EXPLANATION OF SIGNIFICANT DIFFERENCES

Silver Bow Creek/Butte Area NPL Site (original portion)
Warm Springs Ponds Operable Unit
Upper Clark Fork River Basin, Montana

United States Environmental Protection Agency
June 1991

I. INTRODUCTION

This Explanation of Significant Differences modifies certain elements of the Warm Springs Ponds remedy, as described in the Warm Springs Ponds Record of Decision (September 1990).

The most significant aspect of this decision involves Pond 1 and the area below Pond 1. The Record of Decision specified that Pond 1 would be dry-closed, but a decision regarding the area below Pond 1 was deferred for one year. While evaluating alternatives for the area below Pond 1, the EPA has determined that these alternatives may also have important implications on Pond 1 itself. Because these areas have no role in the treatment of water entering the pond system from Silver Bow Creek, the decision has been made to separate them from the active portions (Ponds 2 and 3). Pond 1 and the area below will be the subject of a second and separate proposed plan, public review, and Record of Decision.

This change, together with other minor and ancillary changes to the Warm Springs Ponds remedy, are described in detail in the following sections. The changes enable the EPA to proceed with necessary work on the active portions of the pond system (Ponds 2 and 3), either through an enforcement action against ARCO or through use of Superfund money. At the same time, these changes allow the EPA to conduct a more thorough evaluation of various alternatives for closing the inactive portions of the pond system (Pond 1 and below).

The EPA intends to offer a preferred remedy for the inactive areas, before the end of September 1991, followed by a full public review of the preferred remedy, as well as other alternatives evaluated. The EPA will then select a remedy for the inactive portions.

II. BACKGROUND AND PURPOSE

On September 28, 1990, the U. S. Environmental Protection Agency signed and issued the Record of Decision for the Warm Springs Ponds, which are part of the Silver Bow Creek/Butte Area "Superfund" Site in the upper Clark Fork River Basin of Montana. This Record of Decision presented and described a remedy selected

by the EPA for controlling the highly contaminated tailings, sediments, and water contained within the ponds and for preventing these contaminated materials and water from entering the Clark Fork River.

Figure 1 of the Record of Decision shows the location of the Warm Springs Ponds in relation to the four tributaries that combine to form the Clark Fork River below the ponds and it summarizes the remedy. The Warm Springs Ponds cover an area approximately four miles long and one mile wide. Key features include three settling ponds, three wildlife ponds, extensive wetlands areas and the Mill-Willow Bypass.

This Explanation of Significant Differences, or ESD, describes and documents the changes made by the EPA for the Warm Springs Ponds remedy.

In accordance with federal regulations regarding Superfund activities, specifically Sections 117(c) and 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. Sec. 9601, et seq., and 40 CFR Section 300.435(c)(2)(i) of the National Contingency Plan (NCP), 40 CFR Part 300, this Explanation of Significant Differences has been prepared for the following reasons:

a. to provide the public with an explanation of the nature of the changes;
b. to summarize the information that led to the changes; and
c. to affirm that the revised remedy complies with all statutory requirements.

The Montana Department of Health and Environmental Sciences (MDHES), which conducted the remedial investigation and feasibility study for the Warm Springs Ponds, participated in the deliberations that led to the selection of the remedy described in the September 1990 Record of Decision and the changes described in this Explanation of Significant Differences.

III. REMEDY DESCRIBED IN THE RECORD OF DECISION

The remedy selected by the EPA and specified in the Record of Decision was summarized as follows:

1. Allow the ponds to remain in place; Ponds 2 and 3 will continue to function as treatment ponds until upstream sources of contamination are cleaned up;
2. Raise and strengthen all pond berms according to specified criteria, which will protect against dam failure in the event of major earthquakes or floods, and increase the storage capacity of Pond 3 to receive and treat flows up to 100-year flood;

3. Construct new inlet and hydraulic structures to prevent debris from plugging the Pond 3 inlet and to safely route flows in excess of the 100-year flood around the ponds;

4. Comprehensively upgrade the treatment capability of Ponds 2 and 3 to fully treat all flows up to 3,300 cfs (100-year peak discharge) and construct spillways for routing excess flood water into the bypass channel;

5. Remove all remaining tailings and contaminated soils from the Mill-Willow Bypass, consolidate them over existing dry tailings and contaminated soils within the Pond 1 and Pond 3 berms and provide adequate cover material which will be revegetated;

6. Reconstruct the Mill-Willow Bypass channel and armor the north-south berms of all ponds to safely route flows up to 70,000 cubic feet per second (one-half of the estimated probable maximum flood);

7. Flood (wet-close) all dry portions of Pond 2;

8. Construct interception trenches to collect contaminated ground water in and below Pond 1 and pump the water to Pond 3 for treatment;

9. Dewater wet portions of Pond 1 and cover and revegetate (dry-close) all areas within the Pond 1 berms;

10. Establish surface and ground water quality monitoring systems and perform all other activities necessary to assure compliance with all applicable or relevant and appropriate requirements;

11. Implement institutional controls to prevent future residential development, to prevent swimming, and to prevent consumption of fish by humans; and

12. Defer, for not more than one year after the effective date of this document, decisions concerning the remediation of contaminated soils, tailings, and ground water in the area below Pond 1, pending evaluation of various wet- and dry-closure alternatives and public review.

The selected remedy for the Warm Springs Ponds is composed of a series of remedies, or elements. It represented a synthesis of the State's and EPA's original Alternative 3 (see the feasibility study or proposed plan) and ARCO's Alternative 3A. This new alternative, Alternative 3 + 3A, was developed and selected following months of consultation with the public and the

potentially responsible party, ARCO. It is described in greater detail in Section 8.4 of the Record of Decision.

IV. MODIFICATIONS TO THE REMEDY

As stated in the Introduction, only certain elements of the overall remedy have been modified. The most significant change involves Pond 1 and the area below Pond 1, or the inactive area of the Warm Springs Ponds. Thus, Element Nos. 1-7 and 10 (see above) remain essentially unchanged and they either have been or will be implemented without delay, including operation and maintenance activities. These elements of the remedy involve dam safety and flood routing requirements, removal of tailings from the Mill-Willow Bypass, and water treatment improvements. Clarification of certain aspects of Element Nos. 1-7 and 10 is provided below.

Element Nos. 8, 9, 11 and 12 (see above) may be either slightly or significantly modified, or they may not be modified at all, pending the EPA's and MDHES's thorough evaluation of various alternatives for Pond 1 and the area below. As stated earlier, the EPA intends to issue a separate proposed plan for Pond 1 and the area below Pond 1 before the end of September 1991 and will subject the proposal to full public review before a remedy is selected.

Element No. 12, as described in the Record of Decision, reads as follows:

> Defer, for not more than one year after the effective date of this document, decisions concerning the remediation of contaminated soils, tailings, and ground water in the area below Pond 1, pending evaluation of various wet- and dry-closure alternatives and a public review.

In essence, this will not change. The EPA has already received a draft alternatives analysis from ARCO which evaluates the various possibilities for wet- or dry-closure of both Pond 1 and the area immediately below Pond 1. While the draft report has undergone an initial review by the agencies, additional analysis is needed. Since it is the desire of the EPA to subject these alternatives to a more thorough evaluation and full public review, without impeding the progress of those elements of the remedy involving the active portions of the pond system, it is logical that the remedy should be divided.

The Warm Springs Ponds operable unit, therefore, has been divided into two separate actions. The first action involves the active areas (Ponds 2 and 3, as well as the bypass and berms, inlet and outlet structures, treatment improvement features and monitoring systems). The second action involves the inactive areas (Pond 1 and the area below Pond 1, including the Pond 1

berms, the old Silver Bow Creek channel, and the lowermost portion of the bypass). The second action also involves those decisions deferred by the September 1990 Record of Decision concerning the remediation of contaminated soils and tailings.

V. OTHER MODIFICATIONS

A number of minor changes have also been made by the EPA to the remedy described in the September 1990 Warm Springs Ponds Record of Decision. These changes may be more accurately characterized as technical and legal corrections; however, they are modifications and the EPA is obliged to identify them and briefly discuss the reasons for them.

A. Pond 3 Outflow Structures

Two modifications involve the Pond 3 outflow structures. The Record of Decision specified that the two decant structures within Pond 3 should be raised and modified to provide controlled releases into Pond 2, not to exceed 200 cfs. It also specified that an additional outflow structure (in addition to the emergency spillway) would be constructed to avoid exceeding the maximum allowable storage volume in Pond 3 during the 100-year flood. In other words, outflows in excess of 200 cfs (via the decant structures into Pond 2) were to be routed directly into the Mill-Willow Bypass via a large pipe from the west decant structure. The pipe would have been capable of discharging up to 500 cfs.

Preliminary engineering design work by ARCO has led to uncertainty concerning the integrity of the existing decant structures. Therefore, ARCO has proposed to construct two new decant structures and decommission the old ones. This decision necessitates two modifications to the Pond 3 outflow structures.

The first is to construct the new decant structures in order to accommodate as much as 300 cfs. They will retain the ability to decant 200 cfs, or any lesser flow amount, but it may be both feasible and desirable to route more than 200 cfs into Pond 2 during floods, once experience is gained from actual operation.

The second modification is to discard plans for adding a large pipe to the existing west decant structure. The pipe, which would have passed through the Pond 3 berm, was feasible only if the existing decant structures were to be kept intact. Because new decant structures are necessary, a simpler but more reliable additional outflow structure will be constructed in the northwest corner of Pond 3, separate from either the new or old decant structures.

Preliminary design by ARCO indicates that this bypass outflow structure will be less likely to create hydraulic

problems or fail during floods, as compared to the earlier-proposed outlet pipe. More significantly, the new design offers much greater operational flexibility: Control features will allow outflows up to 1,000 cfs at elevations ranging from 4869.1 ft. to 4876.5 ft. (The normal operating pool level is expected to be about elevation 4868 ft. and the emergency spillway elevation will be at 4876.6 ft.)

Experience gained from actual operation during floods in the future may prove it desirable under certain conditions to discharge Pond 3 water directly into the bypass,through this outflow structure and around Pond 2. Experience may also prove it desirable under different conditions to discharge more that 200 cfs into Pond 2. These two modifications offer that kind of flexibility; however, the EPA allowed the modifications with the understanding that their design must retain the ability to operate within the full range of possibilities described above and, at the same time, assure compliance with all applicable or relevant and appropriate requirements.

B. Regulation of Point Source Discharges from the Warm Springs Ponds

The ROD at pages 1-3 and 2-52 describes the need for adequate treatment of water discharged from the ponds, the need for an additional outlet structure from Pond 3, and the need for overflow spillways. Applicable and relevant and appropriate requirements for the Pond 2 discharge are identified in the ROD in Attachment 1 to Part II.

The following additional information will be useful in understanding the future workings of these aspects of the ponds, and defines required ARARs and use compliance for the various discharges.

1. The discharge from Pond 3 will also be subject to discharge limits and will be used only when necessary.

   The ROD does not clearly state that the Pond 3 overflow discharge will be subject to discharge limits. This ESD clarifies that the discharge is subject to ARARs limits. The use of the Pond 3 discharge structure will be evaluated as experience is gained from the pond system's operation during below-normal, normal, and above-normal flows. The ESD further clarifies the ARAR requirements for the Pond 2 discharge. Remedial design documents required for this action will further define the use of this discharge structure. Overflow spillways, which will be used if flood waters exceed the 100 year flood, will not be subject to any discharge requirement.

2. Specific bioassays described in the ROD will not be required.

The ROD at pages 2-55 and 2-56 identifies specific bioassay studies to be performed at the ponds, to determine the effects of resuspension of bottom sediments. Upon further consideration, EPA has determined that these specific bioassays are not necessary. Rather, interim and final ARAR levels explained below will be required to be met for the point source discharges at the ponds. Any specific studies or additional actions necessary to achieve these levels will be determined during remedial design and remedial action implementation.

3. No permit is required for the discharges, at the time that the ROD and the ESD are undertaken.

In the past, the point source discharge from Pond 2 has been regulated under the State Clean Water Act through a permit issued by the State Department of Health and Environmental Sciences. EPA has continued to examine the effect that section 121(e)(1) of CERCLA, 42 U.S.C. § 9621(e)(1), has on this action and the State's existing permit. EPA has determined that section 121(e)(1) negates the requirement that continued or new point source discharges from the ponds into Mill-Willow Bypass be regulated under a State water quality permit. (See the opinion of the EPA Office of General Counsel dated March 12, 1991, contained in the administrative record). However, the discharges must meet the substantive requirements of the State Clean Water Act and implementing regulations. Final discharge requirements are listed in the ARARs list, Attachment 1 to Part II of the ROD.

To clarify how the discharges are and will be regulated, EPA has determined:

a. The State's permit will continue to govern the Pond 2 discharge until a consent decree is entered for this action, or a unilateral order is issued for this action, or judicial relief is granted under section 106 of CERCLA for this action, or EPA begins remedial design at the site using Superfund money.

b. Once a consent decree is entered for this action, or a unilateral order is issued for this action, or judicial relief is granted under section 106 of CERCLA for this action, or EPA begins remedial design at the Site, using Superfund money, interim limits will apply to the point source discharges until remedial design is completed and remedial action is implemented. Interim limits will be protective of human health and the

environment, and will be further defined in the consent decree or unilateral order.

c. Upon completion of remedial action implementation, ARAR limits defined in Attachment 1 to Part II of the ROD and further clarified in this ESD will apply to the point source discharges. These requirements will be contained in an attachment to the consent decree or unilateral order and the limits will be subject to review during any five-year review performed for the Site, and in any future decision document for the Site.

Interim and final discharge limits and associated requirements will be fully enforceable by EPA and the State pursuant to the terms of a consent decree or unilateral order.

C. ARARs: Corrections and Clarification

Section 5.0 of Part II of the ROD, and Attachment 1 to Part II define ARARs which must be met during and upon completion of the action. Some of these ARARs were inaccurate, due to typographical errors. The following are the correct ARARs for this action, and replace the specific corresponding ARARS listed in the ROD. Other ARARs listed in the ROD are not changed, and remain as necessary requirements for this Site.

1. ARARs Corrections

a. Contaminant Specific ARARs for Groundwater

Arsenic should read 0.05 milligrams per liter (mg/l) instead of 0.02 mg/l, as indicated on page 3, Attachment 1 to Part II of the ROD.

Mercury should read 0.002 mg/l instead of 0.0002 mg/l, as indicated on page 3, Attachment 1 to Part II of the ROD.

b. Contaminant Specific ARARs for Surface Water, Ambient and Point Source Discharge

The table given at page 8 of Attachment 1 to Part II of the ROD should be revised to read as follows:

	Acute (mg/l)	Chronic (mg/l)	Water and Fish Ingestion (ng/l)
Arsenic(III)	0.36	0.19	
Arsenic(V)	0.85	0.048	
Arsenic(Total)	--	--	2.2
Cadmium	0.0039*	0.0011*	
Copper	0.018*	0.012*	
Iron	--	1.0	
Lead	0.082*	0.0032*	
Mercury	0.0024	0.000012	144.0
Selenium	0.26	0.035	
Silver	0.0041*	0.00012	
Zinc	0.12*	0.11*	

This chart reflects minor corrections in arsenic (total), mercury, and selenium levels, and clarifies which standards are chronic numbers, and which standards are acute numbers, as well as indicating that certain of the State's water quality standards relate to water and fish ingestion.

2. ARARs Clarification

Attachment 1 to Part II of the ROD lists a number of ARARs, TCBs, and Other Laws for the entire Warm Springs Ponds operable unit action. This portion of the ESD clarifies which of those standards and requirements apply to the remedial action implemented pursuant to the Record of Decision, as modified by this ESD.

a. Contaminant Specific

Air standards listed in Part I.2. are applicable to this action as described.

Surface Water standards for point source discharges listed in I are applicable to this action as described, as modified by Section 5(B)(3) of the ESD.

Ground water standards listed in Part I(1), Sections I & J, are applicable to this action.

As stated in the September 1990 ROD, temporary diversion of Mill and Willow Creeks into the Ponds may be required in order to meet ARARs for the Site. This issue will continue to be examined, and EPA may require such action as part of this action, or as part of the inactive portion action. EPA will continue to examine possible clean up actions in the upstream portions of Mill and Willow Creeks.

b. Location Specific

All location specific standards listed in Part II are applicable to this action as described, including requirements under the Endangered Species Act and requirements relating to wetlands, as explained below. The Endangered Species Act requirements should also include necessary assessments and actions for protection of peregrine falcons, which have been sighted recently at the ponds.

c. Action Specific

Safety standards, including OSHA safety standards, identified in section III.1.A. - C. are applicable to this action as described.

Cleanup standards for the Mill-Willow Bypass identified in section III.2.A. - D. are applicable to this action as described.

Revegetation standards identified in section III.3.A. - B. are applicable to the disposal area created in Pond 3, and to any areas within or around Ponds 2 and 3 and the Mill-Willow Bypass which involve capping waste in place, as described.

Requirements and standards governing continued operation of Ponds 2 and 3, identified In Section III.4., are applicable to this action as described.

Requirements and standards governing berm strength, identified in section III.5., are applicable to this action, as described.

Closure and post closure care requirements and standards, identified in section III.6.A. - F., are applicable to the Pond 3 disposal area, which is part of this action. Requirements and standards for point source discharges, identified in section III.8.A. - C., are applicable to Pond 2 and Pond 3 point source discharges, as described in the

Attachment and further clarified above.
All TBCs and Other Potentially Relevant Laws identified in the Attachment are applicable or may affect this action, as described.

D. Institutional Controls

The ROD at page 1-4 describes the need for the implementation of institutional controls at the Site, and lists examples of institutional controls which may be necessary. This requirement was made part of the ROD to prevent residential development of the area, and to prevent unnecessary exposure to contaminants in the area. Since the publication of the ROD, EPA has examined specific institutional controls which should be implemented at the site. For purposes of clarification, the following specific institutional controls shall be initiated in cooperation with local governments at the site:

1. Renewal of the lease agreement between ARCO and the State of Montana Department of Fish, Wildlife, and Parks, for continuation of use of major portions of the area as a wildlife refuge.

2. Implementation of a conservation easement with restrictive covenants by ARCO for the Site, to ensure that future development will not include residential use, and will not cause disruption of disposal areas or waste ponds.

3. Implementation of a permit development system, in cooperation with Anaconda and Deer Lodge Counties and ARCO, which will prevent residential development at the Site. The permit system includes the development of a master plan, which will designate the ponds as a wildlife refuge.

4. Implementation of a water well ban in the area. The well ban shall prohibit water wells within the waste ponds at the Site permanently, and shall temporarily prohibit water wells within the Site in areas outside of the waste ponds, until such time as ARARs are achieved for the ground water at the Site.

5. Implementation of a ban on swimming in the Ponds at the Site, to be accomplished through the posting of appropriate signs at the Site.

The ROD describes institutional controls which would ban fish consumption at the Site. EPA has considered this issue further, in consultation with the State Department of Fish, Wildlife, and Parks, and has determined that the ban on taking fish for consumption may not be appropriate for the Site. EPA

will continue to evaluate this issue, and may require such action at a later time, if data indicates such a ban is appropriate. The Montana Department of Fish, Wildlife and Parks retains the ability to implement catch and release policies in order to manage the fishery most effectively.

E. Technical Corrections

This Explanation of Significant Differences offers the EPA an opportunity to correct or clarify certain technical aspects of the Record of Decision. These corrections or clarifications address technical details regarding the construction of treatment improvements and the operation of the pond system. Discussions with the public, the potentially responsible party (ARCO), and other state and federal agencies indicated a need for the following technical corrections:

1. Page 2-51 of the Decision Summary, last full paragraph, states that storage of flood flows up to the 100-year event is one of the primary purposes of Alternative 3 + 3A. The term "storage" was used elsewhere in the document, as well. Use of the term "storage" was not done with the intent of requiring the complete retention of 100-year flood flows in the same manner that a larger, multi-purpose dam would store flood flows. Rather, the intent was to ensure that Pond 3 (and to the extent practicable, Pond 2) could safely receive and treat those 100-year flood flows, but release water as rapidly as possible to balance treatment needs and dam safety requirements. Additionally, water rights are a consideration, and the ponds system must be operated in a manner which will not interfere with downstream water users' rights.

2. Page 2-52 of the Decision Summary, first sentence, requires some clarification and correction. As explained above, "storage" should not be misconstrued. Additionally, however, the figure 13,000 acre-feet should have been 12,500 acre-feet. The crest of the emergency spillway, as designed for dam safety requirements in effect for a flood of one-half the estimated probable maximum flood, will allow no more than 12,500 acre-feet to be contained by Pond 3. It should be understood that under normal operating conditions (before a flood), Pond 3 will already contain approximately 4,800 acre-feet of water. In the event of a flood, Pond 3 will effectively receive and treat all flows up to the 100-year event (3,300 cfs). The difference between 4,800 acre-feet and 12,500 acre-feet is 7,700 acre-feet, and the 100-year design flood for sizing and design, as determined by flood modeling studies conducted by the State of Montana, is

approximately 13,000-13,500 acre-feet. This correction has no effect on treatment capability.

3. Page 2-52 of the Decision Summary, second sentence, requires some clarification. The normal operating volume of Pond 2 will be approximately 1,600 acre-feet. The figure 2,200 acre-feet used in the ROD is roughly the expected volume at high pool, or during floods.

4. Page 2-52 of the Decision Summary, last sentence of second paragraph, requires some clarification. The figure 4,000 cfs was a preliminary design estimate of the intake structure's ability to pass flows during a "PMF-type" of flood. ARCO's design estimate is now approximately 4,600 cfs, and this is acceptable. It should be understood that during a more moderate flood, such as a 100-year event, a maximum of 3,300 cfs will enter the Pond 3 inlet.

5. Page 2-54 of the Decision Summary, first sentence, requires some clarification. The figure of 8,500 cfs is a preliminary estimate that may be adjusted, either upward or downward, in final design.

F. Wetlands and Endangered Species

Two principal sections of the Record of Decision, Section 5.0 and Attachment to Part II, identify and analyze the applicable or relevant and appropriate requirements (ARARs) associated with the Warm Springs Ponds remedy. While certain laws, regulations, and requirements pertaining to the protection of wetlands and endangered species are identified in those sections, their mention in this Explanation of Significant Differences is to reemphasize their importance and specify that ARCO has initiated a wetlands delineation and classification study for the Warm Springs Ponds. The study will identify and measure the areas already considered to be wetlands. As the remedies for the two separate portions of the pond system are implemented, provisions will be necessary to assure that legal requirements related to the ARARs will be met, and that there is no net loss of wetlands.

This may become an important consideration in evaluating alternatives for Pond 1 and the lower area. Complete dry-closure of Pond 1, which would have occurred under the provisions of the September 1990 Record of Decision, and still may occur pending reevaluation and public review, would result in the loss of a portion of those wetlands within the eastern portion of Pond 1. If that decision is made, then it will be necessary to create new wetlands of equal habitat value elsewhere in the pond system. The extent of the increase in wetlands area that is expected to occur when the Pond 2 pool area is increased, in order to improve

water treatment capability, will not be fully known until the wetlands delineation study is finalized and the remedy has begun.

In all instances, and in respect to both remedies, compliance with all ARARs will be required, including the provisions for no net loss of wetlands.

Additionally, a biological inventory of the area will be required. The U.S. Department of the Interior (USDI) has determined that two endangered bird species inhabit the ponds. They are the bald eagle and peregrine falcon. The results of a biological inventory may lead to the need for followup measures. In any case, the presence of threatened or endangered species already calls for close coordination with USDI, and the likelihood of protective or mitigative measures becoming necessary during the remedial design and remedial action phases of cleanup is great.

VI. ADMINISTRATIVE RECORD

This Explanation of Significant Differences has been incorporated into the Administrative Record File for the Silver Bow Creek/Butte Area NPL Site, which is available for public review and can be seen between 8:00 a.m and 4:30 p.m., Monday through Friday, at the EPA's Offices, Federal Building, 301 South Park, Helena, Montana.

VII. APPROVAL

Date: June 24, 1991

James J. Scherer
Regional Administrator

ARMOR APPROPRIATE BERMS TO WITHSTAND THE MAXIMUM CREDIBLE EARTHQUAKE AND ONE-HALF THE PROBABLE MAXIMUM FLOOD (70,000 cfs)

PROTECT POND 1 FROM FLOODS ORIGINATING IN EAST HILLS

WILDLIFE PONDS

POND 2

MILL-WILLOW BYPASS REMOVAL ACTION WAS INITIATED BY CONSENT ORDER OF JULY 1990. EARLY ACTION TO REMOVE TAILINGS AND CONTAMINATED SOILS FROM THE BYPASS CHANNEL ADJACENT TO PONDS 2 AND 3 WILL BE COMPLETED IN 1990.

RETAIN POND 2 AS A TREATMENT POND AND INCREASE WATER LEVELS TO FLOOD ALL TAILINGS AND CONTAMINATED SOILS. CONSTRUCT SPILLWAY INTO BYPASS CHANNEL

TAILINGS AND CONTAMINATED SOILS IN THE BYPASS CHANNEL ADJACENT TO POND 1 WILL BE REMOVED BEGINNING IN 1991 AS PART OF THE OVERALL REMEDY

INTERSTATE 90

MILL- WILLOW BYPASS

POND 3

A PUMPING SYSTEM AND PIPELINE WILL ROUTE CONTAMINATED GROUND WATER FROM POND 1 AREA TO POND 3 INLET FOR TREATMENT

CONSOLIDATE AND DRY-CLOSE (COVER AND REVEGETATE) EXCAVATED TAILINGS AND CONTAMINATED SOILS IN DRY AREAS OF PONDS 1 AND 3

OPPORTUNITY PONDS

POND 3 CLOSURE AREA

POND 3 STORAGE CAPACITY AND TREATMENT CAPABILITIES WILL BE SUBSTANTIALLY UPGRADED TO STORE AND TREAT FLOWS UP TO 3300 cfs.

- RAISE AND STRENGTHEN BERMS
- MODIFY INLET STRUCTURES, INSTALL TRASH RACK AND RELOCATE FUSEPLUG TO ROUTE EXCESS FLOWS TO MILL-WILLOW BYPASS
- IMPROVE LIME ADDITION SYSTEM TO ENHANCE PRECIPITATION OF METALS
- CONSTRUCT NEW OUTFLOW STRUCTURES INTO POND 2 AND SPILLWAY INTO BYPASS CHANNEL
- TEMPORARILY DIVERT MILL AND WILLOW CREEKS INTO PONDS FOR TREATMENT

DEVELOP LONG-RANGE PLAN FOR FINAL CLOSURE OF PONDS:

- ROUTE MILL, WILLOW AND SILVER BOW CREEKS (ONCE CLEANED UP) AROUND THE PONDS
- RECONFIGURE BYPASS CHANNEL TO ACCOMMODATE FISH, WILDLIFE, AND FLOOD ENGINEERING NEEDS
- MAINTAIN SUFFICIENT FLOW THROUGH PONDS TO MAXIMIZE WETLANDS HABITAT AND FLOOD ANY REMAINING CONTAMINATED AREAS
- MONITOR GROUND WATER BELOW PONDS
- MONITOR SURFACE WATER INFLOWS AND OUTFLOWS

CREEK

BOW

SILVER

CREEK

BOW

SILVER

MILL CREEK

WILLOW

CREEK

I 90

N

0 1200 2400

SCALE IN FEET

LEGEND

BERMS

EXPOSED TAILINGS

WETLANDS

FIGURE 1

COMPONENTS OF THE WARM SPRINGS PONDS AND MILL-WILLOW BYPASS REMOVAL ACTION

CLARK FORK RIVER

FATE OF AREA BELOW POND 1 (REMOVAL OF TAILINGS VS WET CLOSURE) WILL BE DEFERRED PENDING EVALUATION OF VARIOUS APPROACHES AND A PUBLIC REVIEW

CONSTRUCT INTERCEPTION TRENCHES TO COLLECT CONTAMINATED GROUND WATER IN AND BELOW POND 1. COLLECTED WATER WILL BE PUMPED TO POND 3 FOR TREATMENT

COMMUNITY OF WARM SPRINGS

DRY-CLOSE POND 1 (COVER AND REVEGETATE)

CREEK

WARM SPRINGS

POND 1

PROTECT POND 1 FROM FLOODS ORIGINATING IN EAST HILLS

RAISE, STRENGTHEN, AND ARMOR APPROPRIATE BERMS TO WITHSTAND THE MAXIMUM CREDIBLE EARTHQUAKE AND ONE-HALF THE PROBABLE MAXIMUM FLOOD (70,000 cfs)

WILDLIFE PONDS

POND 2

MILL-WILLOW BYPASS REMOVAL ACTION WAS INITIATED BY CONSENT ORDER OF JULY 1990. EARLY ACTION TO REMOVE TAILINGS AND CONTAMINATED SOILS FROM THE BYPASS CHANNEL ADJACENT TO PONDS 2 AND 3 WILL BE COMPLETED IN 1990.

RETAIN POND 2 AS A TREATMENT POND AND INCREASE WATER LEVELS TO FLOOD ALL TAILINGS AND CONTAMINATED SOILS. CONSTRUCT SPILLWAY INTO BYPASS CHANNEL

TAILINGS AND CONTAMINATED SOILS IN THE BYPASS CHANNEL ADJACENT TO POND 1 WILL BE REMOVED BEGINNING IN 1991 AS PART OF THE OVERALL REMEDY

INTERSTATE 90

MILL- WILLOW BYPASS

POND 3

A PUMPING SYSTEM AND PIPELINE WILL ROUTE CONTAMINATED GROUND WATER FROM POND 1 AREA TO POND 3 INLET FOR TREATMENT

CONSOLIDATE AND DRY-CLOSE (COVER AND REVEGETATE) EXCAVATED TAILINGS AND CONTAMINATED SOILS IN DRY AREAS OF PONDS 1 AND 3

OPPORTUNITY PONDS

POND 3 CLOSURE AREA

POND 3 STORAGE CAPACITY AND TREATMENT CAPABILITIES WILL BE SUBSTANTIALLY UPGRADED TO STORE AND TREAT FLOWS UP TO 3300 cfs.

- RAISE AND STRENGTHEN BERMS
- MODIFY INLET STRUCTURES, INSTALL TRASH RACK AND RELOCATE FUSEPLUG TO ROUTE EXCESS FLOWS TO MILL-WILLOW BYPASS
- IMPROVE LIME ADDITION SYSTEM TO ENHANCE PRECIPITATION OF METALS
- CONSTRUCT NEW OUTFLOW STRUCTURES INTO POND 2 AND SPILLWAY INTO BYPASS CHANNEL
- TEMPORARILY DIVERT MILL AND WILLOW CREEKS INTO PONDS FOR TREATMENT

DEVELOP LONG-RANGE PLAN FOR FINAL CLOSURE OF PONDS:

- ROUTE MILL, WILLOW AND