

CR Kendall Post-Closure Environmental Impact Statement

Scoping Report

June 2004

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Final

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Section
One

Section 1

Introduction

CDM was contracted by the Montana Department of Environmental Quality (DEQ) in January 2003 to begin the first phases of an Environmental Impact Statement (EIS) for the proposed reclamation at the Canyon Resources (CR) Kendall Mine near Hilger, outside of Lewistown, Montana. The contract included three task orders:

- Task Order 1 - Public Scoping Activities.
- Task Order 2 - Project Management Plan.
- Task Order 3 - Initial Evaluations.

Task Order 1 included four subtasks: Questionnaire Development and Implementation (Scoping Interviews), Open House, Working Meetings with Technical Specialists, Scoping (Public Meeting). CDM has completed the first two task orders and is submitting this scoping report in accordance with the deliverables list provided in Task Order 1.

Public scoping is the first step in conducting an EIS. It is a process that determines what will be reviewed in the EIS and in what detail, in part, through the collection of written and verbal comments from the public. Scoping helps agencies identify environmental issues associated with the project and aids in the development of reasonable reclamation alternatives. It also allows effective public and stakeholder involvement prior to the submittal of the draft EIS.

This report describes the results of the scoping activities conducted between February and June 2003 as part of the EIS. It includes:

- Introduction.
- Background.
- Implementation of Scoping Activities.
- Results of Scoping Activities.

2

Section Two

Section 2

Background

2.1 Overview of Mining/Milling Activities

The CR Kendall site is located in the North Moccasin Mining District in Fergus County Montana (Figure 2-1). Mining in the area can be divided into the historical period from 1880 through 1941 and the modern period, extending from 1981 through 1997.

2.1.1 Historical Mining

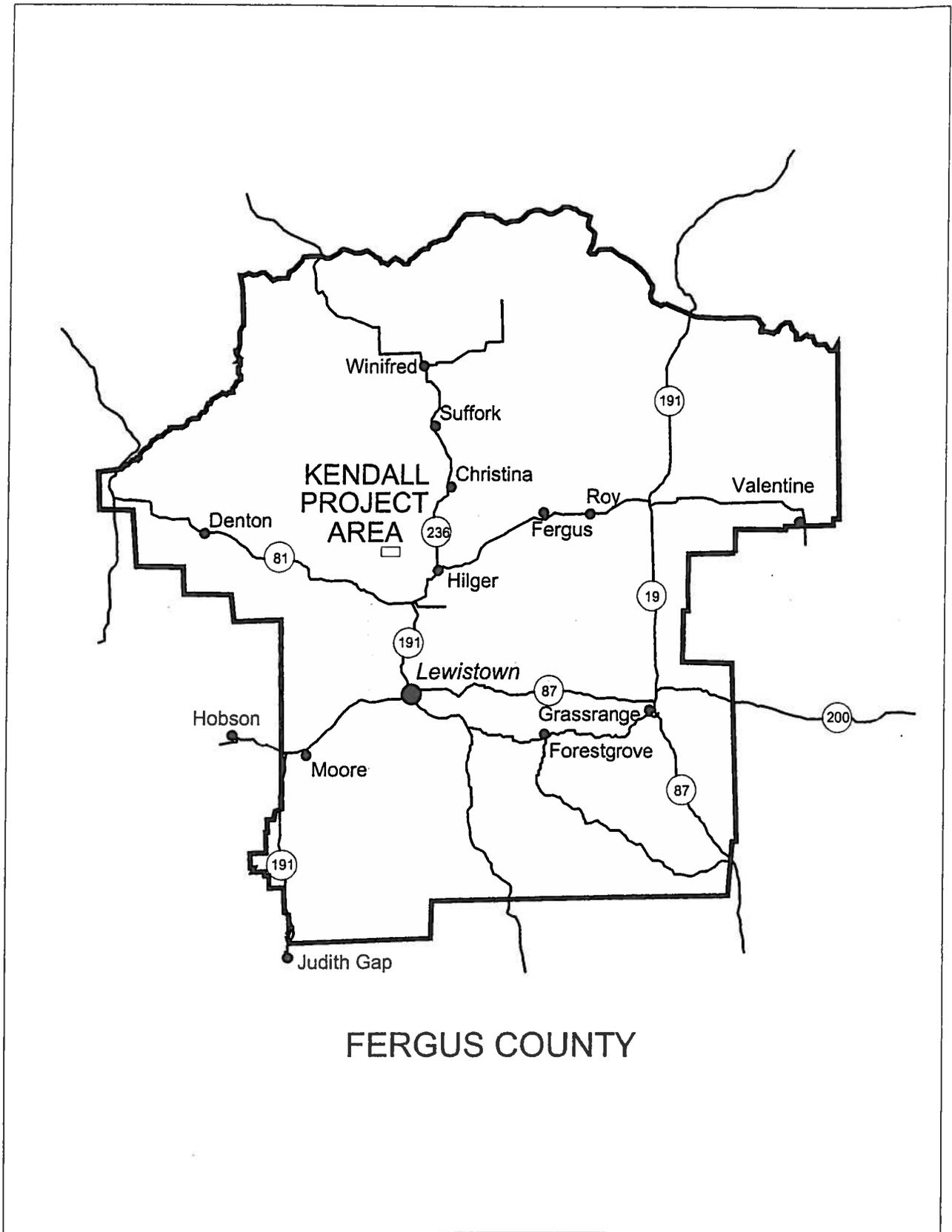
Mining began in what was to become the North Moccasin Mining district in 1880, when "Old Man" McClure staked a claim in what was to become McClure Gulch (~2 miles west of the modern mining operations on the west slope of the Moccasin Mountains). In 1881, the Buchanon Brothers and John Brooks established a claim in Iron Gulch (~1.5 miles west of the modern mining operations). The operations were believed to have been largely placer mines, although an unsuccessful stamp mill was constructed in 1898 (MHS, 1974). The nature of the lode ore prevented economical gold extraction using free milling techniques such as employed when crushing the ore in a stamp mill and amalgamating the gold using mercury. Therefore, it is likely that only a very small quantity of tailings was produced from the Iron Gulch mill before the experiment was abandoned.

Placer operations continued in the drainages west of the current mine site through the 1930s and possibly later. Estimates of the placer gold production from Iron Gulch, McClure Gulch, Bed Rock Creek and Plum Creek range from \$10,000 to \$50,000 between 1880 and 1933 (Blixt, 1933). Given the low production figures, the mass of tailings produced from the placer operations is believed to be small. No tailings are visible on the air photos in this area.

With the advent of the cyanidization process in the 1890s the economical extraction of gold from the lode ore in the North Moccasins became possible. The cyanidization process involved four steps; crushing, leaching, precipitation, and refining. The mined ore was crushed to ¼ inch mesh and placed in a vat of cyanide solution (3 lbs. potassium cyanide per ton of water). Gold recoveries of 90% were obtained from the oxidized ore. The unoxidized ore and black ore (containing bituminous and organic matter) were first roasted before leaching in order to convert the gold into a form that could be dissolved by the cyanide solution.

Following leaching, the cyanide solution containing the gold was pumped to the precipitating tanks, which contained zinc shavings. The gold plated out onto the surfaces of the zinc particles. The zinc/gold was then placed in a lead-lined tank where sulfuric acid was added to dissolve the zinc, leaving the gold as a thick, black mud-like material. The gold mud was then refined into gold bricks.

P:\Land Projects\2003\39562\CRK-EA\DWG\39562-FIG2-1.dwg 10/13/2003 02:59:41 PM MDT



The spent ore from the leaching vats was washed through holes in the bottom of the tanks to the dump. The tailings from the cyanide vats extended for miles down-gradient from the mills, filling entire valleys (MHS, 1974).

Three cyanide mills were in operation in the district between 1900 and 1941 as follows:

- Kendall Mill (1900-1912).
- Barnes-King Mill (1901-1923).
- North Moccasin Syndicate Mill (1936-41).

2.1.2 Modern Mining and Reclamation

Modern heap leach operations were initiated by Triad Resources in 1984 and continued by Greyhall Resources through 1986. CR Kendall Corporation took over the operations in 1986 and continued through the fall of 1997. The gold recovery process involved agglomeration, cyanide heap leaching, Merrill-Crowe precipitation, carbon recovery and smelting. The operations resulted in the disruption of approximately 460 acres of land. According to the Amended Closure Plan (CR Kendall, 2001), by the end of 2000, only 138 acres still required reclamation. Of these 138 acres, the majority encompasses the ore processing areas in Mason Canyon (the Process Valley), including two heap-leach pads, the process plant, process water ponds, and several ancillary buildings and roads.

Major site features include two heap-leach pads (LP#3 and LP#4), process water ponds, six pits (Horseshoe, North Muleshoe, Muleshoe, Haul Road, Kendall and Barnes-King) and three waste rock repositories (Horseshoe, Muleshoe and Kendall). The modern mining features can be seen on Figure 2-2, which is an air photograph taken sometime between 1995 and 1997.

Typically, the modern mining features at the site are described in terms of the drainage in which they are located, which is the format which will be followed here. The northernmost feature is the Horseshoe pit, which is located along the divide between Dog Creek and Little Dog creek. Southeast of the Horseshoe pit, within the Little Dog Creek drainage is a small backfilled pit known as the North Muleshoe pit (also referred to as the South Horseshoe pit). The Horseshoe waste rock dump lies between the two pits, and was apparently loaded onto a portion of the historical North Moccasin Syndicate tailings deposits (also called the Horseshoe tailings). Mining of the Horseshoe ore and concurrent loading of the waste rock dump was conducted by CR Kendall in 1994, while reclamation of the dump occurred in 1994 and 1995.

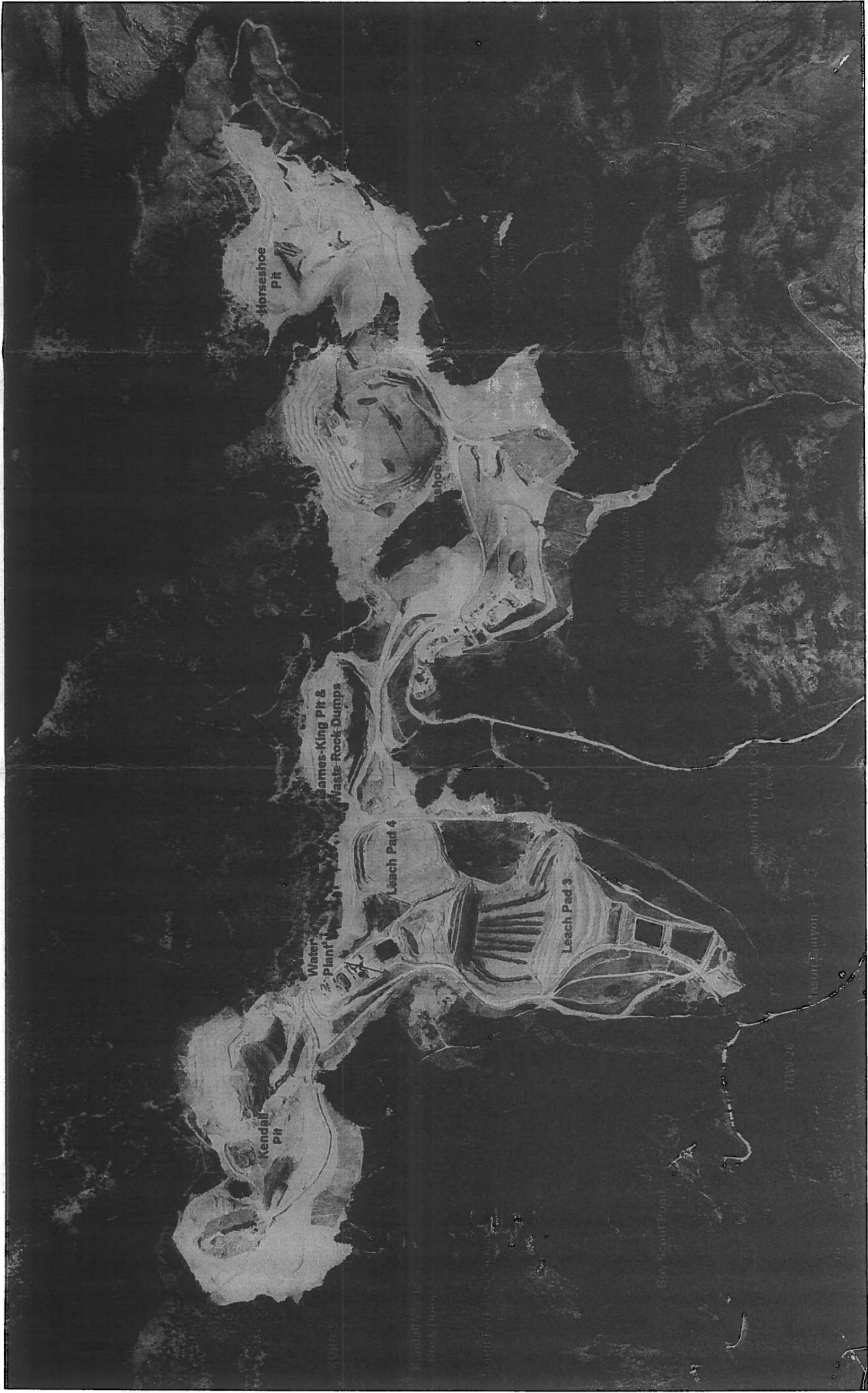


Figure 2-2
 CR Kendall Mine Layout
 Circa. 1997

The next facility to the south is the Muleshoe pit, which is located within a southern tributary of Little Dog Creek. The waste rock from the pit was loaded along the ridge between Little Dog Creek and Barnes-King Gulch to the south, and is referred to as the Muleshoe waste rock dump. A portion of the dump extends into Barnes-King Gulch and covers a portion of the historical Barnes-King mill tailings. The Muleshoe pit and associated waste rock dump were initiated by Grayhall Resources in 1986 and continued by CR Kendall in 1988. C. R. Kendall greatly expanded the Muleshoe pit and extended the dump to the north in about 1990. Reclamation of the Muleshoe dump occurred in 1994 and 1995.

The Barnes-King pit is located at the head of the North Fork of Last Chance Creek. Mining in this pit began in 1981 by Triad Resources, which later became Grayhall Resources. The pit was expanded by CR Kendall through 1995. Small waste rock dumps were loaded just east of the pit, which are now reclaimed.

Mason Canyon, where the process facilities are located, is south of the North Fork of Last Chance Creek. Mason Canyon contains the heap leach pads, gold recovery/water treatment plant, process ponds and offices. A small pit known as the Haul Road pit was mined by CR Kendall's predecessor in the early 1980s. The Haul Road pit has been completely backfilled.

Triad/Grayhall constructed two heap leach pads (#1 and #2) which were later used by CR Kendall to construct two much larger heap leach pads (#3 and #4). Excess spent ore from Leach pads #1 and #2 was buried in a road cut on the south slope of the process valley. A coarse rock underdrain was constructed prior to building the new heap leach pads and process ponds to allow collection of the underflow. A 12 inch layer of historical tailings mixed with 2% bentonite was used for the underliner, which was overlain by a PVC liner and an 18 inch layer of historical tailings. The underliner and overliner were used to protect the PVC liner from punctures by sharp rocks. Leach pad #3 was designed to be about 14 acres while pad #4 design phases 1 and 2 aggregated about 35 acres, however the pads have been expanded over the years and now comprise about 65 acres.

Much of the plant area and process ponds were built directly on or within historical tailings from the Kendall mill. Some of the tailings were removed to construct the underliner and overliner for the leach pads, but much of the historical tailings material was taken from Barnes-King Gulch (34,400 yds) and Little Dog Creek (9,000 yds) (Pegg, 2003). The accessible tailings within Mason Canyon (not beneath process facilities) were removed by CR Kendall in 1997. A sediment trap was constructed in the lower part of the valley in 1994, which was up-graded in 1997.

The Kendall pit is located on the divide between Mason Canyon and the South Fork of Last Chance Creek. The associated Kendall waste rock dump is located at the head of the South Fork of Last Chance Creek. The Kendall pit was mined and the dump loaded by CR Kendall between 1991 and 1993. Reclamation of the dump occurred in

1992 (southeast slope) and 1994 (west and central slopes). In 1996 a seepage collection system was constructed along the toe of the Kendall dump and a sediment trap was placed at the western edge of the dump (WMC, 1999).

2.2 Site Water Quality and Quantity

Water quality concerns in both groundwater and surface water have resulted from at least one of the following:

- Historical mining activities.
- Modern mining activities.
- Natural area background concentrations.

The constituents of concern include; thallium, arsenic, selenium, cyanide and to some extent, antimony, zinc and nitrate. In order to prevent migration of waste impacted waters, CR Kendall began extracting contaminated groundwater by use of a series of pump-back wells (see Figure 2-2). Pump-back wells are located in the south Little Dog tributary at the toe of the North Muleshoe (KVPB-6), in Barnes-King Gulch down-gradient of the Muleshoe waste rock dump (KVPB-2), in Mason Canyon down-gradient of the leach pads and process pond (TMW-26) and in the South Fork of Last Chance Gulch down-gradient of the Kendall waste rock dump (KVPB-5). Total yearly seepage collection for the four pump-back wells has ranged from 19.3 million gallons in 2001 to 24 million gallons in 1997.

Since 1996, neighboring ranchers have observed a decrease in water in their wells and springs. However, a state-wide drought also began about this time, so the relative impacts of the pump-back system vs. drought conditions on water quantity are not obvious. Water quality and quantity issues will be addressed as part of the EIS.

2.3 Regulatory History and Stakeholder Concerns

In 1989, CR Kendall was issued an Operating Permit (#00122) which required the mine to reclaim all accessible mine disturbances with at least 20 inches of replacement soil salvaged from the disturbed areas of the mine site. As of March 1994, CR Kendall had only salvaged 11 inches of the required soils, which resulted in DEQ and the BLM issuing a notice of non-compliance. As part of the settlement, which was reached in October 1995, CR Kendall prepared a revised reclamation plan (Schafer and Assoc., 1995) and a drainage and sediment control plan (CDM/Schafer and Assoc., 1995), which were reviewed and approved by DEQ.

The revised reclamation plan specified a 52 to 56 inch thick water barrier cover system utilizing (from top to bottom) salvaged stockpiled soil (10-14 inches), subsoil (18 inches), coarse drain rock (12 inches) and a reduced permeability layer (RPL) (12 inches of compacted clay) on the waste rock dumps and heap leach pads. Following the approval of the revised reclamation plan, RPL covers were used for all subsequent

waste rock reclamation. However, analyses of the seepage issuing from the drain layer revealed that the materials used to construct the RPL covers may be a source of contaminants such as thallium.

In 1999, CR Kendall requested that the cover requirements in the closure plan be revised from a 52 to 56 inch barrier type to a 22 inch water balance cover. The water balance cover relies on soils to store infiltration water and uptake by plants to limit deep percolation into the waste materials. CR Kendall claimed (based on infiltration modeling) that their proposed 22 inch cover would provide a similar level of infiltration as the 52 to 56 inch cover specified in the approved reclamation plan. However, DEQ indicated that 36 inch soil cover was necessary to provide an adequate growth medium for plants and a filter fabric to prevent loss of fine cover soils to the coarser underlying waste materials. DEQ, based on sampling of the sub-soil materials, determined that the grain size distributions of the sub-soil and underlying waste materials were similar, obviating the need for the filter fabric. On August 18, 2000, DEQ approved the 36 inch water balance cover for the leach pads and waste rock and 8 to 10 inches of soil for other areas of the site was approved (DEQ 2000). CR Kendall appealed that decision to the Board of Environmental Review. That appeal is stayed indefinitely. The August 2000, approval is therefore not in effect.

In March 2001, CR Kendall submitted an Amended closure Plan (CR Kendall, 2001a) which included the previously approved 36-inch water balance cover. DEQ reviewed the plan and prepared a draft EA which evaluated two cover alternatives. One alternative was the previously approved 36-inch water balance cover employing 17 inches of topsoil underlain by 19 inches of subsoil. The other alternative was to use only the 17 inches of topsoil without the subsoil layer. The EA demonstrated that the physical and chemical properties of the subsoil were similar to those of the leach pad and waste rock and would add no benefit to the cover.

Seven comment letters on the draft EA were received by DEQ. The public comments on the EA raised several issues, including;

- Water quality issues and monitoring.
- The impacts of land application of process water.
- Water quantity issues and water right impacts.
- Pit backfill alternatives.
- Potential pollution issues in the Boy Scout pond water and sediment.
- Adequacy of the reclamation efforts which have been performed to date.
- Weed control problems and control practices within the reclaimed areas.

- Retention of an existing or construction of a new reservoir for fire fighting purposes.
- Bond requirements.

In reviewing public comment, DEQ concluded that an EIS would be required to address reclamation and water quality issues. These issues were raised in part by new information including the following:

- Problems are occurring within the reclaimed areas (such as erosion) that were not realized at the time the EA was prepared.
- Some of the vegetation in the reclaimed areas which has been irrigated with process water has not been successful.
- Application of Reverse Osmosis (RO) brine to the leach pad may have resulted in elevated levels of salts.

In the final EA (DEQ, 2001), DEQ concluded that potentially significant cumulative effects on area resources from activities in the area were projected, and a complete reevaluation of potential reclamation materials was warranted. In addition, DEQ concluded that a water treatment plan for the entire site was needed to identify the potential impacts of activities such as the land application of process solutions which contain a relatively large salt load and some metals.

DEQ stated that an EIS was needed to address the soil, vegetation, and water resources effects from this salt and metal load and its effects on CR Kendall's proposed amended water resources management plan (CR Kendall, 2001b). These salts and metals might have a detrimental effect on establishment and maintenance of a viable vegetative cover.

Since the final EA was issued, limited additional sampling data received by DEQ reinforces the concern that the subsoil type and quantities proposed to be used by CR Kendall in 1995 should be reevaluated and that any impacts of the brine salts should be better assessed before decisions on the ultimate thickness and type of cover on the leach pads are made. It is possible that the use of reduced permeability layers (RPL's) or other capping alternatives on the leach pads and waste rock dumps need to be reconsidered. These issues will be addressed in the EIS.

2.4 Project Management Plan

The project management plan serves as a guide for the Kendall Mine Closure Plan EIS process. It establishes responsibilities, schedules, and procedures for the project team. It includes a description of the project team and potential cooperating agencies, contact information, project tasks, a task schedule, known data gaps, issues of concern, the public involvement strategy, a preliminary draft of the proposed action

and alternatives, the format for the EIS, a performance verification plan, and a description of how the Administrative Record will be compiled.

2.5 Stakeholder Involvement Process

CDM and DEQ are using a consensus-building process known as the Stakeholder Involvement Process (SIP) to assist in developing a range of alternatives for the EIS. The SIP is a valuable tool in integrating divergent operational, financial, environmental, and socioeconomic interests of stakeholders during the EIS process.

Early attention to consensus building generally makes the project move more smoothly by assuring that stakeholders have an opportunity to voice their concerns and to be part of the overall decision making process. The SIP gathers stakeholder input using various components of the scoping process.

The SIP also includes the preparation of a scoping document, following completion of the public interviews and before the open house, and the preparation of this scoping report. As part of the SIP, CDM will also assist DEQ in compiling important EIS-related documents for an information repository. This will include all fact sheets and newspaper articles, as well as copies of the draft and final EIS.

3

Section Three

Section 3

Implementation of the Scoping Process

The following scoping activities were completed between February and June 2003 as part of the scoping process for the Kendall EIS:

- Public Interviews.
- Scoping Document.
- Open House.
- Public Meeting.
- Technical Meetings.

The scope of each of these elements and their implementation is discussed below. The issues identified during the implementation are provided in Section 4.

3.1 Public Interviews

As part of the scoping process for the CR Kendall Mine EIS, CDM held private interviews for the interested public in Lewistown, Montana. The purpose of these interviews was to collect input of interested community members on issues related to the mine, thus providing valuable background information for the completion of the EIS. CDM solicited any and all input (technical or non-technical, positive or negative). No attempt has been made to validate the accuracy or completeness of the statements made by the respondents.

The interviews were held on March 10th and 11th from 8:00 am to 6:00 pm and from 8:00 am to 3:00 pm on March 12th. They were promoted in a flyer that was sent to the 135 postal patrons of the Hilger post office (Appendix A). CDM also prepared a press release that was approved by DEQ and released to local media in Montana and the Associated Press (Appendix B). The *Lewistown News Argus* printed a small story on the interviews in the March 7 edition, and the local radio station ran announcements in its local news the week prior to the interviews and on the Tuesday and Wednesday of the interviews. Interested individuals who could not attend the meetings were encouraged to call and be interviewed by telephone.

The interviews were widely advertised to ensure that all interested parties would have an opportunity to participate. The format was a private interview, in neutral territory (the Yogo Inn in Lewistown). This format was chosen to encourage participation by people who might be uncomfortable or afraid to speak in a public meeting.

Twenty-five people were interviewed as part of this process (Appendix C). The length of each interview ran from 15 to 75 minutes, depending on the desires of the person being interviewed. Three other individuals came in to discuss the project, but did not participate in the interview process. Two additional people were interviewed over the telephone, and comments from one individual were received by email.

CDM recorded the name of each interviewee on an attendance sheet and took notes of each interview on blank sheets of paper. The interviewee's name was not included in those notes. Each interviewee was asked a series of eight questions, previously approved by DEQ:

- Are you familiar with the proposed reclamation of the CR Kendall Mine? If so, please tell us how you obtained your information and how familiar you feel (very, somewhat, not very).
- What are your concerns regarding the property, and is one more important than another?
- What do you think are the key issues for the communities of Lewistown or Hilger? How would you rank those issues?
- Would you like to be involved in the technical meetings?
- Are you interested in learning more about the EIS and/or in getting updates on progress?
- Do you have a preference regarding who should provide these updates? If so, please tell us which source you would prefer.
- What do you think is the best way to communicate with the public about the work being done (fact sheets, public meetings, newspaper ads, radio, web site)?
- Do you want to be on the mailing list to receive additional information?
- Where do you think we should hold public meetings?

Attendees were also encouraged to "speak their mind" while CDM took notes. The notes were used to construct this summary after the interview process was finished.

Interviewees included people living near the mine property and other local residents. Seven of the interviewees stated that they either currently or previously worked at the CR Kendall mine or had relatives who did. Others had no history with the mine. Nineteen of the interviewees were local ranchers. Nine of the respondents were involved in an ongoing lawsuit against CR Kendall. Most respondents were long-time or lifetime residents of the area. Many of these people had been on the mine property for recreational purposes before Canyon Resources began their operations.

The relevant information gathered in these interviews is summarized in detail by question in Appendix D. In brief, responses to most questions (other than Question 2) were straightforward. Many people believe they have some degree of familiarity with the reclamation of the site. Several people want to participate in the technical meetings. Most people think Lewistown is the place to hold public meetings. Everyone interviewed wanted to be added to the mailing list to get updates about the project, and they would like those updates to come from the contractor.

Question 2 elicited highly polarized opinions on many subjects, especially those related to water quantity, water quality, and cost. Almost all respondents named water quality and quantity as concerns regarding the property. Response was divided on which was more important. Some respondents also listed other issues such as aesthetics and safety, cost, DEQ response, water treatment (RO) and land application disposal (LAD) of mine water.

The information obtained in the public interviews is discussed in Section 4, Issues Raised During Scoping. The following provides a brief summary of the types of statements made in response to Question 2 by topic area.

- **Water Quality Concerns and Related Issues.** Statements were made regarding the quality of the mine water, the willingness of local ranchers to use mine water for irrigation and stock watering, contamination from the mine affecting off site properties, potential water treatment techniques, ways to avoid water treatment, the potential for acid mine drainage, historic mine tailings in local creeks, the leach pads, and overburden dumped in canyons.
- **Water Quantity Concerns.** Statements were made regarding the mine's role in reducing the amount of water available off site, water quantity problems attributed to the mine that they thought were really the result of the long-term drought and evidence of that drought at local properties, the mine's settlements or attempted settlements with local ranchers, the pump-back system, local drainage, water piping, well pumping, the lack of forward movement on reclamation, water rights and uses of mine water.
- **Aesthetics and Safety.** Statements were made on the aesthetics of the mine highwalls, the need for a return to pristine conditions, the overall improvement of appearance since CR Kendall took over the mine, noxious weeds, and the safety hazard to children and others posed by the mine pits.
- **Cost, Funding, and Related Issues.** Statements were made regarding who should pay for the EIS and mine reclamation, ways to hold down costs, and whether cost should be included or excluded as an issue in the EIS.
- **DEQ Response and Participation.** Statements were made relating to the public's dissatisfaction with DEQ because of favoritism towards the mine or favoritism towards certain landowners, plus DEQ's community involvement.

- Other. Statements were made regarding the desire for adequate reclamation, LAD, land ownership, land use, regulation of the mining industry, the reclamation bond, the need for public tours, the need for compromise, and the mine as a good neighbor.

3.2 Scoping Document

A scoping document (Appendix E) was prepared and distributed prior to the open house and public meeting. The scoping document included the following topics:

- Opportunities for public involvement.
- CR Kendall mine history.
- Relationship of drainage basins to mine pits.
- Overview of the EIS process.
- Issues of concern.
- Discussion of EIS alternatives.
- EIS deliverables.
- Sources of additional information.

The scoping document was reviewed and approved by DEQ prior to being finalized. It was distributed by mail to over 100 individuals on the DEQ provided mailing list on March 29, 2003.

3.3 Open House

The open house was held at the Yogo Inn in Lewistown from 4:00 pm to 6:00 pm on April 9, 2003. An advertisement was prepared by CDM and approved by DEQ for publication in the Lewistown News Argus (Appendix F). The ad ran four weeks, two weeks, three days, and one day prior to the event.

The format was agreed upon with DEQ prior to the event. Five tables, each representing a particular topic, were set up in a large meeting room. Each table was staffed by one or more CDM, TetraTech, or DEQ employees with posters, maps, or other materials that illustrated their topic.

Individual topic areas and their respective representatives were:

- Water quantity - Darrel Stordahl, P.E. (CDM) and Brian Goodman (TetraTech).
- Water quality - Randy Huffsmith, P.E. (CDM).

- Mine Reclamation – Ed Surbrugg Ph.D. (TetraTech).
- EIS Process – Kathy Johnson (DEQ).
- Kendall Mine Regulatory History – Pat Plantenberg (DEQ) and Wayne Jepson (DEQ).

Twenty-eight people registered on the sign in sheet for the open house (Appendix G), although a few more attended without signing in. Attendees were encouraged to move freely from table to table, depending upon their interests. During discussion with the technical representative at each table, notes of the discussions were recorded on a flip chart for use in summarizing the event.

3.4 Public Meeting

The public meeting was also held on April 9, 2003 at the Yogo Inn in Lewistown, from 6:30 pm to 7:45 pm, in the same room as the open house. The ad that ran in the Lewistown News Argus for the open house (Appendix F) also advertised the public meeting.

The format of the two-part meeting was agreed upon with DEQ prior to the event. CDM started the meeting with a 30-minute PowerPoint® presentation that introduced the EIS team and discussed the scope of the EIS, history of the mine, and potential remedial alternatives (Appendix H). Karen Ekstrom and Darrel Stordahl of CDM led this presentation.

Following the presentation, CDM opened the meeting for public comment. The rules of public comment were explained to the audience, and individuals who had indicated on the sign in sheet that they wanted to provide comment were called to the front of the room in the order they appeared on the sign in sheet. After all those who had signed up had an opportunity to speak, the floor was opened to any other interested parties. Participants were given three minutes each to provide their comment, and no one required that length of time. All comments were recorded by a court reporter (Appendix I).

Approximately twenty-eight people attended the public meeting and seven people provided comment. Several people provided written comments a few weeks following the meeting (Appendix J). Several people who signed up to comment changed their minds and declined to do so or left early. The meeting was orderly and people were respectful of one another. By 8:00 pm all comment had been provided and the meeting was adjourned.

3.5 Technical Meetings

CDM facilitated a series of working meetings with technical specialists and stakeholders. These meetings were held to allow those who were interested to become more involved in the technical aspects of the EIS. At the public interviews,

open house, and public meeting attendees were asked if they were interested in participating in the technical meetings. Recipients of the Scoping Document were also advised that they should contact CDM if they were interested in participating in the meetings. A total of twenty people indicated that they had some interest in participating in the meetings (Appendix K). Individuals who indicated they were interested in participating in the public meetings were notified by letter of the dates and topics of the meetings (Appendix L).

Each technical meeting was organized around primary interests based on the comments provided in the public interviews, open house, and public meeting. Participants discussed significant concerns identified during the scoping process and explored ways to address those concerns.

The meetings were held as follows:

- Monday, May 29, 2003 - This meeting took place in Lewistown and was focused on reclamation issues.
- Tuesday, June 3, 2003 - This meeting was also in Lewistown and focused on water quality and quantity issues.
- Thursday, June 12, 2003 - This impromptu meeting took place in Helena at the request of one of the prior technical meeting attendees and was focused on developing reclamation components for evaluation in the EIS.
- Thursday, June 26, 2003 - This meeting was held in Lewistown and focused on developing reclamation alternatives for evaluation in the EIS.

Technical meetings were moderated by a CDM or TetraTech staff member and the meeting digests are provided in Appendix M. Issues raised during the technical meeting were added to the list of issues gathered from other scoping activities and are discussed in Section 4. The information gained will be used to further refine issues and potential alternatives (Section 5). This will allow effective public and stakeholder involvement prior to the submittal of the draft EIS.

4

Section Four

Section 4

Results of the Scoping Process

The comments received as part of the scoping process have been distilled and combined into major issues. This section presents those issues and identifies the ones that will be carried forward for further evaluation in the EIS. Issues which were not carried forward were discarded either because of technical impracticability or because they were not relevant to the scope of the EIS. Although issues may have been discarded, they will still have an impact on the EIS process, because of the background information and community insight they provided.

4.1 Issues Raised During the Scoping Process

Issues raised during the scoping project are summarized by major topic area in Sections 4.1.1 through 4.1.6. The topic areas are:

- Water Quality.
- Water Quantity.
- Reclamation.
- Cost, Funding, and Other Related Issues.
- DEQ Response and Participation.
- Other.

4.1.1 Water Quality

Water quality issues and concerns which were identified during the scoping activities include:

- Mine Water. Can different sources be blended together to provide water suitable for livestock or irrigation? Can it be made available to those who would like to use it for their livestock or irrigation, assuming it meets standards for this use? Can a pond be left for use as fire protection?
- Land Application System. Is it working? If not, can it be fixed (Producers report)? How can conflicting reports of lush vegetation and abundant wildlife vs. dying vegetation be reconciled?
- Pumpback Systems. Are they working? Have they allowed mine water to contaminate surface water, groundwater, reclaimed areas, and sediments on adjacent property. Have the interim standards set by DEQ been met?
- Water Treatment. Is reverse osmosis (RO) a viable treatment option at the site, or is it impractical because of the brine it produces and the disposal of the mineral cake? Is RO cost prohibitive? Are other treatment technologies available?

- **Waste Materials.** Should they be disposed in the pits and capped to prevent contact with water, or can they be left in place? Are there hazardous wastes, and should they receive special treatment? Should the waste rock the mine dumped into local canyons to build a road be removed? Mine Pits. Should they be left as is? Should they be lined, capped, backfilled or used to store wastes, or fenced for safety?
- **Leach Pad/Waste Rock Piles.** Should they be capped followed by water monitoring to ensure a gradual reduction in leachate concentrations? Should the leach pads be terraced to catch surface water until vegetation can utilize it? Has or will the leach pad been graded off the liner, meaning that contamination can infiltrate into the underlying material?
- **Acid Mine Drainage (AMD).** Is the buffering capacity of the waste rock enough to prevent AMD? Is there visual evidence of AMD as can be seen at other sites?
- **Historic Tailings.** Do accumulations of historic tailings from previous mining operations range from 3 to 12 feet thick in the creek beds and extend more than 5 miles from the mine? Have people been watering their livestock for generations with water that is ponded on their property behind dams made of historic tailings with no ill effects? What happens if treated water is released to the contaminated creek bed? Will the tailings be reclaimed as part of this EIS?
- **Water Supply.** Is the Lewistown water supply or the water in Petroleum County potentially threatened by contamination at the mine via the transmission through the Madison Limestone?
- **Groundwater Contamination.** Are water quality standards exceeded for thallium, selenium, arsenic, nitrates, and acid production? Are existing covers effective in reducing thallium levels? What are natural levels of thallium and other parameters in area soils and groundwater? Is any impacted water hydraulically contained?

4.1.2 Water Quantity Concerns

Water quantity issues and concerns which were identified during the scoping activities include:

- **Storm Water Runoff.** Has Kendall failed to build a ditch to direct snowmelt directly to Last Chance Creek? Does the interception of surface water from above the mine by the mine pits reduce the water available off site? Has Department of Natural Resources and Conservation (DNRC) documented surface water flow through washes above the mine that is now being intercepted by the pit instead of being released to local creeks? Has DEQ's refusal to let the mine proceed with capping the leach pad resulted in loss of water (through seepage into the pad) that would have otherwise run off to local drainages? Should the onsite drainage system be changed to eliminate the step pools, which are not useful in dry years, and all ditching should be on native ground instead of disturbed materials?

- Pump-back System. Has the mine's pumpback system reduced the water available off site? Did water quantity problems begin within six months of the start of the pumpback system (1996)? Was the pump-back system supposed to be temporary?
- Groundwater Wells. Has pumping of groundwater from wells on the mine reduced the water available off site and could it negatively impact water wells using that aquifer?
- Drought. Are water quantity problems attributed to the mine really the result of drought which has severely impacted their property?
- Mine Culpability in Water Loss. Has the mine admitted to causing water quantity problems? Is their compensation of, or attempts to compensate, local ranchers for water losses, an admission of guilt, or did the mine offer money to local residents in an effort to put an end to the disputes which they thought were unfounded but time consuming?
- Piping. Does piping water from Little Dog Creek around the mine, instead of letting it go underground, unfairly allocate the water to a specific landowner? Should Little Dog Creek be allowed to go underground as it has in the past?
- Seeps. Were seeps at the base of the mine created by recharge provided by historic mining operations in the area? Have they dried up because the water is no longer being piped in and recharged by the mine?
- Water Rights. Are existing water rights compromised by mining or reclamation activities?
- Increased Downstream Flows. Can drainage channels be extended or re-routed to increase downstream flows? Can additional groundwater be procured to supplement downstream flows? Can springs be developed to augment downstream flows? Can replacement water be provided in the proper locations?

4.1.3 Reclamation

Reclamation issues identified during the scoping activities include:

- General Reclamation. Should existing reclamation be redone? Has reduction been on compound by LAD? Should reclamation prevent people from being affected by the mine in the future and should it follow current laws for water and property rights, non-degradation, and trespass? How effective are reclamation efforts to date?
- Leach Pads. Should leach pads and/or waste rock piles be moved during reclamation activities? Would grading or excavating the leach pad expose additional constituents? Are all of the heap leach materials on the liner system?

- Pits. Should the mine pits be partially or completely backfilled? Should the pit floors be lined with impermeable materials?
- High Walls. Should the high walls be restored, reclaimed, or left as is? Are the highwalls sloughing into the pits?
- General Site Aesthetics. Does the mine look better now than it did before Kendall, because they have cleaned up much of the previously existing contamination?
- Weeds. Has the mine spread noxious weeds on the exploration road and on neighboring properties?
- Borrow Sources. Are alternative local borrow sources for reclamation materials available?
- Underdrain. Is the underdrain in the process valley receiving impacted water?

4.1.4 Cost, Funding, and Related Issues

Cost and funding or related issues identified during the scoping activities include:

- Purpose of an EIS. Why was an EIS needed? Wasn't the reclamation approved by DEQ protective and shouldn't the mine be allowed to finish it? Has the reclamation work done by CR Kendall to date been very detailed and adequate?
- Costs of EIS and Reclamation. Who should pay - DEQ (taxpayers) or the mine? Should the cost of reclamation be considered in the EIS? Will reclamation costs be excessive? If so, is it because of extensive reclamation required because of damage to the environment by the mine, or because the reclamation will be designed, not for protection of health and the environment, but because of the unsubstantiated complaints of a few local landowners?
- Curtailing Costs. What should be done to curtail costs? Should a cost benefit analysis be done on everything? Should existing data be used to keep costs reasonable? Should an offer to exchange \$2 million of reclamation work for mine land to extend the \$1.8 million dollars in the bond be considered? Should locals who work at the mine be used in the reclamation? Do they provide site-specific expertise that can help keep costs down?
- CRK's Ability to Pay. Is the solvency of the mine relevant to the EIS? If so, does the mine have assets that they have tried to shield from public view? Should the mine site be made a Superfund site, forcing the parent company to pay for the cleanup?
- Bond Money. Should the bond money be used to conduct the reclamation as approved by DEQ? Will the selected reclamation plan far exceed the bond amount, and will taxpayers be stuck with the bill? Was a total cost of \$10 million discussed

by DEQ at the last public meeting? Were regulators told when the bond was written that it was too low? Was it set low for political reasons?

- **Negative Impacts of the Mine on the Economy.** Did the mine drive ranchers out of business through water quality and quantity issues? If so, will this have a negative impact on the community, because the average size ranch spends over \$250,000 annually within the community? Has the loss of water had a documented negative effect on local game animals and has this hurt the local economy?
- **Positive Impacts of the Mine on the Economy.** Did mining have a positive effect on the economy of the communities through money from taxes, income to workers, and purchased supplies? Did mining also provide services that would otherwise have had to be provided by the county (such as snowplowing)?

4.1.5 DEQ Response and Participation

Issues and concerns which were identified during the scoping regarding DEQ permitting activities and public participation include:

- **DEQ Oversight.** Can DEQ ensure that the reclamation is effective and legal?
- **DEQ Favoritism of the Mine.** Does DEQ show favoritism to the mine by failing to represent the rights of adjacent property owners in their struggle with the mine? Did each complaint lead to a 5 year study that concluded there was no impact, promptly followed by some action to lessen that impact? Did it take 5 years of input from non-DEQ sources to get DEQ to agree that the pumpback system was a violation of water rights? Is the "piece-meal approach" allowed by DEQ illegal? Is the DEQ EA checklist illegal under NEPA? Should the EIS have been triggered long ago because of "significant change" or "controversy"?
- **DEQ Favoritism of the Landowners.** Does DEQ favor certain landowners? Should DEQ have involved the public, or (because the mine is private property) should the activities on it have been left up to the owner, as long as they are following the law and meeting DEQ's requirements? Has DEQ blackballed Canyon Resources at other sites and stopped the reclamation process? If so, will these delays result in a costlier reclamation because of the price of gas and the use of Davis Bacon wages? Could it cause contamination and get the mine in trouble?
- **Public Involvement.** Have both DEQ and the mine shown a lack of interest in involving the public on mine-related issues? Has this caused mistrust?
- **DEQ Influence.** Will DEQ and the EIS team direct the EIS alternatives analysis with a predetermined alternative in mind?

4.1.6 Other

Other issues and concerns which were identified during the scoping activities, and which do not concern the other primary disciplines include:

- Future Land Use Considerations. Should future use of the land be considered in the EIS? Should some features be left in place (buildings or roads of use to a future owner)? Should fire suppression needs be considered (roads of use for fire fighting or evacuation, at least one of the ponds for a water source for Bureau of Land Management (BLM) helicopters, and at least one of the wells for an emergency source of water)?
- Landownership. Is it relevant that the general public does not know who currently owns the mine property, because the results of the auction have been kept secret? Was the land swap that removed the BLM from ownership of property at the mine illegal and done to prevent BLM oversight?
- Public Acceptance. Are public tours of the mine site important for acceptance?
- BLM involvement in EIS?
- Should the EIS address area-wide cleanup activities (impact area) and not just the mine area itself?
- What are effects on threatened and endangered species (Peregrine falcon for example)?

4.2 Issues Considered but not Recommended for Further Evaluation

The scoping process has provided extensive opportunities to present concerns and issues to be considered during the EIS process. Stakeholders and other interested individuals who participated in the scoping activities were quite knowledgeable about the site and quickly reached a consensus on the most key issues. Most of the technical issues raised will be carried forward for consideration in the EIS process. However, a number of issues were dismissed for further consideration, either for technical reasons or for relevance to the EIS process. Although numerous issues were dismissed from further consideration under the EIS, they still provided valuable insight into the community's concerns regarding the mine and the EIS.

4.2.1 Issues Dismissed for Technical Reasons

Some issues raised during the scoping meetings are technically beyond the scope of the EIS alternatives evaluation, or have been recommended for no further evaluation by consensus during the technical scoping meetings.

In brief, an evaluation of the mine's potential impact to the City of Lewistown water supply will not be included because the regional hydrogeologic setting, distance from the mine to the Big Spring area, and the relatively small contribution of the mine area recharge to the Madison aquifer make it extremely unlikely that impacts from the mine would ever impact the city water supply.

Also, during the final technical scoping meetings, a consensus was reached to reclaim the leach pads in place. Therefore it is recommended that off-loading the leach pads and placing leach pad materials in the pits or other locations not be evaluated.

4.2.2 Issues Dismissed because they are Not Relevant to the EIS

Numerous comments received during the scoping process raised issues concerning CR Kendall or DEQ's legal culpability regarding potential impacts of the mine on landowners the community or other stakeholders. While these issues may be addressed during pending legal action or other venues, these issues are not the focus of the EIS. While impacts or benefits to stakeholders is an important component of evaluating reclamation alternatives for the site, legal culpability concerns will not be directly addressed in the EIS.

Other comments received during the scoping process conveyed concerns regarding past decisions by DEQ regarding permitting and reclamation issues, BLM involvement in the EIS process, past decisions regarding the necessity for an earlier EIS, past public participation and alleged "favoritism" shown either to the mine or other stakeholders. These issues are not evaluated during the EIS process.

4.3 Issues to be Considered in the EIS

Issues not dismissed for technical reasons or relevance will be addressed during the alternatives evaluation process during completion of the EIS. They are:

4.3.1 Water Quality

- Mine Water. Can different sources be blended to provide water suitable for livestock or irrigation?
- Land Application System. Is it working? If not, can it be fixed?
- Pump-back Systems. Are they working?
- Water Treatment. What practical treatment technologies are available?
- Mine Pits. Should they be left as is, or be partially or completely backfilled? Should they be lined, capped, used to store wastes, or fenced for safety?
- Leach Pad/Waste Rock Piles. Should they be capped followed by water monitoring to ensure a gradual reduction in leachate concentrations? Should the pads be terraced to catch surface water until vegetation can capture it, or would

regrading expose additional constituents? Is the buffering capacity of the waste rock enough to prevent AMD?

- **Historic Tailings.** Is it relevant that treated water would be released to contaminated creek beds offsite?
- **Overburden.** Should the overburden the mine dumped into local canyons to build a road be removed?
- **Groundwater Contamination.** Are water quality standards exceeded? Are existing covers effective in reducing thallium levels? What are natural levels of thallium in area soils and groundwater? Is any impacted water hydraulically contained?
- **Underdrain.** Is the underdrain in the process valley receiving impacted water?

4.3.2 Water Quantity Concerns

- **Storm Water Runoff.** Does the interception of surface water from above the mine by the mine pits reduce the water available off site? Should the onsite drainage system be changed to eliminate the step pools, which are not useful in dry years, and should ditching be on native ground instead of disturbed materials?
- **Pump-back System.** Has the mine's pumpback system reduced the water available off site?
- **Groundwater Wells.** Has pumping of groundwater from wells on the mine reduced the water available off site, and could it negatively impact water wells using that aquifer?
- **Drought.** Are water quantity problems attributed to the mine really the result of drought which has severely impacted their property?
- **Piping.** Does piping water from Little Dog Creek around the mine unfairly allocate the water to a specific landowner?
- **Seeps.** Were seeps at the base of the mine created by recharge provided by historic mining operations in the area, and have they dried up because the water is no longer being piped in and recharged by the mine?
- **Water Rights.** Are existing water rights compromised by mining or reclamation activities?
- **Increased Downstream Flows.** Can drainage channels be extended or re-routed to increase downstream flows and can additional groundwater be procured and springs be developed to supplement downstream flows in the proper locations?

4.3.3 Reclamation

- General Reclamation. Should reclamation prevent people from being affected by the mine in the future? Should natural surface water flows and aquifer conditions be restored and contamination of surface water and ground water off site stop?
- High Wall. Should the high walls be restored, reclaimed, or left as is? Are the highwalls sloughing into the pits?
- Borrow Sources. Are alternative local borrow sources for reclamation materials available?
- Should existing reclamation be redone?

4.3.4 Other

- Future Land Use Considerations. Should future use of the land be considered in the EIS? Should some features be left in place (buildings or roads of use to a future owner)? Should fire suppression needs be considered (roads of use for fire fighting or evacuation, at least one of the ponds for a water source for BLM helicopters, and at least one of the wells for an emergency source of water)?
- Should the EIS address area-wide cleanup activities (impact area) and not just the mine area itself?
- What are effects on threatened and endangered species (peregrine falcon for example)?

5

Section Five

Section 5

Preliminary Reclamation Components and Identified Data Gaps

This section discusses the issues related to the preliminary reclamation alternatives resulting from the scoping process. It includes:

- Preliminary reclamation alternative components.
- Agreements and actions common to all alternatives.
- Identified data gaps.

5.1 Preliminary Reclamation Alternative Components

Numerous reclamation alternative components have been compiled to evaluate remedies and address the concerns identified during the scoping activities. Reclamation components are primarily technology or discipline specific solutions for a certain issue or environmental media (i.e. reverse osmosis for mine water treatment or water balance soil cover for waste rock piles).

The reclamation components for the Kendall site have been assembled into various reclamation alternatives that address the three main scoping area issues:

- Improve water quality.
- Increase water quantity.
- Improve revegetation and land use.

The preliminary reclamation alternative components, compiled by site features for the seven main drainages, are provided in Table 5-1. Each reclamation alternative component in Table 5-1 is evaluated for its capability to address the key scoping issues. The reclamation alternatives evaluated for the drainages are also summarized in the Data Gap Technical Memorandum in Appendix N. Final evaluations of the effectiveness, implementability, and costs for each reclamation alternative component will require detailed analyses of existing data, as well as collection of additional data, as necessary. Data gaps that have been identified to complete the evaluation of reclamation alternative components are discussed in this section and in the Data Gap Technical Memorandum in Appendix N.

5.1.1 Mason Canyon - Process Valley

Six reclamation alternatives with nine total modifications were evaluated to address five primary site features in Mason Canyon (Table 5-1). All nine reclamation alternatives and modifications address the improvement of water quality in this drainage. Three reclamation components specifically address increased water quantity while four components address the improvement of revegetation and

increased quality of land use (domestic livestock grazing wildlife habitat). Three reclamation alternative components (regrade leach pads in place, reclaim the plant site, and design and construct stormwater ditches) address all three key scoping issues.

5.1.2 Barnes-King Gulch

For Barnes-King Gulch, five reclamation alternatives (seven total modifications) were evaluated to address four primary site features in Barnes-King Gulch (Table 5-1). All reclamation components address the improvement of water quality in this drainage.

Three reclamation components specifically address increased water quantity (2 pit backfill options and removal of Muleshoe dump). Four reclamation components directly address the improvement of revegetation and increased quality of land use. Three reclamation alternative components (2 pit backfill options and Muleshoe dump removal) were the only reclamation alternatives for Barnes-King that address the combination of the three key scoping issues.

5.1.3 Dog Creek

For Dog Creek, one reclamation component specifically addresses increased water quantity (storm water improvements). The EIS will evaluate the potential of impacts to water quantity in this drainage.

5.1.4 Little Dog Creek

Four reclamation alternatives with six total modifications were evaluated for Little Dog Creek to address three primary site features (the Muleshoe pit, North Muleshoe dump, and the groundwater pump-back system) (Table 5-1). All reclamation components address water quality improvement in the drainage. The pit backfill options and removal of the North Muleshoe dump were evaluated to address increasing water quantities and the improvement of revegetation and land use. Regrading the North Muleshoe dump and improving the existing soil cover would help address an improvement in water quality and revegetation and land use but may have an unquantifiable influence on the quantity of surface water in the drainage.

5.1.5 South Fork Last Chance Gulch

South Fork Last Chance Creek has four reclamation alternatives (six total modifications) considered to address three site features in the drainage (Table 5-1). All reclamation components address the improvement of water quality in this drainage. The Kendall Pit backfill options and removing the Kendall dump would also help address the water quantity and improved revegetation and land use issues. Reclaiming the Kendall dump in place may improve surface water quantity but that influence is unknown.

Table 5-1
Kendall Mine Reclamation Alternatives to Address Key Scoping Issues (does not include No Action)

Drainage Creek/Gulch	Reclamation Alternatives			to address	Key Scoping Issues				Comments/Details
	Primary Site Features	Reclamation Alternative Considered	Modifying Degree		Improve Water Quality	Increase Water Quantity	Improve Vegetation - Land Use		
Mason Canyon - Process Valley	Leach Pads	Regrade	In Place	↕	x	x	x	Seepage collection in place, reduced leaching, no major slumping with 3:1, revegetated slopes	
	Underdrain Flow	Treatment	Active	↕	x			RO, chemical precipitation, ion exchange (zeolites)	
			Passive	↕	x			Biological (biocells), ion exchange, weepines/drainfields, use with active	
	Process Water	Treatment	Active	↕	x			RO, chemical precipitation, ion exchange (zeolites)	
			Passive	↕	x			Biological (biocells), ion exchange, weepines/drainfields, use with active	
	Plant Area (LP4)	Reclaim	Liner and coversoil	↕	x	x	x	About 14 acres	
Stormwater Ditches	Design and Construct	Regrade and line	↕	x	x	x	Design to minimize infiltration, construct to original grades (where possible)		
Barnes-King (B-K) Gulch	B-K Mine pit	Backfill	Daylight	↕	x	x	x	Waste rock from Muleshoe dump, liner and cover soil option to minimize deep leaching.	
			Total	↕	x	x	x	Waste rock from Muleshoe dump, liner and cover soil option to minimize deep leaching.	
	Muleshoe Dump	Removal	Excavate and revegetate	↕	x	x	x	Waste rock removed to Barnes-King pit, depth of metals leaching under dump is unknown.	

Table 5-1
Kendall Mine Reclamation Alternatives to Address Key Scoping Issues (does not include No Action)

Drainage Creek/Gulch	Reclamation Alternatives			to address	Key Scoping Issues			Comments/Details
	Primary Site Features	Reclamation Alternative Considered	Modifying Degree		Improve Water Quality	Increase Water Quantity	Improve Revegetation - Land Use	
Barnes-King (B-K) Gulch (continued)		Improved cover	Cover soil option	↑	x		x	Water barrier verses water balance type soil cover, only borrow soil on site is in Section 29.
	Historic tailings	Removal	Excavate and revegetate	↑	x			Excavate tailings, reestablish flow in Gulch, integrate with stormwater improvements
	Pump-back Water	Treatment	Active	↑	x			RO, chemical precipitation, ion exchange (zeolites), LAD polishing
Little Dog Creek			Passive	↑	x			Biological (biocells), ion exchange, weepines/drainfields, use with active
	Muleshoe Pit	Backfill	Daylight	↑	x	x	x	Waste rock from Muleshoe dump, liner and cover soil option to minimize deep leaching, key-cut in east wall
			Total	↑	x	x	x	2.5 million CY waste rock from Muleshoe dump, liner and cover soil option to minimize deep leaching.
	North Muleshoe Dump	Removal	Excavate and revegetate	↑	x	x	x	Waste rock removed to Muleshoe pit, depth of metals leaching under dump is unknown, possible spring under dump may be reestablished.

Table 5-1
Kendall Mine Reclamation Alternatives to Address Key Scoping Issues (does not include No Action)

Drainage Creek/Gulch	Reclamation Alternatives			to address	Key Scoping Issues			Comments/Details
	Primary Site Features	Reclamation Alternative Considered	Modifying Degree		Improve Water Quality	Increase Water Quantity	Improve Revegetation - Land Use	
		Improved cover	Cover soil option	↑	x		x	Reduce slope steepness, water barrier or water balance soil cover, only borrow soil on site is in Section 29, some areas with existing coversoil would require re-stripping, integrate stormwater improvements
	Pump-back Water	Treatment	Active	↑	x			Higher flow than process water, RO, chemical precipitation, ion exchange (zeolites), LAD polishing
Dog Creek			Passive	↑	x			Large flow requires big footprint, biological (biocells), ion exchange, combine with active
	Drainage adjacent to the Horseshoe Pit	Storm Water Improvements	Develop Spring	↑		x		Evaluate potential improvements to drainage to increase water flows if drainage has been impacted by mining activities
South Fork Last Chance Creek			Daylight	↑	x			Waste rock from Kendall dump, liner and cover soil option to minimize deep leaching, key-cut in east wall
	Kendall Pit	Backfill	Total	↑	x	x	x	3.4 million CY waste rock from Kendall dump, liner and cover soil option to minimize deep leaching.
	Kendall Dump	Removal	Excavate and revegetate	↑	x	x	x	Waste rock removed to Kendall pit, depth of metals leaching and presence of historic tailings under dump are unknown.

Table 5-1
Kendall Mine Reclamation Alternatives to Address Key Scoping Issues (does not include No Action)

Drainage Creek/Gulch	Reclamation Alternatives				to address	Key Scoping Issues			Comments/Details
	Primary Site Features	Reclamation Alternative Considered	Modifying Degree	↑		Improve Water Quality	Increase Water Quantity	Improve Revegetation - Land Use	
North Fork Last Chance Gulch	Reclaim in place		Cover soil option	↑	x		x	Reduce slope steepness, water barrier or water balance soil cover, only borrow soil on site is in Section 29, integrate stormwater improvements	
	Pump-back Water	Treatment	Active	↑	x			Lower flow and thallium, arsenic main contaminant, potentially ion exchange (zeolites) with drainlines (subsurface infiltration trenches), LAD polishing	
Horseshoe Pit Area	Drainage Below Barnes-King Pit and Waste Rock Dumps	Storm Water Improvements	Develop Up gradient Springs if Present	↑	x		x	Lower flow and thallium, arsenic main contaminant, potentially drainlines (subsurface infiltration trenches) Evaluate potential improvements to drainage to increase water flows. Water treatment may be required.	
	Horseshoe Pit	Backfill	Total	↑			x	.615 million CY waste rock from Horseshoe dump, liner and cover soil option to minimize deep leaching.	
	Horseshoe Dump	Removal	Excavate and revegetate	↑			x	Waste rock removed to Horseshoe pit, depth of metals leaching and volume of historic tailings (8.8 acres) under dump is unknown, tailings to be removed with waste rock.	

Table 5-1
Kendall Mine Reclamation Alternatives to Address Key Scoping Issues (does not include No Action)

Reclamation Alternatives		to address	Key Scoping Issues			Comments/Details	
			Improve Water Quality	Increase Water Quantity	Improve Revegetation - Land Use		
Drainage Creek/Gulch	Primary Site Features	Reclaim in place	Cover soil option	↑	↑	x	Dump previously reclaimed, reduce slope steepness, evaluate water barrier or water balance soil cover options, evaluate inter-seeding options, integrate stormwater improvements
Other	Roads	Reclaim Roads not Required for Long Term Maintenance	Revegetate	↑	↑	x	Consider leaving some roads for fire fighting activities.
	Structures	Dismantle Structures and Reclaim Areas	Dismantle and Revegetate	↑	↑	x	Consider leaving some structures for long-term water treatment and maintenance activities.
	Process Facilities	Dismantle Facilities and Reclaim Areas	Dismantle and Revegetate	↑	↑	x	Consider leaving at least one pond for fire fighting activities.
	Off-site Wastes	Reclaim	Reclaim	↑	↑	x	Off-site historic wastes could have an impact on downstream water quality.

5.1.6 North Fork Last Chance Gulch

For North Fork Last Chance Gulch, one reclamation component specifically addresses increased water quantity (storm water improvements). The EIS will evaluate the return of historic storm water and spring flows in this drainage. The drainage is currently dry and it is unknown at this time if water treatment of augmented flows will be required.

5.1.7 Northern Horseshoe Pit Area

For the northern Horseshoe Pit area, only pit backfill and waste rock dump options were considered because very little surface water flows through the area. Three reclamation alternatives (and three total modifications) were considered to address two main site features (Table 5-1). All reclamation alternatives would address improving revegetation and the quality of land use. The reclamation components were not evaluated to address improved water quality directly but may have a related response. The Horseshoe Pit removal and backfill alternative would address the increase in water quantity issue.

5.2 Agreements and Actions Common to All Alternatives

The Stakeholder Involvement Process (SIP) is a valuable tool in integrating divergent operational, financial, environmental, and socioeconomic interests of stakeholders during the EIS process. Using the various technical, private, and public meetings held as part of the SIP, early attention was paid to consensus building. This ensured that stakeholders had an opportunity to voice their concerns and to be part of the overall decision making process.

The stakeholders were able to come to agreement on several issues through the SIP. By consensus, they agreed that no proposed alternative currently exists for the Kendall mine closure, because DEQ denied Kendall's earlier proposed amendment to their closure plan. Thus the EIS will start with essentially a "clean slate" of potential alternatives for reclamation.

The stakeholders also agreed on which potential alternatives should be included for further evaluation in the EIS. A substantial list of potential alternatives was presented based on public comment and accepted reclamation technologies. This list was pared down in the technical meetings to include only those alternatives which were relevant and technically feasible at the Kendall mine.

Finally, the stakeholders were able to identify actions that would be common to any of the alternatives that might be evaluated and chosen during the EIS process. This early identification may enable DEQ to allow CR Kendall to initiate reclamation efforts at the mine site before the EIS is complete. This could possibly result in potential cost savings through the benefit of scheduling work during non-peak construction periods and could be more protective to the environment as remediation activities could start on an accelerated schedule.

The actions identified through this process as being common to all alternatives are:

- Leach Pads 3 and 4. It was agreed that these leach pads will remain in place at the site and that the leach pads are the main priority for remediation at the site. They will be regraded and an appropriate cap (water balance, clay, geomembrane) will be evaluated and chosen in the EIS process. It is anticipated that an EA will be completed for Mason Canyon reclamation to allow work on the leach pads to begin. The EIS will re-evaluate the Mason Canyon reclamation to verify that the reclamation completed under the EA is compatible with the final site-wide alternatives.
- Springs. It was agreed that the flow in springs down gradient of the mine site will be enhanced. This will entail maximizing the surface runoff to the drainages below the mine and working with the BLM to actively develop up gradient springs and routing to increase flows downstream of the mine site, either on the surface or by sub-surface piping.

5.3 Identified Data Gaps

The data gaps identified during the scoping meetings, and the purposes for which the required data will be used, are listed below by specific area.

5.3.1 Mine Pits

Ore was recovered from four primary mine pits at the CR Kendall site, these include (from north to south); the Horseshoe Pit, the Muleshoe Pit, the Barnes-King Pit, and the Kendall Pit. Of key importance for open pit reclamation evaluation are impacts to surface water and groundwater quality and quantity. To evaluate potential mine pit reclamation alternatives, the following data needs to be obtained:

- Volume of open mine pits – will be used to assess potential for complete or partial backfilling of the pits.
- Geotechnical stability of pits – to determine long-term success of the “no action” alternative, evaluate site safety, and evaluate use of pit wall sloughing to partially backfill pits.
- Pit hydrology and hydrogeology – to determine impacts on groundwater and surface water quantity and quality.
- Whole rock and leaching analyses – to determine if pit highwall or floors potentially leach metals to storm water and groundwater.

5.3.2 Leach Pads

Leach pads 3 and 4 are located in Mason Canyon and are still used for temporary storage of excess water. Primary concerns with leach pad reclamation are quantity

and quality of leach pad water, impacts from brine disposal to the leach pads from the sites reverse osmosis water treatment system, potential presence of historic tailings below the leach pads which impact water quality, liner integrity and cover requirements. To evaluate potential leach pad reclamation, the following data gaps need to be filled:

- Leach pad material volumes – to assess regrading or moving options, as well as mass balance of contaminants.
- Geotechnical properties of the materials – to determine leachpad stability, and evaluate regrading and cover components.
- Variability of physical and chemical properties of leach pad materials – to evaluate leachability of materials and regrading and cover requirements.
- Leach pad hydrology (expected quantity of leach pad water) – to evaluate water treatment and disposal components.
- Leach pad water quality - to evaluate water treatment and disposal components.
- Analysis of existing leach pad liner integrity – to evaluate need for potential off-loading and leach pad reclamation alternatives.
- Evaluation of the presence (and volume) of historic mine tailings below the leach pads – to determine potential for impacts to water quality.

5.3.3 Waste Rock Dumps

Four waste rock dumps at the site are proximate to the open pits and are referred to by the same name as the most proximate pit from which the waste rock was primarily derived. Key issues regarding the waste rock dumps include: the effectiveness of the existing covers; potential leaching from cover materials; impacts of waste dumps on surface water and groundwater quality; and the potential toxicity or other inhibitory properties of cover materials impacting reclamation vegetation. The following data for the waste rock dump areas are necessary to evaluate reclamation components:

- Waste rock dump volumes – to assess waste material moving options, as well as mass balance of potential contaminants.
- Plant toxicity data for waste rock cover materials – to assess potential for success of reclamation vegetation.
- Whole rock and leaching analyses for cover materials – to evaluate if cover materials will potentially leach metals into storm water.

- Plant tissue samples of waste rock reclamation vegetation and native plant - to determine if cover materials contribute excessive metal constituents to vegetation.
- Soil sampling beneath waste rock dumps - to assess extent of metals leaching below the dumps.
- Waste rock dump hydrology (expected quantity of waste rock dump water) - to evaluate water treatment and discharge to downstream user components.
- Waste rock dump hydrogeology - to evaluate water treatment and discharge to downstream user components.

5.3.4 Surface Water

Surface water data will be used to evaluate quantity and quality of water present in the drainages, treatment requirements (if any) and potential alternatives to maximize release of water to downstream water users. Extensive surface water data has been collected during routine water quality monitoring at the site. Additional data needs that have been identified during the technical scoping meetings include:

- Water quality and flow rates of Dog Creek, which was not routinely monitored under the operating permit - to identify potential impacts from mining operations and assess mitigation measures if necessary.
- Water rights issues - water rights evaluation will be used to assess the partitioning of available water during and after reclamation.
- Detailed hydrologic investigation - including synoptic flow measurements to assess losing and gaining portions of streams - to assess impacts from mining and mitigation measures.
- Storm water data for drainage - to assess impacts of mine features on quantity and quality of storm water, and potential re-routing options to maximize release of water to downstream users.

5.3.5 Groundwater

Groundwater data will be used to evaluate quantity and quality of water present in the drainages, treatment requirements (if any), evaluate the existing pump-back system and potential alternatives to maximize release of water to downstream water users. Extensive groundwater data has been collected during routine water quality monitoring at the site. Additional data needs that have been identified during scoping meetings include:

- Additional well(s) below the Horseshoe waste rock dump - to evaluate impacts on shallow alluvial groundwater quality, and assess potential treatment and discharge components.

- Additional well(s) below the Muleshoe waste rock dump – to evaluate impacts on groundwater quality in upper Little Dog Creek, and assess potential pump-back, treatment, and discharge components.
- Cyanide sampling of seeps and drainages – to determine potential impacts of recent or historic mining in remote areas.
- Background information review – to establish background concentrations of constituents of concern.
- Spring evaluation – to determine potential for active springs beneath the waste rock dumps, and determine potential impacts. Potential for spring development to increase flows in drainages downstream from the mine will also be assessed.
- Groundwater investigation – to evaluate groundwater/waste rock interaction (determine if portions of the waste rock dumps are inundated at any time).
- Preparation of hydrogeologic cross-sections of drainages – to assess effectiveness of pump-back systems and monitoring network.

5.3.6 Land Application Disposal Areas

There is presently a 250-acre area permitted for LAD. CR Kendall has used this area for application of treated process water. The effect of existing LAD systems on the water quality at the site is unknown. In addition to the current permitted area, other potential LAD areas should be evaluated to determine if LAD could be a potential component of reclamation. The following data will be needed to conduct this evaluation:

- Soil sampling at existing LAD area – to evaluate loading of salts and metals to LAD area soils, and to conduct leaching studies to evaluate holding capacity (and potential for breakthrough) of LAD area soils.
- Soil sampling at non-LAD areas – to provide comparative data for LAD soil samples.
- Soil typing and holding capacity testing of non-LAD soils – to evaluate potential for additional areas which may be appropriate for land application.
- Evaluation of the effectiveness of LAD and its potential to exacerbate contamination of groundwater.

5.3.7 Key Offsite Areas

Several offsite areas were identified during scoping meetings as potential areas of concern. These areas include a pond at the Boy Scout Camp which is located downstream from the mine on the South Fork of Last Chance Creek, and areas which

contain historic tailings (such as Barnes King Gulch) which may impact water quality in surface waters and shallow groundwater. In order to assess potential impacts in offsite areas, the following data should be collected:

- Water quality data in the Boy Scout Camp pond – to assess potential for impacts from the mine migrating down the South Fork of Last Chance Creek.
- Sediment sampling in the Boy Scout pond – to evaluate if impacted sediments from recent mining or historic tailings have been transported to the Boy Scout Camp pond via the South Fork of Last Chance Creek.
- Delineation of Historic Tailings – to evaluate the location and volume of historic tailings, and their potential impacts on water quality.

5.3.8 Available Reclamation Materials

Limited reclamation materials are available on the site to complete reclamation. Existing cover materials will be tested to determine if they are effective and suitable for their existing use. Additional evaluation of the availability of reclamation materials (topsoil, subsoil, gravel, etc.) will be necessary to evaluate reclamation alternatives. Nearby offsite sources of reclamation materials may also be evaluated. The following evaluations regarding reclamation materials will be necessary:

- Onsite reclamation materials inventory – stockpiles and borrow areas will be evaluated to determine the volume of reclamation materials available – this will provide data to evaluate the technical viability of site reclamation using these materials.
- Offsite reclamation materials inventory – offsite borrow sources will be identified (if available) and inventoried in a similar fashion as onsite materials.
- Materials testing – potential reclamation materials (onsite and offsite) will be tested for appropriate physical and chemical properties to determine if they are suitable for intended purposes.

5.4 Prioritized Data Collection to Fill Data Gaps

The identification of actions common to all alternatives (Section 5.2) and the data gap evaluation (Section 5.3) identified two areas as high priority – the leach pads and the hydrogeology related to the availability of groundwater and surface water down gradient of the mine property. As discussed earlier, completing leach pad reclamation will have a significant positive impact on the site water balance and will reduce the amount of poor quality water needing treatment and disposal. Also, water availability for downstream users has been of great concern to participants in the scoping meetings. Data needs that will assist in evaluating the potential to increase downstream flows will be of high priority.

To facilitate the goal of allowing some reclamation work to begin prior to the completion of the EIS, DEQ has authorized the collection of limited and specific environmental samples associated with high priority areas. The number and type of samples were chosen carefully after a thorough review of existing data sources, to ensure that there would be no duplication of effort. The samples were collected and submitted for laboratory analysis of a variety of parameters in July 2003. The results of this sampling were presented to DEQ in Appendix B of the off-site drainages report (CDM, 2004), along with the details of where and how the samples were collected. This document will also be available to the public.

Six leach pad and six waste rock and soil stockpile samples related to the closure of the leach pads were collected. The objective of the leach pad ore sampling is to determine the leachability of metals and salts from the leach pad ore at various water infiltration rates. Geotechnical samples collected from the leach pad ores will be used to determine final leach pad grading for the various leach pad capping alternatives. Samples collected from topsoil, sub-soil, clay and drain rock stockpiles were also collected for leachability analysis and to determine the quality of these materials for use as a growth media.

Water and sediment samples were collected for laboratory analysis to support the hydrogeologic investigation related to final reclamation of the waste rock piles and enhancing the availability of water down gradient of the mine. Three water samples were collected from local springs (Ruckman spring, Kendall Townsite spring, and the Section 29 spring) and four groundwater samples were collected from the Kendall Mine pump-back wells (KPB-6, KVPB-2, TMW-26, and KVPB-5) at the mine. Basic water quality parameters of pH, temperature, and specific conductivity were measured at each spring, pond, and pumpback well sample location. Three sediment and three surface water samples were also collected from ponds on nearby properties (Boy Scout, Ruckman, and Harrell) to determine the potential impact of historic and/or modern mining activities on the drainages and surface water bodies adjacent to the boundaries of the mine site. Additional site inspections were conducted in July and August 2003 to evaluate hydrogeologic conditions of the mine site and adjacent properties. Sites visited in addition to the water sampling sites included the springs located above the mine property on BLM land; and springs and shallow piezometers located in Little Dog Creek and Dog Creek drainages.

Other data gap gathering activities will commence as the data are required and as the necessary funds to gather these data are available. The installation of wells within the waste rock piles to determine if the base of the piles are saturated is an important data gap which will be addressed in an upcoming work plan to be submitted to DEQ. Efforts will be taken to maximize the use of all existing data prior to the collection of additional data.

A

Appendix
A

Appendix A
Flyer Sent of Postal Patrons Announcing
Public Interviews

Do You Have Comments on the Reclamation of the C.R. Kendall Mine?

CDM has been contracted by the Montana Department of Environmental Quality (DEQ) to prepare an Environmental Impact Statement (EIS) for the reclamation at the C.R. Kendall Mine near Hilger, Montana.

One of the first steps in the EIS process is gathering input from neighbors, local residents, and other interested parties.

If you have an interest in the reclamation of the C.R. Kendall mine and would like to be heard, we want to hear from you! Your comments can be positive, negative, technical or non-technical. You can respond to a short list of survey questions, or just feel free to tell us what's on your mind.

Your comments will be kept strictly confidential and will be used to build a list of concerns that need to be addressed by the EIS. A list of names of people who responded will be part of the public record, but no direct quotes will be recorded.

CDM will be in Lewistown March 11, 12, & 13 to meet with the public. We'll be set up in the Board Room at the Yogo Inn. We'd prefer to make appointments, so people have more privacy and don't have to wait, but you are welcome to stop by, if you don't mind waiting for others to finish. We anticipate that each appointment will take between 15 to 45 minutes, depending on what you have to say.

Give Us a Call or Send Us an Email



To make an appointment to provide your input, please call Karen Ekström at CDM in Helena (495-1414 ext. 311).

Karen will be happy to find a time that works for you. You can also contact Karen by email at ekstromkl@cdm.com.

Come to the Open House and Public Meeting



If you are unavailable to provide comments during the dates listed above, you will have another chance to do so the following month.

CDM will be hosting an *Open House* and *Public Meeting*. The *Open House* will give people a chance to meet with folks with technical expertise in various areas (such as water quality or mine reclamation) to discuss the issues and view maps, posters, etc. The *Public Meeting* will bring folks up

to date with what's going on and let them voice their opinions. You are welcome at one or both meetings.

Both the *Open House* and the *Public Meeting* will be held on *Wednesday, April 9, 2003*. The *Open House* will be from *4:00 to 6:00* and the *Public Meeting* will follow from *6:30 to 9:00*. Both will be held at the *Yogo Inn, 211 E. Main, Lewistown*.

CDM
28 North Last Chance Gulch
Helena, MT 59601

Attn: Karen Ekstrom

Postal Patron
HC84
Hilger, Montana 5XXXX

Attention!

**Important information inside about the C.R.
Kendall Mine reclamation.**

Please read and respond.

B

Appendix B

Appendix B

Press Release Sent to Local and State Media Outlets

For Immediate Release

March 4, 2003

Coordinator

For More Information

Karen Ekstrom

CDM Community Involvement

406-495-1414, ext 311

ekstromkl@cdm.com

Helena - DEQ has contracted with CDM to prepare an Environmental Impact Statement (EIS) for the reclamation at the CR Kendall Mine near Hilger, Montana. CDM is acting as an independent, neutral party in this process.

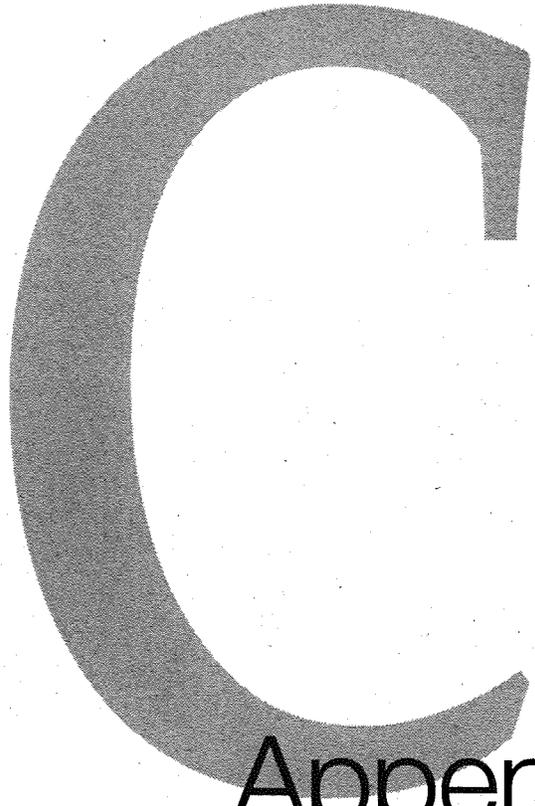
One of the first steps in the EIS process is gathering input from neighbors, local residents, and other interested parties. CDM will be in Lewistown March 11, 12, & 13, in the Board Room at the Yogo Inn between 8 a.m. and 6 p.m. each day.

Anyone with an interest in the reclamation of the CR Kendall mine is encouraged to participate. Comments can be positive, negative, technical or non-technical. People can respond to a short list of survey questions, or just feel free to tell us what's on their mind. Verbal comments will be used to build a list of concerns that need to be addressed by the EIS. A written description of each person's comments will be kept, but the originator of the comment will not be identified. Appointments are preferred, so people have more privacy and don't have to wait. People are also welcome to just drop by, if they don't mind waiting for others to finish.

CDM will make reasonable accommodations for persons with disabilities who wish to participate in these information-gathering sessions. If you require an accommodation, please contact CDM at the address below no later than 5 p.m., March 7, to advise us of the nature of the accommodation that you need.

People interested in scheduling time to provide input or needing more information should contact Karen Ekstrom in Helena at (406) 495-1414, ext. 311 or ekstromkl@cdm.com. You may also contact Kathy Johnson, DEQ, in Helena at (406) 444-1760 regarding the EIS process and DEQ's role in this process.

CDM



Appendix
C

Appendix C

Attendees at Public Interviews

List of Interviewees Kendall EIS Scoping Interviews Lewistown - March 10, 11, 12

Name	Address	Phone
1 Clair O. Clark	716 W. Ohio Street, L	528-8909
2 Monty Weaten		538-3726
3 Dan Harrell		538-5679
4 Lori Harrell		538-5679
5 Lewis Harrell		538-2995
6 Mona Harrell		538-2995
7 Kori Sramek	RR3 Box 3166, L	538-9792
8 Joe Sramek	RR3 Box 3166, L	538-9792
9 Kay Pegg	HC 85 Box 4138, L	538-2281
10 Vernon E. Smith	606 W. Brassy, L	538-8142
11 Glenn Pegg	HC 85 Box 4137	
12 Jerry Hanley	138 13th Ave. S, L	538-2420
13 Dirk Hassler	130 Winifred, Hilger	538-4019
14 Marv Hoffer	105 Carroll Tr	538-2641
15 Richard Hassler		538-8648
16 Ida Ruckman		
17 Stephanie Shammel		
18 Alan Shammel		
19 Bob Ruckman		
20 Vicki Ruckman		
21 Mike McReynolds	280 N Kendall Road, Hilger	
22 Lida McReynolds	280 N Kendall Road, Hilger	
23 Dan Cantrall		473-2233/538-3135
24 Jay Gremaux	Route 2, Box 2252, Lewistown	538-8560
25 Bill Rife		

People who talked to CDM but were not interviewed:

Scott Irvin, Regional Manager, DNRC, Water Resources Office, Lewistown, 538-7459
 Jim Volberding 362-4555
 Dave Ericksson
 Jim Mitchell, BLM

D

Appendix
D

Appendix D

Summary of Responses Obtained During the Public Interviews

As part of the scoping process for the CR Kendall Mine EIS, CDM held private interviews for the interested public at the Yogo Inn in Lewistown, Montana. The purpose of these interviews was to collect input of interested community members on issues related to the mine to provide valuable background information for the completion of the EIS. CDM solicited any and all input (technical or non-technical, positive or negative). No attempt has been made to validate the veracity or completeness of the statements made by the respondents.

The interviews were held on March 10, 11, and 12, from 8:00 am to 6:00 pm on Tuesday and Wednesday and from 8:00 am to 3:00 pm on Thursday. They were promoted in a flyer that was sent to the 135 postal patrons of the Hilger post office. CDM also prepared a press release, which was approved by DEQ and released to local media in Montana and the Associated Press. The Lewistown Argus printed a story on the interviews in the March 7 edition, and the local radio station ran announcements in its local news the week prior to the interviews and on the Tuesday and Wednesday of the interviews. Interested individuals who could not attend the meetings were encouraged to call and be interviewed by telephone.

The meetings were widely advertised to ensure that all interested parties would have an opportunity to participate. The format of the meetings was a private interview, in neutral territory (the Yogo Inn in Lewistown). This format was chosen to encourage participation by people who might be uncomfortable or afraid to speak in a public meeting.

Twenty-five people were interviewed as part of this process (Table X-1). The length of each interview ran from 15 to 75 minutes, depending on the desires of the person being interviewed. Three other individuals came in to discuss the project, but did not participate in the interview process. Two people were interviewed over the telephone. Comments from one individual were received by email.

CDM recorded the name of each interviewee on an attendance sheet and took notes of each interview on blank sheets of paper. The interviewee's name was not included in those notes. Each interviewee was asked a series of eight questions, previously approved by DEQ. They were also encouraged to "speak their mind" while CDM took notes. The notes were used to construct this summary after the interview process was finished.

Interviewees included people living near the mine property and other local residents. Seven of the interviewees stated that they either currently or previously worked at the CR Kendall mine or had relatives who did. Others had no history with the mine. Nineteen of the interviewees were local ranchers. Nine of the respondents were involved in an ongoing lawsuit against CR Kendall. Most respondents were long-

time or lifetime residents of the area. Many of these people had been on the mine property for recreational purposes before Canyon Resources began their operations.

The relevant information gathered in these interviews is summarized below by question. Answers to question number two are also summarized by topic. Where possible, the number of people with a particular response to a question has been quantified. However, Questions 2 and 3 garnered responses that were more "free form" in nature. These responses were especially hard to track in a group format when multiple persons were speaking. The nine respondents involved in the lawsuit came in together with their environmental consultant (on the advice of their attorney). These respondents provided a significant amount of input at a fairly rapid pace, and it was not possible to quantify this input in terms of how many people in the group agreed with each statement. Thus, the responses for Questions 2 and 3 are summarized in a more qualitative fashion.

In brief, the responses provided by the interviewees show that opinion on many subjects, especially the water quantity, water quality, and cost is highly polarized. People generally want to see an end to the delays in reclamation at the site and they don't think the taxpayers should have to pay for the reclamation. There is significant distrust of both the mine and DEQ, and most people feel they have not been adequately informed of events associated with the reclamation. Everyone interviewed wanted to be added to the mailing list.

Question 1 - Are you familiar with the proposed reclamation of the CR Kendall Mine. If so, please tell us how you obtained your information and how familiar you feel (very, somewhat, not very).

- Eighteen of the interviewees thought they had some familiarity with the proposed reclamation.
- Six of these people (Marv Hofer, Claire Clark, Alan Shammel, Ida Ruckman, Vicky Ruckman, and Bob Ruckman) provided written comment on the proposed reclamation in 2001, and their comments are incorporated in the Endangerment Assessment.
- Two people said they were very familiar with the reclamation.
- Most people who had any familiarity with the reclamation plan said their knowledge came from attending the last public meeting.
- Many people had some knowledge of general aspects of the plan (e.g. land application), if not specifics.

Question 2 - What are your concerns regarding the property? Is one more important than another?

Almost all respondents named water quality and quantity as concerns regarding the property. Response was divided on which was more important. Some respondents

also listed other issues such as aesthetics and safety, cost, DEQ response, and land application of mine water.

Water Quality Concerns and Related Issues

- Several respondents said that the quality of water collected from many sources at the mine was very good, and that all mine water could be blended together to provide water suitable for livestock or irrigation.
- Five people said they would like to use the water from the mine for their livestock or irrigation. They believe the water meets the standards for this use.
- Several people said that the pump-back systems are being bypassed and mine water has been contaminating surface water, groundwater, and sediments on adjacent property. Kendall paid for a background water quality study to be conducted and DEQ set interim standards specifically for Kendall. The mine failed to meet their 2001 compliance date.
- Four people mentioned water treatment by reverse osmosis:
 - One said an RO unit could be used at the Kendall mine, and then be used to treat water at other mine sites.
 - Three said it would be impractical because of the brine it produces and the disposal of the mineral cake.
- Many people did not want an ongoing water treatment system, primarily because of cost. Ways to avoid water treatment included:
 - Put the waste materials put back in the pit and cap them to prevent contact with water.
 - Line the pits with impermeable materials (15 to 20 feet of bentonite, plus other impermeable layers) and cap the tops to entomb the waste rock.
 - Put caps on the leach pad and waste rock piles and then monitor the water (capping will gradually reduce the leachate concentrations).
 - Send the hazardous wastes (cyanide and certain metals) to a hazardous waste facility (Mountain Home, ID) for disposal.
- Several people say that recent mining practices were much better than historic practices.
- One person said contact of the waste rock with water will produce acid mine drainage and another said the buffering capacity of the waste rock meant it was incapable of producing acid mine drainage.

- Many people mentioned the historic tailings in the creeks from previous mining operations where the tailings and cyanide were simply dumped down the creeks:
 - Accumulations of historic tailings in the creek beds range from 3 to 12 feet thick.
 - The tailings extend more than 5 miles down the creeks.
 - People have been watering their livestock for generations with water that is ponded on their property behind dams made of historic tailings.
 - They have had no problems with that water.
 - They don't see why the mine should have to do a multimillion dollar reclamation to clean up the same kind of contamination.
 - The mine or taxpayers shouldn't have to pay to cleanup water to pristine levels, because that water will be released to creeks contaminated with tailings from historic mining operations.
- Several people said that Kendall has failed to build a ditch to direct snowmelt directly to Last Chance Creek. In the public meeting two years ago, DEQ promised that this would be done. The runoff currently goes across the leach pad to the Boy Scout Camp.
- Two people said that they have seen that the leach pad has been graded off the liner, so contamination can infiltrate into the underlying material.
- One person said the leach pads should be terraced to catch the water until the vegetation can capture it.
- One person said that Kendall offered to let DEQ dispose of all the historic tailings from the drainages in the area on the mine's leach pad, but DEQ was not interested.
- One person said there was no orange water at the Kendall mine like there is at other mine sites.
- Two people said that the overburden the mine dumped into local canyons to build a road should be removed.

Water Quantity Concerns

- Twelve people said that operations at the mine have reduced the quantity of water available. The reasons given for this reduction included:
 - Improperly abandoned exploration wells that intercept 2 to 4 million gallons per year of water annually and recharging the Madison Limestone.
 - Interception of surface water from above the mine by the pits.

- The mine's pump-back system.
- Pumping of groundwater from wells on the mine.
- Blasting at the mine that dried up adjacent springs and damaged wells.
- Ten people said that the water quantity problems attributed to the mine are the result of drought which has severely impacted their property.
 - Many have had to haul water for the past two years to their property, have had to reduce the size of their cattle operations, and have realized little or no hay crop.
 - One person stated that water resources that had been constant for 50 years on his property had been dry or partially dry for the last two years due to the regional impacts of the drought.
 - Other people said that reservoirs throughout the area had been dry for several years. When there is a snow pack in the Moccasins, everyone will have water.
 - Three people said the only beaver dams in the area are on the property of people involved in the lawsuit.
- Several people said that water quantity problems began within six months of the start of the pump-back system (1996). Rainfall during that period was average (no drought conditions). This pump-back system was supposed to be temporary.
- Several people said the mine has admitted to causing water quantity problems:
 - The mine admitted stopping the flow of water to a local land owner's spring. This landowner reportedly could not speak about the issue because he had signed a release.
 - The mine installed a replacement well in 1996 or 1997, which then collapsed due to blasting, so the mine installed a second well.
 - The mine offered to provide other property owners with money to allow them to drill replacement water wells. The owners were not supposed to discuss the offer with one another. They refused the offer, because they found the releases to be unacceptable.
- One person said the mine offered money to local residents not as an admission of guilt but to put an end to the disputes which the mine thought were unfounded but were time consuming.
- Several people say that DNRC has documented surface water flow through washes above the mine that is now being intercepted by the pit instead of being released to local creeks.

- One person said that piping water from Dog Creek around the mine, instead of letting it go underground, was unfairly allocating the water to a specific landowner. Little Dog Creek should be allowed to go underground as it has in the past. It never ran across the mine.
- One person said that DEQ's refusal to let the mine proceed with capping the leach pad has resulted in loss of water (through seepage into the pad) that would have otherwise run off to local drainages.
- One person said that the seeps at the base of the mine were created by recharge provided by historic mining operations in the area.
- Three people said they were worried that pumping of wells on the mine site to provide water to the creek would negatively impact their water wells.
- One person said that the onsite drainage system should be changed to eliminate the step pools, which are not useful in dry years, and all ditching should be on native ground instead of disturbed materials.
- Two people said that uses should be found for the treated water, because now it just disappears down the pit, which is no good for anyone.
- One person said water rights violations started in 1983.

Aesthetics and Safety

- Several people said that the mine high wall was ugly, but was a cost of doing mining, much like other industries (oil and gas, railroads, etc.) or development (subdivisions) leave scars on the environment.
- One person said the high wall needs to be removed, and the site needs to look like the rest of the mountain when the reclamation is finished. This is required under the Montana constitution.
- Several people said that the site already looks better now than it did before Kendall was there, because the mine has cleaned up much of the previously existing contamination from other mining operations at the site. Finishing the reclamation would just make it better.
- Several people said the mine has spread noxious weeds on the exploration road and on neighboring properties.
- One person said the mine destroyed a local cave and a grove of Rocky Mountain maple on the mine property.
- Several people believed that the mine pits will present a safety hazard to children and others if not filled. For safety purposes, they should be filled, or at least fenced.

Cost, Funding, and Related Issues

- Most people were concerned about who was going to pay for the EIS and the reclamation. Some people wanted DEQ to pay for it, and some people wanted the mine to pay for it. For some people, taxpayers footing the bill for an unnecessarily complex reclamation was their greatest overall concern.
- Several people were concerned that the selected reclamation would far exceed the bond amount, and taxpayers would be stuck with the bill. A total cost of \$10 million was reported to have been discussed by DEQ at the last public meeting.
- Stated causes for a very expensive reclamation included:
 - Extensive reclamation required because of damage to the environment by the mine.
 - A reclamation that was over designed, not for protection of health and the environment, but because of the unsubstantiated complaints of a few local landowners.
- Several people provided suggestions for holding down costs:
- Two said that there was a wealth of information already available for the EIS that should be incorporated, rather than collecting new data.
- One said he had offered to provide about \$2 million of reclamation work in exchange for the land. This would greatly extend the \$1.8 million dollars in the bond.
- Three said that nature can rejuvenate itself if left alone and the reclamation should be simple.
- Several said there should be no water treatment.
- Four said to make sure to use the locals who work at the mine in the reclamation because they have the site-specific expertise needed.
- Two people said a cost benefit analysis should be done on everything.
- Several people did not think cost should be an issue, and the site should be returned to pristine conditions no matter the cost.
- One person said that the mine's claim of poverty was false. They had assets that they had tried to shield from public view through the unscrupulous structuring of their corporation. The mine should be made a Superfund site and the parent company should be made to pay for the cleanup.

- Four people said there was no reason to do an EIS because the reclamation approved by DEQ was protective and the mine should be allowed to finish it. The bond money should be used to conduct the reclamation as approved by DEQ. No better alternatives existed.
- Two people said that the reclamation work done by CR Kendall to date was very detailed and is more than adequate. The bond money should be released to Kendall.

DEQ Response and Participation

- Several people said that they trust DEQ to ensure that the mine is operating legally.
- Several people are very unhappy with DEQ because they believe DEQ favors the mine:
 - DEQ has failed to represent the rights of adjacent property owners in their struggle with the mine.
 - Each complaint leads to a 3 to 5 year study that concludes there is no impact, promptly followed by some action to lessen that impact.
 - Because DEQ involvement has been ineffective, they are worried about who will oversee the reclamation.
 - DEQ has shown an inability to enforce their requirements.
 - DEQ promised in 1997 that their springs and creeks would be tested, but this has not happened.
 - They told the regulators (then the Department of State Lands) at the beginning of the permit process that the bond would not be high enough to complete the reclamation. They feel they have been proven right.
 - It took 3 to 5 years of input from non-DEQ sources to get DEQ to agree that the pump-back system was a violation of water rights.
 - The "piece-meal approach" allowed by DEQ is illegal.
 - DEQ's EA checklist was illegal under NEPA.
 - An EIS should have been triggered long ago because of "significant change" or "controversy."
 - The person who started DEQ's last public meeting said that the meeting would end if there was disruption, which was very upsetting to the crowd.
- Several people are unhappy with DEQ because they believe DEQ favors certain landowners:

- DEQ should have never involved the public, because the mine is private property and the activities on it should be up to the owner, as long as they are following the law and meeting DEQ's requirements.
 - Delays in the completion of the reclamation (caused by DEQ) could cause contamination and get the mine in trouble.
 - DEQ has blackballed Canyon Resources at other sites and has stopped the reclamation process.
 - DEQ's delays will result in a costlier reclamation because of the price of gas and the use of Davis Bacon wages.
- Most people said that both DEQ and the mine have shown a lack of interest in involving the public on mine-related issues. This has caused mistrust.

Land Application

- Several people said that the land application system was supposed to be for emergency use. The land application system has killed trees (which the mine subsequently logged). The water turned the trees, grass, and rocks green.
- Several people said that the grass in the reclamation areas is waist high and very healthy and the reclaimed areas look much better than other local ranches. Any deficiencies in the revegetation are due to too much moisture because the grass seed mix is geared towards dry land, instead of irrigated land.
- Several people cited a recent study done by Richard Progers on the land application system at the mine to reinforce arguments for and against the success of the revegetation.
- Three people said that the land application and revegetation has resulted in a significant increase in wildlife on the mine compared to historic conditions.

Other

- Several people stated that it was important to take into account the future use of the land in the EIS. Rather than return the property to the way it was before mining, they believed that some features should be left in place. These include:
 - Buildings of use to a future owner.
 - Roads of use to a future owner or for fire suppression or evacuation (from the Boy Scout camp) activities.
 - At least one of the ponds for a water source for BLM fire suppression helicopters.

- At least one of the wells for an emergency source of water for fire suppression.
- Several people indicated that no one is aware who currently owns the mine property, because the results of the auction have been kept secret.
- Several people said that the land swap that removed the BLM from ownership of property at the mine was illegal and was done to prevent BLM oversight.
- Several people said they want the reclamation to be done right and they don't want to be affected by the mine in the future. They want the reclamation to follow current laws for water and property rights, non-degradation, and trespass. Their goals are to restore natural surface water flows and aquifer conditions and stop contamination of surface water and ground water on their property.
- Several people said they could have been involved in the lawsuit but they didn't think it was right, because they thought the water quantity problems were caused by the drought and the water quality problems were no worse than those seen from historic mining conditions on their properties.
- One person said there should be only one department to handle all mining issues, because the current system is unfair to the mines.
- One person said that splitting control over water quality and water quantity let the mining industry get away with too much.
- One person said the bond was set low for political reasons.
- One person said public tours of the mine site were important for acceptance.
- One person said the mine directed him to "tread lightly" in all reclamation work.
- One person said that people are going to have to compromise to get things done.
- Four people said that the mine is a good neighbor and is doing their best. They just keep running into road blocks from certain individuals.

Question 3 - What do you think are the key issues for the communities of Lewistown or Hilger? How would you rank those issues?

- Many respondents believed there were no key issues for the communities. They felt that the communities were not affected by the mine due to its remote location. They said that most people in either town were either unaware of the mine or were ambivalent about it.
- Several people raised the issue of water quality in Lewistown as a concern to the community. They believed the water supply could potentially be threatened by contamination at the mine via the transmission through the Madison Limestone.

- Several people believed that the lack of mining at the mine negatively affected the economy of the communities through loss of money from taxes, income, and supplies. Also the mine provided services (such as snowplowing) that now had to be picked up by the County.
- Several people said that driving the ranchers out of business through water quality and quantity issues will have a negative impact on the community, because the average size ranch spends over \$250,000 annually within the community.
- Several people said that the reduction of water quantity caused by the mine has had a documented negative effect on local game animals and this has hurt the local economy.

Question 4 - Would you like to be involved in the technical meetings?

- Several people were interested in being included in the technical meetings (Glenn Pegg, Marv Hofer, Jim Volberding, Scott Irvin) to provide local expertise.
- The plaintiffs in the lawsuit against the mine were also interested in having a representative in the technical meetings.
- The need for advance notice of at least several weeks was stressed.
- People who were interested in attending generally preferred that these meetings be held in Lewistown.

Question 5 - Are you interested in learning more about the EIS and/or in getting updates on progress?

- Everyone was interested in receiving updates on the progress of the EIS. Many people have felt left out in the past and would like to be kept in the loop.

Question 6 - Do you have a preference regarding who should provide these updates? If so, please tell us which source you would prefer.

- Most people (16) preferred to get information from the consultant working on the EIS (CDM).
- Two people would be equally happy getting that information from the mine and three would be equally happy getting that information from DEQ or CDM.
- Several people said they would be suspicious of information they received from DEQ and several said the same about CR Kendall.
- Two people had no preference.

Question 7 - What do you think is the best way to communicate with the public about the work being done (fact sheets, public meetings, newspaper ads, radio, web site)?

- Most people preferred getting information in writing through the mail, and three people had no preference.
- Several people said it was important to advertise public meetings in advance, because the paper does not come out every day.
- People liked seeing public meetings advertised in the paper and announced on the radio.
- Several people said they would like to get updates on what is happening on a regular basis, even if it is just a post card sent to the mailing list or Hilger area residents.
- Several people said that, although they care about what is going on, they do not like to come to public meetings because they feel that certain people are very disruptive, and they don't want to get involved in a screaming match or a feud.

Question 8 - Do you want to be on the mailing list to receive additional information?

- Everyone said they would like to be on the mailing list.

Question 9 - Where do you think we should hold public meetings?

- Eighteen people preferred having public meetings in Lewistown.
- Two people preferred to have the meetings in Hilger.
- The remainder did not have a preference between Lewistown or Hilger.
- No other locations were mentioned.

E

Appendix

E

Appendix E

Scoping Document

CDM

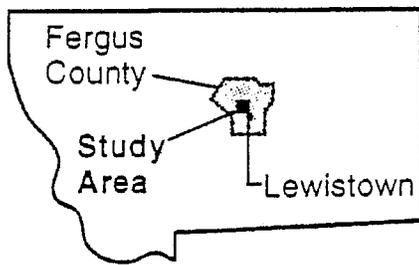
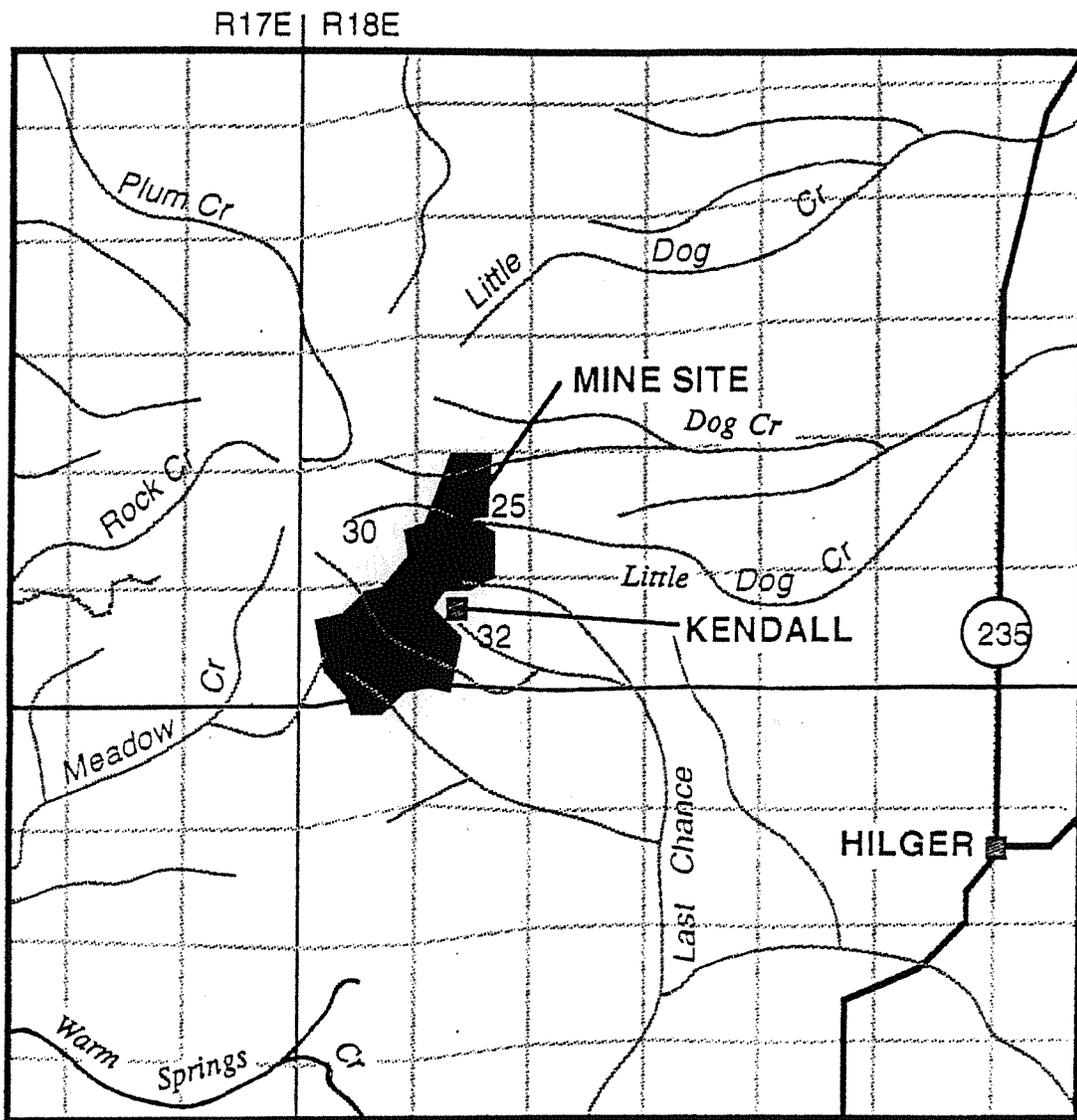


Figure 1 – Location of C.R. Kendall Mine

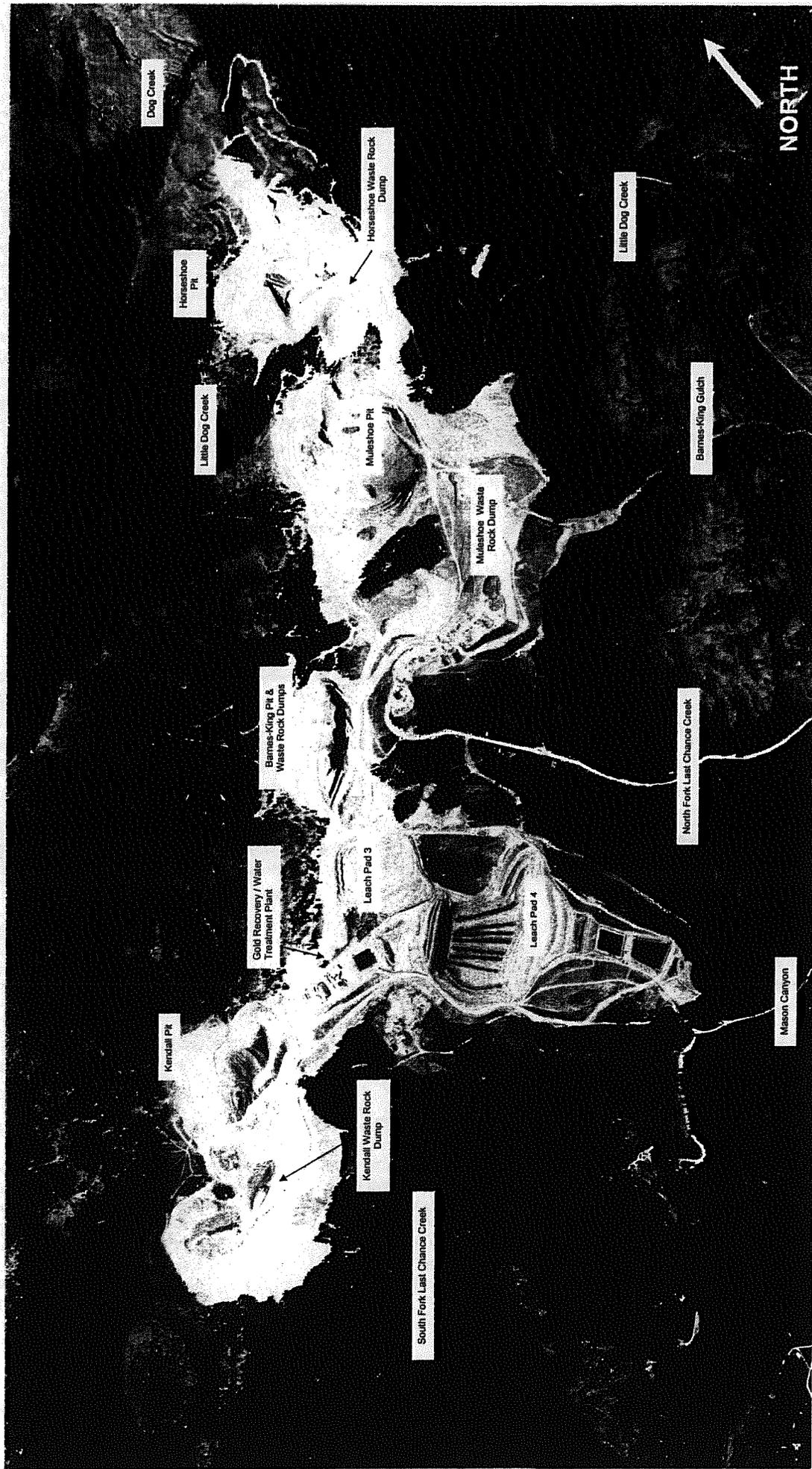


Figure 2 - Site Map

C.R. Kendall Mine History

The CR Kendall Mine is located in the North Moccasin Mining District in Fergus County (Figure 1). The area was discovered in the 1880s when placers were developed in Iron Gulch, Bed Rock and Plum Creek. In 1900, Harry T. Kendall developed mining properties on a north/south belt on the east side of the North Moccasin range and erected a 50 ton cyanide plant. In 1915, the Barnes-King Development Company purchased the Kendall mine and mill. By 1921 all the workings below the 500 foot level were stripped of machinery and by 1923 all worked ended. The mine is listed extensively in the mining literature as working from 1903 to 1920 and in 1939.

The C.R. Kendall Corporation began operations at the mine in 1984 and stopped processing ore in the fall of 1997. During that time, approximately 460 acres were disturbed. According to the Amended Closure Plan, by the end of 2000, only 138 acres still required reclamation. Of these 138 acres, the majority encompasses the ore processing areas in Mason Canyon, including two heap-leach pads, the process plant, process water ponds, and several ancillary buildings and roads. Other needed reclamation includes some resloping and partial backfilling of the Kendall and Barnes King pits.

In June 2000 the DEQ prepared an *Environmental Analysis of Revised Bond Calculation for C.R. Kendall* and determined that the new bond for surface reclamation should be set at \$3,574,313 and the water collection and treatment bond should be set at \$9,894,975. In February 2001, DEQ and C.R. Kendall Corporation entered into an agreement in which \$1,869,000 in reclamation bond money held through a surety bond would be provided to DEQ for the exclusive use of reclaiming the mine. DEQ would administer these funds and would have oversight and final decision-making authority over reclamation activities at the site. C.R. Kendall would work cooperatively with DEQ in the development of a comprehensive reclamation plan and would provide assistance to DEQ to ensure that available reclamation funds are used efficiently.

It was C.R. Kendall's intent to complete the closure of the mine following the closure plan included in their operating permit (which has been amended several times since 1989). However, the closure activities have been put on hold until an EIS is completed with a preferred alternative for reclamation.

Relationship of Drainage Basins to Mine Pits

Closure concerns at the CR Kendall mine are primarily related to water quality and water quantity issues. The following provides an overview of the four mining pits on the Kendall property and the affected drainages. These pits and drainages are shown on Figure 2.

- **Horseshoe Pit.** The northernmost CR Kendall mine unit is the Horseshoe pit, which begins on the ridge between Dog Creek to the north and Little Dog Creek to the south. The pit extends southward to Little Dog Creek, where there is a small backfilled pit known as the South Horseshoe pit. The Horseshoe waste rock dump lies between the two pits, filling a portion of Little Dog Creek, and was reclaimed in 1994 and 1995.
- **Muleshoe Pit.** The next facility to the south, it is the largest of the open pits and is located within a southern tributary of Little Dog Creek. The Muleshoe waste rock dump is located to the south and east of this pit, and extends southward over the ridge into the headwaters of Barnes-King Gulch. The southern portion of the Muleshoe waste rock dump, within Barnes-King Gulch, overlies a significant quantity of tailings from the historic milling operations. Grayhall Resources started the pit and dump in 1986, and both were greatly expanded by Kendall. The Muleshoe dump was reclaimed in 1994 and 1995.
- **Barnes-King Pit.** South of the Muleshoe pit and located near the headwaters of Last Chance Creek. Mining activity at the Barnes-King pit was initiated in 1981 by Triad Resources. Small waste rock dumps have been reclaimed. The pit was expanded by Kendall and mining was finished in 1995.
- **Kendall Pit.** Mason Canyon, the drainage to the south of Last Chance Creek, contains the Kendall Pit and the processing facilities, including the gold recovery/water treatment plant, offices, ponds, and Leach Pad No. 3 and Leach Pad No. 4. Grayhall Resources had constructed two smaller leach pads in this valley, but they were excavated by CR Kendall and used as part of the liner cover material on the larger leach pads. Excess spent ore from the off-loaded pads #1 & 2 was buried in a road cut on the south slope of the process valley. Some historic tailings remain in Mason Canyon, mostly beneath the plant area, but most of the tailings originally in this location were excavated during leach pad construction and used as construction materials. Just south of the process valley is a very small unnamed drainage that is a tributary to Mason Canyon. The former land application areas, which were utilized between 1986 and 1994, are located at the headwaters of this drainage. The southernmost drainage influenced by the mine is the South Fork of Last Chance Creek. The headwaters of this creek are just south of the Kendall pit, and contain the Kendall waste rock dump. Construction of this dump began during 1991 and ended in 1994. The Kendall Dump was partially reclaimed in 1994 and 1995.

Why Do an EIS?

Over its years of operation, numerous amendments to C.R. Kendall's operating permit have been proposed and many have been approved by DEQ, with or without amendments. However, in August 2001, DEQ conducted a draft environmental assessment (EA) in response to an amended closure plan submitted in March 2001 by C.R. Kendall. This draft EA was met with opposition from some area residents, and seven comment letters were received by DEQ. The public comments raised several issues, including salts associated with disposal of process solutions, which could not be dealt with using the changes added to the Agency Modified Plan in the draft EA.

In the final EA, DEQ concluded that potentially significant cumulative effects on area resources from the combined current and reasonably foreseeable activities in the area were projected, and a complete reevaluation of potential reclamation materials on the site is needed to identify the potential impacts from disposal of process solutions with relatively large salt load.

DEQ stated that an EIS was needed to address the soil, vegetation, and water resources effects from this salt load and its effects on C.R. Kendall's proposed amended water resources management plan. These salts might have a detrimental effect on establishment and maintenance of a viable vegetative cover. No water from the site would be released until it meets standards set by DEQ in an Administrative Order on MPDES permit.

Since the final EA was issued, limited additional sampling data received by DEQ reinforces the concern that these salts should be better assessed before decisions on the ultimate thickness of the cover on the leach pad are made. It is possible that a subsoil layer, as proposed in the DEQ-approved amendment (2000) and C.R. Kendall proposed amendment (2001), may be necessary. This issue will be addressed by the EIS.

Key Elements of the EIS Process

- Project Management Plan/Public Affairs Plan
- Public Involvement
- Agency Consultation
- Public Scoping
- Briefing of Elected Officials
- Data Gap Analysis
- Preparation of Supporting Reports
- Description of the Affected Environment
- Determination of Environmental Consequences
- Development of Significance Criteria

Initial Issues of Concern

DEQ has identified five initial issues of concern. Additional issues of concern may result from the scoping process.

- *Water Quality and Quantity*
- *Waste Characterization*
- *Reclamation Plan Changes*
- *Costs and Sources of Funding for Reclamation and Long Term Maintenance*
- *Impacts of Land Application Disposal and Disposal of the Reverse Osmosis Brine*

The EIS Process

The Issues

The EIS will address the major issues identified in DEQ's 2001 environmental analysis. As such, it will include:

1. Reevaluation of the reclamation plan, including all existing reclaimed acres on the site, and addressing a range of alternatives for reclamation.
2. Review of all potential impacts to water quantity and quality in the drainages.
3. Review of water rights issues, and Review of water treatment alternatives.

The EIS will present an analysis of the issues as they relate to the physical, biological, and social and economic effects of the proposed reclamation and various other reclamation alternatives developed during the scoping process. It will include analysis of the impacts of the project in combination with other past, present, or reasonably foreseeable activities in the project area. The "no action alternative", which assumes that the existing situation and trends continue, will be used as the basis for comparisons.

Developing the Alternatives

CDM and DEQ will use a consensus-building process known as the Stakeholder Involvement Process (SIP) to assist in developing a range of alternatives for the EIS. The SIP is a valuable tool in integrating divergent operational, financial, environmental, and socioeconomic interests of stakeholders during the EIS process.

Early attention to consensus building generally makes the project move more smoothly by assuring that stakeholders have an opportunity to voice their concerns and to be part of the overall decision making process.

The SIP gathers stakeholder input using various components of the scoping process outlined on the front page of this scoping document, specifically the:

- scoping interviews,
- open house/scoping meeting, and
- technical meetings.

As part of the SIP, CDM will also assist DEQ in compiling important EIS-related documents for an information repository. This will include all fact sheets and newspaper articles, as well as copies of the draft and final EIS.

If you would like to provide verbal comment for the scoping process, and have not already done so, you are invited to attend the open house and public meeting on April 9 (see front page for details).

If you are uncomfortable with the public meeting process, or are unable to attend for another reason, please call CDM's Community Involvement Coordinator, Karen Ekstrom at (406) 495-1414 x311. You may also write Karen at CDM, 28 N. Last Chance Gulch, Helena, MT, 59601 or email her at ekstromkl@cdm.com. If you are interested in participating in a technical meeting and have not already expressed an interest to CDM, please call or email Karen Ekstrom before April 19, 2003.

Alternatives to Be Considered

The following provides a brief description of the no action alternative, the alternative proposed by C.R. Kendall, and potential components of other alternatives to be considered for reclamation of waste rock and leach pad materials and for handling of contaminated water.

The No Action Alternative

The no action alternative is essentially those activities that are currently approved for reclamation of waste rock and leach pads and handling of ground and surface water at the C.R. Kendall mine.

Reclamation of Waste Rock and Leach Pads

The no action alternative for reclamation of waste rock and soils at the C.R. Kendall Mine is the 1995 approved reclamation plan for the site. This plan contained changes in the proportions and types of soils and other reclamation materials compared to the 1989 reclamation plan, but not a reduction in the volume of the reclamation materials. The plan called for use of reduced permeability layers (RPLs) and a water barrier type cover system for use on the waste rock dumps and the leach pads to limit water infiltration and permeability through the mine wastes.

This plan consists of four layers of materials, with a total thickness of 52 to 56 inches:

- 10 to 14 inches of topsoil
- 18 inches of subsoil (suitable waste rock with some soil-like properties)
- 12 inches of drain material (pit run limestone)
- 12 inches of compacted clayey waste rock

The function of the RPL cover was to provide a barrier to water infiltration (clay layer), yet allow for water entering the cover to be conveyed (drain layer) to storm water ditches. Subsequent testing of seepage issuing from the drain layer into storm water ditches after storm events revealed that the capping materials themselves may be a source of contaminants such as thallium. This indicated that the RPL covers may not be appropriate at the C.R. Kendall mine, especially if the materials from which the covers are constructed are derived from native materials within the local mining district.

Management of Ground and Surface Water

Water contamination was not evident in 1995 and was not included in the approved reclamation plan for the site. However, under DEQ Administrative Order WQ-98-06, C.R. Kendall is required to collect and pump intercepted groundwater seepage from all of the named drainages. Captured water is to be treated and returned in equal amounts to Little Dog Creek and to the South Fork of Last Chance Gulch.

On average, the capture systems intercept and remove about 5 to 11 gallons per minute of shallow groundwater from Little Dog Creek, Barnes-King Gulch, Mason Canyon, and South Fork Last Chance Creek. Pumpback rates vary substantially according to season. Since 1997, seepage totals have been: 2001, 19.3 million gallons (mg); 2000, 23.7 mg; 1999, 23.0 mg; 1998, 23.3 mg; and 1997, 24 mg.

Groundwater captured in the pumpback system shows elevated levels of contaminants derived from mining activities and mineralized rock, including: sulfate, nitrate, selenium, thallium, total cyanide, and arsenic. The water is land applied or treated with zeolite and sent to the pits. Water from two wells is returned to Little Dog Creek and South Fork of Last Chance Creek drainages in quantities similar to what was pumped from them during the previous year. Discharge of this water is to the surface drainage at a point down gradient from the collection system. Water discharged in this manner may either continue as a surface flow or report to groundwater. This is the no action alternative for contaminated water.

Prior to 2000, C.R. Kendall had disposed of treated seepage water by evaporation, irrigation (LAD) and discharge into the Kendall and Muleshoe pits. Beginning in 2000, the mine has used LAD to dispose of 100% of all collected seepage water, as it is of sufficient quality to forgo treatment prior to LAD.

During months when irrigation is not possible, the seepage water is stored in lined containment ponds at the site or, if additional capacity is required, within the leach pads. In 2001, 3.1 million gallons were treated with zeolite columns and discharged to groundwater via the Kendall Pit. Approximately, 26.2 million gallons of water were land applied.

Process water from the leach pads has been managed via three options for water balance control:

- evaporation,
- treatment via reverse osmosis followed by discharge of the treated stream into either the Muleshoe or Kendall pits, or
- irrigation of the pad waters onto reclaimed waste rock dumps.

In 1999, C.R. Kendall used a combination of reverse osmosis and irrigation to dispose of approximately 14.5 million gallons of process water. Evaporation is not a preferred management option due to high electrical costs and the resulting increased concentration of pollutants in the solution remaining after evaporation. Similarly, reverse osmosis treatment involves significant electricity demands and in addition to a clean effluent, produces a concentrated waste stream (brine) which still must be managed via retention in ponds, shipping to a licensed disposal area, or land application.

In 2000, C.R. Kendall used LAD exclusively for the disposal of its process water. The current permitted LAD area encompasses approximately 250 acres, of which only a fraction (30–40 acres) is used at any one time with application rates averaging 100 to 200 gallons per minute. C.R. Kendall disposed of approximately 26.2 million gallons of seepage pumpback and process water through irrigation between May and November in 2001.

The Proposed Alternative

As part of a February 2001 agreement with DEQ, C.R. Kendall provided a reclamation and water management plan (*Kendall Mine, Permit #00122, Amended Closure Plan*) for DEQ's consideration on March 8, 2001. This amended plan is the proposed alternative for reclamation for the EIS.

Reclamation of Waste Rock and Leach Pads

Kendall's amended closure plan included a 36-inch reclamation cover for the leach pad that consisted of two layers:

- 17 inches of topsoil
- 19 inches of subsoil (suitable waste rock with some soil-like properties)

Management of Ground and Surface Water

The proposed alternative for handling of contaminated water in the 2001 amended closure plan entails continued use of the pumpback system, with no treatment of the recovered water. At two of the pumpback sites (South Fork and Mason Canyon), C.R. Kendall proposes to release water directly to the drainages, as water quality is either at or very near compliance levels.

The pumpback water and water collected from the leach pads would be stored in ponds onsite until it is removed for on- or off-site agricultural irrigation purposes.

Process valley storm water drainages would be constructed in bedrock to channel flow.

Potential Components of Other Alternatives

During the initial phase of the EIS, reasonable alternatives for reclamation will be developed to provide a clear basis for choice among the options by the decision makers and the public. These alternatives will include mitigation measures to avoid, minimize, or reduce the magnitude or intensity of the proposed adverse impacts.

The information obtained during the scoping process will be used to develop these alternatives, ensuring that significant and substantive issues identified during the scoping process will be addressed by the EIS.

The following are examples of possible components of the alternatives that will be evaluated during the EIS. These components are based, in part, on feedback obtained during the public interview process in Lewistown. This list is meant to show the range of possible alternatives and is not intended to be inclusive of all alternatives.

Reclamation of Waste Rock and Leach Pads

Potential components of alternatives for reclamation of waste rock and leach pads at the site may include one or more of the following:

- Total or partial backfilling of the pits.
- Capping of leach pads with an RPL system.
- Capping of leach pads with a water balance system.
- Use of a geotextile filter fabric in the leach pad cap.
- Removal of leach pad wastes to another facility.
- Excavation of waste rock from drainages and placement in pit.
- Relocation of waste rock dumps.

Management of Ground and Surface Water

The long term water management objectives for the North Muleshoe, Barnes-King, Mason Canyon and South Fork of Last Chance Creek drainages are to improve water quality and to restore historic flows to the drainages.

Potential components of alternatives for handling contaminated and uncontaminated water at the site may include one or more of the following:

- Continued use of the pumpback system.
- Discontinuance of the pumpback system.
- Augmentation of surface water flows using ground water.

- Collection of leachate water.
- Direct release of leachate water.
- Land application of treated water.
- Land application of untreated water.
- Land application of brine.
- Treatment of water using zeolite columns to remove thallium with on-site disposal of spent zeolite.
- Treatment of water through reverse osmosis and disposal of the brine.
- Rerouting of storm water to prevent losses to the pit during high volume events.
- Construction of passive treatment wetlands to treat both storm water runoff and process flows.

EIS Deliverables

CDM will prepare technical documents to support land reclamation and water treatment decisions, with special emphasis on water quality and quantity for downstream users/receptors. These documents may include: evaluation of engineered cover alternatives, water treatment alternatives, water treatment and/or disposition, and sensitive species; a biological assessment of threatened and endangered species; a wetlands investigation; and a hydrological investigation.

A scoping document will be prepared as part of the initial EIS activities and will be available to the public via the mailing list and the web site.

Major deliverable that will be available for public comment are:

- **Draft Environmental Impact Statement.** After the draft EIS is published, there will be a 30-day public comment period that will be advertised via a general press release and a public meeting.
- **Final Environmental Impact Statement.** This document will present substantive comment and agency response and any changes to the Draft EIS.

Record of Decision. A Record of Decision (ROD) is a concise public document, issued by the agency at the completion of the EIS. It identifies the findings and conclusions reached by DEQ in making its decision for a preferred alternative. The ROD summarizes the major issues and considerations, describes the potential effects, documents the decisions, and identifies necessary steps to lessen the effects on the environment.

EIS Schedule

The EIS process began in February of 2003 and is scheduled to take 13 months to complete. **However, DEQ currently has only enough funding to authorize CDM to conduct the initial three tasks of the draft EIS. If additional funding becomes available, DEQ and CDM would continue the draft and final EIS process.**

<u>Task</u>	<u>Month Due</u>
<i>Draft EIS</i>	
Conduct Scoping*	2
Hold Public Meeting*	2
Identify Additional Alternatives*	4
Complete Preliminary Draft	6
Complete Revised draft	7
Prepare Mailing list	8
Publish and distribute draft EIS	8
Public Comment Period	9
Public Hearing	9
<i>Final EIS</i>	
Review of public comment	10
Preliminary final EIS for internal review	11
Revised draft prepared	12
Mailing list updated	12
Publish and distribute final EIS	13

* Tasks for which funding has been authorized.

Do You Need Additional Information?

Additional detailed information on the Kendall site is available from the following sources:

- **Patrick Plantenberg, DEQ, (406) 444-4960** - *Specific information about the C.R. Kendall Mine Operating Permit and the no action and proposed alternatives.*
- **Kathy Johnson, DEQ, (406) 444-1760** - *General questions on the EIS process.*

You may call **Karen Ekstrom at CDM (406) 495-1414 x311** to provide verbal comment for the scoping process. You may also write Karen at CDM, 28 N. Last Chance Gulch, Helena, MT, 59601 or email her at ekstromkl@cdm.com.

If you are interested in participating in a technical meeting and have not already expressed an interest to CDM, please call or email Karen Ekstrom before April 19, 2003.



Don't forget about the Public Meeting on April 9!

**CDM
28 N. Last Chance Gulch
Helena, MT 59601
Attn: Ekstrom**

G

Appendix G

Appendix G

Sign in Sheets for Open House/Public Meeting

CDM

C.R. Kendall Closure EIS
Open House and Public Meeting Sign in Sheet
 April 9, 2003, Lewistown, Montana

Please print neatly!

Name	Mailing Address			Email Address (optional)	Should we send you a copy of the EIS?	Should we send you a copy of the Scoping Document?	Should we add you to the mailing list?	Would you like to participate in a technical meeting?	Are you attending both the open house and public meeting?	Would you like to provide comments during the meeting?
	Street	City	St							
539-2671 MARVIN C. HOFFER	105 CARROLL TRL	LEWISTOWN	MT	59457	Yes	Yes	Yes	Yes	Possibly	Maybe
XXXXXXXXXX										
Galetha Peeg		"	"	"						
Jim Mitchell		"	"	"						
Clear Clark		"	"	"						
Jim Veilberding										
Maureen Harsch	301 N. Kambare Rd	Hildreth	MT	59457	Yes	Yes			possible	
Dick Haster	"	"	"	"						
John C. Koller	704 W. BRINDWAY	Lewistown								
Dorothy Gorman	606 W. Brassy									
Donnie Gestrus	134 W. Pine St	MS 14	MT	59202	Yes	Yes	Yes	Yes		✓
Stephen & Sherrill	23 Salt Creek Rd	Lewistown		59457	Yes	Yes	Yes	Yes		Maybe
Alan Shamuel	"	"								
Maurice Shamuel	1023 Governors Blvd	Billings	MT	59105						
Jim Jensen	Box 1184	Helena	MT	59624						
MAURIE HELIN	354 NE Blvd	LEWISTON	MT	59457	Yes	Yes	Yes	Yes	Yes	Yes
Ray Clark	220 17th Ave SW	Great Falls	MT	59405						
XXXXXXXXXX										
XXXXXXXXXX										
Dawn Steele	RR 2 Box 2310	Lewistown	MT	59457						X
Sharon Davis	RR 1 Box 1881	Lewistown	MT	59457						X

H

Appendix H

Appendix H

PowerPoint Presentation for Public Meeting

C.R. Kendall Closure EIS Public Meeting

Lewistown, Montana

April 9, 2003



Meeting Objectives

- ◆ Bring the public up to date with what's happening with the EIS
- ◆ Give the public the chance to provide comment, on the record, about issues related to the EIS

Meeting Overview

- ◆ Welcome
- ◆ Introduction of the EIS Team
- ◆ Brief History of the Project
- ◆ EIS Schedule and Funding Issues
- ◆ Scope of Work

(30 to 45
minutes)

-
- ◆ Public Comment

(60 to 90
minutes)

EIS Team

- ◆ Joint effort between:
 - ◆ Montana Department of Environmental Quality (DEQ)
 - ◆ Montana Department of Natural Resources (DNRC)
 - ◆ CDM/TetraTech

CDM and Tetra Tech

- ◆ CDM/Tetra Tech were contracted by DEQ to perform an independent, third-party review of the environmental impacts associated with the site.
- ◆ CDM is lead contractor: Tetra Tech is subcontractor
- ◆ Both major engineering consulting firms with significant experience in investigation, design, and cleanup of mine sites, including EISs
- ◆ Experience with EPA, DEQ, MDT, USFS, and private companies

Members of the EIS Team

- ◆ CDM/Tetra Tech
 - ◆ Project Manager – Darrel Stordahl, P.E.
 - ◆ Reclamation Specialist – Ed Surbrugg, PhD
 - ◆ Water Treatment Specialist – Randy Huffsmith, P.E.
 - ◆ Hydrogeologist – Brian Goodman
 - ◆ Community Involvement Coordinator – Karen Ekstrom, P.G.

Members of the EIS Team (cont.)

◆ DEQ

- ◆ Project Coordinator - Kathy Johnson
- ◆ Operating Permit Section Supervisor – Pat Plantenberg
- ◆ Hydrogeologist – Wayne Jepson
- ◆ Soil Scientist – Scott Fisher
- ◆ Geochemist – Laura Kuzel

◆ DNRC

- ◆ Water Rights Specialist - Scott Irwin

Brief History of the Project

- ◆ Historic mining in area since 1900
- ◆ Grayhall Resources began full-scale mining in 1984 and went bankrupt in 1987.
- ◆ C.R. Kendall acquired the site in 1987 and began mining in 1988
- ◆ C.R. Kendall mined from 1988 to 1997
- ◆ Reclamation has already begun and ~ 138 acres remain to be reclaimed
- ◆ Last approved change to the reclamation plan was in 1995
- ◆ C.R. Kendall submitted a proposed amendment to the reclamation plan in 2001

Brief History of the Project (cont.)

- ◆ DEQ's draft EA in August 2001 received comment that could not be addressed by the EA process
- ◆ DEQ's final EA in February 2002 stated that an EIS would be done for the site
- ◆ DEQ issued a Request for Proposals for the EIS in 2002
- ◆ CDM was contracted in 2003 to perform the EIS

EIS Funding Issues and Schedule

- ◆ Funding for the EIS is provided through DEQ by the legislature
- ◆ To date, funding has been authorized only for the initial steps of the EIS, plus some additional non-typical activities
- ◆ The period of performance for this work is February 2003 through June 2003.
- ◆ If additional funding becomes available, DEQ will authorize additional work to be conducted on the EIS.

Authorized Tasks

◆ DEQ has authorized CDM to perform three tasks by June 2003

◆ Task Order 1 – Public Scoping Activities

◆ Task Order 2 – Project Management Plan

◆ Task Order 3 – Initial Evaluations

Task Order 1 – Public Scoping Activities

◆ Opportunities for the public to learn about the EIS process and to provide input on their concerns

◆ 1.1 - Scoping Interviews

◆ 1.2 - Open House

◆ 1.3 - Technical Meetings

◆ 1.4 - Public Meeting

The results of these scoping activities will be provided to DEQ in a Scoping Report that will also be available to the public

Subtask 1.1 - Scoping Interviews

- ◆ Provided a private venue for comment
- ◆ Comments were not attributed to specific individuals
- ◆ Held in Lewistown from March 11 to 13, 2003
- ◆ Advertised in newspaper, on radio, and via direct mail
- ◆ Twenty-seven people responded (4 by phone)
- ◆ Results will be used to focus the EIS and will be provided to DEQ in a Scoping Report

Subtask 1.2 - Open House

- ◆ Held April 9, 2003 in Lewistown, MT
- ◆ 4:00 to 6:00 pm
- ◆ Provided an opportunity for the public to ask questions and talk with technical specialists

Subtask 1.3 - Technical Meetings

- ◆ Working meetings with technical specialists, stakeholders, and interested public
- ◆ Looking for common components to solve problems - win/win solution is the goal, but compromise may be needed
- ◆ Technical meeting member list will be developed from the other scoping activities
- ◆ Technical groups will be organized around primary interests (such as water quality) and will discuss concerns and potential alternatives
- ◆ Meetings will start in the next few weeks

Subtask 1.4 –Public Meeting

- ◆ Held April 9, 2003 in Lewistown, MT
- ◆ 6:30 to 9:00 pm
- ◆ Updates the public on the EIS activities and provides an opportunity for additional comment to be added to the public record
- ◆ Preceded by a Scoping Document sent to mailing list

Task Order 2 – Project Management and Performance Verification Plan

- ◆ Develop a management plan to serve as a guide for the EIS team
 - ◆ Serves as coordination tool for project
 - ◆ Aids in identification of baseline data gaps and potential schedule delays
- ◆ Collect/provide the Administrative Record
- ◆ Perform project management and QA/QC

Task Order 3 - Initial Evaluations

- ◆ Assist DEQ with data gap analysis
- ◆ Determine environmental consequences
- ◆ Develop reclamation alternatives and identify actions common to all Agency action alternatives

Task 3.1 - Data Gap Analysis

- ◆ CDM/Tetra Tech will review the project and provide a memorandum to help identify supplemental data and information needed for completion of a defensible EIS

Task 3.2 – Determination of Environmental Consequences

- ◆ The affected environment describes those aspects of the existing environment which are relevant to the issues that have been identified
- ◆ Begin analysis of affected environment for direct, indirect, and cumulative effects
- ◆ Address environmental effects or controversy in proportion to their potential significance

Task 3.3 – Development of Reclamation Alternatives and Identification of Common Actions

- ◆ Existing alternatives are “No Action Alternative” (1995) and “Proposed Action Alternative” (2001)
- ◆ Develop a subset of reclamation actions that are supported by the majority of the stakeholders
- ◆ These actions will be part of larger set of alternatives to be included in the EIS
- ◆ Reclamation actions will allow some site work to continue while the EIS is being prepared.

Issues of Concern Identified to Date

- ◆ Water Quality and Quantity
- ◆ Waste Characterization
- ◆ Reclamation Plan Changes
- ◆ Costs and Sources of Funding for Reclamation and Long Term Maintenance
- ◆ Impacts of Land Application Disposal and Disposal of the Reverse Osmosis Brine

Examples of Potential Components of Possible Alternatives – Reclamation of Leach Pad and Waste Rock

- ◆ Total or partial backfilling of pits
- ◆ Capping of leach pad with RPL, water balance, or other types of caps
- ◆ Use of geotextile filter fabric in the leach pad cap
- ◆ Removal of leach pad wastes to another facility
- ◆ Partial excavation of wastes from drainages and placement in pit
- ◆ Relocation of waste rock dumps

Examples of Potential Components of Possible Alternatives – Groundwater and Surface Water Management

- ◆ Continued use or discontinuance of pumpback system
- ◆ Augmentation of surface flows using groundwater
- ◆ Collection of leachate
- ◆ Water treatment (RO, zeolites, or other)
- ◆ Land application (treated or untreated water)
- ◆ Rerouting of storm water
- ◆ Reopening blocked drainages
- ◆ Construction of passive wetlands to treat storm water runoff and process flows

Major EIS Deliverables

- ◆ Draft Environmental Impact Statement
- ◆ Final Environmental Impact Statement
- ◆ Record of Decision

Public Comment

- ◆ Ensures that issues important to the public are known to the EIS team
- ◆ Supplements comments made in the public interviews
- ◆ Comments are most useful if they are specific
- ◆ Everyone who wants to comment will get a chance to do so
- ◆ Comments will be recorded by a court recorder
 - ◆ stand at the microphone
 - ◆ state your name
 - ◆ speak slowly

I

Appendix
I

Appendix I

Transcript of Public Testimony

CDM

BEFORE THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PUBLIC HEARING ON THE PROPOSED PLAN OF
C.R. KENDALL MINE CLOSURE
FERGUS COUNTY, MONTANA

TRANSCRIPT OF THE PROCEEDINGS

Heard Before Karen Ekstrom,
Community Involvement Coordinator

Yogo Inn, Lewistown, Montana

April 9, 2003
7:00 p.m.

REPORTED BY:

CHERYL ROMSA
CHERYL ROMSA COURT REPORTING
P. O. BOX 1278
HELENA, MONTANA 59624
(406) 449-6380

ORIGINAL

I N D E X

COMMENTS	PAGE
VERNON SMITH.....	4
BONNIE GESTRING.....	6
JAMES D. JENSEN.....	7
LEONARD DAVIS.....	8
KAY PEGG.....	9
JIM VOLBERDING.....	10
GLEN PEGG.....	11
COURT REPORTER'S CERTIFICATE.....	13

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WHEREUPON, the following proceedings were had:

(A PowerPoint presentation was given by Karen Ekstrom and Darrel Stordahl.)

MS. EKSTROM: We're going to go on the record to give you a chance to provide comments on the record. And I want to stress that it supplements comments that were already made in the public interview. So if you visited with me during the interview process and you feel comfortable with the comment you gave and you don't want to have your name associated with the comment, you don't have to repeat it again here. And also, if you had folks write down comments on the flip charts during the open house, again, you don't have to repeat that. If you want to repeat it and have your name associated with it, that's fine, too.

The comments are most useful to us if they're specific. And everyone who wants to comment will get a chance to do so, and that's very feasible tonight, where we don't have a whole lot of people signed up.

The way we're going to do it is, I've got the sign-in list, and I've got a column here that indicates whether you do or do not want to provide public comment. And I'm just going to go down the list. It looks like there's about, oh, maybe three yeses and a couple of maybes, and I'll just go in the order they're in on the list. And

1 we'll give folks five minutes to provide their comment.

2 Our court reporter, Cheryl, is going to set up her
3 unit, and we'll shut the PowerPoint off.

4 (A brief discussion was held off the record.)

5 MS. EKSTROM: When you come up, if you could
6 state your name, because I'm probably going to butcher it
7 from the sign-in sheet. We'll have Cheryl tell you if she
8 understands the spelling, and if not, she'll have you
9 spell it. Then just state your comment. And I'm going to
10 time folks. I think five minutes will be --

11 MR. VOLBERDING: I think there may be some people
12 here that actually signed in, but did not check that --

13 MS. EKSTROM: What we're going to do is, we'll go
14 through the list of the people who have indicated they do
15 want to comment, and then when those folks are done, then
16 whoever else wants to comment, we'll just have you stand
17 up kind of in a line in the aisle and move through with
18 the same five-minute interval.

19 The first person I have signed up is Marv Hoffer, and
20 I think Marv is not here anymore. So the next person is
21 Vernon Smith.

22 MR. SMITH: My name is Vernon Smith, 606 West
23 Brassey, Lewistown, Montana. I'm very familiar with the
24 reclaiming process, because I am a part owner of the Queen
25 Rose Mine at Landusky and Zortman, Montana.

1 I truly believe that the pits at Kendall should be
2 just partially filled, not over forty foot deep. The side
3 walls should be left there to ensure environment so the
4 mine can be reopened as the days pass. Because I have
5 assayed every coulee, every place you can get, under
6 ground, on top of the ground, with different mining
7 engineers, since I was 14 years old.

8 For the water, I have never seen much water run in the
9 side coulees. My granddad was a timber man with LeTray,
10 and they never saw much water. The water was trapped in
11 the old tailings and mine dumps that held the water back
12 and let the water run down the streams from the mine.

13 Water was pumped from the creek, which you all know
14 over there, in the Muleshoe and Horseshoe pits. The train
15 tunnel was drove so the mine could be flushed out. There
16 was some water running down the coulees in the shafts, in
17 the old workings, and that's what caused the springs
18 below. Because up above the mine coulees, the rock is
19 limestone; on the other side, towards Hilger down there,
20 it looks like a shale base.

21 So I guess that's it. And the reclaiming should be
22 done within the bond and the money, so the taxpayers don't
23 have to pay any money for reclaiming. And the mine should
24 be left in a situation where it can be reopened easily.
25 And the ore that is piled around there, there should be

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24 be left in a situation where it can be reopened easily.
25 And the ore that is piled around there, there should be

5

1 great regards to the ore, because one ton of waste rock
2 mixed with ore ruins a hundred ton of ore.
3 Thank you.
4 MS. EKSTROM: Thanks, Vernon.
5 Bonnie Gestring, you're next.
6 The next name is Jim Jensen.
7 MS. GESTRING: My name is Bonnie Gestring, and I
8 work for the Mineral Policy Center. I will submit written
9 comments covering most of the things that I'd like to
10 highlight, so contrary to what you asked, they won't be
11 very specific tonight. I just want to lay out a few
12 general comments, and then I'll send the specifics to you
13 in writing.
14 The alternatives that are developed in the EIS must be
15 driven by the requirements of Montana law, which states
16 that, quote, "The reclamation plan must provide measures
17 to prevent objectionable post-mining groundwater
18 discharges; and that the reclamation plan must provide
19 sufficient measures to ensure public safety and to prevent
20 the pollution of air or water and the degradation of
21 adjacent lands."
22 This language is very clear. It doesn't state that
23 impacts should be minimized, it states that they should be
24 prevented. This must be the starting point from which
25 this plan is developed. The plan should focus on

6

1 J-E-N-S-E-N. I'm the Executive Director of the Montana
2 Environmental Information Center, and I testify here today
3 on its behalf.

4 I can't add very much to what Bonnie Gestring just
5 said. We will provide detailed, written comments on the
6 record. But I do want to state, at least for the record,
7 that the Montana Constitution is the basis for which
8 reclamation planning and all of the designs that you come
9 up with here must adhere to, and it says, "All lands
10 disturbed by the taking of natural resources shall be
11 reclaimed." All lands. No rock faces left, no disturbed
12 land left. All lands must be reclaimed.

13 So the question is just how to reclaim, not whether to
14 reclaim. I hope that the team will not waste time or
15 money, being that you really don't have much money -- not
16 even enough to complete this analysis -- on any of the
17 alternatives which will not result in all of the lands
18 being reclaimed. To do so will ensure litigation and
19 postpone the ultimate reclamation at this site, and that's
20 not in anyone's interest.

21 Thank you.

22 MS. EKSTROM: Last on the sign-in sheet as a yes
23 is Leonard, and I'm sorry, Leonard, I can't read your last
24 name.

25 MR. DAVIS: My name is Leonard Davis. I'm with

1 WTL Logging. We've been associated with the area of
2 C.R. Kendall Mine. We did some productive thinning up
3 there and had some beetle infestation problems, some fire
4 detention work we have added to our logging industry in
5 the ten last years.

6 I'm well aware of a lot of stream management zones
7 erosion control, and I just have to say that the
8 Kendall Mine has been very, I guess I'd call it overkill
9 on what they've been doing with the water quality. I'm
10 not too obsessed or too -- I can't really relate on the
11 water quality itself. But as far as taking care of any of
12 the erosion control, stuff like that, they just have been
13 excellent. And they kept a pretty good eye on us while we
14 were up there, too; well concerned about the job, the
15 type, and how we were taking care of the timber and the
16 land and the water.

17 So I was pretty impressed with the mine, not only as a
18 legal aspect, but as a genuine concern of what we were
19 doing and what quality job we were doing.

20 And that's all. Thank you.

21 MS. EKSTROM: Thanks.

22 The last person I have listed as a maybe is Kay Pegg.

23 MS. PEGG: Unfortunately, I had to go out for a
24 moment, so I'm not sure what all has been said. But in
25 response to Mr. Jensen --

1 MS. EKSTROM: Kay, could you come up here.

2 MS. PEGG: Basically, my concern is not entirely
3 with the reclamation of this. I mean, I realize that it's
4 important to reclaim it. But I think that there has been
5 a pretty well documented reclaiming of it already, and
6 it's pretty well done.

7 It bothers me that we are allowing people to more or
8 less try to take away some of the advantages that we have
9 here in Montana for income. When I was young, it was
10 called the Treasure State. Now, it's called Big Sky. And
11 we can't live on sky, we need to do some mining. Our
12 economy is at the bottom of the pit. We need to do
13 something to get our state back into a productive, viable
14 economy. And I think that some of this harassment of the
15 mining industry in Montana is driving it out of our state.
16 And there are other states who are mining and are doing
17 well at it.

18 Thank you.

19 MS. EKSTROM: So that's the list of all the
20 people who have checked that they wanted to comment. Is
21 there anyone else who didn't check it that would like to
22 provide comment?

23 Jim.

24 MR. VOLBERDING: Just some brief comment. I've
25 already had extensive comments with you and have provided

1 written comment.

2 MS. EKSTROM: Jim, could you just give your name
3 to Cheryl.

4 MR. VOLBERDING: Jim Volberding,
5 V-O-L-B-E-R-D-I-N-G, and I'm with Canyon Resources.

6 I do have some supplemental written comment I'll
7 provide you with tonight.

8 The one thing I did want to encourage you and the
9 oversight agencies is that as we go through this
10 process -- and I think Darrel touched on this earlier --
11 that we'll find some commonality with some of the various
12 reclamation alternatives. I'm thinking primarily of some
13 of the dirt work that could be done up there. And my
14 concern is, and I think everybody in this room's concern
15 is to get some work done up on the site.

16 I would like to see, if possible, some of that
17 analysis expedited, and hopefully, to the point where we
18 can actually turn some dirt this year yet. I would hate
19 to see us lose yet another field season out there.

20 And other than that, you've got my comments already.
21 Thank you.

22 MS. EKSTROM: Thank you.

23 Is there anyone else?

24 Glen.

25 MR. PEGG: My name is Glen Pegg, and I want to

1 address this, not only as an employee of Canyon Resources,
2 but also as someone who was born and raised here who
3 utilized the Kendall area for recreation dating back when
4 I was in high school and that. I just want to say that
5 the job that we've done there, I believe, speaks for
6 itself. And anybody who feels differently, I'd like to
7 show them around.

8 I want to say that the mine as it stands, the closure
9 plan as it stands, was something that was approved by the
10 State at the time when we initially instituted it. And
11 since then, we've done numerous revisions to it, not to
12 get out of doing a better job, but to improve the job that
13 we've done up there. And this last revision is something
14 that we've done to improve that job, as well, and I think
15 it ought to be really looked at hard, as far as cost
16 effective and a well-managed area.

17 That's it.

18 MS. EKSTROM: Thanks.

19 Anyone else?

20 Is there anyone who already gave comment who would
21 like to add to their comment?

22 Well, with that, I think we're done. Thank you all
23 for coming.

24 (The proceedings were concluded at 7:21 p.m.)
25

J

Appendix J

Appendix J

Written Comment Received During the Scoping Process

Volberding

COMMENTS PROVIDED BY
JIM VOLBERDING DURING
SCOPING INTERVIEWS

back formal method
EIS Scoping Comments

1. A cost-benefit analysis should be included in the EIS to cover all aspects of reclamation.
2. The EIS should consider CR Kendall's March 2001 Amended Closure Plan as a viable alternative.
3. The EIS should consider whether the alleged water quantity issues are mine related or are caused by the drought conditions the region has experienced in the past several years.
4. The EIS should consider whether the water currently being captured by the mine's pumpback systems is of suitable quality to be utilized for livestock watering purposes. If so, then the EIS should investigate an alternative whereby some or all of the captured water is used for this purpose without additional treatment.
5. The EIS should consider whether the water currently being captured by the mine's pumpback systems is of suitable quality to be utilized for agricultural, i.e., irrigation purposes. If so, then the EIS should consider an alternative whereby some or all of the captured water is used for this purpose without additional treatment.
6. If the EIS determines that the captured pumpback water is of suitable quality to be disposed of via land application (irrigation), the EIS should consider the off-site, down-gradient irrigation location selected by CR Kendall which would have the advantage of not having to pump to up-gradient irrigation sites. *Joe Peters (On Barnes King) notes stockwater standards (MSU) way below irrigation standards.*
7. The EIS should incorporate existing analyses of the performance of various heap leach pad cover options conducted by CR Kendall and DEQ to confirm that the option selected in DEQ's July 2000 and CR Kendall's March 2001 closure plans is a suitable alternative and meets the demands of MMRA.
8. The EIS should incorporate the desires of the Kendall Mine property owners as to whether various buildings, roads, and other infrastructure should remain in place for future use.
9. The EIS should consider whether the current dry land seed mix currently being used at the mine should be changed to accommodate wetter conditions that will occur should land application be chosen as the preferred water disposal alternative.
10. In assessing water quality impacts from the Kendall mine, the EIS should consider whether the elevated constituents levels are mine-related or are due to naturally elevated background or previous, historic mine activity.
11. The EIS should incorporate existing data and reports generated by the Kendall Mine and other entities so as not to be duplicative.

April 8, 2003

Important Information prepared by: Soil Scientist Clair O. Clark for this important meeting on needed solutions for C.R. Kendall Mine Reclamation.

Both CDM and DEQ Staffs keep writing about Scoping interviews, Scoping Meetings, and Technical Meetings, but no mention about going out to the specific sights of major concerns in the Kendall Mine Reclamation for the long term. I believe field trips is important to the people that will be making the final decisions in the EIS process.

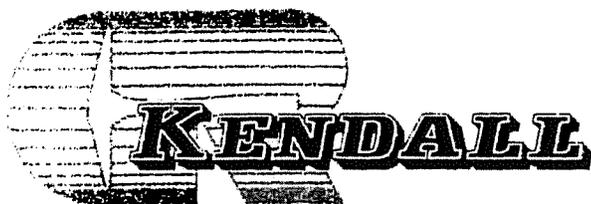
We are very concerned about the long range water quality in surface water runoff, shallow water wells, and deep Geologic formation waters in Fergus and adjacent Counties.

Due to the deep pits dug in the head of drainage, and along the slopes of the Moccasin Mountains as the C.R. Kendall Mine operations tore up the drainage and dividing slopes of ridges in collecting rock fragments in search of gold and other minerals, it has disturbed many areas and geologic formations.

The ranchers, home owners, and adjacent use areas like the Boy Scout Camp site, study areas, and water use areas, are being severally affected economically and health wise.

I gave all my Technical documents to Karen Ekstrom, CDM Community Involvement Coordinator, on March 8, 2003 when she was in Lewistown for her Kendall Mine Reclamation meetings.

This information prepared by:
Clair O. Clark
716 West Chic Street
Lewistown, Montana
Phone: 406 538 8909



CR KENDALL
P.O. Box 799
Hilger, MT 59451
Phone (406) 538-2501

Fax (406) 538-7834

April 9, 2003

Ms Karen Ekstrom
CDM, Inc.
28 North Last Chance Gulch
Helena, MT 59601

RE: Comments and corrections to CDM's "Scoping Document, C.R. Kendall Environmental Impact Statement"

The following comments and corrections to the CDM Scoping Document are offered to help to provide clarity to the EIS process:

Pages 3 and 4: The aerial photographs of the mine site included in the report were taken at the end of mining in 1995 and show the maximum amount of disturbance. Since that time, 299.2 acres of the 446.2 acre of disturbance (67%) have been reclaimed. Including these photographs leaves the public with the impression that much more reclamation work is required than is actually the case.

Page 5: "The C. R. Kendall Corporation began operations at the mine in 1984 and stopped processing ore in the fall of 1997."

This statement is untrue. The CR Kendall Corporation began mining in 1989 under operating permit number 00122. Prior to the CR Kendall's involvement, Trident Investments, Inc., and Grayhall Resources operated open pit mines and heap leach facilities at the mine site during the modern era.

Page 6: While it is true that an EA was issued in August of 2001, the subject of that assessment was NOT the reclamation plan as proposed by CR Kendall. Rather, the subject of the EA was DEQ's amended soil cover plan for the heap leach pads. Neither CR Kendall's proposed soil cover plan nor any aspect of site water management were the subject of the EA. While water management issues were raised in the public meeting, it is deceptive to state that they were the subject of an environmental analysis under MEPA.

Page 6. Subsequent reports issued by DEQ's contractors DO NOT support the contention that salts in the mine waste water are detrimental to vegetation growth. In fact, the report "Kendall LAD Vegetation and Revegetation Monitoring 2002" prepared by Rich Progers, Bighorn Environmental Services under contract to DEQ states that while some plant damage has occurred it is likely due to over application and is temporary. In fact, Progers recommends application of waste waters to promote vegetation on non-productive plots to accelerate the rate of functional

restoration. Further, a June 2001 report prepared for CR Kendall by Parametrix, Inc., entitled "Uptake of Thallium by Pasture Forage Irrigated with Water from the Kendall Mine" indicated that grasses irrigated by mine waters display minimal or no uptake of elements of concern and are suitable for grazing purposes. It should also be pointed out that the mine waste water meets all irrigation and livestock watering standards as promulgated by the Montana State University Agricultural extension service, both for quantity (MontGuide MT 8901) and quality (Baulder, 1998, "When is Water Good Enough for Livestock"). It should also be noted that the salt content of mine waste waters will be reduced dramatically once the pads are covered and subsequent reduction in the contribution of "salts" from leach pad effluent.

Page 6: Review of Water Rights Issues. Water rights issues have already been addressed by the Montana Department of Natural Resources and Conservation (DNRC) in their February 3, 1999, legal opinion regarding application 41T-104524 which ruled that operation of the pump-back system does not require a beneficial use permit. The DNRC ruled that water treatment and disposal via land application is not a beneficial use of the water. In any event, the issue is rendered moot by the fact that the mine is returning water to critical drainages at or above the rates at which it is removed via the pump-back systems.

Page 7: "Water contamination was not evident in 1995 and was not included in the approved reclamation plan for the site."

Water contamination from historical and natural sources WAS evident in 1995 and prior to CR Kendall's involvement at the site. This contamination is documented in "Evaluation of Background Hydrochemistry for the Kendall Mine" prepared by Water Management Consultants in 1999 which was submitted to DEQ and forms the basis for compliance standards that the mine currently operates under. It should be noted that DEQ has suggested that waters currently collected at the Mason Canyon and South Fork pump back locations are at background concentrations and therefore should no longer be intercepted.

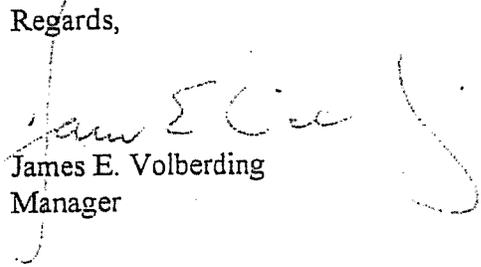
Page 8: Use "land application" versus "irrigation". The use of the term "irrigation" implies a beneficial use which, as noted above, it is not.

Page 8: CR Kendall has applied to DEQ, on May 1, 2002 and July 2, 2002, for permission to land apply waste waters over a larger area per the recommendations of Producers. To date, DEQ has not responded to this request. Note that CR Kendall currently utilizes 101 acres for land application.

Page 8: Proposed Alternative. As stated in the text, CR Kendall did submit a request for a minor permit amendment to Mine Operating Plan 00122 on March 8, 2001. DEQ reviewed the plan and issued one round of completeness questions on April 6, 2001. CR Kendall responded to these questions on May 14, 2001; however, there was no further correspondence from DEQ regarding CR Kendall's proposal. CR Kendall was not informed that the application constituted anything other than a minor permit amendment; therefore, pursuant to MCA 82-4-342(4), the agency has 30 days to respond to a proposal or it is automatically approved. DEQ informed CR Kendall that its application had been denied on May 14, 2002, fully a year after the last correspondence from

CR Kendall. DEQ's decision has been appealed to the Board of Environmental Review, a hearing officer has been appointed, and a hearing scheduled.

Regards,


James E. Volberding
Manager

APR 14 2003

DATE: April 10, 2003

FROM: Kay A. Pegg

TO: Karen Ekstrom
CDM
28 N. Last Chance Gulch
Helena, MT 59601

I much preferred the private meeting format, however since at that meeting my main focus was on the water and environment concerns. These are important areas to address, however my greatest concern is Montana's economy. Since this was not addressed in the public input, I did want to have my feelings included in the comments; however I was so nervous I was not pleased with what I said.

This is what I meant to say:

I'm a native Montanan. My parents grew up in Montana, they raised five children and I raised four—all are living in Montana so I would never condone any activities that would harm the state.

Formerly two of our main economic core were agriculture and mining. However in recent years more and more regulations and restrictions have made it difficult for industry to operate in Montana. Previously we were called the Treasure State. Now we're Big Sky Country, and we are at the bottom of the heap economically—which goes to show you can't live on blue sky.

It's great to save Montana for the children but I'm afraid we're preserving it for the urban area children to use as a playground.

With all due respect to Mr. Jensen as long as humans live in contemporary homes, take advantage of advanced technology and travel in modern

Page 2

modes of transportation the earth cannot be perfectly preserved and it is unrealistic to expect that it can be put back exactly as it was. The C. R. Kendall reclamation project has met the requirements of the original contract on the completed areas and with their current amendment intend to take that commitment one step further in a good faith effort to leave the area better than they found it.

I don't want to take jobs away from your association, but I also do not want a great deal of our states much needed funds used to appease a few squeaky wheels.

Kay A. Pegg

DNRC address

Sept. 3, 2001
105 Carroll Trail
Lewistown, MT. 59457

Patrick Plantenberg,
MT. Dept. of Environmental Quality
1520 E. 6th Avenue,
P.O. Box 200901
Helena, MT. 59620

SUBJECT: CANYON RESOURCES (KENDALL) MINE EIS, DESTROYED AREA
RESTORATION

Greetings,

I, Marvin C. Hoffer, have been actively, and directly involved in this entire issue as a federal staff person and a private citizen since its inception with legal standing per the National Environmental Policy Act (NEPA) and the MT. Environmental Policy Act (MEPA) as your records substantiate.

The following is my Evaluation Report of the obscene environmental conditions generated by the Canyon Resources (Kendall) Cyanide Heap-Leach Mine and its predecessors in the South Mocassin Mts. north of Lewistown, MT. and apparently sanctioned by the MT. Dept. of Environmental Quality (DEQ) and the US Bureau of Land Management (BLM) over the past 15 yrs. with major direct and indirect degradation and destruction of numerous public and private resources and values, environmental, economic, social, and legal. This can not continue.

This Evaluation is in response to the misdirected efforts of the DEQ over the past 15 yrs. and the totally inept, and questionable legal, DEQ intent to "reclaim" the toxic mine wastes, "restore" these invaluable watersheds, and resolve the outrageous public water quality and quantity violations by the mining company and apparently sanctioned by the MT. DEQ over the past 15 yrs.

I hereafter identify the problems, the potential solutions that must be immediately effected to apprise the public and resolve the complex of failed attempts by various MT. agencies, the US BLM, and Canyon Resource (Kendall). My Evaluation is presented in priority sequence, most important actions first.

(A) A completely new Environmental Impact Statement (EIS) to be immediately (Oct. 1-2001) initiated and completed by no later than May 1, 2002 (7 months action time over winter, plus 30

days to solicit a contractor) by an acknowledged professional, reputable contract environmental evaluation firm paid for by the Canyon Resources company, but exclusively selected and administered jointly by the MT. DEQ, DNRC and US BLM with public oversight responsibility will meet the requirements of MEPA-NEPA and the ultimate identification of what the problems are, and potential solutions.

This EIS must be a joint, a cooperative NEPA (federal USBLM) and MT. DEQ-DNRC signature EIS, and cooperatively prepared for public evaluation and decision as to what corrective actions to take. Both the federal government (USBLM) and the MT. DEQ-DNRC must co-sign this EIS in that both the federal and state of MT. governments were, and are, legally and directly involved at the initial permitting process stage and continued to have legal administrative responsibilities under NEPA, MEPA and other laws and policy since then to date.

This can administratively and legally can be administratively and functionally accomplished in my recommended time period, IF, DEQ-DNRC-USBLM are directed by both the current federal and MT. state government administration to immediately resolve this ugly situation; and thereby provide for immediate evaluation by the public of the EIS and selection of the public (e.g. MT. DEQ, DNRC) action to resolve the massive problems beginning July 1-2002. We can not afford to waste any more of our public finances, time, and resources as has been the case to date. DEQ, DNRC, and US BLM for reasons of politics and misdirected intent based on very questionable "data" and objectives have not begun to address the basic and publically acknowledge causes of the many problems within the permitted mine areas, and the solutions to rectify them.

The Joint EIS is the only legal, viable, rational, and effective process available. To deny this solution is to perpetuate the political "solutions" that have been the basis for all actions and inactions to date. "What is the most "cost-effective" answers?" "What is the quickest means to resolve this quagmire of politically sensitive problems?" "Who, which agency" can we tell the complaining publics to pursue for 'answers'?" "How can we avoid being held responsible for results or lack thereof?" Continuance of the terribly ineffective, and wasteful, DEQ, USBLM, DNRC, and CRK mining company inactions and actions is not acceptable under any rational standard, and must stop immediately and to effect the Joint EIS and begin honest, positive, and viable resolution of this horrendous morass of environmental destruction and politics.

In that the US BLM was a federal land administration agency when this mine was permitted jointly by BLM and MT DEQ, it is mandatory under NEPA and MEPA that the above Joint BLM-MT DEQ EIS be co-signed by US BLM on behalf of the federal government and MT. DEQ on behalf of the MT. citizens. This is mandated due to the joint governmental permitting, evaluation, and administration of the subject Canyon Resources (Kendal) mine at its inception, and is irrespective of the ultimate "elimination" of federal land and federal administration in response to Canyon Resources and MT. state agencies to isolate (eliminate) the federal government and applicable

federal laws, policy and standards in the monitoring and administration of the mine.

(1) Bear in mind, we the public, and numerous other non-Montana state and federal agencies and organization, have addressed similar problems long ago and well know the process to develop viable solutions. We are not starting from a position of no experience or ignorance about this type of environmental destruction and degradation of public and private resources. DEQ, USBLM, DNRC should not attempt to misrepresent, beguile, the MT. public by stating or implying that "we must study the problem, we don't have the answers." The years of DEQ-DNRC-USBLM claiming they need more time, don't have the resources, etc. forces the public to conclude that either all three agencies's staff are incompetent, or simply politically stalling to resolve this critical environmental problem. That is either self-deceptive or arrogantly misleading the public. We do not need to reinvent the wheel. Which appears to be the principle thesis of DEQ, US BLM, and Canyon Resource mining company. The avowed "reclamation" to date amounts to no more than cosmetic activity, a poorly veiled scam, none of which addresses, or resolves the basic problems, nor results in viable solutions.

(2) Major, significant issues, factors have drastically changed since this entire problem was brought to the public, field conditions have been massively altered, various actions have been taken by the company, etc. which have significantly altered the field conditions and results, many more are planned or promised, various actions and promises of solutions have been waylaid, and most of the basic problems still exist without any coherent or functional "solutions". There is no evidence of passion in our public agencies to aggressively, effectively resolve the well-recognized problems, only pathetic excuses, blame on other agencies, or claims of inadequacy.... lacking public finances, abilities, knowledge, and time. In short....failure. Pathetic failure by highly-paid public employees.

(3) A series of public field evaluation tours of the entire watersheds and permitted mine areas led by the MT. DEQ,, MT DNRC, and US BLM jointly to permit the adjacent private land owners, the general public, and governmental agencies\staff to discuss on site the problems and potential solutions. This must be done prior to beginning the EIS and Fall 2001 ends. I strongly recommend that this be accomplished for a 2-3 days period in Mid-Sept. 2001. These fact-finding tours should be all encompassing, no areas should be excluded, "off-limits" for any reasons, no hiding the facts, specifically not to inform the public and agencies of ground situations. An honest and open field evaluation intentionally organized to inform, not hide, the facts. This has never been done, and is two decades overdue.

(4) The totally incompetent, damaging actions of questionable legally undertaken jointly by the DEQ, DNRC, US BLM and the mining company over the past 15 years, and specifically the recent 6-year period, to "reclaim", "restore" this irreplaceable public and private watershed has culminated in an unconscionable myriad of horrific failures and continued destruction of our public and private resources, specifically our invaluable surface and ground water resources. If there

The objective: To insulate the critical clay seal from water penetration through transeaporation by a viable, natives only, self-maintaining plant ecosystem.

(f) Reroute all original (pre-mine) streams, water course around all entombed waste rock-spoil pits.

The Objective: To preclude all erosion or damage of the clay seals of all entombed rock-spoil pits. One thunderstorm could easily destroy the clay seal, fill the toxic waste dump in the pits with water, reactivate the acid mine drainage source and create a basin of highly toxic and hazardous materials which would eventually burst and drain into the surface or groundwater.

(g) Isolate all mine cyanide heap-leach and similar toxic wastes-spoils from all waste rock pits, repositories. Never permit any mixture of waste rock and cyanide heap-leach toxic materials, anywhere, anytime. Definitely do not place any cyanide heap-leach and similar toxic wastes-spoils in the waste rock entombed pits, or place or mix with not toxic cap soils for plants restoration.

The Objective: Stratify all toxic mine materials and those materials which could generate toxic products so that complete detoxification of all such material can be initiated, and the complete isolation by entombment of those that meet pre-mine watershed chemical standards and public environmental regulatory. criteria.

(h) Effect an immediate action, a comprehensive and aggressive decontamination of all cyanide heap-leach and similar source toxic hazardous materials on site entirely separate from the entombment of the toxic waste rock. The isolation of these extremely toxic materials is critical to begin restoration of our public surface and groundwater sources, and to preclude further contamination by heavy metals, nitrates, and other mining products of these critical water resources. Water resources as derived from this severely destroyed watershed are the primary and most critical public and private resource of the entire area. It is the ultimate of all values, the source of all potential gain, environmental, social, and economic; or degradation\destruction thereof. If the surface and groundwater contamination by the mine operations is not quickly resolved so that no human support systems, e.g., capture and decontamination facilities for decades, etc., are required, then we will face perpetual destruction of our water resources and perpetual elimination of our cultural, social, economic and environmental values and resource. This is not acceptable under any circumstance.

The mining company, and the state and federal land ownership and regulatory agencies we employ are jointly responsible for the destruction of and restoration of all public and private natural resources and environmental values.

The Objective: Resolve all current and future water quality and quantity problems immediately to begin natural hydrologic functions to recharge our public and private ground water and surface water resources with water equal to in quality and quantity, or greater than, the pre-mine standards on and off-site the permitted Canyon Resources mine area.

C) The naive, of questionable legality, and grossly deficient "check list ea" process and product being attempted by DEQ violates the MEPA and NEPA. It would serve only to further misdirect our public finances and efforts (by DEQ, DNRC, and US BLM) and result in certain failure to resolve the massive contamination of this critical watershed. More importantly, this irrational attempt to "divide and conquer" the problems and "solutions" into separate subjects, "EAs", is known in federal legal circles as "Piece-Mealing" and was declared in federal court decades ago as "Illegal."

MEPA, NEPA mandate that the entire proposed action and potential enlargement thereof must be comprehensively evaluated for all positive and negative ENVIRONMENTAL EFFECTS on, and off-site BEFORE any actions are taken, or governmental sanctions are issued. This specifically includes these aborted attempts at "mine reclamation" of the past 15 years and the current gyrations. If the essential scientific data are not available, then the proposed MEPA-NEPA process can not proceed. Disregard this illegal "checklist EA" entirely and initiate the Joint EIS immediately.

D) The avowed "reclaimed" mined area is fraudulent, a doomed and desperate political attempt at restoration of this devastated watershed and less than candid as to apprising the public about the massive problems which appear to be either ignored or hidden, and viable potential solutions. The public is suspect as to who is directing our environmental laws and protection processes in this matter, our public employees, e.g., DEQ, DNRC, or the mining company.

(E) It was well known by the US BLM and MT. environmental" agencies prior to any cyanide heap-leach gold mining began at Canyon Resources (Kendall) that the touted "bond" values were grossly inadequate, why they were massively insufficient, and what they should approximate. The resultant bond for the massively destructive mining on public and private land was politically dictated, and totally rejected scientific and experienced staff and evidence. I have no tolerance for DEQ lamenting that "we learned a lesson as to how insufficient the bonds are." That is naive, untrue, and implies credibility, when there is none.

(F) The DEQ statements, intent, as made at the public meeting, Lewistown, MT. 8-31-01, that DEQ intends to "do a separate and another environmental assessment (EA) to address water (I assume quality and quantity, etc.)" is simply astounding and illegal per the MEPA, and any rational environmental process. This would simply be another attempt at "piece-mealing" declared in federal

court as absolutely illegal decades ago.

Both the NEPA and MEPA were created by the public to effectively evaluate any\all proposed actions by private and public persons, agencies, groups BEFORE any actions are taken, or sanctioned. MEPA, and any similar environmental law, policy, specifically direct all public agencies, e.g., DEQ, DNRC, etc., and private interests who must seek public government permissions, to complete a COMPREHENSIVE ENVIRONMENTAL EVALUATION (NOT an Economic evaluation) of the entire proposed actions(s) as to potential effects, on and off-site. This specifically directs the DEQ, DNRC to work cooperatively with other public agencies, in this case by law must include the US BLM in that the initial mining actions as permitted included federal land administered by the USBLM. The DEQ attempt to circumvent the mandatory MEPA and NEPA requirements appear to have been engendered by either ignorance of the law and\or by intent. Neither is legally acceptable.

The NEPA\MEPA mandated solution: Abandon the aborted and totally illegal "checklist EA" ritual as an independent effort by DEQ, and initiate the Joint EIS immediately. We can not tolerate the aborted attempts to shove the problem in a hole for we the public to try to clean-up decades in the future.

(G) If MT. DEQ, DNRC, etc. attempt to continue to circumvent MEPA, NEPA and the EIS process, they will simply be illegally squandering our limited financial capacity, will underwrite the mining company violations, and guarantee that the public will continue to have no confidence in the DEQ, DNRC employees and administrators to effect public law and policy to protect the MT. public and its critical environmental resources. The greatest threat from the aborted MT DEQ-DNRC-USBLM and Canyon Resources mine is that the state and federal agencies would give Canyon Resources mine company a "clean bill of health" document thereby releasing them from complete and legally-mandated reclamation, per the MT. Constitution, of the entire massive mining-generated problems. Then obligating in perpetuity the MT. and American public with solving and financing the massive mining-caused reclamation problems.

(H) A solution thereafter is for the MT. public to pursue the transfer of this massive, and correctable, problem to the federal Environmental Protection Agency (EPA) and declare the Canyon Resources (Kendall) mine area a federal superfund site. This in my opinion is the only means to accomplish a complete and an effective reclamation of the Canyon Resources (Kendall) mine devastation. I do not believe the state of MT. employees, agencies want, or have the ability to resolve this critical problem to federal Clean Water Act standards. An ugly fact of declaring it a federal Superfund Site then would be that the mining company polluters win again in that American public would be held hostage to environmentally, financially and legally resolve the problems that many in federal and state government, the public, and the company

knew before they began their toxic cyanide heap-leach gold mining activity would result in another toxic waste dump as resulted from the nearby Zortman-Landusky cyanide heap-leach gold mining activity which also was "administered" by the same US BLM, MT. DEQ groups, with the same devastating results. Slow learners, or are there other more insidious reasons why the MT. and American publics are always paying the horrible price for private greed and governmental agencies ineptitude and aborted actions?

(I) At least 2-3 field examinations of the entire affected geographic area, entire watershed, downstream locations....extending to the Judith River and possibly beyond are required now: schedule 2-3 different dates beginning Sept. 4, 2001 (Tues.) Give all publics a full and informative tour of the entire ground situation including adjacent areas, above, at the sides ,and below the entire mine.

Purpose: (a) Give everyone, public and agency employees a comprehensive and current situation review of all issues. Only in this manner can we begin to determine what the solutions, if there are any, may be. (b) The EIS to be completed will use this information as well.

(J) Paramount to the mandatory EIS and subsequent total decontamination, rehabilitation, and reclamation of the entire permitted mine area and all past, current and future off-site effects is the immediate (by November 1, 2001) development\full replacement of water quality and quantity by and at the Canyon Resources (Kendall) mine company expense to pre-mine conditions, quantity and quality for all degraded and\or destroyed private and public water sources and resources. Conventional wells and pumping facilities from a distant source(s) may be the most effective and immediate solution in part. In addition, Canyon Resources (Kendall) should be held liable for the lost economic resources by the private interests over the past decades of mine operation, with interest. This to be jointly enforced and monitored by MT. DEQ-DNRC and US BLM.

Objective: To replace in full the private and public water resources and sources destroyed\degraded by the Canyon Resources (Kendall) mine actions since inception so that private and public interests have the water resources to function this winter (begins Nov. 1, 2001) and years beyond without hindrance, additional expense, or liability of any nature. Their losses are a direct result of an illegal "taking" by Canyon Resources (Kendall) mine actions.

I hope, and expect, that the MT. governmental agencies, the USBLM, our local MT. representatives, and the Canyon Resources mining company will immediately attack this grievous destruction with one objective: complete, permanent, and immediate restoration of all natural resources and values destroyed\degraded by the Canyon Resources (Kendall) mine in the Moccasin Mts. of MT. No other "solution" is legal, morally , environmentally or socially

acceptable.

Please keep me fully apprized of your proposed actions in a timely manner.

Sincerely,

Marv Hoffer

cc: Sen. Max Baucus

DNRC admin.

DEQ admin.

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Appendix
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Appendix K

List of Those Interested in Attending Technical Meetings

People interested in Technical Meetings

From Public Meeting and Open House

Jim Jensen	Box 1184	Helena	59624		
Bonnie Gestring	134 W. Pine Street	Missoula	59802		
Jim Volberding				362-4555	
Stephanie Shammel	23 Salt Creek Road	Lewistown	59451		
Alan Shammel	23 Salt Creek Road	Lewistown	59451		
Marv Hofer	105 Carroll Trail	Lewistown	59457	538-2641	
Dan Bristol	RR 2 Box 2302	Lewistown	59457		
Jay Gremaux	RR 2 Box 2252	Lewistown	59457	538-8560	
Bill Rife	PO Box 64	Winnett	59604		
Glenn Pegg	HC 85 Box 4137			350-2099	
Kori Sramek	RR 3 Box 31106	Lewistown	59457	538-9792	
Kay Pegg	HC 85 Box 4138	Lewistown	59457	538-2281 or 2355	

From Interviews

Clair O. Clark	716 W. Ohio Street	Lewistown	59457	528-8909	possibly
Dirk Hassler	130 Winifred	Hilger	59451	538-4019	possibly
Richard and Marlene Hassler	2857 N Kendall Road	Hilger	59451	538-8648	possibly
Vernon E. Smith	606 W. Brassy	Lewistown	59457	538-8142	possibly
Jerry Hanley	138 13th Ave. S	Lewistown	59457	538-2420	possibly

Agency Participants

Scott Irvin, Regional Manager, DNRC, Water Resources Office, Lewistown, 538-7459
Jim Mitchell, BLM, Lewistown

Mike and Lida McReynolds	280 N Kendall Road	Hilger	59457	538-7848	possibly
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Appendix

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Appendix L

Technical Meeting Letter

CDM

May 21, 2003

Re: Kendall Mine Closure EIS technical working meetings

Greetings:

As part of the scoping process for the Kendall Mine Reclamation Environmental Impact Statement (EIS), CDM is arranging a series of technical working meetings at the Yogo Inn in Lewistown, Montana.

Two meetings have been scheduled on separate topics:

- Mine Reclamation - May 29, 2003. 1 p.m. to 4 p.m.
- Water Quantity/ Water Quality- June 3, 2003
Water Quantity, 9 a.m. to 12 p.m.
Water Quality, 1 p.m. to 4 p.m.

You are receiving this letter because you indicated an interest in participating in one or both of these meetings, either during the interviews or on the sign in sheet for the open house/public meeting. A total of 18 people expressed an interest in these meetings (Attachment 1).

We would like to use these technical working meetings to identify and resolve technical conflicts related to the specific topic areas. These meetings are *not* a forum for discussions on whether the mine is, or was, "good" or "bad".

The technical working meetings are open to all interested parties. However, we believe our goals will be more easily achieved if the number of participants at each meeting is kept to fewer than 10 people. If you are interested in participating, please review the list of names of other interested parties on the attachment. If several of these individuals are known to you and are known to hold opinions or expertise similar to yours, it is our hope that you would select one person who can represent those opinions. This will reduce the number of people at each meeting and will still allow all view points to be heard. All technical issues raised at the meetings will be addressed, whether they are raised by one person or ten.

Please call Shana at CDM in Helena at (406) 449-2121 to let us know you will be attending. You may also email Shana at gustovichsl@cdm.com.

Thank you!

CDM

Attachment 1
List of Potential Participants in Technical Working Meetings

- Jim Jensen
- Bonnie Gestring
- Jim Volberding
- Stephanie and Alan Shammel
- Marv Hofer
- Dan Bristol
- Jay Gremaux
- Bill Rife
- Glenn Pegg
- Kori Sramek
- Kay Pegg
- Clair Clark
- Dirk Hassler
- Richard and Marlene Hassler
- Vernon E. Smith
- Jerry Hanley

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Appendix
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Appendix M

Notes from Technical Meetings

MEETING DIGEST

Kendall Mine Closure EIS Technical Working Meeting for Reclamation Issues

Date: May 29, 2003
Time: 1:00 pm to 4:00 pm
Location: Yogo Inn, Lewistown, Montana

Attendees:

Name	Company	Address	Phone
Ed Surbrugg	Tetra Tech EM Inc.	Helena	406-442-5588
Clair O. Clark	Lewistown	716 W. Ohio Street	406-538-8909
Marv Hoffer	MJH Inc	Lewistown	406-538-2641
Jim Volberding	Canyon Resource	Lincoln	406-362-4555
Glen Pegg	CR Kendall	Lewistown	406-538-2501
Bonnie Gestring	MPC	Helena	406-549-7361
Dave Chamber	CSP ²	Missoula	406-
Stephanie Shammel	Land Owner	Hilger	406-538-8686
Kathy Johnson	DEQ	Helena	406-444-1760
Pat Plantenberg	DEQ	Helena	406-444-4960

Meeting opened at 1300 moderated by Ed Surbrugg of Tetra Tech EM Inc..

Meeting attendees were asked to sign the attendance list and the meeting agenda was presented and discussed.

Discussed that the results of the technical meeting discussions and input would be the scoping report.

Dave Chambers requested a brief explanation of where the reclamation process was in relation to the EIS scoping?

Dave Chambers asked about the rate of thallium (TI) production from the mine wastes and if the area soils had been sampled for TI? Jim Volberding stated that a consultant (Water Management Consultants) had evaluated the area to some degree and published their results in a 1997 report.

Generally discussed existing reclamation success at the Kendall Mine from the north end of the mine to the south end. Ed Surbrugg provided a brief summary of 2 Rich Producers reports (2001 and 2002) on Kendall Mine revegetation. The reclamation in the major mine areas included:

Horseshoe pit area: Pit is graded to drain. Revegetation is generally unsatisfactory and is dominated by pioneer species. Additional surface revegetation work is needed. Stephanie Shammel state that the existing slopes are eroding and that possibly trace metals have been detected in a down gradient monitoring well.

Muleshoe pit area: Briefly discussed pit backfill, liner alternatives, and poor revegetation in lower area where LAD was not applied.

Barnes-King: Discussed working with other potential agencies (DEQ-MWCB, BLM abandoned mine program) to reclaim tailing in Barnes-King gulch. Identified sampling and analysis of metals in tailing in Barnes-King as an unknown data gap.

Mill site area: Briefly discussed potential impact that regrading, soil cover, and revegetation would have on under-drain water volume and quality. Discussed many aspects of removing leach pad wastes for backfilling pits. Had some concurrence that leach pad materials would be best managed by reclaiming them in place. Deferred to next water quantity and quality technical meeting for most of the water rights, MPDES permit, and use of LAD for long-term water management issues.

Kendall pit area: Discussed need for additional revegetation. Concerns and data gaps were identified for quality and quantity of waste rock with soil-like qualities. Existing data is primarily based on soil physical parameters and leaching studies and plant-available metal concentrations have not been defined. Discussed that with concurrent water treatment alternatives, the Kendall pit will not be needed for discharge of water that passes through zeolite ion-treatment.

Types of Covers: Dave Chambers provided input on what are basically two types of reclamation soil covers: (1) a water barrier type cover (geocomposite clay-liner [GCL], HDPE, bentonite) verses (2) a water balance (restrictive leaching) type cover (deeper soils, stratified layers [fine over coarse textures], soil water potential modeling to define)

Bonnie Gestring requested cross-sections of each of the main pit area to determine the volume of wastes needed to backfill. Jim Volberding said that the information exists and would be provided. Jim and Glen both stated that because of the overburden swell-factor, all waste rock would not fit back into the pits.

Kathy Johnson presented a summary of the main discussion items that would be typed up and emailed or mailed to the meeting attendees. .

The meeting adjourned at 1640.

MEETING DIGEST

Kendall Mine Closure EIS Technical Working Meeting for Water Quality and Quantity Issues

Date: June 3, 2003
Time: 9:00 am to 4:00 pm
Location: Yogo Inn, Lewistown, Montana

Attendees:

Name	Company	Address	Phone
Randy Huffsmith	CDM	Helena	406-449-2121
Clair O. Clark	Lewistown	716 W. Ohio Street	406-538-8909
Marv Hoffer	MJH Inc	Lewistown	406-538-2641
Jim Volberding	Canyon Resource	Lincoln	406-362-4555
Scott Irvin	DNRC	613 NE Main Lewistown	406-538-7459
Glen Pegg	CR Kendall	Lewistown	406-538-2501
Bonnie Gestring	MPC	Helena	406-549-7361
Scott Beal	WMC	Denver	303-979-9005
Alan Shammel	Land Owner	Hilger	406-538-8686
Stephanie Shammel	Land Owner	Hilger	406-538-8686
Lyle Shammel	Land Owner	Hilger	406-538-8686
Kathy Johnson	DEQ	Helena	406-444-1760
Brian Goodman	Tetra Tech EM	Helena	406-445-5588
Wayne Jepson	DEQ	Helena	

Meeting opened at 0910 moderated by Randy Huffsmith of CDM Inc.

Meeting attendees were asked to sign the attendance list and the meeting agenda was presented and discussed.

Marv Hoffer requested copies of the meeting digest form from the previous reclamation technical meeting held on May 28, 2003.

Alan and Stephanie Shammel requested data on current mine pump back system rates and waste rock volumes. Wayne Jepson of DEQ stated that he had provided pump back system data from January through April 2003 to Bonnie Gestring.

Bonnie Gestring requested that hydrogeologic cross-sections of each of the four drainages that the mine crosses. She requested that the cross-sections include monitoring and pump back wells.

Randy Huffsmith indicated that if these cross-section data exist then they will be provided, however there was no budget is available at this time to prepare new cross-sections

The meeting proceeded to the agenda items including the tentative schedule for second technical meeting as follows:

Wednesday, June 25, 2003 – Water Quality/Quantity

Thursday, June 26, 2003 – Reclamation

Wayne Jepson presented a detailed description of the groundwater pump back system starting at the north end of the mine site in the Little Dog Creek drainage. The contaminants of concern that were exceeding regulatory standards include dissolved thallium (Tl), selenium (Se) and arsenic (As). Elevated nitrate and sulfate are also observed. Thallium has been detected above standards in the capture system from the Little Dog, Barnes-King, and Process Valley drainages. There was a general discussion of arsenic at the site. (After Meeting comment by DEQ - Because process water has been land applied CN should also be sampled in these drainages).

Alan Shammel presented questions concerning filtering of samples. There was discussion of the detection of elevated arsenic levels in the Boy Scout pond southeast of the mine site. Discussion took place as to the potential for generation of acid mine drainage (AMD) at the CR Kendall site. Water Management Consultants (1997) reported low pH water in three groundwater seeps located on a topographic high between the Kendall town site and the Mason Canyon Drainage.

Randy Huffsmith mediated the discussion of water treatment alternatives.

A. Land Application

Discussion from the group member indicated a concern that current land application was distributing contaminants to areas of the mine site where they were not previously present.

- Advantages - Dedicated plots to develop water tolerant species, encourage growth, and reduce sedimentation, cation exchange could be positive - may have improved chemistry longer term - process water comes out and quality/flow reduced.
- Disadvantages - Concern with recharge to Madison poor quality water. Concern - mixing pump backwater with process water. Concern: Vegetation becomes contaminated, sorbing to soils, developing a type of vegetation that needs water, evaporated water cannot infiltrate and be available for down stream users.

Offsite land application concern - is it valid? Maybe short term?
Geotechnical stability issues with too much water applied?

B. Passive Biological Treatment

Discussion of this method was presented by CR Kendall personnel indicating that it was previously tested in the Barnes-King drainage and was successful although there were operational problems. The pilot test was successful at removing contaminants of concern.

- Advantages - Can be shown to work, not mechanical, could be more room if waste rock removed, becomes more effective if water flow rates reduced.
- Disadvantages - May require a large footprint, can short circuit, loading could require maintenance, desorption, may not be reliable, may not treat all parameters.

C. Reverse Osmosis (RO)

- Advantages - Permeate can be very clean and easily meet standards, residuals - concentrate is removed from the system. Wind power as a supplement? Bench test, pilot test.
- Disadvantages - Reject stream, classify, and dispose of solids, cost, energy intensive.

G. Zeolites Ion Exchange

Randy Huffsmith presented an explanation to the group on heap leach pad operations and pad closure rinse operations

- Advantages - Known products and results, could be used with another process, effective for thallium and arsenic (selenium?) Could be used passively.
- Disadvantages - May need to be used with other processes, will load and will require disposal.

E. Chemical Precipitation (Ferric Chloride, possible Iron Filings, other)

- Advantages - Proven for Arsenic.
- Disadvantages - Questionable for Thallium and selenium. Precipitate/residuals.

F. Evaporation

- Advantages - Only solids to deal with.
- Disadvantages - Power cost, water rights, likely not feasible.

G. Waste Isolation

Bonnie Gestring expressed a desire to remove all waste that is in contact with groundwater and place it in dry areas such as the mine pits.

- Advantages - Reduces long term treatment
- Disadvantages - Concern issue - Do not leave waste over springs, even if the waste is capped in-place, the waste will still leach to GW.

H. Waste Removal

- Advantages - Could be in dryer/better location.
- Disadvantages - May be difficult to construct in new location. Concern that waste rock piles shut down spring flow. (After Meeting DEQ Discussion: Analysis at Zortman found that 70% of precipitation reported through the leach pads and out as seepage. Reclamamtion will increase evapotranspiration to about 70% of precipitation, reducing seepage flows to 30% of precipitation. Flows to downstream users will decrease with reclamamtion? This should be in quantity discussion)

I. Other Water Treatment Option

No other options at this time (After Meeting DEQ Discussion : In the reclamation meeting we discussed the geochemistry of the waste rock dumps. Are the water quality trends showing that the metals that have come out were surficial deposits on the fractures of the rocks or are the rocks continuing to weather? Do we have a trend analysis that shows the nitrate levels are decreasing as the nitrates are flushed from the rock? Are the levels of arsenic, thallium and selenium showing a declining trend over time? This sounds like a topic for the wq/wq meeting.)

The group broke for lunch at 1215 and reconvened at 1315.

Randy Huffsmith mediated the discussion of water quantity alternatives.

Alternatives for Water Quantity

A. Continue pump back at existing rates

There was a discussion of how the mine currently returns flows from the pump back system to drainages based on prior year flow measurements.

- Advantages - Getting contaminated water out of waste/aquifer.
- Disadvantages -

Concern - makeup water from Water Well #7 could have an effect on aquifer/Section 29 spring. May be difficult.
Concern - Replace water instantaneously.
Concern - Water not replaced in its same location.
Concern - Quantify effects.

Scott Irwin presented a discussion of the past and current water rights situation at the CR Kendall mine.

Bonnie Gestring indicated that the current pump back system does not intercept all contaminated groundwater and that some is likely bypassing the capture system.

The group discussed the need for involvement of the BLM to resolve using spring and groundwater above the mine for supplementing supply below the mine

B. Capping Waste

- Advantages – Discussed in item F.
- Disadvantages -

C. Full or partial pit backfills

- Advantages - Could carry drainage through facility - could partially fill drainages. Could gain some additional topsoil (which may be impacted by seepage through the wastes since they were covered) and potentially reduce cap material, could bring wastes out of groundwater and put in dry area, could improve water quality.
- Disadvantages - Concern: Some pits were already there and could cause contamination in the pit, Geotechnical issues. (Will it lead to better WQ?)

D. Drainage Extension

- Advantages - Little Dog, Mason Canyon could improve water quality.
Concern - easement agreements
- Disadvantages - Perennial flow - smaller and ephemeral flow much larger piping. Concern - Will BLM approve, is it a long-term solution?

E. Supplement shortfalls with supply wells

- Advantages - Discussed during continued pump back.
- Disadvantages -

F. Other Comments/Discussion on Heap Regrading

Marv Hoffer expressed concern that the heap liner would eventually leak. Randy Huffsmith presented information on liner construction. Alan Shammel indicated that if the liner was properly constructed it should not leak. He also expressed a concern as to whether all of the heap materials are still on the liner.

- Heap - Is waste all on liner or if there was leakage underdrain would be impacted.
- Re-grading heap and capping in place would offer advantages because there is already a liner and seepage collection system in place. In addition, there is an underdrain.
- If heap was moved, CN and metal contaminated soils would be in a new locations.
- Underdrain does not appear to be impacted but data should be reviewed in detail to assess.
- How does regrading fit into EIS process? (After Meeting DEQ Comment: This is a reclamamtion issue not a wq/wq issue)

Jim Volberding presented information as to the possible sale of the mine site to Weedon Construction of Lewistown and the possible regrading activities to be conducted by Weedon this summer/fall as part of the transaction. Marv Hoffer indicated that these activities may circumvent the EIS process. Bonnie Gestring inquired as to whether the new owner was willing to contribute funding to the EIS. Randy Huffsmith presented a discussion as to the possible regrading activities that would be conducted on the heap.

The meeting adjourned at 1540.

Meeting at DEQ 6/12/03

Attendees:

Name	Company	Address	Phone
Ed Surbrugg (a.m.)	Tetra Tech EM Inc.	Helena	406-442-5588
Jim Volberding	Canyon Resource	Lincoln	406-362-4555
Glen Pegg	CR Kendall	Lewistown	406-538-2501
Bonnie Gestring	MPC	Helena	406-549-7361
Dave Chamber	CSP ²	Missoula	
Name? (a.m.)	MEIC	Helena	
Kathy Johnson	DEQ	Helena	406-444-1760
Pat Plantenberg	DEQ	Helena	406-444-4960
Wayne Jepson	DEQ	Helena	406-444-0529
Darrel Stordahl (p.m.)	CDM	Helena	406-449-2121

PROCESS VALLEY

Offload Leach Pad

- Liner appears to be working.
- Consider benefits to moving:
 1. backfill pits, long-term containment;
 2. aesthetics;
 3. get worst material out of Mason Canyon.
- Consider option of lining and placing coversoil in area west of LP4 (plant area). Area is about 14.1 acres.

Leach Pad Regrading

- 3:1 slopes (should not have major slip/slumping problems on 3:1).
- Liner types (GCL, clay, RPL, water balance).
- Look at Osborne Model for Zortman for water balance, reduced leaching estimates.
- Kendall and Muleshoe 1995 Revegetation Report discussed use of RPL covers.

Borrow Areas

- Only on site borrow is in Section 29.
- Locate off site borrow source, but material should be similar to site soils and have about 50 % coarse fragments.

Water Treatment Alternatives

- Leach Pad produces 20 – 25 MGY in process water.
- The underdrain produces about 7 MGY (about 13 gpm).

Process Water

Consider:

- RO - use Beall Mountain Report, other related issues such as dispose of brine.
- Contaminants of concern are N, CN, As, Se, Tl.
- Various treatments will work – such as active + passive with LAD polishing.

Underdrain

- Currently about 13 gpm (= 6,832,800 gallons per year).
- Consider:
1. Zeolites polishing;
 2. Drainfield – may need UIC permit;
 3. Biotreatment if volume is reduced.

Stormwater

Consider:

- line stormwater ditches, try to get ditches to original ground.
- redesign of stormwater ditches to minimize leaching not to maximize sediment removal.

Data Gaps

- Analyses needed for off-loading leach pad?

Lower Dog Creek

Known

- Se, N (about 10-15 ppm), Sulfate, TDS also above standards.

N. Muleshoe Dump Reclamation Options

- Backfill option would involve backfilling with 2.5 M CY into Muleshoe pit.
- Key cut in east wall of Muleshoe pit would allow drainage.
- Pit to be lined with something (plastic, GCL, clay) before backfilling. Sandwich waste between 2 liners with coversoil on top of all.
- Less coversoil available after re-stripping due to loss.
- Regrade area under removed dump to reestablish drainage.

Water treatment from North Muleshoe Dump

- 15 gpm □ 10MGY.
- Not as easy to treat this water compared to Process Valley because higher volumes of water and higher Tl concentrations.
- Passive treatment is limited due to treatment size needed and narrow valley.
- Other alternatives could be RO, biocell, zeolites, anaerobic for N.
- Water treatment could end up being a combination of types.

Data Gaps

- Need to ask Shammels where was (is) the spring under the N. Muleshoe Dump?
- It's unknown how deep metals from dump may have leached into underlying materials.

Barnes-King Gulch

Known:

- Tl main concern, elevated N, Se above standards.
- As and Tl greatly elevated in gulch downstream of mine property after flowing over historic tailings. Need to address this issue in the EIS as a concern. Re-route flows away from Barnes-King Gulch until historic tailings are removed.

Pit Backfill Alternative

- Approximately half of the Muleshoe Dump to be backfilled to the Barnes-King pit under the maximum backfill option.

- Remaining half of the Muleshoe Dump to be backfilled to the Muleshoe pit under the maximum backfill option.
- Daylight backfill options also to be evaluated.
- Lining of pit bottom (plastic, GCL, clay).
- Cover backfilled pit (water barrier or water balance).
- Consider benefits to backfilling:
 1. original contours/visual
 2. water quality
 3. water quantity

No Action Alternative

- 1995 approved reclamation plan.

Improve Covers on Dumps Alternative

- Reduce slope steepness.
- Evaluate dump covers.

Water Quality/Water Quantity

- R.O., passive biocells, zeolites, anaerobic, LAD polishing.
- Improve storm water drainages.

Data Gaps

- Volume check of waste rock dumps, and maximum and daylight pit backfill options. Obtain electronic CADD files from mine as a starting point.
- Drawings of maximum and daylight backfill options for each pit.
- Identity future land use designated for the mine site. Mine currently to be restored to grazing and wildlife habitat.

South Fork Last Chance Creek

Known

-

Pit Backfill Alternative

- Kendall Dump to be backfilled to the Kendall pit under the maximum backfill option.
- Daylight backfill options also to be evaluated.
- Lining of pit bottom (plastic, GCL, clay).
- Cover backfilled pit (water barrier or water balance).

No Action Alternative

- 1995 approved reclamation plan.

Improve Covers on Dumps Alternative

- Reduce slope steepness.
- Evaluate dump covers.

Water Quality/Water Quantity

- Drainfield with possible zeolite addition in drainfield trenches.
- Improve storm water drainages.

Data Gaps

- Spring flow beneath Kendall dump unknown. Lowest observed flows in downgradient pump-back well during spring time may be equivalent to flow from any buried springs.
- Identification of borrow sources for water balance covers.

- Flush of sediment in 1995 to Boy Scout pond (Discussed in previous report by)? Identify if As spike noted in pond in 1995. Is dam constructed of historic tailings? Need to discuss this issue in EIS.
- Identify historic waste rock/tailings beneath current waste rock dumps.

Horseshoe

Known

-

Pit Backfill Alternative

- Horseshoe pit already partially backfilled.
- Evaluate maximum backfill alternative.
- Tailings located beneath the waste rock dump.
- Horseshoe waste rock dump volume generated by mine personnel does not include volume of historic tailings located beneath. Horseshoe tailings covered 8.8 acres and at 22-inches of annual precipitation generated 5.3 M gallons of annual runoff assuming an impermeable tailings surface.
- Tailings beneath waste rock dump can be considered for removal with the backfill alternative. Tailings can be placed in Horseshoe pit or in leach pad if it has not been reclaimed when tailings are exposed.
- EIS to discuss a grant required to remove tailings dams on Shammel's property.

No Action Alternative

- 1995 approved reclamation plan.

Improve Covers on Dumps Alternative

- Reduce slope steepness.
- Evaluate dump covers.

Water Quality/Water Quantity

- Currently no water to treat. See data gap discussion.

Data Gaps

- Well 15 B does not show contamination. Well TMW-15 was buried in 1992. Believed to be dry well. Need to check previous data. May need to install an additional monitoring well in this area.

Other Discussions

- Initial EIS evaluations will be completed with alternatives for each drainage basin. These basin alternatives can be incorporated into larger site-wide alternatives later in the EIS process.
- Next technical meeting will be a combined land reclamation/water quality/water quantity meeting held in Lewistown on Thursday June 26, 2003 from 8:00 a.m. until 5:00 p.m.
- DEQ will invite BLM to attend this meeting.
- Agenda should include a discussion of EIS funding status and an update on compliance plan and order.

MEETING DIGEST

Kendall Mine Closure EIS Technical Working Meeting for Reclamation/ Water Quality/ Water Quantity Issues

Date: June 26, 2003
Time: 8:00 am to 2:00 pm
Location: Yogo Inn, Lewistown, Montana

Attendees:

Name	Company	Address	Phone
Kathy Johnson	DEQ	Helena	406-444-1760
Scott Irvin	DNRC	Lewistown	406-538-7459
Wayne Jepson	DEQ	Helena	406-444-0529
Pat Plantenberg	DEQ	Helena	406-444-4960
Jim Volberding	Canyon Resources	Lincoln	406-362-4555
Bonnie Gestring	MPC	Helena	406-549-7361
Dave Chambers	CSP ²	Bozeman	406-585-9854
Stephanie Shammel	Land Owner	Hilger	406-538-8686
Glen Pegg	CR Kendall	Lewistown	406-538-2501
Clair O. Clark	Lewistown	Lewistown	406-538-8909
Brian Goodman	Tetra Tech EM	Helena	406-445-5588
Darrel Stordahl	CDM	Helena	406-449-2121

The technical meeting opened at 0810 and was moderated by Darrel Stordahl of CDM Inc. The meeting agenda (attached) was presented and discussed.

Stephanie Shammel provided comments on previous technical meeting digests -
5-29-03 meeting - No monitoring well is present below the Horseshoe Pit area.
6-3-03 meeting - (with regard to evaluating off-site land application areas) Joe Peter's property will not work. Prodder's study says it will not work. Clair and Stephanie both want a copy of Prodder's second study.

Stephanie Shammel also stressed the need for hydrologic cross sections for the mine area drainages.

Claire Clark expressed concerns about the sloughing of highwalls and the contamination of deep aquifer.

Kathy Johnson provided a summary of DEQ activities. Kathy will discuss MPDES permit issue with DEQ legal staff (John North). Funding issues: \$85K to be spent next fiscal year on EIS or data gap collection and evaluation. \$100K of existing funds must be given back at the end of the State fiscal year (June 30, 2003). DEQ will get these funds back in October, 2003. DEQ will use \$85K to keep project going and begin some data gap collection and evaluation. \$180K remaining on CDM contract.

Bonnie Gestring inquired about DEQ's plans for obtaining the \$180K required to complete the Draft EIS.

Kathy Johnson replied that DEQ will be meeting with CR Kendall to discuss EIS funding. \$50K-\$60K of EPA funding will be available in 2004 to go towards data gaps. The Draft EIS would not be completed until 2005 under the current budget situation. No general fund money is available.

Bonnie Gestring expressed concern about the time frame to complete the EIS. She stated that she appreciates DEQ's efforts to try to fund the EIS, but would like concrete answers to DEQ's budget approach.

Kathy Johnson discussed the proposed action alternative for the EIS. CR Kendall's proposed action was previously denied by DEQ so we do not have a proposed action alternative for the EIS. We can use the current proposed action if desired, or we can just have a no action alternative along with newly developed alternatives.

A decision was made and agreed upon at the meeting to not use the proposed action alternative that was previously described in the Scoping Document in the EIS analysis.

Discussed the next agenda item, which was an overview of reclamation options common to all drainages. These options were generated during the 6/12/2003 meeting. Darrel Stordahl provided a brief summary of each of the following options common to all drainages:

- Maximum Fill Pit Backfill
- Daylight (Free Drain) Pit Backfill
- Lining of Pit Bottom
- Backfilled Pit Cover
- Waste Rock Dump Regrade
- Waste Rock Dump Covers
- Surface/Stormwater Runoff

The reclamation alternatives for each drainage at the Kendall Mine were outlined in the June 12, 2003 meeting. This summary of reclamation alternatives was used as a discussion outline in the technical meeting and comments from the technical group members were documented. The reclamation alternatives by drainages are attached to this meeting digest, including comments generated during this June 26, 2003 technical meeting. Other general comments with regard to the reclamation alternatives are provided below.

After some discussion, it was decided in the technical meeting to add covering the highwalls as a subalternative in the maximum backfill option. A portion of the highwall would remain exposed under the maximum backfill option.

Dave Chambers asked whether we have leaching information on the highwalls. This item was added to the bullet list of data gaps (attached). Dave also asked if we can use visual observation for areas prone to leaching. It was decided that geochemical testing is required to determine if covering of highwalls is necessary. Stockpiled waste rock that is the same composition of the highwalls can be used for geochemical testing.

Stephanie Shammel - Do not regrade the leach pad without putting cover on at same time.

Jim Volberding discussed borrow source for subsoil and topsoil. The only potential borrow site is a small ridge located below the Muleshoe dump, but this is not a good borrow source.

Claire Clark - No quality bentonite exists at the mine site. There is good topsoil available on the benches below the mine site.

Pat Plantenberg- Topsoil on slopes needs to have coarse fragments in order to be stable on reclaimed slopes.

Discussion of piped verses lined drainage for passing surface water through mine site - Claire Clark stated that piping should not be used because it is a short term solution and would not be able to handle slug flows.

Stephanie Shammel provided comment on pit liners - Evaluate without bottom liner to avoid sandwiching water in waste. Evaluate water coming into pit from highwall and evaluate with and without bottom liner.

Wayne Jepson - Soil balance important to topsoil removal/replacement alternatives.

Stephanie Shammel - Spring above Section 29 is flowing strong this year.

Scot Irvine - Historic photos of site area show substantially less vegetation, which would cause more runoff (less water loss from trees/vegetations).

Claire Clark - Consider multi-layers of clay for all clay liners. Dry the R.O. brine and ship off site.

General comments were made with regard to water quality/ water quantity – Mason spring is routed to South Fork (need to consider both mason and south fork drainages when discussing development of spring)
The Harrell's need water in fall.
Mason spring historically flowed down mason Canyon.
Some historic tailings were moved and used to cover liner.
Shammel tailing dams constructed of earthen fill to trap tailings.
Shammel's concerned about LAD north of Muleshoe dump.

Stephanie Shammel expressed concern about Dog Creek- Has mine blasting effected water flow? Drainage is dry. Springs dry at Ranch. Two deep wells supply water to ranch.

Water Quality Concerns -

Did exploration holes contribute to water quality/water quantity issues? Gold Fields drilled exploration holes in 1981. Kendall exploration drilling year was unknown.

Kathy Johnson discussed compliance issues with John North during a break in the technical meeting and reported the outcome of the conversation. DEQ will hold off on MPDES permit until the EIS is completed. EIS will be used to establish limits in the

permit. CR Kendall must comply with interim standards. Kendall is currently meeting interim compliance. Kendall will have to meet full WQB-7 Standards under new compliance order.

Dave Chambers would like to discuss background metal concentration in soils when the time comes. Background not completed in original mine permit.

Additional comments and action items:

CDM needs to obtain the 1983 water sampling data from Stephanie Shammel. The USGS regional geological map shows geology of the area and should be used during the EIS.

Mine pits, waste and tailings that pre-dated CR Kendall mining activities are to be presented as part of the EIS. A layer in CR Kendall's CADD file shows waste rock dumps in relation to site geology.

Stephanie Shammel – All water may not all report to Madison formation. Most wells below mine are installed in Eagle Sandstone.

Discussed priorities for filling data gaps -

Stephanie Shammel - Thinks leach pad regrade/cover is priority.

Bonnie Gestring - Likes idea of leach pad priority if it can be done legally.

Clair Clark – Need a good quality R.O. unit. Take the money currently being spent on recirculating water (pumping) and use instead to treat water.

CDM needs to obtain Spectrum's leach pad analysis from Pat Pantenberg.

Agreements made during Technical Meeting

- It was agreed that we do not have a Proposed Action reclamation alternative to evaluate in the EIS.
- The reclamation alternatives generated in the June 12, 2003 meeting, and further discussed in this June 26, 2003 meeting will be evaluated in the EIS.
- Leach Pad ores will remain in place. Various capping alternatives will be evaluated in the EIS that will include grading the leach pad and capping with a water balance, clay or geomembrane cap. Leach Pad grading and capping is the highest priority at the mine site.
- Spring development up gradient of the disturbed areas of the mine, and a water conveyance system to pass this water through the site to the down gradient drainages, is a priority item that will be evaluated in the EIS. Discussions with BLM will be initiated with regard to spring development.

CR Kendall Mine Closure EIS
Technical Working Meeting
Water Quality/Water Quantity/Mine Reclamation
June 26, 2003 8:00 AM - 5:00 PM

AGENDA

Meeting Attendee Sign-in

Review/Modification of Agenda

5/29/03 Mine Reclamation Meeting Action Item Discussion

6/03/03 Water Quality/Water Quantity Meeting Action Item Discussion

Overview of Reclamation Options Common to All Drainages

- Maximum Fill Pit Backfill
- Daylight (Free Drain) Pit Backfill
- Lining of Pit Bottom
- Backfilled Pit Cover
- Waste Rock Dump Regrade
- Waste Rock Dump Covers
- Surface/Stormwater Runoff

Discussion of Alternatives for Each Mine-Site Drainage

- Known Water Quality/Water Quantity Issues
- Reclamation Options
- Water Treatment
- Data Gaps
- Actions Common to All Alternatives?

Further Discussion of Data Gaps

- Canyon Resource Contribution
- Prioritize Data Gaps
- CDM/Tetra Tech Collection of Data Gaps

Further Discussion of Actions Common to All Alternatives

Additional Technical Meeting Required?

- Specific Topics
- Meeting Date/Location
- Action Items

**Reclamation Alternatives Generated
at the June 12, 2003 and June 26, 2003 Meetings**

PROCESS VALLEY (Mason Canyon)

Known

- Historic tailings and waste located up gradient of the Leach Pad.

Offload Leach Pad

- Liner appears to be working. CDM to evaluate design of existing liner.
- Consider benefits to moving:
 1. backfill pits, long-term containment;
 2. aesthetics;
 3. get worst material out of Mason Canyon.
 - Consider option of lining and placing coversoil in area west of LP4 (plant area) due to historic tailings and waste rock. Area is about 14.1 acres.
- Disadvantages to moving:
 - Leach Pad ores are already contained.
 - Available pit volume not sufficient to contain both waste rock and leach pad materials.

NOTE: A consensus was reached in the June 26, 2003 meeting to leave the ore on the existing leach pad and evaluate the Leach Pad Regrading alternatives below.

Leach Pad Regrading

- 3:1 slopes (should not have major slip/slumping problems on 3:1).
- Liner types (GCL, clay, RPL, water balance).
- Look at Osborne Model for Zortman for water balance, reduced leaching estimates. May have relevance to CR Kendall. Real data available at Zortman to compare to modeling.
- Kendall and Muleshoe 1995 Revegetation Report discussed use of RPL covers.
- Evaluate the Leach Pad ponds. Do they stay or are they removed? One pond requested to remain on site after reclamation for fire suppression.

Borrow Areas

- Only on site borrow is in Section 29.
- Locate off site borrow source, but material should be similar to site soils and have about 50 % coarse fragments.

Water Treatment Alternatives

- Leach Pad produces 20 – 25 MGY in process water.
- The underdrain produces about 7 MGY (about 13 gpm).

Process Water

Consider:

- RO - use Beall Mountain Report, other related issues such as dispose of brine. Consider use of portable unit.
- Contaminants of concern are nitrate, CN, As, Se, Tl, possibly NH₃, antimony, TDS (including sulfate).
- Various treatments will be analyzed – such as active + passive with LAD polishing.

Underdrain

- Currently about 13 gpm (= 6,832,800 gallons per year).

Consider:

1. Zeolites polishing;

2. Drainfield – may need UTC permit for underground injection;
3. Biotreatment if volume is reduced.
4. R.O. to be considered for all alternatives.

Stormwater

Consider:

- line stormwater ditches, try to get ditches to original ground.
- redesign of stormwater ditches to minimize leaching not to maximize sediment removal.

Data Gaps

- Analyses needed for off-loading leach pad?

Little Dog Creek

Known

- Se, Nitrate (about 10-15 ppm), Tl, As, TDS also above standards.

N. Muleshoe Dump Reclamation Options

- Backfill option would involve backfilling with 2.5 M CY into Muleshoe pit.
- Key cut in east wall of Muleshoe pit would allow drainage.
- Pit to be lined with something (geomembrane, GCL, clay) before backfilling. Sandwich waste between 2 liners with coversoil on top of all.
- Less coversoil available after re-stripping due to loss and potentially contaminated from LAD.
- Regrade area under removed dump to reestablish drainage. Test soils beneath to check for contamination. Replace contaminated soils if needed.
- Evaluate covering pit highwall.
- Storm water and spring development. Has water rights implications. Shammel's willing to file water rights.

Water treatment from North Muleshoe Dump

- 15 gpm □ 10MGY.
- Not as easy to treat this water compared to Process Valley because higher volumes of water (seasonally) and higher Tl concentrations.
- Passive treatment is limited due to treatment size needed and narrow valley.
- Other alternatives could be RO, biocell polishing, zeolites, anaerobic for N.
- Water treatment could end up being a combination of types.

Data Gaps

- Determine location of spring(s) under the N. Muleshoe Dump. Historic water rights maps from DNRC will help. Can obtain maps from Scott Irvin.
- It's unknown how deep metals from dump may have leached into underlying materials. Water quality/quantity will determine the need to move dump.

Barnes-King Gulch

Known:

- Tl main concern, nitrate (1-2 ppm), Se above standards.
- As and Tl greatly elevated in gulch downstream of mine property after flowing over historic tailings. Need to address this issue in the EIS as a concern. Re-route flows away from Barnes-King Gulch until historic tailings are removed.
- Peak flows 19-27 GPM. Avg. = 5 GPM.

Pit Backfill Alternative

- Approximately half of the Muleshoe Dump to be backfilled to the Barnes-King pit under the maximum backfill option.
- Remaining half of the Muleshoe Dump to be backfilled to the Muleshoe pit under the maximum backfill option.
- Daylight backfill options also to be evaluated.
- Lining of pit bottom (geomembrane, GCL, clay).
- Cover backfilled pit (water barrier or water balance).
- Evaluate covering pit highwall
- Consider benefits to backfilling:
 1. original contours/visual
 2. water quality
 3. water quantity

No Action Alternative

- 1995 approved reclamation plan (RPL cover).

Improve Covers on Dumps Alternative

- Reduce slope steepness.
- Evaluate dump covers.

Water Quality/Water Quantity

- R.O., passive biocells, zeolites, anaerobic, LAD polishing. Need to consider power requirements for all treatment alternatives.
- Improve storm water drainages.

Data Gaps

- Volume check of waste rock dumps, and maximum and daylight pit backfill options. Obtain electronic CADD files from mine as a starting point.
- Drawings of maximum and daylight backfill options for each pit.
- Mine currently to be restored to grazing and wildlife habitat.

South Fork Last Chance Creek

Pit Backfill Alternative

- Kendall Dump to be backfilled to the Kendall pit under the maximum backfill option.
- Daylight backfill options also to be evaluated.
- Lining of pit bottom (geomembrane, GCL, clay).
- Cover backfilled pit (water barrier or water balance).
- Evaluate covering pit highwall. Consider safety issue.
- Evaluate moving waste rock in head of drainage to avoid polluting Boy Scout pond.

No Action Alternative

- 1995 approved reclamation plan.

Improve Covers on Dumps Alternative

- Reduce slope steepness.
- Evaluate dump covers.

Water Quality/Water Quantity

- Drainfield with possible zeolite addition in drainfield trenches. R.O.
- Improve storm water drainages.

Data Gaps

- Spring flow beneath Kendall dump unknown. Lowest observed flows in downgradient pump-back well during spring time may be equivalent to flow from any buried springs.
- Identification of borrow sources for water balance covers.
- Flush of sediment in 1995 to Boy Scout pond (Discussed in previous report by Ken Kapsi). Identify if As spike noted in pond in 1995. Is dam constructed of historic tailings? Need to discuss this issue in EIS. Wickens Construction of Lewistown constructed pond approx. 23 years ago. Can check with them.
- Identify historic waste rock/tailings beneath current waste rock dumps. Jim Volberding provided photo.

Horseshoe

Pit Backfill Alternative

- Horseshoe pit already partially backfilled.
- Evaluate maximum backfill alternative.
- Evaluate covering pit highwall
- Tailings located beneath the waste rock dump.
- Horseshoe waste rock dump volume generated by mine personnel does not include volume of historic tailings located beneath. Horseshoe tailings covered 8.8 acres and at 22-inches of annual precipitation generated potentially 5.3 M gallons of annual runoff assuming an impermeable tailings surface.
- Tailings beneath waste rock dump can be considered for removal with the backfill alternative. Tailings can be placed in Horseshoe pit or in leach pad if it has not been reclaimed when tailings are exposed.
- EIS to discuss a grant required to remove tailings dams on Shammel's property.

No Action Alternative

- 1995 approved reclamation plan. No RPL exists in Horseshoe.

Improve Covers on Dumps Alternative

- Reduce slope steepness.
- Evaluate dump covers.

Water Quality/Water Quantity

- Currently no water to treat. See data gap discussion.

Data Gaps

Well 15 B (bedrock well) does not show contamination. Well TMW-15 was buried in 1992. Believed to be dry well. Need to check previous data. May need to install an additional monitoring well in the alluvium in this area.

Dog Creek

Water Quantity

- Evaluate water quantity issue.

North Fork Last Chance Creek

Water Quality/Water Quantity

- Evaluate water quantity issue.
- Currently no water treatment required in this drainage.

C.R. Kendall Mine Closure EIS
Draft Data Gap List
June 26, 2003

Non-Prioritized Potential Data Gaps

- Volume of Open Pits
- Volume of Waste Rock Dumps
- Volume/Location of Historic Tailings - need data from old drilling
- Available On-Site Sources of Subsoil/Topsoil/Gravel/Other
 - Volume
 - Leachable/Exchangeable Metals, pH - (leachable metals - not total)
 - Fertility
- Available Off-Site Sources of Subsoil/Topsoil/Gravel/Clay
 - Volume
 - Leachable/Exchangeable Metals, pH - (leachable metals - not total)
 - Fertility
- Background Thallium, Arsenic, Selenium and Other Metals Concentration in Area Soils - look at Water Management report - establish background in EIS for MPDES permit (increase in scope).
- Plant Inhibitory Properties in Top Layer of Leach Pads (used For Brine Disposal)
- Variability (with depth) of Physical and Chemical Properties in Buried leach Pad Material (Dozer Trench to Expose Leach Pad Materials for Sampling and Leaching Studies)
- Rates of Thallium, Arsenic, Nitrate, CN, Selenium and Other Metals from Various Waste that May Become Available and Impact Surface and Groundwater Quality - includes highwalls, pad, reclamation materials
- Leaching Studies (Breakthrough Determinations) for existing LAD and non-LAD Area Soils
- Soil Types and Areas for Joe Peters (and other areas) Potential LAD Area Calculated Salt Loading - Review Producers document first (water rights implications)
- Storm water Data from RPL
- Monitoring Well in Alluvium Below Horseshoe Dump
- Cyanide Sampling in Seeps and Drainages - Wayne will discuss with CR Kendall
- Water Treatment Parameters/Bench Scale Testing
- Boy Scout Lake Investigation (Water Quality, Historic Tailings) - Talk with contractor/review existing data
- Pit/Dump/Leach pad Cover Evaluation
 - Field Testing of Existing Covers? - look at Zortman reports
 - Geotechnical Investigations
 - Look at pump back system designs below waste rock dumps
- Analysis Needed to Evaluate Leach Pad Covers
- Detailed Hydrology Investigation to Address Water Quantity Issues. Review the following reports/sources first:
 - WMC Report

Kirk Warren Report
DNRC violations
Dave Erickson
Kendall Reports
Gallagher report

- Hydrogeologic Cross-Sections of Drainages including Monitoring and Pump Back Wells. Include Gaining and losing Reaches
- Spring Locations Beneath Waste Rock Dumps - DNRC maps
- Groundwater/Waste Rock Dump Interaction . Obtain data from CR Kendall
- Depth of Metals Leaching Beneath Dumps
- Flow Rate of Spring Beneath Kendall Dump
- Monitoring Well Review of Well 15-8 and TWM-15 (Buried in 1992)
- Sloughing of highwalls filling pit
- Field test RPL
 - Infiltration
 - Geochemistry
 - Can RPL materials be used in other areas of site?
 - 1995, 1996 annual report
- Sample Shammel dams for metals
- Dog Creek evaluation
- What water rights exist in mine area?
- Data gaps - what are out there?

Items to address in EIS - Not considered data gaps.

- Cross-Sections of Maximum Fill/Daylight Backfill
- Detailed Evaluation and Modeling for two Soil Cover Types; Water Barrier and Water Balance (Water Potential)
- Management Plan for Irrigation
- Potential use of AML or other Funds to Reclaim Historic Tailings in Barnes-King Gulch
- Mine Currently to be Restored to Grazing and Wildlife Habitat.
- BLM Approval of Spring Development in Upper Drainages
- Water Quality Requirements for Irrigation/Stock Water - What are standards?
- Evaluate Plant Tissue Samples from Revegetation and Native Vegetation
- Identification of Any Plant Toxic or Inhibitory Characteristics That May Be Limiting Revegetation Success - Also prodgers report. Look at data first then make recommendation. Review Scott Fisher's work first.
- Metals/Nitrate Trend Analysis in Mine Impacted Water
- Water rights - use water rights attorney

N

Appendix
N

Appendix N

Data Gap Technical Memorandum

CDM

CDM has been contracted by the DEQ to prepare an EIS to evaluate and select appropriate reclamation and closure alternatives at the site. During preliminary site evaluations, and technical and scoping meetings (involving affected agencies, technical groups, landowners and the public) for the EIS, preliminary reclamation components were developed and data needs were identified which are critical to completing the alternatives analysis in the EIS. This technical memorandum discusses the identified data gaps.

Preliminary Reclamation Components

The preliminary reclamation components identified for evaluation during the EIS technical group meetings are summarized in Table 1. The components identified for reclamation of waste rock and leach pads at the site include total or partial backfilling of the pits, excavation of waste rock from drainages and placement in pits, placing water balance, clay or geomembrane covers on the waste rock dumps, and capping of leach pads with a water balance, clay or geomembrane cover.

Potential components of alternatives for handling contaminated and uncontaminated water at the site include the continued use of the pumpback system, discontinuance of the pumpback system, augmentation of surface water flows using ground water, collection of leachate water, land application of treated water, land application of untreated water, treatment of water using zeolite columns to remove thallium with on-site disposal of spent zeolite, treatment of water through reverse osmosis and disposal of the brine, rerouting of storm water to prevent losses to the pit during high volume events, and construction of passive treatment wetlands to treat both storm water runoff and process flows.

Table 1
 Preliminary Reclamation Alternatives for the CR Kendall Mine

Component	Drainage						
	South Fork Last Chance Creek	Mason Canyon (Process Valley)	North Fork Last Chance Creek	Barnes-King Gulch	Little Dog Creek	Dog Creek	
Pit Backfill (maximum fill)	X			X	X		
Daylight Pit Backfill (free drain)	X			X			
Lining of Pit Bottom	X			X			
Backfilled Pit Cover (water balance, clay, geomembrane)	X			X	X		
Waste Rock Dump Regrade	X			X	X		
Waste Rock Dump Covers (water balance, clay, geomembrane)	X			X	X		
Surface/Stormwater Runoff	X	X	X	X	X	X	
Water Treatment	X	X	X	X	X		
Leach Pad Regrading		X					
Leach Pad Cover (water balance, clay, geomembrane)		X					

Identified Data Gaps

Data gaps identified during the technical scoping meetings, and the purposes for which the required data will be used will be discussed in the following sections.

Mine Pits

Ore was recovered from four primary mine pits at the CR Kendall site, these include (from north to south); the Horseshoe Pit, the Muleshoe Pit, the Barnes-King Pit, and the Kendall Pit. Of key importance for open pit reclamation evaluation are impacts to surface water and groundwater quality and quantity. To evaluate potential mine pit reclamation alternatives, the following data needs to be obtained:

- Volume of open mine pits – will be used to assess potential for complete or partial backfilling of the pits.
- Geotechnical stability of pits – to determine long-term success of the “no action” alternative, evaluate site safety, and evaluate use of pit wall sloughing to partially backfill pits.
- Pit hydrology and hydrogeology – to determine impacts on groundwater and surface water quantity and quality.
- Whole rock and leaching analyses – to determine if pit highwall or floors potentially leach metals to stormwater and groundwater.

Leach Pads

Leach pads 3 and 4 are located in Mason Canyon and are still used for temporary storage of excess water. Primary concerns with leach pad reclamation are quantity and quality of leach pad water, impacts from brine disposal to the leach pads from the sites reverse osmosis water treatment system, potential presence of historic tailings below the leach pads which impact water quality, liner integrity and cover requirements. To evaluate potential leach pad reclamation, the following data gaps need to be filled:

- Leach pad material volumes – to assess regrading or moving options, as well as mass balance of contaminants.
- Geotechnical properties of the materials – to determine leachpad stability, and evaluate regrading and cover components.
- Variability of physical and chemical properties of leach pad materials – to evaluate leachability of materials and regrading and cover requirements.
- Leach pad hydrology (expected quantity of leach pad water) – to evaluate water treatment and disposal components.

- Leach pad water quality - to evaluate water treatment and disposal components.
- Analysis of existing leach pad liner integrity - to evaluate need for potential off-loading and leach pad reclamation alternatives.
- Evaluation of the presence (and volume) of historic mine tailings below the leach pads - to determine potential for impacts to water quality.

Waste Rock Dumps

Four waste rock dumps at the site are proximate to the open pits and are referred to by the same name as the most proximate pit from which the waste rock was primarily derived. Key issues regarding the waste rock dumps include: the effectiveness of the existing covers; potential leaching from cover materials; impacts of waste dumps on surface water and groundwater quality; and the potential toxicity or other inhibitory properties of cover materials impacting reclamation vegetation. The following data for the waste rock dump areas are necessary to evaluate reclamation components:

- Waste rock dump volumes - to assess waste material moving options, as well as mass balance of potential contaminants.
- Plant toxicity data for waste rock cover materials - to assess potential for success of reclamation vegetation.
- Whole rock and leaching analyses for cover materials - to evaluate if cover materials will potentially leach metals into storm water.
- Plant tissue samples of waste rock reclamation vegetation and native plant - to determine if cover materials contribute excessive metal constituents to vegetation.
- Soil sampling beneath waste rock dumps - to assess extent of metals leaching below the dumps
- Waste rock dump hydrology (expected quantity of waste rock dump water) - to evaluate water treatment and discharge to downstream user components.
- Waste rock dump hydrogeology - to evaluate water treatment and discharge to downstream user components.

Surface Water

Surface water data will be used to evaluate quantity and quality of water present in the drainages, treatment requirements (if any) and potential alternatives to maximize release of water to downstream water users. Extensive surface water data has been collected during

routine water quality monitoring at the site. Additional data needs that have been identified during the technical scoping meetings include:

- Water quality and flow rates of Dog Creek, which was not routinely monitored under the operating permit - to identify potential impacts from mining operations and assess mitigation measures if necessary.
- Water rights issues - water rights evaluation will be used to assess the partitioning of available water during and after reclamation.
- Detailed hydrologic investigation - including synoptic flow measurements to assess losing and gaining portions of streams - to assess impacts from mining and mitigation measures.
- Storm water data for drainage - to assess impacts of mine features on quantity and quality of storm water, and potential re-routing options to maximize release of water to downstream users.

Groundwater

Groundwater data will be used to evaluate quantity and quality of water present in the drainages, treatment requirements (if any), evaluate the existing pumpback system and potential alternatives to maximize release of water to downstream water users. Extensive groundwater data has been collected during routine water quality monitoring at the site. Additional data needs that have been identified during scoping meeting include:

- Additional well(s) below the Horseshoe waste rock dump - to evaluate impacts on shallow alluvial groundwater quality, and assess potential treatment and discharge components.
- Additional well(s) below the Muleshoe waste rock dump - to evaluate impacts on groundwater quality in upper Little Dog Creek, and assess potential pumpback, treatment, and discharge components.
- Cyanide sampling of seeps and drainages - to determine potential impacts of recent or historic mining in remote areas.
- Background information review - to establish background concentrations of constituents of concern.
- Spring evaluation - to determine potential for active springs beneath the waste rock dumps, and determine potential impacts. Potential for spring development to increase flows in drainages downstream from the mine will also be assessed.
- Groundwater investigation - to evaluate groundwater/waste rock interaction (determine if portions of the waste rock dumps are inundated at any time).

- Preparation of hydrogeologic cross-sections of drainages - to assess effectiveness of pumpback systems and monitoring network.

Land Application Areas

There is presently a 250-acre area permitted for land application disposal (LAD). CR Kendall has used this area for application of treated process water. The effect of existing LAD systems on the water quality at the site is unknown. In addition to the current permitted area, other potential LAD areas should be evaluated to determine if LAD could be a potential component of reclamation. The following data will be needed to conduct this evaluation:

- Soil sampling at existing LAD area - to evaluate loading of salts and metals to LAD area soils, and to conduct leaching studies to evaluate holding capacity (and potential for breakthrough) of LAD area soils.
- Soil sampling at non-LAD areas - to provide comparative data for LAD soil samples.
- Soil typing and holding capacity testing of non-LAD soils - to evaluate potential for additional areas which may be appropriate for land application.
- Evaluation of the effectiveness of LAD and its potential to exacerbate contamination of groundwater.

Key Offsite Areas

Several offsite areas were identified during scoping meetings as potential areas of concern. These areas include a pond at the Boy Scout Camp which is located downstream from the mine on the South Fork of Last Chance Creek, and areas which contain historic tailings (such as Barnes King Gulch) which may impact water quality in surface waters and shallow groundwater. In order to assess potential impacts in offsite areas, the following data should be collected:

- Water quality data in the Boy Scout Camp pond - to assess potential for impacts from the mine migrating down the South Fork of Last Chance Creek.
- Sediment sampling in the Boy Scout pond - to evaluate if impacted sediments from recent mining or historic tailings have been transported to the Boy Scout Camp pond via the South Fork of Last Chance Creek.
- Delineation of Historic Tailings - to evaluate the location and volume of historic tailings, and their potential impacts on water quality.

Available Reclamation Materials

Limited reclamation materials are available on the site to complete reclamation. Existing cover materials will be tested to determine if they are effective and suitable for their existing

use. Additional evaluation of the availability of reclamation materials (topsoil, subsoil, gravel, etc.) will be necessary to evaluate reclamation alternatives. Nearby offsite sources of reclamation materials may also be evaluated. The following evaluations regarding reclamation materials will be necessary:

- Onsite reclamation materials inventory – stockpiles and borrow areas will be evaluated to determine the volume of reclamation materials available – this will provide data to evaluate the technical viability of site reclamation using these materials.
- Offsite reclamation materials inventory – offsite borrow sources will be identified (if available) and inventoried in a similar fashion as onsite materials.
- Materials testing – potential reclamation materials (onsite and offsite) will be tested for appropriate physical and chemical properties to determine if they are suitable for intended purposes.

Data Collection

Priority of Data Needs

Several data gaps identified in this report have been identified as high priority items, and data collection has already commenced on some of the data gaps. In particular, data needs regarding leach pad reclamation have been prioritized so that reclamation activities on the leach pads can be completed as soon as possible. Completing leach pad reclamation will have a significant positive impact on the site water balance and will reduce the amount of poor quality water needing treatment and disposal.

Secondly, water availability for downstream users has been of great concern to participants in the scoping meetings. Data needs which will assist in evaluating potential to increase downstream flows will be of high priority.

Data Collection

Data will be collected from a variety of sources, including;

- DEQ Records;
- CR Kendall Records;
- Published data sources and technical reports;
- Information from adjacent landowners, and
- Additional field sampling, field testing and analytical testing.

Kathy Johnson
May 19, 2004
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A thorough search of available records will be used to fill as many of the data gaps as possible. Field sampling and analytical testing will be used only to the extent necessary, and careful coordination of these activities by the EIS team will ensure focused, timely and cost-effective data collection. For those components which require additional field sampling and/or analytical testing, field sampling plans (FSPs) should be generated to outline appropriate sampling locations, methodology, and analytical requirements. These plans will be submitted to DEQ for review prior to additional data collection.