WALKER MINE -
SITE INSPECTION REPORT

STEFFEN ROBERTSON & KIRSTEN

Consulting Engineers and Scientists

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SITE INSPECTION REPORT

Prepared for:
State of California
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road
Sacramento, California 95827-3098

Prepared by:
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December 1989
SRK Report No. 06901

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STEFFEN ROBERTSON AND KIRSTEN
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December 20, 1989
SRK Project No. 06901

State of California
California Regional Water
Quality Control Board
Central Valley Region
3443 Routier Road
Sacramento, CA 95827-3098

Attention: Mr. William Croyle

RE: WALKER MINE - SITE INSPECTION

Introduction

As arranged with William A. Croyle we conducted a site visit on November 14, 1989. The visit was conducted by Dr. Chris Page, (mining engineer and rock mechanics specialist), and Dr. Ian Hutchison (geohydrologist) and included a general reconnaissance of the area as well as an inspection of the 700 level adit and the plug. Also present during the site visit were Mr. W. Croyle and Mr. J. Tucker from the Central Valley Region. Detailed observations made during the visit are included in this letter and in the photo record attached in Appendix A. A video of the visit is also available on file with the Central Valley Region.

Summary of Findings

The plug is performing well. The concrete is in good condition and the small quantity of seepage around the plug, which is on the order of tenths of a gallon per minute, is well within expectations. According to the dial gage installed on the plug outlet pipe, the water level behind the plug was 97 ft (42 psi). This is still well below the next potential surface discharge point at the Piute shaft which is approximately 450 ft above the 700 portal level. However, the final equilibrium level to which water will rise behind the plug is not yet known.

Within the level 700 adit segment between the portal and the plug, there is no indication of imminent collapse. However, the timbered sections in the first 1,300 ft cannot be considered secure in the medium term. The unsupported adit segment is in very good condition.

The surface diversions placed around the Piute shaft and central orebody subsidence areas are in reasonable condition but are probably only effective in diverting some of the higher storm or snowmelt flows. Improving the efficiency of these diversions would require relatively costly engineering works to provide effective flow cutoffs through the upper soil cover and additional surface flow channels.

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A brief reconnaissance of the area immediately above and to the east of the portal did not reveal any obvious signs of outflow of acid drainage from the plugged workings.

Recommendations

The long term stability of the 700 level adit needs to be addressed. This can either be accomplished by replacing the timber support and continuing to maintain the adit and the plug, or by grouting up the pipes through the plug, sealing off the portal, and allowing the adit to deteriorate and to ultimately collapse. Due to the large cost differential between these two alternatives, the latter is recommended. However, before it is implemented, at least two or three more years of site data should be collected to determine the equilibrium water level behind the plug and confirm the absence of any mine water seepage that could cause environmental problems.

Provided the plug continues to operate satisfactorily there is no need to improve the surface drainage around the upper two sinkhole areas. This would be very costly to undertake and would not provide any benefits. However, consideration should be given to sealing some of the openings because of the physical hazard they pose. In most cases this could be done by blasting protruding or overhanging rock formations.

In order to keep the plugs operating satisfactorily in the short-term, the mild steel parts used on the valves should be replaced by stainless steel parts. Arrangements should also be made to obtain a minimum of quarterly water level readings behind the plug by either manually reading a pressure gage or reinstalling or repairing the recording gage.

Detailed Observations

(a) Tunnel Condition

The first 1300 feet of the adit is supported with closely spaced timber setts with full timber cladding behind the setts for the walls and roof. Very little rock surface is visible in the timbered section. The remaining 1400 feet is unsupported and is probably contained within unweathered rock.

The following points are pertinent to the timbered section:

- It is difficult to assess how much loose material is resting on the timbers. In a few places it was observed that the loose material is several feet thick both in the roof and the walls;

- There are several sections of tunnel which have been spiled. This involved driving timbers at a slight angle above horizontal into the roof to provide cover for the next sett in very weak or loose ground;

- It is difficult to gauge the age of the timber but it seems that much of the support was in place in the early 1940's;

- A considerable amount of the cladding is completely rotten and some of the caps and legs appear to be in poor condition;

- Most of the timber setts are undistorted although there is some punching of legs into caps and bending of caps and legs;

- There is a significant amount of distortion of the cladding behind the setts but this timber is much thinner and, therefore, more rotten;

- There are some areas of significant adit enlargement resulting in large spaces behind the timber or where several layers of timber have been used to fill the spaces;

- There is evidence of rock deterioration with considerable weathering in the areas close the portal; and

- The first 200 ft of the adit appears to be cut and fill with very little cover material.

The following tentative conclusions may be drawn in reference to the timbered section:

- The condition of the timber is remarkably good given the age and degree of rotting;

- The presence of spiling, indicates very weak or loose rock conditions behind the timber. There are sections where quantities of loose material are visible;

- There is no indication of imminent collapse; however, it is clear that the timbered section cannot be considered secure over the medium- or long-term; and

- It is not possible to predict how long safe entry may be possible, but 10 to 20 years should be regarded as very optimistic.

The unsupported section of the adit is in very good condition with no indication of any recent, significant deterioration. The rock mass is well jointed, but the joints are rough (high friction) and tight in most cases, although unfavorably oriented with respect to adit stability. The adit is old and the lack of deterioration suggests that it should remain in good condition for a long time. However, as for the timbered section, it is difficult to judge what stability will be with the passage of time. However, there are no sections of tunnel which intersect rock masses that would totally close the tunnel if a rock fall occurred.

(b) Plug Condition

The plug is in good condition with very little leakage. Most of the leaking is confined to the interface between the plug and the roof. The 42 psi (97 ft) registered by the pressure gauge is well below the 610 psi (1400 ft) for which the plug was designed. Very little of the rock/plug interface grouting has apparently been carried out. There appears to be no leakage through the rock around the plug.

(c) Geohydrologic Evaluation

The water level behind the plug still appears to be rising with time. Available data has been collected and is plotted on Figure 1. This Figure illustrates that annual rises in groundwater levels have been between 30 and 90 ft. Furthermore, there may be seasonal fluctuations of the order of 10 to 20 ft. There is no indication yet that a long-term equilibrium level has been reached.

(d) Long Term Security of the Tunnel

The plug and tunnel are being inspected and monitored on a regular basis. In the medium-term (next few years), this can continue as long as it is safe to do so. In the longer-term, additional work will have to be done to provide for safe conditions. There are two basic routes that can be taken. These are:

- Rehabilitate the timbered section; and
- Secure the area around the plug and allow the timbered section to collapse.

The first option would require the removal of all the timber and the installation of suitable support such as grouted rock bolts and reinforced shotcrete. This would cost in the region of $1,000 per foot or more. This amounts to a minimum capital cost of approximately $1.3 million.

The second option would require adding support to the rock immediately adjacent to the plug to prevent rock falls and possible short circuiting of the plug, providing a secondary seal to the valves, and sealing off the portal to any access. This could be accomplished for example, by placing a second concrete plug up against the existing plug and collapsing the cut and fill portion of the adit in order to seal off the portal.

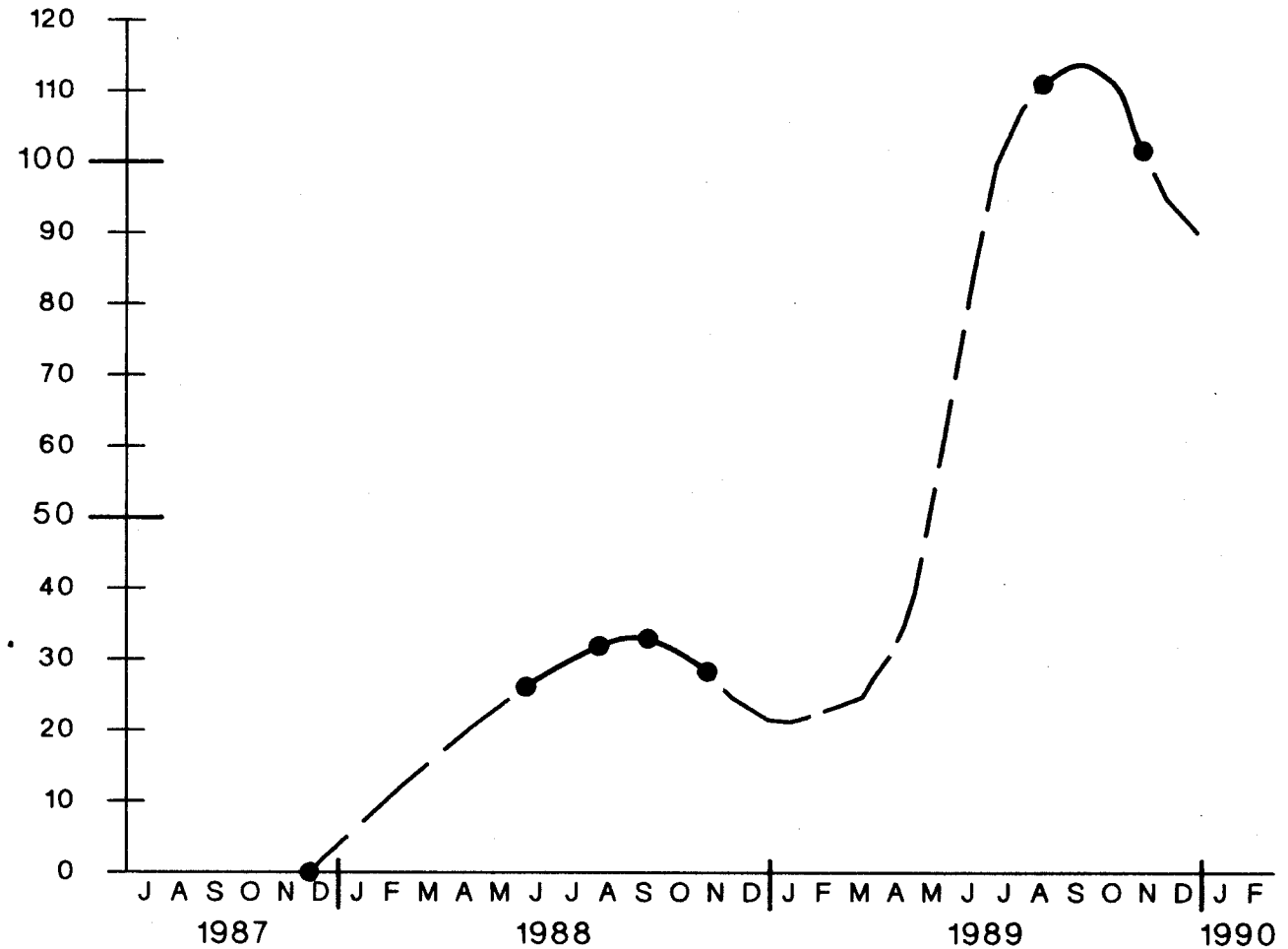
Sincerely,

STEFFEN ROBERTSON AND KIRSTEN
(U.S.), INC.

Ian Hutchison
Division Head
Water

Melissa Pennell
for Chris Page
Division Head
Mining

IH/mlp



PROJECT NO.	PREPARED BY:	FIGURE 1
06901		
DATE 12/89		WATER LEVELS BEHIND THE PLUG
REVISION 0	STEFFEN ROBERTSON & KIRSTEN (U.S.) Consulting Engineers & Scientists	

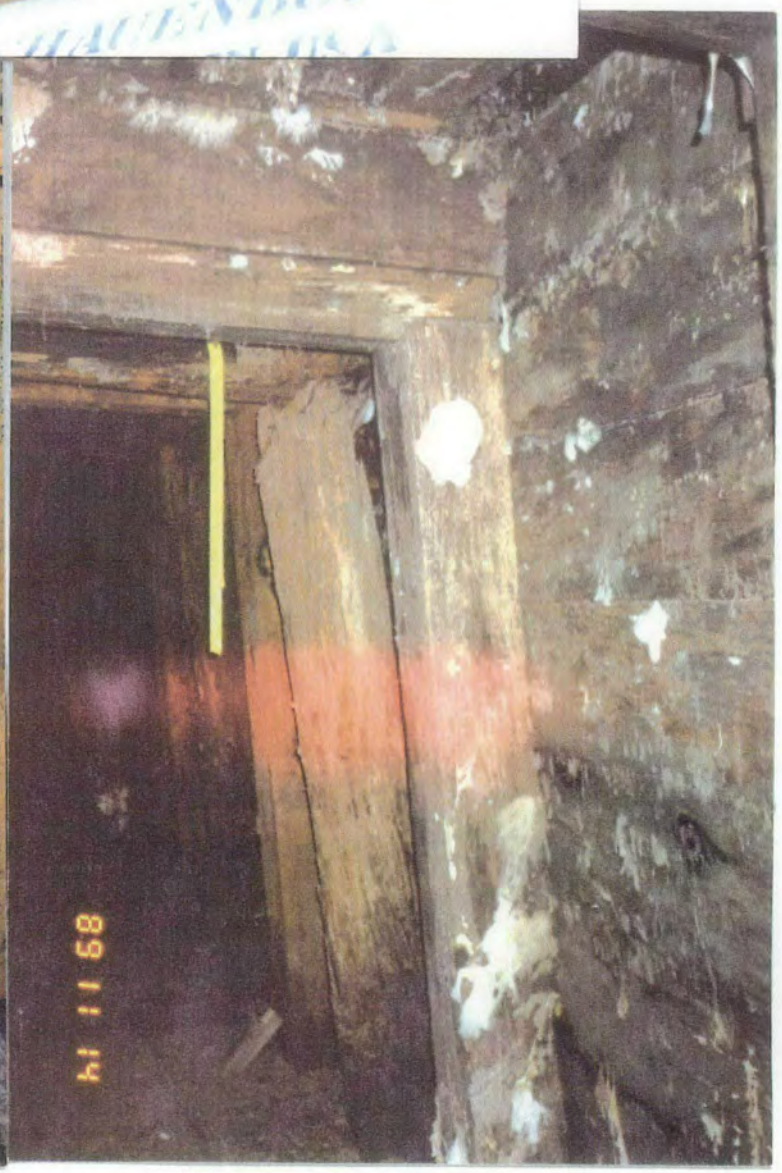
APPENDIX A
SITE PHOTOS:
TAKEN NOVEMBER 14 AND 15, 1989

TAILINGS IMPOUNDMENT

MINE WATER POND

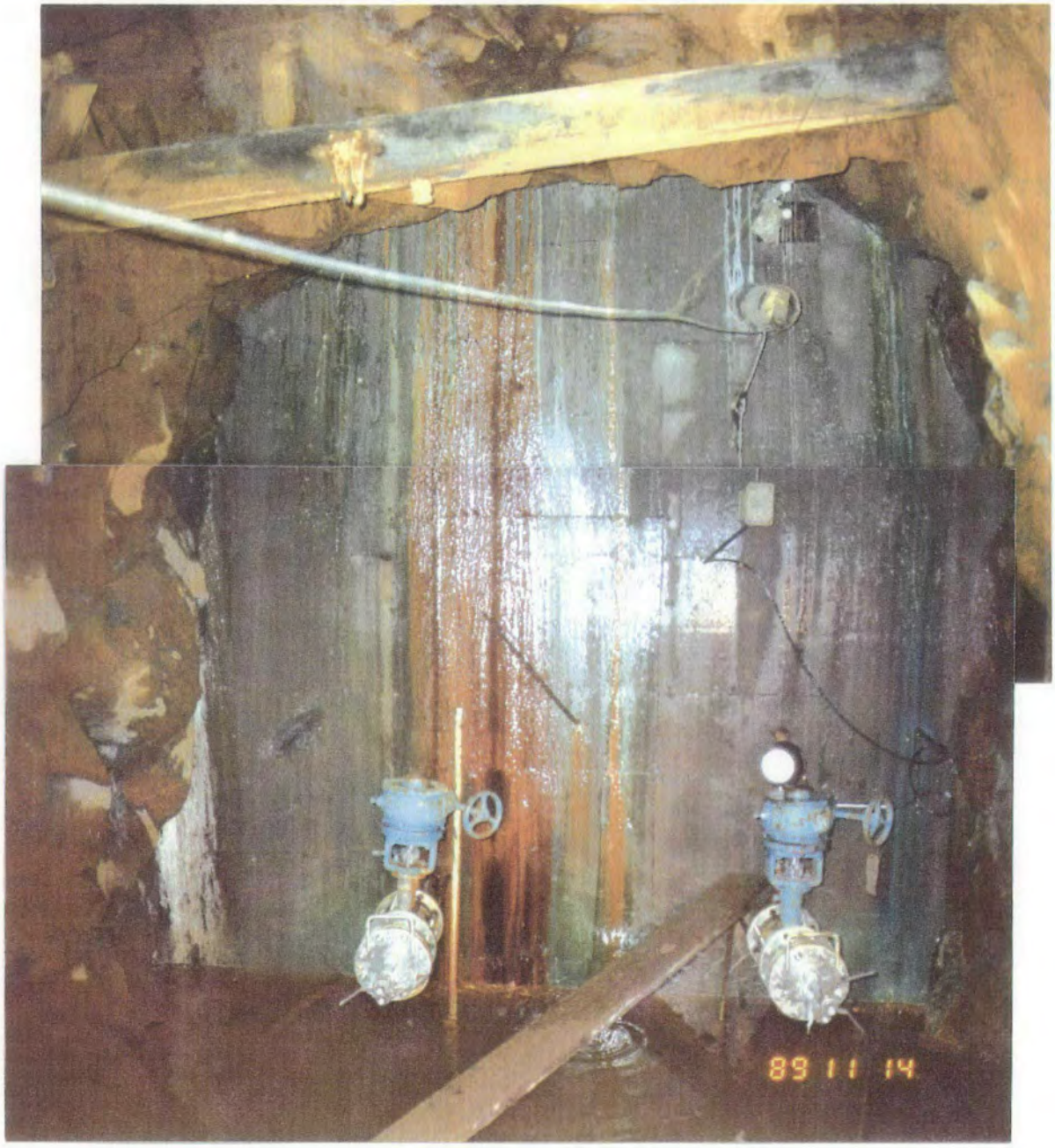
ADIT PORTAL

UNSUPPORTED 700 LEVEL ADIT SEGMENT NEAR THE PLUG

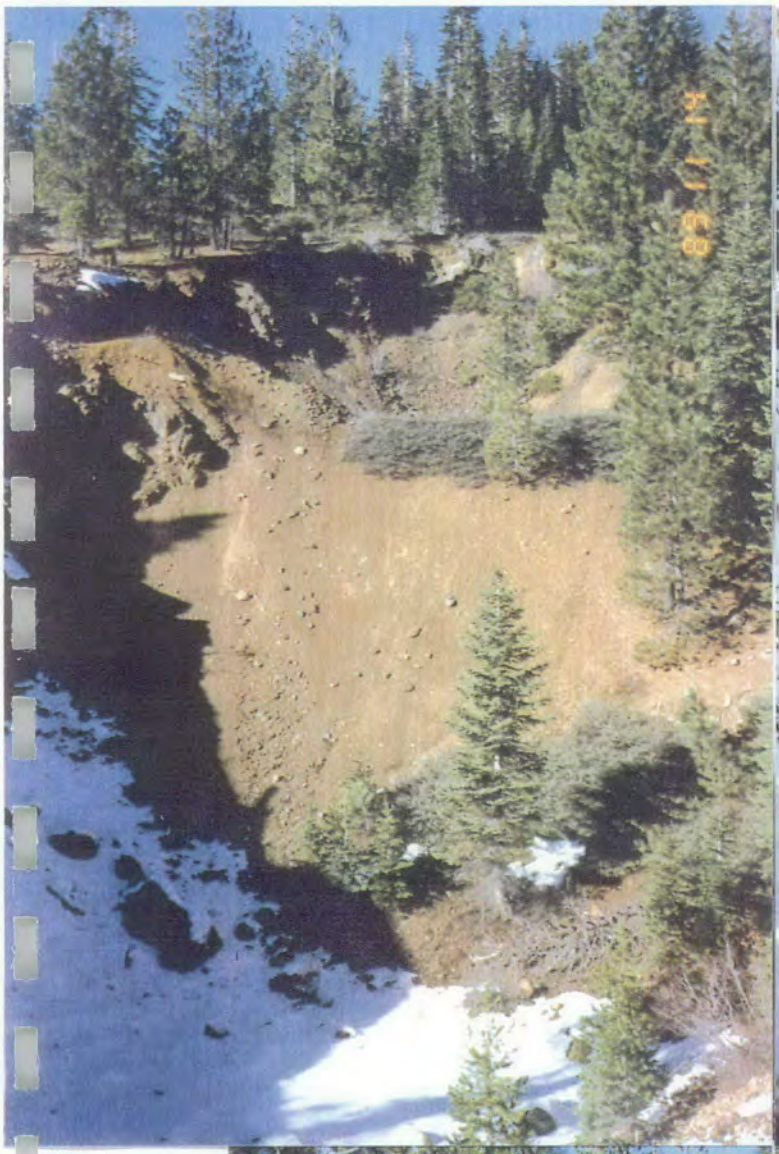


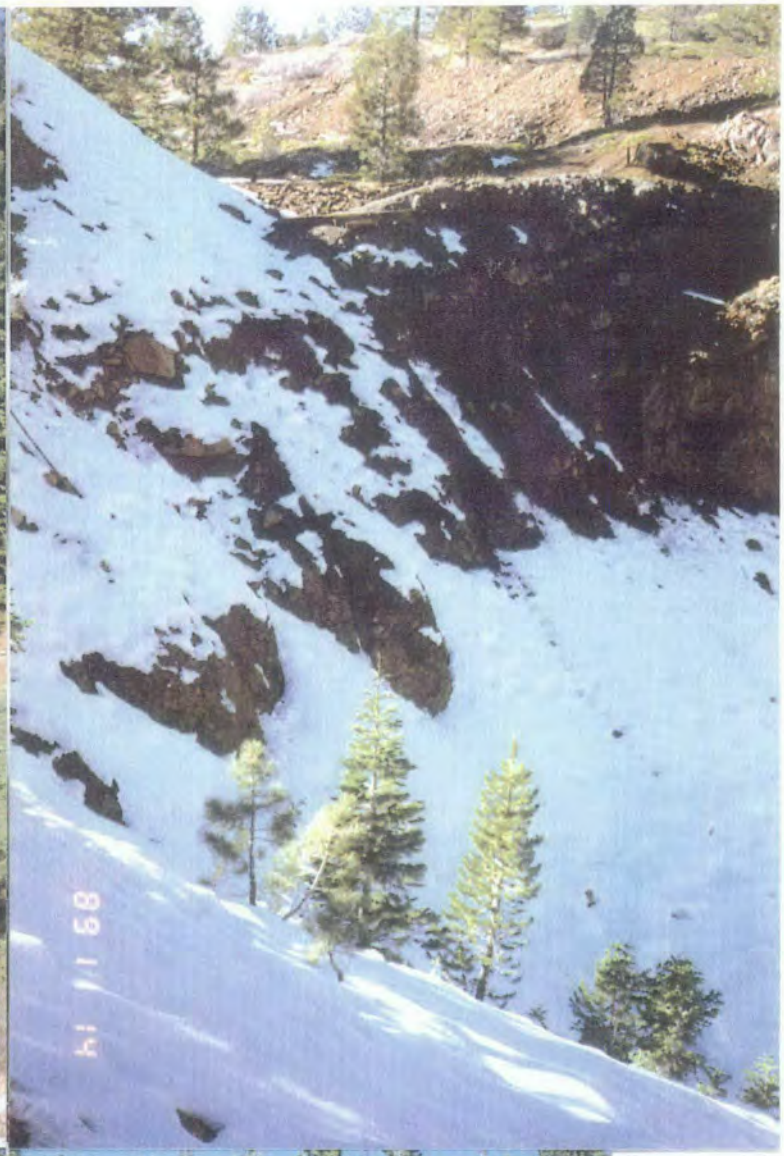
TIMBER SUPPORTED SEGMENTS IN THE 700 LEVEL ADIT

TIMBER SUPPORTED SEGMENTS IN THE 700 LEVEL ADIT



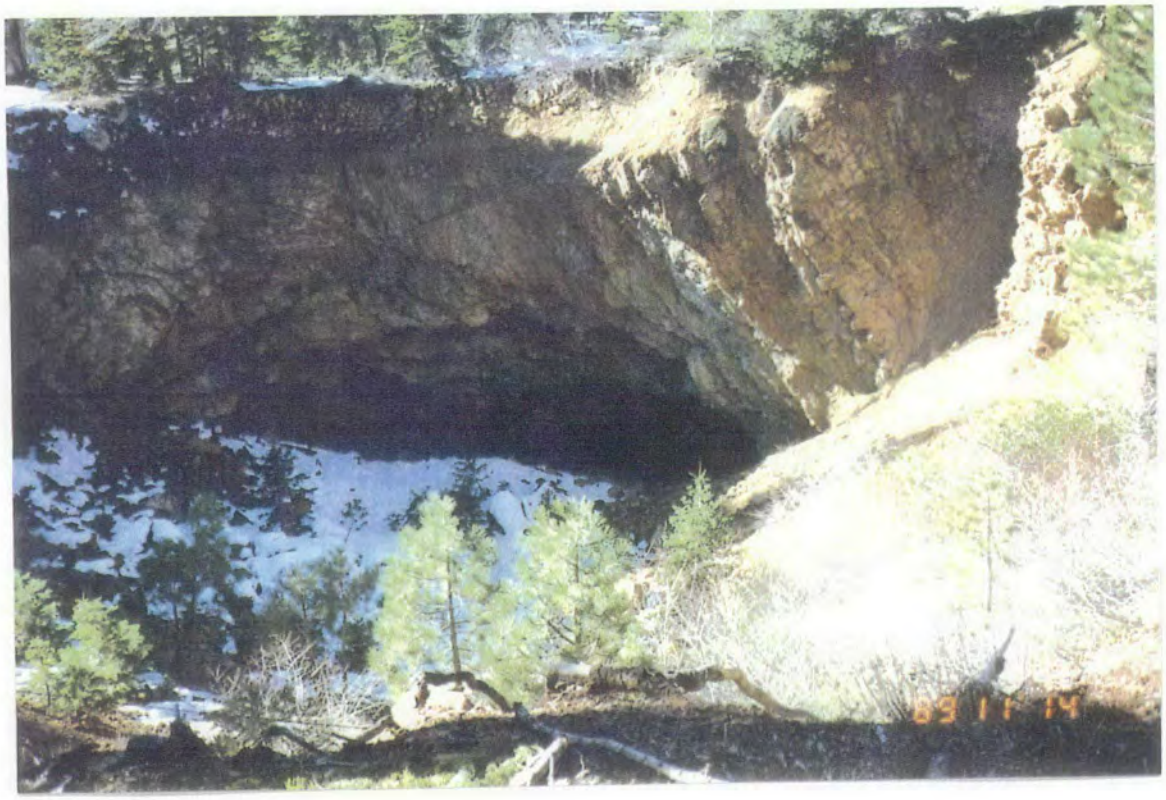
ADIT PLUG



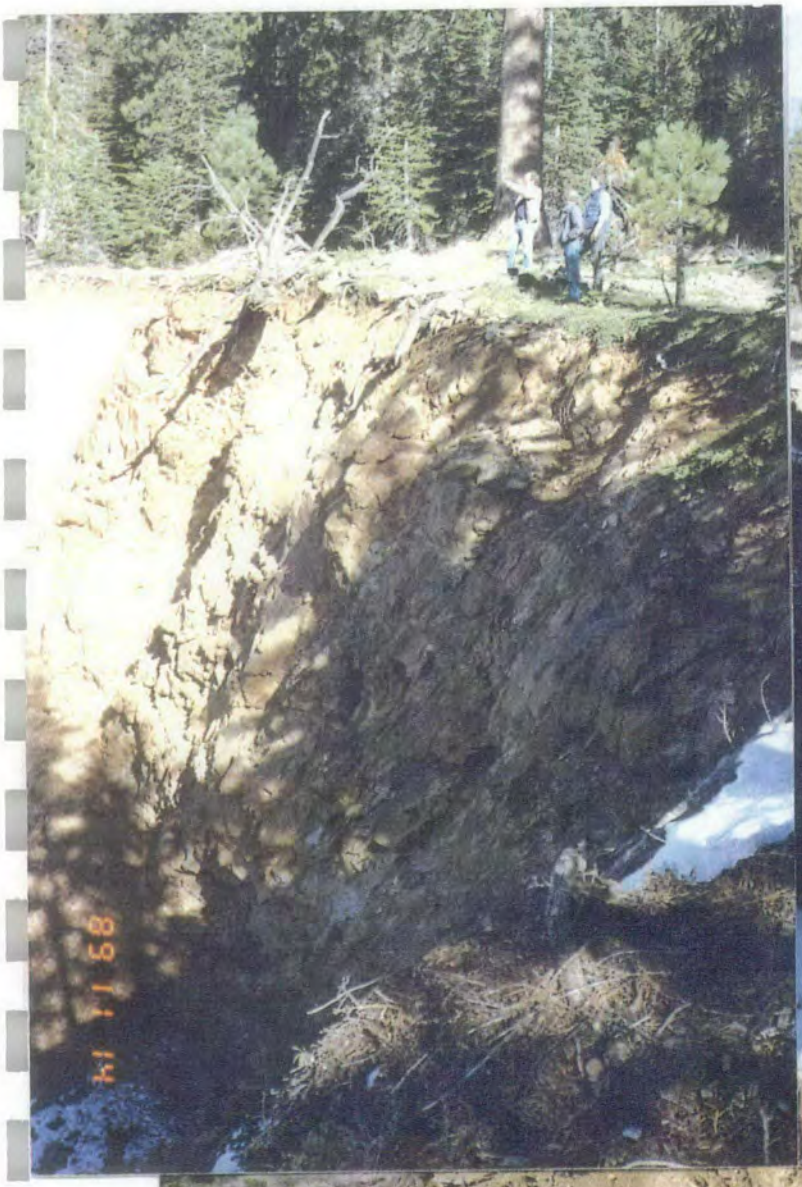


CENTRAL ORE BODY SUBSIDANCE AREA

PIUTE SHAFT



PIUTE SHAFT SUBSIDANCE AREA



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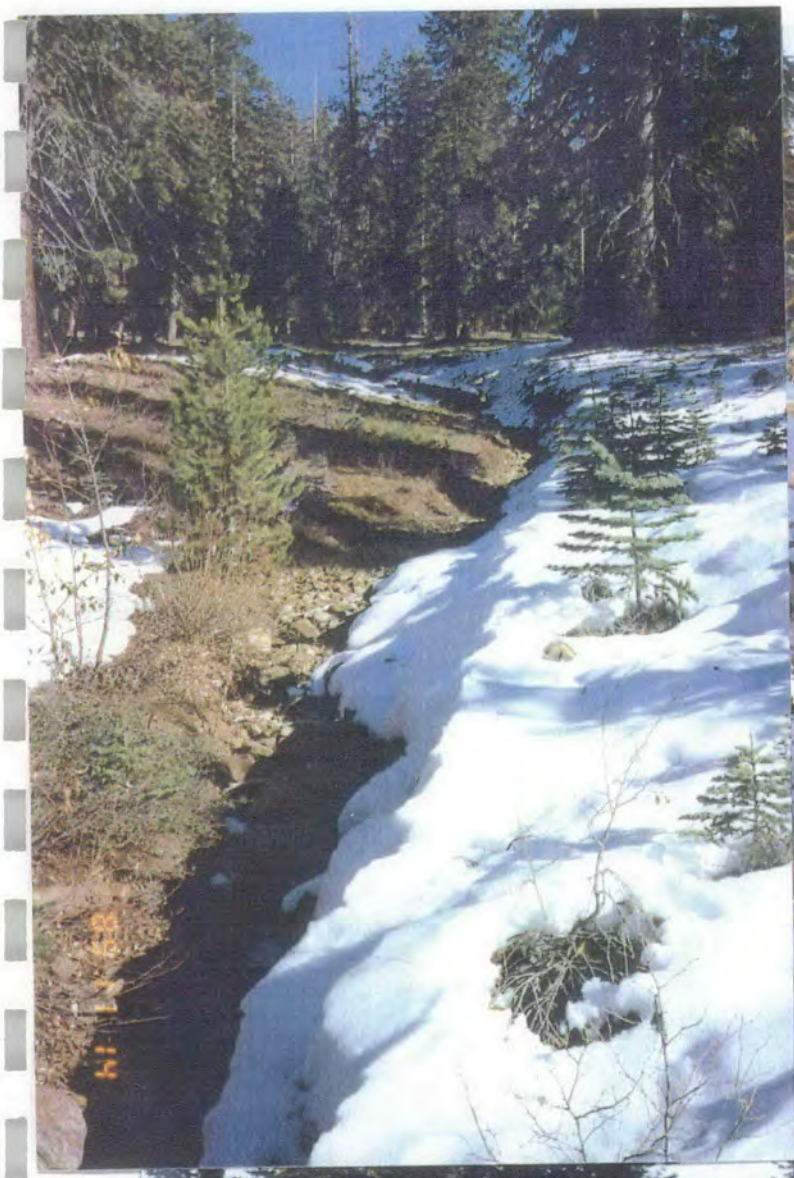
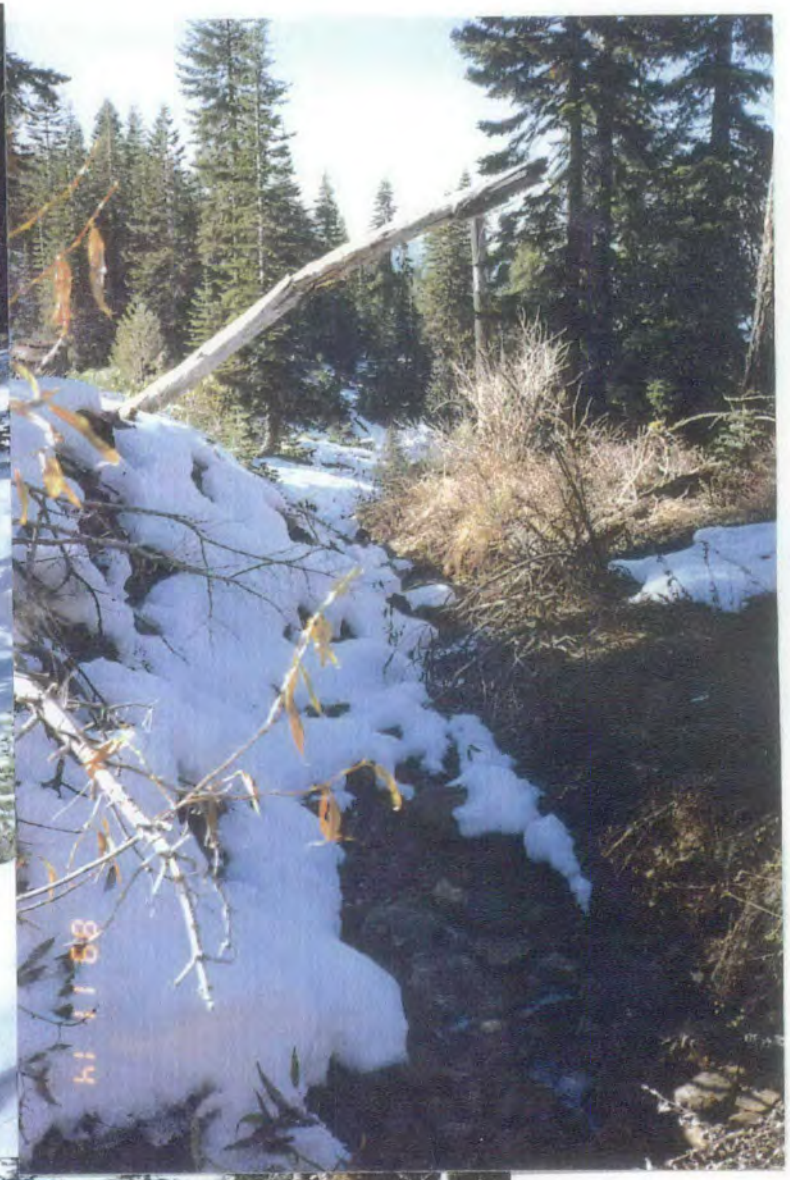
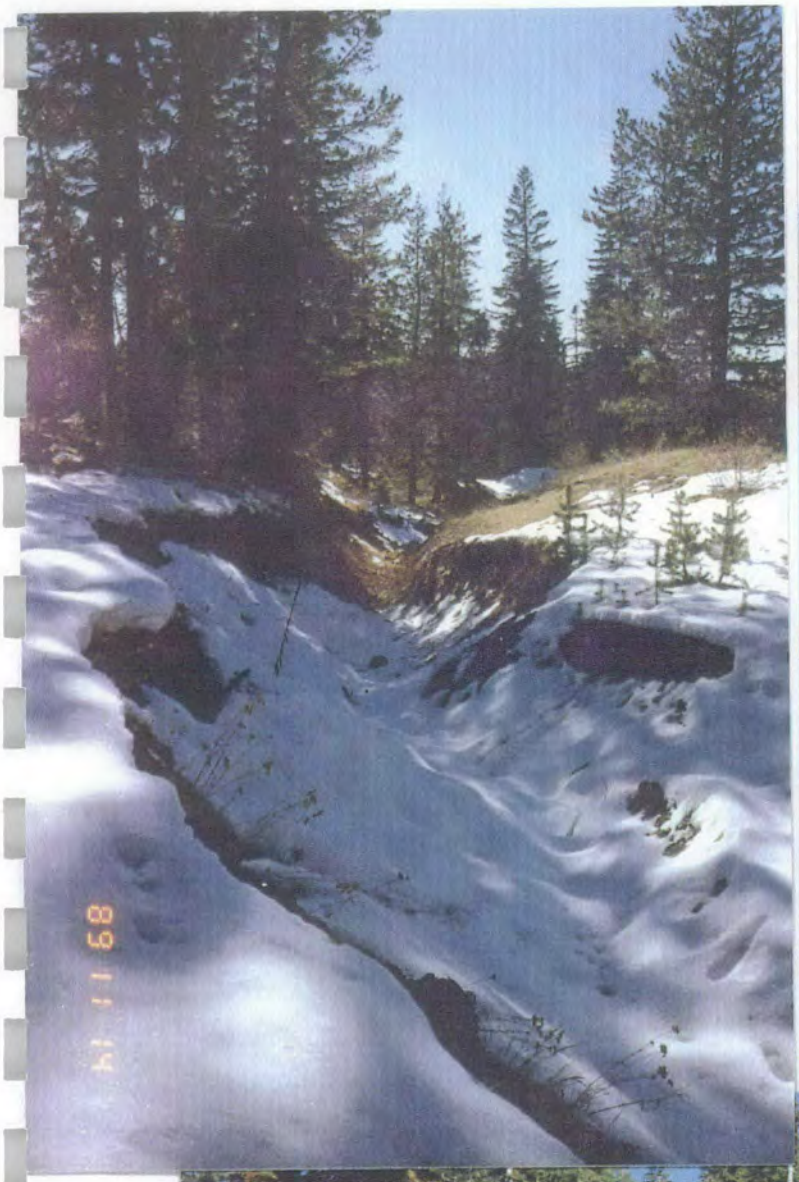
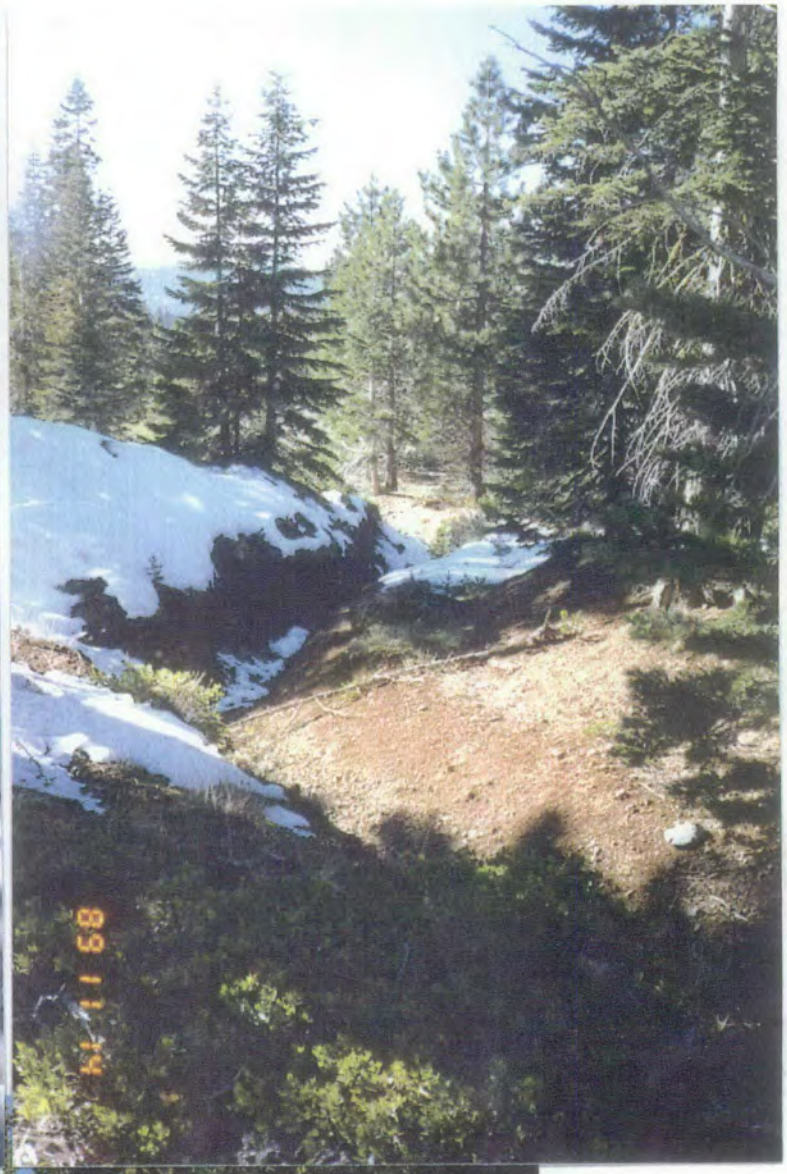




DIVERSION DITCHES AROUND SUBSIDANCE AREAS





DIVERSION DITCHES AROUND SUBSIDANCE AREAS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 90-030

NPDES NO. CA0080110

WASTE DISCHARGE REQUIREMENTS
FOR
WALKER MINE,
CALICOPIA CORPORATION
PLUMAS COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The Walker Mine is a non-operating copper mine in east central Plumas County about 20 miles east of Quincy, 20 miles north of Portola. Walker Mine is in Sections 19, 29, 30, 31,and 32, T25N, R12E and Sections 5, 6, 7, and 8, T24N, R12E, MDB&M. See Attachment A. The Assessor Parcel Numbers (APNs) for the Walker Mine patented properties are 009-090-01, 009-090-02, 009-080-01 and 009-100-09. These parcels represent about 800 acres. See Attachment C.

2. Since 1972, the late Robert R. Barry and Calicopia Corporation represented that they each held a one-half ownership in the Walker Mine. This is shown by numerous documents filed with various parties (under penalty of perjury) copies of which have been received by the Board in the normal course of business and/or through the discovery process of the present litigation. Since the death of Robert R. Barry, the Co-trustees of the Robert R. Barry Trust and the Co-executors of the Robert R. Barry Estate, H. Rogers Barry, Ann B. Barry and Cynthia B. Bidwell contend that Calicopia Corporation owns 100 percent of the Walker Mine.

   In response to the tentative Waste Discharge Requirements (WDRs) sent out for review, the Co-trustees of the Robert R. Barry Trust, the Co-executors of the Robert R. Barry Estate, Walter F. Pettit, Robert H. Goldie, Ann B. Barry, H. Rogers Barry, and Cynthia B. Bidwell, as Co-trustees, Co-executors or as individuals, have stated, under the penalty of perjury, that they do not have any part or interest in Walker Mine.

   The Board accepts these statements, filed under the penalty of perjury, for the purposes of identifying the owner(s) of Walker Mine for this NPDES renewal only. If, at some later time, the Board or the Attorney General finds these statements to be untrue, the Board reserves the right to amend the NPDES permit to reflect the proper findings.

3. Based on Finding No. 2, Walker Mine is owned by the Calicopia Corporation (hereafter Discharger).

4. WDRs Order No. 85-033 require the Discharger to file a RWD no later than 180 days prior to 1 February 1990. The Discharger was notified on 1 September 1989 that a RWD had not been received by the Board. The Discharger was also notified that the failure to file a RWD within 180 days was a violation of Provision E.5 of Order No. 85-033 and state and federal law. Board staff requested that the Discharger file a RWD by 1 October 1989 so that a new permit could be considered for adoption prior to 1 February 1990.

5. On 18 September 1989, the Board received a letter from H. Rogers Barry, President of Calicopia Corporation, which stated that "Calicopia is not aware of any waste discharge on or from its properties, and for that reason has not filed a Report of Waste Discharge". He also stated that if the Board "...know of any existing waste discharges on the Walker Mine and will so advise me, identifying with specificity any claimed discharge, Calicopia will reconsider its decision".

6. On 28 September 1989, Board staff sent a response to H. Rogers Barry identifying three known waste discharges and a threatened waste discharge. This letter again requested a RWD.

7. On 17 October 1989, the Board received a letter from H. Rogers Barry stating that "Calicopia Corporation knows of no basis for the filing of a Report of Waste Discharge or for seeking the issuance of waste discharge requirements and your letter contains no factual basis for such filing or issuance of such requirements."

8. This NPDES Permit has been written without the benefit of information normally provided in the requested RWD.

9. Mining operations ceased in 1941, but acid mine drainage, tunnel muck and mine debris continues to and/or threatens to discharge to Dolly Creek and then into Little Grizzly Creek, which is tributary to Indian Creek, thence into the East Branch, North Fork, Feather River, all of which are waters of the State.

10. Three distinct discharges to surface water have been identified. These are: a point source discharge from the mine portal, "Point Source A"; an intermittent discharge from the settling pond directly to Dolly Creek, "Point Source B"; and intermittent non-point discharges of surface water runoff which contacts waste materials adjacent and below the portal. "Point Source A" and "Point Source B" are identified on Attachment B, a part of this Order.

11. On 13 November 1987, pursuant to its cleanup and abatement authority, the Board completed construction of a mine seal in the main 700 level haulage (access tunnel) of Walker Mine, 2700 feet from the surface. Since that date, acid mine drainage from the underground workings of the mine has not discharged directly to Dolly Creek. The water level behind the seal is being monitored by the Board to prevent a discharge to Dolly Creek, Little Grizzly Creek and Ward Creek Watersheds.

12. On 2 July 1986, the Board found that the discharger had discharged tunnel muck, sludge and other mine debris to an unlined settling pond and an area adjacent to the main portal. The Board and the Discharger's consultant sampled these materials and found that they contained hazardous levels of both total and soluble copper, and high concentrations of various other heavy metals.

13. On 15 April 1987, the Regional Board Executive Officer signed Cleanup and Abatement Order No. 87-703. This order required the Discharger to complete the following:

    A. "By 1 June 1987, sample and analyze tunnel muck, sludge and mine debris for the purpose of waste characterization and classification under the California Administrative Code, Title 23, Chapter 3, Subchapter 15, Section 2571."

    B. "By 1 August 1987, submit a technical report that includes a proposal to relocate Class [Group] A or B mining wastes discharged in violation of Waste Discharge Requirements, Order No. 85-033."

    C. "By 1 August 1987, submit a technical report that includes a proposal to protect Class [Group] C mining wastes from erosion."

    D. "By 1 October 1987, remove Class [Group] A or B mining wastes to a waste management unit which is in compliance with the requirements of Subchapter 15."

    E. "By 1 October 1987, Class [Group] C mining wastes shall be protected from erosion."

14. The Discharger has not complied with Cleanup and Abatement Order No. 87-703 by failing to remove Class [Group] A and B mining waste associated with the discharge(s) discussed in Findings 12 and 13 above, to a waste management unit which is in compliance with Subchapter 15, by 1 October 1987. Most of these wastes remain as they were discharged.

15. The settling pond is subject to the Toxic Pits Cleanup Act (TPCA). This Order does not resolve or address any issues involving the site and TPCA.

16. Sampling data for the period 13 November 1987 to 17 August 1989, indicates the water quality of the mine portal discharge to be as follows:

Constituents	Median	Range	Units
Flow	6.2	4 - 12.5	gpm
pH	7.3	6.4 - 8.3	pH units
EC	110	100 - 130	µmhos/cm
Hardness	48	40 - 52	mg/l
Aluminum	<0.5	<0.05 - <0.5	mg/l
Copper	0.28	0.22 - 0.45	mg/l
Iron	-	<0.01 - 0.7	mg/l
Zinc	-	<0.005 - 0.02	mg/l

17. On 21 December 1983, the Regional Board filed a complaint in the Plumas County Superior Court for preliminary and permanent injunction and civil penalties against Robert R. Barry and Calicopia Corporation. On 14 June 1988, Mr. Robert R. Barry died. On 13 March 1989, the Plumas County Superior Court ordered the venue changed, which transferred the complaint to San Mateo County Superior Court. On 2 November 1989 the second amended complaint was filed with the court to include the current defendants and changed conditions since the death of Robert R. Barry This matter is presently in the process of being brought to trial.

18. On 28 January 1988, the Board requested Plumas County to record a lien on the Walker Mine property described in Finding No. 1, pursuant to the provisions of Section 13305 of the California Water Code, in the amount of $453,423.00. This lien is for costs incurred by the Board during a construction project to abate the water pollution problem at Walker Mine.

19. The Board, on 25 July 1975, adopted a Water Quality Control Plan for the Sacramento River Basin (5A) which contains water quality objectives for all waters of the Basin. These requirements are consistent with that Plan.

20. The beneficial uses of the Feather River and its tributaries are municipal, industrial, and agricultural supply; recreation; esthetic enjoyment; navigation; ground water recharge, fresh water replenishment; hydroelectric power generation; and preservation and enhancement of fish, wildlife and other aquatic resources. The aquatic resources of much of Little Grizzly Creek have been eliminated by the discharge from Walker Mine.

21. Dolly Creek and Little Grizzly Creek are identified as impacted water bodies in the Board's Water Quality Assessment, approved 27 October 1989. The Water Quality Control Plan Report (Basin Plan), dated 21 August 1975, for the Central Valley Region, Basins 5A, 5B, and 5C also identifies Little Grizzly Creek as a Water Quality Limited Segment.

22. The Environmental Protection Agency (EPA) has determined that an NPDES permit must be adopted for inactive as well as active ore mining operations involving point source discharges of pollutants to navigable waters. (REF: Letter from Andrew Lincoff, Permits and Compliance Branch, EPA Region IX to Dennis Heiman, Regional Water Quality Control Board, Central Valley Region, dated 26 May 1986.) EPA has identified "Best Available Technology Economically Achievable" (BAT) limitations for existing and new point sources for the ore mining industry. EPA and the state have determined, using Best Professional Judgment, that these limitations apply to inactive mines. Point source discharges have been defined as any surface runoff collected or channeled by a mine owner or operator, including mine drainage from portals, seeps, tailing piles, and mine dumps.

23. Currently, a portion of the acid mine drainage from Walker Mine has been controlled by the installation of an engineered mine seal as described in Fnding 11. No other technology for the treatment or control of acid mine drainage from Point Source A is currently employed by the Discharger or the Regional Board.

24. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 208(b), 301, 302, 304, and 307 of the Clean Water Act and amendments thereto are applicable to the discharge.

25. This Order shall serve as an NPDES permit pursuant to Section 402 of the Clean Water Act, or amendments thereto, and shall take effect ten days from the date of hearing, provided EPA has no objections.

26. The discharge is presently regulated by Waste Discharge Requirements Order No. 85-033, adopted by the Board on 25 January 1985, which expires 1 February 1990.

27. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.

28. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

29. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the Calicopia Corporation, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. **Discharge Prohibition:**

1. The by-pass or overflow of untreated, partially treated or uncontrolled acid mine drainage is prohibited.

B. **Discharge Specifications:**

1. Neither the treatment nor the discharge shall cause a pollution or nuisance as defined in Section 13050 of the California Water Code.

2. The discharge shall not cause degradation of any water supply.

C. **Effluent Limitations:**

1. The discharge of acid mine drainage from Point Source A and/or Point Source B (see Attachment B) in excess of the following limits is prohibited except as provided in Effluent Limitation C.2. below:

Constituents	Effluent Limitations 24 Hr. Maximum	30 Day Average
Cadmium	100 μg/l	50 μg/l
Copper	300 μg/l	150 μg/l
Lead	600 μg/l	300 μg/l
Mercury	2 μg/l	1 μg/l
Zinc	1500 μg/l	750 μg/l

Ref: 40 CFR 440.103a, 3 December 1982

2. The discharge rate of acid mine drainage (lbs constituent/day) resulting from control actions not using a Best Available Technology Economically Achievable (BAT) treatment shall not exceed one percent of the discharge rate prior to control (i.e. the control shall remove 99 percent of the constituent).

3. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

4. The discharge shall not contain more than 0.2 ml/l settleable solids.

D. Sludge and Solid Waste Disposal:

1. Sludge and/or solid wastes generated by treatment facilities, during mining explorations, or cleanup activities shall only be discharged to a waste management unit which is in compliance with the requirements of Subchapter 15 or to a site(s) which has been approved by the Executive Officer.

E. Receiving Water Limitations:

1. The discharge(s) shall not cause concentrations of constituents in Dolly Creek, at a point 100 feet below the mine access road (R-3), to exceed the following limits:

Constituents	Units	1 Hr. Average	4 Day Average
Aluminum	µg/l	750	87
Cadmium*	µg/l	1.8	.66
Copper*	µg/l	9.22	6.54
Iron	µg/l	1000	Maximum
Lead*	µg/l	33.8	1.32
Mercury	µg/l	2.4	.012
Zinc*	µg/l	65.0	58.9

The discharge(s) shall not exceed the 1 Hr. average more than once every three years on the average.

*Receiving Water Limitations for cadmium, copper, lead, and zinc are calculated by the equations set forth in various EPA Water Quality Criteria Documents using a hardness of **50 mg/l** as $CaCO_3$. The hardness is based on sampling of Dolly Creek upstream of the Walker Mine's influence at the intersection of Road 24N11 and Road 24N09 (background station or R-1). The concentration limitations for cadmium, copper, lead, mercury and zinc are on an acid-soluble basis. Therefore, analysis for those constituents must be done by approved acid-soluble methods.

For cadmium, copper, lead, and zinc the actual compliance value will be calculated with the hardness of the background station at the time of sampling and by the following equations:

Constituent	Units	Equation
1 Hr. Average		
Cadmium	µg/l	=e(1.1280(ln(hardness))-3.828)
Copper	µg/l	=e(0.9422(ln(hardness))-1.464)
Lead	µg/l	=e(1.2730(ln(hardness))-1.460)
Zinc	µg/l	=e(0.8473(ln(hardness))+0.8604)
4 Day Average		
Cadmium	µg/l	=e(0.7852(ln(hardness))-3.490)
Copper	µg/l	=e(0.8545(ln(hardness))-1.465)
Lead	µg/l	=e(1.2730(ln(hardness))-4.705)
Zinc	µg/l	=e(0.8473(ln(hardness))+0.7614)

2. The discharge shall not cause visible oil, grease, scum, foam, floating or suspended material in the receiving waters or watercourses.

3. The discharge shall not cause concentrations of any materials in the receiving waters which are deleterious to human, animal, aquatic, or plant life.

4. The discharge shall not cause esthetically undesirable discoloration of the receiving waters.

5. The discharge shall not cause fungus, slimes, or other objectionable growths in the receiving waters.

6. The discharge shall not cause bottom deposits in the receiving waters.

7. The discharge shall not increase the turbidity of the receiving waters by more than 20% over background levels.

8. The discharge shall not alter the normal ambient pH of the receiving water more than 0.5 units.

9. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

F. **Provisions:**

1. The Discharger shall implement an effluent biotoxicity monitoring program in accordance with procedures outlined in EPA 600/4-85/014 (short-term methods for estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms) and EPA 440/4-85/032 (Technical Support Document for Water Quality Based Toxic Control) to ensure that their discharge(s) do(es) not produce in-stream toxicity. The Discharger shall carry out the biotoxicity monitoring program in accordance with the time schedule outlined in Provision F.8.

   If the discharge produces in-stream toxicity, the Discharger shall conduct an investigation, develop a corrective action plan (CAP) and submit the CAP to the Board for approval.

2. The Discharger shall notify the Board within 24 hours of any by-pass, overflow, or process failure of the acid mine drainage control or treatment system.

3. The Discharger shall report promptly to the Board any material change or proposed change in character, location, or volume of the waste discharge.

4. The Discharger shall comply with the **Standard Provisions and Reporting Requirements**, dated 1 October 1984, which are part of this Order.

5. The Discharger shall comply with the attached **Monitoring and Reporting Program No. 90-030.**

6. The Discharger shall comply with the following time schedule:

Task	Compliance Date
Biotoxicity Monitoring Program	
a. Submit a proposed biotoxicity monitoring program to the Board for approval	1 May 1990
b. Implement the approved biotoxicity monitoring program	Within 30 days of Board approval
c. Submit results of the biotoxicity monitoring program to the Board	In accordance with the Board approved program schedule

7. This Order expires on 1 February 1995 and the Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of such date as application for issuance of new waste discharge requirements.

8. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 26 January 1990.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

1/9/90:WAC:jj

Attachments

WAC

United States Department of Agriculture
Forest Service
Plumas National Forest
159 Lawrence Street
P.O. Box 11500
Quincy, CA 95971-6025

Reply to: 2510

Date: January 22, 1991

Mr. William A. Croyle
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Mr. Croyle:

We accept the revised tentative Waste Discharge Requirements (WDRs) for the Walker Mine Tailings in Plumas County (Case No. 356), dated 31 December 1990. We are very pleased with the working relationship established between the Board and the Forest Service in trying to solve the problems caused by the Mine and the Tailings Pond.

We must point out that the Forest Service can only seek the necessary funding to accomplish the restoration and monitoring programs outlined in the WDR, and that financial uncertainties will be constant. By accepting the revised WDR, we are not committing funds we don't have, only the commitment to seek those funds.

If not already covered in the WDR and Monitoring Program, we would like to include a statement tying the Receiving Water Limitations in the WDR with the monthly and annual sampling programs in the Monitoring Program.

If you have questions, please call Terry Benoit of this office at (916) 283-2050.

Sincerely,

MARY J. COULOMBE
Forest Supervisor

RECEIVED
SACRAMENTO
CVRWQCB
91 JAN 25 PM 2:45

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 91-017

FOR

U. S. DEPARTMENT OF AGRICULTURE,
FOREST SERVICE, PLUMAS NATIONAL FOREST,
WALKER MINE TAILINGS,
PLUMAS COUNTY

SURFACE WATER MONITORING STATIONS

Receiving Water Stations are shown on the schematic map **Attachment A** and are described below. All surface water samples shall be grab samples. Surface water samples shall be taken at the following stations:

Station Number	Monitoring Location
R-1	Dolly Creek, immediately upstream of the County Road 112 - Dolly Creek crossing.
R-2	Dolly Creek, immediately below tailings flash board dam (Forest Service Dam).
R-3	Little Grizzly Creek, 1000 feet below Road 24N60.
R-4	Little Grizzly Creek, approximately 50 feet above confluence with Dolly Creek.
R-5	Little Grizzly Creek, immediately above Road 25N42 and the spring discharge from the west bank (Brown's Cabin)
R-6	Discharge from settling pond to Little Grizzly Creek

SURFACE WATER MONITORING PROGRAM

The Receiving water stations shall be sampled on a **monthly** basis for the following constituents:

Parameter/Constituents	Reporting Units	
Flow	cfs	
Temperature (field)	°F	
pH (field)	pH Units	
Specific Conductance (field)	µmhos/cm @25.C	
Hardness	mg/l as $CaCO_3$	12.00
Alkalinity	mg/l as $CaCO_3$	12.00
Acidity	mg/l as $CACO_3$	10

Parameter/Constituents	Reporting Units	
Total Suspended Solids	mg/l	12 00
Total Settleable Solids	ml/l	12 00
Copper	µg/l	17 ~~13~~ 00
Iron	µg/l	17 ~~13~~ 00
Zinc	µg/l	17 ~~18~~ 00

Note: Methods, locations, and frequency for stream flow measurements are dependent upon accessibility and availability of stream sections where gauging and measurement are feasible. Discharge Flow Measurement may require installation of a weir or other equipment with a recording device.

Annually, during the month of **May**, the receiving water stations R-1 through R-6 shall be sampled for the following constituents:

Parameter/Constituent	Reporting Units	
pH (field)	pH units	6
Specific Conductance (field)	µmhos/cm	6
Temperature	°F	
Turbidity	NTU units	6
Hardness (as $CaCO_3$)	mg/l	12
Bicarbonate	mg/l	
Calcium	mg/l	16
Carbonate	mg/l	
Chlorides	mg/l	10
Magnesium	mg/l	18
Potassium	mg/l	18
Nitrate (as N)	mg/l	18 — 32
Sodium	mg/l	12
Sulfates	mg/l	12
Total Dissolved Solids	mg/l	12
Total Settleable Solids	mg/l	12
Total Organic Carbon	mg/l	65

Parameter/Constituent	Reporting Units	
Aluminum	µg/l	17
Antimony	µg/l	
Cadmium	µg/l	
Total Chromium (III+VI)	µg/l	20
Copper	µg/l	17
Iron	µg/l	
Lead	µg/l	
Manganese	µg/l	
Nickel	µg/l	
Silver	µg/l	
Thallium	µg/l	
Zinc	µg/l	

ICAP[1] - Analysis to be used for determining "acid-soluble" concentrations for the above constituents.

Arsenic	µg/l	25
Chromium (VI)	µg/l	20
Mercury	µg/l	24
Selenium	µg/l	25

AA[2] - Analysis to be used for determining "acid-soluble" concentrations for the above constituents.

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1 Inductively Coupled Argon Plasma Atomic Emission Spectroscopy (ICAP) shall be used for analysis of these constituents.

2 Atomic Absorption Spectroscopy (AA) shall be used for analysis of these constituents.

All surface water samples shall be collected on the same day. If a surface water sampling station has insufficient flow to collect a sample, a statement to that effect may be submitted in lieu of data for that particular surface water sample.

In-stream Biotoxicity Assessment Program

The Discharger shall implement a Board approved "In-stream Biotoxicity Assessment Program" as required by the compliance time schedule contained in Waste Discharge Requirements (WDRs) Order No. 91-017.

Point of Compliance

The discharge from the Walker Mine Tailings shall be measured at the "Point of Compliance" for compliance with Waste Discharge Requirements and its effect on beneficial uses. The Point of Compliance shall be identified as surface water monitoring station "R-5".

The Board recognizes that the current discharge from the Walker Mine Tailings does not meet waste discharge limitations and it is deleterious to beneficial uses. The Board and the Discharger agree that mitigation measures are required and that the affects of the mitigation measures may not be seen for some time. For these reasons, the compliance time schedule, contained in WDRs Order No. 91-017, has been designed to provide sufficient time to investigate the sources of heavy metals, and mitigation alternatives, comply with environmental requirements, and for mitigation implementation and monitoring.

Monitoring Procedures

The Discharger is required to perform sampling, analysis, and observations according to the schedule specified above, using the sampling and analytical methods identified in this program. A statistically valid number of replicates must be taken each time the surface water is sampled.

Discharger shall institute appropriate and consistent sample collection procedures to produce samples, which when analyzed will be indicative of surface water quality. Samples shall be tracked and controlled through the chain of custody procedures approved by the Board. Any modifications to sampling, analytical, or handling procedures must receive prior approval of the Executive Officer.

Detection levels for all constituents listed in this program shall be the **method** detection limit (MDL). For the metal constituents required at the background receiving water station, **R-2**, analysis shall be by the appropriate method that incorporates the lowest reportable detection level for that metal constituent.

Statistical Procedures for Determining Significant Increases

The Discharger shall determine at each sampling whether there is a statistically significant increase over water quality protection standards for each parameter and constituent analyzed.

The significance of increases in indicator parameters and waste constituents over water quality protection standards shall be established through the use of Board approved statistical procedures.

The water quality in each monitoring location shall be compared to the previous analysis of that location after each sampling event to determine if the concentrations are changing over time. The Discharger shall submit a graphic analysis (time versus concentration) for this determination.

REPORTING

In reporting the monitoring data, the Discharger shall arrange the data in tabular and graphical form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or lack thereof. Monitoring reports shall state the laboratory(ies) used by the Discharger.

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, he shall include the results of such monitoring in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall be indicated on the Discharge Monitoring Report Form.

Monthly monitoring reports shall be submitted to the Board by the **15th day of the month** following the month in which the samples were taken or observations made. Quarterly, semiannual, and annual monitoring reports shall be submitted to the Board by the 15th day of the month following the calendar quarter in which the samples were taken or observations made.

A report shall be submitted to the Board by **30 January** of each year containing both tabular and graphical summaries of the monitoring data obtained during the previous year.

MONITORING AND REPORTING
U. S. DEPARTMENT OF
AGRICULTURE, FOREST SERVICE,
PLUMAS NATIONAL FOREST,
WALKER MINE TAILINGS
PLUMAS COUNTY

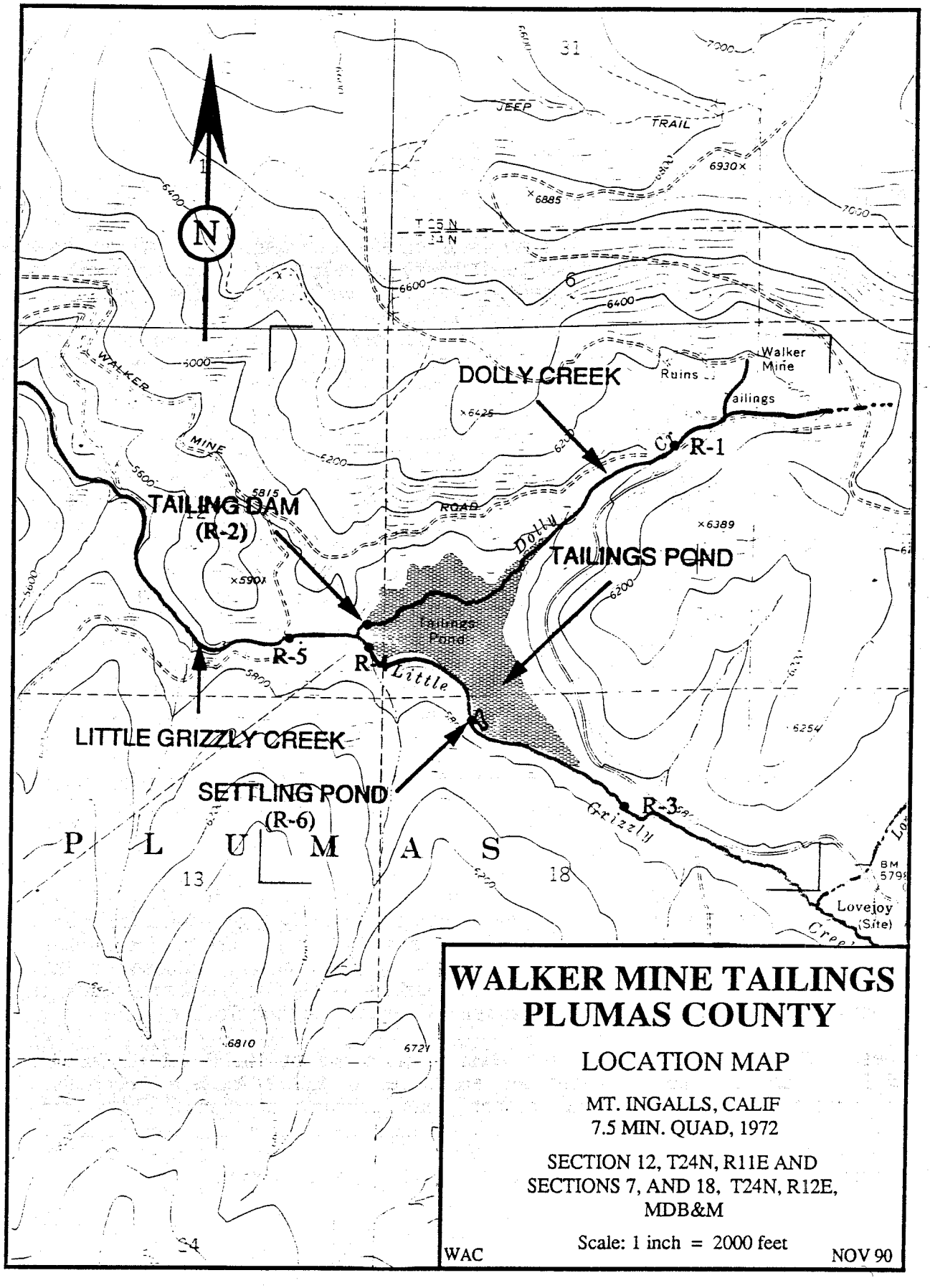
The Discharger shall implement the above monitoring program on the effective date of this Order.

WILLIAM H. CROOKS, Executive Officer

25 January 1991
(Date)

12/28/90:WAC

ATTACHMENT A



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 91-017

WASTE DISCHARGE REQUIREMENTS

FOR
U. S. DEPARTMENT OF AGRICULTURE,
FOREST SERVICE, PLUMAS NATIONAL FOREST,
WALKER MINE TAILINGS,
PLUMAS COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The Walker Mine tailings (tailings) are in east central Plumas County about 20 miles east of Quincy, 20 miles north of Portola in Section 12, T24N, R11E and Sections 7 and 18, T24N, R12E, MDB&M. The tailings cover about 100 acres and range from 2 to 20 feet deep. The location of the tailings is shown on Attachment "A".

2. The tailings are on public land administered by the U. S. Department of Agriculture, Forest Service, Plumas National Forest (hereafter Discharger).

3. The Board currently regulates the tailings under Waste Discharge Requirements (WDRs) Order No. 86-073, dated 28 March 1986. These requirements are neither adequate nor consistent with plans and policies of the Board.

4. Tailings from the Walker Mine mill were deposited in a natural basin at the confluence of Dolly and Little Grizzly Creeks. To contain the tailings, a levee was constructed along the right bank of Little Grizzly Creek and a flash board dam installed across the mouth of Dolly Creek. Also, during the time the Walker Mine was operating, from about 1919 to 1942, Dolly Creek was diverted around the tailings area. Vestiges of the diversion remain, but it is almost completely filled in or in disrepair. After the mine ceased operation, the tailings area also fell into disrepair. Portions of the levee eroded and timbers of the flash board dam disintegrated, which resulted in a discharge of tailings and turbid water to Little Grizzly Creek. Repair of the levee and flash board dam was completed by the Forest Service in 1980. However, the tailings continue to erode and flow into surface waters during rainfall events and snow melt periods.

5. In November 1987, the Board installed a mine seal in the Walker Mine, upstream of the tailings to reduce the loading of heavy metals on Dolly Creek and Little Grizzly Creek. This action has resulted in a significant reduction in heavy metals loading to these waters. This has enabled the Board and the Discharger to assess tailings impact on Dolly Creek and Little Grizzly Creek.

6. The tailings are a threat to water quality because of the existing and potential for release of tailings, heavy metals, and turbid water to Dolly Creek and Little Grizzly Creek.

7. These WDRs have been written to protect beneficial uses of Little Grizzly Creek listed in Finding 15 and bring about compliance with water quality objectives and goals through the length of Little Grizzly Creek. The Board recognizes that the USFS may not be able to implement sufficient controls on the discharges from the tailings to meet the limitations set forth in these WDRs and protect beneficial uses without additional mitigation action on the Walker Mine property, upstream of the tailings on Dolly Creek. However, mitigation of the tailings discharge(s) is warranted to prevent continued discharge of sediment and heavy metals and the adverse impact of the discharge(s) from the tailings on beneficial uses.

8. The Discharger hired a consultant in 1989 to perform feasibility studies on rehabilitation of the tailings. The objectives of these studies were: to reduce sediment loading from the tailings into Dolly Creek; to reduce the export of copper from the tailings to Dolly Creek and Little Grizzly Creek; to recommend concepts for stabilization of the tailings from water and wind erosion; and to investigate the source, generation and transport of copper in the tailings.

9. Dolly Creek crosses the tailings in a northeast-southwest direction. Dolly Creek exits the tailings at a structure referred to as the "Forest Service Dam" and is identified as "R-2" on Attachment A.

10. An undetermined amount of storm water runoff is collected in a settling pond, which is about 2,300 feet southeast of the "Forest Service Dam" and on the tailings. The settling pond is equipped with a drop inlet culvert which discharges directly to Little Grizzly Creek. The discharge from the drop inlet culvert is identified as "R-6" on Attachment A.

11. This permit has been written to regulate the discharges from "R-2" and "R-6" as well as possible unidentified non-point source discharge(s) such as leakage through the berm along Little Grizzly Creek.

12. Flows in Dolly Creek, crossing the tailings, normally range from about .4 cubic feet per second (cfs) to 7 cfs. Flows in Little Grizzly Creek, at a point below its confluence with Dolly Creek, range from 1 cfs to 30 cfs.

13. The Dischargers' consultant has estimated the 24 hour; 10-year, 50-year, and 100-year precipitation events for the tailings area to be 6.0 inches,

8.0 inches, and 9.0 inches, respectively. The consultant calculated peak 10-year, 50-year, and 100-year storm event flows for Dolly Creek, downstream of the tailings, to be 487 cfs, 767 cfs, and 921 cfs, respectively. For Little Grizzly Creek, below the tailings, these flows are 2,082 cfs, 3,234 cfs, and 3,951 cfs, respectively.

14. The tailings have surface water drainage to Dolly Creek and Little Grizzly Creek, thence Indian Creek, thence the East Branch North Fork Feather River, all of which are waters of the State.

15. The beneficial uses of the Feather River and its tributaries are municipal, industrial, and agricultural supply, recreation, esthetic enjoyment, navigation, ground water recharge, fresh water replenishment, hydroelectric power generation, and preservation and enhancement of fish, wildlife and other aquatic resources. The aquatic resources of much of Dolly Creek and Little Grizzly Creek have been impacted by the discharge(s) from Walker Mine property and the tailings.

16. It is not known at this time if the tailings have impacted waters beneath the tailings. The impact of leachate from the tailings will be addressed through the tailings rehabilitation program required under compliance time schedule outlined in Provision D.6.

17. The Board, on 31 March 1989, adopted a Water Quality Control Plan (Basin Plan), Second Edition, for the Sacramento River Basin (5A) which contains water quality objectives. These requirements implement the water quality objectives stated in the Basin Plan.

18. Dolly Creek and Little Grizzly Creek are identified as impacted water bodies in the Board's "Water Quality Assessment", approved 27 October 1989. The Basin Plan for the Central Valley Region, Basins 5A, 5B, and 5C also identifies Little Grizzly Creek as a Water Quality Limited Segment.

19. Currently, no technology for the treatment or control of the tailings discharge from R-2 or R-6 has been employed by the Discharger.

20. The action to adopt revised Waste Discharge Requirements is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.

21. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge

and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

22. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that Waste Discharge Requirements Order No. 86-073 be rescinded, and that the U. S. Department of Agriculture, Forest Service, Plumas National Forest, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Specifications:

1. Neither the treatment nor the discharge shall cause a pollution or nuisance as defined in Section 13050 of the California Water Code.

2. The discharge shall not cause degradation of any water supply.

3. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

4. The discharge shall not contain more than 0.2 ml/l settleable solids.

B. Sludge and Solid Waste Disposal:

1. Sludge and/or solid wastes generated by remediation activities, or during mining exploration, shall only be discharged to a waste management unit which is in compliance with the requirements of Title 23, Division 3, Chapter 15, California Code of Regulations (CCR), (hereafter Chapter 15) or to a site(s) which has been approved by the Executive Officer.

2. The Discharger may propose alternative sludge or solid waste disposal alternatives if the waste is to be treated. Disposal of treated waste must comply with Chapter 15 requirements and be approved by the Executive Officer.

C. Receiving Water Limitations:

1. The discharge(s) shall not cause concentrations in Little Grizzly Creek, at a point immediately above Road 25N42 and above the west side spring discharge (R-5) to exceed the following limits:

Constituents	Units	Limitation
Aluminum	µg/l	750
Cadmium*	µg/l	1.8
Copper*	µg/l	9.22
Iron	µg/l	1000
Lead*	µg/l	33.8
Mercury	µg/l	2.4
Zinc*	µg/l	65

*Receiving Water Limitations for cadmium, copper, lead, and zinc are calculated by the equations set forth in various EPA Water Quality Criteria Documents using a hardness of **50 mg/l** as $CaCO_3$. The hardness is based on sampling of Dolly Creek upstream of the Walker Mine's influence at the intersection of Road 24N11 and Road 24N09. The concentration limitations for cadmium, copper, lead, mercury and zinc are on an acid-soluble basis. Therefore, analysis for those constituents must be done by approved acid-soluble methods.

For cadmium, copper, lead, and zinc the actual compliance value will be calculated with the hardness of background station R-2 at the time of sampling and by the following equations:

Constituent	Units	Equation
Cadmium	µg/l	=e(0.7852(ln(hardness))-3.490)
Copper	µg/l	=e(0.8545(ln(hardness))-1.465)
Lead	µg/l	=e(1.2730(ln(hardness))-4.705)
Zinc	µg/l	=e(0.8473(ln(hardness))+0.7614)

2. The discharge shall not cause visible oil, grease, scum, foam, floating or suspended material in the receiving waters or watercourses.

3. The discharge shall not cause concentrations of any materials in the receiving waters which are deleterious to human, animal, aquatic, or plant life.

4. The discharge shall not cause esthetically undesirable discoloration of the receiving waters.

5. The discharge shall not cause bottom deposits in the receiving waters.

6. The discharge shall not cause fungus, slimes, or other objectionable growths in the receiving waters.

7. The discharge shall not increase the turbidity of the receiving waters by more than 20% over background levels.

8. The discharge shall not alter the normal ambient pH of the receiving water more than 0.5 units.

D. Provisions:

1. The Discharger shall implement an approved in-stream biotoxicity assessment program to determine in-stream toxicity resulting from site discharges and their effect on aquatic life in Little Grizzly Creek in accordance with the compliance time schedule outlined in Provision D.6.

2. The Discharger shall comply with the attached Monitoring and Reporting Program No. 91-017.

3. The Discharger shall notify the Board within 24 hours of any by-pass, overflow, or process failure of the drainage control(s) or treatment system(s).

4. The Discharger shall report promptly to the Board any material change or proposed change in character, location, or volume of the waste discharge.

5. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 July 1990, which are part of this Order.

6. The Discharger shall comply with the following compliance time schedule:

Task	Compliance Date
A. In-stream Biotoxicity Assessment Program	
1. Submit a proposed in-stream biotoxicity assessment program to the Board for review and approval	**1 May 91**
2. Implement the approved in-stream biotoxicity assessment program	**Within 30 days of Board approval**
3. Submit results of the in-stream biotoxicity assessment program to the Board	**In accordance with the Board approved program schedule**
B. Tailings Rehabilitation Program	
1. Submit proposed Tailings Rehabilitation Program that addresses: a. Short term sediment discharge mitigation measures b. Runoff and leachate impacts c. Access and mining restrictions d. Intermediate and long term funding e. Impact of leachate from tailings column on waters beneath the tailings	**1 Apr 91**
2. Submit a report detailing phased approach for rehabilitation of tailings	**1 Jun 91**
3. Complete short term sediment discharge mitigation measures	**15 Oct 91**
4. Begin implementation of phased rehabilitation program	**1 Jun 92**

7. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

8. The Board will review this Order periodically and may revise requirements when necessary.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 25 January 1991.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

12/28/90:WAC

Attachments

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 91-16

APPROVAL OF THE REQUEST FOR UP TO $1,500,000 FROM THE WATER POLLUTION CLEANUP AND ABATEMENT ACCOUNT FOR WALKER MINE, PLUMAS COUNTY

WHEREAS:

1. The Regional Water Quality Control Board, Central Valley Region, has requested an amount not to exceed $1,500,000 from the Water Pollution Cleanup and Abatement Account for additional cleanup actions associated with the Walker Mine;

2. Using Cleanup and Abatement Account funds, the Regional Board has made significant improvements in the water quality of Dolly Creek and Little Grizzly Creek, which were impacted by acid mine drainage from the Walker Mine;

3. Point source and non-point source acid mine drainage discharges from the Walker Mine property continue to occur and impair water quality; and

4. The Regional Board has recently settled litigation with parties responsible for Walker Mine for $1,500,000, which is to be paid to the Water Pollution Cleanup and Abatement Account.

THEREFORE BE IT RESOLVED THAT THE STATE BOARD:

1. Authorizes an amount not to exceed $1,500,000 from the Water Pollution Cleanup and Abatement Account be paid to the Regional Water Quality Control Board, Central Valley Region, to be used for Walker Mine cleanup actions.

2. The Cleanup and Abatement funds shall be distributed in accordance with the Walker Mine settlement schedule after the settlement funds are received and for the amount received.

3. All unexpended funds shall automatically revert to the Water Pollution Cleanup and Abatement Account twelve months from the approved project end date, unless a time extension is granted by the Chief, Division of Clean Water Programs or designee.

4. On July 1 and January 1 of each year, the Regional Board shall submit a report to the Chief, Division of Clean Water Programs, describing the project's progress and the use of the funds.

5. Upon project completion, the Regional Board shall notify the Chief, Division of Clean Water Programs, and submit a final report.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at the meeting of the State Water Resources Control Board held on February 21, 1991.

Maureen Marché
Administrative Assistant to the Board

91 FEB 26 PM 3:53
CAMCOE

WAC

United States Department of Agriculture
Forest Service
Plumas National Forest
159 Lawrence Street
P.O. Box 11500
Quincy, CA 95971-6025

Reply to: 2510

Date: March 28, 1991

Mr. William H. Crooks, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Mr. Crooks:

To comply with the time schedule in the Waste Discharge Requirements (WDR) for Walker Mine Tailings, Order No. 91-017, the following Tailings Rehabilitation Program is proposed. We are unable to submit a more detailed program at this time due to delays in conducting the necessary environmental analysis. In preparation for the analysis, we contracted with an outside consultant to do a preliminary site investigation and develop rehabilitation alternatives. That work was completed last August. A draft copy of the report produced by the contractor is on file at your office. The submittal of this, more generic, program proposal was agreed upon through conversations between our two offices.

ITEMS TO ADDRESS

This proposal addresses:

1. The focus of the rehabilitation program.
2. Short term sediment discharge mitigation measures (schedule item a.).
3. Runoff and leachate impacts (schedule item b.).
4. Impact of leachate from tailings column on waters beneath the tailings (schedule item e.).
5. Access and mining restrictions (schedule item c.).
6. Intermediate and long term funding (schedule item d.).

PROGRAM PROPOSALS

A more detailed description of each of the above items is addressed below.

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CVRWQCB
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1. The Walker Mine Tailings rehabilitation program proposal is focusing on:

   a. Reducing sediment, copper, zinc, and iron transport from the tailings to both Dolly and Little Grizzly creeks to levels that meet water quality requirements and the aquatic objectives for Little Grizzly Creek.

   b. Stabilizing the tailings and minimizing future water and wind erosion.

   c. Promoting revegetation of the tailings.

2. To immediately reduce sediment discharge into Little Grizzly Creek from the tailings area, we will excavate a large area immediately above the tailings retention dam by this fall that will capture the sediment expected to erode from the contributing tails material during a one to five year period. the dam currently has no capacity to store additional material. The excavated area will be annually maintained until such time as the material is stabilized or when monitoring shows that the excavation is not effective and the Board agrees to discontinue. Other short term measures may have to be employed. The excavated material will be deposited on a section of the tailings area where it is not expected to move off-site.

3 & 4. Runoff and leachate impacts are to be dealt with during specific remediation investigation and development. Investigation of the tailings area for surface runoff and stabilization has resulted in the following proposals:

   a. Earthworks to stabilize the tailings and minimize sheet, channel and wind erosion.

   b. Water management efforts to store precipitation and runoff for use in revegetated areas during the summer growing season.

   c. Soil amendment and revegetation efforts to enhance soil suitability for plant growth and reestablish native vegetation.

   Leachate impacts, including impacts to waters beneath the tailings, will be determined during characterization of the tailings and subsurface water movement by a thorough drilling investigation. This investigation will not delay efforts to solve problems associated with Dolly Creek traversing the tailings.

5. Restrictions to future mining claims will be pursued. The likelihood of withdrawing the area from further mining appears good. Since any claimants filing on the tailings area must also share in the responsibilities and expenses of mitigation and the requirements of the WDR order, we expect interests to mine the tails will cease. The tailings area has been submitted to the EPA as a potential superfund site. This will also discourage mining interests.

   The tailings are a favorite recreation area for people using off highway vehicles. This, livestock grazing, and any other activity that would damage our rehabilitation work will be restricted from the area. Fencing, posting with signs, etc., will be considered.

6. Funding the project could be varied, both in timing and sources. Rehabilitating the tailings area will probably take a phased approach. Each phase can be funded separately, with such phases as the revegetation of the tailings funded in stages.

   Funding all or a portion of the work through the Clean Water Act seems highly probable at this time. Regular Forest Service funds will also be sought.

   The project area has been accepted as a viable project within the scope of the East Branch North Fork Feather River (EBNFFR) Coordinated Resource Management (CRM) program, in which the Forest Service and the CVRWQCB are signatories. Innovative funding has already been realized through this group for other projects in the EBNFFR.

We are in the process of pulling together the team members who will be conducting the environmental analysis. This will not delay the short term sediment control work discussed above. We expect the environmental analysis to be completed by this fall unless we experience difficulties, such as having to go with an Environmental Impact Statement (EIS).

If you have questions or comments, please direct them to Terry Benoit of this office at (916) 283-2050.

Sincerely,

for John Palmer

MARY J. COULOMBE
Forest Supervisor

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

INSPECTION REPORT

13 November 2013

DISCHARGER: Walker Mine, Abandoned and Unclaimed Private Property

LOCATION & COUNTY: Plumas County

CONTACT(S): Central Valley Water Board, Jeff Huggins

INSPECTION DATE: 5 November 2013

INSPECTED BY: Jeff Huggins, Water Resources Control Engineer

ACCOMPANIED BY: Vino Jain and Ben Lehman, Central Valley Water Board staff

COMMENTS:
On 5 November 2013, Board staff performed the annual fall inspection of Walker Mine (photo 1) in Plumas County as required by the Walker Mine Operations and Maintenance Procedures (June 1997).

AREAS INSPECTED:

Former Concentrator Plant Foundations:
An inspection of the former concentrator plant area was made as shown in photos 2-11 of the attached photo-log. The formation of copper oxides was observed throughout the area on the concrete ruins and in residual mining waste material in and below the concentrator plant foundations. Copper oxides become soluble in water and pose a threat to water quality by means of flushing during winter rains and snowmelt. In general, little vegetation which might help to control erosion of mining waste was observed on the exposed mining waste within and near the concentrator plant ruins.

1921 to 1927 Period Tailings Facility:
Staff also inspected the former 1920s period tailings area located below the Walker Mine and Mill area (see photos 11-18). A settling pond (photos 13-14) collects runoff from the slope below the former mine and mill area. The pond never completely fills, but it is suspected to indirectly discharge to Dolly Creek via a buried drainage structure or through the fill material. The tailings material shown in photos 15-18 is sparsely vegetated and copper oxides were observed in the drainages shown in photos 15-18.

Portal Area:
The drainage channel between the mine portal and the waste dump was open and flowing at about 0.5 gallons per minute. The portal door (photo 19) at the 700 level adit had been tampered with by vandals which made the door difficult to open, but it was still securely locked upon our arrival.

Ventilation Fan:
Staff rented a portable generator for the ventilation fan, which is needed for the underground inspection. This fan provides fresh air through the ventilation duct all the way to the mine seal. Underground ventilation is needed to provide a flow of air to the underground workings of sufficient volume to dilute and remove noxious gases and provide fresh air for staff. The ventilation system was

allowed to run for approximately 1.5-hours before entry was made into the 700 level adit. This arrangement results in fresh air continually being pushed towards the mine seal and perceptible airflow into the inspectors face as you advance into the 700 level adit.

Seal Pressure:
The first task of the inspection was to download the mine seal pressure data from the Telog data recorder (photos 20-21) located 180 feet into the 10-foot diameter corrugated metal pipe section of the adit. The Telog data recorder is connected via a 2,500-foot long electronic cable to a Druck pressure transmitter at the mine seal. Three times per day the data recorder measures (and then averages the daily measurement) and stores an electronic current measurement (mAmps) from the Druck pressure transmitter. This data is converted mathematically by Board staff to feet of head on the mine seal[1]. When downloading the data logger, staff discovered that from August 19th to August 21st, electronic current measurement from the pressure transmitter fell from 6.92 to 4 mAmps, which likely represents a failure of the pressure transmitter. The data also indicated that a maximum head of 141-feet occurred on the mine seal during the period of June 4th through June 14th, 2013.

Corrugated Metal Pipe:
The drainage channel inside the corrugated section of the mine tunnel was working effectively and was not obstructed. No corrosion, significant seepage, deflection, or physical damage was observed in the corrugated metal pipe section of the 700 level adit.

Timbered Section:
The timbered section of the 700 level adit was open and clear. The conditions in this section were wet and the liquid appear to be from the infiltration of shallow groundwater from the hillside directly above the timber supported section (first 900 feet) of the 700 level adit. No major support problems were observed. However, a number of the timber sets, lagging, and blocking are showing signs of significant decay and need to be replaced.

Unsupported Section:
No scaling was necessary in the unsupported section of the 700 level and no signs of recent rockfall were noted. Water seepage observed in the unsupported section of the adit was minimal; however a small pool of water was noted for the first time on the left-hand side of the adit near the 1600 foot station (photo 22).

Mine Seal, Piping and Valves
Conditions at the mine seal are shown in photos 24-28. The pressure gauge read nearly 50 psi, which indicates a head of approximately 115 feet over the mine seal. Water seepage from around the mine seal and pooled water conditions at the base of the mine seal appeared to be unchanged since July of 2010. Seepage appears to come from the crown of the seal and along both sides. Iron precipitate is evident on the face of the mine seal (photo 24) but does not appear to be significantly different than that shown in the *Walker Mine Seal Testing and Evaluation Report* (GEI Consultants, 1 March 2002). The piping and valves were uncovered (photo 26) and inspected. No seepage or significant changes in corrosion were noted. The valves were not tested due to concern that they may not close completely if opened. Samples of the water pooled at the base of the seal (monitoring location #30) were collected for laboratory analysis. Staff then exited the 700 level adit and securely locked the portal door.

[1] (Note: The Druck pressure sensor is scaled to transmit 4 to 20 mAmps which equates to 0 to 300 feet of head).

Central Ore-Body Subsidence Area:
Inspection of the Central ore body area was made later in the afternoon (see photos 28-34). The primary mining related features in this area consist of the subsidence areas caused by sublevel mining below the Central ore body, several small mining waste piles, and a ventilation shaft located near the top of the hill north of the Central ore body. The subsidence areas act as a natural funnel to transmit precipitation to the underground workings, which in turn increases the hydrostatic pressure on the mine seal, which was installed to stop the discharge of acid mine drainage from the Walker Mine. Staff also inspected the concrete lined diversion ditches, constructed on behalf of the Central Valley Water Board in the early 2000's, which are intended to reduce the amount of surface water runoff during snowmelt periods to the subsidence areas. The diversion ditches were relatively clean of debris, but contained no water at the time of our inspection.

In a brief examination of the mining waste piles located near the Central ore body location, some copper oxide formation was observed as shown in photos 32-33. As noted above, copper oxides become soluble in water and pose a threat to water quality by means of flushing during winter rains and snowmelt. Finally, we located an open ventilation shaft near the top of the hill north of the Central ore body. The ventilation shaft appears to drop approximately 50 vertical feet before dipping at an angle of about 30 degrees to the east to some unknown depth. Coordinates for the shaft were recorded and will be mapped for future reference. The open shaft is an obvious safety hazard and should be closed so that it no longer poses a physical hazard.

Walker Mine Tailings Facility:
Board staff also inspected and obtained water samples from in and around the Walker Mine tailings facility (see photos 35-39) located on adjacent public lands administered by the United States Department of Agriculture Forest Service (USFS). Copper oxides continue to be observed on large boulders (photo 36) just above the Dolly Creek diversion head-works located just east of the Walker Mine tailings. The tailings, shown in photos 37-39, are sparsely vegetated and wind-blown erosion of the tailings continues pose a threat to water quality.

Water Quality Monitoring:
Surface water samples were collected from Dolly, Little Grizzly, Nye, and Ward Creeks. Most of the sample locations had sufficient surface water to sample. Laboratory results are pending.

SUMMARY:

A semiannual inspection was made of the Walker Mine site. Surface water sampling was performed and water pressure measurements on the mine seal were obtained. The pressure transmitter for the Walker Mine seal appears to have failed on or about August 19th and a new pressure transmitter needs to be purchased and installed during the spring 2014 inspection.

RECOMMENDATIONS:

An experience underground mine contractor should be hired to inspect the timbered section and the unsupported section of the 700 level adit for signs of ground support deterioration. Furthermore, while the stainless steel piping and valves need to be inspected and physically tested to ensure their operability in accordance with the Board's Operations and Maintenance Plan for the Walker Mine, there is some potential risk that the valves cannot be completely closed after being opened.

Jeff S. Huggins

JEFF HUGGINS
Water Resources Control Engineer