

APPENDIX E

SAMPLE REPORT OUTLINE FOR A CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Baseline Information

I. Discussion of CHIA process elements

A. Cumulative impact area (CIA)

- Maximum upstream and downstream extent of CIA.
 - a. Discuss criteria used to evaluate significance of spatially remote operations.
 - b. Discuss application of criteria and resulting CIA extremes.
- Delineate watershed area between these points on suitable map.
 - a. Discuss existing and other anticipated mining operations and locate on map.
 - b. Discuss process of delineating surface-water CIA.
 - c. Discuss process of delineating ground-water CIA.
 - d. Show working CIA on suitable map.

B. Hydrologic baseline conditions in the CIA

1. Determine adequacy of available hydrologic data.
 - a. Surface-water data.
 - b. Ground-water data.

2. Characterization of the hydrologic system.
 - a. surface-water system.
 - i. Physical description of surface-water system.
 - ii. Flows.
 - iii. Surface-water quality.
 - iv. Inventory surface-water usage.
 - b. ground-water system
 - i. Physical description of ground-water system.
 - ii. Ground-water flow.
 - iii. Ground-water quality.
 - iv. Inventory ground-water usage.

C. Hydrologic concerns and associated indicator parameters

1. Surface-water concerns
 - a. Identify concerns (Discuss rationale for inclusion of each concern.)
 - b. Indicator parameters used to evaluate surface-water concerns (Discuss reasons for selection of specific parameters.)
 - c. Impact assessment sites.
 - i. Discuss selection of sites where impacts are to be assessed.
 - ii. Locate sites on map of CIA (Use map prepared in step I.A.).
2. Ground-water concerns
 - a. Identify concerns (Discuss rationale for inclusion of each concern.)
 - b. Indicator parameters used to evaluate ground-water concerns (Discuss reasons for selection of specific parameters.)
 - c. Impact assessment sites.
 - i. Discuss selection of sites where impacts are to be assessed.
 - ii. Locate sites on map of CIA.

Analysis and Prediction Information³

D. Material damage criteria considerations

1. Existing water-quality standards.
2. Existing water-quantity standards.
3. Development of limiting parameter values for concerns inadequately covered by existing standards.
4. Site-specific material damage criteria.
 - a. Prepare list of criteria for each parameter at each site.

E. Assessment of cumulative impacts of mining on indicator parameters

1. Mining methods used within the CIA.
 - a. Describe the mining methods used.
 - b. Discuss the effects of various mining methods on hydrology of the CIA.
2. Surface water
 - a. Predictive methods used.
 - i. Discuss reasons for using these methods.
 - ii. Discuss assumptions of the methods.
 - iii. Discuss data requirements of the methods.
 - iv. Discuss procedure used to calibrate method.
 - b. Projected values of indicator parameters at identified surface-water impact sites--long- and short-term impacts.
 - i. Discuss difference in procedure to obtain short-and long-term parameter values.
 - ii. Discuss quantity parameters for each site.
 - iii. Discuss quality parameters for each site.

³ To be used with subsequent analysis and prediction technical reference document

3. Ground water
 - a. Predictive methods used.
 - i. Discuss reasons for using these methods.
 - ii. Discuss assumptions of the methods.
 - iii. Discuss data requirements of the methods.
 - iv. Discuss procedure used to calibrate method.
 - b. Projected values of indicator parameters at identified ground-water impact sites.

II. Determination and statement of findings

A. Determination of material damage potential

1. Surface water
 - a. Comparison of projected values with material damage criteria.
 - b. Potential for material damage to the surface-water system.
2. Ground water
 - a. Comparison of projected values with material damage criteria.
 - b. Potential for material damage to the ground-water system.

B. Statement of findings

1. Summary of findings
2. Discussion

III. References

IV. Appendices

- Baseline hydrologic data