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**KAISER
COAL**

KAISER COAL CORPORATION
102 SOUTH TEJON STREET, SUITE 800 ■ P.O. BOX 2679
COLORADO SPRINGS, COLORADO 80901-2679
(303) 475-7005 ■ TELEX 289 909

file AOT/007/007 #2
cc: J. Whitehead

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**DIVISION OF
OIL, GAS & MINING**

March 13, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John Whitehead
Utah Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

Re: Meetings of January 21 and 22, 1986

Dear Mr. Whitehead:

First of all, I would like to take this opportunity to express my appreciation for your handling of the recent Sunnyside Mines Permit Revision. Cooperation between Kaiser Coal Corporation (Kaiser Coal) and the Utah Division of Oil, Gas and Mining (UDOGM) personnel throughout the processing of the revision was extraordinary. I was appreciative that we could work together to ensure timely completion of the process. I trust that, as the future permitting work is undertaken, Kaiser Coal and UDOGM can work together in the same spirit of cooperation.

In early January of 1986, Kaiser requested meetings with the UDOGM staff to discuss gathering of data on the environmental resources for the proposed Sunnyside No. 5 Mine permit area. Meetings were held on two (2) days, January 21 and 22, 1986 to cover the full range of environmental resources data acquisition. This letter documents Kaiser Coal's understanding of the meetings. Specifically documented in here is the information exchanged between Kaiser and UDOGM. I have outlined areas in which there has been basic agreement reached between Kaiser and UDOGM on data collection and presentation. Also outlined are areas where agreement has not yet been reached concerning data collection and presentation.

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Present at the meetings were the following individuals:

<u>Name</u>	<u>Organization</u>
Lowell Braxton	UDOGM
John Whitehead	UDOGM
Kathy Mutz	UDOGM
Richard Smith	UDOGM
Everett Hooper	UDOGM
Jim Fricke	UDOGM
Pamela Grubaugh-Littig	UDOGM
Martin Holmes	Kaiser
Brian Buck	JBR
Bob Bayer	JBR
Alan Czarnowsky	ACZ INC.
Conrad Parrish	ACZ INC.

All of the above individuals were not present at all times. Several people entered and left the meetings as the topics of discussion changed.

The meetings began on January 21st with a brief introduction of the people attending the meeting. UDOGM personnel were introduced with each person identifying their part in the permit team structure. Kaiser introduced Marty Holmes, Manager of Permits and Regulatory Compliance. Also introduced were Alan Czarnowsky and Conrad Parrish of ACZ Inc. Kaiser has retained ACZ Inc. to provide assistance in preparing the Sunnyside No. 5 Mine Permit Application.

After the introductions, Kaiser Coal presented a brief discussion of the purpose of the meeting and its goals for the meetings. The various purposes for holding these meetings are as follows:

- Discuss a brief history of the Sunnyside Mine operations
- Discuss the permitting history and highlights of the Sunnyside Mines
- Provide a brief overview of the planned Sunnyside No. 5 Mine operations
- Discuss environmental data requirements
 - Data collection requirements
 - Methodologies
- Review general logistics and scheduling for the Sunnyside No. 5 Mine Permit Application

Environmental data gathering requirements were the most important aspect of the discussions held in these two (2) days of meetings. Kaiser Coal believes that a free exchange of information and ideas

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concerning environmental data acquisition was important to the success of the permit application. These meetings were specifically held so that Kaiser Coal could present their environmental data acquisition concepts to the UDOGM staff thus allowing the UDOGM staff to review these concepts and provide comments and suggestions.

Environmental data items discussed the first day included vegetation, soils, wildlife, climatology, archaeology, land use (including prime farmlands), and alluvial valley floors. Geology and hydrology were reserved for the following day's discussions. The overall goal in holding these meetings between Kaiser Coal and UDOGM was to minimize unexpected or last minute requests for information by UDOGM during the permitting process.

The following were the general items discussed by UDOGM and Kaiser Coal at the January 21 and 22, 1986 meetings held in Salt Lake City, Utah:

- (1) Brief History of Sunnyside Mine
- (2) Permit Background
- (3) Overview of Kaiser Coal - Utah Coal Holdings
- (4) Overview of Planned Sunnyside No. 5 Mine
- (5) Vegetation
- (6) Soils
- (7) Wildlife
- (8) Climatology
- (9) Archaeology/Historical Resources
- (10) Land Use
- (11) Permit Format
- (12) Permit Schedule
- (13) Miscellaneous Permit Items
- (14) Geology
- (15) Hydrology

(1) BRIEF HISTORY OF SUNNYSIDE MINES

Kaiser presented a brief history of the Sunnyside Mines operation. The Sunnyside Mines are almost 100 years old and has been continuously operated since the late 1800's. During operations, there have been many changes in ownership, mining technology, production techniques, production goals, and the regulatory environment. In recent years, the Sunnyside Mines were operated primarily by Kaiser Steel Corporation to supply coking coal to the Fontana, California Steel Mill. During this period, the Sunnyside Mines were, for the most part, captive mines delivering coal solely to the steel mill. Management emphasis during this period was on steel production. Coal

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production was a secondary task important only in that it was necessary as part of the steel making process.

The economic recession of the early 1980's brought about a slackened demand for domestic steel. Since the Sunnyside Mines produced coal exclusively for the steel making process, coal production at the Sunnyside Mines decreased correspondingly. Coal production at Sunnyside bottomed out in 1983 at approximately 325,000 tons. The mine approached the brink of closure during this year.

During February 1984, the Sunnyside Mines were acquired by Perma Resources as part of the acquisition of Kaiser Steel Corporation. In 1985, Kaiser Coal Corporation was formed by Perma Resources Corporation to develop and mine the coal reserves formerly held by Kaiser Steel. Kaiser Coal has brought aggressive new management to the Sunnyside Mine, developed new coal markets, recalled laid off workers, and is currently investing substantial amounts of money into the Sunnyside operations.

The Sunnyside Mines are currently producing approximately 2,000,000 tons per year of clean coal. The current operations are working under approximately 2,000 to 2,500 feet of cover which has complicated mining operations. This has prompted Kaiser Coal to conclude that in order to maintain production at the Sunnyside Mines, it is necessary to move the mining operations to shallower, more economic reserves.

(2) PERMIT BACKGROUND

The Sunnyside Mines, formally named Sunnyside Mine No. 1, Sunnyside Mine No. 2, and Sunnyside Mine No. 3 were operating under an approved interim permit until very recently. The permanent program permit application was filed by Kaiser Steel in 1981 and eventually approved by UDOGM in early 1986.

In 1985, a permit application was filed for the area known as the B Canyon Area. In addition, Kaiser Coal began work on a permit application for the C Canyon Area. In mid-1985, it became apparent to the Kaiser Coal corporate staff that coal sales commitments might not be met because of delays in acquiring mine permits. At this time, the Colorado Springs staff of Kaiser Coal became more involved in the permitting process. There was a general reassessment of the permitting position for the entire Sunnyside operations. In early October of 1985, a new course of action was initiated:

- Receive approval of the Sunnyside Mines Permanent Program Permit

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- Revise Sunnyside Mines Permit to add one (1) longwall panel to acquire an additional 12 to 15 months of mining. This 12 to 15 month period would allow sufficient time for development and approval of the Sunnyside No. 5 Mine permit application
- Withdraw the B Canyon permit application filed in 1985
- Combine B Canyon with C Canyon into a single permit document to be submitted to UDOGM in mid-1986
- Re-name the B and C Canyon permit applications to the Sunnyside No. 5 Mine

The current Sunnyside permit status is as follows:

- Sunnyside Mines Permanent Program Permit has been approved
- Sunnyside Permit Revision Application has been approved
- B Canyon Application has been withdrawn
- Work has commenced on the combined B and C Canyon Permit Application Package. The B and C Canyon area is now formally known as Sunnyside No. 5 Mine.

(3) OVERVIEW OF KAISER COAL - UTAH COAL HOLDINGS

A map was presented to UDOGM by Kaiser Coal which showed the extent of Kaiser's Coal's holdings along the Book Cliffs. The North Leases are an area north of the Sunnyside No. 5 Mine permit area. These leases contain coal which Kaiser Coal does not anticipate mining in the near term. The next area to the south is the Sunnyside No. 5 Mine area, formerly known as the B and C Canyon area. The next adjacent property to the south along the Book Cliffs are the existing Sunnyside Mines No. 1, 2, and 3. Immediately south of the Sunnyside Mines are the old Columbia Mines. Kaiser Coal currently holds title to this property. South of the Columbia Mines is the Geneva Mine. The Geneva Mine was acquired by Kaiser in 1984 and has been renamed the Horse Canyon Mine. Immediately south of the Horse Canyon Mine is the area known as the South Leases.

(4) OVERVIEW OF PLANNED SUNNYSIDE NO. 5 MINE

The Sunnyside No. 5 Mine will encompass an area as outlined on a preliminary map that was displayed at the meeting. The mine will be an underground, longwall mine with continuous miner development. Production at the mine will reach 2,000,000 tons per year. All coal removed from the mine will be hauled on a belt through the existing Sunnyside Mines to the current Sunnyside Mines surface facilities where it will be washed. This mine plan will result in the minimal surface disturbance within the No. 5 Mine permit area.

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The surface facilities to be installed at the No. 5 Mine include:

- Access Road
- Bath House
- Office Facilities
- Small Warehouse
- Outside Storage
- Portal Area
- Fan
- Parking Area

Access Road. Kaiser has discussed with the Carbon County Commission and the County Planner the establishment of the first leg of a regional access road along the base of the Book Cliffs. The County sees this road as being consistent with the long term economic plan for Carbon County. The County wishes to build a road which will ultimately stretch from the town of Sunnyside, along the base of the Book Cliffs, and connect with the transportation system in the northern end of the County. Kaiser is in the process of discussing with the County the development of the southernmost portion of this regional access loop. Kaiser has proposed to bear a portion of the costs associated with constructing the first phase of the loop up to a point near the No. 5 Mine surface facilities area. Kaiser will construct a mine access road which starts at or near the termination of the proposed County road and terminates at the Sunnyside No. 5 Mine surface facilities in C Canyon.

Discussions are ongoing with the County at this time.

Bath House. A bath house will be constructed near the portals in C Canyon. By installing bath house facilities in C Canyon, Kaiser can minimize the underground travel time for the miners working at the No. 5 Mine.

Office Facilities. A small office facility will be constructed in C Canyon. This facility may be either a permanent structure or a mobile structure. Principal mine offices will remain in the existing Sunnyside Mines facilities area. The office facilities in C Canyon will be satellite facilities only.

Small Warehouse. A small warehouse will be established in C Canyon to service the needs of the underground operations and maintenance staff.

Outside Storage. A small outside storage area will be established for warehousing of parts and supplies which do not require storage under cover.

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Portal Area. A portal area will be established in C Canyon. Current plans call for four (4) entries to be established on the portal bench area.

Fan. Current plans call for establishing two of the entries in the portal face up area for exhaust. A blowing fan will be installed on an intake entry in the portal area.

Parking Area. A parking area will be established for employee vehicles. Since the underground personnel will report to work at the No. 5 (C-Canyon) facilities rather than the existing Sunnyside facilities, it will be necessary to have parking areas available.

As currently planned, the surface facilities will comprise approximately ten (10) acres. Kaiser Coal is in the process of completing facilities design and layout work. The disturbed area associated with these facilities will be refined as the facilities layout work is finalized.

The surface facilities plan will involve a minimum of surface disturbance within the permit boundaries. The minimum surface disturbance should result in minimal impact to the environmental resources in the No. 5 Mine permit area.

In addition to those facilities currently planned during the first five (5) year permit term, Kaiser Coal may, in the future, install other miscellaneous surface facilities. Some of the surface facilities which Kaiser Coal may install in the future are additional ventilation portals, ventilation shafts, and coal handling facilities. It was emphasized that these facilities are not planned for the current permit term.

The discussion of the Sunnyside No. 5 Mine operations was accompanied by a map showing the currently proposed permit boundaries for the No. 5 Mine. Kaiser did not leave this map with the UDOGM staff as the permit boundaries are not yet finalized.

(5) VEGETATION

Vegetation sampling already completed by Kaiser has been done on two (2) different levels. One level of sampling was done for areas which are projected to be disturbed; the other sampling level was completed for areas which are within the permit boundary but are not expected to be disturbed.

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Vegetation sampling within the limits of projected disturbed areas include the qualitative description of vegetation types as well as quantitative measurements for cover and density in each of the vegetation types identified in the sampled area.

Reference areas have been established for each of the plant communities identified within the disturbed area. Susan Hasenjager, a consultant for Kaiser Coal, has been working with Lynn Kunzler of the UDOGM staff to establish reference areas for each of the disturbed vegetation types. The reference areas have all been quantitatively sampled.

Transects of the area have been established and qualitative descriptions made of the plant communities found within the projected disturbed areas. The qualitative descriptions of all plant communities identified within the permit area will be provided in the permit application.

In addition to the sampling performed by Kaiser, information concerning range condition and trend which was recently mapped by the USDA Soil Conservation Service (SCS) will be included in the forthcoming permit application. Disturbed area was defined as areas from which topsoil has or will be removed. There was general agreement between Kaiser and UDOGM on vegetation information gathering methods.

(6) SOILS

Kaiser has performed soil surveys in the permit area which cover the projected disturbed area. These surveys were performed to an order two (2) level and in compliance with the UDOGM guidelines for preparation of a topsoil management plan. UDOGM pointed out that there are new guidelines coming out for topsoil management. Copies of these guidelines will be sent to ACZ Inc. and to Susan Hasenjager as soon as available.

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During the discussion of topsoil, the question of mapping for disturbed areas was raised. UDOGM requested that the contour interval not exceed ten feet (10') on maps showing the detail of the disturbed areas. Kaiser indicated that all maps of the disturbed areas would be to an appropriate scale and, if possible, to a contour interval of ten feet (10') or less.

(7) WILDLIFE

Kaiser has performed wildlife surveys in the permit area. These surveys will serve as a basis for describing the permit area and adjacent areas with respect to wildlife use.

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Kaiser will hold a consultation meeting with the appropriate agencies. UDOGM suggested that several individuals from the Division of Wildlife Resources (DWR), Fish and Wildlife Service (FWS), Bureau of Land Management (BLM), and a UDOGM representative attend a meeting held in the field to discuss wildlife issues. It was pointed out that Mr. Larry Dalton of the DWR could be helpful in establishing priorities for areas for use as wildlife habitat. It was also suggested that Mr. Clark Johnson of the Fish and Wildlife Service would be helpful as a source of information concerning active raptor nests. Kaiser Coal will contact or meet with these individuals as necessary to ensure that all aspects of the wildlife requirements are met.

(8) CLIMATOLOGY

Climatological and meteorological data will be gathered from existing sources nearby the permit area. There is climatological data available from NOAA, as well as the weather station established at the Sunnyside Mines. Kaiser will gather this data and use information from the nearest appropriate source as the basis for data to be included in the Permit Application Package. There was general concurrence on the proposed sources of meteorological data.

(9) ARCHAEOLOGY/HISTORICAL RESOURCES

Kaiser Coal has performed an archaeological survey of the proposed disturbed area. No significant archaeological sites have been found within this area. The minor artifacts which were discovered in the course of the survey have been documented. The results of this archaeological survey will be included in the permit application along with a map delineating the area surveyed. Kaiser will contact appropriate State, Local, and Federal historical and cultural preservation agencies for any information they may have on the No. 5 Mine area. There were no comments from UDOGM concerning historical/archaeological data acquisition; the Kaiser Coal plan seemed to be satisfactory to UDOGM.

(10) LAND USE

Land use in the permit area will be determined by use of SCS maps and information available from the Carbon County Planning Department. It is anticipated that the historical land use in the permit area is either for wildlife habitat or grazing. This area is not currently known to have ever been developed into a higher land use.

The SCS will be contacted concerning a determination of prime farmlands within the permit boundary. Kaiser expects that there will be a negative determination of prime farmlands.

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Information and a determination of the status of alluvial valley floors within the permit area will be contained in the permit. Given the aridity of the area, it is not anticipated that there will be any alluvial valley floors found within the permit area. In the event that alluvial valley floors are found, they will be properly documented in the Permit Application.

~~UDOGM personnel indicated that these methodologies are acceptable.~~

(11) PERMIT FORMAT

Kaiser Coal appreciates the past discussions between Kaiser and UDOGM concerning permit format. These discussions have allowed us to refine our thinking on permit format. Kaiser intends to submit this permit application in a format which includes text which appears in the front part of the permit application. The text will contain a discussion of all of the regulations which must be answered in the Permit Application Package. In addition to discussions, included in the text will be tables and figures intended to supplement the information found in the verbiage.

Following the text will be the maps required for the permit application. All maps in the permit application package will be referenced in the text.

Following the maps in the permit will be the exhibits. ~~Exhibits will consist of information which is supplemental to the information found in the text.~~ Examples of exhibits are letters of correspondence between Kaiser Coal and the various governmental agencies, field notes, lengthy data tabulations, etc. All of the exhibits will be referenced in the text.

Kaiser Coal believes that this format will yield a usable, readable document readily amendable to expansion in the event that additional information must be put into the permit application. Attached with this letter, for your information, is a copy of the anticipated table of contents for the permit application package.

(12) PERMIT SCHEDULE

Based on our discussions of schedule in the past, UDOGM distributed a tentative review schedule for the Sunnyside No. 5 Mine Permit Application. This schedule is only a draft and is subject to Kaiser Coal meeting the elapsed times noted in the schedule. Kaiser Coal appreciates UDOGM's willingness to establish a permit review schedule. We understand that although review schedules are not final, they do provide a basis for planning. Kaiser Coal will work with great diligence to ensure that the schedule items which fall under its

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control are completed on a timely basis. A copy of the tentative review schedule is attached with this letter.

(13) MISCELLANEOUS PERMIT ITEMS

It was suggested by UDOGM that an OSM representative be invited to the next meeting held between Kaiser Coal and UDOGM. Kaiser Coal concurs with this suggestion and intends to invite appropriate OSM representatives to future meetings with UDOGM .

UDOGM requested that as the environmental data reports are prepared, ~~draft copies be transmitted to UDOGM for review.~~ Kaiser Coal appreciates UDOGM's willingness to review draft reports and will work to see that all environmental data reports are submitted to UDOGM in draft form for comment. This will greatly increase the familiarity of the UDOGM staff with the No. 5 Mine Project. It will also serve to provide Kaiser Coal with valuable input as to the content of the environmental data reports.

(14) GEOLOGY

Kaiser will use a variety of data sources to describe the geology of the Sunnyside No. 5 permit area. Preparation of the existing Sunnyside Mine Permit entailed a literature search for available geologic data. Kaiser intends to use published geologic data to the greatest extent possible. Some of this data will come from professional papers published on the geology of the area and also government documents published by either the U.S. Geological Survey (USGS) or the Utah Geologic and Minerals Survey (UGMS). ~~The UDOGM staff made a specific request regarding the use of stratigraphic nomenclature. It was requested that the nomenclature found in Osterwald's publications be used rather than the nomenclature found in Doelling's work.~~ Kaiser Coal will use the Osterwald stratigraphic nomenclature.

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Geologic mapping of the Sunnyside No. 5 Mine permit area will be completed by synthesizing several sources of information. Some of the available literature contains geologic maps of the area. The published maps will form the basis from which Kaiser Coal will work to prepare the overall geologic maps of the area. Information will be gathered to supplement and confirm the published data. Additional information will be gathered from examining color aerial photographs and reconnaissance level geologic mapping of the area.

Stratigraphic and lithologic data will be gathered from nine (9) exploratory holes drilled in A Canyon, B Canyon, C Canyon, and Bear Canyon and an unnamed canyon north of Bear Canyon. The lithologic logs of these core holes are available from the records of Kaiser Coal

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and the UGMS. Available drill hole information on stratigraphy and lithology will be synthesized for use in the permit application.

Information on the quantity and quality of the coal reserve in the Sunnyside No. 5 Mine area is currently maintained by Kaiser Coal. This information comes from exploration drill holes drilled by Kaiser and others in the area and also from underground sampling in the existing Sunnyside Mines. This data will be used to describe the coal reserves in the No. 5 Mine area.

Roof and floor analyses from the Sunnyside Mine, specifically from the B Canyon entries, are available. This information will be used to characterize the roof and floor material in the Sunnyside No. 5 permit area.

The geologic data available for the proposed Sunnyside No. 5 Mine is considered adequate for permit purposes. Kaiser Coal and UDOGM are generally in agreement on this point.

(15) HYDROLOGY

There currently exists, or is immediately accessible, a variety of data on the ground water hydrologic regime in the No. 5 Mine permit area. Existing data is available from the following sources:

- Seep and Spring Survey
- Spring Quality and Quantity Monitoring

In addition to this existing information, data can easily be gathered from the following sources:

- Man Shaft Survey
- In-Mine Ground Water Study
- Extension of Seep and Spring Survey
- Ground Water Survey
- Surface Water Survey

Kaiser Coal plans to utilize available information and gather additional information from the sources cited to describe the ground water regime in the No. 5 Mine area.

Seep and Spring Survey. During the late summer of 1985, Kaiser conducted a seep and spring survey over the majority of the No. 5 Mine permit area. All seeps and springs found were inventoried. Estimates of flow rates were made for each of the springs. In addition, water samples were taken from 11 of the springs in early November, 1985.

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These samples were analyzed for the water quality parameters listed in Table 1, Water Monitoring Parameters. This data is intended to comprise the first of four (4) samples required for ground water monitoring of springs in the permit area. Kaiser Coal will designate several springs as environmental monitoring points and will take 4 samples at monthly intervals during the 1986 summer field season. These samples will be analyzed for the parameters listed in Table 1, Water Monitoring Parameters.

Spring Quality and Quantity Monitoring. Kaiser has been monitoring two (2) springs near the permit area. The springs were monitored during the summer of 1985. Three (3) water quality samples were taken at one (1) month intervals during the 1985 summer field season.

Ground Water Appearance in Drill Holes. There are several exploration drill holes within or immediately adjacent to the No. 5 Mine permit area. Kaiser will examine the drill hole data to extract as much hydrologic data as possible. At a minimum, it is expected that the first occurrence of ground water in the holes is noted on the logs.

Sunnyside Mine Water Inflow Records. The existing Sunnyside Mines, which operate in an area immediately adjacent to the No. 5 Mine permit area, have been making water for a number of years. Records have been kept over the years of the mine water flow from the Sunnyside Mines. This information will be used, and the records will be thoroughly examined and correlated. This information should be relevant to the description of the impact of the proposed No. 5 Mine on a hydrologic regime. The lithologic, stratigraphic, and hydrologic regime in the No. 5 Mine area is very similar to that found within the existing Sunnyside Mines area. This statement is supported by the fact that not only are the areas immediately adjacent, but the Sunnyside Mines underground mine area intrudes over 8,000 feet into the No. 5 Mine permit area. Therefore, one can expect that the impacts from the proposed No. 5 Mine will be very similar to the impacts from the existing Sunnyside No. 1, 2, and 3 Mines.

Man Shaft Survey. There currently exists a man shaft in Whitmore Canyon which services the Sunnyside Mines. ~~This shaft is unlined.~~ Kaiser believes that much information can be gathered from this shaft. Specifically, two (2) sources of data will be examined. The first source of data will be the shaft itself. A survey will be conducted of the man shaft from the cage. This survey will allow Kaiser Coal personnel to examine the lithology of the shaft and document the occurrence of ground water in the shaft with the lithology. Given the great depth of the Sunnyside Mines, it is felt that the data available from the man shaft may be the most comprehensive data available on the area.

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Secondly, shaft sinking or boring records will be examined. If proper sinking records have been kept, they should contain extensive information on the nature, quantity and occurrence of ground water inflows to the shaft.

In-Mine Ground Water Study. Kaiser Coal intends to perform an in-mine ground water study at the existing Sunnyside Mines. This in-mine ground water study will characterize the geologic occurrence of all identifiable ground water seeps into the mine. The inflows of ground water will be correlated to the mining area and mining type, as well as to geologic occurrence. The current Sunnyside permit stipulates that water quality samples be taken from 13 points within the existing Sunnyside Mines. These samples will also be correlated for occurrence, age of workings, and location within the mine.

Extension of Seep and Spring Survey. Kaiser Coal plans to extend the surface seep and spring survey over the mined out areas of the Sunnyside Mines. Extension of the study over this area will serve to allow a correlation between the occurrence of seeps and springs in undisturbed areas and the occurrence of seeps and springs over disturbed mine areas. This will be valuable information concerning the impact of the Sunnyside Mines on the ground water regime.

Ground Water Survey. Kaiser Coal believes that the ground water data proposed for collection and the methodologies just described will provide the most cost effective array of data for characterizing the hydrologic regime in the No. 5 Mine area. Kaiser Coal has examined the alternative methods available for gathering ground water data in the area and concludes that these methods would provide no better data than that which can be gathered by Kaiser Coal's proposed methods. Furthermore, other methods, such as drilling, would be extremely expensive.

The Sunnyside coal seams are at a depth of approximately 1,500 to 2,500 feet in the No. 5 Mine area. The cost of completing a ground water monitoring well at 1,500 to 2,500 feet is estimated at between \$50,000 and \$100,000. This represents only the cost of completing the well and not the cost of gathering any data from the well. The tremendous cost involved in wells of this depth would naturally limit the number of holes to be drilled to one (1) or two (2) holes. Limiting the drill holes to one (1) or two (2) naturally places other constraints on the data gathering process.

There is a limited ability to get hydrologic data from holes of 1,500 to 2,500 feet of depth. In order to get meaningful data on aquifer characteristics at this depth, it would be necessary to drill and complete very large diameter holes and install equipment similar to that found in oil field applications. Even with the installation of

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oil field type equipment, it is questionable whether good results could be obtained. Kaiser Coal concludes that the only meaningful data which could be obtained from drill holes of this depth would be the location of the piezometric surface and limited sampling of water from the drill hole.

Given that the extreme cost of gathering data at this depth, the data gathering points would be limited to only one or two holes. With only one or two points available, the interpretation of the ground water regime over a large area is problematic. On the other side of the spectrum, with only one or two data points available, it is impossible to identify local variations in the ground water regime. Therefore, Kaiser Coal believes that since large areal interpretations are not possible from a limited number of drill holes, and local variations cannot be identified from these drill holes, that attempting to gather data from a few dedicated ground water monitoring holes would not enhance the overall understanding of the ground water regime in the No. 5 Mine area.

In contrast to the cost and very limited results which could be obtained by drilling ground water monitoring holes in the No. 5 Mine area, Kaiser has examined the merits of the ground water monitoring program proposed herein. The following discussion summarizes Kaiser's analysis of the proposed ground water monitoring program.

The geology and lithology of the Book Cliffs area is well known and found to be very consistent. Some researchers have indicated that the Sunnyside coal seams can be traced for many tens of miles along the Book Cliffs. In addition, other major members of the stratigraphic section may also be traced for many tens of miles in this area.

The existing Sunnyside Mines represent an extensive disturbance to the underground regime. The mines have been in place for almost 100 years and have practiced mining methods which are similar to those used today. Therefore, Kaiser Coal believes that a thorough examination of the ground water flows to the existing Sunnyside Mines represent a unique opportunity to characterize the effects of mining on the ground water regime in the area.

A proper examination of the ground water occurrence in the existing Sunnyside Mines will represent a ground water survey over a very large area. The large areal extent of the information available from the existing Sunnyside Mines will provide a high quality data base for extrapolation to the No. 5 Mine area. This extensive data base, when combined with the known consistent geology of the area, should provide the more than adequate ground water information.

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Kaiser Coal can perform underground survey work and data gathering work at a minimal cost in the existing Sunnyside Mines. Kaiser Coal feels that much more data may be gathered per dollar spent by this means. Therefore, our proposal for ground water monitoring for the Sunnyside No. 5 Mine Permit represents a logical solution. We feel that gathering a large quantity of data from a readily available source is preferable to gathering a small amount of data from a very expensive source.

During the meeting of January 22nd, there was much discussion between Kaiser personnel and UDOGM personnel concerning hydrologic data gathering. UDOGM personnel requested that Kaiser use any geologic drill holes which are proposed for the area as hydrologic monitoring points. In the future, if any drill holes are installed, Kaiser Coal has no problem with the multiple use of drill holes for both geologic and hydrologic purposes. ~~Unfortunately, Kaiser currently has no plans for drilling exploration holes in the area.~~

It became apparent during the meeting that some UDOGM personnel feel that it will be necessary to drill boreholes to complete the ground water monitoring program. Kaiser agreed to further examine the question and present UDOGM with a more detailed description of the proposed hydrologic data gathering program. ~~Kaiser is currently in the process of refining our understanding of the existing hydrologic data base and hopes to meet with UDOGM personnel soon to further discuss this matter.~~

Surface Water Survey Kaiser proposed that the surface water regime be studied in the area by means of installation of one (1) or two (2) stream monitoring points upstream from Grassy Trail Reservoir. A survey of stream flow conditions on the Book Cliffs side of the permit area will also be conducted. Water flow measurements will be taken during the channel survey prior to establishing monitoring stations at any location. Surface water monitoring will be performed in accordance with the guidelines published by UDOGM. There was general concurrence between the UDOGM staff and Kaiser staff concerning the surface water data gathering proposals.

Jim
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This letter conveys the understanding that Kaiser Coal personnel have of our January 21 and 22, 1986 meetings with UDOGM personnel. If you have any questions or comments about this letter, please feel free to contact me. Kaiser welcomes any comments regarding the contents of this confirmation letter. ~~If we have misunderstood any aspects of the January 21 and 22 meetings, please let me know within two (2) weeks of your receipt of this letter.~~ Otherwise, we will assume that both Kaiser Coal and UDOGM are in agreement as to the information exchanged and agreements reached at these meetings.

Mr. John Whitehead
Page Seventeen
March 13, 1986

Thank you again for your time. It is a pleasure working with the UDOGM staff, and we look forward to a continued productive working relationship.

Sincerely,

KAISER COAL CORPORATION

A handwritten signature in cursive script that reads "Martin P. Holmes". The signature is written in dark ink and is positioned above the typed name and title.

Martin P. Holmes
Manager of Permits and
Regulatory Compliance

CHP/wv
Attachments

Table 1
WATER MONITORING PARAMETERS

Field Parameters

Dissolved Oxygen
Flow
pH
Specific Conductance
Temperature

Laboratory Analyses

Aluminum	Nitrate (NO ₃)
Ammonia (NH ₃)	Nitrite (NO ₂)
Arsenic	Oil and Grease
Barium	Phosphate (PO ₄)
Bicarbonate	Potassium
Boron	Selenium
Cadmium	Sodium
Calcium	Sulfate
Carbonate	Sulfide
Chloride	TDS
Chromium	Total Hardness (CaCO ₃)
Copper	Total Settleable Solids (a)
Fluoride	Total Suspended Solids (a)
Iron (dissolved)	Zinc
Lead	
Magnesium	
Manganese	
Mercury	
Molybdenum	
Nickel	

(a) Surface water only

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