.4' (minor).
7. 91.65' to 93.4' (minor).
8. 104.6' to 118.8' (major).
9. 126.6' to 128.85'.

ORIGINAL

JUN 27 1997

D0360-6

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-92-6 DRILLER: LOWELL RITCHIE

DRILLING FOR: THE OHIO VALLEY COAL COMPANY, ALLEDONIA, OHIO

SURFACE ELEVATION: STARTED: JULY 28, 1992
COMPLETED: JULY 31, 1992

LOCATION: OHIO, BELMONT COUNTY

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
CASING	20.00	20.00
BROWN CLAYSHALE	20.00	40.00
GRAY SHALE	7.20	47.20
LIMESTONE	1.00	48.20
GRAY SHALE	6.80	55.00
RED SHALE	5.00	60.00
BROWN AND GRAY SHALE	6.00	66.00
GRAY SHALE	6.50	72.50
SANDY SHALE	4.80	77.30
GRAY SHALE	31.70	109.00
BROWN SANDSTONE	3.20	112.20
GRAY SANDSTONE	2.10	114.30
SANDY SHALE	4.40	118.70
GRAY SHALE	5.10	123.80
COAL AND BONE	0.60	124.40
GRAY LIMY SHALE	10.60	135.00
COAL	3.00	138.00
GRAY SHALE	1.60	139.60
SANDY SHALE (BROKEN)	2.60	142.20
DARK GRAY SHALE	3.60	145.80
COAL	1.00	146.80
DARK SHALE	0.80	147.60
GRAY SHALE	40.40	188.00
GRAY SANDSTONE	4.00	192.00
SANDY SHALE	14.00	206.00
GRAY SHALE WITH LIME	7.70	213.70
GRAY SANDSTONE WITH SHALE STREAKS	6.00	219.70

ORIGINAL

JUN 9 - 1997

D0360-6

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY

CONTINUATION OF DRILL HOLE NO. N-92-6

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
		219.70
GRAY SHALE	14.30	234.00
BONE	0.30	234.30
COAL	2.50	236.80
DARK SHALE WITH COAL BANDS	1.20	238.00
GRAY SHALE	16.00	254.00
SANDY SHALE	7.60	261.60
GRAY SANDSTONE	25.50	287.10
GRAY SHALE	1.50	288.60
COAL	0.50	289.10
GRAY SHALE	4.80	293.90
GRAY SHALE WITH LIME	8.60	302.50
GRAY SANDSTONE	4.30	306.80
SANDY SHALE	2.20	309.00
GRAY SHALE	2.00	311.00
LIMESTONE AND SHALE	17.00	328.00
GREEN SHALE	6.00	334.00
LIMESTONE AND SHALE	60.60	394.60
GRAY SHALE	5.40	400.00
COAL	3.30	403.30
GRAY SHALE	4.50	407.80
LIMESTONE	1.80	409.60
GRAY SHALE WITH LIME	16.40	426.00
LIMESTONE	13.80	439.80
GRAY SHALE	1.50	441.30
LIMESTONE	7.10	448.40
GRAY SHALE	2.60	451.00
LIMESTONE AND SHALE	29.10	480.10
GRAY SHALE	2.60	482.70
DARK SHALE	0.20	482.90
GRAY SHALE	0.50	483.40
DARK SHALE	0.30	483.70
GRAY SHALE	1.00	484.70
COAL	4.64	489.34
GRAY SHALE	4.66	494.00

TOTAL DEPTH: 494 FEET

16 BAGS CEMENT PLACED IN HOLE

ORIGINAL

JUN 27 1997

D0360-6

TOVCC 05063

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-8

*Coordinates: S. 11,436.62 W. 57,286.66 Surface Elevation 1311.67

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		15.0	CM, EM
Shale	Yes	7.5	CM, EM
Claystone, Black	Yes	2.0	AC, CV, EV
Claystone w/Limestone		10.5	AK, CV, EV
Limestone	Yes	1.1	AK, CS, ES
Claystone w/Limestone		3.7	AK, CV, EV
Limestone	Yes	2.5	AK, CS, ES
Claystone		5.0	CV, EV
Shale	Yes	0.7	CM, EM
Claystone		6.2	CV, EV
Shale	Yes	4.7	CM, EM
Claystone		16.3	CV, EV
Shale	Yes	15.7	CM, EM
Claystone w/Limestone		23.6	AK, CV, EV
Claystone, Black		0.4	AC, CV, EV

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL
D0360-6
JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-8

*Coordinates: S. 11,436.62 W. 57,286.66 Surface Elevation 1311.67

Lithology	H_2O**	Thickness	Physical Properties
Limestone		1.2	AK, CS, ES
Claystone w/Limestone		14.4	AK, CV, EV
Shale w/Limestone		11.0	CM, EM
Claystone w/Limestone		24.9	AK, CV, EV
Shale w/Sandstone		8.9	CM, EM
Claystone w/Limestone		9.8	AK, CV, EV
Shale, Black		0.3	AC, CM, EM
Limestone w/Shale		2.7	AK, CS, ES
Claystone		7.3	CV, EV
Black Shale w/Coal		13.5	AC, CM, EM
Shale w/Limestone		0.9	CM, EM
Claystone w/Limestone		7.8	AK, CV, EV
Shale w/Limestone		22.8	AK, CM, EM
Claystone		3.9	CV, EV
Claystone, Black		0.6	AC, CV, EV
Claystone w/Limestone		7.1	AK, CV, EV

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL

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JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-8

*Coordinates: S. 11,436.62 W. 57,286.66 Surface Elevation 1311.67

Lithology	H_2O**	Thickness	Physical Properties
Sandstone & Shale		23.3	CS, ES
Claystone, Black		0.6	AC, CV, EV
Shale w/Sandstone		5.7	CM, EM
Claystone w/Limestone		5.4	AK, CV, EV
Shale w/Sandstone		11.4	CM, EM
Coal w/ Dk. Shale		5.0	AC, CM, EM
Claystone		6.3	CV, EV
Sandstone w/Shale		33.9	CS, ES
Coal (No. 10)		2.3	AC, CM, EM
Shale		7.7	CM, EM
Shale, Black		0.2	AC, CM, EM
Claystone w/Limestone		6.3	AK, CV, EV
Shale		9.9	CM, EM
Shale w/Limestone		24.5	AK, CM, EM
Sandstone		3.4	CS, ES
Limestone w/Claystone		6.7	AK, CS, ES

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL
JUN 27 1997
D0360-6

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-8

*Coordinates: S. 11,436.62 W. 57,286.66 Surface Elevation 1311.67

Lithology	H_2O**	Thickness	Physical Properties
Shale w/Limestone		58.2	AK, CM, EM
Coal (No. 9)		3.9	AC, CM, EM
Shale w/Limestone		22.7	AK, CM, EM
Black Shale w/Coal		0.2	AC, CM, EM
Shale w/Limestone		5.0	AK, CM, EM
Limestone w/Shale		22.7	AK, CS, ES
Shale w/Limestone		16.4	AK, CM, EM
Limestone w/Claystone		14.1	AK, CS, ES
Coal w/Black Shale		1.8	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL

JUN 27 1997

D0360-6

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-8

*Coordinates: S. 11,436.62 W. 57,286.66 Surface Elevation 1311.67

Lithology	H_20**	Thickness	Physical Properties
Coal (No. 8)		5.6	AC, CM, EM
Shale w/LS &CS		4.7	AK, CM, EM

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	2.72%	2.46%	76.88	9.21	+67.67
No. 8 Coal	4.32%	1.76%	55.00	3.76	+51.24
Bottom	2.03%	1.81%	56.60	519.00	-462.40

*If other than State Plane, indicate coordinate system.**Indicate water bearing stratum with an asterisk (*) under column labelled H_20.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL

D0360-6 JUN 27 1997

TOVCC 05068

STATE PLANE COORDS
X - 2,436,119.68
Y - 729,198.75

DIAMOND DRILL HOLE: N92 - 8

ENGINEER: W. J. SIPLIVY
ELEVATION: 1311.67
COORDINATES: S 11436.62 W 57286.66

DRILLER: L. J. HUGHES & SONS, INC., LOWELL RITCHIE

TOWNSHIP: SMITH
SECTION: 16, SW 1/4
COUNTY: BELMONT

SURFACE OWNER: CHARLES H. PELKEY
DATE STARTED: AUGUST 4, 1992
DATE FINISHED: AUGUST 7, 1992

DESCRIPTION

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
20.00	20.00	Non-coring
3.70	23.70	Shale, m. gray, sandy w/Fe-stained joints
3.80	27.50	Shale, tan w/Fe-stained joints
2.00	29.50	Claystone, black w/fe-stains
0.40	29.90	Claystone, m. gray
0.35	30.25	Limestone, tan
1.15	31.40	Claystone, m. gray
0.15	31.55	Sandstone, l. gray
8.45	40.00	Claystone, m. gray (7.45' lost)
1.10	41.10	Limestone, l. gray w/Fe-stains
2.40	43.50	Claystone, m. gray
1.10	44.60	Limestone, l. gray
0.20	44.80	Claystone, m. gray
2.45	47.25	Limestone, l. gray w/Fe-stains
2.55	49.80	Claystone, m. gray
2.40	52.20	Claystone, tan
0.65	52.85	Shale, tan w/Fe-stained joints
6.15	59.00	Claystone, m. gray (4.65' lost)
4.70	63.70	Shale, olive-tan w/Fe-stained joints
0.80	64.50	Claystone, m. gray
15.50	80.00	Claystone, red (4.65' lost)
9.80	89.80	Shale, olive-red w/Fe-stained joints
3.20	93.00	Shale, red w/Fe-stained joints
2.70	95.70	Shale, m. gray
3.70	99.40	Claystone, m. gray
0.70	100.10	Limestone, l. gray w/ Cs ptgs., nodular
5.30	105.40	Claystone, m. gray w/red stks.
0.50	105.90	Shale, m. gray, sandy
4.50	110.40	Claystone, m. gray
3.60	114.00	Shale, m. gray
2.00	116.00	Claystone, m. gray-red
0.75	116.75	Limestone, m. gray, nodular
1.00	117.75	Claystone, m. gray
0.50	118.25	Limestone, l. gray
1.05	119.30	Claystone, m.gray w/Ls nods.
0.40	119.70	Claystone, black

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DIAMOND DRILL HOLE: N92 - 8
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.20	120.90	Limestone, l. gray
14.35	135.25	Claystone, m.gray w/Ls nods.
0.65	135.90	Sandstone, l. gray w/occ. Sh. stks.
10.35	146.25	Shale, m. gray, sandy
4.40	150.65	Claystone, m. gray-green
1.15	151.80	Limestone, l. gray
3.20	155.00	Claystone, m. gray
0.25	155.25	Limestone, l. gray
2.40	157.65	Claystone, m. gray
1.55	159.20	Limestone, l. gray, nodular
0.95	160.15	Claystone, m.gray w/Ls nods.
1.60	161.75	Shale, m. gray, calcareous
1.00	162.75	Limestone, l. gray
2.40	165.15	Claystone, m.gray w/Ls nods.
1.40	166.55	Limestone, l. gray
4.60	171.15	Claystone, m. gray
0.25	171.40	Sandstone, l. gray
0.60	172.00	Shale, m. gray, sandy
1.95	173.95	Sandstone, l. gray
6.05	180.00	Shale, m. gray
3.00	183.00	Claystone, m. gray
0.95	183.95	Limestone, l. gray
2.00	185.95	Claystone, m. gray
3.50	189.45	Shale, m. gray
0.35	189.80	Limestone, l. gray
0.25	190.05	Shale, black
0.20	190.25	Limestone, l. gray
0.80	191.05	Shale, dk. gray
1.70	192.75	Limestone, l. gray
7.30	200.05	Claystone, m. gray
0.70	200.75	Shale, black, carbonaceous
0.05	200.80	Sandstone, l. gray
0.80	201.60	Shale, black, grades sandy
0.30	201.90	Sandstone, l. gray w/coal stks.
0.10	202.00	Shale, black, carbonaceous
2.10	204.10	Coal (WASHINGTON No. 12) upper split
0.65	204.75	Claystone, dk. gray
2.40	207.15	Shale, dk. gray, sandy
5.25	212.40	Shale, black, carbonaceous
1.10	213.50	Coal (WASHINGTON No. 12) lower split
		0.37 coal
		0.26 shale w/coal stks.
		0.47 coal

		1.10 total seam
0.12	213.62	Shale, dk. gray, calcareous
0.15	213.77	Limestone, l. gray
0.60	214.37	Shale, dk. gray-black
7.73	222.10	Claystone, m.gray w/Ls nods.
12.50	234.60	Shale, m. gray w/Ls nods.

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DIAMOND DRILL HOLE: N92 - 8
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
9.90	244.50	Shale, m. gray, sandy
0.40	244.90	Limestone, l. gray
3.90	248.80	Claystone, m. gray
0.60	249.40	Claystone, dk. gray-black
2.65	252.05	Claystone, m. gray-green
1.50	253.55	Claystone, red-green
2.90	256.45	Claystone, m.gray w/Ls nods.
3.60	260.05	Sandstone, l. gray
5.35	265.40	Shale, m. gray, sandy
1.80	267.20	Sandstone, l. gray
0.10	267.30	Shale, m. gray
1.40	268.70	Sandstone, l. gray w/occ. Sh. stks.
2.30	271.00	Shale, m. gray, sandy
6.60	277.60	Sandstone, l. gray
2.10	279.70	Shale, m. gray
0.60	280.30	Claystone, dk. gray-black
5.20	285.50	Shale, m. gray w/Ls nods.
0.50	286.00	Sandstone, l. gray
5.35	291.35	Claystone, m.gray w/Ls nods.
5.00	296.35	Shale, m. gray, sandy
0.30	296.65	Sandstone, l. gray
2.45	299.10	Shale, m. gray, sandy
3.67	302.77	Shale, m. gray
0.25	303.02	Shale, black
3.28	306.30	Coal, WAYNESBURG (No. 11)
		1.88 coal
		0.16 bone w/coal stks.
		0.10 coal
		0.06 bone
		0.74 coal
		0.10 bone
		0.08 coal
		0.10 shale
		0.06 coal
		3.28 total seam
0.20	306.50	Claystone, dk. gray
1.05	307.55	Shale, dk. gray
0.15	307.70	Coal
6.25	313.95	Claystone, m. gray
1.00	314.95	Shale, dk. gray
3.60	318.55	Sandstone, l. gray w/occ. Sh. stks.
0.30	318.85	Shale, m. gray
0.85	319.70	Sandstone, l. gray
0.20	319.90	Shale, m. gray
8.80	328.70	Sandstone, l. gray w/occ. Sh. stks.
0.30	329.00	Shale, m. gray, sandy
15.70	344.70	Sandstone, l. gray w/45 deg. fracture @ 337.4'
3.10	347.80	Shale, m. gray, sandy

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DIAMOND DRILL HOLE: N92 - 8
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
2.29	350.09	Coal (UNIONTOWN No. 10) 0.50 bony coal 0.59 coal 0.50 bony coal 0.29 shale w/pyrite 0.41 coal ---- 2.29 total seam
7.66	357.75	Shale, m. gray
0.15	357.90	Shale, black, carbonaceous
1.00	358.90	Claystone, m. gray w/Ls nods.
0.40	359.30	Limestone, l. gray
4.90	364.20	Claystone, m. gray
9.90	374.10	Shale, m. gray, sandy
0.50	374.60	Claystone, m. gray
0.80	375.40	Limestone, l. gray
1.50	376.90	Shale, m. gray, calcareous
0.60	377.50	Limestone, l. gray, nodular
4.90	382.40	Shale, m. gray
4.20	386.60	Limestone, m. gray, silty
1.75	388.35	Shale, m. gray
0.85	389.20	Limestone, l. gray
4.70	393.90	Shale, m. gray, calcareous
0.90	394.80	Limestone, l. gray, nodular
3.80	398.60	Shale, m. gray, sandy
3.40	402.00	Sandstone, l. gray
0.85	402.85	Claystone, gray-green
2.75	405.60	Limestone, l. gray
0.40	406.00	Claystone, gray-green
1.80	407.80	Limestone, l. gray, nodular
0.25	408.05	Claystone, green
0.60	408.65	Limestone, l. gray
2.65	411.30	Shale, m. gray-green
0.70	412.00	Limestone, l. gray
6.10	418.10	Shale, m. gray-green, calcareous
1.70	419.80	Limestone, l. gray, nodular
13.70	433.50	Shale, m. gray w/Ls nods.
1.30	434.80	Limestone, l. gray
0.90	435.70	Shale, m. gray-green
0.70	436.40	Limestone, l. gray
1.25	437.65	Claystone, green
1.85	439.50	Shale, m. gray, calcareous
1.60	441.10	Limestone, l. gray
0.80	441.90	Shale, m. gray, calcareous
0.40	442.30	Limestone, m. gray, silty
1.00	443.30	Shale, m. gray
2.30	445.60	Limestone, l. gray, nodular
1.00	446.60	Shale, m. gray
1.10	447.70	Flintclay, brown
1.05	448.75	Shale, m. gray

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ORIGINAL
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DIAMOND DRILL HOLE: N92 - 8
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.05	449.80	Flintclay, brown
1.40	451.20	Shale, m. gray-green
6.80	458.00	Shale, m. gray, calcareous
2.60	460.60	Limestone, l. gray w/ Cs ptgs.
2.20	462.80	Shale, m. gray
4.00	466.80	Claystone, dk. gray
3.90	470.70	Coal, SEWICKLEY (No. 9)
		1.92 coal
		0.02 bone
		0.54 coal
		0.03 shale
		1.07 coal
		0.17 bony coal
		0.15 coal

		3.90 total seam
5.00	475.70	Shale, dk. gray
1.50	477.20	Limestone, l. gray
11.90	489.10	Shale, m. gray
2.90	492.00	Limestone, l. gray w/ Cs ptgs.
1.40	493.40	Claystone, dk. gray-green
0.17	493.57	Shale, black
0.06	493.63	Coal (FISHPOT)
1.17	494.80	Shale, m. gray-green
0.35	495.15	Limestone, l. gray
0.35	495.50	Shale, m. gray w/Ls nods.
0.90	496.40	Limestone, m. gray, silty
1.20	497.60	Shale, m. gray
0.75	498.35	Limestone, m. gray, silty
0.30	498.65	Shale, m. gray-green
3.65	502.30	Limestone, l. gray w/ Cs ptgs.
2.40	504.70	Shale, m. gray, calcareous
0.95	505.65	Flintclay, brown
0.90	506.55	Claystone, dk. gray
1.15	507.70	Limestone, l. gray
1.45	509.15	Shale, dk. gray
2.80	511.95	Limestone, l. gray
0.85	512.80	Shale, dk. gray-green
4.20	517.00	Limestone, l. gray w/ Cs ptgs.
2.20	519.20	Shale, m. gray
2.10	521.30	Limestone, m. gray, silty
2.60	523.90	Shale, m. gray, calcareous
6.10	530.00	Shale, m. gray
2.35	532.35	Limestone, l. gray
0.40	532.75	Shale, m. gray
1.05	533.80	Limestone, l. gray
0.80	534.60	Shale, m. gray
1.10	535.70	Limestone, l. gray
0.60	536.30	Shale, m. grzy, calcareous
1.40	537.70	Limestone, l. gray

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DIAMOND DRILL HOLE: N92 - 8
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.35	538.05	Claystone, dk. gray-green
2.60	540.65	Limestone, l. gray, nodular
0.45	541.10	Claystone, m. gray
2.35	543.45	Limestone, l. gray, nodular
0.30	543.75	Claystone, dk. gray-green
2.35	546.10	Limestone, l. gray w/ Ca ptgs.
1.10	547.20	Claystone, m. gray
0.95	548.15	Limestone, l. gray
2.49	550.64	Claystone, m. gray
0.20	550.84	Shale, dk. gray
1.00	551.84	Claystone, m. gray
0.21	552.05	Shale, black, carbonaceous
0.65	552.70	Coal (ROOF COAL)
0.09	552.79	Shale, dk. gray
0.04	552.83	Coal
0.85	553.68	Claystone, dk. gray
5.62	559.30	Coal (PITTSBURGH No. 8)
		0.06 bony coal
		2.19 coal
		0.05 bone
		1.92 coal
		0.10 bone w/pyrite nod.
		1.07 coal
		0.23 coal w/bone

		5.62 total seam
0.22	559.52	Shale, dk. gray, calcareous
0.14	559.66	Claystone, m. gray, firm
1.80	561.46	Shale, m. gray, calcareous
0.26	561.72	Claystone, m. gray, firm
0.20	561.92	Limestone, l. gray
0.48	562.40	Shale, dk. gray, calcareous
0.65	563.05	Claystone, m. gray
0.95	564.00	Limestone, l. gray

AMOUNT OF SOFT/HARD ROCK ABOVE PITTSBURGH COAL SEAM

1. SOFT ROCK: 428.68' or 77.4% of core.
2. HARD ROCK: 125' or 22.6% of core.

PROJECTED AQUIFERS

1. 20' to 29.5'.
2. 40' to 41.1' (minor).
3. 44.8' to 47.25' (minor).
4. 52.2' to 52.85' (minor).
5. 59' to 63.7'.
6. 80' to 93'.

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ATTACHMENT 13
(GEOLOGY REPORT – Underground Workings)

Applicant Ohio Valley Coal Company Drill Hole # N94-1

State Plane Coords: X Y Surface Elevation 1198

LITHOLOGY	H2O*	THICKNESS	PHYSICAL PROPERTIES
CASING		20.00	
SILTSTONE		5.35	ALK, COMP, EROD
SHALE		4.65	ALK, COMP, EROD
LIMESTONE	*	4.75	ALK
LIMESTONE		5.25	ALK
SHALE		5.40	COMP, EROD
SHALE	*	2.64	COMP, EROD
SHALE		1.50	COMP
SHALE		1.30	COMP
SHALE	*	1.25	COMP, EROD
SHALE		2.30	COMP
LIMESTONE		1.65	ALK
SHALE		1.52	COMP, EROD
LIMESTONE		0.32	ALK
SHALE		1.42	COMP
SHALE		0.70	COMP
LIMESTONE		2.10	ALK
SHALE		8.20	COMP
SHALE		1.10	COMP
COAL (NO. 12)		3.40	AC, EROD
SHALE		5.20	COMP, EROD
SHALE		2.85	COMP, EROD
COAL		0.82	COMP, EROD
SHALE		0.25	COMP, EROD
SHALE		6.85	ALK, COMP
SANDSTONE		5.30	ALK
SANDSTONE		3.93	HARD
SANDSTONE		14.42	ALK
LIMESTONE		2.85	ALK
LIMESTONE		0.46	ALK
CLAYSTONE		2.01	ALK, COMP, EROD
CLAYSTONE		5.19	COMP, EROD
SHALE		2.38	ALK, COMP, EROD
LIMESTONE		3.90	ALK
SHALE		4.29	ALK, COMP
SANDSTONE		0.90	HARD
SHALE		1.16	COMP
SANDSTONE		2.70	ALK
SANDSTONE		5.44	HARD
SHALE		0.92	COMP, EROD

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ATTACHMENT 13
(GEOLOGY REPORT – Underground Workings)

Applicant Ohio Valley Coal Company Drill Hole # N94-1

State Plane Coords: X 2430593.48 Y 731503.76 Surface Elevation 1198

LITHOLOGY	H2O*	THICKNESS	PHYSICAL PROPERTIES
SHALE		0.59	COMP, EROD
SHALE		0.50	COMP, EROD
SHALE		0.20	COMP, EROD
LIMESTONE		4.26	ALK
SANDSTONE		3.62	ALK, EROD
SHALE		1.71	COMP, EROD
CLAYSTONE		0.14	COMP, EROD
LIMESTONE		0.32	ALK
CLAYSTONE		3.45	ALK, COMP, EROD
SHALE		0.58	ALK, COMP
SANDSTONE		6.28	ALK
CLAYSTONE		0.75	ALK, COMP, EROD
SHALE		10.98	COMP, EROD
COAL (NO. 11)		**3.41**	AC, EROD
CLAYSTONE		11.69	ALK, COMP, EROD
LIMESTONE		4.10	ALK
SHALE		7.10	ALK, COMP, EROD
SANDSTONE		4.37	HARD
SHALE		0.98	COMP, EROD
SANDSTONE		1.57	HARD
SHALE		5.81	COMP, EROD
SHALE		2.59	COMP, EROD
COAL (NO. 10)		**2.86**	AC, EROD
CLAYSTONE		2.26	ALK, COMP, EROD
SANDSTONE		0.32	ALK
CLAYSTONE		3.28	COMP, EROD
CLAYSTONE		8.26	ALK, COMP, EROD
SHALE		0.34	COMP
SHALE		2.55	ALK, COMP
SANDSTONE		1.48	ALK
SHALE		2.33	ALK, COMP, EROD
CLAYSTONE		0.62	ALK, COMP, EROD
SHALE		5.40	ALK, COMP
LIMESTONE		6.20	ALK
CLAYSTONE		0.64	ALK, COMP, EROD
SHALE		0.33	ALK, COMP, ALK
SHALE		0.74	ALK, COMP, EROD
LIMESTONE		0.60	ALK
SHALE		1.98	ALK, COMP, EROD
LIMESTONE		1.83	ALK

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ATTACHMENT 13
(GEOLOGY REPORT – Underground Workings)

Applicant Ohio Valley Coal Company Drill Hole # N94-1

State Plane Coords: X 2430593.88 Y 731,305.76 Surface Elevation 1195

LITHOLOGY	H2O*	THICKNESS	PHYSICAL PROPERTIES
CLAYSTONE		2.35	ALK, COMP, EROD
LIMESTONE		0.36	ALK
CLAYSTONE		3.08	ALK, COMP, EROD
SHALE		1.62	ALK, COMP
LIMESTONE		3.11	ALK
CLAYSTONE		0.33	COMP, EROD
LIMESTONE		1.57	ALK
CLAYSTONE		0.44	COMP, EROD
LIMESTONE		0.90	ALK
SILTSTONE		1.32	COMP, EROD
SILTSTONE		0.78	COMP, EROD
LIMESTONE		4.81	ALK
SILTSTONE		1.24	COMP, EROD
LIMESTONE		13.09	ALK
LIMESTONE		2.99	ALK
CLAYSTONE		0.72	ALK, COMP, EROD
LIMESTONE		1.17	ALK
CLAYSTONE		0.58	COMP, EROD
SHALE		1.39	ALK, COMP, EROD
LIMESTONE		6.20	ALK
SHALE		0.98	ALK, COMP, EROD
LIMESTONE		4.05	ALK
SHALE		0.92	ALK, COMP
SHALE		0.19	ALK
LIMESTONE		14.10	ALK
CLAYSTONE		2.69	COMP, EROD
SHALE		0.24	COMP, EROD
COAL (NO. 9)		3.85	AC, EROD
CLAYSTONE		0.10	COMP, EROD
SHALE		1.05	COMP, EROD
LIMESTONE		4.63	ALK
LIMESTONE		1.75	ALK
LIMESTONE		3.84	ALK
SHALE		1.50	COMP, EROD
SHALE		2.96	ALK, COMP, EROD
CLAYSTONE		0.13	ALK, COMP, EROD
SILTSTONE		1.94	ALK, COMP, EROD
SHALE		0.90	COMP, EROD
LIMESTONE		0.38	ALK
CLAYSTONE		0.80	ALK, COMP, EROD

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ATTACHMENT 13
(GEOLOGY REPORT – Underground Workings)

Applicant Ohio Valley Coal Company Drill Hole # N94-1

State Plane Coords: X 2430593.88 Y 731,305.76 Surface Elevation 1198

LITHOLOGY	H2O*	THICKNESS	PHYSICAL PROPERTIES
LIMESTONE		0.81	ALK, COMP
CLAYSTONE		0.95	COMP, EROD
COAL		0.23	AC, EROD
SHALE		0.63	ALK, COMP, EROD
LIMESTONE		3.02	ALK
SHALE		0.40	COMP, EROD
LIMESTONE		0.75	ALK
SHALE		0.05	COMP, EROD
LIMESTONE		7.45	ALK
SHALE		0.54	ALK, COMP
CLAYSTONE		0.70	COMP, EROD
LIMESTONE		2.70	ALK
SHALE		1.03	COMP, EROD
LIMESTONE		1.42	ALK
LIMESTONE		0.50	ALK
LIMESTONE		1.87	ALK
CLAYSTONE		0.65	COMP, EROD
LIMESTONE		4.39	ALK
CLAYSTONE		1.87	ALK, COMP, EROD
SHALE		0.76	ALK, COMP
LIMESTONE		2.98	ALK
CLAYSTONE		2.46	ALK, COMP, EROD
SHALE		1.17	ALK, COMP, EROD
CLAYSTONE		0.51	COMP, EROD
SHALE		1.32	COMP, EROD
SHALE		0.49	AC, COMP, EROD
LIMESTONE		11.78	ALK
CLAYSTONE		0.72	ALK, COMP, EROD
LIMESTONE		1.16	ALK
CLAYSTONE		1.30	COMP, EROD
LIMESTONE		0.42	ALK
CLAYSTONE		0.55	COMP, EROD
LIMESTONE		0.35	ALK
CLAYSTONE		0.05	COMP, EROD
LIMESTONE		0.35	ALK
CLAYSTONE		4.33	COMP, EROD
SHALE		0.55	COMP, EROD
COAL (NO. 8)		7.53	AC, EROD
SHALE		0.38	ALK, COMP, EROD
SHALE		1.39	ALK, COMP, EROD

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ATTACHMENT 13
(GEOLOGY REPORT – Underground Workings)

Applicant Ohio Valley Coal Company Drill Hole # N94-1

State Plane Coords: X2430593.88 Y 731305.76 Surface Elevation 1198

LITHOLOGY	H2O*	THICKNESS	PHYSICAL PROPERTIES
LIMESTONE		0.50	ALK
SHALE		0.66	COMP, EROD
CLAYSTONE		0.16	COMP, EROD
LIMESTONE		0.74	ALK
SHALE		0.64	COMP, EROD
LIMESTONE		1.60	ALK
SHALE		1.70	ALK, COMP
LIMESTONE		3.10	ALK
LIMESTONE		1.07	ALK

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (/1000 Tons)	CaCO3 Deficiency (/1000 Tons)
Roof	1.55	1.08	48.4	318	−270
Coal	5.44	2.64	170	10.43	159
Bottom	1.44	0.99	45.0	647	−602

Legend:
AC = ACID PRODUCING
ALK = ALKALINE PRODUCING
COMP = COMPACTIBLE
EROD = ERODIBLE

* – Indicates water bearing stratum under column labelled H2O

Stratum thickness is measured in feet.

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STATE PLANE COORDS
X-2,4. 593.88
Y-73,505.76

DIAMOND DRILL HOLE N94-1

GEOLOGIST: HOMER McEVERS
ELEVATION: ~~1195.00~~ 1196.54 (ALTIMETER)
EXCHANGE COORDINATES: -627732.1 E; -9229.41 N

TOWNSHIP: SMITH
SECTION: 22, NW 1/4
COUNTY: BELMONT

SURF. OWNER: R. RICE
DATE STARTED: 6/21/94
DATE FINISHED: 6/23/94

THICK. (FT)	DESCRIPTION	DEPTH (FT)	ELEV. (FT)
20.00	CASING	20.00	1175.00
5.35	SILTSTONE, LT. BROWN, CALC, SOFT, WEATHERED	25.35	1169.65
4.65	SHALE, GRAY, CALCAREOUS, SOFT	30.00	1165.00
4.75	LIMESTONE, WITH IRON STAINS, GRAY, MEDIUM	34.75	1160.25
5.25	LIMESTONE, GRAY, MEDIUM	40.00	1155.00
5.40	SHALE, GRAY, MEDIUM	45.40	1149.60
2.64	SHALE, W/IRON STAINS, MEDIUM	48.04	1146.96
1.50	SHALE, GRAY, MEDIUM	49.54	1145.46
1.30	SHALE, GRAY, MEDIUM/HARD	50.84	1144.16
1.25	SHALE, GRAY, BROKEN W/IRON STAINS, MEDIUM	52.09	1142.91
2.30	SHALE, GRAY, MEDIUM	54.39	1140.61
1.65	LIMESTONE, GRAY, HARD	56.04	1138.96
1.52	SHALE, GRAY, MEDIUM	57.56	1137.44
0.32	LIMESTONE, GRAY, HARD	57.88	1137.12
1.42	SHALE, GRAY, LAMINATED, MEDIUM	59.30	1135.70
0.70	SHALE, GRAY, MEDIUM	60.00	1135.00
2.10	LIMESTONE, GRAY, HARD	62.10	1132.90
8.20	SHALE, GRAY, MEDIUM	70.30	1124.70
1.10	SHALE, GRAY, BROKEN, MEDIUM	71.40	1123.60
3.40	0.50 BONE COAL (NO. 12)	74.80	1120.20
	2.80 COAL		
	0.10 BONE COAL		
5.20	SHALE, GRAY, LAMINATED, SOFT	80.00	1115.00
2.85	SHALE, LAMINATED, SOFT	82.85	1112.15
0.82	COAL	83.67	1111.33
0.25	SHALE, BLACK, LAMINATED, SOFT	83.92	1111.08
6.85	SHALE, CALCAREOUS, MEDIUM, GRAY	90.77	1104.23
5.30	SANDSTONE, GRAY W/LS NODULES, HARD	96.07	1098.93
3.93	SANDSTONE, GRAY, HARD	100.00	1095.00
14.42	SANDSTONE, GRAY, MEDIUM, CALCAREOUS, LAMINATED	114.42	1080.58
2.85	LIMESTONE, GRAY, HARD	117.27	1077.73
0.46	LIMESTONE, LIGHT BROWN, HARD	117.73	1077.27
2.01	CLAYSTONE, CALCAREOUS, GRAY, BROKEN, SOFT	119.74	1075.26
5.19	CLAYSTONE, GRAY, SOFT	124.93	1070.07
2.38	SHALE: CALCAREOUS, MEDIUM, GRAY	127.31	1067.69
3.90	LIMESTONE, GRAY, MEDIUM	131.21	1063.79
4.29	SHALE, GRAY, MEDIUM, W/LIMESTONE NODULES	135.50	1059.50
0.90	SANDSTONE, GRAY, HARD, LAMINATED	136.40	1058.60
1.16	SHALE, SANDY, GRAY, LAMINATED, MEDIUM	137.56	1057.44
2.70	SANDSTONE, CALCAREOUS, HARD, GRAY	140.26	1054.74
5.44	SANDSTONE, HARD, GRAY, LAMINATED	145.70	1049.30

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THICK. (FT)	DESCRIPTION	DEPTH (FT)	ELEV. (FT)
0.92	SHALE, GRAY, SOFT	146.62	1048.38
0.77	CLAYSTONE, GRAY, LAMINATED, SOFT	147.39	1047.61
0.59	SHALE, GRAY, LAMINATED, SOFT	147.98	1047.02
0.50	SHALE, BLACK, SOFT	148.48	1046.52
0.20	SHALE, GRAY, MEDIUM	148.68	1046.32
4.26	LIMESTONE, GRAY, W/SANDSTONE STREAKS, HARD	152.94	1042.06
3.62	SANDSTONE, LS NODULES, LAM. W/SHALE, GRAY, HARD	156.56	1038.44
1.71	SHALE, GRAY, LAMINATED, SOFT	158.27	1036.73
0.14	CLAYSTONE, DARK GRAY, SOFT	158.41	1036.59
0.32	LIMESTONE, LIGHT GRAY, HARD	158.73	1036.27
3.45	CLAYSTONE, GRAY, SOFT, CALCAREOUS	162.18	1032.82
0.58	SHALE, W/SANDSTONE STREAKS, CALCAREOUS, GRAY, MEDIUM	162.76	1032.24
6.28	SANDSTONE, GRAY, LAMINATED, CALCAREOUS	169.04	1025.96
0.75	CLAYSTONE, GRAY, CALCAREOUS, SOFT	169.79	1025.21
10.98	SHALE, GRAY, SOFT	180.77	1014.23
3.41	**0.18 BONE COAL (NO. 11)**	**184.18**	**1010.82**
	3.23 COAL, W/PYRITE STREAKS		
11.69	CLYSTN, GRAY, SOFT, W/COAL STREAKS, CALC, BROKEN	195.87	999.13
4.10	LIMESTONE, GREEN, HARD	199.97	995.03
7.10	SHALE, GREEN, SANDY, W/LIMESTONE NODULES, SOFT	207.07	987.93
4.37	SANDSTONE, GRAY, LAMINATED, HARD	211.44	983.56
0.98	SHALE, GRAY, LAMINATED, SOFT	212.42	982.58
1.57	SANDSTONE, GRAY, LAMINATED, HARD	213.99	981.01
5.81	SHALE, SANDY, LAMINATED	219.80	975.20
2.59	SHALE, GRAY	222.39	972.61
2.86	**2.00 COAL (NO. 10)**	**225.25**	**969.75**
—	**0.15 CLAYSTONE, GRAY**		
	0.71 COAL		
2.26	CLAYSTONE, GRAY, CALCAREOUS, SOFT	227.51	967.49
0.32	SANDSTONE, GRAY, CALCAREOUS, HARD	227.83	967.17
3.28	CLAYSTONE, GRAY, BROKEN, SOFT	231.11	963.89
8.26	CLAYSTONE, CALCAREOUS, GRAY, SOFT	239.37	955.63
0.34	SHALE, GRAY, MEDIUM	239.71	955.29
2.55	SHALE, GREEN, MEDIUM, CALCAREOUS, LAMINATED	242.26	952.74
1.48	SAND STONE, GRAY, HARD, CALCAREOUS, LAMINATED	243.74	951.26
2.33	SHALE, GRAY, SOFT, CALCAREOUS	246.07	948.93
0.62	CLAYSTONE, GRAY, SOFT, CALCAREOUS	246.69	948.31
5.40	SHALE, GRAY, MEDIUM, CALCAREOUS	252.09	942.91
6.20	LIMESTONE, GRAY, HARD	258.29	936.71
0.64	CLAYSTONE, GRAY, SOFT, CALCAREOUS	258.93	936.07
0.33	SHALE, GRAY, LAMINATED, CALCAREOUS, SOFT	259.26	935.74
0.74	SHALE, GRAY, LAMINATED, CALCAREOUS, SOFT	260.00	935.00
0.60	LIMESTONE, GRAY, HARD	260.60	934.40
1.98	SHALE, GRAY, SOFT, LAMINATED, CALCAREOUS	262.58	932.42
1.83	LIMESTONE, GRAY, HARD	264.41	930.59
2.35	CLAYSTONE, GRAY, CALCAREOUS, SOFT	266.76	928.24

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(Continued)

THICK. (FT)	DESCRIPTION	DEPTH (FT)	ELEV. (FT)
0.36	LIMESTONE, GRAY, HARD	267.12	927.88
3.08	CLAYSTONE, GRAY, CALCAREOUS, SOFT	270.20	924.80
1.62	SHALE, CALCAREOUS, GRAY, MEDIUM	271.82	923.18
3.11	LIMESTONE, GRAY, JOINTED, HARD	274.93	920.07
0.33	CLAYSTONE, GRAY, SOFT	275.26	919.74
1.57	LIMESTONE, GRAY, HARD	276.83	918.17
0.44	CLAYSTONE, GREEN, SOFT	277.27	917.73
0.90	LIMESTONE, GRAY, HARD	278.17	916.83
1.32	SILTSTONE, MEDIUM, GREEN, LAMINATED	279.49	915.51
0.78	SILTSTONE, GREEN, LAMINATED, SOFT	280.27	914.73
4.81	LIMESTONE, GRAY, HARD	285.08	909.92
1.24	SILTSTONE, SOFT, GREEN	286.32	908.68
13.09	LIMESTONE, GRAY, HARD	299.41	895.59
2.99	LIMESTONE, GRAY, MEDIUM	302.40	892.60
0.72	GREEN, CLAYSTONE, SOFT, CALCAREOUS	303.12	891.88
1.17	LIMESTONE, GRAY, MEDIUM	304.29	890.71
0.58	GREEN CLAYSTONE, SOFT	304.87	890.13
1.39	SHALE, CALCAREOUS, SOFT, GRAY	306.26	888.74
6.20	LIMESTONE, GRAY, LAMINATED	312.46	882.54
0.98	SHALE, GRAY, W/ LIMESTONE NODULES	313.44	881.56
4.05	LIMESTONE, MEDIUM, GRAY, LAMINATED	317.49	877.51
0.92	GREEN SHALE, CALCAREOUS, MEDIUM	318.41	876.59
0.19	GRAY SHALE, LAMINATED, CALCAREOUS, HARD	318.60	876.40
14.10	GRAY LIMESTONE, HARD	332.70	862.30
2.69	GRAY CLAYSTONE, SOFT	335.39	859.61
0.24	GRAY SHALE, SOFT	335.63	859.37
3.85	COAL (NO. 9), SS PARTINGS W/PYRITE	339.48	855.52
0.10	GRAY CLAYSTONE, SOFT	339.58	855.42
1.05	SHALE, BLACK, SOFT	340.63	854.37
4.63	LIMESTONE, GRAY, MEDIUM, LAMINATED	345.26	849.74
1.75	LIMESTONE, WHITE, HARD	347.01	847.99
3.84	LIMESTONE, GRAY, MEDIUM, LAMINATED	350.85	844.15
1.50	SHALE, GRAY SOFT	352.35	842.65
2.96	SHALE, GRAY, SOFT, LAMINATED, CALCAREOUS	355.31	839.69
0.13	CLAYSTONE, GRAY, SOFT, CALCAREOUS	355.44	839.56
1.94	SILTSTONE, GRAY, SOFT, LAMINATED, CALCAREOUS	357.38	837.62
0.90	GRAY, SHALE, SOFT	358.28	836.72
0.38	WHITE LIMESTONE, HARD	358.66	836.34
0.80	GRAY CLAYSTONE, SOFT, CALCAREOUS,	359.46	835.54
0.81	LIMESTONE, GRAY, MEDIUM	360.27	834.73
0.95	GRAY CLAYSTONE, SOFT	361.22	833.78
0.23	COAL	361.45	833.55
0.63	SHALE, GRAY, LAMINATED, CALCAREOUS, SOFT	362.08	832.92
3.02	LIMESTONE, GRAY, HARD	365.10	829.90
0.40	SHALE, BLACK, SOFT	365.50	829.50
0.75	LIMESTONE, GRAY, HARD	366.25	828.75

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THICK. (FT)	DESCRIPTION	DEPTH (FT)	ELEV. (FT)
0.05	SHALE, BLACK, SOFT	366.30	828.70
7.45	LIMESTONE, GRAY, HARD	373.75	821.25
0.54	SHALE, CALCAREOUS, HARD, GRAY, LAMINATED	374.29	820.71
0.70	CLAYSTONE, GRAY, SOFT	374.99	820.01
2.70	LIMESTONE, LIGHT GRAY, HARD	377.69	817.31
1.03	SHALE, GREY, LAMINATED, SOFT	378.72	816.28
1.42	LIMESTONE, LIGHT GRAY, HARD	380.14	814.86
0.50	LIMESTONE, GRAY, HARD, LAMINATED	380.64	814.36
1.87	LIMESTONE, LIGHT GRAY	382.51	812.49
0.65	CLAYSTONE, GREEN, SOFT	383.16	811.84
4.39	LIMESTONE, GRAY, HARD	387.55	807.45
1.87	CLAYSTONE, GREEN, SOFT, CALCAREOUS	389.42	805.58
0.76	SHALE, CALCAREOUS, GRAY, MEDIUM	390.18	804.82
2.98	LIMESTONE, LIGHT GRAY, HARD	393.16	801.84
2.46	CLAYSTONE, GREEN, SOFT, CALCAREOUS	395.62	799.38
1.17	SHALE, BLACK, SOFT, CARBONACEOUS	396.79	798.21
0.51	CLAYSTONE, GREY, SOFT	397.30	797.70
1.32	SHALE, DARK GREY, SOFT	398.62	796.38
0.49	SHALE, CARBONACEOUS, SOFT	399.11	795.89
11.78	LIMESTONE, LIGHT GRAY, HARD	410.89	784.11
0.72	GREEN CLAYSTONE, SOFT, CALCAREOUS	411.61	783.39
1.16	LIMESTONE, LIGHT GRAY, LAMINATED	412.77	782.23
1.30	CLAYSTONE, GREEN, SOFT	414.07	780.93
0.42	LIGHT GRAY LIMESTONE, HARD	414.49	780.51
0.55	GREEN CLAYSTONE, SOFT	415.04	779.96
0.35	LIMESTONE, LIGHT GRAY, HARD	415.39	779.61
0.05	GREEN CLAYSTONE, SOFT	415.44	779.56
0.35	LIMESTONE, LIGHT GRAY, HARD	415.79	779.21
4.33	CLAYSTONE, GREEN, LAMINATED, SOFT W/SLICKENSIDES	420.12	774.88
0.55	SHALE, DARK GREY, LAMINATED, SOFT	420.67	774.33
7.53	0.99 ROOF COAL (NO. 8) W/SULFUR STREAKS	428.20	766.80
	0.90 CLAYSTONE, GRAY		
	5.64 COAL W/SULFUR STREAKS		
0.38	SHALE, CALCAREOUS, LAMINATED, GRAY, SOFT	428.58	766.42
1.39	SHALE, CALCAREOUS, DARK GRAY, SOFT	429.97	765.03
0.50	LIMESTONE, LIGHT GRAY, HARD	430.47	764.53
0.66	SHALE, DARK GRAY, SOFT	431.13	763.87
0.16	CLAYSTONE, GRAY, SOFT	431.29	763.71
0.74	LIMESTONE, GRAY, HARD	432.03	762.97
0.64	SHALE, GRAY, SOFT	432.67	762.33
1.60	LIMESTONE, GRAY, HARD	434.27	760.73
1.70	SHALE, W/LIMESTONE NODULES, GRAY, MEDIUM	435.97	759.03
3.10	LIMESTONE, GRAY, LAMINATED, HARD	439.07	755.93
1.07	LIMESTONE, GREEN, HARD	440.14	754.86

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D0360-6

TOVCC 05083

AMOUNT OF HARD ROCK ABOVE NO. 8 SEAM

HARD ROCK: 205.71 FT (48.9%) OF CORE

SOFT ROCK: 214.96 FT. (51.1%) OF CORE

PROJECTED AQUIFERS:

1. 30.00 TO 34.75 (MINOR)
2. 45.40 TO 52.09 (MINOR)

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ORIGINAL

AUG 4 1997

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-94-1 DRILLER: HOWARD SALISBURY

DRILLING FOR: THE OHIO VALLEY COAL COMPANY
ALLEDONIA OHIO

SURFACE ELEVATION: STARTED: JUNE 21 1994
COMPLETED: JUNE 23 1994

LOCATION: OHIO BELMONT COUNTY

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
CASING	20.00	20.00
LIMESTONE AND SHALE	15.00	35.00
GREEN LIMY SHALE	20.00	55.00
LIMESTONE AND SHALE	6.00	61.00
GREENISH LIMY SHALE	9.70	70.70
DARK SHALE	0.70	71.40
COAL	3.40	74.80
GRAY SHALE	4.20	79.00
DARK SHALE WITH SANDSTONE STREAKS	3.80	82.80
LAMINATED COAL . . .	1.10	83.90
GREENISH LIMY SHALE	6.10	90.00
SANDSTONE	28.00	118.00
GREEN LIMY SHALE	10.00	128.00
GREEN LIMY SANDY SHALE	10.00	138.00
SANDSTONE WITH SHALE STREAKS	6.50	144.50
GREENISH LIMY SANDY SHALE	13.50	158.00
LIMESTONE WITH SHALE BANDS	3.00	161.00
SANDSTONE WITH SHALE STREAKS	7.60	168.60
GREENISH SANDY LIMY SHALE	10.60	179.20
DARK SHALE	0.40	179.60
COAL	3.15	182.75
GRAY LIMY SHALE	7.25	190.00
GREEN LIMY SHALE	10.00	200.00
GREEN SANDY SHALE	7.00	207.00

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AUG 4 1997

TOVCC 05085

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-1

FORMATION	STRATA THICKNESS	207.00 DEPTH FROM SURFACE
SANDSTONE WITH SHALE STREAKS	9.00	216.00
GRAY SANDY SHALE	6.60	222.60
COAL	2.00	224.60
GRAY SHALE	0.20	224.80
COAL	0.70	225.50
GRAY LIMY SHALE	13.50	239.00
GREEN SHALE	8.00	247.00
LIMESTONE WITH SHALE BANDS	86.20	333.20
GRAY CLAYSTONE	2.80	336.00
COAL	1.90	337.90
GRAY SHALE	0.45	338.35
COAL	1.50	339.85
GRAY SHALE	1.65	341.50
LIMESTONE WITH SHALE	6.50	348.00
DARK SHALE	11.00	359.00
LIMESTONE WITH SHALE BANDS	34.20	393.20
GREENISH CLAYSTONE	2.40	395.60
BLACK SHALE	0.60	396.20
GRAY SHALE	2.80	399.00
LIMESTONE WITH SHALE BANDS	16.70	415.70
CLAYSTONE	4.85	420.55
COAL	1.00	421.55
CLAYSTONE	0.90	422.45
COAL	5.64	428.09
LIMESTONE WITH SHALE BANDS	7.81	435.90
SANDY SHALE	2.50	438.40
LIMY SHALE	1.60	440.00

TOTAL DEPTH OF HOLE = 440.00 FEET

16 BAGS CEMENT PLACED IN HOLE

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ORIGINAL

AUG 4 1997

TOVCC 05086

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N94-05	10.00	CASING		Y			Y	Y
	10.00	CHIPPED		Y			Y	Y
	4.00	LS/SH		Y				
	16.00	LS/SH/SS	Y			Y		
	3.20	SH		Y			Y	Y
	1.30	LS/SH		Y		Y	Y	Y
	3.60	SH/LS	Y			Y		
	5.10	SH		Y			Y	Y
	0.10	SH/C		Y	Y		Y	Y
	0.80	SH		Y			Y	Y
	0.50	LS	Y			Y		
	0.40	SH		Y			Y	Y
	0.60	LS	Y			Y		
	0.80	SH/CL		Y			Y	Y
	0.20	SH/C		Y	Y		Y	Y
	1.60	SH/CL		Y			Y	Y
	6.20	SH		Y			Y	Y
	0.20	SH/CL		Y			Y	Y
	3.34	C		Y	Y		Y	Y
	0.62	SH		Y			Y	Y
	0.14	BC		Y	Y		Y	Y
	11.30	LS/SH/CL		Y		Y	Y	Y
	16.30	SH		Y			Y	Y
	10.00	SS/SH		Y			Y	Y
	3.40	SH		Y			Y	Y
	0.31	C		Y	Y		Y	Y
	0.05	SH		Y			Y	Y
	0.21	C		Y	Y		Y	Y
	0.05	SH		Y			Y	Y
	0.98	C		Y	Y		Y	Y
	0.14	C/SH		Y	Y		Y	Y
	0.09	SH		Y			Y	Y
	0.30	SH/CL		Y			Y	Y
	0.70	C		Y	Y		Y	Y
	0.28	SH/C		Y	Y		Y	Y
	4.85	LS/SH/CL		Y		Y	Y	Y
	1.54	LS/SH		Y		Y	Y	Y
	2.70	LS/SH/CL		Y		Y	Y	Y
	1.20	LS	Y			Y		
	3.00	LS/SH/CL		Y		Y	Y	Y
	1.20	SS/SH		Y			Y	
	6.60	SS	Y					
	2.50	LS/SH		Y		Y	Y	Y
	1.90	LS	Y			Y		
	0.40	LS/SH/CL		Y		Y	Y	Y
	0.40	LS	Y			Y		
	11.40	LS	Y			Y		
	2.30	LS/SH		Y		Y	Y	Y
	1.80	LS/SH		Y		Y	Y	Y
	2.60	LS/SH/CL		Y		Y	Y	Y
	0.90	LS	Y			Y		
	1.50	SH/CL		Y			Y	Y
	7.70	LS	Y			Y		
	3.20	LS/SH/CL		Y		Y	Y	Y
	9.60	LS/SH/CL		Y		Y	Y	Y
	10.80	SH/LS		Y		Y	Y	Y
	4.70	LS	Y			Y		
	2.70	LS/SH/CL		Y		Y	Y	Y
	2.60	SH/LS	Y			Y		
	5.70	LS	Y					
	1.10	LS/SH		Y			Y	Y
	1.30	LS	Y					
	1.20	LS/SH		Y		Y	Y	Y
	4.30	LS/SH		Y		Y	Y	Y
	0.40	SH		Y			Y	Y
	3.00	LS/SH		Y		Y	Y	Y
	5.40	LS	Y			Y		
	5.50	LS/SH/CL		Y		Y	Y	Y

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ORIGINAL
JUN 27 1997

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N94-05	0.60	SH/CL		Y			Y	Y
	0.15	C		Y			Y	Y
	0.04	SH		Y			Y	Y
	1.60	C		Y			Y	Y
	0.06	SH		Y			Y	Y
	0.11	SH/CL		Y			Y	Y
	1.54	C		Y			Y	Y
	0.07	SH		Y			Y	Y
	4.63	LS/SH/CL		Y		Y	Y	Y
	1.74	LS	Y			Y		
	11.70	LS/SH/CL		Y		Y	Y	Y
	3.30	LS	Y			Y		
	1.30	SH/CL		Y			Y	Y
	0.20	C		Y			Y	Y
	0.40	SH/CL		Y			Y	Y
	13.70	LS	Y			Y		
	1.10	SH/CL		Y			Y	Y
	9.00	LS	Y			Y		
	2.10	LS/SH/CL		Y		Y	Y	Y
	3.00	LS	Y			Y		
	2.60	SH/LS/CL		Y		Y	Y	Y
	0.50	SH		Y			Y	Y
	2.60	LS/SH/CL		Y		Y	Y	Y
	2.90	LS	Y			Y		
	8.70	LS/SH		Y		Y	Y	Y
	7.50	SH/LS/CL		Y		Y	Y	Y
	0.20	SH/C		Y			Y	Y
	0.30	SH/CL		Y			Y	Y
	0.80	SH		Y			Y	Y
	0.96	SH/C/CL		Y	Y		Y	Y
	0.88	C		Y	Y		Y	Y
	0.05	SH		Y			Y	Y
	0.07	C		Y	Y		Y	Y
	0.04	SH		Y			Y	Y
	0.90	SH/CL		Y			Y	Y
	2.00	C		Y	Y		Y	Y
	0.06	SH		Y			Y	Y
	0.30	C		Y	Y		Y	Y
	0.05	SH		Y			Y	Y
	2.64	C		Y	Y		Y	Y
	0.12	SS/SH		Y			Y	Y
	1.11	SH/CL		Y			Y	Y
	0.15	SH		Y			Y	Y
	6.77	SH/LS/CL		Y		Y	Y	Y
	9.20	SS/LS/SH		Y		Y	Y	Y

N94-05					POT. ACID.	POT. ACID	
		NEUT. POT.	TOTAL	PYRITIC	TONS/1000T	TONS/1000T	CACO3
	pH	TONS/1000 T	SULFUR	SULFUR	AS CACO3	AS CACO3	DEFICIENCY
	SU	AS CACO3	%	%	TOT. SULF.	PYR. SULF.	AS CACO3
ROOF ROCK	8.90	484.00	1.03	0.58	32.20	18.10	-466.00
COAL	7.00	6.74	4.76	2.70	149.00	84.30	77.60
BOTTOM	8.85	190.00	1.64	1.32	51.20	41.20	-149.00

ORIGINAL
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LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-94-05 DRILLER: JOSEPH MILLER

DRILLING FOR: THE OHIO VALLEY COAL COMPANY
ALLEDONIA OHIO

SURFACE ELEVATION: 1089.36 STARTED: AUGUST 31 1994
COMPLETED: SEPTEMBER 1 1994

LOCATION: OHIO BELMONT COUNTY SMITH TOWNSHIP
NE 1/4 SE 1/4 SEC 29
T6NR4W

EXCHANGE COORDS:
E-5142.29 N-6966.91

STATE PLANE COORDS -
X-2,441,771.78
*Y-734,770.97

* per phone conversation w/ David Darbick on 8/18/97 GM

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
CASING	10.00	10.00
CHIPPED	10.00	20.00
GRAY LIMY SHALE	4.00	24.00
GRAY LIMY SHALE WITH SANDSTONE STREAKS-RIPPLED	16.00	40.00
GRAY SHALE	3.20	43.20
GRAY LIMY SHALE	1.30	44.50
GRAY SHALE WITH LIME NODULES	3.60	48.10
GRAY SHALE	5.10	53.20
BLACK SHALE WITH COAL SPARS	0.10	53.30
DARK SHALE	0.80	54.10
GRAY LIMESTONE	0.50	54.60
GRAY SHALE	0.40	55.00
GRAY LIMESTONE	0.60	55.60
GRAY SHALY CLAYSTONE	0.80	56.40
BLACK SHALE WITH COAL SPARS	0.20	56.60
GRAY SHALY CLAYSTONE	1.60	58.20
GRAY SHALE	6.20	64.40
GRAY SHALY CLAYSTONE	0.20	64.60
COAL	3.34	67.94
BLACK SHALE	0.62	68.56
BONY COAL	0.14	68.70
GRAY LIMY SHALY CLAYSTONE	11.30	80.00
GRAY SHALE	16.30	96.30
GRAY SANDY SHALE	10.00	106.30

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ORIGINAL

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-05

FORMATION	STRATA THICKNESS	106.30 DEPTH FROM SURFACE
DARK GRAY SHALE	3.40	109.70
COAL	0.31	110.01
DARK SHALE	0.05	110.06
COAL	0.21	110.27
BLACK SHALE	0.05	110.32
COAL	0.98	111.30
COAL AND SHALE . . .	0.14	111.44
BLACK SHALE	0.09	111.53
GRAY SHALY CLAYSTONE	0.30	111.83
COAL	0.70	112.53
GRAY SHALE WITH COAL SPARS	0.28	112.81
GRAY LIMY SHALY CLAYSTONE	4.85	117.66
GRAY LIMY SHALE	1.54	119.20
GRAY LIMY SHALY CLAYSTONE	2.70	121.90
DARK GRAY LIMESTONE	1.20	123.10
GREEN LIMY SHALY CLAYSTONE	3.00	126.10
GRAY SANDY SHALE WITH SANDSTONE STREAKS	1.20	127.30
GRAY SANDSTONE	6.60	133.90
DARK GRAY LIMY SHALE	2.50	136.40
GRAY LIMESTONE	1.90	138.30
GREEN LIMY SHALY CLAYSTONE	0.40	138.70
DARK GRAY LIMESTONE	0.40	139.10
GRAY LIMESTONE	11.40	150.50
DARK GRAY LIMY SHALE	2.30	152.80
GREEN LIMY SHALE	1.80	154.60
GREEN LIMY SHALY CLAYSTONE	2.60	157.20
DARK GRAY LIMESTONE	0.90	158.10
GREEN SHALY CLAYSTONE	1.50	159.60
GRAY LIMESTONE	7.70	167.30
GREEN LIMY SHALY CLAYSTONE	3.20	170.50
GRAY LIMY SHALY CLAYSTONE	9.60	180.10
GRAY SHALY LIMESTONE	10.80	190.90
GRAY LIMESTONE	4.70	195.60
GREEN LIMY SHALY CLAYSTONE	2.70	198.30
GRAY SHALY LIMESTONE	2.60	200.90
GRAY LIMESTONE	5.70	206.60
GRAY GREEN LIMY SHALE	1.10	207.70
GRAY LIMESTONE	1.30	209.00
GREEN LIMY SHALE	1.20	210.20
GRAY LIMY SHALE	4.30	214.50
DARK SHALE	0.40	214.90
GRAY LIMY SHALE	3.00	217.90
GRAY LIMESTONE	5.40	223.30
GRAY LIMY SHALY CLAYSTONE	5.50	228.80
DARK SHALY CLAYSTONE	0.06	228.86
COAL	0.15	229.01
BLACK SHALE	0.04	229.05

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TOVCC 05090

LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-05

FORMATION	STRATA THICKNESS	229.05 DEPTH FROM SURFACE
COAL	1.60	230.65
BLACK SHALE	0.06	230.71
DARK SHALY CLAYSTONE	0.11	230.82
COAL	1.54	232.36
DARK SHALE	0.07	232.43
GRAY LIMY SHALY CLAYSTONE	4.63	237.06
GRAY LIMESTONE	1.74	238.80
GRAY LIMY SHALY CLAYSTONE	11.70	250.50
GRAY LIMESTONE	3.30	253.80
DARK GRAY SHALY CLAYSTONE	1.30	255.10
COAL	0.20	255.30
DARK SHALY CLAYSTONE	0.40	255.70
GRAY LIMESTONE	13.70	269.40
GREEN SHALY CLAYSTONE	1.10	270.50
GRAY LIMESTONE	9.00	279.50
GREEN LIMY SHALY CLAYSTONE	2.10	281.60
GRAY LIMESTONE	3.00	284.60
GRAY SHALY CLAYSTONE WITH LIMESTONE NODULES	2.60	287.20
BLACK SHALE	0.50	287.70
GRAY LIMY SHALY CLAYSTONE	2.60	290.30
GRAY LIMESTONE	2.90	293.20
GRAY LIMY SHALE	8.70	301.90
GRAY SHALY CLAYSTONE WITH LIME NODULES	7.50	309.40
DARK SHALE WITH COAL SPARS	0.20	309.60
GRAY SHALY CLAYSTONE	0.30	309.90
DARK SHALE	0.80	310.70
GRAY SHALY CLAYSTONE WITH SHALE STREAKS AND COAL SPARS	0.96	311.66
COAL	0.88	312.54
DARK GRAY SHALE	0.05	312.59
COAL	0.07	312.66
BLACK SHALE	0.04	312.70
GRAY SHALY CLAYSTONE	0.90	313.60
COAL	2.00	315.60
DARK SHALE	0.06	315.66
COAL	0.30	315.96
DARK SHALE	0.05	316.01
COAL	2.64	318.65
DARK GRAY SANDY SHALE	0.12	318.77
GRAY SHALY CLAYSTONE	1.11	319.88
GRAY SHALE	0.15	320.03
GRAY SHALY LIMY CLAYSTONE	6.77	326.80
GRAY SANDY SHALE WITH DARK SHALE STREAKS AND NODULES	9.20	336.00

TOTAL DEPTH OF HOLE = 336.00 FEET
12 BAGS CEMENT PLACED IN HOLE

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EXCHANGE COOR
E - 60,564.88
N - 1,457.29
STATE PLANE COORDS
X - 2,432,660.42
Y - 739,116.78

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N94-31	20.00	CASING		Y				
	18.00	LS/SH		Y		Y	Y	Y
	10.00	LS	Y			Y		
	9.00	CL/LS		Y		Y	Y	
	11.00	SS	Y					
	12.00	LS/SH		Y		Y	Y	Y
	20.00	LS/CL		Y		Y	Y	Y
	25.00	LS/SH		Y		Y	Y	Y
	3.75	CL		Y			Y	Y
	3.00	C		Y	Y		Y	Y
	5.10	LS/SH		Y		Y	Y	Y
	3.15	LS/SH		Y		Y	Y	Y
	10.00	LS/SH		Y		Y	Y	Y
	10.00	LS/SH		Y		Y	Y	Y
	24.00	LS/CL		Y		Y	Y	Y
	2.35	CL		Y			Y	Y
	0.20	SH		Y			Y	Y
	1.00	SH		Y			Y	Y
	13.55	LS	Y			Y		
	5.50	CL/LS		Y		Y	Y	Y
	0.90	CL		Y			Y	Y
	0.45	SH		Y			Y	Y
	0.40	SH		Y			Y	Y
	0.55	BC		Y			Y	Y
	0.40	SH/C		Y	Y		Y	Y
	0.60	CL		Y			Y	Y
	4.82	C #8		Y	Y		Y	Y
	5.28	SH/CL		Y			Y	Y
	7.00	CL		Y			Y	Y
	21.00	SS	Y					
	5.00	CL		Y			Y	Y
	7.00	CL		Y			Y	Y

N94-31					POT. ACID.	POT. ACID	
		NEUT. POT.	TOTAL	PYRITIC	TONS/1000T	TONS/1000T	CACO3
	pH	TONS/1000 T	SULFUR	SULFUR	AS CACO3	AS CACO3	DEFICIENCY
	SU	AS CACO3	%	%	TOT. SULF.	PYR. SULF.	AS CACO3
ROOF ROCK	8.48	4.20	1.36		42.50		38.30
COAL							
BOTTOM	7.93	145.00	4.88		152.00		7.07

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ORIGINAL
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LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING

Pressure Grouting, Foundation & Soil Borings

320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-94-31 DRILLER: DANIEL HAMRICK

DRILLING FOR: THE OHIO VALLEY COAL COMPANY
ALLEDONIA OHIO

SURFACE ELEVATION: 1038.49 STARTED: DECEMBER 7 1994
COMPLETED: DECEMBER 8 1994

LOCATION: OHIO BELMONT COUNTY

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
CASING	20.00	20.00
GREEN LIMY SHALE	18.00	38.00
LIMESTONE	10.00	48.00
GREEN CLAYSTONE WITH LIMESTONE NODULES	9.00	57.00
GRAY SANDSTONE	11.00	68.00
GRAY LIMY SHALE	12.00	80.00
LIMESTONE WITH CLAYSTONE PARTINGS	20.00	100.00
LIMESTONE WITH SHALE STREAKS	25.00	125.00
GRAY CLAYSTONE	3.75	128.75
COAL	3.00	131.75
GRAY LIMY SHALE	5.10	136.85
LIMESTONE WITH SHALE	3.15	140.00
GRAY LIMY SHALE	10.00	150.00
LIMESTONE WITH SHALE	10.00	160.00
LIMESTONE WITH CLAYSTONE STREAKS	24.00	184.00
GREEN CLAYSTONE	2.35	186.35
BLACK SHALE	0.20	186.55
GRAY SHALE	1.00	187.55
LIMESTONE	13.55	201.10
GREEN CLAYSTONE WITH LIMESTONE NODULES	5.50	206.60
GRAY CLAYSTONE	0.90	207.50
BLACK SHALE	0.45	207.95

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LJ HUGHES & SONS, INC.

THE OHIO VALLEY COAL COMPANY
CONTINUATION OF DRILL HOLE NO. N-94-31

FORMATION	STRATA THICKNESS	207.95 DEPTH FROM SURFACE
GRAY SHALE	0.40	208.35
BONY COAL	0.55	208.90
BLACK SHALE WITH COAL	0.40	209.30
GRAY CLAYSTONE	0.60	209.90
COAL	4.82	214.72
GRAY SHALY CLAYSTONE	5.28	220.00
GREEN CLAYSTONE	7.00	227.00
GRAY SANDSTONE	21.00	248.00
GREEN CLAYSTONE	5.00	253.00
RED AND GREEN CLAYSTONE	7.00	260.00

TOTAL DEPTH OF HOLE = 260.00 FEET

10 BAGS CEMENT PLACED IN HOLE

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ORIGINAL
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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N96-01	20.00	CASING	Y					
Water Bearing Zone	0.67	SH		Y			Y	Y
Water Bearing Zone	0.42	LS	Y			Y		
	1.50	SH		Y			Y	Y
	1.25	SH		Y			Y	Y
	4.17	LS	Y			Y		
Water Bearing Zone	2.00	LS	Y			Y		
	1.00	SH		Y			Y	Y
	0.92	LS	Y			Y		
	0.25	SH/LS NODULES		Y		Y		
	1.42	CORE LOSS		Y			Y	
	2.67	SH/LS NODULES		Y			Y	Y
Water Bearing Zone	0.58	SH/LS NODULES		Y			Y	Y
Water Bearing Zone	1.00	SH/LS NODULES		Y			Y	Y
	2.17	SH/LS NODULES		Y			Y	Y
Water Bearing Zone	4.00	SL		Y			Y	Y
	2.33	SL		Y			Y	Y
Water Bearing Zone	1.08	CL		Y			Y	Y
	1.17	CL		Y			Y	Y
	3.08	CL		Y			Y	Y
	0.17	CORE LOSS		Y			Y	
	1.50	LS	Y			Y		
	2.42	CL		Y			Y	Y
Water Bearing Zone	0.50	LS	Y			Y		
	0.67	LS	Y			Y		
	11.75	CORE LOSS		Y			Y	
	1.17	CL		Y			Y	Y
	0.17	LS	Y			Y		
	0.17	SH		Y				
	2.58	C #12		Y	Y		Y	Y
	0.75	SH		Y			Y	Y
	1.58	SL		Y			Y	Y
	5.04	SH		Y			Y	Y
	2.04	SH		Y			Y	Y
	1.21	C		Y	Y		Y	Y
	0.79	SH		Y			Y	Y
	6.25	SH		Y			Y	Y
	1.38	LS	Y			Y		
	8.21	SH		Y			Y	Y
	0.33	SH		Y			Y	Y
	1.33	SH		Y			Y	Y
	5.25	SH		Y			Y	Y
	7.92	SL		Y			Y	Y
	1.25	SH		Y			Y	Y
	0.42	LS	Y			Y		
	3.50	SH		Y			Y	Y
	0.75	SH		Y			Y	Y
	0.83	SH		Y			Y	Y
	0.25	LS	Y			Y		
	9.25	SH		Y			Y	Y
	9.83	SL		Y			Y	Y
	1.42	SH		Y			Y	Y
	7.17	SH/LS NODULES		Y		Y	Y	Y
	0.58	SH		Y			Y	Y
	2.25	SH		Y			Y	Y
	1.50	SH/LS NODULES		Y		Y	Y	Y
	1.25	SS	Y					
	6.33	SH/LS NODULES		Y		Y	Y	Y
	9.67	SL		Y			Y	Y
	3.92	SH		Y			Y	Y
	3.42	C#11		Y	Y		Y	Y
	1.13	SH		Y			Y	Y
	0.10	C		Y	Y		Y	Y
	1.83	SH		Y			Y	Y
	5.85	SH		Y			Y	Y
	13.17	SL		Y			Y	Y
	1.83	SH		Y			Y	Y
	1.13	SS	Y					
	6.17	SH		Y			Y	Y
	4.67	SH		Y			Y	Y
	1.83	C#10		Y	Y		Y	Y

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ORIGINAL

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N96-01	0.23	C#10		Y	Y		Y	Y
	0.50	C#10		Y	Y		Y	Y
	0.13	SH		Y			Y	Y
	0.04	C		Y	Y		Y	Y
	2.92	SH		Y			Y	Y
	10.06	SH/LS NODULES		Y		Y	Y	Y
	3.83	SH		Y			Y	Y
	5.00	SH		Y			Y	Y
	1.00	SH		Y			Y	Y
	2.00	LS	Y			Y		
	2.33	SH		Y			Y	Y
	6.00	LS	Y			Y		
	1.88	SH/LS NODULES		Y		Y	Y	Y
	0.92	LS	Y			Y		
	11.54	SH/LS NODULES		Y		Y	Y	Y
	2.17	LS	Y			Y		
	1.42	SH/LS NODULES		Y		Y	Y	Y
	0.92	LS	Y			Y		
	0.38	LS/SH		Y		Y	Y	Y
	2.00	LS	Y			Y		
	1.38	LS/SH		Y		Y	Y	Y
	2.38	LS	Y			Y		
	2.58	LS/SH		Y		Y	Y	Y
	2.29	LS/SH		Y		Y	Y	Y
	10.42	LS/SH	Y			Y		
	5.17	LS	Y			Y		
	0.83	LS/SH		Y		Y	Y	Y
	1.08	LS	Y			Y		
	2.08	LS/SH		Y		Y	Y	Y
	1.92	LS	Y			Y		
	1.00	LS/SH		Y		Y	Y	Y
	3.92	SH/LS NODULES		Y		Y	Y	Y
	1.75	LS	Y			Y		
	1.13	SH		Y			Y	Y
	1.00	LS	Y			Y		
	1.21	LS/SH		Y		Y	Y	Y
	3.50	LS	Y			Y		
	3.67	LS/SH		Y		Y	Y	Y
	3.00	LS	Y			Y		
	2.67	SH/LS BANDS		Y		Y	Y	Y
	1.00	CORE LOSS		Y			Y	
	1.67	SH		Y			Y	Y
	2.33	C#9		Y	Y		Y	Y
	0.19	C#9/SH		Y	Y		Y	Y
	0.13	C#9		Y	Y		Y	Y
	0.04	C#9/SH		Y	Y		Y	Y
	1.25	C#9		Y	Y		Y	Y
	5.31	LS/SH		Y		Y	Y	Y
	3.33	LS	Y			Y		
	5.63	SH		Y			Y	Y
	1.25	B/SH		Y	Y		Y	Y
	1.75	SH		Y			Y	Y
	1.21	B/SH		Y	Y		Y	Y
	0.75	SH		Y			Y	Y
	2.38	LS	Y			Y		
	0.75	SH		Y			Y	Y
	0.58	C		Y	Y		Y	Y
	0.50	B/SH		Y	Y		Y	Y
	8.33	B/LS	Y			Y		
	2.21	LS/SH		Y		Y	Y	Y
	1.63	LS	Y			Y		
	0.08	SH		Y			Y	Y
	1.83	LS	Y			Y		
	1.71	LS/SH		Y		Y	Y	Y
	9.75	SH/LS	Y			Y		
	2.67	SH/LS NODULES		Y		Y	Y	Y
	2.25	LS	Y			Y		
	2.33	SH/NODULES		Y		Y	Y	Y
	0.58	CORE LOSS		Y			Y	
	0.58	SH/C		Y	Y		Y	Y
	2.25	SH		Y			Y	Y

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ORIGINAL

TOVCC 05096

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N96-01	1.67	LS	Y			Y		
	0.58	SH		Y			Y	Y
	1.96	LS	Y			Y		
	0.17	SH		Y			Y	Y
	2.58	LS	Y			Y		
	0.92	SH/LS	Y			Y		
	1.54	SH/LS	Y			Y		
	4.92	SH/LS	Y			Y		
	0.25	SH/LS NODULES		Y		Y	Y	Y
	1.92	LS	Y			Y		
	0.25	LS/SH		Y		Y	Y	Y
	1.42	LS	Y			Y		
	1.75	SH/LS NODULES		Y		Y	Y	Y
	0.38	SH/C		Y	Y		Y	Y
	0.54	SH		Y			Y	Y
	0.17	SH/C		Y	Y		Y	Y
	0.15	SH		Y			Y	Y
	0.50	C#8		Y	Y		Y	Y
	0.10	BC#8		Y	Y		Y	Y
	0.85	SH		Y	Y		Y	Y
	4.83	C#8		Y	Y		Y	Y
	0.19	C#8		Y	Y		Y	Y
	0.08	SH/B		Y	Y		Y	Y
	3.17	SH/LS NODULES		Y		Y	Y	Y
	1.25	SH/LS	Y			Y		

N96-01					POT. ACID.	POT. ACID	
		NEUT. POT.	TOTAL	PYRITIC	TONS/1000T	TONS/1000T	CACO3
	pH	TONS/1000 T	SULFUR	SULFUR	AS CACO3	AS CACO3	DEFICIENCY
	SU	AS CACO3	%	%	TOT. SULF.	PYR. SULF.	AS CACO3
ROOF ROCK	9.81	41.70	1.93	1.61	60.30	50.30	18.60
COAL	8.34	5.05	5.10	2.41	159.00	75.30	+154.00 +
BOTTOM	10.10	436.00	1.64	1.38	51.20	43.10	-385.00 -

JUN 27 1997
D0360-6
ORIGINAL

TOVCC 05097

STATE PLANE COORDS
X 2,433,446.93
Y-735,187.73

THE OHIO-VALLEY COAL COMPANY
TEST HOLE N96-01

DRILLED 07/31/96 BY L. J. HUGHES, DAN HAMRICK
COORDINATES:-59850W, -5400S ELEVATION: 1197 (ALTIMETER)

ELEVATION	THICKNESS	DEPTH	STRATA
1177.00	20.00	20.00	CASING
1176.33	0.67	20.67	LIMONITIC STAINED GRAY SH
1175.92	0.42	21.08	HARD LS W/ LIMONITIC STAINS ON FRAC.
1174.42	1.50	22.58	SOFT GRAY SH
1173.17	1.25	23.83	GRAY/BROWN SHALE
1169.00	4.17	28.00	HARD GRAY LS STRONGLY FRAC (24'4" - 25')
1167.00	2.00	30.00	BROWN LS, STRONGLY FRACTURED AND LIMONITIC STAINED 28' - 28'8"
1166.00	1.00	31.00	GRAY SH
1165.08	0.92	31.92	HARD GRAY LIMESTONE
1164.83	0.25	32.17	BROKEN GREEN SHALE W/ LIMESTONE NODULES
1163.42	1.42	33.58	CORE LOSS
1160.75	2.67	36.25	GRAY SHALE W/ LIMESTONE NODULES
1160.17	0.58	36.83	BROKEN BROWN LIMONITIC STAINED SHALE W/ LIMESTONE NODULES
1159.17	1.00	37.83	GRAY SHALE W/LIMONITIC STAINED LIMESTONE NODULES
1157.00	2.17	40.00	GRAY SHALE W/LIMESTONE NODULES
1153.00	4.00	44.00	BROWN SILTSTONE W/LIMONITIC STAINING AROUND PYRITE NODULES
1150.67	2.33	46.33	GRAY SILTSTONE
1149.58	1.08	47.42	GRAY CLAYSTONE
1148.42	1.17	48.58	LIMONITIC STAINED CLAYSTONE
1145.33	3.08	51.67	SOFT GRAY CLAYSTONE
1145.17	0.17	51.83	CORE LOSS
1143.67	1.50	53.33	HARD GRAY LIMESTONE
1141.25	2.42	55.75	GRAY CLAYSTONE W/BLACK CARBONACEOUS STREAKS
1140.75	0.50	56.25	HARD GRAY LIMESTONE W/LIMONITE ON FRACTURES
1140.08	0.67	56.92	HARD GRAY LIMESTONE
1128.33	11.75	68.67	CORE LOSS
1127.17	1.17	69.83	SOFT GRAY CLAYSTONE
1127.00	0.17	70.00	HARD GRAY LIMESTONE
1126.83	0.17	70.17	HARD BONEY SHALE
1124.25	**2.58**	**72.75**	**BANDED COAL - NO. 12 OR WASHINGTON**
1123.50	0.75	73.50	GRAY BANDED SHALE W/PYRITE LENSES
1121.92	1.58	75.08	GRAY BANDED SILTSTONE
1116.88	5.04	80.13	GRAY AND BLACK CARBONACEOUS SHALE
1114.83	2.04	82.17	DARK GRAY AND BLACK CARBONACEOUS SHALE
1113.63	1.21	83.38	COAL
1112.83	0.79	84.17	GRAY AND BLACK CARBONACEOUS SHALE
1106.58	6.25	90.42	GRAY LIMEY SHALE
1105.21	1.38	91.79	HARD GRAY LIMESTONE
1097.00	8.21	100.00	GRAY LIMEY SHALE
1096.67	0.33	100.33	HARD GRAY LIMEY SHALE
1095.33	1.33	101.67	GRAY LIMEY SHALE
1090.08	5.25	106.92	GRAY SILTY SHALE
1082.17	7.92	114.83	GRAY SILTSTONE
1080.92	1.25	116.08	GRAY LIMEY SHALE
1080.50	0.42	116.50	GRAY LIMESTONE
1077.00	3.50	120.00	DARK GRAY LIMEY SHALE
1076.25	0.75	120.75	SOFT GRAY AND BLACK LIMEY SHALE
1075.42	0.83	121.58	SOFT DARK CARBONACEOUS SHALE
1075.17	0.25	121.83	HARD DARK GRAY LIMESTONE
1065.92	9.25	131.08	GRAY-GREEN LIMEY SHALE
1056.08	9.83	140.92	GRAY SILTSTONE
1054.67	1.42	142.33	SOFT GRAY LIMEY SHALE W/1/2" CARBONACEOUS SHALE AT BASE
1047.50	7.17	149.50	GRAY SHALE W/LIMESTONE NODULES
1046.92	0.58	150.08	GRAY SHALE

ORIGINAL

D0360-6
JUN 27 1997

THE OHIO VALLEY COAL COMPANY
TEST HOLE N96-01

DRILLED 07/31/96 BY L. J. HUGHES, DAN HAMRICK
COORDINATES:-59850W, -5400S ELEVATION: 1197 (ALTIMETER)

ELEVATION	THICKNESS	DEPTH	STRATA
1044.67	2.25	152.33	GRAY AND BLACK SHALE - VERY CARBONACEOUS AT BASE
1043.17	1.50	153.83	GRAY SHALE W/LIMESTONE NODULES
1041.92	1.25	155.08	LIGHT GRAY SANDSTONE
1035.58	6.33	161.42	GRAY SHALE W/LIMESTONE NODULES
1025.92	9.67	171.08	GRAY SILTSTONE W/7" OF SANDSTONE AT BASE
1022.00	3.92	175.00	GRAY SHALE W/4" OF BLACK CARBONACEOUS SHALE AT BASE
1018.58	**3.42**	**178.42**	**COAL - NO. 11 - W/1/8" PYRITE BANDS;1/2" BONEY COAL; 12-1/2" ABOVE BASE**
1017.46	1.13	179.54	SOFT GRAY SHALE
1017.35	0.10	179.65	BONEY COAL
1015.52	1.83	181.48	GRAY LIMEY SHALE
1009.67	5.85	187.33	FINELY BANDED GRAY LIMEY SHALE
996.50	13.17	200.50	GRAY SILTSTONE
994.67	1.83	202.33	GRAY SHALE
993.54	1.13	203.46	GRAY SANDSTONE
987.38	6.17	209.63	GRAY SHALE
982.71	4.67	214.29	DARK GRAY SHALE
980.88	**1.83**	**216.13**	**COAL - NO. 10 W/ ABUNDANT PYRITE SEAMS**
980.65	**0.23**	**216.35**	**COAL - NO. 10 W/ PYRITE AND GRAY SHALE**
980.15	**0.50**	**216.85**	**COAL - NO. 10 W/PYRITE SEAMS**
980.02	0.13	216.98	DARK SHALE
979.98	0.04	217.02	BONEY COAL
977.06	2.92	219.94	GRAY LIMEY SHALE
967.00	10.06	230.00	GRAY SHALE W/LIMESTONE NODULES
963.17	3.83	233.83	GRAY SILTY SHALE
958.17	5.00	238.83	GRAY SHALE
957.17	1.00	239.83	GRAY LIMEY SHALE
955.17	2.00	241.83	HARD GRAY LIMESTONE
952.83	2.33	244.17	GRAY LIMEY SHALE
946.83	6.00	250.17	HARD GRAY LIMESTONE
944.96	1.88	252.04	GRAY SHALE W/LIMESTONE NODULES
944.04	0.92	252.96	HARD GRAY LIMESTONE
932.50	11.54	264.50	GRAY LIMEY SHALE W/LIMESTONE NODULES
930.33	2.17	266.67	HARD GRAY LIMESTONE
928.92	1.42	268.08	GRAY - GREEN SHALE W/LIMESTONE NODULES
928.00	0.92	269.00	HARD GRAY LIMESTONE
927.63	0.38	269.38	GRAY - GREEN LIMEY SHALE
925.63	2.00	271.38	HARD GRAY - GREEN LIMESTONE
924.25	1.38	272.75	GRAY - GREEN LIMEY SHALE
921.88	2.38	275.13	HARD GRAY LIMESTONE
919.29	2.58	277.71	GRAY LIMEY SHALE
917.00	2.29	280.00	DARK GRAY - GREEN LIMEY SHALE
906.58	10.42	290.42	HARD GRAY LIMESTONE W/MINOR SHALE BANDS
901.42	5.17	295.58	HARD GRAY LIMESTONE
900.58	0.83	296.42	DARK GRAY LIMEY SHALE
899.50	1.08	297.50	HARD GRAY LIMESTONE
897.42	2.08	299.58	GRAY AND DARK GREEN LIMEY SHALE
895.50	1.92	301.50	HARD PINKISH LIMESTONE
894.50	1.00	302.50	GREEN LIMEY SHALE
890.58	3.92	306.42	GREEN LIMEY SHALE W/PINKISH LIMESTONE BANDS
888.83	1.75	308.17	HARD GRAY LIMESTONE
887.71	1.13	309.29	DARK GREEN AND BLACK SHALE
886.71	1.00	310.29	HARD GRAY LIMESTONE
885.50	1.21	311.50	GRAY - GREEN LIMEY SHALE
882.00	3.50	315.00	HARD GRAY LIMESTONE

JUN 27 1997
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ORIGINAL

THE OHIO VALLEY COAL COMPANY
TEST HOLE N96-01

DRILLED 07/31/96 BY L. J. HUGHES, DAN HAMRICK
COORDINATES:-59850W, -5400S ELEVATION: 1197 (ALTIMETER)

ELEVATION	THICKNESS	DEPTH	STRATA
878.33	3.67	318.67	GRAY LIMEY SHALE, CHANGING TO DARK BROWN AT BOTTOM
875.33	3.00	321.67	HARD GRAY- PINK LIMESTONE
872.67	2.67	324.33	SOFT GRAY SHALE W/HARD LIMESTONE BANDS
871.67	1.00	325.33	CORE LOSS
870.00	1.67	327.00	SOFT BROKEN GRAY SHALE
867.67	**2.33**	**329.33**	**COAL - NO. 9**
867.48	**0.19**	**329.52**	**BROWN SHALE AND COAL - NO. 9**
867.35	**0.13**	**329.65**	**COAL - NO. 9**
867.31	**0.04**	**329.69**	**BROWN SHALE AND COAL - NO. 9**
866.06	**1.25**	**330.94**	**COAL - NO. 9**
860.75	5.31	336.25	GRAY SHALE W/MINOR LIMEY ZONES
857.42	3.33	339.58	HARD GRAY LIMESTONE
851.79	5.63	345.21	GRAY BANDED SHALE
850.54	1.25	346.46	GRAY SHALE AND BONEY SHALE
848.79	1.75	348.21	DARK GRAY CARBONACEOUS SHALE
847.58	1.21	349.42	GRAY SHALE AND BONEY SHALE
846.83	0.75	350.17	DARK GRAY SHALE
844.46	2.38	352.54	HARD PINKISH LIMESTONE
843.71	0.75	353.29	DARK GRAY SHALE
843.13	0.58	353.88	BONEY COAL
842.63	0.50	354.38	DARK BONEY SHALE
834.29	8.33	362.71	HARD PINKISH LIMESTONE W/FOUR 1/2" BONEY COAL ZONES
832.08	2.21	364.92	GREEN - GRAY LIMEY SHALE
830.46	1.63	366.54	HARD PINKISH LIMESTONE
830.38	0.08	366.63	CARBONACEOUS SHALE
828.54	1.83	368.46	HARD PINKISH LIMESTONE
826.83	1.71	370.17	DARK GRAY - GREEN LIMEY SHALE
817.08	9.75	379.92	HARD PINKISH LIMESTONE W/SIX, 1" TO 4" BANDS OF CARBONACEOUS SHALE
814.42	2.67	382.58	DARK GREEN - GRAY SHALE W/LIMESTONE NODULES
812.17	2.25	384.83	HARD PINKISH LIMESTONE
809.83	2.33	387.17	SOFT BROKEN DARK GREEN SHALE W/PINKISH LIMESTONE NODULES
809.25	0.58	387.75	CORE LOSS
808.67	0.58	388.33	BONEY COAL AND SHALE
806.42	2.25	390.58	DARK GRAY AND BLACK CARBONACEOUS SHALE
804.75	1.67	392.25	HARD GRAY LIMESTONE W/PINKISH NODULES
804.17	0.58	392.83	DARK GRAY CARBONACEOUS SHALE
802.21	1.96	394.79	HARD GRAY LIMESTONE
802.04	0.17	394.96	DARK GRAY - BLACK SHALE
799.46	2.58	397.54	HARD GRAY LIMESTONE
798.54	0.92	398.46	HARD GRAY - GREEN SHALEY LIMESTONE
797.00	1.54	400.00	HARD GRAY LIMESTONE /SHALEY BANDS
792.08	4.92	404.92	HARD PINKISH LIMESTONE W/2" GRAY SHALEY BAND AT 401.1'
791.83	0.25	405.17	SOFT GREEN LIMEY SHALE W/LIMESTONE NODULES
789.92	1.92	407.08	HARD GRAY-PINKISH LIMESTONE
789.67	0.25	407.33	SOFT GREEN LIMEY SHALE
788.25	1.42	408.75	HARD GRAY LIMESTONE
786.50	1.75	410.50	SOFT GRAY LIMEY SHALE W/LIMESTONE NODULES
786.13	0.38	410.88	BONEY COAL W/BROWN SHALE
785.58	0.54	411.42	SOFT GRAY SHALE
785.42	0.17	411.58	BONEY COAL AND BROWN SHALE
785.27	0.15	411.73	SOFT BROWN SHALE
784.77	**0.50**	**412.23**	**COAL W/PYRITE LENSES - NO. 8 ROOF COAL**
784.67	**0.10**	**412.33**	**BONEY COAL - NO. 8 ROOF COAL**
783.81	**0.85**	**413.19**	**DARK GRAY - BLACK SHALE**

JUN 27 1997
D0360-6

ORIGINAL

THE OHIO VALLEY COAL COMPANY

TEST HOLE N96-01

DRILLED 07/31/96 BY L. J. HUGHES, DAN HAMRICK

COORDINATES:-59850W, -5400S ELEVATION: 1197 (ALTIMETER)

ELEVATION	THICKNESS	DEPTH	STRATA
778.98	**4.83**	**418.02**	**COAL - NO. 8**
778.79	**0.19**	**418.21**	**COAL - NO. 8**
778.71	0.08	418.29	BONEY SHALE
775.54	3.17	421.46	DARK GRAY SHALE W/ LIMESTONE NODULES
774.29	1.25	422.71	HARD GRAY LIMESTONE W/GRAY SHALE BANDS

FRACTURE PLANES ON CORES WERE OXIDIZED (LIMONITE STAINED) TO A DEPTH OF 56.25 FT. INDICATING INTERMITTENT SATURATION. NO RETURN OF DRILLING WATER OCCURRED TO A DEPTH OF 70 FT. FROM 70 FT. TO 73 FT, WATER FLOWED THE HOLE, INDICATING A WATER-BEARING ZONE. THIS HORIZON IS THE SAME AS THE NO. 12 COAL SEAM. DRILLING WAT DID NOT RETURN IN DRILLING FROM 73 FT. TO THE BOTTOM OF THE HOLE AT 423 FT. FRACTURES ON CORES BELOW 56.25 WERE NOT OXIDIZED INDICATING GENERAL OXYGEN DEFICIENCY IN THE ROCKS.

PERCENT HARD ROCK 25.22%

PERCENT SOFT ROCK 74.78%

JUN 27 1997

D0360-6

ORIGINAL

TOVCC 05101

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N96-02	20.00	CASING		Y			Y	
	3.50	LS	Y			Y		
	1.00	LS/C/SH	Y			Y		
	3.50	CORE LOSS		Y			Y	
	0.33	LS	Y			Y		
	1.42	LS	Y			Y		
	0.92	LS	Y			Y		
	0.67	CORE LOSS		Y			Y	
	0.29	LS	Y			Y		
	0.67	LS	Y			Y		
	0.58	LS	Y			Y		
	1.50	LS	Y			Y		
	2.08	LS	Y			Y		
	0.58	LS	Y			Y		
Water Bearing Zone	3.33	LS	Y			Y		
	2.79	LS	Y			Y		
	0.08	C/SH		Y	Y		Y	Y
	0.92	C#9		Y	Y		Y	Y
	2.00	CORE LOSS		Y	Y		Y	
	1.17	CL		Y	Y		Y	Y
	1.33	C9		Y	Y		Y	Y
	0.33	CORE LOSS		Y			Y	
	0.58	CL		Y			Y	Y
	0.42	CORE LOSS		Y			Y	
	3.42	LS	Y			Y		
	1.92	LS	Y			Y		
	2.69	LS	Y			Y		
	1.98	LS	Y			Y		
	3.25	SH/LS	Y			Y		
	0.13	B/SH		Y	Y		Y	Y
	3.63	SH/LS	Y			Y		
	2.21	LS	Y			Y		
	0.21	LS	Y			Y		
	1.42	LS	Y			Y		
	1.17	CL		Y			Y	Y
	0.21	SH/C		Y	Y		Y	Y
	0.46	CL		Y			Y	Y
	3.38	LS	Y			Y		
	0.13	SH		Y			Y	Y
	8.42	LS	Y			Y		
	0.17	LS	Y			Y		
	1.88	LS	Y			Y		
	1.67	LS/SH		Y		Y	Y	Y
	3.17	LS	Y			Y		
	0.46	LS/SH		Y		Y	Y	Y
	5.67	LS	Y			Y		
	0.21	CORE LOSS		Y			Y	
	1.63	LS/SH		Y		Y	Y	Y
	3.08	LS	Y			Y		
	1.54	LS/SH		Y		Y	Y	Y
	0.83	LS/SH		Y		Y	Y	Y
	0.42	CORE LOSS		Y			Y	
	0.69	C		Y	Y		Y	Y
	1.00	SH/LS	Y			Y		
	2.08	LS	Y			Y		
	0.42	LS	Y			Y		
	0.52	LS	Y			Y		
	1.90	LS	Y			Y		
	0.20	SH/LS	Y			Y		
	4.40	LS	Y			Y		
	1.10	SH/LS	Y			Y		
	1.60	LS	Y			Y		
	2.60	LS	Y			Y		
	0.45	LS/SH		Y		Y	Y	Y
	1.80	LS	Y			Y		
	2.40	LS/SH		Y		Y	Y	Y
	0.80	SH/C		Y	Y		Y	Y
	0.50	CL		Y			Y	Y
	0.55	SH/C		Y	Y		Y	Y
	0.85	C#8		Y	Y		Y	Y
	0.85	CL		Y	Y		Y	Y

ORIGINAL D0360-6
JUN 27 1997

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N96-02	5.02	C#8		Y	Y		Y	Y
	1.33	SH		Y			Y	Y

N96-02					POT. ACID.	POT. ACID	
		NEUT. POT.	TOTAL	PYRITIC	TONS/1000T	TONS/1000T	CACO3
	pH	TONS/1000 T	SULFUR	SULFUR	AS CACO3	AS CACO3	DEFICIENCY
	SU	AS CACO3	%	%	TOT. SULF.	PYR. SULF.	AS CACO3
ROOF ROCK	9.54	4.20	2.84	2.41	88.70	75.30	84.50
COAL	8.37	2.65	4.52	2.07	-141.00	64.70	+ 139.00
BOTTOM	10.04	420.00	2.52	2.18	78.70	68.10	- 342.00

ORIGINAL

JUN 27 1997

D0360-6

STATE PLANE COORDS
X - 2,4~~44~~,364.18
Y - 737,086.69

THE OHIO VALLEY COAL COMPANY
TEST HOL N96-02

DRILLED 07/18/96 **BY L. J. HUGHES, DAN HAMRICK**
COORDINATES:-48900W,-3700S **ELEVATION:** 924 **(ALTIMETER)**

ELEVATION	THICKNESS	DEPTH	STRATA
904.00	20.00	20.00	CASING
900.50	3.50	23.50	HARD GRAY LIMESTONE
899.50	1.00	24.50	HARD BROKEN LIMESTONE W/FRAGMENTS OF COAL AND SHALE (NO OXIDATION ON FRACTURE PLANES)
896.00	3.50	28.00	CORE LOSS
895.67	0.33	28.33	HARD BROKEN GRAY LIMESTONE - NO OXIDATION ON FRACTURES
894.25	1.42	29.75	HARD GRAY LIMESTONE - NO OXIDATION ON FRACTURES
893.33	0.92	30.67	BROKEN DARK GRAY LIMESTONE - NO OXIDATION ON FRACTURES
892.67	0.67	31.33	CORE LOSS
892.38	0.29	31.63	HARD DARK GRAY LIMESTONE - NO OXIDATION ON FRACTURES
891.71	0.67	32.29	HARD GRAY LIMESTONE
891.13	0.58	32.88	BROKEN BROWNISH LIMESTONE - NO OXIDATION ON FRACTURES
889.63	1.50	34.38	HARD BROWNISH LIMESTONE - NO OXIDATION ON FRACTURES
887.54	2.08	36.46	HARD PINKISH LIMESTONE - NO OXIDATION ON FRACTURES
886.96	0.58	37.04	BROKEN HARD BROWNISH LIMESTONE
883.63	3.33	40.38	HARD GRAY LIMESTONE W/LIMONITIC STAINING ON FRACTURES
880.83	2.79	43.17	HARD DARK GRAY LIMESTONE
880.75	0.08	43.25	BLACK CARBONACEOUS SHALE
879.83	**0.92**	**44.17**	**BROKEN COAL - NO. 9**
877.83	**2.00**	**46.17**	**CORE LOSS**
876.67	**1.17**	**47.33**	**SOFT GRAY CLAYSTONE**
875.33	**1.33**	**48.67**	**COAL - NO. 9**
875.00	**0.33**	**49.00**	**CORE LOSS**
874.42	0.58	49.58	GRAY CLAYSTONE
874.00	0.42	50.00	CORE LOSS
870.58	3.42	53.42	HARD GRAY LIMESTONE
868.67	1.92	55.33	HARD PINKISH LIMESTONE
865.98	2.69	58.02	HARD GRAY BANDED LIMESTONE
864.00	1.98	60.00	HARD GRAY MASSIVE LIMESTONE
860.75	3.25	63.25	HARD BANDED GRAY LIMESTONE W/MINOR SHALE BANDS
860.63	0.13	63.38	BLACK BONEY SHALE
857.00	3.63	67.00	HARD BANDED GRAY LIMESTONE W/MINOR SHALE BANDS
854.79	2.21	69.21	HARD PINKISH LIMESTONE
854.58	0.21	69.42	HARD BROWN LIMESTONE
853.17	1.42	70.83	HARD PINKISH LIMESTONE
852.00	1.17	72.00	SOFT GRAY - GREEN CLAYSTONE
851.79	0.21	72.21	BONEY COAL AND SHALE
851.33	0.46	72.67	BROWN CLAYSTONE
847.96	3.38	76.04	HARD PINKISH LIMESTONE
847.83	0.13	76.17	DARK GRAY SHALE
839.42	8.42	84.58	HARD PINKISH LIMESTONE
839.25	0.17	84.75	HARD BLACK LIMESTONE
837.38	1.88	86.63	HARD PINKISH LIMESTONE
835.71	1.67	88.29	DARK GREEN - GRAY LIMEY SHALE
832.54	3.17	91.46	HARD PINKISH LIMESTONE
832.08	0.46	91.92	SOFT GREEN - GRAY LIMEY SHALE
826.42	5.67	97.58	HARD PINKISH LIMESTONE
826.21	0.21	97.79	CORE LOSS
824.58	1.63	99.42	BROKEN DARK GREEN - GRAY LIMEY SHALE

ORIGINAL

D0360-6

THE OHIO VALLEY COAL COMPANY
TEST HOL N96-02

DRILLED 07/18/96 **BY L. J. HUGHES, DAN HAMRICK**
COORDINATES:-48900W,-3700S **ELEVATION:** 924 **(ALTIMETER)**

ELEVATION	THICKNESS	DEPTH	STRATA
821.50	3.08	102.50	HARD PINKISH LIMESTONE
819.96	1.54	104.04	GREEN - GRAY LIMEY SHALE, SOME FRIABLE ZONES
819.13	0.83	104.88	SOFT PINKISH LIMEY SHALE
818.71	0.42	105.29	CORE LOSS
818.02	0.69	105.98	HARD BONEY COAL
817.02	1.00	106.98	DARK GRAY LIMEY SHALE
814.94	2.08	109.06	HARD PINKISH LIMESTONE
814.52	0.42	109.48	HARD DARK GRAY BANDED LIMESTONE
814.00	0.52	110.00	HARD PINKISH LIMESTONE
812.10	1.90	111.90	HARD GRAY LIMESTONE
811.90	0.20	112.10	HARD BLACK SHALEY LIMESTONE
807.50	4.40	116.50	HARD GRAY LIMESTONE
806.40	1.10	117.60	HARD GRAY AND PINK SHALEY LIMESTONE
804.80	1.60	119.20	HARD PINKISH LIMESTONE
802.20	2.60	121.80	HARD DARK GRAY LIMESTONE
801.75	0.45	122.25	GREEN - GRAY LIMEY SHALE
799.95	1.80	124.05	HARD GRAY LIMESTONE
797.55	2.40	126.45	SOFT GREEN LIMEY SHALE
796.75	0.80	127.25	CARBONACEOUS SHALE AND BROWN SHALE
796.25	0.50	127.75	SOFT BROWN CLAYSTONE
795.70	0.55	128.30	DARK CARBONACEOUS SHALE
794.85	**0.85**	**129.15**	**BONEY COAL - NO. 8 ROOF COAL**
794.00	**0.85**	**130.00**	**GRAY CLAYSTONE**
788.98	**5.02**	**135.02**	**COAL - NO. 8 - W/SOME PYRITE BANDS**
787.65	1.33	136.35	GRAY SHALE

THE LANDOWNER REPORTED TO THE DRILL CREW THAT THE DRILL SITE WAS STRIPPED AT AN EARLIER TIME. NO EVIDENCE WAS NOTED IN THE DRILLING OPERATION OF FILL MATERIAL. THE ROCKS CORED WERE ALL FRESH, I.E., UNOXIDIZED, EXCEPT AT 37 TO 40 FT. WHICH IS APPROXIMATELY THE LEVEL OF THE ADJACENT STREAM. NO EVIDENCE OF WATER-BEARING HORIZONES WAS OBTAINED, PARTICULARLY BECAUSE THERE WAS NO WATER RETURN DURING THE CORING OPERATION.

PERCENT HARD ROCK 60.93%
PERCENT SOFT ROCK 39.07%

ORIGINAL

D0360-6

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N96-03	20.00	CASING		Y			Y	
	3.35	LS	Y			Y		
	0.80	LS/SH		Y		Y	Y	Y
	0.95	LS	Y			Y		
	1.35	CORE LOSS		Y			Y	
	0.90	LS/SH		Y		Y	Y	Y
	1.40	SH/LS	Y			Y		
	8.50	LS	Y			Y		
	2.75	SH/LS	Y			Y	Y	Y
	0.90	LS	Y			Y		
	11.75	LS/SH		Y		Y	Y	Y
	1.60	CL		Y			Y	Y
	0.40	CL		Y			Y	Y
	1.10	CORE LOSS		Y			Y	
	2.88	C#9		Y	Y		Y	Y
	0.09	CL		Y	Y		Y	Y
	1.43	C#9		Y	Y		Y	Y
	1.45	CL		Y			Y	Y
	1.50	LS	Y			Y		
	1.70	LS/SH		Y		Y	Y	Y
	1.90	LS	Y			Y		
	4.10	LS/SH		Y		Y	Y	Y
	3.00	LS/SH		Y		Y	Y	Y
	0.40	CSH		Y	Y		Y	Y
	1.90	LS/SH		Y		Y	Y	Y
	0.50	C/SH		Y	Y		Y	Y
	0.90	LS/SH		Y		Y	Y	Y
	3.25	LS	Y			Y		
	0.60	LS/SH		Y		Y	Y	Y
	0.80	CL		Y			Y	Y
	0.60	C/SH		Y	Y		Y	Y
	12.25	LS	Y			Y		
	0.30	SH		Y			Y	Y
	1.95	LS	Y			Y		
	1.60	LS/SH		Y		Y	Y	Y
	1.15	LS	Y			Y		
	1.90	LS	Y			Y		
	0.50	LS/SH		Y		Y	Y	Y
	3.45	LS	Y			Y		
	1.45	LS/SH		Y		Y	Y	Y
	0.15	C/SH		Y	Y		Y	Y
Water Bearing Zone	0.80	LS/SH		Y		Y	Y	Y
Water Bearing Zone	0.15	LS	Y			Y		
Water Bearing Zone	0.10	LS	Y			Y		
Water Bearing Zone	0.20	CORE LOSS		Y.			Y	
Water Bearing Zone	2.00	LS	Y			Y		
Water Bearing Zone	0.15	LS	Y			Y		
Water Bearing Zone	0.20	CORE LOSS		Y			Y	
Water Bearing Zone	1.85	LS	Y			Y		
Water Bearing Zone	0.10	SH/LS	Y			Y		
Water Bearing Zone	0.20	CORE LOSS		Y			Y	
Water Bearing Zone	0.60	LS	Y			Y		
Water Bearing Zone	0.65	LS/SH		Y		Y	Y	Y
Water Bearing Zone	0.20	CORE LOSS		Y			Y	
Water Bearing Zone	0.20	C		Y	Y		Y	Y
Water Bearing Zone	0.40	CL		Y			Y	Y
Water Bearing Zone	0.20	CORE LOSS		Y			Y	
	1.00	LS/SH		Y		Y	Y	Y
	0.45	LS	Y			Y		
	1.25	LS/SH		Y		Y	Y	Y
	2.75	LS	Y			Y		
	0.10	LS	Y			Y		
	5.35	LS	Y			Y		
	0.10	CL		Y			Y	Y
	2.40	LS	Y			Y		
	1.80	LS	Y			Y		
	1.90	SH/LS	Y			Y	Y	Y
	0.15	LS	Y			Y		
	0.30	CORE LOSS		Y			Y	
	0.75	SH/LS	Y			Y		
	0.30	CORE LOSS		Y			Y	

ORIGINAL
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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
PERMIT APPLICATION TEST HOLES

TEST HOLE	THICKNESS	LITHOLOGY	HARD ROCK	SOFT ROCK	ACIDIC	BASIC	ERODIBLE	COMPACTIBLE
N96-03	1.90	LS	Y			Y		
	0.80	SH/LS	Y			Y		
	0.30	CORE LOSS		Y			Y	
	0.50	LS/SH		Y		Y	Y	Y
	0.75	CL		Y			Y	Y
	0.20	CORE LOSS		Y			Y	
	0.90	CL		Y			Y	Y
	0.90	C#8		Y	Y		Y	Y
	0.80	CL		Y	Y		Y	Y
	0.40	CORE LOSS		Y	Y		Y	
	0.35	C#8		Y	Y		Y	Y
	0.60	CORE LOSS		Y	Y		Y	
	0.83	C#8		Y	Y		Y	Y
	0.04	CL		Y	Y		Y	Y
	3.00	C#8		Y	Y		Y	Y
	0.25	SH		Y			Y	Y
	2.43	LS/SH		Y		Y	Y	Y

ORIGINAL

N96-03					POT. ACID.	POT. ACID	
		NEUT. POT.	TOTAL	PYRITIC	TONS/1000T	TONS/1000T	CACO3
	pH	TONS/1000 T	SULFUR	SULFUR	AS CACO3	AS CACO3	DEFICIENCY
	SU	AS CACO3	%	%	TOT. SULF.	PYR. SULF.	AS CACO3
ROOF ROCK	9.72	4.05	2.65	2.21	82.80	69.00	78.70
COAL	9.22	2.75	3.81	1.66	119.00	51.90	-116.00
BOTTOM	10.07	193.00	2.41	2.06	75.30	64.40	-118.00

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TOVCC 05107

STATE PLANE COORDS
X - 2,438,985.09
Y - 735,888.61

THE OHIO VALLEY COAL COMPANY
TEST HOLE N96-03

DRILLED 07/22/96 **BY L. J. HUGHES, DAN HAMRICK**
COORDINATES:-54300W, -4800S **ELEVATION: 934 (TOPOGRAPHY)**

ELEVATION	THICKNESS	DEPTH	STRATA
914.00	20.00	20.00	CASING
910.65	3.35	23.35	HARD PINKISH LIMESTONE
909.85	0.80	24.15	SOFT BROKEN GREY - GREEN LIMEY SHALE
908.90	0.95	25.10	HARD PINKISH LIMESTONE
907.55	1.35	26.45	CORE LOSS
906.65	0.90	27.35	SOFT GREEN LIMEY SHALE
905.25	1.40	28.75	HARD GRAY SHALEY LIMESTONE
896.75	8.50	37.25	HARD PINKISH LIMESTONE
894.00	2.75	40.00	HARD GRAY AND GREEN SHALEY LIMESTONE
893.10	0.90	40.90	HARD GRAY LIMESTONE
881.35	11.75	52.65	DARK GRAY LIMEY SHALE
879.75	1.60	54.25	SOFT GRAY AND BROWN CLAYSTONE
879.35	0.40	54.65	SOFT BROKEN CLAYSTONE
878.25	1.10	55.75	CORE LOSS
875.37	**2.88**	**58.63**	**HARD COAL - NO. 9 - W/PYRITE BANDS**
875.28	**0.09**	**58.72**	**SOFT BROWN CLAY**
873.85	**1.43**	**60.15**	**HARD COAL - NO. 9 - BONEY (59.95-60.00 FT)**
872.40	1.45	61.60	DARK GRAY CLAYSTONE
870.90	1.50	63.10	HARD GRAY LIMESTONE
869.20	1.70	64.80	DARK GRAY LIMEY SHALE
867.30	1.90	66.70	HARD PINKISH LIMESTONE
863.20	4.10	70.80	DARK GRAY LIMEY SHALE
860.20	3.00	73.80	DARK GRAY LIMEY SHALE AND LIMESTONE
859.80	0.40	74.20	DARK GRAY AND CARBONACEOUS SHALE
857.90	1.90	76.10	DARK GRAY LIMEY SHALE
857.40	0.50	76.60	DARK BROWN CARBONACEOUS SHALE
856.50	0.90	77.50	DARK GRAY AND BROWN LIMEY SHALE
853.25	3.25	80.75	HARD PINKISH LIMESTONE
852.65	0.60	81.35	DARK GREEN LIMEY SHALE
851.85	0.80	82.15	SOFT DARK BROWN AND GRAY CLAYSTONE
851.25	0.60	82.75	DARK CARBONACEOUS SHALE
839.00	12.25	95.00	HARD PINKISH AND GRAY LIMESTONE
838.70	0.30	95.30	DARK GRAY -BLACK SHALE
836.75	1.95	97.25	HARD PINKISH LIMESTONE
835.15	1.60	98.85	DARK GREEN LIMEY SHALE
834.00	1.15	100.00	HARD PINKISH LIMESTONE
832.10	1.90	101.90	HARD PINKISH AND GRAY LIMESTONE
831.60	0.50	102.40	DARK GREEN LIMEY SHALE
828.15	3.45	105.85	HARD PINKISH LIMESTONE
826.70	1.45	107.30	GREEN LIMEY SHALE
826.55	0.15	107.45	DARK CARBONACEOUS SHALE
825.75	0.80	108.25	GRAY AND BROWN LIMEY SHALE
825.60	0.15	108.40	HARD PINKISH LIMESTONE
825.50	0.10	108.50	BROKEN GRAY LIMESTONE
825.30	0.20	108.70	CORE LOSS
823.30	2.00	110.70	HARD PINKISH AND GRAY LIMESTONE
823.15	0.15	110.85	BROKEN GRAY LIMESTONE
822.95	0.20	111.05	CORE LOSS

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THE OHIO VALLEY COAL COMPANY
TEST HOLE N96-03

DRILLED 07/22/96 BY L. J. HUGHES, DAN HAMRICK
COORDINATES:-54300W, -4800S ELEVATION: 934 (TOPOGRAPHY)

ELEVATION	THICKNESS	DEPTH	STRATA
821.10	1.85	112.90	HARD PINKISH AND GRAY LIMESTONE
821.00	0.10	113.00	BROKEN LIMESTONE AND SHALE
820.80	0.20	113.20	CORE LOSS
820.20	0.60	113.80	HARD PINKISH LIMESTONE
819.55	0.65	114.45	SOFT GREEN LIMEY SHALE
819.35	0.20	114.65	CORE LOSS
819.15	0.20	114.85	HARD COAL
818.75	0.40	115.25	BROWNISH CLAYSTONE
818.55	0.20	115.45	CORE LOSS
817.55	1.00	116.45	GRAY LIMEY SHALE
817.10	0.45	116.90	HARD BROKEN GRAY LIMESTONE
815.85	1.25	118.15	DARK GREEN AND GRAY LIMEY SHALE
813.10	2.75	120.90	HARD PINKISH AND GRAY LIMESTONE
813.00	0.10	121.00	HARD BROKEN BROWN LIMESTONE
807.65	5.35	126.35	HARD GRAY LIMESTONE
807.55	0.10	126.45	SOFT GREEN CLAYSTONE
805.15	2.40	128.85	HARD GRAY LIMESTONE
803.35	1.80	130.65	HARD WHITE LIMESTONE
801.45	1.90	132.55	HARD PINKISH LIMESTONE AND GREEN SHALE
801.30	0.15	132.70	BROKEN NODULAR LIMESTONE
801.00	0.30	133.00	CORE LOSS
800.25	0.75	133.75	PINKISH NODULAR LIMESTONE AND GREEN LIMEY SHALE
799.95	0.30	134.05	CORE LOSS
798.05	1.90	135.95	HARD GRAY LIMESTONE
797.25	0.80	136.75	GRAY LIMESTONE AND GREEN LIMEY SHALE
796.95	0.30	137.05	CORE LOSS
796.45	0.50	137.55	SOFT GRAY LIMEY SHALE AND HARD GRAY LIMESTONE
795.70	0.75	138.30	SOFT GRAY CLAYSTONE
795.50	0.20	138.50	CORE LOSS
794.60	0.90	139.40	SOFT GRAY AND BLACK CLAYSTONE
793.70	**0.90**	**140.30**	**BONEY COAL - NO. 8 ROOF COAL**
792.90	**0.80**	**141.10**	**SOFT GRAY CLAYSTONE**
792.50	**0.40**	**141.50**	**CORE LOSS**
792.15	**0.35**	**141.85**	**BROKEN BONEY COAL - NO. 8**
791.55	**0.60**	**142.45**	**CORE LOSS**
790.72	**0.83**	**143.28**	**HARD COAL - NO. 8**
790.68	**0.04**	**143.32**	**GRAY CLAYSTONE**
787.68	**3.00**	**146.32**	**HARD COAL - NO. 8**
787.43	0.25	146.57	HARD BROWNISH SHALE
785.00	2.43	149.00	GRAY - GREEN LIMEY SHALE

DRILLER REPORTED WATER LOSS IN ZONE FROM 108 FT. TO 116 FT. ALL CORES ARE FRESH, I.E. UNOXIDIZED, INDICATING THEY ARE BELOW THE NORMAL WATER TABLE.

PERCENT HARD ROCK 45.97%
PERCENT SOFT ROCK 54.03%

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TEST HOLE LOGS AND ATTACHMENT 13'S
D-0360-3 APPLICATION AREA

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ADDENDUM TO PART 2, PAGE 17, B
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

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, siltstone, shale, claystone, 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 Powhatan No. 6 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

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TOVCC 05111

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 will not be conducted under less than 240 feet of cover to further protect the mine and overlying groundwater resources.

The rock strata of Belmont County typically form a gentle monocline that dip southeasterly at grades less than one percent (Figure 2), but in the application area is locally more southward to southwesterly. The base elevation of the No. 8 seam ranges from 783 ft. in the northeast corner to 720 ft. in the southwest corner, near the village of Centerville.

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 three miles east of the Powhatan No. 6 Mine application area and, therefore, is not expected to have an impact on ground water flow in the application area.

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TOVCC 05112

OHIO Department of Natural Resources

George V. Voinovich • Governor
Frances S. Buchholzer • Director

December 8, 1992

Mr. David L. Bartsch, P.E.
Project Engineer
The Ohio Valley Coal Company
56854 Pleasant Ridge Road
Alledonia, Ohio 43902

RE: Test Hole Variance Request, Permit D-0360, Powhatan No. 6 Mine, Smith Township, Belmont County

Dear Mr. Bartsch:

In response to the above captioned variance request, dated June 30, 1992, approval is granted under the provisions of rule 1501:13-4-13 (C)(3). Submit a copy of this packet and letter as part of the permit application when you submit the packet for pre-initial review.

Sincerely,

Glen G. Kizer
Chief
Division of Reclamation

GGK/gm/ds

cc: George Mychkovsky
Vanessa Tolliver
Harry Payne

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JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-34

*Coordinates: S. 11,899.95 W. 52,644.96 Surface Elevation 1199.07

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		5.0	CM, EM
Shale w/Limestone		25.0	AK, CM, EM
Sandstone		8.0	CS, ES
Shale		5.0	CM, EM
Shale, Black		4.0	AC, CM, EM
Limestone & Shale		3.0	AK, CS
Shale, Black		1.2	AC, CM, EM
Limestone		3.8	AK, CS, ES
Shale, Calc.		8.1	AK, CM, EM
Sandstone		16.9	CS, ES
Shale		5.5	CM, EM
Coal		0.5	AC, CM, EM
Shale & Limestone		1.1	AK, CM, EM
Black Shale w/Coal		0.6	AC, CM, EM
Shale w/Limestone		9.9	AK, CM, EM
Coal w/Black Shale		12.5	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-34

*Coordinates: S. 11,899.95 W. 52,644.96 Surface Elevation 1199.07

Lithology	H_2O**	Thickness	Physical Properties
Limestone		10.0	AK, CS, ES
Shale w/Limestone		65.0	AK, CS, ES
Sandstone		5.6	CS, ES
Shale w/Limestone		29.5	AK, CM, EM
Coal w/Black Shale		4.5	AC, CM, EM
Shale, Calc.		31.9	AK, CM, EM
Black Shale w/Coal		10.0	AC, CM, EM
Shale w/Limestone		13.1	AK, CM, EM
Sandstone		7.4	CS, ES
Shale w/Limestone		33.0	AK, CM, EM
Limestone		6.1	AK, CS, ES
Shale w/Limestone		9.5	AK, CM, EM
Limestone w/Shale		19.9	AK, CS, ES
Black Shale		1.9	AC, CM, EM
Limestone		8.2	AK, CS, ES
Shale, Calc.		19.0	AK, CM, EM
Coal w/Bl. Shale		4.1	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

ORIGINAL

D0360-6

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-34

*Coordinates: S. 11,899.95 W. 52,644.96 Surface Elevation 1199.07

Lithology	H_2O**	Thickness	Physical Properties
Shale w/Limestone		23.3	AK, CM, EM
Coal w/Bl. Shale		0.6	AC, CM, EM
Limestone		12.4	AK, CS, ES
Limestone w/Shale		19.9	AK, CS, ES
Black Shale		0.3	AC, CM, EM
Shale w/Limestone		5.3	AK, CM, EM
Limestone w/Shale		13.4	AK, CS, ES
Shale w/Limestone		7.4	AK, CM, EM
Coal w/Bl. Shale		1.8	AC, CM, EM
Coal (No. 8)		5.4	AC, CM, EM
Shale, Calc.		10.2	AK, CM, EM
Sandstone		6.6	CS, ES
Shale		3.6	CM, EM

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	(not analyzed)				
No. 8 Coal	(not analyzed)				
Bottom	(not analyzed)				

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*If other than State Plane, indicate coordinate system.
**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend

AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6

TOVCC 05116

STATE PLANE COORDS -
X - 2,440,769.05
Y - 728,819.96

N-34

NO. 3 LONGWALL DRILLING PROGRAM

Hole is located on ridge above Williams Creek, Smith Township, Belmont County, in the center of the SW ¼ of Section 10, T6N - R4W, Armstrong Mills, 7½' Quadrangle.

Elevation	1210±	1199.07
Depth	477'	
Date Started	November 8, 1978	
Date Finished	November 24, 1978	

Pittsburgh No. 8 Coal lost in orginal hole. Whipstock Wedge at 410' - Cored to 477'.

Coord.
S 11,899.95 W 52,644.96

Bottom of No. 8 Coal

1199.07 Surf
456.66 Depth
742.41 Bottom El.

ORIGINAL

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D0360-6

TOVCC 05117

NO. 3 LONGWALL DRILLING PROGRAM

Hole No. 1

LITHOLOGY		THICKNESS	DEPTH
Overburden		10 - 0	10 - 0
Shale, Med. Br. Olive Fractures at Top		4 - 6	14 - 6
Limestone, Argillaceous, Light Grey		1 - 0	15 - 6
Shale, Med. Grey--Green, Jumbled Bedding		3 - 0	18 - 6
Shale, Red--Maroon		2 - 9	21 - 3
Shale, Med. Grey		13 - 9	35 - 0
Siltstones and sandstones, Fine Grained, Light Grey -- White		8 - 0	43 - 0
Shale, Silty, Light--Med. Grey		5 - 0	48 - 0
Shale, Dk. Grey to Black, Soft occ. Soft zones		4 - 0	52 - 0
Limestone, Silty, Med. Grey		1 - 8	53 - 8
Shale, Med. Grey		1 - 4	55 - 0
Shale, Dk. Grey to Black		1 - 3	56 - 3
Limestone, Sandy Bottom, Light Br. Grey		3 - 0	59 - 3
Limestone, Light Br. Grey		0 - 9	60 - 0
Shale, Med. Grey - Med. Green, Firm, Limey		5 - 0	65 - 0
Mudstone - Shale, Silty, Med. Grey - Green, Limey		1 - 6	66 - 6
Clay Med. Grey		0 - 2	66 - 8
Mudstone - Shale, Silty, Med. Grey--Green, Limey		1 - 6	68 - 2
Siltstones + Sandstones, Flazered, Light -- Med. Grey		8 - 10	77 - 0
Sandstone, Light--Med. Grey, Fine Grained		8 - 0	85 - 0
Shale, Med.--Dk. Grey-Firm		5 - 6	90 - 6
Coal Dirty		0 - 6	91 - 0
Shale & Limestone, Med. Grey, Hard		1 - 2	92 - 2
Shale, Black, Coal & Carby Zones		0 - 7	92 - 9
Limestone + Shale, Med. Grey		2 - 3	95 - 0
Shale + Mudstone + Limestone, Blk. → Dk. Brown near bottom		7 - 6	102 - 6
Coal, Bone Dirty	0 - 5½	2 - 10	105 - 4
Shale, Black	0 - 2½		
Shale, Black, Boney	0 - 4		
Bone, Dirty	1 - 2		
Coal, Clean	0 - 4		
Coal, Dirty	0 - 4		

No. 12 Washington

ORIGINAL

JUN 27 1997

D0360-6

TOVCC 05118

LITHOLOGY		THICKNESS	DEPTH
Shale, Black - Dk. Grey		2 - 3	107 - 7
Shale, Black		5 - 2	112 - 9
Coal + Shale	0 - 2		
Shale, Black, w/coal beds	0 - 5		
Bone + Shale	0 - 4		
Pyrite	0 - ½	1 - 2	113 -11
Coal, Bone	0 - 2		
Coal Clean	0 - ½		
Little Washington			
Shale, Mudstone Med. Grey, Silty		0 - 6	114 - 5
Shale, Black		0 - 7	115 - 0
Limestone, Med. Br. Grey, Hard		10 - 0	125 - 0
Shale, Med. Grey, Green Cast, Limey		20 - 0	145 - 0
Shale, Limey, Dk. Grey, Uniform		2 - 8	147 - 8
Limestone, Light Br. Grey		0 - 6	148 - 2
Shale, Dk. Grey, Porous, Red Cast, Jumbled Bedding		4 - 10	153 - 0
Limestone, Dk. Greenish Grey		2 - 0	155 - 0
Limestone + Shale, Gradationaly Interbedded Dk. Greenish Grey		10 - 0	165 - 0
Siltstones + Shales, Med. Grey, Slightly calcareous		15 - 0	180 - 0
Sandstone, Med. -- Coarse grained, calcareous		5 - 8	185 - 8
Clay, Dk. Grey		0 - 2	185 - 10
Shale, Silty, Med. Grey		5 - 10	191 - 8
Sands + Siltstones, L. Grey		6 - 4	198 - 0
Shale, Med. Grey top ½, Dk. Grey bottom ½, Firm		3 - 2	201 - 2
Limestone, Light Br. Grey		1 - 8	202 - 10
Shale + Mudstone, Med. - Dk. Grey, Calcareous		2 - 2	205 - 0
Siltstones, + Sandstones Light - Med. Grey		4 - 6	209 - 6
Shale, Dk. Grey to Blk.		0 - 11	210 - 5

ORIGINAL
D0360-6
JUN 27 1987

TOVCC 05119

LITHOLOGY			THICKNESS	DEPTH
NS	Shale, Black + Bone, Coaly	0 - 4		
	Coal Clean	2 - 4		
	Coal Bone	0 - 1½		
	Coal Clean	0 - 1½	3 - 6½	213 - 1½
	Coal Bone	0 - 1		
NS	Shale, Black	0 - 5		
NS	Coal No. 11 Waynesburg	0 - 1½		
Mudstone, Silty, Med. Grey			1 - 0½	215 - 0
Shale, Med. Grey, Occasionally V. Calcareous			6 - 6	221 - 6
Siltstone, Med. Grey, Calcareous			4 - 3	225 - 9
Shale, Med. Grey, Calcareous, Jumbled Bedding			5 - 6	231 - 3
Siltstone, Med. Grey, Shaley			15 - 9	245 - 0
Shale, Blk. Occ. Silty			7 - 0	252 - 4
NS	Coal Bone	0 - 0½		
	Coal Clean	2 - 1½	3 - 0½	255 - 0
NS	Shale, Black	0 - 2½		
	Coal No. 10 Uniontown	0 - 8		
Shale, Dk. Grey, Calcareous			6 - 0	261
Limestone, Jumbled, Med. Grey			4 - 0	265
Limestone, Med. Grey			0 - 6	265 - 6
Shale + Limestone, Med. Green Grey			2 - 8	268 - 2
Sandstone, Med. - Light Grey Fine Grain			7 - 5	275 - 7
Shale, Dk. Grey			2 - 0	277 - 7
Shale + Limestone, Med. Grey			17 - 11	295 - 6
Limestone, Light Grey, Occ. Dk. Grey shale partings			1 - 0	296 - 6
Shale, Calcareous, Med. Greenish Grey			4 - 8	301 - 2
Limestone, Med. Br. Grey, Shaley			2 - 10	304 - 0
Limestone, Med. Br. Grey			3 - 4	307 - 4
Shale, Dk. Grnish - Grey, Calcareous, Limestone Bed near top			3 - 10	311 - 2
Limestone, Shaley, Med. Grey			5 - 0	316 - 2
Shale, Dk. Green			0 - 8	316 - 10

D0360-0
JUN 27 1997
ORIGINAL
TOVCC 05120

	LITHOLOGY		THICKNESS	DEPTH
	Limestone, Med. Grey, Occ. Calcareous Shale partings		19 - 2	336 - 0
	Shale, Dk. Green		0 - 8	336 - 8
	Shale, Dk. Grey - Blk.		1 - 10	338 - 6
	Limestone, Light Br. Grey with Shale Partings Occasional Sandstone Beds		8 - 3	346 - 9
	Shale → Mudstone, V. Calcareous Occ. Lst zones, Fracture traces		8 - 3	355 - 0
	Shale, Dk. Grey - Black, V. Calcareous, Occ. Lst zones		8 - 0	363 - 0
	Mudstone, Dk. Gry, Fractured		2 - 9	365 - 9
	Shale, Black Coaly		0 - 2	365 - 11
	Coal, Clean	2 - 2		
	Coal, Bone	0 - 1		
NS	Shale, Black Coaly	0 - 1½		
	Coal Clean	0 - 9		
	Coal Bone	0 - 1	3 - 11	369 - 10
	Coal Clean	0 - 2		
	Coal Bone	0 - 1		
	Coal Clean	0 - 5½		
	No. 9 Sewickley			
	Shale, Silty, Med. Gry		1 - 6	371 - 4
	Shale, Med. Grey		3 - 9	375 - 1
	Limestone, L. Grey		1 - 4	376 - 5
	Mudstone, Calcareous, Highly Fractured		5 - 1	381 - 6
	Shale, Dk. Gry to Black, Calcareous		7 - 3	388 - 9
	Limestone, Light Brown - Med. Brownish Grey, Argillaceous		3 - 0	391 - 9
	Mudstone, Med. Gry, Shaley		1 - 6	393 - 3
	Shale, Boney - Coaly Fishpot		0 - 3	393 - 6
	Shale, Black		0 - 5	393 - 11
(Box 395)	Limestone, Light Br. Grey Flazered at 400		12 - 5	406 - 4
	Shale, Dk. Greenish Grey, V. Calcareous		1 - 6	407 - 10

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ORIGINAL

TOVCC 05121

LITHOLOGY	THICKNESS	DEPTH
Limestone, Light Br. Grey	3 - 6	411 - 1
Mudstone, Shaley, Med. Greenish Grey	0 - 4	411 - 5
Shale, Calcareous, Med. Grey	0 - 3	411 - 8
Limestone, Light Br. Grey	3 - 4	415 - 0
Limstone, Light Br. Grey Shaley at 416 418	3 - 6	418 - 6
Mudstone, Shaley, Med. Greenish Grey, Fractured	1 - 8	420 - 2
Shale, Dk. Br. Grey, Hrd,	0 - 8	420 - 10
Limestone, Light Br. Grey, Argillaceous, Fractured in upper 1/3	3 - 8	424 - 6
Mudstone, Shaley, Med. Green	0 - 6	425 - 0
Mudstone, Light Br. Grey, Calcareous	1 - 3	426 - 3
Shale, Black	0 - 4	426 - 7
Shale, Dk. Grey, Calcareous	0 - 10	427 - 5
Limestone, Light - Med. Grey	0 - 4	427 - 9
Mudstone, Shaley, Med. Br. Grey, Broken	0 - 10	428 - 7
Limestone, Light Grey	0 - 9	429 - 4
Shale, Dk. Grey	0 - 4	429 - 8
Limestone, Light Grey	1 - 11	431 - 7
Shale, Dk. Grey	0 - 4	431 - 11
Limestone, Med. Grey	4 - 5	436 - 4
Mudstone + Shale, Calcareous, Fracture Fillings Med. - Dk. Grey	2 - 8	439 - 0
Limestone, Light Grey, Hrd.	3 - 3	442 - 3
Shale -- Limestone, Med. - Dk. Grey	0 - 10	443 - 1
Mudstone, Shaley, Med. Grey Broken in Middle	2 - 0	445 - 1
Limestone, Argillaceous L. Grey	0 - 5	445 - 5
Mudstone, Med. Grey, Shaley	0 - 6	445 - 11
Mudstone, Med. Grey, Calcareous at Top	1 - 6	447 - 5
Limestone, Med. Grey, Slickensides	0 - 3	447 - 8
Mudstone + Shale, Med. Br. Grey Dk. Grey, Slickensides, Calcareous	1 - 11	449 - 7
Shale, Black	0 - 5	450 - 0

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ORIGINAL

TOVCC 05122

LITHOLOGY	THICKNESS	DEPTH
(Thickness read from drill measuring rod)		
Shale ?	0 - 4	450 - 4
Coal	0 - 6	450 - 10
Shale ?	0 - 10	451 - 8
Coal	5 - 0 ±	456 - 8
Shale	1 - 4	458 - 0

(Lost tube except for 1" Shale)

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ORIGINAL

TOVCC 05123

LITHOLOGY		THICKNESS	DEPTH
		0 - 0	447 - 0
Mudstone, Light Grey, Fractured		1 - 2	448 - 2
Mudstone, Shaley, Dk. Grey, Fractured		1 - 0	449 - 2
Mudstone, L. Grey, Fractured & Broken		0 - 4	449 - 6
Shale, Dk. Grey - Black		0 - 5½	449 - 11½
Coal Bone	0 - 1½	0 - 8	450 - 7½
Coal Clean	0 - 6½		
Shale - Mudstone, Dk. Grey - Blk.	0 - 8½	0 - 8½	451 - 4
Coal Bone	0 - 1		
Coal, Clean, Pyrite 8" from top	2 - 0	5 - 4	456 - 8
Coal Bone	0 - 1		
Coal Clean	3 - 2		
Shale, Black, Boney		0 - 1	456 - 9
Shale - Mudstone,		0 - 4	457 - 1
Fire Clay, Light Grey		0 - 4	457 - 5
Shale, Dk. Grey		1 - 6	458 - 5
Mudstone, Silty, Med. Grey		1 - 0	459 - 5
Limestone, Light Grey		0 - 6	460 - 5
Mudstone, Med. Grey, Soft Bkn.		0 - 9	461 - 2
Mudstone, Hard, Med. Grey Slightly Calcareous		3 - 0	464 - 2
Shale, Silty, Med. Grey		2 - 8	466 - 10
Sandstone, Light Grey, Find Grnd.		6 - 7	473 - 5
Shale, Dk. Grey		3 - 7	477 - 0
Total Depth			477 - 0

D0360-6

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ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-34

*Coordinates: S. 11,899.95 W. 52,644.96 Surface Elevation 1199.07

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		5.0	CM, EM
Shale w/Limestone		25.0	AK, CM, EM
Sandstone		8.0	CS, ES
Shale		5.0	CM, EM
Shale, Black		4.0	AC, CM, EM
Limestone & Shale		3.0	AK, CS
Shale, Black		1.2	AC, CM, EM
Limestone		3.8	AK, CS, ES
Shale, Calc.		8.1	AK, CM, EM
Sandstone		16.9	CS, ES
Shale		5.5	CM, EM
Coal		0.5	AC, CM, EM
Shale & Limestone		1.1	AK, CM, EM
Black Shale w/Coal		0.6	AC, CM, EM
Shale w/Limestone		9.9	AK, CM, EM
Coal w/Black Shale		12.5	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

D0360-6

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)

ORIGINAL
JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-34

*Coordinates: S. 11,899.95 W. 52,644.96 Surface Elevation 1199.07

Lithology	H_2O**	Thickness	Physical Properties
Limestone		10.0	AK, CS, ES
Shale w/Limestone		65.0	AK, CS, ES
Sandstone		5.6	CS, ES
Shale w/Limestone		29.5	AK, CM, EM
Coal w/Black Shale		4.5	AC, CM, EM
Shale, Calc.		31.9	AK, CM, EM
Black Shale w/Coal		10.0	AC, CM, EM
Shale w/Limestone		13.1	AK, CM, EM
Sandstone		7.4	CS, ES
Shale w/Limestone		33.0	AK, CM, EM
Limestone		6.1	AK, CS, ES
Shale w/Limestone		9.5	AK, CM, EM
Limestone w/Shale		19.9	AK, CS, ES
Black Shale		1.9	AC, CM, EM
Limestone		8.2	AK, CS, ES
Shale, Calc.		19.0	AK, CM, EM
Coal w/Bl. Shale		4.1	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

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ORIGINAL

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-35

*Coordinates: S. 19,672.72 W. 52,492.09 Surface Elevation 1013.74

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		5.0	CM, EM
Shale w/Sandstone		14.3	CM, EM
Black Shale		0.1	AC, CM, EM
Shale w/Limestone		10.1	AK, CM, EM
Coal		2.9	AC, CM, EM
Shale		1.8	CM, EM
Coal w/Bl. Shale		1.1	AC, CM, EM
Shale		29.4	CM, EM
Coal & Black Shale		3.6	AC, CM, EM
Shale w/Limestone		25.7	AK, CM, EM
Limestone w/Shale		11.1	AK, CS, ES
Black Shale		0.2	AC, CM, EM
Limestone w/Shale		11.1	AK, CS, ES
Black Shale		0.2	AC, CM, EM
Limestone		6.5	AK, CS, ES
Shale w/Limestone		9.2	AK, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O. D0360-6

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-35

*Coordinates: S. 19,672.72 W. 52,492.09 Surface Elevation 1013.74

Lithology	H_2O**	Thickness	Physical Properties
Limestone w/Shale		44.8	AK, CS, ES
Black Shale		3.5	AC, CM, EM
Coal (No. 9) w/Bl. Shale		3.8	AC, CM, EM
Shale w/Limestone		14.6	AK, CM, EM
Black Shale		4.2	AC, CM, EM
Limestone & Shale		1.8	AK, CM, EM
Black Shale		0.5	AC, CM, EM
Limestone w/Shale		16.6	AK, CS, ES
Black Shale		0.1	AC, CM, EM
Limestone w/Shale		7.2	AK, CS, ES
Shale w/Limestone		8.3	AK, CM, EM
Black Shale		0.8	AC, CM, EM
Shale & Limestone		20.8	AK, CM, EM
Dk. Shale		1.3	AC, CM, EM
Coal w/Dk. Shale		2.1	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6

ORIGINAL
JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N-35

*Coordinates: S. 19,672.72 W. 52,492.09 Surface Elevation 1013.74

Lithology	H_2O**	Thickness	Physical Properties
Coal (No. 8) w/Bl. Shale		6.0	AC, CM, EM
Shale w/Limestone		22.0	AK, CM, EM

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	(not analyzed)				
No. 8 Coal	(not analyzed)				
Bottom	(not analyzed)				

*If other than State Plane, indicate coordinate system.
**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

D0360-6

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ORIGINAL

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

STA PLANE COORDS-
X -2,941,063.32
Y -721,051.25

N-35

NO. 3 LONGWALL DRILLING PROGRAM

Hole is located in minor drainage of Williams Creek approximately 6800' N70°W of Jacobsburg, Smith Township, Belmont County, Ohio, in the NE corner of the NW¼ of Section 8, +6N - R4W, Armstrong Mills, 7½' Quadrangle.

Elevation:	1010± 1013.74'
Depth:	303'
Date Start:	November 28, 1978
Date Finish:	December 1, 1978

S 19,672.72 W 52,492.09

Bottom of No. 8 Coal

1013.74	Surf
280.58	Depth
733.16	Bot. Elev.

D0360-6

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ORIGINAL

NO. 3 LONGWALL DRILLING PROGRAM

HOLE No. 2

LITHOLOGY		THICKNESS	DEPTH
Overburden		10 - 0	10 - 0
Siltstone, Med. Grey, Shaley		6 - 6	16 - 6
Sandstone, L. Grey, Fine grained		3 - 0	19 - 6
Shale, Silty, Med. - Dk. Grey		4 - 6	24 - 0
Sahle, Dk. Grey, Soft		0 - 4	24 - 4
Shale, Blk.		0 - 2	24 - 6
Shale, Dk. Grey, Silty		0 - 6	25 - 0
Mudstone, Shaley, Silty, Dk. Grey		0 - 11	25 - 11
Limestone + Shale, Interbed, Light - Med. Grey		2 - 8	28 - 7
Siltstone + Sandstone Light - Med. Grey		2 - 3	30 - 10
Shale, Med. Grey, Silty		2 - 6	33 - 4
Mudstone, Med. Br. Grey		0 - 9	34 - 1
Shale, Dk. Grey		0 - 7	34 - 8
Shale, Black, Boney		0 - 1	34 - 9
Coal Clean	2 - 9	2 - 10	37 - 7
NS Coal Bone	0 - 1		
No. 11 Waynesburg			
Siltsone, Dk. Grey		0 - 10	38 - 5
Clay, Med. Grey		0 - 1	38 - 6
Shale, Med. Grey, Soft		0 - 11	39 - 5
NS Coal + Shale	0 - 2½	0 - 4	39 - 9
NS Coal Clean	0 - 1½		
Little Waynesburg			
Shale, Dk. Grey - Blk.		0 - 10	40 - 7
Siltstone, Med. Grey, Shale Occ. Soft Mudstone zones Occ. Fractured zones		7 - 6	48 - 1
Mudstone, Med. Grenish Grey, Shaley		0 - 10	48 - 11
Mudstone - Shale Occ. Calcareous Occ. Limestone Beds Silty		6 - 1	55 - 0

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ORIGINAL

TOVCC 05131

LITHOLOGY		THICKNESS	DEPTH
Sandstone + Siltstone + Shale Light - Med. Grey		12 - 4	67 - 4
Shale, Dk. Grey		2 - 8	70 - 0
Shale, Black		0 - 2	70 - 2
Coal, Clean	0 - 3		
Coal, Bone	0 - 1½		
Sample Coal Clean	0 - 7	2 - 0	72 - 2
Coal + Shale	0 - 2½		
Coal Clean	0 - 10		
No. 10 Uniontown			
Shale + Coal		0 - 1	72 - 3
Shale, Med. Br. Grey		0 - 5	72 - 8
Coal + Shale		0 - 1½	72 - 9½
Mudstone, Dk. Br. Grey, Silty		0 - 4½	73 - 2
Coal, Dirty		0 - 6	73 - 8
Mudstone, M. Grey, Silty		1 - 7	75 - 3
Mudstone, Med. Grey, Occ. Silty, Limey, Shaley, Occ. Soft Clayey zones		8 - 9	84 - 0
Limestone, Med. Br.		1 - 3	85 - 3
Shale, Med. Br. Grey, Soft, Broken		1 - 6	86 - 9
Limestone, Med. Br. Grey		1 - 4	88 - 1
Mudstone, Shaley, Med. Grey, Fractured		1 - 10	89 - 11
Mudstone, L. Green-Grey, Clayey		0 - 10	90 - 9
Limestone, Hard Silty		2 - 6	93 - 3
Mudstone, Soft, Varigated		0 - 4	93 - 7
Shale, Silty, Calcareous, Med. Grey		1 - 5	95 - 0
Shale, Silty at top Calcareous, Dk. Grey, Firm Soft 1' - 6" from Bottom		3 - 9	98 - 9
Limestone, Light Br. Grey, Argillaceous, 2" shale Ptg. 1' - 10" from top		4 - 4	103 - 8
Limestone, Light Grey, Argillaceous		2 - 7	106 - 3
Limestone, Argillaceous + Shale		0 - 9	107 - 9
Limestone - Mudstone, Dk. Grey		0 - 10	108 - 7
Mudstone, Med. Grn. - Grey		1 - 4	109 - 11
Shale, Blk.		0 - 3	110 - 2
Shale, Dk. Grey, Hard, Pyrite Blebs, Calcareous		1 - 1	111 - 3

ORIGINAL
JUN 27 1997
D0360-5

TOVCC 05132

LITHOLOGY	THICKNESS	DEPTH
Mudstone, Med. Br. Grey, Shaley	0 - 4	111 - 7
Limestone, Light Br. Grey	1 - 0	112 - 7
Shale, Dk. Grey, Calcareous	0 - 5	113 - 0
Shale - Limestone - Dk. Grey	1 - 2	114 - 2
Limestone, Argillaceous, Dk. Grey	2 - 6	116 - 8
Mudstone - Shale, Med. Grn.	5 - 6	122 - 4
Limestone, with shale partings, Dk. Grn. Grey	2 - 8	125 - 0
Shale, Dk. Grn	0 - 10	125 - 10
Limestone, Light Br. Grey 10 " shale Partings 1" - 4" from bottom	6 - 6	132 - 4
Shale, Dk. Grn. - Grey, Very calcareous Occ. Hard, Occ. Clay zones at top & Bottom	2 - 8	135 - 0
Mudstone. Soft. Shaley. Med. Grn	0 - 6	135 - 6
Shale. Dk. Grey. Very Calcareous. Hard	2 - 9	138 - 3
Limestone. Argillaceous. Light Br. Grey	1 - 8	139 - 11
Shale. Dk. Grey. Hard. Calcareous	1 - 7	141 - 6
Limestone. Light Br. Grey - M. Grey 6" Shale Ptgs. at 4' + 9' from top	15 - 10	157 - 4
Shale, Dk. Grey	0 - 6	157 - 10
Limestone, Light Br. Grey Argillaceous	1 - 4	159 - 2
Shale, Med. Grn., Calcareous	1 - 3	160 - 5
Shale + Limestone, Med. Grn. Grey	1 - 6	161 - 11
Limestone, Med. Olive Grey Argillaceous, Occ. Shaley zones	8 - 6	170 - 5
Shale, Med. Grey, Firm, V. Calcareous	4 - 7	175 - 0
Limestone, Argillaceous, Shaley, med. Grey	3 - 1	178 - 1
Shale, Hard. Med. Grey, V. Calcareous	4 - 1	182 - 2
Limestone, Light Br. Grey, Argillaceous	4 - 2	186 - 4
Shale, Black, Abundant pyrite	0 - 7	186 - 11
Mudstone, Dk. Grey - M. Br. Grey	2 - 9	189 - 8
Shale, Black, Bone	0 - 2	189 - 10
Coal, Clean	0 - 10	
Coal, Dull, Dirty	0 - 2	
ample Coal, Clean	0 - 8½	3 - 7½ 193 - 5½
Coal, Dull, Boney	0 - 4½	
Coal, Clean	1 - 6½	

No. 9 Sewickley

D0360-6

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ORIGINAL

LITHOLOGY	THICKNESS	DEPTH
Shale, Black, V. Coaly w/Pyrite	0 - 2½	193 - 8
Mudstone Med. Grey, Shaley, Soft	1 - 4	195 - 0
Shale, Light - Med. Grey, Calcareous	4 - 2	199 - 2
Limestone, Light Grey, Argillaceous	2 - 0	201 - 2
Mudstone - Shale, Light - Med. Grey Occ. Limestone beds or zones	7 - 2	208 - 4
Shale, Dk. Grey - Blk.	4 - 3	212 - 7
Limestone, Med. Br. Grey	2 - 5	215 - 0
Shale - Mudstone, Dk. Grey	1 - 9	216 - 9
Shale, Black	0 - 6	217 - 3
Limestone, Light Br. Grey Shaley and Bkn. at 4' from top, 224 - 0, 229 - 0	13 - 1	230 - 4
Shale Dk. Grn. Grey, Calcareous at top	1 - 8	232 - 0
Limestone, Light Br. Grey	1 - 11	233 - 11
Shale, Black	0 - 2	234 - 1
Limestone, Med. Br. Grey	1 - 8	235 - 9
Shale - Mudstone, Med. Green Grey	0 - 3	236 - 0
Limestone, Light Br. Grey, Argillaceous	5 - 4	241 - 4
Mudstone - Shale, Dk. Grn. Grey	2 - 0	243 - 4
Shale, Med. Grey, Calcareous	1 - 8	245 - 0
Limestone, Med. Grey	2 - 0	247 - 0
Mudstone, Med. Grn. Grey	2 - 0	249 - 0
Shale, Green - Dk. Grey	0 - 7	249 - 7
Shale, Black Occ. V. Coaly	0 - 9	250 - 4
Shale, Med. - Dk. Grey	1 - 5	251 - 9
Limestone Med. Grey	3 - 3	255 - 0
Mudstone + Shale + Last Interbed, Med. Grey,	3 - 5	258 - 5
Limestone, Med. Grey, Argillaceous	2 - 7	261 - 0
Shale, Med. Grey, Calcareous	0 - 7	261 - 7
Limestone, Light - Med. Grey Bkn. 1' from Bottom, V. Argillaceous Firm	3 - 4	264 - 11
Mudstone + Limestone, Med. Grey	1 - 7	266 - 6
Shale - Limestone, Med. Grey	2 - 0	268 - 6
Mudstone, Med. Grey	2 - 8	271 - 2
Shale, Black, Coaly at Bottom	0 - 4	271 - 6

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	LITHOLOGY		THICKNESS	DEPTH
	Mudstone, Bkn, Soft Med. - Dk. Grey		0 - 9	272 - 3
	Shale, Med. - Dk. Grey		0 - 3-3/4	27 - 6-3/4
ROOF COAL	Coal, Clean, Dull top ½	1 - 2	1 - 2	273 - 8½3/4
DRAW SLATE	Shale Black	0 - 1	0 - 11½	274 - 8½
	Coal	0 - ½		
	Shale, Black, with Pyrite	0 - 4		
	Mudstone - Shale, Med. Dk. Grey	0 - 6		
MAIN BENCH	Coal Bone	0 - 1	5 - 10-3/4	280 - 7
	Coal Clean	2 - 1½		
	Shale, Blk, Boney	0 - ½		
	Coal Clean	0 - 4½		
	Coal, Bone, Shaley	0 - 3/4		
280	Coal Clean	3 - 0		280 - 7
	Coal, Dirty, Shaley	0 - 2½		
	Shale, Black		0 - 2	280 - 9
	Mudstone, Med. Grey Shaley, Firm		2 - 8	283 - 5
	Mudstone, Slickensided, Med. Grey, Calcareous		2 - 3	285 - 8
	Limestone, with Mudstone Bands, Med. Grey		1 - 2	286 - 10
	Mudstone, Med. Grey, Silty		0 - 8	287 - 6
	Mudstone - Limestone, Med. Dk. Grey Slickensided		0 - 8	288 - 2
	Mudstone, Med. Grey		0 - 9	288 - 11
	Limestone, Nodular, Bkn, Med. Grey		0 - 6	289 - 5
	Mudstone, Silty Calcareous, Light - Med. Grey		0 - 6	289 - 5
	Mudstone, Silty Calcareous, Light - Med. Grey		1 - 6	290 - 11
	Siltstone - Sandstone, Med. Grey		1 - 4	293 - 3
	Shale, Med. Grey, Silty		1 - 9	295 - 0
	Shale, Med. Grey, Calcareous and Bkn at 2' - 8" From top for 10"		5 - 2	300 - 2
	Mudstone, Med. Grey Slickensided		1 - 7	301 - 9
	Shale, Med. Grey,		0 - 10	302 - 7
	Mudstone, Soft, Med. Grey		0 - 1	302 - 8
	Total Depth			

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ORIGINAL

TOVCC 05135

DIAMOND DRILL HOLE: MM4-5
Geologist: Eileen Hertel
Elevation: 1285.13 Ft.
Coordinates: S 20,456.22 W 61,489.79

Driller: Hughes Drilling Co., Dale Jarvis

Surface Owner: Betty L. Dunfee
Coal Tract:
Township: Smith, Section 20, NWq
County: Belmont

Date Started: September 27, 1984
Date Completed: October 2, 1984

Strata Thickness (Ft.)	Depth From Surface (Ft.)	Strata
20.0	20.0	Non-coring.
17.8	37.8	Sandy shale, massive, brown, ironstained, occ limey; 7.0' core loss.
1.4	39.2	Shale, black, ironstained, limey.
10.8	50.0	Limestone, brown, ironstained, 4.0' core loss
7.0	57.0	Claystone, v. limey, gray to brown; 1.0' core loss
5.2	62.2	Sandstone, abundant shale streaks, sl. limey, brown and ironstained.
2.3	64.5	Shale, med. gray, broken
20.5	85.0	Core loss (not recovered).
10.5	95.5	Sandy shale, massive, med. gray, limey, flow structure.
4.5	100.0	Shale, med. gray w/some red.
9.0	109.0	Claystone, med. gray, w/some red, v. limey.
7.5	116.5	Shale, med. gray.
8.5	125.0	Limestone, med. gray, ironstained and broken in places.
6.0	131.0	Claystone, gray & red, sl. limey.
8.5	139.5	Shale, med. gray, limey, arg.
6.3	145.8	Sandy shale, massive, med. gray.
3.0	148.8	Claystone, med. gray.
14.2	163.0	Limestone, med. gray, shale interbeds.
5.5	168.5	Claystone, med. gray, sl. limey.
8.5	177.0	Sandy shale, massive, med. gray, occ. sandstone streaks.
3.0	180.0	Shale, gray and red.
12.0	192.0	Claystone, med. gray, limey, grades sandy.
8.7	200.7	Shale, med to dk. gray, arg. in places.
8.3	209.0	Shale, black, carb., coal bands (WASHINGTON COAL HORIZON).
1.4	210.4	Shale, med. gray, sl. sandy.
11.0	221.4	Sandstone, occ. shale streaks, lt. gray, med. grained, calcite cement, mica.
13.6	235.0	Claystone, med. gray, limey.
10.0	245.0	Sandy shale, med. gray, occ. bedded, sl. limey.
6.0	251.0	Shale, med. gray.
4.5	255.5	Claystone, med. gray, sl. limey.
7.2	262.7	Shale, med. gray, sl. limey, v. arg. nr. base.
0.7	263.4	Shale, black, arg.
2.6	266.0	Limestone, black to dk. gray, grades sandy.
6.5	272.5	Claystone, v. limey, med. gray, grades sandy
7.5	280.0	Sandy shale, massive, med. gray, sl. limey.
4.7	284.7	Shale, med. gray, sl. limey.
4.8	289.5	Sandy shale, massive, med. gray, v. limey.
5.5	295.0	Shale, med. gray.
6.0	301.0	Claystone, med. gray, sandy, sl. limey.
9.0	310.0	Shale, med. gray, sandy nr. top., dk. and arg. nr. base.
2.1	312.1	WAYNESBURG COAL (No. 11) Clarain, bright and dull banded, bony near base.
8.0	320.1	Shale, med. gray, arg. nr. top.
0.3	320.4	Coal, bony.
17.3	337.7	Claystone, med. gray, v. limey, grades sandy
26.0	363.7	Sandstone, occ. shale streaks & beds, fine to med med. grained, med. gray, occ. calcite cement.

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Strata Thickness (Ft.)	Depth From Surface (Ft.)	Strata
2.7	366.4	Claystone, med. to dk. gray.
0.2	~~366.2~~ 366.6	Bone, coal bands. Unnamed #10
3.4	370.0	Claystone, med. gray, sl. limey.
5.0	375.0	Shale, med. gray, sandy nr. top, dk. @ base.
29.4	404.4	Limestone, lt. to med. gray, nodular & bedded, occ. arg.
10.6	415.0	Shale, green, grades limey.
59.0	474.0	Limestone, lt. to med. gray, nodular massive and bedded, occ. arg.
2.0	476.0	Claystone, dk. gray to black, sks, carb. nr. base.
3.5	479.5	SEWICKLEY COAL Clarain, bright and dull banded, boney bands nr. middle.
1.2	480.7	Sandy shale, massive, dk. gray.
9.3	490.0	Limestone, med. gray, mostly bedded.
6.0	496.0	Sandy shale, massive, med. gray.
4.0	500.0	Shale, sl. sandy, med. gray.
34.0	534.0	Limestone, lt. to med. gray, nodular and massive & bedded, occ. arg.
1.0	535.0	Claystone, green-gray, sl. sandy, sks.
0.8	535.8	Claystone, dk. gray to black sks (REDSTONE COAL HORIZON).
4.2	540.0	Shale, med. gray, sl. sandy, dk. nr. middle.
11.6	551.6	Limestone, lt. to med. gray, mostly nod., occ. arg.
3.6	555.2	Claystone, v. limey, med. gray, occ. sks.
1.1	556.3	Limestone, med. gray, nodular.
3.0	559.3	Claystone, med. gray, limestone nodules, soft, sks.
0.7	560.0	Claystone, v. soft, abundant sks.
0.3	560.3	Shale, dk. gray, carb., arg.
7.0	567.3	PITTSBURGH COAL 0.45 Clarain, bright & dull banded, clay bands nr. base, roof coal 0.90 Shale, dk. gray, arg. nr. base. 5.65 Clarain, bright w/dull streaks, Num. thin pyrite streaks, occ. dull bands. 7.00
2.4	569.7	Limestone, dark gray, bedded, carb. nr. top.
8.3	578.0	Limestone, med. gray, bedded, often arg.

TOTAL DEPTH 578.0'

Driller's log shows bottom of Pittsburgh seam 569.28' and total depth 580'.

% Hard Rock $\frac{222.7}{567.3} = 39.25\%$

D0360-6

ORIGINAL

STATE PLANE COORDS
X - 2,436,187.68
Y - 716,932.70

DIAMOND DRILL HOLE: M84-6
Geologist: Eileen Hertel
Elevation: 1224.94 ft.
Coordinates: S 23,701.88 W 57,441.87

Driller: Hughes Drilling Co., Dan Hambrick

Surface Owner: William H. Britton
Coal Tract:
Township: Smith, Section 14, SW¼
County: Belmont

Date Started: September 19, 1984
Date Completed: September 21, 1984

Strata Thickness (Ft.)	Depth From Surface (Ft.)	Strata
24.0	24.0	Non-coring.
3.6	27.6	Shale, brown, ironstained, broken, occ. arg.
31.4	59.0	Claystone, v. limey, med. gray w/some red, med soft, sks, occ. limestone interbeds, occ. ironstains.
17.6	76.6	Sandy shale, massive, brown, ironstained, broken, occ. limestone nodules.
4.0	80.6	Shale, med. gray w/some red, very arg.
3.3	83.9	Limestone, med. gray, bedded.
0.4	84.3	Shale, black.
11.3	95.6	Limestone, med. gray, mostly bedded, occ. arg.
9.9	105.5	Sandy shale, massive, med. gray, sl. limey.
4.9	110.4	Shale, med. gray, arg. dark at base.
4.6	115.0	Claystone, med. gray, soft sks.
3.1	118.1	Claystone, med. gray, very limey, occ. sks.
9.1	127.2	Shale, med. gray, arg., limey in places, dark and sks. near base.
0.9	128.1	Coal, boney.
1.9	130.0	Claystone, med. gray, med. soft, sks.
2.4	132.4	Shale, med. gray, occ. sks. dk. & arg. @ base
2.9	135.3	Shale, black, carb., abundant coal bands.
1.0	136.3	WASHINGTON COAL (No. 12) Clarain, dull w/bright streaks, boney bands, pyritic.
2.0	138.3	Shale, med. gray, abundant sandstone streaks.
2.2	140.5	Shale, black, fissile.
0.1	140.6	Coal, boney.
8.4	149.0	Shale, med. gray, sandstone streaks, arg. nr. top and base.
0.1	149.1	Shale, black, carb.
12.5	161.6	Claystone, med. gray, very limey, occ. sks.
4.6	166.2	Sandy shale, massive, med. gray, sl. limey.
6.5	172.7	Sandstone, shale streaks, fine grained, lt. gray, calcite cement, mica.
14.7	187.4	Shale, sl. sandy, med. gray, occ. limey.
2.0	189.4	Claystone, med. gray, limestone interbedded near middle.
6.3	195.7	Shale, med. gray.
2.7	198.4	Claystone, dk. gray, med. soft, sks.
11.0	209.4	Claystone, med. gray, v. limey, occs. sks.
1.5	210.9	Sandy shale, massive, med. gray, limey.
1.5	212.4	Sandstone, occ. shale streaks, fine-grained, lt. gray, calcite cement, mica.
5.0	217.4	Shale, sl. sandy, limey, med. gray.
3.0	220.4	Shale, med. gray, fissile.
6.4	226.8	Sandy shale, massive, med. gray, v. limey.
2.4	229.2	Claystone, med. gray, shaley nr. top.
14.0	243.2	Sandstone & shale, interbedded, med. gray, sl. limey.
1.1	244.3	Shale, dk. gray, black & carb., at base.
3.0	247.3	WAYNESBURG COAL (No. 11) Clarain, bright & dull banded, occ. boney bands.
2.3	249.6	Sandy shale, massive, med. gray.
3.6	253.2	Sandstone, shale streaks, fine-grained, med. gray, sl. mica.
6.5	259.7	Shale, med gray, sl. limey; sandy at top.
0.3	260.0	Shale, black, coal streaks.
0.2	260.2	Coal, bright.
0.6	260.8	Shale, black
7.8	268.6	Limestone, med. gray, arg.

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Strata Thickness (Ft.)	Depth From Surface (Ft.)	Strata
12.8	281.4	Sandy shale, massive, med. gray, occ. limestone nod., pyritic near base.
2.0	283.4	Shale, dk. gray.
4.1	287.5	UNIONTOWN COAL (No. 10) 1.4 Clarain, bright, boney bands 1.0 Clarain, dull, occ. bright bands 0.2 Clarain, bright 0.6 Limestone, dk. gray 0.1 Clarain, bright 0.2 Claystone, hard, dk. gray 0.6 Clarain, bright & dull-banded 4.1
1.5	289.0	Claystone, med. gray, sl. limey, soft, sks.
2.8	291.8	Shale, med. gray, grades sandy.
2.4	294.2	Sandstone, occ. shale streaks, med. grained, lt. gray.
4.3	298.5	Shale, med. gray, sl. sandy, dk. & arg. nr. base.
31.0	329.5	Limestone, lt. to med. gray, nod., massive & bedded arg. nr. top and base.
16.0	345.5	Sandy shale, massive, gray-green, occ. arg.
54.5	400.0	Limestone, lt. to med. gray, nod., massive and bedded, occ. arg., 2.0' green shale bed nr. top.
3.4	403.4	Claystone, dk. gray, soft, sks, boney @ base
3.9	407.3	SEWICKLEY COAL (No. 9) Clarain, bright & dull banded, many boney bands.
0.5	407.8	Claystone, dk. gray, sandy, boney at top.
22.2	430.0	Limestone, med. gray, mostly bedded & arg.
0.9	430.9	Claystone, dk. gray, boney at base.
30.6	461.5	Limestone, lt. to med. gray, nod., massive and bedded, occ. arg.
2.3	463.8	Claystone, gray-green, very soft, sks.
0.2	464.0	Claystone, black, carb. (REDSTONE COAL HOR.)
0.5	464.5	Shale, black.
1.4	465.9	Claystone, med. gray, sandy, occ. sks.
14.7	480.6	Limestone, med. gray, nod., massive & bedded, arg. near top and base.
1.9	482.5	Claystone, med. gray, limestone nod., med. soft, occ. sks.
0.9	483.4	Limestone, med. gray.
2.1	485.5	Claystone, med. gray, limestone nods., med. soft, sks.
0.4	485.9	Limestone, dark gray.
2.2	488.1	Claystone, med. gray, soft broken, sks, boney band near middle.
0.5	488.6	Claystone, dk. gray, carb in places.
7.5	496.1	PITTSBURGH COAL (No. 8) 1.23 Clarain, dull w/bright bands, boney @ top, roof coal 0.73 Claystone, med. gray, occ. sks. boney @ top and base. 1.82 Clarain, bright w/dull streaks. 0.12 Bone 3.60 Clarain, bright, occ. dull bands, broken near base; large pyrite band (0.07') near top. 7.50
3.8	499.9	Limestone, med. gray, most. bedded, boney nr. top.
1.6	501.5	Claystone, med. gray, soft, sks.
6.0	507.5	Limestone, med. gray, arg. bottom half.
2.5	510.0	Sandstone & Shale, interbedded, med. gray.

TOTAL DEPTH 510.0'

MSL - 728.84

ORIGINAL
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D0360-6

TOVCC 05139

LJ HUGHES & SONS, INC.
DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-10 DRILLER: ROGER HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1273.10

STARTED: JULY 7, 1986
COMPLETED: JULY 10, 1986

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SOUTHWEST 1/4
SECTION 8.

EXCHANGE COORDS
E-54,513.62
N-23,859.87
STATE PLANE COORDS
X-2,439,118.32
Y-716,828.01

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
CASING	15.00	15.00
BROWN AND GREEN SHALE	15.00	30.00
RED AND GREEN SHALE	15.00	45.00
LIMY SHALE	10.00	55.00
GREEN SANDY SHALE	6.60	61.60
SOFT GRAY SHALE	8.40	70.00
GRAY SHALE WITH LIME	8.00	78.00
GREEN LIMY SHALE	14.00	92.00
RED AND GREEN SHALE	9.40	101.40
SANDSTONE WITH SHALE	11.00	112.40
GREEN SHALE	2.60	115.00
GREEN SANDY SHALE	13.40	128.40
GRAY LIMY SHALE	34.10	162.50
GRAY SHALE	8.80	171.30
DARK GRAY SHALE	0.50	171.80
BONY COAL WITH PYRITE STREAKS	3.05	WASHINGTON (No.12) 174.85
GRAY SANDY SHALE	2.40	177.25
DARK GRAY SHALE	2.10	179.35
GRAY LIMY SHALE	25.65	205.00
GREEN LIMY SHALE	21.00	226.00
GRAY SHALE	9.00	235.00
GREEN LIMY SHALE	15.70	250.70
SANDSTONE	5.80	256.50
GRAY SHALE	6.60	263.10
LIMESTONE WITH SHALE	1.90	265.00
GREEN LIMY SHALE	14.00	279.00
SANDSTONE WITH SHALE	3.30	282.30
GRAY SHALE	2.20	284.50

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LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-10

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			284.50
COAL	2.18	WAYNESBURG (No.11)	286.68
SANDY SHALE	9.22		295.90
GRAY SHALE	2.70		298.60
BONY COAL	0.33		298.93
GRAY SHALE	1.40		300.33
LIMESTONE WITH SHALE	9.67		310.00
LIMY SHALE	11.60		321.60
SANDY SHALE	8.40		330.00
GRAY SHALE	3.20		333.20
SANDY SHALE	6.80		340.00
GREEN SHALE	4.20		344.20
LIMESTONE WITH SHALE	9.20		353.40
GREEN SHALE	3.40		356.80
LIMESTONE WITH SHALE	7.25		364.05
GREEN SHALE	5.95		370.00
LIMY GREEN SHALE	30.00		400.00
LIMESTONE WITH SHALE	49.20		449.20
GRAY SHALE	2.25		451.45
COAL	3.40	SEWICKLEY (No.9)	454.85
GRAY SHALE	3.00		457.85
LIMY SHALE	17.15		475.00
LIMESTONE WITH SHALE	52.90		527.90
LIMY SHALE	7.10		535.00
GRAY SHALE	0.80		535.80
DARK GRAY SHALE	0.30		536.10
BONY COAL	1.43	ROOF COAL	537.53
GRAY SHALE	0.97		538.50
COAL	2.05	PITTSBURGH (No.8)	540.55
PYRITE	0.09		540.64
COAL	3.35		543.99
GRAY SHALE	5.85		549.84
LIMY SHALE	5.16		555.00

TOTAL DEPTH: 555 FEET

20 BAGS CEMENT PLACED IN HOLE

0360-6

ORIGINAL

JUN 27 1997

TOVCC 05141

LJ HUGHES & SONS, INC.
DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-12 DRILLER: ROGER HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1278.90

STARTED: JULY 11, 1986
COMPLETED: JULY 16, 1986

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
WESTERNHALF-
SECTION 14

EXCHANGE COORDS
E - 58,712.02
N - 21,427.36
STATE PLANE COORDS
X - 2,434,876.35
Y - 719,183.73

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
CASING	15.00		15.00
GRAY SHALE	10.00		25.00
GRAY LIMY SHALE	22.00		47.00
SANDSTONE WITH SHALE	8.00		55.00
GREEN LIMY SHALE	15.00		70.00
RED AND GREEN SHALE	5.50		75.50
SANDY SHALE	5.70		81.20
GREEN SHALE	6.80		88.00
RED AND GREEN SHALE	34.50		122.50
LIMY SANDY SHALE	17.50		140.00
GREEN SHALE	5.00		145.00
LIMY SHALE	17.80		162.80
SANDSTONE WITH SHALE	6.10		168.90
GREEN SHALE	6.10		175.00
LIMY SHALE	18.60		193.60
GRAY SHALE	4.70		198.30
DARK GRAY SHALE WITH COAL STREAKS	0.60		198.90
COAL	1.80	WASHINGTON (No.12)	200.70
GRAY SHALE	0.55		201.25
SANDSTONE	2.60		203.85
GRAY SHALE	3.35		207.20
SANDSTONE WITH SHALE	5.40		212.60
LIMY SHALE	22.40		235.00
SANDSTONE WITH SHALE	10.00		245.00
GRAY LIMY SHALE	29.00		274.00
SANDY SHALE	18.20		292.20
GRAY SHALE	17.40		309.60

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TOVCC 05142

LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-12

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			309.60
COAL	1.80	WAYNESBURG (No.11)	311.40
GRAY SHALE	8.20		319.60
COAL	0.30		319.90
LIMY SHALE	12.10		332.00
SANDY SHALE	13.40		345.40
GRAY SHALE	4.10		349.50
COAL	2.10	UNIONTOWN (No.10)	351.60
PYRITE	0.12		351.72
COAL	0.50		352.22
GRAY SHALE	11.38		363.60
LIMY SHALE	6.40		370.00
LIMESTONE WITH SHALE	22.30		392.30
RED AND GREEN LIMY SHALE	7.70		400.00
LIMESTONE WITH SHALE	63.85		463.85
GRAY SHALE	1.35		465.20
COAL	3.70	SEWICKLEY (No.9)	468.90
GRAY LIMY SHALE	19.10		488.00
LIMESTONE WITH SHALE	52.50		540.50
LIMY SHALE	7.80		548.30
DARK GRAY SHALE WITH COAL STREAKS	0.60		548.90
COAL	1.15	ROOF COAL	550.05
GRAY SHALE	0.93		550.98
COAL	5.58	PITTSBURGH (No.8)	556.56
LIMY SHALE	11.44		568.00

TOTAL DEPTH: 568 FEET

22 BAGS CEMENT PLACED IN HOLE

0360-6

ORIGINAL

JUN 27 1997

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-13 DRILLER: JOSEPH MILLER

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1042.84

STARTED: JULY 16, 1986
COMPLETED: JULY 17, 1986

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SOUTHEAST 1/4
SECTION 20

EXCHANGE COORDS
E - 60685.81
N - 22613.29

STATE PLANE COORDS
X - 2,432,924.47
Y - 717,962.08

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
CASING	17.00		17.00
DARK GRAY CLAYSTONE	2.00		19.00
GRAY LIMY CLAYSTONE	2.10		21.10
GREEN LIMY CLAYSTONE	7.40		28.50
GRAY LIMY SANDSTONE	3.70		32.20
GRAY LIMY SHALE	4.40		36.60
GRAY LIMY CLAYSTONE	1.60		38.20
DARK SHALE	0.20		38.40
GRAY LIMY SANDY SHALE	3.60		42.00
GRAY SHALE	3.10		45.10
GRAY LIMY SHALY CLAYSTONE	1.10		46.20
BLACK SHALE	0.30		46.50
GRAY LIMY SHALE	1.20		47.70
GRAY SANDY SHALE	2.90		50.60
LIMESTONE	0.70		51.30
GRAY SHALE	2.40		53.70
GRAY LIMY SHALE	1.30		55.00
GRAY SHALE	5.00		60.00
GRAY SANDSTONE	0.70		60.70
GRAY SHALE	1.30		62.00
BLACK SHALE	0.65		62.65
COAL	1.45	WAYNESBURG (No.11)	64.10
BLACK SHALE	0.10		64.20
GRAY SHALY CLAYSTONE	0.60		64.80
GRAY SANDY SHALE	2.00		66.80
GRAY SANDSTONE	0.30		67.10
GRAY SANDY SHALE	0.70		67.80
GRAY SHALE	6.40		74.20
CORE LOSS	0.80		75.00

D0360-6 JUN 27 1997
ORIGINAL
TOVCC 05144

LJ HUGHES & SONS, INC.

T NACCO MINING COMPANY

INUATION OF DRILL HOLE NO. N-86-13

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			75.00
GRAY SHALE	0.85		75.85
COAL	0.25		76.10
GRAY LIMY SHALE	7.70		83.80
GRAY SHALE	5.10		88.90
CORE LOSS	1.10		90.00
GRAY SHALE	14.40		104.40
CORE LOSS	0.60		105.00
GRAY SHALE	3.00		108.00
COAL	1.80	UNIONTOWN (No.10)	109.80
SHALE WITH COAL STREAKS	0.30		110.10
DARK SHALE WITH COAL STREAKS	0.20		110.30
GRAY SHALE WITH CLAY STREAKS	3.40		113.70
GRAY SANDY SHALE	1.20		114.90
SANDSTONE	2.00		116.90
GRAY SHALE	2.40		119.30
CORE LOSS	0.70		120.00
GRAY LIMY SHALE	7.80		127.80
LIMESTONE	2.30		130.10
GRAY LIMY SHALE	5.50		135.60
L STONE	4.80		140.40
/ LIMY SHALE	1.20		141.60
IESTONE	4.00		145.60
GRAY LIMY SHALE	7.10		152.70
SANDSTONE	8.20		160.90
SANDSTONE WITH SHALE STREAKS	1.10		162.00
GRAY LIMY SHALE	0.50		162.50
LIMESTONE	2.40		164.90
GRAY LIMY SHALE	0.70		165.60
LIMESTONE	1.90		167.50
GREEN SHALE	3.30		170.80
LIMESTONE	9.00		179.80
GREEN LIMY SHALE	0.30		180.10
LIMESTONE	4.70		184.80
GREEN LIMY SHALE	0.60		185.40
LIMESTONE	6.90		192.30
GREEN LIMY SHALE	0.70		193.00
LIMESTONE	0.90		193.90
GREEN LIMY SHALE	2.90		196.80
LIMESTONE	8.20		205.00
GREEN LIMY SHALE	4.90		209.90
GRAY LIMY SHALE	10.30		220.20
GRAY SHALE	3.80		224.00
DARK SHALE WITH COAL STREAKS	0.35		224.35
COAL	2.10		226.45
DARK GRAY SHALE	0.05		226.50
. . . . .	0.20	SEWICKLEY (No.9)	226.70
RK GRAY SHALE	0.10		226.80
COAL	1.30		228.10

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TOVCC 05145

LJ HUGHES & SONS, INC.

ACCO MINING COMPANY

NUATION OF DRILL HOLE NO. N-86-13

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			228.10
DARK SHALE WITH COAL STREAKS	0.20		228.30
GRAY LIMY SHALE	1.20		229.50
LIMESTONE	3.60		233.10
GRAY LIMY SHALE	1.30		234.40
LIMESTONE	1.70		236.10
GRAY LIMY SHALE	12.00		248.10
LIMESTONE	2.70		250.80
GRAY LIMY SHALE	4.30		255.10
LIMESTONE	11.60		266.70
GRAY LIMY SHALE	0.40		267.10
LIMESTONE	10.10		277.20
GREEN LIMY SHALE	2.00		279.20
LIMESTONE	3.30		282.50
GRAY LIMY SHALE	2.40		284.90
DARK LIMY SHALE	3.50		288.40
LIMESTONE	10.00		298.40
WHITE SANDY FIRE CLAY	4.80		303.20
GRAY LIMY SHALE	7.20		310.40
GRAY SHALE	0.30		310.70
DAR SHALE WITH COAL STREAKS	0.10		310.80
. WITH PYRITE BANDS	0.05		310.85
C GRAY SHALE	0.85		311.70
COAL	0.20	PITTSBURGH (No.8)	311.90
BONY COAL	0.20		312.10
COAL	4.90		317.00
DARK SHALE	0.70		317.70
SANDY FIRE CLAY	1.20		318.90
GRAY SHALE	0.90		319.80
GRAY SANDY SHALE	7.60		327.40
SHALE WITH SANDSTONE STREAKS	2.60		330.00

TOTAL DEPTH: 330 FEET

12 BAGS CEMENT PLACED IN HOLE

D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05146

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-18

*Coordinates: S. 15,249.64 W. 61,084.35 Surface Elevation 1123.82

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		20.0	CM, EM
Shale		10.0	CM, EM
Sandstone		7.0	CS, ES
Shale w/Limestone		27.0	AK, CM, EM
Sandstone		4.0	CS, ES
Shale w/Limestone		19.0	AK, CM, EM
Claystone		8.0	CV, EV
Shale w/Limestone		5.0	AK, CM, EM
Sandstone w/Shale		12.9	CS, ES
Coal (No. 11)		2.0	AC, CM, EM
Claystone		10.1	CV, EV
Shale w/Limestone		18.0	AK, CM, EM
Sandstone		24.0	CS, ES
Claystone		3.0	CV, EV
Shale w/Limestone		15.0	AK, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-18

*Coordinates: S. 15,249.64 W. 61,084.35 Surface Elevation 1123.82

Lithology	H_2O**	Thickness	Physical Properties
Sandstone		7.6	CS, ES
Limestone w/Shale		10.4	AK, CS, ES
Claystone w/Limestone		12.0	AK, CV, EV
Limestone w/Shale		8.0	AK, CS, ES
Shale		4.0	CM, EM,
Limestone w/Shale		51.4	AK, CS, ES
Claystone		2.4	CV, EV
Coal w/Shale		3.6	AC, CM, EM
Limestone w/Shale		9.2	AK, CS, ES
Shale		10.0	CM, EM
Limestone w/Shale		51.4	AK, CS, ES
Claystone w/Limestone		7.7	AK, CV, EV

*If other than State Plane, indicate coordinate system.**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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ORIGINAL
JUN 27 1997

TOVCC 05148

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-18

*Coordinates: S. 57,249.64 W. 61,084.35 Surface Elevation 1123.82

Lithology	H_20**	Thickness	Physical Properties
Coal w/Black Shale		2.0	AC, CM, EM
Coal (No. 8)		5.2	AC, CM, EM
Shale, Calc.		15.2	AK, CS, ES

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	(not analyzed)				
No. 8 Coal	(not analyzed)				
Bottom	(not analyzed)				

*If other than State Plane, indicate coordinate system.**Indicate water bearing stratum with an asterisk (*) under column labelled H_20.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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ORIGINAL
JUN 27 1997

STATE PLANE COORDS
X- 432,392.00
Y-725,317.26

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-18 DRILLER: DANIEL HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1123.82 STARTED: DECEMBER 9, 1986
COMPLETED: DECEMBER 10, 1986

coord: S 15,249.64 W 61,084.35

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SECTION 21
NORTHEAST 1/4.

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
CASING	25.00		25.00
GREEN LIMY SHALE	10.00		35.00
GRAY SANDSTONE	7.00		42.00
GREEN SHALE	18.00		60.00
GRAY LIMY SHALE	4.00		64.00
GREEN LIMY SHALE	5.00		69.00
GRAY SANDSTONE	4.00		73.00
GREEN SHALE	12.00		85.00
LIMESTONE	1.00		86.00
GREEN SANDY SHALE	6.00		92.00
GREEN CLAYSTONE	8.00		100.00
GREEN LIMY SHALE	5.00		105.00
GRAY SANDSTONE	12.70		117.70
GRAY SHALE	0.20		117.90
COAL	2.00	WAYNESBURG (No.11)	119.90
GRAY CLAYSTONE	10.10		130.00
GREEN LIMY SHALE	18.00		148.00
GRAY SANDSTONE	24.00		172.00
GRAY CLAYSTONE	3.00		175.00
GREEN SHALE	6.00		181.00
GREEN LIMY SHALE	4.00		185.00
LIMESTONE	2.00		187.00
GREEN LIMY SHALE	3.00		190.00
GRAY SANDSTONE	7.60		197.60
LIMESTONE WITH SHALE	10.40		208.00
GREEN LIMY CLAYSTONE	12.00		220.00
LIMESTONE WITH SHALE	8.00		228.00
GREEN SHALE	4.00		232.00

D0360-6

ORIGINAL
JUN 27 1997

TOVCC 05150

LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-18

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			232.00
LIMESTONE WITH SHALE	51.40		283.40
GRAY CLAYSTONE	2.40		285.80
COAL	2.00	SEWICKLEY (No.8)	287.80
GRAY SHALE	0.15		287.95
COAL	1.45		289.40
GRAY LIMY SHALE	1.60		291.00
LIMESTONE WITH SHALE	7.60		298.60
GRAY SHALE	10.00		308.60
LIMESTONE WITH SHALE	51.40		360.00
GREEN CLAYSTONE WITH LIME	5.00		365.00
GRAY CLAYSTONE	2.65		367.65
BLACK SHALE	0.20		367.85
COAL	1.00	ROOF COAL	368.85
GRAY CLAYSTONE	0.80		369.65
COAL	5.20	PITTSBURGH (No.8)	374.85
GRAY LIMY SHALE	15.15		390.00

TOTAL DEPTH: 390 FEET

15 BAGS CEMENT PLACED IN HOLE

D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05151

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-18 DRILLER: DANIEL HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1123.82

STARTED: DECEMBER 9, 1986
COMPLETED: DECEMBER 10, 1986

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SECTION 21
NORTHEAST 1/4.

EXCHANGE COORDS
E - 61,084.35
N - 15,249.64
STATE PLANE COORDS
X - 2,432,392.00
Y - 725,317.26

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
CASING	25.00		25.00
GREEN LIMY SHALE	10.00		35.00
GRAY SANDSTONE	7.00		42.00
GREEN SHALE	18.00		60.00
GRAY LIMY SHALE	4.00		64.00
GREEN LIMY SHALE	5.00		69.00
GRAY SANDSTONE	4.00		73.00
GREEN SHALE	12.00		85.00
LIMESTONE	1.00		86.00
GREEN SANDY SHALE	6.00		92.00
GREEN CLAYSTONE	8.00		100.00
GREEN LIMY SHALE	5.00		105.00
GRAY SANDSTONE	12.70		117.70
GRAY SHALE	0.20		117.90
COAL	2.00	WAYNESBURG (No.11)	119.90
GRAY CLAYSTONE	10.10		130.00
GREEN LIMY SHALE	18.00		148.00
GRAY SANDSTONE	24.00		172.00
GRAY CLAYSTONE	3.00		175.00
GREEN SHALE	6.00		181.00
GREEN LIMY SHALE	4.00		185.00
LIMESTONE	2.00		187.00
GREEN LIMY SHALE	3.00		190.00
GRAY SANDSTONE	7.60		197.60
LIMESTONE WITH SHALE	10.40		208.00
GREEN LIMY CLAYSTONE	12.00		220.00
LIMESTONE WITH SHALE	8.00		228.00
GREEN SHALE	4.00		232.00

D0360-6 ORIGINAL

JUN 27 1997

TOVCC 05152

LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-18

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			232.00
LIMESTONE WITH SHALE	51.40		283.40
GRAY CLAYSTONE	2.40		285.80
COAL	2.00	SEWICKLEY (No.8)	287.80
GRAY SHALE	0.15	SEWICKLEY (No.8)	287.95
COAL	1.45	SEWICKLEY (No.8)	289.40
GRAY LIMY SHALE	1.60		291.00
LIMESTONE WITH SHALE	7.60		298.60
GRAY SHALE	10.00		308.60
LIMESTONE WITH SHALE	51.40		360.00
GREEN CLAYSTONE WITH LIME	5.00		365.00
GRAY CLAYSTONE	2.65		367.65
BLACK SHALE	0.20		367.85
COAL	1.00	ROOF COAL	368.85
GRAY CLAYSTONE	0.80		369.65
COAL	5.20	PITTSBURGH (No.8)	374.85
GRAY LIMY SHALE	15.15		390.00

TOTAL DEPTH: 390 FEET

15 BAGS CEMENT PLACED IN HOLE

ORIGINAL
JUN 27 1997

D0360-61

TOVCC 05153

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-20

*Coordinates: S. 16,204.76 W. 55,804.03 Surface Elevation 987.89

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		10.0	CM, EM
Shale		22.2	CM, EM
Coal w/Shale		2.4	AC, CM, EM
Claystone		4.5	CV, EV
Shale		4.8	CM, EM
Limestone w/Shale		5.7	AK, CS, ES
Claystone		2.6	CV, EV
Limestone		1.9	AK, CS, ES
Shale		6.8	CM, EM
Limestone w/Shale		12.7	AK, CS, ES
Claystone		10.5	CV, EV
Limestone w/Shale		65.4	AK, CS, ES
Claystone		2.5	CV, EV
Coal w/Black Shale		3.7	AC, CM, EM
Shale, Calc.		18.4	AK, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL
JUN 27 1997
D0360-61

LJ HUGHES & SONS, INC.
DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-19 DRILLER: DANIEL HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1055.45

STARTED: NOVEMBER 25, 1986
COMPLETED: DECEMBER 1, 1986

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SECTION 22
SOUTHWEST 1/4.

EXCHANGE COORDS
E - 62,351.79
N - 11,509.50
STATE PLANE COORDS
X - 2,431,092.71
Y - 729,034.37

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
CASING	23.00		23.00
CHIPPED	7.00		30.00
GRAY CLAYSTONE	13.50		43.50
COAL	2.10	WAYNESBURG (No.11)	45.60
GRAY CLAYSTONE	9.40		55.00
GREEN SANDY SHALE WITH LIME	15.00		70.00
GRAY SANDSTONE	15.00		85.00
GRAY SHALE	1.80		86.80
COAL	1.50	UNIONTOWN (No.10)	88.30
GREEN CLAYSTONE	7.00		95.30
GRAY LIMY CLAYSTONE	7.10		102.40
GREEN CLAYSTONE	3.00		105.40
GRAY SANDSTONE	5.80		111.20
GREEN CLAYSTONE	1.20		112.40
LIMESTONE	1.60		114.00
GREEN CLAYSTONE	1.00		115.00
LIMESTONE WITH SHALE	15.00		130.00
GREEN LIMY SHALE	6.00		136.00
LIMESTONE WITH SHALE	4.00		140.00
GREEN CLAYSTONE WITH LIME	5.00		145.00
LIMESTONE WITH SHALE	50.00		195.00
GRAY CLAYSTONE	5.00		200.00
COAL	2.75	SEWICKLEY (No.9)	202.75
GRAY LIMY SHALE	9.25		212.00
GRAY SHALE	10.00		222.00
LIMESTONE WITH SHALE	34.80		256.80
GREEN CLAYSTONE	6.50		263.30
LIMESTONE	1.70		265.00

ORIGINAL
JUN 27 1997

D0360-6

LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-19

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			265.00
LIMESTONE WITH SHALE	16.00		281.00
GRAY CLAYSTONE	3.30		284.30
BONY COAL	0.33		284.63
GRAY SHALE	0.23		284.86
COAL	0.85	ROOF COAL	285.71
GRAY SHALE	0.86		286.57
COAL	5.10	PITTSBURGH (No.8)	291.67
GRAY LIMY SHALE	13.33		305.00

TOTAL DEPTH: 305 FEET

12 BAGS CEMENT PLACED IN HOLE

D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05156

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N86-20

*Coordinates: S. 16,204.76 W. 55,804.03 Surface Elevation 987.89

Lithology	H_2O**	Thickness	Physical Properties
Limestone w/Shale		3.4	AK, CS, ES
Claystone		1.5	CV, EV
Black Shale w/Coal		0.3	AC, CM, EM
Limestone w/Shale		30.2	AK, CS, ES
Claystone		5.8	CV, EV
Limestone w/Shale		13.9	AK, CS, ES
Claystone w/Limestone		6.9	AK, CV, EV
Coal w/Claystone		2.5	AC, CM, EM
Coal		5.4	AC, CM, EM
Limestone w/Claystone		7.3	AK, CS, ES
Claystone		13.0	CV, EV

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	(not analyzed)				
No. 8 Coal	(not analyzed)				
Bottom	(not analyzed)				

*If other than State Plane, indicate coordinate system.
**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6

JUN 27 1997

ORIGINAL

STATE PLANE COORDS
X - 437,688.83
Y - 724,458.38

LJ HUGHES & SONS, INC.

DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-20 DRILLER: DANIEL HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 987.89 STARTED: NOVEMBER 18, 1986
COMPLETED: NOVEMBER 19, 1986

Coord: S 16,204.76 W 55,804.63

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SECTION 15
SOUTHEAST 1/4

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
CASING	15.00		15.00
GRAY SHALE	22.20		37.20
COAL	2.50	UNIONTOWN (No.10)	39.70
GRAY SHALE	0.13		39.83
COAL	0.72		40.55
GRAY CLAYSTONE	4.45		45.00
GREEN SHALE	4.80		49.80
LIMESTONE WITH SHALE	5.70		55.50
GREEN CLAYSTONE	2.60		58.10
LIMESTONE	1.90		60.00
GREEN SHALE	6.80		66.80
LIMESTONE WITH SHALE	12.70		79.50
GREEN CLAYSTONE	10.50		90.00
LIMESTONE WITH SHALE	8.00		98.00
GREEN LIMY SHALE	4.00		102.00
LIMESTONE WITH SHALE	53.40		155.40
GRAY CLAYSTONE	2.50		157.90
COAL	1.73	SEWICKLEY (No.8)	159.63
BLACK SHALE WITH COAL STREAKS	0.42		160.05
COAL	1.55		161.60
GRAY LIMY SHALE	8.40		170.00
GRAY SHALE	10.00		180.00
LIMESTONE WITH SHALE	3.40		183.40
GREEN CLAYSTONE	1.45		184.85
BLACK SHALE WITH COAL STREAKS	0.30		185.15
LIMESTONE WITH SHALE	30.15		215.30
GREEN CLAYSTONE	5.80		221.10
LIMESTONE WITH SHALE	13.90		235.00

ORIGINAL

D0360-6 JUN 27 1997

LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. - N-86-20

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			235.00
GREEN CLAYSTONE WITH LIME	5.00		240.00
GRAY CLAYSTONE	1.90		241.90
COAL	1.60	ROOF COAL	243.50
GRAY CLAYSTONE	0.85		244.35
COAL	5.40	PITTSBURGH (No.8)	249.75
LIMESTONE WITH CLAYSTONE PARTING	7.25		257.00
GRAY CLAYSTONE	13.00		270.00

TOTAL DEPTH: 270 FEET

12 BAGS CEMENT PLACED IN HOLE

D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05159

LJ HUGHES & SONS, INC.
DIAMOND CORE DRILLING
Pressure Grouting, Foundation & Soil Borings
320 Turnpike Road, Summersville, West Virginia 26651 (304) 872-1111

DRILL HOLE NO. N-86-21 DRILLER: DANIEL HAMRICK

DRILLING FOR: THE NACCO MINING COMPANY, POWHATAN POINT, OHIO

SURFACE ELEVATION: 1313.34 STARTED: DECEMBER 3, 1986
COMPLETED: DECEMBER 5, 1986

EXCHANGE COORDS
E-67,045.87
N-12,528.11
STATE PLANE COORDS:
X-2426,381.95
Y-727,929.86
Corrected Location
WJR
6-17-92

LOCATION: OHIO, BELMONT COUNTY
SMITH TOWNSHIP
SECTION ~~37~~ 28
NORTHEAST ~~1/4~~ SE 1/4

FORMATION	STRATA THICKNESS	DEPTH FROM SURFACE
CASING	15.00	15.00
BROWN AND GRAY CLAYSTONE	15.00	30.00
BROWN AND GRAY SANDSTONE	4.00	34.00
GRAY SHALE	1.00	35.00
BLACK SHALE	2.40	37.40
LIMESTONE	3.60	41.00
GRAY CLAYSTONE	8.00	49.00
GRAY SANDSTONE	6.00	55.00
GREEN SHALE	10.00	65.00
LIMESTONE	1.60	66.60
RED AND GREEN CLAYSTONE	39.40	106.00
GREEN CLAYSTONE	9.00	115.00
GREEN LIMY CLAYSTONE	15.00	130.00
GREEN CLAYSTONE	17.00	147.00
LIMESTONE	1.30	148.30
GREEN LIMY CLAYSTONE	3.00	151.30
LIMESTONE	2.70	154.00
GREEN LIMY SHALE	6.00	160.00
GREEN CLAYSTONE	9.00	169.00
GREEN SHALE	6.00	175.00
GRAY SHALE	1.60	176.60
GRAY SANDSTONE	0.80	177.40
GRAY SHALE	0.90	178.30
GRAY SANDSTONE	0.60	178.90
GRAY SHALE	5.60	184.50
COAL	0.30	184.80
GRAY SHALE	2.00	186.80
LIMESTONE WITH SHALE	3.20	190.00

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ORIGINAL
JUN 27 1997

TOVCC 05160

LJ HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-21

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			190.00
GRAY CLAYSTONE	7.00		197.00
BLACK SHALE WITH COAL STREAKS	3.00		200.00
GRAY SHALE	0.90		200.90
COAL	0.60		201.50
GRAY SHALE	7.00		208.50
COAL	0.30		208.80
GRAY SHALE	0.20	WASHINGTON (No. 12)	209.00
COAL	0.30		209.30
GREEN LIMY SHALE	10.70		220.00
GRAY SANDSTONE WITH CLAYSTONE STREAKS	10.00		230.00
GRAY SANDSTONE	7.00		237.00
GREEN SHALE	8.00		245.00
GRAY CLAYSTONE	5.00		250.00
GREEN LIMY SHALE	12.00		262.00
GRAY SANDSTONE	4.40		266.40
GREEN LIMY SHALE	8.60		275.00
GREEN SHALE	16.00		291.00
GRAY SANDSTONE	22.20		313.20
BLACK SHALE	0.30		313.50
COAL	0.50	WAYNESBURG (No. 11)	314.00
GRAY SHALE	1.70		315.70
COAL	0.10		315.80
GRAY SHALE	1.70		317.50
GREEN CLAYSTONE	2.50		320.00
GREEN LIMY CLAYSTONE	15.00		335.00
GRAY SHALE WITH SANDSTONE STREAKS	15.00		350.00
GRAY SHALE	3.40		353.40
COAL	1.80		355.20
GRAY SHALE	0.20	UNIONTOWN (No. 10)	355.40
COAL	0.70		356.10
GRAY SHALE	6.20		362.30
LIMESTONE WITH SHALE	4.70		367.00
GREEN CLAYSTONE	11.60		378.60
LIMESTONE WITH SHALE	29.00		407.60
GREEN SHALE	3.40		411.00
LIMESTONE WITH SHALE	50.80		461.80
GRAY CLAYSTONE	3.90		465.70
COAL	3.15	SEWICKLEY (No. 9)	468.85
GRAY LIMY SHALE	2.15		471.00
LIMESTONE WITH SHALE	8.30		479.30
GRAY SHALE	8.50		487.80
LIMESTONE WITH SHALE	35.90		523.70
GREEN CLAYSTONE	3.40		527.10
GRAY CLAYSTONE	2.00		529.10
LIMESTONE	12.70		541.80

D0360-6
ORIGINAL
AUG 4 1997

J HUGHES & SONS, INC.

THE NACCO MINING COMPANY

CONTINUATION OF DRILL HOLE NO. N-86-21

FORMATION	STRATA THICKNESS		DEPTH FROM SURFACE
			541.80
GREEN LIMY CLAYSTONE	6.20		548.00
GRAY CLAYSTONE	2.70		550.70
COAL	0.85	ROOF COAL	551.55
GRAY SHALE	0.80		552.35
COAL	5.45	PITTSBURGH (No.8)	557.80
GRAY LIMY SHALE	7.20		565.00

TOTAL DEPTH: 565 FEET

20 BAGS CEMENT PLACED IN HOLE

D0360-6

ORIGINAL

JUN 27 1997

TOVCC 05162

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-4

*Coordinates: S. 18,988.20 W. 62,484.14 Surface Elevation 1282.62

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CM, EM
Subsoil		4.0	CM, EM
Weathered Rock		15.0	CM, EM
Sandstone	Yes	2.0	CS, ES
Claystone	Yes	14.0	CV, EV
Shale		6.5	CM, EM
Shale, Black		2.9	AC, CM, EM
Shale, Calc.	Yes	2.8	AK, CM, EM
Claystone-Limestone		14.7	AK, CM, EM
Sandstone		2.0	CS, ES
Shale	Yes	10.7	CM, EM
Claystone w/Limestone		13.9	AK, CV, EV
Shale, Black		0.4	AC, CM, EM
Claystone		1.1	CV, EV
Shale, Black		0.2	AC, CM, EM
Claystone w/Limestone		16.8	AK, CV, EV
Shale w/Sandstone		4.4	CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

00360-6

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

ORIGINAL
JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-4

*Coordinates: S. 18,988.20 W. 62,484.14 Surface Elevation 1282.62

Lithology	H_2O**	Thickness	Physical Properties
Claystone w/Limestone		50.0	AK, CV, EV
Shale w/Sandstone		13.9	CM, EM
Claystone w/Limestone		14.3	CV, EV
Shale, Black		0.3	AC, CM, EM
Claystone		3.9	CV, EV
Shale, Black w/coal		4.5	AC, CM, EM
Shale & Claystone		4.1	CM, EM
Shale, Black		3.3	AC, CM, EM
Shale w/Sandstone		7.4	CM, EM
Limestone		1.0	AK, CS, ES
Shale, Black		0.35	AC, CM, EM
Claystone w/Limestone		13.6	AK, CV, EV
Shale, w/Claystone		27.4	AK, CM, EM
Shale, Black		0.7	AC, CM, EM
Claystone w/Limestone		8.4	AK, CV, EV
Shale w/Claystone		15.4	CM, EM
Limestone		1.8	AK, CS, ES

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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ORIGINAL
JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-4

*Coordinates: S. 18,988.20 W. 62,484.14 Surface Elevation 1282.62

Lithology	H_2O**	Thickness	Physical Properties
Sandstone w/Shale		8.0	CS, ES
Shale w/CS &LS		17.0	CM, EM
Shale, Black w/coal		1.2	AC, CM, EM
Shale		5.7	CM, EM
Coal		0.2	AC, CM, EM
Shale, w/Claystone		44.6	CM, EM
Sandstone w/Shale		2.3	CS, ES
Claystone w/Limestone		14.6	AK, CV, EV
Sandstone		3.8	CS, ES
Shale/Claystone w/LS		88.7	AK, CM, EM
Coal w/Black Shale		3.9	AC, CM, EM
Claystone w/Limestone		23.3	AK, CV, EV
Shale, Dk. Gray-Black		0.6	AC, CM, EM
Limestone w/Shale		24.8	AK, CS, ES
Claystone w/Limestone		9.1	AK, CV, EV
Shale, Black		0.4	AC, CM, EM
Limestone w/Claystone		14.8	AK, CS, ES

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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ORIGINAL
JUN 27 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-4

*Coordinates: S. 18,988.20 W. 62,484.14 Surface Elevation 1282.62

Lithology	H_2O**	Thickness	Physical Properties
Claystone w/Limestone		8.7	AK, CV, EV
Coal w/Black Shale		0.7	AC, CM, EM
Claystone		0.9	CV, EV
Coal (Pgh. No. 8)		5.4	AC, CM, EM
Shale & Claystone		3.1	CM, EM,

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	(not analyzed)				
No. 8 Coal	(not analyzed)				
Bottom	(not analyzed)				

*If other than State Plane, indicate coordinate system.
**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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ORIGINAL

JUN 27 1997

ITE PLANE COORDS-
X-2,431,060,47
Y-721,553,75

DIAMOND DRILL HOLE: N92 - 4

ENGINEER: W. J. SIPLIVY
ELEVATION: 1282.62
COORDINATES: S 18,988.30 W 62,484.14

DRILLER: L. J. HUGHES & SONS, INC., GEORGE RITCHIE

TOWNSHIP: SMITH
SECTION: 20, N 1/2
COUNTY: BELMONT

SURFACE OWNER: BETTY DUNFEE
DATE STARTED: APRIL 15, 1992
DATE FINISHED: APRIL 20, 1992

DESCRIPTION

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
20.00	20.00	Non-coring
2.00	22.00	Sandstone, brown, fe-stained
13.95	35.95	Claystone, brown, fe-stained
2.90	38.85	Shale, gray,sandy, jointed w/fe-stains
0.35	39.20	Sandstone, l. gray
2.60	41.80	Shale, m. gray, sandy
2.90	44.70	Shale, black, carbonaceous
2.80	47.50	Shale, m. gray, calc.w/fe-stains
1.50	49.00	Claystone, m. gray
2.00	51.00	Limestone, l. gray, hard
1.10	52.10	Claystone, m. gray
1.00	53.10	Limestone, l. gray, hard
4.40	57.50	Claystone, gray-olive, fe-stained
0.40	57.90	Limestone, l. gray, hard
3.45	61.35	Claystone, m. gray
0.80	62.15	Shale, tan, sandy
2.05	64.20	Sandstone, l.gray-tan, silty
10.20	74.40	Shale, gray-tan, jointed w/fe-stains 69-70'
0.50	74.90	Shale, red
1.50	76.40	Claystone, gray-green
2.20	78.60	Limestone, l. gray w/ Cs ptgs.
2.40	81.00	Claystone, m. gray w/ Ls ptgs.
5.15	86.15	Claystone, m. gray
0.75	86.90	Claystone, m. gray w/ Ls ptgs.
1.90	88.80	Claystone, dk. gray
0.40	89.20	Shale, black, carbonaceous
1.10	90.30	Claystone, m. gray
0.15	90.45	Shale, black, carbonaceous
16.75	107.20	Claystone, m.gray w/Ls nods.
1.30	108.50	Sandstone, l. gray w/occ. Sh. stks.
3.10	111.60	Shale, m. gray w/Ss stks.
4.30	115.90	Claystone, m. gray
3.30	119.20	Limestone, l. gray w/ Cs ptgs.
26.60	145.80	Claystone, m.gray w/Ls nods.

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ORIGINAL

DIAMOND DRILL HOLE: N92 - 4
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.50	147.30	Limestone, m. gray, silty
5.10	152.40	Claystone, m. gray
0.40	152.80	Limestone, l. gray, hard
1.40	154.20	Claystone, m. gray
0.90	155.10	Limestone, l. gray, hard
6.45	161.55	Claystone, m. gray
5.10	166.65	Shale, m. gray, sandy
2.20	168.85	Sandstone, l. gray
2.15	171.00	Shale, m. gray, sandy
0.70	171.70	Sandstone, l. gray
3.70	175.40	Shale, m. gray
0.15	175.55	Limestone, l. gray, hard
6.70	182.25	Claystone, m. gray
5.35	187.60	Shale, m. gray w/Ls nods.
2.05	189.65	Claystone, m. gray
0.30	189.95	Shale, black, carbonaceous
3.90	193.85	Claystone, dk. gray
1.55	195.40	Shale, black, carbonaceous
1.29	196.69	Coal, (WASHINGTON No. 12) bony w/thin Ss ptgs.
1.23	197.92	Shale, black, carbonaceous
0.38	198.30	Coal, bony
1.18	199.48	Claystone, m. gray
2.90	202.38	Shale, m. gray
3.27	205.65	Shale, black, carbonaceous
7.75	213.40	Shale, m. gray
0.65	214.05	Sandstone, l. gray
1.00	215.05	Limestone, l. gray, hard
0.35	215.40	Shale, black, carbonaceous
13.60	229.00	Claystone, m. gray w/ Ls ptgs.
14.40	243.40	Shale, m. gray w/Ss stks.
2.00	245.40	Shale, red-gray
4.70	250.10	Claystone, m.gray w/Ls nods.
5.60	255.70	Shale, m. gray
0.65	256.35	Claystone, m. gray
0.70	257.05	Shale, black, carbonaceous
0.35	257.40	Limestone, m. gray, silty
8.00	265.40	Claystone, m.gray w/Ls nods.
5.00	270.40	Shale, m. gray
1.10	271.50	Claystone, m. gray
9.25	280.75	Shale, m. gray, sandy
1.75	282.50	Limestone, l. gray, sandy
4.40	286.90	Sandstone, l. gray
3.60	290.50	Shale, m. gray w/Ss stks.
1.10	291.60	Claystone, m. gray
2.20	293.80	Shale, m. gray
0.60	294.40	Limestone, m. gray, silty
5.50	299.90	Claystone, m.gray w/Ls nods.
2.25	302.15	Shale, m. gray

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ORIGINAL
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DIAMOND DRILL HOLE: N92 - 4
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.30	302.45	Sandstone, l. gray
5.05	307.50	Shale, m. gray, sandy
0.15	307.65	Shale, black, carbonaceous w/pyrite nod.
1.03	308.68	Coal (WAYNESBURG No. 11) w/bony ptgs.
5.72	314.40	Shale, m. gray
0.15	314.55	Coal
4.05	318.60	Claystone, m. gray
27.30	345.90	Shale, m. gray
13.20	359.10	Shale, m. gray w/Ss stks.
1.20	360.30	Sandstone, l. gray
0.80	361.10	Shale, m. gray, sandy
0.25	361.35	Sandstone, l. gray
1.00	362.35	Claystone, m. gray
3.35	365.70	Shale, m. gray
6.70	372.40	Claystone, m.gray w/Ls nods.
2.90	375.30	Limestone, l. gray, hard
0.65	375.95	Claystone, gray-green
3.75	379.70	Sandstone, l. gray
2.25	381.95	Shale, m. gray
2.20	384.15	Limestone, m. gray, silty
3.25	387.40	Shale, m. gray, calcareous
3.65	391.05	Limestone, l. gray, hard
1.55	392.60	Claystone, m. gray
1.20	393.80	Limestone, m. gray, silty
6.10	399.90	Shale, m. gray, calcareous
5.20	405.10	Claystone, m.gray w/Ls nods.
2.00	407.10	Limestone, l. gray, hard
1.90	409.00	Claystone, m. gray
1.70	410.70	Limestone, m. gray, silty
0.45	411.15	Claystone, green
1.45	412.60	Limestone, m. gray, silty
4.80	417.40	Shale, m. gray, calcareous
2.60	420.00	Claystone, gray-green
9.60	429.60	Shale, m. gray, calcareous
3.95	433.55	Limestone, m. gray, silty
0.40	433.95	Shale, dk. gray
2.15	436.10	Limestone, l. gray, hard
0.65	436.75	Shale, m. gray
0.40	437.15	Shale, green
0.70	437.85	Limestone, l. gray, hard
2.35	440.20	Shale, gray-green
1.65	441.85	Limestone, l. gray, hard
0.65	442.50	Shale, m. gray
5.90	448.40	Limestone, l. gray w/ Cs ptgs.
1.20	449.60	Shale, m. gray
1.15	450.75	Flintclay, brown
8.65	459.40	Shale, gray-green, calcareous
4.50	463.90	Limestone, l. gray w/ Cs ptgs.

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ORIGINAL
JUN 27 1997

DIAMOND DRILL HOLE: N92 - 4
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA	
4.47	468.37	Claystone, dk. gray	
0.23	468.60	Shale, black, carbonaceous	
3.54	472.14	Coal (SEWICKLEY No. 9)	
		0.26 coal	
		0.08 bone	
		0.52 coal	
		0.02 shale	
		0.80 coal	
		0.09 bone	
		0.10 shale	
		0.08 bone	
		1.43 coal	
		0.16 bone w/coal	
		3.54 total seam	
0.10	472.24	Shale, black, carbonaceous	
1.46	473.70	Claystone, m. gray	
5.25	478.95	Shale, m. gray	
1.45	480.40	Limestone, l. gray, hard	
10.55	490.95	Shale, m. gray w/Ss stks.	
1.75	492.70	Claystone, m.gray w/Ls nods.	
1.35	494.05	Limestone, l. gray w/ Cs ptgs.	
1.50	495.55	Claystone, dk. gray-green	
0.15	495.70	Shale, black, carbonaceous	(FISHPOT HORIZON)
0.45	496.15	Shale, dk. gray	
5.00	501.15	Limestone, l. gray w/ Cs ptgs.	
1.60	502.75	Limestone, l. gray, hard	
0.70	503.45	Limestone, l. gray w/ Cs ptgs.	
3.95	507.40	Limestone, l. gray, hard	
0.10	507.50	Shale, m. gray	
1.90	509.40	Limestone, l. gray, hard	
1.40	510.80	Shale, gray-green	
2.00	512.80	Limestone, l. gray, hard	
0.35	513.15	Shale, dk. gray	
1.65	514.80	Limestone, l. gray, hard	
0.70	515.50	Shale, gray-green	
5.40	520.90	Limestone, l. gray w/ Cs ptgs.	
2.40	523.30	Claystone, gray-green	
2.10	525.40	Limestone, l. gray, hard	
1.20	526.60	Shale, m. gray	
0.90	527.50	Limestone, l. gray, hard	
0.90	528.40	Shale, m. gray w/Ls nods.	
1.55	529.95	Claystone, m. gray	
0.35	530.30	Shale, black, carbonaceous	
2.00	532.30	Shale, m. gray	
1.60	533.90	Limestone, l. gray, hard	
0.55	534.45	Claystone, gray-green	
5.30	539.75	Limestone, l. gray w/ Cs ptgs.	

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DIAMOND DRILL HOLE: N92 - 4
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.50	540.25	Claystone, m.gray w/Ls nods.
1.85	542.10	Limestone, m. gray, silty
0.75	542.85	Shale, m. gray
2.25	545.10	Limestone, l. gray, hard
0.90	546.00	Claystone, green w/Ls nods.
1.15	547.15	Claystone, green
0.50	547.65	Limestone, l. gray, hard
1.50	549.15	Claystone, green
0.70	549.85	Limestone, l. gray, hard
2.70	552.55	Claystone, gray-green
0.15	552.70	Shale, dk. gray
1.12	553.82	Claystone, m. gray
0.18	554.00	Shale, black, carbonaceous
0.52	554.52	Coal (ROOF COAL)
		0.37 bony coal
		0.10 shale
		0.05 coal
		0.52 total seam
0.94	555.46	Claystone, m. gray
5.44	560.90	Coal (PITTSBURGH No. 8)
		2.44 coal
		0.16 bone
		0.18 coal
		0.05 bone
		1.41 coal
		0.09 bone
		1.11 coal w/bone
		5.44 total seam
0.31	561.21	Shale, dk. gray
0.20	561.41	Claystone, m. gray
1.60	563.01	Shale, m. gray, calcareous
0.10	563.11	Claystone, m. gray
0.89	564.00	Shale, m. gray, calcareous

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-7

*Coordinates: S. 13,306.79 W. 53,382.97 Surface Elevation 1220.10

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		15.0	CM, EM
Claystone	Yes	7.8	CV, EV
Sandstone	Yes	6.0	CS, ES
Shale	Yes	4.7	CM, EM
Claystone w/Shale & LS		3.8	CV, EV
Claystone	Yes	10.1	CV, EV
Sandstone w/Shale		4.8	CS, ES
Shale	Yes	2.7	CM, EM
Sandstone w/Shale	Yes	9.0	CS, ES
Shale		7.3	CM, EM
Shale w/Limestone		23.5	AK, CM, EM
Shale	Yes	19.2	CM, EM
Sandstone		3.6	CS, ES
Coal w/Dk. Shale		2.4	AC, CM, EM
Claystone w/Limestone		2.0	AK, CV, EV

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

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Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-7

*Coordinates: S. 13,306.79 W. 53,382.97 Surface Elevation 1220.10

Lithology	H_20**	Thickness	Physical Properties
Coal		0.1	AC, CM, EM
Claystone W/Limestone		8.6	AK, CV, EV
Coal w/Black Shale		13.3	AC, CM, EM
Claystone w/Limestone		16.9	AK, CV, EV
Shale w/SS & LS		17.6	CM, EM
Claystone, Dk.-Bl.		3.9	AC, CV, EV
Sandstone		2.3	CS, ES
Claystone w/Limestone		4.6	AK, CV, EV
Shale		5.1	CM, EM
Sandstone w/Shale		17.5	CS, ES
Claystone w/Limestone		15.8	AK, CV, EV
Shale w/Sandstone		13.1	CM, EM
Coal w/Black Shale		5.4	AC, CM, EM
Claystone		5.2	CV, EV
Shale		16.5	CM, EM
Dk. Shale w/Coal		17.0	AC, CM, EM
Claystone w/Shale		3.5	CV, EV

**Indicate water bearing stratum with an asterisk (*) under column labelled H_20.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-7

*Coordinates: S. 13,306.79 W. 53,382.97 Surface Elevation 1220.10

Lithology	H_2O**	Thickness	Physical Properties
Shale, Dk.		3.0	AC, CM, EM
Claystone w/Limestone		7.0	AK, CV, EV
Sandstone w/Shale		9.0	CS, ES
Claystone w/Limestone		32.6	AK, CV, EV
Shale		7.6	CM, EM
Claystone w/Limestone		7.1	AK, CV, EV
Shale w/Limestone		5.8	AK, CM, EM
Limestone w/Shale		16.3	AK, CS, ES
Shale		12.7	CM, EM
Limestone w/Shale		4.6	AK, CS, ES
Claystone		4.4	CV, EV
Coal (No. 9)		3.9	AC, CM, EM
Claystone & Shale w/LS		24.0	AK, CM, EM
Coal & Dk. Shale		1.0	AC, CM, EM
Limestone w/Claystone		20.0	AK, CS, ES

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-7

*Coordinates: S. 13,306.79 W. 53,382.97 Surface Elevation 1220.10

Lithology	H_2O**	Thickness	Physical Properties
Black Shale		0.1	AC, CM, EM
Limestone w/Claystone		12.1	AK, CS, ES
Black Shale		0.2	AC, CM, EM
Claystone w/Limestone		1.7	AK, CV, EV
Black Shale		0.5	AC, CM, EM
Limestone w/Shale & CS		10.3	AK, CS, ES
Claystone w/Limestone		8.0	AK, CV, EV
Shale, Dk. w/Claystone		1.4	AC, CM, EM
Coal w/Bl. Shale		1.8	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-7

*Coordinates: S. 13,306.79 W. 53,382.97 Surface Elevation 1220.10

Lithology	H_20**	Thickness	Physical Properties
Claystone		0.5	CV, EV
Coal (No.8)		5.3	AC, CM, EM
Shale w/CS & LS		5.4	AK, CM, EM

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	2.66%	2.51%	78.44	115.00	-36.56
No. 8 Coal	4.55%	2.14%	66.88	4.76	+62.12
Bottom	2.68%	2.51%	78.44	463.00	-384.56

*If other than State Plane, indicate coordinate system.
**Indicate water bearing stratum with an asterisk (*) under column labelled H_20.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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STATE PLANE COORDS-
X- 140,056.76
Y-727,399.92

DIAMOND DRILL HOLE: N92 - 7

ENGINEER: W. J. SIPLIVY
ELEVATION: 1220.10
COORDINATES: S 13306.79 W 53382.97

DRILLER: L. J. HUGHES & SONS, INC., LOWELL RITCHIE

TOWNSHIP: SMITH
SECTION: 10, SW 1/4
COUNTY: BELMONT

SURFACE OWNER: KENNETH F. RAMAGE
DATE STARTED: JULY 21, 1992
DATE FINISHED: JULY 24, 1992

DESCRIPTION

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
20.00	20.00	Non-coring
4.90	24.90	Claystone, olive w/fe-stains
2.00	26.90	Claystone, brown, fe-stained
0.85	27.75	Claystone, m. gray w/fe-stains @ base
1.70	29.45	Sandstone, l. gray
1.10	30.55	Sandstone, brown w/fe-stains
3.15	33.70	Sandstone, l. gray
4.65	38.35	Shale, m. gray w/fe-stains
1.65	40.00	Claystone, m. gray-red
0.45	40.45	Limestone, l. gray, hard
0.25	40.70	Shale, dk. gray, calcareous
1.40	42.10	Claystone, gray-green
7.70	49.80	Claystone, red, fe-stained bottom 1.2'
2.35	52.15	Claystone, m. gray w/fe stains
0.45	52.60	Shale, m. gray w/ls nods, grades sandy
2.95	55.55	Sandstone, l. gray
0.20	55.75	Claystone, m. gray
0.40	56.15	Sandstone, l. gray
0.65	56.80	Claystone, m. gray, silty
0.55	57.35	Sandstone, l. gray
1.60	58.95	Shale, gray-green, w/fe stains
1.05	60.00	Shale, m. gray
2.45	62.45	Sandstone, l. gray, x-bedded
1.05	63.50	Shale, m. gray, silty
3.05	66.55	Sandstone, l. gray
0.20	66.75	Shale, m. gray
1.15	67.90	Sandstone, gray-tan, w/fe stains
1.05	68.95	Shale, tan, w/fe stains
7.25	76.20	Shale, m. gray, silty
1.95	78.15	Claystone, m. gray
1.45	79.60	Limestone, m. gray, silty
0.40	80.00	Shale, m. gray
0.50	80.50	Limestone, l. gray
2.55	83.05	Claystone, dk. gray, calcareous
2.45	85.50	Limestone, l. gray, silty upper 1.6'

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DIAMOND DRILL HOLE: N92 - 7
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.55	86.05	Shale, m. gray
1.15	87.20	Claystone, m. gray
5.20	92.40	Shale, m. gray, sandy, w/limestone nodules
5.85	98.25	Shale, m. gray, w/fe stained joint @ 96.8' & 97.4'
0.95	99.20	Shale, red
12.35	111.55	Shale, m. gray w/occ. thin sandstone ptgs., fe-stained bottom 1.1'
3.55	115.10	Sandstone, l. gray
2.05	117.15	Shale, dk. gray
0.35	117.50	Coal
0.35	117.85	Limestone, l. gray
0.25	118.10	Claystone, dk. gray
0.50	118.60	Limestone, l. gray
0.85	119.45	Claystone, m. gray
0.10	119.55	Boney Coal
0.75	120.30	Limestone, l. gray
5.00	125.30	Claystone, m. gray
0.90	126.20	Limestone, m. gray, silty
1.90	128.10	Claystone, m. gray
1.00	129.10	Claystone, black carbonaceous
0.20	129.30	Shale, black
3.00	132.30	Coal, WASHINGTON (No. 12)
		0.14 coal
		0.23 bone
		0.27 coal
		1.12 bony coal
		0.06 shale e
		1.18 bony coal
		3.00 total seam
0.70	133.00	Shale, black
2.55	135.55	Shale, dk. gray w/ occ thin sandstone ptgs.
0.15	135.70	Sandstone, l. gray
3.76	139.46	Shale, black
0.24	139.70	Coal
0.92	140.62	Shale, black, carbonaceous
0.66	141.28	Coal
0.13	141.41	Shale, black
0.55	141.96	Limestone, l. gray
0.62	142.58	Claystone, black
15.75	158.33	Claystone, m. gray w/ occ. limestone nodules
7.80	166.13	Shale, m. gray
0.25	166.38	Sandstone, l. gray
0.90	167.28	Shale, m. gray, sandy
8.25	175.53	Shale, m. gray
0.40	175.93	Limestone, l. gray
3.25	179.18	Claystone, dk. gray
0.60	179.78	Claystone, black, carbonaceous
2.30	182.08	Sandstone, l. gray
4.60	186.68	Claystone, m. gray w/ occ. limestone nodules

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DIAMOND DRILL HOLE: N92 - 7
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
5.10	191.78	Shale, m. gray
1.25	193.03	Sandstone, l. gray
0.25	193.28	Shale, m. gray
13.45	206.73	Sandstone, l. gray
2.55	209.28	Shale, m. gray, sandy
1.20	210.48	Limestone, l. gray
4.10	214.58	Claystone, m. gray, w/occ. limestone nods, silty
1.70	216.28	Sandstone, l. gray
3.81	220.09	Claystone, m. gray
2.46	222.55	Claystone, m. gray, calcareous
1.20	223.75	Shale, m. gray, sandy
1.15	224.90	Shale, m. gray
0.95	225.85	Shale, m. gray, sandy
0.45	226.30	Shale, m. gray
0.15	226.45	Sandstone, l. gray
9.16	235.61	Shale, m. gray w/occ. sandstone ptgs.
0.23	235.84	Shale, black, carbonaceous
3.76	239.60	Coal, WAYNESBURG (No. 11)
		0.45 coal w/bone ptgs.
		2.64 coal w/occ thin pyrite lenses
		0.06 bone
		0.38 coal
		0.05 bone
		0.18 coal
		3.76 total seam
1.25	240.85	Shale, black, carbonaceous
0.13	240.98	Bony coal
5.17	246.15	Claystone, m. gray
2.30	248.45	Shale, m. gray, sandy
14.15	262.60	Shale, m. gray
13.79	276.39	Shale, dk. gray w/siderite nods bottom 5'
1.80	278.19	Coal, UNIONTOWN (No. 10)
		0.57 coal
		0.05 shale
		1.18 coal
		1.80 total seam
0.80	278.99	Shale, m. gray w/coal ptgs.
0.61	279.60	Coal
2.80	282.40	Claystone, m. gray
0.70	283.10	Shale, m. gray, sandy
2.95	286.05	Shale, dk. gray
5.70	291.75	Claystone, m.gray w/Ls nods.
1.30	293.05	Claystone, m. gray
0.45	293.50	Shale, m. gray, sandy
5.85	299.35	Sandstone, l. gray
1.60	300.95	Shale, m. gray, sandy
1.10	302.05	Shale, m. gray

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DIAMOND DRILL HOLE: N92 - 7
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.50	303.55	Claystone, m.gray, calcareous
2.65	306.20	Limestone, l. gray
3.40	309.60	Claystone, m.gray, calcareous
3.65	313.25	Limestone, l. gray w/ Cs ptgs.
1.25	314.50	Claystone, m. gray-green
1.60	316.10	Limestone, l. gray
4.30	320.40	Shale, m. gray, calcareous
0.30	320.70	Limestone, l. gray, hard
0.60	321.30	Claystone, m. gray
1.20	322.50	Limestone, m. gray, silty
2.10	324.60	Claystone, m. gray-green, calcareous
0.55	325.15	Shale, m. gray, sandy
1.20	326.35	Shale, m. gray
1.05	327.40	Claystone, green
3.60	331.00	Limestone, m. gray-tan, silty
2.70	333.70	Claystone, m. gray w/Ls nods.
0.50	334.20	Limestone, l. gray
0.40	334.60	Claystone, green
2.90	337.50	Shale, green, calcareous
4.70	342.20	Shale, m. gray, calcareous
1.60	343.80	Claystone, m. gray
2.00	345.80	Limestone, m. gray, silty
2.40	348.20	Claystone, m. gray, calcareous
1.10	349.30	Limestone, l. gray, hard
0.85	350.15	Shale, m. gray, calcareous
0.65	350.80	Limestone, l. gray, hard
4.25	355.05	Shale, m. gray, calcareous
2.60	357.65	Limestone, l. gray, hard
0.80	358.45	Shale, m. gray, calcareous
2.25	360.70	Limestone, l. gray, hard
0.85	361.55	Shale, m. gray-green
1.05	362.60	Limestone, l. gray, hard
0.75	363.35	Claystone, green
1.50	364.85	Shale, m. gray-green
2.20	367.05	Limestone, l. gray, hard
0.70	367.75	Shale, m. gray
3.60	371.35	Limestone, l. gray, hard
1.90	373.25	Flintclay, brown
1.10	374.35	Shale, m. gray-green
1.10	375.45	Flintclay, brown
0.80	376.25	Shale, m. gray-green
4.15	380.40	Shale, m. gray, calcareous
0.60	381.00	Shale, dk. gray
3.00	384.00	Shale, m. gray, calcareous
2.95	386.95	Limestone, l. gray w/ Cs ptgs.
1.35	388.30	Shale, m. gray, calcareous
0.25	388.55	Limestone, m. gray, silty
4.40	392.95	Claystone, dk. gray

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DIAMOND DRILL HOLE: N92 - 7
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
3.85	396.80	Coal, SEWICKLEY (No. 9)
		1.90 coal
		0.07 bone
		0.12 shale
		0.13 bone w/coal
		0.63 coal
		0.11 bone
		0.23 coal
		0.66 coal w/bone

		3.85 total seam
1.65	398.45	Claystone, dk. gray
3.80	402.25	Shale, m. gray
1.90	404.15	Limestone, l. gray
7.80	411.95	Shale, m. gray
0.50	412.45	Shale, dk. gray
0.25	412.70	Limestone, l. gray
0.80	413.50	Shale, dk. gray
2.10	415.60	Shale, m. gray w/Ss stks.
0.60	416.20	Claystone, dk. gray
3.20	419.40	Limestone, l. gray w/ Cs ptgs.
1.40	420.80	Claystone, dk. gray
0.15	420.95	Bony coal (FISHPOT)
0.85	421.80	Shale, dk. gray
1.00	422.80	Limestone, l. gray
1.30	424.10	Claystone, m. gray, calcareous
10.75	434.85	Limestone, l. gray w/ Cs ptgs.
1.40	436.25	Shale, m. gray-green
3.05	439.30	Limestone, l. gray w/ Cs ptgs.
1.00	440.30	Claystone, m. gray-green
1.50	441.80	Limestone, m. gray, silty
0.10	441.90	Shale, black, carbonaceous
3.85	445.75	Limestone, l. gray w/ Cs ptgs.
2.70	448.45	Shale, m. gray-green
0.50	448.95	Limestone, l. gray
0.45	449.40	Claystone, dk. gray
2.25	451.65	Limestone, l. gray w/ Cs ptgs.
2.30	453.95	Claystone, m. gray-green
0.20	454.15	Shale, black, carbonaceous
1.45	455.60	Claystone, dk. gray
0.25	455.85	Limestone, m. gray, silty
0.50	456.35	Shale, black, carbonaceous (REDSTONE 8A HORIZON)
1.20	457.55	Limestone, l. gray
0.40	457.95	Shale, m. gray
0.85	458.80	Limestone, m. gray, silty
2.50	461.30	Claystone, m. gray
1.30	462.60	Limestone, m. gray, nodular
4.05	466.65	Limestone, l. gray

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DIAMOND DRILL HOLE: N92 - 7
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.40	468.05	Claystone, m.gray w/Ls nods.
0.80	468.85	Claystone, m. gray
0.65	469.50	Limestone, l. gray
0.20	469.70	Claystone, m. gray
0.50	470.20	Limestone, l. gray
0.25	470.45	Claystone, m. gray
0.75	471.20	Limestone, l. gray
3.37	474.57	Claystone, m. gray
0.60	475.17	Shale, dk. gray
0.50	475.67	Claystone, m. gray
0.33	476.00	Shale, dk. gray
1.55	477.55	ROOF COAL
		0.52 coal
		0.12 bone
		0.91 coal

		1.55 total seam
0.25	477.80	Shale, black, carbonaceous
0.52	478.32	Claystone, m. gray
5.33	483.65	Coal (PITTSBURGH No. 8)
		0.25 bony coal
		1.81 coal
		0.02 bone
		0.36 coal
		0.05 bone
		2.61 coal
		0.23 coal w/bone

		5.33 total seam
0.25	483.90	Shale, dk. gray, calcareous
0.15	484.05	Claystone, m. gray, firm
1.57	485.62	Shale, m. gray, calcareous
0.40	486.02	Claystone, m. gray, firm
1.00	487.02	Shale, m. gray, calcareous
0.70	487.72	Shale, m. gray
0.50	488.22	Limestone, m. gray, silty
0.78	489.00	Claystone, m. gray, firm

AMOUNT OF SOFT/HARD ROCK ABOVE PITTSBURGH COAL SEAM

1. SOFT ROCK: 354.32' or 74.1% of core.
2. HARD ROCK: 124' or 25.9% of core.

PROJECTED AQUIFERS

1. 20' to 38.35'.
2. 48.6' to 52.15' (minor).
3. 57.35' to 58.95' (minor).
4. 66.75' to 68.95'.
5. 92.4' to 98.25' (minor).

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ORIGINAL

TOVCC 05182

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-9

*Coordinates: S. 17,981.75 W. 49,478.10 Surface Elevation 1271.82

Lithology	H_2O**	Thickness	Physical Properties
Topsoil		1.0	CV, EV
Subsoil		4.0	CM, EM
Weathered Rock		15.0	CM, EM
Shale, w/Sandstone	Yes	10.3	CM, EM
Claystone w/Limestone		4.2	CV, EV
Limestone	Yes	0.6	AK, CS, ES
Claystone		15.2	CV, EV
Shale	Yes	4.8	CM, EM
Claystone		10.7	CV, EV
Sandstone	Yes	4.6	CS, ES
Shale	Yes	5.7	CM, EM
Claystone w/Limestone		24.3	AK, CV, EV
Shale w/Sandstone	Yes	13.3	CM, EM
Claystone		5.0	CV, EV
Limestone	Yes	1.2	AK, CS, ES
Shale	Yes	2.5	CM, EM
Shale, Black		0.7	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

D0360-6
JUN 27 1997
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-9

*Coordinates: S. 17,981.75 W. 49,478.10 Surface Elevation 1271.82

Lithology	H_2O**	Thickness	Physical Properties
Shale w/Limestone		9.7	AK, CM, EM
Claystone w/Shale		14.4	CV, EV
Coal w/Dk. Shale		1.1	AC, CM, EM
Shale w/Limestone		4.6	AK, CM, EM
Claystone w/Limestone		8.4	AK, CV, EV
Coal w/Black Shale		9.3	AC, CM, EM
Shale		11.4	CM, EM
Shale, Black		0.5	AC, CM, EM
Claystone w/Limestone		14.9	AK, CV, EV
Shale w/Sandstone		4.4	CM, EM
Claystone w/Limestone		8.9	AK, CV, EV
Shale & Claystone		14.0	CM, EM
Shale, Black		0.6	AC, CM, EM
Shale w/CS & LS		29.4	AK, CM, EM
Shale w/Sandstone		9.4	CM, EM
Claystone		3.1	CV, EV
Shale		12.9	CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
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AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-9

*Coordinates: S. 17,981.75 W. 49,478.10 Surface Elevation 1271.82

Lithology	H_2O**	Thickness	Physical Properties
Coal w/Black Shale		5.1	AC, CM, EM
Claystone w/Limestone		12.7	AK, CV, EV
Shale		16.3	CM, EM
Coal w/Black Shale		3.3	AC, CM, EM
Claystone w/LS & SS		17.3	AK, CV, EV
Shale		14.7	CM, EM
Claystone w/Limestone		25.1	AK, CV, EV
Shale w/Limestone		54.3	AK, CM, EM
Claystone w/Limestone		6.4	AK, CV, EV
Coal (No. 9)		3.8	AC, CM, EM
Claystone w/LS & Shale		22.4	AK, CV, EV
Coal		0.06	AC, CM, EM
Limestone w/Shale		32.7	AK, CS, ES
Shale, Black		0.4	AC, CM, EM
Claystone w/Limestone		21.0	AK, CV, EV
Coal w/Dk. Shale		2.9	AC, CM, EM
Coal (No. 8)		5.1	AC, CM, EM

**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 13
(GEOLOGY REPORT - Underground Workings)

Applicant: THE OHIO VALLEY COAL COMPANY Drill Hole #N92-9

*Coordinates: S. 17,981.75 W. 49,478.10 Surface Elevation 1271.82

Lithology	H_2O**	Thickness	Physical Properties
Shale w/Claystone		2.3	AK, CM, EM
Claystone w/Limestone		2.7	AK, CM, EM

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur	Pyrite Marcasite Sulfur	Potential Acidity	Neutral-ization Potential	$CaCO_3$ Deficiency
Roof	5.23%	4.70%	146.90	73.12	+73.78
No. 8 Coal	4.39%	1.91%	59.69	4.92	+54.77
Bottom	2.95%	2.82%	88.13	402.00	-313.87

*If other than State Plane, indicate coordinate system.**Indicate water bearing stratum with an asterisk (*) under column labelled H_2O.

Physical Property Legend
AC = Acid Producing
AK = Alkaline Producing
C = Compactible (V=Very, M=Moderate, S=Slight)
E = Erodible (V=Very, M=Moderate, S=Slight)

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JUN 27 1997

STATE PLANE COORDS
X – 2,444,046.05
Y – 722,796.79

DIAMOND DRILL HOLE: N92 - 9

ENGINEER: W. J. SIPLIVY
ELEVATION: 1271.82
COORDINATES: S 17981.75 W 49478.10

DRILLER: L. J. HUGHES & SONS, INC., LOWELL RITCHIE

TOWNSHIP: SMITH
SECTION: 3, SW 1/4
COUNTY: BELMONT

SURFACE OWNER: ROBERT E. HACKENBURG
DATE STARTED: AUGUST 11, 1992
DATE FINISHED: AUGUST 14, 1992

DESCRIPTION

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
20.00	20.00	Non-coring
0.90	20.90	Sandstone, l. gray-tan
8.40	29.30	Shale, tan, sandy w/Fe-stained joints
1.00	30.30	Shale, red
1.90	32.20	Claystone, tan (1.5' lost)
1.40	33.60	Limestone, l. gray
0.60	34.20	Claystone, tan
0.60	34.80	Limestone, l. gray w/Fe-stained joints
5.10	39.90	Claystone, m. gray-tan (3.7' lost)
1.70	41.60	Claystone, red
8.40	50.00	Claystone, m. gray (6.8' lost)
3.80	53.80	Shale, m. gray w/Fe-stained joints
1.00	54.80	Shale, olive-tan w/Fe-stained joints
2.45	57.25	Claystone, red
8.25	65.50	Claystone, m. gray
4.60	70.10	Sandstone, l. gray w/Fe-stained joints
5.70	75.80	Shale, m. gray w/Fe-stained joints
1.60	77.40	Claystone, m. gray-green
0.65	78.05	Limestone, l. gray
7.35	85.40	Claystone, m. gray
1.40	86.80	Claystone, red
1.20	88.00	Claystone, m. gray
1.35	89.35	Claystone, red
2.35	91.70	Claystone, m. gray
0.85	92.55	Limestone, l. gray-tan w/Fe-stained joints
7.55	100.10	Claystone, m.gray w/Ls nods.
1.15	101.25	Sandstone, l. gray, x-bedded
5.00	106.25	Shale, m. gray w/Ls nods.
0.30	106.55	Sandstone, l. gray w/occ. Sh. stks.
4.30	110.85	Shale, m. gray w/Fe-stained joints @ 108' & 109'
0.35	111.20	Sandstone, l. gray w/occ. Sh. stks.
2.20	113.40	Shale, m. gray, sandy
5.00	118.40	Claystone, m. gray
1.20	119.60	Limestone, l. gray w/Fe-stained joints
2.50	122.10	Shale, m. gray w/Fe-stained joints
0.65	122.75	Shale, black

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DIAMOND DRILL HOLE: N92 - 89
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.45	123.20	Limestone, l. gray
9.20	132.40	Shale, dk. gray
9.05	141.45	Claystone, m.gray w/Ls nods.
1.10	142.55	Shale, m. gray, sandy
4.20	146.75	Claystone, m. gray
0.30	147.05	Coal
0.75	147.80	Shale, dk. gray
0.35	148.15	Limestone, l. gray
0.50	148.65	Shale, dk. gray
1.00	149.65	Limestone, l. gray, nodular w/Sh ptgs.
2.25	151.90	Shale, m. gray w/Ls nods.
0.45	152.35	Limestone, l. gray
3.45	155.80	Claystone, m.gray w/Ls nods.
0.90	156.70	Limestone, l. gray w/ Cs ptgs.
4.05	160.75	Claystone, m.gray w/Ls nods.
1.70	162.45	Claystone, dk. gray-black
2.83	165.28	Coal WASHINGTON (No. 12)
3.97	169.25	Shale, dk. gray-black
0.45	169.70	Limestone, l. gray
0.30	170.00	Shale, black, carbonaceous
11.35	181.35	Shale, m. gray
0.50	181.85	Shale, black, carbonaceous w/pyrite
1.90	183.75	Claystone, m.gray w/Ls nods.
1.60	185.35	Limestone, l. gray
11.35	196.70	Claystone, m. gray
1.40	198.10	Shale, m. gray
1.60	199.70	Sandstone, l. gray w/occ. Sh. stks.
1.40	201.10	Shale, m. gray, sandy
0.70	201.80	Limestone, l. gray
8.20	210.00	Claystone, m.gray w/Ls nods.
3.50	213.50	Shale, m. gray
1.25	214.75	Shale, red
2.65	217.40	Shale, m. gray
6.55	223.95	Claystone, m. gray
0.60	224.55	Shale, black, carbonaceous
5.30	229.85	Claystone, m.gray w/Ls nods.
5.60	235.45	Shale, m. gray, calcareous
0.25	235.70	Sandstone, l. gray
1.00	236.70	Shale, m. gray, calcareous
7.65	244.35	Shale, m. gray, sandy
8.55	252.90	Shale, m. gray, calcareous
1.00	253.90	Limestone, m. gray, silty
1.10	255.00	Sandstone, l. gray
0.85	255.85	Shale, m. gray, sandy
2.95	258.80	Sandstone, l. gray w/occ. Sh. stks.
4.45	263.25	Shale, m. gray, sandy
1.60	264.85	Claystone, m. gray
0.80	265.65	Claystone, dk. gray
0.70	266.35	Claystone, m.gray
12.85	279.20	Shale, m. gray, sandy

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DIAMOND DRILL HOLE: N92 - 9
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
4.40	283.60	Coal w/occ. thin bone ptgs. (WAYNESBURG (No. 11)
0.15	283.75	Shale, black, carbonaceous
0.35	284.10	Claystone, m. gray
0.23	284.33	Coal
12.67	297.00	Claystone, m.gray w/Ls nods.
16.30	313.30	Shale, m. gray
1.80	315.10	Coal w/occ. thin bone ptgs. (UNIONTOWN (No. 10)
0.32	315.42	Shale, black, carbonaceous
0.08	315.50	Coal
0.51	316.01	Shale, black, carbonaceous
0.58	316.59	Coal
2.66	319.25	Claystone, m. gray
0.75	320.00	Sandstone, l. gray
3.30	323.30	Shale, m. gray
1.15	324.45	Claystone, m. gray
1.65	326.10	Limestone, l. gray w/ Cs ptgs.
5.80	331.90	Claystone, m.gray-green w/Ls nods.
2.00	333.90	Limestone, l. gray, hard
6.10	340.00	Shale, m. gray
8.60	348.60	Shale, m. gray, calcareous
6.50	355.10	Claystone, m.gray-green w/Ls nods.
0.65	355.75	Limestone, l. gray, hard
7.05	362.80	Claystone, m.gray w/Ls nods.
0.50	363.30	Limestone, l. gray
3.10	366.40	Claystone, m.gray-green w/Ls nods.
1.00	367.40	Limestone, m. gray, silty
3.60	371.00	Shale, m. gray, calcareous
1.10	372.10	Limestone, l. gray
0.50	372.60	Claystone, green
9.90	382.50	Shale, m. gray, calcareous
1.50	384.00	Limestone, l. gray
12.25	396.25	Shale, m. gray, calcareous
2.60	398.85	Limestone, l. gray
0.60	399.45	Shale, m. gray
0.75	400.20	Limestone, l. gray
3.05	403.25	Shale, m. gray-green
0.90	404.15	Limestone, l. gray
0.60	404.75	Shale, m. gray, calcareous
0.80	405.55	Limestone, l. gray
1.05	406.60	Shale, m. gray, calcareous
5.50	412.10	Limestone, l. gray w/ Cs ptgs.
0.95	413.05	Shale, m. gray, calcareous
1.50	414.55	Flintclay, l. brown
0.85	415.40	Shale, green
4.60	420.00	Shale, m. gray, calcareous
3.50	423.50	Shale, dk. gray-green
3.30	426.80	Limestone, l. gray w/ Cs ptgs.
2.80	429.60	Claystone, dk. gray w/Ls nods.
3.60	433.20	Claystone, dk. gray

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DIAMOND DRILL HOLE: N92 - #9
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
3.80	437.00	Coal SEWICKLEY (No. 9)
		0.67 coal
		0.07 bone w/coal stks.
		0.22 coal
		0.01 shale
		0.73 coal
		0.25 bone
		0.77 coal
		0.04 bony coal
		0.78 coal
		0.09 bone w/pyrite
		0.17 bony coal

		3.80 total seam
2.15	439.15	Claystone, dk. gray
0.30	439.45	Limestone, l. gray, nodular
2.15	441.60	Shale, m. gray
0.90	442.50	Limestone, l. gray
4.70	447.20	Claystone, m. gray
7.10	454.30	Shale, dk. gray
3.80	458.10	Limestone, l. gray w/ Cs ptgs.
1.29	459.39	Claystone, dk. gray
0.06	459.45	Coal (FISHPOT)
0.80	460.25	Shale, m. gray w/Ls nods.
5.70	465.95	Limestone, l. gray
0.20	466.15	Shale, dk. gray
0.35	466.50	Limestone, l. gray
0.10	466.60	Shale, dk. gray
6.60	473.20	Limestone, l. gray w/ Sh ptgs.
1.20	474.40	Shale, dk. gray-green
1.95	476.35	Limestone, l. gray
0.20	476.55	Shale, dk. gray
1.90	478.45	Limestone, l. gray
0.65	479.10	Shale, m. gray-green
1.30	480.40	Limestone, l. gray
0.15	480.55	Shale, dk. gray
3.40	483.95	Limestone, l. gray
0.15	484.10	Shale, dk. gray
0.40	484.50	Limestone, l. gray
3.15	487.65	Claystone, m. gray
0.90	488.55	Limestone, l. gray, nodular
3.60	492.15	Claystone, m. gray-green
0.35	492.50	Shale, black, carbonaceous
1.60	494.10	Claystone, m. gray
1.00	495.10	Limestone, l. gray
3.50	498.60	Shale, m. gray, calcareous
2.50	501.10	Limestone, l. gray, nodular
2.10	503.20	Claystone, m.gray w/Ls nods.
2.20	505.40	Limestone, l. gray, nodular
0.40	505.80	Claystone, m.gray w/Ls nods.

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DIAMOND DRILL HOLE: N92 - 9
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.00	506.80	Limestone, l. gray, nodular
1.55	508.35	Claystone, m.gray w/Ls nods.
0.70	509.05	Shale, dk. gray
0.95	510.00	Limestone, l. gray, nodular
1.85	511.85	Claystone, m.gray w/Ls nods.
1.65	513.50	Claystone, m. gray
0.08	513.58	Shale, black, carbonaceous
1.42	515.00	Claystone, m. gray
0.65	515.65	Coal, ROOF COAL
0.75	516.40	Claystone, m. gray
5.05	521.45	Coal, PITTSBURGH (No. 8)
		0.05 bone
		2.02 coal
		0.05 bone w/pyrite
		0.36 coal
		0.03 bone
		2.42 coal
		0.12 bony coal

		5.05 total seam
1.30	522.75	Shale, dk. gray, calcareous
0.45	523.20	Claystone, dk. gray
0.50	523.70	Shale, dk. gray, calcareous
2.70	526.40	Claystone, m.gray w/Ls nods.

AMOUNT OF SOFT/HARD ROCK ABOVE PITTSBURGH COAL SEAM

1. SOFT ROCK: 433.5' or 84% of core.
2. HARD ROCK: 82.9' or 16% of core.

PROJECTED AQUIFERS

1. 20' to 29.3'.
2. 50' to 54.8'.
3. 65.5' to 75.8' (major).
4. 91.7' to 92.55' (minor).
5. 106.55' to 110.85' (major).
6. 118.4' to 122.1'.

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TOVCC 05191

ADDENDUM TO ATTACHMENT 13
THE OHIO VALLEY COAL COMPANY
PERMIT D-0360

The cause of the anomalously high pH values of the roof rock, coal, and bottom at several of the test holes is unknown.

D0360-6

AUG 4 [illegible]

ORIGINAL

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ADDENDUM TO ATTACHMENT 13

STATE EASTING	STATE NORTHING	Hole ID
2,438,621.48	**739,049.51**	DG-51
2,444,258.37	**739,057.65**	DG-52
2,436,189.42	**734,418.07**	DG-53
2,441,996.90	**733,825.82**	DG-54

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AUG 4 1997

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TABLE 1
CORE DRILLING DATA
PITTSBURGH NO. 8 COALBED
POWHATAN NO. 6 MINE

DDH NO.	COAL ELE. (FT.)	SEAM THICKNESS (INCHES) MAIN BENCH	DRAWSLATE	ROOF COAL
N86-1	712	78.2	9.0	14.5
1*	-	-	9.3	9.0
2	723	55.5	10.5	9.5
3	768	64.8	0.0	0.0
4	755	58.6	12.0	8.4
5	716	86.6	15.5	32.3
6	750	63.1	12.0	3.0
7	760	64.8	10.0	3.0
8	740	81.2	14.0	9.8
9	728	77.4	13.1	24.8
10	729	65.9	11.6	17.2
11	757	61.6	12.6	4.2
12	722	67.0	11.2	13.8
13	726	63.6	10.2	0.6
14	713	54.5	11.5	1.0
15	725	59.4	0.0	0.0
16	716	63.8	6.7	1.8
17	724	61.2	0.0	0.0
18	749	62.4	9.6	12.0
19	764	61.2	10.3	10.2
20	738	64.8	10.2	19.2
21	755	65.4	9.6	10.2
22	760	63.4	12.0	12.0
N84-1	724	64.8	12.0	12.0
2	707	64.2	9.6	12.9
3	703	57.0	13.2	4.5
4	703	59.5	13.1	11.4
5	716	67.8	10.8	5.4
6	729	67.2	8.8	14.7
7	723	92.1	9.0	22.0
8	739	57.3	11.0	13.2
9	754	65.1	11.4	12.2
Y-1	704	62.2	12.5	10.5
2	728	62.5	14.0	13.5
3	712	64.0	11.5	18.5
N-35**	730*	70.7	11.5	14.0
B-7	761*	62.0	11.0	13.5
B-10	733*	73.2	10.7	23.2
DG-8	-	63.5	12.0	22.5
DG-9	-	64.7	11.8	13.0
DG-53	-	66.0	?	?
DG-54	-	57.7	10.5	7.0
N92-4	722	65.3	11.3	6.2

* Upper split of roof coal
** Not surveyed.

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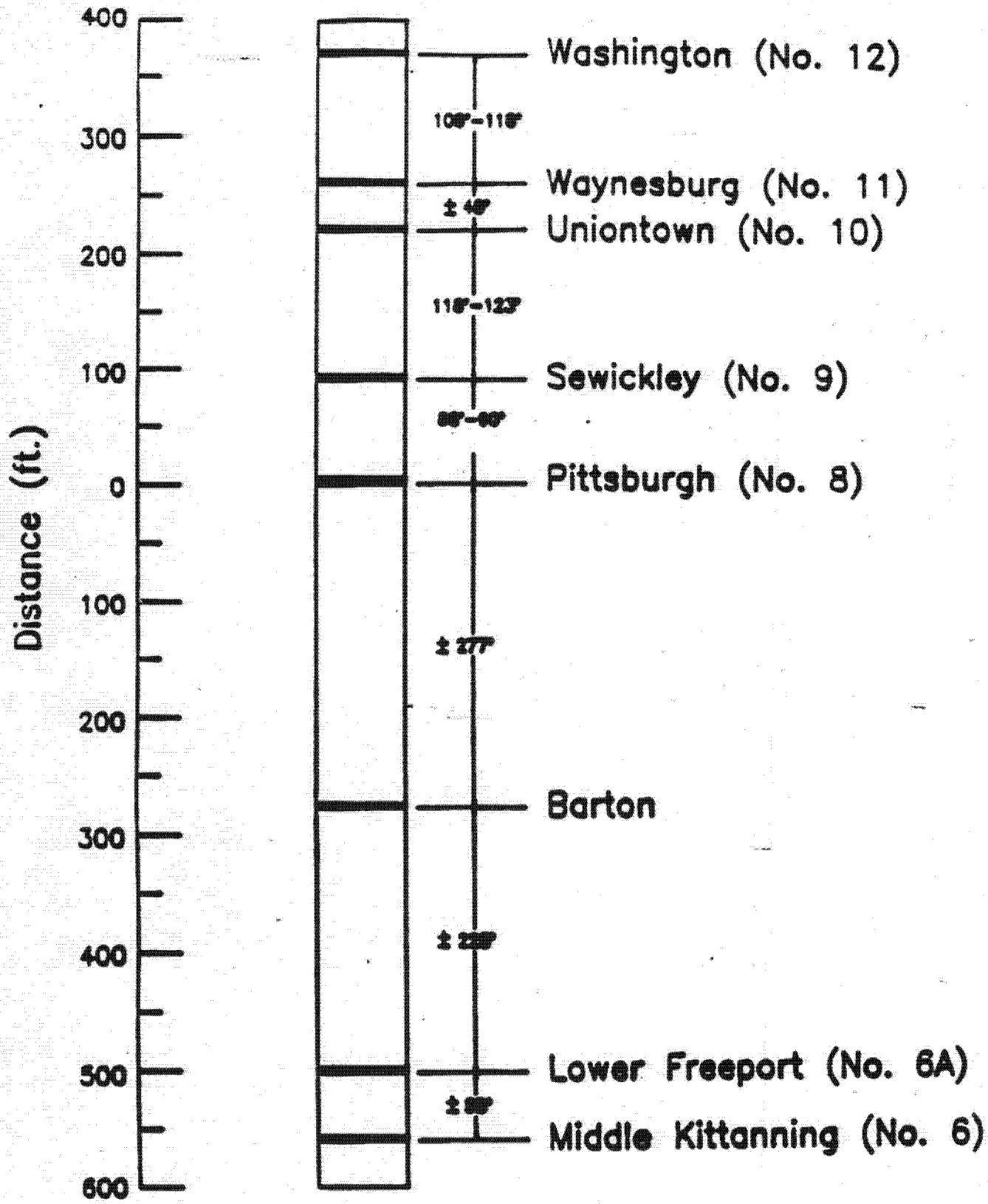
FIGURE 2. GENERALIZED STRATIGRAPHIC SECTION OF COALBEDS



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TOVCC 05195

GEOLOGY-HYDROGEOLOGY-WATER BEARING

MEMPHIS, TENNESSEE

TOVCC 05196

X2,431,332.53
Y 732,212.10

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION ADJ

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-175	W-175	W-175	W-175	W-175	W-175
2.	Lab Identification Number	W-B3	W-B3	W-B3	W-B3	W-B3	W-B3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1132	1132	1132	1132	1132	1132
5.	Depth of Well below Land Surface (feet)	46	46	46	46	46	46
6.	Static Water Level of Well below Land Surface (feet)	15	15	14	14	14	15
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/08/90	12/14/90	01/14/91	02/05/91	03/11/91	04/09/91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	6.9	6.5	7.0	6.8	6.6	7.0
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	26.79	28.50	37.24
	Total Alkalinity (mg/l CAC03)	188.00	192.00	188.00	178.22	177.46	183.54
13.	Specific Conductivity (μmhos/cm at 25°C)	1150	1015	1060	1155	987	861
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.19	.19	1.07	.12	3.14	1.4
16.	Total Sulfates (mg/l)	76.0	105.0	96.0	70.0	65.0	65.0
17.	Total Iron (mg/l)	0.38	0.71	3.41	0.16	18.40	9.00
18.	Total Suspended Solids (mg/l)	4.0	0.3	9.3	2.0	18.0	12.0
19.	Total Hardness (mg/l CAC03)	30	24.7	370.1	120	422	438
20.	Nitrates (mg/l)	6.16	4	1.7	1.11	1.43	2.58
21.	Date Sampled for Analysis	11/08/90	12/14/90	01/14/91	02/05/91	03/11/91	04/09/91
22.	Date Last Precipitaiton Event Occurred	11/07/90	12/04/90	12/30/90	01/31/91	03/10/91	04/08/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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JUN 27 1997

X 2,431,246.25
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LOCATION: ADJACENT

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-176	W-176	W-176	W-176	W-176	W-176
2.	Lab Identification Number	W-R2	W-R2	W-R2	W-R2	W-R2	W-R2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1142	1142	1142	1142	1142	1142
5.	Depth of Well below Land Surface (feet)	43	43	43	43	43	43
6.	Static Water Level of Well below Land Surface (feet)	16	15	15	16	16	17
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/03/90	12/14/90	01/04/91	02/05/91	03/04/91	04/09/91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	6.7	7.0	7.3	6.5	7.0	7.0
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	39.52	29.64	33.25
	Total Alkalinity (mg/l CAC03)	216.00	146.00	214.00	204.82	198.55	194.56
13.	Specific Conductivity (μmhos/cm at 25°C)	1325	1410	1480	1470	1155	1155
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.14	.14	.11	.05	.05	.08
16.	Total Sulfates (mg/l)	66.0	110.0	96.0	72.0	75.0	68.0
17.	Total Iron (mg/l)	0.42	0.44	0.19	0.25	0.21	0.09
18.	Total Suspended Solids (mg/l)	1.0	0.6	2.3	1.0	3.0	0.0
19.	Total Hardness (mg/l CAC03)	386	244.9	377.5	486	460	496
20.	Nitrates (mg/l)	10.1	6.6	3.87	1.28	1.2	2.78
21.	Date Sampled for Analysis	11/03/90	12/14/90	01/04/91	02/05/91	03/04/91	04/09/91
22.	Date Last Precipitaiton Event Occurred	10/24/90	12/04/90	12/30/90	01/31/91	03/03/91	04/08/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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JUN 27 1997

ORIGINAL

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- 732,326.05

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O DEPARTMENT OF NATURAL RESOU ES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

plicant's Name THE OHIO VALLEY COAL COMPANY

1.	Identification No. of Sampling Station from Hydrology Map	W-177	W-177	W-177	W-177	W-177	W-177
2.	Lab Identification Number	W-Y2	W-Y2	W-Y2	W-Y2	W-Y2	W-Y2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1183	1183	1183	1183	1183	1183
5.	Depth of Well below Land Surface (feet)	95	95	95	95	95	95
6.	Static Water Level of Well below Land Surface (feet)	BURIED	BURIED	BURIED	BURIED	BURIED	BURIED
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/06/90	12/11/90	01/22/91	02/02/91	03/02/91	04/09/91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	6.7	7.3	7.3	7.4	7.2	7.3
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	22.42	14.63	8.55
12.	Total Alkalinity (mg/l CAC03)	288.00	220.00	216.00	214.13	210.14	211.28
13.	Specific Conductivity (μmhos/cm at 25°C)	500	510	510	546	441	452
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.04	.09	.01	0	0	0
16.	Total Sulfates (mg/l)	38.0	37.0	47.0	36.0	37.0	31.0
17.	Total Iron (mg/l)	0.06	0.10	0.01	0.11	0.04	0.00
18.	Total Suspended Solids (mg/l)	0.3	2.0	1.7	1.0	2.0	1.0
19.	Total Hardness (mg/l CAC03)	209	132.8	194.5	242	228	224
20.	Nitrates (mg/l)	22.9	22.44	22.88	3.16	8.54	7.12
21.	Date Sampled for Analysis	11/06/90	12/11/90	01/22/91	02/02/91	03/02/91	04/09/91
22.	Date Last Precipitaiton Event Occurred	11/05/90	12/04/90	01/21/91	01/31/91	03/01/91	04/08/91

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Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

ORIGINAL AUG 4 1997

TOVCC 05199

X2,431,931.73
Y 733,776.57

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION
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Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	D W-178	D W-178	D W-178	D W-178	D W-178	D W-178
2.	Lab Identification Number	W/X2	W-X2	W-X2	W-X2	W-X2	W-X2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1225	1225	1225	1225	1225	1225
5.	Depth of Well below Land Surface (feet)	44	44	44	44	44	44
6.	Static Water Level of Well below Land Surface (feet)	39	30	23	34	17	39
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/06/90	12/11/90	01/04/91	02/06/91	03/08/91	04/09/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	6.7	7.4	7.3	7.8	7.3	7.4
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	20.71	18.24	15.20
	Total Alkalinity (mg/l CAC03)	290.00	188.00	240.00	234.65	215.84	189.05
13.	Specific Conductivity (μmhos/cm at 25°C)	915	675	825	892	819	630
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	.03	.08	.02	.02	.05	.05
16.	Total Sulfates (mg/l)	76.0	96.0	91.0	60.0	52.0	70.0
17.	Total Iron (mg/l)	0.16	0.14	0.03	0.21	0.92	0.35
18.	Total Suspended Solids (mg/l)	0.3	2.3	3.0	15.0	6.0	11.0
19.	Total Hardness (mg/l CAC03)	275	158.8	263.2	320	272	260
20.	Nitrates (mg/l)	48.4	42.24	30.36	6.92	12.10	11.2
21.	Date Sampled for Analysis	11/06/90	12/11/90	01/04/91	02/06/91	03/08/91	04/09/91
22.	Date Last Precipitaiton Event Occurred	11/05/90	12/04/90	12/30/90	02/05/91	03/06/91	04/08/91

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Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

ORIGINAL AUG 4 1997

TOVCC 05200

X 2,436,547.43
Y 731,815.44

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION: PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	D W-196	D W-196	D W-196	D W-196	D W-196	D W-196
2.	Lab Identification Number	W-M3	W-M3	W-M3	W-M3	W-M3	W-M3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240	1240	1240	1240
5.	Depth of Well below Land Surface (feet)	21	21	21	21	21	21
6.	Static Water Level of Well below Land Surface (feet)	12	11	6	8	7	7
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/14/90	12/11/90	01/16/91	02/13/91	03/11/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.0	6.9	7.1	7.0	7.0	6.9
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	22.80	12.54	13.87
	Total Alkalinity (mg/l CAC03)	166.00	162.00	148.00	162.26	147.82	145.73
13.	Specific Conductivity (μmhos/cm at 25°C)	425	450	400	420	630	441
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	.01	.03	.05	.02	0	0
16.	Total Sulfates (mg/l)	48.0	55.0	66.0	49.0	44.0	39.0
17.	Total Iron (mg/l)	0.01	0.08	0.12	0.05	0.08	0.10
18.	Total Suspended Solids (mg/l)	3.3	1.0	5.3	0.0	2.0	0.0
19.	Total Hardness (mg/l CAC03)	147	98.1	151.8	200	188	188
20.	Nitrates (mg/l)	13.2	13.64	23.3	2.76	5.62	5.6
21.	Date Sampled for Analysis	11/14/90	12/11/90	01/16/91	02/13/91	03/11/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/15/91	02/10/91	03/10/91	04/14/91

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Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

ORIGINAL AUG 4 1997

2,437,110.65
Y 732,521.31

LOCATION PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-199	W-199	W-199	W-199	W-199	W-199
2.	Lab Identification Number	w-n3	W-N3	W-N3	W-N3	W-N3	W-N3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200	1200	1200	1200
5.	Depth of Well below Land Surface (feet)	67	67	67	67	67	67
6.	Static Water Level of Well below Land Surface (feet)	20	15.5	21	13	17	15
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/14/90	12/13/90	01/16/91	12/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.3	6.9	7.5	7.3	7.2	7.0
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	27.93	20.14	21.85
	Total Alkalinity (mg/l CAC03)	240.00	288.00	120.00	239.40	226.67	228.57
13.	Specific Conductivity (μmhos/cm at 25°C)	550	545	490	514	525	546
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	.01	.03	.02	0	.02	0
16.	Total Sulfates (mg/l)	54.0	53.0	55.0	45.0	46.0	45.0
17.	Total Iron (mg/l)	0.44	0.50	0.09	0.00	0.09	0.10
18.	Total Suspended Solids (mg/l)	4.3	1.0	5.0	1.0	2.0	2.0
19.	Total Hardness (mg/l CAC03)	198	124.8	178.3	284	260	268
20.	Nitrates (mg/l)	4.4	4.40	1.8	0	2.05	2.73
21.	Date Sampled for Analysis	11/14/90	12/13/90	01/16/91	12/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/15/91	02/10/91	03/12/91	04/14/91

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Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 27 1997

ORIGINAL

X 2,437,387.41
Y 732,581.72

LOCATION PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-200	W-200	W-200	W-200	W-200	W-200
2.	Lab Identification Number	W-U3	W-U3	W-U3	W-U3	W-U3	W-U3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1205	1205	1205	1205	1205	1205
5.	Depth of Well below Land Surface (feet)	53	53	53	53	53	53
6.	Static Water Level of Well below Land Surface (feet)	20.5	7	20	18	20	17
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/16/90	12/18/90	01/16/91	02/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	6.4	6.3	6.6	7.1	7.1	6.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	15.20	11.78	19.95
	Total Alkalinity (mg/l CAC03)	82.00	34.00	52.00	111.53	144.97	39.52
13.	Specific Conductivity (μmhos/cm at 25°C)	300	120	190	290	630	200
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.01	.1	.04	.03	.02	.03
16.	Total Sulfates (mg/l)	38.0	42.0	50.0	35.0	32.0	39.0
17.	Total Iron (mg/l)	0.17	3.29	0.92	0.28	0.16	0.75
18.	Total Suspended Solids (mg/l)	0.3	5.3	20.3	2.0	4.0	5.0
19.	Total Hardness (mg/l CAC03)	84	23.5	70.9	139	172	84
20.	Nitrates (mg/l)	5.28	7.48	2.9	0	1.78	0
21.	Date Sampled for Analysis	11/16/90	12/18/90	01/16/91	02/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/17/90	01/15/91	02/10/91	03/12/91	04/14/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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ORIGINAL JUN 27 1997

X 2,437,471.48
Y 732,614,56

LOCATION PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-201	W-201	W-201	W-201	W-201	W-201
2.	Lab Identification Number	W-T3	W-T3	W-T3	W/T3	W-T3	W-T3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210	1210	1210
5.	Depth of Well below Land Surface (feet)	62	62	62	62	62	62
6.	Static Water Level of Well below Land Surface (feet)	48.5	45	44	46	47	53
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/15/90	12/18/90	01/16/91	02/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.3	7.5	7.5	7.3	7.3	7.2
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	19.76	13.30	19.76
	Total Alkalinity (mg/l CAC03)	190.00	210.00	198.00	200.83	201.97	200.83
13.	Specific Conductivity (μmhos/cm at 25°C)	450	465	450	4.41	462	420
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	.02	.04	.05	.02	.02	0
16.	Total Sulfates (mg/l)	40.0	38.0	42.0	35.0	14.0	33.0
17.	Total Iron (mg/l)	0.44	0.12	1.29	0.14	0.15	0.17
18.	Total Suspended Solids (mg/l)	0.3	2.6	5.0	8.0	0.0	2.0
19.	Total Hardness (mg/l CAC03)	153	76.6	151.6	232	228	237
20.	Nitrates (mg/l)	8.80	7.04	7	1.34	3.11	2.75
21.	Date Sampled for Analysis	11/15/90	12/18/90	01/16/91	02/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/17/91	01/15/91	02/10/91	03/12/91	04/14/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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ORIGINAL JUN 27 1997

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Y 732,738.06

LOCATION PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-202	W-202	W-202	W-202	W-202	W-202
2.	Lab Identification Number	W-P3	W-P3	W-P3	W-P3	W-P3	W-P3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210	1210	1210
5.	Depth of Well below Land Surface (feet)	78	78	78	78	78	78
6.	Static Water Level of Well below Land Surface (feet)	52	44	47	50	50	47
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/15/90	12/11/90	01/16/91	02/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.3	7.3	7.5	7.3	7.3	7.1
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	22.99	14.25	19.00
	Total Alkalinity (mg/l CAC03)	204.00	220.00	230.00	224.01	216.60	214.89
13.	Specific Conductivity (μmhos/cm at 25°C)	475	450	460	472	494	431
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.01	.02	.01	.02	0	0
16.	Total Sulfates (mg/l)	39.0	65.0	43.0	35.0	31.0	46.0
17.	Total Iron (mg/l)	0.01	0.06	0.02	0.00	0.06	0.07
18.	Total Suspended Solids (mg/l)	2.7	0.3	6.0	0.0	0.0	0.0
19.	Total Hardness (mg/l CAC03)	175.0	109.4	176.8	255	251	260
20.	Nitrates (mg/l)	6.6	7.48	7.5	1.63	3.92	3.13
21.	Date Sampled for Analysis	11/15/90	12/11/90	01/16/91	02/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/15/91	02/10/91	03/12/91	04/14/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 27 1997
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Y 732,781.03

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-203	W-203	W-203	W-203	W-203	W-203
2.	Lab Identification Number	W-Z3	W-Z3	W-Z3	W-Z3	W-Z3	W-Z3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1208	1208	1208	1208	1208	1208
5.	Depth of Well below Land Surface (feet)	66	66	66	66	66	66
6.	Static Water Level of Well below Land Surface (feet)	39	41	23	33	31	24
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/17/90	12/22/90	01/16/91	02/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.3	6.8	7.5	7.3	7.3	7.3
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	22.00	14.63	17.86
	Total Alkalinity (mg/l CAC03)	190.00	198.00	124.00	208.24	201.97	201.21
13.	Specific Conductivity (μmhos/cm at 25°C)	500	465	500	451	483	431
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	.01	.02	.02	.04	0	0
16.	Total Sulfates (mg/l)	51.0	42.0	48.0	37.0	27.0	31.0
17.	Total Iron (mg/l)	0.01	0.07	0.08	0.12	0.06	0.04
18.	Total Suspended Solids (mg/l)	0.3	2.0	1.7	2.0	1.0	0.0
19.	Total Hardness (mg/l CAC03)	187	108.6	169.8	240	255	236
20.	Nitrates (mg/l)	6.6	7.92	7.5	1.54	3.55	3.63
21.	Date Sampled for Analysis	11/17/90	12/22/90	01/16/91	02/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/16/90	12/18/90	01/15/91	02/10/91	03/12/91	04/14/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 27 1997
D0360-6

ORIGINAL

X 2,437,876.68
Y 732,743.20

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-204	W-204	W-204	W-204	W-204	W-204
2.	Lab Identification Number	W-Q3	W-Q3	W-Q3	W-Q3	W-Q3	W-Q3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200	1200	1200	1200
5.	Depth of Well below Land Surface (feet)	64	64	64	64	64	64
6.	Static Water Level of Well below Land Surface (feet)	14.5	14	11	13	12	10
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/15/90	12/13/90	01/16/91	02/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.3	7.3	7.5	7.3	7.3	7.1
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	20.33	16.34	14.82
	Total Alkalinity (mg/l CAC03)	236.00	224.00	238.00	216.22	229.14	213.18
13.	Specific Conductivity (μmhos/cm at 25°C)	500	528	500	493	504	483
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	.01	.04	.02	0	.02	0
16.	Total Sulfates (mg/l)	44.0	39.0	44.0	36.0	30.0	33.0
17.	Total Iron (mg/l)	0.26	0.21	0.15	0.18	0.09	0.06
18.	Total Suspended Solids (mg/l)	0.3	0.3	5.0	0.0	2.0	0.0
19.	Total Hardness (mg/l CAC03)	198	121.8	180.8	263	250	260
20.	Nitrates (mg/l)	18.9	21.12	15.4	4.48	6.31	4.53
21.	Date Sampled for Analysis	11/15/90	12/13/90	01/16/91	02/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/15/91	02/10/91	03/12/91	04/14/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 27 1997
D0360-6

ORIGINAL

X 2,437,950.11
Y 732,852.12

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-205	W-205	W-205	W-205	W-205	W-205
2.	Lab Identification Number	W-R3	W-R3	W-R3	W-R3	W-R3	W-R3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1195	1195	1195	1195	1195	1195
5.	Depth of Well below Land Surface (feet)	57	57	57	57	57	57
6.	Static Water Level of Well below Land Surface (feet)	29	27	22	26	25	20
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/15/90	12/13/90	01/16/91	02/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.5	7.3	7.5	7.3	7.0	7.2
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	21.47	13.49	8.36
	Total Alkalinity (mg/l CAC03)	200.00	196.00	204.00	187.53	188.29	185.63
13.	Specific Conductivity (μmhos/cm at 25°C)	500	460	475	441	473	410
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.01	.03	.06	0	0	0
16.	Total Sulfates (mg/l)	49.0	44.0	53.0	39.0	35.0	36.0
17.	Total Iron (mg/l)	0.01	0.16	0.06	0.04	0.04	0.04
18.	Total Suspended Solids (mg/l)	1.0	1.3	5.0	0.0	1.0	0.0
19.	Total Hardness (mg/l CAC03)	176	79.9	166.3	230	224	232
20.	Nitrates (mg/l)	5.28	5.28	5.3	1.30	2.85	2.31
21.	Date Sampled for Analysis	11/15/90	12/13/90	01/16/91	02/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/15/91	02/10/91	03/12/91	04/14/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 27 1997
D0360-6
ORIGINAL

X 2,438,290.52
Y 733,062.98

LOCATION
GTE

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	DW-206	DW-206	DW-206	D W-206	D W-206	D W-206
2.	Lab Identification Number	W-S3	W-S3	W-S3	W-S3	W-S3	W-S3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210	1210	1210
5.	Depth of Well below Land Surface (feet)	26.5	26.5	26.5	26.5	26.5	26.5
6.	Static Water Level of Well below Land Surface (feet)	13	12	70	11	16	10
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/15/90	12/13/90	01/16/91	02/13/91	03/13/91	04/17/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.1	7.3	7.0	7.1	7.0	6.9
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	17.29	7.60	10.83
	Total Alkalinity (mg/l CAC03)	132.00	104.00	102.00	104.50	100.13	73.15
13.	Specific Conductivity (μmhos/cm at 25°C)	450	400	350	357	368	280
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.01	.04	.01	.05	.02	0
16.	Total Sulfates (mg/l)	78.0	78.0	74.0	55.0	54.0	48.0
17.	Total Iron (mg/l)	0.21	0.31	0.14	0.47	0.18	0.18
18.	Total Suspended Solids (mg/l)	0.3	4.0	2.3	17.0	8.0	3.0
19.	Total Hardness (mg/l CAC03)	145	61.9	106.6	158	152	128
20.	Nitrates (mg/l)	12.8	10.12	7.5	1.84	3.94	2.23
21.	Date Sampled for Analysis	11/15/90	12/13/90	01/16/91	02/13/91	03/13/91	04/17/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/15/91	02/10/91	03/12/91	04/14/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

ORIGINAL

AUG 4 1997

X 2,443,220.09
Y 732,134.98

LOCATION
GTE

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-225	W-225	W-225	W-225	W-225	W-225
2.	Lab Identification Number	W-G4	W-G4	W-G4	W-G4	W-G4	W-G4
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1148	1148	1148	1148	1148	1148
5.	Depth of Well below Land Surface (feet)	46	46	46	46	46	46
6.	Static Water Level of Well below Land Surface (feet)	9	9	7	7	11	9
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/19/90	12/26/90	01/21/91	02/19/91	03/20/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.5	7.3	7.3	7.0	7.1	7.1
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	21.66	19.57	20.71
	Total Alkalinity (mg/l CAC03)	236.00	236.00	228.00	216.98	244.34	228.19
13.	Specific Conductivity (μmhos/cm at 25°C)	500	490	500	420	473	452
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	.09	.11	.08	.04	.03	.06
16.	Total Sulfates (mg/l)	40.0	52.0	47.0	36.0	36.0	31.0
17.	Total Iron (mg/l)	0.14	0.09	0.13	0.28	0.16	0.17
18.	Total Suspended Solids (mg/l)	40.0	1.0	0.3	3.0	7.0	3.0
19.	Total Hardness (mg/l CAC03)	146	96.9	155.1	216	196	192
20.	Nitrates (mg/l)	1.36	1.54	.04	0	1.9	2.87
21.	Date Sampled for Analysis	11/19/90	12/26/90	01/21/91	02/19/91	03/20/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/16/90	12/24/90	01/20/91	02/17/91	03/18/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 27 1997
0360-6

ORIGINAL

X 2,442,872.01
Y 732,977.42

LOCATION PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	W-226	W-226	W-226	W-226	W-226	W-226
2.	Lab Identification Number	W-P4	W-P4	W-P4	W-P4	W-P4	W-P4
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080	1080	1080	1080
5.	Depth of Well below Land Surface (feet)	40	40	40	40	40	40
6.	Static Water Level of Well below Land Surface (feet)	21	22	23	22	22	22
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/20/90	12/26/90	01/21/91	02/19/91	03/20/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.3	7.5	7.5	7.4	7.3	7.1
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	20.71	30.02	21.85
	Total Alkalinity (mg/l CAC03)	264.00	264.00	150.00	246.62	267.90	246.62
13.	Specific Conductivity (μmhos/cm at 25°C)	550	560	325	462	504	462
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	.15	.13	.02	.09	.1	.08
16.	Total Sulfates (mg/l)	51.0	56.0	21.0	41.0	36.0	36.0
17.	Total Iron (mg/l)	0.60	0.56	0.16	0.64	0.21	0.37
18.	Total Suspended Solids (mg/l)	3.7	0.3	5.3	7.0	3.0	4.0
19.	Total Hardness (mg/l CAC03)	152	87.3	91.9	233	220	208
20.	Nitrates (mg/l)	.92	1.45	2.3	0	0	2.31
21.	Date Sampled for Analysis	11/20/90	12/26/90	01/21/91	02/19/91	03/20/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/16/90	12/24/90	01/20/91	02/17/91	03/18/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

ORIGINAL

JUN 27 1997

STATE PLANE COORDS.
X- 2,430,612.51
Y- 732,223.72
~~PAN~~
* ADJ - per phone conversation w/ Dave Bartlett on 8/7/97 GM

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

1.	Identification No. of Sampling Station from Hydrology Map	DW-268	DW-268	DW-268	DW-268	DW-268	DW-268
2.	Lab Identification Number						
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1165	1165	1165	1165	1165	1165
5.	Depth of Well below Land Surface (feet)	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
6.	Static Water Level of Well below Land Surface (feet)	COVERED	COVERED	COVERED	COVERED	COVERED	COVERED
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made						
9.	Aquifer/Zone Identification for Well/Spring	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
0.	pH (Standard Units)						
.	Total Acidity (mg/l CAC03)						
12.	Total Alkalinity (mg/l CAC03)						
13.	Specific Conductivity (μmhos/cm at 25°C)						
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)						
16.	Total Sulfates (mg/l)						
17.	Total Iron (mg/l)						
18.	Total Suspended Solids (mg/l)						
19.	Total Hardness (mg/l CAC03)						
20.	Nitrates (mg/l)						
21.	Date Sampled for Analysis						
22.	Date Last Precipitaiton Event Occurred						

ORIGINAL

D0360-6

AUG 4 1997

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

X 2,443,073.36
Y 733,210.38

LOCATION
GTE

DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name The Ohio Valley Coal Company

1.	Identification No. of Sampling Station from Hydrology Map	DW-282	DW-282				
2.	Lab Identification Number						
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1098	1098				
5.	Depth of Well below Land Surface (feet)	12'	12'				
6.	Static Water Level of Well below Land Surface (feet)	6'	6'				
7.	Flow for Spring/Stream (gpm or cfs)	L	H				
8.	Date Above Measurements Made	7/31/93	9/14/93				
9.	Aquifer/Zone Identification for Well/Spring	A	A				
10.	pH (Standard Units)	7.3	7.5				
11.	Total Acidity (mg/l CAC03)	33.00	17.20				
12.	Total Alkalinity (mg/l CAC03)	230.60	237.20				
13.	Specific Conductivity (μmhos/cm at 25°C)	530	567				
14.	Total Dissolved Solids (mg/l)						
15.	Total Manganese (mg/l)	0.14	0.21				
16.	Total Sulfates (mg/l)	50.0	40.0				
17.	Total Iron (mg/l)	0.34	0.15				
18.	Total Suspended Solids (mg/l)	<1.0	3.0				
19.	Total Hardness (mg/l CAC03)	226.0	256				
20.	Nitrates (mg/l)	< 0.50	0.52				
21.	Date Sampled for Analysis	7/31/93	9/14/93				
22.	Date Last Precipitaiton Event Occurred	7/28/93	9/9/93				

Laboratory Name ILA
Address 2240 Williamsburg Farms, P. O. Box 81 City Glen Dale
State WV Zip 26038

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 item 14.

ORIGINAL
D0360-6

AUG 4 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,434,841.12	Y 738,964.90	LOCATION ADJ			
1. Identification No. of Sampling Station from Hydrology Map	DW-324	DW-324	DW-324	DW-324	DW-324	DW-324
2. Lab Identification Number	9511139	9512185	9601047	9602034	9603024	9604275
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1000	1000	1000	1000	1000	1000
5. Depth of Well below Land Surface (msl)	9	9	9	9	9	9
6. Static Water Level of Well below Land Surface (msl)	1	2	2	3	2	2
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/03/96	03/04/96	04/18/96
9. Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10. pH (Standard Units)	6.8	6.6	6.0	6.7	6.6	6.5
11. Total Acidity (mg/l CAC03)	18	33	14	8.4	13	<1.5
12. Total Alkalinity (mg/l CAC03)	82	98	48	57	34	50
13. Specific Conductivity (µmhos/cm at 25°C)	330	340	320	340	290	260
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	0.02	<0.02	0.04	<0.02	<0.02
16. Total Sulfates (mg/l)	88	70	56	74	61	50
17. Total Iron (mg/l)	0.11	0.09	0.42	0.75	0.63	0.54
18. Total Suspended Solids (mg/l)	<1.0	<1.0	1.8	13	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	160	170	140	160	120	110
20. Nitrates (mg/l)	3.7	5.8	8.8	6.4	5.7	1.7
21. Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/03/96	03/04/96	04/18/96
22. Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/01/96	03/03/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,438,327.88	Y 738,126.03	LOCATION	ADJ		
1. Identification No. of Sampling Station from Hydrology Map	W-325	W-325	W-325	W-325	W-325	W-325
2. Lab Identification Number	9511144	9512164	9601216	9602053	9603143	9604371
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	975	975	975	975	975	975
5. Depth of Well below Land Surface (msl)	129	129	129	129	129	129
6. Static Water Level of Well below Land Surface (msl)	30	40	28	32	31	30
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/14/95	12/15/95	01/18/96	02/06/96	03/14/96	04/23/96
9. Aquifer/Zone Identification for Well/Spring	E	E	E	E	E	E
10. pH (Standard Units)	8.3	7.3	7.3	7.2	7.4	7.4
11. Total Acidity (mg/l CAC03)	7.9	24	11	9.5	4.6	7.3
12. Total Alkalinity (mg/l CAC03)	200	200	190	140	150	180
13. Specific Conductivity (μmhos/cm at 25°C)	440	490	400	370	330	410
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	0.04	0.03	0.02	<0.02
16. Total Sulfates (mg/l)	85	77	64	60	51	49
17. Total Iron (mg/l)	0.05	0.20	0.17	1.2	0.21	0.05
18. Total Suspended Solids (mg/l)	<1.0	1.3	1.6	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	270	250	240	210	240	220
20. Nitrates (mg/l)	0.68	0.21	1.3	2.5	0.92	1.2
21. Date Sampled for Analysis	11/14/95	12/15/95	01/18/96	02/06/96	03/14/96	04/23/96
22. Date Last Precipitaiton Event Occurred	11/14/95	12/14/95	01/16/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

9/88

OHIO PARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,439,919.84	Y 737,042.26	LOCATION	ADJ

1.	Identification No. of Sampling Station from Hydrology Map	W-326	W-326	W-326	W-326	W-326	W-326
2.	Lab Identification Number	9511251	9512188	9601326	9602051	9603218	9604414
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	910	910	910	910	910	910
5.	Depth of Well below Land Surface (msl)	18	18	18	18	18	18
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/17/95	12/18/95	01/26/96	02/06/96	03/18/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	E	E	E	E	E	E
10.	pH (Standard Units)	7.4	7.3	7.3	7.5	7.4	7.6
11.	Total Acidity (mg/l CAC03)	16	19	12	12	14	11
12.	Total Alkalinity (mg/l CAC03)	310	330	290	300	280	260
13.	Specific Conductivity (µmhos/cm at 25°C)	660	630	600	560	560	520
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.03	0.03	0.03	<0.02	<0.02
16.	Total Sulfates (mg/l)	62	70	64	63	59	53
17.	Total Iron (mg/l)	0.56	0.17	0.07	0.07	0.13	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	2.0	<1.0
19.	Total Hardness (mg/l CAC03)	250	280	260	270	240	200
20.	Nitrates (mg/l)	<0.10	<0.10	0.39	0.19	0.24	0.12
21.	Date Sampled for Analysis	11/17/95	12/18/95	01/26/96	02/06/96	03/18/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/16/95	12/18/95	01/26/96	02/01/96	03/17/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6 AUG 22 1997 ORIGINAL

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OHIO PARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,916.57		Y 736,946.41		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-327	W-327	W-327	W-327	W-327	W-327
2.	Lab Identification Number	9511252	9512189	9601325	9602052	9603227	9604415
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	910	910	910	910	910	910
5.	Depth of Well below Land Surface (msl)	30	30	30	30	30	30
6.	Static Water Level of Well below Land Surface (msl)	8	6	6	7	7	7
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/17/95	12/18/95	01/26/96	02/06/96	03/18/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.2	7.1	7.1	6.9	7.3	7.3
11.	Total Acidity (mg/l CAC03)	18	18	17	11	17	16
12.	Total Alkalinity (mg/l CAC03)	280	300	220	260	220	240
13.	Specific Conductivity (µmhos/cm at 25°C)	580	550	480	500	430	450
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.03	0.03	0.04	<0.02	<0.02
16.	Total Sulfates (mg/l)	39	49	43	51	37	34
17.	Total Iron (mg/l)	1.4	2.1	0.93	3.3	0.85	0.05
18.	Total Suspended Solids (mg/l)	10	6.4	<1.0	8.3	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	310	320	290	280	260	260
20.	Nitrates (mg/l)	1.2	2.3	5.0	3.9	3.6	0.81
21.	Date Sampled for Analysis	11/17/95	12/18/95	01/26/96	02/06/96	03/18/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/16/95	12/18/95	01/26/96	02/01/96	03/17/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OF DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,444,087.26		Y 733,965.59		LOCATION	GTE
1.	Identification No. of Sampling Station from Hydrology Map	W-328	W-328	W-328	W-328	W-328	W-328
2.	Lab Identification Number	9511253	9512291	9602013	9602344	9603338	9604421
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1218	1218	1218	1218	1218	1218
5.	Depth of Well below Land Surface (msl)	100	100	100	100	100	100
6.	Static Water Level of Well below Land Surface (msl)	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/17/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.3	7.2	7.2	7.3	7.3	7.2
11.	Total Acidity (mg/l CAC03)	16	21	17	21	30	16
12.	Total Alkalinity (mg/l CAC03)	220	240	220	230	210	240
13.	Specific Conductivity (µmhos/cm at 25°C)	580	540	460	520	460	530
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.08	<0.02	<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	64	63	63	66	52	66
17.	Total Iron (mg/l)	0.32	0.24	0.20	0.15	0.29	0.14
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	290	330	270	300	260	310
20.	Nitrates (mg/l)	2.8	2.0	3.1	2.5	2.0	0.80
21.	Date Sampled for Analysis	11/17/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/16/95	12/26/95	01/30/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,436,140.00		Y 738,910.92		LOCATION	ADJ
1. Identification No. of Sampling Station from Hydrology Map	W-329	W-329	W-329	W-329	W-329	W-329
2. Lab Identification Number	9511257	9512298	9601037	9602165	9603025	9604335
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	955	955	955	955	955	955
5. Depth of Well below Land Surface (msl)	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
6. Static Water Level of Well below Land Surface (msl)	BURIED	BURIED	BURIED	BURIED	BURIED	BURIED
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/17/95	12/26/95	01/03/96	02/12/96	03/04/96	04/22/96
9. Aquifer/Zone Identification for Well/Spring	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
10. pH (Standard Units)	7.6	7.4	7.3	7.5	7.5	7.5
11. Total Acidity (mg/l CAC03)	6.6	13	20	11	15	8.4
12. Total Alkalinity (mg/l CAC03)	320	320	320	300	290	260
13. Specific Conductivity (µmhos/cm at 25°C)	840	800	860	760	810	750
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16. Total Sulfates (mg/l)	58	55	60	59	66	65
17. Total Iron (mg/l)	0.54	0.25	0.15	0.20	0.26	0.09
18. Total Suspended Solids (mg/l)	<1.0	1.0	<1.0	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	240	230	240	220	230	200
20. Nitrates (mg/l)	<0.10	0.12	<0.10	0.10	0.12	<0.10
21. Date Sampled for Analysis	11/17/95	12/26/95	01/03/96	02/12/96	03/04/96	04/22/96
22. Date Last Precipitaiton Event Occurred	11/16/95	12/26/95	01/03/96	02/12/96	03/03/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OH)EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,435,791.54		Y 738,932.70		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	DW-330	DW-330	DW-330	DW-330	DW-330	DW-330
2.	Lab Identification Number	9511258	9512297	9601039	9602035	9603023	9604196
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	960	960	960	960	960	960
5.	Depth of Well below Land Surface (msl)	8	8	8	8	8	8
6.	Static Water Level of Well below Land Surface (msl)	4	5	4	4	4	5
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/17/95	12/26/95	01/03/96	02/11/96	03/04/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.1	6.9	6.9	7.0	7.1	7.1
11.	Total Acidity (mg/l CAC03)	19	34	33	20	27	34
12.	Total Alkalinity (mg/l CAC03)	260	280	220	250	220	260
13.	Specific Conductivity (μmhos/cm at 25°C)	1200	1200	1100	1200	2000	1200
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	0.05	<0.02	0.02
16.	Total Sulfates (mg/l)	89	97	68	110	110	120
17.	Total Iron (mg/l)	0.45	0.36	0.08	0.65	0.06	0.06
18.	Total Suspended Solids (mg/l)	<1.0	6.0	<1.0	70	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	390	480	420	420	420	330
20.	Nitrates (mg/l)	1.5	3.6	5.4	5.5	6.3	5.0
21.	Date Sampled for Analysis	11/17/95	12/26/95	01/03/96	02/11/96	03/04/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/16/95	12/26/95	01/03/96	02/11/96	03/03/96	04/15/96

Laboratory Name Tradet, Inc.
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SPRING FLOW = GPM
STREAM FLOW = CFS

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OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,436,767.71		Y 738,846.43		LOCATION	ADJ
1. Identification No. of Sampling Station from Hydrology Map	DW-331	DW-331	DW-331	DW-331	DW-331	DW-331
2. Lab Identification Number	9511259	9512165	9601035	9602039	9603026	9604202
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	935	935	935	935	935	935
5. Depth of Well below Land Surface (msl)	11	11	11	11	11	11
6. Static Water Level of Well below Land Surface (msl)	7	9	7	9	8	8
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/20/95	12/15/95	01/03/96	02/05/96	03/04/96	04/15/96
9. Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10. pH (Standard Units)	7.6	7.4	7.3	7.6	7.5	7.6
11. Total Acidity (mg/l CAC03)	11	14	15	7.8	10	9.8
12. Total Alkalinity (mg/l CAC03)	210	220	190	240	220	220
13. Specific Conductivity (µmhos/cm at 25°C)	590	680	640	620	570	530
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	<0.02	0.04	0.03	0.02
16. Total Sulfates (mg/l)	86	90	87	80	65	58
17. Total Iron (mg/l)	0.55	0.27	0.13	0.22	3.5	0.13
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	260	260	260	260	260	240
20. Nitrates (mg/l)	2.5	1.8	2.4	2.5	2.6	0.12
21. Date Sampled for Analysis	11/20/95	12/15/95	01/03/96	02/05/96	03/04/96	04/15/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/03/96	02/01/96	03/03/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997

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OHIO PARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,805.78		Y 737,058.52		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-332	W-332	W-332	W-332	W-332	W-332
2.	Lab Identification Number	0.00	0.00	0.00	0.00	0.00	0.00
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	915	915	915	915	915	915
5.	Depth of Well below Land Surface (msl)	21	21	21	21	21	21
6.	Static Water Level of Well below Land Surface (msl)	21	21	21	21	21	21
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/20/95	12/15/95	01/29/96	02/27/96	03/25/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	NOT	NOT	NOT	NOT	NOT	NOT
11.	Total Acidity (mg/l CAC03)	ENOUGH	ENOUGH	ENOUGH	ENOUGH	ENOUGH	ENOUGH
12.	Total Alkalinity (mg/l CAC03)	WATER	WATER	WATER	WATER	WATER	WATER
13.	Specific Conductivity (µmhos/cm at 25°C)	TO	TO	TO	TO	TO	TO
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
16.	Total Sulfates (mg/l)	WELL	WELL	WELL	WELL	WELL	WELL
17.	Total Iron (mg/l)	WAS	WAS	WAS	WAS	WAS	WAS
18.	Total Suspended Solids (mg/l)	DAMP	DAMP	DAMP	DAMP	DAMP	DAMP
19.	Total Hardness (mg/l CAC03)	AT	AT	AT	AT	AT	AT
20.	Nitrates (mg/l)	BOTTOM	BOTTOM	BOTTOM	BOTTOM	BOTTOM	BOTTOM
21.	Date Sampled for Analysis	11/20/95	12/15/95	01/29/96	02/27/96	03/25/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/27/96	02/27/96	03/21/96	04/23/96

D0360-6

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

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Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,440,417.52			Y 737,077.08	LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-333	W-333	W-333	W-333	W-333	W-333
2.	Lab Identification Number	9511260	9512261	9602005	9602317	9603317	9604408
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	908	908	908	908	908	908
5.	Depth of Well below Land Surface (msl)	23	23	23	23	23	23
6.	Static Water Level of Well below Land Surface (msl)	4	4	3	3	4	4
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.8	7.7	7.3	7.5	7.4	7.6
11.	Total Acidity (mg/l CAC03)	24	20	15	23	16	24
12.	Total Alkalinity (mg/l CAC03)	400	410	400	380	370	380
13.	Specific Conductivity (µmhos/cm at 25°C)	790	820	760	770	760	730
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	0.02	0.14	0.03	0.03	0.02
16.	Total Sulfates (mg/l)	12	15	33	39	46	46
17.	Total Iron (mg/l)	3.2	2.2	3.8	0.72	2.2	2.0
18.	Total Suspended Solids (mg/l)	7.6	11	13	<1.0	30	28
19.	Total Hardness (mg/l CAC03)	160	150	160	180	200	190
20.	Nitrates (mg/l)	<0.10	<0.10	<0.10	0.23	<0.10	<0.10
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/27/96	02/27/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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AUG 18 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,440,608.17		Y 737,417.90		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-334	W-334	W-334	W-334	W-334	W-334
2.	Lab Identification Number	9511261	9512260	9602007	9602323	9603313	9604409
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	913	913	913	913	913	913
5.	Depth of Well below Land Surface (msl)	12	12	12	12	12	12
6.	Static Water Level of Well below Land Surface (msl)	6	6	5	5	6	7
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.3	7.3	6.8	7.5	7.2	7.2
11.	Total Acidity (mg/l CAC03)	23	14	18	7.0	35	24
12.	Total Alkalinity (mg/l CAC03)	190	180	230	100	180	170
13.	Specific Conductivity (μmhos/cm at 25°C)	440	440	540	240	420	390
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.02	0.02	<0.02	0.10	<0.02	0.03
16.	Total Sulfates (mg/l)	51	44	48	20	43	36
17.	Total Iron (mg/l)	0.37	0.99	0.44	4.2	1.1	0.74
18.	Total Suspended Solids (mg/l)	<1.0	6.0	<1.0	29	12	12
19.	Total Hardness (mg/l CAC03)	250	290	290	140	240	220
20.	Nitrates (mg/l)	1.7	3.2	2.4	4.9	2.2	3.1
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/27/96	02/27/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
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SPRING FLOW = GPM
STREAM FLOW = CFS

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OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,440,557.61		Y 737,359.91		LOCATION	ADJ
1. Identification No. of Sampling Station from Hydrology Map	W-335	W-335	W-335	W-335	W-335	W-335
2. Lab Identification Number	9511262	9512259	9602003	9602319	9603315	9604410
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	918	918	918	918	918	918
5. Depth of Well below Land Surface (msl)	25	25	25	25	25	25
6. Static Water Level of Well below Land Surface (msl)	9	15	10	9	10	10
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
9. Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10. pH (Standard Units)	7.3	6.7	6.7	6.7	6.7	6.7
11. Total Acidity (mg/l CAC03)	42	90	63	110	66	74
12. Total Alkalinity (mg/l CAC03)	380	440	420	420	420	440
13. Specific Conductivity (µmhos/cm at 25°C)	1100	1100	1100	1100	1100	1100
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	0.10	0.68	0.16	0.19	0.09	0.07
16. Total Sulfates (mg/l)	160	130	190	150	130	120
17. Total Iron (mg/l)	0.18	2.4	0.16	0.12	0.07	0.06
18. Total Suspended Solids (mg/l)	8.8	59	<1.0	2.4	1.6	<1.0
19. Total Hardness (mg/l CAC03)	620	630	660	670	650	680
20. Nitrates (mg/l)	6.4	<0.10	12	11	9.4	8.7
21. Date Sampled for Analysis	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/27/96	02/27/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

 ORIGINAL JUN 2 7 1997

OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,440,179.15		Y 737,316.67		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-336	W-336	W-336	W-336	W-336	W-336
2.	Lab Identification Number	9511263	9512262	9602006	9602318	9603316	9604411
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	918	918	918	918	918	918
5.	Depth of Well below Land Surface (msl)	30	30	30	30	30	30
6.	Static Water Level of Well below Land Surface (msl)	14	20	13	14	14	14
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.8	7.1	7.0	7.0	7.0	7.1
11.	Total Acidity (mg/l CAC03)	46	12	31	50	25	31
12.	Total Alkalinity (mg/l CAC03)	360	340	320	340	300	360
13.	Specific Conductivity (µmhos/cm at 25°C)	750	730	660	730	700	720
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	90	69	74	84	74	82
17.	Total Iron (mg/l)	<0.05	<0.05	0.10	0.21	0.06	0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	450	430	380	430	440	460
20.	Nitrates (mg/l)	0.88	2.8	1.7	2.0	2.5	2.6
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/27/96	02/27/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

JUN 27 1997

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D0360-6

TOVCC 05226

OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,440,504.56 Y 737,400.36 LOCATION ADJ

1.	Identification No. of Sampling Station from Hydrology Map	W-337	W-337	W-337	W-337	W-337	W-337
2.	Lab Identification Number	9511264	9512258	9602004	9602320	9603314	9604412
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	918	918	918	918	918	918
5.	Depth of Well below Land Surface (msl)	30	30	30	30	30	30
6.	Static Water Level of Well below Land Surface (msl)	22	26	16	20	22	18
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.3	7.3	7.5	7.3	6.9	7.2
11.	Total Acidity (mg/l CAC03)	15	30	13	29	31	29
12.	Total Alkalinity (mg/l CAC03)	250	320	280	320	290	320
13.	Specific Conductivity (µmhos/cm at 25°C)	570	800	720	750	680	720
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.06	0.04	0.04	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	43	32	29	33	52	55
17.	Total Iron (mg/l)	0.18	<0.05	0.26	<0.05	0.06	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	4.0	<1.0	<1.0	1.2	<1.0
19.	Total Hardness (mg/l CAC03)	310	530	400	420	400	420
20.	Nitrates (mg/l)	1.1	2.8	0.50	0.35	0.64	0.81
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/29/96	02/27/96	03/25/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/27/96	02/27/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,444,155.93		Y 737,765.44		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	WL-338	WL-338	WL-338	WL-338	WL-338	WL-338
2.	Lab Identification Number	9511266	9512299	9601261	9602055	9603322	9604352
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	890	890	890	890	890	890
5.	Depth of Well below Land Surface (msl)	25	25	25	25	25	25
6.	Static Water Level of Well below Land Surface (msl)	9	9	9	9	9	9
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/20/95	12/26/95	01/23/96	02/06/96	03/26/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	6.8	6.8	7.0	7.0	7.3	7.4
11.	Total Acidity (mg/l CAC03)	40	40	61	25	34	30
12.	Total Alkalinity (mg/l CAC03)	380	400	390	390	400	380
13.	Specific Conductivity (μmhos/cm at 25°C)	1100	1100	1200	1100	1100	1100
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.02	0.04	0.02	<0.02
16.	Total Sulfates (mg/l)	300	260	270	280	280	300
17.	Total Iron (mg/l)	0.20	0.10	0.54	0.16	0.23	0.09
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	2.0
19.	Total Hardness (mg/l CAC03)	560	560	610	520	590	530
20.	Nitrates (mg/l)	<0.10	0.49	0.19	0.22	0.12	<0.10
21.	Date Sampled for Analysis	11/20/95	12/26/95	01/23/96	02/06/96	03/26/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/19/96	02/01/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

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OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,436,206.29		Y 738,974.24		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-339	W-339	W-339	W-339	W-339	W-339
2.	Lab Identification Number	9511286	9512186	9601036	9602038	9603021	9604199
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	955	955	955	955	955	955
5.	Depth of Well below Land Surface (msl)	28	28	28	28	28	28
6.	Static Water Level of Well below Land Surface (msl)	16	16	15	18	15	16
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/21/95	12/18/95	01/03/96	02/05/96	03/04/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.7	7.5	7.5	7.6	7.6	7.6
11.	Total Acidity (mg/l CAC03)	14	14	16	9.1	13	12
12.	Total Alkalinity (mg/l CAC03)	300	310	290	270	270	280
13.	Specific Conductivity (μmhos/cm at 25°C)	710	690	760	740	760	720
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.02	<0.02	0.03	<0.02	0.02
16.	Total Sulfates (mg/l)	59	67	66	62	66	59
17.	Total Iron (mg/l)	<0.05	0.16	<0.05	0.10	<0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	2.4	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	200	210	210	230	210	250
20.	Nitrates (mg/l)	0.87	0.35	0.85	0.26	0.23	0.78
21.	Date Sampled for Analysis	11/21/95	12/18/95	01/03/96	02/05/96	03/04/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/18/95	01/03/96	02/01/96	03/03/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,442,141.56		Y 737,839.73		LOCATION	ADJ
1. Identification No. of Sampling Station from Hydrology Map	W-340	W-340	W-340	W-340	W-340	W-340
2. Lab Identification Number	9511282	9512300	9601259	9602249	9603267	9604336
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	920	920	920	920	920	920
5. Depth of Well below Land Surface (msl)	20	20	20	20	20	20
6. Static Water Level of Well below Land Surface (msl)	8	9	8	8	18	8
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/21/95	12/26/95	01/23/96	02/21/96	03/22/96	04/22/96
9. Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10. pH (Standard Units)	7.7	6.9	7.0	7.3	7.2	7.5
11. Total Acidity (mg/l CAC03)	11	21	30	18	22	17
12. Total Alkalinity (mg/l CAC03)	440	280	260	230	260	250
13. Specific Conductivity (μmhos/cm at 25°C)	970	540	500	470	530	500
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	0.07	0.04	0.04	0.05	<0.02
16. Total Sulfates (mg/l)	32	48	51	52	37	38
17. Total Iron (mg/l)	0.21	0.55	0.34	0.79	0.34	0.17
18. Total Suspended Solids (mg/l)	<1.0	13	3.6	2.8	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	150	360	320	300	280	280
20. Nitrates (mg/l)	<0.10	0.82	1.6	1.4	1.6	0.54
21. Date Sampled for Analysis	11/21/95	12/26/95	01/23/96	02/21/96	03/22/96	04/22/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/19/96	02/21/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997

ORIGINAL

TOVCC 05230

OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,441,974.32 Y 737,914.46 LOCATION ADJ

1.	Identification No. of Sampling Station from Hydrology Map	W-341	W-341	W-341	W-341	W-341	W-341
2.	Lab Identification Number	9511279	9512301	9601257	9602250	9603266	9604337
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	920	920	920	920	920	920
5.	Depth of Well below Land Surface (msl)	48	48	48	48	48	48
6.	Static Water Level of Well below Land Surface (msl)	28	27	27	28	28	29
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/21/95	12/26/95	01/23/96	02/21/96	03/22/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring	E	E	E	E	E	E
10.	pH (Standard Units)	7.2	7.8	7.5	7.7	7.7	7.5
11.	Total Acidity (mg/l CAC03)	26	7.2	9.6	8.8	8.4	6.4
12.	Total Alkalinity (mg/l CAC03)	280	330	420	420	410	420
13.	Specific Conductivity (μmhos/cm at 25°C)	550	660	880	870	830	940
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.03	<0.02	0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	68	70	37	41	37	32
17.	Total Iron (mg/l)	0.34	0.10	0.08	0.10	0.15	0.10
18.	Total Suspended Solids (mg/l)	1.6	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	350	250	140	160	150	130
20.	Nitrates (mg/l)	0.61	0.36	<0.10	<0.10	<0.10	<0.10
21.	Date Sampled for Analysis	11/21/95	12/26/95	01/23/96	02/21/96	03/22/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/19/96	02/21/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
ORIGINAL

OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,444,089.85		Y 738,193.35	LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-342	W-342	W-342	W-342	W-342	W-342
2.	Lab Identification Number	9511283	9512252	9601070	9602191	9603263	9604338
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	885	885	885	885	885	885
5.	Depth of Well below Land Surface (msl)	42	42	42	42	42	42
6.	Static Water Level of Well below Land Surface (msl)	6	UNKNOWN SEALED	UNKNOWN SEALED	UNKNOWN SEALED	UNKNOWN SEALED	UNKNOWN SEALED
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/21/95	12/22/95	01/04/96	02/14/96	03/22/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring	E	E	E	E	E	E
10.	pH (Standard Units)	7.6	7.4	7.3	7.5	7.4	7.3
11.	Total Acidity (mg/l CAC03)	18	17	16	30	17	17
12.	Total Alkalinity (mg/l CAC03)	260	270	270	260	250	240
13.	Specific Conductivity (µmhos/cm at 25°C)	530	580	580	560	520	520
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	56	55	56	57	53	56
17.	Total Iron (mg/l)	0.14	0.13	0.15	0.31	<0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	2.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	280	280	290	280	270	270
20.	Nitrates (mg/l)	<0.10	11	<0.10	<0.10	<0.10	<0.10
21.	Date Sampled for Analysis	11/21/95	12/22/95	01/04/96	02/14/96	03/22/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/04/96	02/14/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
ORIGINAL

TOVCC 05232

OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,432,828.28		Y 736,674.33		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	W-343	W-343	W-343	W-343	W-343	W-343
2.	Lab Identification Number	9511291	9512303	9601319	9602170	9603323	9604424
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1245	1245	1245	1245	1245	1245
5.	Depth of Well below Land Surface (msl)	108	108	108	108	108	108
6.	Static Water Level of Well below Land Surface (msl)	82	81	80	79	80	77
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/22/95	12/26/95	01/26/96	02/12/96	03/26/96	04/25/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.7	7.9	7.7	7.8	7.6	8.2
11.	Total Acidity (mg/l CAC03)	14	3.0	14	<1.5	7.2	<1.5
12.	Total Alkalinity (mg/l CAC03)	280	300	290	280	280	280
13.	Specific Conductivity (μmhos/cm at 25°C)	920	740	1000	700	1200	680
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	<0.02	0.13	0.08	0.10	<0.02
16.	Total Sulfates (mg/l)	35	12	36	11	37	13
17.	Total Iron (mg/l)	1.8	0.43	1.9	1.9	2.0	0.19
18.	Total Suspended Solids (mg/l)	69	6.8	4.0	5.2	10	13
19.	Total Hardness (mg/l CAC03)	250	150	260	120	300	100
20.	Nitrates (mg/l)	0.54	0.48	0.83	0.43	0.80	0.46
21.	Date Sampled for Analysis	11/22/95	12/26/95	01/26/96	02/12/96	03/26/96	04/25/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/26/96	02/12/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
ORIGINAL

TOVCC 05233

OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,432,852.93		Y 737,022.23		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	W-344	W-344	W-344	W-344	W-344	W-344
2.	Lab Identification Number	9511292	9512302	9601324	9602169	9603324	9604423
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1185	1185	1185	1185	1185	1185
5.	Depth of Well below Land Surface (msl)	54	54	54	54	54	54
6.	Static Water Level of Well below Land Surface (msl)	22	21	20	21	21	19
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/22/95	12/26/95	01/26/96	02/12/96	03/26/96	04/25/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.2	7.5	7.3	7.1	7.0	7.3
11.	Total Acidity (mg/l CAC03)	11	11	10	13	7.7	15
12.	Total Alkalinity (mg/l CAC03)	180	180	130	130	130	130
13.	Specific Conductivity (μmhos/cm at 25°C)	390	400	350	340	320	310
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	53	53	71	61	40	49
17.	Total Iron (mg/l)	0.41	0.09	0.10	0.17	0.14	0.08
18.	Total Suspended Solids (mg/l)	2.4	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	210	210	200	210	180	180
20.	Nitrates (mg/l)	0.18	0.38	0.51	0.62	0.62	0.35
21.	Date Sampled for Analysis	11/22/95	12/26/95	01/26/96	02/12/96	03/26/96	04/25/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/26/96	02/12/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

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OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,432,939.15			Y 735,450.29	LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	W-345	W-345	W-345	W-345	W-345	W-345
2.	Lab Identification Number	9511293	9512193	9601322	9602043	9603141	9604273
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1270	1270	1270	1270	1270	1270
5.	Depth of Well below Land Surface (msl)	86	86	86	86	86	86
6.	Static Water Level of Well below Land Surface (msl)	31	33	30	32	30	31
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/22/95	12/18/95	01/26/96	02/05/96	03/14/96	04/18/96
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.5	7.3	7.3	7.3	7.3	7.3
11.	Total Acidity (mg/l CAC03)	13	11	10	10	12	15
12.	Total Alkalinity (mg/l CAC03)	180	210	190	190	180	180
13.	Specific Conductivity (µmhos/cm at 25°C)	470	530	580	620	600	650
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.02	0.02	0.04	0.02	0.06
16.	Total Sulfates (mg/l)	56	52	53	57	48	47
17.	Total Iron (mg/l)	0.08	0.09	0.47	0.40	0.17	6.0
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	1.6	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	270	270	280	310	370	320
20.	Nitrates (mg/l)	1.3	1.5	1.4	2.2	1.1	1.2
21.	Date Sampled for Analysis	11/22/95	12/18/95	01/26/96	02/05/96	03/14/96	04/18/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/18/95	01/26/96	02/01/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,182.61		Y 736,214.73		LOCATION GTE	
1.	Identification No. of Sampling Station from Hydrology Map	W-346	W-346	W-346	W-346	W-346	W-346
2.	Lab Identification Number	9511346	9512161	9601212	9602037	9603150	9604188
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	930	930	930	930	930	930
5.	Depth of Well below Land Surface (msl)	15	15	15	15	15	15
6.	Static Water Level of Well below Land Surface (msl)	9	11	8	12	11	10
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/24/95	12/15/95	01/18/96	02/05/96	03/14/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.2	7.3	7.3	7.6	7.4	7.1
11.	Total Acidity (mg/l CAC03)	27	24	16	13	17	17
12.	Total Alkalinity (mg/l CAC03)	260	270	240	250	240	230
13.	Specific Conductivity (µmhos/cm at 25°C)	550	580	500	520	530	510
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.04	0.03	0.03	<0.02
16.	Total Sulfates (mg/l)	86	76	71	79	72	69
17.	Total Iron (mg/l)	<0.05	<0.05	<0.05	0.05	<0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	350	310	280	300	300	280
20.	Nitrates (mg/l)	0.12	1.2	0.73	0.18	0.40	0.11
21.	Date Sampled for Analysis	11/24/95	12/15/95	01/18/96	02/05/96	03/14/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/16/96	02/01/96	03/07/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

JUN 27 1997
D0360-6

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OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,441,801.70			Y 734,468.61	LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	W-347	W-347	W-347	W-347	W-347	W-347
2.	Lab Identification Number	9511350	9512155	9601264	9602194	9603247	9604286
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1180	1180	1180	1180	1180	1180
5.	Depth of Well below Land Surface (msl)	130	130	130	130	130	130
6.	Static Water Level of Well below Land Surface (msl)	113	83	88	105	110	110
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/24/95	12/15/95	01/23/96	02/15/96	03/19/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.3	6.8	7.3	7.4	7.3	7.5
11.	Total Acidity (mg/l CAC03)	27	42	16	19	11	11
12.	Total Alkalinity (mg/l CAC03)	280	310	260	270	260	260
13.	Specific Conductivity (μmhos/cm at 25°C)	550	620	500	520	490	540
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	50	45	46	42	45	41
17.	Total Iron (mg/l)	0.42	0.13	<0.05	0.40	<0.05	0.12
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	230	260	230	210	260	230
20.	Nitrates (mg/l)	2.5	0.21	1.8	0.94	1.7	0.52
21.	Date Sampled for Analysis	11/24/95	12/15/95	01/23/96	02/15/96	03/19/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/19/96	02/14/96	03/19/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,441,686.86	Y 734,587.94	LOCATION PAN			
1. Identification No. of Sampling Station from Hydrology Map	WL-348	WL-348	WL-348	WL-348	WL-348	WL-348
2. Lab Identification Number	9511358	9512190	9601321	9602216	9603251	9604285
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210	1210	1210
5. Depth of Well below Land Surface (msl)	120	120	120	120	120	120
6. Static Water Level of Well below Land Surface (msl)	113	99	95	93	95	100
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/29/95	12/18/95	01/26/96	02/16/96	03/19/96	04/19/96
9. Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10. pH (Standard Units)	7.3	7.1	7.4	7.3	7.3	7.4
11. Total Acidity (mg/l CAC03)	32	15	14	15	13	12
12. Total Alkalinity (mg/l CAC03)	260	290	250	260	230	260
13. Specific Conductivity (μmhos/cm at 25°C)	530	520	520	490	530	540
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	0.02	0.18	0.03	0.08	0.03	0.03
16. Total Sulfates (mg/l)	54	50	44	46	57	39
17. Total Iron (mg/l)	0.16	0.11	0.06	2.2	0.48	0.08
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	2.0	<1.0
19. Total Hardness (mg/l CAC03)	220	200	220	200	270	220
20. Nitrates (mg/l)	0.45	<0.10	1.4	0.45	7.6	0.58
21. Date Sampled for Analysis	11/29/95	12/18/95	01/26/96	02/16/96	03/19/96	04/19/96
22. Date Last Precipitaiton Event Occurred	11/28/95	12/18/95	01/26/96	02/14/96	03/19/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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TOVCC 05238

OH)EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,441,439.62		Y 734,207.88		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	WL-349	WL-349	WL-349	WL-349	WL-349	WL-349
2.	Lab Identification Number	9511352	9512156	9601265	9602195	9603248	9604278
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1190	1190	1190	1190	1190	1190
5.	Depth of Well below Land Surface (msl)	105	105	105	105	105	105
6.	Static Water Level of Well below Land Surface (msl)	83	86	82	82	79	80
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/24/95	12/15/95	01/23/96	02/15/96	03/19/96	04/18/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.2	6.8	7.3	7.2	7.3	7.3
11.	Total Acidity (mg/l CAC03)	33	51	26	26	14	14
12.	Total Alkalinity (mg/l CAC03)	270	310	260	250	240	240
13.	Specific Conductivity (μmhos/cm at 25°C)	530	620	500	520	490	500
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	60	52	58	56	50	48
17.	Total Iron (mg/l)	0.05	<0.05	<0.05	0.19	0.06	0.06
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	11	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	290	280	310	300	290	280
20.	Nitrates (mg/l)	0.42	0.59	4.8	2.7	5.6	2.0
21.	Date Sampled for Analysis	11/24/95	12/15/95	01/23/96	02/15/96	03/19/96	04/18/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/19/96	02/14/96	03/19/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OH DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,439,728.13 Y 735,153.24 LOCATION GTE

1.	Identification No. of Sampling Station from Hydrology Map	W-350	W-350	W-350	W-350	W-350	W-350
2.	Lab Identification Number	9511347	9512167	9601263	9602199	9603230	9604287
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1218	1218	1218	1218	1218	1218
5.	Depth of Well below Land Surface (msl)	100	100	100	100	100	100
6.	Static Water Level of Well below Land Surface (msl)	74	85	78	74	75	74
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/24/95	12/15/95	01/23/96	02/15/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.3	7.3	7.3	7.4	7.3	7.4
11.	Total Acidity (mg/l CAC03)	28	28	28	21	20	18
12.	Total Alkalinity (mg/l CAC03)	280	340	300	310	290	280
13.	Specific Conductivity (μmhos/cm at 25°C)	450	620	520	540	500	520
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.02	0.02	<0.02	<0.02	0.02
16.	Total Sulfates (mg/l)	35	31	36	33	32	27
17.	Total Iron (mg/l)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	8.8	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	240	280	300	360	280	260
20.	Nitrates (mg/l)	0.78	0.33	0.47	0.20	0.24	<0.10
21.	Date Sampled for Analysis	11/24/95	12/15/95	01/23/96	02/15/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/19/96	02/14/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,439,902.81		Y 734,839.01		LOCATION	PAN
1. Identification No. of Sampling Station from Hydrology Map	WL-351	WL-351	WL-351	WL-351	WL-351	WL-351
2. Lab Identification Number	9511349	9512157	9601258	9602198	9603231	9604277
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1225	1225	1225	1225	1225	1225
5. Depth of Well below Land Surface (msl)	73	73	73	73	73	73
6. Static Water Level of Well below Land Surface (msl)	31	33	22	25	24	26
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/24/95	12/15/95	01/23/96	02/15/96	03/18/96	04/18/96
9. Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10. pH (Standard Units)	7.5	6.8	6.9	7.3	7.3	7.4
11. Total Acidity (mg/l CAC03)	19	29	40	24	21	20
12. Total Alkalinity (mg/l CAC03)	220	270	280	270	250	260
13. Specific Conductivity (μmhos/cm at 25°C)	430	540	500	480	470	500
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16. Total Sulfates (mg/l)	35	38	30	29	29	25
17. Total Iron (mg/l)	0.07	0.56	<0.05	<0.05	<0.05	<0.05
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	260	330	310	300	280	290
20. Nitrates (mg/l)	0.18	2.3	0.32	4.5	2.6	1.3
21. Date Sampled for Analysis	11/24/95	12/15/95	01/23/96	02/15/96	03/18/96	04/18/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/19/96	02/14/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,442,960.31	Y 734,452.76	LOCATION PAN			
1. Identification No. of Sampling Station from Hydrology Map	W-352	W-352	W-352	W-352	W-352	W-352
2. Lab Identification Number	9511344	9512343	9601320	9602348	9603327	9604413
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1160	1160	1160	1160	1160	1160
5. Depth of Well below Land Surface (msl)	100	100	100	100	100	100
6. Static Water Level of Well below Land Surface (msl)	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED	UNKNOWN BURIED
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/24/95	12/28/95	01/26/96	02/28/96	03/26/96	04/24/96
9. Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10. pH (Standard Units)	7.1	7.2	7.3	7.3	7.3	7.1
11. Total Acidity (mg/l CAC03)	23	13	4.8	8.5	7.9	11
12. Total Alkalinity (mg/l CAC03)	180	120	84	98	91	150
13. Specific Conductivity (µmhos/cm at 25°C)	510	440	560	330	320	450
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
16. Total Sulfates (mg/l)	100	86	57	51	57	89
17. Total Iron (mg/l)	0.49	0.14	0.33	0.36	0.62	0.30
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	230	220	150	150	170	200
20. Nitrates (mg/l)	5.0	9.7	11	9.8	8.1	1.8
21. Date Sampled for Analysis	11/24/95	12/28/95	01/26/96	02/28/96	03/26/96	04/24/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/28/95	01/26/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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TOVCC 05242

OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,443,820.47 Y 734,889.85 LOCATION GTE

1.	Identification No. of Sampling Station from Hydrology Map	W-353	W-353	W-353	W-353	W-353	W-353
2.	Lab Identification Number	9511355	9512295	9601317	9602343	9603336	9604418
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210	1210	1210
5.	Depth of Well below Land Surface (msl)	85	85	85	85	85	85
6.	Static Water Level of Well below Land Surface (msl)	74	73	72	74	75	72
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/24/95	12/26/95	01/26/96	02/28/96	03/27/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.3	7.2	7.3	7.3	7.4	7.6
11.	Total Acidity (mg/l CAC03)	16	13	11	24	18	8.2
12.	Total Alkalinity (mg/l CAC03)	180	190	180	170	170	170
13.	Specific Conductivity (µmhos/cm at 25°C)	380	400	410	360	420	350
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.02	0.74	0.15	<0.02
16.	Total Sulfates (mg/l)	37	32	33	32	40	30
17.	Total Iron (mg/l)	0.06	0.05	<0.05	0.19	0.15	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	240	250	240	220	220	200
20.	Nitrates (mg/l)	0.46	3.9	5.9	3.6	4.8	3.2
21.	Date Sampled for Analysis	11/24/95	12/26/95	01/26/96	02/28/96	03/27/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/26/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

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ORIGINAL

OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,106.18		Y 738,297.10		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	DW-354	DW-354	DW-354	DW-354	DW-354	DW-354
2.	Lab Identification Number	9511339	9512166	9601300	9602050	9603149	9604377
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	935	935	935	935	935	935
5.	Depth of Well below Land Surface (msl)	22	22	22	22	22	22
6.	Static Water Level of Well below Land Surface (msl)	19	18	18	19	19	19
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/25/95	12/16/95	01/24/96	02/06/96	03/14/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.3	7.4	7.3	7.9	7.5	6.5
11.	Total Acidity (mg/l CAC03)	22	14	<1.5	38	9.0	7.8
12.	Total Alkalinity (mg/l CAC03)	260	260	79	220	160	180
13.	Specific Conductivity (μmhos/cm at 25°C)	530	570	240	450	310	340
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.07	0.02	0.06	0.04	0.02	<0.02
16.	Total Sulfates (mg/l)	37	36	32	31	29	28
17.	Total Iron (mg/l)	0.16	0.13	1.1	0.32	0.07	0.94
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	7.2	1.2	180
19.	Total Hardness (mg/l CAC03)	320	280	130	250	210	210
20.	Nitrates (mg/l)	3.0	3.5	4.0	3.9	1.8	0.70
21.	Date Sampled for Analysis	11/25/95	12/16/95	01/24/96	02/06/96	03/14/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/16/95	01/24/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OH EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,438,502.74		Y 738,172.99		LOCATION	ADJ
1. Identification No. of Sampling Station from Hydrology Map	WL-355	WL-355	WL-355	WL-355	WL-355	WL-355
2. Lab Identification Number	9511341	9512347	9601213	9602045	9603048	9604370
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	970	970	970	970	970	970
5. Depth of Well below Land Surface (msl)	55	55	55	55	55	55
6. Static Water Level of Well below Land Surface (msl)	UNKNOWN SEALED	UNKNOWN SEALED	UNKNOWN SEALED	UNKNOWN SEALED	UNKNOWN SEALED	UNKNOWN SEALED
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/25/95	12/27/95	01/18/96	02/06/96	03/05/96	04/23/96
9. Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10. pH (Standard Units)	7.5	7.5	7.3	7.0	7.3	7.1
11. Total Acidity (mg/l CAC03)	31	25	23	20	23	18
12. Total Alkalinity (mg/l CAC03)	280	280	270	290	290	270
13. Specific Conductivity (µmhos/cm at 25°C)	690	680	600	620	630	580
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	0.04	0.03	<0.02	<0.02
16. Total Sulfates (mg/l)	60	59	60	63	72	55
17. Total Iron (mg/l)	0.13	0.06	<0.05	0.06	<0.05	<0.05
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	420	380	370	380	360	320
20. Nitrates (mg/l)	20	14	12	8.7	7.4	4.0
21. Date Sampled for Analysis	11/25/95	12/27/95	01/18/96	02/06/96	03/05/96	04/23/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/27/95	01/16/96	02/01/96	03/05/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,437,312.31		Y 733,455.72		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	DW-356	DW-356	DW-356	DW-356	DW-356	DW-356
2.	Lab Identification Number	9511362	9512158	9601209	9602041	9603225	9604380
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100	1100	1100	1100
5.	Depth of Well below Land Surface (msl)	12	12	12	12	12	12
6.	Static Water Level of Well below Land Surface (msl)	8	9	7	8	7	8
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/28/95	12/15/95	01/18/96	02/05/96	03/18/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	7.5	6.9	6.9	6.9	6.8	7.1
11.	Total Acidity (mg/l CAC03)	23	20	19	12	14	14
12.	Total Alkalinity (mg/l CAC03)	170	180	160	150	140	160
13.	Specific Conductivity (μmhos/cm at 25°C)	430	380	300	310	300	320
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.03	0.03	<0.02	<0.02
16.	Total Sulfates (mg/l)	30	26	27	29	26	24
17.	Total Iron (mg/l)	0.11	0.29	0.26	0.10	0.46	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	3.2	<1.0	<1.0	1.6	<1.0
19.	Total Hardness (mg/l CAC03)	190	200	190	170	160	180
20.	Nitrates (mg/l)	0.39	0.35	0.90	0.50	0.71	0.32
21.	Date Sampled for Analysis	11/28/95	12/15/95	01/18/96	02/05/96	03/18/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/14/95	01/16/96	02/01/96	03/17/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,438,027.99		Y 734,370.73		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	W-357	W-357	W-357	W-357	W-357	W-357
2.	Lab Identification Number	9511363	9512159	9601210	9602040	9603151	9604378
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1000	1000	1000	1000	1000	1000
5.	Depth of Well below Land Surface (msl)	38	38	38	38	38	38
6.	Static Water Level of Well below Land Surface (msl)	33	33	32	33	33	31
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/28/95	12/15/95	01/18/96	02/05/96	03/14/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	8.2	7.9	8.2	8.2	8.0	7.9
11.	Total Acidity (mg/l CAC03)	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
12.	Total Alkalinity (mg/l CAC03)	490	470	520	520	510	510
13.	Specific Conductivity (µmhos/cm at 25°C)	910	930	980	990	980	950
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.02	0.03	0.02	<0.02
16.	Total Sulfates (mg/l)	45	44	54	40	43	32
17.	Total Iron (mg/l)	0.08	0.13	<0.05	0.05	0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	44	120	32	32	48	100
20.	Nitrates (mg/l)	0.18	0.72	<0.10	<0.10	<0.10	<0.10
21.	Date Sampled for Analysis	11/28/95	12/15/95	01/18/96	02/05/96	03/14/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/14/95	01/16/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,102.67		Y 733,788.80		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	W-358	W-358	W-358	W-358	W-358	W-358
2.	Lab Identification Number	9511364	9512348	9601323	9602215	9603228	9604276
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1225	1225	1225	1225	1225	1225
5.	Depth of Well below Land Surface (msl)	35	35	35	35	35	35
6.	Static Water Level of Well below Land Surface (msl)	31	33	30	26	27	24
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/28/95	12/27/95	01/26/96	02/16/96	03/18/96	04/18/96
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.4	7.6	7.5	7.3	7.3	7.3
11.	Total Acidity (mg/l CAC03)	16	17	9.8	20	17	21
12.	Total Alkalinity (mg/l CAC03)	240	240	220	240	230	230
13.	Specific Conductivity (μmhos/cm at 25°C)	470	460	410	420	430	450
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	37	32	32	33	29	30
17.	Total Iron (mg/l)	<0.05	0.06	0.18	<0.05	0.13	0.06
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	270	290	270	280	260	270
20.	Nitrates (mg/l)	1.1	1.0	0.54	1.0	0.62	0.59
21.	Date Sampled for Analysis	11/28/95	12/27/95	01/26/96	02/16/96	03/18/96	04/18/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/27/95	01/26/96	02/14/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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ORIGINAL

TOVCC 05248

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,437,145.95		Y 734,855.00		LOCATION	PAN
1. Identification No. of Sampling Station from Hydrology Map	W-359	W-359	W-359	W-359	W-359	W-359
2. Lab Identification Number	9511359	9512290	9602008	9602218	9603326	9604317
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1118	1118	1118	1118	1118	1118
5. Depth of Well below Land Surface (msl)	18	18	18	18	18	18
6. Static Water Level of Well below Land Surface (msl)	14	14	13	13	10	5
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	11/29/95	12/26/95	01/29/96	02/09/96	03/26/96	04/19/96
9. Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10. pH (Standard Units)	7.3	7.2	6.5	7.3	6.6	6.8
11. Total Acidity (mg/l CAC03)	44	37	<1.5	18	7.2	11
12. Total Alkalinity (mg/l CAC03)	260	270	61	190	57	73
13. Specific Conductivity (μmhos/cm at 25°C)	450	440	210	340	190	210
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	1.5	1.3	0.04	0.40	<0.02	<0.02
16. Total Sulfates (mg/l)	7.6	<1.0	40	38	33	34
17. Total Iron (mg/l)	3.1	2.3	0.40	1.2	0.21	0.40
18. Total Suspended Solids (mg/l)	24	60	40	18	3.2	4.4
19. Total Hardness (mg/l CAC03)	250	260	120	210	110	120
20. Nitrates (mg/l)	0.45	<0.10	0.57	<0.10	0.41	0.40
21. Date Sampled for Analysis	11/29/95	12/26/95	01/29/96	02/09/96	03/26/96	04/19/96
22. Date Last Precipitaiton Event Occurred	11/28/95	12/26/95	01/27/96	02/08/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,438,817.35		Y 738,282.75		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-360	W-360	W-360	W-360	W-360	W-360
2.	Lab Identification Number	9512009	9512341	9601297	9602047	9603145	9604373
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	958	958	958	958	958	958
5.	Depth of Well below Land Surface (msl)	67	67	67	67	67	67
6.	Static Water Level of Well below Land Surface (msl)	59	46	43	43	55	56
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/30/95	12/28/95	01/24/96	02/06/96	03/14/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	7.4	7.5	7.7	7.8	7.5	7.4
11.	Total Acidity (mg/l CAC03)	15	16	12	12	10	12
12.	Total Alkalinity (mg/l CAC03)	280	280	260	280	270	280
13.	Specific Conductivity (μmhos/cm at 25°C)	540	520	480	500	480	500
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.02	0.05	0.04	0.06
16.	Total Sulfates (mg/l)	46	39	40	60	44	42
17.	Total Iron (mg/l)	0.10	0.24	0.11	0.64	0.39	14
18.	Total Suspended Solids (mg/l)	<1.0	4.8	<1.0	13	<1.0	70
19.	Total Hardness (mg/l CAC03)	290	340	300	340	310	300
20.	Nitrates (mg/l)	0.48	0.67	1.2	0.97	0.63	0.54
21.	Date Sampled for Analysis	11/30/95	12/28/95	01/24/96	02/06/96	03/14/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/28/95	01/24/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
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SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
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Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,438,844.54		Y 738,226.17		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-361	W-361	W-361	W-361	W-361	W-361
2.	Lab Identification Number	9512010	9512342	9601301	9602048	9603146	9604374
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	970	970	970	970	970	970
5.	Depth of Well below Land Surface (msl)	102	102	102	102	102	102
6.	Static Water Level of Well below Land Surface (msl)	100	99	55	59	65	75
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/30/95	12/28/95	01/24/96	02/06/96	03/14/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	E	E	E	E	E	E
10.	pH (Standard Units)	7.8	8.1	6.7	7.2	7.3	7.5
11.	Total Acidity (mg/l CAC03)	9.3	5.5	9.5	4.3	7.6	7.4
12.	Total Alkalinity (mg/l CAC03)	350	360	7.5	190	110	160
13.	Specific Conductivity (μmhos/cm at 25°C)	760	800	190	390	240	340
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.03	0.03	0.05	0.02
16.	Total Sulfates (mg/l)	48	35	18	25	23	24
17.	Total Iron (mg/l)	0.07	0.22	0.94	0.17	0.57	1.1
18.	Total Suspended Solids (mg/l)	<1.0	1.6	7.6	<1.0	3.6	5.2
19.	Total Hardness (mg/l CAC03)	120	120	110	200	140	180
20.	Nitrates (mg/l)	0.61	0.68	3.3	3.3	2.3	1.0
21.	Date Sampled for Analysis	11/30/95	12/28/95	01/24/96	02/06/96	03/14/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/28/95	01/24/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
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(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,438,154.23 Y 734,404.18 LOCATION ADJ

1.	Identification No. of Sampling Station from Hydrology Map	DW-362	DW-362	DW-362	DW-362	DW-362	DW-362
2.	Lab Identification Number	9512011	9512160	9601214	9602042	9613211	9604379
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1000	1000	1000	1000	1000	1000
5.	Depth of Well below Land Surface (msl)	11	11	11	11	11	11
6.	Static Water Level of Well below Land Surface (msl)	7	7	6	7	7	7
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/30/95	12/15/95	01/18/96	02/05/96	03/18/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	A	A	A	A	A	A
10.	pH (Standard Units)	6.9	6.8	6.7	7.0	6.8	7.0
11.	Total Acidity (mg/l CAC03)	18	19	8.7	6.6	8.7	8.7
12.	Total Alkalinity (mg/l CAC03)	110	120	97	80	63	87
13.	Specific Conductivity (μmhos/cm at 25°C)	280	360	260	240	190	250
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.04	0.03	<0.02	<0.02
16.	Total Sulfates (mg/l)	60	54	46	47	32	34
17.	Total Iron (mg/l)	0.22	<0.05	0.09	0.11	0.09	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	160	160	150	120	110	120
20.	Nitrates (mg/l)	0.25	0.30	0.50	0.50	0.64	0.14
21.	Date Sampled for Analysis	11/30/95	12/15/95	01/18/96	02/05/96	03/18/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/14/95	01/16/96	02/01/96	03/17/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05252

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,434,010.68		Y 738,153.36		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-363	W-363	W-363	W-363	W-363	W-363
2.	Lab Identification Number	9512013	9512192	9601299	9602321	9603142	9604274
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1095	1095	1095	1095	1095	1095
5.	Depth of Well below Land Surface (msl)	130	130	130	130	130	130
6.	Static Water Level of Well below Land Surface (msl)	96	95	94	95	94	95
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/30/95	12/18/95	01/24/96	02/27/96	03/14/96	04/18/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	6.8	7.3	7.2	6.9	7.2	7.4
11.	Total Acidity (mg/l CAC03)	19	17	24	27	18	22
12.	Total Alkalinity (mg/l CAC03)	210	240	200	180	180	180
13.	Specific Conductivity (μmhos/cm at 25°C)	1200	1400	1200	1000	940	990
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.02	0.03	<0.02	0.02	<0.02
16.	Total Sulfates (mg/l)	54	48	54	58	51	48
17.	Total Iron (mg/l)	0.05	<0.05	0.20	0.16	0.08	0.11
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	440	500	490	450	430	470
20.	Nitrates (mg/l)	2.8	1.0	2.0	2.4	0.92	0.97
21.	Date Sampled for Analysis	11/30/95	12/18/95	01/24/96	02/27/96	03/14/96	04/18/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/18/95	01/24/96	02/27/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

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OH DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,438,941.53 Y 733,225.79 LOCATION GTE

1.	Identification No. of Sampling Station from Hydrology Map	W-364	W-364	W-364	W-364	W-364	W-364
2.	Lab Identification Number	9512014	9512346	9601315	9602252	9603229	9604284
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1238	1238	1238	1238	1238	1238
5.	Depth of Well below Land Surface (msl)	90	90	90	90	90	90
6.	Static Water Level of Well below Land Surface (msl)	51	50	48	50	49	51
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/30/95	12/28/95	01/26/96	02/21/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.5	7.3	7.4	7.4	7.5	7.4
11.	Total Acidity (mg/l CAC03)	11	16	13	14	0.12	12
12.	Total Alkalinity (mg/l CAC03)	220	220	210	220	210	210
13.	Specific Conductivity (µmhos/cm at 25°C)	410	400	420	410	430	450
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.02	<0.02	<0.02	0.02
16.	Total Sulfates (mg/l)	37	32	38	36	37	33
17.	Total Iron (mg/l)	<0.05	0.06	<0.05	<0.05	<0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	2.8	1.6
19.	Total Hardness (mg/l CAC03)	260	270	250	280	240	240
20.	Nitrates (mg/l)	0.97	0.95	2.2	0.93	3.4	0.59
21.	Date Sampled for Analysis	11/30/95	12/28/95	01/26/96	02/21/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/28/95	01/26/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

JUN 27 1997
D0360-6
ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,041.67		Y 732,564.00		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	W-365	W-365	W-365	W-365	W-365	W-365
2.	Lab Identification Number	9512015	9512351	9601314	9602276	9603394	9604403
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1240	1240	1240	1240	1240	1240
5.	Depth of Well below Land Surface (msl)	100	100	100	100	100	100
6.	Static Water Level of Well below Land Surface (msl)	61	60	51	57	60	56
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	11/30/95	12/29/95	01/26/96	02/23/96	03/29/96	04/26/96
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.6	7.6	7.4	7.3	7.3	7.5
11.	Total Acidity (mg/l CAC03)	8.3	12	14	8.0	8.8	56
12.	Total Alkalinity (mg/l CAC03)	210	200	150	160	170	180
13.	Specific Conductivity (μmhos/cm at 25°C)	400	410	330	320	360	350
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	43	35	35	37	34	34
17.	Total Iron (mg/l)	<0.05	<0.05	<0.05	0.04	<0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	260	260	180	180	210	210
20.	Nitrates (mg/l)	0.89	0.81	0.86	0.84	0.88	0.73
21.	Date Sampled for Analysis	11/30/95	12/29/95	01/26/96	02/23/96	03/29/96	04/26/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/29/95	01/26/96	02/21/96	03/28/96	04/26/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,434,138.43		Y 738,244.06	LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	W-366	W-366	W-366	W-366	W-366	W-366
2.	Lab Identification Number	9604406	9605406	9606342	9607269	9608240	9609178
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1060	1060	1060	1060	1060	1060
5.	Depth of Well below Land Surface (msl)	57	57	57	57	57	57
6.	Static Water Level of Well below Land Surface (msl)	26	23	23	23	26	25
7.	Flow for Spring/Stream (gpm or cfs)						
8.	Date Above Measurements Made	04/25/96	05/29/96	06/26/96	07/26/96	08/20/96	09/12/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	7.2	7.0	7.1	7.1	7.3	7.2
11.	Total Acidity (mg/l CAC03)	21	19	16	23	16	25
12.	Total Alkalinity (mg/l CAC03)	180	160	160	180	180	180
13.	Specific Conductivity (μmhos/cm at 25°C)	600	610	630	710	840	750
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.03	0.03	0.02	0.06	0.04
16.	Total Sulfates (mg/l)	41	42	44	35	41	42
17.	Total Iron (mg/l)	0.64	0.56	1.6	0.22	6.3	3.8
18.	Total Suspended Solids (mg/l)	<1.0	2.0	<1.0	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	300	260	310	290	360	400
20.	Nitrates (mg/l)	0.20	0.24	0.24	<0.10	0.20	<0.10
21.	Date Sampled for Analysis	04/25/96	05/29/96	06/26/96	07/26/96	08/20/96	09/12/96
22.	Date Last Precipitaiton Event Occurred	04/23/96	05/29/96	06/24/96	07/24/96	08/20/96	09/12/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05256

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,437,172.95		Y 732,755.24		LOCATION	PAN
1. Identification No. of Sampling Station from Hydrology Map	W-367	W-367	W-367	W-367	W-367	W-367
2. Lab Identification Number	9604404	9605410	9606343	9607271	9608203	9609179
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1210	1210	1210	1210	1210	1210
5. Depth of Well below Land Surface (msl)	77	77	77	77	77	77
6. Static Water Level of Well below Land Surface (msl)	38	40	37	40	45	48
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	04/26/96	05/29/96	06/26/96	07/26/96	08/19/96	09/13/96
9. Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10. pH (Standard Units)	7.3	7.1	7.3	7.3	7.6	7.2
11. Total Acidity (mg/l CAC03)	25	20	16	18	20	25
12. Total Alkalinity (mg/l CAC03)	250	240	240	250	240	230
13. Specific Conductivity (μmhos/cm at 25°C)	500	570	530	500	510	510
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	0.03	<0.02	<0.02	0.03	0.05
16. Total Sulfates (mg/l)	54	56	56	53	55	66
17. Total Iron (mg/l)	0.09	0.23	0.07	<0.05	0.14	<0.05
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	290	290	320	250	250	280
20. Nitrates (mg/l)	0.92	1.0	1.1	1.1	0.70	<0.10
21. Date Sampled for Analysis	04/26/96	05/29/96	06/26/96	07/26/96	08/19/96	09/13/96
22. Date Last Precipitaiton Event Occurred	04/26/96	05/29/96	06/24/96	07/24/96	08/15/96	09/13/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05257

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,437,842.59	Y 733,250.23	LOCATION GTE			
1. Identification No. of Sampling Station from Hydrology Map	W-368	W-368	W-368	W-368	W-368	W-368
2. Lab Identification Number	9604405	9605409	9606344	9607270	9608204	9609180
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1185	1185	1185	1185	1185	1185
5. Depth of Well below Land Surface (msl)	85	85	85	85	85	85
6. Static Water Level of Well below Land Surface (msl)	45	47	45	46	65	68
7. Flow for Spring/Stream (gpm or cfs)						
8. Date Above Measurements Made	04/26/96	05/29/96	06/26/96	07/26/96	08/19/96	09/13/96
9. Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10. pH (Standard Units)	7.4	7.3	7.2	7.4	7.7	7.6
11. Total Acidity (mg/l CAC03)	14	14	10	13	12	14
12. Total Alkalinity (mg/l CAC03)	200	200	190	210	210	210
13. Specific Conductivity (µmhos/cm at 25°C)	400	440	400	400	440	400
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	0.02	<0.02	<0.02	0.04	0.02
16. Total Sulfates (mg/l)	33	36	38	36	36	32
17. Total Iron (mg/l)	0.23	0.29	0.38	0.05	0.21	<0.05
18. Total Suspended Solids (mg/l)	<1.0	<1.0	4.0	<1.0	3.6	<1.0
19. Total Hardness (mg/l CAC03)	220	270	250	180	210	190
20. Nitrates (mg/l)	0.47	0.66	0.59	0.25	0.57	0.11
21. Date Sampled for Analysis	04/26/96	05/29/96	06/26/96	07/26/96	08/19/96	09/13/96
22. Date Last Precipitaiton Event Occurred	04/26/96	05/29/96	06/24/96	07/24/96	08/15/96	09/13/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 2

ORIGINAL

X 2,437,042.26
Y 733,044.35

LOCATION PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

1.	Identification No. of Sampling Station from Hydrology Map	DS-101	DS-101	DS-101	DS -101	DS -101	DS -101
2.	Lab Identification Number	SP-N2	SP-N2	SP-N2	SP-N2	SP-N2	SP-N2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1140	1140	1140	1140	1140	1140
5.	Depth of Well below Land Surface (feet)	-	-	-	-	-	-
6.	Static Water Level of Well below Land Surface (feet)	-	-	-	-	-	-
7.	Flow for Spring/Stream (gpm or cfs)	0 gpm	0 gpm	0 gpm	1.07 gpm	3 gpm	1.07 gpm
8.	Date Above Measurements Made	11/14/90	12/13/90	01/17/91	02/19/91	03/14/91	04/26/91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	6.9	6.4	6.9	6.5	6.9	7.5
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	12.92	17.29	40.47
12.	Total Alkalinity (mg/l CAC03)	192.00	200.00	80.00	134.32	169.48	180.69
13.	Specific Conductivity (μmhos/cm at 25°C)	540	460	360	270	378	452
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.01	0.01	0.01	0.00	0.00	0.00
16.	Total Sulfates (mg/l)	47.0	44.0	44.0	29.0	35.0	35.0
17.	Total Iron (mg/l)	0.02	0.01	0.01	0.11	0.00	0.06
18.	Total Suspended Solids (mg/l)	5.3	0.3	3.6	15.0	5.0	6.0
19.	Total Hardness (mg/l CAC03)	194	121.35	108.4	1820	212	218
20.	Nitrates (mg/l)	12.80	5.28	2.29	0.00	1.10	4.72
21.	Date Sampled for Analysis	11/14/90	12/13/90	01/17/91	02/19/91	03/14/91	04/26/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/16/91	02/17/91	03/13/91	04/24/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 2 7 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RECLAMATION

ATTACHMENT 14A

(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,442,548.30 Y 732,715.00 LOCATION PAN

1.	Identification No. of Sampling Station from Hydrology Map	DS-154	DS-154	DS -154	DS -154	DS -154	DS -154
2.	Lab Identification Number						
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1140	1140	1140	1140	1140	1140
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	1.33 gpm	7.5 gpm	3.0 gpm	4.0 gpm	2.85 gpm	1.81 gpm
8.	Date Above Measurements Made	11-21-90	12-29-90	1-23-91	2-22-91	3-22-91	4-30-91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.3	6.9	7.3	7.3	7.2	6.9
11.	Total Acidity (mg/l CAC03)	0	0	0	13.30	18.43	9.50
12.	Total Alkalinity (mg/l CAC03)	210	154	140	136.42	154.09	153.14
13.	Specific Conductivity (µmhos/cm at 25°C)	400	350	350	300	357	358
14.	Total Dissolved Solids (mg/l)						
15.	Total Manganese (mg/l)	0.01	0.14	0.04	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	39	30	32	24	26	24
17.	Total Iron (mg/l)	0.01	1.06	0.01	<0.04	0.04	0.07
18.	Total Suspended Solids (mg/l)	3.7	13.0	0.3	4.0	1.0	4.0
19.	Total Hardness (mg/l CAC03)	163	87.40	130.3	160	166	180
20.	Nitrates (mg/l)	4.84	2.24	1.98	<1.00	3.35	4.95
21.	Date Sampled for Analysis	11-21-90	12-29-90	1-23-91	2-22-91	3-22-91	4-30-91
22.	Date Last Precipitaiton Event Occurred	11-18-90	12-27-90	1-21-91	2-19-21	3-20-91	4-29-91

JUN 27 1997 D0360-6

Laboratory Name ERI LABS

Address P.O. BOX 259

State BROCKWAY, PA 15824

ORIGINAL

DIVISION OF RECLAMATION

ATTACHMENT 14A

(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,441,536.60 Y 731,494.99 LOCATION PAN

	Identification No. of Sampling Station from Hydrology Map	DS-155	DS-155	DS-155	DS-155	DS-155	DS-155
2.	Lab Identification Number						
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1110	1110	1110	1110	1110	1110
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	10	30	15	12	12	4.28
8.	Date Above Measurements Made	11-21-90	12-29-90	1-23-91	2-22-91	3-22-91	4-30-91
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.5	7.3	7.3	7.6	7.4	7.5
11.	Total Acidity (mg/l CAC03)	0	0	0	4.56	34.96	5.51
2.	Total Alkalinity (mg/l CAC03)	108	72	80	90.82	101.27	105.26
13.	Specific Conductivity (µmhos/cm at 25°C)	300	200	230	250	250	280
14.	Total Dissolved Solids (mg/l)						
15.	Total Manganese (mg/l)	0.17	0.08	0.17	0.12	0.02	0.17
16.	Total Sulfates (mg/l)	34	25	29	25	24	22
17.	Total Iron (mg/l)	0.09	0.30	0.09	0.12	0.10	0.06
18.	Total Suspended Solids (mg/l)	2.7	1.7	1.3	7.0	10.0	9.0
19.	Total Hardness (mg/l CAC03)	105	40.7	79.7	106	112	125
20.	Nitrates (mg/l)	3.78	0.92	0.04	<1.0	2.38	3.44
21.	Date Sampled for Analysis	11-21-90	12-29-90	1-23-91	2-22-91	3-22-91	4-30-91
22.	Date Last Precipitaiton Event Occurred	11-18-90	12-27-90	1-21-91	2-19-91	3-20-91	4-29-91

D0360-6

JUN 27 1997

Laboratory Name ERI LABS

Address P.O. BOX 259

State BROCKWAY, PA 15824

ORIGINAL

X 2,443,579.40
Y 731,197.73

LOCATION
GTE

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

1.	Identification No. of Sampling Station from Hydrology Map	DS-157	DS-157	DS-157	DS-157	DS-157	DS-157
2.	Lab Identification Number	SP-J3	SP-J3	SP-J3	SP-J3	SP-J3	SP-J3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1160	1160	1160	1160	1160	1160
5.	Depth of Well below Land Surface (feet)	-	-	-	-	-	-
6.	Static Water Level of Well below Land Surface (feet)	-	-	-	-	-	-
7.	Flow for Spring/Stream (gpm or cfs)	3 gpm	2 gpm	1 gpm	1 gpm	1.25 gpm	3 gpm
8.	Date Above Measurements Made	11/19/90	12/22/90	01/21/91	02/19/91	03/21/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.9	7.7	7.7	7.7	7.7	8.3
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	15.58	16.72	16.15
12.	Total Alkalinity (mg/l CAC03)	242.00	150.00	224.00	235.03	241.49	214.51
	Specific Conductivity (μmhos/cm at 25°C)	550	400	550	483	483	473
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.01	0.01	0.03	0.00	0.00	0.00
16.	Total Sulfates (mg/l)	51.0	46.0	64.0	54.0	41.0	40.0
17.	Total Iron (mg/l)	0.01	0.08	0.02	0.07	0.06	0.14
18.	Total Suspended Solids (mg/l)	3.0	48.7	0.3	5.0	3.0	15.0
19.	Total Hardness (mg/l CAC03)	213	77.16	208.5	302	248	221
20.	Nitrates (mg/l)	18.00	14.08	12.80	0.00	3.80	3.85
21.	Date Sampled for Analysis	11/19/90	12/22/90	01/21/91	02/19/91	03/21/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/18/90	12/18/90	01/20/91	02/17/91	03/18/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,437,784.05		Y 737,925.34		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	DS-247	DS-247	DS-247	DS-247	DS-247	DS-247
2.	Lab Identification Number	9511145	9512162	9601215	9602054	9603144	9604372
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1000	1000	1000	1000	1000	1000
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	1.07	0.42	1.0	0.25	0.50	0.02
8.	Date Above Measurements Made	11/14/95	12/15/95	01/18/96	02/06/96	03/14/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	7.3	7.3	7.4	7.2	7.1	7.1
11.	Total Acidity (mg/l CAC03)	13	22	15	8.0	9.8	11
12.	Total Alkalinity (mg/l CAC03)	160	210	76	160	140	160
13.	Specific Conductivity (μmhos/cm at 25°C)	390	480	240	410	330	360
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.05	0.04	0.02	<0.02
16.	Total Sulfates (mg/l)	87	74	60	61	52	49
17.	Total Iron (mg/l)	0.93	0.31	1.2	1.7	0.14	0.84
18.	Total Suspended Solids (mg/l)	12	<1.0	12	5.2	<1.0	13
19.	Total Hardness (mg/l CAC03)	240	280	140	240	220	200
20.	Nitrates (mg/l)	0.41	0.14	0.76	3.0	0.43	0.30
21.	Date Sampled for Analysis	11/14/95	12/15/95	01/18/96	02/06/96	03/14/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/14/95	01/16/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,443,924.16			Y 733,816.58	LOCATION	GTE
1. Identification No. of Sampling Station from Hydrology Map	DS-248	DS-248	DS-248	DS-248	DS-248	DS-248
2. Lab Identification Number	9511254	9512292	9602014	9602345	9603339	9604419
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1195	1195	1195	1195	1195	1195
5. Depth of Well below Land Surface (msl)						
6. Static Water Level of Well below Land Surface (msl)						
7. Flow for Spring/Stream (gpm or cfs)	NA	NA	NA	N/A	N/A	N/A
8. Date Above Measurements Made	11/17/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
9. Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10. pH (Standard Units)	7.7	7.7	7.2	6.9	7.1	7.2
11. Total Acidity (mg/l CAC03)	7.5	8.3	10	12	25	20
12. Total Alkalinity (mg/l CAC03)	230	230	170	110	180	240
13. Specific Conductivity (μmhos/cm at 25°C)	530	480	420	320	420	500
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	0.05	<0.02	0.02	0.06	0.03	<0.02
16. Total Sulfates (mg/l)	53	46	46	40	46	48
17. Total Iron (mg/l)	0.64	0.12	0.52	1.4	1.0	0.21
18. Total Suspended Solids (mg/l)	6.4	5.0	11	28	46	3.6
19. Total Hardness (mg/l CAC03)	310	280	230	160	240	290
20. Nitrates (mg/l)	1.7	2.0	6.0	7.6	5.3	4.2
21. Date Sampled for Analysis	11/17/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
22. Date Last Precipitaiton Event Occurred	11/16/95	12/26/95	01/30/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,443,259.52	Y 733,381.74	LOCATION PAN			
1. Identification No. of Sampling Station from Hydrology Map	DS-249	DS-249	DS-249	DS-249	DS-249	DS-249
2. Lab Identification Number	9511255	9512293	9602015	9602346	9603340	9604420
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1150	1150	1150	1150	1150	1150
5. Depth of Well below Land Surface (msl)						
6. Static Water Level of Well below Land Surface (msl)						
7. Flow for Spring/Stream (gpm or cfs)	0.38	0.90	2.0	5.0	3.50	3.5
8. Date Above Measurements Made	11/17/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
9. Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10. pH (Standard Units)	7.4	7.7	7.3	7.3	7.9	7.2
11. Total Acidity (mg/l CAC03)	11	8.0	16	19	11	16
12. Total Alkalinity (mg/l CAC03)	230	250	240	220	200	210
13. Specific Conductivity (µmhos/cm at 25°C)	530	520	490	460	420	450
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	0.03	0.03	<0.02	<0.02	0.02	<0.02
16. Total Sulfates (mg/l)	51	46	51	46	45	45
17. Total Iron (mg/l)	2.5	0.36	0.18	0.16	0.65	0.06
18. Total Suspended Solids (mg/l)	37	4.0	<1.0	13	26	2.0
19. Total Hardness (mg/l CAC03)	290	300	280	280	240	250
20. Nitrates (mg/l)	0.38	0.47	0.94	1.2	1.2	0.96
21. Date Sampled for Analysis	11/17/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
22. Date Last Precipitaiton Event Occurred	11/16/95	12/26/95	01/30/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

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OI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,435,951.99 Y 738,954.46 LOCATION ADJ

1.	Identification No. of Sampling Station from Hydrology Map	DS-250	DS-250	DS-250	DS-250	DS-250	DS-250
2.	Lab Identification Number	9511256	9512296	9601038	9602036	9603022	9604197
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	960	960	960	960	960	960
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	NA	NA	NA	N/A	N/A	N/A
8.	Date Above Measurements Made	11/17/95	12/26/95	01/03/96	02/05/96	03/04/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	7.3	7.6	7.4	7.3	7.4	7.3
11.	Total Acidity (mg/l CAC03)	12	9.4	13	10	13	0.13
12.	Total Alkalinity (mg/l CAC03)	220	200	190	200	200	190
13.	Specific Conductivity (μmhos/cm at 25°C)	580	540	540	440	450	410
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	0.03	<0.02	0.03
16.	Total Sulfates (mg/l)	130	100	100	62	55	53
17.	Total Iron (mg/l)	0.66	0.07	0.17	0.19	0.07	0.41
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	3.6	<1.0	<1.0	2.8
19.	Total Hardness (mg/l CAC03)	330	300	280	240	280	240
20.	Nitrates (mg/l)	0.45	0.65	0.68	0.31	0.27	0.17
21.	Date Sampled for Analysis	11/17/95	12/26/95	01/03/96	02/05/96	03/04/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/16/95	12/26/95	01/03/96	02/01/96	03/03/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
ORIGINAL

TOVCC 05266

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,445,028.79		Y 737,070.00		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	DS-251	DS-251	DS-251	DS-251	DS-251	DS-251
2.	Lab Identification Number	9511267	9512265	9601177	9602156	9603318	9604348
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	885	885	885	885	885	885
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	8.6	7.5	30	12.0	7.5	6.0
8.	Date Above Measurements Made	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	8.0	7.9	7.4	7.7	7.7	7.8
11.	Total Acidity (mg/l CAC03)	5.7	9.7	5.5	5.8	6.1	3.7
12.	Total Alkalinity (mg/l CAC03)	210	230	75	240	170	180
13.	Specific Conductivity (µmhos/cm at 25°C)	850	880	440	750	610	600
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.05	0.06	0.22	0.03	0.04	0.08
16.	Total Sulfates (mg/l)	340	290	170	250	190	170
17.	Total Iron (mg/l)	0.15	0.17	3.6	0.13	0.35	0.83
18.	Total Suspended Solids (mg/l)	1.6	3.0	120	<1.0	9.6	19
19.	Total Hardness (mg/l CAC03)	510	520	240	450	350	340
20.	Nitrates (mg/l)	<0.10	0.13	0.89	0.16	<0.10	<0.10
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/16/96	02/13/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,444,738.12		Y 736,862.95		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	DS-252	DS-252	DS-252	DS-252	DS-252	DS-252
2.	Lab Identification Number	9511268	9512250	9601179	9602157	9603321	9604349
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	898	898	898	898	898	898
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	3.0	2.0	9.4	5.0	3.0	2.0
8.	Date Above Measurements Made	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	7.4	8.2	6.9	7.6	7.4	7.7
11.	Total Acidity (mg/l CAC03)	5.7	5.3	8.1	9.3	6.7	4.3
12.	Total Alkalinity (mg/l CAC03)	220	210	130	210	140	170
13.	Specific Conductivity (µmhos/cm at 25°C)	490	600	360	480	360	400
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	82	77	51	7.3	50	65
17.	Total Iron (mg/l)	0.05	<0.05	0.74	0.10	0.05	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	8.0	7.6	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	280	270	160	260	210	250
20.	Nitrates (mg/l)	0.23	8.0	1.4	0.27	0.45	<0.10
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/16/96	02/13/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
ORIGINAL

TOVCC 05268

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,327.54		Y 736,220.06		LOCATION	GTE
1.	Identification No. of Sampling Station from Hydrology Map	DS-253	DS-253	DS-253	DS-253	DS-253	DS-253
2.	Lab Identification Number	9511348	9512187	9601211	9602033	9603140	9604189
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	935	935	935	935	935	935
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	2.5	3.0	3.0	2.5	3.0	2.40
8.	Date Above Measurements Made	11/24/95	12/18/95	01/18/96	02/05/96	03/14/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring	D	D	D	D	D	D
10.	pH (Standard Units)	7.6	7.6	7.5	7.5	7.3	7.1
11.	Total Acidity (mg/l CAC03)	17	31	18	29	16	20
12.	Total Alkalinity (mg/l CAC03)	280	270	150	210	220	220
13.	Specific Conductivity (μmhos/cm at 25°C)	790	780	460	720	640	660
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.02	0.05	0.03	<0.02	0.19
16.	Total Sulfates (mg/l)	270	250	130	230	200	200
17.	Total Iron (mg/l)	<0.05	0.04	0.52	0.09	0.12	1.8
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	26	<1.0	<1.0	5.2
19.	Total Hardness (mg/l CAC03)	490	530	290	420	400	430
20.	Nitrates (mg/l)	0.16	<0.10	0.15	<0.10	<0.10	<0.10
21.	Date Sampled for Analysis	11/24/95	12/18/95	01/18/96	02/05/96	03/14/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/18/95	01/16/96	02/01/96	03/07/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,443,177.15		Y 734,867.84		LOCATION	PAN
1. Identification No. of Sampling Station from Hydrology Map	DS-254	DS-254	DS-254	DS-254	DS-254	DS-254
2. Lab Identification Number	9511356	9512344	9601318	9602349	9603328	9604416
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1175	1175	1175	1175	1175	1175
5. Depth of Well below Land Surface (msl)						
6. Static Water Level of Well below Land Surface (msl)						
7. Flow for Spring/Stream (gpm or cfs)	0.42	1.0	3.0	2.5	3.0	2.70
8. Date Above Measurements Made	11/24/95	12/28/95	01/26/96	02/28/96	03/26/96	04/24/96
9. Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10. pH (Standard Units)	7.5	7.6	7.4	7.3	7.3	7.3
11. Total Acidity (mg/l CAC03)	9.1	13	13	15	16	12
12. Total Alkalinity (mg/l CAC03)	220	220	220	190	220	220
13. Specific Conductivity (μmhos/cm at 25°C)	440	460	450	470	490	490
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
16. Total Sulfates (mg/l)	50	41	52	34	61	62
17. Total Iron (mg/l)	0.05	<0.05	0.06	0.08	0.15	<0.05
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	260	290	300	280	290	280
20. Nitrates (mg/l)	3.1	1.5	3.1	4.3	4.1	2.3
21. Date Sampled for Analysis	11/24/95	12/28/95	01/26/96	02/28/96	03/26/96	04/24/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/28/95	01/26/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05270

OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,438,887.65	Y 737,548.99	LOCATION ADJ			
1. Identification No. of Sampling Station from Hydrology Map	DS-255	DS-255	DS-255	DS-255	DS-255	DS-255
2. Lab Identification Number	9511340	9512163	9601302	9602049	9603147	9604376
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1075	1075	1075	1075	1075	1075
5. Depth of Well below Land Surface (msl)						
6. Static Water Level of Well below Land Surface (msl)						
7. Flow for Spring/Stream (gpm or cfs)	0.14	0.25	2.4	0.14	0.15	0.25
8. Date Above Measurements Made	11/25/95	12/15/95	01/24/96	02/06/96	03/14/96	04/23/96
9. Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10. pH (Standard Units)	7.4	7.3	6.7	7.3	7.1	7.1
11. Total Acidity (mg/l CAC03)	16	13	42	10	13	13
12. Total Alkalinity (mg/l CAC03)	220	190	52	200	140	150
13. Specific Conductivity (μmhos/cm at 25°C)	410	420	150	410	270	300
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	0.03	<0.02	0.02	0.03	0.03	<0.02
16. Total Sulfates (mg/l)	36	33	25	38	43	28
17. Total Iron (mg/l)	0.69	0.52	0.79	0.42	0.22	0.25
18. Total Suspended Solids (mg/l)	13	<1.0	<1.0	2.4	<1.0	<1.0
19. Total Hardness (mg/l CAC03)	250	220	84	250	190	180
20. Nitrates (mg/l)	0.11	<0.10	0.13	0.28	<0.10	<0.10
21. Date Sampled for Analysis	11/25/95	12/15/95	01/24/96	02/06/96	03/14/96	04/23/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/14/95	01/24/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997

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OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,435,192.97 Y 735,579.68 LOCATION PAN

1.	Identification No. of Sampling Station from Hydrology Map	DS-256	DS-256	DS-256	DS-256	DS-256	DS-256
2.	Lab Identification Number	9511361	9512085	9601167	9602214	9603222	9604320
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1180	1180	1180	1180	1180	1180
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	1.15	0.88	1.7	4.6	5.0	5.75
8.	Date Above Measurements Made	11/28/95	12/07/95	01/16/96	02/09/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.3	7.4	7.3	7.3	7.3	6.8
11.	Total Acidity (mg/l CAC03)	14	10	12	11	0.11	12
12.	Total Alkalinity (mg/l CAC03)	180	180	180	180	170	180
13.	Specific Conductivity (µmhos/cm at 25°C)	420	400	480	410	400	420
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)	41	40	38	38	37	38
17.	Total Iron (mg/l)	0.15	0.71	0.06	<0.05	0.26	<0.05
18.	Total Suspended Solids (mg/l)	<1.0	8.8	1.2	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	230	230	240	250	230	250
20.	Nitrates (mg/l)	0.25	6.4	5.7	7.2	9.0	5.4
21.	Date Sampled for Analysis	11/28/95	12/07/95	01/16/96	02/09/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/05/95	01/16/96	02/08/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997
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DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,438,892.15	Y 737,753.99	LOCATION	ADJ

1.	Identification No. of Sampling Station from Hydrology Map	DS-257	DS-257	DS-257	DS-257	DS-257	DS-257
2.	Lab Identification Number	0.00	0.00	9601298	0.00	9603148	9604375
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1020	1020	1020	1020	1020	1020
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0	0	0.35	0	0.12	0.02
8.	Date Above Measurements Made	11/30/95	12/15/95	01/24/96	02/06/96	03/14/96	04/23/96
9.	Aquifer/Zone Identification for Well/Spring	C	C	C	C	C	C
10.	pH (Standard Units)	NO	NO	6.6	NO	6.5	6.8
11.	Total Acidity (mg/l CAC03)	SAMPLE	SAMPLE	9.3	SAMPLE	17	<1.5
12.	Total Alkalinity (mg/l CAC03)	NO	NO	36	NO	59	64
13.	Specific Conductivity (μmhos/cm at 25°C)	FLOW	FLOW	140	FLOW	160	190
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.00	0.00	0.02	0.00	0.02	<0.02
16.	Total Sulfates (mg/l)	0.00	0.00	24	0.00	3.1	31
17.	Total Iron (mg/l)	0.00	0.00	0.47	0.00	0.10	0.10
18.	Total Suspended Solids (mg/l)	0.00	0.00	<1.0	0.00	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	0.00	0.00	64	0.00	120	96
20.	Nitrates (mg/l)	0.00	0.00	2.6	0.00	1.2	0.79
21.	Date Sampled for Analysis	11/30/95	12/15/95	01/24/96	02/06/96	03/14/96	04/23/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/14/95	01/24/96	02/01/96	03/07/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997
D0360-6

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OHI(:PARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,441,135.48		Y 734,776.42		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	DS-258	DS-258	DS-258	DS-258	DS-258	DS-258
2.	Lab Identification Number	9512349	9601260	9602196	9603249	9604279	9605408
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1205	1205	1205	1205	1205	1205
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.93	3.0	3.5	4.0	4.0	3.1
8.	Date Above Measurements Made	12/29/95	01/23/96	02/15/96	03/19/96	04/18/96	05/29/96
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.4	7.2	7.2	7.3	7.7	7.1
11.	Total Acidity (mg/l CAC03)	14	9.4	16	8.7	8.4	11
12.	Total Alkalinity (mg/l CAC03)	180	140	180	130	140	160
13.	Specific Conductivity (μmhos/cm at 25°C)	390	300	390	300	350	360
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	0.03	0.02	0.04
16.	Total Sulfates (mg/l)	46	43	42	43	40	42
17.	Total Iron (mg/l)	0.05	0.25	0.08	1.0	0.06	0.08
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	33	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	240	170	230	200	250	210
20.	Nitrates (mg/l)	0.75	0.79	0.63	0.78	0.24	0.34
21.	Date Sampled for Analysis	12/29/95	01/23/96	02/15/96	03/19/96	04/18/96	05/29/96
22.	Date Last Precipitaiton Event Occurred	12/29/95	01/19/96	02/14/96	03/19/96	04/18/96	05/29/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

ORIGINAL
JUN 27 1997
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,441,197.94 Y 734,326.53 LOCATION PAN

1.	Identification No. of Sampling Station from Hydrology Map	DS-259	DS-259	DS-259	DS-259	DS-259	DS-259
2.	Lab Identification Number	9512350	9601262	9602197	9603250	9604280	9605407
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200	1200	1200	1200
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	1.7	15.0	15.0	15.0	10.0	4.6
8.	Date Above Measurements Made	12/29/95	01/23/96	02/15/96	03/19/96	04/18/96	05/29/96
9.	Aquifer/Zone Identification for Well/Spring	B	B	B	B	B	B
10.	pH (Standard Units)	7.4	7.3	7.3	7.2	7.7	7.1
11.	Total Acidity (mg/l CAC03)	19	222	17	16	17	18
12.	Total Alkalinity (mg/l CAC03)	210	210	210	200	200	190
13.	Specific Conductivity (μmhos/cm at 25°C)	440	440	390	420	450	490
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.02	<0.02	<0.02	<0.02	0.02
16.	Total Sulfates (mg/l)	44	50	44	49	46	48
17.	Total Iron (mg/l)	<0.05	0.42	<0.05	<0.05	<0.05	0.07
18.	Total Suspended Solids (mg/l)	<1.0	6.8	<1.0	<1.0	<1.0	1.2
19.	Total Hardness (mg/l CAC03)	290	260	270	270	280	250
20.	Nitrates (mg/l)	2.9	3.7	2.7	5.2	1.8	2.1
21.	Date Sampled for Analysis	12/29/95	01/23/96	02/15/96	03/19/96	04/18/96	05/29/96
22.	Date Last Precipitaiton Event Occurred	12/29/95	01/19/96	02/14/96	03/19/96	04/18/96	05/29/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,442,437.41 Y 734,113.71 LOCATION GTE

	Identification No. of Sampling Station from Hydrology Map	DS-263	DS -263				
2.	Lab Identification Number	9611009	9611276				
3.	High (H)/Low (L) Designation (if applicable)	L	H				
4.	Surface Elevation for Sampling Station (msl)	1155	1155				
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.09 gpm	0.23 gpm				
8.	Date Above Measurements Made	10-31-96	11-29-96				
9.	Aquifer/Zone Identification for Well/Spring	B	B				
10.	pH (Standard Units)	7.5	7.5				
11.	Total Acidity (mg/l CAC03)	9.9	4.7				
12.	Total Alkalinity (mg/l CAC03)	180	160				
13.	Specific Conductivity (µmhos/cm at 25°C)	360	360				
14.	Total Dissolved Solids (mg/l)						
15.	Total Manganese (mg/l)	0.08	0.02				
16.	Total Sulfates (mg/l)	38	40				
17.	Total Iron (mg/l)	0.60	0.16				
18.	Total Suspended Solids (mg/l)	8.0	<1.0				
19.	Total Hardness (mg/l CAC03)	250	240				
20.	Nitrates (mg/l)	0.57	0.70				
21.	Date Sampled for Analysis	10-31-96	11-29-96				
22.	Date Last Precipitaiton Event Occurred	10-28-96	11-29-96				

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JUN 27 1997

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

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OHI EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,433,948.62		Y 735,349.85	LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	DS-297	DS-297			
2.	Lab Identification Number	9704250	9705218			
3.	High (H)/Low (L) Designation (if applicable)	L	H			
4.	Surface Elevation for Sampling Station (msl)	1210	1210			
5.	Depth of Well below Land Surface (msl)					
6.	Static Water Level of Well below Land Surface (msl)					
7.	Flow for Spring/Stream (gpm or cfs)	2.23	3.0			
8.	Date Above Measurements Made	04/18/97	05/27/97			
9.	Aquifer/Zone Identification for Well/Spring	B	B			
10.	pH (Standard Units)	7.5	7.4			
11.	Total Acidity (mg/l CAC03)	12	13			
12.	Total Alkalinity (mg/l CAC03)	220	220			
13.	Specific Conductivity (µmhos/cm at 25°C)	520	470			
14.	Total Dissolved Solids (mg/l)	-	-			
15.	Total Manganese (mg/l)	<0.02	<0.02			
16.	Total Sulfates (mg/l)	47	43			
17.	Total Iron (mg/l)	0.07	<0.05			
18.	Total Suspended Solids (mg/l)	<1.0	<1.0			
19.	Total Hardness (mg/l CAC03)	270	280			
20.	Nitrates (mg/l)	2.2	2		-	
21.	Date Sampled for Analysis	04/18/97	05/27/97			
22.	Date Last Precipitaiton Event Occurred	04/18/97	05/27/97			

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997

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X 2,431,328.24
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LOCATION ADJ

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

1.	Identification No. of Sampling Station from Hydrology Map	U Ø34-15	U Ø34-15	U Ø34-15	U Ø34-15	U Ø34-15	U Ø34-15
2.	Lab Identification Number	S-F6	S-F6	S-F6	S-F6	S-F6	S-F6
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1120	1120	1120	1120	1120	1120
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.75 cfs	1.1 cfs	1.63 cfs	0.9702 cfs	0.708 cfs	0.811 cfs
8.	Date Above Measurements Made	11/24/90	12/14/90	01/05/91	02/04/91	03/02/91	04/24/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.8	7.8	7.9	7.8	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	13.87	19.19	10.83
12.	Total Alkalinity (mg/l CAC03)	186.00	164.00	104.00	160.74	169.10	160.55
13.	Specific Conductivity (μmhos/cm at 25°C)	400	410	300	388	310	399
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.16	0.09	0.13	0.15	0.06	0.00
16.	Total Sulfates (mg/l)	48.0	44.0	45.0	35.0	36.0	30.0
17.	Total Iron (mg/l)	0.20	0.10	0.40	0.25	0.19	0.08
18.	Total Suspended Solids (mg/l)	6.7	4.3	20.3	16.0	6.0	2.0
19.	Total Hardness (mg/l CAC03)	178.0	83.4	101.1	180.0	173.0	184.0
20.	Nitrates (mg/l)	8.80	5.28	4.84	1.57	3.34	3.75
21.	Date Sampled for Analysis	11/24/90	12/14/90	01/05/91	02/04/91	03/02/91	04/24/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/04/90	01/ 4/91	01/31/91	03/01/91	04/22/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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ORIGINAL
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STATE PLANE COORDS
X 2,430,990.24
Y 732,678.49

O DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION
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Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-16	U34-16	U34-16	U34-16	U34-16	U34-16
2.	Lab Identification Number	S-E2	S-E2	S-E2	S-E2	S-E2	S-E2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	✓ 1100	1100	1100	1100	1100	1100
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.47 cfs	1.3 cfs	3.12 cfs	1.081 cfs	1.08 cfs	1.097 cfs
8.	Date Above Measurements Made	11/03/90	12/14/90	01/15/91	02/04/91	05/02/91	04/24/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	7.8	7.7	8.0	7.9	7.8
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	11.78	19.00	7.60
12.	Total Alkalinity (mg/l CAC03)	170.00	168.00	100.00	144.59	162.83	149.34
13.	Specific Conductivity (μmhos/cm at 25°C)	425	410	300	388	310	368
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.01	0.08	0.13	0.08	0.03	0.00
16.	Total Sulfates (mg/l)	34.0	38.0	38.0	34.0	34.0	31.0
17.	Total Iron (mg/l)	0.01	0.08	0.47	0.16	0.16	0.05
18.	Total Suspended Solids (mg/l)	3.7	0.3	13.0	3.0	3.0	4.0
19.	Total Hardness (mg/l CAC03)	158.0	96.1	93.9	175.0	173.0	178.0
20.	Nitrates (mg/l)	5.72	4.40	4.84	1.55	3.37	4.04
21.	Date Sampled for Analysis	11/03/90	12/14/90	01/15/91	02/04/91	05/02/91	04/24/91
22.	Date Last Precipitaiton Event Occurred	10/24/90	12/04/90	01/14/91	01/30/91	03/01/91	04/22/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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ORIGINAL
D0360-6

STATE PLANE COORDS.
X 2,431,375.97
Y 732,013.64

OI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION ADJ

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-17	U34-17	U34-17	U34-17	U34-17	U34-17
2.	Lab Identification Number	S-F2	S-F2	S-F2	S-F2	S-F2	S-F2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1085	1085	1085	1085	1085	1085
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	1.331 cfs	1.86 cfs	2.81 cfs	1.118 cfs	2.64 cfs	1.013 cfs
8.	Date Above Measurements Made	11/05/90	12/28/90	01/15/91	02/04/91	03/08/91	04/24/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	7.7	7.8	8.1	8.0	7.9
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	9.31	32.30	9.12
12.	Total Alkalinity (mg/l CAC03)	172.00	142.00	100.00	144.78	130.91	151.24
13.	Specific Conductivity (μmhos/cm at 25°C)	450	360	300	399	347	378
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.01	0.13	0.12	0.13	0.06	0.02
16.	Total Sulfates (mg/l)	34.0	33.0	39.0	34.0	31.0	27.0
17.	Total Iron (mg/l)	0.01	0.15	0.38	0.53	0.23	0.07
18.	Total Suspended Solids (mg/l)	3.7	0.3	18.0	27.0	5.0	10.0
19.	Total Hardness (mg/l CAC03)	158.0	79.7	94.4	178.0	156.0	184.0
20.	Nitrates (mg/l)	5.72	7.92	4.84	1.70	2.64	3.30
21.	Date Sampled for Analysis	11/05/90	12/28/90	01/15/91	02/04/91	03/08/91	04/24/91
22.	Date Last Precipitaiton Event Occurred	10/24/90	11/27/90	01/14/91	01/30/91	03/06/91	04/22/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

ORIGINAL
D0360-6

STATE PLANE COORDS
X 2,432,464.45
Y 733,206.90

OHIO DEPARTMENT OF NATURAL RESOURCES LOCATION
DIVISION OF RECLAMATION GTE
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-18	U34-18	U34-18	U34-18	U34-18	U34-18
2.	Lab Identification Number	S-Q5	S-Q5	S-Q5	S-Q5	S-Q5	S-Q5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1160	1160	1160	1160	1160	1160
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.024 cfs	0.131 cfs	0.177 cfs	0.142 cfs	0.249 cfs	0.072 cfs
8.	Date Above Measurements Made	11/24/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	7.6	7.7	7.6	7.6	7.6
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	14.82	6.84	14.82
12.	Total Alkalinity (mg/l CAC03)	170.00	128.00	128.00	137.37	116.66	177.46
13.	Specific Conductivity (μmhos/cm at 25°C)	400	340	330	320	290	357
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.34	0.11	0.01	0.08	0.10	0.15
16.	Total Sulfates (mg/l)	34.0	36.0	34.0	29.0	25.0	20.0
17.	Total Iron (mg/l)	0.40	0.16	0.01	0.15	0.18	0.17
18.	Total Suspended Solids (mg/l)	7.0	0.3	0.3	10.0	8.0	6.0
19.	Total Hardness (mg/l CAC03)	153.0	68.7	113.1	160.0	136.0	192.0
20.	Nitrates (mg/l)	4.40	8.80	6.60	1.32	1.23	3.67
21.	Date Sampled for Analysis	11/24/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	12/30/90	01/31/91	03/06/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

ORIGINAL
JUN 27 1997

STATE PLANE COORDS
X 2,432,479.77
Y 732,631.50

LOCATION
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DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-19	U34-19	U34-19	U34-19	U34-19	U34-19
2.	Lab Identification Number	S-R2	S-R2	S-R2	S-R2	S-R2	S-R2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	✓ 1130	1130	1130	1130	1130	1130
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.367 cfs	0.26 cfs	0.35 cfs	0.185 cfs	0.301 cfs	0.085 cfs
8.	Date Above Measurements Made	11/06/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.6	7.6	7.7	7.6	7.6
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	13.30	10.26	6.46
12.	Total Alkalinity (mg/l CAC03)	148.00	120.00	114.00	134.14	120.08	159.60
13.	Specific Conductivity (μmhos/cm at 25°C)	450	300	305	310	290	310
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.13	0.17	0.11	0.12	9.91	0.20
16.	Total Sulfates (mg/l)	32.0	34.0	33.0	25.0	24.0	25.0
17.	Total Iron (mg/l)	0.08	0.23	0.17	0.38	0.30	0.20
18.	Total Suspended Solids (mg/l)	0.3	14.7	5.0	18.0	11.0	9.0
19.	Total Hardness (mg/l CAC03)	164.0	63.4	108.9	152.0	139.0	172.0
20.	Nitrates (mg/l)	7.04	5.28	7.04	0.00	1.17	3.69
21.	Date Sampled for Analysis	11/06/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
22.	Date Last Precipitaiton Event Occurred	11/05/90	12/24/90	12/30/90	01/31/91	03/06/91	04/09/91

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ORIGINAL

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STATE PLANE COORDS
X 2,432,162.62
Y 731,736.52

O DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION
ADJ

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-20	U34-20	U34-20	U34-20	U34-20	U34-20
2.	Lab Identification Number	S-G2	S-G2	S-G2	S-G2	S-G2	S-G2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100	1100	1100	1100
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.195 cfs	0.3 cfs	0.396 cfs	0.22 cfs	0.333 cfs	0.132 cfs
8.	Date Above Measurements Made	11/05/90	12/14/90	01/03/91	02/02/91	03/08/91	04/12/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	8.0	7.8	7.9	7.7	7.9
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	14.44	8.93	12.35
12.	Total Alkalinity (mg/l CAC03)	180.00	180.00	148.00	144.59	131.86	165.30
13.	Specific Conductivity (μmhos/cm at 25°C)	425	450	380	388	320	368
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.01	0.17	0.08	0.06	0.07	0.02
16.	Total Sulfates (mg/l)	34.0	35.0	34.0	34.0	26.0	19.0
17.	Total Iron (mg/l)	0.01	0.14	0.17	0.07	0.19	0.06
18.	Total Suspended Solids (mg/l)	2.7	0.3	11.0	6.0	4.0	2.0
19.	Total Hardness (mg/l CAC03)	160.0	98.6	126.6	190.0	156.0	200.0
20.	Nitrates (mg/l)	3.70	2.64	3.87	1.20	1.43	3.90
21.	Date Sampled for Analysis	11/05/90	12/14/90	01/03/91	02/02/91	03/08/91	04/12/91
22.	Date Last Precipitaiton Event Occurred	10/24/90	12/04/90	12/30/90	01/31/91	03/06/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

ORIGINAL
D0360-6

STATE PLANE COORDS
X 2,433,520.04
Y 733,374.28

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-30	U34-30	U34-30	U34-30	U34-30	U34-30
2.	Lab Identification Number	S-P5	S-P5	S-P5	S-P5	S-P5	S-P5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1260	1260	1260	1260	1260	1260
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.007 cfs	0.1 cfs	0.016 cfs	0.0326 cfs	0.058 cfs	0.022 cfs
8.	Date Above Measurements Made	11/24/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	7.6	7.6	7.6	7.4	7.4
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	25.46	7.03	9.12
12.	Total Alkalinity (mg/l CAC03)	142.00	110.00	140.00	124.83	108.11	142.88
.3.	Specific Conductivity (μmhos/cm at 25°C)	350	290	300	290	270	310
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.24	0.07	0.01	0.04	0.04	0.00
16.	Total Sulfates (mg/l)	31.0	35.0	32.0	31.0	27.0	26.0
17.	Total Iron (mg/l)	0.37	0.17	0.01	0.25	0.15	0.12
18.	Total Suspended Solids (mg/l)	1.7	5.6	4.3	10.0	12.0	16.0
19.	Total Hardness (mg/l CAC03)	119.0	55.7	94.1	144.0	121.0	164.0
20.	Nitrates (mg/l)	4.14	3.92	1.98	2.76	1.63	4.20
21.	Date Sampled for Analysis	11/24/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	12/30/90	01/31/91	03/06/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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JUN 27 1997

ORIGINAL

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STATE PLANE COORDS
X 2,433,719.40
Y 732,620.38

Location
PAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-31	U34-31	U34-31	U34-31	U34-31	U34-31
2.	Lab Identification Number	S-S2	S-S2	S-S2	S-S2	S-S2	S-S2
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	✓ 1160	1160	1160	1160	1160	1160
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.184 cfs	0.15 cfs	0.036 cfs	0.1804 cfs	0.199 cfs	0.099 cfs
8.	Date Above Measurements Made	11/06/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.4	7.8	7.6	7.8	7.8
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	9.31	7.89	9.50
12.	Total Alkalinity (mg/l CAC03)	214.00	108.00	110.00	117.99	105.26	146.11
13.	Specific Conductivity (μmhos/cm at 25°C)	450	270	290	270	270	300
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.01	0.07	0.01	0.03	0.04	0.08
16.	Total Sulfates (mg/l)	38.0	38.0	290.0	30.0	27.0	28.0
17.	Total Iron (mg/l)	0.01	0.14	0.19	0.59	0.21	0.66
18.	Total Suspended Solids (mg/l)	0.3	10.0	8.0	19.0	16.0	28.0
19.	Total Hardness (mg/l CAC03)	165.0	59.4	102.4	144.0	122.0	164.0
20.	Nitrates (mg/l)	4.34	2.38	2.11	1.09	1.39	3.86
21.	Date Sampled for Analysis	11/06/90	12/26/90	01/03/91	02/02/91	03/08/91	04/12/91
22.	Date Last Precipitaiton Event Occurred	11/05/90	12/24/90	12/30/90	01/31/91	03/06/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

ORIGINAL
D0360-6

STATE PLANE COORD
X 2,436,430.09
Y 731,541.34

OI... DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-69	U34-69	U34-69	U34-69	U34-69	U34-69
2.	Lab Identification Number	P-F1	P-F1	P-F1	P-F1	P-F1	P-F1
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1225	1225	1225	1225	1225	1225
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.013 cfs	0.013 cfs	0.066 cfs	0.0053 cfs	0.066 cfs	0.022 cfs
8.	Date Above Measurements Made	11/14/90	12/13/90	01/17/91	02/13/91	03/11/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	6.5	6.7	7.3	7.0	7.0	7.1
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	11.59	5.89	15.77
12.	Total Alkalinity (mg/l CAC03)	76.00	106.00	106.00	104.32	95.38	113.81
13.	Specific Conductivity (μmhos/cm at 25°C)	173	260	275	270	240	250
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.52	0.60	0.11	0.28	0.37	0.23
16.	Total Sulfates (mg/l)	25.0	29.0	38.0	32.0	27.0	2.0
17.	Total Iron (mg/l)	0.65	1.59	0.01	0.37	0.19	0.81
18.	Total Suspended Solids (mg/l)	7.0	4.0	7.6	18.0	22.0	26.0
19.	Total Hardness (mg/l CAC03)	65.0	56.2	80.9	124.0	110.0	132.0
20.	Nitrates (mg/l)	2.00	1.32	4.05	0.00	1.26	2.89
21.	Date Sampled for Analysis	11/14/90	12/13/90	01/17/91	02/13/91	03/11/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/09/90	12/04/90	01/16/91	02/10/91	03/10/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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ORIGINAL

x 2,438,400.51
Y 732,479.11

LOCATION
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-79	U34-79	U34-79	U34-79	U34-79	U34-79
2.	Lab Identification Number	P-H1	P-H1	P-H1	P-H1	P-H1	P-H1
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1150	1150	1150	1150	1150	1150
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0 cfs	0 cfs	0.0066 cfs	0.005 cfs	0.0041 cfs	0.007 cfs
8.	Date Above Measurements Made	11/15/90	12/13/90	01/22/91	02/21/91	03/14/91	04/30/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.2	7.4	7.6	7.7	8.0	7.6
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	10.26	10.26	8.17
12.	Total Alkalinity (mg/l CAC03)	166.00	154.00	134.00	131.86	132.81	152.76
13.	Specific Conductivity (μmhos/cm at 25°C)	410	400	360	290	300	389
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.28	0.26	0.12	0.18	0.10	0.16
16.	Total Sulfates (mg/l)	46.0	43.0	38.0	35.0	28.0	31.0
17.	Total Iron (mg/l)	0.73	0.47	0.25	0.43	0.40	0.49
18.	Total Suspended Solids (mg/l)	26.7	7.3	3.0	12.0	18.0	15.0
19.	Total Hardness (mg/l CAC03)	157.0	82.1	98.9	172.0	160.0	188.0
20.	Nitrates (mg/l)	23.80	8.36	7.04	0.00	1.80	2.42
21.	Date Sampled for Analysis	11/15/90	12/13/90	01/22/91	02/21/91	03/14/91	04/30/91
22.	Date Last Precipitaiton Event Occurred	11/07/90	12/04/90	01/21/91	02/19/91	03/13/91	04/29/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

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JUN 27 1997

ORIGINAL

STATE PLANE COORDS.
X 2,938,387.22
Y 732,190.21

O DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION
GTE

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-80	U34-80	U34-80	U34-80	U34-80	U34-80
2.	Lab Identification Number	S-Q3	S-Q3	S-Q3	S-Q3	S-Q3	S-Q3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1120	1120	1120	1120	1120	1120
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.005 cfs	0.04 cfs	0.107 cfs	0.192 cfs	0.122 cfs	0.098 cfs
8.	Date Above Measurements Made	11/15/90	12/13/90	01/22/91	02/21/91	03/14/91	04/30/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.4	7.9	7.6	7.8	8.0	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	7.41	10.07	8.74
12.	Total Alkalinity (mg/l CAC03)	150.00	188.00	118.00	113.81	107.16	147.06
13.	Specific Conductivity (μmhos/cm at 25°C)	350	440	320	270	240	389
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.01	0.04	0.11	0.06	0.00	0.00
16.	Total Sulfates (mg/l)	38.0	38.0	45.0	34.0	31.0	31.0
17.	Total Iron (mg/l)	0.09	0.16	0.34	0.37	0.10	0.08
18.	Total Suspended Solids (mg/l)	5.3	7.0	24.6	10.0	18.0	17.0
19.	Total Hardness (mg/l CAC03)	145.0	97.1	96.1	190.0	136.0	176.0
20.	Nitrates (mg/l)	4.27	6.20	5.28	0.00	1.24	3.02
21.	Date Sampled for Analysis	11/15/90	12/13/90	01/22/91	02/21/91	03/14/91	04/30/91
22.	Date Last Precipitaiton Event Occurred	11/07/90	12/04/90	01/21/91	02/19/91	03/13/91	04/29/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
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JUN 27 1997

ORIGINAL

STATE PLANE COORDS
X 2,438,742.42
Y 731,809.10

LOCATION
PAN

C DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-81	U34-81	U34-81	U34-81	U34-81	U34-81
2.	Lab Identification Number	S-P3	S-P3	S-P3	S-P3	S-P3	S-P3
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1090	1090	1090	1090	1090	1090
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.162 cfs	0.625 cfs	0.578 cfs	0.642 cfs	0.527 cfs	0.433 cfs
8.	Date Above Measurements Made	11/15/90	12/13/90	01/22/91	02/21/91	03/14/91	04/30/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	8.5	7.8	8.0	7.9	8.0
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	9.31	7.60	6.65
12.	Total Alkalinity (mg/l CAC03)	180.00	168.00	150.00	133.95	144.02	162.64
13.	Specific Conductivity (μmhos/cm at 25°C)	400	400	360	310	320	389
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.01	0.04	0.07	0.00	0.00	0.00
16.	Total Sulfates (mg/l)	45.0	40.0	46.0	31.0	34.0	34.0
17.	Total Iron (mg/l)	0.01	0.07	0.28	0.10	0.08	0.28
18.	Total Suspended Solids (mg/l)	2.7	3.0	13.3	8.0	4.0	26.0
19.	Total Hardness (mg/l CAC03)	160.0	90.9	128.6	200.0	168.0	190.0
20.	Nitrates (mg/l)	15.80	2.68	4.22	0.00	1.73	3.00
21.	Date Sampled for Analysis	11/15/90	12/13/90	01/22/91	02/21/91	03/14/91	04/30/91
22.	Date Last Precipitaiton Event Occurred	11/07/90	12/04/90	01/21/91	02/19/91	03/13/91	04/29/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05289

X 2,440,783.16
Y 732,257.39

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION
GTE

Applicant's Name THE OHIO VALLEY COAL COMPANY

1.	Identification No. of Sampling Station from Hydrology Map	U34-110	U34-110	U34-110	U34-110	U34-110	U34-110
2.	Lab Identification Number	S-K5	S-K5	S-K5	S-K5	S-K5	S-K5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100	1100	1100	1100
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.479 cfs	0.88 cfs	0.354 cfs	0.472 cfs	0.3 cfs	0.204 cfs
8.	Date Above Measurements Made	11/23/90	12/22/90	01/23/91	02/21/91	03/22/91	04/03/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	7.4	7.6	7.4	7.6	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	8.74	13.11	4.18
12.	Total Alkalinity (mg/l CAC03)	118.00	86.00	90.00	79.42	126.92	117.04
13.	Specific Conductivity (μmhos/cm at 25°C)	300	225	250	210	270	280
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.03	0.12	0.01	0.05	0.04	0.03
16.	Total Sulfates (mg/l)	31.0	32.0	35.0	25.0	23.0	23.0
17.	Total Iron (mg/l)	0.06	0.30	0.06	0.25	0.16	0.21
18.	Total Suspended Solids (mg/l)	2.3	0.3	0.3	6.0	10.0	7.0
19.	Total Hardness (mg/l CAC03)	110.0	46.7	87.8	139.0	116.0	132.0
20.	Nitrates (mg/l)	0.66	1.41	0.04	0.00	1.96	2.73
21.	Date Sampled for Analysis	11/23/90	12/22/90	01/23/91	02/21/91	03/22/91	04/03/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/18/90	01/21/91	02/19/91	03/20/91	03/29/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 27 1997

ORIGINAL

STATE PLANE COORDS:
X 2,442,353.83
Y 731,126.29

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION
GTE

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-114	U34-114	U34-114	U34-114	U34-114	U34-114
2.	Lab Identification Number	P-M1	P-M1	P-M1	P-M1	P-M1	P-M1
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1070	1070	1070	1070	1070	1070
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.066 cfs	0.088 cfs	0.13 cfs	0.169 cfs	0.011 cfs	0 cfs
8.	Date Above Measurements Made	11/23/90	12/22/90	01/23/91	02/21/91	03/21/91	04/30/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	7.6	7.5	7.5	7.3	7.5
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	7.41	15.20	8.55
12.	Total Alkalinity (mg/l CAC03)	130.00	76.00	110.00	102.79	125.40	120.46
13.	Specific Conductivity (μmhos/cm at 25°C)	350	201	295	260	260	310
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.52	0.11	0.05	0.09	0.02	0.14
16.	Total Sulfates (mg/l)	39.0	33.0	38.0	29.0	30.0	26.0
17.	Total Iron (mg/l)	1.10	0.34	0.01	0.23	0.06	0.21
18.	Total Suspended Solids (mg/l)	1.3	13.3	2.0	5.0	7.0	12.0
19.	Total Hardness (mg/l CAC03)	135.0	48.4	98.9	160.0	144.0	144.0
20.	Nitrates (mg/l)	3.87	0.35	0.35	0.00	1.01	2.77
21.	Date Sampled for Analysis	11/23/90	12/22/90	01/23/91	02/21/91	03/21/91	04/30/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/18/90	01/21/91	02/19/91	03/20/91	04/29/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

ORIGINAL
JUN 27 1997
D0360-6

STATE PLANE COORDS
X 2,442,491.94
Y 733,363.13

C DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-128	U34-128	U34-128	U34-128	U34-128	U34-128
2.	Lab Identification Number	S-O6	S-O6	S-O6	S-O6	S-O6	S-O6
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1070	1070	1070	1070	1070	1070
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.5 cfs	0.043 cfs	0.076 cfs	0.9 cfs	0.19 cfs	0.132 cfs
8.	Date Above Measurements Made	11/28/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.3	7.3	7.6	7.4	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	11.78	9.50	8.93
12.	Total Alkalinity (mg/l CAC03)	160.00	178.00	138.00	127.87	166.25	151.43
13.	Specific Conductivity (μmhos/cm at 25°C)	400	425	350	347	357	300
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.15	0.10	0.08	0.04	0.09	0.03
16.	Total Sulfates (mg/l)	55.0	55.0	48.0	36.0	35.0	35.0
17.	Total Iron (mg/l)	1.28	0.26	0.25	0.35	0.56	0.20
18.	Total Suspended Solids (mg/l)	14.3	10.7	3.0	8.0	3.0	12.0
19.	Total Hardness (mg/l CAC03)	169.0	104.1	124.1	202.0	180.0	184.0
20.	Nitrates (mg/l)	14.50	5.30	3.08	0.00	2.07	3.18
21.	Date Sampled for Analysis	11/28/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/27/90	12/27/90	01/20/91	02/19/91	03/18/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6
JUN 27 1997
ORIGINAL

TOVCC 05292

STATE PLANE COORDS
X 2,443,085.60
Y 732,669.76

LOCATION
PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-129	U34-129	U34-129	U34-129	U34-129	U34-129
2.	Lab Identification Number	S-L5	S-L5	S-L5	S-L5	S-L5	S-L5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1050	1050	1050	1050	1050	1050
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.83 cfs	0.224 cfs	0.244 cfs	0.98 cfs	0.242 cfs	0.145 cfs
8.	Date Above Measurements Made	11/23/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.1	7.6	7.6	7.6	7.4	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	12.73	10.64	10.26
12.	Total Alkalinity (mg/l CAC03)	144.00	142.00	130.00	138.32	166.06	152.38
13.	Specific Conductivity (μmhos/cm at 25°C)	350	380	350	320	330	320
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.01	0.12	0.08	0.04	0.09	0.04
16.	Total Sulfates (mg/l)	48.0	36.0	48.0	37.0	35.0	36.0
17.	Total Iron (mg/l)	0.12	0.35	0.08	0.43	0.38	0.22
18.	Total Suspended Solids (mg/l)	12.3	0.3	5.0	6.0	15.0	17.0
19.	Total Hardness (mg/l CAC03)	137.0	82.4	120.9	210.0	172.0	188.0
20.	Nitrates (mg/l)	5.28	6.60	2.73	0.00	2.08	3.64
21.	Date Sampled for Analysis	11/23/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/27/90	01/20/91	02/19/91	03/18/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-0

JUN 27 1997 ORIGINAL

STATE PLANE COORDS
X 2,443,648.55
Y 732,241.78

LOCATION
GTE

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-130	U34-130	U34-130	U34-130	U34-130	U34-130
2.	Lab Identification Number	S-M5	S-M5	S-M5	S-M5	S-M5	S-M5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1020	1020	1020	1020	1020	1020
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.875 cfs	0.374 cfs	0.38 cfs	1.15 cfs	0.264 cfs	0.154 cfs
8.	Date Above Measurements Made	11/23/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.0	8.0	8.0	7.5	7.5	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	12.92	10.26	8.36
*2.	Total Alkalinity (mg/l CAC03)	140.00	150.00	138.00	117.42	165.30	152.76
13.	Specific Conductivity (μmhos/cm at 25°C)	375	375	350	290	330	357
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.01	0.11	0.01	0.05	0.08	0.05
16.	Total Sulfates (mg/l)	46.0	45.0	46.0	35.0	35.0	35.0
17.	Total Iron (mg/l)	0.09	0.40	0.09	0.64	0.46	0.41
18.	Total Suspended Solids (mg/l)	5.7	6.0	3.3	12.0	12.0	18.0
19.	Total Hardness (mg/l CAC03)	134.0	81.1	126.3	176.0	176.0	192.0
20.	Nitrates (mg/l)	5.28	6.60	2.99	0.00	2.04	3.44
21.	Date Sampled for Analysis	11/23/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/27/90	01/20/91	02/19/91	03/18/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 2 7 1997
D0360-6
ORIGINAL

STATE PLANE COORDS
X 2,444,693.84
Y 731,599.80

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION
PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U34-131	U34-131	U34-131	U34-131	U34-131	U34-131
2.	Lab Identification Number	S-N5	S-N5	S-N5	S-N5	S-N5	S-N5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	970	970	970	970	970	970
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	1.06 cfs	0.749 cfs	0.814 cfs	1.25 cfs	0.274 cfs	0.165 cfs
8.	Date Above Measurements Made	11/23/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.0	8.1	8.1	7.7	7.7	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	14.44	10.83	8.36
12.	Total Alkalinity (mg/l CAC03)	140.00	140.00	140.00	109.06	153.90	152.38
13.	Specific Conductivity (μmhos/cm at 25°C)	375	375	350	260	330	347
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.01	0.09	0.01	0.06	0.09	0.05
16.	Total Sulfates (mg/l)	45.0	45.0	43.0	35.0	34.0	39.0
17.	Total Iron (mg/l)	0.09	0.35	0.09	0.54	0.45	0.40
18.	Total Suspended Solids (mg/l)	3.7	14.0	3.6	7.0	17.0	20.0
19.	Total Hardness (mg/l CAC03)	139.0	80.6	124.6	177.0	172.0	172.0
20.	Nitrates (mg/l)	6.60	5.70	2.90	0.00	2.01	3.80
21.	Date Sampled for Analysis	11/23/90	12/28/90	01/21/91	02/20/91	03/20/91	04/11/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/27/90	01/20/91	02/19/91	03/18/91	04/09/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,430,389.50		Y 735,350.35		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U34-166	U34-166	U34-166	U34-166	U34-166	U34-166
2.	Lab Identification Number	9511132	9512079	9601040	9602166	9603219	9604322
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1170	1170	1170	1170	1170	1170
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.06	0.026	0.27	0.01	0.11	0.10
8.	Date Above Measurements Made	11/14/95	12/07/95	01/03/96	02/12/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.7	7.7	7.3	7.3	7.7	7.8
11.	Total Acidity (mg/l CAC03)	7.0	6.2	5.3	6.1	3.8	2.4
12.	Total Alkalinity (mg/l CAC03)	150	160	90	110	98	120
13.	Specific Conductivity (μmhos/cm at 25°C)	380	350	340	300	290	310
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.18	0.32	0.07	0.15	0.12	0.27
16.	Total Sulfates (mg/l)	54	48	40	39	36	34
17.	Total Iron (mg/l)	0.29	0.13	0.29	0.36	0.68	1.2
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	7.6	2.4	17	38
19.	Total Hardness (mg/l CAC03)	220	200	160	170	160	160
20.	Nitrates (mg/l)	1.0	0.86	7.3	5.0	5.0	3.2
21.	Date Sampled for Analysis	11/14/95	12/07/95	01/03/96	02/12/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/05/95	01/03/96	02/12/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05296

OI)EPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,430,784.32		Y 734,948.47		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U34-167	U34-167	U34-167	U34-167	U34-167	U34-167
2.	Lab Identification Number	0.00	0.00	0.00	0.00	9603220	0.00
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1175	1175	1175	1175	1175	1175
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0	0	0	0	0.001	0
8.	Date Above Measurements Made	11/14/95	12/07/95	01/03/96	02/12/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	NO	NO	NO	NO	7.8	NO
11.	Total Acidity (mg/l CAC03)	SAMPLE	SAMPLE	SAMPLE	SAMPLE	7.0	SAMPLE
12.	Total Alkalinity (mg/l CAC03)	NO	NO	NO	NO	180	NO
13.	Specific Conductivity (μmhos/cm at 25°C)	FLOW	FLOW	FLOW	FLOW	390	FLOW
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.00	0.00	0.00	0.00	<0.02	0.00
16.	Total Sulfates (mg/l)	0.00	0.00	0.00	0.00	39	0.00
17.	Total Iron (mg/l)	0.00	0.00	0.00	0.00	0.61	0.00
18.	Total Suspended Solids (mg/l)	0.00	0.00	0.00	0.00	21	0.00
19.	Total Hardness (mg/l CAC03)	0.00	0.00	0.00	0.00	180	0.00
20.	Nitrates (mg/l)	0.00	0.00	0.00	0.00	0.69	0.00
21.	Date Sampled for Analysis	11/14/95	12/07/95	01/03/96	02/12/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/05/95	01/03/96	02/12/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05297

OH DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,431,400.65		Y 735,309.16		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U34-168	U34-168	U34-168	U34-168	U34-168	U34-168
2.	Lab Identification Number	9511133	9512080	9601041	9602168	9603221	9604324
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1170	1170	1170	1170	1170	1170
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.01	0.002	0.05	0.04	0.20	0.06
8.	Date Above Measurements Made	11/14/95	12/07/95	01/03/96	02/12/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	7.5	7.3	7.4	7.8	7.6
11.	Total Acidity (mg/l CAC03)	12	7.6	7.5	8.7	4.2	5.0
12.	Total Alkalinity (mg/l CAC03)	190	170	120	120	110	130
13.	Specific Conductivity (µmhos/cm at 25°C)	470	390	380	290	290	330
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.49	0.13	0.07	0.06	0.06	0.34
16.	Total Sulfates (mg/l)	120	66	47	44	39	39
17.	Total Iron (mg/l)	1.5	0.12	0.14	0.15	0.20	2.1
18.	Total Suspended Solids (mg/l)	38	<1.0	4.0	<1.0	2.8	52
19.	Total Hardness (mg/l CAC03)	282	230	200	160	160	170
20.	Nitrates (mg/l)	0.42	0.88	6.0	4.5	5.6	2.8
21.	Date Sampled for Analysis	11/14/95	12/07/95	01/03/96	02/12/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/05/95	01/03/96	02/12/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0 3 JUN 26 1997

ORIGINAL

TOVCC 05298

OH DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,445,740.51		Y 733,634.86		LOCATION	ADI
1.	Identification No. of Sampling Station from Hydrology Map	U34-169	U34-169	U34-169	U34-169	U34-169	U34-169
2.	Lab Identification Number	9511278	9512294	9602016	9602347	9603337	9604422
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1090	1090	1090	1090	1090	1090
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.02	0.05	0.026	0.031	0.025	0.04
8.	Date Above Measurements Made	11/21/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.2	6.8	6.7	7.0	7.0	7.3
11.	Total Acidity (mg/l CAC03)	3.2	<1.5	<1.5	<1.5	7.0	2.6
12.	Total Alkalinity (mg/l CAC03)	59	64	52	43	170	62
13.	Specific Conductivity (µmhos/cm at 25°C)	180	210	190	140	180	170
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.02	<0.02	0.02	0.02	<0.02	0.03
16.	Total Sulfates (mg/l)	35	27	30	21	26	28
17.	Total Iron (mg/l)	0.22	0.10	0.36	1.8	0.14	0.21
18.	Total Suspended Solids (mg/l)	<1.0	2.0	<1.0	13	1.6	2.0
19.	Total Hardness (mg/l CAC03)	96	120	92	84	92	92
20.	Nitrates (mg/l)	1.6	2.7	2.2	1.9	1.0	0.12
21.	Date Sampled for Analysis	11/21/95	12/26/95	01/30/96	02/28/96	03/27/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/30/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

JUN 27 1997 D0360-6
ORIGINAL

STATE PLANE COORDS:
X 2,435,995.00
Y 732,870.62

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U-35	U-35	U-35	U-35	U-35	U-35
2.	Lab Identification Number	S-U5	S-U5	S-U5	S-U5	S-U5	S-U5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100	1100	1100	1100
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.052 cfs	0.031 cfs	0.251 cfs	0.148 cfs	0.048 cfs	0.039 cfs
8.	Date Above Measurements Made	11/23/90	12/27/90	01/17/91	02/19/91	03/14/91	04/29/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.7	7.7	7.8	7.7	8.0	7.6
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	14.63	5.51	7.60
12.	Total Alkalinity (mg/l CAC03)	160.00	154.00	140.00	137.18	169.10	160.74
13.	Specific Conductivity (μmhos/cm at 25°C)	400	360	340	290	347	410
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.06	0.08	0.01	0.94	0.03	0.10
16.	Total Sulfates (mg/l)	34.0	37.0	36.0	25.0	28.0	28.0
17.	Total Iron (mg/l)	0.39	0.21	0.15	0.37	0.29	1.21
18.	Total Suspended Solids (mg/l)	18.0	10.6	23.6	8.0	17.0	17.0
19.	Total Hardness (mg/l CAC03)	157.0	774.0	120.9	186.0	176.0	192.0
20.	Nitrates (mg/l)	18.00	5.30	2.77	0.00	1.60	3.22
21.	Date Sampled for Analysis	11/23/90	12/27/90	01/17/91	02/19/91	03/14/91	04/29/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	01/16/91	02/17/91	03/13/91	04/28/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 27 1997

ORIGINAL

STATE PLANE COORDS:
X 2,435,681.33
Y 732,895.22

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U35-A	U35-A	U35-A	U35-A	U35-A	U35-A
2.	Lab Identification Number	S-V5	S-V5	S-V5	S-V5	S-V5	S-V5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1100	1100	1100	1100	1100	1100
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.033 cfs	0.022 cfs	0.476 cfs	0.247 cfs	0.196 cfs	0.118 cfs
8.	Date Above Measurements Made	11/23/90	12/27/90	01/17/91	02/19/91	03/14/91	04/19/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.9	7.9	7.7	7.9	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	11.59	6.84	19.19
12.	Total Alkalinity (mg/l CAC03)	180.00	172.00	162.00	142.50	174.42	166.25
13.	Specific Conductivity (μmhos/cm at 25°C)	400	390	350	320	347	378
14.	Total Dissolved Solids (mg/l)	–	–	–	–	–	–
15.	Total Manganese (mg/l)	0.04	0.06	0.01	0.04	0.02	0.05
16.	Total Sulfates (mg/l)	34.0	36.0	35.0	29.0	26.0	25.0
17.	Total Iron (mg/l)	0.27	0.19	0.01	0.30	0.31	0.65
18.	Total Suspended Solids (mg/l)	3.3	7.6	11.3	18.0	22.0	12.0
19.	Total Hardness (mg/l CAC03)	152.0	80.4	125.3	204.0	189.0	191.0
20.	Nitrates (mg/l)	2.73	1.67	0.04	0.00	1.10	2.70
21.	Date Sampled for Analysis	11/23/90	12/27/90	01/17/91	02/19/91	03/14/91	04/19/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	01/16/91	02/17/91	03/13/91	04/28/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 27 1997
ORIGINAL

STATE PLANE COORDS
X 2,435,730.84
Y 133,585.79

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PLAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U35-B	U35-B	U35-B	U35-B	U35-B	U35-B
2.	Lab Identification Number	S-T5	S-T5	S-T5	S-T5	S-T5	S-T5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1080	1080	1080	1080	1080	1080
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.18 cfs	0.088 cfs	0.35 cfs	0.334 cfs	0.286 cfs	0.173 cfs
8.	Date Above Measurements Made	11/23/90	12/27/90	01/17/91	02/19/91	03/14/91	04/29/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.7	7.6	7.6	7.4	7.8	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	9.12	6.46	5.70
12.	Total Alkalinity (mg/l CAC03)	150.00	124.00	98.00	92.91	126.92	131.67
13.	Specific Conductivity (μmhos/cm at 25°C)	350	325	260	250	260	310
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.11	0.06	0.01	0.06	0.05	0.03
16.	Total Sulfates (mg/l)	38.0	40.0	32.0	27.0	29.0	26.0
17.	Total Iron (mg/l)	0.15	0.16	0.01	0.45	0.18	0.28
18.	Total Suspended Solids (mg/l)	5.0	0.6	5.0	14.0	8.0	15.0
19.	Total Hardness (mg/l CAC03)	136.0	65.4	88.9	0.0	143.0	160.0
20.	Nitrates (mg/l)	7.48	10.10	5.28	0.00	2.02	3.39
21.	Date Sampled for Analysis	11/23/90	12/27/90	01/17/91	02/19/91	03/14/91	04/29/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	01/16/91	02/17/91	03/13/91	04/28/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

D0360-6

JUN 27 1997

ORIGINAL

STATE PLANE COORDS
X 2,436,306.36
Y 733,877.26

LOCATION PAN

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U35-C	U35-C	U35-C	U35-C	U35-C	U35-C
2.	Lab Identification Number	S-S5	S-S5	S-S5	S-S5	S-S5	S-S5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1050	1050	1050	1050	1050	1050
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.25 cfs	0.382 cfs	3.73 cfs	2.664 cfs	1.8 cfs	1.266 cfs
8.	Date Above Measurements Made	11/23/90	12/26/90	01/17/91	02/19/91	03/14/91	04/29/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	8.0	7.7	7.9	8.0	8.0
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	11.40	7.60	6.27
12.	Total Alkalinity (mg/l CAC03)	144.00	140.00	114.00	99.56	126.16	147.25
13.	Specific Conductivity (μmhos/cm at 25°C)	400	360	365	280	280	357
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.13	0.13	0.01	0.09	0.14	0.04
16.	Total Sulfates (mg/l)	57.0	42.0	35.0	25.0	26.0	20.0
17.	Total Iron (mg/l)	0.31	0.18	0.01	0.35	0.63	0.30
18.	Total Suspended Solids (mg/l)	6.7	0.3	0.3	11.0	10.0	8.0
19.	Total Hardness (mg/l CAC03)	139.0	71.9	109.9	0.0	128.0	171.0
20.	Nitrates (mg/l)	5.72	7.00	4.40	0.00	1.91	3.45
21.	Date Sampled for Analysis	11/23/90	12/26/90	01/17/91	02/19/91	03/14/91	04/29/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	01/16/91	02/17/91	03/13/91	04/28/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 27 1997
ORIGINAL

STATE PLANE COORDS
X 2,436,799.23
Y 733,824.12

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U35-D	U35-D	U35-D	U35-D	U35-D	U35-D
2.	Lab Identification Number	S-R5	S-R5	S-R5	S-R5	S-R5	S-R5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1020	1020	1020	1020	1020	1020
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.6 cfs	1.09 cfs	4.57 cfs	0.359 cfs	2.16 cfs	1.309 cfs
8.	Date Above Measurements Made	11/23/90	12/26/90	01/17/91	02/19/91	03/14/91	04/29/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	8.0	7.9	8.0	8.0	8.0
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	10.83	6.65	3.99
12.	Total Alkalinity (mg/l CAC03)	146.00	138.00	120.00	106.97	139.65	152.00
13.	Specific Conductivity (μmhos/cm at 25°C)	375	350	360	290	290	357
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.03	0.08	0.01	0.09	0.10	0.05
16.	Total Sulfates (mg/l)	38.0	39.0	35.0	29.0	30.0	20.0
17.	Total Iron (mg/l)	0.08	0.16	0.13	0.41	0.46	0.32
18.	Total Suspended Solids (mg/l)	2.7	0.3	5.6	15.0	13.0	10.0
19.	Total Hardness (mg/l CAC03)	131.0	67.7	107.1	161.0	169.0	174.0
20.	Nitrates (mg/l)	4.40	6.20	4.09	0.00	1.94	3.16
21.	Date Sampled for Analysis	11/23/90	12/26/90	01/17/91	02/19/91	03/14/91	04/29/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	01/16/91	02/17/91	03/13/91	04/28/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038

JUN 0 - 1997

D0360-6
ORIGINAL

STATE PLANE COORDS
X 2,437,238.61
Y 733,586.90

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

LOCATION PAN

Applicant's Name THE OHIO VALLEY COAL COMPANY

	Identification No. of Sampling Station from Hydrology Map	U35-E	U35-E	U35-E	U35-E	U35-E	U35-E
2.	Lab Identification Number	S-W5	S-W5	S-W5	S-W5	S-W5	S-W5
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1060	1060	1060	1060	1060	1060
5.	Depth of Well below Land Surface (feet)						
6.	Static Water Level of Well below Land Surface (feet)						
7.	Flow for Spring/Stream (gpm or cfs)	0.05 cfs	0.044 cfs	0.037 cfs	0.066 cfs	0.132 cfs	0.008 cfs
8.	Date Above Measurements Made	11/23/90	12/27/90	01/15/91	02/19/91	03/14/91	04/26/91
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	7.7	7.5	7.4	7.5	7.7
11.	Total Acidity (mg/l CAC03)	0.00	0.00	0.00	9.69	3.23	4.18
12.	Total Alkalinity (mg/l CAC03)	112.00	102.00	70.00	81.32	88.92	111.72
13.	Specific Conductivity (μmhos/cm at 25°C)	300	290	225	220	230	280
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.12	0.06	0.04	0.05	0.12	0.02
16.	Total Sulfates (mg/l)	35.0	36.0	35.0	24.0	26.0	24.0
17.	Total Iron (mg/l)	0.51	0.28	1.00	0.49	1.44	0.63
18.	Total Suspended Solids (mg/l)	14.7	5.6	18.0	10.0	19.0	15.0
19.	Total Hardness (mg/l CAC03)	113.0	56.7	68.4	124.0	112.0	130.0
20.	Nitrates (mg/l)	8.80	3.12	0.04	0.00	1.11	2.69
21.	Date Sampled for Analysis	11/23/90	12/27/90	01/15/91	02/19/91	03/14/91	04/26/91
22.	Date Last Precipitaiton Event Occurred	11/22/90	12/24/90	01/14/91	02/17/91	03/13/91	04/24/91

Laboratory Name INDUSTRIAL LAB ANALYSIS
Address 2240 WILLIAMSBURG FARM, P. O. BOX 81, GLEN DALE
State WEST VIRGINIA Zip 26038 D0360-6

JUN 27 1997

ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,431,446.09		Y 738,939.13		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-001	U35-001	U35-001	U35-001	U35-001	U35-001
2.	Lab Identification Number	9511135	9512194	9601042	9602172	9603040	9604191
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1060	1060	1060	1060	1060	1060
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.10	0.15	0.70	0.35	0.35	0.20
8.	Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.7	7.6	7.6	7.8	7.8	7.7
11.	Total Acidity (mg/l CAC03)	4.9	8.2	3.1	5.2	24	4.6
12.	Total Alkalinity (mg/l CAC03)	140	180	100	120	110	140
13.	Specific Conductivity (μmhos/cm at 25°C)	320	430	320	270	310	320
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.13	1.02	<0.02	<0.02	0.07
16.	Total Sulfates (mg/l)	6.3	74	37	37	35	47
17.	Total Iron (mg/l)	0.07	0.14	0.16	0.43	0.30	0.12
18.	Total Suspended Solids (mg/l)	<1.0	4.8	2.0	<1.0	6.4	1.2
19.	Total Hardness (mg/l CAC03)	190	280	170	180	160	220
20.	Nitrates (mg/l)	0.25	0.77	2.2	1.9	1.6	7.4
21.	Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,433,450.69		Y 738,581.18		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-002	U35-002	U35-002	U35-002	U35-002	U35-002
2.	Lab Identification Number	9511134	9512195	9601043	9602173	9603041	9604192
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1000	1000	1000	1000	1000	1000
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.33	0.37	1.0	0.40	0.39	0.30
8.	Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.7	7.6	7.4	7.6	7.8	7.7
11.	Total Acidity (mg/l CAC03)	4.6	11	9.9	6.1	<1.5	3.4
12.	Total Alkalinity (mg/l CAC03)	140	180	130	140	140	140
13.	Specific Conductivity (μmhos/cm at 25°C)	490	570	480	400	410	320
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.13	0.29	0.18	0.26	0.09	0.08
16.	Total Sulfates (mg/l)	170	140	120	80	72	48
17.	Total Iron (mg/l)	0.44	0.21	0.22	0.93	0.09	0.13
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	2.8	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	270	310	260	230	210	190
20.	Nitrates (mg/l)	0.18	0.64	1.2	1.1	1.4	0.94
21.	Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,433,523.58		Y 738,017.38		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-003	U35-003	U35-003	U35-003	U35-003	U35-003
2.	Lab Identification Number	9511136	9512196	9601044	9602159	9603042	9604193
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1015	1015	1015	1015	1015	1015
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.30	0.33	0.5	0.07	0.07	0.02
8.	Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	7.6	7.4	7.5	7.8	7.8
11.	Total Acidity (mg/l CAC03)	8.2	9.6	5.8	3.0	6.4	6.7
12.	Total Alkalinity (mg/l CAC03)	130	140	110	130	120	200
13.	Specific Conductivity (µmhos/cm at 25°C)	750	610	720	560	500	510
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.15	0.03	0.03	0.02	<0.02	0.04
16.	Total Sulfates (mg/l)	110	91	70	63	52	110
17.	Total Iron (mg/l)	0.19	<0.05	0.06	0.06	0.24	0.43
18.	Total Suspended Solids (mg/l)	3.6	2.0	<1.0	<1.0	2.0	12
19.	Total Hardness (mg/l CAC03)	270	280	230	240	200	300
20.	Nitrates (mg/l)	0.22	0.98	2.5	1.3	1.6	0.16
21.	Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,434,244.10		Y 738,590.58		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-004	U35-004	U35-004	U35-004	U35-004	U35-004
2.	Lab Identification Number	9511137	9512191	9601145	9602160	9603043	9604194
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	990	990	990	990	990	990
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.64	0.83	1.5	0.50	0.50	0.42
8.	Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.6	7.6	7.4	7.7	7.8	8.0
11.	Total Acidity (mg/l CAC03)	6.0	15	7.9	6.1	6.4	<1.5
12.	Total Alkalinity (mg/l CAC03)	140	170	120	140	130	130
13.	Specific Conductivity (μmhos/cm at 25°C)	570	540	560	440	460	390
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.07	0.10	0.12	0.12	0.04	0.08
16.	Total Sulfates (mg/l)	160	120	110	79	70	69
17.	Total Iron (mg/l)	0.36	0.09	0.18	0.19	0.16	0.19
18.	Total Suspended Solids (mg/l)	3.2	6.8	20	<1.0	<1.0	2.0
19.	Total Hardness (mg/l CAC03)	290	300	250	230	220	200
20.	Nitrates (mg/l)	0.19	0.51	1.3	1.3	1.4	0.52
21.	Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,434,689.05		Y 738,951.18		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-005	U35-005	U35-005	U35-005	U35-005	U35-005
2.	Lab Identification Number	9511138	9512197	9601046	9602161	9603044	9604195
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1000	1000	1000	1000	1000	1000
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.026	0.066	0.06	0.05	0.05	0.03
8.	Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.6	7.3	7.7	7.8	7.8
11.	Total Acidity (mg/l CAC03)	5.8	5.5	3.5	<1.5	9.8	<1.5
12.	Total Alkalinity (mg/l CAC03)	180	180	110	160	160	140
13.	Specific Conductivity (μmhos/cm at 25°C)	440	440	380	390	440	420
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	0.05	0.03	0.14	<0.02	0.06
16.	Total Sulfates (mg/l)	99	86	0.85	83	76	75
17.	Total Iron (mg/l)	0.82	0.98	0.68	1.9	0.37	0.17
18.	Total Suspended Solids (mg/l)	19	2.0	20	<1.0	2.8	<1.0
19.	Total Hardness (mg/l CAC03)	270	240	200	230	210	210
20.	Nitrates (mg/l)	0.24	0.51	0.94	0.45	0.55	0.39
21.	Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,436,226.94		Y 738,823.61		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-006	U35-006	U35-006	U35-006	U35-006	U35-006
2.	Lab Identification Number	9511140	9512198	9601032	9602162	9603045	9604198
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	950	950	950	950	950	950
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.66	2.16	1.65	0.60	0.61	0.45
8.	Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.9	7.6	7.8	7.8	8.0
11.	Total Acidity (mg/l CAC03)	6.4	5.8	8.8	4.3	6.0	<1.5
12.	Total Alkalinity (mg/l CAC03)	150	180	130	150	140	140
13.	Specific Conductivity (μmhos/cm at 25°C)	550	590	580	440	460	400
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.05	0.05	0.07	0.05	0.02	0.04
16.	Total Sulfates (mg/l)	150	120	110	77	70	71
17.	Total Iron (mg/l)	0.52	0.18	0.30	0.21	0.28	0.09
18.	Total Suspended Solids (mg/l)	6.8	<1.0	8.0	1.2	2.4	4.0
19.	Total Hardness (mg/l CAC03)	270	330	240	240	220	230
20.	Nitrates (mg/l)	0.28	0.65	0.38	1.2	1.2	0.36
21.	Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,436,470.15		Y 738,885.11	LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-007	U35-007	U35-007	U35-007	U35-007	U35-007
2.	Lab Identification Number	9511141	9512199	9601033	9602163	9603046	9604200
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	940	940	940	940	940	940
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.84	2.32	1.70	0.60	0.63	0.46
8.	Date Above Measurements Made	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	7.9	7.6	7.8	7.8	7.9
11.	Total Acidity (mg/l CAC03)	6.6	4.6	7.7	3.7	5.3	<1.5
12.	Total Alkalinity (mg/l CAC03)	150	190	140	150	140	140
13.	Specific Conductivity (μmhos/cm at 25°C)	550	560	580	480	460	410
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.06	0.03	0.06	0.04	0.02	0.04
16.	Total Sulfates (mg/l)	140	110	110	75	71	68
17.	Total Iron (mg/l)	0.76	0.06	0.26	0.23	0.34	0.16
18.	Total Suspended Solids (mg/l)	20	<1.0	1.6	<1.0	5.6	<1.0
19.	Total Hardness (mg/l CAC03)	260	290	260	230	220	240
20.	Nitrates (mg/l)	0.30	1.3	0.98	1.3	1.4	0.40
21.	Date Sampled for Analysis	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/18/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,436,994.61 Y 738,848.20 LOCATION ADJ

1.	Identification No. of Sampling Station from Hydrology Map	U35-008	U35-008	U35-008	U35-008	U35-008	U35-008
2.	Lab Identification Number	9511142	9512267	9601034	9602164	9603047	9604201
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	940	940	940	940	940	940
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.085	1.21	1.70	0.65	0.65	0.48
8.	Date Above Measurements Made	11/14/95	12/21/95	01/03/96	02/12/96	03/05/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	8.1	7.6	7.8	7.8	8.0
11.	Total Acidity (mg/l CAC03)	4.7	4.8	7.3	4.3	6.0	<1.5
12.	Total Alkalinity (mg/l CAC03)	150	150	140	150	140	140
13.	Specific Conductivity (μmhos/cm at 25°C)	560	580	580	460	460	410
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	<0.02	0.05	0.04	0.02	0.04
16.	Total Sulfates (mg/l)	140	98	110	77	70	67
17.	Total Iron (mg/l)	0.65	0.14	0.19	0.18	0.31	0.35
18.	Total Suspended Solids (mg/l)	14	4.0	3.6	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	270	310	260	240	200	230
20.	Nitrates (mg/l)	0.30	2.0	0.98	1.4	1.3	0.40
21.	Date Sampled for Analysis	11/14/95	12/21/95	01/03/96	02/12/96	03/05/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/21/95	01/03/96	02/12/96	03/05/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,437,098.32		Y 738,860.19	LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-009	U35-009	U35-009	U35-009	U35-009	U35-009
2.	Lab Identification Number	9511143	9512268	9601251	9602147	9603132	9604347
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	918	918	918	918	918	918
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	52.0	33.1	70.0	30.2	29.0	25.6
8.	Date Above Measurements Made	11/14/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	8.0	7.4	7.9	7.8	7.9
11.	Total Acidity (mg/l CAC03)	6.5	<1.5	28	4.8	5.7	3.2
12.	Total Alkalinity (mg/l CAC03)	150	140	70	150	120	140
13.	Specific Conductivity (μmhos/cm at 25°C)	590	620	350	580	480	560
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	0.08	0.35	0.06	0.10	0.03
16.	Total Sulfates (mg/l)	160	120	85	140	120	140
17.	Total Iron (mg/l)	0.51	0.44	5.4	0.26	0.46	0.02
18.	Total Suspended Solids (mg/l)	8.4	4.0	140	6.4	4.4	<1.0
19.	Total Hardness (mg/l CAC03)	300	290	160	280	240	300
20.	Nitrates (mg/l)	0.35	1.2	1.8	1.0	0.98	<0.10
21.	Date Sampled for Analysis	11/14/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/21/95	01/24/96	02/13/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,439,833.91		Y 737,743.86		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-010	U35-010	U35-010	U35-010	U35-010	U35-010
2.	Lab Identification Number	9511146	9512269	9604346	9601252	9602148	9603133
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	910	910	910	910	910	910
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	53.0	33.9	73.3	30.8	30.2	27.0
8.	Date Above Measurements Made	11/14/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	8.0	7.9	7.4	7.8	7.8
11.	Total Acidity (mg/l CAC03)	5.8	4.8	4.3	<1.5	4.5	4.6
12.	Total Alkalinity (mg/l CAC03)	150	140	140	73	150	120
13.	Specific Conductivity (µmhos/cm at 25°C)	650	620	570	360	610	480
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	0.06	0.04	0.35	0.08	0.09
16.	Total Sulfates (mg/l)	190	140	140	83	140	110
17.	Total Iron (mg/l)	0.38	0.17	0.17	5.4	0.32	0.41
18.	Total Suspended Solids (mg/l)	6.4	6.0	2.0	140	1.6	6.8
19.	Total Hardness (mg/l CAC03)	340	320	310	160	310	240
20.	Nitrates (mg/l)	0.47	0.12	<0.10	1.7	0.82	0.88
21.	Date Sampled for Analysis	11/14/95	12/21/95	1 /24/96	02/13/96	03/13/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/14/95	12/21/95	01/24/96	02/13/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6 ORIGINAL

AUG 4 1997

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,445,246.46 Y 736,312.12 LOCATION ADJ

1.	Identification No. of Sampling Station from Hydrology Map	U35-012	U35-012	U35-012	U35-012	U35-012	U35-012
2.	Lab Identification Number	9511269	9512251	9601178	9602154	9603319	9604351
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	940	940	940	940	940	940
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.03	0.03	0.44	0.06	0.09	0.04
8.	Date Above Measurements Made	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.9	7.9	7.4	8.0	7.8	7.8
11.	Total Acidity (mg/l CAC03)	6.8	9.6	4.6	28	4.7	5.5
12.	Total Alkalinity (mg/l CAC03)	210	230	78	240	170	190
13.	Specific Conductivity (μmhos/cm at 25°C)	870	880	470	780	610	600
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	0.03	0.12	0.02	0.05	<0.02
16.	Total Sulfates (mg/l)	340	310	160	260	210	180
17.	Total Iron (mg/l)	0.08	0.07	1.4	0.13	0.36	0.27
18.	Total Suspended Solids (mg/l)	<1.0	5.0	50	<1.0	28	1.6
19.	Total Hardness (mg/l CAC03)	520	530	240	440	340	360
20.	Nitrates (mg/l)	<0.10	0.79	1.8	0.12	0.21	<0.10
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/16/96	02/13/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,445,535.89 Y 737,805.71 LOCATION ADI

1.	Identification No. of Sampling Station from Hydrology Map	U35-013	U35-013	U35-013	U35-013	U35-013	U35-013
2.	Lab Identification Number	9511270	9512264	9601175	9602155	9603320	9604350
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	878	878	878	878	878	878
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.06	0.06	2.0	0.09	0.1	0.07
8.	Date Above Measurements Made	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.0	7.3	7.3	7.7	7.8	7.8
11.	Total Acidity (mg/l CAC03)	9.1	13	5.3	7.1	4.1	6.6
12.	Total Alkalinity (mg/l CAC03)	210	240	79	230	160	190
13.	Specific Conductivity (μmhos/cm at 25°C)	710	780	310	700	610	600
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.07	0.12	0.30	0.07	0.03	0.02
16.	Total Sulfates (mg/l)	240	220	53	200	190	170
17.	Total Iron (mg/l)	0.23	0.52	5.6	0.43	0.15	0.26
18.	Total Suspended Solids (mg/l)	3.8	26	270	<1.0	2.4	3.2
19.	Total Hardness (mg/l CAC03)	390	460	130	390	350	340
20.	Nitrates (mg/l)	0.69	1.0	0.64	0.53	0.23	<0.10
21.	Date Sampled for Analysis	11/20/95	12/22/95	01/17/96	02/13/96	03/25/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/16/96	02/13/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,442,223.67		Y 737,325.75		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-014	U35-014	U35-014	U35-014	U35-014	U35-014
2.	Lab Identification Number	9511271	9512271	9601254	9602151	9603136	9604344
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	895	895	895	895	895	895
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	47.0	36.0	90.0	36.0	33.5	30.0
8.	Date Above Measurements Made	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.3	8.0	7.4	7.8	7.8	7.9
11.	Total Acidity (mg/l CAC03)	<1.5	4.1	21	4.8	8.5	3.2
12.	Total Alkalinity (mg/l CAC03)	140	140	75	150	120	140
13.	Specific Conductivity (μmhos/cm at 25°C)	630	620	360	600	470	560
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.02	0.05	0.56	0.08	0.08	0.03
16.	Total Sulfates (mg/l)	180	140	84	140	110	120
17.	Total Iron (mg/l)	0.13	0.18	2.5	0.36	0.40	0.21
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	140	2.0	1.2	3.2
19.	Total Hardness (mg/l CAC03)	320	280	160	320	240	280
20.	Nitrates (mg/l)	0.48	1.0	1.1	0.73	0.81	<0.10
21.	Date Sampled for Analysis	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/21/95	01/24/96	02/13/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
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OHIO PARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,443,840.42		Y 736,608.23		LOCATION	ADJ
1. Identification No. of Sampling Station from Hydrology Map	U35-015	U35-015	U35-015	U35-015	U35-015	U35-015
2. Lab Identification Number	9511272	9512272	9601255	9602152	9603137	9604343
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	877	877	877	877	877	877
5. Depth of Well below Land Surface (msl)						
6. Static Water Level of Well below Land Surface (msl)						
7. Flow for Spring/Stream (gpm or cfs)	47.5	36.0	91.0	36.2	35.5	33.3
8. Date Above Measurements Made	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
9. Aquifer/Zone Identification for Well/Spring						
10. pH (Standard Units)	8.3	8.0	7.4	7.8	7.8	7.9
11. Total Acidity (mg/l CAC03)	2.5	4.6	<1.5	5.8	4.2	2.1
12. Total Alkalinity (mg/l CAC03)	140	140	72	150	120	150
13. Specific Conductivity (µmhos/cm at 25°C)	610	620	360	600	470	560
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	0.02	0.04	0.36	0.08	0.08	0.04
16. Total Sulfates (mg/l)	170	130	81	150	100	130
17. Total Iron (mg/l)	0.10	0.14	5.3	0.43	0.35	0.21
18. Total Suspended Solids (mg/l)	<1.0	<1.0	140	3.6	2.8	<1.0
19. Total Hardness (mg/l CAC03)	310	310	160	310	240	280
20. Nitrates (mg/l)	0.55	0.52	1.7	0.74	0.81	0.11
21. Date Sampled for Analysis	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/21/95	01/24/96	02/13/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6 AUG 22 1997 ORIGINAL

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,445,446.24 Y 738,193.45 LOCATION ADJ

1.	Identification No. of Sampling Station from Hydrology Map	U35-016	U35-016	U35-016	U35-016	U35-016	U35-016
2.	Lab Identification Number	9511280	9512263	9601176	9602046	9603139	9604341
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	875	875	875	875	875	875
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.015	0.03	0.673	0.03	0.01	0.03
8.	Date Above Measurements Made	11/21/95	12/22/95	01/17/96	02/06/96	03/13/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.2	8.3	8.0	7.8	7.8	8.2
11.	Total Acidity (mg/l CAC03)	20	<1.5	6.4	<1.5	3.5	4.1
12.	Total Alkalinity (mg/l CAC03)	110	110	110	120	120	130
13.	Specific Conductivity (μmhos/cm at 25°C)	470	460	510	480	450	560
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	0.07	0.22	0.29	0.27	0.16
16.	Total Sulfates (mg/l)	150	140	160	160	150	170
17.	Total Iron (mg/l)	0.18	0.14	0.49	0.40	1.0	0.27
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	16	1.2	5.6	1.2
19.	Total Hardness (mg/l CAC03)	220	260	240	250	250	280
20.	Nitrates (mg/l)	<0.10	0.44	0.22	0.25	0.14	<0.10
21.	Date Sampled for Analysis	11/21/95	12/22/95	01/17/96	02/06/96	03/13/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/16/96	02/01/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6 JUN 27 1997

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TOVCC 05320

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,440,296.10 Y 738,027.00 LOCATION ADI

1.	Identification No. of Sampling Station from Hydrology Map	U35-017	U35-017	U35-017	U35-017	U35-017	U35-017
2.	Lab Identification Number	0.00	0.00	0.00	9602322	9603268	9604281
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1030	1030	1030	1030	1030	1030
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0	0	0	0.05	0.03	0.009
8.	Date Above Measurements Made	11/21/95	12/22/95	01/30/96	02/27/96	03/22/96	04/18/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	NO	NO	NO	7.0	7.1	7.1
11.	Total Acidity (mg/l CAC03)	SAMPLE	SAMPLE	SAMPLE	<1.5	4.7	<1.5
12.	Total Alkalinity (mg/l CAC03)	NO	NO	NO	22	56	29
13.	Specific Conductivity (μmhos/cm at 25°C)	FLOW	FLOW	FLOW	1000	220	120
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)				0.03	<0.02	0.08
16.	Total Sulfates (mg/l)				22	26	17
17.	Total Iron (mg/l)	0.00	0.00	0.00	0.62	0.08	0.06
18.	Total Suspended Solids (mg/l)				1.2	<1.0	6.8
19.	Total Hardness (mg/l CAC03)	0.00	0.00	0.00	64	88	76
20.	Nitrates (mg/l)				0.11	1.5	<0.10
21.	Date Sampled for Analysis	11/21/95	12/22/95	01/30/96	02/27/96	03/22/96	04/18/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/30/96	02/27/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,441,638.97		Y 738,668.58		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-018	U35-018	U35-018	U35-018	U35-018	U35-018
2.	Lab Identification Number	9511284	9512256	9602010	9602044	9603264	9604282
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	960	960	960	960	960	960
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.06	0.08	0.18	0.25	0.27	0.06
8.	Date Above Measurements Made	11/21/95	12/22/95	01/29/96	02/05/96	03/22/96	04/18/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.2	7.4	7.8	7.4	7.8	7.7
11.	Total Acidity (mg/l CAC03)	8.9	5.8	<1.5	8.7	4.9	11
12.	Total Alkalinity (mg/l CAC03)	170	89	120	190	110	180
13.	Specific Conductivity (μmhos/cm at 25°C)	600	370	360	620	350	630
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.21	0.24	0.03	0.71	0.07	0.44
16.	Total Sulfates (mg/l)	200	95	77	200	84	180
17.	Total Iron (mg/l)	0.18	1.4	0.92	0.88	1.3	0.06
18.	Total Suspended Solids (mg/l)	1.2	21	2.0	<1.0	1.2	2.8
19.	Total Hardness (mg/l CAC03)	320	200	180	340	190	320
20.	Nitrates (mg/l)	0.10	<0.10	0.37	0.31	0.33	<0.10
21.	Date Sampled for Analysis	11/21/95	12/22/95	01/29/96	02/05/96	03/22/96	04/18/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/27/96	02/01/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6
JUN 27 1997
ORIGINAL

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,441,967.60		Y 737,704.92		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-019	U35-019	U35-019	U35-019	U35-019	U35-019
2.	Lab Identification Number	9511288	9512255	9602009	9602251	9603265	9604283
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	910	910	910	910	910	910
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.09	0.13	0.20	0.27	0.33	0.09
8.	Date Above Measurements Made	11/21/95	12/22/95	01/29/96	02/21/96	03/22/96	04/18/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.2	7.7	7.8	7.8	7.8	7.8
11.	Total Acidity (mg/l CAC03)	5.2	4.2	5.9	5.9	2.4	6.5
12.	Total Alkalinity (mg/l CAC03)	170	130	120	92	110	170
13.	Specific Conductivity (μmhos/cm at 25°C)	590	440	360	300	350	630
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.02	0.03	0.07	0.07	0.44
16.	Total Sulfates (mg/l)	180	91	76	76	81	180
17.	Total Iron (mg/l)	0.12	0.54	0.86	1.9	1.3	0.63
18.	Total Suspended Solids (mg/l)	<1.0	14	2.8	9.2	17	<1.0
19.	Total Hardness (mg/l CAC03)	300	230	180	180	190	340
20.	Nitrates (mg/l)	0.12	<0.10	0.36	0.46	0.028	<0.10
21.	Date Sampled for Analysis	11/21/95	12/22/95	01/29/96	02/21/96	03/22/96	04/18/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/27/96	02/21/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,443,564.74		Y 738,595.05		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-020	U35-020	U35-020	U35-020	U35-020	U35-020
2.	Lab Identification Number	9511281	9512253	9601068	9602192	9603261	9604339
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	897	897	897	897	897	897
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.086	1.1	1.3	0.89	0.86	0.63
8.	Date Above Measurements Made	11/21/95	12/22/95	01/04/96	02/14/96	03/22/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.3	8.1	7.9	7.8	7.8	7.8
11.	Total Acidity (mg/l CAC03)	3.6	4.8	2.7	11	<1.5	<1.5
12.	Total Alkalinity (mg/l CAC03)	170	170	150	180	130	160
13.	Specific Conductivity (μmhos/cm at 25°C)	500	560	530	480	380	450
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.03	0.05	0.08	0.02
16.	Total Sulfates (mg/l)	83	87	72	76	57	74
17.	Total Iron (mg/l)	0.10	0.14	0.22	1.5	0.57	0.28
18.	Total Suspended Solids (mg/l)	<1.0	5.0	2.0	<1.0	10	4.0
19.	Total Hardness (mg/l CAC03)	250	270	250	260	210	220
20.	Nitrates (mg/l)	0.54	2.0	1.5	1.4	1.1	0.11
21.	Date Sampled for Analysis	11/21/95	12/22/95	01/04/96	02/14/96	03/22/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/04/96	02/14/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

D0360-6

JUN 27 1997

ORIGINAL

TOVCC 05324

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,444,404.85		Y 738,081.08		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-021	U35-021	U35-021	U35-021	U35-021	U35-021
2.	Lab Identification Number	9511285	9512254	9601069	9602193	9603262	9604340
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	875	875	875	875	875	875
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.86	1.1	1.3	0.89	0.86	0.63
8.	Date Above Measurements Made	11/21/95	12/22/95	01/04/96	02/14/96	03/22/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.3	8.0	7.9	7.8	7.8	7.8
11.	Total Acidity (mg/l CAC03)	3.8	3.7	5.1	8.8	4.4	3.6
12.	Total Alkalinity (mg/l CAC03)	170	170	150	180	130	150
13.	Specific Conductivity (μmhos/cm at 25°C)	490	560	560	500	380	450
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	0.03	0.03	0.09	0.02
16.	Total Sulfates (mg/l)	94	81	74	75	57	76
17.	Total Iron (mg/l)	0.07	0.09	0.17	0.53	0.67	0.24
18.	Total Suspended Solids (mg/l)	<1.0	8.0	<1.0	<1.0	5.2	6.8
19.	Total Hardness (mg/l CAC03)	260	250	230	280	220	240
20.	Nitrates (mg/l)	0.59	1.6	1.5	1.1	0.12	0.15
21.	Date Sampled for Analysis	11/21/95	12/22/95	01/04/96	02/14/96	03/22/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/04/96	02/14/96	03/21/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,433,017.65 Y 736,166.84 LOCATION GTE

1.	Identification No. of Sampling Station from Hydrology Map	U35-022	U35-022	U35-022	U35-022	U35-022	U35-022
2.	Lab Identification Number	9511290	9512289	9602011	9602171	9603325	9604425
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1200	1200	1200	1200	1200	1200
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.0002	0.0002	0.0011	0.003	0.002	0.007
8.	Date Above Measurements Made	11/22/95	12/26/95	01/29/96	02/12/96	03/26/96	04/25/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.2	7.1	7.6	6.8	7.5	7.3
11.	Total Acidity (mg/l CAC03)	30	35	4.6	9.5	2.7	8.9
12.	Total Alkalinity (mg/l CAC03)	92	150	120	52	51	75
13.	Specific Conductivity (μmhos/cm at 25°C)	510	600	380	420	520	520
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	1.0	2.8	0.02	0.82	0.25	0.61
16.	Total Sulfates (mg/l)	24	11	140	28	27	32
17.	Total Iron (mg/l)	2.1	4.1	0.13	0.96	0.87	1.2
18.	Total Suspended Solids (mg/l)	24	45	<1.0	3.2	20	40
19.	Total Hardness (mg/l CAC03)	160	190	190	140	120	120
20.	Nitrates (mg/l)	0.51	0.21	3.1	0.87	0.50	<0.10
21.	Date Sampled for Analysis	11/22/95	12/26/95	01/29/96	02/12/96	03/26/96	04/25/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/27/96	02/12/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,434,132.63		Y 735,714.93		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	U35-023	U35-023	U35-023	U35-023	U35-023	U35-023
2.	Lab Identification Number	9511294	9512081	9601165	9602260	9603223	9604321
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1135	1135	1135	1135	1135	1135
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.04	0.012	0.08	0.012	0.07	0.17
8.	Date Above Measurements Made	11/22/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.4	7.6	7.6	7.4	7.8	7.8
11.	Total Acidity (mg/l CAC03)	6.0	7.7	5.3	4.5	4.9	5.0
12.	Total Alkalinity (mg/l CAC03)	120	150	130	93	120	140
13.	Specific Conductivity (μmhos/cm at 25°C)	420	400	480	350	370	420
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.03	0.05	0.04	0.02	0.03	0.07
16.	Total Sulfates (mg/l)	61	64	54	41	39	40
17.	Total Iron (mg/l)	0.05	0.10	<0.05	0.28	0.27	0.45
18.	Total Suspended Solids (mg/l)	<1.0	2.8	1.2	4.4	8.4	15
19.	Total Hardness (mg/l CAC03)	210	220	220	160	170	200
20.	Nitrates (mg/l)	1.7	0.70	1.6	3.4	2.4	0.38
21.	Date Sampled for Analysis	11/22/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/05/95	01/16/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,439,558.93	Y 736,628.80	LOCATION PAN			
1. Identification No. of Sampling Station from Hydrology Map	U35-024	U35-024	U35-024	U35-024	U35-024	U35-024
2. Lab Identification Number	9511351	9512077	9601172	9602255	9603217	9604312
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	918	918	918	918	918	918
5. Depth of Well below Land Surface (msl)						
6. Static Water Level of Well below Land Surface (msl)						
7. Flow for Spring/Stream (gpm or cfs)	0.40	0.137	0.98	0.98	0.96	1.0
8. Date Above Measurements Made	11/24/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
9. Aquifer/Zone Identification for Well/Spring						
10. pH (Standard Units)	8.0	8.1	7.9	7.8	7.9	8.2
11. Total Acidity (mg/l CAC03)	3.4	5.1	4.2	3.8	3.5	3.7
12. Total Alkalinity (mg/l CAC03)	140	160	140	79	110	120
13. Specific Conductivity (µmhos/cm at 25°C)	370	400	390	220	270	290
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
16. Total Sulfates (mg/l)	67	72	55	36	38	38
17. Total Iron (mg/l)	0.05	<0.05	0.10	0.51	0.33	0.20
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	2.8	6.0	2.0
19. Total Hardness (mg/l CAC03)	290	220	190	140	160	220
20. Nitrates (mg/l)	0.51	0.11	0.96	0.64	0.68	0.26
21. Date Sampled for Analysis	11/24/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
22. Date Last Precipitaiton Event Occurred	11/20/95	12/05/95	01/16/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,438,390.79 Y 736,068.17 LOCATION GTE

1.	Identification No. of Sampling Station from Hydrology Map	U35-025	U35-025	U35-025	U35-025	U35-025	U35-025
2.	Lab Identification Number	9511353	9512076	9601171	9602253	9603215	9604313
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	970	970	970	970	970	970
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.08	0.023	0.20	0.27	0.28	0.15
8.	Date Above Measurements Made	11/24/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.8	7.8	7.6	7.9	7.8
11.	Total Acidity (mg/l CAC03)	4.8	8.8	5.7	2.7	4.0	<1.5
12.	Total Alkalinity (mg/l CAC03)	150	160	140	79	100	110
13.	Specific Conductivity (μmhos/cm at 25°C)	350	360	360	200	250	260
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.04	<0.02	<0.02	<0.02	0.02
16.	Total Sulfates (mg/l)	60	65	45	31	35	34
17.	Total Iron (mg/l)	0.09	0.32	0.09	0.47	1.0	0.31
18.	Total Suspended Solids (mg/l)	<1.0	17	<1.0	<1.0	7.2	4.0
19.	Total Hardness (mg/l CAC03)	200	220	180	140	180	160
20.	Nitrates (mg/l)	0.30	<0.10	0.45	0.98	0.70	0.32
21.	Date Sampled for Analysis	11/24/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/05/95	01/16/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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JUN 27 1997

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,438,429.10		Y 735,135.57		LOCATION	GTE
1.	Identification No. of Sampling Station from Hydrology Map	U35-026	U35-026	U35-026	U35-026	U35-026	U35-026
2.	Lab Identification Number	9511354	9512086	9601170	9602254	9603214	9604314
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	965	965	965	965	965	965
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.30	0.11	0.61	0.60	0.66	0.75
8.	Date Above Measurements Made	11/24/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.1	8.1	7.8	7.7	7.9	8.0
11.	Total Acidity (mg/l CAC03)	2.8	3.6	5.0	3.9	2.8	<1.5
12.	Total Alkalinity (mg/l CAC03)	130	140	130	83	110	120
13.	Specific Conductivity (µmhos/cm at 25°C)	350	360	400	220	270	290
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	0.06	<0.02	<0.02	<0.02	0.02
16.	Total Sulfates (mg/l)	67	69	52	36	37	36
17.	Total Iron (mg/l)	0.06	1.1	0.14	0.51	0.23	0.25
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	1.2	1.2	4.4	2.8
19.	Total Hardness (mg/l CAC03)	200	200	180	130	140	170
20.	Nitrates (mg/l)	<0.10	<0.10	0.99	1.0	0.63	0.26
21.	Date Sampled for Analysis	11/24/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/05/95	01/16/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

JUN 27 1997
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,442,914.34 Y 734,698.53 LOCATION PAN

1.	Identification No. of Sampling Station from Hydrology Map	U35-027	U35-027	U35-027	U35-027	U35-027	U35-027
2.	Lab Identification Number	9511357	9512345	9601316	9602350	9603329	9604417
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1130	1130	1130	1130	1130	1130
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.0005	0.0005	0.0015	0.0025	0.003	0.002
8.	Date Above Measurements Made	11/24/95	12/28/95	01/26/96	02/28/96	03/26/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.0	8.1	7.4	7.1	7.0	7.7
11.	Total Acidity (mg/l CAC03)	8.2	6.2	8.1	5.2	6.8	7.70
12.	Total Alkalinity (mg/l CAC03)	200	220	140	71	130	120
13.	Specific Conductivity (μmhos/cm at 25°C)	490	500	380	250	390	350
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.06	0.04	0.05	<0.02	0.02	0.06
16.	Total Sulfates (mg/l)	91	84	74	54	79	70
17.	Total Iron (mg/l)	0.22	0.31	0.71	1.4	0.48	0.94
18.	Total Suspended Solids (mg/l)	3.2	6.8	24	6.8	4.8	16
19.	Total Hardness (mg/l CAC03)	280	330	230	120	220	200
20.	Nitrates (mg/l)	1.9	0.54	2.4	2.1	2.8	0.21
21.	Date Sampled for Analysis	11/24/95	12/28/95	01/26/96	02/28/96	03/26/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/28/95	01/26/96	02/28/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,443,801.19		Y 736,457.02		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	U35-028	U35-028	U35-028	U35-028	U35-028	U35-028
2.	Lab Identification Number	9511345	9512273	9601180	9602158	9603330	9604407
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	880	880	880	880	880	880
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.015	0.015	0.83	0.02	0.03	0.07
8.	Date Above Measurements Made	11/24/95	12/22/95	01/17/96	02/13/96	03/26/96	04/24/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.8	7.6	7.8	7.0	8.0
11.	Total Acidity (mg/l CAC03)	6.2	4.5	2.5	3.2	4.1	4.6
12.	Total Alkalinity (mg/l CAC03)	160	160	72	150	110	140
13.	Specific Conductivity (µmhos/cm at 25°C)	410	390	250	350	320	320
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	<0.02	0.37	<0.02	<0.02	0.02
16.	Total Sulfates (mg/l)	79	73	37	56	55	51
17.	Total Iron (mg/l)	0.56	0.17	5.6	0.27	0.32	0.80
18.	Total Suspended Solids (mg/l)	14	3.0	380	<1.0	6.2	21
19.	Total Hardness (mg/l CAC03)	250	290	120	250	160	190
20.	Nitrates (mg/l)	5.0	0.10	2.1	0.60	3.2	0.20
21.	Date Sampled for Analysis	11/24/95	12/22/95	01/17/96	02/13/96	03/26/96	04/24/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/22/95	01/16/96	02/13/96	03/21/96	04/23/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO PARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,439,711.44	Y 737,098.22	LOCATION	ADJ

1.	Identification No. of Sampling Station from Hydrology Map	U35-029	U35-029	U35-029	U35-029	U35-029	U35-029
2.	Lab Identification Number	0.00	0.00	9602017	9602149	9613135	9604190
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	920	920	920	920	920	920
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0	0	0.033	0.01	0.04	0.013
8.	Date Above Measurements Made	11/25/95	12/26/95	01/30/96	02/13/96	03/13/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	NO	NO	7.8	7.8	7.8	7.8
11.	Total Acidity (mg/l CAC03)	SAMPLE	SAMPLE	7.0	2.0	2.5	1.6
12.	Total Alkalinity (mg/l CAC03)	NO	NO	110	120	98	120
13.	Specific Conductivity (µmhos/cm at 25°C)	FLOW	FLOW	240	260	200	280
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)			0.02	<0.02	0.03	0.06
16.	Total Sulfates (mg/l)			30	29	29	29
17.	Total Iron (mg/l)	0.00	0.00	0.42	0.17	0.65	1.0
18.	Total Suspended Solids (mg/l)			12	<1.0	13	29
19.	Total Hardness (mg/l CAC03)	0.00	0.00	150	160	130	150
20.	Nitrates (mg/l)			0.30	0.16	0.16	0.20
21.	Date Sampled for Analysis	11/25/95	12/26/95	01/30/96	02/13/96	03/13/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/26/95	01/30/96	02/13/96	03/07/96	04/15/96

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Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,438,466.76		Y 734,768.09		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	U35-030	U35-030	U35-030	U35-030	U35-030	U35-030
2.	Lab Identification Number	9511342	9512084	9601169	9602256	9603212	9604315
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	970	970	970	970	970	970
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.007	0.005	0.02	0.02	0.01	0.12
8.	Date Above Measurements Made	11/25/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.1	8.0	8.0	7.5	8.0	7.8
11.	Total Acidity (mg/l CAC03)	8.2	7.0	8.0	<1.5	7.5	3.2
12.	Total Alkalinity (mg/l CAC03)	210	220	210	57	160	170
13.	Specific Conductivity (μmhos/cm at 25°C)	490	500	510	190	340	400
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	<0.02	<0.02	<0.02	0.07	<0.02	0.03
16.	Total Sulfates (mg/l)	100	110	7.2	39	47	51
17.	Total Iron (mg/l)	0.17	0.06	0.11	3.3	0.30	0.44
18.	Total Suspended Solids (mg/l)	1.6	<1.0	<1.0	30	<1.0	8.2
19.	Total Hardness (mg/l CAC03)	300	300	280	120	200	230
20.	Nitrates (mg/l)	<0.10	<0.10	0.21	0.42	0.20	0.29
21.	Date Sampled for Analysis	11/25/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/05/95	01/16/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

JUN 27 1997

ORIGINAL
D0360-6

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES: X 2,439,439.35 Y 734,614.59 LOCATION PAN

1.	Identification No. of Sampling Station from Hydrology Map	U35-031	U35-031	U35-031	U35-031	U35-031	U35-031
2.	Lab Identification Number	9511343	9512078	9601173	9602257	9603213	9604187
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1120	1120	1120	1120	1120	1120
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.001	0.0016	0.01	0.02	0.01	0.009
8.	Date Above Measurements Made	11/25/95	12/07/95	01/16/96	02/21/96	03/18/96	04/15/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.1	8.0	7.8	7.5	8.0	8.0
11.	Total Acidity (mg/l CAC03)	7.0	6.0	9.7	2.5	5.6	6.0
12.	Total Alkalinity (mg/l CAC03)	270	280	180	55	170	240
13.	Specific Conductivity (μmhos/cm at 25°C)	490	500	530	190	380	440
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.03	0.04	0.20	0.08	<0.02	0.06
16.	Total Sulfates (mg/l)	56	53	73	39	51	40
17.	Total Iron (mg/l)	0.64	0.53	3.2	3.4	0.34	1.1
18.	Total Suspended Solids (mg/l)	19	16	100	32	4.0	38
19.	Total Hardness (mg/l CAC03)	330	310	250	120	260	310
20.	Nitrates (mg/l)	0.30	0.50	0.76	0.50	0.21	0.72
21.	Date Sampled for Analysis	11/25/95	12/07/95	01/16/96	02/21/96	03/18/96	04/15/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/05/95	01/16/96	02/21/96	03/17/96	04/15/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,436,882.08		Y 737,051.78		LOCATION GTE	
1.	Identification No. of Sampling Station from Hydrology Map	U35-032	U35-032	U35-032	U35-032	U35-032	U35-032
2.	Lab Identification Number	9511360	9512083	9601166	9602217	9603216	9604319
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	1078	1078	1078	1078	1078	1078
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0.04	0.04	0.09	0.11	0.15	0.10
8.	Date Above Measurements Made	11/28/95	12/07/95	01/16/96	02/09/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	7.8	7.7	7.8	7.7	7.8	7.8
11.	Total Acidity (mg/l CAC03)	5.7	9.5	6.0	6.8	4.4	<1.5
12.	Total Alkalinity (mg/l CAC03)	180	190	140	150	100	140
13.	Specific Conductivity (μmhos/cm at 25°C)	390	400	380	320	250	310
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.04	0.02	0.03	0.03	<0.02	0.05
16.	Total Sulfates (mg/l)	53	57	41	37	35	34
17.	Total Iron (mg/l)	0.11	0.04	0.10	0.06	0.30	0.42
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	1.2	<1.0	2.8	<1.0
19.	Total Hardness (mg/l CAC03)	220	250	200	200	140	170
20.	Nitrates (mg/l)	<0.10	<0.10	0.57	0.83	0.66	0.45
21.	Date Sampled for Analysis	11/28/95	12/07/95	01/16/96	02/09/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/05/95	01/16/96	02/08/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
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State Wheeling, West Virginia 26003

SPRING FLOW = GPM
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,437,935.65		Y 734,528.13		LOCATION	PAN
1.	Identification No. of Sampling Station from Hydrology Map	U35-033	U35-033	U35-033	U35-033	U35-033	U35-033
2.	Lab Identification Number	0.00	0.00	9601174	9602258	9603226	9604316
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	990	990	990	990	990	990
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	0	0	0.007	0.012	0.015	0.04
8.	Date Above Measurements Made	11/28/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	NO	NO	7.2	7.2	7.7	7.7
11.	Total Acidity (mg/l CAC03)	SAMPLE	SAMPLE	<1.5	4.9	<1.5	3.2
12.	Total Alkalinity (mg/l CAC03)	NO	NO	82	45	61	70
13.	Specific Conductivity (μmhos/cm at 25°C)	FLOW	FLOW	310	140	190	200
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)			<0.02	<0.02	<0.02	<0.02
16.	Total Sulfates (mg/l)			56	30	34	35
17.	Total Iron (mg/l)	0.00	0.00	0.05	0.67	1.0	0.27
18.	Total Suspended Solids (mg/l)			3.6	<1.0	<1.0	2.4
19.	Total Hardness (mg/l CAC03)	0.00	0.00	140	80	110	140
20.	Nitrates (mg/l)			0.41	0.46	0.36	0.22
21.	Date Sampled for Analysis	11/28/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
22.	Date Last Precipitaiton Event Occurred	11/28/95	12/05/95	01/16/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
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State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:	X 2,435,490.35	Y 735,237.64	LOCATION PAN			
1. Identification No. of Sampling Station from Hydrology Map	U35-034	U35-034	U35-034	U35-034	U35-034	U35-034
2. Lab Identification Number	9512012	9512082	9601168	9602259	9603224	9604318
3. High (H)/Low (L) Designation (if applicable)						
4. Surface Elevation for Sampling Station (msl)	1110	1110	1110	1110	1110	1110
5. Depth of Well below Land Surface (msl)						
6. Static Water Level of Well below Land Surface (msl)						
7. Flow for Spring/Stream (gpm or cfs)	0.015	0.013	0.07	0.07	0.07	0.01
8. Date Above Measurements Made	11/30/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
9. Aquifer/Zone Identification for Well/Spring						
10. pH (Standard Units)	7.3	7.3	7.3	7.3	7.8	7.7
11. Total Acidity (mg/l CAC03)	11	9.0	8.0	8.2	6.4	9.4
12. Total Alkalinity (mg/l CAC03)	110	120	140	100	130	160
13. Specific Conductivity (μmhos/cm at 25°C)	320	320	390	240	300	350
14. Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15. Total Manganese (mg/l)	0.02	0.02	0.02	<0.02	0.03	0.07
16. Total Sulfates (mg/l)	75	77	47	35	35	34
17. Total Iron (mg/l)	0.05	0.07	0.13	0.34	0.33	0.72
18. Total Suspended Solids (mg/l)	<1.0	<1.0	<1.0	<1.0	11	21
19. Total Hardness (mg/l CAC03)	180	200	220	160	200	200
20. Nitrates (mg/l)	0.32	0.17	0.78	1.0	0.91	0.26
21. Date Sampled for Analysis	11/30/95	12/07/95	01/16/96	02/21/96	03/18/96	04/19/96
22. Date Last Precipitaiton Event Occurred	11/28/95	12/05/95	01/16/96	02/21/96	03/17/96	04/18/96

Laboratory Name Tradet, Inc.
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SPRING FLOW = GPM
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,445,536.86		Y 738,054.71		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	D35-1	D35-1	D35-1	D35-1	D35-1	D35-1
2.	Lab Identification Number	9511273	9512266	9601256	9602153	9603138	9604342
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	870	870	870	870	870	870
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	49.0	36.8	111.0	38.25	38.0	35.0
8.	Date Above Measurements Made	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.3	8.0	7.4	7.8	7.8	7.9
11.	Total Acidity (mg/l CAC03)	<1.5	4.1	10	3.3	2.6	3.9
12.	Total Alkalinity (mg/l CAC03)	150	150	75	150	120	150
13.	Specific Conductivity (μmhos/cm at 25°C)	610	740	360	600	470	560
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.02	0.04	0.36	0.05	0.08	0.04
16.	Total Sulfates (mg/l)	170	120	81	130	100	120
17.	Total Iron (mg/l)	0.32	0.14	5.6	0.14	0.42	0.20
18.	Total Suspended Solids (mg/l)	<1.0	4.0	140	7.6	<1.0	1.6
19.	Total Hardness (mg/l CAC03)	310	280	150	330	240	280
20.	Nitrates (mg/l)	0.48	1.8	1.0	0.78	0.83	0.10
21.	Date Sampled for Analysis	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/21/95	01/24/96	02/13/96	03/07/96	04/18/96

Laboratory Name Tradet, Inc.
Address P.O. Box 2019
State Wheeling, West Virginia 26003

SPRING FLOW = GPM
STREAM FLOW = CFS

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION
ATTACHMENT 14A
(HYDROLOGIC MEASUREMENTS AND ANALYSES)

Applicant's Name THE OHIO VALLEY COAL COMPANY

STATE PLANE COORDINATES:		X 2,441,041.96		Y 737,548.18		LOCATION	ADJ
1.	Identification No. of Sampling Station from Hydrology Map	D35-011	D35-011	D35-011	D35-011	D35-011	D35-011
2.	Lab Identification Number	9511265	9512270	9601253	9602150	9603134	9604345
3.	High (H)/Low (L) Designation (if applicable)						
4.	Surface Elevation for Sampling Station (msl)	900	900	900	900	900	900
5.	Depth of Well below Land Surface (msl)						
6.	Static Water Level of Well below Land Surface (msl)						
7.	Flow for Spring/Stream (gpm or cfs)	42.0	35.2	88.6	33.3	33.3	29.0
8.	Date Above Measurements Made	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
9.	Aquifer/Zone Identification for Well/Spring						
10.	pH (Standard Units)	8.3	8.0	7.4	7.8	7.8	7.9
11.	Total Acidity (mg/l CAC03)	<1.5	3.2	5.2	7.1	5.0	3.4
12.	Total Alkalinity (mg/l CAC03)	140	140	73	150	120	140
13.	Specific Conductivity (µmhos/cm at 25°C)	590	620	360	600	470	570
14.	Total Dissolved Solids (mg/l)	-	-	-	-	-	-
15.	Total Manganese (mg/l)	0.02	0.05	0.33	0.08	0.09	0.05
16.	Total Sulfates (mg/l)	170	140	74	140	110	140
17.	Total Iron (mg/l)	0.10	0.20	5.2	0.32	0.38	0.24
18.	Total Suspended Solids (mg/l)	<1.0	<1.0	130	<1.0	<1.0	<1.0
19.	Total Hardness (mg/l CAC03)	310	290	180	290	230	300
20.	Nitrates (mg/l)	0.39	0.85	1.2	0.76	0.98	<0.10
21.	Date Sampled for Analysis	11/20/95	12/21/95	01/24/96	02/13/96	03/13/96	04/22/96
22.	Date Last Precipitaiton Event Occurred	11/20/95	12/21/95	01/24/96	02/13/96	03/07/96	04/18/96

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 14B
(GROUND WATER HYDROLOGY DESCRIPTION)

APPLICANT'S NAME **The Ohio Valley Coal Company**

Aquifer/Zone Identification	Aquifer/Zone Lithology	Aquifer/Zone Thickness	Aquifer/Zone Elev.(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	Up to 30 feet	888 to 1219 msl	Local - Primarily along stream valleys	Domestic Livestock	Variable - Generally <2 to >20 gpm
(B)Washington No. 12 Cyclothem	Shale, Sandstone, Limestone, Coal	Approximately 70 feet	1115 to 1245 msl	Local-Primarily where less than 100 feet deep	Domestic Livestock	Variable - Generally less than 2 gpm
(C)Waynesburg No. 11 Cyclothem	Shale, Sandstone, Limestone, Coal	Approximately 100 feet	1015 to 1175 msl	Local-Primarily where less than 100 feet deep	Domestic Livestock	Variable - Generally less than 2 gpm
(D)Sewickley No. 9 Cyclothem	Shale, Sandstone, Limestone. Coal	Approximately 120 feet	855 to 1075 msl	Local-Primarily where less than 100 feet deep	Domestic	Variable - Generally less than 2 gpm
(E)Redstone No. 8A Cyclothem	Shale, Sandstone, Limestone, Coal	Approximately 60 feet	795 to 915 msl	Local-Primarily where less than 100 feet deep	Domestic Livestock	Variable - Generally less than 2 gpm

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

DOM. = DOMESTIC USE
LIV. = LIVESTOCK USE

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
DS-101	PHILLIPS	1140			C	0.86 UNUSED
DS-154	FULTON	1140			B	1.33 - 7.5 LIV.
DS-155	FULTON	1110			C	4.28 - 30 LIV.
DS-157	WALLS	1160			B	1.88 DOM.
DS-247	BECKETT	1000			C	0.54 DOM.
DS-248	FOX	1195			B	N/A DOM.
DS-249	FOX	1150			B	2.55 LIV.
DS-250	HEATH	960			D	N/A DOM.
DS-251	BUMGARDNER	885			D	11.93 LIV.
DS-252	BUMGARDNER	898			D	4.07 LIV.

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OHIO DEPARTMENT OF NATURAL RESOURCES

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ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
DS-253	C. FULTON	935			D	2.73 UNUSED
DS-254	FOX	1175			B	2.10 DOM.
DS-255	SCHIMMELL	1075			C	0.56 UNUSED
DS-256	KINDLER	1180			B	3.18 LIV.
DS-257	LANCASTER	1020			C	0.08 DOM.
DS-258	A. FULTON	1205			B	3.09 UNUSED
DS-259	A. FULTON	1200			B	10.22 UNUSED
DS-263	FULTON	1155			B	0.16 LIV.
DS-297	CIMINI	1210			B	2.23 - 3.0 LIV.
W-175	HAYES	1132	46	15	C	UNUSED

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

DOM. = DOMESTIC USE
LIV. = LIVESTOCK USE

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
W-176	THOMAS	1142	43	16	C	DOM.
W-177	DELANEY	1183	95	UNKNOWN	C	DOM.
DW-178	BOROUGH	1225	44	30	B	DOM
DW-196	PHILLIPS	1240	21	9	A	DOM
W-199	JONES	1200	67	17	B	DOM.
W-200	JONES	1205	53	17	B	UNUSED
W-201	BAKER	1210	62	47	B	DOM.
W-202	BAKER	1210	78	48	C	DOM.
W-203	SANDERS	1208	66	32	B	DOM.
W-204	SANDERS	1200	64	12	B	DOM.

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OHIO DEPARTM OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

DOM. = DOMESTIC USE
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ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
W-205	KOVALY	1195	57	25	B	DOM.
DW-206	SANDERS	1210	27	22	B	UNUSED
W-225	WALLS	1148	46	6	C	UNUSED
W-226	RUMSKEY	1080	40	22	C	DOM.
DW-268	DELANEY	1165	COVERED	UNKNOWN	UNKNOWN	UNUSED
DW-282	RUMSKEY	1098	12	6	A	DOM.
DW-324	SHAW	1000	9	2	A	UNUSED
W-325	BECKETT	975	129	32	E	DOM.
W-326	MILLER	910	REPORTED 18	BURIED	E	DOM.
W-327	MILLER	910	30	7	A	UNUSED

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

DOM. = DOMESTIC USE
LIV. = LIVESTOCK USE

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
W-328	FOX	1218	REPORTED 100	NKNOWN	C	DOM.
W-329	SUTTON	955	BURIED	NKNOWN	UNKNOWN	DOM.
DW-330	~~THOMAS~~ * Turkal	960	8	4	A	DOM.
DW-331	~~SCHMITT~~ * Clark	935	11	8	A	DOM.
W-332	D. WALLS	915	21	21	A	UNUSED
W-333	G. WALLS	908	23	4	A	UNUSED
W-334	D. WALLS	913	12	6	A	DOM.
W-335	D. WALLS	918	25	11	A	DOM.
W-336	G. WALLS	918	30	15	A	DOM.
W-337	D. WALLS	918	30	21	A	DOM.

* per phone conversation w/ Dave Bartsel on 8/7/97. GM

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

DOM. = DOMESTIC USE
LIV. = LIVESTOCK USE

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
WL-338	BUMGARDNER	890	25	9	A	DOM.
W-339	R. BROCKLEHURST	955	28	16	A	DOM.
W-340	W. BROCKLEHURST	920	20	10	A	DOM./LIV.
W-341	W. BROCKLEHURST	920	48	28	E	DOM./LIV.
W-342	RONYAK	885	REPORTED 42	SEALED	E	DOM.
W-343	CIMINI	1245	108	80	C	UNUSED
W-344	CIMINI	1185	54	21	C	DOM.
W-345	MALONEY	1270	86	31	B	DOM.
W-346	BUTCHANOWIEZ	930	15	10	A	DOM.
W-347	A. FULTON	1180	130	102	C	DOM.

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ATTACHMENT 14C
(WELL/SPRING INVENTORY)

DOM. = DOMESTIC USE
LIV. = LIVESTOCK USE

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
WL-348	A. FULTON	1210	120	99	C	DOM.
WL-349	* A. Fulton ~~P. FULTON~~	1190	105	82	C	DOM./LIV.
W-350	C. FULTON	1218	100	77	C	DOM.
WL-351	K. FULTON	1225	73	27	B	DOM.
W-352	FOX	1160	REPORTED 100	BURIED	C	DOM.
W-353	* Fox ~~THOMAS~~	1210	85	73	C	DOM.
DW-354	SHIMMEL	935	22	19	A	UNUSED
WL-355	ALLEN	970	REPORTED 55	SEALED	D	DOM.
DW-356	PARISH	1100	12	8	A	DOM.
W-357	SHUNK	1000	38	33	D	DOM.

* per phone conversation w/ Dave Bartch on 8/7/97. GM

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DIVISION OF MINES AND RECLAMATION

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

DOM. = DOMESTIC USE
LIV. = LIVESTOCK USE

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
W-358	STATLER	1225	35	29	B	DOM.
W-359	MARIETTA COAL CO.	1118	18	12	A	UNUSED
W-360	LANCASTER	958	67	50	D	DOM.
W-361	LANCASTER	970	102	76	E	DOM.
DW-362	WESPRIMI	1000	11	7	A	DOM.
W-363	K. WIGGINS	1095	130	95	D	DOM.
W-364	MCQUIRE	1238	90	50	B	DOM./LIV.
W-365	BOYD	✓ 1240	100	58	B	DOM.
W-366	WIGGINS	✓ 1060	57	24	D	DOM.
W-367	JONES	✓ 1210	77	41	C	DOM.

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DIVISION OF MINES AND RECLAMATION

DOM. = DOMESTIC USE
LIV. = LIVESTOCK USE

ATTACHMENT 14C
(WELL/SPRING INVENTORY)

Applicant's Name: The Ohio Valley Coal Company

Well/Spring Identification Number	Name of Owner of Well/Spring	Surface Elevation of Well/Spring	Depth of Well in Feet (msl)	Static Water Elevation of Well (msl) (Avg)	Lithology of Supplying Aquifer/ Waterbearing Zone	Known Uses of Well/Spring (if spring give avg. discharge rate, gpm)
W-368	SANDERS	1185	85	53	C	DOM.

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OHIO DEPARTMENT OF NATURAL RESOUI S
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 14D
SURFACE WATER BODIES/PUBLIC WATER SUPPLIES)

Applicant's Name ^The Ohio Valley Coal Company

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
WILLIAMS CREEK TRIBUTARIES:	INTERMITTENT STREAMS	SEE APPLICATION MAP	LIVESTOCK/UNUSED
U34-15	Stream	BOROUGH CO.	Unused
U34-16	Stream	DELANEY	Livestock
U34-17	Stream	DELANEY	Livestock
U34-18	Stream	BOROUGH CO.	Unused
U34-19	Stream	DELANEY	Livestock
U34-20	Stream	RICE	Unused
U34-30	Stream	BOROUGH CO.	Unused
U34-31	Stream	DELANEY	Livestock
U34-69	Stream	PHILLIPS	Livestock
U34-79 (P-8)	Pond	JONES	Unused
U34-80	Stream	FOX	Unused
U34-81	Stream	FOX	Unused
U34-110	Stream	FULTON	Unused
U34-114 (P-7)	Pond	WALLS	Unused
U34-128	Stream	RUMSKEY	Unused
U34-129	Stream	RUMSKEY	Unused
U34-130	Stream	WALLS	Unused
U34-131	Stream	WALLS	Unused

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OHIO DEPARTMENT OF NATURAL RESOURCES
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ATTACHMENT 14D
SURFACE WATER BODIES/PUBLIC WATER SUPPLIES)

Applicant's Name ^The Ohio Valley Coal Company

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
U34-166	Stream	KINDLER	Livestock
U34-167 (P-2)	Pond	KINDLER	Livestock
U34-168	Stream	KINDLER	Livestock
U34-169 (P-6)	Pond	ELLIS	Unused
MCMAHON CREEK TRIBUTARIES:	INTERMITTENT STREAMS	SEE APPLICATION MAP	LIVESTOCK/UNUSED
U-35	Stream	PHILLIPS	Unused
U35-A	Stream	PHILLIPS	Unused
U35-B	Stream	PHILLIPS	Unused
U35-C	Stream	PHILLIPS	Unused
U35-D	Stream	PHILLIPS	Unused
U35-E	Stream	PARISH	Unused
U35-012	Stream	JOCUMSUN	Unused
U35-013	Stream	BUMGARDNER	Livestock
U35-016 * (P-5)	* Pond ~~Stream~~	EUREKA	Unused
U35-017 (P-4)	Pond	EUREKA	Unused
U35-018	Stream	BROCKLEHURST	Livestock
U35-019	Stream	BROCKLEHURST	Livestock
U35-020	Stream	BROCKLEHURST	Unused
U35-021	Stream	FILICKY	Unused

* per phone conversation with Dave Bartsch on 8/7/97. GM

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 14D
SURFACE WATER BODIES/PUBLIC WATER SUPPLIES)

Applicant's Name ^The Ohio Valley Coal Company

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
U35-022 (P-1)	Pond	CIMINI	Livestock
U35-023	Stream	CIMINI	Livestock
U35-024	Stream	BUTCHANOWICZ	Unused
U35-025	Stream	BUTCHANOWICZ	Unused
U35-026	Stream	MARIETTA COAL CO.	Unused
U35-027	Stream	FOX	Livestock
U35-028	Stream	BUMGARDNER	Livestock
U35-029	Stream	WALLS	Unused
U35-030	Stream	GOODMAN	Unused
U35-031	Stream	FULTON	Unused
U35-032	Stream	KINDLER	Livestock
U35-033	Stream	MARIETTA COAL CO.	Unused
U35-034	Stream	KINDLER	Livestock
D35-011	Stream	STATLER	Unused
HUTCHINSON RUN AND TRIBS.	INTERMITTENT STREAMS	SEE APPLICATION MAP	LIVESTOCK/UNUSED
U35-001	Stream	R&F COAL CO.	Unused
U35-002 (P-3)	Pond	R&F COAL CO.	Unused
U35-003	Stream	R&F COAL CO.	Unused
U35-004	Stream	R&F COAL CO.	Livestock

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DIVISION OF MINES AND RECLAMATION

ATTACHMENT 14D
SURFACE WATER BODIES/PUBLIC WATER SUPPLIES)

Applicant's Name ^The Ohio Valley Coal Company

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
U35-005	Stream	SHAW	Livestock
U35-006	Stream	SHAW	Livestock
U35-007	Stream	SCHMITT	Unused
U35-008	Stream	SCHMITT	Unused
MCMAHON CREEK	PERENNIAL STREAM	SEE APPLICATION MAP	UNUSED
U35-009	Stream	KUZMA	Unused
U35-010	Stream	MCMAHON	Unused
U35-014	Stream	BROCKLEHURST	Unused
U35-015	Stream	BUMGARDNER	Unused
D35-1	Stream	BUMGARDNER	Unused
* There are other property owners that these streams flow across. Please see application map for other owners.)			

* per phone conversation with Dave Bartsch on 8/7/97. GM

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

ATTACHMENT 22
(CERTIFICATE OF LIABILITY INSURANCE)

Name of Insured The Ohio Valley Coal Company

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 (E) of rule 1501:13-7-07 of the Administrative Code stated below.

Name of Insurer Federal Insurance Company
Policy Number 37104410
Policy Period 1 year 6/1/97 to 6/1/98
Name of Underwriting Agent Daniel R. Jack
Address of Underwriting Agent 922 Philadelphia Street, Indiana PA 15701
Telephone Number of Underwriting Agent (412) 349 - 1300

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

6/1/97
Date

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(E) The Public Liability Insurance Policy shall:

1.) Be in effect during the term of the permit or any renewal, including 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.

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ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 06/06/1997

PRODUCER (412)349-1300 FAX (412)349-1446
Reschini Agency Inc
922 Philadelphia Street
P.O. Box 449
diana, PA 15701
Attn: Amy Rhoades Ext 5911

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A: Federal Insurance Co.
COMPANY B:
COMPANY C:
COMPANY D:

INSURED
The Ohio Valley Coal Company
56854 Pleasant Ridge Road
Alledonia, OH 43902

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR OWNER'S & CONTRACTOR'S PROT	37104410	06/01/1997	06/01/1998	GENERAL AGGREGATE	$ 2,000,000
					PRODUCTS - COMP/OP AGG	$ 1,000,000
					PERSONAL & ADV INJURY	$ 1,000,000
					EACH OCCURRENCE	$ 1,000,000
					FIRE DAMAGE (Any one fire)	$ 100,000
					MED EXP (Any one person)	$ 10,000
	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS				COMBINED SINGLE LIMIT	$
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE	$
	GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT	$
					OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY UMBRELLA FORM OTHER THAN UMBRELLA FORM				EACH OCCURRENCE	$
					AGGREGATE	$
						$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: INCL EXCL				WC STATUTORY LIMITS / OTHER	
					EL EACH ACCIDENT	$
					EL DISEASE - POLICY LIMIT	$
					EL DISEASE - EA EMPLOYEE	$
A	OTHER Pollution	73170889	06/01/1997	06/01/1998	Limits $1,000,000 Occurrence $1,000,000 Aggregate	

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
Degradation loss, diminution in quality and quantity of public and private water supplies covered.

CERTIFICATE HOLDER

ODR - Reclamation - 70245
Bannock - Uniontown Road
St. Clairsville, OH 43950

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25-S (1/93)

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Ohio Department of Natural Resour
Division of Mines and Reclamation

Attachment 23
(Pending Permit Applications)

Applicant's Name The Ohio Valley Coal Company

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-0360-6	Division of Mines and Reclamation	OH

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Ohio Department of Natural Resour
Division of Mines and Reclamation

Attachment 23
(Pending Permit Applications)

Applicant's Name The Ohio Valley Coal Company

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. Maple Creek Mining Incorporated

Application No.	Name of Regulatory Authority	State
Permit No. 63841302 (several revisions pending)	PA Dept of Environmental Protection	PA

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

ATTACHMENT 27A
(HISTORIC AND PREHISTORIC PROPERTIES)

1. Applicant's Name THE OHIO VALLEY COAL CO Permit # D-0360

   Address 56854 PLEASANT RIDGE ROAD

   City ALLEDONIA State OH Zip 43902

2. Contact Person David Bartsch Phone (614) 926-1351

3. Location and Acreage Information

   County Belmont Township Smith

   Section(s)/Lots 11,17,23 T-6N, R-4W
   St. Clairsville, OH
   USGS Quadrangle Armstrong Mills, OH Acreage 1361.2

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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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)

Unknown

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

Dr. Jeffrey C. Reichwein
Division of Reclamation
Fountain Square, Building B-3
Columbus, Ohio 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 any 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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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 31
(Subsidence Control Survey)

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SURFACE OWNER	COUNTY	TOWNSHIP/SECTION	RENEWABLE RESOURCES	STRUCTURES - USE	MAP LOC. KEY (STRUCTURES)
BOROUGH CO.	BELMONT	SMITH/23	WOODLAND	HOUSE	4 - 1
			WELL	BARNS(3)	W-178
			STREAMS	OUTBUILDINGS	U34-15, U34-18, U34-30
C. MALONEY	BELMONT	SMITH/23		HOUSE	4 - 2
			WELL	OUTBUILDING	W-345
C.K. & V.J. CIMINI	BELMONT	SMITH/23	WOODLAND	HOUSE	4 - 3
			PASTURELAND	TRAILER	
			WELLS	OUTBUILDINGS	W-343, W-344
				100 GAL BURIED FUEL TANK	

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 31
(Subsidence Control Survey)

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SURFACE OWNER	COUNTY	TOWNSHIP/SECTION	RENEWABLE RESOURCES	STRUCTURES - USE	MAP LOC. KEY (STRUCTURES)
C.K. & V.J. CIMINI	BELMONT	SMITH/23	PASTURELAND	RUINS	4 - 4
			WOODLAND		
			POND		U35-022, P-1
			STREAMS		U35-003, U35-023
			UNDEV. SPRINGS		
			DEVELOPED SPRING		DS-297
D. M. KINDLER	BELMONT	SMITH/17	WOODLAND	RUINS	4 - 5
			PASTURELAND		
			SPRING		DS-256
			UNDEV. SPRINGS		
			STREAMS		U35-034, U35-032
BOROUGH CO.	BELMONT	SMITH/17	WOODLAND		4 - 6
BOROUGH CO.	BELMONT	SMITH/17	WOODLAND		4 - 7
BO[illegible]GH CO.	BELMONT	SMITH/17	[illegible]ODLAND		[illegible] - 8

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 31
(Subsidence Control Survey)

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SURFACE OWNER	COUNTY	TOWNSHIP/SECTION	RENEWABLE RESOURCES	STRUCTURES - USE	MAP LOC. KEY (STRUCTURES)
BOROUGH CO.	BELMONT	SMITH/17	WOODLAND	RUINS	4 - 9
			STREAMS		U35,U35-B, U35-C
R.L. PHILLIPS	BELMONT	SMITH/17	WOODLAND		4 - 10
			STREAMS		U35 - A
R.L. PHILLIPS	BELMONT	SMITH/17	PASTURELAND	OUTBUILDING	4 - 11
			SPRING		DS-101
R.R. PARISH	BELMONT	SMITH/17	PASTURELAND	HOUSE	4 - 12
			WOODLAND	OUTBUILDINGS	
			WELL		W-356
			STREAMS		U35-D, U35-E
G.T. & K.M. JONES	BELMONT	SMITH/17	PASTURELAND	HOUSE	4 - 13
			WOODLAND		
			WELL		W-367

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 31
(Subsidence Control Survey)

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SURFACE OWNER	COUNTY	TOWNSHIP/SECTION	RENEWABLE RESOURCES	STRUCTURES - USE	MAP LOC. KEY (STRUCTURES)
G. & A. JONES	BELMONT	SMITH/17	PASTURELAND	-	4 - 14
			WOODLAND		
G.F. & A.M. JONES	BELMONT	SMITH/17	PASTURELAND		4 - 15
			WOODLAND		
R.G. & P.M. ANDERSON	BELMONT	SMITH/17	PASTURELAND	HOUSE	4 - 16
			WOODLAND		
			WELL		W-368
G.F. & A.M. JONES	BELMONT	SMITH/17		HOUSE	4 - 17A
			WELL	OUTBUILDING	W-199
				SWIMMING POOL	
G.F. & A.M. JONES	BELMONT	SMITH/17		UNOCCUPIED TRAILER	4 - 17B
			WELL	OUTBUILDING	W-200
C.G. BAKER III	BELMONT	SMITH/17		GARAGE	4 - 17C
			WELL		W-201

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

ATTACHMENT 31
(Subsidence Control Survey)

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SURFACE OWNER	COUNTY	TOWNSHIP/SECTION	RENEWABLE RESOURCES	STRUCTURES - USE	MAP LOC. KEY (STRUCTURES)
C. & M.L. BAKER III	BELMONT	SMITH/17		TRAILER	4 - 17 D
			WELL		W-202
J.F. & C. L. SANDERS	BELMONT	SMITH/17		TRAILER	4 - 17E
			WELL	OUTBUILDING	W-203
J.L. SANDERS ET AL.	BELMONT	SMITH/17		TRAILER	4 - 17F
			WELL	OUTBUILDING	W-204
T.L. KOVALY	BELMONT	SMITH/17		TRAILER	4 - 17G
			WELL	OUTBUILDINGS	W-205
R.K. SANDERS	BELMONT	SMITH/17	PASTURELAND	OUTBUILDINGS	4 - 18
			POND		U34-079
JOHN H. GOODMAN, III	BELMONT	SMITH/17	BUILDING LOT		4 - 18A
J. & C. SANDERS	BELMONT	SMITH/17	PASTURELAND	UNOCCUPIED HOUSE	4 - 19
			WELL	OUTBUILDINGS	W-206

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JOHN H. GOODMAN, III	BELMONT	SMITH/17	PASTURELAND		4 - 20
			WOODLAND		
			STREAMS		U35-030, U35-031
H.K. & J.J. BOYD SR.	BELMONT	SMITH/17	PASTURELAND	TRAILER	4 - 21
			WOODLAND	OUTBUILDING	
			WELL		W-365
G.A. & D. L. MCGUIRE	BELMONT	SMITH/17	PASTURELAND	HOUSE	4 - 22
				OUTBUILDINGS	
			WELL		W-364
J.D. & S.V. & R.S. STATLER	BELMONT	SMITH/17	PASTURELAND	OUTBUILDING	4 - 23
J.D. & S.V. & R.S. STATLER	BELMONT	SMITH/17	PASTURELAND	TRAILER, (STORAGE & OFFICE)	4 - 24
J.D. & B.A. STATLER	BELMONT	SMITH/17	PASTURELAND	TRAILER	4 - 25
			WELL	OUTBUILDING	-358

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R.K. STACHYRA JR.	BELMONT	SMITH/17	PASTURELAND		4 - 26
			WOODLAND		
E. & M. WESPRIMI	BELMONT	SMITH/17		HOUSE	4 - 27
			WELL	OUTBUILDING	W-362
A.L. & D.M. SHUNK	BELMONT	SMITH/17		HOUSE	4 - 28
			WELL	OUTBUILDINGS	W-357
MARIETTA COAL CO.	BELMONT	SMITH/17	WOODLAND	RUINS	4 - 29
			WELL		W-359
			STREAMS		U35-025, U35-033
J. BATCHANOWICZ	BELMONT	SMITH/17	WOODLAND	HOUSE	4 - 30
			WELL	CAMP HUT	W-346
			STREAMS	OUTBUILDINGS	U35-024, U35-025
C. & B. FULTON	BELMONT	SMITH/17	WOODLAND		4 - 31
			SPRING		DS-253
			TURELAND		

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M.G. FEISLEY	BELMONT	SMITH/17	WOODLAND		4 - 32
R.J. & D. SCHIMMELL	BELMONT	SMITH/17	WOODLAND		4 - 33
			SPRING		DS-255
G. LANCASTER	BELMONT	SMITH/17	WOODLAND		4 - 34
			SPRING		SP - 257
M.G. FEISLEY	BELMONT	SMITH/11	WOODLAND		4 - 35
D. WALLS	BELMONT	SMITH/11	WOODLAND		4 - 36
			WELL		W-332
			STREAM		U35-029
M.P. MCMAHON	BELMONT	SMITH/11	WOODLAND		4 - 37
			STREAM		U35-010
			PASTURELAND		
CSX TRANSPORTATION	BELMONT	SMITH/11	RIGHT OF WAY		4 - 38
FORMERL & O. RAILROAD					

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G.R. WALLS	BELMONT	SMITH/11		TRAILER	4 - 40
			WELLS	OUTBUILDINGS	W-333, W-336
D.E. WALLS	BELMONT	SMITH/11		HOUSE	4 - 41
			WELLS	GARAGE	W-334, W-335, &
				OUTBUILDING	W-337
J.D. & R. STATLER	BELMONT	SMITH/11	WOODLAND		4 - 42
			STREAMS		U35-011
E.E. MILLER	BELMONT	SMITH/11	WOODLAND	HOUSE	4 - 44
			WELLS	OUTBUILDINGS	W-326, W-327
			PASTURELAND		
B. FULTON	BELMONT	SMITH/11	WOODLAND		4 - 45
			PASTURELAND		

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C.W. & B.J. FULTON	BELMONT	SMITH/11	WOODLAND	OUTBUILDINGS	4 - 46
			PASTURELAND		
			STREAM		U34-110
C. & R. FULTON	BELMONT	SMITH/11		TRAILER	4 - 47
			WELL	HOUSE	W-350
				OUTBUILDINGS	
K.J. FULTON	BELMONT	SMITH/11	WOODLAND	HOUSE	4 - 48
			WELL	OUTBUILDINGS	W-351
			PASTURELAND		
J.H. GOODMAN II	BELMONT	SMITH/11	WOODLAND		4 - 49

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A. P. FULTON II ETAL	BELMONT	SMITH/11	WOODLAND	HOUSE	4 - 50
			PASTURELAND	OUTBUILDING	
			WELLS		W-347, W-348
			SPRINGS		DS-258 DS-263
			STREAM		U34-128
A.P. & P. FULTON II	BELMONT	SMITH/11	WOODLAND	HOUSE	4 - 51
			PASTURELAND	BARNS	
			WELL		W-349
			SPRING		DS-259
M.H. SARGUS	BELMONT	SMITH/11	WOODLAND		4 - 52
B. FULTON	BELMONT	SMITH/11	WOODLAND	RUINS	4 - 53
			PASTURELAND		
			CROPLAND		
			STREAM		U35-014

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M. BUMGARDNER	BELMONT	SMITH/11	WOODLAND	BARNS	4 - 55
			PASTURELAND		
			SPRINGS		DS-251, DS-252
			STREAMS		U35-012, U35-013
					U35-015, U35-028
W.F. & M.L. FOX	BELMONT	SMITH/11	WOODLAND	HOUSE	4 - 56
			WELL	BARN	W-352
			SPRING	OUTBUILDINGS	DS-254
			STREAM	TRAILER	U35-027
			PASTURELAND		

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O.C. RUMSKEY	BELMONT	SMITH/11	WOODLAND	HOUSE	4 - 57
			PASTURELAND	GARAGE	
			WELLS	SHEDS	W-226, W-282
			STREAM	CABIN RUINS	U34-129
W.L. & M.L. FOX	BELMONT	SMITH/11	WOODLAND	2 HOUSES	4 - 58
			CROPLAND	BARN	
			PASTURELAND	OUTBUILDINGS	
			WELLS		W-328, W-353
			SPRINGS		DS-248, DS-249
			STREAM		U34-130, U34-169