RESPONSE TO COMMENTS

The public comment period for the draft NPDES permit for Sunshine Mining Company began on July 24, 1990, and expired on August 22, 1990. Comment letters were received from the Idaho Department of Fish and Game (IDFG) and Sunshine Mining Company. These comments and EPA's responses are summarized below:

1. Comment: IDFG commented that while improvements in the treatment of mining wastes and the decline in mining activity have resulted in improved aquatic conditions and fish populations in the South Fork Coeur d'Alene River, fish habitat conditions in the South Fork are still significantly depressed. And the Department hopes that the permit effluent limitations will allow for continued improvement.

   Response: After a needed period for treatment facility upgrading, permittee compliance with the permit limitations will result in a reduction of the amount of toxic pollutants present in the existing discharge from Outfall 001. This should help to improve the water quality of the river.

2. Fact Sheet, Page 2, Paragraph 2

   Comment: Sunshine Mining Company indicated that the flow quantity for the Tri-Mer Tri-NOx Scrubber wastestream should be 1440 gal/day rather than 144 gal/day.

   Response: The flow quantity for this wastestream has been changed to 1440 gal/day.

3. Fact Sheet, Page 14, Item Number 7, Water Quality Assessment

   Comments: Sunshine questioned the 51.044 cfs South Fork Coeur d'Alene River flow value used in the water quality assessment on the basis that (1) flow monitoring data at an upstream location was used, (2) Big Creek flow should have been added into the flow total, and (3) the Company's belief that EPA based the permit receiving water quality requirements soley on a statement in the assessment that the technology-based BAT lead limitations will result in instream levels that approach the water quality standard level.

   Response: In the assessment, a $_{30}Q_{10}$ low flow in the South Fork of 40.484 cfs was used, and the lowest monthly average flow of Big Creek measured during the water years 1971, 1972, 1973, and 1974 of 10.56 cfs was added to that figure for a total streamflow of 51.044 cfs (33.0 mgd).

   The South Fork low flow value was obtained from U.S. Geological Survey (USGS) data collected at the Silverton, Idaho gaging station. This is the only flow monitoring station

in the area that has a period of record long enough to enable calculation of a $_{30}Q_{10}$ low flow value.

The receiving water quality monitoring requirements of the permit are not based soley on the reference in the assessment to lead. Pollutant parameter levels in both the discharge and receiving water upstream of the discharge are variable in occurrence, and dilution of the discharge in the river under low flow conditions is low enough (12 to 1) to cause concern about possible impacts on the river. While the Sunshine permit is not a water quality-based permit, a dilution ratio of less than 100 to 1 is generally considered to warrant special attention in terms of potential discharge impact on receiving water quality.

Documented reports of discoloration of the South Fork streambed downstream of the discharge, show that there is an impact of the Sunshine discharge on the river. Because of this and the low dilution ratio, ambient monitoring to better define receiving water impacts is appropriate.

4. Fact Sheet, Page 5, Item Number 6, Internal Limitations

Comments: Sunshine raised several concerns about the proposed internal wastestream limitations applicable to the discharges from the Antimony Plant/Silver-Copper Refinery. Among these comments, were (1) that EPA's justification for use of internal limitations was inadequate, (2) that the Agency may not have fully considered the ramifications of the requirements related to sampling and chemical analyses, (3) EPA does not have legal authority to regulate internal wastestreams before introduction into the tailings pond, and (4) there is no need to have internal limits on certain parameters because sampling of the wastestreams showed very low levels of these parameters.

Response: EPA does have the legal authority to establish effluent limitations on internal wastestreams, but in view of the Company's comments, the Agency reevaluated the situation and decided to use the building block treatability approach for establishment of effluent limitations on the Outfall 001 discharge.

There are different effluent limitations applicable to the individual wastestreams contributing to the Outfall 001 discharge. Use of the building block approach to develop the limitations will assure that proper waste treatment technology is applied.

The Company will get credit for use of the existing tailings pond as part of the treatment system and, at the same time, this approach will provide the Company with flexibility for

handling the waste flows.

5. Fact Sheet, Page 11, Outfall 001 Discharge

Comment: Sunshine questioned the approach used in establishing best professional judgement (BPJ) Outfall 001 limitations for nonregulated parameters where wastestream concentration levels are lower than treatability values.

Response: Based on a review of the raw data for wastestreams contributing to Outfall 001, some of the wastestreams had nonregulated parameter levels that were in most cases well below treatability levels. For these cases, the Agency has elected to establish "monthly average" and "daily maximum" wasteload allowances for the respective parameters based on the existing data. When using the building block approach in establishing effluent limitations, it is necessary to get an accurate accounting of all wastestreams.

6. Fact Sheet, Page 15, Item B, Tailings Pond Seepage

Comment: Sunshine commented that there is no evidence that the tailings pond seepage is excessive or that it adversely affects receiving water quality, if seepage is occurring.

Response: The data used to demonstrate excessive seepage from the tailings pond, was collected by EPA on September 25, 1984. While the Company did not object to use of this data initially, the Agency does not know or have a good feeling on whether or not there is excessive seepage presently occurring because of the lack of current data. Consequently, the permit requirement has been changed from one requiring development and construction of a tailings pond seepage control system, to one requiring a study to show if excessive pond seepage is occurring or that seepage is causing negative water quality impacts.

7. Fact Sheet, Page 16, Item Number 9, Monitoring Requirements

Comment: Sunshine objected to the assertion in the fact sheet that the Company's operations result in the discharge of several known toxic pollutants to Big Creek. That there is no data presented in the Fact Sheet to support this, and Sunshine is unaware of such discharges.

Response: The Company has a discharge directly to Big Creek from Outfall 003 (Price Tunnel Diversion Dam) which discharges toxic metals to Big Creek. While data concerning this discharge are not presented in the Fact Sheet, some metals data is contained in the Company's June 10, 1983 NPDES permit application for the discharge.

8. Monthly Average Permit Limitations

Comment: Sunshine indicated that the proposed permit parameters set forth a monthly average figure which is one half the daily maximum figure, and there seems to be no logic in such a requirement with respect to the parameters where BPJ is being exercised.

Response: The promulgated guidelines also contain monthly average limitations which either equal or approach one half of the daily maximum limitation values. In most cases, this is a result of the application of treatability data for the various parameters.

9. Monitoring Reports

Comment: The Company commented that the required time schedule for submitting monthly reports by the 10th day of the following month is too stringent a time schedule, and suggested that this be changed to the 14th day.

Response: Under the circumstances, the Agency believes this to be a valid suggestion, and the change to 14th day of the following month reporting has been made in the permit.

10. Sunshine Mill Waste Flow

Comment: Sunshine commented that a new sandfill tank and new cyclone wash have been added to their operations which results in an additional flow to the mill wastestream of 451 tons per day of water, and that the mill wastestream flow should be increased by this amount.

Response: This flow adjustment has been incorporated into the calculcations for the mill waste loading allowances, and is reflected in the final permit limitations.

11. Sulfide Precipitation Waste Treatment Technology

Comment: Sunshine expressed their belief that because Table VII-21 of the Phase II General Development Document for Nonferrous Metals does not include sulfide and filter treatability levels for arsenic, this implies that sulfide precipitation is not effective treatment technology for removing arsenic from the raffinate wastestream.

And the Company goes on to express their belief that (1) sulfide precipitation will not work, and (2) H_2S gas generated during the sulfide precipitation process is lethal at low levels which for this reason alone, makes it an inappropriate treatment process.

Response: The fact that arsenic is not listed in Table VII-21 of the General Development Document under the sulfide & filter technology system column, does not mean that sulfide precipitation is not an effective treatment technology for removing arsenic from wastestreams high in arsenic. It is indicated in the Nonferrous Metals Manufacturing Point Source Category Phase II Regulation, 40 CFR Part 421, that sulfide precipitation is used in many process and wastewater treatment applications in nonferrous metals manufacturing, and it is widely used in the industry to improve metals removals. Both of the promulgated BPT and BAT regulations applicable to the Sunshine Antimony Plant are based, in part, on lime precipitation and sedimentation technology with sulfide precipitation pretreatment to remove large amounts of arsenic present in the raw wastes. Sulfide precipitation is included in the model treatment technology for antimony plants to assure that the promulgated limits will be met.

Sunshine's raffinate wastestream is also high in arsenic and multiple metallic pollutants. And the existence of full scale commercial sulfide precipitation units in operation at numerous installations, demonstrates that this waste treatment technology exists for the treatment of liquid wastes like the raffinate wastestream.

The Agency recognizes that H_2S gas is produced during the sulfide precipitation waste treatment process, and has decided that the gas should be collected. This technology was taken into account in the waste treatment cost estimates.

12. Comments: On May 20, 1991, IDHW-DEQ certified the draft permit pursuant to Section 401(a)(1) of the Clean Water Act on condition that the following requirements are included in the issued permit.

    1. The permittee shall visually observe the discharge and river on a weekly basis, and shall report the number of days precipitate is observed on the river bottom in the Discharge Monitoring Report (DMR) cover letter. The weekly observations shall be performed on the same day each week.

    2. The permittee shall collect samples of the precipitate if it does occur, and shall analyze the precipitate to determine it's chemical constituents. Such determination shall be completed within 3 months of the effective date of the permit, or within 3 months of the first date the precipitate occurs, if it does not exist at the time the permit becomes effective.

    3. The permit may be reopened at the request of DEQ to include conditions to correct the precipitate problem, to

incorporate the results of a TMDL study, or to address a change in cold water biota beneficial use criteria from future to current.

Response: These conditions have been added to the draft permit.

SUMMARY OF DRAFT PERMIT CHANGES

1. The reference to antimony plant/silver-copper refinery discharge on the title page and Table of Contents has been deleted, and the remaining items in Part I. of the Table of Contents have been relettered.

2. The Part I.A. effluent limitations and monitoring requirements related to the antimony plant and silver-copper refinery discharge have been deleted, and Parts I.B., C., D., E., F., and G. have been relettered accordingly.

3. Effluent limitations for the Tailings Pond Discharge-Outfall 001 in Part I.A.1. have been changed as follows (draft permit values are shown in parenthesis):

Parameter	Monthly Avg. mg/l-lb/day	Daily Max. mg/l-lb/day
Flow-mgd	-	2.8 (2.7)
Antimony (Sb)	0.320 - 7.5 (0.313 - 7.1)	0.681 - 15.9 (0.669 - 15.1)
Arsenic (As)	0.286 - 6.7 (0.277 - 6.2)	0.602 - 14.1) (0.586 - 13.2)
Cadmium (Cd)	0.051 - 1.2 (0.051 - 1.1)	0.106 - 2.5 (0.106 - 2.4)
Copper (Cu)	0.192 - 4.5 (0.194 - 4.3)	0.387 - 9.0 (0.390 - 8.7)
Gold (Au)	- (-)	0.0001 - 0.002 (-)
Iron (Fe)	1.115 - 26.0 (1.107 - 24.6)	2.000 - 46.7 (1.982 - 44.1)
Lead (Pb)	0.274 - 6.4 (0.273 - 6.1)	0.550 - 12.8 (0.548 - 12.2)
Manganese (Mn)	0.503 - 11.7 (0.499 - 11.1)	0.886 - 20.7 (0.879 - 19.6)
Mercury (Hg)	0.0020 - 0.05 (0.0020 - 0.05)	0.0043 - 0.1 (0.0044 - 0.1)
Nickel (Ni)	0.093 - 2.2 (-)	0.149 - 3.5 (-)
Silver (Ag)	0.025 - 0.6 (-)	0.048 - 1.1 (-)
Zinc (Zn)	0.605 - 14.1 (0.610 - 13.6)	1.227 - 28.6 (1.236 - 27.5)
TSS	20.0 - 467 (20.0 - 445)	31.6 - 738 (31.7 - 705)
Oil & Grease 3/	Non-Detectable	Non-Detectable
	(Same as above, except for the footnote)	
pH	Not less than 6.0 nor greater than 9.5	
	(Same as above)	

And the monitoring requirements have been changed as follows (draft permit monitoring requirements shown in parenthesis):

Parameter	Measurement Frequency	Sample Type
Flow	Daily (Same as above)	-
Metals (Sb, As, Cd, Cu, Au, Fe, Pb, Mn, Hg, Ni, Ag, & Zn)	5/Week (3/Week)	Grab (Grab)
(All of the above metals except for Au, Ni, & Ag)		
Oil & Grease (Oil & Grease not in draft permit)	Weekly	Grab
Total Hardness (as $CaCO_3$)	Weekly (Same as above)	Grab
TSS	Daily (Same as above)	Grab
pH	Daily (Same as above)	Grab

Footnote number 3 on the Oil & Grease parameter has been added as follows:

"Samples shall be analyzed using gravimetric method 413.1 in EPA's Methods for Chemical Analysis."

4. Additions have been made in Part I.A. relative to the Tailings Pond Discharge-Outfall 001, which:

(1) stipulates that EPA will authorize less frequent monitoring of pollutant levels in the discharge if the permittee adequately demonstrates that the levels are lower on non-operating days, or that fewer samples accurately describe the discharge, with the provision that EPA may require resumption of the original permit monitoring frequency upon written notice,

(2) requires daily production figures to be maintained at the Antimony Plant, Silver Refinery, and Copper Refinery, and

(3) provides the permittee with the opportunity to apply to EPA for an increase in the antimony and/or arsenic limitations if the permittee demonstrates that the mine

drainage wastestream contains higher concentrations of these parameters, and stipulates that any such increases in these permit limits may be made at EPA's discretion.

5. Part I.E. has been changed from a requirement for design and construction of a tailings pond seepage control system to one requiring a tailings pond seepage study, with the provision that if results of the study indicate excessive seepage is occurring or that seepage is causing negative water quality impacts, that the permit may be reopened to incorporate seepage control requirements.

6. The submittal date for Discharge Monitoring Reports (DMRs) specified in Part II.C. has been changed from the 10th to the 14th day of the following month.

7. A new Part I.F. (River Precipitate Investigation) has been added which requires the collection and analysis of any precipitate on the river bottom to determine it's chemical constituents within 3 months. Accordingly, the original Part I.F. has been relettered G.

   And Part I.D. (Receiving Water Quality Monitoring Requirements) has been expanded to require visual monitoring of the discharge and river for the presence or absence of the precipitate on a weekly basis, and reporting of the number of days precipitate is observed on the river bottom.

8. Part IV.D. (Permit Actions) has been expanded to allow for any request by IDHW-DEQ to have the permit reopened for the purpose of (1) including conditions for correction of a river bottom precipitate problem, (2) incorporating the results of a TMDL study, or (3) addressing a change in cold water biota beneficial use criteria from future to present.