MINUTES

MONTANA SENATE
52nd LEGISLATURE - REGULAR SESSION

COMMITTEE ON NATURAL RESOURCES

Call to Order: By Chairman Lawrence Stimatz, on March 11, 1991, at 3:00 p.m.

ROLL CALL

Members Present:
Lawrence Stimatz, Chairman (D)
Cecil Weeding, Vice Chairman (D)
John Jr. Anderson (R)
Esther Bengtson (D)
Don Bianchi (D)
Steve Doherty (D)
Lorents Grosfield (R)
Bob Hockett (D)
Thomas Keating (R)
John Jr. Kennedy (D)
Larry Tveit (R)

Members Excused: None

Staff Present: Gail Kuntz (EQC).

Please Note: These are summary minutes. Testimony and discussion are paraphrased and condensed.

Announcements/Discussion: None

HEARING ON HOUSE BILL 380

Presentation and Opening Statement by Sponsor:

Representative Fritz Daily, sponsor of the bill, stated that HB 380 deals with a very serious problem, the Berkeley Pit. HB 380 is composed of three main parts: It will become a prohibited activity in the state of Montana to allow contaminants of hazardous substances present at federally supervised sites; it instructs to Department of Health to establish and implement a system for prioritizing sites for remedial action based on potential effects on human health and the environment, and it increases the fine from ten thousand dollars per day to twenty five thousand dollars per day for a person or company who violates this law. The soul purpose for introducing this bill is to prevent the Environmental Protection Agency and the Atlantic Richfield Company from allowing the water in the Berkeley Pit to

rise above the alluvial aquifer which is exposed on the southeast wall of the pit. According to the documents prepared by EPA and their contractors, the potential for this highly contaminated mine water to discharge into the aquifer surrounding Butte is a definite possibility. The water or poison, in the berkeley pit is currently over seven hundred and forty feet deep. The water is within four hundred and fifty to five hundred feet from flowing over the top. In 1989 the temperature in Butte, Montana reached a minus forty degrees Fahrenheit, and the Berkeley pit did not freeze. The Berkeley pit, and the related mine flooding, has the potential to become the state's most serious disaster not only from an environmental standpoint, but also from a social and economic standpoint. (Exhibit 1).

Proponents' Testimony:

Jim Johnston, Director of Public Works for Butte-Silverbow, stated that the Berkeley Pit is the largest potential problem that Butte-Silverbow faces.

Dan Dennehy, Director of Butte-Silverbow City-County Health Department, stated that this bill will ensure that the proper regulation and enforcement procedures are in place and available if the contaminated water from the Berkeley Pit reaches the alluvial level. It would cause major problems for local government, and especially for the citizens of Butte-Silverbow, Dennehy said.

Floyd Bossard, a consulting engineer from Butte, Montana, stated that approximately seventy-five percent of his work has been with the mining industry. He is a mining man, he is a citizen of Butte, and he is a co-chairman of a citizens technical environmental committee in Butte. He speaks today out of frustration, after three years of personal association with events relating to solving the potential problems presented by the rising waters in the Berkeley Pit. The Berkeley pit water level decisions were made at a closed meeting, and a document was prepared for the citizens to review. EPA doesn't look into the future or the social and economic impacts of its decisions. He said that Butte will have the largest volume of industrial contaminates in the world the pit is allowed to reach that level.

Kim Wilson, representing the Clarkfork coalition, stated his name in support of HB 380.

Representative Pavlovich stated that he agrees with Representative Daily. He is a concerned citizen of Silverbow county. EPA and ARCO have studied this, there are too many studies and nothing is getting done.

Opponents' Testimony:

Ward Shanahan, an attorney in Helena, Montana representing Atlantic Richfield, stated that it has been mentioned by the sponsor, that we are dealing with a negotiated water level. As far as the water level is concerned, there is no negotiation. He submitted an administrative record into the record (Exhibit 2).

He proposed amendments to the bill (See Exhibit #3). He then submitted a legal position paper on HB 380 (See Exhibit #4), and facts about the critical water level in the Berkeley Pit (Exhibit #5).

Bill Williams, project manager for Atlantic Richfield, presented a video to the committee. The water in the Berkeley Pit is coming from three areas. One coming from the eastern side of the pit. There are two different water systems at work. The precipitation plant is another aspect of it; there is some loss that goes through that system. The Berkeley pit today has a series of wet spots on either side, and an overflow which is variable. Two separate systems are recharging from two separate directions. One issue that has been brought up is how rapidly the water is rising in the pit. The reason for the rising water is that the storage volume that is represented in the mine shafts is very limited. As the water rises in the pit, the storage volume increases over time because the upper regions of the pit are much wider and much more able to store water. The water level is currently below Silverbow Creek, which would be a discharge from the valley if the water were allowed to leave the pit. The rate of increase will decrease over time. When the actual level is reached, the Pit water will still stay below the surrounding water table. He stated that they agree with amendments four, seven, six, and nine proposed by Mr. Shanahan (See Exhibit 3).

Ray Kellman, vice president of Montana Resources, stated that this is a complicated matter. The process that is going on will answer a lot of questions that are involved in this matter. The information that was put together back in 1981 and 1982 is right on track as to how fast the pit is going to fill. He clarified that the pit froze several times this year. He and Representative Fritz have a technical difference about what is going on with this study. The amendments proposed by ARCO help clarify some of the differences of opinion on this bill.

Ted Doney, representing ASARCO Inc., stated that consent orders are not only an order under federal law, they are also a contract. If the legislature passes this bill, they will be telling the state of Montana to rip up the contract that they have already entered into with the federal government. This will put a serious damper on future discussions with EPA and other companies regarding consent orders. He supports the amendments proposed by ARCO.

Questions From Committee Members:

Senator Bengtson asked how they plan to get rid of the water in the Pit.

Bill Williams stated that the water will have to be treated and discharged into Silverbow Creek. The water will have to be treated to the water quality standards that exist in Silverbow creek.

Senator Tveit asked how long the Pit had been filling up.

Bill Williams replied the pumps were shut down by Anaconda in April of 1982.

Senator Doherty asked about the definition on page six. How many places in the state of Montana fall within the definition?

Representative Daily stated only one.

Senator Doherty asked if that it is such a good idea to prevent aquifer contamination, why are we limiting it to one spot in Montana?

Representative Daily replied that he was concerned more with one particular problem. He could have drafted the bill much more broadly, but he didn't do that. This bill only addresses the problem if the water discharges into the aquifer.

Senator Doherty stated that the proposed amendments strike a whole bunch of language on pages seven, eight, nine, eleven, and twelve. What is the reason for doing that?

Representative Daily replied that the reason that the reason for the amendments is on page seven, lines fifteen through seventeen. When the legislation was first introduced, the bill defined an aquifer as a water bearing sub-surface formation that yields a sufficient quantity of water to a well for a beneficial use. In Montana law, an aquifer is defined in several different places as simply a water bearing sub-surface formation. The amendments don't eliminate anything out of the section, that language just isn't needed anymore.

Senator Doherty asked what the consent decree does.

Russ Forba, private manager in charge of this project for EPA, stated there are two components of the consent decree. It requires the responsible parties to conduct the remedial investigation feasibility study and it requires the responsible parties to keep the water below the 5410 foot level. If ARCO doesn't keep the water below the 5410 foot level, and it rises above that, then there is a twenty-five thousand dollar a day penalty. That does not mean that a lower water level won't be established.

Senator Hockett stated that the water was tested once in 1987, why is it not being done more often?

Russ Forba stated that during April of this year they are scheduling another sampling. They will know how much the water has changed since 1987.

Senator Hockett asked Representative Daily if there is a concern about the quality of the water entering the pit. He asked if sampling the water every four years is adequate.

Representative Daily replied absolutely not. Montana Tech would like to get some of that water in their sampling program. They cannot get that water. Montana Tech has to make its own contaminated water. The problem that they have is they are going to do it this summer. They've wanted to do it for the past two summers and it hasn't been done.

Senator Hockett asked how do you know that 5410 is the factor.

Russ Forba stated that is their interpretation. They went out and gathered all of the information on alluvial water systems. They tried to find out the water table of the lowest point of the upper basin of Silverbow creek.

Senator Doherty stated that in the consent decree, under the reservation of rights section on page eighty, paragraph nine, the

state reserved all of its rights to pursue any actions pursuant to state law.

Sherry Purdy, representing Atlantic Richfield (ARCO), stated that the reservation of rights provision is pretty standardized. Under its federal surplus, states do have the ability to retain their rights to take action. However, it depends on what action you intent to take. The problem is, they are required under the consent order with the environmental protection agency to come in and study the situation before any action is taken. HB 380 forces them to go in and take immediate action before they know what the extent of the problem is.

Senator Grosfield asked what the rate of the water is coming into the Pit?

Floyd Bossard replied that the water is coming in at a rate of seven million gallons per day.

Closing by Sponsor:

Representative Daily closed by saying that the question that Senator Weeding asked was the most important question that was asked and that was "what happens if we determine a different level?". The EPA negotiated a level at five thousand four hundred and ten feet, two hundred feet above the contact point. They are saying that the water has the potential to discharge in significant quantities. This study cost five million four hundred thousand dollars. We got to this point, and we didn't even use it. Bill Williams stated that Representative Daily agreed to the amendments. He does not agree to any amendments. This sounds like a Butte problem, but it isn't. The may be the most serious problem that the state of Montana is facing. To solve this problem, we are talking about billions of dollars. This bill has no effect unless the water is discharged from the pit. HB 380 passed the House of Representatives 100 votes to 0. There is no question that the Berkeley Pit is an ecological time bomb. If this contaminated water gets into the aquifer surrounding Butte, it can never be fixed.

HEARING ON HOUSE BILL 539

Presentation and Opening Statement by Sponsor:

Representative Fritz Daily, sponsor of the bill, stated that this bill also has to deal with the Superfund process that is taking place in Butte. HB 539 will require the potential responsible parties and EPA to perform a number of state and local requirements in addition to the federal requirements before they clean up a contaminated waste site. The main purpose in introducing this legislation is to ensure that there will be local and state input into the Superfund process. It will also influence EPA to become more responsible in their decision making. Under the federal program, the potentially responsible parties are required to perform cleanup. He wants to require quality standards rather than the minimum standards now imposed by EPA. The Superfund process is backwards. Under the current

process, the potentially responsible parties and EPA negotiate and make a decision on how to clean up a Superfund site. After the decision is made a public hearing is held. What he is trying to do with this piece of legislation is to get some input on the front end of the decision making process.

Proponents' Testimony:

Jim Johnston, Director of Public Works for Butte Silverbow, stated it is imperative for local government to get more involved. There is a big difference between rural reclamation and urban reclamation.

Chris Kaufman, representing the Montana Environmental Information Center, stated the bill puts an emphasis on public participation and allows more public input into the process particularly in the area of work plans as well as consent decrees. It is important to continue to emphasize public participation in the Superfund cleanup sites. This bill gives the Department the ability to require financial assurance of the potentially responsible parties. This is a good change in the state's super fund law.

Dan Dennehy, Director of the Butte Silverbow City-County Health Department, stated the public participation in this process, especially with the local level people, is not so impaired that a solution can be worked out.

Opponents' Testimony:

Ward Shanahan, representing Atlantic Richfield, stated that it is necessary to make some consensus changes to this bill. He is not certain as to why the retroactive applicability date in section 7(B) is needed. The bill is made retroactive to occurrences after June 30, 1985. He didn't hear any testimony as to why that was necessary. He requested that the applicability date be changed on "passage and approval".

Questions From Committee Members:

Senator Grosfield asked about the retroactive applicability, and what types of activities would be affected?

Representative Daily stated that the intent is, if a consent decree or an order has been issued but has not yet been completed, then at that point the local government would have a way of getting that through the process.

Senator Tveit asked what is the definition of a liable person?

Representative Daily stated that a liable person is somebody who is potentially responsible at the site.

Gail Kuntz stated that was correct. The language in question is saying that the person, in effect, is the responsible party and would not be included amongst the number of people necessary to qualify to have a written request from the meeting or hearing.

Closing by Sponsor:

Representative Daily emphasized that the bill does effect places other than Butte. The EPA hasn't been responsible in dealing with the people of Butte and not only the people of Butte, but in the other areas of Montana in cleaning up contaminated waste sites. He is trying to involve the citizens of Montana in deciding the process. There are two hundred twenty federal and state Superfund sites in Montana. He believes in mining, and thinks that mining is good for Montana. When he looks at the mine waste dumps in Butte, he doesn't think that they are ugly.

HEARING ON HOUSE JOINT RESOLUTION 39

Presentation and Opening Statement by Sponsor:

Representative Fritz Daily, sponsor of the bill, stated that this resolution came about as a result of HB 380 concerning the Berkeley Pit. This is a committee resolution that was requested by the House Natural Resources Committee after listening to the statistics, facts, and concerns that he presented relating to the Berkeley Pit. This resolution is not a substitute for HB 380. HJR 39 is a supplement to encourage the Environmental Protection Agency to take the necessary steps to correct and address the issues in a timely and appropriate manner. This bill passed the House of Representatives on a vote of 100 to 0.

Proponents' Testimony:

Jim Johnston, Director of Public Works for Butte Silverbow, stated that they are in support of HJR 39.

Dan Dennehy, Director of City-County Department for Butte Silverbow, stated that they also are in support of HJR 39.

Opponents' Testimony:

Ward Shanahan, representing Atlantic Richfield, stated that he appears as an opponent for the purpose of offering some amendments. The amendments are primarily intended to get some of the facts straight as to the resolution.

Questions From Committee Members:

Senator Hockett commented that Representative Daily seems to be fairly harsh on the EPA. He asked if Representative Daily had checked beyond the EPA to another agency, such as commerce, for help?

Representative Daily stated that they have checked beyond the EPA for help. One of the issues that is raised in the section that has to be resolved is that they are encouraging the EPA to put more people in Butte. We have had the support of the congressional delegation. EPA has not been very responsible.

Closing by Sponsor:

Representative Daily closed by saying that on the final work plan presented to ARCO which is stated on page 2-2 that the Pit is currently filling with water at a rate of about five thousand gallons per minute. This would calculate out to about 7.2 million gallons per day. The EPA calculates the water coming into the Pit at about 7.68 million gallons per day. The last time that the pit was checked in 1987, the water in the Berkeley Pit was twenty five feet lower than the water in the kelly shaft. Montana resources calculate at this point that the difference is probably about eighteen feet, and with that it does show that the water is going towards the Berkeley pit. The gradient of the water is towards the Pit, but in 1982, when the pumps were shut off, the gradient of the water was towards the mines. In 1984, when the water in the mines reached the bottom of the Berkeley Pit, then the gradient of the water reversed. The water is now going from the mines to the pit. The gradient can reverse. The gradient of the water in Butte before mining was from north to south, now the gradient of water is from south to north. It can and it does reverse. It can exit through other means. There are wells south and east of the concentrator in Butte which show that the water in the Berkeley pit, the water and wells outside of the concentrator is rising at the same rate as the water in the Berkeley Pit. This tells you that it is hydrologically connected.

ADJOURNMENT

Adjournment At: 6:30 p.m.

LAWRENCE STIMATZ, Chairman

DARA ANDERSON, Secretary

LS/da

DATE 3-11-91

COMMITTEE ON Natural Resources

VISITORS' REGISTER

NAME	REPRESENTING	BILL #	Check One: Support	Check One: Oppose
FLOYD C. BOSSARD	CITIZEN OF BUTTE	380	✓	
DAN POWERS	Butte-Silver Bow	380	✓	
Jim Johnston	Butte-Silver Bow	380	✓	
Dan Dennehy	Butte-Silver Bow	380	✓	
WARD SCHRADER	ATLANTIC RICHFIELD	380		✓
"	"	539	AMEND	
"	"	HJR39	AMEND	
W. R Williams	ARCO	380		✓
		539	AMEND	
		HJR39	AMEND	
Sherry Purdy	ARCO	380		✓
		539	Amend	
		HJR39	Amend	
Dan White	ARCO	380		✓
		539	Amend	
		HJR39	Amend	
RUSS FORBA	MT. EPA	380 TECHNICAL		
JAMES DAILY	Butte Silver Bow Citizen	380	✓	
"	"	539	✓	
"	"	HJR39	✓	
Kim Wilson	Clark Fork Coal.	380 539		
Chris Kaufmann	MEIC	HB380 HJ39 HB539		
Jim Johnston	Butte Silver Bow	HB 380 JR 39	✓	
Dan Dennehy	Butte-Silver Bow	HB539 HJR 39	✓	
REP PAVLOVICH	BUTTE	380-539 39	✓ ✓	

(Please leave prepared statement with Secretary)

ROLL CALL

Natural Resources COMMITTEE

DATE 3-11-91

52

LEGISLATIVE SESSION

NAME	PRESENT	ABSENT	EXCUSED
Senator Anderson	✓		
Senator Bengtson	✓		
Senator Bianchi	✓		
Senator Doherty	✓		
Senator Grosfield	✓		
Senator Hockett	✓		
Senator Keating	✓		
Senator Kennedy	✓		
Senator Tveit	✓		
Vice Chairman, Weeding	✓		
Chairman Stimatz	✓		

Each day attach to minutes.

WITNESS STATEMENT

To be completed by a person testifying or a person who wants their testimony entered into the record.

Dated this 11th day of March, 1991.

Name: Russ Forbes

Address: USEPA 301 S Park Helena MT 59634

Telephone Number: 406-449-5414

Representing whom?

USEPA

Appearing on which proposal?

380

Do you: Support?_____ Amend?_____ Oppose?_____

Comments:

Technical Comments Only

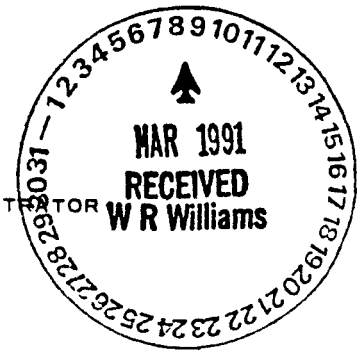
PLEASE LEAVE ANY PREPARED STATEMENTS WITH THE COMMITTEE SECRETARY

SENATE NATURAL
EXHIBIT NO. 1
DATE 3/11/91
BILL NO. HB 380

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

IN THE MATTER OF:	)	ADMINISTRATIVE ORDER ON CONSENT
. ATLANTIC RICHFIELD COMPANY;	)	
. MR. DENNIS WASHINGTON;	)	Remedial Investigation/ Feasibility Study for Butte, Montana, Area Mine Flooding Operable Unit (Silver Bow Creek/ Butte Area NPL Site)
. MONTANA RESOURCES, INC.;	)	
. AR MONTANA CORPORATION;	)	
. ASARCO, INC.;	)	
. MONTANA RESOURCES	)	
Respondents.	)	
PROCEEDING UNDER SECTIONS 104 AND 122 OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980, 42 U.S.C. §§ 9601-9675, AS AMENDED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, PUB. L. 99-499, 100 STAT. 1613 (1986)	)	Docket No. CERCLA VIII-90-09

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460



JUL 18 1990

THE ADMINISTRATOR

SENATE NATURAL RESOURCES
EXHIBIT NO. 2
DATE 3/11/91
BILL NO. HB 380

Mr. Fritz Daily
1057 W. Steel
Butte, Montana 59701

Dear Fritz:

Thank you for your recent letters regarding the Berkeley Pit project in Butte, Montana. I recognize and share many of your concerns with the Superfund process. These are not easy issues and Superfund is a complex program. Nevertheless, I am committed to streamlining the process wherever and whenever possible to get results sooner.

My trip to Montana was an important experience. There is no way, as Senator Baucus said, to grasp the enormity of the cleanup without seeing the site firsthand. I have a far better appreciation of what's involved and the people who are affected.

Your letter of May 31 raised several issues about the Berkeley Pit project. The Agency is responding in detail to the specific issues raised by the Citizens Technical Environmental Committee (CTEC) as part of the responsiveness summary to the Mine Flooding (Berkeley Pit) Administrative Order. This commitment was made to CTEC following receipt of that group's February 20, 1990 letter and reiterated at the May 30 public meeting in Butte.

We share your concern that there is a real potential for contaminated water from the Berkeley Pit to pollute the shallow alluvium if appropriate corrective action is not taken. The objective of the remedial investigation is to collect information to identify the appropriate level at which water treatment must begin. We will treat contaminated water when it approaches the bedrock-alluvium interface or at the water level identified as a result of the analysis of the data. I understand EPA agrees that the bedrock-alluvium interface east and south of the Berkeley Pit is below the 5000 foot level. The lowest bedrock-alluvium interface on the east wall of the Berkeley Pit, however, is 5260 feet, according to the most recent information provided to us by the Montana Bureau of Mines. The intent of this remedial investigation is to clarify the data and help EPA formulate remedial options.

I urge you to continue to bring your concerns and questions directly to the attention of John Wardell in the Montana Office. John impressed me greatly -- as did his staff -- with his commitment to serve the public interest and improve the environment. Throughtout this process, we want and value your continued involvement. John is committed, as I am, to assuring full and complete public access to the decision making process.

I appreciate your kind closing words in your May 31 note. I will do my utmost to assure adequate safeguards to public health and the environment in the cleanup of Berkeley Pit.

Sincerely yours,

Bill

William K. Reilly

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, MONTANA OFFICE
FEDERAL BUILDING, 301 S. PARK, DRAWER 10096
HELENA, MONTANA 59626-0096

SENATE NATURAL RESOURCES
EXHIBIT NO. 2
DATE 3/11/91
BILL NO. HB 380

Ref: 8MO

March 11, 1991

DEAR CHAIRMAN AND SENATE NATURAL RESOURCES COMMITTEE MEMBERS:

EPA wishes to provide technical information to this Committee regarding House Bill 380.

EPA is concerned about the threat that is posed to Silver Bow Creek and the associated alluvial aquifer by the Berkeley Pit. Because of this concern, EPA has put high priority on addressing this problem through the Superfund process as reflected by Administrator Reilly's attached letter (Attachment A).

Representative Daily has raised several concerns to EPA about the Berkeley Pit which he feels are not being addressed through the Superfund process. These concerns were expressed by Representative Daily at public meetings in Butte which EPA held in May 1990. EPA's responses to these concerns are provided on pages 2-4 in the attached responsiveness summary (Attachment B). For your ease of analysis I have provided a summary of these concerns and a summary of the technical information associatedwith these concerns.

* <u>The present established critical water level (5410" USGS datum) does not adequately protect Silver Bow Creek and the associated alluvial aquifer</u>

<u>Response:</u> The present technical information gathered by EPA indicates that this level <u>is</u> protective. This conclusion is based on the fact that the water in the pit cannot migrate into the alluvial system unless the water level in the pit exceeds the static water level in the alluvial system. In reviewing all the available data, EPA found the lowest water level in the alluvial system in the upper Silver Creek basin to be 5410'. This point is located below Colorado Tailings which is quite a distance from the Pit. The alluvial water level next to the Pit is 5450', adding an additional 40' safety factor. EPA does not expect the water level in the Pit to rise to the 5410 level until the year 2010, and perhaps later depending on water management practices by Montana Resources (MR). These conclusions were based on extensive data reviewed by several

parties including EPA, USGS, MDHES, MDSL, Montana Bureau of Mines and Geology, and several engineering/hyrogeologic consulting firms (Camp Dresser & McKee, PTI Environmental Services, and Canonie Environmental). This data is contained in several reports and data bases available from EPA and include:

1. Preliminary Water Balance for the Berkeley Pit and Related Underground Mine Workings, CDM, 1988

2. Final Work Plan for the RI/FS - Butte Mine Flooding Operable Unit", CDM, April 1990

3. Phase II Remedial Investigation Data Summary, CH2M Hill/Chen-Northern, Inc., March 1990

4. Silver Bow Creek Remedial Investigation Report, Multi Tech, May 1987

5. Montana Bureau of Mines and Geology Mine Shaft Water Level Data Base

EPA has an agreement with the Potentially Responsible Parties (PRPs) (ARCO, MR, ASARCO, and Dennis Washington) which requires the parties to take action to prevent the water in the Pit from exceeding the 5410' level. This agreement is backed up with a stipulated penalty (agreed upon by the PRPs) of $25,000 per day if this water level is exceeded.

Most importantly, this critical water level is not a final level. A Remedial Investigation/Feasibility Study (RI/FS) for the Mine Flooding project is underway. Tasks required in this study include an inventory of all alluvial wells throughout the Butte area; continued monitoring of the flooding shaft system; and installation of several deep bedrock wells south and east of the pit. If the data collected from these activities indicate that a lower critical water level is necessary, EPA will designate a lower water level and set up a project schedule which prevents the water in the pit from exceeding that level. If a new water level is designated, EPA will take legal action to require the potentially responsible parties (PRPs) to take the steps necessary to prevent the water level in the Pit from exceeding the new critical water level.

* The public needs assurance that a treatment plant will be in place by 1996 or prior to the occurrence of negative public health or environmental impacts

Response: The present information indicates that there is no need to have a treatment plant built by 1996. Our present projection for the pit water reaching the contact between the alluvium and bedrock on the southeast wall of the Pit (5260' level) is the year 2000 (see page 4 of Attachment B). This is a change from our original projection of this occurrence (1996/1997) because the rate of water rise in the pit has slowed down to a greater degree than originally projected. EPA's schedule is now structured so that a decision on the final critical water level and the technology to be used to treat the Pit water can be made by late 1993. Design and construction can be completed by the end of 1996 if necessary. It should be reemphasized, however, that EPA does not believe that a treatment plant is needed until at least the year 2010 when the water level in the Pit approaches the 5410' level, given the present data. This date can change, of course, based on the findings of ongoing studies and monitoring.

Thank you for providing us with an opportunity to provide this technical information. If there are any additional questions that the committee may have concerning this issue, please feel free to ask.

ATTACHMENT A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 18 1990

THE ADMINISTRATOR

Mr. Fritz Daily
1057 W. Steel
Butte, Montana 59701

Dear Fritz:

Thank you for your recent letters regarding the Berkeley Pit project in Butte, Montana. I recognize and share many of your concerns with the Superfund process. These are not easy issues and Superfund is a complex program. Nevertheless, I am committed to streamlining the process wherever and whenever possible to get results sooner.

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Your letter of May 31 raised several issues about the Berkeley Pit project. The Agency is responding in detail to the specific issues raised by the Citizens Technical Environmental Committee (CTEC) as part of the responsiveness summary to the Mine Flooding (Berkeley Pit) Administrative Order. This commitment was made to CTEC following receipt of that group's February 20, 1990 letter and reiterated at the May 30 public meeting in Butte.

We share your concern that there is a real potential for contaminated water from the Berkeley Pit to pollute the shallow alluvium if appropriate corrective action is not taken. The objective of the remedial investigation is to collect information to identify the appropriate level at which water treatment must begin. We will treat contaminated water when it approaches the bedrock-alluvium interface or at the water level identified as a result of the analysis of the data. I understand EPA agrees that the bedrock-alluvium interface east and south of the Berkeley Pit is below the 5000 foot level. The lowest bedrock-alluvium interface on the east wall of the Berkeley Pit, however, is 5260 feet, according to the most recent information provided to us by the Montana Bureau of Mines. The intent of this remedial investigation is to clarify the data and help EPA formulate remedial options.

I urge you to continue to bring your concerns and questions directly to the attention of John Wardell in the Montana Office. John impressed me greatly -- as did his staff -- with his commitment to serve the public interest and improve the environment. Throughtout this process, we want and value your continued involvement. John is committed, as I am, to assuring full and complete public access to the decision making process.

ATTACHMENT B

Summary

MINE FLOODING OPERABLE UNIT

REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SILVER BOW CREEK/BUTTE AREA SITE

JULY 1990

The U.S. Environmental Protection Agency (EPA) is conducting a Remedial Investigation/Feasibility Study (RI/FS) on Mine Flooding at the Silver Bow Creek/Butte Area Superfund site in southwestern Montana. In planning for this RI/FS, EPA prepared a work plan on which it solicited public input. The work plan was placed in information repositories in the Butte area and provided to interested groups on request.

This document presents EPA's response to comments submitted by the public concerning the Work Plan for the Mine Flooding RI/FS. The formal public comment period ran from May 4, 1990 to June 4, 1990. Two public meetings were held to provide the public with opportunities to obtain information about and comment on the Work Plan for the RI/FS.

The first public meeting, held May 8, 1990, was informational; that is, it was designed to present information about the Work Plan and provide an opportunity for residents to ask questions. The second meeting was held on May 30, 1990 and was designed primarily to receive comments from the public.

A meeting was also held with the Citizens Technical Advisory Committee (CTEC), a group of Butte area residents organized to maintain an on-going dialogue with EPA about Superfund studies in the Butte area and upper Clark Fork River Basin. The purpose of this meeting was to listen to and respond to CTEC's initial concerns about mine flooding as expressed in their Report 1.1.

This document is divided into sections that correspond to the May 8 and May 30, 1990 meetings mentioned above and to CTEC reports regarding mine flooding. The four sections are:

I. Responses to Public Meeting Comments
May 30, 1990

II. Responses to Public Informational Meeting Comments
May 8, 1990

III. Responses to CTEC Report 1.1
February 20, 1990

IV. Responses to CTEC Report 1.2
May 30, 1990

In addition the following documents are included:

Attachment A Full Transcript of May 30, 1990 public meeting.

Attachment B CTEC Report 1.1

Attachment C CTEC Report 1.2

RESPONSES TO PUBLIC MEETING COMMENTS
MAY 30, 1990

EPA Montana Director John Wardell and Remedial Project Manager Russ Forba met with approximately 25 people on May 30, 1990 to receive comments on the Work Plan. About 10 people made comments or asked questions. Many of those questions were answered at the meeting. The following paragraphs address comments that were not answered by EPA at the meeting. For a record of comments and responses provided at the meeting, please see Attachment A, Public Meeting Transcript.

1. Issue: Mr. Fritz Daily, State Representative, expressed concern regarding several issues:

   - The established critical water level for the Berkeley Pit does not protect Butte from potential mine flooding.
   - EPA has raised the critical water level and thereby decreased protectiveness since its initial discussions and documents.
   - The studies must be completed as quickly as possible to insure protection of the public.
   - The community needs assurance that a treatment plant for pit water will be in place by 1996 or prior to a public health or environmental threat from mine flooding.
   - Montana Resources, Inc. (MRI) has data concerning the critical water level that is different from EPA's.
   - A catastrophic event such as an earthquake would cause the pit to fill more quickly. Rep. Daily submitted an article concerning this issue.

   Response: Contrary to Rep. Daily's statements there was no previous EPA critical water level. Various water levels in the pit, including the level of contact between the bedrock and the alluvium, were used for predictive purposes in discussions of the pit water balance and filling rate. The bedrock/alluvial contact was identified only as a geologic contact, a level characterized by a significant change in permeability of the strata, or layers of earth. The pit water is not presently impacting the alluvial aquifer or Silver Bow Creek, and EPA has always maintained that pit water would not flow away from the pit unless the pit water level rose above the water level in the alluvium. The Work Plan text quoted by Rep. Daily clearly states that bedrock water levels must approach or exceed alluvial water levels before pit water will discharge.

The critical level presented in the final Work Plan was determined from sources such as the Montana Bureau of Mines and Geology (MBMG), the U.S. Geological Survey, and contractors we have assigned to work on this problem, and was based on careful evaluation of all available data. The basic premise in our evaluation is that water flows toward the lowest point. In the Butte area, the lowest point on Silver Bow Creek is at elevation 5,410 feet. Thus, this level represents the ultimate discharge point for the basin. This level was established as a maximum level to which the water will be allowed to rise anywhere within the East Camp/Berkeley Pit system. If the water reaches this level before we complete the RI/FS, the potentially responsible parties (PRPs) will be required to initiate immediate action to prevent the water from flowing out of the East Camp toward the alluvial aquifer and Silver Bow Creek. Containing the water in the pit so that it does not migrate away from the pit is a primary objective of this entire action.

The hydraulic gradient in both the bedrock and alluvium is towards the pit (see Figures 2-4 and 2-5 in the final Work Plan, April 27, 1990). Maintenance of this inward gradient is part of the rationale behind choice of the critical level (see the discussion in Section 3.1.1 in the final Work Plan). The inward gradient will be maintained throughout the RI/FS. The level was chosen to be conservatively protective and well below the water level in the alluvial aquifer near the pit. Maintenance of pit water below this level will also allow time to conduct the RI/FS in accordance with the Superfund law. Even if the pit water level rose to 5,410 feet, it would still be 40 feet below the water level in the Silver Bow Creek alluvial system adjacent to the pit.

There are other ways for the mine water to discharge into the alluvial aquifer (other than through the alluvium exposed on the side of the pit). However, discharge only can occur if the bedrock water level rises above the level in the alluvial aquifer. The critical level is equal to the lowest alluvial water elevation in the Butte area. The bedrock water level throughout the East Camp area (including the pit) will be maintained below this elevation; thus there is no mechanism for any discharge from the bedrock into the alluvial aquifer. It is not possible for mine waters to discharge as long as water levels in the East Camp/Berkeley Pit system are maintained below the critical water level.

EPA's calculations presented in the final Work Plan predict that the bottom of the alluvium may be

reached by the year 2000. These projections differ from MRI's because EPA has incorporated the latest water level information generated by the Montana Bureau of Mines and Geology while MRI has not.

The RI/FS is now scheduled so that a treatment plant could be designed and constructed by 1996, if necessary. This is the most accelerated schedule possible without compromising the RI/FS process and Superfund regulatory requirements.

In the article on earthquakes in Butte that was submitted by Rep. Daily, the author in no way demonstrates that earthquakes along the Continental fault could add to the volume of water or otherwise potentially contribute to mine flooding, even though both mine flooding and earthquakes may occur simultaneously. EPA believes that an earthquake would not radically change the existing hydrologic system and nature of the interaction between the mine systems and the alluvial groundwater system. The only threat perceived by EPA due to earthquake activity is potential failure of the Yankee Doodle Tailings Pond Dam and subsequent flow into the Berkeley Pit. The RI/FS Work Plan requires that the PRPs investigate the stability of the Tailings Pond Dam.

2. Issue: The majority of comments presented by Floyd Bossard, a CTEC spokesman, came directly from the CTEC Report 1.2. EPA has responded to this report in detail in Section IV of this document. CTEC's two additional recommendations were:

    1. That EPA evaluate ground water quality in the Rocker basin; and
    2. That EPA perform an analysis of the socioeconomic impacts of remedial alternatives.

Response:

1. The Mine Flooding Work Plan is presently being revised to reflect the first recommendation. The bedrock monitoring program is being expanded to include several shafts and a seep located west of the Butte area identified as the "Outer Camp", including the Orphan Boy and Margaret Ann shafts. In this way, any impacts in this area resulting from the mine flooding in Butte will be monitored and identified before they become a problem.

2. Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), EPA must evaluate remediation alternatives solely on the basis of protection of human health and the environment. The final remedial action decisions are made by

the Regional Administrator, based on recommendations from the EPA Regional Director of Hazardous Waste Management, Director of the Montana EPA office, and the State of Montana. Superfund regulations mandate that these decisions be based on the totality of the problem including permanence, alleviation of the threat to human health and the environment, and community acceptance as demonstrated by public input. The law does not allow for studies of socioeconomic impact.

3. Issue: Jack Wolf expressed concern that the study will go on until 1993, and it will be 1996 before any action is taken. He wanted to know what the chances were that his well would become contaminated, and asked how often he should test his well.

Response: EPA has made a commitment and, the PRPs have agreed, to maintain the bedrock water level in the East Camp/Berkeley Pit system below the critical water level, which is the lowest alluvial ground water level in Butte. Therefore, contaminated water will not flow into the alluvial aquifer and impact Mr. Wolf's well. The present schedule is the most accelerated schedule possible, and is designed to protect human health and the environment.

EPA will include Mr. Wolf's well in the well inventory scheduled during the RI/FS. EPA will also monitor area water levels to assure that mine water will not impact alluvial wells such as Mr. Wolf's.

4. Issue: Mr. Dave Brown, State Representative, discussed the current work being done by Montana Technology Company in an effort to develop technologies to clean up hazardous waste sites. He asked if any coordination between that work and the mine flooding RI/FS is possible within the framework of the regulations. He also asked if this emerging technology could speed up the cleanup.

Response: The program Rep. Brown referred to is an effort to develop and use innovative technologies to clean up hazardous waste sites. The program is utilizing funds provided by the EPA Superfund Innovative Technology Evaluation (SITE) Program and the U. S. Department of Energy (DOE). The EPA Montana Office and EPA Region 8 Office in Denver plan to work closely with these programs and incorporate proven, implementable technology in the Berkeley Pit project. Presently, however, the EPA Montana Office is attempting to "fast track" the RI/FS to arrive at a Record of Decision as quickly as possible. To do this, EPA is relying on

conventional advanced waste water treatment and mining-related metals recovery technology. If innovative technology is developed under these programs or by the responsible parties which will facilitate solving the Berkeley Pit problem, EPA will amend any decisions to incorporate such technology.

5. Issue: Floyd Bossard asked about the potential for evaporation of heavy metals from the pit. He also expressed concern that the rising pit water potentially could increase the possibility of community exposure to radon gas and asked if this would be considered in the RI/FS.

Response: Under the local conditions of temperature and pressure, neither evaporation of metals from water in the pit, nor suspension of metals in evaporated water would be possible.

Presently the water in the underground mines is rising one inch per day on the average and the rate of rise is slowing. At this rate, very little volume of air potentially containing radon is pushed up and out of the mines potentially into homes. The volume of air which is displaced by the water is not considered to be significant and therefore is not perceived to be a potential problem that should be studied in the RI/FS. Ventilation systems associated with new mining operations are likely to circulate much more potential radon-containing air than the mine flooding.

7. Issue: Mel Rowling, CTEC, commented that a rockfall into the pit during a recent storm event resulted in thousands of tons of rock dropping into the pit.

Response: The relative volume of rock slides from the sides of the pit which enter the water is not considered to be significant when compared to the entire pit volume and therefore does not increase the rate of fill to any significant degree. The collapse of a structure such as the Yankee Doodle Tailings Pond Dam could have a significant impact on pit filling. Therefore, this possibility will be evaluated in the RI/FS.

8. Issue: Tom Malloy expressed concern about the effects that the contaminated water might have on migrating water fowl that land on Berkeley Pit water and suggested that the RI/FS Work Plan address this issue.

Response: EPA believes exposure of waterfowl to the metal-laden pit water would be very short term, as the waterfowl only appear to use the water body very briefly while migrating. Since there is no food

source available in or near the Berkeley Pit, there will most likely be no resident population of water fowl in the pit. These very brief exposures to the water are unlikely to impact waterfowl.

RESPONSES TO PUBLIC INFORMATIONAL MEETING COMMENTS
MAY 8, 1990

When EPA initiated the public comment period on the work plan, the Agency held an informational public meeting to explain the document, and to answer initial questions on it. About 40 persons attended this meeting. John Wardell and Russ Forba attended this meeting; Mr. Forba made a presentation, and both EPA representatives answered questions. The paragraphs that follow summarize comments made at the meeting and EPA's responses.

1. Issue: Concerns were expressed about the critical water level including: 1) the actual water level today; 2) the effect that a large volume of water from the leach pad system might have on water levels in the pit; and 3) the nature of the alluvial-bedrock system.

   Response: The pit water level as well as the water level throughout the East Camp will be monitored as part of the RI/FS. The water discharging from the leach pads into the pit will be monitored continuously for the duration of the RI/FS. The RI/FS Work Plan also requires tasks to be performed to ascertain the nature and extent of any migration of contaminants from the leach pads to the south. The nature of the alluvial-bedrock system will be more fully characterized during the RI/FS.

2. Issue: Concern was expressed regarding whether there would be adequate time to build a treatment plant and have it operating prior to the pit water level reaching the critical level. Do current mining operations have any effect on pit water levels?

   Response: EPA is currently projecting that the critical level may be reached in the year 2010, and the bottom of the alluvium may be reached by the year 2000. The current Work Plan schedule is designed so that remedial design/remedial action (RD/RA) can begin by Fall 1993, if necessary at that time. This allows time to design and construct a water treatment plant by 1996, if deemed necessary.

   Discharge from the leach pads is the primary mining operation which affects the pit filling rate. This discharge has been accounted for in EPA's filling projections. EPA believes it is reasonable to assume that this discharge will either remain at its present magnitude or be reduced, since MRI has already taken measures to reduce this pit inflow.

3. Issue: Who owns the water in the pit?

   Response: EPA is studying this issue and will specifically address it in the Feasibility Study.

4. Issue: Can clean water from the East Ridge be diverted before it enters the tailings ponds and becomes contaminated?

   Response: The feasibility of diverting East Ridge waters will be evaluated in the FS as part of the evaluation of inflow control alternatives.

5. Issue: Concern was expressed that some metro storm drain water might be seeping into the underground mine workings.

   Response: EPA considers the amount of any seepage from the metro storm drain to the mine workings to be minor. However, the inflow contribution of percolation through permeable disturbed soils and solid waste piles to the mine workings may be significant. The magnitude of this potential contribution will be evaluated in the RI.

6. Issue: Concern was expressed over changes in pit chemistry and the possibility of turn over. Does EPA plan to sample this summer?

   Response: Based on vertical profile density calculations performed by ARCO in 1987, EPA has determined that seasonal turn over of the pit water is not possible given the chemistry of the pit at that time. Pit sampling is currently scheduled for Fall 1990. If this sampling shows drastically different chemistry than the 1987 sampling, additional density calculations will be undertaken and the need for additional sampling will be evaluated.

7. Issue: Has EPA considered freezing of the pit water as a treatment alternative?

   Response: This treatment technology has not been shown to be technically feasible for treatment of waters with elevated levels of heavy metals except hexavalent chromium and cadmium (CDM. Initial Scoping of Response Alternatives for Berkeley Pit/East Camp. August 18, 1988). Due to the unproven nature of this technology for these metals, the presence of high levels of suspended solids, and the associated high energy costs, this technology was eliminated from further consideration in the initial scoping of remedial alternatives performed by EPA.

RESPONSES TO CTEC REPORT 1.1
FEBRUARY 20, 1990

CTEC published and mailed to EPA Report 1.1, which focused on mine flooding issues. Subsequently, on March 6, 1990, EPA remedial project manager Russ Forba met with CTEC to discuss issues raised in the report. At that meeting, Mr. Forba committed that EPA to responding to all questions in writing after the public comment period on the Mine Flooding Work Plan ended. The paragraphs that follow provide that written response to the CTEC report submitted to EPA on February 20, 1990.

1. Issue: CTEC cited, "A Clear and Present Need for a Water Treatment Plant." It is CTEC's position that a fully functional facility to treat the pit water must be operational by 1996. Members said bench-scale testing should be conducted now. CTEC asked EPA to make its current plans for a water treatment plant available by May 1, 1990, noting that EPA needs to develop alternatives concurrently with bench scale testing so all alternatives can be evaluated in 1991. CTEC recommended establishing output standards for the plant which initially meet the industrial-grade water requirements of Montana Resources, Inc. and eventually meet water quality standards for discharge into Silver Bow Creek.

   Response: The rationale behind the schedule presented in the final Mine Flooding RI/FS Work Plan (April 27, 1990) is designed so that remedial design/remedial action (RD/RA), if necessary, can begin by Fall 1993. This allows time to complete the design and construction of a waste water treatment plant by late 1996, if necessary. Completion of the treatment plant would be long before the water reaches the bedrock/alluvial interface on the east face of the pit based on current EPA calculations. EPA's present modeling shows that the water in the pit will not reach this interface until at least the year 2000, if the present flooding rate continues.

   Bench scale testing is scheduled to be conducted prior to beginning Phase 2 of the FS, and must be completed by the end of August 1992. Thus, treatability studies will be completed prior to the detailed analysis of remedial alternatives, which will be conducted in Fall 1992. This is the most accelerated schedule possible without compromising the quality of the FS and Superfund regulatory requirements. The treatability studies conducted in Phase 2 of the FS will evaluate treatment to the level necessary for use in

the Montana Resources, Inc. (MRI) concentrator. Discharge standards for a treatment plant will have to meet the State I-classification discharge standards.

The current schedule allows time to develop an efficient treatment system that will provide the best possible result over time. EPA does not believe that the additional water which will have entered the pit during the RI/FS process will negatively impact human health or the environment, as water will not be flowing away from the pit. Under the present schedule, there will be time to develop a system that uses innovative treatment technology and that may use metals recovery processes.

2. Issue: Stating the EPA is, "Playing Fast and Loose With the 'Critical Water Level,'" CTEC questioned why the earlier EPA-sanctioned critical level was raised and why the possible lower connection via the Pittsmont mine workings was not considered. CTEC asked EPA to reassess its approach to defining the critical water level in the pit. CTEC asked to be shown data that disprove the risk associated with the lower/sooner contact of pit water and alluvial ground water via the Pittsmont mine workings.

Response: There was no previous EPA-sanctioned critical water level. Various levels (including the level of contact between the bedrock and alluvium) were used for predictive purposes in discussions of the pit water balance.

The critical level as presented in the final Work Plan was determined based on careful evaluation of all available data. In the Butte area, the lowest point on Silver Bow Creek is at elevation 5,410 feet. Thus, this level represents the ultimate discharge level for the basin. This level was established as a maximum level for any point in the East Camp/Berkeley Pit system to prevent creating a gradient out of the East Camp System towards the alluvial aquifer and Silver Bow Creek.

A complete discussion of the critical water level can be found on pages 1-3 of this document.

The potential connection between the pit and the alluvial aquifer via the Pittsmont mine workings was considered by EPA in determining the critical water level. Since available data show that the alluvial ground water level

near the Pittsmont Number 4 shaft is over 400 feet higher than the current pit water level, EPA believes that the possible connection does not pose a major threat. Because the water would flow toward the pit. Thus, even if a connection exists, the data shows that alluvial ground water near the Pittsmont shaft is flowing towards the pit. Data supporting this conclusion is presented in Figure 2-5 of the final Work Plan. This situation will be monitored throughout the RI/FS. In addition, EPA has required installation of several monitoring wells in the area for the Pittsmont Shaft (east and south of the pit) to monitor this situation.

One objective of the RI/FS is to collect data to evaluate and better define the critical level. Water levels in the East Camp/Berkeley System will be monitored closely by EPA throughout the RI/FS, and EPA is prepared to take action sooner, if necessary. If a water level lower than the present critical level is found to be necessary based on the information collected during the RI/FS, it will be identified, confirmed, and established in the Record of Decision (ROD).

3. Issue: Referring to "Contamination by Diffusion," CTEC asked EPA to explain how its risk assessments deal with the problem of contaminated pit water dispersing toxic materials into the alluvial aquifer by diffusion.

Response: In its response to CTEC, ARCO showed that diffusion of contaminants out of the pit will be extremely minor. EPA reviewed ARCO's calculations and supporting data very closely and has reached the same conclusion. The hydraulic forces which drive ground water towards the pit are one million times greater than the forces diffusing the contaminants.

4. Issue: Citing a, "need for accurate and current data," CTEC urged adoption of the following efforts to assure better monitoring of the mine flooding situation:

1. Authorize and/or carry out appropriate sampling of pit water on a regular basis;

2. Accelerate and expand the drilling program east of the pit to monitor contamination and characterize hydrologic features; and

3. Institute state-of-the-art surveying

techniques to measure water levels in the pit precisely.

Response: The pit water is to be sampled once during the RI and once during the FS as currently planned in the Work Plan. One sampling is in support of the neutralization investigation, and one sampling will need to be conducted in support of performing treatability studies. The pit will be sampled again during the remedial design pilot plant phase following the RI/FS and Record of Decision (ROD). EPA believes that regular sampling of the pit water is not necessary, given that the volume of water in the pit does not change significantly on a monthly basis (with respect to the overall volume in the pit). EPA does not believe that the volume of water in the pit will change sufficiently to alter the pit water chemistry on a regular basis. If the results of sampling to be conducted during the RI are significantly different from the 1987 sampling results, EPA will reconsider implementing additional sampling.

The drilling program has been expanded in the RI/FS Work Plan. New bedrock monitoring wells are to be installed at five locations east and south of the pit, and six alluvial aquifer monitoring wells are to be installed east of the pit in the leach pads area. These wells will be used to monitor contamination and characterize hydrologic features.

The pit water level is to be monitored by ARCO using state-of-the-art surveying techniques. USGS data will be used to ensure site-wide consistency. ARCO, MRI, and EPA are investigating the feasibility of installing a staff gauge that can be observed with binoculars from the viewing stand on the south side of the pit.

5. Issue: Stating that, "No one benefits from delay," CTEC cited two reasons why EPA should not delay the Mine Flooding RI/FS: 1) the urgency of the situation requires prompt action; and 2) delays can cause potential negative economic consequences with respect to new mining dewatering operations. CTEC recommended that appropriate governmental agencies protect the Butte mining district from further inundation and loss of minable resources.

Response: EPA believes that the revised accelerated RI/FS schedule presented in the final Work Plan adequately addresses the urgency of the

mine flooding situation. As for the potential economic consequences, EPA agrees that the flooding may have major economic implications for the reopening of mine workings which have been inundated. However, it is not within EPA's authority to consider socio-economic issues. Superfund was not established to promote economic viability. EPA must respond solely to health and environmental concerns. Mine operations have historically had to dewater mines in the Butte area to gain access to ore reserves. The purpose of the Mine Flooding RI/FS is not to keep water levels down to facilitate mining, but rather to investigate alternatives to mitigate hazards to human health and the environment. EPA believes that the RI/FS tasks outlined in the final Work Plan will meet this goal in a very timely manner. EPA believes that the present RI/FS schedule and tasks do not increase the risk of introducing pit water into the alluvial aquifer.

RESPONSES TO CTEC REPORT 1.2
MAY 30, 1990

Concurrent with EPA's public meeting to receive formal comment on the work plan, CTEC published Report 1.2 and delivered it to EPA at the meeting. The paragraphs that follow summarize CTEC's issues as presented in that report, and EPA's responses.

1. Issue: EPA has failed to provide a formal, documented response to CTEC's Report 1.1 (February 20, 1990)

   Response: EPA informed CTEC at a meeting March 6, 1990 that it would formally respond to Report 1.1 after the public comment period on the final Mine Flooding RI/FS Work Plan. This response has been completed and is part of this document.

2. Issue: The committee was unable to find in the "final" document any substantive alteration in the RI/FS objectives, processes, or assumptions that formed a basis for EPA's draft work plan (which CTEC previously reviewed)

   Response: EPA has addressed CTEC's Report 1.1 as part of this document. EPA believes that changes which were made in the final Work Plan, specifically in the schedule, address many of CTEC's comments on the draft document. Remaining concerns have been addressed in this document.

   Two of CTEC's primary concerns had to do with the need for a treatment plant and the RI/FS schedule. EPA modified the RI/FS schedule substantially in the revised version of the Work Plan. Specifically, Phase 1 of the FS (development and screening of alternatives) and bench scale treatability studies were accelerated to mid-1991 and mid-1992, respectively. Available treatment technologies will be evaluated in the screening study (Phase 1 of the FS) in 1991, which is one year earlier than originally planned. This is the most accelerated schedule possible without compromising the FS process and Superfund regulatory requirements, and it allows ample time for construction of a treatment plant by 1996, if necessary. Bench-scale studies could not be accelerated any sooner because they will be based on the results from the neutralization study, which are expected to be available Fall 1991.

CTEC's other major recommendation was that EPA reassess its approach to defining the critical level. As discussed in detail in EPA's response to CTEC Report 1.1, the critical level was determined based on very careful evaluation of all available data. The level was chosen to be conservatively protective and maintain an inward hydraulic gradient towards the pit based on current information. If a lower level is deemed necessary based on new information collected during the RI/FS, this lower level will be documented and explained in the ROD.

3. Issue: The committee strenuously objected to the assumptions made by the current process, specifically, that treatment of the pit water would not be considered or implemented until the water level rises to a (disputed) critical level.

Response: The critical level was determined based on careful evaluation of all available data. (See EPA's response on this subject in Section I, pages 1-3, and Section III, pages 9-10, of this document.) EPA does not believe that the critical level concept encourages the PRPs to let the problem get worse or that continued contamination is inevitable. The level was chosen to be conservatively protective and allow time to conduct the RI/FS in accordance with the Superfund law. Allowing the water level to reach a critical level before a treatment plant is constructed will also allow a maximum time period for development of innovative treatment technologies that might treat the water more completely and efficiently. It should be noted that bench-scale testing is included as part of the RI/FS and is scheduled to be completed by the end of August 1992.

4. Issue: The committee questioned the final Work Plan's apparent emphasis on cost factors governing the RI/FS process. The committee urged EPA to discount near-term project costs that continue to delay the construction and operation of a treatment facility for contaminated mine waters.

Response: EPA has not placed undue emphasis on cost in developing the RI/FS Work Plan. However, it is important to note that cost is a component to be considered in selection of a remedy. The National Contingency Plan (NCP) and the RI/FS guidance require that costs be considered when evaluating remedial alternatives. The cost of a remedial

alternative is weighed against the benefit to health and the environment. The role of Superfund is to protect human health and the environment in a permanent, cost-effective manner. Therefore, the chosen remedial alternative and the time frame for implementing this alternative must take cost factors into account per Superfund law (NCP, 40 C.F.R. § §, 300.430(e)(7)(iii) and (e)(9)(iii)(G) and the RI/FS guidance (U.S. EPA, 1988), Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA).

The present RI/FS schedule is the most accelerated schedule possible without compromising the quality of the FS and Superfund Regulatory requirements. The present schedule allows ample time for construction of a treatment plant by 1996 if necessary.

5. Issue: The committee asked why treatment technologies to bring the water in the Berkeley Pit up to drinking water standards cannot be brought on line immediately to prevent further degradation of ground and surface water throughout the drainage.

Response: The pit water is not presently impacting the alluvial aquifer or Silver Bow Creek. EPA believes additional water in the pit will not impact the environment if discharge to the alluvial system is not allowed to occur. EPA's approach is to contain all the contaminated bedrock water in the pit by maintaining the hydraulic gradient towards the pit. As long as this gradient is maintained, the alluvial aquifer and Silver Bow Creek will not be impacted. Mine water will not flow away from the pit unless the pit water level rises above the level of ground water in the alluvial aquifer. Water levels will be monitored throughout the RI/FS to assure that pit water does not rise beyond the critical level. EPA is prepared to take action sooner, if need be.

The present RI/FS schedule is the most accelerated schedule possible without compromising the quality of the FS and Superfund regulatory requirements. The present schedule allows ample time for construction of a treatment plant by 1996 if necessary. EPA believes that this is a very protective schedule which will prevent any impact to human health and the environment (the alluvial aquifer or Silver Bow Creek) and

allows time to develop a treatment system that is as efficient as possible.

6. Issue: CTEC expressed concern that almost 7 million gallons per day of water from uncontaminated sources are allowed to flow into the pit "sump," where they become contaminated and thus magnify the problem.

Response: The feasibility of routing uncontaminated surface waters around the Berkeley Pit will be evaluated in the FS with evaluation of inflow control alternatives. If deemed to be feasible, uncontaminated water would be controlled and not allowed to enter the pit system. The inflow control investigation conducted as part of the RI is designed to characterize the entire water management system at MRI's operation so that control of clean waters and use of alternative water supplies to slow down the rate of pit filling can be fully evaluated as inflow control alternatives in the FS.

On the other hand, ground water entering the pit does not become contaminated in the pit. It becomes contaminated as it flows through the many miles of underground mine workings which are connected to the pit or as it flows through the leach pad and waste rock areas. In order to not "waste" clean ground water, clean waters would have to be captured before they entered the area of the Butte mine workings or the leach pad area or the waste rock areas. In a fractured bedrock system such as exists in Butte, and over such a large area, construction of a barrier system to prevent clean ground water from reaching the mine workings or other source areas such as the leach pads is not feasible. Ground water is recovering in the mine workings because dewatering pumpage has been stopped. Allowing the contaminated bedrock and alluvial waters to collect in the pit "sump" actually contains the problem in one place for ultimate disposition or treatment. This is the reason that EPA has determined that an inward gradient (toward the pit) must be maintained. As long as an inward gradient is maintained, the alluvial aquifer and Silver Bow Creek will not be impacted.

7. Issue: CTEC expressed the opinion that because makeup water for MRI's operations comes in as pure drinking-quality water from Silver Lake at the rate of 5.4 mgd, the problem is compounded even further.

Response: MRI may choose to recycle water from the pit. EPA will not plan to make a decision on the need for recycling from the pit until after the completion of the RI/FS. The Agency believes there is time available during the RI/FS process to thoroughly evaluate the water rights implications and make rational decisions concerning the need for pit water recycling.

8. Issue: The CTEC report states that,"source-control" cannot take place (in the current work plan) before 1996.

Response: MRI has taken actions to lower the leach pads discharge to the pit. This issue is to be investigated in the RI/FS. EPA believes that the current RI/FS schedule is a protective schedule which will prevent any impacts to human health and the environment and allow a thorough investigation of these issues.

9. Issue: The CTEC Report stated that plans for the entire Clark Fork drainage are being placed at risk by the current work plan assumption that the Berkeley Pit should be allowed to fill with approximately 40 billion gallons of severely contaminated water before any treatment will be brought on line. By then, the report says Butte may be condemned by EPA's inaction into becoming a perpetual Superfund site.

Response: EPA does not believe that the current Mine Flooding RI/FS schedule will place plans for the Clark Fork drainage at risk. This is because the rationale behind the Mine Flooding RI/FS is to contain all contaminated water in the pit for ultimate treatment. The current inward gradient will be maintained and will be monitored closely. There will be no downgradient impacts in the Clark Fork drainage as long as an inward gradient is maintained. The present schedule will not condemn Butte to becoming a perpetual Superfund site; however, perpetual treatment of the Berkeley Pit may be necessary. This perpetual treatment would be needed regardless of the critical level established for the pit and the volume of water in the pit. The present RI/FS schedule is the most accelerated schedule possible to protect health and the environment without compromising the quality of the FS and Superfund regulatory requirements.

10. Issue: CTEC asked EPA to explain, in writing, EPA's responses to CTEC Report 1.1. To demonstrate

its commitment to responding to community concerns, CTEC asked this explanation be correlated to the final Work Plan.

Response: The response to CTEC Report 1.1 has been completed, is part of this document (See Section III pages 8-12), and is correlated to the final Work Plan.

11. Issue: CTEC asked EPA to explain why the current RI/FS work is committed to letting the problem of pit water and mine flooding become continually worse, rather than seeking ways of immediately arresting further site contamination through increased volumes of contaminated water.

Response: The main objectives of the Butte mine flooding remedial actions are to mitigate the impact of mine water discharge on Silver Bow Creek and the adjacent alluvial aquifer and to contain the contaminated bedrock ground water in the Berkeley Pit, i.e., maintain flow toward the pit so that the contaminated bedrock ground water does not migrate from the area into the alluvial aquifer. The latter objective involves evaluating and better defining the critical water level. In this way, the problem is contained while the RI/FS is being conducted. The general objectives of the RI/FS are to identify the nature and extent of contamination associated with mine flooding and to evaluate remedial alternatives. In more concrete terms, these objectives are to:

1.) Collect data in support of evaluation of inflow control alternatives that would control the rate of pit filling; and

2.) Collect data in support of evaluation of treatment alternatives that would prevent inputs of contaminated mine waters to Silver Bow Creek and the adjacent alluvial aquifer.

The present RI/FS schedule is believed to be the most accelerated schedule possible that will still allow a full RI/FS to be conducted in accordance with Superfund law. The results of the RI/FS will feed into the water quality-related ROD. This ROD will coordinate all decisions relating to water quality impacts on Silver Bow Creek. EPA does not believe that this approach allows the problem to get significantly worse; instead, EPA believes that this approach allows the problem to be contained while the RI/FS is conducted. As long as the mine waters are contained by an

inward hydraulic gradient, there will not be an impact to the alluvial aquifer or Silver Bow Creek. Mine waters will flow away from the pit only if the pit water level is allowed to rise above the level of ground water in the adjacent alluvial aquifer. Water levels will be monitored closely throughout the RI/FS to prevent a reverse in the direction of water flow.

13. Issue: CTEC asked EPA to demonstrate the treatment technologies it has declared are currently available, and begin testing those technologies for immediate or interim application to the water in the Berkeley Pit.

Response: Available treatment technologies which will be evaluated in the FS are listed in the final Work Plan and include passive treatment, chemical precipitation, activated alumina, reverse osmosis, ion exchange, sulfide precipitation, and distillation. Treatment technologies will be evaluated in the Mine Flooding FS. Bench scale testing of treatment technologies is scheduled to be conducted prior to the beginning of Phase 2 of the FS, and must be completed by the end of August 1992. This schedule is designed so that remedial design/remedial action (RD/RA) can begin by Fall 1993, if necessary. This allows time to design and construct a waste water treatment plant by late 1996, if necessary.

14. Issue: CTEC asked all parties involved in planning remedial activities for Butte pit water and mine flooding to give serious and extensive consideration to the socio-economic impact on the community of Butte of the establishment of the nation's largest permanent body of toxic water.

Response: CERCLA requires that EPA be responsible for health and environmental impacts; socio-economic and community welfare concerns are not within EPA's mandate nor authority under the law. The mine flooding RI/FS is designed to mitigate hazards and to protect human health and the environment.

15. Issue: CTEC asked EPA to reconsider the objectives in the RI/FS, which focus on identifying and maintaining a certain critical water level beyond which the water would not be allowed to rise.

Response: As indicated above, EPA has given very careful consideration to the critical water level concept. (See pages 1-3 and 9-10 of this

document) The level was determined based on careful evaluation of all available data. The level was chosen to be conservatively protective. Pilot plant treatability studies in support of a treatment plant would begin long before the critical level is approached. Even if the pit water level rose to the critical level, it would still be 40 feet below the water level in the alluvium. Thus, flow would still be toward the pit, and there would be ample time for construction of a treatment facility. EPA will also collect new information concerning the hydrologic characteristics of the bedrock and alluvial systems and will monitor the entire system throughout the RI/FS and post-RI/FS time period. If information is developed that indicates a lower critical level is necessary, EPA will designate a lower level.

Conclusions

EPA appreciates the careful and thoughtful comments that the Agency has received from the public. As noted throughout this document, in several instances the work plan for the RI/FS was changed to reflect these comments.

As the RI/FS proceeds, final reports will be available for public review in the Butte/EPA office located in the basement of the Silver Bow County Courthouse.

EPA also plans to conduct a meeting to inform interested residents of the progress of the RI/FS approximately every six months or as major milestones in the project are reached. Written fact sheets and progress reports will also be published to report significant developments in the RI/FS.

ATTACHMENT A

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EPA PUBLIC HEARING

Butte, Montana
on May 30, 1990
at 7:10 p.m.

JOHNSON
EAYRS &
JACKSON
COURT
REPORTING

Kristi K. Eayrs
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(406) 586-8151

RUSS FORBA: Our primary purpose tonight is to receive public comment on the Remedial Investigation/Feasibility Study for the mine flooding Work Plan. We're here to listen to what you all have to say. We'll be taking notes. We'll be taking this all down and we will be formally responding to it in a responsive summary following the public comment period. The public comment period officially ends on June 4th. If people still have comments after that, we still receive and respond to comments throughout the process. However, we need a deadline to start our responsive summary.

Now, we've received a lot of comments to date. We've received comments earlier in the year from the CTEC Committee. And as I stated at that time, we will respond to those in our formal response in the summary at the end of the public comment period. I know we'll be receiving quite a few comments tonight.

One of the things that I need you to do, when you do make a comment, is please state your name clearly. It would help if you came up to the mike to make your comments.

What we wanted to do was very, very quickly run through the tasks in the RI/FS Work Plan and go through those in about maybe five to ten minutes, and then we'll start receiving public comments. As you know, we put out