U.S. Environmental Protection Agency

Region 10

Response to Comments for City and Borough of Juneau A-J Mine
(NPDES Permit #AK-004951-4)

Background

On August 9, 2004, EPA issued a notice of proposed reissuance of a National Pollutant Discharge Elimination System (NPDES) permit for the City and Borough of Juneau, which owns the inactive Alaska-Juneau (A-J) Mine. The mine drainage effluent is discharged to Gold Creek. The public review and comment period expired on September 8, 2004. EPA received comments from the City and Borough of Juneau (CBJ). This document summarizes the comments made by CBJ, and the justification for any action taken or not taken by EPA in response to the comments.

Public Comments and Responses

Comment #1: Effluent and Receiving Water Sampling and Reporting Dates

CBJ has stated that the Gold Creek drainage tunnel (GCDT) and the GCR receiving water monitoring site are located at the base of a large avalanche chute that releases each year. In the interest of safety, CBJ has requested that the monitoring period be extended through May 31 to allow for the annual avalanche activity to occur before monitoring takes place. CBJ has stated that May is still a low flow period and the proposed change would assure safety in acquiring the samples. CBJ has also requested that the required submittal dates for the annual discharge monitoring report (DMR) and the surface water monitoring report be changed from May 31st to June 30th, to reflect the change in the monitoring season.

Response #1:

EPA agrees that the safety of the personnel who sample the effluent and receiving water is of great importance and has made the requested changes. The monitoring and reporting dates have been changed in all instances in the final permit.

While the required annual or three times per year (for mercury) sampling must be completed between January 1 and May 31, the permittee has the option of sampling more frequently and during other times of the year. The permittee must report the results of any additional sampling as required by part III.D. of the final permit. The permittee must comply with the effluent limits at all times, regardless of the sampling frequency.

Comment #2: Receiving Water Monitoring for Metals

CBJ has requested that EPA add a footnote to Table 2 of the draft permit, stating that receiving water sampling shall be for both total recoverable and dissolved metals. CBJ notes that sampling for both dissolved and total recoverable metals will allow for an understanding of the ratio of dissolved metals to total recoverable metals in the receiving water.

Response #2:

The purpose of receiving water monitoring is to determine if a discharge has the reasonable potential to cause or contribute to a water quality standards violation. EPA believes that, because Alaska's water quality standards for cadmium, copper, lead and zinc are expressed as dissolved metal, it is only necessary to sample the receiving water for the dissolved fraction of these metals.

EPA acknowledges that the draft permit does not specify whether receiving water samples should be analyzed for dissolved or total recoverable metals, therefore EPA has revised Table 2 to show that receiving water sampling for cadmium, copper, lead and zinc must be for dissolved metal, and that sampling for mercury and selenium must be for total recoverable metal.

The final permit does not prohibit CBJ from sampling the receiving water for other forms of metals (or any other pollutants) in addition to the required sampling. If CBJ intends to sample the receiving water for both dissolved and total recoverable metals with the goal of developing site-specific translators for dissolved metals, CBJ should note that EPA guidance recommends that a minimum of 10 matched pairs of total recoverable and dissolved metals samples be collected during periods of low stream flow (EPA, 1996). If CBJ plans to develop site-specific translators, EPA suggests that CBJ discuss these plans with EPA and ADEC to assure sampling and analytical protocols are correct.

Comment #3: Receiving Water Monitoring for Hardness and Alkalinity

CBJ has requested that footnote #1 be deleted from Table 2, so that monitoring for hardness and alkalinity will be required at both stations GCR and GCB, rather than just station GCR.

Response #3:

EPA agrees that it would be preferable to have hardness and alkalinity data for the receiving water both upstream and downstream of the discharge. Footnote #1 has been deleted from Table 2 of the final permit and the subsequent footnotes have been renumbered.

Comment #4: Calculation of Hardness-Dependent Metals Criteria

CBJ has requested that EPA recalculate the water quality criteria for metals based on a 5^{th} percentile low stream flow hardness of 88 mg/L as $CaCO_3$, rather than using the 5^{th} percentile of all available mixed hardness data, which is 62.7 mg/L as $CaCO_3$.

Response #4:

EPA disagrees. Since CBJ is required to monitor the effluent from the Gold Creek Drainage tunnel only once per year for most pollutants, it is appropriate to base the effluent limits on worst-case conditions for both hardness and available dilution. Further, the permittee provided only eight matched pairs of hardness and flow rate data points, which are insufficient to demonstrate the claimed inverse relationship between hardness and flow rate.

The goal of water quality-based effluent limitations is to establish a low probability of water quality standards violations, regardless of the sampling frequency. In order to ensure that the effluent limits in the final permit are protective of water quality standards under all conditions, effluent limits for hardness-dependent metals continue to be based on the 1Q10 and 7Q10 flow rates and the 5th percentile of all available hardness data.

CBJ has the option to collect additional matched pairs of hardness and flow data for Gold Creek, to establish a correlation between hardness and flow rate. Hardness data should be collected downstream from Outfall 001 at station GCB. If these data show such a correlation, EPA may consider this in the next permit cycle. EPA suggests a sampling frequency (for hardness and flow rate) of at least once per month for the length of the permit cycle in order to provide a large enough sample size to establish the correlation. Samples for hardness and flow rate must be collected during the same 24-hour period to be considered a matched pair.

Comment #5: Dilution Factor and Effluent Limits for Mercury

CBJ has stated that it is not valid to impose water quality-based effluent limits based on effluent concentrations below the analytical reporting limit (RL), even though a discharge at the RL concentration would cause or contribute to a water quality standards violation. CBJ has also requested that the effluent limits for mercury be calculated based on a 30Q5 receiving stream flow rate (the lowest 30-day average flow rate expected to occur once every five years) rather than the 7Q10 flow rate, and that the average monthly limit for mercury should be set equal to the wasteload allocation. CBJ has stated that the chronic criterion for mercury is based on bioaccumulation of mercury in fish tissue, and that effluent limits based on this criteria should therefore be based on longer-term exposure. CBJ has questioned the effluent data summary in Table 2 of the Fact Sheet, which states that the average mercury concentration is 0.06 μg/L and the maximum mercury concentration is <0.06 μg/L.

Response #5:

As stated in the Fact Sheet, if the RL for a given pollutant was greater than the most stringent water quality criterion for that pollutant, EPA made the conservative assumption that the effluent concentration was equal to the RL for the purpose of averaging in Table 2 of the Fact Sheet. Since all effluent mercury samples were below the reporting level of 0.06 μg/L, all effluent concentrations were assumed equal to the RL for averaging purposes. This results in an average effluent mercury concentration of 0.06 μg/L. The maximum effluent mercury concentration is listed as <0.06 μg/L, to acknowledge that the true values are somewhat less than 0.06 μg/L. CBJ is correct that it is mathematically impossible for the maximum of a given data set to be less than the average of the same data set. EPA regrets any confusion caused by this presentation of the historical effluent data, but as stated in the response to Comment #6, the fact sheet is a final document and cannot be changed.

Because there is a technology-based effluent limit in effect for mercury, the maximum daily technology-based effluent limit of 2 μg/L was used as the maximum projected effluent concentration, with no reasonable potential multiplier applied (see part B of Appendix D of the Fact Sheet, and footnote #1 to Table D-2). This practice functions as a “check” of the

technology-based effluent limits, to determine if they are stringent enough to protect water quality. Effluent data were not a factor in determining reasonable potential to cause or contribute to a water quality standards violation for mercury. If the maximum projected effluent mercury concentration had been assumed equal to the reporting limit of the effluent data, the discharge would still have had reasonable potential to cause or contribute to a water quality standards violation.

EPA acknowledges a typographical error in Table D-2 of the Fact Sheet. Table D-2 erroneously indicates, in the "mercury" column, that the discharge did not have the reasonable potential to cause or contribute to a water quality standards violation for mercury. Because the maximum projected receiving water concentration is greater than the most stringent criterion, EPA concluded in the Fact Sheet that the discharge does have the reasonable potential to cause or contribute to a water quality standards violation for mercury. The numeric values in this table are correct.

The A-J Mine has been shut down for several years, and the available data show that the concentration of mercury in the effluent is less than the RL of 0.06 μg/L. Since no new activity is planned at the mine and all mercury concentrations have been below the RL, it is unlikely that the concentration of mercury in the effluent will be as high as the maximum daily technology-based effluent limit (2 μg/L). Therefore, EPA has determined that it would be inappropriate to establish reasonable potential for a water quality-based effluent limit for mercury for this facility at this time. The final permit will require effluent mercury data to be collected with a more sensitive analytical method, in order to determine the true effluent mercury concentration. Therefore, the final permit retains the technology-based effluent limits for mercury, which were used in the previous permit. These limits are 1 μg/L average monthly and 2 μg/L maximum daily. The final permit requires the permittee to sample the effluent three times per year for mercury with a method with a detection limit less than or equal to 0.01 μg/L. Currently, the only EPA-approved method with a sufficiently low method detection limit (MDL) is Method 1631 (EPA, 2002).

Because the final mercury effluent limits are technology-based and not water quality-based, the issues of the flow condition to be used to establish a mixing zone and dilution ratios and the appropriateness of setting the average monthly limit equal to the chronic WLA are moot. The final effluent limits are not based on conditions in the receiving water.

Comment #6: Requested Changes to Fact Sheet

CBJ has requested a number of changes to the Fact Sheet in order to make the Fact Sheet consistent with the final permit.

Response #6:

The Fact Sheet is a final document which has the sole purpose of supporting the conditions in the draft permit. The Fact Sheet cannot be modified. Changes which appear in the final permit are explained and justified in this Response to Comments document.

Comment #7: Monitoring Requirements for Pollutants Not Subject to Effluent Limits

CBJ questions whether monitoring should be continued for pollutants for which previous monitoring does not show reasonable potential to cause or contribute to a water quality standards violation. EPA used a 10% "screen" to determine whether monitoring for pollutants not subject to effluent limits should continue. This means those pollutants for which the maximum projected receiving water concentration was greater than 10% of the most stringent water quality criterion have continued monitoring requirements. CBJ has stated that the 10% "screen" is overly stringent, because the maximum projected receiving water concentration is already based on an upper percentile of effluent data. CBJ believes that the screen should be 70%.

Response #7:

CBJ is correct that the reasonable potential analysis to determine if effluent limits are necessary is based on an upper percentile of effluent data. Monitoring requirements for alkalinity, flow, and hardness were not subject to the 10% screen in question. EPA agrees that effluent monitoring for aluminum, nickel and turbidity is no longer necessary, and monitoring requirements for these pollutants have been removed from the final permit.

The final permit retains monitoring for sulfate. The discharge from the Gold Creek drainage tunnel has the reasonable potential to cause or contribute to a violation of water quality standards for sulfate. However, the effluent limits for TDS are protective of the water quality standards for sulfate (that is, the TDS limits implicitly limit sulfate to an acceptable level), and an effluent limit for sulfate is not necessary. However, it is still necessary to monitor for sulfate, because changes in ambient or effluent water quality, or changes to Alaska's water quality standards (particularly the site-specific criterion for TDS) may require an effluent limit for sulfate in the next permit cycle.

Implementation of CWA Section 401 Certification Requirements

The Alaska Department of Environmental Conservation included the following stipulations in its Clean Water Act Section 401 certification of the EPA-prepared NPDES permit for the A-J Mine:

1. Outfall 003 (Ebner Adit, Latitude 58° 18' 30" N, Longitude 134° 23' 1.2" W), located adjacent to, and discharging to Gold Creek, approximately 1000 feet downstream from outfall 001...shall be sampled annually for flow and conductivity during the same sampling period as Outfalls 001 and 005.

Pursuant to the CWA Section 401 certification, EPA has added requirements to sample the Ebner Adit for flow rate and conductivity to the final permit. ADEC has also certified the mixing zone, with dilution factors as calculated by EPA in the Fact Sheet, and has certified the compliance schedule for mercury, which appears in the final permit.

Other Permit Revisions

The final permit requires reporting to the Office of Compliance and Enforcement within 24 hours of a maximum daily limit violation for cadmium, copper, lead, mercury, selenium and zinc.

The draft permit makes several references to the "Director," defined as the Director of the office of Water at EPA Region 10. EPA Region 10 has recently undergone a reorganization, which has created a new office, the Office of Water and Watersheds, to replace the Office of Water. Also, the responsibility for NPDES compliance and enforcement now lies with the Office of Compliance and Enforcement. Therefore, EPA has changed references to the "Director" to the "Director of the Office of Water and Watersheds," the "Director of the Office of Compliance and Enforcement," or simply "EPA," as appropriate.

EPA has changed the numbering of part II.E.2.(b) to include subparts (i), (ii), and (iii). The content of II.E.2.(b) has not changed.

EPA has corrected typographical and grammatical errors in the draft permit as follows:

1. In Part I.A. of the draft permit, the numbering skips between I.A.2. and I.A.4. (there is no I.A.3.) The final permit has corrected this numbering error. Part I.A.4. is now I.A.3., I.A.5. is now I.A.4., and so on.
2. Part II.E.3.(b) now reads "Certified statement that the above review *has been* completed…." In the draft permit it read "Certified statement that the above reviews *have been* completed…." (Emphasis added).

There are also some minor formatting and pagination differences resulting from the conversion of the document to Microsoft Word format from the Corel WordPerfect format in which it was drafted.

References

ADEC. 2003. *Water Quality Standards.* Alaska Administrative Code, Title 18, Chapter 70.

EPA. 1996. *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion.* EPA 823-B-96-007.

EPA. 2002. *Method 1631, Revision E: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry.* EPA 821-R-02-019.