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CROWN JEWEL MINE

FINAL ENVIRONMENTAL IMPACT STATEMENT

January 1997

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APPENDIX L

PUBLIC INVOLVEMENT FOR THE DRAFT EIS

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1.0 INTRODUCTION

This appendix documents Forest Service and WADOE activities to involve and consult the public in preparing the final EIS for the Crown Jewel Project.

Information in this appendix includes:

Summary of Public Involvement Activity - Section 2.0

This section documents public notices, meetings conducted, and the comment period associated with the review of the draft EIS.

Comment Statistics - Section 3.0

This section presents the number and origin of comments and summarizes the number of comments by subject area.

Summary of Comments - Section 4.0

Section 4.0, Summary of Comments, of this document summarizes, by discipline, all the comments received on the draft EIS. Due to the vast number of individual comments received (over 11,500), not all comments are specifically represented in this section; however, this section provides the reader with the general nature of the comments received.

List of Respondents to the Draft EIS-Section 5.0

This section provides a listing of the comment sources (federal, state and local agencies, general public, Canadian government, etc.)

Summary of Responses - Section 6.0

Section 6.0, Summary of Responses, of this appendix further breaks down the comments listed in Section 4.0, Summary of Comments, and provides detailed responses. Since many of the comments received on the draft EIS focused on the same theme, this section has been developed to avoid redundancy. As in the Summary of Comments section, not all the comments received are specifically addressed; this is due to the vast number of individual comments received. However, it is believed that all substantive comments, are addressed in this section. Substantive comments are defined as those comments pertaining to the adequacy of the draft EIS and associated documents or the merits of the alternatives. Substantive comments do not include expressions of general belief, opinions, or votes. All individual comments are addressed in a background document available for review at the Forest Service office in Tonasket, Washington and the WADOE offices in Yakima and Olympia, Washington.

Copies of Letters from Agencies, Indian Tribal Governments, and Elected Officials - Section 7.0

Copies of the letters received from federal, state, and local agencies, Indian tribal governments, and elected officials are contained in this section.

2.0 SUMMARY OF PUBLIC INVOLVEMENT ACTIVITIES

The Crown Jewel Mine draft EIS was filed with the Environmental Protection Agency (EPA) on June 23, 1995. The Notice of Availability of the Crown Jewel Mine draft EIS was printed in the Federal Register on June 30, 1995. The public review period for the Crown Jewel Mine draft EIS extended from June 30, 1995 to August 29, 1995.

Public involvement activities (post release of Crown Jewel Mine draft EIS) included the following:

2.1 PUBLIC NOTICES AND NEWS RELEASES

As part of the release of the Crown Jewel Mine draft EIS, public notices were put in two local newspapers: the Omak-Okanogan County Chronicle on June 28, 1995 and the Okanogan Valley Gazette-Tribune on June 29, 1995. Both of these notices discussed the times and locations for the three information meetings, the two site tours and information on the August 17th public hearing, plus discussed the public comment period. Both of the above newspapers also had front page articles on the release of the draft EIS on those dates. The Wenatchee World had front page articles mentioning the release of the draft EIS on June 23, 1995 and June 27, 1995 and published a list of the times and locations of the three information meetings, site tours, and the public hearing on June 28, 1995. A notice about the information meeting in Midway B.C. was published in Canadian newspapers by the Canadian government.

A notice of the availability of the Crown Jewel Mine draft EIS for comment was also published in the Federal Register on June 30, 1995. An update notice on the status of the Crown Jewel Project was published in the Federal Register on April 18, 1996.

Notices of the Public Hearings (August 15 & 17, 1995) were published in the Seattle Times Inc., Spokesman Review, and Wenatchee World on August 4, 1995. This notice was also published in the Omak-Okanogan County Chronicle on August 9, 1995.

Patty Betts, WADOE Project Coordinator; Phil Christy, Forest Service Project Team Leader; and Craig Bobzien, Tonasket District Ranger appeared on "Open Line" on KOMW radio (Omak) to discuss the Crown Jewel Project and answer public questions on July 7, 1995 and July 28, 1995.

2.2 PUBLIC MEETINGS

Three public information meetings were held to explain and answer questions on the Crown Jewel Mine draft EIS. These meetings were as follows:

- July 20, 1995 in Midway, British Columbia;
- July 26, 1995 in Oroville, Washington; and,
- July 27, 1995 in Riverside, Washington.

2.3 SITE TOURS

The Forest Service and WADOE hosted two site tours to the Crown Jewel Project site. These site tours were held on July 29, 1995 and August 5, 1995. They were organized to provide interested individuals the opportunity to observe the site proposed for mining and milling activities and ask questions of Forest Service, WADOE, and Proponent staffs.

2.4 PUBLIC HEARINGS

Two formal public hearings were held for interested individuals and organizations to make oral comments and statements on the Crown Jewel Mine draft EIS. These meetings were as follows:

- August 15, 1995 in Ellensburg, Washington; and,
- August 17, 1995 in Oroville, Washington.

2.5 NEWSLETTERS

The Forest Service and WADOE distributed newsletters in June 1995, February 1996, August 1996 and January 1997 to individuals on the Crown Jewel Project mailing list.

The June 1995 newsletter contained a schedule for public meetings and field trips, tips on reviewing and commenting on the Crown Jewel Mine draft EIS, and general information including how to obtain a copy of the draft EIS.

The February 1996 newsletter provided individuals on the Crown Jewel Project mailing list with an update on the status of work on the final EIS, as well as a summary of the comments received on the draft EIS.

The August 1996 newsletter provided a listing of reports and studies completed since the release of the draft EIS; this newsletter also contained a "return" card to update the Crown Jewel Project mailing list and to determine the number of individuals and organizations who wanted a copy of the final EIS.

The January 1997 newsletter announced the release of the final EIS; Forest Service and BLM Record of Decision; the status of State Agency permits and contact names; and the names and locations of additional places where the Crown Jewel Mine final EIS could be viewed.

2.6 SPANISH SUMMARY

A Spanish "Summary" of the Crown Jewel Mine final EIS was prepared and made available upon request to assist the Spanish speaking residents of the area.

3.0 COMMENT STATISTICS

The Forest Service and WADOE received 4,533 written and oral responses from individuals, organizations, and governmental agencies which contained 11,731 catalogued individual comments to the Crown Jewel Mine draft EIS. A total of 120 individuals commented on the Crown Jewel Mine draft EIS at the public hearings held in Ellensburg and Oroville, Washington.

Table L-1, Comment Origin Information, provides information on the number of comments (responses) received on the Crown Jewel Mine draft EIS, as well as the origin of those comments.

TABLE L-1, COMMENT ORIGIN INFORMATION

Category/Origin	Number
Written Responses (Letters, postcards, petitions, etc.)	4,413
Oral Responses (Individuals who had comments at 8/15/95 & 8/17/95 public hearings)	120
Total Responses* (i.e., letters, post cards, petitions, oral testimony)	4,533
Responses from within State of Washington	3,881
Responses from Canada	100
Responses from Other Locations (outside State of Washington and Canada)	552
Total Individual Comments* (Written and Oral)	11,731

Note: * Written and oral responses typically contain several individual comments.

Table L-2, Comment Discipline Breakdown, displays the number of individual comments received on the Crown Jewel Mine draft EIS by discipline.

TABLE L-2, COMMENT DISCIPLINE BREAKDOWN		
Comment Discipline	**Number of Comments**	**Percentage (%) of Total**
Air Quality	260	2.2
Geochemistry	190	1.6
Geotechnical Considerations	127	1.1
Soils	30	0.3
Hydrology	904	7.7
Vegetation	64	0.5
Wetlands	92	0.8
Fish and Aquatic Resources	116	1.0
Wildlife	412	3.5
Noise	77	0.7
Recreation	49	0.4
Scenic Resources	37	0.3
Heritage Resources	129	1.1
Transportation	148	1.3
Land Use/Reclamation	277	2.4
Socioeconomics	490	4.2
Accidents and Spills	87	0.7
Miscellaneous[1]	7,826	66.7
Monitoring	80	0.7
Bonding/Performance Securities	118	1.0
Mitigation	191	1.6
Cumulative Effects	27	0.2
TOTALS	11,731	100%

Note: [1] The miscellaneous category includes "form" letters or petitions expressing either support or opposition to the Crown Jewel Project. Over six thousand individual comments were statements of support or opposition.

4.0 SUMMARY OF COMMENTS

4.1 AIR QUALITY

General

There were comments requesting minor text clarifications, or expressing opinions regarding the air quality impacts of the proposed Crown Jewel Project without referring to any specific evaluations in the draft EIS.

Emission Estimates

Commentors expressed concern that the fugitive dust and toxic by-products from the blasting and the fugitive dust and tailpipe exhaust from the commute vehicles and supply/delivery trucks along the public roads leading to the Crown Jewel Project site were not included in the emission estimates or the ambient impact modeling. Some commentors disputed the Proponent's calculations that indicated that the peak wind speeds at the mine site are not high enough to cause wind erosion of the disturbed overburden, waste rock areas, and the dewatered tailings pond. Others believed that the Proponent's calculated emissions from the point sources (stacks and vents) were based on overly-optimistic high control efficiencies.

Background Data

The wind speed and wind direction data, collected by the Proponent, were disputed by some commentors. Other commentors questioned how long-term temperature, precipitation, and evaporation data for the mine site could be derived by correlating two years of on-site data against long-term data from the reference station at Republic, Washington. Several commentors questioned how the Proponent derived the assumed background PM-10 and Total Suspended Particulate data that were used for the computer dispersion modeling to demonstrate compliance with the WADOE ambient air quality standards.

Miscellaneous

There was concern that the proposed Crown Jewel Project would violate either the existing Clean Air Act or the recently-enacted Washington Metal Mining and Milling Operations Act. In addition, the visibility assessment was questioned.

Commentors expressed general concern that the air quality impacts caused by the mine would degrade the quality of life (i.e. religious freedom, lifestyle choices, etc.) in the region.

4.2 GEOCHEMISTRY

General

General comments addressed a wide range of issues but primarily consisted of generalized opinions of the reviewers. Editorial comments included recommended clarifications, revisions, corrections, and additions to text, tables, appendices, and maps and figures.

Geochemical Testing Procedures and Data

Reviewers commented on the adequacy of the geochemical testing procedures used, the availability of geochemical quality assurance (QA)/quality control (QC) data, the correlation between "duplicate" waste rock sample results, the analysis of ore samples, and the number and type of humidity cell tests performed.

Geochemistry of Waste Rock Disposal Areas

Comments were received on the geochemistry of the waste rock disposal areas including the number and percentage of potentially acid-generating waste rock types, the potential to form "hot spots," and the quality of water that would discharge from the waste rock disposal areas.

Pit Water Quality Impacts

Other reviewers commented on the potential of the open pit mine to impact water quality. Both general and specific comments were received. Specific comments included the acid generation potential of pit walls, the time that potentially acid-generating waste rock material would be exposed to weathering, the adequacy of pit water quality modeling, and potential impacts to water quality if the pit was backfilled.

Geochemistry of Ore Stockpile

A comment was received on the potential impact to water quality from ore stockpile runoff.

Geochemistry of Tailings Disposal Area

Comments were received on the geochemistry of the tailings including dangerous waste classification results, cyanide concentrations in the tailings pond, acid generation potential of the tailings, and confirmation testing of tailings samples.

Operational Monitoring and Mitigation of Potential Geochemical Impacts

Reviewers requested that the final EIS present a selective handling plan for waste rock and discuss how the Proponent would monitor for and mitigate potential geochemical impacts during and after the mine operations.

Comparison to Other Mines

Reviewers suggested that geochemical data from the Crown Jewel Project be compared to geologic and water quality data collected from historic mines.

Miscellaneous Comments

Miscellaneous comments were received from reviewers regarding mapping of geochemical sampling data, the presence and fate of mercury, impacts from blasting, effects of microbial activity on acid generation, and the relationship between calcium content and neutralization potential.

4.3 GEOTECHNICAL CONSIDERATIONS

General

The majority of the general geotechnical comments focused on the tailings facility design, construction, and performance. Limited questions were directed at the stability of waste rock disposal areas at the site.

Tailings Dam Stability

Comments were received about the stability of the upstream construction of the tailings dam embankment and its general stability under strong earthquake conditions.

Tailings Facility Impoundment and Operation

There were concerns with the liner system proposed for the Crown Jewel Project tailings facility impoundment. In particular, how the liner system would function and be incorporated with the upstream construction techniques proposed for subsequent embankment raises. Other questions focused on the potential leakage of solutions from the tailings impoundment and the impacts of solution losses to Marias Creek.

Miscellaneous

Miscellaneous comments included requests to review impoundment designs, concerns about the Starrem Reservoir, responsibility of damage due to earthquakes, underground stability concerns, pit wall and waste rock stability issue/concerns, and tailings disposal and siting methods selection.

4.4 SOILS

General

There were comments received that requested minor text clarifications, cited typos, and expressed general opinions concerning the soils sections.

Soil Availability

Concerns about adequate growth medium to perform the required reclamation were expressed.

Soil Suitability

There was concern that the topsoil would be contaminated while in storage or when replaced over waste rock or tailings. Others asked about the effectiveness of fertilizer on soil suitability.

Erosion Rate Calculations

It was suggested the erosion rate calculations were too conservative based on the values estimated for various model parameters and that they should be lower than the rates shown on *Table 4.5.2, Summary of Mine Component Erosion Rates by Alternative*, of the draft EIS.

RUSLE "C" Factor

Concern about the use of the "C" Factor in the Revised Universal Soil Loss Equation (RUSLE) was expressed.

Contamination of Aquifer Through "Well Drained" Soils

Concern that any spills which may occur might infiltrate through soils described as "well drained" was expressed.

4.5 HYDROLOGY

Climatology

The comments and concerns for climatology focused on the precipitation and evaporation data sets used in analyses for the draft EIS. Many comments stated that precipitation estimates were underestimated while evaporation estimates were overestimated. Effects of microclimates on precipitation and evaporation were also noted as a concern by some commentors. Additional discussion was requested concerning the relationship between surface water and precipitation,

including an expanded discussion of stream flows representing wet, dry, or normal (average) precipitation years.

Surface Water Hydrology

The surface water hydrology comments included many varying opinions regarding the Project. General comments were made that the hydrologic impacts were understated in the draft EIS. Comments also suggested that more emphasis should be placed on conservation of water resources. Specific comments included requests for surface water monitoring points established lower in the drainages than the current monitoring reaches, concerns about the validity of Marias Creek flow estimates, and the influence of the Roosevelt adit on Nicholson Creek. Additional discussion was requested regarding estimated mean annual flows for the Crown Jewel Project area streams. Stream depletion was an issue with many commentors. Some commentors believed stream depletion estimates were underestimated while others commented that the estimates were overestimated. Some comments suggested that a discussion of drought periods be included in the final EIS. Quantification of the impacts of storm runoff from the waste rock disposal areas was requested, along with additional discussion of planned sediment control. It was suggested that the discussion of cumulative impacts to surface water be expanded to include water availability and minimum streamflows.

Ground Water Hydrology

Comments expressed concerns regarding water level monitoring on site. Other comments suggested that impacts to the Beaver Creek drainage were not addressed. General questions regarding the hydrogeologic characterization of the site were raised. Some comments expressed discomfort with the estimates of ground water inflow into the pit. Some commentors thought inflow estimates were too low, and others thought inflow estimates were too high. Some commentors questioned the hydrogeologic methodologies and assumptions. Similarly, many comments expressed discomfort with pit dewatering and its impacts. Additional discussion was requested regarding the pit dewatering effects to aquifer storage, the ground water recharge zone, and the ground water contribution to surface streams. Some comments addressed underground mining induced subsidence and requested clarification on the impacts from subsidence. Comments were received concerning stream depletion as well as ground and surface water interaction. More information was requested about pit backfilling and underground mine alternatives. A re-evaluation of flow from the Roosevelt adit was requested. Tailings facility comments referred either to design criteria questions or comments concerning seepage from the tailings facility. Additional discussion was requested to address seepage from the waste rock disposal areas. There were many questions and comments concerning impacts from mining activities on springs, seeps, and wetlands. Specifically, many commentors felt that impacts to Beaver Canyon had not been addressed and should be included in the final EIS.

Water Quality

Comments regarding water quality were focused predominantly on the results of pit water modeling. Concerns were voiced about modeled levels of cadmium and silver in the pit lake, and potential contamination of the ground water, surface water, springs, seeps, and wetland areas. Concerns were voiced that the conservative approach of the pit water model, as well as the limitations and problems with comparing model results with water quality standards, was not stressed in the draft EIS. Water quality impacts associated with the tailings facility were an issue addressed by many comments. Requests were made to expand the discussion concerning water quality impacts from waste rock disposal areas. Commentors asked questions about water quality impacts to wetlands due to stream depletion. There were comments that disagreed with the assessment of water quality impacts from the backfilled pit alternative. Additional discussion was requested regarding water quality impacts from blasting, dust suppression, and sanitary waste.

Water Supply and Water Rights

Comments on water supply were split between those who felt the plan used too much water and those who felt the plan was well thought out and stressed conservation of water. Many comments requested that the water supply plan and its impacts to the Myers and Toroda Creek drainages be described in more detail. Other comments asked for further clarification of water usage in the form of a water budget. Specific water rights issues relating to permitting were stated, and questions regarding the legal standing of water rights in the Myers Creek and Toroda Creek drainages were raised. It was requested that more discussions regarding the hydrologic characterization of the Myers Creek and Toroda Creek drainages be presented. Concerns were expressed that removing a portion of the Myers Creek spring freshet would impact ground water recharge. Additional Instream Flow Incremental Methodology (IFIM) studies were requested to characterize the required instream flows of both Myers and Toroda Creeks. Several commentors requested a discussion on Tribal water rights issues and impacts. It was requested that cumulative impacts be addressed in more detail.

4.6 VEGETATION

General

General vegetation comments included suggestions that existing plant communities be used as a guide to reclamation work, that more information be included on the quality of plant succession, and that a discussion be included about possible frog pond impacts if the water available was reduced.

Sensitive Plants

Comments were received regarding the impacts to sensitive plant populations if the hydrologic characteristics of streams, seeps, and bogs were affected. Additional comments expressed concern about the adequacy of plant surveys and proposed mitigation.

Range

Comments suggested providing additional information on the quality of range forage, water, and access, with a specific request for clarification of the term "permitted numbers."

Plant BE

There were comments expressing concern about the adequacy and content of the Plant BE.

Policy Issues

There were vegetation policy comments directed towards the WADOE and Forest Service.

Miscellaneous

Other comments focused on concerns regarding particular plant species.

4.7 WETLANDS

General

Typographic errors were cited as discrepancies between the draft EIS and the Wetland Delineation Report in regard to wetland acreage. There were a number of complaints regarding a Myers Creek wetland not being inventoried. The use of the 1987 and 1989 Wetland Delineation Manuals was questioned.

Wetlands Mitigation

There were comments stating that the mitigation plan for wetlands was unacceptable. Several commentors wondered how mitigation would be assessed without a functional assessment. Many had specific concerns about certain areas, such as the frog pond, Pine Chee Springs, and the Nicholson Creek drainage.

Wetlands Impacts

The comments pertaining to direct wetland impacts focused on acreage figures for different alternatives. There were several requests for functional assessments of the wetland areas to be impacted. Several comments expressed concern about the headwaters of Marias Creek being used as a tailings pond, and several requests were made to detail the linear feet of impacts to the Gold Bowl drainage, Starrem Creek, and Marias Creek.

Indirect Wetlands Impacts

Concern was expressed about flow reduction and its impacts to wetlands in Myers, Bolster, and Thorp Creeks. There were several requests for an evaluation of indirect impacts to riparian areas that might be caused by flow reduction in the above creeks.

4.8 FISH AND AQUATIC RESOURCES

General

Commentors expressed opinions, cited typos, and requested clarifications.

Myers Creek Diversion

Concerns were expressed regarding the need for instream flow requirements to protect fish resources, Canadian stream flows and aquifers, and senior water rights which would be located downstream of a diversion of Myers Creek water into the proposed Starrem Reservoir. Some specific comments on the IFIM study were also received.

Starrem Reservoir

Concerns were expressed about the impacts of Starrem Reservoir construction on fish (if present) in Starrem Creek and on associated wetlands. The downstream impacts of a possible Starrem Reservoir failure on the fisheries resource in Myers Creek were also a concern.

Impacts on Marias and Nicholson Creeks

Concerns included impacts of potential water quality degradation from sedimentation, metal levels, or changes in the source or inflow rate of ground water from the proposed Crown Jewel Project on existing or potential aquatic resources. Pit water quality as it relates to potential cyanide leaching was also expressed as a concern.

Downstream Impacts to Toroda Creek and Kettle River Resources

Commentors suggested that Marias and Nicholson Creeks are potential contributors to aquatic resources downstream in Toroda Creek and/or the Kettle River. Fish in upstream areas emigrate and colonize downstream reaches. A concern was raised about water quality degradation if sediments or elevated metals levels were delivered to downstream reaches.

Monitoring and Mitigation Plans

Opinions were expressed regarding the adequacy of monitoring and mitigation plans proposed for the Crown Jewel Project.

Impacts on Native American Tribal Treaty Rights

Concerns were expressed about Crown Jewel Project impacts on Native American Tribal treaty rights.

Other Comments

Concerns were expressed regarding the adequacy of the baseline fisheries surveys, downstream effects on the Columbia River, spring freshet flows, and macroinvertebrate information.

4.9 WILDLIFE

General

General comments addressed topics such as basic wildlife biology, expressed opinions regarding the wildlife impacts of the proposed Crown Jewel Project (both that impacts were understated and that impacts were overstated), and requested a variety of specific editing corrections or revisions.

Toxics

Many comments were received about the potential toxic impacts from the chemicals and petroleum products that would be used as part of the mining and milling process. These concerns included the potential for toxic impacts from the tailings facility and recovery solution collection pond and the potential for toxic impacts to fauna, particularly in relation to migratory birds and aquatic life. Other comments were about the nature, magnitude, and effects of a potential spill along the transportation route into a stream or lake. Numerous commentors questioned the effectiveness of the INCO SO_2/Air/Oxidation cyanide destruction process.

Habitat

Questions were raised about the impacts that the Crown Jewel Project would have on wildlife habitat. Were the impacts displayed in the draft EIS overstated or understated? Questions were asked about why the draft EIS did not use population surveys and instead used changes in habitat and cover types to estimate wildlife impacts. Numerous commentors noted that mines they had visited operated in harmony with wildlife. A number of comments related to riparian and wetland cover type losses and questioned whether these losses would be considered substantial. Numerous questions were raised about habitat loss, fragmentation, and the wildlife impacts of the Crown Jewel Project on the wildlife corridor between British Columbia and the Colville Reservation and other forested areas in the Okanogan Highlands.

Deer Issues

Comments were raised about the impacts of the Crown Jewel Project on local deer populations. Would the mine create permanent changes in deer migratory patterns? Would deer disappear from the Crown Jewel Project area not only over the duration of the operations but also for a longer period before recovering? Were the impacts of timber harvest on Snow Intercept Thermal Cover (SIT) overestimated or underestimated. Thus, were the impacts on deer over or under estimated? What would the impacts be on Tribal and recreational hunting?

Threatened, Endangered, and Sensitive Species

Comments were received that asked questions or made comments related to the impacts of the Crown Jewel Project on grizzly bear, wolf, northern goshawk, lynx, common loons, bats, and wolverines. What were the likely impacts to these species? Would the Crown Jewel Project continue a trend toward a loss of population viability? Would the mine influence the travel of such wide ranging species as the grizzly bear and wolf during their seasonal wanderings from Canada? Concerns were raised that parts of the Biological Evaluation verged on the ridiculous, rambling on about threatened and endangered species which have not been found in the site area, nor the analysis area.

Habitat Evaluation Procedure

Questions were asked about why the results of the Habitat Evaluation Procedure (HEP) process were not used to describe wildlife habitat effects and mitigation opportunities for the Crown Jewel Project. Other comments stated that the habitat conditions within the HEP analysis area would not remain static under the "No Action" alternative. Most forest habitats, based on projections from the land management agencies, would be significantly impacted by ongoing forest management activities over the next 60 years without the Crown Jewel Project. Comments were made that the Habitat Suitability Index (HSI) scores for six species had errors that caused an overestimation of impacts by the Crown Jewel Project.

Methods

Questions were asked and comments were received that related to how the wildlife analysis was conducted. These comments and questions related to how the core area was determined, why riparian buffers were used instead of areas that were actually disturbed in the riparian zones, why distinctions were made between different cover types, and on what basis assumptions were made on human presence, road density, and natural forest succession.

Noise Impacts

Questions were raised about the assessment of noise impacts on wildlife. Some commentors disagreed with using the 10 dBA increase over ambient as a noise impact criteria. They felt that noise levels exceeding 20 dBA above background were more likely to be the level impacting wildlife.

Miscellaneous

Questions were asked about the following miscellaneous items: wildlife corridors between British Columbia and the Colville Reservation; Tribal members subsistence rights for hunting and fishing; impacts to the great blue herons nest on Myers Creek; impacts on aquatic life including fish, macro-invertebrates and amphibians; over or under estimation of wildlife impacts; and, impacts from noise, light, and disturbance.

Mitigation and Monitoring

Comments questioned how wildlife losses would be mitigated, how specific monitoring would be carried out, and what would be the effectiveness of proposed monitoring and wetlands mitigation. Numerous comments were received from the Proponent questioning how the effectiveness ratings were derived and disagreeing with how the effectiveness ratings were established. Several questions and comments were received about the proposed fence around the tailings facility, including those related to its design and effectiveness at preventing wildlife access to the tailings pond.

4.10 NOISE

General

Commentors requested minor text clarifications or expressed opinions regarding the noise impacts of the proposed Crown Jewel Project without referring to any specific evaluations in the draft EIS.

Regulatory Limits

Clarification was requested on how WADOE's environmental noise limits would be used to minimize noise impacts at the various residential and rural areas surrounding the proposed Crown Jewel Project. There were also requests for operational noise monitoring during the life of the Crown Jewel Project to track compliance with the regulatory noise limits and with any negotiated Project-specific permit limits. Some commentors asked how the Proponent would monitor worker exposure to noise levels within the work place and demonstrate compliance with regulatory limits.

Background Noise and Mechanical Noise Distinctions

There were commentors requesting additional discussion on how the background noise measurements of rural-type noises could be compared against the mechanical noises that would emanate from the proposed mining activities.

Modeling Methods and Noise Levels

Commentors requested additional discussion on how the ENM noise model was used to calculate the future noise levels surrounding the proposed Crown Jewel Project. Other commentors questioned why A-weighted decibels (dBA) and "equivalent noise levels " (L-eq) were used to describe the background levels and the calculated future noise levels.

It was asked why the noise impacts that would be caused by construction of the Starrem Reservoir and the noise levels caused by increases in commute traffic vehicles and supply/delivery trucks were not discussed in the draft EIS.

Miscellaneous Noise Effects

There were questions which asked how the calculated future noise levels would affect wildlife in the vicinity of the Crown Jewel Project. There were requests for additional discussion on how the range of calculated noise levels relate to possible human health impacts. A concern was expressed that the noise impacts caused by the proposed Crown Jewel Project would degrade the quality of life in the region.

4.11 RECREATION

General

There were comments requesting minor clarifications and text changes or expressing opinions regarding recreation impacts.

Impacts on Beth and Beaver Lakes

Comments expressed concern about traffic passing the Beth and Beaver Lakes and nearby campground. Some expressed the opinion that the draft EIS overestimated the traffic impact on Beth and Beaver Lakes, while others were concerned with future Crown Jewel Project employees impacting the campground.

Loss of Recreational Income

There were comments regarding the potential loss of tourists, due to noise, dust, visual impacts, lights, etc. from the Crown Jewel Project, and the dollars they contribute to the local economy.

Diminished Value of Recreation Resources

An opinion was expressed that the draft EIS failed to discuss how the Crown Jewel Project would diminish the value of recreation resources within the mine site and the surrounding area.

Data on Projected Camping

The data on camping increases as a result of Crown Jewel Project employees was questioned.

Recreational Value of the Post-Mining Lake Formation

There were comments which emphasized the potential recreational value of the lake that would form in the pit once mining is completed.

Impacts on Hunting and Fishing

There were comments regarding the impacts of the Crown Jewel Project on hunting and fishing in the area, and the potential revenues lost if hunting and fishing decreases.

4.12 SCENIC RESOURCES

General

There were comments requesting minor clarifications and text changes or expressing opinions regarding the Crown Jewel Project.

Forest Service Scenic Management System

The basic methodology and assumptions of the scenic resources analysis was questioned.

Impacts of Project-Related Dust on Visibility

Comments were received regarding the effect on viewsheds of dust and air pollution created by the Crown Jewel Project.

Impacts of Project Lighting

Concern was expressed that the effects of Crown Jewel Project lighting was not adequately addressed.

Visual Impacts from Other Viewpoints

Some comments brought up the potential for scenic impacts to additional recreational sites, such as Bodie Mountain and Mt. Spock (White Mountain) in the Colville National Forest and the new Virginia-Lily Trail. Another commentor felt that the Nealey Road Viewpoint should have been taken at a point further south on the road.

Viewpoint Photographs

The quality of the photographs in Section 3.16, Scenic Resources, of the draft EIS, was the subject of several comments. It was requested that the mine site be labeled on the viewpoint photos.

4.13 HERITAGE RESOURCES

General

General comments requested minor text or table clarifications, re-illustration of figures, and supplementary detailed information concerning cultural resources or survey methodology. Statements and opinions were made related to cultural resources, tribal interaction, and prehistoric-historic land use in the area of impact.

Traditional Use and Traditional Cultural Properties

Comments were directed at the lack of consideration for traditional subsistence use of usual and accustomed places in the Crown Jewel Project area by Native American peoples.

Treaty Rights and Issues

There were comments addressing Native American treaty rights in the Crown Jewel Project area. These claims to rights of use relate to this region's former inclusion in the north half of the Colville Indian Reservation. Other questions included: "If Battle Mountain Gold succeeds in patenting the properties, this would result in the permanent loss of Treaty rights on those lands. Is it possible for the government to transfer ownership of public lands (patent) when the original indigenous inhabitants retain rights to the use of these properties?"

Other commentors noted that the draft EIS failed to address Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations.

Policy Issues

There were comments which suggested that the Native Americans in the region were not asked to be involved in the EIS process and were not consulted concerning cultural resources by the lead agencies.

Graves and Burials

Some comments expressed concern over the status of grave sites which were identified during cultural resource surveys. Additional comments addressed the potential for Indian burials located in the Crown Jewel Project area and asked if the Native American Graves Protection and Repatriation Act (NAGPRA) is applicable in the Crown Jewel Project area.

Religion

Similar to comments directed at traditional use and treaty rights, these comments focused on the loss of access to the Crown Jewel Project area. There were comments which raised the issue of the Crown Jewel Project's impact on the religion or religious practices of the region's Native Americans. Another question asked if the proposed powerline upgrade would adversely affect the traditional cultural property known as the Hee Hee Stone.

Miscellaneous

There was an opinion that the findings of the Cultural Resource Investigations indicated that scarce research has led to flawed conclusions and that a revised study should include comprehensive

documentation by tribal members. Comments were received which stated that current academic sources, as well as extensive interviews with tribal members, would seem essential in an investigation of Crown Jewel Project impacts. One comment stated that Indian fishing rights in the area need to be presented and quantified. Another asked: "Why were there never any meetings on the reservation?"

4.14 TRANSPORTATION

General

Many comments presented an opinion or view on various aspects of the transportation sections of the Crown Jewel Project draft EIS. In addition, several comments cited typos and the need for minor edits/clarifications in the text.

Hazardous Materials Transport

Many comments expressed concerns regarding potential impacts created by the transport of supplies on the roads along Toroda Creek and through Beaver Canyon. The risk of increased accidents and possible spill events due to the physical conditions/location of these roads was also noted.

Accidents

Comments concerning accidents focused on the assumptions and baseline data used, as well as predicting the number, type, and result of accidents, and magnitude of potential accidents.

Maintenance Responsibilities and Liabilities

Comments were received on the physical/fiscal responsibility for upgrading, upkeep, and maintenance of existing county roads as a result of increased Crown Jewel Project-related traffic. Also, there were questions about who would ultimately pay the costs associated with the cleanup of spills.

Average Daily Traffic

There were comments about both the under-estimation and the over-estimation of traffic impacts. In particular, some comments suggested the construction phase projections were under-estimated when projected over a 12-month versus a 6-month period.

Miscellaneous

There were miscellaneous comments about potential traffic dust impacts, monitoring of transportation mitigation measures (e.g. use of pilot cars, the Proponent's commitment to busing, compliance with speed limits, etc.), and indirect impacts from unemployed job-seekers.

4.15 LAND USE/RECLAMATION

General

Comments focused on text clarifications, typos, and general opinions about the reclamation plans and post-mining land use.

Compliance with Reclamation Regulations

There were concerns raised that the Proponent's plan does not satisfy the minimum reclamation requirements of the Washington Department of Natural Resources (WADNR). Other comments raised

questions about the success of steep slope reclamation and the reclamation of various Crown Jewel Project components using various revegetation techniques and materials.

Loss of Biodiversity, Low Stocking Rates

There were concerns that the revegetation plan did not provide a diversity of native plant species and that the stocking rates for forbs and trees were too low under Alternative B.

Long-Term Reclamation Monitoring

Comments suggested that the draft EIS needed to clarify long term monitoring commitments. These included monitoring erosion, vegetation success, waste rock disposal area stability, tailings embankment stability, and acid rock drainage. Others asked what corrective action plans would be triggered in case of adverse environmental occurrences.

Patenting

There were questions about the patenting process, including land use questions and questions regarding the status of other Proponent mining claims in the area.

Other Comments

Other comments focused on fencing proposals, zero discharge from tailings, justification for the preferred alternative, and water infiltration into the waste rock disposal areas.

4.16 SOCIOECONOMICS

General

General comments addressed topics such as history and future of mining in Okanogan and Ferry Counties, concern that socioeconomic impacts were understated, lost opportunities associated with the "No Action" Alternative A, comparison with a separate fiscal analysis prepared for Proponent, local procurement, and a variety of specific editing corrections or revisions.

Population, Housing & Land Use

Comments covered questions regarding extent of a population influx and associated construction/operations housing needs, current inadequacy of housing and/or land use controls, potential for an active mine to cause some residents to leave, and potential effects on property values and tribal lands.

Employment & Income

There were questions and comments relating to assumed local hire rates. Also addressed were questions regarding mining employment, need for added job opportunities, training programs for employees, use of profits, and effects of eventual mine closure.

Community & Public Services

It was indicated that effects on community and public services were not adequately addressed or documented. Topics of concern included schools, law enforcement, water, solid waste, recreation, roads, electrical power, social and health services, and general effects to unincorporated areas.

Fiscal Effects

Comments covered temporary duration of revenue increases; property tax implications associated with the "No Action" Alternative A; failure to address impacts to local, county, state and federal entities; and suggestions for ongoing financial monitoring or creation of a reserve fund.

Social Values

Questions raised relate to definition of socioeconomic groups, historical versus current social values, retention of Native American hunting and fishing rights, documentation of Chesaw/Highlands community divisions, and the potential role of the Forest Service to ensure "healthy dialogue" in the community.

Quality of Life

A number of comments covered the importance of "quality of life" and environmental protection to the local economy, a desire to place an economic value on natural environment and "quality of life" amenities, the wise use of natural resources, a shift from dependence on natural resource industries, and the need to better account for the high cost and cumulative effects of environmental degradation.

Tourism

Some commentors noted that tourism activity currently is important to the Chesaw/Highlands economy, and that potential losses of tourism associated with the Crown Jewel Project need to be addressed or mitigated.

Health Care

It was stated that "EMTs cannot address the major trauma, respiratory problems, basic health care, and drug and alcohol related services that would be needed by the (Crown Jewel Project) Employees."

Divided Community

Concerns were expressed that the Crown Jewel Project was dividing the community.

Agency Credibility

There were concerns about agency credibility and motivation regarding the Crown Jewel Project.

Domestic Water Supply

What would be the effects of the Crown Jewel Project on domestic water supplies?

Effects on Landfills

What would be the effects on the local landfills from solid waste generated by the community and the Proponent?

Historic Mining

What was the role and importance of mining in the study area?

4.17 ACCIDENTS AND SPILLS

General

Commentors presented opinions or views on possible accidents and spills. In addition, several comments cited typos and the need for minor edits/clarifications in the text.

Effects/Consequences of Release

These comments reflected concerns regarding effects if a spill or accident occurs, the potential for cyanide and other harmful chemicals to enter the environment, potential long term consequences, and financial liability in the event of spills and accidents.

Response and Cleanup

Comments focused on the need for containment designs and contingency plans in the EIS.

Other Comments

Comments referred to a variety of topics including potential decrease in property values if there is a spill, the need for a complete risk analysis, a discussion on cyanide container construction, and a comparison of the proposed Crown Jewel Project to the Guyana tailings facility incident.

4.18 MISCELLANEOUS

General

There were several thousand comments received as "form" letters, post cards, or petitions expressing either support or opposition to the Crown Jewel Project. Other commentors requested text clarifications, cited typos, or expressed opinions.

EIS Content and Preparation

Commentors asked that detailed monitoring and mitigation plans be included in the EIS. Commentors asked that a discussion of the permitting process be included. Questions were asked about regulatory responsibilities concerning EIS preparation and about the relationship amongst the lead agencies, the third party contractor, and the Proponent.

Alternatives and Project Components

Comments were received concerning the alternatives. It was asked "why so many?" Others wanted additional information on all the alternatives. Questions and concerns revolved around tailings pond siting and operation, ore processing methods, mining methods, waste rock disposal area siting, work shifts, blasting schedules, etc.

Regulatory Compliance

It was asked if the Crown Jewel Project was in compliance with all Washington State and federal regulations, including the Washington Metal Mining and Milling Operations Act, NPDES regulations, storm water controls, air quality regulations, on-site sewage disposal requirements, and dangerous waste regulations.

Future Project Expansion

There were concerns about the future expansion of the Crown Jewel Project. Included were questions about additional Proponent mining claims and the possibility that future adjacent mines would ship ore to the Crown Jewel Project for processing.

Other Comments

Other comments included concerns about wetland impacts on Nicholson Creek, cyanide degradation during winter months, liner life, selection of supply vendors, water for dust suppression, and the Summitville Mine (Colorado) incident.

Policy Issues

There were several comments directed to the WADOE and Forest Service concerning regulatory policy.

4.19 MONITORING

General

These comments expressed general opinions about the proposed monitoring plans, requested text clarifications, and cited typos.

Responsibility and Oversight of Monitoring

Comments were received questioning whether the agencies or the Proponent would conduct monitoring. If the Proponent conducts the monitoring, several questions centered on how the agencies would oversee such monitoring. There was a question whether the Proponent would fund any independent agency or organization to conduct monitoring. There were questions regarding the final authority on approval of monitoring plans and who would decide on the placement of various monitoring stations. It was asked, "who would be responsible for setting compliance levels, and if monitoring would continue after release of any performance securities for the site?"

Monitoring Plan Details

There were comments concerning the details of monitoring, including the proposed length of monitoring, planned quality assurance and quality control measures, monitoring locations, monitoring levels that would trigger action or some type of mitigation, and specific questions on various monitoring aspects of the Crown Jewel Project. Other comments posed questions regarding monitoring programs for water quality, stream flow, air, reclamation success, soil, tailings facility, wetlands, fisheries, dam maintenance, the frog pond, and waste rock disposal area(s).

4.20 BONDING/PERFORMANCE SECURITIES

General

Many comments expressed opinions or views on the performance securities for the Crown Jewel Project; some cited the need for minor edits or clarifications to the text.

Performance Security Details

There were comments regarding the lack of details for performance securities for reclamation and potential remediation of the Crown Jewel Project. Questions included what would be the amount of the performance security or securities, what types of performance security or securities would be acceptable, who would complete calculations for performance security or securities, what agencies

would be responsible for holding the performance security or securities. There were additional comments on how the performance security or securities would be updated to keep pace with inflation as well as questions regarding the "trigger" mechanisms for forfeiture of performance security or securities. Some individuals asked who would perform the reclamation or the remediation in the event of a forfeiture of a bond. There are also questions about how long performance security or securities would be held by the agencies before release.

Proponent Bankruptcy and/or Site Abandonment

There were comments regarding the possible bankruptcy of the Proponent and what guarantees would be in place to prevent the site from becoming a "Superfund" site. There were some comments that asked how regulators in Washington would prevent the Summitville Mine experience in Colorado from occurring at the Crown Jewel Project.

Miscellaneous

The miscellaneous comments included: who do we sue when our well is impacted and what rights do Canadian citizens and property owners have in the event of an environmental problem in Canada? It was also stated that the Proponent should be responsible for reclaiming the damage which has already occurred.

4.21 MITIGATION

General

Commentors requested minor text clarifications and expressed general opinions about mitigation.

Suitability and Effectiveness of Mitigation

There were questions on the "soundness" of mitigation measures proposed for the Crown Jewel Project. Some commentors wondered if these mitigation measures would work and be effective, and, if not, what action would the agencies pursue if mitigation measures prove to be ineffective.

Details of Mitigation

There were comments requesting more detail on mitigation. Additional mitigation details were requested for final pit water quality, visual resources, accidents and spills, sediment control, and waste rock storage. There were questions regarding the timing of mitigation. For example, there was a question whether wetland mitigation would begin prior to mine disturbance. Other comments stated that contingency plans were needed in case of disasters.

Other Comments

There were questions asked about who would pay for any required clean-up, how would the natural flora be replaced, and what would be a safe level of cyanide.

Policy Issues

There were concerns about the effectiveness ratings for aquatics and wetlands mitigation, as well as other mitigation policy aspects of the Crown Jewel Project.

4.22 CUMULATIVE EFFECTS

General

There were comments received requesting clarifications and minor revisions to the text.

Effects on Hydrology

There were a variety of comments, concerns, and questions on the cumulative effects of the Crown Jewel Project, in particular on hydrology and water rights.

Future Mining

There were comments focused on the potential of future mining in the region. Some commentors were concerned that, if the Proponent is allowed to proceed with the Crown Jewel Project, many other mining companies would move into the region and develop mining and milling operations.

Miscellaneous Cumulative Effects

Other comments, concerns, and questions addressed the cumulative effects on local solid waste facilities, socioeconomic conditions, and habitat loss from logging.

5.0 LIST OF RESPONDENTS TO THE DRAFT EIS

This section provides a listing of the individuals, organizations, government agencies, and elected officials who commented on the Crown Jewel Project draft EIS. There were over 4,500 letters, forms, petition signatures, or oral speakers that submitted comments on the Crown Jewel Project draft EIS. In some cases, names and addresses were illegible. Thus, this listing may be incomplete, have the last name only, first name only, or misspelled names.

5.1 FEDERAL AGENCIES

U.S. Army Corps of Engineers

Erkel, Tim

U.S.D.I. Bureau of Land Management

Fisher, James

U.S. Environmental Protection Agency

Parkin, Richard

U.S. Bureau of Mines (department abolished in 1995)

Norberg, John

U.S.D.I. Bureau of Indian Affairs

Socula, Maurice

U.S.D.I. Office of The Secretary

Polityka, Charles

Federal Officials

U.S. House of Representatives - Hastings, Doc
U.S. House of Representatives - Nethercutt, George
U.S. Senate - Gorton, Slade

5.2 WASHINGTON STATE AGENCIES

Washington Department of Fish and Wildlife

Friesz, Ron

Washington Department of Natural Resources

Lasmanis, Raymond

Washington Department of Community Trade and Economic Development

Griffith, Gregory

Washington State Officials

State of Washington House of Representatives - Chandler, Gary
State of Washington House of Representatives - Ballard, Clyde
State of Washington House of Representatives - Schoesler, Mark
State of Washington House of Representatives - McMorris, Cathy
State of Washington House of Representatives - Sheldon, Tim
State of Washington House of Representatives - Stevens, Val
State of Washington House of Representatives - Delvin, Jerome
State of Washington House of Representatives - Koster, John
State of Washington House of Representatives - Thompson, Bill
State of Washington House of Representatives - Fuhrman, Steve
State of Washington House of Representatives - Foreman, Dale
State of Washington House of Representatives - Elliot, Ian
State of Washington Senate - Strannigan, Gary
State of Washington Senate - Swecker, Dan
State of Washington Senate - Snyder, Sid
State of Washington Senate - Seller, George L.
State of Washington Senate - Haugen, Mary Margaret

5.3 COUNTY AGENCIES

Chelan County - Marcellus, Earl - Commissioner
Ferry County - Windsor, Ed - Board Of Commissioners
Ferry County - Hall, Jim
Ferry County Noxious Weed Control Board
Okanogan County - Thiele, Ed
Okanogan County Council For Economic Development - Nielson, Ron
Okanogan County - Higby, Spence - Commissioner
Okanogan County Department of Public Works - Nott, Joseph
Okanogan County Public Utility District - Warner, Harlan
Okanogan County Sheriff - Weed, James
Pend Oreille County - Mckenzie, Karl; Hanson, Mike - Board of Commissioners
Wallowa County - Boswell, Ben - Commissioner (Oregon)

5.4 MUNICIPAL OFFICIALS

Town of Tonasket - Fancher, Tom - Mayor
City of Oroville - Lane, Don - Chief of Police
City of Oroville - Walker, Jimmie D. - Mayor

5.5 TRIBAL GOVERNMENTS

Colville Confederated Tribes - Dick, Matthew
Colville Confederated Tribes - Louie, Deb - Councilman
Colville Confederated Tribes - Passmore, Gary

5.6 PRIVATE ORGANIZATIONS

Agricultural Community Alliance - Forrester, Dick
Blue Ribbon Coalition - Cook, Adena
Center for Environmental Law and Policy - Paschal, Raebel
Columbia River Bioregional Education Project - Gillespie, Stuart & Geraldine Payton
Columbia River Valley Dist Council of Carpenters - Johnson, Jerome
Colville Indian Environmental Protection Alliance - Gabriel, Gere
Common Sense Resource League - Hurst, Bob

Common Sense Resource League - Dart, Richard
Concerned Citizens For Responsible Mining - Brown, Carolyn
Ferry County Action League - Anderson, Anne
Friendship Ministries - Blackmore, George
Kettle River Conservation Group - Peterson, Mike
Knob Hill Stock Assn. - Kurtz, Dale
Laser Inc - Wilson, Jim
Lazer Inc - Williams, John
Methow Valley Resource Alliance - Maples, Jean
Mineral Policy Center - Patric, William
Molson Grange - Dart, Richard
National Parks and Conservation Association - Griedman, Gregory
Natural Resource Defense Council - Wald, Johanna
Northwest Forestry Association - Dick, Bob
Northwest Mining Association - Olson, Tim
Northwest Ecosystem Alliance - Friedman, Mitch
Northwest Mining Association - Urnovitz, R.K. Ivan
Okanogan County Citizens Coalition - Shaver, John
Okanogan County Farm Bureau - Umberger, John
Okanogan Highlands Alliance - Dipretoro, Richard
Okanogan Highlands Alliance - Rehanek, Woody
Okanogan Mining Association - Woolschlager, Hawley
Okanogan Resource Council - Lawrence, Bonnie
Okanogan Wilderness League - Bernheisel, Lee
Okanogan Wildlife Council - Kirchner, Michael
Okanogan Wildlife Council - Christoph, Mark
Okanogan Wildlife Council - Phillips, G.J.
Okanogan Wildlife Council - Sylwames, Roger E.
Okanogan Wildlife Council - Bowes, Jerry
Okanogan Wildlife Council - (name not legible)
Okanogan Wildlife Council - Hahn, Wayne
Okanogan Wildlife Council - Norman, Howard
Okanogan Wildlife Council - Stone, Sr., Melvin R.
Okanogan Wildlife Council - Mason, Jeffrey
Okanogan Wildlife Council - Howell, Rick
Okanogan Wildlife Council - Swayze, Carlos
Oregon Natural Resources Council - Valantine, Diane
Pacific Crest Biodiversity Project - Dodge, Tad
Rivers Council of Washington - Graham, Bill
Schee-Ranium Mines, Inc.
Sierra Club, Cascade Chapter - Lawler, Mark
Sierra Club, Rocky Mt. Chapter - Berman, Jeffrey
Sierra Club, Black Hills Group - Brademyer, Brian
Spokane Audubon Society - Alonso, Joyce
Washington Environmental Council - Cantrell, Dan
Washington Native Plant Society - Davison, Jerry
Washington State Building and Construction Trades Council - Dilger, Bob
Washington State Cattlemen's Organization - Jellison, Bert
Washington State Cattleman's Association - Osmoson, Darrell
Washington State Farm Bureau - Jocobs, Don
Washington State Grange - Joy, Bob
Washington State Grange - Keller, Janelle
Washington State Grange
Washington State Log Truckers Conference - President - Moore, Bill
Washington Wilderness Coalition - Currie, Cathie
Western Shoshone Defense Project - Sewall, Christopher

Western Mining Action Project - Flynn, Roger
Zaishta Church - Reverend Two Eagles

5.7 GENERAL PUBLIC - PRIVATE INDIVIDUALS AND BUSINESSES

Aasen, James
Abee, Robin
Abernathy-Robinson, Kathy
Abraham, Eric
Abrahamson, Alfred & Margaret
Acord, Jack L.
Adams, Owen
Adams, Warren
Adams, Wayne & Cleta
Adamsen, Wendy
Adkins, Bob
Adkins, Clinton
Adkins, Mrs. Pat
Adler, Karen
Adrienne, Ross
Agee, Darren
Aguilar, Anthony
Aher, Jim
Ahlwardt, Sam
Ahrens, Jodi
Aiken, Ralph
Aiken, Ted L.
Ailport, John
Alberg, Mike
Alberts, Gene S.
Albrecht, Bill & Heidi
Aldous, Alan
Alexander, Carol
Allard, Gary
Allen, Gary
Allen, Tony
Allen, Ursula
Allstot, Victor
Allyn, David
Almquist, Stuart
Almquist, Francis
Almquist, Kathryn
Altmiller, Clara
Alumbaugh, Verle
Alvarez, Oscar R.
Ambrose, Allen
Ames, Allison
Ames, Hugh J.
Amos E. Coffelt & Assoc.,
Amundsen, Susan
Anders, Nicholas
Andersen, Karen
Anderson, Anne
Anderson, Barbara
Anderson, Bob
Anderson, Chris
Anderson, Daniel
Anderson, David
Anderson, Dennis & Rosalie
Anderson, Eileen
Anderson, G.
Anderson, Gary
Anderson, Gary L.
Anderson, Harold
Anderson, Jerry & Jonnie
Anderson, John
Anderson, John D.
Anderson, Jonas & Sue
Anderson, Karolina
Anderson, Minot
Anderson, Neil
Anderson, Pamela
Anderson, Pat
Anderson, Paul
Anderson, Stephen
Anderson, Todd
Anderson, Wendy
Anderson, William F.
Andreas, Scott
Andres, Leah
Andres, Tammy
Andrew, E.
Andrew, Teresa L.
Andrews, Fletcher
Andrews, Gary
Andrust, John
Aner, Randal
Angell, Michael A.
Angell, Michael & Sherrill
Anglin, Mike
Anvil, Shirley
Archuleta, Pete
Arepa, Barbara
Armour, Brad
Armour, Stephanie
Armstrong, Jeffery
Arnett, James
Arns, Bill
Arthur, Bill
Ashley, Larry
Ashley, Nancy
Ashmore, Steve
Ashton, Arlene
Asmussen, Daryl
Asmussen, Jan
Assink, Nellie
Atkinson, Ursula
Attwood, Mr. & Mrs. Ray
August, Patricia
Auguston, Herbert C.
Austin, Jeff
Ayers, Dara
Ayers, Tom
Baca, Joe
Bachar, Joel
Bacon, Francis
Bagwell, Barney
Bagwell, Melvin S.
Bailey, David L.
Bailey, Gerald
Bailey, Ramona
Bailey, Robert
Bailey, Walter
Bailey Iii, Joseph M.
Baine, Robin
Baines, Olga
Baird, Mike
Baka, Eric
Baker, Barbara
Baker, C.L.
Baker, Christine
Baker, Harry
Baker, Jessica
Baker, Kris
Baker, Marian L.
Baker, Patricia
Baker, Perry E.
Baker, Raymond
Baker, Richard E.
Baker, Sally
Baker, Sibyl L.
Baker, Susan
Baker, Warren
Balanos, Don
Balderson, Aleda
Baldrige, Anne
Baldwin, Dina
Baldwin, Lynne
Baldwin, Marion
Baldwin, Marion & Ila
Baldwin, Richard L.
Baldwin, Troy
Ball, Alice
Ballinger, Bonita

Ballou, Mary L.
Ballow, Edward E.
Baltzley, Barbara
Baltzley, Charles
Banks, Kenneth
Banta, William
Barbre, Paul
Bardwell Logging
Bard·vell, Rodger
Bardwell, Sid
Barker, Bruce & Freeda
Barker, George
Barker, Jason
Barker, Jeffrey
Barker, Winnifred
Barnes, Bill & Beth
Barnes, Bob
Barnes, Charlene
Barnes, Jerry
Barnes, Jessie
Barnes, Nancy
Barnes, Wayne
Barnett, Joanie
Barnett, Luis
Barnett, Mary
Barnhart, John
Barnhill, Clifford C.
Barr, Scott
Barrat, Crescent
Barrett, Floyd
Barrett, Jo
Barstad, Mark
Bartels, Jerry
Bartosek, Karin
Bartosek, Trudy
Baser, Don
Bauer, David
Bauer, Forrest
Bauer, Robert
Baumgardner, Patti
Baumgardner, Raymond D.
Bay, Carl
Bayer, Doug & Cheri
Baz-dresch, John
Beach, Joan
Beach, River
Beachel, Glen
Beagles, Gary W.
Bealon, Mary
Beatty, Donald
Beaucharp, Kevin
Bebber, Emily
Beck, Harry Jr
Beck, Rick
Becker, Dave
Becker, Dennis
Becker, Nick
Beckman, Gary & Eileen
Bedord, Lewis R.
Beebe, Kerry
Beebe, Linda J.
Beedie, Kari
Beehner, Bill
Beeman, Bert
Beeman, Chauncey
Beeman, Fred L.
Beeman, Geraldine
Beeman, Jack
Beener, Craig
Beeple, Ernest
Beers, Jennifer
Begnal, Thomas
Beierle, Carole
Beierle, Ray
Belbrai, Arturo
Belknap, Bob
Bell, Alan
Bell, Celeste
Bell, Marsha
Bell, Patty
Bell, Randy
Bell, Ross
Bell, Vaughn C.
Belling, William
Benbold, Harmon
Bencich, Nancy
Bender, Rick S.
Benedict, Mara
Benefield, Dan J.
Bengtson, Don
Benich, Jesse
Bennett, R. Dana
Bensing, Alberta
Bensing, Clifford
Bensley, J.M.
Bentley, Howard
Bentley Jr, John
Benton, Craig H.
Benzing, Cathy
Berda, Cyril
Berdan, Frank
Berg, Charlie
Berg, Forest
Bergen, Linda
Berger, Frieda
Berger, Molly & Adam
Bergh, Arthur R.
Bergh, Helene
Bergh, Jeff
Bergh, Kirsten
Bergman, Lyn
Bergstrom, Brian
Berio, Owen
Berney, G. E.
Berry, Joe & Diane
Berry, Parker
Berry, Stephen R.
Berstrom, Lee
Bertrand, Claudine
Bertrand, Dan
Beshey, Robert A.
Bevier, Fran
Bevier, Judy
Bevier, Roger
Beyers, Ralph & Leona
Bierwagen, Gordon
Biggs, Richard
Biladean, Ted
Biladeau, Marla
Billberg, Pat
Bingham, C.L.
Birch, Al
Birch, Jacqueline
Birch, Lyle
Bittrick, John
Bivens, Eddie
Blackman, Lawrence B.
Blackmore, George
Blackmore, Thelma
Blair, James
Blair, Ken
Blake, James
Blake, Linda
Blaney, Paula
Blaney, Robert
Blank, James
Blankenship, James C.
Blankenship, Larry
Blankenship, Matt
Blankenship, Max J.
Blaski, Paul F.
Blenck, Tony
Blessing, Jack
Bley, Nathalie
Bliss, Carman
Bloom, Colin
Bloomfield, Michael
Blue, Stella
Bodien, Rosie
Boechler, Joseph
Boehn, Kathleen
Boerner, Ron
Boersma, Jim
Boesel, Marcy
Boesel, Mike
Bogue, Michael
Bohinann, Ted
Bokaw, Robert

Bokma, Alan
Boldman, David
Bolkrom, Clarence L.
Booker, Gary
Bordwell, Richard
Borst, Douglas
Boseck, Mike
Bossard, Stan
Boswell, Claudia
Bouar, Harold
Bouer, Cindy
Boulton, William
Bounton, Joe
Bourn, Mike
Bourth, Gloria
Bouta, Charlotte
Bouta, Dale
Bouta, Larry
Bouta, Villiani
Bowe, Carol & Ron
Bowe Construction
Bower, Chris
Bowes, Gerald G.
Bowes, Jerry
Bowles, James W.
Bowles, Tim
Bowling, Chris
Bowman, Tony
Bowmer, Stewart
Box, Lou
Boyce, Barry
Boyd, Greg
Boyer, Joyce
Boyer, Tim
Brack, Eric
Bradbury, James
Bradford, Susann
Bradley, J.C.
Bradley, Robert
Bradley, Robert L.
Brady, Tomas
Braithwaite, Samuel
Branam, George
Branche, R.J.
Brandon, Wesley
Brandt, Fern
Brannon, Jim
Brannon, John
Branson, Jennell
Brashear, Jill
Brattain, Dorothy A.
Braummeling, Sherry
Braun, David
Braunschweig, Jeff
Brazeau, Steve L.
Brazle, Dolly
Brazle, Warren
Brees, Emily
Bremicker, Cloud
Bremmeyer, Bill
Bremner, Arthur
Bremner, Esther R.
Bremner, Fred W.
Bremner, Jaki
Bremner, Terra
Brender, Jeff
Bresee, Gerald
Breshears, Henry
Breshnahan, Rena
Breslin, Brian
Brevik, Ray
Brewster, J.P.
Bride, Vivian
Briggs, Ernie P.
Briggs, Howard
Briggs, Richard E.
Bright, Ken
Brisbois, Gene
Brittain, Michael
Britz, J.V. & Muriel
Brock, Gene
Brockhoff, Mike
Broderson, Dustin
Broemmeling, Rhonda
Brookfield, Richard
Brooks, Jonathon
Brooks, Lyle
Brooks, Richard
Brower, Troy
Brown, Bret M.O.
Brown, C. W.
Brown, Clinton L.
Brown, Columbus
Brown, Cory
Brown, Dan L.
Brown, Deborah E.
Brown, Dennis
Brown, Don
Brown, Edith
Brown, Garn A.
Brown, Gary
Brown, George
Brown, Jane
Brown, Janis
Brown, Jayne
Brown, Ken & Barb
Brown, Marion G.
Brown, Ron
Brown, Scott
Brown, Sonny
Brown, Tami
Brown, Twila
Brown, Vernon
Brownson, Dianne
Bruggman, Ed
Brunell, Don
Bryan, Christina
Bryan, Cody E.
Bryan, Les
Bryan, Leslie
Bryan, Shirley & John
Bryant, Elizabeth
Bryant, Erin
Bryant, Sam
Buchanan, Richard
Buchannan, George B.
Buchert, Ed
Buchert, Evangelene
Buchner, Gerald
Buck, Bonnie
Buckus, Bary
Bucond, Kandee
Buddington, Andrew
Budsey, David
Buell, Jack H.
Buell, Shane
Buitrago, Liz
Bunch, Darrel
Bunch, David
Bunch, Jim
Bunch, Judy
Bunson, Mick
Burbank, Arika
Burbank, Celeste
Burbank, Harold & Rosa Lee
Burbank, Jacob
Burbank, Shelle
Burchett, Floyd
Burchett, Wayne
Burgess, Bill
Burgh, Brian
Burke, Bob
Burke, Constance
Burke, Joseph
Burkhart Sr., Aaron
Burks, Flora Faye
Burks, John C.
Burlen, David
Burnett, Brian
Burnett, Joseph
Burnett, William D.Burns
Burns, David
Burns, John
Burns, Luella
Burns, William L.
Burnside, Chris
Burnside, Jim
Buroken, Michael

Burrill, Bill A.
Burris, Rex D.
Burt, Steven W.
Burton, Denise
Burton, F.J.
Burton, Pete L.
Burwell, John
Bush, Lorraine
Bussell, Cal
Bussler, Duane
Butcher, Charles
Butcher, Jeff
Butler, Ben
Butler, Garold
Butler, Jeff
Butler, Robert
Butler, Rusty
Butschke, Cheryl
Buttle, Kim
Bye, Butch
Bye, Don
Byrd, Donald R.
Byrd, Margaret
Cabbage, Joe
Caddy, Catherine M.
Caddy, James E.
Caddy, Rick
Cadieu, Dale
Cagle, Merrell W.
Caldwell, William
Calhoon, Kenneth
Callander, Terry D.
Calligo, Gamilla
Calus, Barbara
Calvert, Thomas
Cameron, Arthur L.
Cameron, Donald E.
Cameron, Erna
Cameron, Larry
Cameron, Robert
Cameron, Robert
Campbell, Charlie
Campbell, Lloyd
Campbell, Minnie
Campbell, Richard
Campbell, Robert
Campbell, Ronald W.
Cannon, Henry
Cantaline, Luella
Canterbury, Joel C.
Canthour, Leanne
Cantlon, Erik
Caple, John
Carden, Gary
Carder, Kathleen
Carlson, A.
Carlson, Robert
Carnett, Carmen
Carpenter, Allison
Carpenter, Frank G.
Carpenter, Jody
Carpenter, M. R.
Carr, Delaney
Carrasco, Joe
Carrel, Chris
Carroll, Denny
Carter, Bruce
Carter, Cloyd
Carter, Dorothy
Carter, Homer
Carter, Renee
Carter, Sandy
Cartwright, David T.
Casebier, James A.
Casey, Helen
Casey, Paul
Casey, Ray
Casey, Tim
Castiglia, Betty J.
Castona, Robert
Castrich, Elroy
Cates, Michael
Catlu, Julie A.
Caton, Tom
Caveness, James
Caves, Milton J.
Caves, Shirley
Cebanno, Kenneth
Certain, Lila
Certain, J. Dave
Chamberlain, Galen
Chamberlin, Bill
Chamberlin, Jim
Chambers, Joyce
Chancey, William, Ruby
Chapman, Richard
Chappel, Mary
Charbonneau, Carl
Charbonneau, M.
Charland, Todd
Chase, Florince
Chase, Harvey
Chastans, Edward
Chavez, Nick
Cheatad, Leo
Cherrington, Ken
Chestnut, Burt
Chiechi, Dolores
Chiechi, Douglas
Chiechi, Michael, Lori
Chiechi, Vito
Childers, Don
Childress, Beatrice
Christensen, Dustin
Christensen, Margaret
Christensen, Shirley
Christensen, Susan
Christensen, Ted
Christensen, Todd
Christenson, Carol
Christenson, Randall R.
Christian, James W.
Christie, Jr., Bruce
Christoph, Jerry
Christopher, Andy
Chuck, M.
Chukinee, Garry
Chun, Soo
Chunn, Murray
Churbermeau, Carl
Church, Liisa
Ciais, Andre J.
Cirtis, William N.
Cisneros, Grace
Claphan, Bobbie
Clark, David R.
Clarke, Dale
Clarkson, Betty L.
Clarkson, James & Lisa
Clarkson, Kenneth J.
Claussen, Eric
Claussen, Kimberzly
Clayton, Alicia
Cleek, Lawrence & Pat
Clem, Joy
Clemen, Howard
Cleuh, Jeffery
Clifford, Bill
Clift, V.S.
Cline, Fred
Cline, Judith Jean
Cline, Susan
Cline Iii, Frank W.
Clough, David R.
Clough, Lesla
Clough, Merle A.
Cloutier, Bruce
Coaxum, Darryl
Cochran, Carleen
Cochran, Phil
Cochran, William
Cockle, Roy
Coffelt, Amos
Coffey, Shelly
Cohee, Joseph
Colberg, Terry
Colbert, Daniel C.
Colbert, Ray

Cole, Bruce
Cole, Carla
Coleman, Michael
Coleman, Susan
Coleman, Tim
Coles, Thomas
Coller Jr., Richard L.
Collier, Brad
Collin, Colan
Collins, Don
Collins, Larry
Collins, Michael
Collins, Ryan
Collyer, Nathan
Coltrin, Sid
Columbia, Dana L.
Coly, Ted
Combs, Donnie
Combs, E C
Combs, John Jr
Combs, John W.
Combs, Sally
Comeau, Vernia S.
Coneau, Pete
Coney, Marilyn
Connell, Shawn
Conner, Gary
Conner, Skip
Conner, Teresa
Conner, Sr., James L.
Conners, Harry K.
Connor, Jerry
Cook, Fred
Cook, Jim
Cook, Marie
Cook, Regina
Cook, Stan
Cool, Bruce
Coombes, Charlotte
Coon, Walter B.
Cooper, Carmella
Cooper, Karen
Cooper, Richard & Carmela
Cooper, Travis
Corbaley, Daniel L.
Corbet, Jack D.
Core, Ira
Corey, John
Corn, Kay
Cornelius, Moriah
Cornell, Dennis
Cornwall, Corda
Cornwall, David
Cornwall, Robert
Cornwall, Ruth
Cornwall, Saleta
Cornwall, Thelma
Corp, Guy
Corsa, Amoreena
Cortez, Antonio
Cortez, Victor
Corwall, Duane
Corwin, Douglas H.
Cosiento
Cosletela, Roger & Sue
Cotter, Robert
Cotter, Stephen
Cottonwoods Motel
Couelt, Darrell L.
Coultas, Dale
Coulter, Joe W.
Couse, Clifford
Couse, Shirley
Cousins, James C.
Cowardin, John C.
Cowardin, Mike T.
Cowley, Anne
Cowley, J.L.
Cowon, Rachel
Cox, Nells
Coxeis, William D.
Coyle, Kenneth
Crabenstein, Christa
Crackel, Dan
Cramer, Steve
Cramer, Tom
Crampton, Susan
Crawford, Claudia
Crawford, Sibyl
Crawford, Susan
Crawford, Thomas
Creegan, Cindi
Creegan, Jim
Crenshaw, John E.
Creveling, Edna
Cribby, Paul
Critchlow, Mary Jane
Crittenden, Mariah
Croll, Rhea
Crollard, Dave
Cromwell, Kim
Cromwells Used Cars
Crooks, Phillip
Cross, Darren
Croweln, Eric
Cruise, Ceila
Cruse, N.M.
Cruthers, Brent D.
Culbertson, Tricia
Cullier, Laurence
Culver, R.B.
Cunningham, D.E.
Cunningham, Judith L.
Cunningham, Shara
Curdie, David
Curdie, Ella
Currie, Cathie
Currie, Donna
Currin, Robert
Curtis, Lloyd
Curtis, Ruth W.
Curtis, Sheryl
Cusick, John O.
Cutchie, Jack
Cyr, Roger M.
Dagnon, Hal
Dahcquist, Norman
Daignault, Roger R.
Dailey, Sonnia Hall
Dally, Brett A.
Dalzell, Turii
Dammam, Fred
Dammann, Fred & Nancy
Dammolee, Mike
Daniel, Rajan
Daniels, Cynthia Sue
Daniels, Jerry
Danntree, Douglas & Marcella
Hall-mcmurtrie
Darnell, Robert
Darr, Allan B.
Dart, John
Dart, Phillip
Dart, Richard
Daueber, Lynn
Daugharty, Dale
Daust, L. R.
Davenhall, Matthew
Davey, Gary
Davidson, James
Davidson, Loren
Davis, Alice M.
Davis, Ben
Davis, Chase
Davis, Dale G.
Davis, Dana
Davis, Donald B.
Davis, Donald A.
Davis, Gary
Davis, Greg
Davis, Jack
Davis, Karin
Davis, Kevin
Davis, Lisa
Davis, Mary Lou
Davis, Morgan
Davis, Sam
Davis, Scott G.

Davis, Sidney
Davis, Terry
Davis, William
Davison, David
Dawson, John
Day, John
Day, L.M.
Day, V. L.
Dchutz, Karen
De Noyer, Carl
De Noyer, Ida Mae
De Yonge, Jack
Dearborn, Nick
Debells, Frank
Debord, Dan
Debra, Ted
Decker, Dan
Dedmotley, David
Degerstrom, Neal
Deglee, John
Dehart, Kurt
Delancey, Melbert D.
Delby, Wendy
Deleo, Tim
Delfeld, Billie
Delong, Glen
Deloss, Nicole
Delsignore, A.
Dempsey, Ken
Denaney, Roger
Denis, Greg
Denney, Don & Jan
Dennis, Scott
Deponty, B.B.
Dermott, John
Desautel, Joe
Desjardens, Rebecca & John
Detro, Marguerite
Detro, Russel
Detweiler, Mary
Devaney, Ken
Devine, Brenda
Devlin, Bary
Devo, Rocky
Devon, Dale
Devon, Judy & Larry
Dewitt Ii, Larry
Dial, Vega
Dick, Kenneth R.
Didra, Henry
Didra, Jo Ann
Diehl, Charlie
Dihger, Robert
Dildine, Tom
Dills, Lynn
Dinkins, Vicki
Dirks, Darcy
Dirks, Darrell
Dixon, Donald
Dixon, Gary
Dixon, June
Dobson, Kenneth
Dodge, Theodore
Doelling, Christine
Doherty, James
Dolly, Brett A.
Donaldson, Genna
Donaldson, James
Donaldson, Janna
Donaldson, William K.
Doner, Gerald Riggs
Doner, Susan
Doran, Dan
Doremus, Llyn
Dorsey, James
Doucett, John
Doucette, Gilbert J.
Dougherty, Gary
Douglas, Jack
Downard, Jerry
Downard, Toni
Downey, Mike
Doyle, Eldon
Draggoo, C.
Draggoo, Richard B.
Dragnich, Larry
Dragnich, Nick
Dragnich, Vivian
Drake, Cedar
Draper, Louis
Drapnuii, Louie
Dreaming, Dolphin
Dress, Donetta
Drever, Margie
Drinkard, Aron
Drinkard, Jack
Drummond, Barbara
Drummond, Monte
Drury, Brooke
Duchow, Carl
Duchow, Mrs. Carl
Ducote, Danielle
Ducote, Rachel
Dudley, Bradford
Dull, Thomas & Evelyn
Duncan, Ginger
Duncan, J.G.
Duncan, James
Dunham, Dorothy
Dunkelberger, Harris
Dunn, Jerald A.
Dunn, Lois
Dunn, Rosalie M.
Dunning, Dean
Dunoskovic, Krista K.
Durbin, Mike
Durham, Al
Dusenberry, Susan
Dwight, Vern
Dyker, Richard
Eader, Jerry
Eads, Andy
Eagle, Mary
Eagle, Jr., Leonard
Eagles, Two
Earlscourt, Skip
Early, Shelly
Ebisch, Jim
Eckenburg, Max
Eckley, Chris
Ecklon, Shauneen
Eder, Larry
Eder, Lynn
Eder, Terri
Edmonds, Dayton
Edmonds, Taleah
Edwards, Craig
Edwards, D.M.
Edwards, David
Edwards, Ralph
Egbert, William
Eggert, Sharon
Ehlers, George
Ehlers, Jay M.
Ehnis, Rick A.
Eich, Dan & Maria
Eichler, John
Eidukas, John
Eiffert, James
Eisenberg, Jossie
Ellers, Carl
Ellingson, S.D.
Ellington, Audra
Ellington, Ryan
Elliot, Jeremy
Ellis, John W.
Ellis, Norman A.
Ellis, Tom R.
Elting, Amanda
Elvin, Judy
Embrysk, Stanley L.
Embysk, Lee
Emerrich, Martin
Enbysk, Terron & Lee
Engel, Deja Leah
Engel, Elan
Engel, Mary
Engel, Reed H.

Engeland, M. W.
Engelbretson, Jackie
Engle, Don
Engle, Mary & Reed
English, Chris
English, Delmer
English, Steve
Engstrom, George E.
Engstrom, Vivian
Engstrom, Wesley
Ennis, Pat
Ennis, Susan
Enpstrom, George
Epley, Georgina
Epperson, Jeff
Erb, Mike
Erb, Robert
Erbs, Steve
Erdman, Coreena
Erickson, Curt & CJ
Erickson, Judy
Erickson, Ron
Espenhorst, Eric
Ethberg, Mitch
Evans, Chester
Evans, Jim & Carol
Evans, Milford
Evans, Paul
Evans, Susan
Evans, Walter J.
Evans Auto Rebuild
Evant, Joseph
Evarano, Anna
Everhart, John
Evesland, Helsner
Evesland, Peg
Fagan, Mike
Faircloth, Leon
Fancher, Ryan
Faragher, Mary
Farland, Lawrence
Farley, Bill
Farley, John
Farrar, Jeffrey
Farrester, Barbara
Farrester, Dave
Faulkner, M.D.
Faulks, Delmar
Fearter, Ira
Federspiel, Christine
Fedrespiel, Ralph
Fee, Roy
Fegarda, Jose
Fein, Matthew
Feldman, David
Feldman, Mark
Felix, Kathy
Felkosky, Joe
Felmley, Drew
Felmley, Robert
Felmley, Vivian
Felzien, Ray
Ferdette, Jean
Ferguson, Nathaniel
Ferguson, Roger A.
Ferrall, James H.
Fewkes, Casey
Fictitious, Luke
Fife, Dean
Fife, Debbie
Fike, Justin P.
Finch, James
Fine, David D.
Finley, Daisy
Finley, Ronald
Finnell, Alfred F.
Finnell, Floretta R.
Finnigan, Timothy
Finsen, Betty
Finsen, Jack
Finsen, Joseph
Firpo, Leonard & Darlene
Fischer, John S.
Fish, James
Fisher, Clair
Fisher, Denise
Fisher, Jason
Fisher, John
Fisher, Peggy L.
Fisher, Thomas W.
Fisk, Ken
Fitzpatrick, Dan
Fitzpatrick, Melvin L.
Fitzpatrick, Timothy A.
Fitzthum, Julia
Fixer, Newton
Flajole, Matthew
Flemming, Annabelle
Fletcher, Jean
Fletcher, Mike
Fletcher, Wayne
Flora, Connie
Flores, Guadalupe
Flores-pacha, Michele
Flores-pacha, Shelly
Flory, Bridget
Flynn, Joseph
Flynn, Thomas
Fogley, Mike
Folkes, Harry
Fonping, Linda
Ford, Jim
Foreman, Leah
Forest, Ron
Forney, Merlin W.
Forrester, Jayce
Forsman, Ed
Forthun, Leland
Forthun, Leona
Foss, Clayton
Foster, Shanta
Foster, Warren
Fouraker, Eugene
Fowler, Ruth
Fox, Connie
Fox, Jay & Le
Fox, Pete
Fraizer, Gail
Frank, George
Frank, Jess
Franklin, Byron
Franklin, Eric
Frankos, Coletba
Frantz, George
Frantz, Iva Mae
Fraser, Raymond D.
Frazier, Evelyn
Frazier, Jeff
Frazier, Roy
Frazier, T.R.
Frazzell, Doug
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Freeman, Sandra
Freese, Nancy
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Freudenstein, Tom
Frey, Carla
Fridley, Carol
Fridley, Ray A.
Friedbauer, Karen
Friedbauer, William
Fritz, Arlen
Fromm, Jack L.
Frue, Chris
Fry, Amy
Fry, Dietz
Fry, Nettis
Fry, Stephen
Fulford, Kenneth
Fuller, Judith
Fulsaas, Kris
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Funk, Sarah
Furely, Raymond
Furman
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Furness, Tom F.
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Gadeberg, Joe
Gadiwalla, Amir
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Gallagher, Roberta
Gallagher, Tim
Gallagher, Tom
Galloway, Jim
Galloway, Patty
Galvan, Antonio
Garcher, Kathy
Gardiner, Leah
Gardinier, Dave
Gardinier, Dianne
Gardinier, Jill
Gardinier, Roger
Gardner, Duane
Gardner, Heidi
Gardner, Lula
Garner, Richard
Garoutte, Gordon
Garrett, Paul
Garrett, Wes C.
Gartin, Glenn
Gates, Gene L.
Gates, Greg
Gates, Rudoph L.
Gattman, Jessica
Gattman, Lavonna
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Gault, Gorge
Gavin, Dale
Gavin, Jack M.
Gavin, Lillian E.
Gavin, Linda
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Gayle, Amber
Gegg, Diana
Gehl, Danielle K.
Geiger, Kevin
Geigle, Arlen
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Gelvin, Della
Gelvin, Ed
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Gerasche, Joyce
Gerken, Candy
Germain, M. S.
Geroux, Dennis
Gerrer, Dennis D.
Gerringer, Dana
Gersbosch, Rick
Getschmann, Clarence
Gianukakis, William
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Gibbs, Raymond
Gibson, Brock C.
Gibson, Wesley
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Gifford, Robert
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Gildroy, Art, Karen
Gillespie, Stuart
Gills, Jeff
Gilman, Herman
Gilman, Michael
Gilmer, Chuck
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Glaesemann, George
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Glenn, Nick A.
Glessnur, Ray & Pauline
Glickerman, David
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Goad, Matthew
Gochnour, Lee Pat
Godwin, Eunice
Goetz, Gregory
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Golde, Stanley
Goldman, Dan
Golec, Matt
Golliday, Max
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Gonk
Gonzales, Del E.
Gonzalez, Gulalio
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Goumans, Greg
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Grabriel, Gerry
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Graham, Rand E.
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Grene, Dan
Gricno, Gerald
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Griffith, Autumn
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Harb, Edna
Harbin, Klint
Harbison, Randy
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Harvey, Vernon
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Hogan, Steven P.
Hogness, Margaret
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Holden, Billie
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Holland, Dan
Hollett, John
Holloway, Robyn
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Holmes, Arthur
Holmes, Jennifer
Holmes, Kevin L.
Holmes, Larry
Holmes, T H
Holmes, William
Holt, Ron
Holt, Thomas
Holznetzer, Doris
Hoover, Sue
Hopkins, Brian
Hoppens, David
Hoppens, Jeff
Horak, Frank
Horn, Brad
Horne, Sandra
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Hottell, Diana
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Houston, Wayne B.
Howard, Barney
Howard, Roger
Howard, Ted
Howe, Cora
Howe, Dawn
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Howe, Delmar H.
Howe, Hazel
Howe, Kenneth
Howell, Donna
Howell, Kyle
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Howell, Spike
Howerton, Kenneth & Peggy
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Hoyt, Bete
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Hubbard, Mike
Hubbs, Bill M.
Huber, Joyce
Huber, T.D. & J.A
Huber, Ted
Hudson, Michael
Hudson, Ryan
Hued, Terry
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Huffman, Rick
Huggins, Cliff
Huggins, Erika
Hughes, Doris
Hughes, Garry
Hughes, Glen
Hughes, Judy
Hughes, Kathy
Hughes, Robert

Hulsing, Tim, Janet, Jesse, & Kylan
Humbel, Will
Hunsaher Hell, Sherrie
Hunt, Walt
Hunter, Wendy
Hunting, Marshall
Huntley, Williams
Husband, Sandra K.
Husen, John & Margaret
Huslid, Oddvar
Hustad, Alan D.
Hutchessen, David
Hutton, Rodney
Hyde, Bob
Hyde, Jenny
Hyde, JK Quill
Hyde, Ron
Hyde, Rose
Hyman, Rob
Ianniello, Susan
Ianuly, Thed
Imbert, Charlene
Ines, Joselito
Ingebrigbon, Paul
Ingraham, Theresa
Ingram, Bill
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Inskeep, Rick D.
Iribarren, Rick
Irwin, Frieda
Irwin, Robert
Irwin, Stuart
Israel, Gideon
Iukes, Georgia
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Iverson, Jay
Jack, Jim
Jackson, Alfred
Jackson, Art & Susan
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Jackson, Clayton
Jackson, Darcy
Jackson, Frank
Jackson, James
Jackson, Jim
Jackson, Marian
Jackson, Roger
Jackson, Roy & Nancy
Jackson, Sally
Jacobs, Don
Jacobs, Kim
Jacobson, James
James, Aaron
James, Raymond & Lavonne
Jameson, Denise
Jameson, Jess
Jameson, Mary
Jann, Lucinda
Jannot, Rusty
Jansen, Hugh
Jaquish, Gordon W.
Jaquish, Rhonda
Jarbeau, Jayne
Jasley, Connie
Jedel, Frank
Jeffery, Skip
Jeffery, Wesley
Jellison, Burt
Jellison, Francis
Jenkins, John
Jenkins, Marlene
Jensen, Becky
Jensen, Beverly
Jensen, Elmer
Jensen, Gary
Jensen, Harold & Chris
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Jensen, Philip
Jentzen, Karen
Jessup, Alan
Jessup, Phillip
Jewett, Denise
Jockisch, Dan
Johanson, Roger
Johnson, Allen G.
Johnson, Arthur D.
Johnson, Brett
Johnson, Cliff
Johnson, Erik
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Johnson, Gary
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Johnson, Grady
Johnson, James
Johnson, Jeffrey L.
Johnson, Jerome
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Johnson, Linda
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Johnson, Nelda
Johnson, Noel
Johnson, Paul
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Johnson, Richard
Johnson, Roy
Johnson, Sherry
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Johnson, Tom
Johnston, Clarence
Johnston, Dave L.
Johnston, Loren
Jolly, Ed
Jones, Cherie
Jones, Jean
Jones, Paul C.
Jones, R.D.
Jones, Rhonda
Jones, Robert Levi
Jones, Steve
Jones, Walter
Jordan, C.
Jorgenson, Howard N.
Josig, Walter
Joyner, Lola
Judkins, Alford
Juneau, Sam
Jury, Arthur Jr
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Kammers, Suzanne
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Kane, James
Karlin, James
Karsin, Erica
Katz, Robin
Keaton, Tiffany R.
Kebler, Karen
Kebler, Marianne
Keen, Tammy M.
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Keeton, Bill
Keeton, Corey
Keeton, Nancy
Keith, Daniel
Keller, Lawrence W.
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Kelley, Charles
Kelley, Colleen
Kelley, Debora
Kelley, Donald
Kelley, Walt
Kells
Kelly, Audrie
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Kelly, Cliff
Kelly, Florence
Kelly, John
Kelly, Noble L.
Kelly, Peggy
Kemp, Melvin
Kendall, Mike L.
Kendel, Al
Kendrick, Pat
Kennedy, Barbara

Kent, Sam
Kerler, Jim
Kernan, Florence
Kersey, Frank
Kessler, Dallas
Ketley, A.B.
Key, Lucille
Kidwell, Dan
Kidwell, Samuel
Kilburn, Hugh
Kile, Les
Kile, Lorraine
Kilpatrick, Kathleen
Kimble, Jackie
Kimbrell, Pete
Kincaid, Gerald
King, Clayton
King, Donald
King, Doreen
Kingsbury, Donald O.
Kingsfield, Spencer
Kinney, Karen
Kinney, Lester
Kinpers, Floyd
Kinread, Larry
Kinzer, Kelly
Kirby, Jessie
Kirby, Nina
Kirchenmeister, Joseph
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Kirk, Harold
Kirkpatrick, Gwen
Kitchell, Margaret
Kitterman, Debbie L.
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Kivi, Dick
Kjas, Bob
Kjos, Leonard P.
Klaas, Scott E.
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Kliegman, Hanna & David
Kline, Roy J.
Klinkert, Susan
Klump, Ted
Kluth, Douglas
Knapp, Angie
Knapper, Fred
Knight, Connie
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Knight, Mark
Knight, Monica
Knight, Tim
Knowles, Leah
Knox, Janet N.
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Knuth, Mike
Knutz, William
Koch, D.L.
Koch, Jake
Kochsmeier, Karra
Kocol, Jeffrey
Kocol, Lora
Kodya, Traci
Koehn, Christopher & Lynn
Koenig, Gary
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Kolb, Dorene
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Kong, Carol
Kontos, Mike J.
Koontz, Charlie
Kortemeier, Randy
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Kowallis, Warren E.
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Kristensen, Karl
Kristensen, Kim
Kroboth, Roger C.
Krossiv, Lester
Kroupa, Dolores
Kruse
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Kuntz, Ray L.
Kurtz, Allan
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La Motte, Vernon
La Pierre, Betty
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La Shelle, Mary
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Labbe, Lucien
Labreck, Jeffrey
Labriole, Madeline
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Ladoux, Larry
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Lagge, Rick J.
Lake, Terra
Lambert, Sunflower
Lamberton, Dee
Lamoreaux, Craig
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Lamtt, Mcihael
Lancaster, Bob
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Layer, Eric
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Lewis, Allan & Mary
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Marsall, Gary
Marsh, Gerald
Marshall, Amy J.
Marshall, Brenda
Marshall, Don
Marshall, Hank
Marshall, Rockey
Martha, Calus
Marthini, Thomas
Martin, Ausha
Martin, Betty Lou
Martin, Craig & Renee
Martin, Gary L.
Martineu, Gabriella
Marton, Cliff
Marttin, Cheryl
Martz, Harold
Marvin, James L.
Mason, Cheryl
Mason, Erika
Mason, Vernon
Mastel, Doug
Mathews, Lloyd
Matlock, Bert F.
Matson, Russell
Matta, Sky
Mauk, Ernest B.
Mauk, Harry L.
Mauppins, T. Dawn
Maurer Sr, Daniel
Maxwell, Sue
May, Brenda
May, Phyllis
Maycumber, Donald L.
Mazzetti, Johnny
Mazzetti, Michael Buffalo
Mazzetti, Virginia
McAbee, Vivian
McAdams, Kenneth
McAlavy, Robert A.
McAlister, H.S. & Mary
McAuley, Bruce
McAuley, Wendy Lyons
McCalley, Bruce
McCambridge, Nancy
McCann, Ed
McCarrell, Brad
McCarter, Mike
McCarthy, Bill
McCaughan, Joanne
McCleary, Gordon
McClellan, E. Jack
McClellan, John
McClemon, Melissa
McClure, Kenneh & Carol
McClure, Mike
McCord, Justina
McCormack, Tom
McCourt, Tim M.
McCoy, Scott E.
McCulley, Bernice
McCullough, Angie
McDaniel, A.G.
McDaniel, Bill & Jan
McDaniel, Margaret J.
McDaniel, Mark D.
McDaniel, Robert & Linda
McDonald, Dennis
McDonald, George
McDonald, Kay
McDonald, Thomas E.
McDonnell, James A.
McDonough, Dennis J.
McEnaney, Mike
McFadden, Carla
McFall, Doug J.
McFarland, Lawrence
McFarland, Zella
McGlochlin, Steven
McGrath, Freda T.
McGreeny, Mike
McGregor, James
McGuire, John
McGuire, Virginia
McIntike, Ted
McIntosh, Howard
McIntosh, Larry
McIntyre, Bill W.
McIntyre, Gordon E.
McKay, Bridget
McKay, Gabe
McKee, Sage
McKendrick, Jonathan
McKenna, Jodi
McKerlie, Bill
McKillip, Michael
McKinney, Barbara
McKinney, Charles
McKinney, Frank
McKinney, Herman
McKinney, Leo
McKinsey, Beryl A.
McKnightt, Rod
McLeod, Heather
McLiment, Michael
McMillan, Dr. Carol
McMunn, Jim
McNale, Grace
McNamara, Jessica
McNamara, Richard
McNight, Bruce
McNitt, Mark
McPheeters, Les & Lila
McPherson, Wendy
McRayde, Doug
McRea, Toby
Meabebasterrachea, Ruferno
Meadows
Meadows, Paul
Medearis, Margaret
Medearis, Myron
Meese, Amie Ellis
Meier, John H.
Meier, Michelle B.
Meredith, Don
Merrical, Cindi
Merritt, Roxara
Mesell, Mike
Meslar, James
Meslar, John
Messer, Howard L.
Messer, Ron
Metz, Donna
Metz, Martin
Meyer, Julie
Michael, Larry
Michaels, Rich

Michaletz, Sarah
Michel, Charles
Michels, Deb
Middlekoop, F.P.
Milarlin, George
Miles, James
Miller, Bob
Miller, Brad L.
Miller, Catherine
Miller, Cynthia
Miller, David
Miller, Dean
Miller, Donna & Bob
Miller, Dorothy
Miller, Ernest M.
Miller, Gary
Miller, George
Miller, Ilene
Miller, Jim
Miller, Johnny
Miller, Katie
Miller, Lee
Miller, Lee H.
Miller, Marge
Miller, Mary E
Miller, Matthew
Miller, Michael D.
Miller, Ronald
Miller, Tara
Miller, William A.
Millhouse, Shane
Millikin, Susan
Mills, Aley
Mills, Alison
Mills, Billy
Mills, Cindy
Mills, Greg
Mills, Jerry
Mills, Mike
Mills, Ron
Mills, Terry
Minahan, Catherine
Mineard, Cheri
Mineard, Joe
Minnick, Jeannine
Minnick, Lewis
Mino, Debie
Minster, Joseph B.
Minton, Casey
Minyard, Johnny
Mirand, Bill
Mirse, Gary
Missen, David P.
Mitchell, Aaron
Mitchell, Ken T.
Mitchell, Michael
Mitchell, Nancy
Mitchell, Stan
Mitchell, Virgil M.
Mizer, Opal
Moberg, Jeremy
Mobley, Van
Moceri, Alison
Moen, Alan
Moffatt, Concetta
Moffitt, Christa
Moffitt, Ian
Moffitt, Wanda
Mohae, Chris
Moir, Helen
Mollaeri, Alex
Mondot, Michelle
Monil, Charles
Moniz, Elaine
Monoghan, Jr., Mike M.
Monroe, Richard R.
Montaner, Rick
Montanye, Beverly
Montanye, Ken
Monte, Mike F.
Montgomery, John
Montgomery, Kimberly
Montgomery, Kyle
Montgomery, Mary
Montoya, Marcelo
Moody, Carole
Moon, Hong Suk
Moon, June
Mooney, Dywen
Moonie, William S.
Moore, Bill
Moore, Cecil G.
Moore, David K.
Moore, Hal
Moore, J.H.
Moore, Kerry
Moore, Mark
Moore, Mrs. Wallace H.
Moore, Patricia
Moore, Raymond W.
Moore, Ruth
Moore, Ryan T
Mora, Gilbert
Moran, Debbi
Moran, Jolen T.
Moran, Mary E.
Moreland, Joanne
Morey, Brian
Morgan, Jeffery
Morgan, Juanitia
Morgan, Tim
Morningstar, Michael
Morris, Arthur
Morris, Belva M.
Morris, Dennis
Morris, Dwight
Morris, Eric
Morris, Francis A.
Morris, Frank & Belva
Morris, Melbourne
Morris, Nancy
Morris, Paul
Morris, Robert D.
Morrison, Bruce
Morrison, Charles
Morrison, Leea
Morse, Edward M.
Morse, J.D.
Morse, John
Morse, Susan M.
Mortensere, Willard
Morton, Bob
Mosby, Al
Moser, Gib & Shirley
Mosers, John & Carol Lee
Moses, Harvey Jr
Mossey, Chris
Moulton, Katherine
Mowette, Todd
Moyer, Kim
Moyers, Arthur
Moyn, Sierra
Muir, Daniel A.
Mulgrew, Thomas
Mullica, Gary
Mullikin, Agnes J.
Mullikin, Paula J.
Mullikin, Susan
Mumm, Glen
Mumma, John
Munce, Al & Verna
Mundt, Kathryn
Mundy, Linder G.
Munson, Lisa
Munson, M.W.
Murphy, Lee F.
Mush, John
Mycek, Linda
Mycolk, Deborah
Myers, Dave
Myers, David
Myers, Dean
Myers, James
Myers, Steve
Myers, W.M.
Mylan, Mike & Angie
Mylar, Rich
Myrick, Juanita

Nahhas, Harold E.
Nam, Davis
Namkung, Damien
Nash, Judi
Nau, Robert N. & Rosalind
Naylor, Brent
Neal, Janette
Neal, Ken
Neal, Marilyn & Glen
Neal, Mary
Neal, Robert
Neal, Ronald
Nealey, Maxine
Nebergall, M. T.
Neeley, Lyle
Neeley, Peggy
Neils, Rodney
Nelson, B.R.
Nelson, Dick
Nelson, Dorothy
Nelson, Elysia
Nelson, Florine N.
Nelson, Frank J.
Nelson, Franklin E.
Nelson, Iris M.
Nelson, Irma Del
Nelson, James
Nelson, John
Nelson, Larry
Nelson, Lillian
Nelson, Louis
Nelson, Richard
Nelson, William J.
Nesbitt, Lance
Nessly, Patricia
Nessly, William
Neuberger, Kerry
Neumiller, Romey
Nevall, Anthony
New, Angel
New, Garry & Shirley
Newberry, Mark
Newbury, Tara
Newell, Matt
Newman, Jen
Newman, John
Newman, Jon
Newman, Pam
Newsom, Roderick
Newton, Jim
Newton, Scott
Nichols, Almon
Nichols, Stephanie
Nicholson, Don
Nicket, Ernie
Nickolson, Mike
Nielsen, Kai
Nielson, Mark A.
Nigg, Leanne
Nigg, Michael
Nigg, William
Nikon, Ruth M.
Nilsey, Shan
Nilson, Heather
Niton, Jim
Nixon, Ruby
Noble, Barbara
Noble, Mike
Nokes, Galen
Noll, Steve
Nordstrom, Nils G.
Norman, Howard
Norris, James R.
Norris, Kyle
North, Alisa
North, Pat
Norton, Roger
Norton, Vickey
Norwick, Richard
Noteboom, Travis
Notson, Bob
Nottingham, Genevieve
Novotney,Clifford&Genevieve
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Nush, Don & Sue
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O'Hair, Shane
O'Kelly, Don
O'Neil, Larry
Oakes, Gerald
Oberg, Ivan
Oberg, Norman
Odegard, Bern
Odorizzi, R. A.
Oestriech, Gary & Liz
Ogilvie, Bill
Ogle, Analee
Ohashi, Tricia
Ohlde, Roger
Olinghouse, Charlie
Oliver, Jerry
Oliver, Lynn
Oliver, Marilyn
Oliver, Norman
Oliver, Raymond J.
Oliver, Teresa
Olmstead, Bonnie
Olmstead, Mike
Olsen, Heber
Olsen, Kate
Olsen, Vernon M.
Olsen, Walter H.
Olson, Arthur & Doris
Olson, Eleanor
Olson, Floyd
Olson, Gary N.
Olson, Janice
Olson, Marvin
Olson, Rebecca
Olson, Todd
Olton, Maureen
Oneil, Keith
Opperud, Scott
Orcutt, Chester A.
Ormiston, William
Oroville Pharmacy
Osburn, Jason
Osterberg, Joey
Otto, Forest
Owen, Ann D.
Owen, Bob
Owen, Jon
Owen, Laurel
Owen, Quinn
Owens, Brad G.
Owens, Theresa
Oyarzo, William R.
Pack, Steven
Palachuk, Douglas
Pallers, R.
Palmanteer Iii, Eddie
Palmer, Susan A.
Palmer, Tim
Palmer, Virgil
Palmier, Gregory
Pappidas, Macleod
Paris, Nancy
Parisean, John
Park, Richard
Parker, Chuck
Parker, Cliff
Parker, Mark A.
Parker, William
Parker, Zack
Parks, Sam
Paro, Nikola
Parr, John
Parr, Susan
Parsons, Barbara
Parsons, Lisa
Partel, Andrea
Paterson, Elvie & Ralph
Paterson, Ronald
Patrick, Adrienne
Patrick, Debora
Patrick, James
Patrick, Virginia

Patten, Jeff
Patterson, Donovan
Patterson, Elvie
Patterson, Irene
Patterson, Jeff
Patterson, Ralph
Paul, Mila
Paulson, Amanda
Paulson, Barbara
Paulson, Joshua
Paulson, Seth
Payne, Patrick
Payton, Geraldine
Peacock, Charles D.
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Pearson, Beverly
Pearson, David
Pearson, John
Pearson, Scott
Peck, Jerry
Peck, William & Johanna
Pecnick, William
Pecoraro, Shannon
Pedersen, Jane
Peine, Francis
Pelton, Brenda
Pelton, Randy
Pena, Randy
Pendergraft, Mike
Pentecut, Donald
Perez, Elco
Perrizo, J.L.
Perry, Betty
Perry, Milt
Perryman, Laurena
Peters, John F.
Petersen, Elden
Peterson, Charles
Peterson, Craig
Peterson, Dan
Peterson, Gene
Peterson, Henry
Peterson, Kara
Peterson, Keith
Peterson, Larry & Judy
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Peterson, Robert
Peterson, Sherry
Petrou, Dena
Petruzzelli, John E.
Peugh, Leonard
Peugh, Vernita
Pevear, Anita
Pfeifer, Dennis
Phillips, Bruce
Phillips, Dawn
Phillips, G.J.
Phillips, James
Phillips, Jerry
Phillips, John
Phillips, Stan
Phillips, Stanley
Phillipson, Andrew
Picard, Jane
Pilarski, Michael
Pillow, Ken
Pinar, Dennis
Pipkin, Rich
Pippel, Kelly
Pittman, Houston
Pitts, Johnny C.
Plahuta, Joseph
Plahuta, Marilyn
Plumbons, Mari
Plumlee, Bobbie
Plussett, Fay
Poirier, Paul
Pollack, Jordan
Pomeroy, Thurman
Pomoroy, Clarisse
Poole, Heibert
Porter, Genna
Porter, Paula
Porter, Ronald D.
Porter, Stan
Porter, Sydne
Porter, Tamara
Posadas, Alfredo
Posadas, Carol
Post, Emily
Poull, Jeanne
Poulson, Mike
Pound, Richard E.
Powell, Fontello
Powell, Travis G.
Prater, Juanita
Prather, Roger
Pratt, Julienne
Prescott, Greg
Presley, Carl
Presswood, Tom
Pricce, Frank
Price, A
Price, Lucille W.
Price, Paul
Prichett, Myra
Pridgen, Anna
Prilchett, Misti
Prine, Steve & Charlotte
Prior, John & Ruth
Pritchard, Kirsten
Pritchard, Michael
Pritchard, Valerie
Pritchett, Raymond
Pritt, Kevin
Proffit, Margie
Proffitt, Christi
Pruett, Carla
Pruitt, Jim
Pruitt, Kassie
Pruitt, Ken
Pryor, Alvin
Pucket, Carol
Pucket, Roy
Puckett, Don
Quaade, William
Qualheim, Margaret
Querholt, Allen
Quigley, Chuck
Quillen, Tim
Rachilmir, Larry
Rader, Allen
Radford, Willow
Rains, Louise
Rains, Jr., Charles
Rainsberry, Jai
Rajala, John
Ralston, Kenneth
Ramey, Don
Ramirez, Cuauhtemor
Rampley, Elenore
Rampley, Terry & Cara
Ramsay, Barry
Ramsay, Douglas
Ramsden, Mark A.
Ran Den Henzel, Diana
Ran Den Henzel, Hauelne
Range, Clyde
Rangel, Cruz G.
Rapp, Stanley
Rate, Juanita
Rawles, Dale
Rawly, Rob
Ray, Casey
Ray, Donald
Ray, Tina
Raybinuald, Mark
Rayner, Gerald
Rea, Thomas M.
Reaves, Jim
Redden, Eddie
Reddington, John
Reed, Don R.
Reed, May
Reeder, Geneva
Rees, Mennos & Jane
Reese, Alysa
Reese, Don

Reese, John
Regan, Jeff
Rehanek, Woody
Rehanik, Estrarie
Rehl, Kert
Reichard, D.
Reichard, Ms.
Reichert, Debra
Reichert, Eric
Reid, Eliza
Reid, Richard
Reider, Ross
Reinbold, Butch
Relaford, Fred
Relbit, Peter
Remacle, Lawrence
Remer, Mark
Rendall, Carole
Renegar, Cynthia
Repley, Ken
Republic BPW
Reynolds, Jim
Reynolds, Ken
Reynolds, Tom
Rheanert, Larry
Rhodes, Merron
Rhodes, Ted D.
Rhodes, Valerie
Rice, Lee
Rice, Lynn
Ricevoto, Boomer
Ricevuto, Ann Marie
Ricevuto, Charles
Rich, Charlene
Richards, Fred H.
Richards, Mack
Richardson, Charles
Richardson, Fred & Helen
Richardson, Glenn
Richardson, John
Richardson, Ralph
Richardson, Ronnie L.
Rickard, Mark
Rider, Lew
Ridolfi, Callie
Rigg, Fred
Riker, Bud
Riker, Everett
Riker, Phil
Riley, Frank
Riling, Rochelle
Ripley, Kenneth
Rise, Claire
Rise, Rachel
Rise, Tom
Rishky, Jerry
Risser, John
Ritlett, Michael
Rittel, Sheila
Ritthaler, Jason
Rivera, Ramiro I.
Rivera, Roy
Rivers, Richard
Road, Steven
Robbi, Marc & Tina
Robbins, Alice M.
Robbins, Ben & Myrna
Robbins, Cleta
Robbins, David
Robbins, Tommye
Robecia, Laura
Roberson, Dale
Roberson, Glen
Roberson, Mary
Roberton, Cassandra
Roberts, Ben
Roberts, Cecil
Roberts, Ellen
Roberts, Gerald
Roberts, Gordon
Roberts, Gordon
Roberts, Gordon
Roberts, Kathleen
Roberts, Randall C.
Roberts, Shirley
Roberts, W.C.
Robertson, Alvin
Robertson, Eric
Robertson, Shauna
Robinson, Charles
Robinson, David
Robinson, Kam
Robinson, Leland & Irene M.
Robinson, Marshall
Robinson, Mary Alice
Roblinger, Calvin
Rocchia, Pasquale
Rochelle, Sadie
Rocines, John
Rock, M.D., L.B. & Sandy
Rockstead, Marilyn
Rockwell, William M.
Rodgers, Scott
Rodriguez, Maria
Rodriques, Rigoberto
Roedell, Michael & Carlyn
Rogaan, R.G.
Rogers, Bryan
Rogers, George
Rogers, John W.
Rogers, Paul
Rogers, Rick
Rogers, Rodney
Rogers, Wayne
Roloff, Cheryl M.
Roloff, Keith
Romberg, Harry
Root, Richard
Ropp, Katherine
Rose, Alan
Rose, Dean
Rose, Jessie E.
Rose, Peggy
Rose, Ronald
Roseking
Rosetree, Autumn
Ross, Bob
Rosse, Jennifer
Rossebo, Lida
Roth, Beverly
Roth, Craig & Juanita
Roth, Ed
Roth, Erin
Roth, Mr. & Mrs. Phil
Rothanburg, Rich
Rothberg, Bert
Rothrock, Dorothy J.
Rothrock, Gayle
Rothrock, Leroy
Rouly, Fran
Rounds, Darrel
Rounds, Frank
Rounds, Jennifer
Rounds, Kathy
Rounds, Lori Anne
Rounds, Susan
Rounds, Terry Don
Roundtree, Shannon
Roush, Larry
Rowell, Doug A.
Rowley, Craig
Rowton, Dale
Rowton, Donna
Rowton, Evan
Rowton, Verita
Roy, Melanie
Royal, Bob
Rubert, Gertie
Rubert, Lawerance
Rubert, Pamela
Rudie, Daniel
Rudley, Moss
Runnels, Dan
Running, Dean
Rupp, Jack
Rusch, Joseph
Rusho, Roger
Russell, Charles D.

Russell, Floyd C.
Russell, Frankie
Russell, Kirk
Russell, Larry Dean
Ryan, Jahn
Ryan, James
Rylander, Roger
Sabold, Amanda
Sabold, David
Saeger, Jan P.
Safian, Paul M.
Safountain, Roy
Saint, Donald G.
Saks, Kris
Salazar, Imelda
Salazar, Oscar
Salazar, Susana
Salter, Linda
Sampey, Daryl
San Misuel, John
Sanborn, Anne
Sand, Glenn M.
Sanders, Robert
Sands, Mark
Sanger, Mary Ann
Santerre, Gay & David
Saper, Sarah
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Satashell, John
Sates, Archie
Sattler, Dave
Sauer, Louis
Sauer, Norman
Sauers, Jack
Sawiuk, Myron
Sawyer, Maurice & Kay
Sawyer, Rebecca
Sayler, Gary
Sayles, Hayley
Scacco, Dorothy J.
Scarlett, Robert
Schacht
Schaeffer, Ben
Schafer, David
Schaller, Jelka
Schaller, Lisa & Todd
Schaller, Tim
Schanck, Nolan
Schatz, Sandra
Scheel, Dwight
Scheel, Jennifer
Scheffer, Caroline
Scheffler, Daniel
Schett, Lloyd
Schilling, Dixie L.
Schilling, Tim
Schippers, Richard
Schlueter, Michael
Schmidt, Carl
Schmidt, Gary
Schmidt, Kevin J.
Schmitt, James
Schneider, Harvey
Schneider, Philip
Schneider, Phillip
Schneider, Stan
Schneller, Bruce
Schneller, Stanley
Schoffen, Derek H.
Schoo, Mike
Schooley, Stanley D.
Schowen, Sarah
Schrock, Dale
Schrock, Ray
Schrock Jr., Dale
Schroeder, Debi
Schroeder, Glenn
Schroeder, Jack
Schroeder, Marsha
Schultz, James
Schumacher, Gretchen
Schumacher, James
Schumacher, Paul
Schumacher, Sally
Schumacker, David
Schuster, Greg
Schutter, Matt
Schweikert, Mike
Schweitzer, Jeffrey J.
Schwilhe, Ernest Paul
Schwilke, David
Schwilke, Jan
Schwilke, Linda
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Scott, Clay
Scott, Donald
Scott, Edna
Scott, Emalie
Scott, Fren C.
Scott, John
Scott, Lam
Scott, Louise
Scott, Michelle
Scott, Ranona
Scott, Tracy
Scout, Fred C.
Scriver, Arloha
Scriver, L. Fern
Scriver, Larry D.
Scriver, Slim
Scriver, Tim
Seaman, Mary E.
Searcy, Wayne
Seccombe, Thomas
Sedin, Helding
Sedin, Sharon
Seibold, Dauge
Seigrist, Charles
Seims, Tim
Selif, Carolyn
Sellers, Lewie
Sells, Herbert
Selman, Ethel
Serburg, Mark
Severin, Delia
Shafford, Dave
Shah, Chandra
Shannon, James
Sharman, Mary
Sharp, Chet
Sharpe, Roberto
Shatto, Jim
Shaw, Alan
Shaw, Bonnie
Shaw, Cindy
Shaw, Dick M.
Shaw, John & Shay
Shaw, Louis H.
Shaw, Sam
Shea, Jackie
Shearin, Billy
Sheets, Dick
Sheikh, Hoda
Sheldon, Truman
Shepherd, A.
Sheridan, Paul A.
Shifflette, Elena
Shiflett, Sandy
Shillenbarger, Judy
Shiner, Jackie
Shiner, Sam
Shively, Gary
Short, B E
Short, Donna
Short, Roger & Sandy
Shorter, Jack
Shove, V. C.
Shumate, Richard H.
Shunn, John R.
Shunn, Maralee
Shunn, Tanes
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Shurtlett, Walter
Siegrist, Charles
Siegrist, Lucille
Siegwarth, J.L.
Siglin, Sr., Raymond

Silva, Larry
Silverbead
Silverthorn, C. C.
Silverthorn, Charles, Marya
Silverthorn, J.R.
Simeone, Robert
Simms, Marge
Simons, A. Russell
Simons, Rick
Simser, A.E.
Sirrk, Dale
Sites, Stephen
Sitton, Marty
Skatrud, Mark & Julia
Skelton, Allen
Skelton, John
Skinner, Jim
Skinner, Timothy S.
Skirko, Lana
Skirko, Rick
Skye, Raina
Slater, Angela
Slater, Sonia
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Slohr, Jerry
Smart, Jackie
Smidt, Gordon
Smith, Lisa & Sevin
Smith, Ben
Smith, Bonnie
Smith, Bryan
Smith, Carol
Smith, Clayton M.
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Smith, Donald W.
Smith, Gary
Smith, Gene
Smith, Grant & Nicole
Smith, Ida
Smith, Jason
Smith, Jean Spicer
Smith, Jeffrey S.
Smith, Jerry
Smith, Jim
Smith, Joan
Smith, Justin & Carol
Smith, Kenneth O.
Smith, Laurie
Smith, Lionel
Smith, Lloyd H.
Smith, Lynn
Smith, Mike & Bonnie
Smith, Omar, Wanda
Smith, Pam
Smith, Raina
Smith, Ray
Smith, Richard
Smith, Ron & Victoria
Smith, Sam
Smith, Scott A.
Smith, Steven
Smith, Susan, Carl
Smith, Tami
Smith, Thomas
Smith, Tom
Smith, Wayne
Smith, Jr., Keith
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Smithson, Al
Sneur, Sid
Snyder, August
Snyder, Therese J.
Sodering, Jacquelyn
Solomko, Gina
Solomko, Michael
Solomon, Randy
Songtree, Chris
Sonsteng, Bill
Sorene, Sidney
Sorensen, Lynn
Sorenson, Jim
Soukup, Fred
Southmull, C.
Soutnwick, Dick
Soya, Ernie
Soya, Spurlin
Spakowky, Pete
Spangler, Dave
Sparks, Jerry
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Spaulding, Roxy A.
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Spear, Sharla
Speier, Andy
Spence, John & Marie
Spencer, Karen
Splitt
Spofford, Nadine
Spreadborough, Gary
Springer, Arnold
Springer, Robert
Sproul, Ted
Spurbeck, Charles
Spurgeon, Casey
St John, Vivian
St Peter, Harold
Stabenfeldt, John
Stag, John
Stager, Rich
Stair, James
Stalder, Berta
Standal, Warren J.
Standberg, Eric
Stanford, Deanna
Stansburry, Dean & Lillian
Staples, Cory
Starley, Roger
Steas, Richard
Stedman, Wayne
Steele, Jerry
Steenbrugh, Bruno
Steffens, Jon
Steg, Betty
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Stephens, Janet
Stephenson, Jenny
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Stephenson, M J
Stevens, Bob
Stevens, Carl J.
Stevens, Hazel J.
Stevens, Jack W.
Stevens, Karrie
Stevens, Laurie
Stevens, Spencer
Stewart, Don T.
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Stillwell, Pauline
Stiner, Sam
Stoddard, Ronald L.
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Stoddard, Valorie
Stog, John
Stohl, Sandy
Stoker, Mary Ann
Stolle, Larietta
Stolp, George H.
Stolp, Mary
Stoltz, Tom Jr
Stone, Jerry
Stone, Lou
Stone, Rob & Donna
Storm, Ted
Storr, W. A.
Stotts, Ellen
Stotts, John
Stotts, Roy
Stover, Christine
Strand, Steve
Strange, Tom
Streiff, Robert
Strenlou, Kerry
Streuli, Ryn
Stringfellow, Tracy
Strohl, Harry
Stromberg, Gary
Struebing, Debbie

Strum, Doug
Studley, Rose
Stultz, Darrell
Stump, Jeff
Stump, Tim
Sturgeon, Bucky
Sturholm, Janet
Subr, David
Suda, Catherine
Suder, Ross
Suderhn, Jr., Mel
Suhi, Bill
Sukes, Kenneth
Sullivan, Elizabeth
Sullivan, Mary Anne
Sullivan, Mr. & Mrs. John W.
Sump, Bob
Sunderland, Neil
Sundquist, Tammy
Sundstrom, Erick W.
Super, Donald
Super, Joe & Racheal
Super, Kristen
Sutter, Joe
Svennunssen, Jon
Swager, Carol
Swager, Robert
Swain, Vera
Swallom, Laurence E.
Swallom, Lenora L.
Swan, Mark
Swan, Stacy Ann
Swanson, Chris
Swanson, Harvey
Swartsel, Andrew
Sweeney, Gerald
Sweeney, John
Sweeney, Steven
Switzer, Greg
Switzer, Thomas
Swook, Dennis
Sykes, Kenneth
Sylvester, Donald
Sylvester, John
Sylvester, Julie
Taber, David & Judi
Taber, George
Taber, Judi
Taber, Larry
Taber, R.
Tadayoyong, Anthony
Taffer, Gary
Tagg, Ann
Tagg, Rap
Talbert, Jim
Talley, Tim
Tannascoh, Annette
Tanneling, Larry
Tanner, Elliott
Tannot, Shawna
Tarpenning, Adele
Tarr, Trena
Tatlow, Linda
Tayler, Benjamin
Taylor, Byron
Taylor, James
Taylor, James B.
Taylor, Jessica
Taylor, Kelli
Taylor, Lynn
Taylor, Marilynn
Taylor, Melvin R.
Taylor, Michael
Taylor, Morris
Taylor, Mr. & Mrs. Kenneth
Taylor, Oscar
Taylor, Shirley
Taylor, Terry
Taylor, William R.
Teas, Kathleen
Teas, Thomas
Teel, Anthony
Telford, Brett
Tempel, Monte
Terrill, Anthony
Thayer, Mary
Thayer, Shirley
Thayer, Terry
Theis, Jerry
Theis, Paul
Theringer, Wayne
Thiringer, Garry
Thomas, Jason J.
Thomas, Doreen A.
Thomas, Jaqueline
Thomas, Martha
Thomas, Mildred
Thomas, Ray
Thomas, Richard R.
Thomas, Robert
Thomas, Ron
Thompson, Brian & Sandi
Thompson, Doug
Thompson, Georgia
Thompson, Jennifer
Thompson, Jim
Thompson, John
Thompson, Margo
Thompson, Matt
Thompson, Nate
Thompson, Ray G.
Thompson, Rob
Thompson, Ronald
Thompson, Ruth
Thompson, Scott
Thompson, Tim
Thordon, Floyd
Thoren, Denny
Thoresen, Mel
Thornton, Ardis
Thornton, B. Carl
Thornton, Carol,Edith & Ardis
Thornton, Dell & Lyla
Thornton, Edith
Thornton, Florence
Thornton, Floyd
Thornton, Gary
Thornton, Geoffrey
Thornton, Mr. & Mrs. Ernie
Thornton, Pollyanna
Thornton, Randy
Thrasher, Harold H.
Thrasher, Ida
Thrasher, Paul
Thrift, Jim
Thronson, Janet
Thurston, Cache
Tibbs, Lilliam
Tifs, Paul
Tillery, Ruthmae
Tillinghast, Ronald J.
Timm, Brad
Timm, Bryan
Tincher, Ken
Todaro, Nick G.
Tollefson, Richard L.
Tollefson, Robert
Tollefson, Ronna
Tolley, Merl
Tolley, Rick
Tolliver, Jamie L.
Tomita, Sue
Tomlinson, Daryl
Topping, Clark
Toso, Gail
Townsend, Darwin L.
Traboe, Billy
Tracy, Marie-Dominique
Tracy, M.D., Bruce
Trechter, John
Tremblay, Amanda
Triezenberg, Ed
Tritle, Frances H.
Trombley, Tom
Troutner, Tom
Trudell, John
Trudranal, Tom
Truitt, Marilyn

Truitt, Sandra
Trumbel, J.J.
Trumble, Shannon
Tryon, Ed R.
Tsapralis, Nancy
Tubbs, Don
Tugan, Carl
Tugan, Enid
Tugaw, Cecil Jr.
Tureck, Kathy
Turnbull, Genevieve H.
Turner, Cynthoa
Turner, Everett L.
Turner, Gilbert
Turner, Kent
Turner, Lela
Turner, Marge
Turner, Marie
Turner, Marion C.
Turner, Maurice
Turner, Muriel
Turner, Philip
Turner, Roberta
Turner, Steve
Turner, Wayne
Tutag, Tim
Tuttle, Carol
Tuttle, Kenn
Tyler, Mark
Tyrrell, Katlenia
Tyson, Margaret
Uerhaag, Walter
Uetz, Allan
Uetz, Trish
Umberger, John
Urban, Paul
Urlacher, Craig
Utt, Iona
Valdez, Ron
Van Beeck, Kathryn
Van Cleave, Alta
Van Demark, Dick
Van Demark, Karen
Van Gessel, Anthony
Van Geysel, James
Van Slyke, Billie
Van Slyke, Greg
Van Woert, Mrs. Roy
Vanblarion, Richard
Vance, Clifford
Vance, Verbel B.
Vandiver, Gerald
Vandiver, Neoma
Vanel, Steffan
Vangen, Raymond
Vanmuller, Greg
Vannebo, Theodore
Vanzandt, Don
Varner, Jennifer
Vaughn, Dan & Sandra
Vausant, Coralie
Vawter, Donald
Vawter, T G
Vejraska, Craig
Vejraska, L.C.
Vejraska, Mary
Vejrostek, Sheri
Venature, Lyle
Veral, Michelle
Verbeck, Don
Verbeck, Emert
Verhei, Bruce
Verstegen, Gary
Verstegen, Rodney K.
Vester, Deborah
Vet, Al
Veumar, Jim
Viau, Joelle
Vice, Keith L.
Vickerman, Don
Vierra, Jennifer
Villardi, Michael
Vinatieri, Lyle & Fern
Vine, Mark
Vipperman, Raymond G.
Virginia, Petersen
Virtue, George
Visalli, Dana
Visness, James
Visser, Margaret
Visser, Ray G.
Visser, Roy A.
Voggenthgler, Don
Vorhaus, David G.
Vyraska, Todd
Waager, Kenneth A.
Waddell, Dick
Wade, Dale
Wadkins, Alvin W.
Wadkins, Geo
Waffle, Clinton
Wagner, Darcy
Wagner, Earl
Wagner, John
Wagner, Larry
Wagner, Wyatt
Waiss, Joan
Wakefield, Paul
Walen, Tommy
Walker, Bereen
Walker, Brent
Walker, Greg
Walker, Marvin
Walker, Warren Roger
Walkins, Ray
Wall, John
Wall, Stephanie
Walla, Doug
Wallace, Jeff
Wallace, Lee
Wallace, Lydia
Wallace, Ray
Wallace, Virgil
Walsh, Harold J.
Walsh, Jacqueline
Walsh, Kara
Walsh, Leo
Walsh, Sylvia
Walston, Dale
Walter, Dorothy
Walter, Patrick D.
Walter, Ron
Walters, Brent
Walters, Vicky
Walton, Cindy
Walton, Jimmy
Wanechek, Jan & Caryn
Ward, D. Lyn
Ward, Dale
Ward, Daniel W.
Ward, Dennis
Ward, Ken
Ward, Michael A.
Ward, Pat
Wardrip, Don
Warman, T.W.
Warner, Harlan
Warner, Jeff
Warren, Beverly
Warren, Christopher
Warren, Dick
Warring, Mary
Warsher, Ron
Wason, Buddy W.
Waterbury, G. S.
Waters, Lisa
Waters, Shirley
Watkins, Jim
Watkins, Ray
Watkins, Susan
Watson, David
Watson, M.D., David
Watt, Ed
Watts, Randy
Watts, Richard
Weaver, Henry
Weaver, Jack
Weaver, Jerry

Weaver, Jim
Weaver, Richard
Webber, Doreen
Webber, Richard S.
Webber, Richard P
Webber, Stanley A.
Webber, Teresa
Weber, Bruce
Webster, C. Dixie
Webster, Cecil A.
Webster, G.
Webster, Henry
Weedman, Don
Weedman, Tom
Weeks, Mark
Weeks, Ron
Weely, Bill W.
Weismantle Sr., John C.
Welch, George E
Weller, Roberta
Welles, William
Wells, Judy
Wells, Kevin
Welsch, Michael
Wener, Celia Jill
Wentz, Dave
Wepfer, Jill
Werner, Gene
Werner, Richard Thomas
Werny, Isa
Wertz, Richard
West, Gary
Westerdahl, Brian
Westfall, Terry
Westover, Dewayne
Wetchnic, Dennis
Whaley, Lleweilyn
Wheaton, Stanley
Wheeler, Jim
Wheeler, Mary I.
Whinery, Rhonda
Whipple, Clay
Whipple, Clifton C.
Whitaker, Jeff
White, Annette
White, Betty
White, Carol
White, Catherine
White, Darrell
White, David
White, Gordon
White, Jeff
White, John
White, Karen
White, Kirby
White, Larry
White, Malcolm S.
White, Shirley
Whitecar, John
Whitecar, Lenore
Whitehead, James
Whitehorn, John W.
Whiteley, Lorie
Whitfield, Jerry
Whiting, C.L.
Whitley Fuel
Whitmore, Dave & Dolores
Whitner, Jacqueline
Whittaker, Paul
Wickens, John F.
Wickstrom, Pat
Wickstrom, Sheila M.
Widdifield, Bob & Marti
Widell, John
Wieber, Cheryl
Wiener, Francis
Wiese, Tracy
Wietrick, Donalda
Wietrick, Ed
Wietrick, George
Wietrick, Wanda
Wilcox, Douglas
Wilcox, Kathy
Wilcox, Sara
Wilder, Dal
Wilder, Dennis
Wilder, Marilyn
Wiley, R.J.
Wilkerson, Stephen L.
Wilkinson, Roy H.
Willard, James D.
Willard, Jesse R.
Willard, Jim & Chery
Williams, Al
Williams, Alex
Williams, Arnold
Williams, Barry
Williams, Charles
Williams, Chesla
Williams, Chris
Williams, Dick
Williams, Donald
Williams, George
Williams, J.O.
Williams, Joe
Williams, Marvin L.
Williams, Phillip
Williams, Rey
Williams, Robert
Williams, Rowland
Williams, Steve
Williams, W.F.
Williamson, Margorie
Willis, Manny
Willms, Hannah
Willoughby, William
Wilsey, Carolyn
Wilson, Albert
Wilson, Archie
Wilson, Dwight
Wilson, Effie
Wilson, Elizabeth
Wilson, George
Wilson, Grenda R.
Wilson, Henry
Wilson, Jason
Wilson, Jean E.
Wilson, Jon
Wilson, Justin
Wilson, Ken
Wilson, Margaret
Wilson, Nancy
Wilson, Ray I.
Wilson, Ron
Wilson, Ronald R.
Wilson, Roy
Wilson, Russ
Wilson, Ruthann
Wilson, Tom
Wilson, Wally & Agatha
Wilting, Bruce
Wiltz, Don
Wiltz, Doug
Wiltz, Nick
Wiltz, Ruby
Wiltz, Shawn
Wind, Mike
Windsor, Ed & Stella
Wines, Fern
Wingerter, Pete
Winslor, Donna
Winslow, James
Winston, Terry
Winter, John
Wisdom, Leslie
Wiseman, John
Wisener, R.J.
Wisener, Ron
Wisener, Sue
Witt, Lawrence
Wittstack, Thomas
Woda, Janice
Woda, Les
Wolf, Johnny
Wolleat, Alan
Wolleat, Vonetta
Wolley, Don
Wolley, Patricia

Wonch, Robert
Wood, Allen
Wood, Brad
Wood, Gail
Wood, Gerry
Wood, Linda
Wood, Lisa
Woodard, Kevin
Woodmansee, Gary D.
Woodrow, Doug
Woods, Vicki
Woodson, Matt
Woodson, Sara
Woodward, Jack
Woolery, Rachel
Woolf, Virginia
Wooten, George
Wortel, Reeva
Worthington, Bert
Worthington, Jean
Wraspir, Morris
Wright,Colleen
Wright, Jerry G.
Wright, Martin
Wright, Nick
Wyatt, Mari
Wyatt, Rae Jean
Wyman, Linda S.
Wynn, Dan
Xochitt Small Bear
Yacinich, Matt
Yagi, Kirby
Yagi, Suma
Yeager, Jeff A.
Ylitalo, Gina Maria
Yockey, K.
York, Silma
Young, Carla
Young, Donald
Young, Geary
Young, James
Young, Judee
Young, Lance
Young, Pat
Young, Todd Z.
Zabreznik, Jessie
Zaegar, Helen
Zak, Anthony
Zatin, Douglas
Zerck, Bob
Zieg, Jerry
Zielke, Mark
Zigarlick, M
Zigarlick, Wayne
Zile, Jim
Zindel, Robert
Zink, Shaula
Zink, Zack
Zinns, Jill
Zinns, Rob
Zion, Rebecca
Zulauf, Allen & Ellen
Zurbel, Oliver
Zyskowski, Robert

5.8 CANADIAN GOVERNMENT

Corporation of the Village of Midway - Hatton, R.J.
Stenson, John - Canadian Mayor

5.9 CANADIAN GENERAL PUBLIC

Albo, Jane
Areshenkoff, Harvey
Banman, Terry
Banner, Doug
Bannert, Willow G.
Blaine, Al
Bradshaw, Nicki
Buchinsk, Vic
Bullero, Walter
Caron, Linda
Carson, John W.
Cawston
Chapman, John
Chernoff, Cloyd
Clements, Ellen
Clifton, Ron
Cott, Douglas
Diesel, Dorrin
Evans, Nora
Fitzpatrick, Arlene
Hantley, Leslie
Harper, Gerald Bill
Heiberg, Rolf
Hoodikoff, Nick
Hughes, Gord
Johnstone, A.
Kalmakoff, Dora
Kalmakoff, William
Klenisky, Walter
Koochin, Ann
Koochin, Harry
Koochin, Pete
Koochin, Steve
Kopan, Matthew
Kopan, Shirley
Krulic, Joe
Larabee, Norm
Larcocski, Morris
Lazar, Jim
Lazeroff, Bill
Lazeroff, Ken
Levesque, Darlene
Levesque, Jacques
MacDonald, George
MacDonald, Shelley

Makortoff, Nettie
Makortoff, Paul
Mayer, W.
Mayrs, Evelyn
Mayton, Peter
Munro, Kirsten
Munro, Ross
Nedokus, John
Nedokus, Polly
Planidin, Phillip
Plotnekoff, C.P.
Popoff, Mary
Prue, Sharon M.
Ramsey, Neil
Reiner, Jerry
Rilkoff, Polly
Rothery, John
Rusch, Melanie
Russell, M.C.A.
Russell, P.F.
Scott, L
Sheehan, Rebecca
Sheloff, Mary
Sheloff, Paul
Skripnik, Nick
Slabor, Mary
Slots, R.H.
Soviskov, H.
Stewart, George
Struhall, Flo
Struhall, George
Strukoff, Bob
Swift, Larry
Swokoekoff, W. W.

6.0 SUMMARY OF RESPONSES

The comments, as categorized in Section 4.0, Summary of Comments, are further sub-categorized in this section to facilitate response to the major issues and concerns. All substantive individual comments are addressed in a background document (Response to Crown Jewel Mine draft EIS Comments) available for review at the Forest Service office in Tonasket, Washington and at the WADOE offices in Yakima and Olympia, Washington.

6.1 AIR QUALITY

General

6.1.1 **Commentors requested minor text clarifications or expressed opinions regarding the air quality impacts of the proposed Crown Jewel Project without referring to any specific evaluations in the draft EIS. Comments remarked that the draft EIS did not contain sufficient specifics, such as describing the effects of air pollution.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "air quality" aspects of the Crown Jewel Mine draft EIS. We have received your comments and made revisions, as appropriate, to the final EIS.

Emission Estimates

6.1.2 **Why weren't the fugitive dust and toxic by-products from the blasting included in the emission estimates or the ambient impact modeling?**

Response:

The Proponent has proposed that no controls on blasting are required as part of Best Available Control Technology (BACT). The Proponent has calculated emissions estimates for the blasting using methods published by EPA. WADOE has reviewed these estimates and found them appropriate for use in this EIS. The adequacy of the Proponent's BACT assessment would be determined as part of the Notice of Construction Air Quality permit process.

6.1.3 **Why weren't the fugitive dust and tailpipe exhaust from the commute vehicles and supply/delivery trucks along the public roads leading to the Crown Jewel Project site included in the emission estimates or the ambient impact modeling?**

Response:

Air quality impacts from traffic on public roads due to the Crown Jewel Project are analyzed in the EIS and mitigation identified when appropriate in Section 4.1, Air Quality. The Proponent would be required to apply dust controls to the Pontiac Ridge mine access roadway which falls under the jurisdiction of Okanogan County. In order for the air quality impact analysis contained in the final EIS to be valid, a dust control program must be implemented.

Dust from Forest Road 3575-120 would be controlled by the Proponent as part of their dust abatement program. This would consist of periodic watering and/or the use of dust abatement chemicals.

A preventative maintenance program for operations vehicles would be a part of the operation plan. A paragraph has been added to Section 4.1, Air Quality, of the EIS discussing tail pipe emissions from off-site vehicles.

A discussion of the health impacts of diesel exhaust has also been added to Section 4.1, Air Quality, of the final EIS.

6.1.4 **Several commentors disputed the Proponent's calculations which indicated that the peak wind speeds at the Crown Jewel Project mine site are not high enough to cause wind erosion of the disturbed overburden, waste rock disposal areas, and the dewatered tailings facility.**

Response:

The Proponent used calculations employing methods published by EPA to assess wind erosion. Based on measured wind speed data from the Crown Jewel Project mine site, the calculations indicate that no wind erosion of overburden, disturbed areas, or the reclaimed tailings facility is expected to occur. Section 4.1.4, Effects Common to All Action Alternatives, of the final EIS contains this information. The EIS states that reclamation must be conducted properly to avoid blowing dust impacts such as those which occurred at the Holden Mine.

6.1.5 **Several commentors were concerned that the Proponent's calculated emissions from the point sources (stacks and vents) were based on over-optimistically high control efficiencies for the baghouses, cyclones, and water-sprays.**

Response:

The control efficiencies estimated for baghouses in the final EIS are at the upper end of the range of what could be expected from a baghouse. However, with baghouses, it is more appropriate to discuss outlet concentrations than control efficiencies. This is due to the nature of a properly operated baghouse, which yields fairly constant outlet concentrations over a broad range of inlet loadings. For six of the eight baghouses or filters that are part of the Crown Jewel Project, the Proponent has projected an outlet concentration of 0.02 grains per dry standard cubic foot. The other two are projected at 0.007 and 0.04 grains per dry standard cubic foot. Based on comparison with permitting and testing of other facilities, these are not overly optimistic projections. For example, WADOE has required emissions of less than 0.01 grain per dry standard cubic foot in various permits.

A distinction must be made between Alternative B in which the Proponent proposes to locate the crusher below surface without ventilation and Alternatives C and D in which the underground mining method would require ventilation. Under Alternative B, the Proponent has said that the only emissions from the crusher would come from the feed hopper. Emissions from dumping into the feed hopper would be controlled by water spray. Emissions from the crusher itself would be minimal due to the lack of ventilation and the below surface location, according to the Proponent's proposal. Refer to Section 4.1.4, Effects Common to All Action Alternatives.

6.1.6 **Please clarify how the toxic compounds in the fugitive dust from the mining operations were determined to be insignificant. How did WADOE establish the allowable ambient concentration limits for toxic compounds? Please clarify how WADOE's "Small Quantity Emission Rate" exclusion can allow a proposed facility to demonstrate compliance with air toxic limits without performing computer modeling of the toxic compounds.**

Response:

The concentrations of toxic elements contained in the fugitive dust are shown in the final EIS in *Table 4.1.7, Alternative B Modeled Ambient Air Quality Impacts - Toxic Air Pollutants*. In order for WADOE to approve a Notice of Construction Air Quality Permit, state regulations require a demonstration that emissions from the source are sufficiently low to protect human health and safety. One way of satisfying this requirement is to

show that concentrations of toxic air pollutants predicted at the point of compliance are less than Acceptable Source Impact Levels (ASIL) published in the regulation (WAC 173-460). WADOE has stated that for the Crown Jewel Project, the fence line would be the appropriate point of compliance.

A second way to demonstrate compliance with this requirement, without conducting modeling, is to show that emissions are below the Small Quantity Emission Rate published in the state regulation. The EIS contains modeling which predicts the ambient impacts at Chesaw, which is more distant than the fence line. WADOE has not yet determined whether the emissions of toxic air pollutants are sufficiently low to protect human health and safety. As noted above, however, such a judgement would be made by WADOE prior to making a permit decision on the Notice of Construction Air Quality Permit.

For the purpose of this environmental review, a single numerical threshold was not developed or used to determine what constitutes a significant air quality impact for the Crown Jewel Project. Rather, the projected impacts, from this specific site were determined and compared with existing criteria, both quantitative and qualitative, known to the agencies. Ultimately, the agencies relied heavily on the best judgment of air quality professionals in determining what constitutes a significant air quality impact.

The lead agencies are aware that some air quality laws and regulations contain definitions which include the word "significant." For example, a federal air quality regulation (Title 40 CFR 52.21) defines "significant" basically as the amount of actual or potential emissions necessary to require a Prevention of Significant Deterioration (PSD) permit. A state regulation (WAC 173-400-030) has a similar definition. The agencies do not believe the use of the word "significant" in an air quality law or regulation is necessarily equivalent to a "significant" air quality impact under environmental review laws.

The fact that one jurisdiction had a quantitative threshold (the comment mentions a California air quality standard) would not be the single determinant of whether an impact was significant, but could be taken into account in making the determination.

Background Data

6.1.7 **Several commentors disputed the wind speed and wind direction data that were collected by the Proponent.**

Response:

The air quality impact assessments in the final EIS will utilize the same wind data set that was included in the draft EIS. The electronic station that has been operated by the Proponent since 1991 uses sensors that conform to EPA's standards. During the period from June 1991 through March 1992, the Proponent conducted semi-annual third-party station audits to demonstrate that the sensors and data loggers were calibrated within acceptable tolerances established by EPA. Wind roses from the on-site weather station are included in *Figure 3.1.2, Wind Roses From On-Site Weather Station*, in the final EIS.

6.1.8 **Several commentors questioned how long-term temperature, precipitation, and evaporation data for the mine site could be derived by correlating two years of on-site data against long-term data from the agency-operated reference station at Republic, Washington.**

Response:

The WADOE, Forest Service, and Forest Service's contractors worked with the Proponent to compile the best available historical weather data for the region and to synthesize the regional data into a unified weather data set for the Crown Jewel Project mine site. Section 3.1.3, Climate, of the final EIS describes how the unified mine site weather data set was developed. The estimates for precipitation, evaporation, and temperature for the mine site have been revised from the draft EIS. A detailed assessment report entitled Meteorological Data Set, Crown Jewel Project (ENSR, 1996a), discusses the data evaluation methods and procedures.

6.1.9 **Several commentors questioned how the Proponent derived the assumed background PM-10 and Total Suspended Particulate data that were used for the computer dispersion modeling to demonstrate compliance with the WADOE ambient air quality standards.**

Response:

Figure 4.1.1, Maximum Peak-Year Annual Average TSP and PM-10 Concentrations (Not Including Background), is included in the final EIS showing several modeled TSP concentration points from the fence line to Chesaw and Bolster. From these revised modeling results, it will be more apparent what the concentrations of TSP are at different distances from the mine site. Section 4.1, Air Quality, of the final EIS has been revised to show new results of computer dispersion modeling of TSP that includes contributions from blasting and on-site haul road dust. From these revised modeling results, it will be more apparent what the concentrations of TSP are at different distances from the mine site.

The ambient air quality modeling given in the Proponent's revised WADOE air quality permit application and the final EIS assume a background PM-10 concentration that is higher than the assumed value that was used for the original modeling. Section 3.1.2, Air Quality, of the final EIS describes how the revised background concentration estimate was derived.

Miscellaneous

6.1.10 **Several commentors expressed concern that the proposed project would violate either the ambient air concentration limits in the existing Clean Air Act, or the baseline monitoring requirements stipulated in Washington's recently-enacted Metal Mining and Milling Operations Act.**

Response:

Section 3.1.2, Air Quality, and Section 4.1.2, Air Quality Regulations Applicable to All Alternatives, of the final EIS has been revised to itemize which air quality regulations do and do not apply to the Crown Jewel Project. As described in Section 4.1.5, Effects of Alternatives B and E, of the final EIS, the Crown Jewel Project must comply with all state and federal applicable ambient concentration limits.

The Washington Metal Mining and Milling Operations Act does not stipulate any specific air quality baseline monitoring requirements. WADOE previously had developed methods of determining what constitutes adequate air quality baseline data for air quality permits. One of the criteria for deciding whether on-site preconstruction air quality monitoring would be required is the amount of emissions produced by the Crown Jewel Project. Since the passage of the Washington Metal Mining and Milling Operations Act, WADOE has continued to use these methods. Based on these methods, on-site preconstruction ambient air quality monitoring normally would not have been required for the Crown Jewel Project.

6.1.11 Will PSD increments be violated?

Response:

The EIS does not evaluate whether or not PSD increments would be exceeded. The Proponent has stated that emissions from the Crown Jewel Project would not be large enough to require a PSD permit, which would mean that PSD increments do not apply to the Crown Jewel Project.

6.1.12 Several commentors disputed the estimated background visual range that was used as the basis for the visibility impact assessment at Pasayten wilderness area. Other commentors questioned why the visibility impacts in the immediate vicinity of the proposed Crown Jewel Project were not modeled.

Response:

The Proponent chose not to revise their visibility impact assessment at the Pasayten Wilderness to reflect more stringent background visual range values used by the Forest Service. Section 4.1, Air Quality, of the final EIS has been updated to provide a detailed discussion of the visibility impact assessment at the Pasayten Wilderness using the Forest Service guidelines. The Proponent's visibility assessment was completed using EPA methodology. The Forest Service has developed its own guidelines that are in most cases more stringent than EPA's. Using the Forest Service methodology and conservative assumptions, it would not be surprising for VISCREEN to show an impact on visibility in the Pasayten Wilderness, when NO_x, PM-10, and SO_x conversion to ammonium are taken into account.

The visibility modeling, as discussed in the draft EIS, used the EPA background visual range. As with many screening techniques, the VISCREEN model sets up a logical sequence. The first test, called a VISCREEN LEVEL-1 analysis, incorporates conservative assumptions so that if a project passes this test, no further investigation is required. For the VISCREEN LEVEL-1 analysis, the background visual range is taken from a chart of background values placed on a map of the United States and published by the EPA. The VISCREEN LEVEL-1 analysis conducted for the Crown Jewel Project used the EPA value of 60 kilometers (37 miles) taken from this chart and not the Forest Service value of 285 kilometers (178 miles).

If a project fails VISCREEN LEVEL-1 analysis, the more refined VISCREEN LEVEL-2 analysis is conducted. In place of more general conservative assumptions, VISCREEN LEVEL-2 guidance allows for inputs which more closely resemble actual project conditions.

In a VISCREEN LEVEL-2 analysis, it would be appropriate to use a specific background visual range which differs from the general one recommended for this location.

The key point is that the Crown Jewel Project did not fail VISCREEN LEVEL-1 analysis; it passed using the EPA background visual range. Under EPA guidelines, the use of VISCREEN LEVEL-2 analysis and site specific background visual range is, therefore, not required. Under Forest Service guidelines, the Viscreen Level-2 analysis was required. Under the worst case scenario, using very conservative assumptions, the Crown Jewel Project does not meet Forest Service guidelines for the Pasayten wilderness.

6.1.13 Additional information was requested on the specific methods that would be used to minimize fugitive dust emissions from the mining and hauling operations.

Response:

The Proponent's technical support document that was submitted as part of the WADOE air quality permit application describes the Best Available Control Technology (BACT)

assessments that WADOE requires to demonstrate that the applicant is using BACT for emission control. Section 4.1, Air Quality, of the final EIS has been revised to provide a brief summary of the Proponent's BACT assessments, which would include the use of water and chemical dust suppressants to control fugitive dust on site.

6.1.14 **Concerns were expressed about radionuclides contained in dust generated from blasting.**

Response:

There are three agencies that have some regulatory authority for radionuclides. Two agencies in the State of Washington and one federal agency. These include:

- Washington Department of Ecology (WADOE);
- Washington Department of Health; and,
- Mine Safety and Health Administration (MSHA).

WADOE is charged by the Washington State Clean Air Act [See RCW 70.94.331(2)(c)] with adopting air quality and emission standards by rule. Pursuant to this responsibility, it has adopted WAC 173-480, Ambient Air Quality Standards and Emission Limits for Radionuclides.

The State of Washington Department of Health is designated as the state radiation control agency (see RCW 70.98.050) and has adopted rules pursuant to this responsibility. Among these are WAC 246-247, Radiation Protection-Air Emissions, and

WAC 402-80, Monitoring and Enforcement of Air Quality and Emission Standards for Radionuclides.

The federal Mine Safety and Health Administration (MSHA) is responsible for worker protection at mine sites.

The waste rock geochemical testing program conducted for the Crown Jewel Project EIS showed radionuclide levels of 0.55 part per million (as Uranium) in two of the 25 samples tested. The other 23 samples had uranium levels below the analytical limit of 0.1 part per million. These concentrations are well below the threshold levels of concern for risks to human health. In addition, standard dust suppression techniques normally utilized would also effectively remove airborne radiological particulates if present.

6.1.15 **As a point of clarification, BMGC did not unilaterally "choose" not to conduct baseline ambient air modeling, rather BMGC developed its baseline data collection approach in consultation with and at the direction of the WADOE. BMGC has also demonstrated that the Crown Jewel Project is not subject to PSD permit requirements and the document should so state.**

Response:

The comment misquotes the draft EIS. The draft EIS says "the Proponent chose not to conduct ambient air quality monitoring..." (emphasis added). The comment refers to baseline ambient air modeling (emphasis added). The discussion here will be limited to ambient air quality monitoring.

WADOE disagrees that the Proponent developed its baseline data collection approach "at the direction of the WADOE."

It is true that ambient air quality monitoring was the topic of discussions between WADOE personnel and the Proponent's representatives and consultants. The Proponent also submitted a plan for collection of meteorological data to WADOE in which the company stated its position that pre-construction ambient air quality data collection was not necessary.

WADOE has informed the Proponent in the past that it normally requires preconstruction ambient air quality data for sources requiring a PSD permit, and that it normally does not require such data collection for sources which do not require a PSD permit and that the Proponent's decision not to conduct such monitoring carries a risk for the company.

Regarding the comment that the Proponent has demonstrated that PSD permit is not needed, it would be more accurate to say that the Proponent has presented emissions estimates that non-fugitive emissions for the Crown Jewel Project are below the 250-ton per year threshold which applies to some types of sources. Whether or not a PSD permit is required will be determined by WADOE during air quality permitting and can be subject to review by EPA.

The language in the EIS is an accurate description of the fact that the responsibility for the decision not to conduct pre-construction ambient air quality monitoring rests with the Proponent. The Proponent has been collecting ambient air quality data at the site for most of 1996.

6.1.16 Has the Proponent satisfied air quality modeling requirements at the facility boundaries?

Response:

At the time the final EIS was published, the Proponent has <u>not</u> demonstrated compliance with ambient air quality standards at the mine site fence line. They have submitted modeling showing that predicted concentrations would be less than the standards at the mine claim boundaries. The language in the EIS is an accurate reflection of this situation. Since the draft EIS, the Proponent has submitted revised modeling (June 1996). The fence line for Alternative B was revised since the draft EIS. The current situation is accurately reflected in Section 4.1, Air Quality, of the final EIS. The WADOE has not ruled on the acceptability of the Proponent's demonstration that no ambient air quality standard will be exceeded and will not do so until it makes its permit decision on the Notice of Construction (WP) Air Quality Permit.

6.2 GEOCHEMISTRY

General

6.2.1 General comments were received on the following geochemistry topics:

- **Source of waste rock geochemistry data;**
- **The number of waste rock samples collected and analyzed;**
- **Use of Acid-Base Accounting (ABA) tests;**
- **Natural buffering capacity of site bedrock;**
- **Potential water quality impacts from the waste rock disposal areas, pit walls, and ore stockpiles;**

- Estimated percentage and volume of potentially acid-generating waste rock;
- Arsenic levels in sample leachates;
- Leaching of metals from the mine pit into ground water;
- Potential impact to local and Canadian streams from acid rock drainage (ARD);
- Potential water quality impacts from pit backfilling;
- Potential for leakage from the tailings facility;
- Detoxification of tailings; and,
- Effect of copper and arsenic on recovery of gold from ore.

These comments were general in content and most suggested that the draft EIS either underestimated or overestimated potential geochemical impacts.

Response:

We appreciate the input of all individuals, organizations, and agencies who have commented on the "geochemistry" aspects of the Crown Jewel Mine draft EIS. We reviewed your comments and made revisions, as appropriate, to the final EIS.

6.2.2 Editorial comments on geochemistry sections of the draft EIS included:

- Clarification of text and table footnotes;
- Updates to references;
- Suggested additions to text, tables, and appendices;
- Revisions to definitions presented in the text and/or glossary;
- Corrections to maps and figures; and,
- Rewording or removal of sentences to avoid potential biases.

Response:

Editorial comments were carefully reviewed and revisions were made, as appropriate, to the final EIS.

Geochemical Testing Procedures and Data

6.2.3 Several reviewers indicated that the geochemical testing procedures used (including ABA, leachability, and humidity cell tests) are not adequate and could underestimate potential geochemical impacts.

More specifically, reviewers questioned the use of single batch leach tests, believed that sequential batch tests would more closely simulate field conditions, questioned the quality of water used to perform leachability tests, and requested an explanation for the statement that "actual leachate (pH) values would likely be slightly lower."

Other reviewers suggested that humidity cell tests were biased due to grain size factors and should have been performed for longer than 20 weeks, should have been inoculated with *Thiobacillus ferrooxidans* bacteria, and should have included testing of confirmation waste rock samples. Still other reviewers indicated that the use of humidity cell tests was probably appropriate; however, discussion of other testing methods should be added to the final EIS. Two reviewers suggested that a different ABA testing procedure be used, and/or the current results should be further compared to the humidity cell test results.

Another reviewer indicated that humidity cell tests are not a reflection of actual field conditions. Because they are designed to enhance or accelerate the rate of acid generation, the test results may overestimate potential geochemical impacts. This reviewer also asked that further discussion be added to the final EIS of the "semi-quantitative" nature of the humidity cell test results.

Response:

The leachability test procedure is an approved EPA laboratory method designed to assess the leachability of a large volume of waste materials. Use of sequential batch tests to evaluate the leachability of mine materials at the Crown Jewel Project was not considered appropriate. Sequential batch tests would be useful, for example, at a site where waste rock materials were not selectively handled and the quality of water in a waste rock disposal area became sequentially worse as it infiltrated through different rock types. For the Crown Jewel Project, the Washington Metal Mining and Milling Operations Act, Forest Service and BLM guidelines, require development of a waste rock management plan that describes how potential acid-generating rock would be identified and handled during the mining operation. The single batch leachability test results, combined with other laboratory geochemical testing results, allows the Proponent to identify specific mine materials with the potential to leach contaminants and generate acid. All of this information would be used to prepare the waste rock management plan.

To simulate the leaching of mine materials by precipitation, geochemical samples from the Crown Jewel Project were leached using a synthetic precipitation solution. The solution was prepared by mixing a small quantity of sulfuric and nitric acid with deionized water. As specified by the EPA Method 1312, the pH of the resulting mixture was approximately 5.0. The EPA considers this pH to be representative of the pH of natural precipitation west of the Mississippi River. The statement in the draft EIS that "actual leachate (pH) values would likely be slightly lower" has been removed from the final EIS.

Appendix E, Geochemistry, of the final EIS addresses the inoculation of humidity cell test samples with bacteria and the length of the testing period. Regarding the issue of sample grain size, geochemists agree that grain size can affect humidity cell test results or, more specifically, the application of these results to predict field conditions. There is, however, less agreement on whether grain size and other factors of the testing procedure result in overestimation or underestimation of "long-term" acid generation potential and metals leachability. The EPA technical document, Acid Mine Drainage Prediction (EPA, 1994), describes the different geochemical testing procedures currently used (including ABA methods) and the advantages and disadvantages of these methods. It also describes the comparison between ABA and humidity cell test data.

Humidity cell tests, like all laboratory geochemical testing methods, will only provide an approximation of actual field conditions. The humidity cell test was designed to enhance or accelerate the rate of acid generation in sulfide-bearing mine materials and, as such, in some instances may overestimate or underestimate actual field conditions. The final EIS has been revised to include further discussion of the application of

humidity cell test results and their use in predicting long-term water quality results. The Proponent conducted 17 humidity cell tests of 30 to 50 weeks on confirmation waste rock samples. The results of this testing program are included in the final EIS in Section 3.3.3, Geochemistry.

6.2.4 **It was requested that QA/QC data verify the validity of the geochemical data presented in the EIS.**

Response:

The documents cited in Appendix E, Geochemistry, of the final EIS include a detailed description of how Crown Jewel Project geochemical samples were collected and handled prior to analysis. Sample analysis was performed by Core Laboratories (Core) of Aurora, Colorado. Core is an accredited laboratory by the State of Washington and meets mandatory QA/QC requirements set forth by the WADOE.

For reference, QA/QC data generated by Core during analysis of the confirmation waste rock samples are presented in Appendix E, Geochemistry, and Final Summary Report, Confirmation Geochemistry Program, Crown Jewel Project (TerraMatrix, 1995a). QA/QC data for the other Crown Jewel Project geochemical samples analyzed by Core are presented by the Proponent under separate cover (BMGC, 1996d).

6.2.5 **Some comments suggested that the correlation between duplicate waste rock geochemical samples should be defined using statistical criteria. Another comment suggested that further text be added to the final EIS that discusses the significance of the correlation between duplicate results.**

Response:

Appendix E-8, Results of Waste Rock Duplicate Analysis, has been added to the final EIS. This sub-appendix lists the duplicate sample results and describes a statistical analysis performed to define the degree of duplicate correlation. Results from the statistic analysis are described in Section 3.3.3, Geochemistry, of the final EIS.

6.2.6 **Comments were received regarding the number of ore samples analyzed and their representativeness. Another commentor asked why ore samples were analyzed.**

Response:

The number of ore samples analyzed and their representativeness are described in the document Report of Geochemical Testing of: Ore and Low Grade Ore, Crown Jewel Project (Kea Pacific and Golder, 1993c). Section 3.3.3, Geochemistry, of the final EIS was updated to explain why ore samples were included in the geochemical testing program and why ten test samples were considered representative of the ore body.

6.2.7 **Why were relatively few humidity cell tests performed compared to ABA tests?**

Response:

A phased approach was used to design the geochemical testing program. Samples were selected to account for site geologic conditions, sulfide content of the rock material, and the volume of waste rock and ore material proposed to be mined. Static Acid-Base Accounting (ABA) tests were performed first to identify mine materials that have the potential to generate acid. Humidity cell test sample selection was based on the results of the ABA tests. Section 3.3.3, Geochemistry, in the final EIS, explains the sample selection process and results of the testing.

Geochemistry of Waste Rock Disposal Areas

6.2.8 **It was suggested that other waste rock types, in addition to those discussed in the draft EIS, may be potentially acid-generating. One comment also questioned the percentage of waste rock samples reported to be potentially acid-generating in the draft EIS and noted an apparent discrepancy between the EIS team and the Proponent regarding the percentage of waste rock types with certain ABA values.**

Response:

The percentage of potentially acid-generating waste rock at Crown Jewel Project was described in the technical report Final Summary Report, Confirmation Geochemistry Program, Crown Jewel Project (TerraMatrix, 1995a) and further addressed in memorandums by Rod Lentz (U.S.D.A. Forest Service, October 18, 1995 and May 15, 1996). The final EIS includes additional information and analysis in Section 3.3.3, Geochemistry.

6.2.9 **Several comments were received regarding the potential to form "hot spots" in the waste rock disposal areas. Some reviewers indicated this potential was understated in the draft EIS, while other reviewers indicated this potential was overstated.**

Response:

The potential for "hot spots" to form in the waste rock disposal areas and to impact water quality would largely depend on identification of potentially acid-generating waste rock during mine operations. The final EIS includes a discussion of the requirement under the Washington Metal Mining and Milling Operations Act and Forest Service and BLM guidelines stating that the Proponent must develop, as part of the Crown Jewel Project permitting, a waste rock management plan to minimize the potential for weathering of waste rock material and formation of acidic drainage. Refer to Section 2.12.5.1, Prevention of Acid Rock Drainage, in the final EIS.

6.2.10 **It was suggested that the quality of water discharged from the waste rock disposal areas be further evaluated and quantified in the final EIS.**

Response:

Section 3.3.3, Geochemistry, Section 4.6.3, Effects Common to All Action Alternatives, and Section 4.7.3, Effects Common to All Action Alternatives, have been revised to more clearly describe seepage and runoff and associated impacts from waste rock disposal areas.

6.2.11 **It was suggested that small volumes of potentially acid-generating waste rock be disposed of in the tailings disposal facility.**

Response:

This alternative for waste rock disposal would be constrained by logistical aspects and would increase the overall size of the tailings facility. Mixing of waste rock and tailings material would create geotechnical stability problems in the tailings facility. Also, waste rock placed directly on the liner could create "puncture" problems. Delivery of waste rock to the tailings facility would be constrained by lack of equipment available to operate on the low-bearing strength of tailings, particularly during the operations of the facility.

Pit Water Quality Impacts

6.2.12 **A general concern was expressed that open pit mining would expose rock material to water and atmospheric conditions and potentially result in significant impacts to water quality in the mine pit lake that develops following mine closure.**

Response:

Section 4.6.3, Effects Common to All Action Alternatives and Section 4.6.4, Effects of Alternative B, of the final EIS, describe water quality conditions predicted for the pit lake for three pit filing scenarios including enhanced filling of the pit with water from the proposed Starrem Reservoir.

6.2.13 **One comment stated that additional waste rock samples should be collected and analyzed to assess the potential to generate acid along the pit walls.**

Another comment suggested that fracturing and decomposition of waste rock along pit walls and within disposal areas should be accounted for when evaluating potential environmental impacts.

Finally, a third comment suggested that the final EIS include a comparison of pit wall ABA data with associated humidity cell data, clarify how average pit wall ABA values were calculated, and restate the relationship between pit wall ABA data and pit water quality modeling results.

Response:

To analyze the potential for acid generation by waste rock, samples were selected to account for site geologic conditions, sulfide content of the rock material, and the volume of waste rock. Static Acid-Base Accounting (ABA) tests were performed first to identify mine materials that have the potential to generate acid. Humidity cell test sample selection was based on the results of the ABA tests. Humidity cell testing accounts for fracturing and weathering of waste rock. Section 3.3.3, Geochemistry, explains the sample selection process and results of the testing.

Section 3.3.3, Geochemistry, has been revised to clarify how average pit wall ABA data were calculated and to restate the relationship between pit wall ABA data and pit water quality modeling results.

6.2.14 **It was pointed out that potentially acid-generating waste rock would be exposed early in the mining process and could increase the likelihood of impacts.**

Response:

Water that enters the open pit during mining would be collected and either used for process makeup water in the mill or discharged, if it meets required standards in federal and state permits. As a result, potentially acid-generating waste rock exposed early in the pit is not expected to impact water quality. After mining, a variety of waste rock types would be exposed in the final pit walls, including potentially acid-generating material. Pit water quality simulations accounted for these rock types and incorporated results from humidity cell tests. The latter are designed to enhance the rate of natural rock weathering and, therefore, are useful in assessing potential long-term water quality impacts.

6.2.15 **One comment indicated that modeling of pit water quality conditions was generally inadequate.**

Another indicated that the humidity cell test data used in modeling are only a rough approximation of reality and questioned the use of 15-week test data, stating that results from longer testing periods should have been used. This reviewer also suggested that the final EIS address potential impacts from exposure of potentially acid-generating waste rock on the southwest side of the proposed open pit, upgradient of Bolster Creek.

A third comment indicated that input parameters for pit inflow (i.e., the relative contributions from surface runoff and ground water inflows) were not correct. This reviewer also believed that results from pit water quality modeling presented in the draft EIS are extremely conservative and represent worst case conditions since only humidity cell data for samples with a high potential to generate acid and leach metals were used.

Response:

Section 4.6.3, Effects Common to All Action Alternatives and Section 4.6.4, Effects of Alternative B, of the final EIS, describe water quality conditions predicted for the pit lake for three pit filling scenarios including enhanced filling of the pit with water from the proposed Starrem Reservoir.

Humidity cell tests, like all laboratory geochemical testing methods, will only provide an approximation of actual field conditions. The humidity cell test was designed to enhance or accelerate the rate of acid generation in sulfide-bearing mine materials and, as such, in some instances may overestimate or under estimate actual field conditions. The final EIS has been revised to include further discussion of the application of humidity cell test results and their use in predicting long-term water quality results. The results of this testing program are included in the final EIS in Section 3.3.3, Geochemistry.

6.2.16 **It was pointed out that a quantitative discussion of water quality conditions under the pit backfill alternative was not performed and should be included in the final EIS. One of the reviewers presented and described results of their analysis of potential pit water quality impacts from pit backfilling and stated that relative impacts would be greater than if the pit was not backfilled.**

Response:

An evaluation of potential water quality impacts from backfilling the open pit with waste rock was conducted. As the backfilled waste rock in the open pit becomes saturated with water after mining, flushing of the backfilled material could result in a temporary release of trace metals and residual ANFO to surface waters (Schafer, 1996b). Assuming selective handling of the backfilled material, the initial discharge from the open pit under this alternative would be expected to be of lower quality than Alternative B. After the initial flushing of the backfilled waste rock with water, the long-term impact to ground water quality from the partial backfilling (Alternative E) is predicted to be worse than Alternatives C and D due to a larger area and volume of exposed pit wall and backfilled waste rock, and similar to or worse than Alternative B. Refer also to Section 4.6.3, Effects Common to All Action Alternatives, for a detailed discussion of lake water quality for alternatives with a pit lake.

Geochemistry of Ore Stockpile

6.2.17 **The EIS should address the potential impact to water quality from ore stockpile runoff.**

Response:

The potential impact to water quality from ore stockpile runoff is described in Section 4.6.3, Effects Common to All Action Alternatives, and Section 4.7.3, Effects Common to All Action Alternatives, of the final EIS.

Geochemistry of Tailings Disposal Area

6.2.18 **It was suggested that the final EIS be updated to include results from bioassay testing and a discussion of whether tailings material classify as dangerous waste. Another commented on potential human health and wildlife risks associated with heavy metals that would be contained in the tailings.**

Response:

Results from dangerous waste designation tests are presented in the final EIS in Appendix F, Dangerous Waste Characterization Results for Detoxified Tailings, and in Section 3.3.3, Geochemistry. Potential risks to wildlife exposed to tailings are discussed in the final EIS in Section 4.12, Wildlife. Refer also to response 6.18.36 in this appendix.

6.2.19 **There were concerns that cyanide concentrations in the proposed tailings pond would exceed allowable permit levels, particularly during the winter months. Clarification was requested regarding achievable cyanide concentrations in the tailings pond. There were comments that the final EIS should include a brief discussion of the optimization of cyanide treatment using the INCO SO_2/Air/Oxidation process.**

Response:

The Proponent has proposed to meet a rolling average monthly cyanide concentration of 10 ppm WAD cyanide in their spent tailings effluent in the pond. The actual concentration of WAD cyanide will be set in permits, and may be set at a concentration lower than 10 ppm WAD cyanide based on the reliable application of the INCO SO_2/Air/Oxidation cyanide destruct process. Cyanide levels greater than 40 ppm WAD cyanide at the end of the pipe discharging into the tailings facility would require mitigation to protect wildlife.

Natural degradation cannot be demonstrated to be a reliable primary treatment method for the Crown Jewel Project since most natural degradation processes are accelerated at a neutral to acidic pH; the high buffering (alkaline) characteristics of the tailings would tend to inhibit some of these reactions. Natural degradation could not be solely relied upon to meet permit requirements as the primary cyanide destruction process and is not considered in the EIS.

Instead, WAD cyanide will be regulated at the point of discharge into the tailings facility (end of pipe), thus eliminating the consideration of seasonal variations in the tailings pond. Optimization of the INCO/SO_2/Air/Oxidation treatment process is discussed in Section 2.2.11, Cyanide Destruction, of the final EIS and in the Engineering Report: INCO SO_2/O_2 Wastewater Treatment Unit (BMGC, 1996h).

6.2.20 **The EIS should address the acid generation potential of the tailings. Would the addition of sulfate to the tailings through use of the INCO process form sulfuric acid? It was suggested that statements in the draft EIS be clarified and/or corrected regarding the impact of INCO byproducts on sulfate concentrations in the tailings.**

Response:

The Proponent analyzed the long-term acid generation potential of seven bench-scale tailings samples from the Crown Jewel Project. Test results are summarized in the final

EIS in Section 3.3.3, Geochemistry, and indicate that the tailings material is not acid-generating. Additional humidity cell test data through week 52 (of the testing period) were provided by the Proponent for four of the samples after the draft EIS was released. These results are included in the final EIS and confirm that the tailings are not acid-generating.

Regarding the tailings sulfate issue, sulfate is a byproduct of using the INCO SO_2/Air/Oxidation process but its addition to the tailings would not result in the formation of sulfuric acid. Section 3.3.3, Geochemistry, of the final EIS was updated to clarify this issue.

6.2.21 **Were confirmation tailings samples tested and, if not, why?**

Response:

Confirmation tailings samples were not tested for the Crown Jewel Project. WADOE and the Forest Service considered the tailings testing program to be adequate to characterize the tailings material. However, to determine whether the tailings would classify as dangerous waste, WADOE did require that the Proponent prepare additional bench-scale tailings samples to obtain bioassay data. Results from the dangerous waste designation tests are presented in the final EIS, Appendix F, Dangerous Waste Characterization Results for Detoxified Tailings, and summarized in Section 3.3.3, Geochemistry.

Operational Monitoring and Mitigation of Potential Geochemical Impacts

6.2.22 **The final EIS should explain how the Proponent would identify, isolate, and treat potentially acid-generating waste rock exposed during the mining operation. The final EIS should include a detailed monitoring plan designed to detect ARD and metals leached from the open pit and waste rock disposal areas.**

Response:

The Washington Metal Mining and Milling Operations Act and Forest Service and BLM guidelines require that a waste rock management plan be prepared for the Crown Jewel Project that describes how potentially acid-generating waste rock would be handled. A description of the Proponent's waste rock management plan has been included in the final EIS in Section 2.12.5.1, Prevention of Acid Rock Drainage, to address the comments of several reviewers. The Proponent has included a proposed waste rock management plan in the Solid Waste and Waste Rock Management Plan, as part of the NPDES/State Waste Discharge Permit application (BMGC, 1996g)

Section 2.13.1, Water Resources Monitoring, of the final EIS has been revised to describe the surface and ground water monitoring programs that would be implemented during operations as well as during closure and post-closure periods.

6.2.23 **Several commentors want the final EIS to include a detailed contingency plan that would explain how the Proponent would mitigate potential ARD and metals leaching. It was suggested that this plan give special attention to arsenic contamination. Other reviewers believed the plan should define "trigger levels" for corrective action if impacts from mining are observed.**

Response:

Section 2.12.5.2, Water Discharge, has been included in the final EIS to describe the steps that would be implemented to address situations when water quality requirements are not met. Water quality requirements would be determined using baseline water quality data.

Comparison to Other Mines

6.2.24 **It was stated that the quality of water sampled from two historic mine adits at the site (Gold Axe and Upper Magnetic Mine) is relatively poor which suggests potential impacts from mining. Other reviewers believed that geologic and water quality data from historic mines in the Crown Jewel Project area show a low risk for acid generation and metals leaching and, therefore, should be further discussed in the final EIS.**

Response:

Section 3.8.6, Influence of Past Mining on Ground Water, of the final EIS describes baseline water quality data collected from historic mine adits in the Crown Jewel Project area and how these data relate to local geologic conditions and potential impacts.

6.2.25 **It was suggested that geochemical data from other mine operations should be compared to geochemical data collected from if similar rock units and mining depths were encountered and if those operations had ARD problems.**

Response:

Every mining operation is unique due to differences in local geologic, topographic, climatological, hydrologic, and biologic conditions. As such, any comparison between mine sites would be problematic and can only be used as an approximate guide to what would or would not work. Experience gained at other mining projects has been used throughout the EIS process to assess potential impacts to resource areas and to develop appropriate mitigation measures.

Miscellaneous Comments

6.2.26 **Data from the geochemical sampling and testing program should be "mapped" to assist in assessment of metals distribution and acid generation potential around and within the proposed open pit.**

Response:

Section 3.3.3, Geochemistry, describes the acquisition and application of the various geochemical test data for the Crown Jewel Project. The testing program was designed to account for the variety of rock materials that would be exposed by the pit over the life of the Crown Jewel Project. Through this testing process, some of these rock materials were identified as acid-generating and thus would require special handling. Section 2.12.5.1, Prevention of Acid Rock Drainage, of the final EIS, discusses this issue. Pit lake water quality predictions were also made using these data. Section 4.6.4, Effects of Alternative B, of the final EIS, discusses pit lake water quality.

6.2.27 **Due to the potential for mercury to bioaccumulate, its presence in the orebody and its fate during ore processing should be described in the final EIS.**

Response:

The potential for mercury to bioaccumulate at the Crown Jewel Project appears to be low, based on the following geochemical and baseline water quality data:

- The mercury concentration in leachate from 79 waste rock samples, seven tailings solid samples, six low grade ore samples, and four ore samples analyzed by EPA Method 1312 was less than 0.0003 mg/l;
- The mercury concentration in leachate from 17 waste rock humidity cell tests ranged from less than 0.002 mg/l to less than 0.004 mg/l. The mercury

concentration in leachate from another waste rock humidity cell test was less than 0.008 mg/l;

- Over a 3½ year period, the mercury concentration in baseline water quality samples from 25 springs and seeps, 14 surface water stations, nine ground water monitoring wells, and five historic mine adits has been less than or equal to 0.0002 mg/l; and,

- Based on bench scale testing, the concentration of mercury in the tailings pond could range from 0.0004 mg/l to 0.0023 mg/l and, on a volume basis, average about 0.001 mg/l.

6.2.28 **The final EIS should address potential impacts to water quality from blasting.**

Response:

An evaluation of nitrate loading from blasting was performed by Schafer and Associates and summarized in the technical memorandum, Revised Final Calculation of Nitrate Loads for Evaluation of Pit Water Quality (Schafer, 1996b). Results from this evaluation are included in the final EIS in Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water. Refer also to response 6.5.46 in this appendix.

6.2.29 **The EIS should address the importance of microbial activity in the acid generation process.**

Response:

The importance of microbial activity in the acid generation process is discussed in the final EIS in Appendix E, Geochemistry, as it relates to the interpretation of humidity cell test data.

6.2.30 **There were errors in the draft EIS regarding the comparison between the calcium content of site mine materials and neutralization potential.**

Response:

As correctly pointed out, there is not a direct comparison between the calcium content of site mine materials based on X-ray fluorescence (XRF) data and neutralization potential. Section 3.3.3, Geochemistry, of the final EIS was corrected and updated accordingly.

6.3 GEOTECHNICAL CONSIDERATIONS

General

6.3.1 **The majority of the geotechnical comments received on the draft EIS focused on the tailings facility design, construction, and performance. A few commentors addressed the stability of the waste rock disposal areas. Other comments cited typos and suggested clarifications.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "geotechnical" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Tailings Dam Stability

6.3.2 Will the tailings dam be stable under severe earthquake loads and will upstream construction over tailings material be stable?

Response:

Since the issuance of the Crown Jewel Mine draft EIS, the Proponent has revised the proposed tailings facility to incorporate downstream construction of the embankments. This revised embankment construction plan has been designed to satisfy the Washington State Department of Ecology, Dam Safety Guidelines Part IV, dated July 1992.

Knight Piesold (1993a) estimated the Maximum Credible Earthquake (MCE) for the area and placed such an earthquake at the epicenter distance of 10 miles from the Crown Jewel Project site. They then attenuated the ground acceleration and predicted a maximum bedrock acceleration of 0.19 g based on historic earthquake records, (g = 32 ft/sec^2) for a 50,000+ year return event. This peak acceleration was used in stability analyses for the original "modified centerline" constructed embankment and indicated that the tailings facility may undergo small displacements but would not fail.

The proposed revised Crown Jewel Project tailings facility would incorporate an initial starter dam. Subsequent lifts would begin at the toe of the existing embankment and be constructed upward until the required crest elevation is achieved, thereby reinforcing the initial embankment. See Section 2.2.14, Tailings Embankment Design and Construction, of the final EIS for further discussion and Final Design Report, Tailings Disposal Facility, Crown Jewel Project, Okanogan County, Washington (Golder, 1996a).

Tailings Impoundment Design and Operation

6.3.3 Will the tailings liner system perform adequately and prevent the loss of solution into Marias Creek which functions as the underdrain system?

Response:

Since the issuance of the Crown Jewel Mine draft EIS, the Proponent has revised the proposed tailings facility to incorporate downstream construction of the embankments and a double synthetic liner system, which would include a leak detection system. See discussion in Section 2.2.14, Tailings Embankment Design and Construction, and Section 2.2.15, Tailings Liner System Design, of the final EIS.

The liner system proposed for the tailings facility is an upgraded variation of the current most commonly accepted liner design for tailings facilities. The revised system would incorporate two geosynthetic liners with an overdrain, a leak detection system, and an underdrain for surface water. The overdrain system serves for tailings dewatering and the underdrain system serves to route surface and ground water intercepted beneath the facility on downstream. These are separate systems as implied by the description. The overdrain system and the leak detection system would discharge to the recovery solution collection pond for recycle to the mill, while the underdrain would be routed around the collection pond. The liner system also meets AKART, All Known Available and Reasonable Technology.

Miscellaneous

6.3.4 Will there be an opportunity for independent evaluation and public comment on the tailings designs as the plans are developed?

Response:

While there is no formal public review and comment requirement other than in the SEPA/NEPA process, the WADOE Dam Safety Section files are public records and the public has the right to visit state offices and review file contents. Plans and technical documents used in the preparation of the EIS and in decisions made on permits would be available for public review.

6.3.5 Was fracturing and exfoliation of waste rock and pit walls considered?

Response:

Over time, the surface of the waste rock and the pit walls would weather and exfoliate. However, the overall slope angles of the waste rock piles and pit walls would not be expected to change substantially as a result of weathering.

6.3.6 Concerns were expressed about construction and stability of Starrem Reservoir.

Response:

The Starrem Reservoir embankment would be designed and built according to WADOE Dam Safety rules and regulations. These rules and regulations are designed to ensure that dams are stable.

6.3.7 Will the Proponent be responsible for damage from earthquakes?

Response:

The Proponent would be responsible to the extent that earthquake damage affecting the integrity of facilities for continued operation or failure of facilities would be repaired. However, the cost of earthquake damage occurring post-operation would be included in the performance securities and would not be the direct responsibility of the Proponent once reclamation is complete and if the Proponent is not the landowner.

6.3.8 Will glacial sediments cause stability problems for the north waste rock pile?

Response:

The proposed waste rock disposal area is located over an area that contains a drainage channel. The surface water drainage would be diverted around the waste rock disposal area to the extent practicable; however, it is expected that some water may still flow below the waste rock disposal area. Since the waste rock is a very coarse, free draining material, it is unlikely that any seepage pressures would develop in the fill. However, it has been recommended that a drainage layer be placed below the waste rock fill, particularly in existing drainages, to ensure adequate drainage. The waste rock disposal area design considers the underlying foundation material.

6.3.9 There was a request for seismic research by independent sources. What is basis for concluding that the faults are inactive?

Response:

Seismic activity in the region has been recorded by the United States Geological Survey, National Earthquake Center (see *Figure 3.4.1, Earthquake Epicenters*, in the final EIS). This data, in conjunction with on-site geologic mapping and interpretation, formed the basis for the analysis in the EIS.

The bibliography section beginning on page 104 of the final design report in Volume 1 of the Tailings Disposal Facility, Final Design Report (Knight Piesold, 1993a), cites the actual sources consulted in estimating the seismic events the impoundment should be capable of surviving. These independent studies included:

- USGS, Earthquake Hazards in the Pacific Northwest; An Overview, Open-File Report 91-441-0, 1991;
- Basham, Weichert, Anglin, & Berry, New Probabilistic Strong Seismic Ground Motion Maps of Canada: A Compilation of Earthquake Source Zones, Methods and Results, Earth Physics Branch Open-File Report 82-33, 1982; and
- Washington Division of Geology and Earth Resources, Various Earthquake Circulars on the region.

The independent seismic risk assessment of the Crown Jewel Project site as completed by the WADOE, Dam Safety Section, and relied heavily on independent studies done for the Bureau of Reclamation and for Seattle City Light's Boundary Dam Project. These studies included:

- Geomatrix Consultants, Inc., 1989, Seismotectonic Evaluation of the Northwest Rocky Mountains - Okanogan Uplands Geomorphic Province, U.S. Department of the Interior, Bureau of Reclamation; and
- PRC Engineering, Inc., 1985, Phase A Report, Seismotectonic Study Boundary Hydroelectric Project.

6.3.10 Is geotechnical stability a justifiable concern?

Response:

Stability is always a concern when fills with steep side slopes and large impoundment construction are proposed.

6.3.11 The objective should be to ensure that mine pit highwalls are stable over the long-term.

Response:

As part of reclamation, the WADNR has stipulated that portions of the final pit walls and benches would be blasted down to create a rough irregular surface or be obscured by filling in order to reduce rectilinear features. Ravelling and instability of remaining highwalls can be expected. Attaining immediate stability by reducing slopes would be impractical and result in substantially greater pit area and associated environmental effects.

6.3.12 How does the plan to tunnel underground mitigate the future possibility of tunnel collapse due to limestone solubility?

Response:

Limestone solubility can be a concern as is the case in the state of Florida and other locations. However, the limestone sinkholes which occur in Florida and other locations are in a completely different geologic regime than what is present at the Crown Jewel Project. The carbonates in the Crown Jewel Project area are marbles. Karst or solution features are not prevalent in the marble (or its altered products) at the Crown Jewel Project site. Moreover, most underground workings, as contemplated in Alternatives C and D, would intersect rock types which are predominately non-carbonate.

6.3.13 Benefits of dewatered tailings disposal should be studied further.

Response:

The concept of dewatering tailings is a very expensive process involving filter presses and possibly thermal dryers to lower the moisture content of the tailings slurry to a point where a stable disposal pile could be constructed and maintained. The area

needed to construct a dewatered tailings disposal facility would probably exceed 100 acres (the approximate area of the proposed tailings pond), depending on the site selected. The Washington Metal Mining and Milling Operations Act requires that these tailings be placed in a lined tailings facility similar to what would be required for tailings deposited in solution. Rain and/or snowfall during placement would severely affect the stability of the disposal area. Construction of a permanently covered, dewatered tailings disposal is not considered practical for the Crown Jewel Project. The potential impacts of a failure in the disposal area would be similar to a failure in the waste rock disposal facilities. Potential mitigation for these instabilities would be to construct an embankment/berm around the disposal area. See Section 2.2.12, Tailings Disposal, in the EIS for further discussion of the pros and cons of this method of tailings disposal.

6.3.14 How were the sites of the proposed tailings facilities located?

Response:

Rationale and selection criteria for the tailings facilities locations are presented in Section 2.2.13, Tailings Disposal Locations, and supported by an evaluation of tailings disposal sites around Buckhorn Mountain (Golder, 1994d) submitted by the Proponent, Appendix K, Tailings Site Selection Report, as prepared by the WADOE, and in the Technical Memorandum - Review of Off-site Upland and Side-Hill Tailings Disposal (TerraMatrix, 1996).

6.4 SOILS

General

6.4.1 There were several comments received which agreed with the soils sections in the draft EIS. Other comments cited typos, requested minor clarifications, or expressed general opinions.

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "soil" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Soil Availability

6.4.2 Is there adequate growth medium to perform the required reclamation?

Response:

Yes, for all alternatives except Alternative C, for which a slight deficiency is estimated. The analyses comparing available soil versus required soil for the various alternatives is provided on *Table 4.5.1, Summary of Resoiling Considerations*, of the final EIS. Section 2.11.4, General Reclamation Procedures, has been clarified in the final EIS, to indicate the availability of adequate growth medium.

Soil Suitability

6.4.3 Will the salvaged topsoil be contaminated or lose its nutrients while in storage? Upon replacement, will the topsoil be contaminated by the waste rock or tailings? Can fertilizer help replace lost nutrients?

Response:

All soils suitable for salvage would be excavated and placed into topsoil storage stockpiles prior to any disturbance or directly applied to regraded areas. These procedures are described in Section 4.5, Soils, in the final EIS. The storage stockpiles would be isolated from the mining and milling operation until reclaimed for replacement. No contamination of the soils would occur while in the topsoil stockpiles.

The nutrient-supplying capability of a soil is a function of several soil characteristics including soil texture, cation exchange capacity, organic matter content, material volume, clay mineralogy, soil moisture regime, etc. It is true that a portion of this capability may be diminished as a result of soil stockpiling over time, and that the longer a soil is stockpiled the greater is the temporary loss of the soil's nutrient-supplying capability. However, it is also true that a fertilization program, based on accepted soil sampling and laboratory analysis techniques, would serve to correct this loss within the time frame envisioned for the Crown Jewel Project regardless of the alternative selected. This is the type of soil fertilization program that is proposed by the Proponent as a part of the reclamation plan for the proposed action. It would also apply to the preferred alternative, or any alternative, by default.

The types of areas where salvaged soils would be replaced include subsoils, waste rock, and tailings. A discussion of the potential interaction between subsoils, waste rock, tailings, and the salvaged soils is presented in the final EIS in Section 4.5.3, Effects Common to All Action Alternatives. No contamination of the replaced soils is anticipated.

Erosion Rate Calculations

6.4.4 **There were comments concerning the calculation of erosion rates; specifically: Section 4.5.4, Effects of Alternative B, Paragraph 2, of the draft EIS: "The assumption that revegetated 2H:1V slopes in Alternative B would have significantly lower ground surface and canopy cover is invalid. Existing slopes, both natural and revegetated have high ground cover values and - depending upon plant community - significant canopy cover. The potential erosion rates should be corrected."**

Response:

It is true that existing slopes have high ground covers and, depending upon plant community, significant canopy cover values. However, existing conditions obviously reflect vegetation communities which have had more than one to five years to develop and become topographically and vegetatively stable. The total percent ground and canopy cover estimates used in the RUSLE equation for the 2H:1V slopes of Alternative B was 88% and 78% for the one and five year time frames, respectively. (The lower fifth year percentage represented an estimated major decrease of ground cover due to mulch decomposition which was not totally compensated for by canopy cover. This *is* notably (perhaps not "significantly" as stated by the commentor) less than the 100+% value used for existing conditions.

To complete an analysis of this nature for a NEPA document, a conservative case situation must be assumed in the absence of applicable data to the contrary. No site-specific revegetation data is known to be available but, at the same time, site revegetation potentials can be considered to be comparatively high based on proposed soil reapplication depths, mulching practices, and the regional climatic regime. Therefore, ground and canopy cover values were selected that were believed to conservatively represent both existing conditions and revegetation potentials. As a reflection of the overall potential accuracy of the RUSLE equation, in terms of mining disturbances, these estimates are considered to be valid. A correction of potential

erosion rates, given that they are all below National Resource Conservation Service (NRCS) soil loss tolerance levels for loss of soil productivity seems unwarranted.

RUSLE "C" Factor

6.4.5 **Following reclamation treatments, it is likely that the actual RUSLE 'C' factor for reclaimed site surfaces would be in the range of 0.003 to 0.005 as a result of mulching alone. Other factors would further serve to maintain a lower RUSLE 'C' than that presented.**

Response:

The "C" factors used in RUSLE were calculated using values for a number of parameters (used in model sub-routine calculations) required by the model itself. These parameters included existing and proposed reclaimed vegetation types as well as estimated surface roughness, percent ground cover, percent canopy cover, average canopy cover height (ft.), a root mass factor, above ground biomass (lbs./ac.), and below ground biomass (lbs./ac.). With respect to the effect of mulching, it is true that at the time of application, and for some time thereafter, ground cover values would be extremely high. However, some allowance must be made for mulch loss and decomposition over time which would result in a lower ground cover value related to mulch application. This is particularly true for a five year time-frame where it was estimated that the majority of the mulch-effect would be lost. The C factors used, following reassessment, still appear to represent reasonable values applicable to the Crown Jewel Project. (See response 6.4.4 in this section concerning selected values and the perceived requirements for a conservative approach to model application.)

Contamination of Aquifer Through "Well Drained" Soils

6.4.6 **The facilities will be constructed on what appears to be soil mapping unit D, which is described as a well-drained soil. Does this mean that any contaminate spills will infiltrate immediately into the aquifer?**

Response:

No. All suitable soils would be salvaged prior to construction of the facilities. Soils in the facilities area are considered 100% salvageable (Cedar Creek Associates, Inc., 1992). Areas surrounding the facility structures would be comprised of roads, storage areas, and parking areas which would be compacted as a function of developing these areas. The compacted surfaces would limit infiltration of contaminants into the ground. In the event of a spill, the ground which is contaminated would be excavated and disposed of properly. The storm water runoff plan developed for the facilities area would route water to detention ponds. Oil/water separators would be installed, (as a condition of a site-specific Spill Prevention Control and Countermeasure [SPCC] plan) as necessary to separate hydrocarbons from the water. The oil collected would be periodically reclaimed and reused or disposed of properly.

6.5 HYDROLOGY

Climatology

6.5.1 **Many comments discussed a lack of on-site precipitation and evaporation data. The correlation of precipitation data with the Republic station was said to be an inadequate substitute for on-site data. Another comment stated that temperature and wind data needed to be included in the determination of an appropriate evaporation calculation. Commentors stated that conditions vary over short distances and that Republic was too far from the site. Other comments stated that precipitation was understated and**

evaporation was overstated. Another comment stated that data had been collected for an insufficient time period. Precipitation, temperature, and wind data from long term weather stations located at Molson, Havillah, and Canada were suggested for correlation.

Response:

The surface water and ground water impact assessments in the final EIS are based on a revised set of temperature, precipitation, and evaporation data. The WADOE, the Forest Service and the Forest Service's contractors worked with the Proponent to compile the best available historical weather data for the region and to synthesize the regional data into a unified weather data set for the mine site. Section 3.1, Air Quality/Climate, of the final EIS describes how the unified mine site weather data set was developed. A detailed assessment report entitled Meteorological Data Set, Crown Jewel Project (ENSR, 1996a) discusses the data evaluation methods and procedures.

The air quality impact assessments in the final EIS utilize the same wind data set that was included in the draft EIS. The electronic station that has been operated by the Proponent since 1991 uses sensors that conform to EPA's standards. During the period from June 1991 through March 1992, the Proponent conducted semi-annual 3rd-party station audits to demonstrate that the sensors and data loggers were calibrated within acceptable tolerances established by EPA. Section 3.1, Air Quality/Climate, of the final EIS includes a brief discussion of the Proponent's quality control methods that were used to establish the validity of the wind data.

6.5.2 **Several comments were made regarding variation of precipitation and evaporation as a result of microclimates at the site. Other comments suggested that changing the configuration of the Buckhorn Mountain summit may affect precipitation patterns at the site.**

Response:

Section 3.1, Air Quality/Climate, of the final EIS has been revised to discuss how wind, temperature, and precipitation data sets were developed.

Concerning the removal of part of Buckhorn Mountain, only a portion of the mountain top would be removed by the mining operation. Please refer to *Figure 2.16, Alternative B, Operational Site Plan*, of the final EIS. This figure shows that most of Buckhorn Mountain would remain intact. No climate changes are anticipated due to the mining operation.

6.5.3 **A description of the relationship between precipitation and surface water flow at the site was requested.**

Response:

The surface water and ground water impact assessments in the final EIS are based on a revised set of temperature, precipitation, and evaporation data. The WADOE, the Forest Service and the Forest Service's contractors worked with the Proponent to compile the best available historical weather data for the region and to synthesize the regional data into a unified weather data set for the mine site. Section 3.1, Air Quality/Climate, of the final EIS describes how the unified mine site weather data set was developed.

Streamflow at the site was compared to precipitation data. The relationship of streamflow to precipitation data is addressed in the final EIS, in more detail, in Section 4.7, Surface Water and in the detailed assessment report entitled Analysis of Stream Depletions Resulting from the Proposed Crown Jewel Project (Hydro-Geo, 1996a).

6.5.4 **On-site temperature data needs to be discussed in the EIS document. Other comments asked about the purpose of temperature data. One comment stated that degradation of cyanide was temperature dependent and this relationship needed to be explored in the EIS. Others commented that the average annual temperature presented in the draft EIS seemed high for the area.**

Response:

The WADOE, the Forest Service and the Forest Service's contractors worked with the Proponent to compile the best available historical weather data for the region and to synthesize the regional data into a unified weather data set for the mine site. Section 3.1.3, Climate, of the final EIS, describes how the unified mine site weather data set was developed and *Table 3.1.1, Weather Data*, displays the temperature data.

6.5.5 **This comment noted that an average annual precipitation value was of limited use and that a range of high and low precipitation amounts should be used in the analyses.**

Response:

For purposes of modeling the hydrological impacts to ground water flow, stream flow, and wetlands, two sets of wet year and dry year precipitation values were derived by inspecting the historical wet/dry cycles at the Molson weather station. Based on the patterns at Molson, the extreme wet year at the mine site is estimated to be 31.7 inches per year (which corresponds to an 86-year recurrence interval). The extreme dry year at the mine site is estimated to be 14.2 inches per year (which corresponds to a 13-year recurrence interval).

Surface Water Hydrology

6.5.6 **General comments included many varying opinions regarding the Crown Jewel Project. Statements ranged from the opinion that the hydrology impacts were understated, to the opinion that the operation was a good plan which was trying to conserve water resources. Other comments stated that the Crown Jewel Project was using too much water and creating too much pollution. None of these comments asked specific issues to be addressed.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "surface water hydrology" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

6.5.7 **There were many comments that addressed minor clarifications, editorial changes, and cited typos.**

Response:

All requested corrections and modifications were considered and revisions were made, as appropriate, in the final EIS.

6.5.8 **The availability of sufficient surface water flow data on the lower portions of drainages in the Crown Jewel Project area was questioned. One comment stated that obtaining this information was necessary for a complete EIS. Other comments stated that there was a low level of agreement within the available on-site stream flow data and that the data is then unreliable. Others stated the opinion that an average streamflow could not be estimated from the data available and that the period of data collection was too short. There were other comments that questioned the amount of snow cover that would be lost when the top of Buckhorn Mountain is removed.**

Response:

Additional data has been collected at locations near the confluence of the Crown Jewel Project area streams to Toroda and Myers Creeks. This data is presented in Section 3.6.2, Regional Surface Water Hydrology, of the final EIS. Extensive work was completed to review surface water flow data collected at the Crown Jewel Project site. All of the surface water hydrology data was reviewed. The peak surface water flows in the upper portions of drainages vary significantly from year to year and from site to site. This reflects differences in runoff response to changes in precipitation annually and between drainages due to their aspect, vegetative cover, and infiltration into the soil. The regression equation used to calculate mean annual flow in the draft EIS and the associated discussion has been deleted from the final EIS. Changes in snow accumulation on the north-east side of Buckhorn Mountain due to the mining operation have been considered in the stream depletion calculations, and are discussed in Section 4.7, Surface Water, of the final EIS.

6.5.9 **Several comments were received regarding the validity of the Marias Creek flow data. There were comments that stated that flows from the Roosevelt adit have been illegally diverted from Marias to Nicholson Creek, and that any stream flow monitoring done on Marias Creek was flawed due to this diversion.**

Response:

There was no illegal diversion of the flow from the Roosevelt adit. A description of the Roosevelt adit discharge history is included in Section 3.6.4, Project Area Surface Water Hydrology, subsection "Project Area Drainage Characteristics," of the final EIS. Baseline surface water flow monitoring conducted as a part of the baseline monitoring program was intended to establish pre-mining conditions. Refer to response 6.18.48 in this appendix, for further discussion of Roosevelt adit flows.

6.5.10 **A comment was made that the estimated mean annual flow estimates presented in the draft EIS should be discussed in more detail.**

Response:

The estimated mean annual flow data for the Buckhorn Mountain streams have been removed from the final EIS. These have been replaced with estimates of the runoff for each of the Crown Jewel Project area streams. Surface water flows measured during the monitoring program have been plotted in hydrographs for each station and the water year that each station has been monitored. Based on the hydrographs, a water balance was prepared. Refer to Section 3.6.4, Project Area Surface Water Hydrology, subsection "Analysis of Surface Water Monitoring," of the final EIS.

6.5.11 **Comments stated that stream depletion was not adequately addressed, that reduced stream flow will be a problem for aquatic life, that reduced stream flow will affect the Kettle River, and that recreational uses (canoeing) will be compromised. More specific comments asked how stream depletions would be mitigated. Some comments stated that the EIS should identify water users and their water requirements and assess the impact of stream depletion on these users. Still other comments asked for identification of the lineal feet of streams that would be dredged and filled, along with the number of lineal feet and specific location along streams that would have reduced flow. Other comments stated that stream depletion would be less than what was reported in the draft EIS.**

Response:

Stream depletion modeling has been revised in the final EIS. This revision includes a re-evaluation of climatology, pit inflow modeling, analyses of hydrographs of streams in the Crown Jewel Project area, and inclusion of additional data collected subsequent to the draft EIS. The results of stream depletion modeling are found in *Table 4.7.3,*

Impacts of Mining on Buckhorn Mountain Drainages, discussed in Section 4.7.4, Effects of Alternative B, and shown on *Figure 4.7.2, Zone of Influence Due to Pit Dewatering*, of the final EIS. Stream depletion along specific locations and lineal footage along streams that would have reduced flows are shown on *Figure 4.7.3, Schematic - Average During and Post Mining Stream Depletions* and *Table 2.15, Summary of Impacts by Alternative for Each Issue*. Predicted stream depletion at the end of mining from all streams on Buckhorn Mountain is 46 acre-feet for an average precipitation year. This compares with a mean annual discharge for the Kettle River at Carson, British Columbia of approximately 1.08 million acre-feet/year. Construction of the mine is expected to result in the depletions referenced in tables above. Mitigation for impacts resulting from those depletions can be found in Section 2.12.16, Wetlands, and Section 2.12.18, Wildlife and Fish - Public Land Enhancement, of the final EIS.

Comments concerning the impact of reduction in stream flow on individual water rights are beyond the scope of the final EIS and will be considered during evaluation of the water right permit applications for the Project.

6.5.12 **Comments were made regarding the need to address drought periods in the final EIS. Other comments suggested that stream flows be correlated to precipitation and that a discussion should be included that presents a range of expected flows from extreme high flow periods to extreme low flow periods.**

Response:

Additional data has been collected near the confluence of the Crown Jewel Project area streams with Toroda and Myers Creeks. This data is presented in Section 3.6.2, Regional Surface Water Hydrology, of the final EIS. The period of record for stream flows monitored at the project site correspond to a period of high precipitation variability. For more information regarding the climatology referenced above, please see Section 3.1, Air Quality/Climate, and Section 3.6.4, Project Area Surface Water Hydrology, subsection "Analysis of Surface Water Monitoring," of the final EIS. Extensive work has been done to review surface water flow data collected at the site since the issuance of the draft EIS. Please refer to Section 4.7, Surface Water of the final EIS.

6.5.13 **Most of the comments about "impacts to wetlands" focused on the frog pond. Comments stated that the evaluation should focus on long term as well as short term impacts to the frog pond, that baseline seasonal water levels from the frog pond should be collected, questioned whether tailings would be deposited within the frog pond, and questioned how the reduction of flow to the frog pond was calculated. (Other comments asked about direct and indirect impacts to the frog pond from the mining operation.) Another comment suggested that all the alternatives be reviewed for consistency regarding the size of the frog pond.**

Response:

Seasonal water level data was not collected for the frog pond as part of the baseline monitoring program. The Proponent has been collecting data on water levels at the frog pond. Seasonal water level monitoring of the frog pond is described in Section 2.13.1, Water Resources Monitoring, of the final EIS. Also, as stated in Section 2.13.5, Wildlife and Fish Monitoring, in the final EIS, the frog pond would be monitored annually using chorus surveys to determine the relative abundance of spotted frogs.

No alternative would result in tailings being deposited in the frog pond. Alternative G would result in placement of waste rock that would cover the frog pond. The frog pond fills during the spring snow melt and overflows to the north and east into Nicholson Creek. During the year, the water surface in the frog pond is reduced by evapotranspiration, seepage, and cattle and wildlife usage. By late summer and fall

only a small pool remains. The drainage basin which contributes surface water runoff to the frog pond is about 50-60 acres. There is no obvious evidence of springs providing water to the pond during the low water period in the fall. The pit inflow numerical modeling and stream depletion modeling cannot be used to precisely quantify impacts to the frog pond due to the localized nature of this hydrologic system. Monitoring and mitigation measures are described in Section 2.13.1, Water Resources Monitoring, of the final EIS. Additional monitoring of the frog pond may be required as part of the Corps of Engineers 404 permit.

The final EIS has been revised to list the frog pond with an area of 1.8 acres.

6.5.14 **Comments stated that there was a lack of information regarding the impact of pit dewatering and blasting on flows in Beaver Creek and other drainages south of Pontiac Ridge.**

Response:

Pit inflow modeling and stream depletion modeling predict no hydrologic changes as a result of the mine operation further south than Ethel Creek and Marias Creek. See Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water, of the final EIS. Refer also to response 6.5.34, in this appendix.

6.5.15 **Several comments related strictly to the flow from the waste rock disposal areas. One comment was a request to quantify runoff. Another comment said that the draft EIS failed to show that waste rock was located more than 200 feet from streams. One comment asked that the effect of waste rock placement on snow melt should be considered.**

Response:

A hydrologic water balance has been developed for the driest, average, and wettest precipitation periods. Runoff is one element of this water balance, (See Section 4.7.3, Effects Common to All Action Alternatives, subsection "Waste Rock Disposal"). Refer to response 6.18.42, in this appendix, for solid waste regulations applicable to waste rock. Changes in snow melt runoff on the north-east side of Buckhorn Mountain due to construction of the waste rock disposal areas are considered in the stream depletion calculations as revised in the final EIS, and are presented in Section 4.7, Surface Water.

6.5.16 **Several comments asked what the impacts of sediment loading would be to streams and aquatics. Design criteria used in the sediment control plan was questioned. One comment asked whether design criteria using 10-year and 25-year recurrence intervals were sufficient for the Crown Jewel Project. Another asked what happens when the storm event exceeds the design criteria. Another comment stated that the inches of rainfall listed for design storm events seemed low and wanted to know the source of information. Other comments questioned the effectiveness of the sediment control structures. Another group of comments expressed concern that sediment modeling was required in order to estimate tons per year of sediment entering streams on the Crown Jewel Project site. One comment stated that a discussion of NPDES and storm water permitting needed to be included in the final EIS. Several commentors suggested alternatives that would minimize impacts from sedimentation.**

Response:

The discharged water could cause seasonal erosion to the drainage channels and add sediment during high flow periods, as discussed in Section 4.7, Surface Water, of the final EIS. These impacts are not expected to substantially affect resident fisheries. Impacts to fisheries are discussed in Sections 4.11, Aquatic Habitats and Populations, and 4.12, Wildlife.

Alternative B includes designs for retaining storm water runoff for the 24-hour peak snowmelt, the volume of one year of accumulated sediment, and the 10-year, 24-hour storm. If a runoff event exceeds the design criteria, water would be discharged from the sediment traps to either Nicholson Creek or Marias Creek. Refer also to response 6.18.22 in this appendix. Drainage channels to the sediment traps will be designed to pass the 100-year, 24-hour storm event without overtopping on federal lands.

The precipitation-frequency data used to calculate the storm event volume were determined using data taken from the National Oceanographic and Atmospheric Administration (NOAA) Atlas, which is commonly used for the design of hydrologic structures.

Modeling was completed to evaluate soil loss associated with site reclamation for each alternative. *Table 4.5.2, Summary of Mine Component Potential Erosion Rates by Alternative*, shows the soil loss in tons per year. Modeling was also done by Golder Associates as a part of the NPDES permit application. To determine the TSS concentration in water discharged from the sediment traps, refer to the Crown Jewel Project: Diversion Channels and Sediment Traps Conceptual Design Report (Golder, 1996b). Additional information relating to NPDES permitting and storm water controls is found in responses 6.18.22 and 6.18.33 in this appendix.

6.5.17 **It was requested in several comments that cumulative impacts to drainages further from the Crown Jewel Project area need to be discussed. These drainages were specified as Myers, Marias, Nicholson, and Toroda Creeks, and the Kettle and Okanogan Rivers.**

Response:

There would be direct hydrologic impacts within Myers, Marias, Nicholson, and Toroda Creeks and the Kettle River basins. These impacts are discussed in Section 4.7, Surface Water, of the final EIS. Cumulative indirect hydrologic impacts within the Okanogan River basin would result from increased water demand to serve additional residents moving into the Tonasket and Oroville areas who work at the mine or provide support services for those residents. Section 4.19, Socioeconomic Environment, of the final EIS discusses these impacts.

Ground Water Hydrology

6.5.18 **Some commentors believed that the hydrogeologic systems were not fully understood and that the draft EIS was inadequate. Comments that the draft EIS lacked sufficient data to address impacts to ground water were also expressed. Some commentors believed that wells would dry up off-site, water would be contaminated, quality assurance and quality control of water quality data were not presented, and stream flow would be reduced. These comments are grouped here as general; however, more specific comments on these subjects are responded to later in this section.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "ground water" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Additional work on the hydrogeological aspects of the Crown Jewel Project has been completed since the draft EIS was published in June 1995. Additional hydrogeologic investigations were conducted in the open pit area and in the proposed tailings disposal area. The results of field investigation were incorporated into ground water flow modeling using ABCFEM, a finite-element model (Hydro-Geo, 1996b) and SEEP/W

analytical model (Golder, 1996c). Additional technical reports addressing the issues raised in many of the comments on surface and ground water hydrology have been completed. This modeling is discussed in Sections 4.6, Ground Water, Springs and Seeps, and 4.7, Surface Water, of the final EIS.

The following measures were taken to ensure that the baseline surface and ground water quality data collected for the Crown Jewel Project EIS were valid:

- Field and laboratory water quality samples were collected in accordance with methods described in the report Baseline Hydrologic Monitoring Plan (ACZ, 1993). This report was reviewed by the WADOE and Forest Service;
- As specified in the above plan, quality assurance samples were collected in the field on a routine basis;
- Water quality analyses were performed by laboratories certified or accredited by the State of Washington;
- Samples were analyzed in strict accordance with Quality Assurance (QA)/ Quality Control (QC) specifications required by EPA-certified laboratories; and,
- All water quality data were carefully validated following procedures outlined in the report Baseline Hydrologic Monitoring Plan (ACZ, 1993). Data validation results were summarized and reported to WADOE and other agencies on a monthly basis. Copies of the data validation reports are available from WADOE upon request.

6.5.19 **There were many comments that requested minor clarifications, editorial changes, and cited typographical errors.**

Response:

All requested corrections and modifications were considered and revisions were made, as appropriate, in the final EIS.

6.5.20 **Several comments addressed specific wells and asked, "How do I know my well is going to be safe and productive, in terms of quantity?" Several commentors expressed concern about their wells going dry. Another comment asked, "Who will be responsible?"**

Response:

Figure 4.6.1, Zone of Influence Due to Pit Dewatering and the Pit Recharge Catchment Area, identifies the area which is predicted to be influenced by the mining operation. Ground water levels inside the zone are predicted to decline one foot or more. Ground water levels outside the zone are predicted to experience declines of less than one foot.

The question of who would be responsible if a domestic well should go dry would depend on a number of site specific factors such as the location of the well, whether the well fully penetrates the aquifer, and whether the decline can be directly attributable to a specific cause.

6.5.21 **Water level fluctuations on site need further discussion in the final EIS. The ground water monitoring network needs to be expanded further downstream of the Crown Jewel Project site. The Pontiac Ridge area also needs to be included in the ground water monitoring network.**

Response:

The ground water monitoring program in the general area of the Crown Jewel Project may change as a result of the mine permitting process. See Section 2.13.1, Water Resources Monitoring, of the final EIS for further details. No impacts to ground water in the Pontiac Ridge area are predicted.

6.5.22 **Comments were received that questioned the testing procedure used at the site to evaluate hydrologic properties. Specifically, that hydraulic conductivity outside the pit area was not evaluated, and that only one pump test was used to characterize the entire aquifer system.**

Response:

The aquifer system in the general Crown Jewel Project area was assessed from numerous air-lift tests, slug tests, a pump test, packer tests, by monitoring of water levels in numerous wells, and by monitoring discharge from the existing mine adits. The results of field investigations were verified by the calibration of the ABCFEM, a finite-element computer model. These tests are discussed in Section 3.8, Ground Water, of the final EIS.

6.5.23 **Comments questioned the methodology, terminology, assumptions, and the data used in determining ground water inflow into the pit. Some commentors believed that predicted inflows were seriously overestimated; others believed that predicted inflows were seriously underestimated.**

Response:

The estimates of ground water inflow into the pit have been revised and are discussed in Section 4.6, Ground Water, Springs and Seeps, in the final EIS. This revision includes a reevaluation of climatology, pit inflow modeling, analyses of hydrographs of streams in the Crown Jewel Project area, and inclusion of additional data collected subsequent to the release of the draft EIS. Results of the ground water flow model calibration support the approximate range of ground water inflow as previously presented in the draft EIS.

6.5.24 **The issue of dewatering the open pit was the subject of several comments. Some commentors believed that dewatering would reduce aquifer storage, change the location of the ground water drainage divide, reduce the ground water recharge zone, and reduce the ground water contribution to surface water streams. Others believed a contrary view that the drainage divide would remain stationary and that the recharge zone would not expand during dewatering. Several comments requested discussion on the impact to the fracture flow system from blasting.**

Response:

Impacts from pit dewatering have been revised in the final EIS. This revision includes a reevaluation of climatology, pit inflow modeling, analyses of hydrographs, and the inclusion of additional data collected subsequent to the draft EIS. The results of additional studies are summarized in Section 4.6, Ground Water, Springs and Seeps, in the final EIS.

The impacts of blasting bedrock is expected to extend only 10-15 feet into the pit walls.

6.5.25 **The statement in the draft EIS that mine induced subsidence would only impact the ground water system locally was questioned. The comment asked, "what is the definition of locally impact" and asked, "how will subsidence affect the five drainage basins with headwaters at the site, and how far downstream will these impacts extend?"**

Response:

The local impact areas of subsidence are shown on *Figure 2.18, Alternative C, Operational Site Plan*, and *Figure 2.19, Alternative D, Operational Site Plan*, designated as "potential subsidence zone." The impacts of subsidence on the ground water system during and after the underground mining alternative would depend on the mining method, geology, and hydrogeology of the site. Mining methods with any form of backfilling would have a minimal impact on surface and ground water resources. Mining with caving methods could impact surface and ground water resources to a larger degree, but not as much as open pit mining. The effects of underground mining on the ground water system are discussed in Sections 4.6.5, Effects of Alternative C, and 4.6.6, Effects of Alternative D.

6.5.26 **Some commentors stated that the effects of dewatering on the streams were underestimated and others stated that these effects were overestimated.**

Response:

The ground water flow computer modeling was revised regarding the potential stream depletion and the interaction between surface and ground water. The model was calibrated to the measured water levels in the wells, flow in surface streams, and discharge from the Roosevelt adit. The results of modeling and of the assessment of stream depletion are presented in the Analysis of Stream Depletions Resulting from the Proposed Crown Jewel Project (Hydro-Geo, 1996a), and the Analysis of Open Pit Mine Inflow for the Proposed Crown Jewel Project (Hydro-Geo, 1996b). Section 3.8.7, Relation of Ground Water and Surface Water Systems, Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water, in the final EIS discuss the results of the modeling.

6.5.27 **Several comments disputed conclusions in the draft EIS that total seepage from the pit would be lowered as a result of backfilling. Several clarifications were requested regarding selective backfilling of waste rock material. The conclusion that water would discharge from the pit largely in the form of springs and seeps, rather than at a defined outflow point was disputed.**

Response:

The sections of the final EIS (Sections 4.6, Ground Water, Springs and Seeps and 4.7, Surface Water) that discuss outflow and seepage from the backfilled pit have been revised to address these comments.

6.5.28 **More detail describing the underground mine alternative was requested. Another comment stated that inflow rates to the underground mine were derived using very simplistic empirical equations that are based on idealized assumptions and that inflow is overestimated.**

Response:

The underground mine alternative is discussed in Section 2.6, Alternative C. Ground water flow modeling has been revised. See Section 4.6.5, Effects of Alternative C, of the final EIS.

6.5.29 **Re-evaluation of the flow analysis from the Roosevelt adit was requested. Clarification that the Gold Axe adit has never discharged was requested. The issue of diverted flows from the Roosevelt adit feeding Marias or Nicholson Creek was also raised.**

Response:

Re-evaluation of flow analysis from the Roosevelt adit is presented in the report Analysis of Open Pit Mine Inflow for the Proposed Crown Jewel Project (Hydro-Geo, 1996b). The text in the final EIS has been revised, correspondingly. Discussion on

flows from the Gold Axe adit in Section 3.8.6, Influence of Past Mining on Ground Water, has been clarified. Response 6.18.48, in this appendix addresses Roosevelt adit discharge history.

6.5.30 **Comments questioned the placement of the tailings pond over a fault in Marias Creek.**

Response:

Presence of adverse geologic conditions, such as faults, are addressed in Appendix K, Tailings Site Selection Report of the final EIS.

6.5.31 **Many comments expressed disbelief that the tailings facility could be labeled "zero-discharge." Other comments questioned how the tailings would dry out after operations are ended without discharging water. Another comment requested that modeling similar to that performed for Marias Creek be performed for the alternative that places the tailings disposal area in Nicholson Creek.**

Response:

The proposed Crown Jewel Project tailings facility is designed as a "closed circuit" facility. "Zero discharge" means that no discharge of process water will be permitted from the tailings facility. Refer also to Section 2.2.15, Tailings Liner System Design.

Reclamation of the proposed Crown Jewel Project tailings facility would involve recontouring of the surface area, draining of the facility, application of a three foot layer of coarse material followed by 12 inches of topsoil, and revegetation. During the final year of operation, the tailings deposition sequence would be modified to achieve final surface configuration. The final surface configuration would prevent any ponding, promote overall drainage to the reclamation spillway, and reduce infiltration of direct precipitation. Following reclamation, evaporation and plant respiration should be sufficient to prevent most surface moisture from entering the tailings materials during the growing season months. In the winter, during the time of greatest precipitation and lowest evaporation and plant respiration, moisture would pass through the reclaimed soil profile to the soil/tailings interface. Most of this infiltration would collect above the interface in the soil profile and seasonally could enter the tailings. Refer to response 6.15.2 in this appendix for additional information on the reclamation plan.

Seepage modeling was not conducted for a tailings facility in Nicholson Creek drainage because the Nicholson alternative tailings disposal site would be very similar to the Marias Creek area. Impacts from this facility on the ground water system would be similar to those described in the Marias Creek drainage.

6.5.32 **Comments suggested that seepage from waste rock facilities had not been adequately addressed. Another comment stated that the assumptions made in modeling waste rock seepage were overly conservative.**

Response:

Ground water recharge through the waste rock disposal areas during operations would be greater than premining conditions. Modeling (Schafer, 1996a) predicts a decrease in seepage through the waste rock disposal areas after reclamation and such seepage would be less than premining recharge rates.

As a result of the large surface area of waste rock exposed to weathering, water quality impacts from waste rock disposal sites could result from the formation of acidic drainage and leachate that contains trace metals. Refer also to Section 4.6.3, Effects Common to All Action Alternatives. All surface seepage from waste rock disposal

areas would be captured during operations and reclamation and routed to a sediment detention pond before being released.

6.5.33 **Clarification was requested in the sections describing springs and seeps. The statement, "number of springs and seeps found only once" should be clarified. Clarification was requested in the description of the interconnection of surface and ground water. One comment stated the pit dewatering has little effect on springs in the area. Another comment requested that the proposed mitigation account for a reduction in springs and seeps.**

Response:

Springs and seeps are listed in *Table 3.7.1, Spring and Seep Investigation Summary,* of the final EIS. The number of times each spring or seep was located can be determined by the presence of a measurement value or a "NM" (NM indicates No Measurement). Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water, of the final EIS discuss ground water and surface water, describe the inherent variability in spring flow, and the potential effects of pit dewatering. The proposed mitigation for potential flow reduction to springs and seeps is discussed in Section 2.12.16, Wetlands.

Section 3.8.7, Relation of Ground Water and Surface Water Systems, addresses the interconnection between ground and surface water.

6.5.34 **Discussion on the impacts from the mining operation on ground water, springs, seeps, and wetlands in the Beaver Canyon area were requested.**

Response:

Computer modeling of ground water flow during the mining operation indicated that the zone of influence due to open pit drainage would not extend into the Beaver Canyon drainage. Therefore, no impacts to local water supply wells, springs, seeps and wetlands are anticipated. Refer to *Figure 4.6.1, Zone of Influence Due to Pit Dewatering and the Pit Recharge Catchment Area.*

Water Quality

6.5.35 **There were many general water quality comments. These included comments that suggested the following:**

- **The final EIS should include the development of new or revised alternatives that would have less impact on water quality;**
- **The draft EIS glosses over long term impacts;**
- **Mitigation measures for water quality need more discussion; and,**
- **Water pollution can not be controlled from the Crown Jewel Project. These comments are grouped here as general; however, more specific comments on these subjects are responded to later in this section.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "water quality" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

6.5.36 **There were many comments that requested minor clarifications, editorial changes, and cited typographical errors.**

Response:

All requested corrections and modifications were considered and revisions were made, as appropriate, in the final EIS.

6.5.37 **Several comments addressed specific wells and asked "How do I know my well is going to be safe, in terms of water quality."**

Response:

In compliance with state ground water quality regulations (Chapter WAC 173-200, October 1990) and federal water quality regulations, WADOE, the Forest Service, and BLM would require that the Proponent monitor site ground water quality conditions both during and after the mining operation in those areas where ground water impacts are predicted to occur or are reasonably foreseeable including, but not limited to, the proposed tailings facility, waste rock disposal area(s), and mining areas. Monitoring would ensure early detection of potential ground water quality degradation before downgradient users are affected. If ground water quality degradation is detected and confirmed, WADOE would require that the Proponent mitigate impacts as required under state law. A performance security would be posted for remediation of any water quality impacts. Refer to Section 2.13.1, Water Resources Monitoring, for monitoring measures and Section 2.14, Performance Securities, for a discussion of performance securities.

6.5.38 **Some comments questioned the validity of the water quality data collected and requested QA/QC data. One comment noted that the presence of H_2S in many springs inventoried suggested anaerobic conditions were present in the ground water. Further discussion was requested on the topic of acid mine drainage as a result of oxidation on pit walls and waste rock.**

Response:

The following measures were taken to ensure that baseline surface and ground water quality data collected for the EIS were valid:

- Field and laboratory water quality samples were collected in accordance with methods described in the report Baseline Hydrologic Monitoring Plan (ACZ, 1993). This report was reviewed by the WADOE and Forest Service and, to ensure collection of representative and reproducible samples, included requirements to filter surface and ground water in the field before laboratory analysis of trace elements and metals;

- As specified in the above plan, quality assurance samples were collected in the field on a routine basis;

- Water quality analyses were performed by laboratories accredited by the State of Washington;

- Samples were analyzed in strict accordance with Quality Assurance(QA)/Quality Control(QC) specifications required by the EPA-certified laboratories; and,

- All baseline water quality data from were carefully validated following procedures outlined in the Baseline Hydrologic Monitoring Plan (ACZ, 1993). Data validation results were summarized and reported to WADOE and Forest

Service on a monthly basis. Data validation reports are available for review at the WADOE office in Yakima, Washington.

Presentation of QA/QC data and validation results from the baseline water quality monitoring program was considered too voluminous for inclusion of the Crown Jewel Project final EIS. This information is available for review at the WADOE office in Yakima, Washington.

Based on chemical equilibrium calculations alone, it can be shown that it would be impossible for sulfide to exist in water that also contains dissolved oxygen (Snoeyink and Jenkins, 1980). The baseline ground and surface water quality data from Crown Jewel Project sampling stations suggest, however, that the oxidation-reduction reactions predicted to control hydrogen sulfide and oxygen concentrations are not in equilibrium.

See Sections 4.6.3, Effects Common to All Action Alternatives, and 4.6.4, Effects of Alternative B, in the final EIS, regarding the potential for acid rock drainage from oxidation of pit walls and waste rock.

6.5.39 **Some comments cited that elevated concentrations of silver and cadmium predicted in the pit lake water were unacceptable. Related comments requested a discussion on the proposed mitigation of the silver and cadmium concentrations, and expressed concerns over long term impacts. Several comments questioned the stratification of the pit lake and its effect on the model if the lake was not oligotrophic. Other comments suggested that the draft EIS failed to explain the conservative nature of the pit water quality modeling and the limitations and problems with comparing model results to freshwater aquatic standards. Several comments stated that drawing specific conclusions of exceedence from the pit water quality modeling was inappropriate. Other comments noted that NPDES permitting would need to be completed for any discharge of pit water to Nicholson Creek. Discussion of impacts of using Nicholson Creek as a mixing zone were also requested. Another comment requested a discussion on the length of time monitoring would be required for pit water discharge.**

Response:

Section 4.6.4, Effects of Alternative B, of the final EIS, describes water quality conditions predicted for the pit lake for three pit filling scenarios, including enhanced filling of the pit with water from the proposed Starrem Reservoir. Refer also to Section 4.6.3, Effects Common to All Action Alternatives.

Section 4.6.3, Effects Common to All Action Alternatives, in the final EIS was revised to include a more complete explanation of the assumptions used including static factor of the pit lake and limitations of predicting pit water quality conditions at the Crown Jewel Project.

Pit water quality predictions were directly compared to Washington ground water quality and fresh water aquatic life standards and presented in *Table 4.6.2, Comparison of Predicted Water Quality Conditions in the Proposed Open Pit to Washington Ground Water Quality Criteria*, and *Table 4.7.4, Comparison of Predicted Water Quality Conditions in the Proposed Open Pit to Washington Aquatic Life Criteria.* A column was added to each table that lists the range of baseline surface and ground water quality concentrations measured at the site. These comparisons were made to predict potential regulatory compliance problems and to establish an adequate performance security.

If predicted water quality exceedences occur, the Proponent would be required to implement the mitigation measure described in Section 2.12.5.2, Water Discharge and

Section 2.12.18.14, Pit Lake. The pit lake water quality would be monitored as described in Section 2.13.1, Water Resources Monitoring.

If the pit lake water quality exceeds the water quality standards, the Proponent would be required to obtain an NPDES permit for releasing treated water from the lake.

6.5.40 **Comments requested further discussion on background levels of cyanide found in some adit samples. Another comment stated that water from the Roosevelt adit (or any adit) is not ground water and therefore requires an NPDES permit for discharge. It was suggested that these discharges be captured and routed to the tailings facility.**

Response:

There is no documentation that cyanide was used at the site in the past to process ores. The infrequent detection of cyanide during baseline monitoring in historic mine discharges and in downgradient streams suggests either a natural source or, due to the relatively low laboratory detection levels employed, an artifact of the analysis.

Flows from historic mine adits at the Crown Jewel Project site originate as ground water that is discharged at the surface. The adit discharges are described in Section 4.6, Ground Water, Springs and Seeps. Capture and diversion of the adit discharges to the tailings facility is one method to comply with water quality standards. Another method is treatment and discharge. Refer to Section 2.12.5.2, Water Discharge. Adit discharges are subject to an NPDES permit.

6.5.41 **Comments stated that water in the tailings facilities represents a long term risk for impacting ground water quality. More specific comments asked when it could be determined if the tailings liner system is leaking; and, if a leak is detected, what would be the impact to ground water. Another comment asked if there are metals in the tailings impoundment that exceed "any water quality standard." Other comments asked about the direction of surface water flow after reclamation and about subsequent water quality impacts. One commentor stated that the worst case tailings pond failure scenario did not account for the diversion of Roosevelt adit flows to Nicholson Creek.**

Response:

Impacts to ground water quality due to loss of solids or liquids from the tailings facility are described in Section 4.6.3, Effects Common to All Action Alternatives.

Leaks from the primary liner would be detected by the leak detection system. Leaks from the secondary liner could be detected by monitoring of the underdrain or by the ground water monitoring network. Refer to Sections 2.12.13.4, Tailings Disposal Facility and 2.13.1, Water Resources Monitoring. *Table 3.3.7, Analysis of Tailings Liquid, Table 4.6.3, Predicted Ground Water Contaminant Concentrations Downgradient from a Release of the Tailings Impoundment, Assuming Worst Case Conditions*, and *Table 4.12.5, Risk or Probability of Toxic Impact at the Tailings Pond*, disclose potential changes in several parameters including metals. Refer also, to Appendix F, Dangerous Waste Characterization Results for Detoxified Tailings, for more information on detoxified tailings.

After reclamation, runoff from the tailings disposal facility would discharge to Nicholson Creek. Discharges from the Roosevelt adit are also expected to go to Nicholson Creek as they currently do.

6.5.42 **Comments requested additional discussion of seepage from the waste rock disposal areas. Another comment stated that seepage from waste rock should be discharged to ground water rather than surface water. However, the opposite viewpoint was also expressed, that discharge to ground water was unacceptable. It was stated that more**

work was needed to characterize the water quality of seepage from the waste rock disposal areas. Some commentors said that "hot spots" would form in the waste rock disposal areas. A request was made that information pertaining to Total Suspended Solids (TSS) from waste rock areas be discussed. Other comments stated that waste rock is a solid waste requiring a liner, and that a storm-water NPDES permit is not applicable to runoff from waste rock, rather a traditional NPDES permit would be required.

Response:

Section 3.3.3, Geochemistry, Section 4.6.3, Effects Common to All Action Alternatives, and Section 4.7.3, Effects Common to All Action Alternatives, have been revised to more clearly describe seepage and runoff and associated impacts from waste rock disposal areas. The potential for "hot spots" to form in the waste rock disposal areas and impact water quality would largely depend on identification of potentially acid-generating waste rock during mine operations. The final EIS was revised to include a discussion of the requirement under the Washington Metal Mining and Milling Operations Act and Forest Service and BLM guidelines that the Proponent develop as part of the Crown Jewel Project permitting a "waste rock management plan" to minimize the potential for acidic drainage. Refer to Section 2.12.5.1, Prevention of Acid Rock Drainage, of the final EIS.

Modeling was completed to evaluate soil loss associated with site reclamation for each alternative. *Table 4.5.2, Summary of Mine Component Potential Erosion Rates by Alternative,* shows the soil loss in tons per year. Modeling was also performed by Golder Associates as a part of the NPDES permit application. For information on the predicted TSS concentration in water discharged from the sediment traps, refer to the Crown Jewel Report: Diversion Channels and Sediment Traps Conceptual Design Report (Golder, 1996d).

For information concerning the regulations which affect waste rock, refer to response 6.18.42 in this appendix. An NPDES permit is required for all discharges of pollutants to waters of the United States. Waste rock effluent, derived from seepage or runoff from waste rock or overburden stockpiles, is subject to 40 CFR, Part 440, Effluent Limit Guidelines. Waste rock effluent is also subject to effluent limits to protect aquatic life and human health.

6.5.43 **Comments were received regarding impacts on wetland areas from increased sediment. A commentor stated that as sediment fills in the wetland area temperature increases, dissolved oxygen decreases, and there would be increased nutrient loading.**

Response:

Potential impacts to wetlands from the waste rock facilities are discussed in Section 4.7.3, Effects Common to All Action Alternatives.

6.5.44 **A comment expressed concerns regarding water quality impacts including temperature, dissolved oxygen, and bacteria as a result of reduced flow.**

Response:

Potential water quality impacts from mine-related stream depletion are described in Section 4.7, Surface Water. No detectable water quality impacts are predicted in the lower reaches of site streams either during or after mining. Measurable flow reductions are predicted for some project alternatives during and after mining along the upper reaches of Bolster, Gold, and Nicholson Creeks. The major water quality impact associated with these flow reductions is expected to be the rate of daily temperature change. Increases in maximum daily dissolved oxygen concentrations are not expected due to the strong dependence of this parameter on air temperature and ground water

inflow. As a result, changes in dissolved oxygen and bacteria populations in site streams are not expected.

6.5.45 **Many comments requested that water quality impacts from complete and partial backfilling alternatives be modeled. Several comments stated that mitigation of water quality impacts would be more difficult in the backfilled options because water would not discharge at a single point. Other comments disagreed with the draft EIS statement that water quality impacts could be less due to the lack of exposed pit walls, and instead asserted instead that backfilled material would result in poorer water quality due to the leaching of the backfill material as the water level rises.**

Response:

An evaluation of potential water quality impacts from complete and partial backfilling of the open pit with waste rock was conducted. Under Alternatives E and F, as the backfilled waste rock becomes saturated, flushing of the backfilled material could result in a temporary release of trace metals and residual ANFO to surface waters (Schafer, 1996b). Even assuming selective handling of the backfilled material, the initial discharge from the backfilled pit under these alternatives would be expected to be of lower quality than Alternative B.

Under Alternatives E and F, after the initial flushing of the backfilled waste rock, the long-term impact to ground water quality is predicted to be worse than Alternatives C and D, due to a larger area of exposed pit wall and waste rock, and similar to or worse than Alternative B. Refer also to Section 4.6.3, Effects Common to All Action Alternatives, for a detailed discussion of lake water quality for alternatives with a pit lake.

6.5.46 **There were several comments that requested more discussion on the water quality impacts of blasting and the use of ANFO at the site. What is the impact of remnant ANFO on metal concentrations in the ground and surface water, and does ANFO cause chemical or biological degradation or alteration? Other comments requested that other sources for nitrate and phosphate be identified.**

Response:

Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water, of the final EIS provide a discussion of potential impacts to ground water and surface water quality from ANFO use. These final EIS sections have been updated with a study performed by Schafer and Associates, Inc. (1996b) to predict impacts from ANFO on pit water quality under various Crown Jewel Project alternatives. The study concluded that the nitrate concentration in water discharged from the pit area would be substantially greater if waste rock is used for pit backfilling and could exceed ground water standards.

Remnant ANFO is not expected to impact the metal concentrations in the Crown Jewel Project area ground and surface waters. Nitrate in the ANFO would facilitate biological activity if released into site streams.

Other sources of nitrate and phosphate at the Crown Jewel Project include sanitary wastes and fertilizers used with site reclamation. Impacts to ground water quality associated with sanitary wastes and fertilizers are presented in Section 4.6.3, Effects Common to All Action Alternatives, and Section 4.7.3, Effects Common to All Action Alternatives, of the final EIS.

6.5.47 **Most comments regarding dust suppression asked what choices are available for chemical dust suppression and what the impacts on water quality would be from those**

chemicals. One comment asked about the water quality impacts from road sanding and salting.

Response:

Section 4.1.4, Effects Common to All Action Alternatives, subsection "BACT Assessment for Haul Road Dust," addresses the use of chemicals for dust suppression.

Table 4.1.3, Dust Suppression Methods, of the final EIS lists the characteristics of some dust suppression products which may be used on haul and access roads at the Crown Jewel Project. Use of dust suppressants and, during the winter months, the use of sand and/or salt on roads are not expected to result in substantial environmental impacts at the Crown Jewel Project. The runoff from mine roads would be diverted to sediment traps and may be monitored as required in the NPDES permit. This permit would specify the allowable concentration and loading of potential pollutants in the runoff based on current state water quality standards and technology-based criteria.

6.5.48 **Comments requested more discussion be added to the final EIS regarding sanitary waste disposal. Another comment asked about the impact of waste water infiltrating into the ground water.**

Response:

A discussion of the sewage disposal system for the Crown Jewel Project and potential impacts to site ground water quality is presented in Section 4.6.3, Effects Common to All Action Alternatives, of the final EIS. Requirements to treat and dispose of sanitary waste at the site would be specified in a sewage disposal permit issued by the Washington Department of Health or Okanogan County Health Department.

Water Supply and Water Rights

6.5.49 **There was a wide variety of general comments. Many felt the draft EIS should have been more positive discussing the Proponent's water supply plan. Others questioned if water was available in light of a perceived shortage of water on the Myers and Toroda Creek drainages. Mining, as a beneficial use over agriculture, was questioned. More discussion of existing water rights was requested. Others questioned whether the mine would shut down if their water usage were deemed out of priority. Several comments asked why the Proponent applied for rights to more water than documented usage suggested. Other comments suggested that the Proponent monitor residential wells. Many comments expressed concern for maintenance of instream flow for aquatic life. More information was requested on tribal water rights.**

Response:

A description of the water supply plan has been added in Section 2.2.19, Water Supply, of the final EIS. The WADOE determines water availability and authorizes appropriations of water through permit decisions.

Decisions whether to grant or deny the requests are made based on information available concerning the application. For approval, the project must meet four tests as follows:

1. There will be no impairment to existing water rights nor injury to the instream values for fish and other instream resources.

2. There is water available for appropriation.

3. The water use will be beneficial.

4. Issuance of the requested water right will not be detrimental to the public's interest.

Both irrigation and mining are considered beneficial uses of water under state law. Therefore, it is allowable to change water rights from irrigation to mining, as long as there is no impairment to existing water rights, and the right(s) to be changed are not enhanced or expanded.

The appropriation of water would be curtailed when other rights become impaired or instream flows are not met. This probably would not affect the use of water at the mine site since the water supply plan includes a storage reservoir just for this purpose. Water storage is proposed to reduce conflicts. Water would be withdrawn for storage during high flow periods.

The strategy of the water supply plan was to apply for water rights from as many sources as practical, knowing that water would not be available for appropriation from all sources at all times of the year. For example, one application requested the theoretical maximum amount of water that might be available from Starrem Creek during an extreme storm event.

Effects of the Crown Jewel Project on aquatic habitats are discussed in Section 4.11, Aquatic Habitats and Populations. Instream flow protection for resident fish populations in Myers Creek is presented in Section 4.11.7, Instream Flow Incremental Methodology (IFIM).

Figure 4.6.1, Zone of Influence Due to Pit Dewatering and the Pit Recharge Catchment Area, identifies the predicted zone of influence from pit dewatering. Ground water levels inside the zone are predicted to decline one foot or more.

Ground water levels outside the zone are predicted to experience declines of less than one foot. No residential wells have been identified inside the zone of influence; therefore, no monitoring of residential wells have been proposed as a requirement for the Crown Jewel Project.

See Section 3.9, Water Supply Resources, subsection "Introduction," of the final EIS for a description of tribal water rights within the Crown Jewel Project area.

6.5.50 **Suggestions were made to expand and correct the discussion of Water Supply and Water Rights in the final EIS.**

Response:

Section 2.2.19, Water Supply, of the final EIS discusses water supply and water rights. We have reviewed comments and made revisions, as appropriate, to the final EIS.

6.5.51 **Comments expressed concern about the availability of water to their existing or future domestic water wells.**

Response:

Existing ground water uses would be protected if the well fully penetrates the aquifer. Future appropriations are not protected under Washington State Law which is based on the doctrine "first in time, first in right."

6.5.52 **Many comments stated that they did not understand why the water use stated in the draft EIS did not add up to the amount needed to operate the mine. Others requested that a comprehensive water balance be presented to account for all impacts the Myers and Toroda Creek drainages.**

Response:

Water use in the draft EIS was based on water rights applications filed by the Proponent of the Crown Jewel Project. The Proponent applied for water rights from as many sources as practical, realizing that water would not be available for appropriation from each source at all times of the year. As a result, the total amount requested appears to be more water than necessary for the Proponent's proposal. Water balance for the site is discussed in Section 4.7.3, Effects Common to All Action Alternatives, and Section 2.2.18, Water Use, of the final EIS. Operational water balances are displayed in three figures in Chapter 2, Alternatives Including the Proposed Action, these include Figure 2.13, Operational Water Balance Schematic - Average Year, Figure 2.14, Operational Water Balance Schematic - Dry Year, and Figure 2.15, Operational Water Balance Schematic - Wet Year.

6.5.53 **There was concern that the Proponent may acquire water rights in Toroda Creek when others have been denied water rights for many years. Others believed that Myers Creek was over appropriated. Several asked how a change in diversion point and time of diversion from the Lost Creek well would be handled.**

Response:

WADOE will evaluate the Proponent's water right applications under the same set of rules as the earlier applications; however, under the different conditions of each application, different decisions could be arrived at. This is especially true if the Proponent has the capability to store water in a reservoir for use when water is not directly available from the other water sources. Myers Creek has been adjudicated and use can be regulated according to the adjudication during water short periods.

The application to change the right from the Lost Creek well does not include a change in the point of withdrawal, nor does it include a change in the timing of the withdrawal. The Crown Jewel Project EIS cannot address the comments concerning the end result of the water right permit decision process.

6.5.54 **Comments suggested that the use of the Lost Creek well pumping test was taken out of context and should be corrected.**

Response:

Discussion of the Lost Creek well pump test in Section 3.9.2, Ground Water, of the draft EIS was corrected in the final EIS to refer specifically to the Lost Creek well.

6.5.55 **Comments requested that the Proponent's water supply plan be explained in more detail and that impacts to the surrounding wetlands, domestic wells, and instream flows be addressed in more detail. Some concern was expressed regarding diversion of a portion of the Myers Creek spring freshet. Comments stated that diverting a portion of the Myers Creek freshet may affect ground water recharge to Myers Creek basin later in the irrigation season. Comments requested that IFIM studies be conducted on all applicable streams in the Myers Creek basin. One comment asked if all or a portion of the large Canadian storage right on Myers Creek has been relinquished due to nonuse.**

Response:

The water supply plan and impacts to surrounding wetlands, domestic wells and instream flow discussion was updated in Section 2.2.19, Water Supply, and in Section 4.8, Water Supply Resources and Water Rights, of the final EIS. Impacts to wetlands are discussed in Section 4.7.4, Effects of Alternative B, and displayed on *Table 4.10.1, Wetlands, Springs, and Seeps Narrative Description and Impact Classification*. For impacts to domestic wells, refer to *Figure 4.6.1, Zone of Influence due to Pit Dewatering and the Pit Recharge Catchment Area*, which identifies the zone of

influence. Ground water levels inside the zone are predicted to decline one foot or more. Ground water levels outside the zone are predicted to experience declines of less than one foot.

The proposed Myers Creek diversion is located approximately 1/4 mile south of the Canadian border. Any water rights upstream from this site would not be affected by this diversion. The IFIM study has recommended minimum flows on Myers Creek in the range of 6 to 12 cfs, below which the proposed new diversion rights could not be exercised. The proposed new diversions would not dewater Myers Creek.

The proposed changes to the Leslie and Lost Creek Ranch irrigation rights would still be subject to regulation in favor of downstream senior rights. The decisions regarding the changes to the irrigation rights would consider the issue of return flows. Only water consumptively used by plant growth would be considered for change.

Fish biologists from British Columbia's Ministry of Environmental Lands and Parks, Canada's Oceans and Parks, WADOE, Forest Service, and Washington Fish and Wildlife, examined Myers, Nicholson, Marias, and Gold Creeks to identify suitable locations for setting up transects for IFIM modeling. Based upon the Proponent's water supply plan, the size of each stream, its fish population, and predicted stream depletions, only Myers Creek was deemed amenable to IFIM Modeling.

Canadian storage licenses CL 45154 and CL 36709 authorize 1,170 acre-feet to be diverted from Myers Creek and are dependent upon the spring freshet. Since Canadian (British Columbia) water licenses remain valid until formally relinquished by the government, these rights are still valid and will be protected.

6.5.56 **Commentors asked for clarification on the water appropriation status of Myers and Toroda Creeks.**

Response:

The discussion regarding stream depletion has been revised in Section 4.7, Surface Water, in the final EIS. Additional studies, both ground water modeling and the resulting stream depletion were completed. Section 3.9.3, Surface Water, has been revised to clarify the water appropriation status on Myers and Toroda Creeks.

6.5.57 **It was requested that more information about the operation of the Starrem Reservoir be presented in the final EIS. Another comment asked how the Proponent would keep Starrem Reservoir from freezing in the winter. Other comments suggested that monitoring from Starrem Creek is not occurring and should commence.**

Response:

The main water source for the reservoir would be the diversion on Myers Creek during the spring freshet, with some contribution from the changes to the irrigation rights during the irrigation season. Rainfall and snowmelt within the Starrem catchment would also be impounded in the reservoir when flows on Myers Creek are above minimum flows as set by IFIM. Surface freezing may occur in Starrem Reservoir, however, it would not inhibit the pumping operation.

Stream flow monitoring on Starrem Creek was initiated in October of 1994 and will continue throughout the duration of the Crown Jewel Project.

6.5.58 **Many comments requested additional information be provided concerning water rights appurtenant to the Colville Reservation. Native American fishing rights also exist in the area and need to be discussed.**

Response:

The Colville Confederated Tribes have interests in water quantity and quality based on two federal claims. By agreement on May 9, 1891, the Tribe ceded the north half of the Colville Indian Reservation (established in 1872). In Antoine v.s. Washington, 420 United States 194 (1975), the court ruled that the 1891 agreement had reserved hunting and fishing rights for the Tribe within the ceded area. The Tribe has an additional interest to the extent that water resources in the subject area, including Toroda and Myers Creeks, may be necessary to satisfy the Tribe's federally reserved water rights. The Tribe's federally reserved water rights have not been quantified at this time.

6.5.59 **One comment stated cumulative impacts regarding water rights should evaluate all existing and pending water rights. If none are pending, then the impact should be limited to water rights applications from the Proponent.**

Response:

The water rights permitting process would evaluate all existing and pending Proponent water right applications and would also consider the impacts of the increased water demand from expected population growth in the area due to the Crown Jewel Project. Section 4.19, Socioeconomic Environment, of the final EIS discusses the effects of population growth.

6.6 VEGETATION

General

6.6.1 **Several comments simply presented an opinion or view on various aspects of the vegetation sections. There were comments that are beyond the scope of the EIS. In addition, several comments cited typos or the need for minor edits/clarifications in the text.**

Response:

We appreciate the input of all those individuals, organizations and agencies who commented on the "vegetation" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Sensitive Plants

6.6.2 **Reduced ground and surface water available in Myers Creek will have adverse impacts on sensitive plants.**

Response:

Hydrological and IFIM studies were completed on Myers Creek and indicated little impact on stream flow from water withdrawals. Likewise, only minor impact is expected from withdrawal from the Lost Creek well since it is presently used for irrigation. Under the Proponent's proposal to change the diversion point of the Leslie Ranch water rights, there may actually be more water flowing down Myers Creek in the summer from Mary Ann Creek to the diversion point north of Forest Road 3575.

Table 4.7.3, Impacts of Mining on Buckhorn Mountain Drainages, indicates that anticipated reductions in annual flows would average less than 0.1% of Myers Creek flows during mining and post mining. This small reduction in flow should have no effect on sensitive plants.

6.6.3 **What do the scientific names used in the draft EIS mean? What are the common names of the sensitive plants found in the Crown Jewel Project area? What are the plants used for? Where else do these plants grow?**

Response:

Scientific names are used to avoid confusion by being precise about which species is being referred to. Many common names apply to more than one species of plant. For example, a number of species look like dandelions. A list of common names for sensitive species is provided in Appendix J, Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, of the final EIS.

No known specific use is made of the sensitive plant species. Information on abundance of these plants and their comment names and distribution in other areas can be found in Appendix J, Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, of the final EIS. Information on other known locations of these plants can be obtained from sources such as the Washington State Natural Heritage Program.

6.6.4 **The nature and extent of plant inventories for the draft EIS are not adequately described.**

Response:

Plant inventory surveys are discussed in Appendix J, Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, of the final EIS. As described in this appendix, the Intuitive Controlled method for surveys was used in most of the area.

The nature of other plant inventories are described in the reports entitled Timber and Vegetation Resource Studies (A.G. Crook, 1993a); Crown Jewel Project, Wildlife Technical Report (Beak, 1995a); and Proposed Crown Jewel Mine Project, Wildlife Habitat Evaluation Procedures Study (WADFW, 1995).

6.6.5 **The quality or successional status of the plant communities are not mentioned until you get to the wildlife section where old growth is mentioned.**

Response:

Quality and successional status of plant communities are mentioned in Section 3.10.3, Forest Resource, of the final EIS. This section specifically mentions that nearly all of the forested plant communities have been altered by either clear cutting or the selective harvest method. Since all plant communities had to be fully described in Section 3.13, Wildlife, to complete HEP modeling, it does not seem necessary to also describe them in Section 3.10, Vegetation. A reference to the plant community descriptions in the vegetation section will be made to assist the reader in getting a more complete understanding of the plant communities present within the Crown Jewel Project area.

6.6.6 **Water, containing acids and leach metals, will flow from the lip of the pit down Bolster Creek impacting water quality and rare plant populations.**

Response:

The Proponent's proposed drainage control system would direct any flow from disturbed areas to control structures, situated on the east side of Buckhorn Mountain. Therefore, any runoff from the lip of the pit lake would not travel down to Bolster Creek, but would exit down the Gold Bowl drainage to Nicholson Creek.

6.6.7 **Ground water flow to the frog pond will be altered and possibly reduced by all action alternatives. What will be the impact to plant life?**

Response:

There are no threatened, endangered, or sensitive plant species identified in proximity to the frog pond. As such, any potential impacts to plant life is not viewed as being significant. There has been a water level monitoring program implemented to characterize existing conditions and variability of frog pond water levels to determine effects to vegetation and animal life. Mitigation for impacts to this wetland will be required as described in Section 2.12.16, Wetlands.

6.6.8 **The draft EIS should state whether seeps and springs were surveyed for sensitive plants and what the impacts of mine dewatering would have on these seeps and springs. Impacts to sensitive plants could be reduced by transplanting or collecting and propagating seed.**

Response:

Existing seeps and springs were surveyed for sensitive plants (Appendix J. Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants). This information is contained in Section 3.7, Springs and Seeps. Impacts to seeps and springs are displayed in Sections 4.6, Ground Water, Springs and Seeps and 4.10, Wetlands. Transplanting or seed collection is not deemed necessary to maintain the viability of sensitive plant species, but the Forest Service plans to try transplanting several populations of *Platanthera obtusata*. Refer to response 6.6.4 in this section.

Range

6.6.9 **Additional information on grass species, predominance of pinegrass, limited livestock value of pinegrass, water availability, steepness of terrain, and transitory range should be included in Section 3.10.7, Range Resource, of the final EIS.**

Response:

There is an abundance of additional information available from both the Timber and Vegetation Resource Studies report (A.G. Crook, 1993a) and the Range Resources and Noxious Weed Surveys report (A.G. Crook, 1992b). It is correct that there is a predominance of pinegrass in the understory in the Crown Jewel Project area, and it is considered fair forage for cattle. Water is indeed a limiting factor, and there are areas of steep ground which are unsuitable for grazing. Transitory range is available in the area, primarily on the private land, where more domestic grass seeding has taken place. The following has been added to Section 3.10.7, Range Resource, providing additional range information.

> "Information on range conditions within the Crown Jewel Project area was gathered in both the Timber and Vegetation Resource Studies (A.G. Crook, 1993a) and the Range Resources and Noxious Weed Surveys (A.G. Crook, 1992b). Information from these studies shows that a predominance of the understory vegetation in the Crown Jewel Project area is pinegrass (*Calamagrostis rubescens*). Pinegrass stays green all summer; its abundance makes it an important forage plant. It is normally the least palatable of the more common native grasses. Seeded domestic grasses are preferred by livestock during the summer months when pinegrass leaf blades become harsh and tough; however, it is often a key summer grass when other grasses are dormant."

The livestock grazing allotments within the Crown Jewel Project area have portions which are too steep to be considered suitable for livestock grazing and where water is limited. Within the allotments, there are areas which have been harvested for timber and which now provide transitory range value for cattle. Limited areas of overgrazing

and trampling damage are evident, and represent less than 1% of the total area within the Crown Jewel Project boundary.

6.6.10 **The statement, "permitted numbers on private lands were reduced," should be clarified.**

Response:

Section 3.10.7, Range Resources, of the final EIS has been revised to clarify the statement.

Plant BE

6.6.11 **The draft Plant BE fails to adequately evaluate impacts to extremely rare off-site plant species (p 10) and communities downstream and down gradient of the proposal; it lists *Cypripedium parviflorum* as a rare off-site plant. There are other rare plants as well; a full botanical inventory of the botanical resources of Myers Creek may be needed.**

Response:

There are other plant species of concern in the area. However, they are not on the Regional Forester's sensitive species list and are therefore not considered in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants (Appendix J).

The document analyzes the Crown Jewel Project area, not Myers Creek. A full botanical inventory of Myers Creek is beyond the scope of this document and not necessary. Predicted impacts to Myers Creek, south of the Canadian border, conclude that flows would generally be greater than at the present time due to the proposed change in the point of diversion for a portion of the Leslie Ranch water rights to further downstream on Myers Creek.

6.6.12 **The Plant BE states "These [rare plant] pops. are in a drainage that would have little if any runoff from the mine project, yet the SW lip of Alt. B's proposed pit would be located in the S. Fork Bolster Creek drainage. Bolster Creek is a preferential flowpath which could carry potential contaminants from the SW pit lip to rare wetlands at the confluence of Bolster and Myers Creeks."**

Response:

Based on WADOE permitting requirements (NPDES permit), any runoff from Crown Jewel Project disturbance would be routed through the drainage and sediment control network for water quality monitoring prior to discharge to area streams. Therefore, the water quality in Bolster Creek would not be affected. Refer also to response 6.6.6, of this appendix regarding flows down Bolster Creek.

As stated in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, there would be little or no runoff from the Crown Jewel Project into Bolster Creek. If acid generation occurs, whether in the surface or ground water, it is expected to flow into the pit area or into the sediment traps for water flowing off the waste rock areas. There it would be neutralized or buffered, if needed, before it can be released to the environment. Refer to Section 6.2, Geochemistry, in this appendix for comments and responses concerning acid potential from waste rock.

6.6.13 **The Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants states, "Transportation of supplies is not planned along a route (Bolster and Myers Creeks) near the populations of these species, so there should be no problem from dust or accidental spill of chemicals;" this neglects the fact that there would be impacts on plants during the Starrem Reservoir construction.**

Response:

Impacts from the construction of Starrem Reservoir were judged to be very small if not nonexistent to off-site plants, as there would not be significant traffic over a period of more than four months. Dust on the Bolster Creek road, from construction traffic, would be controlled during construction. Therefore, it was not discussed in the Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants. A sentence has been added to clarify this.

Noise is unlikely to impact plants. The amount of dust from the Starrem Reservoir construction is judged to be small, and is far enough away from plant populations that impacts, if any, should be very small. Chemicals are unlikely to be used in the Starrem Reservoir area except as part of the wetlands mitigation to control reed canarygrass. Exhaust from construction equipment are far enough away from plant populations that it is unlikely there would be any impact to sensitive plants.

Policy Issues

6.6.14 **When such a large fraction (½) of the known state population of a species is at risk (namely *Botrychium crenulatum, Listera borealis, and Plantanthera obtusata*), and because additional mining and timber sales on National Forest lands may affect these species (Appendix J, The Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, pages 23-25), I request the Forest Service to reconsider the draft EIS ..... until comprehensive conservation plans for the impacted species can be completed.**

Response:

All three species tend to be associated with moist riparian habitats. These habitats would generally be protected from timber harvest by riparian guidelines in the Forest Plan, as modified by the Pacific and Inland Native Fish Strategy documents. The future disturbance of riparian area by projects, such as this mine, are anticipated to be unusual. Thus habitat for these species should normally be protected.

Only one of these species was ever considered for federal listing, *Botrychium crenulatum*. This species is a "Species of Concern" with the USFWS and is on the Washington State Sensitive Species list. Many additional populations of this species have been found since it was first considered. This species would be impacted the least of the three from the Crown Jewel Project.

As discussed in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, the number of plants in a population can vary depending on climate, the time of year, and from year to year (Wagner and Wagner, 1990). The plant populations in the Crown Jewel Project area were surveyed at prime times of the year to observe the most plants. Most of the populations were visited more than once, some over a period of years, with population numbers being lower (at least for *Listera borealis*) as summer progressed. Some populations varied year to year.

The other populations on the Okanogan National Forest that are not in the Crown Jewel Project area were discovered over a period of years, at varying times of the year, often late in the summer. If all of these sites could be visited at prime times of the year, it is likely the total number of plants would increase for *Listera borealis*, and perhaps for the other two species as well.

Prior to 1990, only four populations of *Listera borealis* were known in Washington (Salstrom and Gamon, 1993). Since then, many more populations have been discovered. Additional populations of this and the other two species continue to be

discovered each year, and it is reasonable to assume more populations would be discovered in the future. On the Methow Valley Ranger District, four new populations of *Listera borealis* were discovered in 1995, containing at least 49 plants. On Tonasket Ranger District, 11 new *Listera borealis* populations were discovered consisting of at least 155 plants total, and four new *Platanthera obtusate* sightings with 880 plants during the summer of 1995. Additional populations of these species were discovered in 1996. There may have been additional sightings on other forests and districts.

If an action alternative is selected, there would be impacts on the plants. Although the number of plants of *Listera borealis* would presumably be greatly reduced (but as discussed above the size of populations vary over time), the number of populations (at least 80 in the State of Washington) would remain quite large, including the ones found in 1995. Less than 25% of the Tonasket Ranger District has been surveyed for plants. As surveys are completed in the future for other projects, more area would be covered. If populations continue to be discovered at the rate they have in the past few years (roughly a 20 fold increase since 1990), this species could have 100 observed occurrences. This could make it eligible for S-4 status; i.e., apparently secure (Washington Natural Heritage Program, 1994).

There would also be more plants of *Platanthera obtusata* with a total of 38 populations left in the state, if an action alternative is selected. (See Table 6 in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, in Appendix J of the final EIS.) More populations and plants may be known to have been discovered on other forests when information is requested from the Washington State Natural Heritage Database Program in the future.

Considering the large number of populations of *Listera borealis*, it seems unlikely this species is in immediate peril of disappearing. Likewise, the same is true for *Platanthera obtusata* and *Botrychium crenulatum.*

In the Forest Plan for the Okanogan National Forest Standards and Guideline 6-19 states "Sensitive plants and animals should be protected." For nearly all projects, sensitive plant populations would be protected. However, the very nature of the Crown Jewel Project makes it difficult, if not impossible, to avoid impacts on plant species.

The field work completed for the conservation strategies for both *Listera borealis* and *Platanthera obtusata* included visits to sites on both the Okanogan and Colville National Forests. These plans have not been completed because of lack of funding to support such work. The conservation strategies in Oregon for *Botrychium crenulatum* did not include field work for the Okanogan National Forest. However, any future work on a conservation strategy for the Okanogan would no doubt rely heavily on the work completed in Oregon. A study has also been done on the genus for the Interior Columbia River Basin project (Zika, et al, in press). For now, other species are of higher priority to study on the Okanogan.

6.6.15 **Federal regulation 40 CFR 230.10 (b) requires demonstration that projects would not lead to unacceptable adverse impacts to federally listed threatened and endangered or candidate species.**

Response:

No threatened or endangered plants were encountered in the analysis area. Threatened, endangered, and candidate plant species are discussed in Appendix J, Biological Evaluation for Proposed, Threatened, Endangered, and Sensitive Plants.

Miscellaneous

6.6.16 **Rare plant species in Myers Creek wetlands include:**

a. **Yellow lady slipper ..., which may be a unique cross with *Cypripedium montanum*.**

b. **Three rare sedges [*Carex dioca, C. capillaris, C. buxbaumii*] which are only documented in one to three other places in the entire Northwest;**

c. **Certain plants, like the Blue-eyed grass, are extremely rare; the Myers Creek [and possibly Mary Ann] Creek wetlands plant communities...**

d. **Golden Corydalis ...**

e. **Bog Birch ...**

Response:

Yellow lady slipper may cross with *Cupripedium montanum*; however, that is beyond the scope of this document.

Carex capillaris and Carex dioca are not discussed in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants because they are not on the Regional Forester's sensitive species list, although they are species of concern to the Forest Service. *Carex capillaris* occurs in Oregon, Idaho, and Nevada (Oregon Natural Heritage Program, 1995, p 47). *Carex dioca* occurs in Oregon and Nevada (Oregon Natural Heritage Program, 1995, p 47). Both species are circumboreal, and thus more common in Canada. Both species are proposed Washington State Sensitive Species.

Carex buxbaumii has populations in Chelan, Clallam, Grays Harbor, Kittitas, Mason, Okanogan, Pend Oreille, Skagit, Snohomish, Stevens, and Whatcom Counties (Washington Natural Heritage Program, 1994). *Carex buxbaumii* is discussed in the Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants.

Sisyrinchium septentrionale (Blue eyed grass) is discussed in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants. It is sensitive in Washington, and occurs in Northeastern Washington in Okanogan, Ferry, Pend Oreille, and Stevens Counties. It also occurs north to British Columbia, Alberta, Saskatchewan, and Manitoba (Henderson, 1976; Washington Natural Heritage Program, 1994).

Sisyrinchisum septentrionale is on the Yellow list (watch list) of the British Columbia Conservation Data Center. "The Yellow list includes many of the infrequent, locally frequent, or locally common native plants treated in The Vascular Plants of BC. These are mainly plants which may be vulnerable in the near future due to continuation of present day development. There are two lists that, on a scale of rarity are above the Yellow list. These include the Red list, which is the rarest, and the Blue list, which is intermediate.

Golden Corydalis is a monitor species, not a sensitive species. It is therefore not considered in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants.

Bog Birch is not a sensitive species and also has a wide range (Hitchcock and Cronquist, 1964). It is therefore not considered in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants.

As cited in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants, nearly all of the Crown Jewel Project is situated in a different drainage from the one the plants are described in. Containment barriers are planned to be constructed around the Crown Jewel Project area, as well as stabilization of soils with vegetation. Little if any disturbance is considered likely outside the Crown Jewel Project boundary.

6.6.17 **The draft Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants refers to the effects of pumping the Lost Creek Well. "If creek flows are disturbed by pumping, action can be taken to stop the pumping. This should prevent any negative impacts on sensitive plants that might be in the vicinity of the well." This analysis completely overlooks potential effects of pit de-watering on reduced creek flows and diminished aquifer/wetland recharge. The draft EIS does not evaluate effects of pit de-watering on reducing ground water in the Bolster alluvial fan or on rare plant communities and wetlands on Myers Creek.**

Response:

The possible reduction of Bolster Creek stream flows is discussed in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants with most reduction of stream flows occurring above 4,505 feet elevation. (See also Hydro-Geo, 1996a.) In the report from Hydro-Geo Consultants, the potential impacts of mining on Bolster Creek stream flows (both base and surface flow) were estimated to be a maximum reduction of about 3.0% at the end of mining before the pit fills with water, and about 2.1% following pit filling, at the confluence with Myers Creek (Section 4.7, Surface Water, of the final EIS). Work completed for the Proponent by Golder Associates (1995c) predicts a reduction of flows in Bolster Creek of 1.7% at the confluence with Myers Creek. These changes in hydrology should have no effect on sensitive plant species.

6.6.18 **There is no inventory of native cultural, medicinal, and food plants in or adjacent to the Crown Jewel Project area. The Forest Service has an obligation to develop such an inventory.**

Response:

A forest-wide ethnographic overview was completed in 1993, which included Buckhorn Mountain and vicinity. It was based, in part, on interviews with tribal members and research in the tribal Department of History and Archaeology. The overview also contains a list of culturally sensitive plant species and their uses. A detailed vegetation inventory was conducted over the Crown Jewel Project area for plants of concern or which were unusual.

The Tonasket Ranger District wrote a letter to the Cultural Committee of the Colville Confederated Tribes, with copy to Brett Dumas, a Tribal Vegetation Ecologist, on August 28, 1995 requesting "Input from you for the planning process concerning plants of cultural concern to the tribes would be appreciated. If you have concerns about the vegetation in the area, please forward this information to Larry Loftis, Tonasket Ranger District." No reply was received.

6.6.19 **Cyanide can be toxic to plants under some circumstances. The effects of cyanide on rare plants is not thoroughly analyzed.**

Response:

Cyanide and plants are discussed in detail in the final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants (Appendix J), with numerous references cited. Cyanide associated with the Crown Jewel Project is predicted to have no effects on sensitive plants.

6.6.20 **The final Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants discussion of heavy metals potential on Buckhorn Mountain is based on unproven assumptions. Analyses by Maest, Chambers, Robinson et. al. reveal that the AGP of pit water, waste rock, and tailings must be much higher than the Proponent anticipates. Higher AGP and lower water pHs could have a profound impact on metals solubility and mobility and bioavailability through plant uptakes.**

Response:

A detailed response to these and other comments related to pit water quality modeling is presented in response 6.5.39 of this appendix. Regarding the issue that the geochemical testing procedures used (including ABA, leachability, and humidity cell tests) are not adequate, please refer to responses 6.2.3 and 6.2.9 in this appendix.

6.6.21 **The statement that the various plants "...were either blooming or fruiting, which indicates they are reproducing" is misleading. Many plant species may produce non-viable propagules and/or viable propagules which may be eaten by insects or rendered non-viable through disease. A better measure of reproduction would be recruitment of new individuals of the species into the existing population.**

Response:

Measuring recruitment of new individuals would be a better measure. However, to collect information would require establishing and collecting data from monitoring plots over a period of several years. This would be an expensive and time consuming process. In the meantime, production of flowers and fruits makes it reasonable to assume that reproduction is occurring in the populations.

6.7 WETLANDS

General

6.7.1 **Several comments simply presented an opinion or view on various aspects of the wetlands sections or presented comments that are beyond the scope of the EIS. In addition, several comments cited the need for minor edits/clarifications or correction of typos in the text.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "wetland" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Wetlands Mitigation

6.7.2 **Replacing quality wetlands with wetlands degraded by man's activities is an unacceptable practice. Why doesn't the EIS consider avoidance as the first priority?**

Response:

Avoidance was considered as the first priority. Where it was not reasonable to avoid a wetland, then mitigation for the impact needs to be considered. There is limited opportunity for creation of quality wetlands on-site; therefore, off-site wetland

enhancement has been proposed as the primary mitigation measure. Restoration of degraded wetlands is often considered as part of a mitigation package. The probability of success is higher than in enhancement or creation areas. However, the ultimate goal of mitigation is no net loss of wetland functions and values. This type of mitigation would be combined with restoration, creation, or enhancement of other wetlands. The final mitigation package would likely include a combination of these different types of mitigation.

Avoidance of wetlands is considered as a first priority. Avoidance is included in the definition of mitigation provided in Chapter 7, Glossary, of the final EIS.

6.7.3 **Wetland mitigation measures that have a low rating are unacceptable. Please come up with stronger mitigation measures. Why are the details of mitigation postponed until the permit process?**

Response:

Only mitigation with a potential for success would be included in the final mitigation package. This package would include monitoring and contingency plans to further assure success. Refer to Corps of Engineers 404 Permit Application (Joint Aquatic Resources Permit Application). Additional information has been added to Section 2.12.16, Wetlands, and Section 2.13.1, Water Resources Monitoring, and Section 4.10.13, Mitigation, of the final EIS.

A re-evaluation of effectiveness ratings by the Forest Service and WADOE has upgraded Pine Chee to a high, Myers Creek to a moderate, and Bear Trap Canyon to a low-moderate. The nine acre wetland and the frog pond remained at low effectiveness for wetland functions. Some of the mitigation sites have dual purposes. Besides replacing/improving wetland functions and values, they have value in compensating for some of the impacts to wildlife. See Section 2.12.16, Wetlands, in the final EIS.

Wetland mitigation proposals are normally developed and submitted to the appropriate agencies by the Proponent as part of the permit application process. Once the application/proposed mitigation plan is submitted, the agencies would begin review. The mitigation plan can be returned for revisions, approved, approved with conditions, or denied. Most often, proposed mitigation plans are revised during the review process. A final approved mitigation plan would be required before State Certification and the Corps of Engineers 404 permit, as well as Okanogan County permits related to wetlands, can be issued.

6.7.4 **An assessment of riparian values for the affected areas along the impacted creeks should be made as well as a functional assessment for the areas proposed for mitigation. Some kind of accounting system will be necessary to determine the credits to be allocated for restoration of existing degraded systems to replace direct losses of intact systems.**

Response:

Performing a hydrological functional assessment of riparian corridors was not identified in the EIS scoping process except as part of the wildlife impact assessment in Chapter 4, Environmental Consequences. Stream depletion studies indicate that flows would be reduced. The highest stream flow reductions would be in the upper reaches which do not contain well-developed riparian zones and stream flows recover quickly moving down stream. Effects from potential changes in riparian areas on wildlife is displayed in Section 4.12, Wildlife. Refer also to Section 4.10, Wetlands, of the final EIS.

Compensation ratios would be determined during the Corps of Engineers 404 permit process. Compensation ratios will not be determined in the EIS.

Wetland Impacts

6.7.5 **The impacts of "entombing" 2.4 acres of Marias Creek wetlands under tailings needs to be addressed, as well as reductions in Gold, Nicholson, and Myers Creek wetlands.**

Response:

Impacts to Marias Creek wetlands as well as other wetlands are discussed in Section 4.10, Wetlands, of the final EIS.

6.7.6 **Impacts from discharging fill or dredge material to all waters of the United States must be addressed with increased specificity. Impacts to creek systems and their associated riparian corridors must be included.**

Response:

Impacts to waters of the United States and State are displayed in several sections of the final EIS. In addition, a new Waters of the United States section has been added to Section 4.10, Wetlands; please refer to Section 4.10.11, Waters of the United States.

Impacts to wetlands are displayed in Section 4.10, Wetlands, including *Table 4.10.1, Wetlands, Springs and Seeps Narrative Description and Impact Classification, Table 4.10.2, Wetlands Direct Impact Acreage*, and *Table 4.10.3, Wetlands Impacted by Mining Operations*.

Impacts to streams, springs and seeps are included in Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water, including *Table 4.6.1, Springs and Seeps Impacted by Mining Operations*.

Lineal feet of direct disturbance to streams is displayed in *Table 2.15, Summary of Impacts by Alternative for Each Issue*. This table also displays the number of springs and seeps directly and indirectly affected, along with decreases in area stream flows at an average annual precipitation of 20 inches. *Table 4.7.3, Impacts of Mining on Buckhorn Mountain Drainages,* identifies the stream flow water gain or loss (in percentages) at the end of mining and once a new hydraulic state has been achieved for several reaches along Nicholson, Marias, Gold, Bolster, and Ethel Creeks. *Table 4.7.2, Summary of Average Precipitation Year (20.0 Inches) Impacts on Buckhorn Mountain Drainages*, divides the same information into base flow and surface flow. More specific information is provided in the report Analysis of Stream Depletions Resulting from the Proposed Crown Jewel Project (Hydro-Geo, 1996a).

Section 4.11, Aquatic Habitats and Populations, discusses the potential effects on the fish resources and other aquatic organisms.

Riparian areas are discussed from several different perspectives in the final EIS. Riparian areas are discussed in Section 3.12, Aquatic Resources. Section 3.12.2, Survey Methodology, describes the information collected which includes stream cover types, bank width and depth, bank substrates, bank ground cover class, floodplain vegetative information, stream shade percent, and floodplain width. Vegetation in riparian areas is discussed as part of Section 3.10.5, Threatened, Endangered, and Sensitive Plants Species, and Section 4.9.3, Effects Common to All Action Alternatives. Wetlands as part of the riparian area are discussed as part of Section 4.10.4, Effects Common to All Action Alternatives. The baseline information and

effect to wildlife as it relates to riparian areas are discussed in Sections 3.13, Wildlife, and 4.12, Wildlife.

Also please refer to the Proponent's Corps of Engineers 404 Permit Application/Washington Joint Aquatic Resource Permit Application For: Hydraulic Project Approvals, Shoreline Management Permits, Water Quality Certification, Approval for Exceedence of Standards, and U.S. Army corps of Engineers Section 404 and 10 Permits, and, Crown Jewel Project Conceptual Wetland Mitigation Plan (Parametrix, 1996a).

6.7.7 Reductions in flows in Gold, Nicholson and Myers Creeks affect accompanying wetlands.

Response:

Hydrologic data indicates that there would be no substantial indirect changes to wetland hydrology from stream flow reductions. Refer to Section 4.7, Surface Water, and Section 4.10, Wetlands, of the final EIS. *Table 4.10.1, Wetlands, Springs and Seeps Narrative Description and Impact Classification*, identifies any wetlands which may be impacted from stream reductions. Refer also to response 6.5.11 in this appendix concerning stream depletion.

6.7.8 Impacts to the nine-acre high quality wetland system at the headwaters of Nicholson Creek must be addressed in the EIS.

Response:

Section 4.10, Wetlands, discusses impacts to this nine acre wetland. See *Table 4.10.2, Wetland Direct Impact Acreage*. See also Section 2.12.16, Wetlands. The Proponent's plan, Alternative B, has been revised in the final EIS to avoid direct impacts to this wetland except for the fence around the tailings facility. This wetland is fed by both surface water, such as the Roosevelt adit discharge, and ground water. The greatest impact to this wetland would be from reduced flows discharged by the Roosevelt adit. Flows from the Roosevelt adit at the end of mining are predicted to be reduced from an average of about 56 gpm to 36 gpm for the open pit alternatives. Once the pit has filled, Roosevelt adit flows are predicted to return to an average of about 42 gpm. These changes in flows in conjunction with the geology of the area, should result in minimal effects on the nine acre Nicholson Creek wetland.

Indirect Wetlands Impacts

6.7.9 The EIS should contain an assessment of secondary impacts to wetlands.

Response:

Secondary (indirect) impacts are difficult if not impossible to quantify. *Table 4.10.1, Wetlands, Springs and Seeps Narrative Description and Impact Classification, Table 4.10.2, Wetlands Direct Impact Acreage*, and *Table 4.10.3, Wetlands Impacted by Mining Operations*, are included in the final EIS to display direct and indirect effects to wetlands. Indirect effects are not quantified. Indirect impacts are discussed in Sections 4.7, Surface Water, and Section 4.10.4, Effects Common to All Action Alternatives, Subsection "Indirect Effects," of the final EIS. Also, see response 6.7.7 in this appendix.

6.7.10 Concern was expressed about impact to large wetland on both sides of Myers Creek, just south of Bolster Creek. This wetland is not mentioned in the draft EIS. Specific mention should be made about impacts to a heron rookery adjacent to one portion of

this wetland as well as effects to threatened, endangered, and sensitive plant species in this wetland.

Response:

The wetland area on Myers Creek, just south of Bolster Creek, is locally known as the "Triple Creek" wetland. Although the Triple Creek wetland is outside the designated wetlands analysis area, the Forest Service and WADOE have considered whether any impacts from mining or water right withdrawals, including the Lost Creek Ranch well, would affect these wetlands. The Forest Service and WADOE have concluded wetlands along Myers Creek would not be measurably affected by mine dewatering. Surface flows in Bolster Creek, at the confluence with Myers Creek, are predicted to be reduced by less than 2.5% on an annual average basis as a result of mine operation. *Table 4.7.2, Summary of Average Precipitation Year (20.0 Inches) Impacts on Buckhorn Mountain Drainages*, describes the expected changes in both the surface and base flows during mining and post mining for Bolster Creek. The Triple Creek wetland is mentioned in Section 4.10.1, Summary, and Appendix J, Biological Evaluation for Proposed, Threatened, Endangered, and Sensitive Plants, of the final EIS which discusses potential impacts to plant life in this wetland.

The Crown Jewel Project proposal involves changing the point of diversion for some of the Leslie Ranch water rights (upstream of the Triple Creek Ranch wetlands) to a point near the Canadian border. Flows through the portion of Myers Creek supporting the Triple Creek wetland could be enhanced during the irrigation season due to this change in point of diversion. Reductions in ground water recharge and base flows are not anticipated to be substantially reduced due to mining operations. Wetland values are not influenced by endangered or threatened plant species, as none are present in the Crown Jewel Project area.

The Forest Service and WADOE do not anticipate any impacts to the heron rookery along Myers Creek. Refer to response 6.9.97 of this appendix. Additional monitoring of wetlands would be part of the overall wetland mitigation package. Specific parameters, criteria, and response triggers, and contingency plans would be included in the approved Corps of Engineers 404 permit.

6.7.11 **Mine water flowing down Bolster Creek would negatively impact the Triple Creek wetlands. Pollution of wetlands from ground water and to Ethel and Thorpe Creeks caused by the mine operation are also a concern.**

Response:

We recognize the hydrologic and water quality values of wetlands along this area of Myers Creek. All discharge and storm water would be controlled by the drainage control system. This system would be a condition of an approved NPDES permit. No discharge to the Bolster, Ethel, or Thorpe Creek drainages is planned. Refer also to response 6.6.12 in this appendix.

6.7.12 **Impacts on existing off-site wetlands are not included in measurements of potential impacts.**

Response:

Impacts to off-site wetlands are identified. Many of these impacts are identified as indirect impacts. Please refer to *Table 4.10.1, Wetlands, Springs and Seeps Narrative Description and Impact Classification*.

Unimpacted off-site wetlands would not require mitigation measures. However, mitigation is proposed to enhance several off-site wetlands, as described in the Washington Joint Aquatic Resource Permits Application For: Hydraulic Project

Approvals, Shoreline Management Permits, Water Quality Certification, Approval for Exceedence of Standards, and U.S. Army Corps of Engineers Section 404 and 10 Permits), and the Crown Jewel Project Conceptual Wetland Mitigation Plan (Parametrix, 1996a). Additional effects resulting from the mitigation actions which have been identified are also addressed.

6.7.13 **The impacts to all wetlands, not just jurisdictional wetlands, should be assessed and mitigated.**

Response:

Biological wetlands have been addressed in Section 4.10, Wetlands, of the final EIS. Refer also to response 6.7.10 in this appendix.

6.7.14 **No basis is presented for the statement that wetlands in the Myers Creek watershed or other watersheds may experience a reduction in size or productivity as a result of reduced stream flows due to mining activity.**

Response:

The final EIS was revised based on additional hydrologic modeling conducted between the draft and final EIS. The predicted reductions in stream flows and their associated impacts to wetlands are discussed in Section 4.10, Wetlands, Section 4.6, Ground Water, Seeps and Springs, and Section 4.7, Surface Water, of the final EIS.

6.7.15 **How was the 600 foot buffer around riparian areas determined? What is the difference between a riparian area and a stream?**

Response:

These distances are tied to Corps of Engineers, USFWS, EPA, and WADOE policy or guidelines for wetlands mitigation. Protection of perennial streams or wetlands, as called for in the Inland Fish Plan, PACFISH and the Northwest Forest Plan is a 300-foot buffer on each side of the water body of fish bearing streams (300 feet on each side = 600 feet). The WADNR places emphasis on sediment impacts from roads and harvest activities within 200 feet of water bodies. The scientific basis of the number "300" represents best professional judgement of the Forest Service and WADOE for no or minimal impacts.

Streams are distinct water bodies which drain in a more-or-less discrete location over a long period of time. Riparian areas have a general wetness at least during part of the year, and surface water may or may not be present. Indicators of riparian areas are general site wetness, general topographic location of swales, depressions, etc.; vegetation with specific water requirements and/or soil conditions which develop under wet or moist conditions. Riparian areas may be associated with streams. Typically, a riparian zone is the transition area between a stream and an upland area.

6.7.16 **For purposes of administering the Federal Clean Water Act, the Crown Jewel Project is not a water dependent project; therefore, it must be assumed that alternative non-wetland sites are available.**

Response:

Review of the proposal, under Section 404 of the Clean Water Act by the Corps of Engineers, determines if this is a water dependent project. Then, as appropriate, the Corps of Engineers considers whether alternative practicable non-wetland sites are available. An alternative is considered to be "practicable" if it is available and capable of being accomplished, taking into consideration cost, existing technology, and logistics.

6.8 FISH AND AQUATIC RESOURCES

General

6.8.1 **Commentors expressed numerous opinions, cited typographical errors, and questioned unclear sentences. Commentors expressed opinions regarding the adequacy of baseline aquatics studies, information, etc., associated with the Crown Jewel Project. Additionally, comments were received on the potential downstream effects of the Crown Jewel Project on the aquatic environments of the Columbia River.**

Response:

We appreciate the input of all individuals, organizations, and agencies who commented on the "fish and aquatic resources" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Due to the distances and dilution rates involved it was determined by the Forest Service and WADOE that any impacts to the Columbia River were non-existent to negligible.

Myers Creek Diversion

6.8.2 **What are the impacts of the Myers Creek diversion on downstream fisheries? What would be the impact on stream flows in Canada, and on Canadian aquifers? How would the diversion operate under the current water rights structure?**

Response:

In Section 4.8, Water Supply Resources and Water Rights, of the final EIS, the existing and proposed new water rights are described for the Crown Jewel Project. As stated in Section 4.11.7, Instream Flow Incremental Methodology, of the final EIS, an instream flow study using the USFWS Instream Flow Incremental Methodology (IFIM) model was conducted to evaluate the relative effects of the Crown Jewel Project related flow and withdrawal scenarios to determine water withdrawal effects on the fish populations downstream of the diversion to provide water supplies from Myers Creek to store in the Starrem Reservoir for use on the Crown Jewel Project. Based on the results of the IFIM study, instream flows were evaluated which would provide adequate stream flows for trout spawning and rearing below the point of the Myers Creek diversion. The stream flows identified were agreed on in the IFIM process by WADFW, WADOE, British Columbia Ministry of the Environment, Land and Parks, and Canadian Department of Fish and Oceans, as adequate to protect fisheries and aquatic resources below the point of diversion. The Crown Jewel Project diversion water supplies would be regulated by the WADOE, consistent with both Washington and Canadian water right laws.

Starrem Reservoir

6.8.3 **Would the failure of the reservoir dam constructed in Starrem Creek for the Crown Jewel Project water storage cause detrimental downstream effects in Canada and United States reaches of Myers Creek?**

Response:

In the event of a failure of the Starrem Reservoir embankment there could be downstream channel and property damage. However, due to construction criteria for the dam structure, the probability of such an event during the life of the Crown Jewel Project is extremely low to negligible. The dam is designed to withstand greater than a 10,000-year, 24-hour storm event. For further information on the potential impacts

of a Starrem Reservoir failure, refer to Section 4.22.1, Water Reservoir Rupture, in the final EIS.

Impacts to Marias and Nicholson Creeks

6.8.4 **What would be the potential impacts on Marias and Nicholson Creeks from the Crown Jewel Project site disturbances (sediment) and road construction, specifically with regard to water quality degradation, effects on macro-invertebrate populations, and stream channel substrate composition necessary for trout spawning and juvenile habitat?**

Response:

The actual sediment recruited from the Crown Jewel Project to streams draining the disturbed parts of these watersheds would depend on the area disturbed, climatic conditions during the period of time the Crown Jewel Project is operating, during post Crown Jewel Project rehabilitation activities, and the effectiveness of the proposed erosion control practices. It is anticipated that even with normal climatic phenomena, the Crown Jewel Project would probably increase sediment levels to some degree; however, the degree to which channel sedimentation would occur and affect riparian ecosystems and functions is estimated to be minimal to moderate during the course of the Crown Jewel Project, depending on the previously listed criteria. Refer also to response 6.5.16 in this appendix.

6.8.5 **Would an accidental spill or leakage of cyanide have detrimental downstream effects to aquatic habitats and the fisheries resource? Would partial backfilling of the mine pit with waste rock materials, as identified in Alternative E, potentially increase the concentrations of toxic metals? What would be the effect of silver, cadmium, and mercury from the pit lake and sub-surface flows have on the fisheries resources of Nicholson Creek?**

Response:

Surface runoff and/or ground water sources of cyanide and potential impacts on fisheries are considered to be minimal. If an accidental spill or ground water seepage was to occur, it would be localized and could potentially have an adverse effect on fisheries downstream until the cyanide was diluted below toxic concentrations (refer to Section 4.22.4, Other Types of Accidents, and Section 4.22.3, Transportation Spill). Cyanide, when in solution with water (on surface), escapes as a gas when aerated (as in stream riffles). Cyanide is not environmentally persistent and degrades naturally to less toxic compounds by a variety of volatilization, oxidation, photodecomposition, and biodegradation mechanisms. Thus, the further the accidental spill/seepage travels, the less toxic it becomes. The rate of cyanide degradation depends on the initial cyanide concentrations, the volume of discharge, the amount of stream aeration, the temperature of the water, and existing water chemistry.

Partial backfilling of the pit would increase the surface area of material available for chemical reactions to occur. It is projected that with the additional material in the pit, concentrations of metals and nitrate would be elevated, as may other chemicals and compounds. Refer also to responses 6.5.39 and 6.5.45 of this appendix.

Metals such as cadmium, silver, and mercury are naturally present in varying concentrations (referred to as background levels) in all surface waters, and many are required by fish and aquatic organisms in trace quantities for proper physiological function. Mining activities, however, may cause concentrations of dissolved metals to exceed background levels. In general, mortality is usually attributed to high metal concentrations; however, exposure to sublethal levels may produce such chronic

effects as behavioral changes and reproductive failure. Both of these effects can ultimately determine species survival in the effected habitat.

Runoff and discharge from mine tailing materials may introduce toxic metals into streams. These substances may produce toxic effects alone, in combination, or synergistically, or they may behave antagonistically to reduce toxicity. Refer to Section 4.11.3, Effects Common to All Action Alternatives, and Appendix I, Fisheries and Aquatic Habitat Biological Evaluation. Refer also to response 6.5.39 in this appendix.

6.8.6 What would be the impacts on Marias and Nicholson Creeks from potential changes in ground water inflow (baseline) during operation and after reclamation of the Crown Jewel Project? Would there be sedimentation and release of toxic metals, as well as degradation of fish habitat from reduced flow levels?

Response:

There are not expected to be any significant changes in the stream-flow regimen (average baseflow) resulting from the Crown Jewel Project on either Nicholson or Marias Creeks, with the exception of the South Fork of Nicholson Creek (Gold Bowl drainage). This reduction would only occur through the life of the Crown Jewel Project until the pit lake fills, at which time it is predicted that the Gold Bowl drainage would flow perennially. Currently, the Gold Bowl drainage is intermittent and flows only during spring runoff. However, due to the predicted changes in the hydrology of the watersheds, it is estimated that changes in baseline flow in the lower reaches of Buckhorn Mountain drainages would be negligible, as well as flow related changes to the aquatic habitats. Flows after the pit has filled should be the same or slightly greater than present flows. Base flows, at the conclusion of mining, would be decreased about 6% at the upper extent of fish habitat on Nicholson Creek. Flows on Marias Creek at the upper extent of fish habitat would be reduced less than 1%. See Section 4.11.3, Effects Common to All Action Alternatives. Refer also to response 6.5.11 in this appendix. The potential effects of ground water on sediment transport would be negligible since subsurface flow would not be affecting sediment transport. Sediment transport would only be affected by surface flows.

The subsurface transport of metals through ground water to the Crown Jewel Project area stream-courses is difficult to quantify, and the effect of those metals on aquatic ecosystems would be dependent on concentrations in the ground water, and dilution which would occur when subsurface flows mix with surface flows. Required mitigation to minimize the transport of metals and sediment are described in Section 2.12.13, Surface Water and Ground Water-Quality and Quantity. Required monitoring is described in Section 2.13.1, Water Resources Monitoring. An environmental protection performance security (see Section 2.14, Performance Securities) would provide sufficient funding for monitoring and clean-up of potential problems revealed during or after closure of the Crown Jewel Project in the event the Proponent failed to meet various permit commitments.

6.8.7 Fisheries and aquatic surveys conducted in Marias and Nicholson Creeks were inadequate for the Crown Jewel Project and ignore the overall aquatic habitat in streams potentially affected by the Project.

Response:

Fisheries habitat surveys conducted in Marias and Nicholson Creeks were based on the U.S. Forest Service, Region 6 Stream Survey Protocol (Hankin and Reeves). This survey process evaluates channel conditions, channel substrate composition, riparian area vegetation habitat, plant community seral stages, presence/absence and relative abundance of fish species, and historical land management practices. The data is summarized by stream-reach. Stream-reaches are determined by the geomorphological

uniqueness of stream segments within a watershed and channel form. Additionally, species presence/absence data were collected by electro-fishing methods by several different contractors in streams which would potentially be affected by the Crown Jewel Project. Reaches of perennial and intermittent streams for which fish populations were not documented were identified, and this and other aquatics data were used for evaluations of the various alternatives. The surveys conducted for the Crown Jewel Project represent the state-of-the-art estimates of fish distribution and riparian habitat conditions.

Downstream Impacts to Toroda Creek and Kettle River Resources

6.8.8 Have adequate macro-invertebrate studies been conducted to adequately monitor the proposed Crown Jewel Project and potential downstream project related effects to Nicholson, Marias, and Toroda Creeks, and the Kettle River?

Response:

Pre-Project macro-invertebrate studies have been conducted to provide baseline data for monitoring of macro-invertebrate species (Northwest Management, Inc., 1994a and EcoAnalysts, Inc., 1996). Monitoring sites have been established on tributaries which most likely would indicate any changes in water quality and corresponding changes in macro-invertebrate population richness as a result of the proposed Crown Jewel Project. The sites and monitoring protocol are identified in, Benthic Macro-invertebrate Monitoring Plan for the Crown Jewel Project (Northwest Management, Inc. 1994b).

The agencies involved with the aquatic aspects of the Crown Jewel Project determined that data collected on Toroda Creek and its tributaries was adequate for baseline monitoring and also adequate to make an informed decision on the Crown Jewel Project. Impacts to macro-invertebrates and fisheries in Toroda Creek and the Kettle River are not anticipated as a result of the Crown Jewel Project. Monitoring of Toroda Creek was deemed unnecessary, since monitoring sites on Marias and Nicholson Creeks are in closer proximity to the Crown Jewel Project area and would provide data which would better reflect potential impacts to fisheries and aquatic resources that might be related to the Crown Jewel Project.

Monitoring and Mitigation Plans

6.8.9 Have adequate Crown Jewel Project monitoring plans been identified as part of the operation and closure of the Crown Jewel Project? Issues include water quality, macro-invertebrate population richness, and fish population condition.

Response:

Crown Jewel Project water quality evaluations have been conducted for both ground and surface water sources. Baseline habitat and water quality parameters have been identified based on existing pre-Project conditions as part of the planning process. Monitoring and evaluation of potential changes in ground and surface water quality would be conducted throughout the life of the Crown Jewel Project, and would include monitoring and evaluation of potential toxic metal releases into ground and surface waters, as well as sedimentation and water temperature (Refer to Section 2.12.18, Wildlife and Fish - Public Land Enhancement, and Section 2.13, Monitoring Measures). These comparisons would be based on the pre-Project evaluations. Water quality would be monitored and primarily regulated by the WADOE.

Macro-invertebrate surveys have been conducted as part of the pre-Project baseline evaluations and any changes in the richness of the macro-invertebrate community would also be used as a monitoring tool to evaluate potential changes in population

structure as a result of the Crown Jewel Project (refer to Section 2.13.5, Wildlife and Fish Monitoring).

Additionally, fisheries populations would be monitored (refer to Section 2.13.5, Wildlife and Fish Monitoring) to determine any changes in population structure and biomass which may result from changes in water quality. This would be accomplished by conducting fish population density and condition surveys in permanent sample plots.

Impacts on Native American Tribal Treaty Rights

6.8.10 The BLM and Forest Service have fiduciary responsibility to protect tribal water rights in the Myers Creek watershed. No discussion of this issue is presented in the draft EIS.

Response:

The BLM and Forest Service do not have a fiduciary responsibility because they do not have the authority to manage tribal assets. The Bureau of Indian Affairs has the fiduciary responsibility to manage tribal assets.

Tribal water rights are discussed in Section 4.8, Water Supply Resources and Water Rights, of the final EIS, and responses to comments concerning tribal water rights are presented in Section 6.5, Hydrology and Section 6.13, Heritage Resources, of this appendix.

Other Comments

6.8.11 Are the macro-invertebrate studies and monitoring protocol identified for the Crown Jewel Project adequate to monitor potential changes in water quality?

Response:

The macro-invertebrate studies conducted for the Crown Jewel Project are believed to be adequate to monitor potential water quality changes which may change population structure or richness. The pre-Project baseline monitoring stations have been established at locations which would reflect potential Crown Jewel Project related impacts. It is felt that monitoring stations established in areas remote from the project may provide little useable information due to the interference caused by other land uses such as silvicultural, road construction, recreation, range utilization, agricultural activities, and residential related activities.

6.8.12 The WADOE should establish minimum stream flows in the Crown Jewel Project area streams such as Marias and Nicholson Creeks.

Response:

Flow in the portions of Nicholson Creek, which contain fish populations, are too small and variable to utilize minimum flow processes such as the IFIM. Predicted baseline flow reductions in the portions of Nicholson Creek which contain fish are estimated to be 4-5% of existing baseline flows at the end of operations and before the pit has filled. Predicted baseflow reductions in the portions of Marias Creek which contain fish are estimated to be less than 1% of existing baseline flows. Once the pit has filled, flows would be about the same as pre-Project or slightly greater. Refer to *Table 4.7.2, Summary of Average Precipitation Year (20.0 Inches) Impacts on Buckhorn Mountain Drainages*. Models such as the IFIM are not able to evaluate such small changes in streamflow.

6.8.13 Have sufficient fisheries studies been conducted to assess the potential impacts of the proposed Crown Jewel Project on the affected bodies of water?

Response:

Numerous fisheries studies have been conducted for the proposed Crown Jewel Project and potentially affected tributaries, and include: 1) habitat condition surveys (A.G. Crook, 1993b and Pentec, 1993a); 2) instream flow studies (Golder, 1994a and Cascades Environmental Services and Caldwell Associates, 1996); 3) fisheries population surveys which include species presence/absence, relative abundance, length frequency data (A.G. Crook, 1993b, Pentec, 1993a and Cascades Environmental Services, 1996), and genetic analysis of fish stocks in the Crown Jewel Project area (A.G. Crook, 1993b). Complete literature citations for these documents are referenced in Appendix I, Fisheries and Aquatic Biological Evaluation, and in Appendix A, List of Unpublished Reports, of the final EIS.

6.8.14 **The (aquatic) Biological Evaluation (BE) should be withdrawn because no proposed endangered, threatened, or sensitive (PETS) aquatic species have been observed in the Crown Jewel Project area.**

Response:

The objectives of the (aquatic) Biological Evaluation (BE) for sensitive species are: 1) to ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native species, or contribute to trends towards Federal listing of any species; and 2) to provide a process and standard that ensures sensitive species receive full consideration in the decision making process (FSM 2672.41; R6 SUPP 2600-90-5; 2672.41).

In Appendix I, Fisheries and Aquatic Habitat Biological Evaluation, data are provided to document, based on limited electrophoretic analysis of rainbow trout (*Oncorhynchus mykis*), that no redband trout (*Oncorhynchus mykis gairdnerii*) were identified in the Crown Jewel Project area. However, this area is within the historical range of redband trout (Behnke, 1992). Habitat for this species does exist, although impacted by historical management activities. There are no passage barriers within the waters potentially affected by the Crown Jewel Project. The redband trout is considered a sensitive species (PETS) by the Forest Service. Therefore, an (aquatic) Biological Evaluation was completed to evaluate potential effects by alternative resulting from the Crown Jewel Project to the aquatic habitats.

6.8.15 **Existing aquatic habitat has been impacted by historical land management activities. Management of this area should be directed toward improving impacted conditions. Current stream survey data and field reviews of existing aquatic conditions indicate riparian ecosystem habitats have been compromised to varying degrees by historic management activities, such as silviculture, grazing, and road construction activities.**

Response:

Based on stream survey data and other studies, specific mitigation measures, such as the input of large woody complexes, wetlands development, water developments for livestock, and stock driveway construction have been identified as aquatic habitat mitigation opportunities for water potentially affected by the Crown Jewel Project. Baseline water quality monitoring indicates that the area streams are presently transporting low levels of sediment.

6.8.16 **The Crown Jewel Project draft EIS does not adequately address impacts to fisheries and aquatic resources potentially affected by the Crown Jewel Project.**

Response:

It is agreed that some adverse impacts to fish habitat may be realized from the Crown Jewel Project. The potential impacts to the fisheries and aquatic resources from the Crown Jewel Project have been studied and analyzed for the past five years by

biological consulting firms, the WADFW, the WADOE, and the Forest Service. Studies were conducted with regard to current aquatic habitat and water quality conditions and compared to aquatic habitat and water quality conditions that are predicted to occur both during operations and after reclamation of the Crown Jewel Project. Through these analyses, it has been determined that there would be the potential for short-term sedimentation conditions downstream from the Crown Jewel Project site, which would be dependent on climatological conditions during the life of the Crown Jewel Project (including post closure time frames until reclamation activities have been completed). Additionally, it has also been identified, based on pre-Project chemical modeling, that there may be some toxic metal problems associated with the pit lake downstream discharges following closure of the Crown Jewel Project and filling of the pit lake. These potential concerns associated with the aquatic resource would be monitored throughout the life of the Crown Jewel Project, and if these potential problems manifest themselves, the Proponent would be required to take remedial action to correct any water quality or aquatic resource problems associated with the Crown Jewel Project. Finally, site specific mitigation activities have been prescribed to offset the potential impacts associated with the Crown Jewel Project. These mitigation activities have been agreed to by the planning agencies previously mentioned in accordance with the best available technology to maintain and restore the potentially affected resources.

6.8.17 **Mitigation for wetlands or the loss of wetlands affected by the proposed Crown Jewel Project were not adequately addressed in the draft EIS. Of particular concern was the loss of the frog pond.**

Response:

The mitigation for wetlands is discussed in the final EIS in Section 2.12.16, Wetlands. Particular mitigation for the frog pond is discussed and includes several mitigative features such as movement of the waste rock facilities to increase buffering of the site, planting of trees and shrubs to create a more complex vegetation community structure, creation of snags, and fencing to prevent livestock use for 16 to 20 years after the initiation of the Crown Jewel Project. The frog pond would be monitored for loss of functions and values during Project operation. Additionally, construction of new wetlands would be conducted to further mitigate for loss of wetland values.

6.8.18 **Discussions of toxicity occurring at specific concentrations are not relevant unless related to water hardness?**

Response:

It is agreed concentrations of cadmium and silver are less toxic for many aquatic organisms in hard water, as per the chemical modeling (assuming 200 mg/l as calcium carbonate). It is also true that toxicity of cadmium and silver varies greatly between different species of macro-invertebrates and fish species. For example, brook trout experience toxic effects of cadmium and silver at substantially lower levels than rainbow trout (Nelson et al., 1991). Brook trout are the most common fish species in the area immediate to the proposed Crown Jewel Project area. The range of toxicity also is true of many macro-invertebrate species, which experience a very wide range of toxic effects, depending on species. In general, mortality is usually attributed to elevated metal concentrations; however, exposure to sublethal levels over time can produce chronic effects such as behavioral changes and reproductive failure, with both effects ultimately determining species survival in the affected habitat. As discussed in the final EIS, Appendix I, Fisheries and Aquatic Habitat Biological Evaluation, actual toxicity of cadmium and silver would also be dependent on validity of chemical modeling, concentrations in pit water, underground seepage, and flow-dependent dilution rates from perennial streams which would be seasonally variable.

6.8.19 **The draft (aquatic) Biological Evaluation (BE) states that trampled and eroded stream banks, stream-bed sedimentation, and stream channel instability are common throughout the area. This is not consistent with Page 4-44, Section 4.7.2, Paragraph 4 of the draft EIS, which states that there is no indication of long-term increases in sedimentation from previously logged areas or where mineral exploration and historic development have taken place.**

Response:

In the executive summary for stream surveys conducted by A.G. Crook Company (1993b), it is stated, "It appears that historical mining impacts are relatively minor compared to impacts to the stream/riparian areas resulting from timber harvest, road construction, and grazing. Trampled and eroded stream banks, stream-bed sedimentation, stream channel instability, lack of canopy cover, large debris jams, and instream cover reduction are common throughout the drainage. These impacts are particularly evident in the lower sections of the drainage, below the proposed () mining project."

6.9 WILDLIFE

General

6.9.1 **Commentors requested minor text clarifications, asked basic wildlife biology questions, expressed opinions regarding the wildlife resource impacts of the proposed project without referring to any specific evaluations or without presenting any supporting documentation for their point of view.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "wildlife" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions and clarifications, as appropriate, to the final EIS.

Toxics

6.9.2 **The transport and storage of fuel, 189,000 gallons of diesel and 2,500 gallons of unleaded gas, by accident or carelessness, could find its way into the ground water or surface water and become a hazard to aquatic and human life. The transport and storage of chemicals, if accidentally spilled, could poison fish, wildlife, and humans alike.**

Response:

Your comments are addressed in Section 4.12.4, Toxics, and in Section 4.22, Accidents and Spills, of the final EIS.

6.9.3 **The tailings pond and the recovery solution collection pond can attract migratory birds and result in bird and other wildlife deaths. Destruction of cyanide in these ponds may appear to be at acceptable levels; however, the pH in a birds digestive system may change the chemical makeup of a nontoxic substance into a toxic substance.**

Response:

The acid conditions in the digestive system of birds can potentially trigger toxic effects at a later point in time than when initially exposed. The toxics analysis does not conclude that the proposed tailings pond cyanide levels are nontoxic. It concludes that for some species, with tailings pond access, there would be negligible to low levels of mortality over the life of the Crown Jewel Project. There would be daily monitoring of

the tailings pond to note any wildlife presence or mortality during the first year of operation. The frequency of monitoring would be reevaluated after that point in time.

6.9.4 **Downstream effects on the rich neotropical migrant songbird nesting populations in the Okanogan Highlands need to be addressed. Although the draft EIS lists three songbird species, this does not take into account the downstream neotropical migrant songbird nesting population that would be effected by any changes in water quality or quantity from the mine and tailings themselves.**

Response:

Neotropical migrant birds migrate from wintering areas to take advantage of the seasonal pulse of food availability in northern latitudes. An abundant source of food combined with longer daylight feeding hours provide conditions supporting successful reproduction. While neotropical migrant birds collectively use a variety of habitats in northern latitudes, riparian and wetland habitats are key components for a majority of species.

Mine impacts to neotropical migrants result from loss of habitat and the reduced prey base supported by that habitat. Reducing the amount of available habitat can lower the numbers of animals that can be supported in a given area. *Table 4.12.2, Loss of Cover Types (Acres) in the Core Area by Alternative*, of the final EIS outlines the loss of cover types that would occur with each alternative. The HEP models for Veery, Black Tern, and Vesper sparrow would reflect changes in habitat suitability for these representative migrants. Sections 4.12.3, Effects Common to All Action Alternatives, of the final EIS describes the general implications of reduced water flows. In addition, fragmentation of forest habitats has been linked with the increase of brown-headed cowbirds, which are nest parasites of neotropical migrants. Brown-headed cowbirds do occur in the Okanogan Highlands.

6.9.5 **According to the National Wildlife Federation, thousands of animals have perished as a result of drinking and/or swimming in cyanide ponds. Wildlife are naturally attracted to these ponds and waterfowl in particular are not kept out by a fence. How would the potential plight of waterfowl be addressed? The Buckhorn Mountain area lies in a corridor for migrating waterfowl.**

Response:

Most of the waterfowl mortality associated with cyanide is likely the result of exposure to heap leach tailings operations. With heap leach tailings operations cyanide levels occur around 200 ppm and are highly toxic. In contrast, the Crown Jewel Project utilizes cyanide to extract the gold within agitated tanks at the mill. Cyanide levels would be detoxified to levels below 10 ppm before entering the tailings pond about 95% of the time where waterfowl could be exposed for an estimated 95% of operational time. Cyanide levels at 10 ppm are projected to reduce mortality risk to waterfowl down to negligible levels. The Proponent has not provided an estimate of how high cyanide levels would exceed 40 ppm or how long cyanide levels would exceed 40 ppm during the remaining 5% of operational time, between the tailings pipe outlet and the tailings pond. However, when cyanide levels exceed 40 ppm at the end of the pipe then mitigation measures (such as wildlife hazing or diluting supernatant solutions with recycled tailings water) are expected to be in place and fully functional. Monitoring the tailings pond for mortality would be a part of operational requirements to confirm whether projections are correct. The USFWS would be informed of any mortality and would decide whether additional mitigation measures are needed to meet the intent of the Migratory Bird Treaty Act.

6.9.6 **There are so many uncertainties in predictions about toxins. How can determinations of no significant impact be made on such incomplete data?**

Response:

In the past, scientists who wanted to reduce the risk to wildlife from toxins typically added several orders of magnitude to the permitable limits as a safety factor. New methods for conducting ecological risk assessment are being used worldwide to increase the usefulness of the predictions. A discussion of uncertainty in ecological risk assessment was presented by Smith and Shugart (1994). There are many types of uncertainties; for our purposes, the two primary types are lack of knowledge (e.g., how would a certain species respond to a chemical) and natural variability. The methods used in the wildlife analysis incorporated both types of uncertainties and presented information based on probabilities of exceeding a certain level of risk. This approach provides a range of risks as well as a central measure of risk. Impact assessments indicate that, based on the range of uncertainties of the input parameters, there is no risk of impact.

6.9.7 **Tailings ponds and collection ponds can attract migratory birds and result in bird and other wildlife deaths. Destruction of cyanide in these ponds may appear to be at acceptable levels, however the pH in their digestive system can cause what was considered to be non toxic to be toxic. Concentrations of 10 ppm cyanide are lethal. HCN may be generated from tailings pond water as turbidity decreases and from exposed tailings solids and increase their toxicity to wildlife.**

The draft EIS omits discussions of "safe" levels to wildlife of tailings cyanide. According to Bruce Humphries of the Colorado Mined Land Reclamation Division, 20 - 40 ppm is enough to kill wildlife (Denver Post, 4/4/92), yet the mining industry often holds to 50 ppm as the threshold for wildlife kills--a position disputed by the Nevada Department of Fish and Wildlife Enhancement in Reno.

Response:

The level of cyanide allowed in the tailings pond is a permit issue and would be determined by the WADOE as part of the permitting process. There is no universal cyanide threshold defining where safe levels of cyanide occur.

The USFWS is reluctant to set a numerical criterion defining safe levels because factors such as highly variable ore constituents; variable exposure and response for different types of animals; potential additive, offsetting or synergistic reactions all confound the prediction of hazard to wildlife.

Concentrations of chemicals in tailing ponds have been shown to vary through time. Consequently, finding a dead bird at or near a pond may not be the result of the concentration at the time of discovery but rather at the time of exposure. The concentrations are not necessarily the same. The view of the USFWS is to require that the level of detoxification of a pond should be such that bird mortality does not occur as a result of ingestion of pond water (Hallock, 1993).

The wildlife analysis projects that cyanide impacts alone at 40 ppm should be negligible. However, ammonia exposure may lengthen the time fauna are exposed to cyanide which increases the overall risk to low for bats, passerine birds and shorebirds.

Because the total cyanide and WAD cyanide concentrations in the tailings are nearly the same, only a very minor increase in the WAD concentration could occur with conversion of cyanide complexes to HCN (WAD can not exceed total cyanide). In addition, under conditions in the pond and on the tailings "beach" the small amounts of HCN generated would rapidly volatilize and be further diluted and carried away into the atmosphere. The potential effect on exposed wildlife would be so small that it would be difficult or impossible to measure.

6.9.8 **What affects to wildlife are anticipated by elevated metals in the waters of Buckhorn Mountain?**

Response:

Section 4.12.4, Toxics, of the draft EIS addresses your question. It states that the pit lake would not have direct toxic impacts to terrestrial wildlife or their habitats. The potential risk of toxic metals in the pit lake to fish and aquatic invertebrates will vary for each of the following three scenarios: 1) the pit lake is filled, augmented with Myers Creek water; 2) the pit lake is completely filled without Myers Creek water; and, 3) while the pit lake is filling and without Myers Creek water. Conservative geochemical modeling of projected pit water quality suggest that levels of mercury and silver pose a high toxic risk to fish for all scenarios, while values for lead, nickel and copper range from negligible to high risk depending on the scenario. The toxic risk for aquatic invertebrates for mercury, lead, nickel, silver, cadmium and copper vary from negligible to high depending on the specific scenario (Beak, 1996).

Seepage from waste rock disposal areas could be a source of potential impacts to wildlife. Initial screening indicated that the potential for toxic impact is low.

Mathematical models were used to determine toxic impacts of cyanide, ammonia, arsenic, lead, copper, and nickel in the tailings pond. The results of that model are displayed in *Table 4.12.5, Risk or Probability of Toxic Impact at the Tailings Pond*, in the final EIS. Also, displayed in Section 4.12.4, Toxics, of the final EIS are the potential impacts from an accidental liner breach and accidental transportation spills.

6.9.9 **Tailings that are dewatered and dry are susceptible to photo-oxidation which increases their toxicity and exposure. There is no support for the assertion that dewatered tailings disposal would result in "...virtual elimination of potential mortality of birds which would be attracted to a tailings pond."**

Response:

The statement concerning the elimination of toxicity by dewatered tailings has been dropped from Section 2.2.12, Tailings Disposal, of the final EIS.

6.9.10 **Cadmium is lethal to fish from 10 - 100 parts per billion [ppb]; its reactions with other substances such as zinc may increase cadmium's toxicity to aquatic organisms. Silver is toxic to fish as low as 4 ppb depending on exposure time. Macroinvertebrate silver toxicity ranges from 30 - 50 ppb.**

Response:

Predicted potential post- Project metals concentrations are addressed in Chapter 4, Environmental Consequences, of the final EIS, and the potential effects of concentrations of metals on aquatic biota are addressed in Appendix I, Fisheries and Aquatic Habitat Biological Evaluation. The readers need to understand that the predicted potential concentrations of metals in the EIS may be a result of the input parameters for the modeling and, in reality, would likely be much lower. The potential detrimental effects of metals concentrations on aquatic organisms varies widely between different macro invertebrate and fish species. Thus, concentrations which may not affect one species may be lethal to another (Nelson et al., 1991). Refer also to Sections 4.6.3, Effects Common to All Action Alternatives, and 4.6.4, Effects of Alternative B, in the final EIS.

6.9.11 **To make such a statement (draft EIS, page 4-72); "The common loon and northern bald eagle may be subject to a large degree of negative impact if a spill occurred" in the summary section on environmental consequences to wildlife and not also include the**

fact that the statement is a highly unlikely scenario gives readers a wrong impression that these situations would occur.

A spill in the Beth and Beaver Lake system could be catastrophic, not only to the fish eating loons, but to all the wildlife dependent on the lakes. The draft EIS says that a chemical spill is an unlikely event, but the Tonasket Ranger District has already had one such event in the area. In the 1994 field season, a pickup truck carrying herbicides had an accident resulting in a spill. The consequences in this case may have been small. This would not be true if a semi-truck loaded with cyanide had a similar mishap.

Response:

The wildlife analysis looked at three hypothetical accident scenarios for the sole purpose of predicting the impacts of a transportation spill in the unlikely event that one did occur. The likelihood of a spill occurring was not addressed in this wildlife section, but is covered in Section 4.22, Accidents and Spills, of the final EIS. Section 4.12.4, Toxics, of the final EIS presents a more detailed explanation of the hypothetical scenarios used to evaluate the effects of a spill. The narrative describes, "Toxic impacts resulting from the unlikely event of large, direct spills into waterways was evaluated based on the size, location, and timing of the spill as described by the Forest Service (Zieroth, 1993)."

6.9.12 **Tailings ponds in the head of drainages is not a very good idea. Leaks in liners and/or structural failures in the dam can result in the transport of toxic materials, including trace elements, into ground and surface waters. These elements can result in fish and wildlife deaths and affect the human population too. Upwelling of ground water in a stream system, if it contained contaminants or toxic elements could affect fish reproduction, since upwelling of ground water often occurs in gravels where fish spawn.**

Response:

For tailings site selection, refer to response 6.18.6 in this appendix. For liner system and embankment design refer to responses 6.3.2 and 6.3.3 in this appendix. For effects to ground and surface water refer to Section 6.5, Hydrology, in this appendix.

6.9.13 **Many factors would determine the nature and magnitude of effects on aquatic life at a spill site. Thus, to say that a spill would be acutely lethal is misleading, and the discussion should be reworded.**

Response:

It is true that many factors determine the nature and magnitude of effects (e.g., the stream flow at the time of the spill, or whether the entire contents of the load were dumped directly into the streams, etc.). However, many of these uncertainties were removed for the purpose of the spill analysis. In a series of letters culminating in a letter from Zieroth (1993), the size, location, and timing of the spill scenario were defined before the analysis was conducted (see Section 4.12.4, Toxics, of the final EIS). Spills were hypothesized to occur in summer (during low flow), and the rate of spill into the water was defined for each chemical. Based on these assumptions, the concentrations would be acutely lethal to aquatic life.

6.9.14 **The assumptions used to develop the toxic analysis are unrealistic (especially for bats) and tend to overstate the potential impact (assuming that levels of cyanide and other toxics are near or below levels used in the models).**

Response:

All assumptions are referenced and specific assumptions for each scenario or species are provided on data sheets in Crown Jewel Project Wildlife Technical Report (Beak,

1995a). Standard databases were used for the toxicity data (Oak Ridge National Laboratory, 1994) and species exposure data (EPA, 1993). Estimates for time spent by each species in various habitats were provided by wildlife experts after review of predicted conditions. An evaluation of specific assumptions is provided in response 6.9.16 in this appendix.

6.9.15 **Commentor feels it is unrealistic to assume that the interaction of individual chemicals is additive since the effects of one chemical may supersede or mask the impacts of another chemical.**

Response:

The reasons for assuming additive reactions are outlined in Section 4.12.4, Toxics, of the final EIS. The assumption is still valid, and is the most common assumption made when the question of chemical interaction is raised. In addition, the comment ignores the possibility of synergisms. In his book, Suter (1993) states on page 373 that "as with the interactions of individual chemicals, the simplest assumption is that they are additive, but more complex interactions are possible." Synergisms and antagonisms are nonadditive and are more difficult to address, particularly when no definitive information is available on how the chemicals of concern interact. For example, ammonia toxicity has been reported to be synergistic with cyanide toxicity (Smith et al., 1979), but others have reported additive or antagonistic interactions (Alabaster et al., 1983).

6.9.16 **Risk estimates to bats and birds for ammonia and cyanide are overestimated due to the local environment being less favorable (lack of food, high human activity). Estimates of ammonia concentrations are overstated and harmful levels to mammals appears to have been set too low. Commentor questions conclusions of ammonia toxicity on birds and small mammals and offers information about Patuxent Environmental Science Center tests involving Dr. Vyas.**

Response:

The estimates for bat exposure resulted from detailed discussions with Mark Perkins, an acknowledged bat expert in this geographic area. Bats tend to drink immediately after leaving the roost, and that tends to be the only time they drink. When looking for a place to drink, the presence or absence of a food source is not an issue. Therefore, if the roost is adjacent to the tailings pond, then it is reasonable to assume that they take their drink from this location. The rest of the time off the roost is spent in foraging for food (i.e., not drinking water). The analysis assumed that bats were not eating at or near the tailings pond, and that there would be no food source at the tailings pond. The analysis concludes that the overall risk from cyanide is low for bats and shorebirds (see last column of the *Table 4.12.5, Risk or Probability of Toxic Impact at the Tailings Pond*, in the final EIS). Based on the definition of adverse impact for ammonia (i.e., illness), the risk is high for ammonia; however, the overall population level impact would be low.

The wildlife analysis utilized concentration levels of 94 mg/L. These concentrations are net concentrations that consider chemical transformations with both the soil and atmosphere.

Attempts to contact Dr. Vyas directly have not been successful. A number of voice mail exchanges have taken place. Based on the voice mail messages, it appears that the studies referred to involved feeding fire retardant chemicals to wildlife. While these chemicals contained ammonia salts, the concentrations of the constituent compounds in the fire retardant are proprietary. Since the concentration of ammonia in the fire retardant is not known, the results of Vyas studies are not useful for calculating reference doses. The Vyas studies involved very short-term exposures which is another reason his results are not particularly suitable for deriving reference doses for the Crown Jewel Project. It is impossible to assess what form the chemical is in (i.e., availability), the dose over time, or the amount of ammonia in the chemical.

6.9.17 **Describe the methodology used to extrapolate NIOSH standards for humans to wildlife.**

Response:

The NIOSH standard was described on page 195 of the Crown Jewel Project Wildlife Technical Report (Beak, 1995a). It was assumed that wildlife and humans respond similarly to ammonia and high pH. We used 500 ppm (water) and 35 mg/m^3 (air) from the NIOSH handbook to calculate the reference dose for wildlife species. In his book, Suter (1993) extensively discusses (starting on page 196) the relative sensitivities of different species and the use of extrapolation and allometric regression to estimate toxic response of one species based on the results from tests with another species. While the data clearly shows a great deal of variation in responses between chemicals, test situations and species, there does tend to be generalizations. Based on the best available information, NIOSH values for human response to ammonia are used to estimate the response of various wildlife species.

Page 195 of the Crown Jewel Project Wildlife Technical Report (Beak, 1995a) states, "For most parameters, the effects are based on mortality and impacts to reproduction and growth. Sub-lethal responses that could alter behavior (e.g., avoidance or attraction), or alter activity levels as a result of sickness (perhaps increasing vulnerability to predation) are not included. However, the impacts of exposure to high pH (cement/lime) or high concentrations of ammonia on terrestrial wildlife species are not known. To assess impact as a result of pH and ammonia, NIOSH (1985) levels for health protection of humans were extrapolated to wildlife. NIOSH limits were set based on human responses such as gastrointestinal illness. A similar sub-lethal response is likely for wildlife species. Sub-lethal impacts on behavior may occur for parameters in

addition to ammonia and cement/lime, but are not generally considered in this analysis because of uncertainties in the link between sub-lethal effects and population success."

As stated above, the 500 mg/L suggested for drinking (NIOSH, 1985) is based on irritation of mucosal membranes for humans (the dose for humans would be 14 mg/kg/day). NIOSH standards were not used to determine mortality, but rather suggest concentrations that would likely lead to illness in wildlife. According to IJC (1985), a 1% to 3% ammonia solution is toxic at 285 mg/kg/day (based on the same calculations). This number is probably closer to reality for toxicity, rather than illness resulting from ingestion.

6.9.18 **Invertebrates should not be a concern since the tailings pond is not designed to provide habitat for invertebrates.**

Response:

While not designed for use by wildlife, the analysis looked at impacts to species that could occur there. The tailings pond poses a high toxic risk to invertebrates and is so noted.

6.9.19 **There are inconsistencies and discrepancies in the worst case scenario of accidental liner breach between the Hydro-Geo scenario and the wildlife analysis.**

Response:

The wildlife analysis used a conservative 1-D model which allows for no dilution between the tailings pond and the wetland. Moreover, since Kd (adsorption factor) is very low for both CN and NH_3, there is essentially no retardation of these chemicals by adsorption. Volatilization is assumed to occur in the wetland and is significant for CN. The 2-D Hydro-Geo model allows for dilution prior to breakthrough, but does not consider any differential adsorption or volatilization of chemicals.

Beak assumed that the wetland was located 200 feet from the liner breach. Since a small wetland presently exists near the edge of the tailings footprint, this path-length seems plausible. The Hydro-Geo (Seepage and Attenuation Study) (Hydro-Geo, 1995b) conclusion that the plume would not extend beyond the footprint would seem to be highly dependent on where in the footprint the breach is assumed to occur. The Hydo-Geo description does not indicate where the model locates the liner breach relative to the liner edge. The breach in the wildlife model is assumed to occur near the edge. This is a conservative assumption.

Note that the concentration of the plume at 200 feet could be much higher than that at 489 feet (about 1000 times higher judging from the Hydro-Geo (Figure 7) results after four years of seepage). Figure 7 gives approximately the same ammonia concentration that the wildlife analysis estimated for a wetland 200 feet downgradient. The consequence of this is that although different assumptions were made, the results are not inconsistent through time.

Habitat

6.9.20 **Consider this: destroying the habitat of several animals whose critical wildlife habitat would be replaced by the tailings of the mine.**

Response:

The wildlife analysis in Chapter 4, Environmental Consequences, of the final EIS describes the habitat losses that would occur with mine development alternatives. Impacts to habitat are likely to lead to displacement or loss for dependent species.

However, it is important to clarify the issue of the term "critical habitat." This is a term utilized by the USFWS (and delineated by the USFWS) as the habitat necessary to support the recovery of an endangered or threatened species. No "critical habitat" has been delineated in the analysis area.

6.9.21 **Waste water leaching into the ground and streams would greatly impact the water quality of ground water as well as fish and game habitat.**

Response:

Mine waste water would have to meet Washington State and federal water quality standards before being released into the surface and ground water systems. Meeting Washington State water quality standards should ensure minimal impacts to fish and wildlife habitat. Should waste water enter ground water systems, potential impacts to fish and game habitat would not occur unless the ground water reached the surface. If ground water surfaces, the degree of potential impact to fish and wildlife habitat would depend on the levels of contaminants. Dilution is expected to occur with this scenario, but exposure to metals is possible. Continued ground and surface water monitoring is an integral part of the permitting process.

6.9.22 **Perhaps not all wildlife disturbance in the 113 square mile study area would be an effect of the mine site but as a result of other environmental issues over which Battle Mountain Gold Company has no control.**

Response:

This comment may refer to a projection derived from the HEP study which modeled what future impacts may take place over time if mine development didn't occur. The intent of modeling this "without the mine/no-action" scenario is to determine the actual projected impact of each mine development alternative. The impact is determined by comparing the differences in Habitat Units when "action mine development alternatives" are compared to the "without the mine" scenario. The modeling was based on applying management direction provided by each respective land management agency. For the Okanogan National Forest, three different management approaches were utilized (MA-25, MA-14, and MA-26). A large portion of the project area is in MA-25 which does not manage for Snow Intercept Thermal Cover (SIT). This was partially the basis for the comment that SIT cover would be eliminated anyway.

However, it is important to recognize that the HEP modeling for "without the mine" is only a modeling tool that helps to determine the impact of proposed action alternatives. The projected actions "without the mine" are an attempt to define a likely scenario, rather than an effort to precisely identify where and when actions would take place. For example, recent Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales have modified the Forest Plan and Management Area direction that was the basis for the HEP modeling projected impacts on National Forest lands. Late and old structural stages (which often provide SIT cover) now would be retained even in MA-25, when the existing level of late and old structural stages is below the range of what would have historically occurred. Refer also to response 6.9.71 in this appendix.

6.9.23 **The mines I have visited appear to operate in harmony with native wildlife. I have seen deer, small game and birds all peacefully living and grazing within a stones throw to operating open pits and processing facilities. I find a fairytale aspect in consideration of wildlife, almost mythical in its endeavor to create a wildlife population that withers at the mere sight of humanity. Would your current analysis support such empirical observations? Or does your current model indicate wildlife being driven a significant distance from the mine? If it is the latter, which is how I read the current draft EIS, I would suggest you modify the analysis.**

Response:

The term "wildlife" encompasses a wide diversity of animals with different approaches to finding food, cover and raising young. Some habitat general list species would adapt. However, other species are more vulnerable. In broad terms, species that are more vulnerable include those with specialized niche requirements or have limited population sizes and ranges. Species which do not readily move, have low rates of population increase. Species with low genetic variability are less adaptable.

6.9.24 **The people who work the mine would not be prone to suddenly chasing a curious animal except to keep it from getting hurt. The mine would not be leaving garbage behind like picnickers have a tendency to do. Since the Crown Jewel Project is contained, routine and the people aren't there to do anything with the animals, I doubt that wildlife would be diminished in the rest of the Okanogan National Forest at all.**

Response:

See Section 4.12.3, Effects Common to All Action Alternatives, of the final EIS for a discussion of the direct impacts of mine development within the core area, as well as indirect and cumulative impacts to wildlife in the analysis area.

6.9.25 **While there may be an impact to habitat, the animal population study results show little or no effect on the number of animals potentially present on the property. In addition, the document doesn't mention that for certain species, existing habitat has not reached species saturation so existing populations could move onto other locations within the analysis area.**

How many fauna would be killed after filling in the wetlands and during the mine site preparation?

Response:

The Crown Jewel Project wildlife analysis focused on assessing changes in habitat rather than changes in populations. Animal populations naturally vary over time due to the influence of changes in weather, climate and habitat (such as the impacts of severe winters, prolonged drought, and wild fire affecting the availability of food), as well as the effects of food competition between species, predation intensity, and disease outbreaks. Determining the cause of population change, or whether a population has reached carrying capacity can be challenging. Rigorous surveying methods consistently applied over time, and specific to the animal being studied, are needed to isolate the impact of each factor on a population.

Considering the diversity of species that have been documented to use the analysis area and the range of factors causing variation in population levels, the most cost effective and timely way to analyze the mine impacts is to assess changes in habitat. Habitat is defined as the combination of resources (food, cover, water) and environmental conditions (temperature, precipitation, presence or absence of predators and competitors) that allows a species to occupy, survive and reproduce in an area. Loss of habitat is considered the greatest single factor in wildlife population declines.

The Crown Jewel Project wildlife analysis described types of habitat at different spatial scales (such as the analysis area, core area, HEP study area, as well as specific attributes of stands such as the presence of snags or down logs. Wildlife evaluation species were selected from the total biodiversity of the area based on being either a species with protective status by state or federal agencies, an indicator species that highlights limiting habitats, species of high human value, or animals that represent a group that use environmental resources in a similar way. Changes in habitat availability and suitability were then analyzed for the selected species.

6.9.26 **Surrogate Species do not reflect impact to actual species; i.e., Red Tailed Hawk not suitable surrogate to Northern Goshawk.**

Response:

Wildlife species often differ in their approaches to obtaining basic life requirements. However, the use of surrogate species in assessing potential effects of environmental contamination for the final EIS is appropriate and consistent with the procedures outlined in the Wildlife Exposure Factors Handbook (EPA, 1993). The assumption used in the analysis is that species of similar size and metabolism, with similar approaches to obtaining food (eg. carnivore, insectivore, herbivore) will have similar food ingestion rates, water ingestion rates, and inhalation rates. These ingestion rates are key factors used in the analysis for projecting the amount of potential toxic exposure. Therefore we can use the detailed information on one species, like the food and water ingestion rates and inhalation rate for the red-tailed hawk, and assume that a similar species like the goshawk will have similar exposure rates.

6.9.27 **Would a 40 percent reduction in surface flow to the frog pond prevent the pond from filling and functioning?**

Response:

It is believed that the frog pond, besides capturing surface flow, could be partially fed by a spring. It is proposed to monitor the frog pond on at least a yearly basis to determine if there is a reduction in function and a reduction in numbers of spotted frogs. If there is a reduction in function, then mitigation would be designed to alleviate this effect. Wetlands mitigation proposes to plant shrubs and trees along the northern perimeter, fence the area off from livestock use for about 15 years, and monitor the pond. Additional mitigation would include diversion of water to augment flows to the pond during operations and until reclamation is complete.

6.9.28 **Riparian and wetland cover type losses range from 82 acres (Alternative C) to 127 acres (Alternative G). Such losses are considered substantial for all alternatives. Permanent loss of riparian and wetland habitat important for spotted frog, winter wren, ruffed grouse and great gray wolf would occur in Marias Creek under Alternatives B, C, D and E.**

Response:

Impacts to habitats of these species are documented in the final EIS in Section 4.12, Wildlife. In addition, as documented in Section 4.12, Wildlife, a detailed assessment of the predicted impacts of the mining alternatives to over 40 species is presented in the Crown Jewel Project Wildlife Technical Report by Beak (1995a), which includes the above mentioned species. This report is part of the analysis file for the EIS. Impacts to functions and values of wetlands are required to be compensated for under the Clean Water Act and Okanogan County ordinances. Potential wetlands mitigation is proposed at Pine Chee Springs; on Myers Creek near the international border; around the frog pond; in the headwaters of Bear Trap Canyon; and, in the headwaters of Nicholson Creek (Section 2.12.16, Wetlands, of the final EIS).

6.9.29 **The delineation of riparian cover types versus actual riparian zones is unclear.**

Response:

There is a difference in how riparian areas were measured, for different resources, in the EIS.

1. Riparian/wetland cover types were defined in the wildlife analysis as all areas within 100 feet of a stream, wetland, lake, or pond, and 50 feet of a seep or

spring. This broad definition was used to portray a zone of influence where species associated with riparian areas were likely to occur.

2. The HEP study more closely identified riparian and wetland habitats tied to actual mesic vegetation and soil saturation. Both of the above approaches were used to look at larger areas and provide a general picture of available habitats.

3. In contrast, the most detailed survey of wetlands was conducted (See Section 3.11, Wetlands, of the final EIS) using narrow specific measures of wetland hydrology, hydric soils and hydrophytic vegetation, and focused on the footprint area. This survey measured the wetland area more precisely in square feet and was based on the methodology outlined in the 1987 Corps of Engineers wetlands Delineation Manual and the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands. Additionally, each wetland was rated according to the Washington State Wetlands Rating System for Eastern Washington.

6.9.30 **The Forest Service used the Tonasket Wildlife Habitat Inventory Procedures (TWHIP) to evaluate deer habitat on Forest Service lands. This methodology tends to overestimate the amount of Snow Intercept/Thermal (SIT) cover and other winter cover by ignoring the availability and value of forage in an area and by including all acres within stands as SIT or other winter cover even if SIT cover is found at less than 40% of sampling stations. Commentor objects to method where if a stand is found to contain any habitat that may be suitable, then the entire stand was designated as suitable.**

Response:

When agencies received a draft of the Crown Jewel Project Wildlife Technical Report, the misapplication of TWHIP was also identified. However, the resulting reanalysis that followed was not available for the draft EIS. Revised calculations show both a reduced level of existing snow-intercept thermal cover and a narrowing of differences between alternatives for this habitat. Revisions have been incorporated into the final EIS.

6.9.31 **Analysis implies that because specific cover types are present, then these cover types provide suitable habitat. This gives the impression that most, if not all, of these PETS species may use the area, when in fact the likelihood that they would occur on the site is negligible. This tends to exaggerate the amount of suitable habitat, probable value, on the site for these species.**

Response:

One standard method utilized in the wildlife analysis proceeds with the following steps:

1. Define the differing habitat types in the project area (cover types);

2. Identify key species of concern to use as evaluation species;

3. Identify the cover types these species are known to utilize based on literature reviews; and,

4. Document changes in the cover types as a consequence of mine development.

The evaluation species are selected animals that either are known to occur, suspected to occur, or have historically occurred in the analysis area. This method does not imply that the species would be found in the available habitat at any given point in time even though the analysis area is within the geographic range of all the evaluation species.

Specific information documenting the known occurrence of species is provided in Section 3.13.5, Wildlife Species Overview, of the final EIS.

6.9.32 **The fact that designated recovery zones for these species (Threatened and Endangered Species) do not include the Analysis Area indicates that federal and state biologists recognized that the area would not provide suitable habitat for these species.**

Response:

Recovery zones have been identified as those areas needed for the recovery of the species. The analysis area is outside of the Grizzly Bear Recovery Zone. However, the Grizzly Bear Recovery Plan recognizes that grizzly bears would move and even reside permanently outside the recovery zone. In fact, the plan notes that "Bears can and are expected to exist outside recovery zone lines in many areas."

6.9.33 **Some commentors felt that draft EIS statements are incorrect concerning: habitat lost with the mine, that reclamation features are of lower quality, that new features would have little habitat value, and that currently much higher quality habitat is found on the site and it would improve over time even without the mine. Others felt that no loss of wildlife habitat would occur at the site; it would just be changed to cover types that are less preferred by some species of wildlife analyzed in the EIS.**

Response:

The wildlife analysis considers unreclaimed roads and the extensive pit walls to be habitat lost with the mine. Mitigation utilizing blasting techniques to provide structure for cliff dwelling animals is proposed, but much of the pit wall would be unused talus and rock wall. The draft EIS projects that reductions in soil productivity of 10% to 15%, are expected. This can directly translate to declines in both plant and animal productivity. Also, what may be described as successful reclamation is often not the same as a restored ecosystem. Reclaimed lands are generally very simplified in structure, function and community compared to surrounding existing conditions.

Part of the intent to manage wildlife habitat on public lands is to provide secure habitat for maintaining viable populations, and to minimize the impacts that occur when wildlife are displaced by settlements or development from habitat that historically was used. An overall reduction in available habitat can lead to a reduced capacity to support the affected species. The wildlife analysis documents the changes in habitat availability that would occur as a result of mine development.

6.9.34 **Summary of impacts to wildlife (*Table 2.15, Summary of Impacts by Alternative for Each Issue*, of the draft EIS) are misleading because it lumps several cover types into groups that should be considered separately (i.e., young mature, mature, and old-growth stands, with no differentiation between managed and unmanaged stands).**

This section (Section 3.13.5, Wildlife Species Overview, of the draft EIS, Paragraph 4) and other sections imply that all habitat within cover types is suitable for the species just because some habitat within the cover type is suitable. Some riparian areas and other cover types listed provide little habitat for hairy woodpeckers. Yet, because stands with different habitat features were lumped together, it appears that more habitat is available than is the case. Although habitats may appear "suitable" based on human definitions, lack of use of such habitats by wildlife species suggests that habitats are less suitable or unsuitable to species which should be taken into account in the analysis.

Response:

In both the HEP and TWHIP, core area cover type analysis, some grouping occurred. The biologists decided to group cover types where appropriate after determining that

the evaluation species were not discriminating by use or avoidance between the grouped cover types.

The wildlife analysis looked at the available habitat with both site specific and general approaches. The TWHIP and HEP site specific analysis did measure and rate each individual stand in terms of its varying suitability as habitat. The general approach described by the commentor was used to measure changes in land and cover type in the core and analysis area, and to measure habitat values to ensure compliance with Okanogan National Forest Land and Resource Management Plan direction. Both site specific and general approaches can provide appropriate and useful information. General approaches are typically used on large scales to provide a broad overview.

Determining "lack of use" for the wide range of evaluation species for any particular stand or drainage or analysis area is difficult. Just because an animal is not seen during a stand walk-through does not mean that the habitat is unsuitable, or that the animal is absent from the area. For example, suitable habitat for cougar is provided by almost the entire analysis area, yet how often are cougar sighted other than by being in the right place at the right time or by establishing costly and time-consuming surveys. The exception would be surveying habitat that are restricted to limited and easily surveyed locations (e.g., surveying for black tern nesting use of Beth and Beaver Lakes). The habitat-based approach is an effective method for looking at large area impacts on a range of evaluation species, especially after taking into consideration the time and expense of long-term animal surveys.

6.9.35 **The document should note that human activities also benefit wildlife, such as use of human structures for nest sites, feeding on road kills, and use of human by-products and waste.**

Response:

Habitat loss and fragmentation associated with human activities are considered the factors most responsible for loss of biodiversity. Land stewardship activities that incorporate the needs of wildlife are necessary to ensure long-term survival for some species. However, the artificial replacement of nesting structure or food sources such as road kills is not considered a desirable long term substitute for loss of natural habitat providing food, cover and security.

6.9.36 **The EIS needs to address the favorable benefits of the Starrem Reservoir. One of the benefits of the reservoir is that water levels would fluctuate. Few aquatic bird species favor stable water levels and those are primarily species that nest over water, such as loons and terns, and might lose nests to higher water. However, most ducks and other birds favor fluctuating water levels because they provide a variety of micro habitats and feeding areas and because many insects and other prey require periods of wetness and dryness to reproduce and mature (Weller, 1986). The reservoir would also be surrounded by grassland vegetation that could be used by nesting ducks and other birds.**

Response:

The wildlife analysis recognizes that the Starrem Reservoir may provide a beneficial impact as a waterfowl resting area. However, because the impoundment is a synthetic lined structure without shoreline vegetation, with highly fluctuating water levels that provide no food value (in comparison to the range of what naturally occurs in wetland environments), its utility is expected to be limited.

6.9.37 **The document should clarify what is meant by an "ongoing loss." At some point, the forest would return to the condition it was before the Crown Jewel Project. Based on WADFW (1995) analysis, 45 percent of the young mature and mature forest within the**

core area would be harvested within the next 60 years. This would result in a greater loss of snags and other habitat needed by cavity nesting species than would occur with the Crown Jewel Project.

Response:

The time framework for the wildlife analysis looked out 100 years. The reference to "ongoing loss" refers to the fact that more than 100 years following mine closure would be necessary to establish mature habitat conditions characterized by well-developed vegetative structure (e.g., snags, down logs, rich humus layer, multi-layered canopies).

6.9.38 **The mix of grasses, shrubs and trees that would result under the BMGC proposed reclamation plan would attract a greater mix of wildlife. Total biomass production of plant and animals may exceed levels found in more densely stocked stands proposed under Alternatives C-G. BMGC feels that Alternative B reclamation would result in similar numbers of large trees as occur on the site today (100 trees/acre).**

Response:

Alternative B, reclamation, as proposed in the draft EIS, states that trees would be planted in several clumps totaling about 100 trees per acre, except for south aspects where 20-25 seedlings would be planted. The other alternative reclamation plans propose similar levels of shrub and grass planting as Alternative B, but more uniformly planted trees with a density of around 250 trees per acre. Trees are planted at higher density on the expectation that some attrition and mortality would occur over time. The commentor feels that original Alternative B would make up the numbers of trees to fill the gaps and get to 100 trees/acre by regeneration seeding from adjacent forested stands. The reason why stand densities may be less in Alternative B reclamation are the following: 1) attrition is likely to occur in the clumps thereby lowering stocking levels; 2) the 2H:1V slopes in Alternative B would provide less favorable conditions for successful reclamation; and 3) seed fall is likely in areas with favorable topography. However, not all the reclaimed areas have favorable topography.

6.9.39 **Commentor wants it noted that despite the impacts that have and would occur, suitable habitat remains for a variety of wildlife. The site may provide habitats in different amounts than currently exist on the site, but changes in the mix of habitat types would occur under traditional forest management, as well. Large areas within the Analysis Area would not be impacted and can be managed to provide most habitats lost due to the mine project and integrated with habitats created after reclamation.**

Response:

Section 4.12.5, Cumulative Effects, of the final EIS notes that suitable habitat occurs in the analysis area (as detailed in Section 3.13.5, Wildlife Species Overview, of the EIS), while continuing to focus on the key cumulative changes over time.

6.9.40 **Primary comparison criteria should include: 1) permanent and long-term changes in vegetative community types; 2) the isolation of remaining habitat; 3) interruption of habitat corridors; and 4) the relative importance of snow intercept thermal cover to deer winter range.**

Response:

There is nothing in NEPA requiring evaluation criteria. While permanent and long-term changes in vegetative community types are not an identified evaluation criteria, this issue is addressed in *Table 4.12.1, Status of Reclamation Within the Alternative Footprints*, of the final EIS.

6.9.41 **The number of acres of suitable habitat for Townsends big-eared bats is high, since they tend to prefer lower elevations.**

Response:

While it is noted that Townsends big-eared bats may prefer lower elevations, they also have been documented at higher elevations. Therefore, higher elevation habitat is also quantified for the table.

6.9.42 **As compared to the Washington Department of Fish and Wildlife Habitat Evaluation Procedures (HEP) Study (1996), the definition of mixed conifer mature cover is much more generous in the draft EIS and implies much greater suitable habitat for some species than actually exists on the site.**

Response:

The value for the beginning diameter of mature conifer cover was incorrectly stated as greater than 9 inches d.b.h. However the values collected in the field were consistent with Okanogan National Forest Implementation Guidelines (>10" d.b.h.), and the HEP. The correction has been made to the final EIS narrative.

Deer Issues

6.9.43 **Concern that there would be permanent changes in deer migratory patterns.**

Response:

The Methow Valley deer herd is migratory in the traditional sense of moving between geographically separated summer and winter ranges. In contrast, deer in the Okanogan Highlands can be seen in the same general area throughout the year. They take advantage of available forage provided within their home range - seeking out succulent vegetation in the forest as well as agricultural alfalfa fields, utilizing lichen in mature forest with snow intercept thermal cover in the winter, as well as seeking out south face exposures with reduced snow depths and earlier forage. Knowledge of home ranges and movement pathways is acquired by offspring while accompanying their mother in their first year of life. Crown Jewel Mine impacts would change habitats and patterns of area use by deer, but continued occupancy of the general area is expected.

6.9.44 **Some environmental experts believe that deer would be impacted to an extreme degree which would force mountain lions down into the more populated areas of the valley. My experience in Republic, as mountain lions have begun to have difficulty finding suitable prey in the forest was to seek out family pets or children as more vulnerable prospects. In addition, deer would move down to the valley and have a negative impact on the primary employer of Okanogan Valley, namely farms and orchards.**

Response:

Development of the Crown Jewel Project is expected to impact deer habitat with particular concern for additional loss of critical winter habitat which is already in short supply. The loss of habitat associated with the mine would be cumulative to other ongoing impacts from timber management, housing development, and road construction. The cumulative loss of habitat will likely result in a net loss of total deer in the area over time. The loss of deer habitat in the Okanogan Highlands is not viewed as an "extreme degree," but rather as an unfavorable trend, especially for mule deer.

Deer are primary prey species for cougar, but how a change in the deer population will affect cougar numbers and behavior would be extremely difficult to predict. The recent trend of cougar incidents involving people and domestic animals in Okanogan County and across the state is believed to be connected to conservative hunting seasons of the

past several years that has allowed the cougar population to build to possibly record numbers.

Cougars have very large home ranges of 75-130 square miles see the Crown Jewel Project Wildlife Technical Report (Beak, 1995a). Therefore, it is expected the habitat impacts resulting from development and operation of the mine would have minimal impacts to the cougar population.

No data exists to suggest deer associated with Buckhorn Mountain area will be displaced to the lower valleys to cause damage to orchards and other farm crops. There may be some incremental and temporary increase of deer foraging in farm fields associated with Myers and Toroda Creeks. More than likely, there will be adjustment in total numbers of deer based on the carrying capacity of the natural habitat.

6.9.45 **Deer would disappear from the Crown Jewel Project area (pg. 4-118 draft EIS), what with the loss of SIT, forage and habitat not only through the duration of the mine (any alternative except A) but also for the 100 years needed for recovery. They would never return to their former numbers (pg. 4-73 draft EIS).**

Snow intercept/thermal (SIT) cover for deer in the Wildlife Core Area is in short supply and is likely limiting the deer population. We believe the action alternatives of the Crown Jewel Project would have significant adverse impacts to the mature conifer habitats and associated wildlife populations. We are particularly concerned for the long-term status of mule deer.

Response:

There were interpretation and assessment errors associated with the original delineation and analysis of cover types for deer and several other wildlife species in the draft EIS. As a result, estimates of available suitable habitat and projections of habitat losses were incorrect. The Forest Service and wildlife specialist personnel have corrected and updated the cover type mapping and recalculated potential impacts to habitats for each action alternative. Methods and rationale for the development of the corrected cover type map and analysis of potential impacts are available at the Tonasket Ranger District in the Administrative Record for the Crown Jewel Project EIS.

Snow intercept/thermal (SIT) winter deer habitat is currently deficient and does not meet Forest Plan Standards and Guidelines in Management Areas 14 and 16 in the Core Area. Crown Jewel Mine development would further reduce available SIT cover on Buckhorn Mountain. The impact analysis for deer has been corrected to indicate that 28 to 55 acres of SIT cover would be lost depending on action alternative. (See *Table 4.12.4, Impacts to Habitat Within the Core Area by Selected Wildlife Species and Alternative*, of the final EIS).

It is uncertain to what extent existing deer populations within the Analysis Area would be affected by reductions of SIT cover within the Core Area. There is no data available on current deer population numbers or the total amount of deer SIT cover within the Analysis Area. It is possible that there would be at least some reduction in Core Area deer numbers associated with a reduction in SIT cover.

Potential reductions in available habitat and local deer herd numbers would be mitigated somewhat by road closures planned with the project. These road closures would reduce the current open road density of 2.2 miles per square mile to 1.9 miles per square mile in the Analysis Area and increase the extent of secure habitat areas. It is anticipated that hunting-related reductions in the local deer population would be less with these road closures.

Losses in deer SIT cover would be long-term since suitable SIT cover conditions would take over 100 years to reestablish on reclaimed areas. Cumulative losses in SIT cover have been primarily the result of past timber harvest. As indicted in Section 4.12.5, Cumulative Effects, of the final EIS, timber harvest in the Analysis Area has decreased dramatically over the last few years, and current levels of timber harvest are expected to continue. With these projections, available SIT cover for deer would be anticipated to increase, resulting in a long-term trend of habitat improvement for deer.

The recreation section notes that deer are likely to be displaced, not disappear, from the facility areas for the life of the mine operation. Since deer utilize a variety of cover types, deer would be using the area well before the 100 years needed for recovery [Note - recovery refers to reestablishing a young mature forest, not the wildlife population]. In fact, mitigation is proposed to facilitate deer movement through the project fenced perimeter. See response 6.9.25 in this appendix, for a discussion of influences on population densities.

6.9.46 **Another concern is movement by displacement of the deer herds of Buckhorn Mountain. Who would pay for the studies that need to be done on the impact on other hunting areas next to Buckhorn? I understand that the Washington Department of Fish and Wildlife manages these areas to specks of maximum carrying capacity the areas would hold. Would there be studies done on the impact to the hunting population of all these areas?**

Response:

It is difficult to ascertain the intent of this comment, but we believe it expresses concern for loss of hunting opportunity on Buckhorn Mountain as well as in adjacent areas and how would these losses be documented.

This concern is addressed in Section 4.14, Recreation, that covers hunting opportunities. The mine is expected to impact deer habitat which would result in a net loss of deer over time. This loss would also represent an incremental loss of hunting opportunity in the area. Some of this loss will be minimized or compensated by proposed mitigation listed in the final EIS.

Other hunting opportunities would be lost by closing the project area to public hunting during the life of the mine. It is possible some portion of the deer herd utilizing Buckhorn Mountain would be displaced to other areas open to hunting. Although, it is believed many of the deer will acclimate to the mine and remain on site. Some deer may actually move into the area and use the mine site as a reserve during the hunting season.

Displaced hunters who have traditionally hunted the project area may either choose to hunt elsewhere, or may choose to stop hunting altogether. Those who choose to hunt elsewhere may contribute to crowded conditions which could further reduce the overall quality of the recreational hunting opportunity.

Studies designed to specifically document impacts to hunting opportunity are not planned. Studies conducted during the development of the final EIS have determined direct impacts to habitats and indirect impacts to activities such as recreation. Some indication of impacts to hunting may be illustrated in the annual hunting season harvest report prepared by the Washington Department of Fish and Wildlife.

6.9.47 **Commentor notes that impacts to winter range are higher when impacts outside of Forest Service Management Areas 14 and 26 are factored in. The actual loss of deer winter range is much greater than estimated when cover is based on the total available**

cover within the entire Core Area and not just those MA's managed for deer winter range.

Response:

It was necessary to isolate the impacts to deer winter range for Management Areas 14 and 26 in order to assess whether the impacts comply with Okanogan National Forest Land and Resource Management Plan direction. In contrast, the HEP analysis looked at impacts to mule deer winter range throughout the entire core area without regard to land ownership or jurisdiction.

6.9.48 **Agencies have discounted studies, including field studies in the area itself, indicating that deer do not depend on SIT cover that is above 4,600 feet in elevation. Observations by A.G. Crook Company (1993d) and WADFW (G. Oakerman, WADFW, personal communication) indicated that deer used mostly open, south-facing slopes found at lower elevations during winter and that patches of mature forest cover near the proposed mine site were little used by deer during winter. Most blocks of SIT in the core area are too small to be of much value to deer. We believe that the quality and quantity of SIT cover has been overstated.**

Response:

Wintering deer use SIT that is higher than 4,600 feet in the Okanogan Highlands. This is documented in a number of areas throughout the Highlands such as Cayuse Mountain and Beehive/Tunk Mountain. There is no elevation break, other than where higher elevations do not provide growing conditions that support the tree species and stand conditions providing snow interception (e.g. high elevation lodgepole pine stands and alpine conditions). The conditions on Buckhorn Mountain do support Douglas-fir stands that provide snow intercept thermal cover. Observations of deer use of the Buckhorn Mountain area during the winter are documented from sightings noted during the Buckhorn and Nicholson timber sales. However, observations suggest that less deer are utilizing the area with the recent Nicholson timber sale compared to numbers seen during the Buckhorn timber sale. It is likely that current limited deer use of the area in winter is primarily caused by past timber harvests and high road densities, but also the result of impacts associated with mining exploration disturbance and habitat loss. Both types of impacts reduced the level of snow intercept thermal cover.

When agencies received a draft of the Crown Jewel Project Wildlife Technical Report (Beak, 1995a), the misapplication of TWHIP was also identified. Revised calculations show both a reduced level of existing snow-intercept thermal cover and a narrowing of differences between alternatives for this habitat. Revisions have been incorporated into the final EIS.

Without question, it is desirable to have larger block sizes of SIT cover to provide more effective winter use. However, Okanogan National Forest standards and guidelines do not specify a minimum size requirement for SIT unlike the 30-acre minimum size for old growth designation. Within deer winter range management areas, stand surveys measure cover conditions at 10 points on a linear transect. Every survey point represents 10% of the stand (e.g., 3 points of SIT correspond to 30% of the stand).

6.9.49 **Mule deer are not a sensitive or listed species. They are common and adaptable. Any impacts to winter range are likely to be largely offset by increased forage and forest diversity of the reclaimed mine area.**

Response:

Mule deer are indicator species on the Okanogan National Forest. Multi-agency biologists have identified winter range as the limiting factor/habitat associated with maintaining viable populations of mule deer, while recognizing that all seasonal ranges

are important for survival. Good quality spring range can quickly boost energy reserves depleted by winter conditions. Good summer and fall forage support the growth of fawns and enable deer to reach their best physical condition necessary for entering winter in good shape with adequate fat reserves. During winter, mule deer must cope with the worst environmental conditions while consuming the poorest quality food. Suitable winter range providing shallow snow, adequate food, and sufficient shelter help deer maintain their energy balance by slowing the rate of weight loss during winter. Deer can quickly lose weight and die if winter range is scarce or of poor quality. Consequently, good winter range is essential for mule deer survival and productivity.

One cannot totally offset the loss of winter range with similar acres of reclamation forage. Among the reasons for this conclusion, the projected loss of soil productivity would negatively affect forage quality and quantity. Also, there would be a time lag when forage is unavailable until reclamation efforts have successfully restored some level of forage.

Area biologists note that white-tailed deer populations are increasing throughout the county, while mule deer populations appear to be declining. There is speculation that declining mule deer numbers are tied to reductions in winter range. White-tails appear to be more adaptable to human settlement and disturbance.

6.9.50 **All cover types provide wildlife with thermal cover, not just those types listed in Section 3.13.2, Habitat Overview, of the EIS.**

Response:

Thermal cover, as used in the section, is consistent with terminology used in the Okanogan National Forest Land Resource Management Plan.

Threatened, Endangered, and Sensitive Species

6.9.51 **The northern goshawk is a candidate species under the Endangered Species Act for listing at both the state and federal level. We are very concerned with the likely impacts to goshawk, which the BE and EIS both state "may contribute to a trend toward loss of population viability within the analysis area." Habitat would not be suitable in the area to support goshawks for at least 100 years after reclamation activities are completed.**

Both the BE and draft EIS overstate the value of the Core Area to goshawks. Only two (or possibly three) goshawks were seen within the 10,962 acre Core Area during surveys done in 1993, and only three northern goshawk nests were found in the 72,700 acre Analysis Area several years ago. During more recent surveys conducted by the Forest Service, no goshawks were found near the mine site. Thus statements in the BE and especially the draft EIS on potential impacts of the Crown Jewel Project, including habitat loss, noise, and light, on breeding and foraging goshawks are overstated.

Response:

The goshawk and other candidate species found on the Tonasket Ranger District have been down graded from "candidate species" to "species of concern" by the US Fish and Wildlife Service. These species no longer have protection under the Endangered Species Act, yet sufficient information exists to warrant concern about habitat and populations over portions of their range.

There were interpretation and assessment errors associated with the original delineation and analysis of cover types for northern goshawk and several other wildlife species in the draft EIS. As a result, estimates of available suitable habitat and projections for habitat losses were inaccurate. Forest Service and TerraMatrix personnel have corrected and updated the cover type mapping and recalculated potential impacts to habitats for each action alternative. Methods and rationale for the development of the corrected cover type map and analysis of potential impacts are available at the Tonasket Ranger District in the Administrative Record for the EIS.

The revised baseline condition analysis for northern goshawk indicates that approximately 614 acres, 2,491 acres, and 5,065 acres of nesting habitat, post-fledging family area (PFA) habitat, and foraging habitat, respectively, are available within the Core Area. Revised impact projections indicate that losses of potential nesting habitat would range from 79 to 146 acres (13% to 24%) depending on alternative. For potential PFA habitat, losses would range from 271 to 475 acres (11% to 19%), while reductions in potential foraging habitat would range from 565 to 778 acres (11% to 15 %). At a minimum 468, 2,016, and 4,287 acres of nesting habitat, PFA habitat, and foraging habitat, respectively, would remain in the Core Area regardless of which alternative is selected.

A further consideration is that northern goshawk surveys in the Core area did not locate any goshawks or goshawk nests within or near the Crown Jewel Project area. Surveys for goshawks were conducted 1990 through 1994 during the spring and summer. Survey methods included Region 6 protocol, taped voice calls, intuitive walk through of likely habitat and checks of inactive known nests.

No management guidelines for maintaining goshawk populations in the Okanogan National Forest are available. A number of studies have evaluated goshawk habitat requirements in the western and southwestern United States. Management guidelines developed for the northern Rocky Mountain Region (Hayward et al., 1990) and the southwestern United States (Reynolds et al., 1992) are relatively similar and were assumed to be applicable to the Okanogan National Forest.

Studies reviewed by Hayward et al. (1990) and Reynolds et al. (1992) indicate that goshawks require home ranges of approximately 5,000 to 6,000 acres. Distances between occupied home ranges vary from one to four miles apart (Hayward et al., 1990). Each home range must contain minimum levels of suitable nesting, PFA, and foraging habitat to support a nesting pair and successful rearing of young. Goshawks forage in a variety of forested cover types, and availability of suitable foraging habitat is usually not considered limiting. On the other hand, the availability of suitable nesting habitat is often considered the most limiting factor in the reproductive success of northern goshawks (Forest Service, 1991a).

Recommendations for minimum levels of suitable nesting habitat range from two to three suitable nest stands with minimum sizes of no less than 25 to 30 acres (Hayward et al., 1990; Reynolds et al., 1992). Nest stands of at least 125 acres are considered optimal (Hayward et al., 1990). Reynolds et al. (1992) also recommends at least three replacement nest stands so that a minimum of 180 acres of suitable nesting habitat is available within a home range. Hayward et al. (1990) does not provide any recommendations for PFA habitat, but Reynolds et al. (1992) recommends at least 420 acres of suitable PFA habitat in addition to nesting habitat. PFA habitat should be centered around suitable and replacement nest stand areas. For foraging habitat, Hayward et al. (1990) recommends from 1,500 to 6,000 acres of suitable habitat within a 10,962 acre area depending on the quality of available foraging habitat. Reynolds et al. (1992) recommends approximately 5,400 acres of suitable foraging habitat in addition to nesting and PFA habitat.

Existing habitat conditions and habitat losses associated with project development were reevaluated with respect to known habitat requirements and management recommendations discussed above. Based on existing information on home range sizes, distances between home ranges, and available suitable habitat, the 10,962 acre wildlife Core Area studied for the Crown Jewel Project could support a maximum of one nesting pair of goshawks. The project area represents less than 10% of the Core Area, but potential goshawk habitat would be impacted disproportionately by project development. As noted above reductions in nesting and PFA habitat would range from 13% to 24% and 11% to 19%, respectively. It is important to note, however, that direct impacts to a nesting pair are not anticipated since no goshawk nest sites were located near the project area. Development of the Crown Jewel Project could have an indirect adverse effect on goshawks by reducing the extent of suitable habitat that could be occupied in the future. Noise and human activity associated with the mine implementation would create a short term (life of the mine) reduction in available nesting and PFA habitat within the core area. Following mine cessation, adequate levels of nesting, PFA, and foraging habitat would remain within the Core Area to support one nesting pair of goshawks, and therefore, reductions in the population viability of northern goshawk within the Analysis Area is unlikely.

After cessation of mining, the primary focus of mitigation would be reclamation targeting the replacement of forested habitats. Although stand characteristics suitable for goshawk nesting and PFA habitat could take 100 years or more to develop (suitable foraging habitat would establish more quickly), the long-term trend would be for no net loss of suitable goshawk habitat. In addition, the EIS analysis (Section 4.12.5, Cumulative Effects, of the final EIS) indicates that timber harvest in the Analysis Area has decreased dramatically over the last few years, and that current levels of timber harvest are expected to continue. With these projections, additional timber stands should progress toward developing the mature and old growth forest characteristics preferred by goshawks for nesting and PFA habitat, resulting in a long-term trend of habitat improvement.

6.9.52 **The mine would influence the travel of such species as the grizzly bear and wolf during their seasonal wanderings from Canada.**

Response:

The Analysis Area includes a portion of the northern Okanogan Highlands, one of several mountain ranges that form peninsular extensions from Canada and provide landscape links between British Columbia and northern Washington. Movement of gray wolf or grizzly bear between British Columbia and the southern portions of the Okanogan Highlands has not been documented, but dispersal between the two areas is possible over the long-term. The Okanogan Highlands have not been identified as a movement linkage between the Selkirk and Northern Cascades Recovery Zones designated for grizzly bear (USFWS, 1993).

Landscape features favorable to dispersing animals are represented by north-south oriented mountain ranges with limited amounts of human development. The Kettle River Range provides a continuous mountain connection between British Columbia and the southern portions of the Okanogan Highlands. Portions of existing movement linkages in the vicinity of Buckhorn Mountain would be disrupted by the mine footprint and associated human activities. Dispersing grizzlies or gray wolves would likely avoid the active mine disturbance, but there would remain considerable areas with limited human influence in the eastern portions of the Analysis Area, including the unroaded Jackson Creek drainage. The mine disturbance area would represent less than 1% of the total acreage within the Analysis Area. The majority of the Analysis Area would not be physically altered by the proposed mine and would continue to provide functional travel linkages for potential grizzly and gray wolf movement from British

Columbia into the southern portions of the Okanogan Highlands. For wide-ranging species such as grizzly bear or gray wolf, a mine caused minor shift in dispersal travel through the Analysis Area would be insignificant.

6.9.53 **I think some of the Biological Evaluations verge on the ridiculous. The draft EIS rambles on about potential impacts to endangered, threatened, candidate and sensitive species-many of which don't even occur in the site or analysis areas. (Examples: California Bighorn Sheep, Grizzly Bear, Gray Wolf, Pygmy Rabbit.) No threatened or endangered species have been found in the site area, nor is the site within the bounds of any recovery zone or close to a sensitive wilderness area or park. Wildlife studies show unreasonable concern for the responsibility that the project disturbance (<1.0%) would have on 72,700 acres of the greater analysis area.**

Instead of just objectively seeking out the truth about the proposal about the feasibility of the mine, the draft EIS has taken this opportunity to enter a fantasy land about grizzly bear, gray wolves, California wolverines, and California bighorn sheep. It becomes impossible to decide if the draft EIS was looking at a mine or a possible zoo. The discussions in the EIS tend to overstate the importance of the project area to grizzly bear and wolf since they are wide ranging species. This is especially true for the wolf and grizzly bear, which may never use the site, or rarely at best.

Response:

One standard method utilized in the wildlife analysis proceeds with the following steps:

1. Define the differing habitat types in the project area (cover types);

2. Identify key species of concern to use as evaluation species (refer to response 6.9.25 in this appendix);

3. Identify the cover types these species are known to utilize based on literature reviews; and

4. Document changes in the cover types as a consequence of mine development. The evaluation species are selected animals that either are known to occur, suspected to occur, or have historically occurred in the analysis area. This method does not imply that the species would be found in the available habitat at any given point in time even though the analysis area is within the geographic range of all the evaluation species. Specific information documenting the known occurrence of species is provided in Section 3.13.5, Wildlife Species Overview, of the final EIS.

The wildlife analysis does point out the impact human activity has on these species. However that does not negate the need to evaluate the availability of habitat. For example, where habitat is present, the impact from human activities can be mitigated by effective area road closures. Note - the HEP specifically modeled the impacts that occur from human disturbance in the sharp-shinned hawk model. Refer also to Sections 4.1 and 4.2 of the Biological Assessment (Appendix H) Wildlife Biological Assessment/Wildlife Biological Evaluation, of the final EIS.

The Core and Analysis areas contain some of the necessary characteristics for suitable grizzly bear and gray wolf habitats (e.g., vegetation types and food sources), but other important habitat characteristics are missing. Missing characteristics for the grizzly bear include isolation, sanitation, suitable den sites, and safety. The general lack of isolation, sanitation, suitable den sites, and safety habitat features reduces the likelihood that grizzly bears would occupy habitats in the Core and Analysis areas in the future.

Development of the Crown Jewel Project would not adversely affect existing populations of gray wolf because no viable wolf populations occur in the Analysis Area. Crown Jewel Mine development would have little adverse effect on dispersing individuals that wander into the Analysis Area. No currently unroaded areas or blocks of secure habitat would be affected by mine development. Impacts associated with mine operation and increased human presence would be short-term and cease after the completion. The mine area could result in minor shifts in potential movement by dispersing wolves through the Kettle River Range, but mine development would not preclude travel by dispersing wolves from current population areas through the Okanogan Highlands. The Crown Jewel Project would contribute to a small incremental adverse, cumulative effect of reduced available habitat.

6.9.54 **I am afraid we would lose two breeding pair of loons on Beth & Beaver Lakes due to increased traffic, noise, disturbance, recreation and spills. The short-term reduction of the Loon population may lead to an important loss of genetic diversity.**

Response:

This comment has been addressed in Appendix H, Wildlife Biological Assessment and Biological Evaluation, and Section 3.13.6, Threatened, Endangered, and Sensitive Species, subsection "Common Loon," which concludes that project development would not result in the direct loss of nesting or foraging habitat within the Core or Analysis Area. However, loons using lakes in Beaver Creek Canyon could be exposed to direct disturbance impacts from light and glare, and noise. Loons would likely acclimate to the moderate increases in traffic noise and associated light in the transportation corridor. Increases in human disturbance, with project development, could have minor adverse effects on the common loon. The potential for adverse impact is associated primarily with the extremely low risk of a spill of toxic chemicals or diesel fuel into Beaver Creek. If a spill of toxic materials should occur near common loons, individual loons or a breeding pair could be adversely affected.

6.9.55 **Don't we have to deal with the Endangered Species Act since bears are in the area?**

Response:

A Biological Assessment (BA) has been prepared that documents the effects of the mine on threatened and endangered species. The US Fish and Wildlife Service is consulted on the determinations reached in the BA as required by Section 7 of the Endangered Species Act. Refer to Appendix H, Wildlife Biological Assessment and Biological Evaluation.

6.9.56 **Both my wife and myself have observed a bald eagle at Beaver Lake.**

Response:

The Wildlife Biological Assessment (Appendix H) Section 12.7, of the final EIS clarifies the Determination of Effects for Bald Eagles expected from the project.

6.9.57 **The formation of a pit lake would provide habitat for a breeding pair of common loons. I disagree with the draft EIS statement that the pit lake would be too small for a pair of loons. Loons use Lost Lake and it is smaller than the proposed pit lake. I am concerned that loons would become attracted to this open water as it is rare in the Analysis Area. Also that they could become sick from toxins while resting on the open water.**

Response:

Common loons inhabit large wooded lakes which have an ample supply of fish and are of sufficient size to allow loons to take flight and clear surrounding trees (Terres, 1980, Rodrick and Milner, 1991). Preferred nesting habitat is considered to be clear, secluded lakes larger than 10 acres and below 5,000 feet in elevation (Reel et al., 1989). They typically breed on lakes which have healthy fish populations (Cannings et al., 1987, Rodrick and Milner, 1991). Nests are built of matted grasses, rushes, and twigs within four feet of the water's edge (Terres, 1980).

The pit lake is projected to be approximately 20 acres in size. The EIS and the Biological Evaluation have been revised to indicate that common loons could occasionally land and rest on the pit lake created after mine closure. Loons would not be expected to remain on the lake for extended periods because of a lack of suitable nesting and feeding habitat. Based on water quality projections for the pit lake (*Table 4.7.3, Impacts of Mining on Buckhorn Mountain Drainages*, of the final EIS), pit lake waters would not create a toxic risk for loons or other waterbirds.

6.9.58 **Habitat changes would result in effects to Candidate 2 species.**

Response:

Due to the revisions in the candidate species list by the USFWS, no candidate species occur within the Core or Analysis area. Previously listed candidate species occurring in the project area are now considered species of concern and have no protection under the Endangered Species Act.

Effects to these species have been addressed in Section 3.13.6, Threatened, Endangered, and Sensitive Species, and Section 4.12, Wildlife.

6.9.59 **The draft Biological Evaluation for the Crown Jewel Project states that suitable foraging and breeding habitat for amphibians and the spotted frog at the frog pond should be unaffected by project-related activities. This seems unlikely as numerous wetlands would have reduced flows for at least ten years and probably greater than 15 to 20 years. As a consequence, the vegetational structure and diversity of the wetlands, and particularly for the frog pond, would change. Wetlands would be reduced in size and the value of the frog pond, as a wetland, would diminish. The alteration of the pond and other wetlands would negatively impact wildlife dependent on wetland/riparian habitat.**

Response:

The spotted frog was selected as a HEP evaluation species to focus on how mine development may affect amphibians. The HEP addressed and documented changes in habitat quality and quantity. The Biological Evaluation in Appendix H, focused on impacts to spotted frogs, noting the effects of habitat loss, and increases in light, noise and road traffic. The main area where impacts to amphibians may occur is the frog pond. Surface flow reductions to the frog pond of at least 40% are projected with mine development alternatives. The HEP study assumed that wetland habitats would be replaced by riparian habitat in the affected area of the frog pond and other wetlands. The cumulative effect of changes in habitat quality, and potential impacts from noise, lights and road traffic may lead to reductions in the number of spotted frogs and other amphibians in the frog pond. Additional impact to amphibians would occur where wetland habitats are replaced by the mine operation or dewatered due to altered flows going into the pit. Mitigation augmenting flows to the frog pond and nearby nine-acre wetland has been identified.

6.9.60 **Information on the occurrence of spotted bats near the analysis area is speculative as no spotted bats were captured at these sites and no analysis was done of call**

frequencies of the bats. We question the relevance of bat sightings 15 to 100 miles away from the Analysis Area, and whether such sightings are "near the Analysis Area" as stated in the table and associated text.

Response:

The information on bats utilizes the best available information. Note that the spotted bat information comes from three and ten miles away from the Analysis Area.

6.9.61 **Given the need for seclusion, it is highly unlikely that 95 percent of the analysis area and core area is suitable for grizzly bear. On page 3-133, paragraph 5 of the draft EIS, the statement is made that it is unlikely that grizzly bears occur in the core or analysis areas due to levels of human activity found in the areas. We agree with this latter statement, and believe the 95 percent figure should be significantly reduced.**

Response:

This comment is addressed in Section 4.2 of the Wildlife Biological Assessment and Biological Evaluation (Appendix H). The Core and Analysis areas contain some of the necessary characteristics for suitable grizzly bear habitat (e.g., vegetation types and food sources), but other important habitat characteristics including isolation, sanitation, suitable den sites, and safety are lacking. The general lack of isolation, sanitation, suitable den sites, and safety habitat features reduces the likelihood that grizzly bears would occupy habitats in the Core and Analysis areas in the future.

6.9.62 **What is the source of the statement that grizzly bears were once permanent residents in the Okanogan Highlands? Unless this can be documented, the sentence should be revised.**

Response:

Historic range maps for the grizzly bear are found in the North Cascades Grizzly Bear Ecosystem Evaluation Final Report, September 1993. This document is located on the Tonasket Ranger District. For more information on grizzly bear sightings refer to Section 4.2 of Appendix H, Wildlife Biological Assessment and Biological Evaluation.

6.9.63 **Because WADFW does not always verify sightings or the ability of the observer to make identifications, data on wolf sightings may include coyote, coyote/dog, or wolf/dog hybrids. This should be noted in the discussion.**

Response:

Clarifications on the validity of sightings is provided in the wildlife narrative in Section 3.13, Wildlife, of the final EIS.

6.9.64 **Some mention should be made at the end of the paragraph (Section 3.13.6, Endangered, Threatened, Candidate and Sensitive Species, draft EIS Paragraph one) of the fact that despite the presence of food and some cover, it is unlikely that wolves would use the area due to the level of human disturbance. In addition, again, a general note should be made for wide-ranging species that the number of individuals, if any, that would use the site would be small.**

Response:

Section 4.1, Gray Wolf, of the Wildlife Biological Assessment (Appendix H) in the final EIS addresses your comments.

6.9.65 **The discussion should note that although Townsend's bats may use the adits, data collected to date suggest they do not.**

Response:

Your comment is addressed in *Table 3.13.3, Bat Detections In or Near the Analysis Area,* of the final EIS and in response 6.9.41 in this appendix.

6.9.66 **Define what is meant by Goshawk foraging habitat.**

Response:

For purposes of this analysis, goshawk foraging habitat was determined using the successional stage vegetation groups. Foraging habitat included old growth, young mature, and mature mixed conifer forests including nesting habitat and post fledging areas.

6.9.67 **The impact of road densities on wolves has no apparent relevance to this Project.**

Response:

Your comment is addressed in Section 4.1, Wildlife Biological Assessment (Appendix H), of the final EIS. Impacts associated with mine operations, increased roads and increased human presence would be short-term and cease after completion of mining operations. The mine area could result in minor shifts in potential movement by dispersing wolves through the Kettle River Range, but mine development would not preclude travel by dispersing wolves from current population areas through the Okanogan Highlands. The Crown Jewel Project would contribute to a small incremental adverse, cumulative effect of reduced available habitat.

6.9.68 **There is no evidence to suggest that bats use the Gold and Double Axe for roosts based on observations in the adits during the day, from trapping operations, and use of bat ecolocators (ENSR, 1994).**

Response:

Your comment is addressed in Section 4.12.7, Threatened, Endangered and Sensitive Species, of the EIS.

Habitat Evaluation Procedure

6.9.69 **The commentor wants a documented review of wildlife in the proposed route area. What are the impacts of noise and traffic on animals in Beaver Canyon.**

Response:

Since logging trucks use the road in Beaver Canyon, the type of noise associated with transport trucks already occurs in the canyon. However, the volume of traffic and duration of noise would increase. The impacts of noise on wildlife is discussed in Section 4.12.3, Effects Common to All Action Alternatives, Subsection "Noise." Traffic impacts are discussed in Section 4.12.3, Effects Common to All Action Alternatives, Subsection "Roads." Forest Service monitoring of golden eagle, loon, and black tern activity is planned in Beaver Canyon to help determine whether key species are being affected.

HEP surveys and TWHIP surveys were conducted on the habitats in the proposed route area. Wildlife sightings were noted during these surveys. In addition, Breeding Bird Surveys have been conducted on a portion of Beaver Canyon. These sightings have been incorporated into the species list for the Crown Jewel Project area.

6.9.70 **The EIS should use the results of the HEP to describe wildlife habitat effects and mitigation opportunities. In addition, when addressing impacts to various wildlife species using the Habitat Evaluation Procedure (HEP), it is important to include the**

amount of habitat units (HUs) within the core and to determine both the extent of impact and the extent of mitigation that should be required.

Response:

The Habitat Evaluation Procedure (HEP) was used to model impacts of both mine exploration and mine development. The EIS focuses on the impacts of mine development, since mine exploration was covered under a previous NEPA document. The use of a mitigation HEP is not required in order to complete the final EIS. However, the option to use HEP to measure the effectiveness of mitigation is still available to the WADFW if they choose to pursue it.

The HEP did assess habitat quality and quantity for the entire core area (approximately 24,000 acres), defining the habitat units (HUs) for each of the ten evaluation species or guilds. The evaluation species included spotted frog which evaluated small wetland emergent cover quality and water stability, black tern which evaluated lacustrine, wetland and aquatic bed wetlands, and veery which evaluated deciduous riparian and forested wetlands. The HEP summary is included in both the draft EIS and final EIS showing the changes in HUs for each species or guild with the differing mine development alternatives. Changes in HUs from baseline conditions could form the basis for the level of mitigation that would be required for compensation. At this time, a mitigation HEP which would quantify the value of proposed reclamation activity to offset losses in HUs has not been pursued. Negotiations between the Proponent and WADFW concerning compensatory mitigation are still ongoing.

6.9.71 **Habitat conditions within the core area would not remain static under the "No Action" alternative. Based on WADFW HEP (1996) projections using land management information provided by the Forest Service, BLM and WADNR, most forest habitats within the core area would be significantly impacted by ongoing forest management activities. For example, loss of deer SIT cover is predicted to be much greater without the Crown Jewel Project than with the Project during the next 60 years. The discussion should be revised to reflect these projections.**

For some species, and in particular species that rely upon young mature and mature forest habitat conditions in the year 2040, with or without the Crown Jewel Project, would be very similar. For example, the amount of suitable habitat available for the fisher, pileated woodpecker, sharp-shinned hawk and mule deer in winter would differ by less than 100 acres with or without the project in the year 2048. Given that the analysis area in the WADFW HEP study was 24,000 acres, these differences are insignificant. The draft EIS wildlife discussions and impact calculations should be revised to consider these and other similar results of the WADFW HEP study, so that the Crown Jewel Project impacts are not exaggerated by an erroneous assumption of a static condition under the "no action" alternative.

Response:

This comment refers to a projection derived from the HEP study which modeled what future impacts may take place over time if mine development didn't occur. The intent of modeling this "without the mine/no-action" scenario is to determine the actual projected impact of each mine development alternative. The impact is determined by comparing the differences in Habitat Units when "action mine development alternatives" are compared to the "without the mine" scenario. The modeling was based on applying management direction provided by each respective agency. For the Okanogan National Forest, three different management area approaches were utilized (MA-25, MA-14, and MA-26). A large portion of the project area is in MA-25 which is not managed for SIT. This was partially the basis for the comment that SIT would be eliminated anyway.

However, it is important to recognize that the HEP modeling for "without the mine" is only a modeling tool that helps to determine the impact of proposed action alternatives. The projected actions 'without the mine' are an attempt to define a likely scenario, rather than an effort to precisely identify where and when actions would take place. For example, recent Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales have modified the Forest Plan and Management Area direction that had been the basis for the HEP modeling future impacts on national forest lands. In contrast to previous direction, late and old structural stages (which often provide SIT) now would be retained even in MA-25, when the existing level of late and old structural stages is below the range of what would have historically occurred.

The draft EIS recognized in the "no action" alternative that forest management, recreation and livestock grazing would continue and that impacts associated with these activities would be expected to continue. The commentor chooses to interpret this as "conditions would remain essentially unchanged." One can talk in generalities about what may happen in the area without the mine, but it is difficult to go into detail without specific projects to assess. In contrast, the proposed "mine development action alternatives" provide very site specific actions that are the basis for detailed analysis of effects.

The final EIS is required to document and analyze the impacts of proposed mine development alternatives. To use a clarifying example, trees would be harvested to facilitate the development of mine operations. In this case, timber harvest would be an impact connected with mine development. In contrast, if the mine is not developed and a timber sale occurs in the same area, then the impact is connected with the timber sale.

The final EIS clearly points out that putting a mining operation on Buckhorn Mountain area would include differing impacts to wildlife besides changes in habitat. The analysis addresses both large (analysis area) and narrower (core area) scales in defining the impact.

6.9.72 **A map showing the HEP study area would be helpful. Why did the area of analysis differ from that used for the TWHIP and other habitat studies done for the draft EIS? What were the criteria used to select species for the HEP analysis?**

Response:

The HEP analysis area slightly increases the study area from that used by the TWHIP survey. The revisions were made to more completely incorporate the areas where impacts were projected.

There were two primary criteria used to select species for the HEP analysis. The first was that the models were expected to assess potential changes in priority habitats which are:

a. Old growth forests as defined by the Forest Service;

b. Mature forests;

c. Riparian habitat regardless of its vegetation composition;

d. Shrublands/steppe habitat;

e. Prairie/steppe habitat;

f. Aspen (hardwood) habitat;

g. Snags (large and small diameter);

h. Wetlands in at least five major categories (palustrine forest, palustrine scrub shrub, palustrine emergent, aquatic bed, and lacustrine); and,

i. Downed woody material.

The second criteria was that the models were expected to assess potential changes in habitat quantity and quality of the following priority wildlife species that potentially occur on or would be impacted by the mine, including:

a. Common loon;

b. Black tern;

c. Northern goshawk;

d. Swainson's hawk;

e. Golden eagle;

f. Ruffed grouse;

g. Blue grouse;

h. Sharp-tailed grouse;

i. Great blue heron;

j. Pileated woodpecker;

k. Black-backed woodpecker;

l. Vaux's swift;

m. Western bluebird;

n. Mountain bluebird;

o. Deer winter snow intercept thermal cover;

p. Deer summer range;

q. Marten;

r. Neotropical migrant birds;

s. Cavity nesting birds; and,

t. Spotted frog.

6.9.73 **Several habitat suitability index (HSI) scores in the draft EIS and HEP study are incorrect. These include the spotted frog (0.46), the vesper sparrow (0.92), the fisher**

(0.66) and the sharp-shinned hawk (0.78). The correct mule deer summer range HSI is 0.42.

Due to an error in calculating the HSI score for the pileated woodpecker, its HSI score is reduced to 0.31. This reflects the lack of large (greater than 20 inches d.b.h.) trees on the Core Area due to past forest management practices. Based upon the revised model, the quality of the habitat for pileated would be similar before and after the Crown Jewel Project.

Response:

The HSI computer model for the pileated woodpecker contained an error in the determination of the suitability index for large snags (>20" d.b.h.). Forest stands with low snag densities had higher habitat quality than the correct model would ascribe to them. While this means that the quality of pileated woodpecker habitat impacted is overestimated, the quality of developing and reclaimed forest stands is also overestimated. WADFW does not think it necessary to reanalyze the HEP using the corrected model for pileated woodpeckers because of this "compensation" effect. Consistent application would also allow a reasonable comparison between impacts and benefits from the developing mitigation plan.

6.9.74 **The draft EIS states that the HEP analysis predicts impacts to wildlife species chosen to evaluate wetland/deciduous riparian habitats. The statement is made that "the impacts are primarily a function of habitat loss due to disturbance and habitat degradation due to the reduction of stream flows and lowering of the ground water levels." Because the streamflow reduction data are expressed only in terms of overall impacts to drainage basins, it is not clear how this data was used in the HEP analysis. Neither the draft EIS nor the HEP Study Summary indicate how the generalized streamflow data were used to make quantitative predictions about changes to specific habitat types. Additional supporting data should be presented about more accurate predictions of streamflow and ground water impacts.**

Response:

The following reports and letters address your comments. The HEP Final Report and Comments on the draft EIS; Ron Friesz, WADFW letter of August 29, 1996 to Patty Betts, WADOE; Hydro-Geo Study, Technical Report - Analysis of the Open Pit Mine Inflow for the Proposed Crown Jewel Project; and, Ron Friesz, WADFW letter of January 1996 to Patty Betts, WADOE.

6.9.75 **A great deal of time was spent cover typing the wildlife habitats within the core and analysis areas by the HEP Team. The final EIS should explain why these cover types, and associated wildlife habitats which are more descriptive than those presented, were not used in the draft EIS.**

Response:

The HEP analyzed the impacts of both mine exploration and mine development. Baseline conditions for the HEP were based on the pre-exploration environment. In contrast, this EIS is analyzing the impacts of proposed mine development. The baseline condition for the EIS is based on the post-exploration environment. Consequently the EIS did not utilize the HEP to describe baseline and mine development impacts. The HEP is valuable for assessing the total impact of mine exploration and development and can be used to assess the level of mitigation required to offset project total impacts.

Methods

6.9.76 **What is the justification for defining the core area as one mile out from the footprint?**

Response:

Agency biologists from the Forest Service, BLM, WADFW, and USFWS delineated the Core Area to include the area within one mile of the footprint. It was the professional opinion of the biologists that impacts may go out one mile from the footprint, and therefore should be included as part of the Core Area.

6.9.77 **The distinction between wet and moist bottom land habitats is unclear.**

Response:

No distinction was made between wet and moist bottomland habitats. A distinction is made between upland grassland and bottom land grasslands. The areas were delineated based on topography. Upland grasslands occur on ridges and upper slopes whereas bottom land grasslands occur in the bottom of drainages.

6.9.78 **The commentor questions the use of riparian buffers rather than what actually exists, especially in situations near steep slopes and hills.**

Response:

Riparian buffers, as a concept, have been utilized by the Forest Service to indicate a zone of influence supporting riparian functions. For example, the Inland Native Fish Strategy guidelines outline distances surrounding fish bearing streams where management activities are limited.

6.9.79 **Human presence within the core area is not low based on information provided in Section 3.15, Recreation, of the final EIS.**

Response:

The statement made is that human presence is low in regard to permanent residences but increases due to recreation. The statement about human presence made in cumulative effects (Section 3.13.3, Land Use Patterns and Human Activity Influencing Wildlife), does not contradict statements made in Section 3.15, Recreation. Additionally, the statement is qualitative. For quantitative information the reader should refer to Section 3.15, Recreation, of the final EIS.

6.9.80 **The draft EIS should reflect that a high road density in the core area is also due to past logging activities and not just mineral exploration.**

Response:

The final EIS has been edited to note that road density within the core areas is high (6.08 miles per square mile) due to past mineral exploration and logging activities. However, road density is higher within the core area primarily due to past mineral exploration. Other areas in the Forest do not have comparably high road density (more that 6 mi/mi^2) where only logging activities have occurred.

6.9.81 **The statement in the draft EIS that pileated woodpeckers are common in the area may be misleading or wrong.**

Response:

Pileated woodpeckers were frequently observed during TWHIP surveys (wildlife observations were recorded on the TWHIP forms). Ron Friesz described his

observations of pileated woodpeckers within the area in a personal communication (2/10/94).

6.9.82 **What is meant by long-term? Also, the landscape is currently covered with topsoil.**

Response:

As stated in Section 4.12.3, Effects Common to All Action Alternatives, long-term is more than 100 years. Reclaimed areas would be bedrock covered with stored topsoil. Stored topsoil placed on bedrock would not have the same characteristics (components and structure) as naturally occurring topsoil on bedrock.

6.9.83 **Estimates of trees per acre under natural forest succession presented in *Table 4.12.3, Comparison of Forest Secession on Buckhorn Mountain Under Reclaimed and Natural Scenarios*, of the draft EIS do not match field data presented by Beak (1995a).**

Response:

The estimates of trees per acre under natural forest succession presented in *Table 4.12.3, Comparison of Forest Secession on Buckhorn Mountain Under Reclaimed and Natural Scenarios*, of the final EIS were derived from WADNR empirical growth and yield tables for the site index and site class representative of the core area. Differences between these estimates and that collected on-site likely reflect past management activities which have occurred on-site. However, the point of this table was to illustrate the estimated differences in tree age to reach specified tree diameters for forest succession on reclaimed land as compared to natural forest succession. No conclusions were drawn for number of trees present.

6.9.84 **The assumption for future timber harvest in the analysis area presented under cumulative effects differs from that presented in the HEP.**

Response:

The cumulative effects analysis looked at reasonably foreseeable future actions. This included the activities that are identified by the Okanogan National Forest five year action plan. This process is consistent with how cumulative effects are completed on other Forest Service projects. The HEP is a modeling tool, where projections of likely timber harvest scenarios based on the Forest Plan Standards and Guidelines (but not identified site specific projects) are modeled to portray impacts within a 60 year period. The scenario under HEP is not a likely scenario since it did not consider reductions in future timber harvests on National Forest lands based on the impacts from the Crown Jewel Project. It also did not consider interim direction on riparian protection which is part of the Inland Native Fish Strategy Decision or direction based on the Continuation of Interim Management Direction Establishing Riparian Ecosystem and Wildlife Standards for Timber Sales (Forest Service, 1994).

Noise Impacts

6.9.85 **The noise impacts to wildlife are overstated. Noise doesn't bother coyotes and deer.**

Response:

Section 4.12.3, Effects Common to All Action Alternatives, of the EIS recognizes that some species are known to habituate to noise. The section also describes situations where noise has the potential to negatively affect wildlife. It's important to recognize that different kinds of animals (or even different individuals of the same species) may not react in the same way to noise disturbance. Timing of a disturbance is a factor. For example, interruptions during the critical times of breeding, nesting, and hibernation can affect reproductive success or survival.

6.9.86 **Nighttime operations during the summer would substantially exceed ambient noise levels over approximately 5,200 acres outside the mine footprint [4-85]. Blasting (which would occur only during daytime) would result in adverse noise impact to an area of about 5,600 and 2,900 acres beyond the footprint.**

Response:

The areas that define where noise would impact wildlife are centered around Buckhorn Mountain. With noise attenuation, noise levels would continue to drop with increasing distance away from Buckhorn Mountain. The noise section makes a statement about hearing from the vantage point of the nearest residential dwellings and not from being on Buckhorn Mountain.

6.9.87 **Concern for the effects of night time blasting and the impact to hibernating animals.**

Response:

All routine blasting would occur during the day. No blasting is proposed during the night except in an extreme emergency to protect life or property. Mitigation to minimize the effects of blasting includes establishing regular blasting times in order to provide animals the best chance of acclimating to blasting disturbance.

There are limited available studies on the effects of blasting on hibernating animals. As described in the wildlife analysis, noise disrupting hibernating animals can increase stress and reduce energy reserves needed to survive the winter. Disturbance can lead to abandoning a den which places an animal at risk unless it can find an alternate shelter.

6.9.88 The commentor **disagrees with using the 10 dBA increase over ambient as a noise impact criteria. Noise levels exceeding 20 dBA above background noise are more likely to be the level impacting wildlife, rather than the 10 dBA level.**

Response:

A 20-decibel increase above ambient would be perceived by humans as four times louder. This level would underestimate potential adverse effects to wildlife. An increase of 10 decibels above ambient is considered substantial enough to result in detrimental impacts to wildlife. Under normal conditions, a three-decibel change in noise level (a doubling of sound pressure level) is barely detectable to the human ear, a five-decibel change is considered to be readily noticeable, while a ten-decibel increase (judged by most people to be twice as loud) represents a substantial increase (Bruel and Kjaer, 1984, and USDOT, 1980).

The data provided in the Baseline Noise Monitoring Report (Hart Crowser, 1993) represents the worst-case expected sources and levels of noise for the action alternatives. The data are provided on an A-weighted scale representing the frequency spectrum audible to the human ear (the evaluations were of potential noise impacts on humans).

Wildlife are receptive to different sound frequency spectrums, much of which may be inaudible to humans (i.e., outside the range represented by "A-weighted" sound pressure levels). Furthermore, different wildlife species may be sensitive to different sound pressure levels. Different species of wildlife, and different individuals within the same species, may respond differently to increases in sound pressure level or changes in the nature of the sound. The potential effect depends upon the nature of the noise (continuous or impulse), the sound pressure level increase above background, the behavior of the species (related to season and time of day), the level of wildlife use of the area, and the tolerance of the species or individual.

Some species are known to habituate to certain types of noise or certain noise levels (e.g., noise from highway traffic). Some species are generally much more tolerant of loud noises than other species. In general, wildlife are most likely to habituate to noises that are steady or continuous, or frequently occur (e.g., traffic, operation of heavy equipment). Wildlife which do habituate to noise often show an initial period of avoidance. Wildlife are less likely to habituate to sudden, infrequent impulse noises such as from blasting or rock dumping.

Generally, noise has the greatest potential to adversely affect wildlife when they are breeding, nesting, hibernating, denning, roosting, or performing critical life functions. For example, noise may cause raptors or other birds to flush from nests leaving young or eggs exposed to weather or predators. Noise may disrupt hibernating or denning animals (e.g., bats, bear, frogs), resulting in abandonment of the site, increased stress, reduced energy reserves, or death from exposure. Noise disturbance may reduce foraging time and/or increase energy expenditure (e.g., due to fleeing or flushing). For these reasons, it is not possible to identify a specific sound pressure level which would adversely affect individual wildlife species. Nonetheless, a ten-decibel increase in sound pressure level above ambient is considered a conservative estimate of the level which could potentially affect wildlife.

6.9.89 **The commentor feels that 45 - 60 dBA levels would not affect wildlife and notes studies done by ENSR at military installations.**

Response:

The ENSR reports do not identify specific noise levels associated with the human activities discussed. The reports do identify some tolerance and lack of statistical association between human activities (e.g., firing, fence construction, vehicle traffic, etc.) and Swainson's hawk (n = 25) and burrowing owl (n = 5) nest activity, success, and productivity, between human activities and raven nest productivity. However, the reports attribute military and other human activities to nesting failure of Swainson's hawks, burrowing owls, ravens, red-tailed hawks, and Cooper's hawks. Furthermore, the reports recommend restriction on military and other human activities around raptor nest sites.

The evaluation of potential impacts of noise from the mining operation was done for wildlife in general. Published data on the response of wildlife to noise is limited to a few species only. It is true that some individuals of some species would not be affected whatsoever. Many species and individuals within a species are tolerant of, or would acclimate to, some types or levels of noise and are probably unaffected by natural noises such as thunder. It is also true that at the same noise level, some species would be adversely affected. However, analyzing potential effects of noise to each species which could potentially occupy the project area is not possible or practical. It is also inappropriate to determine effects to all wildlife based on documented evidence from a few species alone. Consequently, the analysis is conservative, and in no way implies that all individuals or all wildlife species would be adversely affected. Impacts could be less than those indicated, but the approach is not extremely conservative and the actual impacts would not be significantly less than indicated.

Perhaps noise levels of 45 to 55 dBA would be tolerated by some individuals or some species of wildlife. Indeed, there are some species that do occur and thrive in semi-rural areas and along noisy roadsides. However, the mining operation is expected to produce a noise level of 100 dBA, with blasting expected to be as loud as 105 dBA (Section 4.13.3, Effects Common to All Action Alternatives, draft EIS page 4-110). A noise level of 100 to 105 dBA would be about the same as a jet flying over at less than 1,000 feet, or a rock band at 15 feet. In the 5,600-acre noise impact zone

predicted when blasting during the summer, the noise level would range from 105 dBA to 55 dBA. This would be perceived by humans to be as much as 64 times as loud as the 45 dBA ambient level. In the predicted summer nighttime impact zone of 5,200 acres, the noise level would range from 100 dBA to 45 dBA. This would be perceived to be as much as 64 times as loud as the 35 dBA ambient level. It is only at the perimeter or limits of the impact zones where noise would be perceived as twice as loud as ambient noise (i.e., exceed ambient by 10 dBA).

6.9.90 **The commentor disagrees with the statement that noise represents the greatest potential effect to wildlife of the Crown Jewel Project.**

Response:

The language in the final EIS has been clarified. The effects of noise on wildlife is emphasized because it can be quantified and represents a considerable potential for disturbance to wildlife from the proposed project. However, noise is just one of the factors reducing habitat suitability. The direct, indirect, and cumulative effects on habitat quality and quantity are likely the greatest impacts to wildlife associated with mine development.

6.9.91 **The commentor questions the use of USDOT standards.**

Response:

The USDOT standard is provided as an example of an average noise level for natural areas at which, if substantially exceeded by a proposed action, would require the consideration of noise abatement measures. Logging, hunting, snowmobiling, etc. do occur in the area, but these activities are occasional and intermittent and generally do not occur continuously from a large fixed location as the mine operation would.

Miscellaneous

6.9.92 **Buckhorn Mountain is located in a strategic wildlife corridor between British Columbia and the Colville Reservation used by deer, lynx and wolverines. The mine with its roads and activity would make this area impassable. There is a need to address the impacts of the mine on the wildlife corridor between British Columbia and the Colville Reservation.**

Response:

The concept of maintaining wildlife corridors in forested environments is based on the intuition that linking separate habitat patches with forested cover would assist animal movement and connections between isolated populations. The probability that a particular corridor would be used would vary by species (their mobility, habitat and security requirements), and the landscape context. For example, aquatic animals would heavily use riparian corridors that upland species may use infrequently. Section 4.12.3, Effects Common to All Action Alternatives, of the draft EIS addressed the issue of how travel corridors on Buckhorn Mountain and the western portion of the analysis area would be impacted by mining activities, specifically identifying disrupted forested corridors. These forested corridors were identified using the guidelines provided by the Interim Management Direction Establishing Riparian, Ecosystems, and Wildlife Standards for Timber Sales. The draft EIS section also noted that functional wildlife corridors would remain in the eastern portion of the analysis area, including the unroaded Jackson Creek drainage.

Animal movements of large mammals can be characterized in four ways.

1. Local movements are those daily travels to obtain food, water, escape cover, den sites, etc.

2. Migrations are movements between different geographic areas in response to seasonal changes in resource availability (such as the movements of the large Methow Valley deer herd between high elevation summer range and valley winter range).

3. Dispersal implies the successful establishment (usually by juvenile animals) of a breeding territory in an area distant from the natal area.

4. Nomadism are broad random movements typical of the plains bison.

Animal migrations and nomadism between British Columbia and the Colville Reservation have never been documented and are highly improbable. However, dispersal between the two areas is expected over the long term. Landscape features favorable to dispersing animals include the north-south mountain corridors linking British Columbia and the Colville Reservation. The Kettle Range provides a continuous mountain connection between the two areas. Toroda Creek and flanking ridge lines including the unroaded Jackson Creek, Bodie Mountain, and Clackamas Mountain areas link up with Fir Mountain, Cornell Butte, and Dugout Mountain areas to provide a segmented mosaic of additional opportunities for dispersal to the Colville Reservation.

Since dispersal tends to be the opportunistic settlement of available habitat, the impact of the Crown Jewel Project on dispersing animals is expected to be localized around the actual footprint of the mine where loss of habitat and travel cover have been identified. Topographically, the footprint impact would occur along the longest, most gradual north-south linkage connecting the upper headwaters of Gold, Nicholson, and Marias Creeks.

Refer to response 6.9.52 in this appendix.

6.9.93 **The mine would affect tribal members and their ability to harvest fish and wildlife for subsistence purposes in usual and accustomed areas.**

Response:

Wildlife and game populations have always fluctuated in response to environmental or other pressures. Technically, there are no treaty rights over the area in question. There are; however, requirements embodied in historic preservation law and federal policies on government to government relationships that have been, and continue to be, followed.

The Crown Jewel Project would not affect Colville Confederated tribal members reserved rights to hunt and fish on the North Half. It would limit, for a period of time, where they can exercise their reserved rights. The Okanogan National Forest recognizes its obligation to manage for wildlife and fish on the lands it manages on the North Half, which must be balanced with competing legal mandates. It is not possible to quantify any perceived loss of fish and wildlife due to the mine, therefore the Forest Service has displayed the loss of habitat caused by the mine. The Proponent has offered the WADFW approximately 300 acres of land near the mine in compensation for the loss of wildlife habitat.

6.9.94 **Increased traffic would increase wildlife/vehicle collisions, reducing huntable game populations affecting subsistence use by tribal members.**

Response:

We agree with the statement that increased traffic may increase wildlife/vehicle collisions. There is not necessarily a one-to-one relationship between increased vehicles, increased collisions, and decreased wildlife populations. Vehicle collisions with wildlife would not affect tribal members reserved rights to hunt and fish on the North Half. Refer also to response 6.9.93 in this appendix.

6.9.95 **Increased subdivision of lands can affect winter range and result in game populations that would affect subsistence use by tribal members.**

Response:

We agree with the statement that increased subdivision of lands can affect wildlife populations for some species. There is not necessarily a one-to-one relationship between increased subdivision of lands and decreased wildlife populations. Increased subdivision of land would not directly affect tribal members reserved rights to hunt and fish on the North Half since the rights are only on Federal lands though it could indirectly affect populations since there would be less habitat available. Refer also to response 6.9.93 in this appendix.

6.9.96 **Operations of the mine may result in stress to wildlife negatively affecting reproduction resulting in a loss of subsistence use by tribal members.**

Response:

Wildlife population numbers are attributable to a number of complex causes, and a correlation between human population pressures and wildlife population numbers are difficult to demonstrate. Refer also to response 6.9.93 in this appendix.

6.9.97 **There is a need to address the impacts of the mine on the Myers Creek great blue heron rookery.**

Response:

Great blue herons nest in colonies, selecting a location that provides both security and suitable nearby feeding areas. Documented impacts to colonies have been caused by the actual physical loss of nesting habitat, disturbance from activities adjacent to a rookery that lead to displacement of nest sites, and disturbance during the critical period of reproduction (just before and during egg laying). Changes in food availability would also affect the number of birds that can be supported in the colony.

Project activities in the vicinity of the heron rookery include the construction and operation of the Starrem Reservoir, road construction near the reservoir, laying water pipe from Lost Creek Ranch to the Starrem Reservoir, and increased traffic. These activities would not physically alter the actual rookery site but would occur in close proximity. Great blue herons have been shown to readily habituate to activities that pose no direct threat. When activities occur near a rookery that are threatening, the nests closest to the disturbance may be abandoned and nesting activities are displaced to other sites further away from disturbance.

A potential well and pipeline from Lost Creek Ranch, approximately 1,300 feet from the rookery, is the closest Crown Jewel Project related activity to the rookery. This activity is not expected to be detrimental to the heron rookery. Similar types of activity, such as road work, has already taken place on parts of County Road 4883 and the rookery remains active. This indicates that the herons are tolerant of this level of nearby activity. All anticipated mining related activities would occur far enough away from the rookery so that disturbance during the critical reproductive period before and during egg laying is avoided. This type of disturbance typically occurs when people are within or near enough to a rookery to cause the adults to flush from the nests.

Great blue herons feed primarily on fish, but are opportunistic feeders that would also eat frogs, worms, and small mammals. Great blue herons range far afield in search of their food (14 miles is considered a reasonable foraging distance). Most of the creek and lake foraging area within 14 miles of the rookery would not be impacted by the mine. The potential exists that withdrawal of peak flows from Myers Creek may reduce hyporheic recharge that could affect downstream fisheries. (See Fisheries Section.) If this occurs, great blue herons may be forced to forage over greater distances. If an accidental spill occurs in Myers Creek there may be an impact to the forage base for herons (See Section 4.12.4, Toxics, of the final EIS).

In summary, routine mining related impacts to the heron rookery are expected to be minor. Dust abatement on Myers Creek would be utilized during reservoir construction. Crown Jewel Mine operating plans would contain strategies for spill prevention and control of hazardous materials to minimize pollution should an accidental spill occur.

6.9.98 **None of the alternatives relate to wildlife displaced by the 1,000-9,000 acre impact area. Impacts to surrounding game units must be evaluated. The same is true for affected hunters who have come to the Buckhorn/Chesaw area for generations.**

Response:

Wildlife and game populations have always fluctuated in response to environmental or other pressures. If hunting kill ratios drop in the Buckhorn Mountain block, hunters are likely to try other areas or may stop hunting.

The key to a species' long term survival is whether it can successfully reproduce and maintain viable population levels. Part of the intent to manage wildlife habitat on public lands is to provide secure habitat for maintaining viable populations and to minimize the impacts that occur when wildlife are displaced by settlements or development from habitat that historically was used. An overall reduction in available habitat can lead to a reduced capacity to support the affected species. The wildlife analysis documents the changes in habitat availability that would occur as a result of mine development.

6.9.99 **The draft EIS does not discuss the impacts on fish and amphibians from reduction in streamflow and sediment loading in Myers Creek.**

Response:

Possible impacts on the fisheries resource in Myers Creek from the project are displayed in Section 4.11.7, Instream Flow Incremental Methodology (IFIM), of the final EIS. Sediment loading in Myers Creek is not predicted to be a concern. Short-term sediment impacts to Myers Creek are only predicted to possibly occur during installation of the water diversion flume and during installation of rock sills, part of the proposed wetland mitigation.

6.9.100 **The impact on wildlife from power lines needs to be discussed including the risk of collision with power lines.**

Response:

The wildlife analysis appropriately points out that collisions may occur, as well as noting that some beneficial effects are possible.

Refer to Section 4.12.3, Effects Common to All Action Alternatives, of the final EIS for a discussion of power line impacts to wildlife.

6.9.101 **Wildlife impacts of the mine are overestimated. Bear, cougar and moose are seen in Oroville.**

Response:

The key to a species' long term survival is whether it can successfully reproduce and maintain viable population levels. The rare sighting of these animals in Oroville are likely to be dispersing animals or those that opportunistically look for food from a more secure and isolated base habitat (such as the nearby Mt. Hull area). It is highly unlikely that these animals would find security to reproduce, or be tolerated, in settled town communities. Part of the intent to manage wildlife habitat on public lands is to provide secure habitat for maintaining viable populations and to minimize the impacts that occur when wildlife are displaced by settlements or development from habitat that historically was used. An overall reduction in available habitat can lead to a reduced capacity to support the affected species. The wildlife analysis documents the changes in habitat availability that would occur as a result of mine development. Refer also to response 6.9.33 in this appendix.

6.9.102 **I want to see a drawing of what poles discouraging raptor uses looks like.**

Response:

Figure 2.24, Proposed Power Pole Design, of the final EIS provides three designs of power poles. The intent of these power pole designs is to protect raptors from potential electrocution hazards.

6.9.103 **The commentor points out that black bear occur in the analysis area, but suggests that the draft EIS implies that black bears do not occur.**

Response:

Section 3.13.5, Wildlife Species Overview, of the final EIS discusses the occurrence of black bears in the analysis area. The commentor may have meant the discussion on grizzly bears, which have not been sighted during surveys in the analysis area.

6.9.104 **The commentor doesn't feel that migrating birds were surveyed at the right time.**

Response:

The wildlife analysis utilized the results of the Breeding Bird Surveys in Beaver Canyon. These surveys were conducted during optimal time periods for monitoring migrant breeding birds.

6.9.105 **Industrial noise, lights and activity would discourage wildlife from the surrounding areas. Do "life requisites" include noise, light and disturbance?**

Response:

Impacts from noise, light and disturbance are considered in the wildlife evaluation when they are important habitat factors in determining the quality of the habitat. The impacts from these disturbance factors are addressed in Section 4.12.3, Effects Common to All Action Alternatives, of the final EIS.

6.9.106 **Does the wildlife data collected in the fall adequately extrapolate to other seasons?**

Response:

It is believed that the data collected can adequately be extrapolated to all seasons. Much of the TWHIP data was collected in August, September, October and November. Information collected for the summer wildlife survey was gathered in June and July 1992. Information collected for the winter wildlife survey was collected between November 1991 and March 1992. Field data collection for the HEP study was completed in September and October 1994. Wildlife field data has been collected on the project during at least 10 months of the year.

6.9.107 **The Crown Jewel Project Wildlife Technical Report (Section 5.1.6) lists only 99 acres of disturbed area. Over 500 acres has been just clearcut in analysis area by Golden Phoenix et al. Is this not considered disturbed?**

Response:

Harvest activities do not fall under the definition applied to the "disturbed/residential" land type. Harvest activities fall under the classification of "open coniferous."

Disturbed/residential is classified as towns, mines, rock pits, home sites, and parking lots.

6.9.108 **Are the conception rates for cattle expected to be reduced from the nitrates?**

Response:

The conception rates for cattle are not expected to be reduced from nitrates. Cattle would be fenced out of the Crown Jewel Project area during operations and for a period of six years thereafter unless cattle grazing was determined to be beneficial for restoration of the site. Nitrate levels may be slightly elevated over background after the Crown Jewel Project. These levels are not expected to be detrimental to cattle. Before water from the project can be released to the environment, it would have to meet State and federal water quality standards.

6.9.109 **No pre-exploration baseline data is included for fish and wildlife other than A.G. Crook's scant field studies. This is another serious omission.**

Response:

The Crown Jewel Project EIS evaluates the effects of proposed mine development, while discussion of exploration and past timber harvest is included in the discussion of cumulative effects. The baseline utilized for this EIS is post-exploration. A previous Environmental Assessment looked at the effects of mine exploration activities and utilized pre-exploration baseline field studies. It should also be noted that the HEP analysis looked at the impacts of both exploration and development on wildlife.

6.9.110 **I don't want these workers poaching deer on my property and using my property when I'm not there.**

Response:

The Crown Jewel Project would increase human activity in the Chesaw/Wauconda area. As a result, there would likely be more awareness of the wildlife populations which could lead to incremental increased interest in hunting, both legal and illegal. The increase of hunting interests could aggravate trespass problems on private property. Trespass is an enforcement problem which the Okanogan County Sheriff's Office has the primary responsibility for enforcement. The WADFW enforcement program would cooperate closely with the County on trespass and would take the lead role on other poaching problems on private property. Illegal hunting is also an educational problem to be addressed in training programs by the mining company (See Section 2.12.20, Employee Training, of the final EIS).

6.9.111 **Burrowing fauna may open containment pathways from the tailings pond into the food chain. Monitoring shrews and earthworms would not prevent transmutation of toxins and heavy metals into the food chain. Appropriate mitigation such as an impermeable barrier between the tails and top soil must be included in the draft EIS.**

Response:

Approximately 171 tons of lead nitrate are projected to be used annually for milling operations. Some of this lead would end up in the tailings impoundment where it could

be accessible to earthworms. Section 4.12.4, Toxics, of the draft EIS has noted that bioaccumulation of lead and cadmium can occur in earthworms. Fauna that consume earthworms, such as moles and shrews can then become receptors for any lead contaminants. James Ryan (US-EPA), a leading expert scientist in this specific field, was contacted concerning the specific levels of lead in the Crown Jewel Project. His assessment was that the expected levels of lead in the tailings (less than 400 ppm or a doubling above background level) "should not be a problem." Lead becomes a concern when levels are in the thousands of ppm.

Consequently, monitoring is proposed to measure lead levels in the tailings pond to verify projections that operational levels would occur in the hundreds/ppm range. Monitoring would directly test the levels of lead in the tailings rather than the indirect method of testing small mammals for accumulations over time. The basis for changing the monitoring approach is to identify lead concentrations in the tailings more directly, and earlier during mine operations. Testing small mammals would only be conclusive if conducted a number of years following faunal recolonization.

6.9.112 **Benthic macro invertebrates collected from pool habitats were identified and enumerated, but there are limited comparisons to riffle habitats and overall diversity in streams. Two benthic macro invertebrate sampling-stations on Myers Creek are too far downstream of the mine to distinguish between impacts from the proposal and unrelated land uses in Myers Creek basin. There should be sampling stations on Ethel, Bolster, and Gold Creeks.**

Response:

Extensive pre-project macroinvertebrate studies have been conducted to provide baseline data for project monitoring of macroinvertebrate species (Northwest Management, Inc., 1994; and EcoAnalysts, Inc., 1996). Crown Jewel Project monitoring sites have been established on tributaries which most likely would indicate any changes in water quality and macroinvertebrate population richness as a result of the proposed Crown Jewel Project. The sites and monitoring protocol are identified in The Benthic Macroinvertebrate Monitoring Plan for the Crown Jewel Project (Northwest Management, Inc., 1994b).

6.9.113 **Potential impacts due to Starrem Reservoir construction, equipment hauling and employee transportation are not even mentioned in the draft EIS, much less evaluated. These potential impacts include, but are not limited to, noise, fugitive dust, chemical spills, exhaust fumes, increased traffic stressing wildlife, etc.**

Response:

The wildlife analysis has evaluated the changes in habitat resulting from the Starrem Reservoir construction. Impacts from the reservoir construction are described as changes in cover types for both the HEP and wildlife core area analysis. Changes in wildlife habitat are addressed in Section 4.12, Wildlife, of the final EIS. See response 6.9.97, in this appendix, for a discussion of how activities on Myers Creek may impact the great blue heron rookery.

6.9.114 **How can agencies realistically determine that all effects to wildlife are the result of the mine?**

Response:

Section 4.12.5, Cumulative Effects, of the final EIS evaluates the impacts to wildlife from the Crown Jewel Project as well as the other types of activities that affect wildlife such as timber harvest and increased human settlement. The HEP analysis attempted to isolate the effects of the mine from other activities by comparing expected

management actions that would occur in the absence of mine development to impacts occurring with each mine development alternative.

6.9.115 **This summary section informs the reader that the net adverse impacts to wildlife under the proposed action would be greater than the preferred alternative. The author places great emphasis on the loss of deer snow intercept/thermal cover. However, when you compare the impacts of the preferred alternative to Alternative B other important species and habitat would be effected. There needs to be more justification for this determination and subjective analysis. The draft EIS on page 4-72 even goes on to contradict itself. It begins by stating that the net adverse impacts to wildlife (following reclamation and mitigation) would be greatest under Alternatives B and F and it explains why in greater detail in the following few paragraphs. However, on the same page, it explained that "the loss of wildlife habitat would be common to all action alternatives and that the magnitude of impacts would vary between alternatives, depending upon the size of the footprint, the duration of construction, operation and reclamation, and the amount of habitat."**

Response:

The section referred to by the commentors has been looked at in detail. The section is consistent, but there appears to be a misunderstanding by the reviewer. Modified Alternative E was identified by the Forest Service and BLM as the recommended alternative. While the analysis shows that Alternative E has major impacts, it was not identified as the alternative with the greatest impacts.

The EIS analyzes the impacts to a range of environmental components ranging from air quality, soils, water resources to wildlife. Choices that are advantageous to one resource may not be as positive to another resource. For example, it is desirable to have more gentle slopes (3H:1V) to facilitate successful reclamation. However, this means that in the short-term more existing wildlife habitat is covered by waste rock piles. Consequently, there are tradeoffs involved with all the alternatives. These are described in more detail in Chapter 4, Environmental Consequences, of the final EIS.

6.9.116 **Why compare the wildlife impacts of the mine which occurs on a small area to the large 72,700 acre analysis area?**

Response:

Elements of biodiversity occur in different organizational levels ranging from genetic, to species, populations, community, and ecosystems levels. These organizational levels operate at different spatial and temporal scales. While the bulk of the wildlife analysis clearly focused on impacts within the core area, the use of the 72,700 acre analysis area was necessary to evaluate cumulative effects as well as impacts to predators with large home ranges.

6.9.117 **A Forest Plan amendment is required because none of the action alternatives would fully comply with Forest Plan standards and guidelines for wildlife. Until these amendments are identified, WADFW is unable to support any amendment that would further reduce habitat below minimums set in the Forest Plan.**

Response:

The amendment is identified in *Figure 2.1, Management Prescription 27,* and in Section 2.1.5, Project Alternative Comparison, of the draft EIS. The Forest Plan identified this area as having the potential for mining at the time of its release. The overall objective of this proposed new management area is to return the land to the underlying management area prescriptions over time. The amount of cover lost and retained under each of the alternatives is identified in *Table 4.12.6, Summary of Forest Plan Consistency by Alternative*, of the final EIS. These are the cover standards that would

be set for the MA under each alternative. The Forest Plan recognized that amendments might be necessary in the case of mine development on page 4-21 of the Forest Plan.

6.9.118 **Hunting pressures are expected to increase due to both Project-related and unrelated population growth. Construction of power lines could lead to increased human presence and future wildlife impacts.**

Response:

It is acknowledged in the wildlife analysis that human population increases would occur as a result of the mine, and with expected population growth in the county. Increased settlement would occur in areas not managed by public land agencies. Crown Jewel Projections show limited growth from the mine. However, growth carries the risk of wildlife displacement or habitat loss.

6.9.119 **Why does the draft EIS assume there is no toxic threat to amphibians from the tailings impoundment? Won't frogs, toads, salamanders, etc., get into the tailings pond? How would wildlife attraction to the tailings pond be prevented?**

Response:

A deer proof fence (96 inches above ground) combined with a mesh fence (or other acceptable material) 18 inches above and below ground would be constructed around the tailings facility to exclude small and large animals that do not fly. While it is impossible to guarantee total exclusion (e.g., some climbing animals may breach the fence), the proposed mitigation is designed to eliminate most access for non-flying animals. Birds and bats would have access to the tailings pond. The tailings pond would be monitored for the presence of any wildlife mortality within the fence perimeter. It is recognized that any mortality of a migratory bird linked to tailings operations is considered a violation of the Migratory Bird Treaty Act as administered by the USFWS. The USFWS would be notified of any mortality that occurs within the tailings pond fenced perimeter. Should daily monitoring of the tailings pond identify any migratory bird mortality, then additional measures would be taken.

6.9.120 **The draft EIS points out that ground water flow to the frog pond would be altered and possibly reduced by all action alternatives. What is the impact of the dewatering to the plant and animal life in and adjacent to these wetlands?**

Response:

The wildlife analysis notes that the alteration of the frog pond would reduce the open water component of the pond during operations. Existing wetland vegetation in the center of the frog pond would likely remain, but wetland habitat along the perimeter may convert to riparian habitat (only seasonally saturated). The effect on animal life would be a slight reduction in habitat for species dependent on wetland communities. Mitigation augmenting flows to the frog pond and nine-acre wetlands has been identified.

6.9.121 **The apparent justification for the draft EIS preferred alternative (modified Alternative E) was to avoid snow intercept thermal cover deer habitat south of the pit.**

Response:

The main reasons for selecting the preferred alternative was not driven by considerations of deer habitat. The driving force was to design an alternative with 3H:1V slopes, avoiding the frog pond and one that met the guidelines of Inland Native Fish Strategy, Environmental Assessment (Forest Service, 1995a). Providing 3H:1V slopes was emphasized in order to encourage successful reclamation in comparison to results that could be expected with the steeper slopes proposed by Alternative B.

Other forces were the visual impacts of having a south waste rock disposal area and concerns about the impacts from the possibility of having metals exceeding State and Federal water quality standards in the pit lake.

6.9.122 **Suggests habitat won't be lost, but merely change over time. Wetland habitats would be created in the pit and sought out by wildlife.**

Response:

The wildlife analysis recognizes that succession in reclamation and animal use would occur over time. The HEP analysis points out that species adapted to grassland shrub communities would have more available habitat compared to existing conditions. The HEP also notes that the remaining habitat groups of wetland/riparian, coniferous forest habitat, and multi-cover type habitats would see negative impacts. It is recognized that wildlife is attracted to wetland habitats. However, conservative modeling suggests that pit lake water quality may be toxic to fish and aquatic invertebrates.

6.9.123 **The successional stage diversity analysis points out that the seedling/sapling component is below the Okanogan National Forest LRMP levels and it should be noted that reclamation would increase those levels.**

Response:

The reclaimed mine would provide this component in the future as would currently regenerating timber harvest units. The way the information is presented in Section 4.12.6, Forest Plan Consistency, of the final EIS is consistent with environmental documents addressing timber sales. Specifically, the changes from existing condition are presented rather than projecting future succession.

6.9.124 **The discussion should also focus on the effects of connectivity of current and future forest management activities under the Forest and BLM Plans.**

Response:

Current and future timber harvests on the Okanogan National Forest are applying the direction to maintain at least two wildlife corridors between late and old structural stages and MR cells. The BLM does not have the same policy guidelines. Therefore, impacts to corridors may be possible. Currently, there are no site specific BLM proposed actions available to evaluate the potential for impact.

6.9.125 **Commentor wants name changed to "Forest Plan Consistency" rather than "Forest Plan Compliance." Based on our assessment of this table (Pg. 4-95, *Table 4.12.6, Summary of Forest Plan Consistency by Alternative*, of the draft EIS), it appears that the proposal would have little impact on the "Forest Plan" species of concern based on current conditions. However, the Project may slow progress toward meeting certain objectives of the Plan.**

Response:

Activities on the Okanogan National Forest are either required to meet Forest Plan Standards and Guidelines or an approved amendment to the Forest Plan. The use of the terms compliance and noncompliance are appropriate when identifying whether actions meet or fail to meet Forest Plan direction. The Forest Plan compliance section clearly delineates between whether habitat losses resulting from proposed actions would remain above threshold levels (compliance), be reduced below prescribed threshold levels (noncompliance), or exacerbate situations where thresholds are not currently being met (noncompliance). The measure is based on whether actions comply or not comply with Forest Plan Standards and Guidelines, not how much or little an action is in noncompliance.

6.9.126 **Areas of concern involving wildlife habitat include:**

1. **The isolation of remaining habitat, thereby decreasing the habitat's effectiveness;**

2. **Interruption of habitat corridors; and,**

3. **The relative importance of the snow intercept thermal cover to deer winter range in light of other Forest practices near and/or adjacent to the proposed Crown Jewel Project.**

Response:

The areas of concern listed in the draft EIS include loss of habitat and habitat effectiveness. The wildlife analysis itself assumed that any fragmented habitat within the core area would be considered habitat lost during the duration of the project. Interruption of habitat corridors is addressed in the section on landscape connectivity. Refer to response 6.9.92 in this appendix. The list of areas of concern would incorporate this issue. Impacts to deer habitat would include the effect on snow intercept thermal cover.

6.9.127 **When comparing total and open road densities between with or without the proposed Crown Jewel Project, attention needs to be on the percent change within the core analysis area and not on the whole forest.**

Response:

The wildlife analysis does address road density changes in the core area as well as evaluating road densities by Okanogan National Forest management areas.

6.9.128 **The draft EIS should discuss the following impacts to vegetation. The acreage of old growth forest that would be lost should be reported, as this would be an irreversible impact. Reclamation would be unable to replace the existing biodiversity and the intact functioning ecosystem for long time period.**

Response:

Refer to *Table 4.12.6, Summary of Forest Plan Consistency by Alternative*, and Section 4.12.6, Forest Plan Consistency, of the final EIS for a discussion on changes in old growth habitat. Refer to Section 4.12.3, Effects Common to All Action Alternatives, of the final EIS for a discussion on the long term impact that would occur before mature conditions (such as snags, down logs, rich humus layer, and multi-layered canopies) are achieved.

Mitigation and Monitoring

6.9.129 **How would wildlife losses be mitigated (biomass, wetlands, and habitat)?**

Response:

See Section 2.12, Management and Mitigation, of the final EIS. Wetland mitigation is covered in Section 2.12.16, Wetlands, of the final EIS. Wildlife mitigation is covered in Section 2.12.18, Wildlife and Fish - Public Land Enhancement, of the final EIS. Reclamation procedures describing the revegetation goals are found in Section 2.11.4, General Reclamation Procedures, of the final EIS. Also, the Washington Department of Fish and Wildlife (WADFW) and the Proponent are currently involved in negotiations on additional compensatory mitigation to offset project impacts. The Proponent has proposed to WADFW to acquire and protect approximately 300 acres of land, with covenants attached to the land, as compensatory mitigation for impacts to wildlife.

6.9.130 **There is a concern that bats and shorebirds aren't excluded from the tailings pond. Alternative B proposes other lackluster approaches which are inherently unsound. Among them is the refusal to build a net over tailings to exclude bats & shorebirds, which have a "high" risk potential due to tailings ammonia.**

Response:

The toxics analysis suggested that projected cyanide levels in the tailings pond would result in negligible risk of toxic impact for fauna evaluated (with the exception of aquatic invertebrates) when cyanide levels are 10 ppm or less. The Proponent has indicated that cyanide levels at the end of the pipe leaving the mill will be at 10 ppm or less for 95% of operational time. The Proponent has not estimated what the cyanide levels would be for the remaining 5% of operational time. Consequently mitigation requiring exclusion or further detoxification is required when cyanide levels exceed 40 ppm at the end of the pipe leaving the mill. The toxics analysis notes that synergistic effects are possible, specifically identifying the synergism between ammonia and cyanide. Ammonia which causes nausea, could lengthen the time fauna (such as bats, shorebirds, and songbirds) are exposed to cyanide. Consequently, the overall risk may increase from negligible levels to low levels. Monitoring would be implemented on a daily basis, for the first year of the Crown Jewel Project, to determine if mortality is occurring and whether additional mitigation or monitoring would be required as described in responses 6.9.3, 6.9.7, and 6.9.119 in this appendix. This approach is used in situations where no or very low levels of mortality are projected.

6.9.131 **Once a year monitoring of frogs is inadequate.**

Response:

The Forest Service plans to count calling frogs in the spring using Audio-Strip Transects. This monitoring approach is considered an effective way to inventory not only species composition but also to provide an approximation of relative abundance of breeding frogs (Heyer, 1994).

6.9.132 **In the draft EIS on pg. 2-97, Myers Creek is mentioned. The statements are made that virtually all of the land along that creek is privately owned. I am confused by the lead agencies making observation about buying that land, fencing that creek, and establishing additional habitat.**

Response:

There are two wetlands mitigation sites are proposed for Myers Creek on private land. One is located at Pine Chee springs and the other is located just south of the International border. The Proponent, not the agencies, has investigated options to purchase wetlands and wildlife habitat along Myers Creek as mitigation to partially offset project impacts. The Clean Water Act requires compensatory mitigation for all impacts to "Waters of the United States" As part of this mitigation, the Proponent has explored purchasing Pine Chee wetlands and a 50-acre parcel along Myers Creek just south of the Canadian border.

6.9.133 **If birds land on the tailings pond and die, what is the effect on the species.**

Response:

The tailings pond would be monitored to record any mortality. It is expected that mortality levels would be negligible to low. If mortality occurs, then mitigation would be imposed to reduce the risk. The intent of the mitigation would be to insure that mortality levels would be low and that population level impacts affecting species would not occur. If monitoring detects mortality, the USFWS would determine the appropriate level of additional mitigation.

6.9.134 **Replacement wetlands habitat should be created for spotted frogs.**

Response:

Mitigation measures include creating replacement wetlands and transplanting spotted frogs to suitable habitats.

6.9.135 **There is concern with the loss or reduction in habitat in Management Requirement (MR) cells.**

Response:

Management Requirement (MR) cells are part of a strategy to meet National Forest Management Act direction to maintain viable populations of existing native and desirable nonnative vertebrate species. MR cells on National Forest lands within the analysis area are located in mature or old growth stands, habitat considered limited for the Okanogan National Forest indicator species (pileated woodpecker and three-toed woodpecker). The intent is to provide a network of "limiting" habitat (MR cells) that is well distributed to support viability and promote interactions for the indicator species. The wildlife analysis identified which MR cells would be affected by mine development alternatives. If the final selected alternative eliminates an MR cell, an alternate existing mature/old growth stand would be identified as a MR cell replacement.

6.9.136 **I feel that the mitigation measures imply that good habitat would be created in the pit lake walls and pit lake for species that do not occur there or cannot survive the conditions.**

Response:

The wildlife analysis considers unreclaimed roads and the extensive pit walls to be habitat lost with the mine. Mitigation measures are proposed that increase the likelihood that the pit walls would be used by raptors, bats, and other cliff dwelling birds. It is expected that the talus, to a limited extent, would be used by rock dwelling animals, including reptiles such as garter snakes. The draft EIS noted that the pit lake water, based on conservatively modeled water quality conditions, may have levels of metals that exceed State of Washington acute or chronic freshwater aquatic criteria. These levels may be toxic to certain species of fish and aquatic invertebrates. However, in some situations it is advantageous to create wetlands and aquatic habitat to help address potential water quality problems.

6.9.137 **The permanent conversion of wetlands to drier types could impact wildlife for longer than 100 years.**

Response:

The wildlife analysis did not look out beyond 100 years. However, the analysis did identify irreversible and irretrievable commitments of resources which included the loss of wetlands. The Corps of Engineers 404(b)(1) permit requires compensatory mitigation for all loss of wetlands functions and values. The Proponent's wetlands mitigation program involves treatments on approximately 90 acres of land.

6.9.138 **Monitoring and mitigation is inadequately described. Mitigation needs to be more specific and quantifiable. WADFW wants full mitigation of mine impacts, and therefore requests complete mitigation be developed and implemented. The draft EIS lacks mitigation that meets the state intent to fully mitigate Crown Jewel Project impacts.**

Response:

Wetland mitigation is covered in Section 2.12.16, Wetlands, wildlife mitigation is covered in Section 2.12.18, Wildlife and Fish - Public Land Enhancement, and reclamation procedures describing the revegetation goals are found in Section 2.11.4,

General Reclamation Procedures, of the final EIS. Also, the Washington Department of Fish and Wildlife (WADFW) and the Proponent are currently involved in negotiations on additional compensatory mitigation to offset project impacts. The Proponent has proposed to acquire and protect approximately 300 acres for long term wildlife management.

The approach used to describe mitigation has been revised to provide additional clarification. The mitigation includes a goal statement, or target, combined with an effectiveness rating providing an assessment of how likely the target or goal can be reached.

Mitigation has been identified that attempts to minimize impacts, avoid impacts, or replace part of the impacted habitats.

There are no policies or regulations that require the Forest Service to fully mitigate all wildlife impacts from a mining project.

6.9.139 **High road densities in the core area during and after mine operations would impact deer.**

Response:

The final EIS notes that road densities are high in the core area and that impacts to deer and other animals would occur. Road closures have been implemented to reduce the level of impact. However, projected levels of 4 mi./sq. mi. following project completion would continue to impact deer. It should be noted that the delineation of the core area has contributed to high road densities since the core area includes long narrow sections of the supply transportation route.

6.9.140 **The use of "stand-up logs" to provide perches and act as snags throughout the reclaimed areas is suggested as a way to supplement creation of snags in surrounding forests.**

Response:

Mitigation returning structure to reclaimed sites includes replacing seven tons/acre of down woody material (such as logs and stumps), and setting up a limited number of raptor perches. The length of time "stand-up logs" would remain vertical is expected to be considerably less than the longevity of natural snags. Current mitigation therefore focuses on creating snags in the remaining surrounding forests rather than putting up "stand-up logs."

6.9.141 **Yarded deer should be monitored particularly in areas near transportation routes so preventative measures can be taken to minimize harassment and mortality.**

Response:

Environmental training and education could be provided to employees. In the interest of safety for employees and for deer, employees would be asked to be aware of areas where deer may be concentrating along roads. Safety sessions should include the identification of areas where deer concentrations are occurring. Should heavy road kill occur, WADFW may negotiate with the Proponent for additional road signing that would alert motorists about deer concentration areas.

6.9.142 **A number of individual comments were received about the effectiveness rating given to different mitigation measures in Section 2.12, Management and Mitigation, of the final EIS.**

Response:

To reduce confusion, a goal statement was added to each individual mitigation measure and the effectiveness rating was compared against this goal statement. In some cases when the goal statement was identified the effectiveness rating went from moderate to high. All mitigation measures that had an effectiveness rating of low were reevaluated to determine if the measure could be made more effective or if the measure should be dropped since it was not very effective at achieving the desired mitigation. A small number of mitigation measures were dropped.

6.9.143 **Commentor questions basis for requirement burying the fence. It should be justified by a known impact.**

Response:

Underground fencing is utilized by the Forest Service in nursery areas to minimize access by burrowing animals. The goal for underground fencing, in combination with above ground fencing, is to minimize animal access to the tailings environment. The determinations for negligible impacts to small non-flying animals is based on the fact that fencing would restrict access. Section 4.12.4, Toxics, and *Table 4.12.5, Risk or Probability of Toxic Impact at the Tailings Pond*, of the final EIS point out the increased risk of toxic impact to bats, shorebirds and songbirds that occurs due to access.

6.9.144 **All wildlife impact evaluations to date (including the Habitat Evaluation Procedure Study for the Proposed Crown Jewel Mine Project, Washington Department of Fish and Wildlife, 1995), have assumed that fish and wildlife impacts would be through loss or alteration of habitat and that no direct mortality through contamination or other means would occur. If this assumption is invalid and direct mortality of trust wildlife resources does occur, immediate rectification of the cause of mortality and compensatory mitigation should be made.**

Response:

Monitoring requirements state that any wildlife mortality that occurs within the fenced perimeter would be reported to the USFWS on the day that they are located. The tailings pond area would be inspected daily for any mortality during the first year of operation. While significant numbers of mortality aren't expected, monitoring would confirm whether the assumptions are correct. After that point, the need for daily inspections would be reevaluated. Since the USFWS would be informed of mortality within the fenced perimeter, the agency would be aware of situations that may require additional rectification and mitigation.

6.9.145 **The potential toxicity from waste rock detention ponds should be assessed.**

Response:

Section 2.12, Management and Mitigation, notes that any water discharged from the mine pit or Crown Jewel Project collection and infiltration ponds must meet WADOE water quality permit requirements and Federal water quality standards. Water quality monitoring standards include testing water quality for water that has come in contact with waste rock.

6.10 NOISE

General

6.10.1 **Commentors requested minor text clarifications, or expressed opinions regarding the noise impacts of the proposed Crown Jewel Project without referring to any specific evaluations in the draft EIS.**

Response:

We appreciate the input of all those individuals, organizations and agencies who commented on the "noise" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Regulatory Limits

6.10.2 **How would WADOE's environmental noise limits be used to minimize noise impacts at the various residential and rural areas surrounding the proposed Crown Jewel Project?**

Response:

Section 3.14.5, Noise Regulations, of the final EIS describes the WADOE regulatory limits as well as other noise guideline values that are used by EPA and Forest Service. *Table 3.14.2, Allowable Noise Levels at Residential and Non-Residential Receiving Property for Industrial Noise Source,* summarizes the WADOE allowable noise regulations. The discussions on the calculated environmental impacts presented in Section 4.13, Noise, have been revised to direct the reader back to Section 3.14, Noise, of the final EIS, for the baseline information.

6.10.3 **Operational noise monitoring should be required during the life of the Crown Jewel Project to track compliance with the regulatory noise limits and with any negotiated Project-specific permit limits.**

Response:

We acknowledge that some other mining projects in the western United States have been required to perform periodic operational noise monitoring to demonstrate compliance. Section 2.12.8, Noise, of the final EIS discusses mitigation for operational noise.

Modeling indicates that noise levels during the operation phase would be below the allowable limits for residential areas set by WADOE standards and a Okanogan County noise ordinance. If there were noise ordinance exceedences at residential areas, it would be enforced by Okanogan County. No noise monitoring of the Crown Jewel Project is planned.

6.10.4 **How would the Proponent monitor worker exposure to noise levels within the work place, and how would the Proponent demonstrate compliance with regulatory limits?**

Response:

Allowable worker exposures to peak noise levels and continuous noise levels within the mining and milling operations are regulated by a federal agency (MSHA) and a state agency (WISHA). Under regulations enforced by these agencies, the Proponent could be required to conduct periodic monitoring of work place noise levels and to take corrective action, as needed, to comply with the noise limits and/or hearing protection work practices. For purposes of assessing environmental impacts in this final EIS, it is assumed that the Proponent would comply with all work place noise regulations and that they would conduct all required work place monitoring.

Background Noise and Mechanical Noise Distinctions

6.10.5 **How can the background noise measurements of rural-type noises be related to the mechanical noises that would emanate from the proposed mining activities.**

Response:

The baseline monitoring program was designed to collect noise data under a variety of existing conditions that include a mixture of natural sounds and man-made sounds such as: "small town" residential conditions at Chesaw; ranch activities near Bolster and Pine Chee; and unpopulated rural conditions near South Corral. The baseline monitoring was conducted during calm weather periods when the noise levels were conservatively low. Section 3.14, Noise, of the final EIS includes a discussion of how some of the baseline monitoring was devoted to assessing how mechanical noises were audible when they impacted exceptionally quiet rural areas. Section 3.14, Noise, and Section 4.13, Noise, of the final EIS have been updated to explain how the modeled mechanical noises relate to the measured rural background noises.

Modeling Methods and Noise Levels

6.10.6 **How was the ENM noise model used to calculate the future noise levels surrounding the proposed Crown Jewel Project. Why were A-weighted decibels (dBA) and "equivalent noise levels" (L-eq) used to describe the background levels and the calculated future noise levels.**

Response:

The baseline noise measurements and the calculated noise levels surrounding the proposed Crown Jewel Project have been presented using the units of measure that are consistent with EPA's research into noise impacts and with WADOE's noise regulations. Several other units of measure exist for describing noise levels, but they are not relevant for noise impact assessments in Washington State. Regarding the specific assumptions that were used in the predictive noise modeling, Section 3.14, Noise, of the final EIS has been revised to clarify the data sources that were used (e.g., assumed wind speed and direction, specific location and elevation of noise sources, etc.).

6.10.7 **Why were the noise impacts that would be caused by construction of the Starrem Reservoir not discussed in the draft EIS.**

Response:

Section 4.13.4, Effects of Alternative B, of the final EIS has been revised to present calculations of the construction noise levels at the nearest representative residential areas. The calculations are based on published Construction Engineering Research Laboratory (EPA) estimates for noise emissions from representative construction activities. During construction and removal of the Starrem Reservoir, audible noises are expected during daylight hours up to two miles from the reservoir site.

6.10.8 **Why were the noise levels caused by increases in commute traffic vehicles and supply/delivery trucks not discussed in the draft EIS?**

Response:

Section 4.13.4, Effects of Alternative B, subsection "Traffic Noise Impacts", of the final EIS has been revised to include a discussion of the calculated noise increases at several representative public road segments that would result from increases in commute vehicle traffic and supply/delivery truck traffic. The noise calculations were completed using an EPA-approved computer model.

Miscellaneous Noise Effects

6.10.9 How would the calculated future noise levels affect wildlife in the vicinity of the Crown Jewel Project?

Response:

The potential impacts of noise on wildlife caused by a range of factors are one of the elements in this EIS. Section 4.12.3, Effects Common to All Action Alternatives, subsection "Land Use/Disturbance," of the final EIS describes the possible impacts from blasting noise and by continuous operational noise on wildlife.

6.10.10 How does the range of calculated noise levels relate to possible human health impacts?

Response:

Section 3.14, Noise, of the final EIS has been revised to include a brief discussion of the health and psychological effects of impulse noises (e.g., blasting) and continuous low-level noises such as might be expected at the residential and rural areas surrounding the Crown Jewel Project mine site. Section 3.14.3, Baseline Noise Levels, discusses health effects of community noise based on data taken from EPA studies.

6.10.11 The noise impacts caused by the Crown Jewel Project would degrade the subjective quality of life (e.g., solitude, religious freedom, lifestyle choices, etc.) in the region.

Response:

The Forest Service and WADOE appreciate the importance of subjective environmental factors which can affect the enjoyment of living in or visiting rural areas such as the area surrounding the Crown Jewel Project site. However, in some cases, an EIS cannot quantify and compare the "quality of life" that would result under the range of Crown Jewel Project alternatives. To the most practical extent, the final EIS addresses "quality of life" issues by focusing on the regulatory limits and guidelines that were developed by the agencies to protect public well-being.

6.10.12 Where will the blasting and heavy equipment operational noise be audible? I am concerned about hearing it where I live.

Response:

Section 4.13.3, Effects Common to All Action Alternatives, of the final EIS has been revised to more clearly indicate the modeled noise levels and the distance from the proposed mine that the noise would be heard under various climatic conditions and during various operational functions such as blasting, hauling, rock crushing, etc. (see *Figure 4.13.2, Modeled Noise Results: Continuous Operation, Summer, Prevailing West Wind*, through *Figure 4.13.6, Modeled Noise Results: Blasting, Summer, West Wind*).

6.11 RECREATION

General

6.11.1 There were a number of comments requesting minor clarifications and text changes or expressing opinions regarding recreation impacts. There was disagreement with the data on Native American hunting. Other comments expressed general opinions about the alternatives and their effects on recreation.

Response:

We appreciate the input from all those individuals, organizations, and agencies who commented on the "recreation" aspects of the Crown Jewel Mine draft EIS. We have

reviewed your comments and made revisions, as appropriate, to the final EIS. Data on Native American hunting was updated based on data obtained from the Colville Indian Tribe.

Impacts on Beth and Beaver Lakes

6.11.2 **There were several comments regarding Beth and Beaver Lakes. Some commentors expressed concern about traffic past the lakes and campground; another stated that the impact of traffic on the lakes was overestimated; and another was concerned with construction and mine employees impacting the Forest Service campground at Beth and Beaver Lakes.**

Response:

The issue of the impact of traffic on those using the facilities at Beth and Beaver Lakes was discussed in Section 4.14.3, Effects Common to All Action Alternatives. In response to the comment that impacts were overstated, the text was clarified to state that the impact would mostly occur on weekdays and that the projected 10 to 18 supply vehicles per day would occur during the peak operations year. The statement regarding traffic impacts at the lakes was not deleted as requested by the commentor, because this traffic is of concern to the public, as evidenced by comments to the draft EIS. Section 4.14.4, Effects of Alternative B, of the final EIS discusses employee impacts on the Five Lakes area and Section 4.14.3, Effects Common to All Action Alternatives, of the final EIS discusses possible construction and mine employee impacts on campgrounds.

Transportation of supplies past Beth and Beaver Lakes is a concern, as evidenced by public comments on that subject. The area around Beth and Beaver Lakes is used for camping and picnicking and both lakes are fished. It can be assumed that people camping are generally seeking some degree of quiet. According to the Forest Service, Beth Lake is often used to accommodate overflow from Lake Bonaparte and thus the campground is not just used by those seeking a convenient place to fish. Although the impact of 18 or fewer supply vehicles passing the campground per day (round trip) during the week would be considered a minor impact, it is still a concern to the public. The text has been changed to reflect the fact that impacts would mostly only occur on weekdays.

Of the seven setting indicators within the Recreation Opportunity Spectrum (ROS), only the number of social encounters apply, with the result of increased traffic and increased noise modifying the experience of the recreationist. The existing ROS class of this area is Roaded Natural. With a significant increase in weekday or weekend traffic, the ROS class would drop to a Roaded Modified level. See *Figure 3.15.1, Recreation Opportunity Spectrum Inventory*, in the final EIS.

Loss of Recreational Income

6.11.3 **There were numerous comments regarding the potential loss of tourists due to noise, dust, visual impacts, lights, etc. and the dollars they contribute to the economy.**

Response:

The recreation analysis indicates that there would be an increase in recreation in the analysis area due to the Crown Jewel Project employees and their families; thus no projected net reduction in recreation. Although tourists may contribute more dollars to the local economy than the employees, who would be local residents, there is little evidence to support the assertion that tourists would completely avoid the area once the mine begins operations. Crown Jewel Project-related noise would be barely audible

during the nighttime and early morning hours within three miles of the mine site. The Crown Jewel Project would be visible from several points on public roads and trails, but the view would be of fairly short duration, i.e. brief glimpses as one drives down the road. To those hiking the area mountaintops, such as Mt. Bonaparte and Graphite Mountain, the view would be of longer duration and thus some of those visitors may not come back to the area. Since Mt. Bonaparte contributes only 400 recreation visitor occasions, compared to almost 28,000 recreation visitor occasions for the Five Lakes campgrounds, the loss of any Mt. Bonaparte visitors would have negligible impacts on the area's economy. The majority of tourists would not be affected by Crown Jewel Project lighting depending on the type of lighting used. The main concern regarding tourism would be the effect of up to 18 supply vehicles per day passing by Beth and Beaver Lakes. This would mostly occur during the weekdays. Thus the majority of the tourists would not be affected. Effects regarding the potential loss of tourists is further displayed in Section 4.19.3, Comparative Effects Common to All Action Alternatives, Subsection "Income."

Diminished Value of Recreation Resources

6.11.4 **Will the Crown Jewel Project diminish the value of recreation resources within the mine site and the surrounding area, due to noise and mine visibility?**

Response:

The text was revised in the final EIS to reflect the diminished recreational value of the area within the mine site and in the immediate vicinity. Since there would be no recreation allowed in the mine area, the activities would likely be displaced to other portions of the National Forest. Refer to Section 4.14.3, Effects Common to All Action Alternatives, of the final EIS. The noise and scenic impacts are discussed in Section 4.14, Recreation, and Section 4.15, Scenic Resources, of the final EIS.

Data on Projected Camping

6.11.5 **The data on camping increases as a result of Crown Jewel Project employees was questioned. Specifically questioned was why the camping days per household varied by alternative and whether or not recreation visits refer to the same thing as recreation visitor days.**

Response:

Data on additional camping visits resulting from the Crown Jewel Project was derived from multiplying the camping trips per household data, (WAICA, 1990), by the persons per household figure estimated for each alternative which was provided in Section 4.19, Socioeconomic Environment. Since the persons per household number varies by alternative, as do the number of employees, there is not one consistent "camping days per household figure" that one can apply to all the alternatives. The camping data is intended to be presented in terms of "recreation visits," which means one visit to a particular site, of any duration, in contrast to a recreation visitor day which equals twelve visitor hours. This measure was used because the camping data from the state recreation plan was in the form of recreation visits.

The primary impacts of increased population would be increased demand for recreation, social services, and traffic, as well as the aesthetic impacts caused by increased development. Recreational impacts are discussed in Sections 4.14.3 through 4.14.9 under subsections entitled "Indirect Effects." Aesthetic impacts of increased population are discussed in Section 4.15.3, Effects Common to All Action Alternatives.

Recreational Value of the Post-Mining Lake Formation

6.11.6 **Several commentors felt that the recreational benefits of the Crown Jewel Project were not emphasized, in particular the recreational value of the lake that would form in the pit once mining is completed.**

Response:

A possible beneficial effect of the Crown Jewel Project would be the formation of a lake in the pit after operations cease. This is discussed in Section 4.14.4, Effects of Alternative B, in the final EIS. After mine closure and reclamation, some individuals may choose to picnic at the pit lake site or view the closed mine from a historic viewpoint. The potential for safety problems, however, at the post-mining lake due to the steep walls and talus slopes were mentioned as well as the concern about water quality. Water quality at the site may require management to meet federal and state water quality requirements.

There are other aspects of the Crown Jewel Project that could be considered a beneficial or adverse effect, depending on one's perspective. The increase in recreation due to Crown Jewel Project employees would increase pressure on the resource, but may also bring in more revenues. Closure of roads around the Crown Jewel Project would reduce access for hunting but may also increase deer populations, thus possibly improving hunting success rates.

Impacts on Hunting and Fishing

6.11.7 **What would be the impacts on hunting and fishing and the potential revenues lost if hunting and fishing decreases?**

Response:

The draft EIS does not conclude that the deer or hunters would disappear entirely from the study area. A small percentage of the estimated 448 hunters that use the study area currently use the Crown Jewel Project area and immediate vicinity. Those that usually hunt within the Crown Jewel Project boundaries would be displaced to other areas. Some of those that hunt in the immediate vicinity of the Crown Jewel Project would also be displaced due to the reduced access and aesthetic qualities of the area (traffic, noise, etc.) A portion of these displaced hunters may be discouraged altogether and hunt elsewhere in Okanogan County or choose to hunt completely outside Okanogan County. The closure of many of the roads in the vicinity of the Crown Jewel Project may actually increase the deer population due to the reduction in hunting pressure. This reduction in access and subsequent increase in deer numbers could attract other types of hunters to the area.

In the long term, the proposed Crown Jewel Project would decrease certain types of deer habitat but would increase the open forage habitat. This may initially benefit deer populations, especially in the smaller openings with increased edge effect. In the long run this may result in over-harvesting of the deer due to a lack of cover. This would ultimately decrease the quality of the hunting experience within the Crown Jewel Project boundaries. Hunting within the Crown Jewel Project boundaries, however, constitutes a relatively small percentage of the total hunting which occurs in the study area. Thus hunting in the study area is not expected to be substantially reduced in the long term.

6.12 SCENIC RESOURCES

General

6.12.1 There were a number of comments requesting minor clarifications and text changes or expressing opinions regarding the Crown Jewel Project. Other comments contained general opinions about the alternatives and their effects on scenic resources.

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "scenic resources" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Forest Service Scenic Management System

6.12.2 What are the basic methodology and assumptions of the scenic resources analysis?

Response:

The Forest Service is required to evaluate scenic impacts based on the Forest Service Visual Management System (currently being revised as the Scenic Management System). The National Forest Landscape Management Manual, Volume 2, Chapter 1, provides definitions for background, middleground, foreground view and provides criteria for identifying distinctive versus common landscapes. The new Landscape Aesthetics, a Handbook for Scenery Management (Forest Service, 1993b), page 21, presents research supporting the assumption that people prefer a natural setting in the National Forest. The Okanogan National Forest Plan, developed the visual significance designations, sensitive viewsheds, and visual quality objectives upon which the scenic resource section was based. These designations were reviewed in 1989 for the updated plan. Very few changes resulted.

Impacts of Project-Related Dust on Visibility

6.12.3 What will be the effect of dust and air pollution created by the Crown Jewel Project on views.

Response:

Refer to responses 6.1.11 and 6.1.12 in this appendix. Refer also to Section 4.1.5, Effects of Alternatives B and E, subsection "Impacts to Visibility at Pasayten Wilderness Area."

Impacts of Project Lighting

6.12.4 Project lighting has not been adequately addressed.

Response:

The effects of lighting cannot be quantified, because the Proponent has not specified the exact types of lighting to be used. In general, they have committed to using portable lighting focused into the Crown Jewel Project area, which should reduce light trespass into adjacent areas. Refer also to Section 2.12.17, Scenic Resources, subsection "Exterior Lighting."

Visual Impacts from Other Viewpoints

6.12.5 Several commentors mentioned the potential for impacts to additional recreational sites, such as Bodie Mountain and White Mountain in the Colville National Forest and the new

Virginia-Lily Trail. Another commentor felt that the Nealey Road Viewpoint should have been taken at a point further south on the road.

Response:

Mt. Bodie is outside the 10-mile radius that was designated as the study area. Mt. Bonaparte, which is 13 miles away from Buckhorn Mountain was included only because it is a developed site. It is very doubtful that the Crown Jewel Project would be visible from White Mountain (Mt. Spock). White Mountain is located approximately 48 miles from the Crown Jewel Project, and there are two intervening peaks that are taller than Buckhorn Mountain.

The new Virginia-Lily trail is located eight miles south of the site on mostly south and east-facing slopes and would not have close-up or extensive views of the Crown Jewel Project site. This site was not included as a viewpoint, but is addressed in Section 4.15, Scenic Resources.

The intent in selecting viewpoints was not to select every point with a view of the Project site, but to select a few viewpoints that have the closest and best views of the site. A selected view point provides a unique view that would allow analysis of a particular Project feature, such as the Nealey Road viewpoint. The Nealey Road Viewpoint was selected because it has a good view of the powerline corridor and is near existing homes. Although other points along the road may have a view of Buckhorn Mountain, the map analysis indicated that the inside of the pit would not be visible from points west of the ridge due to obstruction by the ridge itself.

Viewpoint Photographs

6.12.6 **The quality of the photographs in Section 3.16, Scenic Resources, of the final EIS was the subject of several comments, including the remark that a wide-angle lens was used, that the quality of the Mt. Bonaparte viewpoint photo was poor and that the Toroda Creek Viewpoint photo showed too much of the road. It was requested that the mine site be labeled on the viewpoint photos in Chapter 3, Affected Environment.**

Response:

The viewpoint photos were not taken with a wide-angle lens. Some were composed of several photos spliced together to create a panorama which may make them appear to be taken with a wide-angle lens. The panoramas were considered necessary to show the context of the view which more closely resembles how scenes are perceived by the human eye. The Mt. Bonaparte photo does show some haze which frequently occurs in the area and is difficult to avoid when photographing an object that is thirteen miles away. The road in the Toroda Creek Viewpoint shows what the observer actually sees from this viewpoint. The winding road in the foreground is important because it leads the eye directly to Buckhorn Mountain.

Figure 3.16.3, Nealey Road Viewpoint, through *Figure 3.16.8, Existing Conditions Within the Project Site,* of the final EIS, were not modified to point out the Crown Jewel Project site, as requested, because this was completed for the computer visual simulations in Section 4.15, Scenic Resources, of the final EIS and because the mine site would not be visible from some of the viewpoints. Highlighting the Crown Jewel Project area on these photographs would tend to exaggerate the impacts of the Crown Jewel Project.

6.12.7 **Why was Forest Road 3275-125 selected as a viewpoint?**

Response:

Forest Road 3275-125 was included as a viewpoint because the area around the mine could be opened to the public after mining operations are completed. Thus one viewpoint was selected to analyze the long-term, close-up impacts.

6.13 HERITAGE RESOURCES

General

6.13.1 Several comments requested minor text or table clarifications, re-illustration of figures, and supplementary information concerning cultural resources or survey methodology. Additional general statements and opinions related to cultural resources were also expressed.

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "heritage resources" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and have made revisions, as appropriate, to the final EIS.

Traditional Use and Traditional Cultural Properties

6.13.2 The Heritage Resources section of the draft EIS failed to consider traditional use or traditional cultural properties (including locales for hunting or gathering) important to Indian peoples within the Crown Jewel Project impact area.

Response:

The Crown Jewel Project would not affect Colville Confederated tribal members reserved rights to hunt and fish on the former "north half" of the Colville Indian Reservation. It would limit, for a period of time, where they can exercise their reserved rights. The Forest Service recognizes its obligations to manage wildlife and fish on the "north half", but the Forest Service must balance this wildlife and fish management with competing legal mandates. It should be noted that little response was obtained from the Colville Tribes to Forest Service requests for tribal input to the cultural resources study, although the tribe has conducted its own traditional cultural property inventory.

Treaty Rights and Issues

6.13.3 The Heritage Resource section fails to consider Native American treaty rights with regard to lands once contained in the north half of the Colville Indian reservation, some of which are now included within the Crown Jewel Project area.

Response:

A discussion of the relationship between the Forest Service and the Colville Tribes has been included in Chapter 1, Purpose and Need for Action, in the final EIS. The Colville Tribe's reserved water, hunting, and fishing rights on the former "north half" of the Colville Indian reservation are recognized. There are also requirements embodied in historic preservation law and federal policies on government to government relationships that have been, and continue to be, followed.

Technically, there are no treaty rights to specifically recognize the Buckhorn Mountain area, rather, there are "reserved rights." Attempts to learn specific cultural, historical, and religious concerns from the responsible Colville Tribal Government departments

occurred throughout the 4 + year life of the cultural resource work on the Crown Jewel Project, and very little information was obtained from the Colville Tribes.

6.13.4 **If the Proponent succeeds in patenting the properties, this would result in the permanent loss of Treaty rights on those lands. Is it possible for the government to transfer ownership of public lands (patent) when the original indigenous inhabitants retain rights to the use of these properties?**

Response:

Yes, the land can be patented under existing laws. If the land is patented, this action could result in the permanent loss of use of these lands by the Colville Confederated Tribes since the land would no longer be under federal ownership. This EIS does not determine if the land can be patented or not. Patenting is a completely separate process as explained in Section 3.19.8, Patenting of Crown Jewel Project Mining Claims, and Section 4.18.3, Effects Common to All Action Alternatives.

6.13.5 **The Forest Service has special obligations to understand the nature of the Colville Tribes' rights in the "north half" and to make decisions consistent with a proper understanding of these rights.**

Response:

The Forest Service recognizes its obligation and trust responsibility to respect the Colville Tribe's reserved rights in the "north half." The agency's own enabling legislation, however, assigns primary responsibility to manage habitat which it believes is consistent with the obligation to manage tribal reserved rights.

6.13.6 **The draft EIS fails to address Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations.**

Response:

EO 12898 on Environmental Justice is a recent policy that targets minority populations in urban areas and is not believed to be within the scope of the Crown Jewel Project. The Forest Service strategy and program responsive to EO 12898 was issued in December 1995, and concerns programs that are unrelated to the Crown Jewel Project.

6.13.7 **Indian fishing rights exist in the area. No discussion of this issue is presented. In order to protect these rights they need to be quantified, particularly in regards to fish and fish habitat loss.**

Response:

The Forest Service has a clear obligation to manage resources for sustainability. Outside of Alaska, the Forest Service does not have a trust duty to manage habitat or resources expressly for the benefit of tribal members. The quantification of habitat or resources is not assigned to the Forest Service in legislation affecting the "north half."

6.13.8 **Why were there never any meetings on the reservation?**

Response:

Government to government communications have occurred. Public meetings were located where it is believed to be central to the most people interested in the Crown Jewel Project. Notices of public meetings were published in the Omak Chronicle, the Gazette Tribune, and the Wenatchee World; broadcast on KOMW radio; and mailed to tribal members on the Crown Jewel Project mailing list. A scoping meeting was held in the City of Okanogan in February 1992 to make the meeting more convenient for tribal members to attend. A public information meeting was held in Riverside,

Washington regarding the draft EIS to be convenient for tribal members and residents of omak and Okanogan to attend.

6.13.9 **There is no inventory of native cultural, medicinal, and food plants in or adjacent to the Crown Jewel Project area. The Forest Service has an obligation to develop such an inventory.**

Response:

There are generic lists of culturally-significant plants in the ethno-botanical literature. The Colville Tribes have performed their own inventory for such resources since publication of the draft EIS. In addition, a forest-wide ethnographic overview was completed in 1993 which included Buckhorn Mountain and vicinity and was based, in part, on interviews with Colville Tribal members and research in the tribal Department of History and Archaeology. The overview also contains a list of culturally sensitive plant species and their uses. A detailed vegetation inventory was conducted over the Crown Jewel Project area for plants of concern or which were unusual.

6.13.10 **The Crown Jewel Project would affect tribal members and their ability to harvest fish and wildlife for subsistence purposes on the former Colville reservation "north half." It was stated that the effects on fish and wildlife can not be fully mitigated to off-set the losses to fish and wildlife and subsistence over the life of the mine.**

Response:

The Crown Jewel Project would not affect tribal members reserved rights to hunt and fish on the "north half." The Forest Service recognizes its obligations to manage for wildlife on the lands it manages on the "north half" which must be balanced with competing legal mandates. It is not possible to quantify any perceived loss of fish and wildlife due to the mine. The Forest Services agrees, therefore, that it is not possible to fully mitigate negative effects on fish and wildlife numbers. However, it is possible to mitigate loss of habitat. Habitat mitigation is contained in Sections 2.12.18, Wildlife and Fish - Public Land Enhancement, and 2.12.19, Wildlife and Fish - Private Land Enhancement.

6.13.11 **The high road density after Crown Jewel Project completion would make the core area less attractive to some tribal members for subsistence purposes, thereby reducing tribal hunting opportunities in the area.**

Response:

Hunting opportunities would still exist in the area, but would be lost within the Crown Jewel Project boundaries during operations. It is not possible, or legally required, to accommodate personal preferences for certain locations for subsistence activities. See also response 6.13.10 in this appendix. The open road density during Crown Jewel Project operations and post-closure would be less than presently exists. Refer to Section 4.12, Wildlife.

6.13.12 **The loss of about 11,000 acres of huntable lands in the Crown Jewel Project area coupled with increased "No Trespassing" and "No Hunting" signs on private lands and the resulting increase in local/regional human populations from the Crown Jewel Project would increase the competition for local harvestable fish and wildlife and affect subsistence use of tribal members.**

Response:

This effect is disclosed in Section 4.11, Aquatic Habitats and Populations, Section 4.12, Wildlife, Section 4.14, Recreation, and Section 4.16, Heritage Resources, of the final EIS. Competition for resources due to population increases are, however, inevitable social forces that would happen absent of the Crown Jewel Project. The loss

of huntable land would be about 2,000 acres during Crown Jewel Project operations. Access to an additional 6,000 acres may be more difficult due to road closures to provide security cover for wildlife.

Policy Issues

6.13.13 **Native Americans in the region were not asked to be involved in the EIS process and were not consulted concerning cultural resources by the lead agencies.**

Response:

A discussion on Forest Service - tribal relations has been added in Section 1.9.3, Consultation with the Confederated Tribes of the Colville Indian Reservation Government to Government Relations, of the final EIS. In addition, Forest Service records show that communications with the Tribal Business Council and the Tribal Government Departments occurred regularly. The record shows clear intent to learn information and concerns from the relevant Tribal government and departments.

There is a legal requirement for notification with the Colville Tribes under the existing regulations governing compliance with the National Historic Preservation Act of 1966, as amended, 1980. The 1992 amendments to the act obligates a federal agency to consult with Indian tribal governments who may have an interest in a project's effect on religious or cultural sites, but the regulations implementing the 1992 amendments have been stalled. Never-the-less, the Department Director received a copy of the cultural resource survey on November 30, 1995. Receipt of written comments are still pending and would be welcomed.

6.13.14 **A separate additional section should document the considerable outreach and consultation that took place between the agencies and the Colville Tribes during preparation of the draft EIS.**

Response:

Information on tribal interests, the Forest Services responsibility in this area, and communicational and consultation measures undertaken for the Crown Jewel Project is included throughout this section of Appendix L. Additional discussion is included in Section 1.9.3, Consultation with the Confederate Tribes of the Colville Indian Reservation Government to Government Relations, in the final EIS.

6.13.15 **Work performed for the Crown Jewel Project does not comply with the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA), Native American Indian Religious Freedom Act (AIRFA), and Section 106 of the National Historic Preservation Act, as amended.**

Response:

Cultural resource surveys and investigations have been completed and meet compliance with the National Historic Preservation Act of 1966, as amended, 1980. Note that, although this Act was substantially amended in 1992, the implementing regulations have not yet been issued. NAGPRA does not apply to the Crown Jewel Project because it refers to archaeological collections housed in museums. AIRFA may apply to the Crown Jewel Project, but the ethnographic work conducted to date have failed to identify religious sites that would apply. The Colville Tribes have not offered contrary documentation.

President Clinton's Executive Order (EO) on Government to Government Relationships is a reaffirmation of policy that the Forest Service strives to uphold, which is to communicate and solicit information from the tribe at the appropriate point in the

planning process. The EO on Environmental Justice is a recent policy that has recently been interpreted for Forest Service Field units and does not apply to the Crown Jewel Project.

6.13.16 **The Colville Tribes urge the Forest Service as trustee of reserved rights to consider these comments carefully, and would be pleased to further discuss our management concerns during the coming weeks.**

Response:

The Forest Service accepts these comments and has strived to strengthen the final EIS based on their substantive content. The Forest Service holds that it is a trustee of habitat in a multiple-use framework. The Colville Tribe's reserved rights are recognized and would be protected.

The Forest Service met with the Natural Resource Committee of the Colville Tribes in November 1995 to discuss their concerns. This was an open meeting where several interested tribal members attended. The Forest Service also hosted a number of people from the Colville Tribes and the BIA for a site visit to the Crown Jewel Project on August 21, 1995.

Graves and Burials

6.13.17 **What is the present condition and past history of burials or graves identified during cultural resource surveys for the draft EIS? Did AHS consider the potential for extant burials in the Crown Jewel Project area? Is the Native American Graves Protection and Repatriation Act (NAGPRA) applicable in the Crown Jewel Project area?**

Response:

An inventory for unrecorded archaeological sites, including burial sites, has been performed according to the process required in 36 CFR 800, which included requesting specific locations known to the responsible Tribal Government department. No additional burial sites were identified. Should any burials encountered during Crown Jewel Project activities, they would be accorded full protection and respect under the law.

During the cultural resources survey which preceded the draft EIS, two areas containing "graves" were identified, please refer to *Table 3.17.3, Heritage Resources Identified by Survey at Power Line Route and Related Construction Features*, of the final EIS. Site 45OK361, an open camp with a burial component, was recorded in 1976 on land owned by the Public Utility District (PUD), Oroville. At that time, professional excavations of the site were not carried out. However, the site was disturbed by the initial PUD construction efforts and subsequent vandalism by amateur collectors (45OK361 Site Form on file, Office of Archaeology and Historic Preservation, Olympia). At site 24-75, a "burial" was removed by the Okanogan County Sheriff's Department with the full knowledge of the Colville Confederated Tribes (CCT). No human remains were reportedly found, but soil from the site was removed and reburied at St. Marie's Mission (24-75 Site Form on file, Office of Archaeology and Historic Preservation, Olympia, Washington).

While it is true that prehistoric burials could be present on Buckhorn Mountain, none have been discovered or reported to date. Issues concerning the Native American Graves Protection and Repatriation Act (NAGPRA) are only applicable if and when burials are discovered on lands under federal or Native American jurisdiction. NAGPRA applies to the Crown Jewel Project, if graves or funerary items are discovered. Should graves or funerary objects be discovered during Crown Jewel Project development,

work would be stopped in that immediate area. A programmatic Memorandum of Agreement (MOA) would then need to be entered into between the Proponent, the Colville Tribes, and SHPO. In terms of cultural patrimony, the Colville Tribes would represent local Native American interests.

Religion

6.13.18 **The Heritage Resources section of the draft EIS failed to consider Native American concerns over the Crown Jewel Project's impacts on religion and religious practices. Will the proposed power line upgrade adversely affect the traditional cultural property known as the Hee Stone?**

Response:

The Colville Tribe's reserved water, hunting, and fishing rights on the "north half" are recognized. There are also requirements embodied in historic preservation law and federal policies on government to government relationships that have been, and continue to be, followed.

Even though there are no treaty rights to recognize on the Buckhorn Mountain area, attempts to learn specific cultural, historical, and religious concerns from the responsible Tribal Government department occurred throughout the 4 + year life of the cultural resource work on the Crown Jewel Project. Very little information was obtained from the Colville Tribes.

Concerning the Hee Hee Stone (45OK830), this National Register of Historic Places (NRHP) eligible property is presently located adjacent to a transmission line. The planned upgrade to this line would not adversely effect this traditional cultural property. Please refer to Section 4.16, Heritage Resources, of the final EIS.

Miscellaneous

6.13.19 **Current academic sources, as well as extensive interviews with tribal members, would seem essential in an investigation with impacts of the magnitude of this mine proposal.**

Response:

The separate cultural resources report for the Crown Jewel Project adequately summarized current archaeological research for the area (AHS, 1994).

A recent ethnographic overview for the Okanogan National Forest, written at the same time the cultural resource investigations for the Crown Jewel Project were performed, did interview a number of tribal members with mixed success. Some tribal members who claimed to possess traditional knowledge of the area simply refused to disclose what they knew. Others claimed there was little traditional significance to the Crown Jewel Project area. Still others opined that the fact that the area was off the reservation generally kept Colville tribal members traditional activities to the reservation proper, or to areas south and west of the reservation.

6.13.20 **In reviewing the findings of the cultural resource investigations, scarce research has led to flawed conclusions, and the revised study should include comprehensive documentation by Colville tribal members.**

Response:

The cultural resource investigations are legally subject to the National Historic Preservation Act as regulated under 36 CFR 800, which have been met. Federal Regulation 36 CFR 800 allows for the tribal government to come forward with

additional documentation to augment the original cultural resource investigations and, if they provide such information, the cultural resource investigations would be so revised.

Since the draft EIS was issued, the Colville Tribes has performed their own Traditional Cultural Property Study of the Crown Jewel Project area. No information from that study has been presented to the lead agencies as of October 10, 1996.

6.14 TRANSPORTATION

General

6.14.1 **Many comments simply presented an opinion or view on various aspects of the transportation sections or that are beyond the scope of this EIS. In addition, several comments cited the need for minor edits, clarifications, or typos in the text.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "transportation" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Hazardous Materials Transport

6.14.2 **County Roads 9495 (Toroda Creek) and 9480 (Beaver Canyon portion) should not be considered for the supply route due to adverse and unique winter conditions and the risk of increased accidents and possible spill events due to the physical conditions and location of these roads.**

Response:

The planned supply route from Wauconda was recommended based on a number of factors including directness of route, year-round accessibility, general road conditions, grades, existing traffic, road capability to withstand heavy loads, relative uniform elevation, better safety record, etc. The route from Oroville was also analyzed in Section 4.17, Transportation, of the final EIS. It showed no particular advantage and notable disadvantage over the proposed supply route selected. See Section 2.2.17, Supply Transportation, in the final EIS for further discussion of the rationale for selections of supply route options.

6.14.3 **Not factored in are the miles along the road that are wetlands. This must be documented and spill impacts analyzed.**

Response:

Neither the regulations of the U.S. Army Corps of Engineers or the WADOE require that wetland determinations be made along existing supply routes. Accident and spill scenarios have been discussed in Section 4.22, Accidents and Spills, of the final EIS. This discussion includes a possible cyanide spill into Beaver Lake.

6.14.4 **The possibility of traffic jams (i.e., jack-knifed semi) on the supply route is not addressed. The EIS must include a worst-case scenario for the supply route.**

Response:

The Forest Service and WADOE note the concern that a jack-knifed semi could result in "quite a traffic jam" on the supply route. It is a possibility, but the risk of this happening is remote. Accident and spill scenarios addressed in Section 4.22, Accidents and Spills, of the final EIS, include several different types of contaminants.

Accidents

6.14.5 **The projected materials use should be calculated for each of the hazardous materials to be transported, how often, and quantities historically released during transport. Engineering evaluations should then be made as to how these materials would be contained and cleaned up, and the medical needs of any involved victims.**

Response:

Data was obtained from the U.S. Department of Transportation regarding incidents involving the transport of hazardous materials. In particular, statistics regarding the transport of sodium cyanide and diesel fuel were obtained for the period of 1983 through 1994. These materials represent the bulk of hazardous material shipments. The estimated loads of all consumables are shown on *Table 2.4, Materials and Supplies*, and *Table 2.5, Consumables Estimate - Underground Mining*, of the final EIS. *Table 4.17.3, Annual Hazardous Material Transport,* summarizes yearly estimates of hazardous materials that would be transported by Alternative.

Cyanide: During the period 1983 through 1994, there were 114 reported incidents nationwide involving liquid and solid sodium/potassium cyanide in the United States. Of these 114 total incidents, five were due to vehicle (transport truck) accidents. The remainder were due to defective packaging or handling during loading/unloading. The incidents during loading/unloading happened within containment structures, thus there was little effect on the environment.

There were 90,020.7 gallons of cyanide solution involved in the five transport incidents with an estimated 3,052.3 gallons (3.4%) actually spilled, while there were 265,303 pounds of solid cyanide (briquettes) involved in the five incidents with 267.2 lbs (0.1%) spilled. The most recent reported transport vehicle accident with spillage of cyanide happened in 1988 in Nevada, where a truck carrying 47,600 pounds of cyanide contained in 14 bins was involved in an accident. One bin was damaged and released 75 pounds of cyanide. There have been no human injuries or fatalities resulting from the transport of cyanide during the time period 1983 through 1994.

Du Pont, a major supplier of cyanide and a potential supplier for the Crown Jewel Project, has delivered more than 1,000,000,000 (one billion) pounds of sodium cyanide to its customers in the past 60 years. Through their Conoco subsidiary, Du Pont owns and operates a fleet of over 400 transportation units in North America with a safety record (1.55 accidents per 1,000,000 miles) nearly six times better than the industry average. In addition, since Conoco began transporting sodium cyanide from Du Pont's Carlin, Nevada terminal (August 1989), they have not had an accident.

Safety in handling and transport is emphasized through the help and assistance of major producers who provide detailed guidelines to customers outlining basic safety precautions for working with cyanide to emergency treatments for cyanide poisoning to providing rapid assistance in the event of a transport incident. The major cyanide suppliers also emphasize the use of only highly qualified, specially trained carriers. In addition, most producers have a toll-free "cyanide hotline" for assistance during emergencies.

In the case of a transport release, the following minimum precautions and guidelines should apply:

- Remember that cyanide is highly toxic;

- Good general ventilation should be provided to keep dust, mist, and HCN gas below exposure limits;

- Have available and use as appropriate: face shields; rubber suits, aprons and boots; disposable toxic dust and mist respirators; and self-contained breathing air supply (in case of emergency); and,

- HCN detector, first aid, and medical treatment supplies.

To contain a spill of sodium cyanide, sweep up and shovel the material into a covered container or plastic bag. Cover and keep spillage dry. Flush spill area with a dilute solution of sodium or calcium hypochlorite. Dispose of according to federal, state, and local regulations.

Diesel Fuel: During the period of 1983 through 1994, there were 2,700 reported incidents involving diesel fuel nationwide including Alaska and Hawaii, of which 370 incidents (13.7%) resulted from vehicular accidents. In the state of Washington, during the period of 1983 through 1994, there were 31 reported incidents of which nine (29%) were vehicle accidents resulting in 4 to 4,750 gallons of spillage per incident. The most recent reported accident was in 1989. There were no injuries or fatalities associated with the accidents in Washington. However, there were three injuries and three fatalities nationwide over the 12 year period.

In event of a release during transport, an attempt to contain the spill should be made by shoveling a berm, dam, or other containment and using absorbent pillars at the nearest culvert/barrier. At a minimum, a shovel and two absorbent pillars should be carried by the carrier. These measures can help reduce the impacts until additional response measures can be implemented by designated response teams.

Any attempt to provide a hypothetical type, extent and/or severity of potential injuries due to an accident would be highly speculative. The Forest Service and WADOE prefer to emphasize worker training to avoid accidents and to maintain measures to respond to accidents which could result in injuries. The Mine Safety and Health Administration (MSHA) requires safety training for the handling of mine related materials. The Proponent's Integrated Plan of Operations (BMGC, 1993), outlines the minimum employee education and training that would be implemented. The Proponent plans to provide training to local emergency services personnel to handle potential incidents involving cyanide and diesel fuel.

"Containment and clean-up plans" are discussed in Section 2.12.4, Spill Prevention, Hazardous Materials, Fire Prevention and First Aid, of the final EIS. The Proponent would prepare site specific detailed plans for emergency response and spill containment as required by law as part of the permitting process.

There are too many assumptions and unknowns (i.e., spill location, weather, personnel availability and location, etc.) to provide an estimation of travel time to a spill. It is expected that response to a potential spill would occur as rapidly as possible.

It is expected that area hospitals would be equipped to handle "chemically poisoned victims." The Proponent has indicated that cyanide antidote kits or funding would be made available to the local hospitals. See Section 4.19, Socioeconomic Environment, of the final EIS for further discussion.

The Proponent would have trained emergency response personnel on staff at the Crown Jewel Project. In addition, the emergency services at the Crown Jewel Project would include capability for emergency helicopter transport for injured personnel. Okanogan

County would be responsible for having additional training provided for private individuals and Okanogan County response teams.

6.14.6 What would be the effect of increased traffic on the existing accident rate?

Response:

The Okanogan County and Forest Service roads within the Crown Jewel Project transportation network are similar in nature to other mountainous rural roads in the United States At the same time, they should not be compared to urban, highly traveled, better maintained roads. For that reason, the Forest Service and WADOE have primarily used data collected for these roads in the analysis.

The historical accident data (1988-1992) obtained from the state and county transportation departments indicate an average of 32.3 accidents occur annually on the transportation routes proposed for the Crown Jewel Project. See Section 4.17.3, Effects Common to All Action Alternatives, of the final EIS. These 1988-1992 accident statistics indicate the following:

- Hwy 20 has an annual average of 0.23 accidents per 100,000 miles traveled.
- County Road 9495 (Toroda Creek) has an annual average of 0.4 accidents per 100,000 miles traveled.
- County Road 9480 (west) (Oroville - Toroda Road) has an annual average of 0.44 accidents per 100,000 miles traveled.
- County Road 9480 (east) (Oroville - Toroda Road) had no reported accidents between 1988-1992.
- County Road 4895 (Pontiac Ridge Road) has had annual average of 8.2 accidents per 100,000 miles traveled (based on 2 reported accidents).

It is understood that not all "accidents" are reported to the authorities; however, accidents do happen. There are no enforced "mitigative" measures in place, except for the limited visits by the Sheriff's department. Therefore, the accident statistics for the Crown Jewel Project area county roads probably understate the actual conditions. With the potential increase in daily traffic from the Crown Jewel Project, it is possible that the number of accidents could increase over the life of the operation. However, any increase in accidents would probably not be directly related to the increase in traffic because of the mitigation measures proposed in Section 2.12.14, Transportation, of the final EIS. Other mitigation measures would include trucking companies using trained drivers, upgrade of some roads, adherence to speed limits, and general public awareness of increased traffic.

With the mitigation measures implemented and the general public awareness of increased traffic, it might be possible that the potential for accidents per 100,000 miles traveled would decrease rather than increase as has been suggested.

6.14.7 Slow moving water trucks on Bolster Road controlling dust could cause accidents.

Response:

A slow moving water truck could cause accidents. However, the Forest Service and WADOE suspect the likelihood is remote and probably no greater than the farm equipment, local resident's vehicles, and the other traffic currently using Bolster Road. Watering the road to control dust during construction activities may actually decrease accidents due to improved visibility.

Maintenance Responsibilities and Liabilities

6.14.8 Who would be responsible and pay for upgrading, upkeep and maintenance of existing Okanogan County roads? What would be the cost to the Okanogan County and taxpayers?

Response:

Okanogan County has indicated that they do not anticipate any changes to their winter maintenance schedule; but, if a change in the schedule was needed, an additional employee and truck would probably be required. In a verbal agreement, the Proponent has said they would pay for the extra cost. The Proponent and Okanogan County are in negotiations about the maintenance responsibilities of County Road 4895. The maintenance of all other county roads would remain the responsibility of Okanogan County. Okanogan County would receive additional property and fuel taxes.

6.14.9 Who would ultimately pay for cleanup of spills?

Response:

The carrier would be financially responsible for each shipment until the Proponent has accepted delivery. For example, Du Pont Chemical Company indicated that they:

1. Are self insured for spills up to $1 million;
2. Carry additional insurance for spills over $1 million;
3. Are liable for the merchandise until it is delivered to the site;
4. Have never had a spill of a bulk container of cyanide; and,
5. Have an emergency response team in Spokane, Washington.

Average Daily Traffic

6.14.10 Concerns were proposed about traffic volume estimates.

Response:

Section 4.17, Transportation, of the final EIS has provided a projection for Crown Jewel Project related traffic including employee traffic, supply, and miscellaneous traffic. See *Table 4.17.1, Average Daily Traffic By Alternative*, and *Table 4.17.2, Traffic Summary By Road*, of the final EIS for the actual projections.

Table 4.17.1, Average Daily Traffic By Alternative, presents the expected conditions for the construction phase projected for a whole year (conservative case). The peak employment expectation is 250 persons during the construction phase, 225 individuals for the actual construction aspects and 25 individuals for the operations portion. This represents an average daily traffic (ADT)of 270. Refer to Appendix G, Traffic Assumptions, of the final EIS for how this number is derived. To this projected ADT of 270, an ADT of 19 has been added to represent regulatory and miscellaneous (mostly logging traffic, [13 vehicles]) traffic, for a total of 289 ADT for personnel transport. No matter whether these people work for six months or for the conservative projection of 12 months, it still equals an average daily traffic number of 289 vehicles per day for the transport of the construction workers, other personnel, and logging traffic related to Crown Jewel Project construction.

These employee ADT projections are quite conservative because 250 employees are a peak projection and are only expected for a few months during construction. A lesser number of people would be required the majority of the time during the construction phase. Due to this variability in the number of workers required at any specific time during the construction phase, mandatory busing was not considered.

In order to fully evaluate the potential traffic impacts, we then added the supply traffic ADT. The total annual supply-related construction traffic is estimated to range from 1,696 to 2,476 vehicles. Based on a 260-day schedule, the supply traffic would range from 6.5 to 9.5 vehicles per day or an average ADT of 16 supply vehicles per weekday. During the six months of concentrated construction, it is estimated that as many as 16 transport vehicles per day (ADT 32) could use the roads to the Crown Jewel Project. Appendix G, Traffic Assumptions, in the final EIS presents the assumptions, methodologies, and calculations used in the traffic analysis. The draft EIS incorrectly stated an ADT of 18 for construction supply traffic and has been revised to accurately reflect the above discussion.

The construction phase has been conservatively projected to last for 12 months, which are the numbers presented in *Table 4.17.2, Traffic Summary By Road.*

6.14.11 Will busing to the Crown Jewel Project be mandatory?

Response:

The Proponent has indicated that busing/van pooling would be provided and encouraged during operations as the primary employee transportation from a location in or near Oroville to the Crown Jewel Project site. The EIS analysis assumes that most employees would live in the Tonasket-Oroville corridor. The employee transport analysis presents three scenarios: (1) 93%of the employees would be bused; (2) 75% of the employees would be bused; and, (3) none of the employees would be bused. These scenarios were selected to present a range within which the actual condition would fit. Appendix G, Traffic Assumptions, of the final EIS presents the assumptions and the estimated effects of the 93%, 75%, and 0% busing levels. Effects in the EIS were displayed based on 75% busing during operations.

6.14.12 Traffic increases on Havillah Road have not been addressed. There appears to be inadequate studies of impacts to Havillah and Nealey Roads.

Response:

Based on the proposed Crown Jewel Project routes, there would be no anticipated direct effects to either Havillah or Nealey Roads from Crown Jewel Project traffic. However, it is acknowledged that employee traffic could occur on any routes within the area of the Crown Jewel Project, but it would be minimal. There could be some indirect effects as a result of increased population, but this impact is also expected to be minor.

6.14.13 What is the definition of ADT? The definition should be improved over the one now in the draft EIS and Glossary.

Response:

ADT is a measure of traffic over a 24-hour period and is determined by counting the number of vehicles (from both directions) passing a specific point on a given road. In the case of the Crown Jewel Project, it has been assumed that all traffic would return on the same day and on the same road that was used for initial access. Therefore, one vehicle going to and from (round-trip) the Crown Jewel Project would result in an ADT of 2. The above definition has been included in Section 3.18, Transportation, and in Chapter 7, Glossary, of the final EIS.

6.14.14 **Why was carpooling analyzed when, on page 2-41, of the draft EIS carpooling was eliminated from further evaluation?**

Response:

Carpooling as a mitigation for the construction period would be encouraged by the lead agencies. It would be difficult to schedule busing for construction workers from different companies based on the specialized work and expertise needed to construct the facilities within a reasonable timeframe. Therefore, it was recommended that carpooling be used during the construction period.

Carpooling was analyzed for the construction period only, while busing was used as the mitigating factor for the operational period. Mitigation measures and method analyzed in the final EIS were proposed by the Proponent or suggested by the lead agencies.

Miscellaneous

6.14.15 **Do *Table 2.4, Materials and Supplies*, and *Table 2.5, Consumables Estimate - Underground Mining*, include supply consumption by the Crown Jewel Project testing labs?**

Response:

Yes, supply consumption by the on-site testing laboratory is included in the miscellaneous category in both *Table 2.4, Materials and Supplies*, and *Table 2.5, Consumables Estimate - Underground Mining.*

6.14.16 **Who will enforce rules, regulations, weight restrictions, and mitigation on Okanogan County roads?**

Response:

Okanogan County would enforce rules, regulations and mitigation on County roads. State and Okanogan County law enforcement would continue to be responsible for all enforcement of applicable laws on County roads. The Crown Jewel Project would not affect how weight restrictions are placed on County roads. The Crown Jewel Project is being designed with excess storage capacity for project materials given that weight restrictions could be in place for several months at a time during spring break-up. The Proponent has proposed at least six weeks of storage capacity for most materials needed in the mining operation. Section 3.18, Transportation, of the final EIS identifies the roads that have weight restrictions imposed during the spring thaw.

On Okanogan County roads, pilot cars would be self monitored. The Forest Service and WADOE expect some private citizen monitoring would occur by local residents reporting infractions to authorities.

6.14.17 **During spring breakup load restrictions, is there a plan for the stockpiling of supplies?**

Response:

The Proponent has proposed at least six weeks of storage capacity for all supply items, including the high consumption items. However, in extreme or emergency situations, travel at night over frozen roads could occur.

6.14.18 **"I am appalled that the mining company was allowed to build 27 miles of road, albeit described as 'test platforms', in a pristine wilderness, when your own Forest Service Plan dictates a reduction in road density. Who gave permission for this travesty?"**

Response:

Table 3.19.1, Crown Jewel Project Exploration Summary, of the final EIS displays the history of the Crown Jewel Project from initiation in 1988 through March 1996. This history portrays the sequencing of current disturbance and the agencies permitting the activities. Federal mining laws require Federal agencies to provide a mining claimant reasonable access to their claims for further prospecting, mining, or necessary related activities.

6.14.19 **It is suggested that the operational conditions of the roads and highways on the supply route will not be affected. How can this be?**

Response:

The "operational conditions" of roads and highways on the supply route would continue to be paved or gravel as they are now. These roads and highways would be two-lane where two-lane traffic now exists and they would accommodate Crown Jewel Project and general public traffic as they do now. The supply route currently accommodates logging/commercial trucks and general public traffic. Maintenance and snow-plowing would continue, and none of the supply route would be closed to public traffic.

Okanogan County has indicated that the proposed supply route (Toroda Creek Road via Highway 20) is the safest route available. The other alternatives have structural inadequacies as well as long steep grades which would make winter driving even more hazardous.

Highway 20 is already an industrial route used by many large trucks.

Forest Service Road 3575-120 from Pontiac Ridge Road to the mine site would be upgraded from the current operating condition to a 24-foot wide gravel surfaced road. The proposed final design is currently under review by the Forest Service. Costs of the upgrade and ongoing maintenance would be the responsibility of the Proponent. County Road 4895 would be upgraded by the Proponent during the first year of operations.

6.14.20 **The traffic impacts to Bolster Road are not covered.**

Response:

Transportation impacts to Bolster Road as a result of Starrem Reservoir construction and operation have been included in Section 4.17, Transportation, of the final EIS.

6.14.21 **The cumulative effects study on transportation is extremely minimal and does not adequately address or represent the potential impacts. Impacts from job-seekers who come looking for work and find none are not included.**

Response:

The Forest Service and WADOE believe the discussion is adequate. Impacts from logging are already included in the historic baseline numbers. The Forest Service and WADOE have no information that any existing mines plan to expand or that any new mines would be proposed in the future; therefore, identifying potential impacts from other potential mines would be inappropriate.

Indirect and cumulative impacts due to a Crown Jewel Project related population increase are discussed qualitatively in Section 4.14, Recreation, and Section 4.19, Socioeconomic Environment, of the final EIS.

Predicting a number for "job seekers who come looking for work and find none" is speculative. The EIS does qualitatively mention that in-migration of people could affect

various resources. However, we have no evidence that substantial increases in impacts would result.

6.14.22 **There were comments concerning the March 94 Draft Transportation Impact Report.**

Response:

The March 24 Draft Transportation Impact Report was an internal working draft document. Assumptions, methodologies, and data were re-examined and the results are presented in the final EIS in Appendix G, Traffic Assumptions. No "final" transportation impact report is planned.

6.14.23 **County Road 4895 is a gravel road, and it is incorrect to state that the road might be closed during spring breakup.**

Response:

The Okanogan County Department of Public Works stated "Gravel roads are not normally restricted unless severe mud conditions or rutting develop" (Hinger, 1993) and "All county roads are subject to restrictions during the Spring thaw" (Hinger, 1995). Restrictions on paved roads accessing the site effectively create restrictions on the gravel roads. There was a heavy load restriction placed on one gravel road, in 1996, in Okanogan County.

6.14.24 **The list of roads identified for closure on Page 4-143 is slightly different than on the list on Page 2-100.**

Response:

The list of road closures on page 2-100, of the draft EIS are proposed wildlife mitigation measures which would result in permanent or temporary closures of those roads. The list on page 4-143 of the draft EIS refers to roads which would be closed to through traffic during the life of the operation due to facility disturbance. However, after further study, the roads to be closed for wildlife mitigation would be associated with the Marias Creek Road 3550, from Bat Canyon west to the boundary with State land. See Section 2.12.18, Wildlife and Fish - Public Land Enhancement, of the final EIS.

6.14.25 **Pontiac Ridge Road is closer to four miles in length to Forest Road 3575-120 at the mine and is dirt and dust not gravel.**

Response:

County Road 4895 (Pontiac Ridge Road) is about two miles in length from the intersection of County Road 9480, on the west, to the intersection with Forest Road 3575-120 and has been surfaced with material from the Pine Chee pit located in Section 3 (USGS Map).

6.14.26 **Will local trucking companies be used, such as ....?**

Response:

The Proponent has not identified the specific companies or people to be employed, nor is it relevant to the EIS to require them to do so.

6.14.27 **What would be the return route for semi trucks; would they run 24 hours a day; and who would enforce restrictions?**

Response:

The analysis assumed the transport (semi) trucks would use the same road for access and return. Pilot cars were not considered for "non-hazardous" supplies. According

to the Proponent's operating plan, deliveries would only be accepted during daylight hours. The Proponent has indicated that supply deliveries would be scheduled Monday through Thursday. In rare cases, night or weekend travel could occur.

6.14.28 **Our cows have to cross Cow Camp Road at least once a day to get water in the NE part of our land. Heavy traffic on Cow Camp and the Pontiac Ridge Road could hurt or kill our cows.**

Response:

With any increase in traffic, there would be an increased chance of a cow/vehicle accident. But, considering the number of vehicles anticipated, the risk should be minimal.

6.14.29 **The transport of cyanide, explosives, diesel fuel, etc. on the Beth-Beaver Lake Road (County Road 9480) is insane. The road would have to be modified drastically. The draft EIS does not address this.**

Response:

The Okanogan County Public Works Department feels the road is adequate for transport of supplies to the Crown Jewel Project. There is one bad curve in the vicinity of Beth and Beaver Lakes, but widening the road at this point would require putting fill in the lake.

6.14.30 **Transportation of mining supplies and personnel will be more hazardous than described by the Proponent.**

Response:

"Transportation of mining supplies and personnel will be more hazardous than described by the Proponent" is a misconception. The impact analysis was conducted under the guidance of the Forest Service and WADOE, and not the Proponent. The roads proposed for use have been used by logging trucks for years with a very good safety record.

6.14.31 **Estimated driving speed on unpaved access roads will be higher than 25 m.p.h. as stated in the draft EIS. No one around here drives at 25 m.p.h. on dirt roads, thus dust emissions will be higher than stated.**

Response:

The 25 m.p.h. speed limit would be enforced on the portions of the Crown Jewel Project area where haul trucks or other large equipment normally operate or any other portions of Crown Jewel Project roads that the Proponent deems applicable due to human or environmental safety. Forest Service roads have a speed limit of 25 m.p.h. Otherwise the speed limits would be as posted by Okanogan County and enforced by the Sheriff's department.

6.14.32 **The unique nature of local Okanogan County roads, particularly in winter conditions, must be addressed more fully.**

Response:

Okanogan County roads are not any more unique in nature than other mountainous county roads in the United States Forest Service personnel have talked to truck drivers that deliver to mines in Eastern Washington, Northern Idaho and Western Montana, and these truck drivers indicated to the Forest Service that the roads accessing the Crown Jewel Project are much better than some of the other roads that they have to travel in the winter.

6.15 LAND USE/RECLAMATION

General

6.15.1 There were many comments which expressed general positive an negative opinions concerning the reclamation alternatives. Other comments cited typos or requested minor clarifications not requiring a specific response.

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "land use/reclamation" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Compliance with Reclamation Regulations

6.15.2 The reclamation discussions are too sketchy in the draft EIS. The plans presented in the draft EIS do not meet the minimum requirements of the WADNR or other agencies; i.e. Forest Service, BLM, or WADOE. Bonding amounts are not defined, so what will stop the operator (Proponent) from just walking away.

Response:

The proposed reclamation plan for Alternative B consists of a 90 + page document plus tables, maps, and appendices, which is on file with the Tonasket Ranger District, U. S. Forest Service. This plan is summarized in Section 2.11, Reclamation Measures, of the EIS, including additional measures required by the agencies. Short, topic-specific summaries are also provided throughout Chapter 2, Alternatives Including the Proposed Action, of the EIS to aid the reader in understanding how reclamation activities could vary by Crown Jewel Project alternative. The Proponent's plan has recently been revised (July 1996) which provides for segmental reclamation, reduces overall waste rock slopes to 2.5H:1V, and increases woody plant stocking rates.

The reclamation plan summary presented in the final EIS defines revegetation goals and objectives, addresses revegetation schedules and temporary shutdown procedures, and summarizes (in some detail) the reclamation and revegetation techniques proposed by the Proponent. As appropriate for a NEPA/SEPA document, this discussion is in summary form and is tiered to the Proponent's detailed Reclamation Plan which is available for review by interested parties. Based on reclamation plan discussions presented in EIS documents prepared for similar mining operations, the reclamation plan information presented in the Crown Jewel Project EIS is considered to be informative and complete.

As discussed in Section 2.11.5, Reclamation and Environmental Protection Performance Securities and Section 2.14, Performance Securities, of the final EIS, bond amounts cannot be calculated at this time since it is uncertain how many performance securities would be required, which federal or state agency would hold such securities, or what type of financial instrument would be used to back the guarantee. This section goes on to note that, by state and federal law, no mining or milling operations can commence without the approval of permits and plans by the Forest Service, BLM, WADOE, or WADNR. Agency approval of these permits would depend, in part, on the calculation of adequate performance securities and execution of the appropriate financial guarantees.

The Washington Metal Mining and Milling Operations Act, as amended in 1995, requires the Proponent to provide a performance security that includes funding of cleanup before permits are issued (RCW 232.11(2) (c)). These securities include both

a reclamation performance security and an environmental protection performance security. If the Proponent "walks away" from the Crown Jewel Project, the securities would be available to reclaim or clean up the abandoned site, as necessary. Refer also to Section 2.14, Performance Securities, of the final EIS.

Section 2.14.1, Reclamation Performance Security, subsection "Metals Mine Reclamation Performance Security Comparisons," lists the approximate reclamation performance security amounts currently in place for certain western United States precious metals mining operations.

The Proponent has included in their revised reclamation plan (BMGC, 1996f) a performance security cost estimate which proposes $4,259,150 in year one; $6,119,869 in year four; $6,111,266 in year nine; and $1,061,290 in year ten. The Forest Service presently holds two reclamation bonds for the past exploration work which total $530,000.

6.15.3 **There were various opinions expressed concerning the need to have overall 3H:1V final slopes versus 2H:1V to reduce erosion potential and ensure revegetation success.**

Response:

The Proponent has revised their reclamation plan (BMGC, 1996f), available for review at the Tonasket Ranger District office, which reduces overall reclaimed slopes to 2.5H:1V. The final EIS has been revised to reflect this change.

The analysis presented in Section 4.4.3, Effects Common to All Action Alternatives, described a 1.5H:1V and 2H:1V slope angles as having "high" erosion potentials. Further, the text indicates that reclamation on 2H:1V slope angles typically requires a greater input of time, money, and effort, but that the effect of slope is mitigatable. There was no intention in the section to indicate that reclamation on such slope angles was impossible.

Please see the revised Section 4.4, Geotechnical Considerations, for the current analysis of erosion (erodibility) potentials.

6.15.4 **The reclamation plan does not describe the impacts from ARD from the reclaimed pit whether left as a lake or partially backfilled.**

Response:

Please refer to Section 3.3.3, Geochemistry, of the final EIS for a discussion on the potential for ARD from either backfilled waste rock or exposed pit walls. In summary, leachability tests indicated that precipitation would not leach substantial concentrations of metals or radionuclides from the waste rock or the pit walls. Also, depending on the alternative, humidity cell tests indicated that 5-29% of the total waste rock volume generated at the mine could be potentially acid-generating. A discussion of the potential impacts to ground and surface water are presented in Sections 4.6, Ground Water, Springs and Seeps, and 4.7, Surface Water, of the final EIS.

Refer also to responses 6.5.39 and 6.5.45 of this appendix.

6.15.5 **General reclamation concerns included:**

- **Burying of concrete and other solid waste on site;**
- **Netting of pit lake or tailings facility to prevent birds from encountering ponded water;**

- **The use of a sprinkler system to evaporate tailings solution; and,**
- **The existing clear cut area on Buckhorn mountain.**

Response:

Burying of concrete - All clean concrete could be buried on site. Other solid waste could be transported off site to an approved solid waste landfill. Building foundations could be buried, covered with soil and revegetated.

Netting - Using Alternative B as an example, the pit lake would cover approximately 20 acres and the tailings facility (at peak), with pooled solutions, would cover about 58 acres. To net areas of this size would involve a considerable engineering effort. Section 4.12.4, Toxics, of the final EIS discusses the potential impacts to bird and bat taxa. *Table 4.12.5, Risk or Probability of Toxic Impact at the Tailings Pond*, of the final EIS lists the overall risk of population level impacts to birds and bats as "low" or "negligible." Risks of impacts from the pit pond to terrestrial species is negligible based on the report Examination of Potential for Toxicity to Aquatic and Terrestrial Species in and Near the Proposed Pit Pond for the Crown Jewel Mine (Beak, 1996).

Monitoring of the tailings pond would be required, as discussed in Section 2.12.18.12, Wildlife Exposure to Toxic Substances, Section 2.13.5, Wildlife and Fish Monitoring, Section 2.12.13.4, Tailings Disposal Facility, Section 2.13.1, Water Resources Monitoring, Section 2.13.3, Geotechnical Monitoring, and Section 2.13.4, Geochemical Monitoring. If migratory bird deaths occur in the tailings facility, measures would be taken to discourage use. These measures may require hazing, netting the pond, covering the pond, etc.

The pit lake would not contain cyanide or other chemicals associated with the milling process. The geochemistry analyses presented in Section 3.3.3, Geochemistry, of the final EIS indicates that no substantial concentrations of metals or radionuclides would be leached from the waste rock or pit walls.

Sprinklers - It is anticipated that evaporation would remove remaining solutions from the tailings and solution ponds at reclamation. However, sprinklers may be used to aid evaporation during final reclamation. Sprinklers would only be used for a short duration during the dry season. The impacts of particles blown by the wind during sprinkling are anticipated to be negligible.

Clear cut - The logging which occurred on Buckhorn Mountain, at the site of the proposed pit, was conducted by a company unrelated to the Crown Jewel Project. That timber sale was sold in 1977, a number of years before the commencement of exploration. No planting was conducted due to the exploration drilling which occurred after the logging and because of the proposed mining disturbance. Under Alternative A, No Action, the Proponent would be required to reclaim the site, which would include reforestation.

6.15.6 **Several letters were received requesting examples of open pit (gold mine) reclamation sites, both in and outside Washington. Others requested information on the Proponent's reclamation record.**

Response:

The Proponent is conducting reclamation at their other mining operations in Colorado, Nevada, Australia, and Bolivia (South America). In Colorado, the Proponent has reclaimed portions of the waste rock disposal areas and the pit area under standards of the Colorado Division of Mining and Geology. In Nevada, the Proponent is reclaiming waste rock sites and other facilities in accordance with the standards of the Nevada

Division of Environmental Protection, Bureau of Mining and Reclamation. Australia has similar requirements for reclamation. In Colorado, the Proponent has filed a surety bond with the State of Colorado in the amount of $6.4 million for reclamation.

6.15.7 **The reclamation plan for the proposed pit lake is sketchy. More details on proposed vegetation types and fish species is required.**

Response:

Reclamation of the proposed pit lake is a concept introduced by the EIS interdisciplinary team during the evolution of this EIS. The Proponent has revised their reclamation plan for the pit area. Refer to Section 4.3, Pit and Highways, of the Reclamation Plan (BMGC, 1996f). A summary of the revised plan is included in the final EIS. The plan has become a part of a mining permit application to be submitted to the Washington Department of Natural Resources (WADNR) for approval. The WADNR permit is a document, separate from this EIS, which is required to operate a mining operation of this type within the State of Washington. This reclamation plan would also be part of the Plan of Operations submitted to the Forest Service for approval on the portions of the pit on National Forest land and to the BLM for approval on the portions of the pit on land that they administer.

6.15.8 **The draft EIS is not clear as to when and how the recovery solution collection pond and the storm water control system will be reclaimed.**

Response:

Reclamation schedules and procedures for the recovery solution collection pond and the storm water control system are discussed in Sections 4.5.5 and 4.7, respectively, of the Reclamation Plan (BMGC, 1996f). Section 2.11.4, General Reclamation Procedures, of the final EIS has been modified to summarize these procedures.

Loss of Biodiversity, Low Stocking Rate

6.15.9 **The following are comments received regarding biodiversity and stocking rates:**

a) **"...some wildlife habitat and biological diversity would likely be irreversible and irretrievable due to the loss of soil productivity and old growth..." The statement that timber losses in areas covered by waste rock are not irreversible is not supported.**

b) **Proposed plant species for revegetation are invasive, not native; and as such, are inconsistent with the intent of NEPA to ensure protection of biodiversity. In addition, the cumulative impacts of logging, grazing, and mining involve a loss of biodiversity.**

c) **Within the species selection for revegetation, no mention of forbs is included with seeds and shrubs.**

Response:

It is true that the effects to soil productivity as a result of mining versus clear-cutting are not the same. The effects of mining operations on soil productivity would be restored, in large measure, as a result of the stockpiling of suitable soil materials, fertilization techniques, soil reapplication, microbial inoculation, and mulching. This is not the case with regard to the effects of clear-cutting where less rigorous soil mitigation actions are required.

Recent reports suggest that to replace the ecosystem of an old-growth western forest might take 180 to 500 years. It is suggested that to create a new forest stand that would provide SIT cover for deer might take 100 to 150 years. Given the long-term nature of the effects, clear-cutting an old-growth forest essentially becomes an irreversible commitment of resources. Harvest of SIT cover is a long-term irretrievable commitment of resources. (See Section 4.23.1, Irreversible Resource Commitment, in the final EIS.)

Timber losses in areas covered by waste rock are considered to be generally reversible, in the long term, given observations made during the soil survey conducted within the Crown Jewel Project area boundaries in 1992. Soil pedon characteristics were observed at approximately 325 points within the Crown Jewel Project area, including 18 formal sampling points as recorded in the document Soils Technical Memorandum-Project (Cedar Creek Associates, Inc., 1992). The vast majority of these sites supported some type of forest community dominated by one or more tree species including Englemann spruce (*Picea engelmannii*), Douglas-fir (*Pseudotsuga menziesii*), and western larch (*Larix occidentalis*). These sites typically, though by no means exclusively, exhibited subsurface soil horizons with high coarse fragment contents (rocks, cobbles, and gravels) overlain by comparatively shallow surficial horizons characterized by moderate textures and low coarse fragment contents. In effect, tree-dominated vegetation communities were essentially ubiquitous throughout the Crown Jewel Project area and appeared to be well established regardless of soil characteristics. Undisturbed grass- and shrub-dominated communities were rare within the proposed Crown Jewel Project area boundaries. Where they occurred, soils supporting grass vegetation communities were typically characterized by soil depths less than 12 inches to hard bedrock. Shrub vegetation communities were typically supported by soils 40+ inches deep having a low percentage of coarse fragments throughout the soil profile.

The Proponent proposes to reclaim the sloping portions of the waste rock disposal sites by applying approximately 18 inches of salvaged soil having a low coarse fragment content. The waste rock material would consist of rock material size classes ranging from boulders to gravels to some finer materials. This soil/waste rock stratigraphy compares favorably with the soil characteristics of a number of pedon sample points currently supporting established tree vegetation communities in the areas of the proposed waste rock disposal sites. These pedon sample points include M-11, M-14, M-15, and M-17, all of which are located in or near the proposed boundaries of either the north or south waste rock disposal sites of Alternative B. There are, of course, differences between the waste rock material and the endemic subsurface soil material in terms of pore space, chemistry, and fines content. Differences in pore space and fines content may be reduced to some degree by weathering over the long term. It is believed that tree communities would become established over the waste rock disposal sites given the overall similarities of the pre- and post-mining soil and soil/waste rock characteristics, respectively, and the apparent adaptability of the tree species common to the proposed Crown Jewel Project area. Species dominance and tree densities are unknown, hence the phrase "generally not irreversible."

A 12-inch resoiling depth is proposed for the level benches of the waste rock disposal sites. An eventual tree-dominated vegetation community occurring over these benches is also assumed to be valid. The natural soil profiles exhibiting a deeper surficial soil layer over the high coarse fragment subsurface layer occur over moderate to steeply sloping terrain. It is believed that a lesser reapplied soil depth is sufficient to support a future tree community on nearly level slopes due to higher soil moisture infiltration, coupled with a higher tree seed retention rate due to decreased runoff potential.

Section 4.9.3, Effects Common to All Action Alternatives, of the final EIS has been modified to more fully explain this concept.

Of the 19 species proposed for revegetation, only two forb species are considered to be non-native. These species are cicer milkvetch (*Astragalus cicer*) and sanfoin (*Onobrychis viciaefoilia*).

Cicer milkvetch, a native of Eurasia, is tolerant of a wide variety of soil and site characteristics and is palatable to both livestock and wild ungulates. This species also has a well-rated potential for restoring big game range in the Intermountain West (Wasser, 1982). It has been used widely in reclamation plantings due to its hardiness, nitrogen-fixing capability, and commercial availability. Though considered to be strongly competitive in well-established stands, the seeds/ft^2 planting rate for cicer milkvetch is about 10% of the seeds to be planted as proposed in the *Reclamation Plan* prepared by the Proponent for the Crown Jewel Project.

Sanfoin, a native of southern Europe, is also adapted to a wide variety of environmental conditions including those characterizing the Crown Jewel Project site. It is a non-bloating, commercially available legume (Thornburg, 1982) which has a history of being planted for reclamation purposes in the West. Not as competitive as cicer milkvetch, the planting rate proposed by the Proponent is about 5% of the seeds to be planted per square foot.

The subsection entitled "Seeding and Planting" in Section 2.11.4, General Reclamation Procedures, page 2-84 of the draft EIS, is in error. Forb species are included in the Proponent's proposed seed mixtures to be used to revegetated areas disturbed by Project components. The forb species proposed for seeding include cicer milkvetch (*Astragalus cicer*), American vetch (*Vicia americana*), Rocky Mountain penstemon (*Penstemon strictus*), and sanfoin (*Onobrychis vicaefolia*). Planting specifics may be found in the proposed Reclamation Plan for the Crown Jewel Project (BMGC, 1996f) prepared by the Proponent in consultation with Golder Associates, Inc. and Shepherd Miller, Inc. Section 2.11.4, General Reclamation Procedures, of the final EIS has been modified to indicate that forb species are included in the proposed seed mixtures.

Refer to Section 2.11.4, General Reclamation Procedures, of the final EIS which states "As much natural, local vegetation seed sources (grasses, forbs, shrubs, and trees) would be used as feasible." Seed sources from sites with similar environments would be selected to ensure that the plants are adapted to the elevation, precipitation, temperature, and soil conditions present at the Crown Jewel Project. As much of the seed as possible would be collected locally.

6.15.10 **Why does the draft EIS propose 50-100 tress per acre in Alternative B and up to 250 trees per acre in the other alternatives? Alternative B would turn a forest land into a shrub/grass land.**

Response:

The tree planting rate for Alternative B (50-100 trees/acre where trees are to be planted) was proposed by the Proponent in their Reclamation Plan as revised in November 1993. The rate of 250 trees per acre (where trees are to be planted) was made a part of the reclamation plans for the other action alternatives by the Tonasket Ranger District of the U.S. Forest Service.

In the revised Reclamation Plan (BMGC, 1996f), the Proponent has committed to stocking rates of 250 seedlings per acre in random patterns (page 3-38). Actual stocking rates would be agreed upon by the Forest Service, BLM, WADNR, and the Proponent, and would become a permit condition.

Long-Term Reclamation Monitoring

6.15.11 **The reclamation plan does not address long-term waste rock and tailings monitoring in regard to erosion, vegetation, and stability. In addition, tailings reclamation does not address the impacts on deep-rooting trees or burrowing animals. Monitoring in perpetuity for acid mine drainage should be planned.**

Response:

The Proponent has committed to extensive monitoring before, during, and after mining. Details of the monitoring efforts are summarized in Section 2.13, Monitoring Measures, of the final EIS. Monitoring would include ground and surface water quantity and quality, erosion of tailings pond (refer to response 6.15.18), geotechnical monitoring, geochemical monitoring, wildlife and fish monitoring, revegetatation monitoring (refer also to Sections 5.0 and 6.0 of the Proponent's Reclamation Plan, [July 1996]), and reclamation monitoring. Section 2.13, Monitoring Measures, states that environmental monitoring would be part of any action alternative. Monitoring programs would include reclamation and post closure aspects of the Crown Jewel Project. There would be periodic review of monitoring data, and the Proponent would prepare an annual report for monitoring studies. Besides meeting periodically with representatives of state and federal agencies, a public meeting, if desired, could be held annually to discuss monitoring information.

Implementation of the reclamation plans should preclude the need for monitoring in perpetuity.

Deep rooting trees and burrowing animals: Based on the geochemistry analyses presented in Section 3.3.3, Geochemistry, of the final EIS, and the Proponent's proposal to cover the tailings pond with three feet of coarse material before applying soil, no adverse impacts to vegetation is anticipated. The Proponent has committed to a vegetation monitoring plan which would serve to assess any impacts to vegetation. Refer to Section 2.13.9, Reclamation Monitoring, of the final EIS and Sections 5.0 and 6.0 in the Proponent's Reclamation Plan (BMGC, 1996f).

The impacts on birds or mammals which have consumed worms or small rodents which have burrowed into the reclaimed tailings is discussed in Section 4.12.4, Toxics, in the final EIS. Monitoring of wildlife would be required. Section 2.13.5, Wildlife and Fish Monitoring, of the final EIS discusses the monitoring which would be conducted.

Detailed monitoring plans, including parameters and schedules, would be developed by the Proponent and approved by the appropriate regulatory authorities i.e., WADNR, WADOE, Forest Service, and BLM prior to permit approval.

6.15.12 **There are no detailed Corrective Action Plans (CAP's) in the reclamation plan sections. Also, missing are the trigger mechanisms which would prompt the corrective actions.**

Response:

Details of Corrective Action Plans (CAP's) or trigger mechanisms have not been finalized as part of the EIS process. Monitoring and mitigation requirements have been summarized in Section 2.12.13.4, Tailings Disposal Facility, and Section 2.13.1, Water Resources Monitoring, of the final EIS. During the permitting process, the regulatory agencies would use the recommendations developed as part of the EIS to define the CAP's and trigger mechanisms. These plans and triggers would then become conditions of permit approvals.

Patenting

6.15.13 **Several letters were received requesting clarification on the patenting process. Others asked "what is the Proponents's status in the process?"**

Response:

BMGC and Crown Resources Corporation are in a joint venture to develop the Crown Jewel Project. The mining and mill site claims are in Crown Resources Corporation name. Subsequent to the development of the discussion used in Section 3.19.8, Patenting of Crown Jewel Project Mining Claims, of the draft EIS, Crown Resources Corporation received approval from the BLM for the first-half certificates of the "mining claims" for which patenting is sought. Although it appears that the Secretary of Interior is on a path to approving the final patents, the U.S. House of Representatives has recently reinstated an unconditional one-year ban on the issuance of new patents. The outcome of patenting is unclear pending various mining law reform proposals. The Budget Reconciliation Act (H.R. 2491) had produced the most comprehensive reform measure for mining law reform; however, President Clinton vetoed this bill. The budget reconciliation measure provided that patenting be preserved, but patents issued after the date of enactment would require the payment of a fair market value for the surface and grant the government a right of re-entry if the land is used for non-mining purposes.

Section 3.19.8, Patenting of Crown Jewel Project Mining Claims, of the final EIS discusses the potential for patenting of lode claims and mill sites underlying the Crown Jewel Project. If and until patents are actually issued, it is appropriate to retain the ownership status of these lands as "Federal" in the analysis.

6.15.14 **If the Proponent patents the land and receives ownership, how will this affect the proposed post mining land use?**

Response:

Patenting represents a change in land ownership from public to private land, as explained in Section 3.19.8, Patenting of Crown Jewel Project Mining Claims, of the final EIS. The Crown Resources Corporation has made application for patenting approximately 760 acres at the Crown Jewel Project site. This would involve 11 mining claims and 117 mill site claims. Long-term land use would probably be for wildlife mitigation (Section 2.12.19, Wildlife and Fish - Private Land Enhancement).

6.15.15 **What about the Proponent's additional claims encompassing about 9,000 acres in the area adjacent to the proposed Buckhorn mine. Does the Proponent plan to develop this area?**

Response:

The potential impact to the various resource areas for the identified alternatives is set forth in Chapter 4, Environmental Consequences, of the final EIS. Acreage to be disturbed by each of the action alternatives is set forth in Tables 2.7 through 2.12 of the final EIS. The projected disturbance area for all action alternatives is less than one thousand acres. The Proponent may control 9,000 acres (in the form of claim and private property in the region), but the Plan of Operations submitted by the Proponent portrays physical disturbance of less than one thousand acres. This situation is not atypical in the mining industry. In the search for minerals, companies would generally acquire (through purchase lease, or claim procedures) a large block of area from which the search for economically recoverable reserves would be based. The Proponent has defined a Crown Jewel Project that they believe is economically viable. If an expansion of that operation or a separate future operation is proposed, it would require

a separate NEPA and SEPA analysis and documentation. There is no proposal to expand the tailings facility to include tailings material from other ore bodies in the future.

The Proponent explained in an April 1996 letter to the Forest Service that the 9,000 acres referred to in their stock prospectus included all lands owned or controlled by the joint ventures, which is several thousand more acres than would be directly affected by development of the Crown Jewel Project facilities. The Proponent's letter went on to explain that the control of surrounding lands was for a variety of reasons such as to ensure access, create a safety and security buffer, or avoid conflicts with third parties.

Other Comments

6.15.16 **Although the fencing would prevent cattle from disturbing recently planted areas, is the idea practical and necessary. Why is so much area being fenced?**

Response:

The discussion presented in Section 3.12.7, Cattle Enclosures, of the Proponent's Reclamation Plan (BMGC, 1996f), states that cattle would be excluded from reclaimed areas until revegetation success standards have been attained. This approach is summarized in Section 2.11.4, General Reclamation Procedures, of the final EIS. The statement regarding controlled grazing refers to an accepted management practice which may be employed to achieve certain vegetation community diversity objectives. Termed "controlled" grazing, it can be assumed that it would only be used in the latter stages of vegetation establishment and where the benefits of the activity would outweigh the potential negative effects.

The only areas on federal lands proposed to be fenced are areas that would be disturbed/reclaimed. These include a safety buffer required around the Crown Jewel Project boundary and two wetland mitigation sites that logically fall within the Crown Jewel Project fence boundary. The Bear Trap Canyon wetland mitigation site would also be fenced as part of the mitigation plan. These fences are envisioned to be in place for about 16 years, or less, (from the initiation of construction) in all action alternatives except Alternative F where some fencing may be in place up to 39 years (see Section 2.12, Mitigation and Management).

The Forest Service would like to see a smaller area fenced than what the Proponent has proposed but recognizes that a certain amount of area needs to be fenced off for safety and that claim boundaries are a logical place to put the fence, where possible.

6.15.17 **How is it possible to have a "zero discharge" tailings disposal system? How will the tailings facility be monitored?**

Response:

The tailings facility for the Crown Jewel Project is designed as a "zero discharge" (closed circuit) system. That is, no discharge of effluent from the tailings facility would be permitted.

Solutions, which drain from the tailings pond, would be collected at the toe of the tailings embankment in a double-lined recovery solution collection pond and pumped back to the mill for recycling. Section 2.11, Reclamation Measures, has been expanded in the final EIS to discuss the recycling system during operations and after reclamation. Section 2.2.15, Tailings Liner System Design, of the final EIS discusses the tailings facility liner system. An analysis of the potential water quality impacts is presented in Section 4.7.3, Effects Common to All Action Alternatives, of the final EIS.

At reclamation, solutions still remaining on the tailings pond or in the recovery solution collection pond would be allowed to evaporate. Most likely evaporation would be completed during the dryer summer months. A sprinkler system may be installed on the tailings pond to aid in evaporation.

A detailed discussion of the tailings pond system is presented in Final Report, Tailings Disposal Facility (Golder, 1996a).

Monitoring of the tailings facility is described in Section 2.12.13.4, Tailings Disposal Facility, Section 2.13.1, Water Resources Monitoring, Section 2.13.3, Geotechnical Monitoring and Section 2.13.4, Geochemical Monitoring. Refer also to response 6.18.33 in this appendix.

6.15.18 **There is no mention of how runoff would be handled during and after reclamation of the tailings pond. What is the potential for the soils cap over the tailings pond to erode and possibly erode the tailings?**

Response:

As noted on pages 3-24 to 3-27 and 4-13 of the Proponent's Reclamation Plan, (BMGC, 1996f), available for review at the Tonasket Ranger District, U.S. Forest Service, "Sediment traps and diversion channels will be removed following successful establishment of revegetation sufficient to control erosion." Section 2.11.4, General Reclamation Procedures, of the EIS has been modified to reflect this. The tailings facility, after reclamation, would be sloped about 2%-4% to drain to the north and down an engineered structure to the nine acre wetland.

The potential for the three foot layer of coarse material and the soil cap over the tailings pond to erode, thereby exposing the tailings, is very low. This assumes that the proposed revegetation plan is successfully implemented and that vegetation establishment is successful the first two years prior to any high intensity precipitation event occurring. As noted on *Table 4.5.2, Summary of Mine Component Potential Erosion Rates by Alternative*, of the EIS, the estimated erosion rates from the surface of the tailings pond for all alternatives is 0.007 and 0.004 tons per acre per year for the one and five year time spans, respectively. Using the 0.004 rate, it would take 250 years to reach the USDA-NRCS soil loss tolerance of 1.0 ton per acre. One ton per acre of soil loss, in terms of soil thickness, is approximately equal to one-fifth the thickness of a dime. If it can be assumed that this essentially level site would easily achieve vegetative stability within this time-frame, there should be no potential for the soils cap over the tailings to erode.

6.15.19 **Justification for the preferred alternative (modified Alternative E) is needed.**

Response:

Upon review of new information and technical reports prepared after the draft EIS, Modified Alternative E was dropped as the Preferred (selected) Alternative. Please refer to the Record of Decision for a discussion of the Selected Alternative.

6.15.20 **What measures will be taken to reduce the infiltration of water into the waste rock storage piles or the tailings.**

Response:

Not all precipitation which falls on the waste rock disposal area(s) or tailings area can be prevented from infiltrating into these areas. However, with the implementation of the proposed reclamation plan, particularly resoiling, much of the water infiltration would be prevented (refer to Waste Rock Facility Seepage Analysis, Schafer and Associates, Inc., 1996a). As more vegetated growth is achieved, water infiltration

would decrease. The grading proposed for these areas would also enhance water runoff from the reclaimed areas rather than pooling.

During operations, water which accumulates on the waste rock disposal area(s) would be diverted, managed, and controlled by the drainage and sediment control system network. Where it interferes with operations, snow which accumulates on the waste rock disposal area(s) would be plowed over the edge, and, as temperatures rise, the snow will melt and the resulting water would flow to drainage and sediment control systems installed for the Crown Jewel Project.

Refer to Section 2.11, Reclamation Measures, and Proponent's Reclamation Plan (BMGC, 1996f), and to response 6.15.2 in this appendix.

6.15.21 **The Minnie Mine demonstrates the potential for cyanide and other harmful chemicals to enter the environment and is an example how the Forest Service follows through on mining operations and cleanup.**

Response:

The abandoned Minnie mill site has been successfully reclaimed. Lengthy study and monitoring at the site confirms that cyanide or heavy metals did not escape the heap liner or the process ponds during or after mine operation. Cyanide compounds were successfully detoxified during the cleanup and heavy metals in process waters and sludge were removed from the site. Only arsenic, which was naturally present in the ore remains in the treated ore heap material. This material was isolated with a soil layer and revegetated. Ground water monitoring to date has shown no evidence that arsenic is leaching from these materials.

Total cleanup costs at the Minnie Mine operation were much greater than the Forest Service reclamation bond. This is largely because the ultimate cleanup went well beyond that required when the operating plan was originally approved by the Forest Service and the permits issued by the WADOE. State requirements associated with the Model Toxic Control Act (MTCA), which was enacted after the fact, changed standards and other requirements and were not envisioned when the Minnie Mine was originally permitted. To avoid this situation with the Crown Jewel Project, the Forest Service would consider MTCA in developing mitigation and monitoring measures and would be a factor in developing state permits and financial assurances.

6.15.22 **The Forest Service made an arbitrary decision on the Crown Jewel Project early on when it assigned the Buckhorn area to commodity and commodity-wildlife management areas. For all practical purposes, this decision resulted in a violation of road density standards and guidelines.**

Response:

Management area decisions made in the Okanogan National Forest Land and Resource Management Plan (LRMP) were by the Regional Forester after a long planning and NEPA process involving substantial public outreach and comment. Due to the nature of mineral exploration and development, the Forest Service planning team was aware that some standards and guidelines, including road density, might not be reasonably met. In fact, it was known that many areas of the Forest would not meet the standards and guidelines at the time the LRMP was approved. Exploration activities were reviewed using project-specific NEPA analyses which were tiered to the LRMP.

6.15.23 **Reclamation should begin within two years of the opening of the mill instead of after mill closure. This is done in Nevada mines.**

Response:

Reclamation efforts would be ongoing from the start of the Crown Jewel Project, as described under Section 2.11.3, Reclamation Schedule, of the final EIS until completion of the Crown Jewel Project when the reclamation goals and objectives have been met. Some facility disturbance, such as the water pipeline, would be reclaimed as it is installed. Exposed soil which is not again going to be disturbed for several years would be seeded with a temporary erosion control seed mixture. The waste rock disposal areas would be reclaimed in three to five phases throughout the life of the Crown Jewel Project with reclamation of the first phase taking place within about three years of the start of milling.

6.15.24 **Based on the Proponent's reclamation plan, trees would be planted in clumps with open areas surrounding clumps of trees. These clumps, along with trees that established from local seed sources, are expected to show stocking densities of 200+ trees per acre after 100 years.**

Response:

Replanting trees in clumps would not meet Forest Service objectives of returning the reclaimed areas to their underlying management area in a reasonable time frame. Much of the Crown Jewel Project area was classified as Management Area 25, which has a primary emphasis on fiber production while considering other environmental resources.

6.15.25 **The amount of large woody debris that would be stockpiled for use in reclamation needs to be quantified. The USFWS recommends that the appropriate number, size, and species of debris logs, that would be necessary for reclamation, be quantified and that these resources be stockpiled during initial vegetation removal. This recommendation was provided in previous (USFWS) comments on the reclamation plan. Removing debris logs from nearby timber sales would be unacceptable.**

Response:

It is proposed to return approximately seven tons per acre of large woody debris to revegetated sites on federal lands. Under Alternative B, a replacement of 4,600-5,000 tons of large woody debris would be required by federal and state agencies. No more than 10% of this requirement could be met using stumps. Large woody debris would be stockpiled throughout the operation of the Crown Jewel Project to ensure there would be adequate amounts at the time of reclamation. This would likely be accomplished through stockpiling of cull and low value material in the first several years of clearing and stockpiling the remaining necessary material from clearing that occurred during the mid to later portions of the operation. Wood from outside the area being cleared would not be cut on Federal lands to provide the large woody debris component, unless purchased on the open market.

6.15.26 **The 100 years cited in the text for the reclaimed area to be restored to its natural productivity was disputed.**

Response:

A new surface soil base would be created by disturbing, storing, mixing, and then applying the salvaged soil. As such, one cannot expect conditions to return to pre-disturbance conditions quickly, but rather, it is expected to take a long period of time, 100 years or possibly longer, for the soils to develop and move toward a condition similar to pre-disturbance conditions. Adding amendments to the soil would help restore nutrients to the soil but does not necessarily duplicate all the conditions that existed prior to disturbance.

6.15.27 **What WACs apply to reassignment of WADNR lands to use by a private party? Is this loss of public lands mitigated?**

Response:

A trade of land of equal value would need to take place between the WADNR and the Proponent before the land can be utilized. RCW 79.08 and RCW 76.12 specify the conditions under which lands can be exchanged.

6.16 SOCIOECONOMICS

General

6.16.1 **General comments addressed topics such as history and future of mining in Okanogan and Ferry Counties, concern that socioeconomic impacts are understated, foregone opportunities associated with the "No Action" Alternative A, comparison with separate fiscal analysis prepared for Proponent, local procurement, and a variety of specific editing corrections or revisions. Other comments cited typos or requested minor clarifications.**

Response:

We appreciate the input of all those individuals, organizations and agencies who commented on the "socioeconomic" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Additional discussion is being provided in the final EIS regarding history and future of mining and the separate fiscal analysis conducted by the Proponent. Analysis of foregone opportunities as part of Alternative A is discussed in Section 4.26, Reservation of Project For Future Development.

Population, Housing & Land Use

6.16.2 **Comments covered questions regarding extent of a population influx and associated construction/operations housing needs, current inadequacy of housing and/or land use controls, potential for an active mine to cause some residents to leave, and potential effects on property values and tribal lands.**

Response:

Issues related to population influx beyond what might be supported directly and indirectly by the Crown Jewel Project, potentials for some existing residents to relocate and/or effects on property values are addressed in qualitative fashion as cumulative effects in the final EIS. Evaluation of housing needs is updated to reflect current (1996) conditions consistent with the draft EIS methodology in Section 4.19, Socioeconomic Environment, of the final EIS. No additional discussion of effects on tribal lands has been conducted as part of the socioeconomic evaluation, as these topics are covered elsewhere (e.g. Sections 3.17, Heritage Resources, and 4.16, Heritage Resources) in the final EIS.

Employment & Income

6.16.3 **A number of questions and comments relate to the assumed 80% local hire rates. Also addressed were questions regarding mining employment, need for added job opportunities, training programs for employees, use of profits, and effects of eventual mine closure.**

Response:

The term "local" is intended to cover persons who lived in the study area (or northeastern Okanogan or western Ferry County) prior to hiring and did not move to the area for purposes of seeking work at the Crown Jewel Project. This clarification is provided in Section 4.19.1, Summary, in the final EIS.

The final EIS includes a more detailed quantitative assessment of the effects of a range of local hire rates together with additional mitigation proposed by the Proponent. Clarification of questions regarding trends in mining employment, more current unemployment data, training programs, distribution of profits, and effects of eventual mine closure on area incomes and employment are addressed in more detail in Section 4.19, Socioeconomic Environment, in the final EIS, and supporting reports.

Community & Public Services

6.16.4 **Many comments indicated that effects on community and public services are not adequately addressed or documented. Topics of concern identified include schools, law enforcement, water, solid waste, recreation, roads, electrical power, social and health services, and effects to unincorporated areas.**

Response:

Updated (1996) information regarding the status of study area community and public service providers is provided in the final EIS in Section 3.20, Socioeconomic Environment, and Section 4.19, Socioeconomic Environment. Additional analysis of Proponent effects on solid waste/landfill operations, roads, and development capacity of unincorporated areas is also incorporated in the final EIS in Section 4.19, Socioeconomic Environment, in subsection "Community and Public Services."

Fiscal Effects

6.16.5 **Comments covered temporary duration of revenue increases, property tax implications associated with Alternative A, failure to address impacts to local, county, state and federal entities, and suggestions for ongoing financial monitoring or creation of a reserve fund. Will the local taxing jurisdictions become dependent on the income?**

Response:

Quantitative fiscal analyses have been revised to reflect updated budgetary conditions and Proponent provided data in the final EIS, including updated and more detailed assessments for local, county and state entities. Fiscal impacts to the federal government are not covered by the NEPA/SEPA process for the Crown Jewel Project EIS.

The degree to which local government jurisdictions would become dependent on income from the Crown Jewel Project depends on budgeting decisions of pertinent jurisdiction officials. The final EIS does indicate that other mining communities, including Ferry County, reportedly have experienced public agency funding problems when mines have curtailed or ceased operations because local governments had come to rely on mine-related revenues (see Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Fiscal Conditions").

Social Values

6.16.6 **Questions were raised that relate to the definition of socioeconomic groups, historical versus current social values, retention of Indian hunting and fishing rights, and documentation of Chesaw/Highlands community divisions.**

Response:

Additional discussion of social values issues (previously provided as part of separate socioeconomic background reports to supplement the draft EIS) is directly incorporated in the final EIS, in Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Social Values." Special attention was made in this section with respect to the clarification of retention of Indian hunting and fishing rights.

Quality of Life

6.16.7 **A number of often detailed comments covered the importance of quality of life and environmental protection to the local economy, desire to place an economic value on natural environment and quality of life amenities, wise use of natural resources, shift from dependence on natural resource industries, and need to better account for the high cost and cumulative effects of environmental degradation.**

Response:

Additional narrative discussion of socioeconomic implications for quality of life, environmental protection and wise use values is provided in the final EIS in Section 3.20.8, Social Values, and Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Social Values", together with a more detailed quantitative assessment of employment and incomes associated with natural resource industries versus other sources of economic activity. Techniques such as contingent valuation studies suggested to place an economic value of natural environment and quality of life amenities are beyond the NEPA/SEPA scope for the EIS. Additional narrative regarding potential long-term effect of environmental degradation is contained as part of the final EIS discussions of cumulative effects.

Tourism

6.16.8 **Some comments noted that tourism activity currently is important to the Chesaw/Highlands economy, and that potential losses of tourism associated with mining activity need to be addressed or mitigated.**

Response:

The final EIS contains both quantitative data and narrative to assess the current importance and potential effects of Crown Jewel Project Alternatives for tourism in Okanogan and Ferry Counties and more specifically for the Chesaw/Highlands area in Section 3.20.5, Income, and Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Income." This discussion is consistent with additional analysis provided for the recreation assessment in Section 4.14, Recreation, of the final EIS.

Health Care

6.16.9 **There were comments that remarked that EMTs cannot address the major trauma, respiratory problems, basic health care, and drug and alcohol related services that will be needed by Crown Jewel Project employees.**

Response:

The EIS did not mean to imply that EMTs would take the place of doctors or major trauma facilities. It is also not prudent to assume that the mine employees would develop drug and alcohol problems. Lifestyles suggested by this comment are consistent with traditional views of mining activity, but are changing as the workforce requirements of current mine operators are changing. Discussions with other comparable mines indicated little documentation of drug and alcohol related concerns.

Divided Community

6.16.10 There were comments which expressed concern that the Crown Jewel Project was dividing the community.

Response:

It is not within the scope of the EIS to try to reconcile differences of opinions between individuals. It would be up to the community leaders, county and city governments, and the Proponent to become good neighbors. As noted in the final EIS, in Sections 3.20 and 4.19, Socioeconomic Environment, it is important to find new common ground. Potential mechanisms for cooperative dialogue and planning are described in greater detail by the Affected Socioeconomic Background Report 1996 Update Crown Jewel Project (E.D. Hovee, 1996a), in Section 2.12.11, Socioeconomics and Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Social Values."

Agency Credibility

6.16.11 There were concerns about agency credibility and motivation.

Response:

We acknowledge the dissatisfaction of the commentor with the environmental review process as it has been perceived. However, the commentor's concerns about (1) agency credibility, political motivation, or performance to the commentor's expectation of time of review, and (2) issuance of public participation grants under the provisions of Initiative 97, are outside the scope of the Crown Jewel Project EIS.

Domestic Water Supply

6.16.12 What will be the effects on domestic water supplies?

Response:

Effects on domestic water supplies are addressed as part of the discussion of community and public services for both rural and incorporated communities. The draft EIS notes that "Difficulties in meeting water demands would be most pronounced if new housing for mine related households is developed outside of areas currently served by public or community water systems, particularly in the Chesaw/Highlands area." All of the incorporated communities have adequate water capacity (as of 1996) to serve additional residential development. Refer to Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Community and Public Services" and Section 3.9, Water Supply Resources.

Effects on Landfills

6.16.13 What will be the effects of the Crown Jewel Project on solid waste generated in the community and by the Proponent?

Response:

The Proponent would be responsible for recycling or off-site disposal of all controlled or hazardous materials in compliance with applicable state and federal regulations. Non-hazardous consumable materials would be either recycled (as area recycling programs become available) or transported to the appropriate local landfill. More specific estimates of the material to be landfilled as a proportion of Okanogan County waste are provided in the final EIS, Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Community and Public Services."

Sewage generated at the Crown Jewel Project would be treated on-site with an approved septic and drainfield system or a package treatment system. The Crown Jewel Project would not directly affect effluent in residential communities (from mine operations). Effects would be related to added housing and population within incorporated study area cities. These indirect effects are addressed in the final EIS with updated information, based on local jurisdiction wastewater treatment capacities, provided in the final EIS, Section 4.19.3, Comparative Effects Common to All Action Alternatives, subsection "Community and Public Services."

Historic Mining

6.16.14 What was the role and importance of mining in the study area?

Response:

Mining did play an important role providing employment in the early Caucasian settlement of Okanogan County prior to about 1920 but has not played a significant role as a proportion of the total local economy since. However, mining has played a more prominent continuing role in neighboring Ferry County, including Republic which is part of the study area.

The period 1861 (the earliest gold discovery in Okanogan County) to the early 1920s represents approximately 60 years of the last 130+ years of Caucasian settlement in Okanogan County. In Ferry County, commercially viable mining activities have continued to the present. WADNR indicates that there are five mining operations, including gold mines, currently permitted in Okanogan County.

Though often reported as a single employment category, United States census data makes it possible to separate mining from construction employment. Revised figures with graphs are included in the final EIS as *Figure 3.20.2, Employment Distribution for Ferry County*, and *Figure 3.20.3, Employment Distribution for Okanogan County*, and *Table 3.20.3, 1990 Labor Force and Employment Data*.

6.17 ACCIDENTS AND SPILLS

General

6.17.1 Many comments simply presented an opinion or view on various aspects of the accidents, spills, and toxics discussions in the draft EIS. In addition several comments cited the need for minor edits/clarifications in the text.

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "accidents and spills," and toxics aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Effects/Consequences of Release

6.17.2 The potential for cyanide and other harmful chemicals to enter the environment has been seriously understated.

Response:

The potential impacts of cyanide and other harmful chemicals entering the environment has been discussed in various portions of the EIS. Sections of particular note are Section 4.22, Accident and Spills, Section 4.12.4, Toxics, Section 4.6, Ground Water, Springs and Seeps, Section 4.7, Surface Water, and Section 2.12.4, Spill Prevention, Hazardous Materials, Fire Prevention and First Aid.

6.17.3 The consequences of a catastrophic tailings impoundment failure should be discussed in the EIS.

Response:

Section 4.22.2, Tailings Dam Failure, of the final EIS discusses the potential effects resulting from uncontrollable events of nature. These potential effects from catastrophic events are not expected to happen, but the consequences of such a failure are displayed.

6.17.4 Will the tailings liner system perform adequately and prevent the loss of solution into Nicholson and/or Marias Creeks?

Response:

Since the issuance of the Crown Jewel Project Mine draft EIS, the Proponent has revised the proposed tailing facility design to incorporate downstream construction of the tailings embankments and a double synthetic liner system, which would include a leak detection system. See discussion in Section 2.2.14, Tailings Embankment Design and Construction, and Section 2.2.15, Tailings Liner System Design, of the final EIS.

A seepage and attenuation study (Hydro-Geo, 1995b) conducted for the tailings facility concluded that, even during an extreme case of liner failure, potential contaminants would not reach any down-gradient springs, seeps, or flowing stream sections in concentrations any higher than the levels currently measured in Marias or Nicholson Creeks. Refer to Section 4.22.4, Other Types of Accidents, Section 4.6.3, Effects Common to All Action Alternatives, and Section 4.6.4, Effects of Alternative B, of the final EIS for a discussion of tailings liner leaks. Based on the leach tests conducted on the tailings solids, there would be no toxic effects to aquatic species.

6.17.5 What would be the impacts of an earthquake related failure of the tailings pipeline?

Response:

Any leakage from a failure of the tailings pipeline would likely remain in the pipeline ditch and would flow directly to the tailings impoundment.

Response and Cleanup

6.17.6 The EIS should include a "worst case" tailings pond failure scenario and the probable consequences of such an event.

Response:

Worst case analysis are extremely difficult to define and formulate, due to individual thoughts on what constitutes a hypothetical worst case. Throughout Chapter 4, Environmental Consequences, and specifically Section 4.22, Accidents and Spills, of

the final EIS, different impacts and effects are presented based on the scenario and action alternative components. In some cases, specifically Section 4.22, Accidents and Spills, the scenarios and effects presented could be considered worst case. Section 4.22.2, Tailings Dam Failure, discusses the potential effects resulting from uncontrollable events of nature including an earthquake induced failure and a dam breach by overtopping.

6.17.7 **Contingency plans should be developed to respond to failures from catastrophic events.**

Response:

Contingency plans have been developed to respond to failures. These plans are displayed in numerous places in the final EIS including Section 2.11, Reclamation Measures, Section 2.12, Management and Mitigation, Section 2.13, Monitoring Measures, Section 2.14, Performance Securities, Section 4.6, Ground Water, Springs and Seeps, Section 4.17, Transportation, and Section 4.22, Accidents and Spills.

The Proponent will be required to have prevention and response plans on file prior to the commencement of mining and milling operations.

Other Comments

6.17.8 **A hazardous waste management plan has not been presented.**

Response:

The Washington Metal Mining and Milling Operations Act (Chapter 78.56 RCW), requires that a Pollution Prevention Plan (Voluntary Reduction Plan as defined by RCW 70.95C.200) be prepared to identify hazardous substances used and hazardous waste generated, and that such a plan analyze opportunities for their reduction, recycling, and treatment (refer to Section 2.12.4.1, Spill and Handling Plans.) The plan would be required by September 1 following the first year that the Crown Jewel Project generated hazardous wastes or that it was required to report hazardous substances under Section 313 Title III of the Superfund Amendments and Reauthorization Act (SARA). There are no regulatory requirements to prepare a hazardous waste management plan prior to that time.

6.17.9 **The draft EIS does not discuss on-site fuel and hazardous materials storage, including containment design and cleanup.**

Response:

The Proponent will be required to have prevention and response plans on file prior to the commencement of mining and milling. See Section 2.12.4, Spill Prevention, Hazardous Materials, Fire Prevention and First Aid, and Appendix B - Agency Responsibilities (Permit and Approvals), in the final EIS. The final details of these plans are permit requirements and can not be determined until a selected alternative is chosen.

6.17.10 **"The concern that we have is if there is a cyanide spill and the word gets out - no matter how minute the spill is, we feel that the property value of the (Okanogan) highlands would be diminished greatly. As a property owner this is a grave concern. We would like to know what protection as property owners we would have?"**

Response:

The handling, transportation, use, and monitoring of all hazardous material is covered in great detail in Section 2.12.3, Cyanide and Other Chemicals, Section 2.12.4, Spill Prevention, Hazardous Materials, Fire Prevention and First Aid, and Section 4.22,

Accidents and Spills, and is common to all action alternatives. A spill of any amount would be covered in a Spill Prevention Control and Countermeasures Plan (SPPC), as required under EPA 40 CFR Part 112. But this plan, or any document that it is contained in, is not intended in any way to circumvent the Civil Damage Laws of the land. Any damage to person, or property or the value of same, would be a civil matter to be determined in the proper Civil Courts.

6.17.11 **The draft EIS fails to give a thorough and complete risk analysis of the Crown Jewel Project.**

Response:

Chapter 4, Environmental Consequences, of the final EIS is dedicated to the analysis and presentation of potential effects of the Crown Jewel Project. Risk assessments are an integral component of the Biological Assessments and Biological Evaluations conducted by the Forest Service for Threatened, Endangered and Sensitive Species and are included in Appendix H, Wildlife Biological Assessment and Biological Evaluation, Appendix I, Fisheries and Aquatic Habitat Biological Evaluation, and Appendix J, Biological Evaluation for Proposed, Endangered, Threatened, and Sensitive Plants. The potential for harmful chemicals to enter the environment has been discussed in Section 4.22, Accidents and Spills, in the final EIS. Reclamation and remediation performance securities will be held by the agencies to address potential risks from the Crown Jewel Project, as addressed in Section 2.14, Performance Securities, of the final EIS.

6.17.12 **The draft EIS fails to discuss the potential impact of failure of Crown Jewel Project facilities, such as the tailings facility and waste rock disposal areas.**

Response:

Potential effects of the failure of the tailings facility are discussed in responses 6.17.3 and 6.17.4 in this appendix.

Potential effects of the failure of the waste rock disposal areas are discussed in Section 4.4.3, Effects Common to All Action Alternatives, subsection "Waste Rock Disposal Areas" of the final EIS.

Potential effects of the failure of the Starrem Reservoir are discussed in Section 4.22.1, Water Reservoir Rupture, of the final EIS.

Potential impacts of a failure of the pit lake are not considered based on the physical setting of the proposed lake within the confines of the excavated pit.

6.17.13 **The EIS should elaborate on the construction of cyanide containers and the safety statistics of cyanide transport.**

Response:

Most containers containing solid cyanide in the past have been "Flo-bins,"™ which are used to transport a solid (briquette) form of cyanide and are double-walled, stainless steel containers designed to withstand damage, leakage, and/or water contamination (refer to Section 4.22.3, Transportation Spill). Another recent transport containerization method is DuPont's Excel II method of delivery which transports dry cyanide to the site in a double-walled, stainless steel tanker also designed to withstand damage, leakage, and/or water contamination in an accident. Water is added to the cyanide on-site before pumping it into a holding tank.

Safety statistics on cyanide transport can be found in the final EIS in Section 4.22.3, Transportation Spill, and response 6.14.5 in this appendix. DuPont has shipped approximately three billion pounds of cyanide throughout the world without incident

(Whitworth, 1994). DuPont has shipped 20 million pounds of sodium cyanide to mines in the state of Washington since 1989 without any transportation incidents.

6.17.14 **There were several concerns about the tailings pond embankment failure which occurred in Guyana, S.A. and any tailings pond embankment failures that might have occurred at any of the Proponent's other mining operations.**

Response:

The Proponent has no connection to the Omai gold mine operation located in Guyana, South America. The Omai operation is an open pit mine and processes approximately 12,000 (metric) tons of gold ore per day. The Proponent has proposed to process approximately 3,000 tons of gold ore per day. The Omai operation uses a carbon-in-leach mill, which is larger but similar to the metallurgical process planned for the Crown Jewel Project. In August of 1995, the Omai tailings dam failed and released an estimated 600 million gallons of fluid containing approximately 25-30 ppm cyanide into a nearby river system. There were no reported human fatalities as a result of the accident, but there were aquatic and terrestrial wildlife deaths. The Omai tailings dam was constructed on sand and laterite. (Laterite is a highly weathered red subsoil that develops in a warm tropical climate.) The proposed Crown Jewel Project tailing(s) embankments (in either the Marias and Nicholson Creek drainages) would be "keyed" into bedrock material, which is of a "hardrock" nature versus the sand and/or laterite at the Omai site. In addition, the Omai operation is located in a semi-tropical rain forest that receives over 100 inches of annual rainfall, most of which occurs in July and August. The region around the proposed Crown Jewel Project does not receive torrential tropical rains. In addition, we understand that the Omai operation does not have a cyanide destruction prior to tailings disposal, while the Proponent plans to install an INCO SO_2/Air/Oxidation cyanide destruction process at the Crown Jewel Project. The Forest Service and WADOE have discussed the potential effects of a Crown Jewel Project tailings facility failure in Section 4.22.2, Tailings Dam Failure, of the final EIS. Section 4.17, Transportation, and Section 4.22, Accidents and Spills, of the final EIS also present a discussion of potential impacts from cyanide release.

To our knowledge, no tailings pond failure has occurred at any of the Proponent's operations. The United States has the most stringent regulations in the world, and they are enforced. The WADOE, Dam Safety Division, would not approve permits for the tailings facility unless they meet the stringent state of Washington regulations.

6.17.15 **The Proponent should be financially liable for any accidents and/or spills on public transportation routes.**

Response:

The transporter (carrier) of chemicals/materials would be financially responsible for accidents or spills on public transportation routes. Transporters are required to have insurance for accidental releases. For example, DuPont is self-insured for accidental release costs up to one million dollars. They carry insurance for costs over one million dollars.

6.18 MISCELLANEOUS

General

6.18.1 **There were several thousand comments received as "form" letters which expressed either support or opposition to the Crown Jewel Project. Other comments suggested editorial changes, requested text clarifications, cited typos, or expressed opinions not requiring a specific response.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on "miscellaneous" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

EIS Content and Preparation

6.18.2 Why haven't details of the monitoring and mitigation plans been presented in the EIS.

Response:

Mitigation and monitoring measures for Federal lands and permits are presented in Chapter 2, Alternatives Including the Proposed Action, of the final EIS. A Record of Decision will be issued for the Federal actions proposed for the Crown Jewel Project, and additional mitigation and monitoring could be included in the Record of Decision. The State of Washington does not issue a Record of Decision for the final EIS, but rather issues its decisions as part of their permitting process which may result in additional mitigation and monitoring requirements as a part of the various state permits.

6.18.3 Why isn't there a discussion of the various required permits, the permitting process, and public involvement in that process?

Response:

A discussion of the required permits for the Crown Jewel Project is presented in Section 1.8, Permits and Approvals Needed, of the final EIS. A list of the permits and approvals is presented on *Table 1.1, List of Tentative and Potential Permits and Approvals*, of the final EIS. A more detailed discussion of each permit and approval is presented in Appendix B, Agency Responsibilities.

As discussed in the previous response, the EIS (and subsequent Records of Decision) are not decision documents for State and local agencies. Each state and local government permit listed in *Table 1.1, List of Tentative and Potential Permits and Approvals*, of the final EIS has its own approval process, which may include public hearings and comment periods. Details of these processes are available for public review at the appropriate county or state offices.

6.18.4 Why were there so many alternatives in the draft EIS and what was the rationale for how the components were combined? An alternative that is better than Alternative B needs to be analyzed in order to fulfill NEPA requirements. The lead agencies are required to give the rational behind preferred alternative selection.

Response:

Chapter 2, Alternatives Including the Proposed Action, explains the alternative selection process and reasoning. The National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA) require that a number of reasonable alternatives be considered, but provides no limit to the actual number to be considered. It is important to remember that, by providing alternatives for comparison, the various impacts to the environment can be either eliminated, lessened, or mitigated.

NEPA and SEPA require that alternatives to the proposed action be developed so that a reasonable range of alternatives are displayed. Alternatives C through G develop a reasonable range, and meet the purpose and need to greater and lesser extent. The draft and final EIS documents acknowledge that some components of some of the alternatives are less economic. These components were used in some of the alternatives because of significant public interest, expressed during scoping, in evaluating the environmental effects of these less economic components.

Reasonable alternatives under SEPA are those that attain or approximate the objectives of the proposal, but at a lower environmental cost or with less environmental degradation. Thus, the objective of a proposal determines whether an alternative is available and reasonable. In this case, the objective of the proposal is determined in large measure by the Proponent in contrast to, for example, an agency-originated proposal for a planning or public works project. The Proponent seeks to develop a commercially viable mine and mill facility under the Mining Law of 1872, as amended. Some of the alternatives developed for the EIS contain elements that a prudent investor might avoid because of the effect of those elements on the commercial viability of the Crown Jewel Project. An alternative which would not be prudently undertaken due to commercial non-viability would not meet the objective of the proposal.

As noted above, some alternatives were fully developed in response to public interest, particularly in pursuit of lower environmental costs or less degradation; furthermore, commercial feasibility is partly dependent on technology and the price of gold, so it is prudent to consider, to a limited extent, alternatives that may not presently appear commercially viable but might become so with changes in circumstances. In view of these considerations, the Forest Service and WADOE believe the resulting range of alternatives is reasonable. The analysis shows in some cases that some of these more costly options resulted in greater environmental effects for some resources. These are factors that the decision makers will weigh then selecting the final alternative.

NEPA does not require an infinite combination of alternatives nor the development of "unreasonable" alternatives. Development of an alternative that would use all of the most costly, least environmentally damaging components would have resulted in an alternative that was clearly economically infeasible, and therefore "unreasonable" by the NEPA definition. Each of the alternatives that were developed provides specific tradeoffs for different resources. Alternative components that may be beneficial for one resource may be harmful for another resource. The NEPA Selected Alternative provides the best mix of components to minimize impacts to the environment while meeting the purpose and need for the Project to respond to the Proponent's proposal while protecting environmental resources. The draft EIS did evaluate several alternatives that contained components that may be considered currently economically infeasible in order to respond to significant public interest.

The rationale for the determination of the Selected Alternative will be included in the Record of Decision.

6.18.5 **What are the responsibilities of the lead agencies? What is the relationship between the lead agencies, the third party contractor, and the Proponent concerning the preparation of the EIS? The document does not disclose which preparers were paid directly by the Proponent.**

Response:

The lead agencies for the Crown Jewel Mine EIS (Forest Service and WADOE) have overall and final responsibility for the content and preparation of the EIS.

The NEPA regulations have always provided for the option of a third party contractor in the preparation of an EIS. The latest version of the NEPA regulations, dated 1986 (prior to the Forest Plan) states that "...any environmental impact statement prepared pursuant to the requirements of NEPA shall be prepared directly by or by a contractor selected by the lead agency...It is the intent of these regulations that the contractor be chosen solely by the lead agency...to avoid any conflict of interest. Contractors shall execute a disclosure statement prepared by the lead agency...specifying that they have no financial or other interest in the outcome of the project...the responsible Federal

official shall independently evaluate the statement prior to its approval and take responsibility for its scope and contents." [1506.5(c)].

In the case of the Crown Jewel Project (as opposed to the Forest Plan), a third party contractor was needed to provide the Forest Service with special expertise that was unavailable on the Okanogan National Forest staff. The WADOE agreed to have the Forest Service manage the preparation of the EIS and hire the third party contractor while maintaining joint responsibility with the Forest Service for the content of the EIS.

TerraMatrix was selected by the lead agencies to provide the special expertise and signed statements specifying that they have no financial or other interest in the outcome of the Crown Jewel Project. The lead agencies have an interdisciplinary team who reviewed all documents produced for the Crown Jewel Project for adequacy, content and accuracy. Technical documents have also been peer reviewed by agency personnel. Any documents prepared by the third party contractor that were considered biased or otherwise lacking were sent back to the contractor for rewrite.

Reports prepared by the Proponent are noted as such on the title pages. All information supplied by the Proponent or their contractors has been peer reviewed by agency specialists or third party contractors and the reviewers are identified in background documents.

The Proponent pays all invoices from the third party contractor.

Alternatives and Project Components

6.18.6 **Other locations besides headwaters of streams should be evaluated for potential tailings sites.**

Response:

The siting study for the tailings facility was re-examined to determine if potential sidehill or dry upland locations existed that could be suitable for the disposal of the amount of tailings material projected. This re-examination is documented in Section 2.2.13, Tailings Disposal Locations and in the report titled Technical Memorandum Review of Off-Site Upland and Side-Hill Tailings Disposal (TerraMatrix, 1996). The screening criteria used to re-examine this issue is as follows:

- A ten mile radius around the proposed mine pit was established as the initial boundary for the investigations.
- Physical restrictions within the ten mile area were identified, i.e., Canadian border, Myers Creek, Beaver Creek, and Toroda Creek. These physical constraints established a refined investigation area.
- Within the refined investigation area, the areas exceeding 30% slope, the area between 10% and 30% slope, and the area of less than 10% slope were identified.
- Areas with slopes between 10% and 30% were further reviewed to identify potential side-hill tailings impoundment locations and a conceptual impoundment layout adjacent to the proposed pit in the Marias Creek drainage was superimposed onto the topography. This resulted in an extremely long narrow impoundment snaking along the hillside, while the total disturbed area to incorporate the back slope into the hill and to establish the embankment on the outslope was far more than the proposed tailings area.

- Areas with slopes less than 10% were examined for potential tailings sites. The areas large enough to contain the required amount of tailings material were typically located next to Beaver Canyon or Myers Creek and provide no major environmental advantage over the proposed sites in the Crown Jewel Project area, or were located on ridgetops and were not suitable.

Results of additional tailings siting screening are presented in Appendix K, Tailings Site Selection Report, of the final EIS.

6.18.7 **There were requests to analyze alternative ore processing methods.**

Response:

Section 2.2.8, Ore Processing Methods, of the final EIS presents a list of potential ore processing methods and the rationale for the methods selected for further study in the EIS.

6.18.8 **There were requests to consider pressure oxidation as a method of gold processing.**

Response:

Pressure oxidation (autoclaving) is a process used to pre-treat refractory ores. Refractory ores are those whose geochemical and metallurgical properties impede the recovery of their valuable mineral constituents without some sort of pre-treatment. With pressure oxidation, the ore is "oxidized" with heat and pressure to alter the chemical makeup of the sulfides, thereby increasing the ability of cyanide to contact and dissolve the gold values in the rock.

The Proponent conducted metallurgical tests and determined that the Crown Jewel Project ores do not require this pre-treatment to recover acceptable levels of the gold.

6.18.9 **Incorporation of flotation or other non-cyanide processes could increase yields from low grade ores. Additional milling processes may increase the feasibility of some alternatives.**

Response:

See Section 2.2.6, Ore Processing-Crushing, Section 2.2.7, Ore Processing-Grinding, and Section 2.2.8, Ore Processing Methods, of the final EIS for discussion of the processes and selection rationale.

6.18.10 **Costs were given as the reason to consider only on-site processing of tailings, yet no economic analysis of these costs were presented.**

Response:

Please refer to Section 2.2.9, Off-Site Processing, and Section 2.2.13, Tailings Disposal Locations of the final EIS. Also, refer to report entitled Technical Memorandum, Review of Off-Site Upland and Side-Hill Tailings Disposal (TerraMatrix, 1996).

6.18.11 **The draft EIS offers no comparative analysis of INCO SO_2/Air/Oxidation process with other processes and does not disclose potential problems or track record for the INCO SO_2/Air/Oxidation process.**

Response:

Please refer to Section 2.2.11, Cyanide Destruction, and *Table 2.2, Summary of Cyanide Treatment Processes*, of the final EIS.

6.18.12 **Alternative C should be considered without the quarry atop Buckhorn Mountain (that rock could be obtained by the Proponent elsewhere). Waste rock, rather than quarry rock, should be used to backfill the mine and seal the adits.**

Response:

It would be more economical and cause less environmental impacts to use quarry rock from the top of the mountain than to create haul roads to transport waste rock from the underground mining adit to the top of the mountain where it would have to be crushed and stockpiled for use.

The rock quarry location was selected based on rock availability, location relative to the operation, and general logistics to supply the underground workings through vertical shafts. Moving or eliminating the quarry only transfers potential impacts and adds to the operational logistics of the alternative, such as transportation.

6.18.13 **Note that Alternative C is the only alternative with low ratings altogether, making it an attractive option worthy of in-depth comparative analysis and economic feasibility studies.**

Response:

Although there were questions about the feasibility of Alternative C in meeting the Proponent's goal and objectives, it was fully developed for the EIS to respond to significant public interest. Under SEPA, decision makers have the option of conducting additional economic analysis to use in decision making. A pre-feasibility economic comparison of all action alternatives was performed in 1995. Please refer to Section 4.21.3, Economic Analysis of the Alternatives, for a comparison of Alternative C against other action alternatives. Refer also to response 6.18.4 in this appendix.

6.18.14 **Why has there been no consideration of an underground mine with the ore shipped off site?**

Response:

There are enumerable ways to combine components to form alternatives. The ones presented in the Crown Jewel Project EIS are believed to cover the range of the issues, concerns, and criteria developed during scoping. Refer also to response 6.18.4 of this appendix.

6.18.15 **The draft EIS states that Alternative G would have the least short-term visual impacts. This is not true. Minimizing visual impacts is just one of many advantages of Alternative A.**

Response:

The scenic impacts of Alternative G have been rewritten for the final EIS to better clarify the impacts.

6.18.16 **Alternative shift schedules should be researched and factored into the assessment.**

Response:

The Proponent projected that approximately 144 employees would be required during the operation phase based on a 24-hour per day operation. Varying the shift schedules to three 8-hour shifts from two 12-hour shifts would not significantly change the associated impacts. The largest difference would be in the number of vehicles needed to transport employees. If a 75% participation rate in busing is assumed, then the average daily traffic (ADT) would increase by 42 vehicles for a three shift operation.

6.18.17 **Alternative C would clearly have the least impacts on surface and ground water in both the Myers Creek and Toroda Creek watersheds. There is not enough information in the EIS to fully evaluate Alternative C.**

Response:

Considerable time and effort was put in to exploring options and formulating the Action Alternatives. This formulation process is described in Section 2.1, Formulation of Alternatives, of the final EIS. All of the action alternatives have been adequately presented and discussed in Chapter 2, Alternatives Including the Proposed Action, and Chapter 4, Environmental Consequences, of the EIS. A more in depth evaluation for Alternative C would be difficult because the exact location of underground adits and drifts is not currently known. From information reasonably assumed, the impacts of Alternative C on surface and ground water on Buckhorn Mountain would be similar to, but slightly less than other action alternatives.

6.18.18 **Not enough mining or non-mining alternatives were considered. State of the art mining techniques were not used.**

Response:

There were six action and one non-action alternatives presented. This is well within the EIS scoping parameters. Refer also to responses 6.18.4, 6.18.14 and 6.18.17 in this appendix.

A full range of current mining and milling techniques are analyzed and displayed in Chapter 2, Alternatives Including the Proposed Action, of the final EIS. Final design requirements of the facilities would be based upon these and other findings of the document as well as regulatory requirements and would be established in the various permits to be issued thereafter. Non-mining alternatives are beyond the scope of the EIS (except the No Action Alternative) because they do not meet the purpose and need to respond to the Proponent's proposal.

6.18.19 **Dewatered tailings disposal should have been considered as a valid alternative.**

Response:

Section 2.2.12, Tailings Disposal, of the final EIS presented both advantages and disadvantages of this disposal method. Based on that analysis, the dewatered tailings option was eliminated from further detailed consideration.

6.18.20 **Open pit mining is defined as a method that uses a sequenced set of operations to maximize recovery of ore. The preferred alternative disrupts this sequence. No where in this section are economics discussed.**

Response:

It is not believed that the preferred alternative (Alternative E Modified), as displayed in the draft EIS, would change the amount of ore that would be recoverable. However, it may change the economics of the recovery. It should be noted that the "Alternative E Modified" has been dropped from consideration in the final EIS. Economics are included in Section 4.21, Mining Economics, of the final EIS.

6.18.21 **The Proponent plans to collect and route stormwater from the mine into the tailings, yet tailings rely on net evaporation of thin layer deposition design.**

Response:

In their NPDES/State Waste Discharge Applications (BMGC, 1996g), the Proponent currently proposes to collect stormwater from the mine pit, mill area, waste rock disposal areas, roads, tailings impoundment, and ancillary facilities and route it to the

sediment traps for treatment and future releases to drainages. The tailings pond is characterized as a net evaporation area. However, water is not expected to evaporate during storm events and the tailings facility management and tailings beach design account for possible stormwater inflows.

6.18.22 **"The draft EIS Alt.B projects a similar steep-angle S.Waste Rock Pile with its base 600 ft. from the proposed tailings impoundment, and stormwater diversion channels engineered to only ten-year/24-hour storm events (two inches precipitation in 24 hrs.); this is insufficient engineering to ensure that the tailings impoundment would not be flooded--and impoundment integrity compromised--by storm water runoff from waste rock."**

Response:

The diversion channels are designed to convey the 100-year, 24-hour storm without over-topping.

The sediment traps have been designed to contain the run-off volume of the eight-year, 24-hour peak spring snow melt, the estimated volume of one year of accumulated sediment, and the total volume of the ten-year, 24-hour storm. Additional capacity has been furnished to provide a minimum of one foot of freeboard at peak discharge.

6.18.23 ***Figure 2.2, Waste Rock Disposal Area Options*, of the final EIS depicts the waste rock disposal options for the Crown Jewel Project. We realize that some of the waste rock disposal options are limited by criteria such as slope stability etc.; however, the figure indicates that there may be some flexibility on the boundaries of some of these disposal areas.**

Response:

Yes, there could be some flexibility on the boundaries of the waste rock disposal sites. A varying arrangement of waste rock disposal sites have been provided in the EIS action alternatives and are displayed in Section 2.2.5, Waste Rock Disposal, of the final EIS.

6.18.24 **Please provide a clear indication of how much of Marias Creek would be directly displaced by the various tailings impoundment alternatives. In addition address the area of direct and indirect impact of the proposed water collection system below each tailings impoundment.**

Response:

Please refer to Section 4.7, Surface Water, Section 4.10.11, Waters of the United States, and *Table 2.15, Summary of Impacts by Alternative for Each Issue*, of the final EIS. *Table 2.15, Summary of Impacts by Alternative for Each Issue* and *Table 4.10.3, Wetlands Impacted by Mining Operations*, display the lineal feet of stream directly impacted by each alternative. The impacts to Marias Creek are from the tailings facility.

6.18.25 **There were concerns on the possibility of nighttime blasting.**

Response:

The Mine Safety and Health Administration (MSHA) rules and regulations specify that all surface mine blasting would be conducted during daylight hours. Special permission must be requested for nighttime blasting.

6.18.26 **The final EIS should clarify why both the effluent from the gravel overdrain for the dewatering tailings and the underdrain system for ground water underflow would both discharge to the recovery solution collection pond.**

Response:

The gravel overdrain system for tailings dewatering and the ground water underdrain system are separate systems as implied by the description. The Proponent has revised the liner and leak detection system as described in revised Section 2.2.15, Tailings Liner System Design, of the final EIS. Since there would now be two synthetic liners with an intermediate leak detection system, the underdrain would be allowed to discharge to the natural drainage. The overdrain and leak detection system drain would discharge to the recovery solution collection pond.

6.18.27 **Underdrains should be constructed under the waste rock piles to prevent potential springs and seeps from contacting potentially acid-generating materials.**

Response:

If springs or seeps are encountered during topsoil removal and site preparation, underdrains would be installed to convey this water under the waste rock storage areas. Refer to Section 2.12.6.1, Geotechnical Stability, and Section 4.6.3, Effects Common to All Action Alternatives, subsection "Waste Rock Disposal."

6.18.28 **Page 4-42, Column 2, Paragraph 5, of the draft EIS states that the selective placement of potentially acid-generating waste rock would probably not be feasible.**

Response:

This paragraph refers to backfilling the pit with waste rock rather than constructing waste rock disposal areas where selective handling would be possible and is required under the Washington Metal Mining and Milling Operations Act and Forest Service and BLM Guidelines.

6.18.29 **The final EIS should state what methods would be used to prevent the pit from filling with water after mining, if that was decided to be used as a mitigation measure.**

Response:

Response strategies identifying corrective actions and financial security appropriate to accomplish the corrective actions can be found in mitigation measure 2.12.13.5, Pit Lake.

6.18.30 **The final EIS should clarify how partial or complete backfill of the open pit would result in an irretrievable loss of gold resources.**

Response:

The ability to remove the backfill is not based on technology but rather on economics. The irretrievable loss of gold resource due to backfilling is based on the assumption that future re-mining would not be conducted in a backfilled pit due to the economics of recovering high strip ratio (ratio of tons of waste rock to tons of ore) material.

The Proponent has stated that approximately 3.5 million tons of additional ore could be mined, if the market price of gold reached $800 per ounce. Should gold prices rise significantly so that mining of this additional ore would become economical, that proposal would require a separate environmental analysis since it is not proposed or reasonably foreseeable at this time.

6.18.31 **Most of the studies were completed for Bolster and Chesaw, and very little, if any consideration was taken for the east side of the mine -- basically Pontiac Ridge and Toroda Creek.**

Response:

The EIS considered impacts to all areas potentially affected which included both Myers and Toroda Creek drainages. Impacts discussed specific to Pontiac Ridge were mostly related to transportation, noise, and wildlife impacts. No hydrologic impacts are predicted for Pontiac Ridge.

Regulatory Compliance

6.18.32 **Is the proposed Crown Jewel Project in compliance with the Washington Metal Mining and Milling Operations Act concerning the siting of the tailings pond? What about other provisions of the Washington Metal Mining and Milling Operations Act such as air quality baseline and pre-construction ambient monitoring?**

Response:

A Tailings Site Selection Report has been completed in compliance with the Washington Metal Mining and Milling Operations Act, Chapter 78.56 RCW. The Site Selection Report is presented in Appendix K, Tailings Site Selection Report. The Act stipulates that all proposed metal mining and milling operations must comply with all provisions of the Act prior to approved permits being granted by either the WADNR or WADOE. Refer to response 6.1.10 in this appendix, concerning air quality.

6.18.32.1 **What are the permitting requirements concerning air quality for this project? What about the drift of fugitive dust outside the project boundaries?**

Response:

The concentrations of toxic elements contained in the fugitive dust at the Crown Jewel Project boundary are shown in the final EIS in *Table 4.1.6, Alternative B Modeled Ambient Air Quality Impacts - Criteria Pollutants*. In order for WADOE to approve a Notice of Construction air quality permit, state regulations require a demonstration that emissions from the source are sufficiently low to protect human health and safety. One way of satisfying this requirement is to show that concentrations of toxic air pollutants predicted at the point of compliance are less than Acceptable Source Impact Levels (ASIL) published in the regulation (WAC 173-460). WADOE has stated that, for the Crown Jewel Project, the fence line is the appropriate point of compliance. In May 1996, the Proponent expanded the area within the fence line compared to the original fence location displayed in the draft EIS. Expanding the fenced area affects other issues in addition to air quality such as range allotments. The expanded fenced area has been accepted by the agencies involved.

6.18.33 **Does the proposed Crown Jewel Project have to comply with National Pollution Discharge Elimination System (NPDES) regulations? What is meant by "zero discharge"? What is the numerical threshold for determining how much water pollution from the waste rock disposal area(s) would cause a significant surface water quality impact?**

Response:

A NPDES permit is required for discharges of pollutants to waters of the United States. The NPDES permit is listed in *Table 1.1, List of Tentative and Potential Permits and Approvals*. It is also discussed in Appendix B, Agency Responsibilities (Permits and Approvals).

"Zero discharge" means that no discharge would be permitted from the tailings facility.

WADOE would consider water quality degradation beyond background or state water quality standards significant.

6.18.34 Does the proposed Crown Jewel Project have to comply with Washington Storm Water regulations?

Response:

Yes, the Crown Jewel Project would have to comply with all applicable county, state, and federal regulations. Section 4.6.4, Effects of Alternative B, subsection "Drainage Control," has been revised accordingly. Refer to response 6.18.22, in this appendix for additional information about the Proponent's stormwater control facilities design and the report Conceptual Design Report Diversion Channels and Sediment Traps, Crown Jewel Project (Golder, 1996d).

6.18.35 Does the proposed Crown Jewel Project have to comply with Washington On-Site Sewage Disposal regulations? If so, where are the plan details? Where is the impact analysis?

Response:

Yes. This approval is listed on *Table 1.1, List of Tentative and Potential Permits and Approvals*. It is also discussed in Appendix B, Agencies Responsibilities (Permits and Approvals). Section 2.2.24, Sanitary Waste Disposal, states that either Septic Tank - Leach Field or Package Sewage Disposal Plant would meet state and local standards and protect water quality. Actual siting and design details are a permit issue and are not within the scope of the EIS. The effects of installing a sewage disposal system are displayed in Section 4.6.3, Effects Common to All Action Alternatives, of the final EIS.

6.18.36 If the tailings are designated as solid or dangerous waste, why are they proposed to be placed on or near a creek? This would appear to be in violation of Washington solid and dangerous waste regulations.

Response:

Dangerous waste information provided by the Proponent does not indicate that the tailings would be characterized as dangerous waste under applicable state dangerous waste rules. As a matter of caution, additional bioassays of the tailings were conducted since the draft EIS. Refer to mitigation measure 2.12.13.3, Cyanide Destruction, for additional assurances required of the Proponent prior to and during operations. If the tailings had designated as dangerous waste, they would have to be disposed of in a authorized waste management facility permitted under state dangerous waste management laws. Disposal of dangerous waste through discharge to the tailings facility without the necessary disposal facility permits would constitute a potential significant adverse impact warranting further environmental review under SEPA. However, the bioassays did not produce new information indicating that the tailings would designate, so no additional environmental review was undertaken. A discussion of the bioassay documentation can be reviewed in Section 3.3.3, Geochemistry.

The mill tailings meet the definition of solid waste as described in Chapter 173-304 WAC, the Minimum Functional Standards for Solid Waste Handling (MFS). However, the MFS contains an exclusion for "liquid wastes whose discharge is regulated under federal, state, or local water pollution permits" (Chapter 173-304-015(2)). Therefore, the local standards referenced in the comment would not apply to the Crown Jewel Project tailings impoundment, as it would be regulated by a NPDES/State Waste Discharge Permit issued by the WADOE. The Washington Metal Mining and Milling Operations Act specifies that "all known available and reasonable technology" (AKART) be used to limit concentrations of potentially toxic materials.

Waste designation characterizes the qualities of waste produced by the proposed ore milling process. However, the character of these mill tailings is still relevant to the environmental review process to the extent that their discharge bears on the environmental impact of the tailings facility, which is discussed in Chapter 4, Environmental Consequences, of the final EIS.

6.18.36.1 Concern was expressed about whether Nicholson Creek would be used as a mixing zone and that the Proponent should be required to meet effluent limits without a mixing zone. Also, another comment stated that Marias Creek should not be used as a tailings impoundment underdrain to collect leaks. Another comment indicated that a NPDES permit should be required because discharges to ground water will eventually reach surface waters or wetlands.

Response:

The Proponent may be entitled to the use of a mixing zone in accordance with WAC 173-201A, Washington's Water Quality Standards for Surface Water. This determination is made as a part of the permit application review. Before a mixing zone is granted, WADOE must find that the discharger has applied AKART, that the mixing zone is necessary to meet the effluent limit, and then limit the size of the mixing zone to the minimum necessary.

Using streams as locations of tailing facilities is addressed in responses 6.18.6 and 6.18.24 in this appendix.

An NPDES permit is required for all discharges of pollutants to waters of the United States

6.18.36.2 A comment expressed the opinion that the cadmium criteria in Washington's water quality standards was not sufficiently stringent to protect aquatic life and that EPA's criteria should be used instead.

Response:

Washington's water quality criteria for cadmium are .00155 and .00057 mg/l per liter, respectively, for acute and chronic toxicity based upon a water hardness of 50 mg/l as $CaCO_3$. The numeric criteria will be higher for water that has a higher hardness. The criteria in Chapter 173-201A, Water Quality Standards for Surface Waters of the State of Washington, are EPA's criteria. WADOE is required to submit updated standards to EPA for approval approximately every three years.

6.18.36.3 Information normally found in the NPDES permit should appear in the final EIS. The requested information includes an effluent characterization, a description of the type and location of outfalls, effluent volumes, treatment technologies, and receiving water characteristics.

Response:

The information presented in the final EIS is not as specific as what will be used by WADOE in developing a NPDES/State Waste Discharge permit for the facility. WADOE may require specific design, operational, or monitoring controls as a part of its permit process that are beyond what the Proponent has described in their Plan of Operations or in various mitigation measures. The EPA encourages inclusion of a draft permit in an EIS document to ensure that the performance limits in the permit are known to the permittee and can be met. EPA's purpose in recommending this procedure is to prevent approval and construction of a project that would be in violation of the Clean Water Act upon start up. WADOE does not have the same regulatory need for inclusion of the draft permit in the final EIS because it has specific preconstruction design review and approval authority under RCW 90.48 and WAC 173-240. The Proponent has prepared a NPDES/State Waste Discharge Permit Application (BMGC, 1996g). This permit application is available for review in the Forest Service office in

Tonasket, Washington and the WADOE office in Yakima, Washington. Public notice of the availability was advertised from October 3, 1996 to October 10, 1996. Interested persons were invited by the WADOE to submit written comments by November 9, 1996.

Future Project Expansion

6.18.37 **It appears that the Proponent has an additional 9,000 acres of land claimed surrounding the proposed Crown Jewel Project. What is their patenting status? Does this mean they plan to expand the mining operation?**

Response:

Section 4.21.2, Potential Mine Expansion, has been revised in the final EIS to clarify the potential for mine expansion. The Proponent explained in an April 1996 letter to the Forest Service that the 9,000 acres referred to in their stock prospectus included all lands owned or controlled by the joint venture, which is several thousand more acres than would be directly affected by development of the Crown Jewel Project. The joint venture owns or controls surrounding lands for a variety of reasons such as to ensure access, create a safety and security buffer, or avoid conflicts with third parties.

Crown Resources Corp. (joint venture partner of the Proponent) has received first half certificates for their mill site claims. Refer to responses 6.15.13, 6.15.14 and 6.15.15 in this appendix for further discussion.

There is no proposal to expand the Crown Jewel Project by the Proponent.

6.18.38 **If other mining projects are permitted in the area, would the Proponent be allowed to expand their mill or tailings pond and process ore from the new mines?**

Response:

There is no proposal to expand the tailings facility to include tailings material from other ore bodies in the area.

Any future expansion of the mill or tailings facility would, at a minimum, require a revision in approved permits and a separate NEPA and SEPA analysis.

Other Comments

6.18.39 **It has been said that the synthetic liner has a projected life of only ten years. What happens then? Will the pond contents flow out and contaminant the ground water?**

Response:

A liner life of only ten years would not be acceptable for this project. Laboratory testing conducted by both private industry and the EPA have demonstrated that the polymers (synthetic liner material) should maintain their integrity for many decades, if not hundreds of years (Landreth, 1990). Since there is still much to be learned about the service life of the synthetic liners, a leak detection system would be installed and is required under the Washington Metal Mining and Milling Operations Act along with a second liner. The tailings pond alternatives developed for the Crown Jewel Project would have double synthetic liners and a leak detection system. The Proponent has revised their proposed liner system to include two synthetic liners with an intermediate leak detection system. Refer to Section 2.2.15, Tailings Liner System Design, of the final EIS for a discussion of the proposed liner system.

The Seepage and Attenuation Study Crown Jewel Tailings Disposal Facility (Hydro-Geo 1995b) includes seepage rates and various scenarios that result from liner failure, and

Section 4.22.4, Other Types of Accidents, of the final EIS considers environmental consequences from liner failure. Refer also to Section 4.7, Surface Water, of the final EIS.

6.18.40 How can the reclaimed pit be allowed to discharge water if silver and cadmium concentrations exceed EPA allowable levels?

Response:

Refer to response 6.5.39 in this appendix.

6.18.41 The draft EIS states that cyanide degrades naturally from exposure to sunlight. In the winter months, sunlight is at a premium and the days are cold. How will this affect the degradation of cyanide? Will the Proponent transport cyanide in its liquid form? If so, what additional precautions will be taken to prevent spills, impacts, etc?

Response:

The lack of sunlight in the winter would slow the natural degradation of cyanide in the tailings. However, as pointed out in Section 2.2.11, Cyanide Destruction, of the final EIS, natural degradation is not being proposed as the primary destruction treatment. The INCO SO_2/Air/Oxidation process is the primary treatment. The tailings pond would have an added benefit in continuing the natural degradation of cyanide in the tailings below the concentration level allowed at the pipe discharging tailings into the tailings disposal facility.

The cyanide would be transported to the site in solid (briquettes) form as stated in *Table 2.4, Materials and Supplies,* and *Table 2.5, Consumable Estimate - Underground Mining* in Chapter 2, Alternatives Including the Proposed Action, of the EIS.

Section 4.22, Accidents and Spills, discusses three cyanide release scenarios which could affect water bodies. Section 4.22.2, Tailings Dam Failure, identifies loss of aquatic life as a consequence of dam breach. Section 4.22.3, Transportation Spill, subsection "Sodium Cyanide," discusses aquatic life losses. Section 4.22.4, Other Types of Accidents, subsection "Leak in the Tailings Facility," discusses the consequences to the environment from a leak in the tailings liner.

6.18.42 Since the waste rock is "solid waste," will the waste rock disposal areas be lined? Shouldn't they (waste rock disposal areas) be regulated as solid waste? If not, why not?

Response:

Waste rock does meet the definition of solid waste as stated in Chapter 173-304 WAC. Waste rock could be regulated as solid waste landfills, most likely as Inert/Demolition Landfills (173-304-461 WAC). Chapter 173-304-100 (40) WAC defines inert wastes as "non-combustible, non-dangerous solid wastes that are likely to retain their physical and chemical structure under expected conditions of disposal, including resistance to biological attack and chemical attack from acidic rainwater." Humidity cell testing conducted on representative samples of waste rock conclude that the potential for the rock to generate acidic or toxic drainage is low. Refer to Section 3.3.3, Geochemistry, of the final EIS. The WADOE would require short-and-long term monitoring of waste rock seepage to confirm this conclusion.

The primary responsibility for regulation of solid waste lies with the local government. While Okanogan County's Comprehensive Solid Waste Management Plan does not specifically address mining wastes, the Okanogan County Health Department could require an Inert/Demolition Landfill Permit for the waste rock disposal areas. The requirements for design and operation of Inert/Demolition Landfills are oriented toward

protecting against physical hazards, since by definition, biological or chemical hazards are not significant. Inert/Demolition wastes do not require a liner or underdrains (Chapter 173-304-461).

The Washington Metal Mining and Milling Operations Act, Chapter 78.56.100 RCW, requires the development of a waste rock management plan, to be approved by WADOE and WADNR prior to water quality permit approval. The Plan must identify the acid-generating properties of the waste rock, contain a strategy for encapsulating potentially toxic materials from the environment to prevent release of heavy metals and acidic drainage, and a plan for reclaiming and closing the waste rock disposal areas. The waste rock management plan is discussed in Section 4.7, Surface Water, of the final EIS. In addition, all discharges from the waste rock area(s) would be regulated by the effluent limitations contained in the NPDES permit.

The Inland Native Fish Strategy Decision (Forest Service, 1995a) under Minerals Management Standard and Guideline MM-3 states: "Prohibit solid and sanitary waste facilities in Riparian Habitat Conservation Areas. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Habitat Conservation Areas exists, and releases can be prevented and stability can be ensured, (then):

a. Analyze the waste using the best conventional sampling methods and analytic techniques to determine the chemical and physical stability characteristics.

b. Locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Habitat Conservation Areas.

c. Monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects to inland native fish and to attain Riparian Management Objectives.

d. Reclaim and monitor waste facilities to assure chemical and physical stability and revegetation to avoid adverse effects to inland native fish, and to attain the Riparian Management Objectives.

e. Require reclamation bonds adequate to ensure long-term chemical and physical stability and successful revegetation of mine waste facilities."

Given the requirements of the WADOE, the NPDES permit regulations, the Washington Metal Mining and Milling Operations Act, Inland Native Fish Strategy Decision, and the proposed reclamation of the waste rock areas, there is no environmental benefit justification to require a landfill permit or a liner system.

6.18.43 **Wetlands are a critical issue in the Nicholson Creek drainage. Why are waste rock disposal areas located so as to disturb these wetlands, when they can be placed elsewhere? How do the tailings impoundments in the different alternatives impact the wetlands in the Nicholson Creek drainage?**

Response:

Alternatives B, E, F, and G showed minor disturbance of wetlands in the Nicholson and Marias Creek drainages from waste rock disposal areas. This disturbance from waste rock storage to wetlands totals between 0.01 acre in Nicholson Creek and 0.02 acre in Marias Creek. The waste rock disposal areas have been designed to minimize

impacts to wetlands. Based on comments received from agencies and the public, the Preferred Alternative has been designed to reduce impacts to these wetlands. Refer to Chapter 2, Alternatives Including the Proposed Action, and all wetland sections of the final EIS for revised plan details and wetland impacts.

In Alternatives F and G, placement of the tailings impoundment would directly impact South Nicholson Creek. No tailings are proposed to be placed in the Nicholson Creek drainage in Alternatives B, C, D, or E. Note that hydrologic impacts are predicted for all alternatives to wetlands in the Nicholson Creek drainage basin.

6.18.44 Was the alternative of a buried power line considered?

Response:

Installing an underground high voltage power line is extremely expensive and creates more physical disturbance than an "overhead" power line. This option is discussed in Section 2.2.22, Power Supply, in the final EIS. This option was considered but not carried forth for further study in the final EIS based on discussions with engineers from Okanogan P.U.D.

6.18.45 Why is the Proponent proposing to use vendors outside Okanogan County to purchase much of their supplies and materials?

Response:

Vendors within Okanogan County would be used to the extent possible. However, there are currently no vendors within Okanogan County that can supply all of the specialized mining equipment and supplies which would be required for the mining operation.

6.18.46 Comments were received stating that the Summitville Mine (Colorado) incident caused the deposition of tailings containing cyanide into the Alamosa River and thereby caused contamination of the Alamosa River. Comments remarked that this incident was a result of poor engineering design of the heap leach pad, steep waste rock disposal areas, and underestimation of storm water flows. Some comments suggested that these Summitville activities appear to be the same situation as the proposed Crown Jewel Project, since the design calls for steep waste rock disposal area and diversions designed for ten-year/24-hour storm events.

Response:

The Summitville Mine and the Crown Jewel Project are similar in that they both were or are proposed to be open pit mines, used or plan to use cyanide in gold recovery, and are both about the same size on a total reserve basis.

Major topographic, climatical, and geologic differences exist between the Summitville Mine and Crown Jewel Project. The Summitville Mine was located at 11,500 feet while the Crown Jewel Project is at about 5,500 feet. The Summitville Mine is in an area that receives 300 to 400 inches of snowfall per year, while the Crown Jewel Project area is projected to receive less than 100 inches of snowfall per year. The Summitville ore was located in oxidized rock (allowing for heap leaching) while the Crown Jewel Project has a sulphide ore (calling for conventional milling - tank cyanidation). Much of the Summitville Mine waste rock was found to be acid-generating, while only 5% to 15% of the Crown Jewel Project waste rock was estimated to be acid-generating.

The major operational difference between the Summitville Mine and the Crown Jewel Project is the ore processing methods. The Summitville Mine employed a heap leach method of gold extraction where ore material is placed on a liner, cyanide solution is

introduced on the ore, gold is leached into solution (pregnant solution), and the pregnant solution is piped to a gold recovery circuit. With heap leaching, there are no tailings, and the (spent) ore is detoxified in place to cyanide levels acceptable to regulatory standards. The Crown Jewel Project would not employ heap leach techniques and, as such, would have no heap leach pad. Conventional milling (carbon-in-leach extraction) would be used at the Crown Jewel Project, and the INCO SO_2/Air/Oxidation system would reduce cyanide levels in the tailings material to acceptable regulatory standards prior to discharge into the tailings facility.

A brief project history of the Summitville Mine and its problems follow (Jones, 1993).

In 1984, Galactic Resources, Limited (Galactic) submitted the first large cyanide heap leach reclamation permit application in Colorado for the Summitville site. The permit review process by the Colorado Mined Land Reclamation Division (MLRD) was conducted in the summer and fall of 1984, with permit application approval in October 1984. After delays related to financing, construction commenced in the winter of 1985 and was completed during the summer of 1986. Considerable difficulty was encountered due to the extreme winter conditions at the high mountain location. Commercial mine operation began in 1986 and continued until 1991 when mining ceased. The heap leach operation continued into 1992. Early in 1992, the MLRD and the Colorado Water Quality Control Division (WQCD) of the Department of Health informed Galactic the permit must be substantially revised and the bond increased to adequately provide for closure. In July 1992, Galactic signed a settlement agreement with the MLRD and WQCD. This agreement provided for Galactic to meet several conditions, including increasing the posted bond to $7.2 million and meeting interim water discharge quality requirements. Galactic was also required to submit a final closure plan by November 30, 1992 on which the proper bond amount would be determined and posted. In the late summer and fall of 1992, reclamation work was accomplished on the site with Galactic completing contouring and seeding of 144 acres of disturbed land, installing a Degussa water treatment plant, and continuing to treat water from the Reynolds adit (an abandoned underground mine) and water that was leaking from the heap leach ponds. Galactic was unsuccessful in reaching the limits for discharge imposed by the WQCD. Because of this they did not discharge the treated water into Wightman Fork (a tributary to the Alamosa River), instead returned the treated water to the heap leach ponds increasing the levels of those ponds to capacity. In late November 1992, Galactic submitted a final closure plan, with estimated first phase closure cost to be approximately $22 million. A few days later, Summitville Consolidated Mining Company (the mine operator) and a subsidiary to Galactic, filed for protection under the United States bankruptcy code. At the same time, on December 4th, the parent company, Galactic, notified the state they would withdraw as operator on December 15, 1992. This action gave Colorado ten days to arrange for a new entity to take over operation of the water treatment facilities and site during the remaining winter months ahead. Colorado did not have adequate emergency authority to adequately take over the Summitville operation, and subsequently requested that the Environmental Protection Agency (EPA) take over the site operations as of December 16, 1992. EPA has operated the treatment facilities at the Summitville site since late 1992, although not always in conformity with the discharge limitations imposed upon Galactic by the WQCD. The Summitville Mine "incident" can be traced to several key problem areas (Jones, 1993):

- Design flaws related to the initial water balance (the design called for zero discharge, but the actual situation required discharge);

- Poor installation of the heap leach pad liner and not adequately repairing early leaks detected in the liner;

- Failure of both Galactic and the Colorado regulatory agencies to recognize and respond to the build-up of water and copper in the system;
- Not following the permitted mining and ore processing plans;
- Insufficient surveillance by the MLRD because of lack of staff and funding;
- Unrealistic water quality limits required by the WQCD; and,
- Inadequate financial assurances to address remedial and reclamation activity.

In a revised reclamation plan (December 15, 1995), the Proponent has committed to overall waste rock slopes of 2.5H:1V. Additionally, the Proponent has committed to sequential reclamation of the waste rock slopes. This would allow some reclamation (grading, topsoiling and revegetation) of the lower waste rock slopes during operations, thereby adding additional stability to the 2.5H:1V slopes.

Refer to response 6.18.22 in this appendix, for the proposed design criteria of the stormwater diversions and sediment traps. In addition, the tailings facility is designed to contain 360 acre-feet of water which is twice the runoff volume from a 72-hour storm event (WADOE regulations). Translated, the 72-hour event equals a storm which would theoretically occur once in every 30,000 years.

6.18.47 **What about other health effects from tailings or cyanide?**

Response:

The potentially toxic trace metals associated with the milling process were considered. Refer to Section 3.3.3, Geochemistry. At certain concentrations, these trace metals could be carcinogenic.

The chemistry of cyanide solutions is complicated because the cyanide ion forms compounds and complexes with many elements. Some cyanide species are highly toxic whereas others are relatively inert and harmless. Molecular hydrogen cyanide (HCN) is the most toxic form of cyanide. Under most conditions, HCN exists as a gas which readily dissipates or reacts with the environment to form less toxic or non-toxic forms of cyanide. Thus HCN is an ephemeral toxin, and many naturally occurring geochemical processes reduce the HCN concentration with time.

Free cyanide includes the two species, ionic cyanide (CN^-) and molecular hydrogen cyanide. Free cyanide toxicity in man, mammals, and aquatic species is well documented (Douforoff, 1976; and, Towill et.al., 1978). The lethal doses reported for human adults vary with human weight and the type of exposure as follows:

- One to three mg/kg body weight if ingested;
- 100 to 300 ppm if inhaled; and,
- 100 mg/kg of body weight if absorbed.

Cyanide can form HCN at a low pH, <7.

The Crown Jewel Project milling circuit is designed to keep the pH at 10 or higher, and the INCO SO_2/Air/Oxidation destruct process would be utilized. The tailings embankment, liner system, reclaim system, and monitoring system are designed to prevent contaminants from reaching the environment. Other, non-lethal affects of cyanide include effects on the cardiovascular system, central nervous system, liver,

kidneys, and the skin (NIOSH, 1990). Refer also to Section 2.2.8, Ore Processing Methods, Section 4.12.4, Toxics, and Section 4.22.3, Transportation Spill.

6.18.48 Why was the outflow from the Roosevelt adit allowed to be illegally diverted?

Response:

Forest Service records indicate outflow from the Roosevelt adit entered Nicholson Creek in 1973, while similar records indicate that the flow entered Marias Creek in 1974. The divide between the two drainages is slight. Subsequently, the outflow may enter either drainage at various times.

At the time the work occurred to reopen the culvert across Forest Road 3275-122, the flow was entering Nicholson Creek and the work preserved the direction of flow. All available Forest Service data and evidence indicate that when and if a change in stream course came about, it was a natural occurrence. The stream course change was possibly affected by logging activities that occurred in the area with the Bishop timber sale (1974-1978), as the road was built and the culvert installed (between 1975 and 1977) to allow logging of the area. The date on which the culvert was plugged sufficiently to allow the flow to divert to a different channel is unknown, but it can be approximated to some time after the closing date of the Bishop timber sale in 1978.

6.18.49 An EIS should have been performed for previous cumulative impacts due to grazing, mineral exploration, timbering, and mining.

Response:

Cumulative impacts from these past project activities are considered for all resources in Chapter 3, Affected Environment, which evaluates the current condition of the resources. All resource sections of Chapter 4, Environmental Consequences, build on this foundation in the direct, indirect, or cumulative effects by alternative.

Grazing allotments were established under Forest Service and BLM guidelines. An Environmental Assessment (EA) was prepared by the Proponent and approved by the Forest Service for the exploration conducted on the site. EA's for the timber harvests were conducted by the Forest Service and BLM. All of those documents made a finding of no significant impact based on the information that was available to the decision makers at the time. All of these past projects were evaluated as part of the Crown Jewel Project cumulative effects analysis. All past and current logging, grazing,and exploration activities have been conducted in compliance with applicable laws and regulations.

Exploration NEPA documents do not assume development, because it is not "reasonably foreseeable" that development would eventually take place. Very few exploration activities eventually lead to development. Exploration is simply the exploring for mineral deposits and, if found, determining if the potential for development exists.

6.18.50 It was questioned why local issues like hiring practices and road maintenance are discussed in the EIS.

Response:

SEPA provides for the assessment of impacts from a proposal on the natural and built environment. The elements of the built environment are listed in WAC-197-11-444. At least to the extent that local hiring, taxation, and road maintenance associated with a project lead to or reflect impacts to the elements of the environment listed in the WAC, they are legitimately addressed in the environmental review process. It is appropriate for a county to provide the lead agencies with information regarding these

issues. The Okanogan County government has been consulted and their information has been used in presenting these issues and responding to comments.

6.18.51 **There has been insufficient attempt to analyze the benefits of no action.**

Response:

The impacts resulting from the "no action" Alternative A are summarized in Chapter 2, Alternatives Including the Proposed Action, and fully displayed in Chapter 4, Environmental Consequences, by issue and alternative. Also, Section 4.26, Reservation of Project for Future Development, of the final EIS, discusses the advantages and disadvantages of delaying the Crown Jewel Project.

6.18.52 **Why isn't it possible to mine the support pillars at the very end of the project life. This is undertaken at other underground mines.**

Response:

Alternatives C and D propose to "rob" from the support pillars, as safety allows, at the end of mining.

6.18.53 **There were several comments concerning the economic analysis performed for the alternatives; these include:**

1) **The economic analysis should be presented as a comparison of the alternatives with all variables equally applied.**

2) **The draft EIS fails to consider additional reasonable alternatives that would entail reduced earnings for the Proponent, but substantially less severe impacts to the environment.**

3) **Since Alternatives F and G are uneconomic, why are they retained as Alternatives?**

4) **Net returns calculated from *Table S-14, Socioeconomic Assumptions for the Action Alternatives*, of the draft EIS Summary. Capital and annual expenditures subtracted from the total value of gold produced (180,000 oz/yr x 8 yrs x $380/oz) seem to show Alternative F as more profitable than Alternative C. This contradicts the conclusions of Section S-60 (draft EIS) which suggests that Alternative C may be feasible and F not.**

5) **The statement that the operation of the mine for only 12 hours per day could decrease efficiency and impact the economic feasibility of the Crown Jewel Project is unsupported.**

6) **Does the economic analysis take into account bonding and long term care requirements?**

7) **Although the document was quite thorough in its presentation of all alternatives, it seemed to omit addressing the fact that some of the proposed alternatives are economically impractical.**

8) **Why doesn't the document state that 80% of the gold would be recovered with a combination of underground and surface mining? What is the expected net profit by the Proponent using this method?**

Response:

1) A comparison of the Net Present Values (NPV) for the alternatives is presented on *Figure 4.21.2, Comparison of NPV (15%) of Crown Jewel Project Alternatives to Alternative B*, in the EIS.

2) Several alternatives were considered that would result in reduced profits for the Proponent. See *Figure 4.21.2, Comparison of NPV (15%) of Crown Jewel Project Alternatives to Alternative B*, of the final EIS.

3) Despite the poor economic performance of Alternatives F and G, they are retained because of significant public interest in displaying their effects and because, broken out individually, some components of these alternatives may still be viable. Alternative E Modified has been dropped from further analysis.

4) The net-return calculation does not assess the effect of time on the bottom line. Alternative F would mine at only one-half the rate of Alternatives B or C (16-year mine life instead of eight years). In addition, Alternative F includes another 16 years to backfill the pit. Calculating the Net Present Value of the alternative considers negative and positive cash flows resulting from the operation and discounts (adjusts for the time value of money) net revenues back to the present. Considering the effect of time, Alternative F results in a net loss to the Proponent. See Section 4.21.3, Effects Common to All Action Alternatives, of the final EIS.

5) Alternative F evaluates the effects of an alternative that considers the 12-hour day component.

6) Yes, the cost of financial surety was analyzed and varied by alternative in the economic analysis.

7) NEPA requires that alternatives to the proposed action be developed so that a reasonable range of alternatives are displayed. Alternatives C through G develop a reasonable range, and meet the purpose and need to a greater or lesser extent. The draft EIS and final EIS acknowledge that some alternative components rendered some alternatives less economic (refer to Section 4.21.3, Economic Analysis of the Alternatives). These components were used in some of the alternatives because of significant public interest during scoping in evaluating the environmental effects of these less economic components. Reasonable alternatives under SEPA are those that attain or approximate the objectives of the proposal, but at a lower environmental cost or with less environmental degradation. Thus the objective of a proposal determines whether an alternative is available and reasonable. In this case, the objective of the proposal is determined in large measure by the Proponent (in contrast to, for example, an agency-originated proposal for a planning or public works project). The Proponent seeks to develop a commercially viable mine and mill facility under the Mining Law of 1872, as amended. Some of the alternatives developed in the EIS contain elements that a prudent investor would avoid because of the effect of those elements on the commercial viability of the Crown Jewel Project. An alternative which would not be prudently undertaken due to commercial non-viability would not meet the objective of the proposal.

   As noted above, some alternatives were fully developed in response to public interest, particularly in pursuit of lower environmental costs or lesser degradation. Furthermore, commercial feasibility is partly dependent on technology and the price of gold, so it is prudent to consider, to a limited extent, alternatives that may not presently appear commercially viable but

might become so with changes in circumstances. In view of these considerations, the Forest Service and WADOE believe the resulting range of alternatives is reasonable. The analysis shows, in some cases, that some of these more costly options resulted in greater environmental effects for some resources. These are all factors the NEPA decision makers weighed and will continue to weigh when choosing the Selected Alternative.

8) *Table 2.1, Alternative Comparison Summary,* in the final EIS displays gold recovery by alternative. The net profit by the Proponent has not been figured as it is not necessary information for decision making. All alternatives were compared using Net Present Value (NPV) which takes into consideration the time value of money. NPV of the alternatives is displayed in *Figure 4.21.2, Comparison of NPV (15%) of Crown Jewel Project Alternatives to Alternative B,* of the final EIS.

6.18.54 **Comparison of alternatives must be presented in a way that can be easily compared. Using qualitative terms does not suffice with the quantity of technical information available or that could be collected. Comparisons should be quantitative.**

Response:

Comparisons between alternatives should be quantitative, when such information is available. When sufficient information to provide accurate quantitative comparisons has been available, the Forest Service and WADOE have done so. SEPA/NEPA requires the WADOE/Forest Service to collect sufficient information for decision making and for comparing alternatives. It does not expect or require the Forest Service and WADOE to collect all information so that everything is known and quantified. Specifically NEPA states that EISs are to be informative not encyclopedic (40 CFR 1502.2). Providing quantification in some instances may imply more accuracy than is true or result in wrong information. WAC 197-11-700 Definitions (2)(f) refers to quantification and adverse environmental impacts. It states, "Environmental cost refers to adverse environmental impact and may or may not be quantified." Additionally, WAC 197-11-440(5)(e)(v) states, "one alternative can be used as a benchmark for comparing alternatives."

There are quantitative comparisons of the alternatives presented throughout the EIS, where available. A few examples are as follows:

- Summary tables for each alternative in Chapter 2, Alternatives Including the Proposed Action;
- *Table 2.1, Alternative Comparison Summary*;
- *Table 2.6, Estimated Water Use Requirements*;
- *Table 2.15, Summary of Impacts by Alternative for Each Issue*; and,
- *Table 3.3.1, Waste Rock Percentages for the EIS Alternatives.*

More is known about the Proponent's proposal than other alternatives because of the additional studies performed by the Proponent for their own purposes. Quantitative information in comparison form to the Proponent's proposal is used to reduce unnecessary paperwork and costs of analysis.

6.18.55 **It is incorrect to assert that Federal agencies have the authority to choose the no-action alternative.**

Response:

Based upon past experience, it is likely that the mine impacts could be reasonably mitigated, thus allowing selection of an action alternative. However, it is possible, in rare situations, that conflicts with other laws such as the Endangered Species Act could require the selection of the no action alternative.

6.18.56 **NEPA requires the disclosure of mine expansion as a cumulative impact, including a worst case analysis. Disclosure should be presented in a supplemental draft EIS.**

Response:

Cumulative effects include past, present, and reasonably foreseeable future actions. Mine expansion is not reasonably foreseeable as contemplated in 40 CFR 1508.7, because no plan or proposal has been submitted by any entity. No exploration is currently being completed in the area, nor is there any indication that any entity intends to do any further exploration. Even if the Forest Service and WADOE assume that further exploration or development would occur, it would be meaningless to analyze any impacts because it would be impossible to predict effects because no specifics about such a hypothetical proposal would be known. (See 40 CFR 1502.22) Any potential future expansion of the mine would be analyzed in a separate environmental analysis.

6.18.57 **According to the EPA: "Alt. G is not an option, as proposed from a Sec. 404 permitting standpoint due to proposed tailings impoundment in Nicholson Creek and waste rock disposal in the Frog Pond," yet it is included in the alternatives.**

Response:

The 404 (b)(1) permit is issued by the Corps of Engineers and not the EPA. EPA has some review authority over this permit. The Corps of Engineers felt that covering the frog pond could be permittable under the 404 (b)(1) permit although strong rationale would need to be provided. Impacts of covering the frog pond would have to be compensated for by development or enhancement of wetlands at other sites.

6.18.58 **Under Alternatives A through G, has all of the land affected by each of the alternatives been fully evaluated from an environmental perspective?**

Response:

The lands that would be affected, by each of the alternatives, have been evaluated from an environmental perspective.

6.18.59 **As proposed by the Proponent, the ore stockpile area would be located on a small constructed fill at the top of a natural drainage below the north portion of the open pit. Under the preferred alternative (and all other draft EIS alternatives, except Alternative B), the stockpile area would be moved slightly up drainage, north and west of the primary crusher location, and would be constructed as a cut large enough to accommodate the ore stockpile, access road, and crusher operating area. This modification was apparently made to avoid placing fill in the top of the small drainage. The Proponent considers this modification unacceptable because of the high cost of construction, inadequate available area, and safety concerns, with little if any, environmental benefit.**

Response:

The proposed sidehill ore stockpile location was considered in the EIS due to the desire to be consistent with interim direction contained in the Inland Native Fish Strategy goal MM-2 which states: "Locate structures, support facilities, and roads outside Riparian Habitat Conservation Areas. Where no alternative to siting facilities in Riparian Habitat Conservation Areas exists, locate and construct the facilities in ways that avoid

impacts to Riparian Habitat Conservation Areas and streams and adverse effects on inland native fish."

The Forest Service preference was to place the ore stockpile on the spur ridge north of Gold Bowl drainage between the 4,900 foot waste rock haul road and the 4,820 foot crusher elevation. Responding to the draft EIS, the Proponent attempted to design an ore stockpile according to these requirements. Because of limitations of the 4,900 foot waste rock haul road and a steep slope directly below it, the maximum stockpile capacity attained was approximately 130,000 tons (43 days at 3,000 tons/day) and did not account for additional area needed for mill water storage tanks. The Proponent contends that a capacity of 250,000 tons (83 days at 3,000 tons/day) is needed to maintain a constant supply to the crusher and mill and, therefore, that the alternative site is infeasible.

Issues raised in this comment have been evaluated (Lentz, 1996a) and the effects included in the final EIS for consideration by the permitting agencies.

The ore stockpile capacity is dependent upon two major factors. First is the variability of the ore to waste by mined bench. Because some benches have less ore than others, a minimum capacity of 150,000 tons is needed to carry mill operations through the periods during which "barren" benches are being mined. The above minimum capacity must in turn be enlarged to accommodate the second factor, which is the variability of the grade and hardness of the ore. In order for the mill to run effectively (maintaining high gold/silver recovery), ore feed grade and hardness must be as uniform as possible. This is accomplished by segregating ore into multiple stockpiles by grade and hardness and blending to produce a uniform mill feed (Schumacher, 1996).

Analysis of comments and data from the draft EIS suggest the following additional considerations. Assuming that the proposed sidehill ore storage site is feasible: (a) the impact to the Gold Bowl drainage could not be entirely avoided due to the haul road which must cross the draw and the difficulty of keeping all excavated rock from entering the drainage during construction; (b) the total area of disturbance of the Forest Service alternative is greater (12 acres) than the proposed drainage fill (seven acres); and, (c) in either case sediment from runoff during construction and operation would be controlled by capture in a diversion and infiltration system.

6.18.60 **By requiring the Proponent to make major changes in its proposal by the selection of a different alternative that provided negligible environmental gain, the viability of the mine would be impacted.**

Response:

NEPA and SEPA require federal and state agencies to consider reasonable alternatives to the proposed action (Proponent's Plan of Operation). United States mining laws recognize the statutory right of mining claim holders to explore and/or develop mineral resources and encourages such activity consistent with the Mining and Mineral Policy Act and the Federal Land Policy Management Act which require responsible federal agencies to review the Proponent's Plan of Operation to ensure that: 1) adequate provisions are included to minimize, to the extent practical, adverse environmental impacts on the public land surface; 2) measures are included to provide for reclamation; and, 3) the proposed operation would comply with other applicable federal, state and county laws and regulations.

For state and local decision making for the Crown Jewel Project, WAC 197-11-448 provides clarification regarding the balancing of environmental gain and alternative selection: "SEPA contemplates that the general welfare, social, economic, and other requirements and essential considerations of state policy will be taken into account in

weighing and balancing alternatives and in making final decisions." However, this additional information is not required to be contained in the EIS.

Economic impacts of the different alternatives are displayed in Section 4.21, Mining Economics, of the final EIS.

6.18.61 **The Proponent is taking a way of life from local residents without adequate compensation, and this is theft. Wealthy companies should not be allowed to steal from the poor, minorities, and American Indians.**

Response:

The Proponent is exercising rights established under applicable state and federal laws. This opportunity is available to all citizens of the United States The purpose of the environmental analysis is to disclose environmental impacts and evaluate alternatives. These impacts would be minimized to the extent authorized by law and regulation.

Policy Issues

6.18.62 **Are mining claims still patentable?**

Response:

The 1872 Mining Law as amended, while being considered for revision by the United States Congress, is currently in effect which allows for patenting of mining claims. The 1996 Federal Appropriations Act continues a moratorium on the processing of mine claim patent applications except for applications filed and meeting certain requirements on or before September 30, 1994.

6.18.63 **EPA recommends that the mine site be returned to as close to natural conditions as possible, including complete backfilling.**

Response:

Complete backfilling is evaluated in Alternative F, and the effects, both positive and negative, are disclosed. These effects will be considered along with applicable laws and regulations in the identification of the Selected Alternative found to be in the Record of Decision.

6.18.64 **What is the justification for Preferred Alternative E Modified. It should have been presented as a stand alone alternative.**

Response:

Alternative E Modified was dropped from consideration in the final EIS after further analysis. All of the components of Alternative E Modified were evaluated in other alternatives. Although developing Alternative E Modified as a stand alone alternative would certainly have been preferable, to do so would have resulted in further delays in publication of the draft EIS.

6.18.65 **It was asked who would set permit limits for cyanide levels and how would compliance with these limits be judged? What would be the enforcement?**

Response:

The appropriate agencies would set the permit limits depending on the permit. The WADOE would set cyanide permit limits in the NPDES/State Waste Discharge Permit. The WAD cyanide limit would be set at the discharge point to the tailings pond, or in the water pool, or at both locations. Compliance with permit limits is documented through monitoring. Sampling and analysis are performed by the Proponent. Agencies

would inspect and independently collect and analyze samples to determine the integrity of the permittee's sampling and analysis program and determine compliance with effluent limits at the time of the inspection. Sample analyses conducted for compliance with limits in the NPDES/State Waste Discharge permit must be performed at laboratories accredited by WADOE. Enforcement tools include notices of violations, administrative orders (including possible shutdowns), and financial penalties (fines). The public may observe water quality sample collection for monitoring under provisions of the Washington Metal Mining and Milling Operations Act.

6.18.66 **A comment questioned the SEPA regulations pertaining to the number of required public hearings. Another asked why a meeting was not held in Chesaw to gather local input?**

Response:

WAC 197-11-535 provides for the conduct of public hearings in the SEPA process. Public hearings are discretionary unless an appropriate petition for a hearing is received. The WAC is silent on the location of public hearings. Conducting two public hearings exceeded the minimum requirements of the WAC. The Forest Service and WADOE believe that these additional efforts to foster public participation are consistent with the policies underlying NEPA and SEPA.

Concerning the gathering of local input, a meeting was held in Oroville since that was the closest population center with adequate facilities.

6.18.67 **There were comments which suggested that the draft EIS was inadequate, that additional alternatives needed to be studied, and that a supplemental draft was required.**

Response:

The level of detail disclosed for each alternative is sufficient for the decision makers to make an informed decision. NEPA specifically states EISs shall be analytic and not encyclopedic (40 CFR 1502.2). Additional details are known about Alternative B because the Proponent developed information for their own purposes and provided this information to the agencies. A reasonable range of alternatives was developed to respond to the issues.

NEPA requires that supplemental drafts be prepared where the agency makes substantial changes in the proposed action or there are significant new circumstances or information (40 CFR 1502.9) bearing on the proposed action or its impacts. Although additional information regarding the alternatives was developed between the draft EIS and final EIS based on public input, it is not significantly new information nor have substantial changes been made to the proposed action. The final EIS displays all needed information for the decision makers to make an informed decision. The public would also have an opportunity to review the final EIS prior to implementation because the Forest Service has internal administrative appeal regulations which automatically stay projects for a minimum of 50 days after decision. If the project is appealed, the project is additionally stayed until 15 days after appeal resolution. The result is that appellants can have their concerns about the project reviewed at the Regional Office level prior to implementation.

Under SEPA, if information developed on the basis of public and agency comments substantially changes the analysis of significant impacts and alternatives in the existing draft EIS (by adding new significant impacts), a supplemental EIS would be appropriate. On the other hand, if the additional information does not substantially change the analysis of significant impacts and alternatives, it would be inappropriate to consider a supplemental EIS. In the present case, public comment produced no information

indicating that any new significant or substantial adverse environmental impacts that would warrant a supplemental EIS.

Technical reports developed between the draft and final EIS have been made available for public review.

6.18.68 **Eliminating a "reasonable" alternative solely on the basis of financial considerations completely ignores the relative benefits to the environment and human health.**

Response:

According to the Council on Environmental Quality's (CEQ's) 40 Most Asked Questions (2a), "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint" and use common sense. Therefore, alternatives may be eliminated on the basis of economic feasibility.

In addition, Forest Service Surface Management regulations (36 CFR 228.5[a]) state that the economics of the operation must be considered in determining the reasonableness of surface protection requirements.

NEPA and SEPA provide somewhat different tests for the reasonableness of alternatives. Reasonable alternatives under SEPA are those that attain or approximate the objectives of the proposal, but at a lower environmental cost or with less environmental degradation. Thus the objective of a proposal determines whether an alternative is available and reasonable. In this case, the objective of the proposal is determined in large measure by the Proponent in contrast to, for example, an agency-originated proposal for a planning or public works project. The Proponent seeks to develop a commercially viable mine and mill facility under the Mining Law of 1872, as amended. Some of the alternatives developed in the EIS contain elements that a prudent investor might avoid because of the effect of those elements on the commercial viability of the Crown Jewel Project. An alternative which would not be prudently undertaken due to commercial non-viability would not meet the objective of the proposal.

Some alternatives were fully developed in response to public interest, particularly in pursuit of lower environmental costs or lesser degradation. Furthermore, commercial feasibility is partly dependent on technology and the price of gold. It is prudent to consider, to a limited extent, alternatives that may not presently appear commercially viable but might become so with changes in circumstances. In view of these considerations, the Forest Service and WADOE believe the resulting range of alternatives is reasonable.

In this case, all action alternatives prepared for the draft EIS were carried forward and analyzed equally for purposes of the EIS process.

6.18.69 **The Record of Decision must contain a completed final reclamation plan with appropriate mitigation and reclamation.**

Response:

The Records of Decision will contain all mitigation and reclamation measures required by Federal agencies. Along with regulatory requirements, the final EIS would be the basis for issuance of the permits by the State of Washington, which may require additional mitigation and reclamation measures. The final reclamation plan would be developed utilizing both the measures required by Federal agencies and those required by the State through the permitting process. Additional public review and comment is provided during the WADOE permit processes for Air Quality and NPDES/State Waste Discharge.

6.18.70 **Does WADOE have a strategy for dealing with the human health criteria (HHC) for arsenic when it comes to mining?**

Response:

The National Toxics Rule (NTR), 40 CFR 131.36, established numeric water quality standards for toxic pollutants to protect human health. The regulation adopted by EPA is self implementing for those constituents that are not specifically assigned numeric criteria in Washington's Water Quality Standards for Surface Water, WAC 173-201A.

Based on the baseline monitoring program, the concentration of arsenic surface water appears to exceed the human health criteria (HHC) in the NTR. Where NTR toxic pollutants are present at natural concentrations above the HHC, effluent limits can be set at levels equal to the mean natural background concentration of each constituent. The NTR also allows States to utilize mixing zones that are already in place in state standards (40 CFR 131.36(c)(2)(I)). WADOE's NPDES Permit Writer's Manual identifies the chronic aquatic life mixing zone criteria as appropriate for setting effluent limits to protect human health. For mixing zone calculations or modeling, the industrial or municipal effluent flow used in the annual average and the receiving water flow used is the mean flow.

The effluent limits afford equivalent health protection to that which would exist absent a project requiring NPDES coverage. Significant changes in hydrology which would result in greater mass loading of an NTR constituent, and therefore result in greater exposure, would also be considered in setting effluent limits. The strategy is consistent with the applicable portion of the antidegradation policy, WAC 173-201-070(2), which states "Whenever the natural conditions of said receiving waters are of a lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria."

6.18.71 **It was stated that WADOE provided speakers for a "public interest group meeting" on the Crown Jewel Project in June of 1994. The Proponent believes this reference is to a meeting held by Columbia River Bioregional Education Project (CRBEP) using WADOE grant money. Because this money was granted to CRBEP specifically to "educate the public" on the Crown Jewel Project, this meeting should probably be considered as an agency-sponsored meeting. Also, a discussion should be added to the final EIS specifically identifying the source of the grant money; the group who received the money and the group's relationship to other groups opposing the Crown Jewel Project; and the other informational meetings help using the grant money.**

Response:

CRBEP was reimbursed by WADOE through a Public Participation Grant Program for some of its activities. The Washington Department of Ecology's (WADOE) Public Participation Grant Program (Chapter 173-321 WAC) awards grants to non-profit organizations and community groups to further public inquiry and education on the topics of solid or hazardous waste management. The purpose of the grant was to allow this organization to review various technical aspects of the environmental work on the proposed Crown Jewel Project and to explain how to participate in the SEPA processes during the public comment period.

Both the Forest Service and the WADOE provided speakers at meetings held by CRBEP to discuss the NEPA and SEPA processes.

It is outside the scope of the EIS to provide any additional information about the meetings and/or CRBEP. Additional information was provided to the public earlier in the February/March 1993 " EIS Project Update."

6.18.72 **Several commentors stated that they thought the comment period for the draft EIS was too short.**

Response:

The comment period was based on NEPA and SEPA guidelines. NEPA and SEPA call for a 45 day comment period. A 60 day comment period was granted for the Crown Jewel Project. This exceeds the requirements. It should be noted that comments were still accepted two months after the scheduled end of the comment period.

It should also be noted that any new, substantive comments received prior to the publication of the final EIS were considered by the Forest Service and WADOE.

6.18.73 **Delays in completing the draft EIS were unnecessary and unwarranted. Crown Butte New World Mine, by comparison expects completion of the draft EIS 29 months after the end of scoping, with a draft EIS completion date of 1/96 or sooner.**

Response:

The length of time required to complete the draft EIS was commensurate with the level of complexity, the enormous amount of interagency consultation and cooperation for the Crown Jewel Project, the high degree of public interest and involvement, and the site specific conditions. The proposed Crown Butte New World Mine is located in Montana, which has different laws than Washington State, so comparisons are not equitable. The New World Mine proposal process started in 1990, and release of the draft EIS was expected in May 1996. A tentative agreement announced by President Clinton, between the mine owners and the United States Government, may result in termination of the New World Project.

6.19 MONITORING

General

6.19.1 **Comments were received that agreed with the discussion on monitoring or simply expressed opinions about monitoring for the Crown Jewel Project. Other comments cited typos or requested minor clarifications.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "monitoring" aspects for the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Responsibility and Oversight of Monitoring

6.19.2 **Will the Proponent provide funds for an independent agency to conduct pre-mining, during mining, and after-operational monitoring?**

Response:

Under the various approved federal and state permits, the Proponent would be required to conduct monitoring before, during and after mining. Monitoring results would be sent to the regulatory agencies as stipulated in approved permits. Sampling and analysis by the Proponent would be at the Proponent's expense. At any time, the regulatory agencies can request portions of any samples taken and have the split samples analyzed for verification of results. In addition, the agencies can perform their own sampling. Sampling by the agencies would be at the agencies' expense. It would be up to the discretion of the Proponent to implement and fund independent monitoring.

The Washington Metal Mining and Milling Operations Act includes a citizen's observation and verification process.

6.19.3 **Information on the water quality assurance program seems ill-defined for the water-monitoring program. Can you address what quality assurance and quality control will be implemented for water-monitoring programs?**

Response:

Monitoring plans would be developed prior to final project approval in state and federal permits. A complete description of the quality assurance, quality control (QA/QC) program would be an integral part of the monitoring plan. The monitoring plan along with the QA/QC program would be reviewed by the regulatory agencies prior to approval. Please refer to Section 2.13.1, Water Resources Monitoring, of the final EIS. Refer to responses in Section 6.5, Hydrology, in this appendix for additional information.

6.19.4 **What is the length of monitoring? Who will be responsible if pollution occurs after a reclamation bond is returned to the Proponent? What is meant by "long-term monitoring." The effectiveness of self-monitoring was also questioned.**

Response:

The length of time (long-term) that future monitoring would be conducted, the monitoring locations, sample frequency, samplers, parameters, etc., would be stipulated in the various approved state and federal permits. Baseline monitoring is currently being conducted. Monitoring is discussed in Section 2.12, Management and Mitigation, and Section 2.13, Monitoring Measures, of the final EIS.

The Proponent would still be responsible for any contamination attributed to the mining operation, even if it occurs after the return of the reclamation and environmental protection securities.

The term "long-term monitoring" is subjective. Monitoring as described in Section 2.13, Monitoring Measures, of the final EIS, would continue throughout the life of the mine, through reclamation, and for "some" period of time after reclamation. The length of time after reclamation that monitoring would continue would depend mainly on the monitoring data collected to date. Air quality and revegetation monitoring would probably end shortly after reclamation, whereas water quality monitoring would probably continue for a number of years after reclamation. The duration of monitoring would be a decision made by the regulatory agencies based on annual review of the monitoring data.

Federal and state regulatory oversight depend primarily on effective self-monitoring by permittees. Changes to the system of regulation are outside the scope of the environmental review process. The Washington Metal Mining and Milling Operations Act requires quarterly inspection by the various state agencies of metals mining and milling facilities as a means of assuring continuous compliance with permit conditions. BLM manual direction also requires at least quarterly monitoring. Available information does not indicate that the proposed facility presents a risk from inadequate monitoring.

6.19.5 **Who has the final authority for approving the water-monitoring plan? What would be the point of compliance for water quality?**

Response:

WADOE has final authority for approving water monitoring plans, although other agencies (BLM, Forest Service) have regulations or policies requiring water monitoring as part of reclamation. Refer also to response 6.19.3 in this appendix.

According to WAC 173-200-060(a), the point of compliance with the ground water standards "...shall be established in the ground water as near the source as technically, hydrogeologically, and geographically feasible." State approval of the monitoring plan is linked to the NPDES permit issuance process. Refer also to response 6.18.33 in this appendix. Refer to Section 2.13.1, Water Resources Monitoring, of the final EIS for a further description of water monitoring plans.

6.19.6 **Are there plans to put all monitoring requirements into a single manual? Will a citizens' impact committee be formed to oversee monitoring and mitigation?**

Response:

The Proponent's Environmental Manager assigned to the Crown Jewel Project may organize monitoring requirements into one document; however, such organization would be solely at the discretion of the Proponent's Environmental Manager. The Forest Service, WADOE, and other agencies involved do not plan to require that all monitoring requirements for all permits and their associated conditions be included in one manual.

Any group of citizens can form, at their own expense, a committee to oversee the environmental affairs of the mining operation. However, the Proponent has all the privacy rights and privileges as any other business.

Section 10(c) of the Washington Metal Mining and Milling Operations Act allows citizens to observe and verify water sampling activities. This can be coordinated through the WADOE. Please review the Washington Metal Mining and Milling Operations Act for further information concerning the rights of citizens and the rights of the Proponent under State law.

6.19.7 **Who will be involved in setting monitoring levels that trigger mitigation? What are these levels?**

Response:

The appropriate regulatory agencies would set these levels and specify/stipulate the type of mitigation according to their individual regulatory authority and jurisdiction. Much of the information used to determine these would come from the baseline data collected as a result of this EIS. Specific "action" thresholds, not outlined in the EIS, would be contained in specific permit approvals.

Monitoring Plan Details

6.19.8 **Where are the plans for a long-term monitoring and care of the tailings impoundment?**

Response:

Recommendations for monitoring and care of the tailings pond are discussed in Section 2.12, Management and Mitigation, and Section 2.13, Monitoring Measures, of the final EIS and in Tailings Disposal Facility Final Design Report, (Knight Piesold, 1993a). Final monitoring details would be stipulated in approved plans of operation and permits. Please refer to specific Section 2.12.13.3, Cyanide Destruction, Section 2.12.13.4, Tailings Disposal Facility, Section 2.13.3, Geotechnical Monitoring, Section 2.13.4, Geochemical Monitoring, and Section 2.13.5, Fish and Wildlife Monitoring.

6.19.9 **What are the long-term site monitoring plans for erosion?**

Response:

Recommended soil erosion monitoring is discussed in Section 2.13.9, Reclamation Monitoring, of the final EIS.

6.19.10 What are the long-term site monitoring and care procedures for both the Starrem Creek Reservoir embankment and the tailings embankments?

Response:

Recommendations for monitoring and care of the tailings pond and reservoir are discussed in Section 2.13, Monitoring Measures, of the final EIS and in the Tailings Disposal Facility Final Design Report, (Knight Piesold, 1993a), and in Design Report Starrem Creek Dam And Reservoir, (Golder, 1993a).

6.19.11 What are the long-term site monitoring plans for stream flows?

Response:

Long-term monitoring is addressed in response 6.19.4 in this appendix.

6.19.12 What are the plans for long-term water-quality monitoring? Where will the water-monitoring sites be located? What is the frequency of water-quality monitoring? Who will monitor water quality? Will there be an independent oversight committee to review water-quality analyses? Would there be bioassay monitoring of water?

Responses:

Recommendations for water quality monitoring are discussed in Section 2.13.1, Water Resources Monitoring, of the final EIS and monitoring is also discussed throughout the water resources sections in Chapters 3 and 4 of the final EIS. Refer also to response 6.19.4 in this appendix. Monitoring details will be stipulated in approved permits.

In addition to baseline monitoring wells, permit compliance wells would be developed in appropriate locations to detect impacts to water quality. Surface water monitoring would also be undertaken for area streams, wetlands, springs and seeps.

Seepage from the overdrain and underdrain of the tailings facility would also be monitored. The response to a ground or surface water contamination situation depends on the hydrogeologic conditions at the point of detection and, as a result, remediation is possible.

Frequency, location and responsibility for monitoring will be specified in permits issued for the Crown Jewel Project. Most monitoring will be performed by the Proponent with oversite by the regulatory agencies. Bioassay monitoring of water is not planned.

6.19.13 Will waste rock be monitored and tested during and following operations to determine any Acid Rock Drainage (ARD) potential?

Response:

Yes, the monitoring of waste rock for ARD is discussed in Section 2.13.4, Geochemical Monitoring, of the final EIS. Specific monitoring details would be stipulated in approved permits. Waste rock management is also discussed in Section 2.12.5.1, Prevention of Acid Rock Drainage.

6.19.14 Are there plans for any wetland monitoring during and after operations? What about monitoring of areas undergoing wetland mitigation? Is monitoring of off-site wetlands necessary?

Response:

The monitoring of wetlands are discussed in Section 2.13.1, Water Resources Monitoring, and Section 2.12.16, Wetlands, of the final EIS. Monitoring of wetland mitigation areas would be included as a condition of the Corps of Engineers 404 permit.

Some monitoring of wetlands, springs, and seeps adjacent to the Crown Jewel Project would be required but the exact amount has not been determined by the involved agencies. The wetlands that would be monitored would be the ones most likely to be impacted and the ones with the highest and most difficult to replace functions and values. Section 4.6, Ground Water, Springs and Seeps, and Section 4.10, Wetlands, of the EIS lists the wetlands, seeps, and springs that are most likely to be impacted. Final determinations of monitoring requirements would be made during the permitting process.

6.19.15 **Are there any plans to do ongoing fisheries monitoring in Marias, Nicholson, or Myers Creeks? What are the waterfowl monitoring plans?**

Response:

The monitoring of wildlife and fish is discussed in Section 2.13.5, Wildlife and Fish Monitoring and 2.12.18, Wildlife and Fish - Public Land Enhancement, of the final EIS. Marias and Nicholson Creeks are included in the monitoring. Forest Service fisheries Biologist(s) plan to monitor fish habitat and/or populations in Marias and Nicholson Creeks during operations.

6.19.16 **Are there any plans to do flow monitoring of Myers Creek downstream of the diversion to the Starrem Reservoir?**

Response:

As a condition of in-stream flow requirements to support the various life stages of the brook and rainbow trout in Myers Creek, it would be necessary to monitor the stream flow below the Starrem Reservoir diversion. Temperature collection would be part of this monitoring.

6.19.17 **Is annual monitoring of frogs in the frog pond sufficient to determine impacts to these species?**

Response:

Audio-strip transects are proposed to count calling frogs in the spring. This monitoring approach is considered by Forest Service biologists to be an effective way not only to inventory species composition but also to provide an approximation of relative abundance of breeding frogs.

6.19.18 **Will there be sediment monitoring of creeks, ponds, and seeps? What elements will be analyzed? Will metals be monitored as part of sediment monitoring? Will any of the contaminants be bio-available to organisms as a result of accumulation in stream bottom sediments?**

Response:

Monitoring for sediment loading is discussed in Section 2.13.1, Water Resources Monitoring, of the final EIS. Other monitored parameters discussed are pH, temperature, and conductivity; however, the specific metals and chemicals which may be monitored would evolve during the permitting process. Monitoring details would be stipulated in approved permits. A discussion of bio-available contaminants is presented in Section 4.11.3, Effects Common to All Alternatives, of the final EIS.

6.19.19 **How will cyanide be monitored in the tailings facility? What happens if monitoring shows increases in cyanide levels to the point that wildlife mortality occurs? How will wildlife monitoring be conducted for the tailings impoundment? How will the tailings facility liner be monitored for leaks?**

Response:

Both the liquid fraction and solid fraction would be sampled and analyzed for cyanide. The analysis results would provide the Proponent with information whether the INCO SO_2/Air/Oxidation process is performing properly. If cyanide concentrations are unacceptable, the mill may have to shut down and repairs made to the cyanide destruct system. Because of the sampling frequency, corrections should be made long before cyanide concentrations would attribute to wildlife mortality. Monitoring details for cyanide levels in the tailings pond would be delineated in the NPDES permit (refer to Section 2.12.13.3, Cyanide Destruction) to be issued after publication of the final EIS.

Wildlife monitoring is discussed in Section 2.13.5, Wildlife and Fish Monitoring, and in Section 2.12.18.12, Wildlife Exposure to Toxic Substances, which lists some additional mitigation measures which might be imposed if wildlife mortality occurs at the tailings facility.

A leak detection system would be installed between the double synthetic liners during the tailings pond construction. Sampling of flows captured by the leak detection system, between the synthetic liners, would be analyzed for cyanide. Sampling of flows captured by the underdrain, located beneath the second liner, would also be analyzed for cyanide. Details of the double synthetic liner and leak detection system are summarized in the final EIS in Section 2.2.15, Tailings Liner System Design.

6.19.20 **Given the geology of the site, can monitoring from ground water wells be misleading? Is there the potential that ground water monitoring wells would not be able to detect leaks in the tailings impoundment or problems as a result of mining and waste rock disposal?**

Response:

In addition to ground water monitoring wells, water in sediment ponds, tailings underdrain outflows, and water in Marias, Bolster, Gold, and Nicholson Creeks would be monitored. The wells currently being monitored at the Crown Jewel Project site are baseline wells. Although many of the baseline wells would be used for compliance monitoring, additional wells would be developed in appropriate locations to ensure permit compliance.

6.19.21 **There appears to be a lack of reclamation-monitoring detail. Could you provide additional detail on reclamation monitoring? How is it possible to achieve the 250 trees/acre at the end of the fifth reclamation year?**

Response:

The discussion of reclamation monitoring found in the final EIS is consistent with SEPA and NEPA requirements. Specific monitoring details would be stipulated in approved permits. Reclamation monitoring is discussed in Section 2.13.9, Reclamation Monitoring, Section 2.13.10, Revegetation Monitoring, Section 2.13.12, Soil Replacement Monitoring, and Section 2.13.13, Soil Storage Monitoring, of the final EIS.

Concerning revegetation success, it is expected that some natural seeding and/or regeneration, particularly from western larch would occur in many areas to be reclaimed. It is not unusual for natural regeneration to account for 50% of the total regeneration on disturbed sites in the Okanogan Highlands.

6.19.22 **What will be the WADOE implementation program for Total Suspended Particulates (TSP) be based on, PM-10 or PM-2.5? Is a monitoring package required for ambient air quality? Will air quality monitoring be conducted during reclamation?**

Response:

If WADOE were the only agency involved, it probably would specify PM-10 monitoring. If the Forest Service were the only agency involved, it probably would specify PM-2.5 monitoring. The recommendation for the use of "module A IMPROVE, [PM-2.5]" which generated the comment has been removed from the final EIS.

It is important to remember that both PM-10 and PM-2.5 monitoring are valuable. Since the WADOE and the Forest Service are committed to working together and seek to avoid duplicative requirements, they have agreed to find ways that the same monitoring stations can fulfill the ambient air quality monitoring required for the EIS and the ambient air quality monitoring which is likely to be required by WADOE as part of the Notice of Construction air quality permit.

The final decision on what size particulate to monitor has not been made. Prior to the installation of the monitoring stations, the Proponent would be required to submit a monitoring plan that describes the methods to be used. The decision on which particle size to be monitored would be made at that time. An important factor in making that decision would be the progress toward establishing an ambient air quality standard for particulates smaller than PM-10.

Air Quality monitoring during reclamation may be required depending on WADOE permit requirements.

6.19.23 **Topsoil is one of the most important aspects to reclamation. Could you detail how topsoil will be monitored both during removal and replacement? Can a new section be added to detail topsoil monitoring?**

Response:

Soil suitability for disturbed areas has been conducted and is discussed in Section 3.5, Soils, of the final EIS. A plan for monitoring soil stripping and storage is discussed in Section 2.13.13, Soil Storage Monitoring, and the plan for monitoring the replacement depths for soils is discussed in Section 2.13.12, Soil Replacement Monitoring, of the final EIS. These sections have been expanded in the final EIS. Soil would be tested following re-application but prior to planting to determine nutrient values. Fertilizer would be added, if necessary.

6.19.24 **Will sediment that accumulates in waste rock detention ponds be analyzed?**

Response:

Sediment which accumulates in sediment ponds would be analyzed for Toxicity Characteristics Leachate Procedures (TCLP). If sediment is not toxic, it would be disposed of on-site. If toxic, sediment would be transported off-site for proper disposal. The sediment is not expected to be toxic.

6.19.25 **The McLaughlin Mine in California underestimated ARD potential from their waste rock. Will the same thing happen at the Crown Jewel Project?**

Response:

Mr. Raymond Krause, Environmental Manager for the McLaughlin Mine was asked about the circumstances surrounding the underestimation of ARD potential in their waste rock. The following is a paraphrased reply from the January 9, 1996 letter that Mr. Raymond Krause sent to Mr. Alan Czarnowsky, TerraMatrix.

The original evaluation of the McLaughlin Mine waste rock was conducted in 1981 and 1982, using then state-of-the-art techniques (used static tests only), and predicted that only 8% of the waste material would have a net acid-generating potential. Based on the understanding of the time, it was felt that the waste rock could be randomly placed into the waste dumps without the formation of acid leachate.

Monitoring of water discharging from the waste rock indicated the formation of acid rock drainage (ARD) in the waste rock dumps. Kinetic testing was conducted and indicated that as much as 40% of the waste material had ARD potential. Once this determination was made, an active program of selective placement of waste rock was implemented to prevent formation of significant ARD leachate. Acid-generating rock is now completely surrounded with five feet of nonacid-generating clays. The criteria for closure has been established at 20 feet to daylight for acid-generating rock.

The sampling and testing procedures performed at the Crown Jewel Project site for ARD potential are generally accepted industry and regulatory procedures. Please refer to Section 3.3.3, Geochemistry, of the final EIS.

6.19.26 **There needs to be a detailed monitoring plan for all aspects of mitigation (protection and restoration). The draft EIS does not include such a plan; A logical question presents itself: if operators cannot effectively track raw baseline data, how will they effectively track flow-paths of introduced contaminants in air, ground and surface water, etc.**

Response:

Section 2.12, Management and Mitigation, and Section 2.13, Monitoring Measures, have been reviewed and been updated in the final EIS. Additional information about monitoring would be contained in the Plans of Operations for the Crown Jewel Project which require approval by the Forest Service and the BLM before activities can commence on land that they manage. Permits required by different federal, state and county agencies would also include required monitoring as part of the permit conditions.

Most monitoring would be self-monitoring with spot checking by the agencies. Information collected and analyzed to date by the Proponent for the Crown Jewel Project has met very high standards of quality assurance/quality control.

6.20 BONDING/PERFORMANCE SECURITIES

General

6.20.1 **There were numerous comments received on the draft EIS that simply expressed opinions about performance securities for the Crown Jewel Project or cited the need for minor edits and clarifications to the text.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "bonding/performance securities" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Performance Security Details

6.20.2 **No financial assurance estimates or costs are presented in the draft EIS to address possible financial abandonment or post-closure long-term continued site maintenance.**

Response:

The financial assurance details and costs specifically associated with environmental protection and reclamation would be determined following selection of a Selected Alternative and development of a refined Plan of Operations for permit acquisition. At that time, detailed calculations would be completed. The basis for these calculations have been discussed in Section 2.14, Performance Securities, of the final EIS.

A listing of reclamation performance bonds for other precious metals mines is provided in Section 2.14, Performance Securities, in the final EIS. These are examples to represent performance bonds currently in place for certain other Western United States mines.

The Proponent has included in their revised reclamation plan (BMGC, 1996f) their performance security cost estimate which proposes $4,259,150 in year one; $6,119,869 in year four; and $6,111,266 in year nine; and $1,061,290 in year ten. The Forest Service presently holds two reclamation performance securities for the past exploration work that totals $530,000.

6.20.3 **The draft EIS fails to explain clearly the handling requirements for posting performance securities, the provisions for accidental release response funds, the reclamation in the case of the Proponent's financial failure, or the ongoing responsibility to deal with long-term care and repair.**

Response:

The Forest Service, BLM, and WADNR require that an acceptable reclamation performance security be deposited prior to issuance of an approved Plan of Operations or permit. The amount of the security would be determined by the agencies based on the estimated costs of completing reclamation according to the approved reclamation plan and the associated administrative overhead. This security would provide the agencies with sufficient funds to reclaim the site and provide environmental protection should the Proponent fail to do so.

The regulations of the Forest Service (36 CFR, Part 228A), BLM (43 CFR, Part 3809), and WADNR (RCW 78.44.087 and WAC 332-18-120), and WADOE (RCW 78.56) require that the Proponent deposit a performance security (e.g., bank letter of credit, cash deposit, negotiable security, corporate security bond, etc.) to ensure that environmental protection, reclamation, and monitoring can be achieved during and following mining and milling activities. In addition, the agencies may increase or decrease the amount of the reclamation performance security at any time to compensate for alterations in the operations. At a minimum, the agencies would review the adequacy of the performance security every two years.

The WADOE requires an environmental protection performance security to be deposited before approval of permits. The WADOE would determine the amount of this performance security. In addition, the WADOE may increase or decrease the amount of the performance security at any time to compensate for alterations in the operations. At a minimum, WADOE would review the adequacy of the performance security every two years.

There is some overlap in agency authority and content between reclamation and environmental performance securities. At this time, it has not been determined if the Forest Service and BLM would require additional performance securities or if they would enter into a written agreement with the WADNR, whereby the WADNR would hold the reclamation security, in order to avoid multiple securities. Release of any securities would require the consent of the WADNR, WADOE, Forest Service, and BLM.

For additional information regarding reclamation and environmental protection performance securities, refer to Section 2.14, Performance Securities, of the final EIS.

6.20.4 **The Proponent believes that it is most appropriate and efficient for one agency to hold the reclamation performance security and that a multi-party Memorandum of Understanding be developed to administer the program.**

Response:

The Forest Service, BLM, WADOE, and WADNR are exploring the most efficient method to assure performance security. Because of the Washington Metal Mining and Milling Operations Act, there will likely be two separate instruments; one for reclamation, which likely will be held by the WADNR, and one for environmental protection, which will be held by the WADOE.

At this time, it has not been determined if the Forest Service and/or BLM would require reclamation performance securities for federal lands or if they would enter into a written agreement with the WADNR in order to avoid multiple securities.

For additional information regarding reclamation and environmental performance securities, refer to Section 2.14, Performance Securities, of the final EIS.

6.20.5 **How would patenting affect the federally held performance securities?**

Response:

Any reclamation performance security held by the Federal agencies covering patented lands would be transferred at the time of patenting to the WADNR. The environmental protection performance security held by the WADOE would not be affected by patenting.

Proponent Bankruptcy and/or Site Abandonment

6.20.6 **The EIS should discuss the possibility of operator abandonment of the site prior to completion of reclamation and the likelihood that the agencies would be forced to complete the reclamation/clean up.**

Response:

Both the reclamation and environmental protection performances securities must be in place prior to issuing any permits or approvals for the Crown Jewel Project. This is discussed in Section 2.14, Performance Securities, of the final EIS. These securities should be adequate to reclaim the site and do any necessary environmental clean-up should the Proponent abandon the site.

6.20.7 **Financial solvency of " Joint Venture" and financial accountability of Crown Resources and the Proponent in case of abandonment or inactivity needs to be demonstrated.**

Response:

The performance securities will protect against the potential insolvency of the Proponent. This is discussed in Section 2.14, Performance Securities, of the final EIS.

6.20.8 **If the ore plays out or the price of gold drops, what guarantees are there that the Proponent will not abandon their tailings pond?**

Response:

The reclamation and environmental protection performance securities are independent of gold prices or the status of the Proponent's ore reserves. These securities would be required prior to any plan or permit approval. Once under agency administration, these securities would be available for environmental protection or reclamation should the Proponent be unable or unwilling to fulfill permit and plan obligations. This aspect is discussed in Section 2.14, Performance Securities, of the final EIS.

Miscellaneous

6.20.9 **"We have a shallow well at our home in Chesaw, we have had the water tested by 2 (two) labs. We have pure clean hard well water. Who do we sue when our water becomes unfit to drink? Where do we go for help when our well goes dry and we need to redrill for a deeper well? Who pays the cost?"**

Response:

There is no indication, based on the EIS investigations and analyses, that there would be any direct effect to ground water in the vicinity of Chesaw as a result of any of the Crown Jewel Project action alternatives. However, the Proponent would be liable for any mine-related contamination. The ground water code only affords protection for wells if the well fully penetrates the aquifer. Refer also to response 6.5.20 in this appendix.

6.20.10 **What rights do Canadian citizens and property owners have with regard to full legal and financial protection in the event the Crown Jewel Project creates an environmental problem in Canada?**

Response:

If the Proponent creates an environmental problem in Canada, nothing in the EIS is intended in any way to circumvent the Civil Damages Laws of the United States or Canada. Any damage to person, or property or the value of same, would be a civil matter to be determined in the proper Civil Courts.

6.20.11 **The Proponent should be responsible for reclaiming the damage they have already inflicted on Buckhorn.**

Response:

The Forest Service currently holds two reclamation performance securities deposited by Battle Mountain Gold Company and Crown Resources, Inc. to cover reclamation of the disturbance from the exploration activities conducted to date should the Proponent be unwilling or unable to execute their obligations. If the Crown Jewel Project does not continue, then the existing exploration disturbance would be reclaimed according to the exploration reclamation plan approved by the Forest Service. The Proponent has already reclaimed some exploration disturbance that is outside of the area expected to be affected by any of the action alternatives discussed in the EIS for the proposed Crown Jewel Project.

6.20.12 **The EIS process must afford the public an opportunity to comment on the adequacy of the financial assurances that are developed between the agencies and the Proponent.**

Response:

It is not planned that the general public would have an opportunity to comment on the adequacy of the performance securities during the state and federal permitting and Plan of Operations approval process.

6.20.13 **In order to prevent occurrence of otherwise avoidable degradation, the final EIS must not only accurately identify likely impacts and detail specific conditions that will prevent or mitigate those impacts, it must also provide estimates of the costs that will be incurred in satisfying these conditions.**

Response:

Section 2.11, Reclamation Measures, Section 2.12, Management and Mitigation, and Section 2.13, Monitoring Measures, summarize proposed mitigation and monitoring to be required for the Crown Jewel Project and the proposed goals of the mitigation. These sections have been revised between the draft and final EIS to include more details on proposed monitoring and mitigation. There is no requirement under NEPA or SEPA to display the cost of proposed mitigation. Under SEPA, the cost of proposed mitigation may be discussed if there is concern about whether a mitigation measure is capable of being accomplished. Reclamation costs were estimated and considered in the economic analysis of the alternatives (see Section 4.21, Mining Economics).

6.21 MITIGATION

General

6.21.1 **There were several comments which expressed opinions concerning mitigation which did not require a specific response. Other comments cited typos or requested text clarifications.**

Response:

We appreciate the input of all those individuals, organizations, and agencies who commented on the "mitigation" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

Suitability and Effectiveness of Mitigation

6.21.2 **Commentors questioned the effectiveness of fencing as a mitigation practice, and asked why fencing was not proposed for the wetlands below the tailings pond and how long fencing would last around underground mining subsidence areas.**

Response:

Please refer to response 6.15.16 of this appendix for the discussion of fencing. Fencing is proposed around wetland enhancement areas. Fencing would remain above the underground mining area subsidence as long as required by the Forest Service, or WADNR, if the land is privately owned.

6.21.3 **There were comments which stated that the mitigation of wetlands was inadequate. Replacing good wetlands by enhancing damaged wetlands was unacceptable.**

Response:

There is little or no opportunity to enhance wetlands on site. The practice of enhancing off-site wetlands is a practice applied by both the WADOE and the Corps of Engineers. The goal of the final mitigation plan would be to replace lost functions and values of wetlands with no net loss in acreage. The final plan would include enhancement or

restoration of existing wetlands or creation of new wetlands. Final details of the plan would be included in the Corps of Engineers 404(b)(1) permit.

The wetlands mitigation section of the final EIS has been rewritten to incorporate discussions that have been ongoing since the release of the draft EIS based on the Proponent's proposed wetlands mitigation plan entitled Project Conceptual Wetland Mitigation Plan, (Parametrix, 1996a).

6.21.4 The open pit can never be reclaimed so that a healthy forest will grow again.

Response:

Reclamation of the mine area would vary by alternative. Under Alternative F, the pit would be backfilled with waste rock, topsoiled, and revegetated to a forested environment. Under Alternatives B, D, and G, the north portion of the pit would be reclaimed as a lake with talus slopes and benches on the rock walls above the lake. Under Alternative E the north portion of the pit would be backfilled so no lake would form, but the pit walls above the backfilled portion would be similar to the pit walls above the lake in Alternative B. The difference is that the refilled material in Alternative E would be topsoiled and the area revegetated. The south portion of the pit under Alternatives B, E, and G would be reclaimed to similar standards. Portions of this area would have the pit walls and benches blasted down to create talus slopes. Other potions would be partially backfilled with waste rock and topsoiled. The south pit floor would be partially topsoiled and revegetated. All areas topsoiled would be revegetated with tree species including Engelmann spruce and maples (refer to Sections 2.5 through 2.11 of the final EIS).

6.21.5 It was suggested that stream flow mitigation was inadequate.

Response:

The effects of all action alternatives on surface and ground water hydrology, both quality and quantity, are discussed in Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water. Refer also to Section 2.12.13, Surface Water and Ground Water - Quality and Quantity, for a discussion of the mitigation measures planned, and Section 2.13.1, Water Resources Monitoring, for proposed monitoring of the water resources.

6.21.6 What is the mitigation for increased levels of nitrates if it is found in water quality analyses?

Response:

Elevated nitrate loading levels could come from inefficient ignition of the ammonium nitrate/fuel oil (ANFO), the explosive to be used at the mine, caused by poor mixing at the mixing station or loading non-water proof ANFO into wet drill (blast) holes. Loading wet holes would be an operator error. If inefficient ignition or blasting of wet holes with ANFO occurs, it would be apparent because there would be yellow/orange smoke during the blast and/or the rock would not be broken properly. Since the explosive mixing station is located on site, adjustments would be made to resolve the situation. Supervisors would be trained to identify both problems. For further discussion see response 6.5.46 in this appendix.

Another possible source of contamination may come from a large spill. However, a spill should be cleaned up rather quickly and would not be expected to cause long term water quality problems. See spill response mitigation in Section 2.12.4, Spill Prevention, Hazardous Materials, Fire Prevention and First Aid.

6.21.7 **What mitigation will there be for acid rock drainage (ARD) "hot spots" or increased levels of cyanide in the tailings due to lack of sunlight and cold temperatures in the winter?**

Response:

Geochemical analyses Section 3.3.3, Geochemistry, has determined that less than 15% of the waste rock would be potentially acid-forming in the open pit alternatives. As mitigation, the Proponent has committed to a selective placement plan which would isolate this material in the waste rock disposal areas. Details of this plan would be submitted to the regulatory agencies for review and approval as an integral part of permitting. In addition, all runoff from the waste rock disposal areas would be subject to NPDES effluent limitations.

The Proponent has committed to a WAD cyanide concentration limitation of less than ten parts per million (ppm) in the tailings pond as a running monthly average. The cyanide level at the pipe discharging the tailings slurry into the tailings disposal facility would be a WADOE permit condition. The lack of sunlight and cold temperatures in the winter do not increase cyanide concentrations. Rather, they inhibit "natural degradation" of cyanide. Natural degradation would be more prevalent in the summer months than in the winter months.

6.21.8 **It was suggested that the only effective way to control dust on the access road was by paving.**

Response:

Dust would be controlled on the access roads by watering and the use of chemical dust suppressants. Refer to Section 4.14.3, Effects Common to All Action Alternatives, subsection "BACT Assessment for Haul Road Dust." This is an accepted practice in the mining industry. Paving of access roads was eliminated from consideration due to safety concerns involving haul truck traffic on steep paved roads in the winter months, the frequent need to change locations of roads to access the pit and waste rock disposal areas, the type and amount of paving that would be necessary to withstand use by 85 ton haul trucks, and the amount of use projected for some roads.

Regarding chemical treatment as a dust control measure, one control efficiency model shows the dust abatement efficiency varies between 82% and 97% with weekly application, between 67% and 94% when applied every two weeks, and between 62% and 89% when applied monthly.

Regarding the sole use of water as a dust control measure, the control efficiency is highly dependent on the surface moisture content achieved and maintained. One reference shows a control efficiency of 95% when the surface moisture content is 9% and a control efficiency of 75% when the moisture content is 3.5%. Control efficiencies declined rapidly for moisture contents less than 3.5% at the site used in this study.

The key factor in controlling dust is a dedication to the performance of repetitive tasks in a timely manner.

6.21.9 **Further evaluation of grave sites needs to be explored in order to be in compliance with Native American rights regulations.**

Response:

Cultural studies and surveys conducted for the Crown Jewel Project EIS were in compliance with the Native American Graves Protection and Repatriation Act. Please refer to Sections 3.17, Heritage Resources, and 4.16, Heritage Resources, in the final

EIS and comment responses in Section 6.13, Heritage Resources in this appendix. Also, please refer to the Memorandum of Agreement Between the State Historic Preservation Office and the Forest Service/BLM.

6.21.10 **Several comments questioned the effectiveness of storm water controls to guarantee surface water quality. One comment suggested that run-off from the waste rock needed to be treated as "mine water."**

Response: For a discussion of the proposed storm water controls refer to response 6.18.22 in this appendix.

Final approved storm water design parameters are a permit issue and will be finalized during the permitting process. Section 4.6.4, Effects of Alternative B, subsection "Drainage Control," has been revised to reflect the proposed storm water controls.

Runoff from undisturbed areas which mixes with runoff from the waste rock becomes "mine water" and is subject to the 40 CFR 440 effluent limits. Water draining onto the upper limits of the waste rock facilities would be relatively small because the completed rock facilities are very near the crest of the ridge in all of the alternatives. Discharges from storm water facilities would be required to meet NPDES effluent limitations.

Details of Mitigation

6.21.11 **There were requests for the corrective action plans and trigger mechanisms to be detailed in the final EIS.**

Response:

Corrective action plans would be developed by the Proponent and submitted to the regulatory agencies for review and approval. This would be a major component of the permitting process and is not within the scope of the EIS. Potential permits required for the Crown Jewel Project are listed and discussed in Appendix B, Agency Responsibilities (Permits and Approvals), and displayed in *Table 1.1, List of Tentative and Potential Permits and Approvals*, in the final EIS.

Mitigation measures are applied based on the level and source of the contamination. It is not possible to set out specific mitigation without this information. Section 2.12.13, Surface Water and Ground Water - Quality and Quantity, and Section 4.22.4, Other Types of Accidents, of the final EIS discuss potential mitigation for releases to ground water. The Washington Metal Mining and Milling Operations Act requires the company to provide a performance security that includes funding for reclamation before permits are issued. (RCW 232.11(2)(c).

6.21.12 **Details to the mitigation measures (including transportation, fish and wildlife, water quality, land use, etc), were requested to be summarized in Section 2.12, Management and Mitigation, of the final EIS.**

Response:

The mitigation measures summarized in Section 2.12, Management and Mitigation, of the final EIS are the measures proposed by the Proponent and/or recommended by the various discipline specialists and the lead agencies responsible for oversight of the Crown Jewel Project. These mitigation and monitoring measures have been clarified in the final EIS. Much of the specifics of the mitigation and monitoring will be determined for the final Plans of Operation and during permitting.

6.21.13 **The draft EIS states that wetlands in Bear Trap Canyon would be used for mitigation; however, no acreage is given.**

Response:

Section 2.12.16, Wetlands, of the final EIS states that the acreage, including buffers, would be approximately 10 acres.

6.21.14 **What are the appropriate ground water quality mitigation methods that would be implemented if quality is compromised? How effective are they? When will they be implemented?**

Response:

The various Crown Jewel Project components have been developed and refined through the EIS process to protect ground and surface water quantity and quality. These protection measures as well as ground and surface water monitoring are discussed throughout the final EIS. (Refer to Section 2.12.13, Surface Water and Ground Water - Quality and Quantity, Section 2.13.1, Water Resources Monitoring, Section 3.8, Ground Water, and Section 4.6, Ground Water, Springs and Seeps.) Detailed mitigation plans are not required in the EIS. Emergency response plans and corrective action plans would be developed during the permitting process to respond to spills or other situations if monitoring indicates that water quality has been adversely impacted.

6.21.15 **When will wetland mitigation begin, during mining or after mining?**

Response:

The exact timing of mitigation would be defined by an approved Corps of Engineers 404 permit. However, mitigation usually begins concurrent with construction activities.

6.21.16 **The draft EIS does not contain contingency plans for accidents.**

Response:

Refer to Section 2.12.4, Spill Prevention, Hazardous Materials, Fire Prevention and First Aid. The Proponent would be required to develop Spill and Handling Plans, including a Hazardous Material Handling Plan, a Transportation Spill Response Plan, and a Spill Prevention Control and Countermeasure (SPCC) plan (see Appendix B, Agencies Responsibilities, Permits and Approvals). In addition, the Proponent would be required to develop a Fire Protection and Suppression Plan. Emergency response plans would be developed during the permitting process.

6.21.17 **How will the Proponent mitigate silver and cadmium if they occur in the proposed pit lake.**

Response:

The EIS predicts exceedances of the aquatic life criteria for several metals including silver (Ag) and cadmium (Cd) based upon the baseline data that has been collected at the site followed by modelling. The models include assumptions that are biased (conservative) and are expected to overestimate the concentration of constituents in surface water after closure of the mine. Monitoring during mine operation would provide a basis to refine the models and better understand the likelihood of predicted exceedances. Treatment of the water in the pit lake before it discharges would be required if the predictions are verified. Please see response 6.5.39, of this appendix for further discussion. Please refer to Section 2.12.13.5, Pit Lake, and Section 2.13.1, Water Resources Monitoring, of the final EIS for discussion of proposed mitigation and monitoring.

6.21.18 The draft EIS talks about the treatments for pit lake water and storm water; what are they?

Response:

Treatments for storm water include best management practices (BMPs) as described in Section 2.11.4, General Reclamation Procedures, and Section 2.12.13, Surface Water and Ground Water - Quality and Quantity, of the final EIS. In the event monitoring identifies adverse impacts to surface water, corrective action plans would be implemented. Please refer to responses 6.19.6 and 6.19.9 in this appendix.

6.21.19 A few comments asked about the mitigation of ground and surface water contamination in case of a tailings liner or embankment failure.

Response:

The Proponent has revised their tailings pond liner system which now includes two synthetic liners, a leak detection system, and an underdrain and overdrain. This system is described in Section 2.2.15, Tailings Liner System Design, of the final EIS. This section includes a discussion of how the overdrain would function to control water. A massive liner failure scenario is discussed in Section 4.22.4, Other Types of Accidents, of the final EIS. Runoff from the active tailings facility would be controlled. Once the tailings facility is graded, topsoiled and revegetated, runoff would be allowed to drain off of the facility area, via an engineered control structure that would route runoff to Nicholson Creek. Section 2.12.13, Surface Water and Ground Water - Quality and Quantity, of the final EIS discusses potential mitigation for releases to ground water.

Other Comments

6.21.20 Who will pay for the cost of ground water monitoring and remediation?

Response:

The Proponent would be responsible for conducting and paying for ground and surface water monitoring as required under permits and for remediation for potential contamination. The WADOE would hold a performance security to make sure water monitoring is continued after the completion of reclamation for as long as necessary. In addition, they would hold a performance security in case of the need for remediation during or after completion of the Crown Jewel Project. Refer to Section 2.14, Performance Securities, of the final EIS.

6.21.21 Mitigation to replace flora will only be partially successful. There is no way to replace the diverse genetics and species types that occur in these areas especially the forbs in the understory.

Response:

It is stated in Section 2.11.4, General Reclamation Procedures, of the EIS: "As much natural, local vegetation would be used as feasible." Much would depend on how successful native species are in accomplishing the goals of reclamation, e.g., stabilizing the soil. If they do not work, then non-native species may have to be used. An attempt would be made to use on-site native species to the extent practical. It is not practical to use all on-site native grasses, forbs, and shrubs since it would be nearly impossible and prohibitively expensive to collect adequate amounts of seed and grow enough stock in nurseries. It is expected that about 25% of the grasses, shrubs, and forbs used to control erosion could be considered "completely" native. That is, from on-site seed sources.

Policy Issues

6.21.22 **Any proposed mitigation on Nicholson Creek headwaters should not be permitted to negatively impact sensitive plant species.**

Response:

The proposed Nicholson Creek wetlands mitigation should have no negative impacts on sensitive species. The fencing of this wetland should protect this area from cattle grazing impacts.

Other fencing would be designed to route cattle away from known plant populations. Seeding of the dam site may contain species that invade wetland habitats. Otherwise, no impacts are foreseen.

6.21.23 **Cattle would be fenced out of the mine footprint. This action may increase grazing pressure in other riparian areas. Efforts should be taken to provide supplemental water sources and protect riparian sites.**

Response:

The frog pond would be eliminated as a source of water for livestock with the initiation of the Crown Jewel Project because it would be fenced. In the final EIS there is the following statement: "Two replacement water sources would be developed to compensate for the loss of this water source for cattle grazing and would be maintained by the Proponent for a period of not less than 16 years after the initiation of construction activities." Refer to Section 2.12.16, Wetlands, and Section 2.12.7.2, Livestock Water Source Developments.

In November of 1995, Forest Service personnel and the permittee on the Cedar Allotment located two replacement water sources that could be developed. One is located northeast of the frog pond near monitoring well #5. There are some sensitive plant concerns near this proposed development. Monitoring and protective measures would be required to eliminate disturbance to those plants and to provide riparian protection. The spring source would be fenced to protect from trampling and the water trough would be located away from the draw as far as practical.

Another opportunity to develop water for livestock to replace lost water at the frog pond includes developing a spring along the Forest Road 3575-125 near to or in the borrow pit. The spring source would be fenced and the water trough would be located away from the draw as far as practical.

The Nicholson Creek Headwaters Wetland mitigation in Section 2.12.16, Wetlands, subsection "Nicholson Creek Headwaters Wetland" of the EIS states that "a replacement water source would be developed to compensate for the loss of this water source for cattle grazing." In November of 1995, the permittee stated that there is nothing nearby to compensate for this lost water source.

The permittee proposed that since the Crown Jewel Project fence would eliminate livestock water in the SE ¼ of Sec. 13 near the Magnetic Mine, livestock water be developed as part of the water supply line. A livestock water trough could be placed just north of the Crown Jewel Project fence. Section 2.12.7.2, Livestock Water Source Developments, of the final EIS, states "Certain existing water source developments used would be inside the fenced area surrounding the mining and milling activities. Where this occurs, the Proponent would work with the Forest Service, the BLM, and the livestock permittees to find and develop replacement water sources for livestock."

6.21.24 **The purpose of management and mitigation measures for the proposed gold mine (Project), is to avoid adverse impacts to the environment and to reclaim disturbed areas (draft EIS page 2-85). SEPA WAC 197-011-660 states that proposals may be denied under SEPA if reasonable mitigation measures are insufficient to mitigate the identified impacts. Mitigation measures and their expected effectiveness are listed in the draft EIS on pages 2-86 through 2-96. Many of the measures are rated as low or moderate. Shouldn't permits be denied under SEPA if excellent results cannot be achieved through mitigation? Other comments also questioned the ratings given in the draft EIS.**

Response:

Part of the confusion may be that the effectiveness level was rated for how well the mitigation accomplished the goal of the mitigation, not the ability to implement the mitigation. The final EIS has been modified to include a goal statement for each of the mitigation measures and a paragraph has been added to the introduction of Section 2.12, Management and Mitigation, to clarify the effectiveness rating.

Although the rating process is somewhat subjective and often cannot be quantified, the ratings were based on the best professional judgement of the Forest Service and WADOE. Refer to Section 2.12, Management and Mitigation, of the final EIS for revisions in the effectiveness ratings.

Concerning denial of permits, WAC 197-11-660 states that the proposal must also "be likely to result in significant adverse environmental impacts identified in a final or supplemental environmental impact statement prepared under this chapter..."

Permits can be denied using SEPA substantive authority, if significant impacts from the proposal would remain even after reasonable mitigation measures are applied. Under WAC 197-11-060, the proposal cannot be denied using SEPA substantive authority if only nonsignificant adverse environmental impacts remain.

6.21.25 **There was a disagreement with the moderate rating for the Proponent's ability to attain the promised 80% local hiring. It was suggested that the rating should be changed to high.**

Response:

The agencies believe the rating of effectiveness should remain moderate since it is not obvious that the Proponent can hire 80% of their employees locally (from within eastern Okanogan County or western Ferry County and from people who have been residents for a period of time). This rating is an effectiveness rating and not a rating of the ability to implement.

6.21.26 **The draft EIS states that "reclamation plans and mitigation would eventually restore wildlife habitat, but not the same quality or quantity that would be lost." Because the proposed permanent and interim loss of habitat would be foregone until reclamation and mitigation measures reach full maturity, it is requested that compensatory mitigation be developed to offset these proposed losses.**

Response:

Federal regulations require that locatable mineral operations, where feasible, minimize adverse environmental impacts on National Forest System lands (36 CFR 228.8), and must consider economics of the operations along with other factors to determine reasonable surface resource protection. NEPA identifies mitigation as avoiding, minimizing, rectifying, reducing or eliminating, or compensating for impacts. Compensatory mitigation is only one of a variety of types of mitigation available to decision makers. One hundred percent mitigation for wildlife habitat is not required by federal regulation and is not considered reasonable except where required by other laws

(e.g., Endangered Species Act). The final EIS presents required mitigation to offset wildlife habitat losses in areas designated for wildlife habitat management under the Okanogan National Forest Land and Resource Management Plan, and on BLM land under the Spokane Resource Area Management Plan.

Additional compensatory mitigation for impacts to wildlife are being considered as part of the state permitting process. These mitigation measures are displayed in Section 2.12.19, Wildlife and Fish - Private Land Enhancement.

6.21.27 **Changing current Forest Service management of Nicholson Creek wetland and riparian areas has much potential to enhance fish and wildlife resources, but should not be considered mitigation. The proposed enhancement of riparian and wetlands in Bear Trap Canyon should not be considered mitigation.**

Response:

Changing Forest Service management has some potential to enhance wildlife resources associated with the Nicholson Creek headwaters and the frog pond. Forest Service management would not likely fence these areas off from use or expend funds to plant areas around these wetlands, particularly since the frog pond was created as a stock watering facility in the 1920's. Mitigation proposed to be implemented by the Proponent would control cattle use of these facilities for 15 to 20 years. The Forest Service believes this is mitigation for some of the Crown Jewel Project impacts to wetlands. The Forest Service views this mitigation as partly compensating for Crown Jewel Project impacts to other wetlands on National Forest lands.

6.21.28 **The final EIS should identify the physical and biological effects of changing flows in Gold, Bolster, Marias, Toroda, and Myers Creeks in terms of sediment transport, stage height of high and low flows, maintenance of habitat diversity, changes in the abundance and diversity of aquatic biota, and changes to the associated riparian communities.**

Response:

A discussion of estimated stream depletion and its effects are presented in Section 4.7, Surface Water, of the final EIS and response 6.5.11 in this appendix. A discussion of sediment transport and its affects on water quality and quantity is presented in Section 4.7, Surface Water, and Section 2.13.1, Water Resources Monitoring. The effects of stream depletion and sediment loading on aquatic biota, wetlands, and riparian areas is discussed in Section 4.11, Aquatic Habitats and Populations, and Section 4.10, Wetlands, respectively.

Impacts to area streams, ground water, springs and seeps are discussed in Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water. These same sections also discuss predicted changes to area stream flows as a result of pit dewatering and pit filling. Information on effects to aquatic habitats is contained in Section 4.11, Aquatic Habitats and Populations. Information on effects to wetlands is contained in Section 4.10, Wetlands.

Impacts on riparian communities are characterized in the wildlife analysis, Section 4.12, Wildlife. Some change of vegetation to a drier ecotype is expected in such locations as the frog pond and the nine acre wetland if augmentation of water availability flows is not accomplished. The final details of this augmentation would be determined in the 404(b)(1) permit, the 401 permit, or Okanogan County permits.

6.22 CUMULATIVE EFFECTS

General

6.22.1 There were a number of comments, concerns, and questions received on cumulative effects. Some expressed opinions and/or requested clarification in the final EIS.

Response:

We appreciate the input of all those individuals and organizations who commented on the "cumulative effects" aspects of the Crown Jewel Mine draft EIS. We have reviewed your comments and made revisions, as appropriate, to the final EIS.

We have addressed the cumulative impacts to the various appropriate resources in Chapter 4, Environmental Consequences, of the final EIS. Although some commentors suggested addressing a specific radius from the proposed site, it was decided not to use a standard distance for this study. The very nature of cumulative effects analysis dictates that the area of influence varies from discipline to discipline.

Effects on Hydrology

6.22.2 Not enough is said on the cumulative effects that the Crown Jewel Project would have to existing water rights or future rights.

Response:

The disposition of water rights in the State of Washington has been updated and is discussed in Section 4.8, Water Supply Resources and Water Rights, of the final EIS. In the State of Washington, the WADOE has the statutory and regulatory responsibility to review water right applications or changes to existing water rights and to render decisions on these matters. Cumulative effects to water rights would depend on these decisions and certainly is a consideration in making these decisions.

6.22.3 The studies fail to assess fully the potential negative impacts of the Crown Jewel Project on downstream water users and other instream values. The source of water supply for mining operations and the consequences of utilizing that source during low flow periods have not been adequately considered, and for this reason a study integrating the hydrological characteristics and the cumulative impacts to the entire watershed should be performed.

Response:

The direct, indirect and cumulative effects on the water resources are discussed in Chapter 4, Environmental Consequences, of the final EIS, particularly in Section 4.6, Ground Water, Springs and Seeps; Section 4.7, Surface Water; Section 4.8, Water Supply Resources and Water Rights; Section 4.10, Wetlands; and Section 4.11, Aquatic Habitats and Populations.

A detailed instream flow study of Myers Creek is set forth in Section 3.12.10, Instream Flow Incremental Methodology (IFIM), of the final EIS. One of the primary purposes of an IFIM study is to model the relationship of stream flow to habitat values for fish species of concern. The outcome of the IFIM study provides decision makers with an estimate of minimum flows to provide aquatic habitat protection (see Section 4.11.7, Instream Flow Incremental Methodology (IFIM), of the final EIS). Downstream water users on Myers Creek holding senior water rights were considered in this analysis. Water for their use during the irrigation season was included in the base flow numbers that were set. Appropriation of water from Myers Creek under new water rights would be curtailed when minimum flows are not met.

6.22.4 **The cumulative impacts on water resources has not been adequately addressed.**

Response:

The cumulative impacts to both ground and surface water resources are addressed in Section 4.6, Ground Water, Springs and Seeps, and Section 4.7, Surface Water, of the final EIS. These sections were revised and updated in the final EIS.

Future Mining

6.22.5 **The draft EIS failed to recognize the possibility that, with permitting of the Crown Jewel Project proposal, other mining ventures would be drawn to the area. Potential cumulative regional impacts of both an environmental and socioeconomic nature resulting from the development of a new industry in the Okanogan Highlands must be considered.**

Response:

The possibility of future mining in the area is addressed in Section 3.19.2, Crown Jewel Project Exploration Activities, and Section 4.21.2, Potential Mine Expansion, of the final EIS. At this point in time, no proposals for additional exploration or mining have been filed, and other future exploration and mining activities are therefore not "reasonably foreseeable" as required by NEPA or SEPA for cumulative effects analysis. If such a mining and ore processing development is proposed, it would be subject to the preparation of an environmental analysis as required by NEPA and/or SEPA and related regulatory review. Since no specifics are known regarding hypothetical projects, any analysis would be meaningless.

Mining has been an integral part of the history of the Okanogan Highlands as explained in Section 3.17.3, History, of the final EIS. The last mine operated on Buckhorn Mountain until 1951. The historic mines were smaller than the operations proposed for the Crown Jewel Project.

6.22.6 **The cumulative impact of mining operations has not been adequately addressed. The final EIS for land and resource management for the Okanogan National Forest on III-15 references 2,750 mining claims. This application would set the standard and I fear negatively impact the total water and air quality of the region. My water comes from a 120 foot deep well and I don't want any cyanide in it.**

Response:

See response 6.22.5 in this appendix.

The control of mining (and mill site) claims in no way allows a claim holder to initiate mining and ore processing activities without first obtaining permits or receiving approvals from a host of regulatory authorities. Prior to any operations, the claim holder must file a plan of operations with the Forest Service and/or BLM (depending on which federal lands the claim is located). As mentioned above, this plan of operations would be subject to a NEPA and SEPA analysis, and compliance with a number of other federal, state, and local regulations including SEPA must be secured prior to any mining and ore processing activities. A discussion of the various permits and approvals required for mining and ore processing activities in Washington State and Okanogan County is set forth in Section 1.8, Permits and Approvals Needed, and in Appendix B, Agency Responsibilities (Permits and Approvals), in the final EIS.

The cumulative effects on air quality are discussed in Section 4.1.10, Cumulative Effects, of the final EIS. The cumulative effects on ground water are discussed in Section 4.6.3, Effects Common to All Action Alternatives, of the final EIS. The

cumulative effects on surface water are discussed in Section 4.7.3, Effects Common to All Action Alternatives, of the final EIS. Given the designs set forth by the Proponent and regulations required by the agencies, ground water contamination from cyanide is not expected. Monitoring would be an integral part of operations. This monitoring would continue after mine closure in compliance with the State Waste Discharge Permit to be required by WADOE and Federal reclamation requirements. The WADOE would also require a performance security in compliance with the Washington Metal Mining and Milling Operations Act. (See responses in Section 6.20, Bonding/Performance Securities, in this appendix.)

Miscellaneous Cumulative Effects

6.22.7 **Section 2.2.24, Solid Waste Disposal, of the draft EIS is incomplete. The amount of solid waste to be generated by the proposed Crown Jewel Project, from all alternatives, all personnel and their families, support staff, contractors, visitors, and all other potential contributors should be calculated and stated, with justifications for the calculations.**

Response:

Estimates for solid waste to be generated at the Crown Jewel Project operation are as follows:

- Construction; four to five lbs/day/employee;
- Operations; two to three lbs/day/employee; and,
- Reclamation; two to three lbs/day/employee.

Approximately three to four lbs/day/household individual would be generated by the newcomers and their families (Czarnowsky, 1996). Section 2.2.25, Solid Waste Disposal, of the final EIS has been revised to reflect these numbers.

An estimate of the impacts of solid waste generated as a result of the different alternatives is set forth in Section 4.19.3, Comparative Effects Common to All Action Alternatives, in subsection "Community and Public Services," of the final EIS.

6.22.8 **The siting of solid waste disposal facilities off-site is extremely problematic. The existing solid waste disposal site that the Proponent proposes to use was engineered for a life span (47 years) suitable to the local environment without the contribution of the Proponent's Crown Jewel Project. The Crown Jewel Project is large enough, and enough personnel would be brought into the area such that the life of the landfill site would be drastically reduced. The Proponent apparently feels that local government and citizens should bear the cost of siting and planning the solid waste facility to be used next, once the existing site is no longer able to accept additional waste. These accelerated costs of planning the next landfill should be described, with calculations shown. The proportion of these costs due to the Proponent's Crown Jewel Project should be calculated and described in detail.**

Response:

As discussed in Section 4.19.3, Comparative Effects Common to All Action Alternatives, of the final EIS the projected amount of solid waste generated by the Crown Jewel Project would be less than 2% of the total projected annual solid waste input to the Okanogan County landfill. This includes both direct and indirect input to the landfill. The solid waste input to the Okanogan County landfill is within the operational design criteria of the landfill. The accelerated costs of planning and siting

the next landfill would be speculative. These costs are included as part of the tipping fee charged to every user of the landfill. Crown Jewel Projects such as the Crown Jewel Project, and the associated population growth, were included in the planning for the existing landfill.

6.22.9 **Timber sales (Nicholson and Buckhorn) have already impacted the area. Major sales are planned under salvage legislation. These cuts would result in cumulative impacts that are not addressed in the draft EIS.**

Response:

Section 3.19.3, Historic and Present Timber Operations, and Section 3.19.4, Proposed Timber Operations, of the final EIS have been updated to provide current information on timber sales. No timber sales are planned within the Buckhorn Block under the salvage legislation.

Based on timber harvests that have been conducted since the release of the draft EIS various EIS sections have been updated, most notably, Section 3.13, Wildlife, and Section 4.12, Wildlife, of the final EIS.

6.22.10 **The draft EIS raises a number of grave cumulative impact and landscape concerns for wildlife, and is remarkably frank in doing so. It leads us to wonder how the Forest Service, entrusted with protecting and stewarding our public lands, can choose an alternative in full knowledge of its extreme impacts to wildlife and habitat and so counter to the direction of your own Forest Plan?**

Response:

The purpose of an EIS is to disclose the environmental effects of the alternatives. Cumulative effects are disclosed in Chapter 4, Environmental Consequences, of the final EIS. NEPA and SEPA do not mandate environmental protection, only disclosure of effects although other laws may contain mandates. The alternatives are designed to meet all laws, rules and regulations and respond to the Proponent's proposal. The Forest Service recognized on page 4-21 of the Forest Plan that future mineral development might require Plan amendments.

6.22.11 **Substantial habitat losses have recently occurred due to logging by Omak Wood Projects, Crown Resources (Pacific), and Golden Phoenix in the Analysis Area. The Nicholson Timber Sale also added to habitat loss. Species from these areas have moved to the Core Area and many would perish if the mine goes in. The cumulative effects would be much greater than predicted and may lead to federal (threatened or endangered) listing and loss of viability to PETS (Proposed, Endangered, Threatened, and Sensitive) species.**

Response:

The potential and expected cumulative effects of the action alternatives have been analyzed and discussed by resource in Chapter 4, Environmental Consequences, of the final EIS. Effects on threatened, endangered and sensitive (TES) federal species have been documented in the Biological Evaluations for wildlife, fisheries, and plants. The BE's and the final EIS (Section 4.12.7, Threatened, Endangered, and Sensitive Species) document that the Project is not likely to adversely effect the viability of any TES wildlife species.

7.0 COPIES OF LETTERS FROM AGENCIES, INDIAN TRIBAL GOVERNMENTS, AND ELECTED OFFICIALS

7.1 FEDERAL AGENCIES

U.S. Army Corps of Engineers

Erkel, Tim

U.S.D.I. Bureau of Land Management

Fisher, James

U.S. Environmental Protection Agency

Parker, Richard

U.S.D.I. Bureau of Indian Affairs

Soeula, Maurice

U.S. Bureau of Mines

Norberg, John

U.S.D.I. Office of the Secretary

Polityka, Charles

Federal Elected Officials

US House of Representatives - Hastings, Doc
US House of Representatives - Nethercutt, George
US Senate - Gorton, Slade

7.2 WASHINGTON STATE AGENCIES

Washington Department of Fish and Wildlife

Friesz, Ron

Washington Department of Natural Resources

Lasmanis, Raymond

Washington Department of Community Trade and Economic Development

Griffith, Gregory

Washington State Elected Officials

State of Washington House of Representatives - Ballard, Clyde
State of Washington House of Representatives - Schoesler, Mark
State of Washington House of Representatives - McMorris, Cathy

State of Washington House of Representatives - Sheldon, Tim
State of Washington House of Representatives - Stevens, Val
State of Washington House of Representatives - Delvin, Jerome
State of Washington House of Representatives - Koster, John
State of Washington House of Representatives - Thompson, Bill
State of Washington House of Representatives - Fuhrman, Steve
State of Washington House of Representatives - Foreman, Dale
State of Washington House of Representatives - Elliot, Ian
State of Washington House of Representatives - Chandler, Gary
Washington State Senate - Strannigan, Gary
Washington State Senate - Swecker, Dan
Washington State Senate - Snyder, Sid
Washington State Senate - Seller, George L.
Washington State Senate - Haugen, Mary Margaret

7.3 LOCAL/COUNTY AGENCIES

Chelan County - Marcellus, Earl - Commissioner
Town of Tonasket - Fancher, Tom - Mayor
City of Oroville - Lane, Don - Chief of Police
Ferry County - Windsor, Ed - Board Of Commissioners
Ferry County - Hall, Jim
Ferry County Noxious Weed Control Board
Okanogan County - Thiele, Ed
Okanogan County Council For Economic Development - Nielson, Ron
Okanogan County - Higby, Spence - Commissioner
Okanogan County Department of Public Works - Nott, Joseph
Okanogan County Public Utility District - Warner, Harlan
Okanogan County Sheriff - Weed, James
Pend Orielle County - Mckenzie, Karl; Hanson, Mike - Board of Commissioners
City of Oroville - Walker, Jimmie D. - Mayor
Walawa County - Boswell, Ben - Commissioner (Oregon)

7.4 TRIBAL GOVERNMENTS

Colville Confederated Tribes - Dick, Matthew
Colville Confederated Tribes - Louie, Deb - Councilman
Colville Confederated Tribes - Passmore, Gary

7.5 CANADIAN GOVERNMENT

Corporation of the Village of Midway - Hatton, R.J.
Stenson - John - Canadian Mayor

REFERENCES

All references cited in Section 6.0, Summary of Responses, in this appendix are listed in Chapter 6.0, References, in the main body of the Crown Jewel Project final EIS

EXHIBIT A

COPIES OF LETTERS FROM AGENCIES, INDIAN TRIBAL GOVERNMENTS, AND ELECTED OFFICIALS

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
EASTERN WASHINGTON REGULATORY OFFICE
POST OFFICE BOX 273
CHATTAROY, WASHINGTON 99003

REPLY TO
ATTENTION OF

September 5, 1995

Regulatory Branch

Mr. Phil Christy
USDA, Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, Washington 98855

Dear Mr. Christy:

This is in response to your letter of August 24, 1995, regarding the Draft Environmental Impact Statement (DEIS) for the Crown Jewel Project. At this time, we are still in the process of compiling our comments, and should have them to you within the next two weeks.

We are also in the process of stetting up a pre-application meeting with interested agencies to discuss the proposed project, specifically the portions of the project for which a Department of the Army permit is required. The meeting should be in early October in Spokane. Please let me know if you are interested in attending.

I would also like to repeat my request for audio tapes of the public meetings that were held regarding the DEIS. Thank you.

Sincerely,

Tim R. Erkel
Biologist, Eastern Washington Office

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
EASTERN WASHINGTON REGULATORY OFFICE
POST OFFICE BOX 273
CHATTAROY, WASHINGTON 99003

REPLY TO ATTENTION OF

September 19, 1995

Regulatory Branch

Mr. Phil Christy
U.S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, Washington 98855

Dear Mr. Christy:

This is in regards to the Draft Environmental Impact Statement (DEIS) dated June 1995 for the Crown Jewel Mine being proposed by Battle Mountain Gold Company near Chesaw, Okanogan County, Washington. The following are our comments on the DEIS.

General Comments

As we have stated in our comment letters on each of the Preliminary Draft Environmental Impact Statements, we still do not agree with the separation of the discussions of surface waters and streams, springs and seeps, and wetlands. All of these are regulated by the Corps of Engineers, and all impacts to these various waters will be included in our review of the proponents application for a Department of the Army permit. At a minimum, a table should be included that would provide cumulative impact totals, broken down in terms of direct and indirect impacts, for these waters for each alternative. The Clean Water Act views each of these type of waters as waters of the United States, and the EIS should as well.

Chapter 4

Chapter 4 needs to identify what areas in terms of lineal distance of what streams would be directly impacted (dredged or filled) by each proposed alternative,as well as direct impacts (i.e. reduced flows). This information is required to determine the amount of jurisdictional waters impacted for use in the review of the project pursuant to the Clean Water Act. This type of information can also be included in Table 4.7.1.

4.10.3 Effects Common to All Action Alternatives (Indirect Effects)

An estimated maximum acreage of indirect impacts should be calculated for each of the alternative by using the maximum potential area of impact as shown on Figure 4.6.1, and assuming that any wetland within that area will have it hydrologic source eliminated. This will be the basis for review for the

Department of the Army permit under the Clean Water Act. The indirect impacts to wetlands must also be discussed in the sections of 4.10 of the EIS that discuss the effects of each alternative. The Potential indirect impacts to wetlands should also be shown in a Table similar to Table 4.10.1, or added to Table 4.10.1.

If you have any Questions on the preceding comments, please contact me at the above address or by phone at (509) 238-4570.

Sincerely,

Tim R. Erkel
Biologist, Eastern Washington Office

In reply refer to

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Wenatchee Resource Area
915 Walla Walla
Wenatchee, Washington 98801-1521
509/665-2100
FAX: 509/665-2121

WMP-130-88-041 W
3809 (134)

Craig Bobzien, District Ranger
USDA, United States Forest Service
Okanogan National Forest
Tonasket Ranger District
1 West Winesap
Tonasket, Washington 98855

Dear Craig:

This letter is in response to your recent inquiry about comments on the Crown Jewel Mine Project Draft Environmental Impact Statement (DEIS). A number of our specialists have commented on previous preliminary drafts. In discussions with our Geologist, Brent Cunderla, who is the BLM EIS Team Leader for the project, he indicated that only three specialists would have formal comments on the Draft EIS. Attached you will find comments from our Spokane District Botanist, Pam Camp, (2 pages) and our geologist, Brent Cunderla (4 pages). The Spokane District Mining Engineer, Kelly Courtright, will also be submitting comments, but the comments will be sent/faxed direct from our District Office in Spokane. Should you have any questions concerning the comments please contact the specialists directly either in Wenatchee at (509) 665-2100 or in Spokane at (509) 536-1200.

Sincerely,

James F. Fisher
Area Manager

Enclosures as stated

In reply refer to:

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Wenatchee Resource Area
915 Walla Walla
Wenatchee, Washington 98801-1521
509/665-2100
FAX: 509/665-2121

3809/6840(134)

MEMORANDUM

July 3, 1995

TO: Brent Cunderla, Wenatchee Area Geologist
FROM: Pamela Camp, Spokane District Botanist
SUBJECT: Comments on the Draft Environmental Impact Statement, Crown Jewel Mine, June 1995

General Comments
I feel that I am neither an Author or Principal contributor to this document, as listed in the Summary for the Draft, or a Preparer, as listed in the Draft, 5-3. This should be changed to reflect my true status as a Reviewer.

Affected Environment, Vegetation, 3.10
The quality or successional status of the plant communities are not mentioned until you get to the wildlife section where old growth is mentioned. For consistency, the same descriptions of values should be adressed in all sections.

Environmental Consequences, Vegetation 4.9
4.9.1 Reclamation would eventually mitigate soil erosion but some wildlife habitat and biological diversity would likely be "irreversible and irretrievable... due to the loss of soil productivity and oldgrowth" and climax ecosystems (as addressed in forest resources). The statement 4.9.3 "vegetation communities in reclaimed areas should occur in a manner similar to that found in clearcuts is not supported. The loss of soil productivity is not the same in these two actions and cannot be directly compared. The statement that timber losses in areas covered by waste rock are not irreversible is not supported. Please provide references.

The affects of water use from adjacent drainages such as Myers Creek may affect rare plant populations in the drainage and those affects should be addressed.

Biological Assessment
The statement that it seems unlikely that forest or state viability will be reduced for Listera borealis, a sensitive plant species, is not supported with analysis. The proposed project will destroy or affect 7-8 populations and 299-1933 plants, or roughly up to two thirds of the known numbers of individuals on the forest and up to half of the known numbers of individuals in Washington state. Also, up to 16% of the Platanthera obtusata, a sensitive plant species, will be affected at the forest level. The rationale for the conclusion of no viability loss of these species is not clear.

Another point that should be addressed in the viability analysis is the destruction of the unusually large mega-populations of these species which are more typical found in small populations. Destruction of large populations may have a greater impact on viability than loss of small populations.

Whether these populations are central or peripheral to the range of the species may also be important in evaluating species viability. Peripheral populations may be more critical to the long term genetic integrity of the species.

At the species level viability analysis, where the distribution of the species is discussed, abundance or rarity in other states should be considered as well. Listera borealis is considered threatened with extirpation from Oregon, List 2 (ONHP, 1993), rejected for listing in Montana (1991). Platanthera obtusata is also List 2 in Oregon (1993) and Idaho S1 (critically imperiled because of extreme rarity or because some factor of its biology making it especially vulnerable to extinction) (1992).

Ownership and protective status of the other known sites should be included in the viability analysis. If all other populations are privately owned the impacts should be viewed differently than if all the populations were in Federal land ownership or preserve areas.

Pamela Cap

In reply refer to:

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Wenatchee Resource Area
915 Walla Walla
Wenatchee, Washington 98801-1521
509/665-2100
FAX: 509/665-2121

WMP-130-88-041 W
3809 (134)

TO: Official File WMN-130-88-041 W

FROM: Wenatchee Resource Area Geologist

SUBJECT: Comments on the Crown Jewel Project Draft EIS

Chapter 1

Page 1-12, Section 1.10.7 Soils (Key Issue) "Primary Comparison Criteria"
Reference is made to soil depths of "12-inch to 18-inch depths". Is this loose soil as applied or after application (compaction)?

Chapter 2

Page 2-13, Section 2.2.5 Waste Rock Disposal
All references to waste rock stockpile (except Alternative F-Complete Backfill) should be changed to disposal in this section. Stockpile gives a false connotation that the waste rock piles are temporary in nature and not permanent, which they are.

Page 2-14, Section 2.2.5 Figure 2.2
On page 2-13 the title of Figure 2.2, is given as "Waste Rock Disposal Area Options," The actual title on Figure 2.2 page 2-14 is "Waste Rock Stockpile Options" Please change the title on Figure 2.2 to reflect text.

Page 2-26, Section 2.2.11 Cyanide Destruction (1st Par.)
Where is the WAD Cyanide measurement "less than 10mg/l" location? Tailings pond?

Page 2-40, Section 2.2.15 Tailings Liner System Design
What will be the average amount of water stored in the tailings facility (in gallons)?

(3rd Par.) Use of cyanide and zero discharge of cyanide, metals, and other hazardous chemicals from the "lined tailings facility" are two key issues associated with this project, yet there is no public input during the EIS process to address the liner configuration (Permit Issue). Will any comments or public participation be allowed during WA-DOE permit process of tailings

impoundment?

Page 2-43, Table 2.4, Materials and Supplies
Based on the figure given in Table 2.4 for Ammonium Nitrate use, approximately 25,000 tons of this explosive will be utilized for the proposed eight year mine life scenario. The EIS does not analyze the effects of nitrate contamination in surface and/or groundwater. Two areas of concern are in the surface runoff waters in the proposed pit area and drainage from the waste rock disposal area(s).

Page 2-51, Section 2.2.24 On-site Solid Waste Disposal (1st Par.)
What is going to be recycled?

Page 2-52, Section 2.2.25 Segmental Reclamation (2nd Bullet)
Is there going to be segmental reclamation of the waste rock disposal area(s) slope(s) prior to mine closure? This section makes reference to "The waste rock could be constructed in lifts and selected portions then pushed and configured by dozer...areas."

Page 2-83, Section 2.11.4 Tailings Pond Dewatering and Closure
There is no discussion concerning reclamation of the reclaim solution collection pond. The pond that collects water from the tailings facility underdrain. Will this pond be kept in place and monitored and if so for how long? What if contaminants are detected?

Page 2-96, Section 2.12.15 Vegetation (4th Par.-last line)
"Only herbicides having Forest Service approval would be used." Please let BLM also comment on proposed use of herbicides.

Page 2-106, Section 2.13.3 Tailings Facility (1st Par.-2nd line)
In reference to the Tailings Facility what does "significant observations" mean?

Chapter 3

Page 3-54, Figure 3.7.1 Spring and Seep Locations
A comparison with this figure (glacial sediments) with the preferred alternative for placement of waste rock in the north waste rock disposal area shows that a large portion of the proposed waste rock area will be underlain by glacial sediments. Are the glacial deposits very thick? Will they pose any danger of slope failure (instability) in waste rock disposal pile(s).

Page 3-191, Section 3.19.8 Patenting of Crown Jewel Mining Claims
What is the status on condemnation drilling for patenting of the mill site claims?

Chapter 4

Page 4-3, Section 4.1.4 Operation (1st Par.-last line)
Blowing dust generated from the waste rock disposal area should

also be addressed. This will be a significant open area that may have fugitive dust generation during windy periods. Not addressed in Table 4.1.2., but figures given in Table 4.1.3.

Page 4-30, Section 4.6.3 Waste Rock Disposal (1st Par.-last line)
"All action alternatives include temporary or permanent waste rock storage at the Project site." Suggest changing of wording to temporary storage and permanent waste rock disposal areas.

All references to waste rock storage except the complete backfill (Alternative F) should use disposal area not storage.

Page 4-31, Section 4.6.3 Waste Rock Disposal (3rd Par.-2nd line)
There is a lot of discussion about possible ARD generation and mitigation but the response to nitrates contamination are summarized as "Potential impacts from blasting on water quality are difficult to predict, and would depend, to a large degree, on the blasting efficiency." How will the possibility of nitrate contamination of surface and/or groundwater be mitigated? How will it be treated if it occurs?

Page 4-48, Section 4.7.3 Waste Rock Disposal (1st line)
"temporary or permanent storage" Should read temporary storage or permanent disposal. Again section uses storage and disposal interchangeably. Temporary storage-Permanent disposal!

Paragraph 4 states "Potential long-term surface water quality impacts from waste rock disposal site(s) are expected to be somewhat less than during operations." Document what the impacts (ARD, Nitrates etc.) might be, rather than just stating its going to be less after reclamation.

Page 4-172, Section 4.19.3 Land Ownership & Values
A point that should be addressed here is the fact that if and when the patenting procedure is finalized approximately 925 acres of public land (BLM, USFS) will become private land. Development of these private lands?

Page 4-182, Section 4.22.3 Sodium Cyanide (1st Par.)
Should elaborate on the construction of the cyanide transport containers, their durability and water tightness, if any.

Paragraph 2 states that "...cyanide is highly lethal to aquatic organisms." but "...organisms usually recover quickly on removal to clean water..." Removal to clean water hardly seems pertinent to consider when the gas cloud from volatilization would quickly overcome and possibly kill humans (4th Par.)!

Paragraph 3 "...level of cyanide is lethal..." Replace is with are.

Page 4-183, Section 4.22.3 Cement/Lime (last Sentence)
The fact that it may "...be messy to clean-up..." has little to do with the purpose of this document.

Page 4-183, Section 4.22.3 Fuels (3rd Par.)
What is the "...location and availability of spill response personnel , materials and equipment."? Please document or reference where this information is to be found.

Page 4-184, Section 4.22.3 Increase in Nitrate Loading Due to Explosives Handling (3rd Par.)
"The potential for this situation to occur can not be estimated; however, some mines have elevated levels of nitrates and some do not." How will nitrate levels in surface/groundwater be mitigated? If there is no mitigation then other methods of blasting or rock breakage should be addressed in the EIS.

Chapter 5

Page 5-3, Section 5.4 Bureau of Land Management
In reference to George Brown, the title of "(Asst. Project Manager)" makes him sound like he works for Battle Mountain Gold Co. Please remove this title. He is the BLM Spokane District Geologist.

Page 5-4, Section 5.4 Bureau of Land Management
In reference to Brent Cunderla, change "River Fall" to River Falls.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Spokane District Office
1103 N. Fancher
Spokane, Washington 99212-1275

IN REPLY REFER TO.

In Reply Refer To:
WMN-130-88-041W
3809(134)

August 29, 1995

Mr. Sam Gehr, Forest Supervisor
U.S.D.A. Forest Service
Okanogan National Forest
1240 South Second Ave.
Okanogan, WA 98840

Re: Review Comments on Crown Jewel Project Draft EIS
Deadline: August 29, 1995

Dear Mr. Gehr:

Enclosed please find my comments on the Crown Jewel Project Draft EIS.

1. Table of Contents: All page listings with the exception of Chapter 2 list pages in the format of 1-15, 5-6, 8-3, etc. As an oversight the Chapter 2 page number list in the Table of Contents omits the Chapter "2-" designation. For consistency this needs to be corrected.

2. The page preceding the "Fact Sheet" states that the Forest Service and BLM prefer a Modified Alternative E utilizing a single north waste rock disposal area at 3H:1V slopes for reclamation that includes partial pit backfilling. It seems appropriate and forthright to tell the public in this section and other appropriate sections specifically how many acres would be disturbed if this FS/BLM preferred alternative is selected since it has not been addressed by one of the alternatives. It would also be appropriate for the final draft to include a Preferred Alternative Site Plan similar in detail to that shown in Figure 2.10 on page 2-55.

3. P.1-12, Section 1.10.9 Reclamation (Key Issue): The first bulleted item "2H:V" seems to be an error.

4. P.2-6, Figure 2.1, Management Prescription 27: The last activity listed is "Protection." Based on the language included it appears that this should be relabelled as "Fire Protection."

5. P.2-37, Tailings Disposal Location Options Not Considered Further: Although the text states that the North Nicholson Tailings Facility Option will not be considered for further evaluation, it is not indicated in the

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bullet summary at the bottom of the right column on this page. This needs to be corrected.

6. P.2-54, 2.5.1 Alternative B Mining Techniques: I was under the assumption that during mining waste rock would also be analyzed to determine it's potential to generate acid rock drainage so that acid generating rock can be identified and selectively placed in the waste rock dumps to isolate it and prevent acid rock drainage from occurring. All this section states is that cuttings from the blast holes would be "...analyzed...for precious metals content." This section needs to be modified if the plan is to also analyze for potential to produce acid rock drainage during mining so this information can be used for selective placement to isolate acid generating materials.

7. P.2-82, Second to last bullet: It would be better to replace the word "grading" with "re-seeding." The commencement of the time period to begin monitoring reclaimed slopes should be based upon the time the slopes are re-seeded for revegetation and not simply graded. The act of re-seeding is a more critical action that should trigger the time frame to commence monitoring reclaimed slopes as opposed to the re-grading activity. As stated, this would be a problem for the agencies if the operator re-grades the slopes and then waits for a period of time before re-seeding.

8. P.2-83, Topsoil, Second to last Paragraph of the page: It is recommended that the word "All" be added to the beginning of this paragraph which addresses reclamation measures. The revised sentence would begin, "All topsoil and cover soil suitable..."

   Battle Mountain and Cedar Associates representatives repeatedly stated during several EIS meetings I attended that they would collect <u>all</u> topsoil and cover soil suitable for revegetation. The agency staff at these meetings also confirmed, that Battle Mountain would be required to salvage and stockpile <u>all</u> topsoil and cover soil suitable for revegetation and this should be specifically stated in the EIS. It is an oversight to leave this clarification out of the EIS. This is particularly important to BLM that this statement, "All topsoil..." be in the EIS because the majority of the waste dump areas related to this project will be on BLM land.

   It is very common for operators to get in a rush to dump waste rock as mining progresses and in their haste they commonly do not adequately remove all of the available topsoil and growth material. Then at the end of the operation when there is not enough topsoil to reclaim the site everyone looks for someone to blame and it is too late to do anything about it at that time. It is critical to avoid this common pitfall. This is an important issue and needs to be clarified by making the recommended wording change that "All" be added to the beginning of this sentence.

9. P.2-105, 2.13.2, Paragraph 4: It is recommended that air quality monitoring also be required during reclamation when large quantities of dry dusty material are loaded, transported by truck, dumped, and spread out on the graded surface.

10. Requested Insertion After Section 2.13.6 Timber Monitoring on P.2-107: It is requested that a new Section 2.13.7 be inserted in the EIS titled, Topsoil and Cover Soil Salvage Monitoring. This will require re-numbering the remaining sections.

    Based on the fact that removal of all topsoil and cover soil is one of the most important single factors that will affect the success or failure of reclamation, this critical aspect of the project needs to be monitored as a separate and distinct monitoring measure. This new section needs to state that prior to beginning excavation or construction of any facility at the site (i.e. mill complex, pit, roads, tailings pond, water storage reservoirs, waste dump areas, etc.) and after topsoil has been removed, individual inspections will be conducted jointly by the operator and affected agencies to confirm by all parties that all topsoil and cover soil has been removed before construction (i.e. waste rock placement) or excavation (i.e the pit) can commence in the specified area. If topsoil and cover soil remains the operator would be required to remove the additional topsoil.

    In addition to maps and a narrative description of the surveyed areas, these inspections will also include detailed photographic documentation showing the areas where topsoil has been completely removed, and estimates of the quantity and quality of topsoil removed from each specific area. This requested modification to the EIS is particularly critical given the "...limited soil resource available on-site for resoiling purposes." as stated on P.4-152 of the EIS.

11. P.2-108, 2.13.10, Soil Replacement Monitoring: What are the "design thicknesses" referenced in this section? The previous section on reclamation monitoring is very specific. Is the design thickness 18 inches on slopes and 12 inches on horizontal areas as stated at other locations in this EIS? If so, this or other specified thicknesses need to be stated for clarification in this section. Furthermore, it needs to be consistently stated at every similar reference in the EIS.

12. Table 2.14, Summary of Impacts by Alternative for Each Issue, P. 2-110: The issue which addresses "Percentage of final slopes that are: Steeper than 2H:1V, 2H:1V, etc." is misleading and could cause significant confusion to the reader. It should be clarified that this section of the table is referring to all project slopes which includes both the pit walls and waste dumps. In other words this does not refer to reclaimed waste dump slope angles only.

    If one assumes that the table is referring to the waste rock dump slopes only (this is not clarified) it currently states that Alternative E would have between 40 and 50 percent of the slopes steeper than 3H:1V. This is incorrect because under Alternative E all waste rock dump slopes would be reclaimed at an angle of 3H:1V. This problem can be resolved by replacing "Percentage of final slopes that are:" in the table with the statement "Percentage of overall project final slopes that are:"

13. P.3-191, Section 3.19.8, Patenting of Crown Jewel Mining Claims: Discussion on P. 3-193 should be modified to reflect recent changes related to the patenting process revocations.

If you have any questions regarding these comments please feel free to contact me at (509) 536-1200.

Sincerely,

Kelly D. Courtright

Kelly D. Courtright
District Mining Engineer

cc: Eric Hoffman
Jim Fisher
Brent Cunderla

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

August 29, 1995

Reply To
Attn Of: WD-126

Phil Christy
US Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, Washington 98855

Dear Mr. Christy:

In accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act, the Environmental Protection Agency has reviewed the **Crown Jewel Mine Draft Environmental Impact Statement (draft EIS)**. The draft EIS analyzes 6 action alternatives to meet the objectives of the purpose and need as well as a No Action alternative.

The proposed gold mine would be located in the Okanogan National Forest near Tonasket in Northeastern Washington. The Proponent, Battle Mountain Gold Company, proposes to produce about 180,000 ounces of gold per year for approximately 8 years. This would result in nearly 34,000 tons of waste rock per day. 766 acres would be disturbed during the life of the project.

Our review revealed a number of important concerns regarding water quality, hydrologic alteration, NPDES permitting, reclamation and wetland and stream mitigation. We have rated the draft EIS E0-2 (Environmental Objections--Insufficient Information). Our enclosed comments explain the basis for this rating and make suggestions for the final EIS.

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This rating and a summary of our comments will be published in the *Federal Register*. A copy of our rating system is enclosed. Thank you for the opportunity to review this draft EIS. Please contact me at (206) 553-8574, or John Bregar in our Environmental Review Section at (206) 553-1984 if you have any questions about our comments.

Sincerely,

Richard B. Parkin

Richard Parkin, Acting Chief
Program Coordination Branch

Enclosures

cc: Dave Kaumheimer, U.S.F.W.S
Bob Raforth, DOE Central
Tim Erkel, COE
Collville Tribes

Environmental Protection Agency
Detailed Comments on the Crown Jewel Mine
Draft Environmental Impact Statement

General Comments

Rating

The Environmental Protection Agency (EPA) believes that there are specific impacts that should be avoided at the site of the proposed Crown Jewel Gold Mine. For this reason, we have rated the draft EIS "EO" (Environmental Objections). The numeric rating, "2", which accompanies the alpha rating indicates that the draft EIS itself lacks the information necessary to determine potential environmental impacts from this project. The document does not address significant issues related to water use, wetland and stream mitigation, alternative selection, reclamation, NEPA requirements.

Reclamation

Pages 2-79 to 2-85 of the draft EIS discuss reclamation measures that would be taken during and after mine closure. On page 2-85 it states, "At this time, it has not been determined how many performance securities would be required, or if the Forest Service, BLM, WADOE, and WADNR would work together on determining the method or manner of a reclamation guarantee for the Crown Jewel mining and milling activities, and who would hold that assurance." All too often in the mining industry, reclamation guarantees have been left to the last minute and the public is left uninformed on the details of these guarantees. We need to be certain that adverse impacts from reclamation are avoided. A final reclamation plan, including disclosure of financial information and bond amounts should be discussed in the final EIS. Impacts from incomplete reclamation poses a risk to the environment that could be avoided if proper consideration to reclamation is given before the EIS process is complete.

To reduce risks, EPA recommends that the mine site be returned as close to natural conditions as possible. We strongly recommend pit backfill as opposed to allowing the pit to fill with water and discharge into Nicholson Creek. We appreciate the amount of data collected and research done to date on the characterization of future water quality conditions. However, we also know that there is a certain level of unpredictability in these situations and the risks outweigh the benefits on this point.

Alternatives

Chapter 2 describes the various alternatives revealed during the scoping process for this project.

Alternative C does not appear to be a viable alternative; page 2-5 states, "In response to agency and public input, it was decided to consider this alternative for comparative purposes." In the Council of Environmental Quality Regulations at 40 CFR 1502.4 (a) it states, "Agencies shall... (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." Alternative C has not been objectively evaluated in the draft EIS. If it has been eliminated from study, the reasons for this should be clearly explained. Throughout the document there are references to the fact that Alternative C is not financially feasible, yet there are no clear examples of the cost/benefit ratios for each alternative so it is difficult to determine the relative gains/losses. This is a very controversial project with potential to seriously impact area resources. Eliminating a "reasonable" alternative solely on the basis of financial considerations completely ignores the relative benefits to the environment and human health.

The draft EIS lacks a cost effective alternative that is also environmentally less damaging. For example, many of the alternatives have the potential to be less environmentally damaging through backfill and/or underground options. However, Alternative G places waste rock directly in the Frog Pond (not a "reasonable" option as compared with the other alternatives), Alternatives C and G provide for no pit backfill, Alternative F operates on 1 shift (12 hours per day, which would substantially reduce the yearly ore production), and all of the alternatives, where there is an option to choose north or south, place the major portion of waste rock *north* of the pit in the Nicholson Creek drainage instead of opting to reduce impacts by confining the major environmental disturbance to the Marias Creek drainage. The Forest Service and BLM preferred alternative is a variation on Alternative E. This option is not explored or mapped in the body of the EIS and is present only in the Summary document. It would be helpful if the Forest Service and BLM alternative was evaluated in the final EIS.

Given the complex nature of this project and the large range of options it is critical that the Forest Service place an emphasis on the reasoning behind alternative selection in the final EIS. EPA suggests naming the alternatives as opposed to lettering them. This would help to clarify the general goal of each alternative and therefore reduce its arbitrary nature. In addition, the final EIS should propose a true environmentally less damaging alternative. In keeping with our rating of "EO", we believe that impacts to Nicholson Creek could be limited by avoiding the placement of waste rock in that drainage, and by placing the tailings facility entirely in the Marias creek drainage. EPA's suggested preferred alternative is as follows:

Underground/Surface Mining with Backfill
This alternative is a variation on Alternative D. It would involve extraction of the ore from the north portion of the ore body by surface mining and would mine the southern portion of the ore zone by underground methods. The operation would run 24 hours per day, employ about 225 people during operations, and produce an average of 3,000 tons of ore per day. The life of the operation would be 8 years: 1 year for construction, 6 years

for operation, and 1 year for the completion of most reclamation. Crushing would be conducted below ground level. Grinding and milling would be above ground. Gold extraction would use conventional milling with the tank cyanidation process and CIL gold recovery. The tailings facility would be located entirely in the Marias Creek drainage and residual cyanide in the tailings would be reduced using the INCO cyanide destruction process. Waste rock would be placed south of the pit area in Waste Rock Stockpile B and C (as shown in Figure 2.2 on page 2-14 of the draft EIS). The combination of Stockpile B and C would allow approximately 30 million cubic yards of waste rock (based on the Figure 2.2). Waste rock would be used to completely backfill the underground mine and the north pit. Backfill of the pit would begin immediately after mining of the pit is completed. Employees would be bused to the site from locations in or near Oroville. The supply route would access the Crown Jewel Project from the south through Wauconda, Toroda Creek, and Beaver Canyon. This alternative would recover about 80% of the gold reserve available to strictly surface mining. A detailed compensatory mitigation plan would be provided in the final EIS.

EPA recommends avoiding any alternative which proposes direct losses to Nicholson Creek, or significant hydrologic alteration to the Frog Pond. During two site visits from EPA wetlands specialists, diverse wetland communities were observed associated with the upper reaches of Nicholson creek. Due to the perennial nature of Nicholson Creek and the related quality of wetlands, impacts to upper reaches of Marias Creek would in fact have less adverse impacts to the aquatic environment than would impacts to Nicholson creek, although, more wetland acreage might be affected.

NEPA Scope

EPA is very concerned that there have been actions taken to date on site that are not adequately analyzed in the EIS. We realize "mine production" and "mine exploration" are considered very separate issues in the Forest Service viewpoint. However, it is important to recognize that the amount of site disturbance to date could potentially be viewed as "significant" under NEPA and that the timber harvest, road building and exploration actions taken to date are directly related to, and in fact, would not be taken if development were not a reasonably foreseeable option.

One example we can use to illustrate this point is the Minerals Management Service (MMS) EIS process. If a lease for oil and gas is proposed for a particular area on the outer continental shelf, MMS will first put together an exploration based EIS which, if taken on its own, may not be considered a significant action. Since exploration may reasonably be proceeded by development, and since exploration is a means to achieve development, a full EIS is prepared revealing the specific environmental impacts of both exploration and the general impacts of development. If the area is leased and development is proposed, a second more detailed EIS is prepared

addressing the new source permit issues and more specific impacts from development.

Although the environmental damage has occurred on site, an analysis of the impacts of these actions should be summarized in the final EIS. The following NEPA language applies in this situation.

40 CFR 1508.25 (emphasis added)

Scope consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement. The scope of an individual statement may depend on its relationships to other statements (§§ 1502.20 and 1508.28). To determine the scope of environmental impact statements, agencies shall consider 3 types of actions, 3 types of alternatives, and 3 types of impacts. They include:

(a) Actions (other than unconnected single actions) which may be:

(1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. **Actions are connected if they:**

(I) Automatically trigger other actions which may require environmental impact statements.

(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.

(iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

(2) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

(3) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

(b) Alternatives, which include: (1) No action alternative.

(2) Other reasonable courses of actions.

(3) Mitigation measures (not in the proposed action).

© Impacts, which may be: (1) Direct; (2) indirect; (3) cumulative.

Water Quality

The surface water quality section in Chapter 4 of the draft EIS describes the potential impacts to surface water. We are concerned about adverse effects to streams and creeks within the project vicinity. The EIS does not present a convincing case that water quantity manipulations and alterations caused by the mining operation will not significantly affect water quality. We are specifically concerned about hydrologic changes that could lead to adverse ecological effects to both headwater and isolated wetlands, Nicholson Creek and Marias Creek, as well as to water quality standards violations (including in-stream flow requirements, temperature, turbidity, etc) in Nicholson, Marias, Bolster, Gold, Ethel, and Torada Creeks.

There is very little reference to the fact that although a National Pollutant Elimination System (NPDES) permit is needed for the proposed project, to date, there has been no characterization of the potential for this project to comply with NPDES permit parameters. The water issues for this project are extremely complex and there is insufficient information to address all of the water quality and water management issues at this time. The final EIS should contain the kind of information that would be found in an NPDES permit for this project and if at all possible attach a draft permit as an appendix. This includes effluent characterization in terms of relevant water quality standards, a description of the types and locations of the potential outfalls, effluent volume, treatment technologies and the characteristics of the receiving water. This information would provide the level of detail necessary to understand what impacts would be avoided during this project, and show that issuance of a permit will be feasible.

The proposed Starrem reservoir will block fish passage to Starrem Creek. Resident fish species utilizing this system could therefore be significantly restricted in terms of full range of rearing habitat and possible access to spawning habitat. This issue has not been sufficiently addressed.

The water extraction proposed in Myers Creek is not well characterized. Impacts include surface water extraction, ground water extraction, hydrologic alteration from project activities and flow augmentation to the tributaries of Toroda Creek. On page 3-36 and 37, it states, "A monitoring station on Myers creek...was operated to obtain information pertaining to flows during the irrigation season; and, therefore, winter stream flows were not recorded." This seasonal gap in data is significant and should be better characterized in the final EIS. Low flows in the winter could potentially shut down the process of drawing water from Myers Creek. The impacts from the above actions need to be better explained in the final EIS and the level of detail in this explanation should be sufficient for permitting purposes.

EPA is concerned with how runoff and discharges from the tailings impoundment will be managed to protect Marias and Nicholson Creeks after mining has been completed. We are concerned about impacts from seepage from the tailings impoundment and exposure to wildlife (page 2-101 says "The proponent is expected to design and operate facilities that minimize wildlife exposure and hazardous substance."). The final EIS needs to more accurately portray the potential impact from unexpected events on fish and wildlife resources.

Wetlands and 404 Issues

Pursuant to 40 CFR 230.10(a) it must be demonstrated that the chosen alternative is the least environmentally damaging, practicable project alternative. The EIS does not comply with this regulation.

Pursuant to 40 CFR 230.10(b) no permit should be issued if it could cause or contribute to

violations of state water quality standards or toxicity effluent limitations. Without the benefit of reviewing conditions for NPDES permits and understanding all of the water uses and manipulations, an adequate assessment of the water quality and ecological impacts can not be completed. In addition, 40 CFR 230.10(b) requires demonstration that projects will not lead to unacceptable adverse impacts to federally listed threatened and endangered or candidate species. Hydrologic changes associated with this project could significantly impact populations of candidate amphibian species.

As proposed in the draft EIS, each of the alternatives addressed within the draft EIS appears to pose significant adverse impacts to aquatic resources due to combined direct physical losses of wetlands and streams, and the secondary effects caused by hydrologic and geomorphologic alteration. Specific issues of concern include:

(a) Significant changes in hydrology to the Frog Pond wetland appear in all alternatives. Due to the very specific water level and vegetation structure requirements for successful amphibian reproduction, changes to hydrology can obliterate this habitat function. Spotted frogs are candidate for listing as an Endangered species and significant numbers can be found in this pond. Populations have significantly declined in portions of their historic range (W. P. Leonard et al. 1993).

(b) Disturbance associated with hydrologic changes can also significantly affect wetland communities which are relatively undisturbed. These impacts have not been adequately assessed in the EIS.

(c) All alternatives which include open pit mining could result in adverse impacts to aquatic life and other organisms which might feed within the project area.

(d) All alternatives propose significant direct losses of headwater and first order creek systems. The least impacting proposal in terms of lineal foot losses of creek systems is Alternative C, with 1350 lineal feet lost of Gold Bowl Creek (a first order headwater creek to Nicholson and Marias creeks); 3550 lineal feet of Marias creek; and 2200 lineal feet of Starrem creek.

There is insufficient information provided in the draft EIS to demonstrate that impacts would be sufficiently mitigated pursuant to 40 CFR 230.10(d). The following must be accomplished to demonstrate compliance with this regulation: First, all measures to avoid and minimize unacceptable adverse impacts must be demonstrated by selecting the least environmentally damaging project alternative. Second, for remaining unavoidable adverse impacts, a <u>detailed</u> compensatory mitigation plan demonstrating that remaining impacts can be technically and ecologically replaced in acreage and in function must be provided (see previous cautions regarding ability to mitigate in our May 6, 1994 letter).

The draft EIS provides no detailed compensatory mitigation plan to demonstrates how all aquatic resource impacts (wetland, seep/springs, streams and wildlife) shall be replaced and mitigated. Chapter 2 (pp. 2-91: Surface and groundwater, 2-96 - 2-99: Wetlands, 2-100 - 103: Wildlife and Fish) discusses a number of mitigation concepts associated with wetland and stream impacts, however, until it is demonstrated that implementation of these compensatory mitigation concepts are technically feasible and adequate to compensate for adverse ecological impacts to aquatic resources, a §404 compliance determination can not be made. For example, installing fish structures to provide passage through culverts and create pools in the lower reaches of Marias and Nicholson Creek would only benefit fish provided that flows, water quality and headwater functions are maintained. It may be counter-productive to add fish structures within streams which experience degradation from mining operations.

Sufficient information must be provided to determine that compliance with the 404(b)(1) guidelines has been met (40 CFR 230.12). There is, however, sufficient information to determine that the impacts would "cause or contribute to" significant adverse impacts to aquatic life (violation of 40 CFR 230.110(c)). Therefore, our recommendation to the corps at this time, were there to be a public notice issued, would be not to issue a §404 permit for this project.

Direct and Secondary Losses

All direct and secondary impacts to seeps, springs, streams and wetlands are subject to §404 regulation. Total area of (1) direct, and (2) secondary impacts should be quantified for all springs/seeps, wetlands and lineal feet of streams (and included on one table) so that proposed compensatory mitigation actions and amounts could be compared and assessed.

Data Needs

The final EIS should present baseline seasonal water level depth data for the Frog Pond in order to determine the appropriate hydrology to support continued amphibian breeding. The final EIS should include modelled changes in stream hydrographs to clarify the impacts to water resources.

Direct Losses of Wetlands

Pages 4-63 - 4-64 indicate that welands losses range from 0.92 acres (alternative F) to 5.42 acres (alternative G). While the footprint of the wetland acreage loss might be small the total impact is larger when secondary effects are acounted for as indicated in the discussion on pp. 4-64 & 4-65. In addition to table 4.10.1, which provides wetland impact and acreage by wetland type, an assessment of secondary impacts should be provided.

Seeps and Springs

Seeps and springs have not been quantified or characterized clearly in terms of hydrologic contribution to surface waters, including wetlands. We are concerned about alteration to springs and seeps because their functions will be difficult, if not impossible, to replicate and replace.

For purposes of §404 all impacts to aquatic resources (inclusive of wetlands, seeps, springs, perennial and intermittent streams) from direct and secondary impacts will need to be pulled together in one place in the document along with a detailed mitigation plan. The mitigation plan should address specific ecological goals and objectives, acreage and actions to mitigate specific impacts to all aquatic resources within each affected watershed. The plan should include specific performance standards to demonstrate attainment of goals and objectives, a detailed monitoring plan, long term protection (in perpetuity) measures, and contingency plans in the event mitigation does not replace lost functions and habitats.

Page Specific Comments

Page 2-3, Section 2.1.4: "Following the NEPA and SEPA processes, and the Preferred Alternative is selected, the Proponent must provide final engineering design and final reclamation and closure plans for the selected alternative to the appropriate agencies involved." The NEPA/SEPA process is not strictly for the benefit of the involved agencies. It is designed to provide meaningful information to the affected public so they can understand the environmental impacts of the proposed project. The Record of Decision must contain a completed final plan with appropriate mitigation and reclamation. The Record of Decision is a legal document and the Forest Service and the Proponent are bound by the decision therein. In our view, it is the only assurance to the public that the project will be done according to the specifications in the EIS.

Page 2-14, Section 2.2.5, Figure 2.2: This figure depicts the waste rock stockpile options for the proeject area. It appears from this picture that volume of waste rock stockpiles B, C, and D equals a total of 54 million cubic yards of space available for waste rock on the south side of the pit. We realize that some of the waste rock stockpile options are limited by criteria such as slope stability etc., however, the figure indicates that there may be some flexibility on the boundaries of some of these piles.

It is unclear in Alternatives B, C, D, F, and G why the emphasis for storage is north of the pit. EPA has been very clear on the point that the Nicholson Creek drainage contains some very unique and valuable wetlands (see page 5 of our letter dated May 6, 1994) and impacts to headwater wetlands in this drainage should be avoided. The final EIS should provide more justification for the site selection of waste rock stockpiles and other options for waste rock disposal outside of the Nicholson Creek drainage should be explored.

Page 2-46, Section 2.2.18: The second to the last paragraph in the first column regarding cessation of operations should include more information on where water from the tailings impoundment will ultimately be discharged.

Page 2-46, Section 2.2.19: This section describes the water supply options for the site. This section of the EIS is lacking in level of detail and should be revised to include not only the water supply options, but also the water discharge options. There is no unified presentation of all the hydrologic operations for this project and it is very difficult to understand all of their potential implications. There is no solid data in the draft EIS that address the water balance on site. Annual precipitation on site has not been measured (precipitation *was* measured by the Proponent at a residence about 4 miles south of the project area as noted on page 3-5, and this data is not acceptable as objective, scientifically accurate data), cumulative impacts of hydrologic alteration to Myers Creek have not been evaluated, hydrologic mechanisms for surface water recharge are not clear, and the hydrologic impacts of pit dewatering have not been adequately addressed.

Page 4-28, Section 4.6.3, Figure 4.6.1: This figure seems to be flawed. It proposes to show the area of influence of the operation on surface and ground water, but the influence stops at exactly 4500'. This figure needs additional information or needs to be updated to include all the influences on surface and ground water from project operations.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

REPLY TO
ATTN OF: WD-126

MAY 06 1994

Phil Christy
Tonasket Ranger District
Okanaogan National Forest
P.O. Box 466
Tonasket, WA 98855

Dear Mr. Christy:

The Environmental Protection Agency (EPA) has reviewed the preliminary draft Environmental Impact Statement (PDEIS) for the **Crown Jewel Project** in the Tonasket Ranger District on the Okanogan National Forest. Our review was conducted in accordance with the National Environmental Policy Act (NEPA) and our responsibilities under Section 309 of the Clean Air Act.

The Crown Jewel Project preliminary draft EIS is an informative and comprehensive document. It addresses most of the pertinent issues and potential environmental consequences of project activities. The PDEIS has done a good job of presenting discussions of complex issues in an understandable way for the general reviewing public. Although the information in the PDEIS is good, we are providing comments on some issues of concern.

We circulated the copies of the PDEIS that we were provided among several EPA programs. Our comments fall into three overall categories: NPDES permit issues, hydrogeology, and wetlands.

We appreciate the opportunity to review and provide comments on this PDEIS. If you have any questions about our review comments please contact Sally Brough in our Environmental Review Section at (206) 553-4012.

Sincerely,

Sally Brough for

Joan Cabreza, Chief
Environmental Review Section

Enclosure

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Environmental Protection Agency (EPA)
Detailed Review Comments
Crown Jewel Project
Preliminary Draft Environmental Impact Statement (EIS)

National Pollutant Discharge Elimination System (NPDES) Permit Issues

Based on our review of the Crown Jewel PDEIS our major concern with the discussion about the NPDES permit is that mine drainage is considered stormwater throughout the document. The contact person for these comments is Cindi Godsey in our Water Permits Section, she can be contacted at (206) 553-1755 if you have any questions about our NPDES comments. Ms. Godsey develops NPDES permits for mining projects in Idaho and Alaska and is familiar with 40 CFR 440 which are the regulations for ore mining and dressing.

On page 2-76, the PDEIS states that mine drainage would be discharged from sedimentation ponds under an NPDES permit or a stormwater permit. A stormwater permit is an NPDES permit but does not apply to mine drainage as it is defined according to 40 CFR 440 - a traditional NPDES permit would deal with mine drainage. We have attached a copy of memo that defines the applicability of 40 CFR 440 Effluent Limitations Guidelines to mine drainage, process water, and storm water.

Page 4-40 talks about the ore stockpile, how diversions would be placed around this area, and how any drainage would be diverted to a pond and monitoring would take place according to a stormwater permit. Again, this is not stormwater, it is mine drainage and as such should be regulated by 40 CFR part 440.

Page 4-42 discusses the potential of acid mine drainage developing in the waste rock piles. The drainage from these piles is mine drainage and as such needs regulating as stated above.

Page 4-46 talks about pit water and discharging it according to the stormwater permit. Again, this is not stormwater but mine drainage and needs a traditional NPDES permit instead of a stormwater permit.

Page 4-38 talks about disturbances during construction activities and the potential for degradation of surface water during this time. The PDEIS provides no discussion about obtaining a stormwater permit for construction activities. In this case a stormwater permit would be needed in addition to the traditional NPDES permit.

Page 3-60 discusses flows from old mine adits particularly the Roosevelt Mine. These flows are not groundwater as indicated in the PDEIS. These are unpermitted discharges of pollutants to waters of the United States (discharging to wetlands) which should be regulated by an NPDES permit. The PDEIS also mentions discharges from the Buckhorn adit. These discharges would also require an NPDES permit.

Hydrogeology

EPA looked at selected portions of the PDEIS. Our review was geared to checking out the potential for acid rock drainage (ARD), leaching of metals from the tails and how hydrology is presented. Misforecasting the pH in tailings ponds and under estimating high flows can lead to unfortunate situations such as occurred at the Summitville mine in Colorado. If you have any questions about these comments you can contact Bill Riley in our Wetlands Section at (206) 553-1412. Mr. Riley is currently working on the AJ and Kensington mines in Juneau, Alaska.

Sampling

WE are impressed by the amount of waste rock sampling done and the analyses that were performed. ARD from waste rock shouldn't be a problem if the tests were done correctly. Since there were only ten ore samples analyzed, we request that the draft EIS provide an explanation of why this is considered representative of the entire ore body. One of the things we noticed at Kensington was the high correlation between Au and S and the variability in both throughout the ore body. Why are ten samples representative?

The fact that they used kinetic tests (humidity cells) (HCT) to simulate the potential for ARD in the long-term (alternating wet and dry seasons) seems to make sense. The results do seem to indicate little potential for ARD. The draft EIS should expand this discussion to describe the other kinds of kinetic tests and why HCT was used. There's a statement on p. 3-18 that says that the standard acid-base accounting tests tend to underestimate ARD potential. The draft EIS should explain this statement.

The As levels seem quite high (.210 - .430 mg/l) relative to the Human Health Criteria of .00018 mg/l. This could be a concern if there's a discharge (see comments below).

Surface Water (P. 4-40 to 4-46)

There is no discussion regarding how high flows would be handled. The tailings pond is designed to be zero discharge but we could not find any mention of

Applicability of 40 CFR Part 440 Effluent Limitations Guidelines to Discharges from Ore (Metal) Mining and Dressing Sites

Discharge/Source of discharge	Applicable ELG, if any (see key)	Note/Comment
Pregnant pond (barren and surge ponds also)	PW	
Polishing pond	PW	
Concentration building	SW	If storm water only, and no contact with piles
Concentrate pile (product storage)	PW	
Mill site	SW	Same a concentration bldg.
Ancillary areas		
Office/administrative building and housing	UC	Unless mixed with SW from industrial area, then SW
Chemical storage area	SW	
Docking facility	SW	Excessive contact with waste product could constitute MD
Explosive storage	SW	
Fuel storage (oil tanks/coal piles)	SW	
Vehicle/equipment maintenance area/building	SW	
Parking lots	SW	UC if only employee and visitor type parking
Power plant	SW	
Truck wash area	SW	Excessive contact with waste product could constitute MD
Reclamation-related areas		
Any disturbed area (unreclaimed)	MD	SW if inactive area
Reclaimed areas released from reclamation bonds after Dec. 17 1990	UC	
Reclaimed areas released from reclamation bonds prior to Dec. 17 1990	SW	
Partially/inadequately reclaimed areas or areas not released from reclamation bond	SW	

KEY: UC - Unclassified; Not Subject to Storm Water Program or 40 CFR Part 440 Effluent Limitations Guidelines (ELG)
MD - Subject to 40 CFR Part 440 ELG for mine drainage
PW - Subject to 40 CFR Part 440 ELG for mill discharge or process (including zero discharge ELG).
SW - Subject to Storm Water Program, but not subject to 40 CFR Part 440 ELG

Applicability of 40 CFR Part 440 Effluent Limitations Guidelines to Discharges from Ore (Metal) Mining and Dressing Sites

Discharge/Source of discharge	Applicable ELG, if any (see key)	Note/comment
Land application area run-off	MD	PW-if Process fluids present
Crusher area	MD	PW-if Process fluids present
Piles (seepage and/or runoff)		
Spent ore	MD	PW-if Process fluids present
Surge/Ore	MD	PW-if Process fluids present
Waste rock/overburden	MD	
Topsoil	SW	
Drainage		
Pit drainage (unpumped)	MD	
Pit drainage (removed by pumping)	MD	
Mine water from underground mines (unpumped), adit discharges	MD	
Mine water from underground mines (pumped)	MD	
Seeps/French drains	MD	PW-if Process fluids present
Roads constructed of waste rock or spent ore		
On-site haul roads	MD	
Off-site haul/access roads	SW	(if off Active Area)
Roads not constructed of waste rock or spent ore		
On-site haul roads	SW	MD-if dust control with MD water
Off-site haul/access roads	SW	
Milling/concentrating		
Tailings impoundment/pile	PW	
Run-off/seepage from tailings dams/dikes when constructed of waste rock/tailings	MD	PW-if Process fluids present
Run-off/seepage from tailings dams/dikes when not constructed of waste rock/tailings	SW	PW-if Process fluids present
Heap leach pile runoff/seepage	PW	

the flood storage capacity/freeboard for the pond. While the NSPS effluent guidelines allow a discharge if there's a storm event greater than the 10 yr. 24 hr. storm, what would the WQ be? Would the discharge meet WQS? There should be a comparison somewhere of effluent limits and WQS applicable to any discharge and some calculation of what the likely effluent quality would be. Effluent limits during a storm event would not have to be met but the draft EIS should compare the discharge to WQS. Meeting WQS could be difficult with the high As levels. The draft EIS needs to provide more discussion about the 40 mg/l of WAD CN. Is this a state standard or is it a performance standard?.

The pit water will discharge sometime after 7 to 54 years. Why the wide range? This would need to be permitted in an NPDES permit. Again, a comparison of the pit WQ and effluent limits for mine drainage and WQS should be provided. Could be they would have to treat it. How would that be done? This shouldn't be put off to the future to figure out.

Reclamation

The reclamation plan is pretty sketchy but sounds quite conventional. We are concerned that the plan calls for dewatering the tailings pond. A tough policy question for EPA HQ (we have asked several times and don't get a clear answer) is how can you dewater the pond and still comply with the zero discharge requirements for process wastewater? Anyway, as with the pit water, how would the effluent compare with WQS/NSPS? Would treatment be required?

Finally, there is no mention of how runoff would be handled during/after reclamation. What's the potential for the soils cap over the tailings pond to erode, exposing and perhaps eroding the tailings? Again, high flows and possibly perpetual maintenance should be addressed.

Miscellaneous

From what we have seen of the layout of the project, we believe they have done in the design about as much as possible to minimize the contact between wastewater and surface and ground water. If the "conversion" issue comes up (conversion of waters of the United States to a treatment system), we think one could argue that the 404 permit for the tailings pond liner and the diversion channels would effectively isolate the "treatment system" from any waters of the U.S.

We note also on p. 3-103 that the Buckhorn adit has pretty high As (.025 mg/l). Is there a plan to capture this and route to the tailings pond? It's well above the WQS/HHC. Perhaps the larger question is, does Ecology have a strategy for dealing with the HHC for As when it comes to mining? It's a big issue elsewhere.

Wetlands

EPA thoroughly reviewed the PDEIS regarding wetlands issues. If you have any questions about these comments you can contact Linda Storm in our Wetlands Section at (206) 553-2578. Ms. Storm reviews section 404 permits for a number of types of projects in Washington state.

§404: Discharge of Dredge or Fill Material in Waters of the United States

The PDEIS addresses potential impacts to wetlands in terms of acreage and function associated with the various alternatives fairly well. However, the majority of impacts to waters of the U.S. which must be authorized under a §404 permit are to the various creek systems and their associated riparian corridors (some of which are comprised of wetlands). It is not clear in reading the PDEIS that the authors are clear about the applicability of §404 to dredge and fill material disposal in all waters of the U.S. Specifically, page 2-163 gives the impression that only a state waste discharge permit applies to surface water discharges associated with the tailings impoundment. §404 also applies, but specifically to any discharge of dredge or fill material (e.g., tailings and the associated construction of the tailings impoundment) to waters of the U.S. inclusive of wetlands which are also surface waters. Thus all impacts to Marias Creek, Nicholson Creek and other creeks (Gold Bowl Creek) must be addressed as §404 discharges for which avoidance, significance of impacts to aquatic resources, and compensatory mitigation measures must be addressed. The DEIS should be clearly written to specify the extent of impacts in both lineal feat and acreage to all creek systems associated with dredge and fill material disposal and resultant adverse effects from such disposal. The extent of impacts to riparian corridors associated with creeks should also be specified for purposes of evaluating adverse impacts.

Discharges of dredge or fill material into waters of the U.S. (including wetlands) will result from (1) the mining operation itself (e.g., impacts to Gold Bowl Creek), (2) the tailings impoundment (either Marias Creek or Nicholson Creek or a combination of the two), (3) the dam and reservoir on Starrem Creek, and (4) miscellaneous road crossings. The PDEIS does not clearly discuss the extent of impacts to Gold Bowl Creek from mining operations, nor does it articulate the total lineal feet of creek system that would be impacted for each of the tailings impoundment alternatives. In order to adequately quantify the impacts for purposes of the §404 permit the lineal foot distance of impact due to each tailings facility alternative should be provided. Also, impacts to Marias Creek that would result from the placement of a collection system downstream of a tailings impoundment needs to be addressed explicitly in terms of lineal foot of stream that would be impacted.

Chapter 2: ALTERNATIVES

General: Based on two field site investigations which we participated in during FY 1993, it is our opinion that of the two creek systems which have been identified as alternatives for the tailings impoundment, that the Marias Creek system would result in less adverse impacts to waters of the U.S. than would the Nicholson Creek proposal. The Nicholson Creek system has more associated wetlands, including sensitive plant species within its headwater wetlands, and a gaining hydrologic regime. All impacts to Nicholson Creek and its associated headwater wetlands should be completely avoided.

Discussion of alternatives in the context of associated impacts in Chapters 3 and 4 indicate that Alternatives B, C, D, E, and F indicate that there will be some direct fill and associated impacts to Nicholson Creek. This is inconsistent with the discussion of alternatives in Chapter 2 which implies that alternatives B-F will only involve placing the tailings impoundment in Marias Creek, avoiding impacts to Nicholson Creek. This inconsistency should be resolved and impacts to Nicholson Creek should be avoided entirely.

This is not to say, however, that impacts to Marias Creek from a tailings impoundment and associated proposed water collection system downstream to Marias Creek are not significant. While the system has been degraded to a certain extent by cattle trampling, it contains a well developed riparian overstory and diverse plant community understory in the upper reaches (observed during field investigation with Springwood Associates representatives, October 1993).

Based on the information provided on the stream survey work (Chapter 3,) Marias Creek is typical of 2nd order streams and may provide important spawning habitat. The PDEIS concludes that the creek provides poor fisheries resource habitat because it is predominantly comprised of riffles and devoid of pools and glides. This is characteristic of steeper gradient, small first and second order creeks. Furthermore, it is possible that emerging juveniles could migrate to lower portions of the creek or to Toroda creek for rearing (pool) habitats. Therefore, while the ratio of pool-riffle-glide is not good, the overall habitat potential for trout species should not be ruled out.

2.11.19: Discussion of Compensatory Mitigation for §404 Impacts

Proposed Mitigation Sites identified for impacts to wetlands are:

(1) Bear Trap Canyon (involves principally deforested patch riparian restoration)
(2) Nicholson Creek Headwaters (involves buffer provision and protection)
(3) "Frog Pond" (involves buffer establishment, preservation and some buffer planting)
(4) Pine Chee Springs (involves preservation of high quality spring fed forested wetland and small creek relocation)

EPA has been to each of these sites and through discussions with the Battle Mountain Gold Company's wetland and §404 permit consultants (Springwood Associates) am familiar with some of the concepts associated with each of these areas. The following are general comments on my understanding of potential "mitigation" measures associated with each of these locations and comments specific to each:

(1) Bear Trap Canyon: This is a first order tributary to Marias Creek which has been denuded from forestry practices in a patchwork network. The concept here would involve restoration of a riparian corridor along the creek. We support this concept as a means for replacing some of the lost functions associated with direct losses of the Marias creek segment that would result from the tailings impoundment. However, some kind of accounting system will be necessary to determine the credits to be allocated for such restoration of an existing degraded creek system for the direct losses of an intact stream and riparian corridor of a certain lineal foot length. We need to be provided with the actual distance of creek and acreage of associated riparian corridor that will be directly lost in order to determine what the necessary compensatory mitigation debit will be. Providing functional replacement through restoration of a degraded system for direct losses of a stream which is mainly in-tact will potentially involve a significant ratio of compensation beyond the actual area of creek system directly lost. There is not currently an accepted accounting system for functional replacement of direct habitat losses. However, restoration of previously degraded habitat is likely to be much more ecologically beneficial within a watershed than attempts to create habitats as compensatory mitigation. In order to evaluate the merits of this aspect of the compensatory mitigation proposal, more detailed technical information on the system to be restored and the system to be impacted will need to be provided in the context of an accounting system based on functional attributes. Direct losses of stream habitat should be evaluated both from an acreage and functional standpoint in order to determine the functional replacement credits that would be necessary to compensate the losses. This is not necessarily an easy task.

(2) Nicholson Creek Headwaters: The concepts discussed here are to exclude cattle, establish a buffer, and provide experimental manipulations to establish aspen stands. We strongly recommend that all actions to protect and maintain the existing headwater wetlands and hydrologic system to Nicholson Creek be taken and that no encroachment to wetlands or proposed buffer be allowed. We are concerned about the potential conflict between the use of portions of this system for part of the tailings impoundment (Discussion of Alternatives B - E Chapter 4) and the goals of protection of this system. This mitigative action as proposed would be primarily avoidance and long term protection as opposed to "compensation" for direct wetland and stream losses. The concept of conducting experiments to establish aspen stands and to exclude conifer should be elaborated upon to provide enough information on whether this will be advantageous or not. This concept could be detrimental to existing vegetative communities that support emergent species. Further, the sensitive species

within this wetland should be specified and no actions which could be detrimental to such species should be undertaken as "mitigation" (e.g., hydrologic manipulation could be detrimental).

(3) Frog Pond: We strongly support the protection of this system through avoidance and establishment of buffers and cattle exclusion. In order to successfully attain goals to protect this unique and highly productive wetland system maintaining the hydrology will be important as well as maintaining the existing forested buffer. Establishing a forested buffer in the currently bare portions would also be beneficial. **We do not recommend that direct manipulation to create snags via tree girdling be done.** We do strongly recommend that a minimum 150 foot buffer (up to 300 feet) be set aside in perpetuity to ameliorate adverse impacts from future forestry and other activities.

(4) Pine Chee Springs: This proposed mitigation site is located on a tributary to Myers Creek. The concepts proposed are to preserve a significant existing forested wetland and to re-locate the small stream. We support the protection of this unique wetland and associated creek system. We understand from our site visit that the stream re-location concept is proposed to compensate impacts associated with Myers/Starrum Creek reservoir project. While we are not opposed to the proposed lower portion of the creek re-location, the actual overall benefits to the system and/or species impacted by the reservoir are not explicitly clear. With out clarification it is difficult to evaluate the merits of this proposal in the context of compensatory mitigation. This should be elaborated upon in a detailed compensatory mitigation plan.

With the exceptions specified above for the Nicholson Creek and Frog Pond areas, the mitigative concepts are appropriate for the areas selected. However, it is not at all clear at this point how these concepts at each of these location will directly offset the direct and indirect impacts to Marias, Nicholson and Myers/Sterrum Creeks and associated wetland and riparian areas, and the species they support, as well as to other miscellaneous wetlands that will be impacted from roads, power lines, etc. A clear accounting system based on acreage, lineal feet, and a functional attribute assessment (using HEP, WET and/or other methodologies) will be necessary to evaluate the adequacy of compensatory mitigation for actual losses of waters of the U.S. The biggest concern we have at this time is the with the lack of specificity on the extent of impacts to stream corridors that will result from the project.

2.12 Monitoring Measures

Page 2-157: There needs to be a detailed monitoring plan for all aspects of mitigation (protection and restoration). Ideally, all monitoring requirements for all permits and their associated conditions should be included in one manual such that the facilities operator could ensure monitoring was conducted and that employees

were adequately trained about avoiding impacts to sensitive areas and mitigation sites. For the §404 permit, monitoring will be necessary at both restoration and preservation/protection sites. Monitoring should include (but is not necessarily limited to):

(1) Monitoring of vegetation establishment for wetlands and riparian corridors: inclusive of plant species colonization, plant survival and vigor, and percent cover of canopy established. Permanent vegetation transects should be established to document baseline conditions and to monitor changes in community composition and structure over time after restoration actions have been implemented.

(2) Monitoring of wildlife and fish use (where applicable)

(3) Monitoring of water quality and quantity in preservation/protection areas

(4) Monitoring of instream characteristics (for Bear Trap Canyon and Pine Chee Springs) to assess attainment of increased functional attributes. Monitoring stream habitat and stream communities should be based on comparison to baseline conditions to assess increase in function for specified attributes over time. For instream monitoring we recommend the protocols established in *Region 10 In-stream Biological Monitoring Handbook: For Wadable Streams in the Pacific Northwest* (Hayslip 1993) be used. This handbook provides a number of metrics which represent a combination of structural and functional attributes that can be monitored to assess change of in-stream condition. These methods (or equivalent) should be used to establish baseline conditions and to monitor change over time following restoration.

2.13 RECLAMATION MEASURES

Comments specific to Chapter 2: pages 168-173, and 177-178

While the proposed revegetation and plant species proposed for reclamation appear to be consistent with the goals to "return the disturbed areas to a stabilized and productive condition" following mining and milling activities, the proposed species are not consistent with the intent of NEPA to ensure protection of biodiversity. The proposed species selected reclamation are invasive species (*Dactylus glomerata, Bromus sp.*). While they may be desired for their ability to rapidly colonize and stabilize soils and are typical for grazing practices, they will tend to out compete native species that remain. We strongly discourage the planting of invasive forage species for either reclamation or mitigation work and also discourage use of straw mulch which can additionally introduce non-native or invasive species (such as *Phalaris arundincea*). Native species to the area should be used. The proposed reclamation seeding and plantings along with other activities associated with the proposed mine and the cumulative effects of forestry practices all contribute to cumulative impacts and

loss of biodiversity. Therefore, where ever feasible it is imperative to conduct reclamation and restoration work in such a way as to restore native systems.

Chapter 3: AFFECTED ENVIRONMENT

Page 3-60: As noted above, we are concerned with the potential direct and indirect impacts to the 9-acre high quality wetland system at the headwaters of Nicholson Creek. We strongly recommend all measures to avoid impacts to this system be pursued further. Impacts associated with direct impacts from various alternatives should be clarified (again there is inconsistency between Chapters 2 and Chapters 3 and 4). Also, more detailed discussion should be provided on the potential impacts to this system due to hydrologic alteration and operations and the mine site. The following questions need to be clearly addressed: How close will direct mining operation be to this wetland/headwater system? Will the tailings impoundment be partially placed in this wetland system? How will the hydrology of this system be altered? What are potential adverse effects to the wetland and Nicholson Creek due to hydrologic alteration and impacts? etc.

Page 3-61:Marias Creek: Please provide (in Chapter 4) a clear indication of how much Marias Creek (in miles or linear feet and in acreage) will be directly displaced by the various tailings impoundment alternatives. Impacts to downstream functions as a result of hydrologic modification, loss of habitat, and due to disturbance should also be evaluated. In addition the area of direct and indirect impact caused by the proposed water collection system below the tailings impoundment must be explicitly addressed for each proposed tailings impoundment location alternative.

3.12: VEGETATION/WETLANDS

This section provides clear, useful information. However, there are some discrepancies. We suggest that native vegetation plant communities be used to establish reference condition for which to direct reclamation and restoration re-vegetation work.

3.12.2 Wetland Plant Community

Page 3-115: Paragraph 3 indicates there were only 46.85 acres of wetlands identified in the Project and adjacent areas. This is inconsistent with previous figures given. Please verify correct acreage of total wetlands and correct this statement. In order to provide detailed wetland plant community information for each of the inventoried wetlands, both referenced delineation reports should be included as an appendix of the DEIS for comment and review. It is hoped that these reports will have plant species and soil type information per each wetland in addition to wetland size and location

Page 3-127: WILDLIFE

The sections which discuss riparian and wetland species is not all inclusive, specifically with regard to amphibians and reptiles. The section on Reptiles and Amphibians (page 3-141) is more inclusive.

When addressing impacts to various wildlife species using the Habitat Evaluation Procedure (HEP), it is important to include the amount of Habitat Units (HUs) within the Core and to determine both (1) the extent of impact; and (2) the extent of mitigation that should be required. The PDEIS does not provide the number of acres and habitat units for each species discussed. We assume the DEIS will have this information clearly specified. Once this is done, is it the intent of the Forest Service to identify the extent of HUs in order to determine what the necessary mitigation should be in HUs? If so, we suggest using this approach for target species assemblages for various wetland and riparian areas that will be impacted. This method for habitat used by particular species, in conjunction with the assessment of baseline conditions of stream and wetland conditions could be used to develop the units of compensatory mitigation required to replace functions lost due to wetland and riparian habitats losses associated with the project. Species assemblages for wetland and riparian habitats would need to be agree upon by WDW, WDF, USFWS, Ecology, EPA and others involved in developing the proposed compensatory mitigation for wetland and riparian habitat impacts.

3.15: FISHERIES

Are there fish species in addition to brook and rainbow trout which utilize the creek systems within the project area? If so, why is there no information on non-game/non-commercial fish use? Shouldn't stream surveys be conducted to identified all potential species use and/or community composition?

Page 3-172: Please refer to earlier comment above regarding our concern that Marias Creek may provide some important habitat for spawning activity even though the presence of pools is very low. Please address the possibility of use for spawning in this 2nd order system with juvenile trout rearing occurring lower in the system (e.g., Toroda Creek) where there is more pool habitat.

Chapter 4: CONSEQUENCES OF THE PROPOSAL AND THE ALTERNATIVES

Please note that many of the above comments relate to the discussion of impacts/consequence of the project to wetland and riparian systems. These comments should be addressed where they best fit within the text of the DEIS. It may be more logical to discuss mitigation efforts associated with various alternatives within Chapter 4 as opposed to Chapter 2 as well.

Page 4-23: Alternative B: According to previous discussion and Table in Chapter 2, this alternative should not have any tailings located in Nicholson Creek. Refer to our above concerns and recommendations. This comment applies to Alternative E as well.

4.8 Surface Water: It should be clarified here that the discussion on "zero discharge" only applies to effluent discharge from the tailings facility once it is constructed. If this is the cased, it must be clearly demonstrated how such "zero discharge" shall be obtained. If the discussion is not restricted to effluent discharge from a constructed tailings facility, it is not at all true to say that the facility will be "zero discharge," because discharge of tailings (fill material) to the creek under §404 is a pollutant discharge. It should also be clearly demonstrated how such "zero discharge" shall really be obtained and how instream water quality standards shall really be met.

Wetlands and Streams are surface waters. As noted above, there is no discussion of direct impacts/losses of habitat due to §404 discharges to creeks due to the tailings impoundment, the mining itself (Gold Bowl Creek), and the dam and reservoir construction with associated water withdrawal impacts from Myers Creek. These impacts need to be clearly addressed under Surface Waters (as well as other sections).

Page 4-47, last para.: Mention of reduction of surface flow to the "frog pond" is given in association with a proposed sediment control facility structure that is part of the North waste rock disposal site under Alternative B. Potential impacts to amphibian production due to hydrologic alternation should of the pond should be clearly addressed. Measures under all alternatives to avoid impacting the hydrology of the frog pond should be selected. More detailed baseline hydrologic information on the frog pond should be provided if it has not already been gathered. Baseline hydrologic data will be necessary to monitor the frog pond and any potential adverse effects associated with mining or forestry operations.

4.10.2 EFFECTS COMMON TO ALL ACTION ALTERNATIVES

Page 4-59: Tailings Disposal

Why is a non-cyanide floatation process only considered with Alternative G?? Alternative G is not an option, as proposed, from a §404 permitting standpoint due to proposed tailings impoundment in Nicholson Creek and waste rock disposal in the "frog pond". However, a non-cyanide floatation process option would definitely benefit water quality and reduce adverse ecological impacts. Therefore, a non-cyanide floatation process should be considered with all other alternatives which pose less environmental damage to wetland and aquatic resources.

Please provide EPA with a copy of the Tailings Disposal Facility, Final Design Report, 1993 by Knight Piesold.

Page 4-60: Waste Rock Disposal.

Waste Rock Disposal should not be considered in wetlands or other aquatic resource areas. Options which involve backfilling of waste rock to the mine are preferred over permanent waste rock storage areas. More detail should be provided on the proposed waste rock collection pond, specifically on design and location. The disposal of effluent from this collection pond to Nicholson Creek could pose significant adverse effects depending on the constituents of the water and the flows in Nicholson Creek. Please address all potential water quality impacts associated with such discharge. This would be part of and subject to a Washington State §402 mining permit which addresses all applicable effluent limitations guidelines and toxicity standards for mining operations.

4.12 VEGETATION/WETLANDS

Refer to previous comments regarding reclamation and restoration of native species and native plant communities.

Page 4-91: Wetlands

This section indicates "that 61.54 acres of jurisdictional wetlands exist" in the project area. Please correct with regard to above noted discrepancy. In other sections a figure of 84 acres of wetland and riparian habitat is discussed. It is important to provide accurate information throughout the text on wetland acreage figures. It is also important to provide the information on riparian corridor impacts (though they may not always be jurisdictional waters of the U.S.). Because riparian systems functions very similarly to wetlands in many cases, it is EPA's policy to address impacts to riparian areas as components of stream corridors and to try to provide functional replacement where there are unavoidable adverse impacts. Thus, impacts to riparian corridors is important in addressing overall impacts to streams and creeks in addition to jurisdictional wetlands.

The statement: "Federal; policy for determining mitigation necessary to demonstrate compliance with the Clean Water Act, Section 404(b)(1) guidelines,. . ." does not just apply to wetlands. The §404(b)(1) guidelines requires mitigation for all unavoidable adverse impacts to all waters of the U.S. Thus, compensatory mitigation for this project needs to address adverse impacts to wetlands, streams, springs and seeps, lakes, and ponds (and any associated impacts to such waters of the U.S.). Please refer to previous comments to provide quantification and functional assessment of impacts to all waters of the U.S. for purposes of the §404 analysis and review.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO - - Lack of Objections

The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonaby available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

CONFEDERATED TRIBES OF THE COLVILLE RESERVATION

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT CROWN JEWEL MINE OKANOGAN COUNTY, WASHINGTON

August 29, 1995

Joint Lead Agencies:

USDA Forest Service
Okanogan National Forest
Tonasket Ranger District

Washington State Department of Ecology

Submitted by:

Maurice Socula
Environmental Coordinator

Stephen Suagee
Reservation Attorney

P.O. Box 150
Nespelem, WA 98841

Summary: The Colville Confederated Tribes strongly supports Alternative A, the No Action Alternative. These comments consist of a general statement by the Reservation Attorney of the legal status of the Tribes in relation to the lands and resources in the proposed project area (which affects decisions to be made by both the federal and state lead agencies), and of the special management and planning duties imposed on the U.S. Forest Service as trustee of the Tribes' federally protected rights. The general statement is supported by comments of the following tribal government programs and departments: Fish and Wildlife (separate comments of Fishery and Wildlife Biologists); Environmental Trust (separate comments of Department Director/Water Administrator, Hydrologist, and Environmental Health Specialist Chris Young); Cultural Resources Board.

Office of the Reservation Attorney
Confederated Tribes of the Colville Reservation
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Phillip Cordier, Attorney
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Alan C. Stay, Attorney
Michael Taylor, Attorney

December 16, 1994

Doug Clausing, Section Manager
Water Resources Program
Central Regional Office
Department of Ecology
3601 W. Washington
Yakima, WA 98903-1164

Attention: Phil Crane

Re: 20 Applications filed by Battle Mountain Gold Company; Objections to granting the applications and request for extension of comment period

Dear Mr. Clausing:

As you know, the Battle Mountain Gold Company has published notice of twenty (20) applications seeking permits from the Department of Ecology for various aspects of the water supply plan for the Crown Jewel Mine on Buckhorn Mountain. The Confederated Tribes of the Colville Reservation (the Tribes) object to the granting of any of these applications until there has been an opportunity to evaluate them in the context of the Environmental Impact Statement (EIS), which we understand to be a joint SEPA-NEPA undertaking of the Department and the U.S. Forest Service.

In addition, the notices provide for a public comment period of only 30 days (during the winter holiday season), unreasonably short notice for permits essential to a project of this magnitude. Additional time is necessary to assemble and explain the information relevant to the Tribes' objections, and we ask that you provide us at least sixty (60) additional days as a matter of inter-governmental cooperation.

The Crown Jewel project area is entirely within the North Half of the Colville Reservation. Under the agreement between the Tribes and the U.S. Congress, by which the Tribes ceded certain rights in the North Half to the United States, the Tribes retain fishing and hunting rights throughout the North Half. The U.S. Supreme Court has recognized that these tribal hunting and fishing rights are protected by federal law. Antoine v. Washington, 420 U.S. 194 (1975). Tribal members frequently hunt and fish on the North Half (and their activities are regulated by tribal ordinance), and we are very concerned that no permit be

approved unless maintenance of instream flows and water quality necessary to the preservation of fish populations can be assured. In addition, we want to examine potential impacts to game animals and wildfowl, and whether there may be any human health concerns related to the water uses proposed in the application. The Tribes cannot adequately review potential fish and wildlife impacts and tribal member fishing patterns during the brief comment period provided in the notice.

Individual tribal members own substantial acreage in the North Half, which is held in trust by the United States. These properties are known as trust allotments. Several members have expressed concern to our tribal government about the proximity of their allotments to the Crown Jewel project area, and the potential for adverse impacts to water and air quality and livestock on their property. The Tribes may wish to provide an inventory and map overlays of potentially affected allotments in the North Half, but will not be able to do so in the unreasonably short comment period.

Extending the comment period, and deferring action on the applications for the sake of coordination with the EIS process, will enable to the Tribes to better understand details of the proposed water uses and the extent to which they may affect the important tribal interests outlined above. We would intend to have our various technical resource specialists spend time discussing our concerns with and gathering information from the Department, the Forest Service, and the applicant Battle Mountain.

In closing, please treat this letter as the Tribe's initial objection to all twenty (20) applications of which notice was published on December 1. The Tribes believe that as a separate government, with federally protected rights in the North Half that the State may not regulate, we are exempt from the filing fee of $2.00 per application objected to. In the alternative, we request that the fee be waived. If you are unwilling to recognize an exemption or waive the fees, please advise us and we will make appropriate arrangements, but in the interim please accept these comments.

I will be out of the office from December 19 until at least December 29, but please feel free to contact my colleague in this office Bruce Didesch. Thank you for your attention to this important matter.

Sincerely,

Stephen H. Suagee

Stephen H. Suagee
Reservation Attorney

COLVILLE CONFEDERATED TRIBES
CULTURAL RESOURCES BOARD

COMMENTS REGARDING THE FOLLOWING:

CULTURAL RESOURCES INVESTIGATIONS OF THE CROWN JEWEL MINE PROJECT, OKANOGAN COUNTY, WASHINGTON

THE COLVILLE CONFEDERATED TRIBES ARE IN FAVOR OF ALTERNATIVE A: NO ACTION

Listed below are cultural concerns regarding the Colville Confederated Tribes response to the DEIS of the afore mentioned Crown Jewel Mine Project. In accordance with President Clinton's Executive Orders (April 29, 1994) regarding "Government to Government Relations with Native American Tribal Governments, as executive departments and agencies undertake activities affecting Native American tribal rights or trust resources, such activities should be implemented in a knowledgeable, sensitive manner respectful of tribal sovereignty; and the Environmental Justice Action (12898) of February 11, 1994, this Executive Order applies equally to Native Americans, specifically, with health and environmental research; data collection, analysis and stakeholder access to information; enforcement and compliance assurance; partnerships, outreach and communication with stakeholders; Native American, indigenous, and Tribal programs; and integration of environmental justice into all agency activities.

INTRODUCTION: (*insert, PAGE 2, LINE 2)

...*"NORTH-HALF OF THE COLVILLE INDIAN RESERVATION, OF WHICH THE COLVILLE CONFEDERATED TRIBES HAVE RESERVED HUNTING--FISHING AND WATER RIGHTS, ADDITIONAL ARCHAEOLOGICAL AND HISTORICAL IMPACT STATEMENTS FROM THE COLVILLE CONFEDERATED TRIBES ARCHAEOLOGIST TO BE PREPARED IN COMPLIANCE WITH THE NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT, AND THE NATIVE AMERICAN INDIAN RELIGIOUS FREEDOM ACT AND PRESIDENT CLINTON'S EXECUTIVE ORDERS, ON A "GOVERNMENT-TO-GOVERNMENT" RELATIONSHIP, AND THE "ENVIRONMENTAL JUSTICE ACT", COMMENTS OF THE COLVILLE TRIBES HISTORY/ARCHEOLOGY DEPARTMENT.

Table 1. Cultural Resources activities, Crown Jewel Mine Project, 1992-1994.

TASK	QUANTITY	ESTIMATED RCENTAGE AREA SURVEYED
Preparation of DOEs	9 sites	100
Survey on Buckhorn Mountain	ca. 1,400 acres	20 *s/b 100% of area
Survey of proposed water lines in existing road right-of-way	ca. 28 miles	50 (car survey)
Survey of roads proposed for improvement	ca 6 miles	50 (car survey)
Survey of proposed Gold Creek Water line	ca. 1 mile	100
Survey of water supply pump station	ca. 2 acres	100
Survey of proposed storage reservoir well field, water line, access road	ca 30 acres	100
Survey of Okanogan County PUD substation and transmission line	ca. 26 miles	100

Work performed for this project, does not comply with provisions of the NA GRAVES PROTECTION AND REPATRIATION ACT, NATIVE AMERICAN INDIAN RELIGIOUS FREEDOM ACT, does comply with provisions of Section 106 of the National Historic Preservation Act, as amended. Figure 1. Buckhorn Mountain survey areas and associated support facilities with associated cultural resources ..."MAP IS NOT CLEAR, IS THE 1990 PROJECT AREA AND THE 1992-1994 PROJECT AREA BOTH TO BE CROWN JEWEL PROJECT? PLEASE EXPLAIN? (PAGE 3)

Project History

"Page 5, (paragraph 2)..*.No cultural resource sites were recorded as the result of this first phase of archaeological survey for the Crown Jewel Exploration project. (April 1990) The AHS involvement {Galm and Luttrell) did not consider the Colville Confederated Tribes reserved historical Hunting, Fishing, and Water Rights." These must be considered prior to project planning by AHS.

Project Description

Crown Jewel expended to 4,000 acres, mining properties were surveyed by AHS, without the early archaeological impact of 5,400 acres of which 280 acres were surveyed (20%); the entire 5,400 acres MUST be surveyed as to archeological prehistoric (prior to 1700 and including 1700-1899) and the vicinity of the small mountain lake (PAGE 6) {NOT INCLUDED ON THE MAP, a strong candidate for prehistoric utilization, even though no prehistoric component was observed in the SINGLE shovel test locale.

More intensive studies must be made to determine the prehistoric and aboriginal inhabitants cultural impacts to the immediate area of the Buckhorn Mountain from Oroville.

SEVEN SITES SUBMITTED TO OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION (OAHP), two sites recommended for inclusion in the NRHP (see below), 450K830 "HEE HEE STONE, A TRADITIONAL SPIRITUAL SITE OF THE COLVILLE CONFEDERATED TRIBES; ...a grave site was not evaluated for significance because of NRHP criteria guidelines, ALTHOUGH THIS STILL MUST BE AVOIDED. THE COLVILLE TRIBES BURIALS MUST BE PRESERVED AND PROTECTED.

MINING PROPERTIES on Buckhorn Mountain were evaluated, and an eighth doe WAS COMPLETED FOR REVIEW BY USFS, BLM AND OAHP (no mention as to the integrity or features included as summarized in APPENDIX 1, not attached to this impact statement.

FIGURE 3, LOCATION OF EVALUATED BUCKHORN MOUNTAIN MINING PROPERTIES.

CULTURAL RESOURCES INVESTIGATIONS MUST BE COMPILED FOR PREHISTORIC AND THE HISTORIC HUNTING-FISHING-WATER RIGHTS OF THE COLVILLE CONFEDERATED TRIBES.

THERE IS NOT A MAP OF ;THE COLVILLE TRIBES TRADITIONAL-CULTURAL ARCHAEOLOGICAL CAMP SITES, BURIAL SITES, HUNTING-FISHING, WATER RIGHTS SITES, NOR A COLVILLE TRIBES FISH AND WILDLIFE, WATER/HYDROLOGY SURVEY,(OR MAPS) REQUIRED BY LAW.

BACKGROUND RESEARCH

Environment

This area does not adequately describe the watershed or drainage and topography of entire project area relative to fish and wildlife habitat, ground/surface water, and cultural concerns of the affected tribes. The tribes live off the land, air and water, without, these we are nothing. Clean land, for the food it provides; clean air for all to breathe, and survive; the clean water of which all resources and human kind subsists upon. The MOTHER EARTH MUST NOT BE DESTROYED.

Human Factors

This section does not include the reserved traditional culture of the Colville Confederated Tribes prior to 1892; the Indian Allotments, and Hunting-Fishing and Water Rights of the Tribes. Tribes buried their dead where ever they camped therefore, burial sites must be preserved and protected in accordance with the Native American Graves Protection and Repatriation Act. Religious sites for vision quests were not made known to others due to the sacredness of each site; thus, the Native American Indian Religious Freedom Act preserves this right.

Ethnology and Prehistory

COLVILLE CONFEDERATED TRIBES/BANDS ETHNOLOGY AND PREHISTORY

MUST BE EXPANDED UPON IN THIS SECTION:

Traditional territory of the Northern Okanogan Indians; Oroville a former camp site, a salmon fishery and camp site, and a religious and ceremonial--vision quest site on Buckhorn Mountain from the highest point. Fishing was more for subsistence, than economic reasons; as the Okanogan Band of the Colville Confederated Tribes lived off the land, food gathering, with the seasons.

History

COLVILLE CONFEDERATED TRIBES HISTORY MUST BE INCLUDED PRIOR TO THE WHITE SETTLEMENT, MINING LEASES, ETC. THIS AREA, COVERS MINING HISTORY.

BACKGROUND RESEARCH

CULTURAL RESOURCE INVESTIGATIONS BY AHS IN 1990, SHOULD HAVE BEEN IN ACCORDANCE WITH PRESIDENT CLINTON'S EXECUTIVE ORDERS "ON A GOVERNMENT-TO-GOVERNMENT BASIS" AND THE ENVIRONMENTAL JUSTICE EXECUTIVE ORDERS WITH THE COLVILLE CONFEDERATED TRIBES.

FIELDWORK

Field Survey work should include entire project area (100%)., 450K361 site of an open camp and burial area, 14 shovel test holes, must be expanded to more shovel tests.

SUMMARY: THE COLVILLE CONFEDERATED TRIBES AGAIN RECOMMEND THE "NO ACTION ALTERNATIVE, TO PRESERVE AND PROTECT THE CULTURAL AND NATURAL RESOURCES OF THE TRIBES ABORIGINAL LAND. LAND WHERE OUR ANCESTORS ARE BURIED, CAMPED, GATHERED FOOD (DEER-FISH-BEAR-ROOTS-BERRIES-MEDICINES, ETC.) AND WHERE THE WATER NOURISHES ALL THE CREATURES. PLANTS AND TRIBAL MEMBERS.

Colville Confederated Tribes

P.O. Box 150 - Nespelem, WA 99155 (509) 634-4711

ENVIRONMENTAL TRUST PROGRAM

Memorandum

DATE: August 16, 1995

TO: Maurice Socula, Environmental Protection Coordinator

FROM: Walt Hunner, Hydrologist

RE: Review of Draft Environmental Impact Statement for Crown Jewel Mine, Okanogan County, WA

The following comments are in response to review of the Draft Environmental Impact Statement (DEIS) for the Crown Jewel Mine, Okanogan County, WA. Specific attention was given to the sections on surface and ground water, water supply resources, wetlands, and aquatic resources.

A. Water Quantity

1a. The DEIS estimates that stream diversions, pit dewatering, reduced infiltration due to loss of soil and vegetation in activity area, and interception of overland flow will reduce surface flows by stated percentages. Water depletion for each stream should be quantified. Also, values or uses for which a stream resource is to be managed should be identified and established, and the necessary flow regimes (instream flows) should be quantified and protected.

b. The DEIS includes mean annual flow and mean annual peak flow data for all streams in the project area using regionalized regression equations. Hydrologic quantification should include analyses of low flows, high flows, "normal" monthly flows, and monthly or daily flow durations. It is often practical to quantify normal flows in terms of average median or mean daily flow by month; mean, minimum and maximum monthly flows commonly are determined.

c. Minimum instream flows for fish were established by the IFIM process for Myers Creek (which will have diversion for mine reservoir). Minimum instream flows for fish and water quality concerns should be determined for all potentially impacted streams.

The impact of reduced instream baseflows of local creeks due to pit dewatering is understated in the DEIS. Decreasing streamflows such that fish are impacted is illegal. Also, quantified instream flows are necessary for water rights litigation and any additional appropriations.

2. A hydrologic study should include a water budget analysis. This procedure was not done for the area, and the data necessary to support a water budget, including precipitation and evapotranspiration, was not collected.

3. Also, the following concerns were not adequately addressed:
   a. the effects of blasting a 400 foot deep pit into an aquifer that supplies five creeks in the area. Data is insufficient to evaluate impacts, including pit dewatering, to ground and surface water flow regimes.
   b. the effects of 25 to 30 % reductions in Myers Creek flow on aquifers and wetlands.
   c. anticipated impacts to drainages east of Buckhorn Mountain (needs expansion).
   d. assessment of the impact of additional people in area (due to new jobs) on water quantity (availability) and quality.

B. <u>Water Quality</u>
1. to state that acid or toxic spills "could cause acute short-term water degradation" is misleading; acid and heavy metals leaching and contamination of the groundwater system and creeks it feeds could persist for many years; an accumulation of low level contaminants over time could adversely impact aquatic resources and water usage.
2. the validity of surface water quality data is in question as no QA/QC data is presented in the DEIS.
3. other water quality concerns require further investigation:
   a. the effect of storm water runoff from waste rock piles on surface water quality including sediment loading is not completely addressed; sedimentation from site development activities would be common to all action alternatives and needs to be quantified (sediment yield budget).
   b. commonly occurring chemical compounds (e.g. nitrates and phosphates) that affect aquatic health and water use need to be identified and quantified. Nutrient loading and sediment loading are concurrent events (some parameters are delivered to water courses by attachment to sediment particles).
   c. some ambient water quality conditions were characterized, but the impact and long-term effects of low or reduced streamflows (baseflows) on temperature, dissolved oxygen, bacteria, and other parameters needs to be identified and assessed.
4. other landscape positions besides headwaters of streams should be evaluated for potential tailing sites; the engineering design for ponds / tailing impoundments is not clear; the use of Nicholson Creek as a mixing zone for dilution of heavy metals and Marias Creek as a tailings underdrain to collect leaks and recycle contaminated water

to the mill has negative environmental connotations.

5. the section on reclamation monitoring needs more detail; monitoring measures for ground water and surface water are addressed but need further development- water resource site monitoring should continue for the long-term in order to evaluate reclamation success following a mining operation.

C. Wetlands

1. impact assessment of wetlands is vague, and a "low" rating of effectiveness for wetlands function mitigation is a concern.
2. replacing quality wetlands with wetlands degraded by man's activities is an unacceptable practice.

D. Other

Land status and water related maps in the DEIS only provide information south of the international boundary. Hence some watersheds are not completely shown. It is assumed, for instance, that Myers Creek flows into the Kettle River. The entire picture needs to be clearly presented in order to facilitate the understanding and interpretation of certain issues, such as potential impacts of water diversions and other activities to downstream resources.

ENVIRONMENTAL HEALTH PROGRAM

Colville Confederated Tribes

Memorandum

DATE: 29 August 1995

TO: Gary Passmore
Director, Environmental Trust Department

FROM: Chris Young
Environmental Health Program Manager

RE: Crown Jewel Mine Draft Environmental Impact Statement (EIS)

This proposed project of the applicant will have significant and irreversible environmental health impacts, except for option A (no project). It is extremely unfortunate that there is an extremely abbreviated period of time in which to ascertain the nature and extent of these potential environmental health impacts. It is preferable that time be made available to conduct computer searches of the literature, interviews with local health officials, review patient charts, examine roadway crash and injury data, obtain local health jurisdiction codes and regulations, and make sanitary surveys of the proposed site. In fact, the proposed site (site) probably has never received a sanitary survey by a qualified environmental health professional. This omission could result in an incomplete evaluation.

Inadequately addressed areas within the draft EIS include:

Ambient noise evaluations (1.10.6);
Sewage disposal (2.2.23);
Solid waste management (2.2.24);
Motor vehicle injuries and fatalities (no assigned section number);
Hazardous material management (no assigned section number).

Specific areas for additional investigations follow:

AMBIENT NOISE EVALUATION

The draft EIS noise evaluations remain problematic. Many

references to "WADOE" "allowable limits" are mentioned without stating what these limits are, and with no procedure described as to how an appropriate limit was selected. WADOE "limits for residential areas" may be appropriate rather than the lower limits such as for rural or wilderness areas, but in any event a method should be shown as to how the limit was selected.

The levels modeled have used the measurement of noise in decibels (Db) on the A scale. The A scale is a scale weighted toward speech frequencies, approximately 2000 Hz and may not be appropriate for pure tone noise and impact noise. Pure tones will be generated by fans, blowers, and other equipment, and there will be a large component of impact noise at any construction or mining site. In fact, a sound at 100 Hz such as that produced by a rock being dumped into a truck bed will be 30 Db louder if it is measured on the relatively linear C scale rather than the A scale. Although this 100 Hz tone may not cause hearing damage in a test subject, using the A scale will make the noise "quieter" than it actually is for the purpose of comparing it with ambient noise levels. I feel the Draft EIS overall evaluation that the ambient noise levels will be relatively insignificant is incorrect.

The Draft EIS statement in 4.13.5 that using half of the quarry equipment proposed under other alternatives would produce 3Db(A) lower sound pressure levels is only correct if the sound levels produced are very low, approximately 60Db(A) or less. Of course, 3Db(A) is a dimensionless unit which describes a doubling (or halving) of a measured sound pressure level. In fact, if four pieces of equipment operating together all produce 100Db(A), eliminating two of these machines will still result in a sound pressure level of 100Db(A).

In 4.13.1 proponent states "If noise levels are above regulatory limits within the confines of specific work areas, protective hearing apparel would be worn by employees in these areas. The MSHA (Mine Safety and Health Administration) regulations related to hearing conservation are identical to OSHA (Occupational Safety and Health Administration) regulations in that requiring exposed employees to wear personal protective equipment is a "last resort" of hearing protection after engineering and administrative controls fail to reduce a noise overexposure.

Applying these engineering and administrative controls will result in additional equipment being on-site, a greater maintenance load and larger industrial hygiene staff, and possibly will have other effects. In effect, a hearing conservation program will have to be in place with its attendant manpower requirements. It sounds as if the proponent has not planned for this impact.

SEWAGE DISPOSAL

Preliminary engineering evaluations should be made, and calculations shown, for the proposed on-site sewage disposal systems. The mill facility, shop complex, and likely other sites (anywhere humans are) will generate wastewater and the proponent proposes using "leach fields" for this waste. It should be shown exactly where the systems are proposed to be constructed. It may not be possible to comply with county regulations regarding sewage disposal at one or more of the proposed areas.

SOLID AND HAZARDOUS MATERIAL MANAGEMENT

Section 2.2.24 is incomplete. The amount of solid waste to be generated by the proposed project, from all alternatives, all personnel and their families, support staff, contractors, visitors, and all other potential contributors should be calculated and stated, with justifications for the calculations.

The siting of solid waste disposal facilities off site is extremely problematic. The existing solid waste disposal site proponent proposes to use was engineered for a life span suitable to the local environment without the contribution of proponent's project. This project is large enough, and enough personnel will be brought into the area such that the life of the landfill site will be drastically reduced. Proponent apparently feels that local government and citizens should bear the cost of siting and planning the solid waste facility to be used next, once the existing site is no longer able to accept additional waste. These accelerated costs of planning and siting the next landfill should be described, with calculations shown. The proportion of these costs due to proponent's project should be calculated and described in detail.

Hazardous wastes, as defined by WA Department of Ecology regulations, will be generated from this project. In addition to process chemicals such as NaCN (sodium cyanide), maintenance operations such as vehicle repair, plant maintenance and operations, pesticides use and management, construction, and possibly other operations can generate hazardous waste.

No descriptions and calculations are provided describing the proponent's hazardous waste management plan. In fact, no plan has been presented. The amount of hazardous waste expected to be generated should be described in detail and a plan presented for its management, including waste stream management, methods for reducing the quantity generated, on-site storage, transport methods to be used, and disposal site(s) proposed. As in the solid waste plan (above) the expected reduction in the life of the hazardous waste disposal sites should be described, with calculations shown. Again, hazardous waste disposal facilities

are designed with an engineered materials acceptance rate, and the affect of proponent's increase in this rate should be described. Even more so than with solid waste sites, hazardous waste sites are extremely problematic in siting, and proponent's impact on the life of these sites should be calculated, with statements as to how local governments and communities will be compensated for the acceleration in siting permit costs.

Transportation-related hazardous material releases occur at a rate described in actuarial tables. The projected materials throughputs should be calculated for each of the hazardous materials planned to be transported, how often, where, and the quantities historically released during transport. Engineering evaluations should then be made as to how these materials will be contained and cleaned up, and the medical needs of any involved patients. Local emergency medical facilities including ambulance services, dispatch agencies, and trauma treatment centers should be surveyed to determine their capability to concurrently treat, say, 12 people with acute 95% body surface area sodium hydroxide burns. The local ambulance services in the area are staffed by volunteers, likely without adequate training and equipment for responding to a new class of industrial and transportation disasters. Proponent's plan to mitigate these impacts should be described in detail.

MOTOR VEHICLE INJURIES AND FATALITIES

The draft EIS has preliminary data on the amount of vehicular traffic generated by this project. The traffic calculations, however, appear to be only for supply trucks for consumable chemicals, steel balls, and other supplies. Many other sources of vehicular traffic are reasonably foreseeable, such as the proposed employee busses, contractors, regulatory officials, the media, emergency vehicles, law enforcement and security vehicles, families and visitors, tourists, sales staff making "cold calls", pilot vehicles, nonscheduled deliveries such as UPS (United Parcel Service), caterers, and likely other sources of traffic.

Vehicular fatality and injury rates can be expressed in a rate per 100,000 miles traveled. For each one of the types of traffic generated on the types of roads to be driven, in the weather conditions historically expected, and during the time frames and traffic density situations reasonably foreseeable, a fatality and injury rate should be determined. It should be determined what the normal percentage mix of who the likely victims/patients will be: local citizens, employees, tourists, etc. It is unfortunate but true that humans have not yet been able to avoid all traffic crashes, especially on the roads of the type near the area of the project. The EIS should state the expected fatality and injury rates and incidences and how they will be mitigated

The wear and tear on existing roadways will be enormous. the EIS does not state how these roadways will be kept at their current level of repair. If local government agencies are to conduct roadway repairs financed through a higher tax base no statement is provided as to how the roadways will be kept up while the local governments "ramp up" their maintenance fleet and staff. This increase in infrastructure maintenance equipment and personnel will lag behind the roadway degradation by several years. As roadways deteriorate there are additional vehicular fatalities and injuries. These increases should be described, calculations given, with methods for mitigation (if one can mitigate a crippling injury or fatality).

Colville Confederated Tribes

P.O. Box 150 - Nespelem, WA 99155 (509) 634-471

ENVIRONMENTAL TRUST DEPT. MEMORANDUM
AUG.15, 1995

TO: Maurice Socula
Environmental Coordinator

FR: Gary Passmore, Director
Environmental Trust

RE: Comments on DEIS for Crown Jewel Project

WATER QUALITY AND QUANTITY:
p 2-105: Text does not describe in detail the water monitoring program. It implies that it is not developed yet. When would the monitoring system be developed, and what would be the frequency and time period of monitoring? Who would monitor and how would quality assurance/quality control be provided? Will there be an independant advisory oversight committee? Have bioassays been considered for monitoring?

p 2-109 and 111: Table 2.14 doesn't express fish habitat or numbers loss impacts as a result of streamflow reductions. Habitat loss is not expressed in losses of fish or fishing opportunities. (See later comment under Indian Reserved Rights).

General comment regarding water management: There is no water balance analysis presented in the DEIS to assess the impact of the alternatives on various watersheds. There is no comprehensive presentation of water management at the mine site on a mass balance basis taking into account probable maximum storm events. No hydrogeology on Meyers creek, the main source of water, is presented. No analysis of impacts of transporting water from Meyers Creek watershed to Toroda Creek watershed is presented. What is the impact on water rights, and what's the safe annual yield of this aquifer? Will indian lands in the Meyers drainage be affected?

Watershed analysis and sediment transport modeling for the sub watersheds affected is not presented. Soil erosion rates are mentioned on 4-19 (table on 4-20) but are not translated into sediment generation and the impacts of that increased sediment.

p 4-27 Doesn't speak to location of monitoring wells in relation to groundwater velocities. Just installing them "downgradient" won't insure timely detection of contamination and head changes. They

must be located to detect contamination as soon as possible, not after it has occurred for a number of years. Who has final approval authority on the water monitoring plan?

In more than one section reference is made to low permeablility glacial deposits. Due to complex deposition regimes these deposits are neither anisotrophic or homogeneous and may contain units of high permeability. Without extensive geotechnical evaluation they cannot be relied upon as leachate barriers.

As regards ore stockpiling, the best method is to prevent the leachate in the first place, rather than speculate about its impacts. Ore stockpiles should be covered with tarps and underlain by an engineered material of limited porosity. This is common practice in ore processing facilities.

TAILINGS FACILITY:
P2-46 mentions allowing the water to evaporate at cessation of operations. Evaporation will need to be induced. Drying of the saturated tailings themselves will probably need to be induced as well.

P4-30 Describes precipitation entering the reclaimed tailings mass. There should be a capillary break installed to minimize this possibility.

No mention is made of tailings dam(s) design. No crossectional diagrams are presented of proposed tailings facility construction. No plans are presented for tailings facility closure. The DEIS Volume I and II text descriptions of tailings management are sketchy at best. Given the history of tailings facility failures at a local mine (Hecla, Republic) this is a gross oversight. Based on the sketchy information provided there is no basis for evaluating the alternatives presented. At a minimum the facility should be double lined with a fully engineered dam(s), i.e., no tailings material used as dam material.

Text makes reference to design of tailings dams to meet state criteria. Will there be opportunities for independent evaluation and public comment on the designs as the plans are developed?

Regarding Decomposition/Weathering of Rock:
Was fracturing and exfoliation of waste rock and pit walls due to decompression taken into account? Are there examples of similar lithologies removed from similar depths in old mines that could be used as examples of what to expect decades into the future?

P4-35: What will be done to mitigate the exceedence of primary and secondary groundwater quality criteria within the pit lake. Will the water be treated? No mention is made of this.

P4-52: What will be done to mitigate the permanent exceedence of aquatic life criteria for Cd and Ag within the pit lake? Will the water be circulated through filters?

WATER RIGHTS AND INDIAN RESERVED RIGHTS:
General Comment Regarding Proposed Water Supply and Water Rights: No hydrologic/hydrogeologic evaluation is included for the Meyers Creek Basin, the primary source of mine water. As a result it is not possible to evaluate the potential effects of the proposed mine alternatives on water rights appurtenant to Indian owned land. Evaluation of impacts on ground water levels in the basin are needed. The IFIM evaluation of Meyers Creek is a good method, but it needs to consider impacts in the U.S. portion. The study objectives concentrate on the Canadian portion and it is not clearly stated what the dewatering impacts will be.

P4-56: A water right is not, strictly speaking, a "private property right." It is a usufructory right held in a common public resource subject to a variety of limitations such as amount, time, and place of diversion and use. Non-consumptive uses are subject to additional limitations. Water rights are issued subject to existing (prior or senior) rights. Another distinction from a private property right is that a water right can be lost by non-use.

P4-57: Water right applications are not located on a map or by other means. Water right requests are not related to project alternatives which vary considerably in diversion duty volumes and periods of use. All of the water rights applications are not included in the list. This provides an inadequate basis upon which to evalua te the impact of the alternatives.

Indian owned land is located (the SW1/4 Sec.4, T39N, R30E W.M.) in the Myers Creek watershed. Additionally, Indian fishing rights exist in the area. The BLM and Forest Service have a fiduciary (trustee) reponsibility to protect these rights. No discussion of this issue is presented in the text. If these rights are determined to be impacted mitigation must be insured. In order to protect these rights they need to be quantified, particularly as regards fish and fish habitat loss. The IFIM analysis needs to be done for all affected streams to quantify impacts.

Other Indian land is located throughout the area. The secondary impacts related to population growth need to be evaluated. All new housing in the area near the mine site will of necessity require domestic wells. These wells will impact the Kettle and Okanogan rivers.

According to the May 95 watershed assessments of the Kettle and Okanogan drainages performed by the Department of Ecology both Rivers have not been adequately meeting statutory instream flow levels for some time. The Kettle River instream flows are

typically are **not** met 50 percent of the time during the late summer and fall. Okanogan statutory instream flows are **not** met on average of 60 to 100 days per year depending on where you are in the system. This is damaging the Tribes' fishery. Any additional water rights granted for the Crown Jewel Project must be conditioned to minimum flows, i.e., shut down in favor of senior appropriators when flows are not met. The Forest Service and BLM as trustees have a responsibility to see that this is adhered to.

Regarding alteration of surface water flows: The State of Washington RCW 90 has prohibitions against wasting water. Drilling a hole and leaving an unplugged artesian well is usually considered a prohibited act. Are flows from abandoned mine workings also considered prohibited acts under state law, and, if so, how will this issue be dealt with?

FISH & WILDLIFE

COLVILLE INDIAN AGENCY
WESPELEM, WASHINGTON

MEMORANDUM

August 18, 19

TO: Maurice Socula, Environmental Specialist

FROM: Maureen Murphy, Steve Judd & Carl Hruska, Wildlife Biologists

SUBJECT: COMMENTS ON CROWN JEWEL MINE DEIS

I. General Comments

The proposed Crown Jewel Mine will affect tribal members and their ability to harvest fish and wildlife for subsistence purposes on the former Colville Reservation North Half. Mining is an activity that in general is not considered beneficial to fish and wildlife. Just how detrimental it turns out to be usually hinges on the size, type and duration of the mining operation and the level of reclamation carried out upon completion. It would be the rare case where site restoration would equal or exceed pre-mining wildlife habitat values. Restoration efforts often fall short of these values and\or require long time periods to be realized. We do not think that the negative effects on fish and wildlife resources of this mine proposal can be fully mitigated to off-set the losses to fish and wildlife and subsistence over the life of the mine (10 years, possibly 20).

Secondary impacts associated with an operating mine can equal or exceed the direct impacts of the mine itself. The area will probably experience an influx of people to build the mining facility and/or work in the mine or participate in reclamation efforts. There could also be an increase in people to provide services for those people (and their families) directly associated with the mine. This means increased housing developments which can physically displace wildlife and result in a loss of habitat. Habitat quantity and quality is also reduced through increased disturbance and harassment. More demand is placed on water and power supplies which can in turn impact fish and wildlife habitat. The increase in the local population will also result in increased recreational demands. This leads to more pressure on hunting and fishing resources as well as increased disturbance from berry picking, hiking, camping and other outdoor activities.

II. Specific Comments

The proposed mine will affect 11,000+ acres of habitat for both huntable populations of game as well as non-game species. All of the action alternatives will result in habitat loss, particularly mature and old growth forest. Furthermore, certain categories of habitat losses, e.g., deer winter cover, in at least some portions of the core area will fall below the standards and guidelines required in the Okanogan National Forest Land and Resource Management Plan. Loss of habitat will result in population losses. Reduced numbers of subsistence wildlife will affect tribal members utilizing the project area.

Reclamation measures should focus on bringing all affected lands back to as close a pre-mining condition as possible. There will be some unavoidable losses in site productivity; nonetheless, much can be done if enough effort is put forth. On sites that are presently supporting forests, stocking rates of seedlings should be at levels that reasonably ensure that a stand similar to the one lost to mining will be re-established. Forested areas that will be adequately re-stocked during reclamation vary under the alternatives, however under Alternative B, the Proponents proposal, none of the affected acres in the mine footprint will be reclaimed to a fully-stocked forested condition. This is unacceptable.

Current road densities in the core analysis area coupled with additional roads for the mine are estimated to be over 6 miles per square mile, which are exceedingly high densities which in turn impact fish and wildlife in a variety of ways. Road closures during and after project completion will bring that figure down to 4 miles which is an improvement but still too high. Many of the post-mining roads will be open to administrative use only so there will be a decrease in *vehicular* access by other users to the area. While this is a necessary reclamation effort which will improve habitat quality and wildlife use levels, these measures will make the core area less attractive to some tribal members for subsistence purposes, thereby reducing tribal hunting opportunities in the area.

The proposed mine will affect about 11,000 acres of huntable lands in the project core areas, i.e., that area associated with the pit, facilities, roads, traffic, etc. This loss, coupled with increased "No Trespassing" and "No Hunting" signs on private lands due to more people in the Orville-Chesaw-Tonasket area, could also decrease tribal member opportunities to hunt and fish in the general area.

The proposed mine will result in an increase in local/regional human population. This population increase may be good for economic benefits to some, but will increase the competition for local harvestable wildlife and fish and affect subsistence use of tribal members. According to predictions given under the various alternatives, hunting and fishing pressure will increase 9%-27% over existing levels. This is on top of the 14.5% estimated increase due to anticipated population increases in the recreation study area *without* the proposed mine.

The 1991 tribal deer harvest levels of 39 hunters and 28 deer on page 3-151 of the DEIS are incorrect. We suspect these figures are misinterpretations of the hunter report card returns presented in the tribal North Half deer harvest report for that year. At present, we do not have any deer harvest estimates for the 11,000 acre project core area. We do know that tribal members hunt both the project analysis area in general and the core area specifically, based on verbal accounts and hunter report card returns.

We do have harvest estimates for Game Management Unit (GMU) 206 which encompasses the proposed mine site, the core analysis area and the U.S. portion of the project analysis area. GMU 206 is bordered on the north by Canada, on the east by the Kettle River and Toroda Creek Road, on the south by State Highway 20 and on the west by the Okanogan River and Lake Osoyoos. Projected tribal deer harvests for GMU 206 from 1977-1994 have ranged from 80-385 animals, with an 18-year average of 160 head. The projected harvest for the 1991 season is 219 head. The Tribes portion of the combined harvest (Tribal + State) from 1980-1994 for GMU 206 ranges from 9% to 37% with an average of 23%. Over the past 10-years, both Tribal and State harvests have generally shown an increasing trend with the State harvests exhibiting a greater degree of increase and a more consistent trend. The projected 1991 tribal harvest for GMU 206 was 219 head which comprised 22% of the combined harvest for that unit.

Increased traffic from local and regional population centers to staff and service the mine will increase wildlife/vehicle collisions. The disturbance to wildlife populations by the operation of this mine may result in stress to these populations, negatively affecting reproduction, reducing huntable populations of game and affecting the subsistence use by tribal members.

The transport and storage of fuel, 189,000 gallons of diesel and 2,500 gallons of unleaded gas, by accident or carelessness, could find its way into the groundwater or surface water and become a hazard to aquatic life and human life. The transport and storage of chemicals, if accidently spilled, could poison fish and wildlife and human alike.

Tailings ponds and collection ponds can attract migratory birds and result in bird and other wildlife deaths. Destruction of cyanide in these ponds may appear to be at acceptable levels, however the pH in a birds digestive system can cause what was considered to be non toxic to be toxic.

Tailings ponds in the head of drainages is not a very good idea. Leaks in liners and/or structural failures in the dam can result in the transport of toxic materials, including trace elements, into ground and surface waters. These elements can result in fish and wildlife deaths and affect the human population too. Upwelling of ground water in a stream system, if it contained contaminants or toxic elements could effect fish reproduction, since upwelling of groundwater often occurs in gravels where fish spawn.

We also have some concerns in regards to using deep wells to monitor cyanide migration into groundwater. According to B. Albrechtsen et. al.: "While this may provide useful information to research, if contaminated water is detected in the area, the problem will already be too advanced to solve."

The storage reservoir for water is in the Starrem Creek drainage, west of Meyers Creek. If this reservoir fails, sediments will be deposited in Meyers Creek and could affect fisheries in both the U.S. and Canada. Meyers Creek, from Mary Ann Creek to the Canadian Border is a water/shoreline of the State. How can putting structures in this creek and or across this creek be consistent with the Shoreline Management Act?

Jerry Marco also has a few additional comments although he has not had yet had the opportunity to add them here. He would like to provide those comments early next week if possible. Please contact us is if you have any questions about our comments.

Sources Referenced

1. B. Albrecthsen, et. al.. 1987. Intra-agency report/recommendations on mine land reclamation efforts. Intermountain Forest and Range Experiment Station, U.S. Forest Service, Logan, Utah. 5 pp.

2. Judd, S.L., and M.A. Murphy. 1977-1994. Tribal North Deer Harvest Reports, Fish and Wildlife Dept., Colville Confederated Tribes, Nespelem, WA.

CONFEDERATED TRIBES OF THE COLVILLE RESERVATION
OFFICE OF THE RESERVATION ATTORNEY

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Stephen H. Suagee, Attorney - 895
Richard Taylor, Attorney - 581

Bonnie Garden, Secretary - 554
Peggy Circle, Secretary - 393
Leon Stanger, Assistant - 834

MEMORANDUM

To: USDA Forest Service
Okanogan National Forest
Tonasket Ranger District

Washington State Department of Ecology

From: Stephen H. Suagee
Reservation Attorney

Date: August 29, 1995

Subject: **Tribal Rights and Federal Trust Responsibilities in Relation to the EIS Process for Crown Jewel Mine**

The Confederated Tribes of the Colville Reservation, acting through its federally recognized governing body the Colville Business Council, has by the approval of Resolution No. 1995-529, August 17, 1995, determined that the Crown Jewel Mine would cause significant and potentially irreparable impacts to tribal rights in the project area and adjacent lands. Accordingly, the Colville Tribes supports Alternative A, the No Action Alternative, as the only alternative that would prevent those impacts. Moreover, the Draft EIS for this project does not adequately recognize or evaluate these potential impacts, and therefore the lead agencies may not proceed with any decision to authorize the project in any form until the deficiencies in the DEIS have been remedied.

As explained below, the Colville Tribes holds federal reserved hunting and fishing rights in the entire former North Half of the Colville Reservation, within which the project area is located and within which many of the adverse impacts will occur. The Tribes' fishing rights include federal reserved water rights to instream flows sufficient to preserve fish populations in all streams and rivers within the North Half. These water rights have a priority date of not later than 1872, when the Reservation was established. The DEIS fails to even mention these tribal water rights, and does not adequately address the instream flow requirements of creeks in the project area in relation to the Tribes' water rights. This is of course relevant to the Department of Ecology's role in approving water permits and the overall water use plan for the Crown Jewel mine pursuant to this EIS process. And it is of critical importance to the trust responsibility of the U.S. Forest Service; as a federal agency, the Forest Service is the trustee of the Tribes' water rights and other reserved rights in the North Half, and is held to an exacting standard of care in its NEPA review of any project

that may affect those tribal rights.

In addition to the potential to impair tribal water rights, the Tribes is concerned that the DEIS discloses potential water quality problems. Water quality adequate to preserve fish populations is an element of the Tribes' reserved rights, which the Forest Service must protect as a trustee.

The Tribes' hunting rights include the rights to gather food, medicinal, and cultural plants. Again, the Forest Service in its NEPA process is under a trust duty to identify how such rights and natural resources may be affected by the proposed project. There has been no inventory of plant resources that could be affected by the project, and thus the Forest Service has no way of knowing how the Tribes' rights in these resources may be affected. Nor is it clear from the DEIS that impacts to tribal hunting rights are adequately analyzed. The attached comments of tribal wildlife biologists suggest that the DEIS has misinterpreted tribal deer hunting data, that not enough is known about the impacts to game species or tribal hunting opportunities, and that consequently it is not possible to develop an adequate mitigation strategy based on the DEIS.

A. ESTABLISHMENT OF COLVILLE RESERVATION AND RESERVED RIGHTS IN THE NORTH HALF (Fishing, Water, Hunting, and Gathering Rights)

The original Colville Indian Reservation was established by Executive Order of July 2, 1872 issued by President Grant pursuant to Congressional authorization. The original Reservation encompassed over three million acres, all the lands between the Columbia and Okanogan Rivers north to the Canadian border. By Agreement of May 9, 1891, which Congress ratified, the Colville Tribes ceded the North Half of the Reservation to the United States, and the Reservation boundaries were reduced to essentially their current status. (Certain allotments were retained by individual Indians within the North Half, some of which are still held in trust for individuals by the United States.) The 1891 Agreement expressly reserved hunting and fishing rights on the North Half to the Tribes and its members and provided that such rights "shall not be taken **or in anywise abridged.**"

The U.S. Supreme Court has interpreted the tribal rights reserved in the 1891 Agreement as prohibiting the State of Washington from in any way regulating tribal hunting and fishing on the North Half. Antoine vs. Washington, 420 U.S. 194 (1975).

Today the Tribes regulates hunting and fishing by tribal members on the North Half in much the same ways as it regulates on-Reservation hunting and fishing by tribal members, pursuant to permanent ordinances and seasonal regulations enacted by the Business Council and enforced by Conservation Officers and the Tribal Court system.

The Antoine decision essentially recognizes that under federal law the Tribes' hunting and fishing rights on the North Half are exactly the same as the hunting and fishing rights of the Tribes at the time when the North Half was still part of the Reservation. The 1891 Agreement simply "reserved" some of those rights to the Tribes at the same time that the land itself was being ceded to the United States. These reserved rights are also exactly the same as an off-reservation treaty right; treaties are simply those agreements between Tribes and the U.S. that were entered into before 1871, when Congress stopped using treaties as the mechanism for dealing with Indian Tribes so that both houses of Congress (not just the Senate with its exclusive power to ratify treaties) could be involved in the approval of the agreements. One of Washington's unsuccessful arguments in Antoine had been that the 1891 Agreement could not have the same effect as a treaty to prohibit State regulation of tribal hunting on the North Half.

The Antoine case was about regulation of hunting and fishing, but there are other federal court decisions that clarify the extent of the Tribes' reserved hunting and fishing rights on the North Half. Perhaps the most significant element of the fishing right is the associated federal reserved water right to instream flows sufficient to preserve fish populations. United States vs. Adair, 723 F.2d 1394 (9th Cir. 1984). In the Adair case, the U.S. Court of Appeals for the Ninth Circuit concluded that because the Klamath Tribe of Oregon had retained its treaty hunting and fishing rights on Forest Service land (Winema National Forest) that was no longer part of any Reservation, the Tribe also held instream water rights sufficient to preserve fish populations in streams within those lands. (Note that as the title of the Adair case implies, the United States took that position on behalf of the Klamath Tribe.)

The doctrine of federal reserved water rights (also known as the Winters Doctrine) was first established by the U.S. Supreme Court in a 1908 decision which determined that when Congress created the Fort Belknap Indian Reservation in Montana, water rights were impliedly reserved as of the date of the Reservation. This effective date for the tribal water rights meant they had

priority over non-Indian rights in the same basin that had been recognized under state law after the creation of the Reservation. Winters vs. U.S., 207 U.S. 564 (1908) Like many western states, including Washington today, Montana at the time of the Winters case followed the prior appropriation doctrine of water rights. This principle means that the oldest, or most senior, water right will be satisfied completely before any junior rights are even partially satisfied. Thus the priority date of a Winters Doctrine water right is crucial in times of shortage.

In the Adair case, the federal appeals court determined that the priority date of the Klamath Tribe's reserved instream water rights was "time immemorial" because the Klamath Tribe had fished on the Forest Service lands since aboriginal times. The Adair decision is directly on point to the Colville Tribes' situation on the North Half: Colville Indians have fished on what is now the North Half since aboriginal times. The Tribes' instream water rights for fish preservation have a priority date of time immemorial, or in no case later than 1872, and are clearly the senior water rights in the Crown Jewel project area.

The Tribes hunting rights are clearly recognized, although the management implications of those rights at this point in the EIS process are evidently not clear to the Forest Service. It should also be noted that under well settled principles for interpreting tribal rights, which were applied in the Antoine decision, the Tribes' hunting rights on the north Half also include the right to gather plants for food, medicinal, and cultural purposes.

Based on the foregoing, it would obviously be incorrect to conclude that simply because the project area is not located on tribal land, no significant interests of the Tribes are implicated by the proposed project. Newspaper accounts of the August 17, 1995 public hearing in Oroville attribute such a viewpoint to unnamed officials of both the Forest Service and the Department of Ecology. And as demonstrated in the next section on the Forest Service's trust responsibility, the Forest Service has special obligations to understand the nature of the Tribes' rights in the North Half and to make decisions consistent with a proper understanding of these rights, something that it cannot do if tribal land ownership is made the touchstone of the Tribes' interest in the project area. The Colville Tribes desires to work with the Forest Service and Ecology to address the need to protect instream flows in the project area, as discussed more specifically later in these comments.

B. THE FEDERAL TRUST RESPONSIBILITY AND THE NEPA PROCESS

As basic as the law of reserved tribal rights discussed above is the federal trust responsibility to protect and preserve those rights and the natural resources subject to those rights. This responsibility flows from the unique government-to-government relationship between the United States and each federally recognized Indian Tribe. **All** federal agencies, not just the Bureau of Indian Affairs or the Interior Department, are obliged to fulfill a trust duty to Tribes with respect to any management activities within their authority that implicate tribal rights. Covelo Indian Community vs. F.E.R.C., 895 F.2d 792 (9th Cir. 1990); Nance vs. EPA, 645 F.2d 701 (9th Cir. 1981).

Thus the Forest Service has a trust duty to the Colville Tribes in the NEPA review and decisionmaking regarding the Crown Jewel Mine. The above cited cases, as well as an extensive body of Interior Department administrative decisions and legal opinions, recognize that the trustee federal agency must treat the natural resources subject to the reserved tribal right (fish, timber, water, wildlife, etc.) as a tribal asset to be protected under a fiduciary standard of care. The trustee agency must be loyal to the interests of the beneficiary tribe. See for instance, the May 8, 1991 decision of the Interior Secretary to increase instream fish flows released into northern California's Trinity River by a Bureau of Reclamation facility 70 miles outside the boundaries of the Hoopa Valley Indian Reservation; the decision affirms the agency's overriding trust duty to tribes to provide fish flows prior to any other use of project water.

In the context of environmental review pursuant to the National Environmental Policy Act (NEPA), the trustee agency must know what resources are at stake, and how the Tribes' unique interests in the resource may be impacted, **before** any decision is made to authorize a project. That has not occurred in this EIS process with respect to instream flow water rights, adequate protections for water quality, inventory of plant and vegetational resources, and mitigation for impacts to habitat of wildlife subject to tribal hunting rights. Such additional review must occur before the EIS may be considered adequate. The applicable standard of review is in part defined by the 1891 Agreement, which states that tribal rights in the North Half shall not be abridged in any way.

C. SUMMARY OF DEPARTMENT COMMENTS

This summary section is not intended to exhaust the concerns identified in the attached comments from tribal programs, and the lead agencies are urged to review all the program comments.

1. Water Rights. In view of the Tribes' instream water rights, and the Forest Service's obligation to protect those rights, IFIM and instream flow studies should be conducted of all major streams in the project area, including Nicholson and Toroda Creeks as well as simply Myers Creek. These creeks area all targeted for new water withdrawals. In addition, the IFIM as applied to Myers Creek needs to be expanded to insure that channel maintenance flows are provided. Tribal Fishery Biologist Jerry Marco's comments note that IFIM is not designed to determine habitat conditions that may require peak flows for maintenance. IFIM analysis without more may therefore make it appear that the peak of the hydrograph (any flow in excess of the spawning minimum) may be allocated to storage without adverse fisheries impacts. The obstruction to fish passage on Nicholson Creek should be analyzed from the standpoint of possible removal and reintroduction of fish into the habitat that exists above the obstruction.

The Tribes is very concerned that no water rights permits, overall water management plan, or operating plan dependent on new withdrawals of water, be approved until it can be determined that such can be done without adverse impact to instream flows adequate to preserve fish populations. As discussed above, the Forest Service as trustee has an affirmative obligation to pursue a course of action that will insure that such flows are protected.

2. Water Quality. Both the Fishery Biologist and Environmental Trust Director note that the DEIS predicts permanent exceedence of toxic thresholds for Cadmium and Silver, at least in the mine pit area. We also note that the applicable standard for Cadmium errs on the side of increased hazard to fish populations; given the federal trust responsibility, it would be more appropriate to utilize an EPA rather than State standard for Cadmium.

Note also the concerns set forth below and in the departmental comments about the tailings facility.

3. Hunting Rights/Wildlife Habitat. As suggested in the comments of tribal Wildlife Biologists, the DEIS does not

adequately analyze the overall impact to wildlife habitat in relation to tribal hunting rights and opportunities. Further analysis is necessary to meet the Forest Service's trust responsibility in the NEPA process.

4. **Gathering Rights/Plant Resources.** There is no inventory of native cultural, medicinal, and food plants in or adjacent to the project area. Thus it is not possible to know whether there will be any impacts to such resources, whether sufficient quantities may be available elsewhere on the North Half, and what may be done to mitigate or eliminate any such impacts. The Forest Service has an obligation to develop such an inventory, and the Tribes would be happy to assist in developing an approach to such an inventory and in commenting on the results.

5. **Archaeological/Historical Resources.** It has not been possible to obtain the written comments of the Tribes' History and Archaeology Department. This Department is responsible for participating in the review process under Section 106 of the National Historic Preservation Act. The Department Director advises that she has no record of any Section 106 consultation having been initiated with the Colville Tribes.

D. CONCLUSION: MULTIPLE ACTIONS AND THE EIS PROCESS

The DEIS is not clear which agency actions and decisions will be made pursuant to the final EIS. Evidently a Plan of Operations for the mine itself is contemplated as one component of any Record of Decision that may issue. There are several major aspects of the project that are not sufficiently developed in the DEIS to constitute a proposal for decision. For instance, the tailings facility is proposed for a couple of alternative locations. At the field trip on August 17, 1995, the Tribes was advised that the Department of Ecology has proposed certain design modifications that would eliminate underdraining of Marias Creek, in order to develop a series of pools to facilitate monitoring of water quality. In concept this appears to be a sound idea, but there is no discussion of this in the DEIS and hence the Tribe and public cannot understand or comment on how this proposed modification may be connected to other aspects of the tailings facility. In addition, as a result of the decision in Washington Wilderness Coalition vs. Hecla Mining, 870 F.Supp. 983 (E.D.Wa. 1994), it would appear that an NPDES permit will be required for the tailings facility; there should be clearer discussion of this connected action.

Another example of the lack of focus as to the action to be authorized pursuant to the EIS is the brief statement that an amendment to the approved Okanogan National Forest Plan may be required. There is no discussion as to the nature and scope of any possible amendment. The Tribes is concerned about the potential for ad hoc modifications to Forest standards and guidelines as needed to justify the impacts of the project. For example, the DEIS notes that stream channel surveys have found that stream channel embeddedness in Marias and Nicholson Creeks already exceed current Forest Standards and Guidelines. See attached comments of Fishery Biologist Jerry Marco.

The overall water plan for the mine has been the subject of a separate permitting process of the Department of Ecology. The Tribes understands that final permitting has been deferred until the final EIS is available, but again we are concerned that the final plan has become something of a moving target.

In general, the final EIS should more directly identify the agency decisions that will rely on it, so that the Tribes and interested public can evaluate the extent to which impacts to any legally protected interests have been properly reviewed in advance and have not been subject to pre-determined decisionmaking.

E. CONCLUSION

The Colville Tribes appreciates this opportunity to comment on the DEIS. We urge the Forest Service as trustee of our reserved rights to consider these comments carefully, and would be pleased to further discuss our management concerns during the coming weeks. This office would be happy to discuss legal standards with the Regional Counsel's office, and in concert with any consultation that you may choose to seek from the Interior Solicitor. We urge the Department of Ecology as the water use permitting authority to consider our reserved instream flow rights carefully; we would also be pleased to work with Ecology in the coming weeks to address the status of the water management plan and its relation to the Tribes' rights.

FISH & WILDLIFE

MEMORANDUM

August 25, 19

TO: Maurice Socula
Environmental Specialist

FROM: Jerry Marco
Fishery Biologist

SUBJECT: Comments on Crown Jewel Mine

RECEIVED
AUG 29 1995

Here are some additional fishery related comments to incorporate with the Fish/Wildlife comments you received last week.

The DEIS predicts through modeling, surface water quality conditions that will exist in the open pit and compares the predicted heavy metal toxicity levels to Aquatic Life Criteria parameters. Model results indicate a high probability of exceedence for cadmium chronic criteria and acute criteria for silver. Both of these metals are highly toxic to fish at low concentrations.

Fish exposed to cadmium become hyperactive, followed by respitory distress and paralysis. Cearly and Coleman(1974) found that the toxic effect of cadmium on the nervous system is consistent with the metal's inhibition of the enzyme cholinestrease which results in paralysis of the respiratory system. The greatest concentrations of cadmium in fish exposed to the metal are found in their gills, kidney, liver and testes and apparently tissue residues reach equilibrium with cadmium concentrations in water(Eaton, 1974). Research has shown that rainbow trout exposed to cadmium for 30 weeks and then transferred to clean water for ten weeks lost some accumulated cadmium from gill tissues but retained high levels in kidney and liver tissues. Wilson et. al.(1981), also found that cadmium concentrations in livers of rainbow trout inhabiting a stream contaminated by acid mine wastes were closely correlated with environmental concentrations. Wilson et. al.(1981) recommend that cadmium concentrations in waters occupied by salmonids should not exceed 0.0004 mg/l.

Based on the research cited above, it appears that the Aquatic Life Criteria identified in the DEIS will not be adequate to protect the fishery resources in the receiving streams if these standards are used for monitoring. For example, the acute criteria for cadmium identified in the DEIS requires only meeting concentrations of 0.0074 mg/l, much higher than research recommendations for salmonids of 0.0004mg/l. Further investitgations into water quality standards are needed as well as a specific mitigation plan on how to mitigate for impacts to the affected fishery resources.

- The expectation for instream flow needs during the rainbow trout spawning period is somewhat

[illegible] for instream flow needs of fish, however, IFIM derived fish flows may play a key role in the development of overall flow needs. The primary purpose of the predictive model used in IFIM is to describe the relation between streamflow and usable amounts of physical water column space. This is particularly useful during late summer when low flow conditions exist, however, seldom will the model restrict flows during moderate to high flow regimes, i.e. rainbow trout spawning period.

A method which examines both instream and out-of-stream flow requirements within a streamflow management framework is needed. This method will look at flow requirements for riparian habitat, floodplains and channel morphology, as well as those of fish. These requirements need to be considered in any analysis of flow alteration since biotic conditions such as riparian habitat or long-term fish community structure may depend on them.

- The DEIS identifies short-term increases in sediment yield which could result in impacts to fishery resources in Marias and Nicholson Creeks. Fishery surveys conducted in these streams have found stream channel embededness to already exceed the current standards and guidelines of the Okanogan National Forest. Further investigations are needed to determine what impacts will result to the fishery resources as a result of further increasing stream channel embededness.

References :

Cearly, J. E., and R. L. Coleman. 1974. Cadmium toxicity and bioconcentration in largemouth bass and bluegill . Bulletin of Environmental Contamination and Toxicology 11: 146-151.

Eaton, J. G. 1974. Chronic cadmium toxicity to the bluegill (Lepomis macrochirus Rafinesque). Transactions of the American Fisheries Society 103:729-735.

Wilson, D., B. Finalayson, and N. Morgan. 1981. Copper, zinc and cadmium concentrations of resident trout related to acid-mine wastes. California Fish and Game 67: 176-186.

United States Department of the Interior

BUREAU OF MINES
Western Field Operations Center
East 360 3rd Avenue
Spokane, Washington 99202-1413

August 16, 1995

Mr. Phil Christy
U.S.D.A. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket WA 98855

Subject: Review of the Draft Environmental Impact Statement, Crown Jewel Mine, Okanogan County, Washington, June, 1995. (ER95/475)

Dear Mr. Christy:

We have reviewed the subject document and have made recommendations (enclosed) to the Regional Director, Fish and Wildlife Service, Portland, Oregon which are to be included in the joint Department of Interior comments. We are forwarding you a complete copy of our comments for your early consideration. If you have any questions about our recommendations, please call us at (509) 353-2700.

Sincerely,

Nick Zilka for

John R. Norberg, Chief
Branch of Engineering and Economic Analysis

Enclosures

One of the primary concerns of the Bureau of Mines is the development of alternatives. The only alternative, other than the proposed action alternative, which uses technology and methods which would be practical from a perspective of mining efficiency or project economics is Alternative E. Alternative C and D reduce estimated return on invested capital by more than 25%; Alternatives F and G result in negative cash flows. Additionally, there are no significant gains in other resource values from these four alternatives. We conclude that only the proposed action (Alternative B) and Alternative E represent viable mining options.

The EIS indicates the following general relationships and magnitudes of environmental impacts on the various components of the local project environment.

Air quality	no major impacts from any alternative
Geology	no major impacts from any alternative
Soil	no major impacts from any alternative
Ground water	little impact
Surface water	little impact
Vegetation	no T & E species; impacts will be mostly mitigated
Wildlife habitats[1]	
Upland grassland	no substantial impacts to species
Bottomland grassland	no substantial impacts to species
Shrub cover	no substantial impacts to species
Early conifer	no substantial impacts to species
Mixed conifer pole	no substantial impacts to species
Mixed conifer mature	(Alternative B 576 acres. disturb.) (Other alternatives 501 - 708 acres disturb.)
Riparian wetland	(Alternative B 92 acres disturb.) (Other alternatives 82 - 127 acres disturb.)
Noise	below allowable limits
Recreation	temporary impacts comply with established levels
Scenic	general disturbance with all alternatives
Heritage	all alternatives share similar degree of disturbance
Transportation	all alternatives have similar increases in traffic.

Alternatives other than B and E call for radical technical and engineering changes in the project. There are also drastic reductions in the efficiency of the operation, which reduces the estimated ore recovery and the return on investment by $65 million to $197 million. From a purely cost / benefit perspective, $65 million to $197 million seems like a high price to pay for 114 acres of deer habitat and 0.21 acres of wetland.

The concern is that the development of these alternatives has not been constrained by feasibility and that cost/benefit relationships have not been presented clearly in the document.

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[1] There are few important differences in habitat impacts between alternatives with the exception of 114 more acres of deer SI/T habitat for Alternative B than other Alternatives.

The basic differences between the costs of the various alternatives and the benefits associated with each of the alternatives are lost in the detail of the document.

Another concern is the use of financial analysis (mining economics) which presents quantitative point estimates associated with each alternative. As stated within the document, this type of evaluation is complex and detailed. Federal agencies rarely have the information necessary to duplicate the range of options available to private firms with regard to sources of funds, future partnerships, or the types of debt which may be used by the firm. In this respect, these estimates should be presented only to represent the change in after tax cash flows between alternatives when all variables have been consistently applied within the model for all alternatives. In this way, the cost of the various alternatives can be established and compared to the benefits.

While it is the purpose of the EIS to determine environmental impact of the Proponent's alternative and determine other alternatives which may have less impact, greater attention must be paid to the economic feasibility of each project. The revenues from this project not only profit the companies involved, but more than 50% of the net income of the project will go to pay various taxes - federal, state, and local. Therefore it would be wise to add a table or paragraph showing the NPV(15%) values (and/or the current ROI from a breakeven analysis) in comparison to the environmental trade-offs for each alternative. This would assist in determining the optimum balance between profitability and environmental impact.

Gold recovery of each alternative, based on the amount of ore in reserves (1.56 Million) should be considered carefully because of the future prospects of mining the ore which is left in the ground under some of the less efficient proposed alternatives. It would be more environmentally sound to get the maximum amount of ore out of the ground now so as to avoid future environmental impact to the site from mining companies coming back to recover reserves left in the area.

Section 2.2.8 should be "Ore Processing Technology", as opposed to "Ore Processing Methods." 'Technology' describes the process used, while 'method' is the manner in which that technology is applied. On the same note, under section 2.2.8, page 2-22, the section should end with Thiosulfate, as this is the end of the technologies considered. A new section should cover a description of the methods considered (heap, vat or agitation). 'Vat leaching' and 'tank leaching' is redundant, the words 'agitation leaching' should replace 'tank leaching' in the document.

Under section 2.2.10 Gold Recovery: CIP and CIL are methods of solution separation/purification, electrowinning and Merril-Crowe (zinc precipitation) processes are the actual recovery from solution. Under solution separation/ purification, CIP and CIL are methods of carbon adsorption, two other processes are solvent exchange and ion exchange. It should be explained why these two were not considered. In some cases no separation or purification of solutions is needed. Electrowinning and zinc precipitation can then be contrasted as recovery processes in a new section.

Statement of the Honorable Doc Hastings
Crown Jewel Project DEIS
Oroville, Washington
August 17, 1995

I want to thank the Department of Ecology and the U.S. Forest Service for holding this hearing today in Oroville and providing me this opportunity to testify on the Draft EIS for Battle Mountain Gold's Crown Jewel mining project located in nearby Chesaw.

Many of my constituents here in Okanogan County have expressed their strong support for this project and the positive impact it will have on the local economy. Having reviewed Battle Mountain Gold's proposal, I can see why local reaction has been so positive. Not only will this project bolster a struggling local economy, but Battle Mountain Gold, the project proponent, has gone to great lengths to ensure that the Crown Jewel project can be completed and operated in an environmentally sensible manner. In short, the Crown Jewel Project should serve as a model for the kind of balanced solution to controversial economic and environmental conflicts that are common throughout rural western communities.

Ladies and gentlemen, I am here today to express my strong support for the proponent's preferred Alternative B in the Draft EIS which allows this project to move forward. Because 71 percent of the land in Okanogan County is publicly owned, projects like Crown Jewel are one of the few sources of high paying jobs that can be generated in this rural county. In

recent years, Okanogan has suffered from double digit unemployment in part because of restrictions on natural resources related jobs such as logging, grazing, and farming. Jobs have been lost in these communities, families have been ruined, and yet it is highly debatable whether the quality of our environment has been enhanced. All anyone has to do to witness the environmental damage that can result from excessive restrictions is tour the Okanogan National Forest which was heavily damaged from last summer's severe wildfires caused in part by strict limits on logging.

The Crown Jewel Project will provide a badly needed infusion of jobs and revenue into Okanogan County. The project will employ 170 people and generate $4.4 million in wages each year. Battle Mountain Gold, the project proponent, is committed to hiring 80 percent of these new employees from within the local community. Employees hired locally are expected to earn an average of $30,000 per year. For this struggling rural county, these numbers represent a tremendous boost for the local economy.

In addition to the 170 new jobs that the Crown Jewel Project will create, approximately 70 new local jobs will be created indirectly because of Crown Jewel's substantial local payroll as well as the goods and services purchased by Battle Mountain Gold.

Finally, Battle Mountain Gold will pay $500,000 a year in new local taxes and $600,000 in new state taxes, once in full operation. This new source of tax revenue is desperately needed

due to the fact that local services in counties like Okanogan that are dominated by public lands have deteriorated rapidly from a lack of an adequate tax base. This new revenue will improve the quality of our local county schools and the condition of our roads, which are vital to ensuring access in this rural county.

It should also be pointed out that Battle Mountain Gold is not only required by law but fully committed to complying with the strongest regulatory oversight before, during, and after operations go into effect. Just last year, the Washington state legislature passed and Governor Lowry signed into law one of the toughest state mining laws in the country. Among its provisions, the law mandates citizen oversight, more frequent monitoring and inspections, and financial guarantees before mining begins in order to ensure that the environment and the local community affected by this project are protected.

In addition to these new constraints, the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA) mandate a comprehensive review of the potential environmental impacts of every operation prior to permitting and before construction can begin. Under these provisions, Battle Mountain must obtain over 60 separate permits from a variety of local, state, and federal agencies before development and operations of the Crown Jewel Project can begin. During construction and continuing through operations and after, the regulatory agencies will, as required by law, monitor water

quality, air quality, and other environmental issues to ensure that Battle Mountain meets its responsibilities.

It is also important to point out that the process to permit Crown Jewel has already been underway for over three years. Battle Mountain Gold has been required to spend millions of dollars to prepare or fund an ever growing list of unprecedented agency required studies. The process has already included comprehensive studies on wildlife; air and water quality; and economic impact analysis.

Battle Mountain Gold's commitment to this rigorous process has resulted in unusually strong environmental safeguards, enhancements, and wildlife protections for the Crown Jewel Project. For example, to ensure water quality protection, a total of 23 surface and groundwater monitoring stations are being sampled regularly. In addition, mining cannot begin at Crown Jewel until a detailed reclamation plan is approved by the appropriate regulatory agencies and the money to pay for it is guaranteed through a bond. Finally, Battle Mountain has purchased 29 acres exclusively for the purpose of enhancing existing wetlands on that property as well as using a portion of the land for the creation of new wetlands.

Most importantly, the Crown Jewel Project has the strong backing of the local community, including the unanimous support of the Okanogan County Commissioners. Local support is particularly relevant in this case because technical data

indicates that any environmental impact will be limited exclusively to the local area.

In closing, it should be pointed out that it has taken the regulators over three years to release this draft EIS since the project was first proposed. It is very important that we move forward with the development of this economically important, environmentally sound project as quickly as possible.

Alternative B in the Draft EIS is the only feasible option for accomplishing this goal. All other proposals including the U.S. Forest Service supported Alternative E will force Battle Mountain Gold to spend more time and money for little or no environmental benefit.

The people of Okanogan County are desperately awaiting the valuable injection of jobs and revenues that the Crown Jewel Project will bring to their struggling communities. Moreover, Battle Mountain Gold has demonstrated without question its strong commitment to ensuring that the pristine resources of Okanogan County are preserved forever. I urge the adoption of Alternative B and the expeditious approval of this important project.

TMI#: 4539

Representative Hastings.

Thank you. I appreciate very much the opportunity to come here and speak today. I stand here in strong support of the Battle Mountain Project. I'm not going to go into a lot of details--I have a prepared statement I'd like to enter for the record. The reason I don't want to go into a lot of details is because I feel very strongly that something that impacts the community as much as this project will--economically and other ways--is best expressed by those that will be affected. While I have the privilege of representing the Fourth Congressional District I can tell you that my home is in the far end of the district. And probably nobody in my part of the district even knows that this going on. But I can tell you in the times that I have stood for election and come up here, I've heard this over and over, and I can tell you from the people that I have talked to, that Battle Mountain Gold, going on with that project, and through all the hoops that they have jumped through, I think that, and I've heard from my constituents, that what they are doing is sound, and the economic benefits that this will bring to this county I think is something, especially for a county, of which 71% is owned by the federal government. This is a resource county. The county commissioners and the county government frankly needs that revenue, because of eroding base because of other natural resource decisions and the actions that have happened. I stand here, and I'm sure that the, in fact I hope, that the testimony that will be given here tonight will go into a lot more detail. But I want to emphasize this, and probably this is the most important reason why I believe this project ought to go forward, is because the input that I've gotten from my constituents up here, and also because the elected government officials here--the county commissioners--have strongly gone on record for this project. And if for no other reason, that should be taken into consideration at a much, much higher level. And so with that I'd like to submit for the record my statement, and I'd like to also submit for the record a statement of my colleague from the Fifth Congressional District, Congressman George Nethercutt, who also asked me to tell you that he also wants to go on record in support of this project. (Applause).

TMI#: 4503

Thank you very much for allowing me to come speak tonight. My name is Gary Chandler. I'm a state representative. Also serve as a chair of the House Agriculture and Ecology Committee here in the state of Washington. First of all I want to thank you for coming to my district. And attracting such a large crowd here, we like large crowds like this, but unfortunately I doubt very many of these are from my district tonight. But I think it's unusual, and I don't know if the Department of Ecology and the Forest Service is setting a new policy of holding hearings, public hearings so far away -- several hundred miles from the affected site. I would hope that if this is the new policy of both of these agencies, that in the future public hearings will be held in Okanogan County, especially maybe up at Orient, or Iowan, or Meddling Falls on issues of importance to Seattle or the west side, such as, whenever they want to change something down on the waterfront, or build a new ecological park. I also understand that tonight's hearing is four hours long, but the one Oroville is only going to be three hours long which I find also very interesting. So, I'm wondering what constituent interest of the thirteenth district that you're in tonight, brings you here tonight. Some citizens of the thirteenth district might wonder what is legitimately being accomplished by this unscheduled stop, and I'm one of those. Since I'm here I would like to say a few words about Crown Jewel and its benefits. Over the past two years the legislature has scrutinized all of the state's environmental laws to ensure that they are adequate for any future mining that will take place in the state. The 1994 Metals Mining Act, which gives Washington State one of the nation's strongest mining laws, was passed -- the legislature, almost unanimously with the help of the environmental committee, and in the industry, and in an bipartisanship effort to have these regulations in place before the Crown Jewel Mine began operations. Now what is the state going to gain by approving and letting this mine go into operation? Ninety-five construction jobs with a payroll of 3.6 million. To someone from Seattle that's not very many jobs. I haven't been up to Okanogan very much, but I watch the stats, and I know that it's a county with high unemployment. Ninety-five jobs to Okanogan County are an awful lot of jobs. Three-point six million dollars is an awful lot of money to those people up there. One-hundred and fifty well-paying jobs during the operation with an annual payroll of 4.4 million dollars. Once again, to standards on the west side -- not many jobs. But the Okanogan, or to the east side, that's a substantial amount of people to go to work in a county that has got a high unemployment rate. Battle Mountain has committed to hiring 80% of those positions locally as it has in cases where it has other mines throughout the United States. Secondary employment impacts from construction operations will result in 365 additional jobs, with a 9.3 million at secondary labor income during the life of the mine. There again, a large number of jobs. The economic stimulus of this activity will generate fiscal surpluses totaling 3.7 million to the coffers of the governmental entities that are going to be affected.

I support the plan as proposed by Battle Mountain, referred to as Alternate B in the draft environmental statement, and encourage the state and federal agencies to conclude the remaining necessary, and unnecessary steps, so as the benefits of this operation can begin. Thank you. (Applause.)

STATEMENT OF U.S. REPRESENTATIVE GEORGE R. NETHERCUTT, JR.

U.S. FOREST SERVICE/WASHINGTON DEPARTMENT OF ECOLOGY HEARING ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR BATTLE MOUNTAIN GOLD'S CROWN JEWEL PROJECT

OROVILLE HIGH SCHOOL, OROVILLE, WASHINGTON
AUGUST 17, 1995

I welcome this opportunity to express my views on the subject of the proposed Crown Jewel Mine Project in Okanogan County.

After a waiting period of more than three years and millions of dollars spent on environmental studies, a draft Environmental Impact Statement (EIS) has finally been issued regarding the Battle Mountain Gold Company's Crown Jewel Mine project. I especially urge the Forest Service, the Bureau of Land Management and the Washington Department of Ecology to complete the final EIS without delay, so that the people of Okanogan County can go forward with their plan to generate badly-needed jobs in northern Washington.

With regard to the draft EIS, I support the "Alternative B" proposal, which I believe is a reasonable plan of operation that satisfies all of the requirements of state and federal law, especially concerning water, wildlife, reclamation and cynanide. I do not support any alternative plans that would require significant additional expenditures during construction and operation that would result in no substantial supplementary safety or environmental benefits.

The Crown Jewel Mine project will generate almost 200 jobs for the community and will operate in compliance with 60 permits to ensure protection of the environment during operation and reclamation of the land to support livestock grazing, timber production, wildlife habitats, recreation and watershed after the completion of the project.

Thank you for allowing me to speak in support of the Crown Jewel Mine project and the "Alternative B" proposal. It is my hope that there will be no further unreasonable delays in the approval of this very important project.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
500 NE Multnomah Street, Suite 600
Portland, Oregon 97232-2036

IN REPLY REFER TO

September 6, 1995

ER 95/475

Sam Gehr, Forest Supervisor
Okanogan National Forest
1240 South Second Avenue
Okanogan, Washington 98840-9273

Dear Mr. Gehr:

The Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS), for the proposed Crown Jewel Mine Project, Okanogan National Forest, Tonasket Ranger District, Okanogan County, Washington. The following comments are provided for your use and consideration when preparing the Final Environmental Impact Statement (FEIS).

GENERAL COMMENTS

The Fish and Wildlife Service (Service) reviewed the Preliminary DEIS (PDEIS), and provided comments on June 2, 1994, in a letter to Mr. Phillip Christy, of the U.S. Forest Service (Forest). In that letter, the Service concluded the proposed project would: 1) modify a number of watercourses, 2) divert water out of basin, 3) involve the construction of a water storage and transfer system (this could potentially contaminate aquatic habitat), and 4) divert several small streams to obtain sufficient water to process the ore. The Service requested the Forest to consider fish and wildlife resources equally with project goals. The Department is concerned that these water diversions and modifications cumulatively could significantly impact aquatic habitat. When combined with the filling of wetlands, proposed as part of the project and effluent discharges, these proposed water impacts would be further exacerbated. Accordingly, the Department would recommend individual permits be required under the auspices of the Clean Water Act (CWA). If issues raised in these comments on the DEIS are not satisfactorily resolved, the Department may recommend permit denial.

Furthermore, an interagency team of wildlife biologists conducted a Habitat Evaluation Procedures (HEP) study of existing wildlife habitat in the area of the proposed Crown Jewel Project. The DEIS does not incorporate much of the information on wildlife habitat from the HEP study, such as cover typing and potential mitigation opportunities. The Department suggest the HEP results be utilized in the FEIS to give fish and wildlife resources equal consideration.

The DEIS states that "reclamation plans and mitigation would eventually restore wildlife habitat, but not the same quality or quantity that would be lost" (pg 4-185). Because the proposed permanent and interim loss of habitat would be foregone until the reclamation and mitigation measures reach full maturity, the Department requests compensatory mitigation be developed to offset these proposed losses.

The information in the following excerpt is taken from the Service's June 2, 1994 letter on the PDEIS and it is pertinent to the comments which follow:

> "The grouping of project components into alternatives appears to be done in such a way that the alternatives which provide greater environmental protection but involve greater financial costs include components which have greater environmental costs. Two alternatives which provide decreased environmental impact are Alternative F: Complete Backfill, and Alternative G: Flotation Milling. For these alternatives, the tailings impoundment is placed in the Nicholson drainage which would impact more wetlands, involve stream rerouting, and generally increase the risk of dam or lining failure because groundwater is closer to the surface compared to the Marias drainage option. All other alternatives include the Marias drainage option. No justification is provided which explains why the Nicholson drainage rather than the Marias drainage is more appropriate for these two alternatives. Alternative F includes a 12-hour, rather than 24-hour, working day during the active mining phase of the project. The extended life of the project under this alternative would increase direct and cumulative environmental impacts. It is not clear why a 12-hour working day during the active mining phase is being considered for an alternative that differs from the proponent's alternative only in activities which occur after the active mining phase is complete. Alternative G includes a waste rock pile configuration which would impact significantly greater acreage of wetlands than other alternatives. No information is provided which would indicate why a change in gold recovery methods would require that this waste rock configuration be included in this alternative. The alternatives, as currently developed, provide an obvious misrepresentation of environmental costs. The Service strongly suggests that the alternatives for each project component be assessed for relative environmental costs, and that only those component alternatives with reasonable environmental costs be included in the development of project alternatives. If project components which would cause greater environmental impacts are included in an alternative, the justifications for including those components should be provided".

Components of the alternatives should be adjusted to provide the greatest environmental protection. The DEIS does not provide justification to indicate why these more environmentally costly components have been retained. The DEIS quotes the CWA Section 404(b)(1) guidelines to note the filling of wetlands should be avoided, and yet in Alternative G, the waste rock pile would fill the frog pond even though more protective options are

clearly available. Information should be provided to explain the use of more costly components in Alternatives F and G (which are clearly those not preferred by the proponents). Alternately, the components should be replaced with less environmentally costly alternatives to allow a reasonable choice among alternatives.

The DEIS uses a short-term analysis to evaluate the potential hazards of locating a cyanide tailings impoundment at the top of a drainage. The DEIS repeatedly states the impoundment has a very low probability for failure. However, the impoundment would fail eventually. In the best case scenario, this remotely located impoundment will be checked for damage following a major earthquake or flood event, and resources will be available to remove any tailings from the draw. This action would limit the amount of contaminants entering the aquatic system. In the worst case scenario, substantial amounts of fine-grained materials, possibly containing toxic concentrations of metals or other chemicals, would continue to erode and wash through the stream system for many years. The majority of aquatic life would be eliminated in Marias and Toroda Creeks, and lesser impacts would occur as far as the Columbia River. Because the tailings impoundment is a permanent project feature, we recommend the FEIS provide for the long-term consequences of tailings impoundment failure.

This DEIS contains little information on Starrem Creek, even though Starrem Creek is as large or larger than several of the creeks for which more detailed information is included. The reservoir to be placed on this creek has the potential to cause significant impacts to aquatic organisms and riparian vegetation downstream of the dam. Thus, Starrem Creek should be addressed in all appropriate sections of the FEIS. We are particularly concerned with impacts to downstream resources while the reservoir is filling. Specific detailed information should be provided on how water quality and quantity would be affected by the reservoir and how the stream would be restored when the reservoir is no longer needed. Starrem Creek should be included in surface water monitoring programs, and sampling should begin as soon as possible so that adequate background data can be gathered. This information was also requested in the Service's comments on the PDEIS.

The DEIS repeatedly refers to treatment of potentially contaminated water from the open mine (after pit is filled), the waste rock detention ponds, and the reclaim solution collection pond, yet it does not attempt to describe treatment methods, construction of a treatment facility, and associated impacts. The FEIS should address options for treatment of potentially contaminated water. This information was also requested in the Service's previous comments on the PDEIS.

In several places in the DEIS, an unwritten assumption seems to exist that when tailings or waste rock piles are reclaimed, groundwater contamination, which could impact fish and wildlife resources, would disappear. For example, a tailings liner leak was modeled for 8 years until reclamation took place (page 4-36, column 2, paragraph 3). The DEIS suggests

reclamation would help prevent saturation of the tailings (page 4-30, column 1, paragraph 2) and water quality impacts from waste rock piles will decrease following reclamation (page 4-31, column 1, paragraph 5). While evapotranspiration would reduce water infiltration, precipitation data indicates less than 20 percent of the precipitation occurs during the plant growing season. This estimate is based on a growing season of April through June, and on an assumption that vegetation would be primarily grasses for many years and they would be dormant in late summer. Thus, the assumption that reclamation would significantly reduce water infiltration seems questionable. We suggest that either this assumption be removed, or include results from previous reclamation projects or models in the FEIS.

SPECIFIC COMMENTS

Page S-6. Section 1.4.5. Many areas to be reclaimed possibly may not have adequate soil depth or productivity that would enable a forested environment to re-establish. The FEIS should address the adequacy of soil depth for restoring forest habitat.

Page S-11. Alternative C, Paragraph 2. A location for the tailings facility should be included in this section.

Page S-18. Alternative F. The FEIS should clarify why the only alternative that requires complete backfill of the proposed mine pit is associated with a change in daily operation from 24 hours/day to 12 hours/day and a shift in the tailings facility from the Marias Creek drainage to the Nicholson Creek drainage.

Page S-23. Section 2..3, Paragraph below bullets. The DEIS states logging will "promote successful reclamation at the end of mining". The FEIS should clarify this statement.

Page S-50. Section A.4 Geotechnical Considerations (Paragraph 4 and other places). The basis for designating this fault inactive and the probability of the fault reactivation should be identified in the FEIS.

Page S-52. Section 4.7 Surface Water, Paragraph 1. In Paragraph 1 and several other places, the DEIS asserts the probability of tailings facility liner leakage is very low. While a study was conducted on what would happen if the liner failed, the claim of low probability of occurrence is not substantiated. Information should be provided on the failure rate of existing lined facilities (cyanide tailings and other types) to support this assertion, or the assertion should be removed.

Page 1-5. Section 1.6, Okanogan Forest Plan Compliance, (Paragraph 2). More definitive Management Area 14 goals would include the desired deer population level in terms of herd size and a definition of "moderate level" of dead tree habitat in terms of numbers of snags of a certain size or greater per acre.

Page 1-12. Section 1.10.8. Primary comparison criteria should include changes in surface water quality parameters, (e.g. water temperature), to waters remaining in-channel downstream of water diversions.

Page 1-13. Section 1.10.11. Primary comparison criteria should include permanent and long-term changes in vegetative community types.

Page 1-13. Section 1.10.13. Other "areas of concern" involving wildlife habitat include: 1) the isolation of remaining habitat, thereby decreasing the habitat's effectiveness; 2) interruption of habitat corridors; and 3) the relative importance of the snow intercept thermal cover to deer winter range in light of other Forest practices near and/or adjacent to the proposed project.

When comparing total and open road densities between with or without the proposed project, attention needs to be on the percent change within the core analysis area and not on the whole forest.

Page 2-3. Section 2.1.5. The FEIS should clarify why Alternatives C and G would have a different supply route. As stated previously, it also should be explained why in Alternative F mining would be restricted to a 12 hour shift thereby prolonging the years of operation before backfill and reclamation could occur.

Page 2-5. Column 2. The DEIS is unclear why a surface quarry would be required for back filling the mine. The FEIS should explain why the waste rock should not be used as is proposed in Alternatives D and F.

Page 2-7. Alternative E. (Column 1). The DEIS states that 10.5 million cubic tons of waste rock would be moved to partially refill the north pit to prevent forming a post-mining lake. However, on page 2-52, it is stated that "approximately 6 million cubic yards of waste rock would be required for backfill of the north zone of the final mine pit to achieve post-mining drainage." It should also be pointed out that even if the larger, 10.5 million cubic tons were moved, the pit would only be backfilled by approximately 20 percent. The FEIS should address these apparent inconsistencies.

Page 2-33. Column 2. The "standard reclamation practices" that would be used to revegetate the surface of the tailings during operation should be identified in the FEIS.

Page 2-38. Column 1, Paragraph 1. The tailings embankment freeboard would retain rainfall events. The volume of water from a calamitous snowmelt should be considered in the FEIS.

Page 2-52. Column 1. Sequenced mining should be employed to allow an area to be backfilled with the waste rock from the area being mined. If this type of mining is employed for Alternative F, complete backfill of the pit upon completion of mining, would require much less time than the 16 years proposed.

Page 2-71. Section 2.9. Please refer to comments above under page S-18, Alternative F.

Page 2-79. Section 2.11. Incorporated into the DEIS by reference is the August 1993 Reclamation Plan (revised November 1993). This plan is Battle Mountain Gold Company's proposed reclamation for the site. As the Service stated in its June 2, 1994, letter which included comments on the August 1993 Reclamation Plan, a detailed schedule of the proposed monitoring plan, with quantifiable goals, as well as a detailed contingency plan with quantifiable "triggers" that would implement contingency actions, should be provided.

Page 2-81. Section 2.11.4. The amount of large woody debris that would be stockpiled for use in reclamation needs to be quantified. The Department recommends that the appropriate number, size, and species of debris logs that would be necessary for reclamation, be quantified and that these resources are stockpiled during initial vegetation removal. This recommendation was provided in our previous comments on the reclamation plan. Removing debris logs from nearby timber stands would be unacceptable.

Page 2-83. Column 1, Paragraph 5. Leaving a 54 million cubic yard mine pit in the landscape does not appear to fit the definition of reclamation. The Service strongly recommends that the proposed pit be completely backfilled and the landscape topography be returned as close as possible to what existed prior to Crown Jewel Project exploration.

Page 2-85. Section 2.11.5. The Department strongly recommends that for the purposes of determining compliance, all components of the reclamation plan be as quantifiable as possible.

Page 2-85. Section 2.12. Regarding management and mitigation practices, the DEIS states "The purpose of these practices would be to reduce or avoid adverse impacts to the environment and to reclaim disturbed areas." Not all impacts of the project will be reduced, avoided, or rectified through reclamation. Compensatory mitigation is required to address the residual impacts. A comprehensive mitigation plan should be developed that includes habitat compensation for those habitats that would be permanently impacted and for habitats that would be impacted for the duration of mining and until full maturation of reclamation measures would be achieved. It is incumbent upon the Forest that mitigation action plans be fully developed (40 CFR 1502.14(f) and 1502.16(h)).

Sam Gehr, Forest Supervisor
Okanogan National Forest

Page 2-87. Section 2.12.4. The following spill prevention plans should also be developed: tailings pipeline failure, tailings dam failure, tailings lining failure plan, and Gold Creek water supply pipeline failure. Regarding item 3 in this section, it is likely that the supplier's spill response plan will be fairly general. Specific plans should be developed by the proponent for all water bodies potentially impacted by a spill along the proposed transportation routes beyond Washington State Highways 97, 20, or 21.

Page 2-94. Column 1, Paragraph 5 and elsewhere. We are concerned with mine post-closure monitoring of the tailings facility, and request information be provided on how long and what type of monitoring would be continued once the site is mined and reclaimed. This information was also requested in the Service's previous comments on the PDEIS.

Page 2-96. Column 2. Paragraph 1. Seeds from locally derived native plants should be used for revegetation. We recommend that a long-term contract be established to ensure a supply of local seed throughout the life of the project.

Page 2-96. Section 2.12.16. Mitigation for wetland impacts should include mitigation for riparian habitat impacts associated with water withdrawals from Myers and Starrem Creeks.

Page 2-97. Column 2. The FEIS should note the potential Pine Chee Springs wetland mitigation site lies adjacent to a main county road which may become a mine haul-route. The juxtaposition of the wetland area and the roadway would reduce the site's potential mitigation benefit.

Page 2-98. Column 1. Bear Trap Canyon. The potential mitigation that would occur in Bear Trap Canyon would enhance a highly degraded wetland and riparian system. However, because changes in the Forest Service's current grazing and roadbed management of the area are goals irrespective of the proposed gold mine, the resulting enhancement of riparian and wetland functions should not be considered compensatory mitigation.

Page 2-98. Column 2. Nicholson Creek Headwaters Wetland and Page 2-99. Column 1., Frog Pond. As noted above, changing current Forest Service management of these wetland and riparian areas has much potential to enhance fish and wildlife resources but should not be considered mitigation.

Page 2-101. Column 2. Paragraph 7. Reclamation of the pit should include shorelines and breaks in the pit walls to ensure wildlife would be able to easily escape the pit and lake.

Page 2-104. Section 2.13.1. Detailed water monitoring plans provided under the State permits should be presented in greater detail in the FEIS to fully comply with the National Environmental Policy Act.

Information on water quality and quantity monitoring scattered through the rest of the document should be consolidated in one section. For example, detailed water quality monitoring information is provided on page 4-31, column 1, paragraph 4.

Page 2-105. Column 1. Nothing is mentioned in the DEIS about estimating and monitoring flow discharge in any of the streams. Because minimal flow requirements are needed to protect fisheries in the existing water channels, flow discharge needs to be determined and monitored.

Page 2-106. Section 2.13.5. All wildlife impact evaluations to date (including the Habitat Evaluation Procedure Study for the Proposed Crown Jewel Mine Project, Washington Department of Fish and Wildlife, March 1995), have assumed that fish and wildlife impacts would be through loss or alteration of habitat and that no direct mortality through contamination or other means would occur. If this assumption is invalidated and direct mortality of trust wildlife resources does occur, immediate rectification of the cause of mortality and compensatory mitigation should be made.

Page 2-107. Section 2.12.9. We suggest that if monitoring of revegetation efforts reveals additional shrub and tree plantings are necessary, monitoring be prolonged to assure that compliance with revegetation standards would be met with the use of well established saplings, rather than less than one-year-old seedlings.

Page 3-86. Section 3.11.2. It should be noted that although only 46.85 acres of jurisdictional wetlands were identified "in the Project and adjacent areas", approximately 249 acres of wetland and aquatic habitat was identified in the HEP analysis area.

Page 3-96. Section 3.12.9. Because of the variability in biological measurements like aquatic invertebrate community parameters, we recommend establishing several control sites in nearby unimpacted streams upon project initiation. In addition, because changes in flow to each of the monitored streams would occur with any of the action alternatives, potentially resulting in movement of the riffle/pool/run sequences, we advise having more than one monitoring station on each stream.

Page 3-108. Column 1. A great deal of time was spent cover typing the wildlife habitats within the core and analysis areas by the HEP Team. The FEIS should explain why these cover types, and associated wildlife habitats which are more descriptive than those presented, were not used in the DEIS.

Page 3-141. Column 1. The HEP indicator species were chosen because their habitat requirements would reflect the habitat needs of a number of species within the Crown Jewel analysis area.

Page 4-12. Section 4.4.3. The possibility of an earthquake causing the failure of pipelines carrying tailings solution should be addressed.

Page 4-14. Column 2. Paragraph 2. Justification should be provided to explain why diversion structures of Alternative B are designed for a lower flood event than the structures of other alternatives.

Page 4-14. Column 2. Paragraph 3. The statement that "the potential for failure of diversion structures is low" seems arbitrary. The basis for this statement should be provided.

Page 4-19. Section 4.5.3. The alternatives include several detention basins. Reclamation of these structures should be described, as they would likely be situated in drainage areas and have a high potential to re-erode. The erosion from new drainage created by mine pit overflow, tailings facility discharges, detention pond releases, etc. should be considered. The erosion associated with construction of a water delivery pipeline should be considered.

Page 4-21. Column 2. Paragraph 4. We suggest removing all but the first sentence of this paragraph for the following reasons. Productivity is only one aspect of functioning soils. The project would impact the soil ecosystem which includes soil layering, structure, and biota. The integrity of the system would be lost while the soil is stockpiled, and it is not clear that it can be replaced by adding synthetic chemicals.

Page 4-29. Tailings Disposal The FEIS should clarify why both the effluent from the gravel overdrain system for dewatering tailings and the underdrain system for groundwater underflow would both discharge to the reclaimed solution collection pond. We recommend that the two discharges be separated and that the underdrain discharge be sampled for tailings leaks. This is not an option with the combined discharges. Although groundwater sampling should be conducted, sampling of the underdrain discharge could allow leak detection sooner than sampling of wells. This recommendation was provided in our previous comments on the PDEIS.

Page 4-30. Column 1. Paragraph 4. The DEIS states a waste rock pile underdrain would be constructed if needed to channel flow from previously identified springs and seeps. However, with any alternative, the groundwater system will change significantly due to dewatering, and new springs and seeps may appear. We recommend an underdrain be constructed even if no springs and seeps currently occur at the waste rock site to prevent contact of potentially acid generating waste rock with water. This information was also requested in the Service's previous comments on the PDEIS.

Page 4-31. Column 1. Paragraph 2. The proposed measures should be described; if they are described elsewhere in the document, they should be referenced.

Page 4-31. Column 1. Paragraph 4. We recommend monitoring of the sediment chemistry be included for waste rock pile detention ponds.

Page 4-32. Column 2. Paragraph 3. Reporting impacts associated with mine drainage as a percent of the watershed does not provide very useful information. The number of existing springs and seeps, and the acreage of the affected area should be reported. This comment applies to other alternatives, as well.

Page 4-36. Column 2. Paragraph 3. Information should be included on whether the modelling of the tailings liner leak worst case scenario was based on current groundwater conditions or some other conditions. It seems that results could vary significantly depending on whether groundwater conditions during mine dewatering are taken into account. This should be clarified in the FEIS.

Page 4-38. Column 1. Paragraph 1. The DEIS states that the gaining character of the groundwater would reduce impacts from the waste rock piles. As with the above comment, potential impacts to groundwater should also consider conditions during mine dewatering.

Page 4-42. Column 2. Paragraph 5. The DEIS states that selective placement of potentially acid generating waste rock would probably not be feasible. This statement is in contradiction with other statements in the DEIS which indicate that selective placement could be used in a variety of circumstances to reduce the impacts from acid generating rock. Specifically, page 4-54, column 1, paragraph 2 states that water quality conditions were predicted using the assumption of selective handling. These contradictions should be rectified.

Page 4-43. Section 4.7.1. As with other sections of the DEIS, this section should include discussions of the impacts to Myers and Starrem Creeks.

Page 4-46. Section 4.7.3. The FEIS should include a discussion of erosion and sediment loading to Gold Creek as a result of construction of the water delivery pipeline. Also, discussion should be provided on the likelihood of increased erosion and sedimentation during the reclamation period associated with newly placed soils and newly graded areas.

Page 4-46. Column 2. Paragraph 4. The impacts of open pit dewatering to springs and seeps should be discussed.

Page 4-47. Column 2. Paragraph 1. Further information should be provided on detention ponds. Discussion of impacts should include the possibility that sediment and water quality in the detention ponds will decrease over time as contaminants accumulate. The path of discharged pond water should be identified. A reclamation plan for the detention ponds should be provided.

Page 4-47. Tailings Disposal Section. This section limits the environmental consequences discussion to a description of the facility. The FEIS should expand this section's discussion to include water quality of the tailing pond, impoundment failure, tailing slurry pipeline rupture, and possible impacts to downstream surface water and migratory birds. This information was also requested in the Service's previous comments on the PDEIS.

Page 4-48. Column 1. Paragraph 1. Further details are required on the handling of the tailings pond dewatering solution, including the amount of water which would be discharged following decommissioning, monitoring frequency and constituents, length of time over which monitoring would continue, criteria levels which would trigger treatment, and potential effects to downstream water quality and quantity.

Page 4-51. Column 1. Paragraph 2. (last sentence). The FEIS should state what methods would be used to prevent the pit from filling with water.

Page 4-57. Column 2. Paragraph 2. Similarly to timber harvesting (comment page 2-96), the Department recommends seeds be collected from the areas to be cleared. Timing of seed collection must be carefully considered, and may have to occur the summer and fall prior to timber harvest. Seeds of appropriate species can be used for soil stabilization and revegetation, or can be planted and harvested to produce more seed.

Page 4-58. Section 4.9.3. The DEIS should discuss the following impacts to vegetation. The acreage of old growth forest that would be lost should be reported, as this would be an irreversible impact. Reclamation would be unable to replace the existing biodiversity and the intact functioning ecosystem for a long time period.

Page 4-59. Table 4.9.1. Impacts to sensitive plants could be reduced by transplanting the plants into identified wetland mitigation areas or collecting and propagating seed for transplant. The FEIS should state whether existing springs and seeps were surveyed for sensitive plant species and if mine dewatering would cause indirect effects by reducing spring or seep discharge and wetland plant habitat.

Page 4-63. Section 4.10. The Department recommends the functions and services of all wetlands, not just jurisdictional wetlands, be assessed and impacts to these wetlands be mitigated. The proponent should address non-jurisdictional wetlands shown in Figure 3.7.1.

Page 4-66. Section 4.11. This section should also describe the effects of the damming of Starrem Creek on flow and aquatic habitat and the effects of discharge from the open pit on Nicholson Creek flow and aquatic habitat.

Page 4-69. Column 2. Paragraph 4. This section on tailings impoundment failure focuses

narrowly on the effect of sediments to stream habitats, and characterizes these effects as short-term. Impacts to water and sediment quality would occur from cyanide, metals, salinity, and probably other chemicals. Metals would remain in the system, and have the potential to cause long-term impacts. The DEIS should provide a realistic assessment of the downstream impacts of impoundment failure. This information was also requested in the Service's previous comments on the PDEIS.

Page 4-70. Column 2, Paragraph 2. This section states a tailings impoundment failure could impact about 2.6 miles of Marias Creek. Another section in the DEIS (page 4-181, column 1, paragraph 1) states that slide flow of the tailings slurry would impact about 2.6 miles of the creek. Impacts to aquatic life and habitat clearly would continue far beyond the area of the slide flow. Misrepresentation of impacts should be avoided.

Page 4-88. Column 1. Paragraph 4. Potential toxicity or other impacts to wildlife from waste rock detention ponds should be assessed.

Page 4-89. Column 2. Paragraph 1. This section describes transfer of metals from tailings to earthworms and then to small mammals. Several years would probably be required for earthworms to colonize the reclaimed area, particularly as a functioning soil ecosystem, upon which the earthworms depend, would not develop for several years. Monitoring of metals in small mammals too soon may result in a false conclusion that toxicity from metals is not a problem.

Page 4-178. Section 4.22. A contingency plan must be developed that would be implemented in the event of any of these listed catastrophes.

Page 4-185. Section 4.23.2. The FEIS should clarify how partial or complete backfill of the open pit would result in an irretrievable loss of gold resources. If the technology to extract additional gold becomes available, the technology to unearth the pit would likely become available.

Page 4-186. Section 4.24. The following bullet statements should be added: loss of an intact functioning ecosystem and loss of plant biodiversity.

Page 4-186. Section 4.24. The FEIS should identify the physical and biological effects of changing flows in Gold, Bolster, Marias, Nicholson, Toroda, and Myers Creeks in terms of sediment transport, stage height of high and low flows, maintenance of habitat diversity, changes in the abundance and diversity of aquatic biota, and changes to the associated riparian communities.

Page 4-187. Column 2. The FEIS should clarify how implementation of any of the mine alternatives would increase the number of hunters, campers, or other forest users within the

mine-impact area. If the mine would eliminate some habitat and decrease the productivity of much of the remaining habitat within the analysis area, game populations, hunting, and wildlife viewing opportunities would likely be reduced. Hunting, camping, and wildlife viewing outside of the analysis area, may increase due to the increased human population associated with the mine.

If you have any questions or need information on any specific comment, please contact Ms. Liz Block, Contaminant Specialist, of the Service's Moses Lake Field Office, Washington at (509) 765-9043.

We have appreciated the opportunity to comment.

Sincerely,

Charles Polityka
Regional Environmental Officer

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Washington State Senate

Senator Gary Strannigan

38th Legislative District

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August 28, 1995

Mr. Phil Christy
Crown Jewel Draft EIS
U.S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Mr. Christy,

I would like to add my comments to the DEIS for the Crown Jewel. I first learned of the mining development when I came to the legislature in 1995 and was assigned to the Natural Resources Committee. Our current state and federal laws should result in allowing mining to continue in this state without nearby communities having to sacrifice a clean environment and without taxpayers having to take on any of the burden in situations that theoretically could arise when a company is financially incapable of solving an environmental problem it may cause.

Last month the Governor of Alaska signed into law a bill offering incentives to mining companies for exploration. The bill allows mining companies to credit many of their exploration costs against future taxes and royalties due to the state for a total credit of up to $20 million per project. Our state has preferred a path of making it more expensive to mine. Given the strict laws now in place, we should at least act expeditiously to make sure the new regulations aren't misused as a tool for tieing up mining proposals in a longer than necessary permitting process.

Battle Mountain's proposal in Okanogan County (alternative B) represents an opportunity to generate high paying jobs without sacrificing the area's environmental quality. I appreciate the opportunity to comment in behalf of Battle Mountain Gold.

Sincerely,

Gary Strannigan
State Senator

TMI#: 4542

Hello, my name is Kathryn O'Connell, and I'm Senator Gorton's Eastern Washington Director, and I would just like to say that I wish Slade was here, he wishes he was here, and I would just like to read a statement for him.

I would like you to consider the following comments in support of Battle Mountain Crown Jewel Project, and its positive future for the citizens of north central Washington. I hope that the public hearing in Oroville will be an interesting and informational venue for Washington State citizens to discuss the Crown Jewel Project; however, I am disheartened that the first hearing was held in Ellensburg. Since the community that is most dramatically impacted, and influenced by this proposal, is not the first voice to be heard. Tape being turned over.

SIDE 2 OF 10

I'm sorry for the interruption.

Oh, no problem. Communities must be able to devise their own destiny, and I favor localized decisions made by those who are close to the environmental impacts of this project. The draft environmental impact statement by the Department of Ecology, and the United States Forest Service shows a thorough study of the environmental and economic concerns regarding the Crown Jewel Project. It is my hope that you will work jointly with the Battle Mountain Gold Company and recognize their monetary and time commitment to this project. Please weigh and give fair and every consideration to Battle Mountain's proposed alternative as quickly as possible to come to a final decision. It is my strong hope that you will consider the economic and social benefits of this mine to the citizens of Okanogan County, and that you will listen carefully to the concerns and support you hear tonight. Thank you. (Applause).

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
1550 Alder St. N.W., Ephrata, WA 98823-9651 Tel. (509) 754-4624

August 29, 1995

Ms. Patricia Betts
Washington Department of Ecology
Post Office Box 47703
Olympia, WA 98504-7703

Dear Ms. Betts:

SUBJECT: REVIEW AND COMMENTS FOR THE DRAFT EIS OF THE CROWN JEWEL MINE PROJECT, OKANOGAN COUNTY, WASHINGTON

The Washington Department of Fish and Wildlife (WDFW) appreciates the opportunity to review and comment on the draft Environmental Impact Statement (EIS) prepared for the Crown Jewel Mine Project. Our comments regarding this draft EIS are referred to in the following format: 1) general discussion issues; and 2) identified page specific suggestions for corrections, clarifications or recommendations within the draft EIS document.

1. General Issues

a. Proposed Reclamation and Mitigation Measures

The draft EIS states that all action alternatives would result in both short-term and long-term impacts to wildlife. Proposed reclamation plans and mitigation measures may eventually restore wildlife habitat, but not to the quality and quantity that would be lost; therefore, a net loss to wildlife would occur. Mitigation that would be implemented after project construction, or that required a long time to reach replacement value, would include additional habitat values (over and above replacement value) equal to the loss through time.

The draft EIS lists 20 practices to minimize disturbances and adverse impacts to fish and wildlife, but are presented with such little detail it is difficult to judge their effectiveness. Some would be good for public relations and education (i.e. nesting boxes, dog control), while others are contingent on changes in water quality (i.e. pit lake, fish habitat restoration). Some are designed to minimize impacts during construction and operation of the mine and would be important (i.e. blasting schedules, boundary fences), but only three suggest long-term mitigation for lost habitat values by modifying restoration plans (i.e. plant

palatable grasses, reduce time to establish snow intercept thermal cover, create snags). None of the mitigation activities address the permanent loss of habitat or habitat values loss over the time of the project and recovery period. In our opinion, the proposed mitigation in the draft EIS does not adequately address the significant adverse impacts to the fish and wildlife resources.

WDFW Mitigation Policy strives for full mitigation which ensures no net loss of habitat values or wildlife populations. Also, we believe full mitigation for significant adverse impacts to wildlife is the intention of the 1994 Metal Mining Law (RCW 78.56.010, 78.56.020, 78.56.050). Therefore, we recommend more complete mitigation be developed and implemented for this project. This would include compensatory mitigation to replace permanent habitat values lost and habitat values loss through time.

b. Modified Alternative E

The USDA Forest Service (Forest Service) and Bureau of Land Management (BLM) prefer a modified Alternative E that includes partial backfilling of the open pit, a north waste rock disposal area with 3H:1V slopes for reclamation and a tailings facility in the Marias Creek drainage. This plan was not available for inclusion in the draft EIS and therefore was not available for review by WDFW. This alternative, while having the largest footprint size, may reduce the final impact surface area by the partial backfilling of the open pit. The creation of one waste rock stockpile instead of two should reduce the loss of mature conifer stands although the amount lost would still remain substantial. Reclamation of the waste rock piles at 3H:1V instead of 2H:1V should improve revegetation success.

The modified Alternative E would seem better than the proposed Alternative (B) which would convert the largest amount of habitat capable of supporting fully stocked conifer forest and has a reclamation plan with proposed low stocking of replacement tree cover.

c. Impacts to mature conifer forest

Snow intercept/thermal (SI/T) cover for deer in the Wildlife Core Area is in short supply and is likely limiting the deer population. The US Forest Service minimum requirements in Management Areas (MAs 14 and 26) for deer winter range (winter snow intercept, thermal regulation and hiding cover) are not met in some Core Area portions. Within the draft EIS, deer SI/T cover estimates are based on Tonasket Wildlife Habitat Inventory Procedures (TWHIP) which only includes cover found within MAs

managed for deer winter range. However, other Management Areas (MAs 14 and 25) which are managed for timber and range and not for deer winter range also provide winter thermal and hiding cover. The actual loss of deer winter range is much greater than estimated when cover is based on the total available cover within the entire Core Area and not just those MA's managed for deer winter range.

Limited SI/T cover makes existing mature conifer forest increasingly valuable around Buckhorn Mountain. Due to past forest practices (timber harvesting) which have already reduced deer winter habitat in the Core Area, a further decrease in SI/T cover through mine actions would have substantial effects on deer. These pressures, combined with the loss of animal movement corridors, increased habitat fragmentation, increased hunting pressures and human activities (road traffic, noise, development), would most likely have deleterious impacts on local deer populations.

Mature conifer stands also provide other features that, once destroyed, are difficult to replace. Snags, which are a key component of habitat for cavity excavators (woodpeckers), do not meet Forest Plan standards and guidelines in some Core Area portions. The loss of down and dead woody material and a diverse stand structure found within mature conifer stands would also reduce the prey base habitat for carnivores and raptors.

Contiguous mature forest stands on and near Buckhorn Mountain serve as north-south corridors providing cover during animal movement. Any further fragmentation of mature forest will reduce animal use of these travel corridors. Several corridors would be interrupted where they cross the mine footprint.

Mature forest providing cover for deer and other mature conifer species (pileated woodpecker, fisher, etc.) would take over 100 years to grow on reclaimed sites due to the loss of soil productivity, the proposed inadequate tree stocking levels and the lack of snags, down logs and multi-storied canopies. Combined with the loss of habitat permanently converted to nonforested habitat, those species using mature conifer forests will be negatively impacted.

In addition, during the interval in which mature conifer forest is expected to develop, no compensation is proposed for the loss of wildlife productivity for the 100 years.

As mature conifer stands in the Core and Analysis Areas are in limited supply, every effort should be made to avoid direct impact.

Based on the above discussion, we believe the action alternatives of the project would have significant adverse impacts to the mature conifer habitats and associated wildlife populations. We are particularly concerned for the long-term status of mule deer.

To summarize, the draft EIS states that all Crown Jewel Project action alternatives would result in both short-term and long-term impacts to wildlife; accordingly, there will be a need for mitigation. WDFW Mitigation Policy strives for full mitigation which ensures no net loss of habitat value or wildlife populations. Also, as stated above, we believe the intent of the 1994 Metal Mining Law is to fully mitigate significant impacts including compensatory mitigation. **The draft EIS lacks proposed mitigation measures which will fulfill this policy and mining law, especially concerning issues "c - Impacts to mature conifer forests" and "d - Impacts to Stream Flow, Seeps, Springs, and Wetlands", below.**

d. Impacts to Stream Flow, Seeps, Springs and Wetlands

Mining operations are expected to have some impact on stream flows, seeps, springs and wetlands. It appears no complete analysis of all potentially impacted wetlands has been completed. Hydro-Geo has examined the mine pit filling (1994) and the impacts of mining on area stream flows (1993) for the total drainage affected and for the headwaters directly affected. These dewatering impacts have not been combined with impacts due to diversion ditches, interceptor wells, pit sumps and tailing underdrains at the mine site.

WDFW expects long term effects of mining operations on stream flows, seeps, springs and wetlands. After mining activities cease for those alternatives that involve pit lake formation, water will begin to accumulate in the pit bottom. According to the 1993 study by Golder Associates (Groundwater Inflows to the Crown Jewel Pit, Okanogan Co. WA), the pit would fill in approximately 12-45 years after the end of mining. Another study by Hydro-Geo Consultants, Inc. (1994) estimates the pit filling to take 7-13 years. At that time, the pit outflow will enter the Gold Bowl and Nicholson Creeks. For mining alternatives that involve partial back filling of the mine pit, ground water levels would potentially reach an equilibrium in approximately 2 to 6 years. After complete reclamation, including the tailings disposal site, the drainage that were diverted during operations will be reestablished to the approximate pre-mining drainage direction (BMGC 1993). Due to the ambiguity of time necessary for ground water recharge and location of stream flows, impacts to wetland and riparian habitat will be long-term and not short-term, lasting the 10 years of the project and the additional 2-45 years necessary for ground water flow to approach pre-mining levels.

e. Habitat Evaluation Procedures (HEP)

For the most part, the draft EIS used a habitat analysis approach to describe habitats and to predict impacts of the Project (as discussed in sections 3.13 and 4.12). However, it should be noted that Habitat Evaluation Procedure (HEP) was also used to evaluate the net impact of the six proposed mining alternatives. HEP is a methodology specifically designed by the U.S. Fish and Wildlife Service to determine and measure impacts of major projects such as the proposed Project. It is an accounting procedure that measures changes in wildlife habitat quality and quantity over time. It combines measures of quality and quantity of available habitat into a single value, termed habitat unit for selected evaluation species.

For this project, two HEP analysis were conducted: 1) Without the Project, and 2) With Project/Without Mitigation. The Without Project analysis included expected management of the area had the project (including mine exploration) not occurred. The With Project/Without Mitigation contained exploration, proposed mining and reclamation activities. The difference between these two analysis was the basis for determining impacts. Calculations were made for each proposed mining alternative.

Although discussed briefly in the draft EIS, <u>the HEP data (Table 4.12.7 -pg 4-102) should be considered as more accurately depicting the expected impacts of the six proposed mining alternatives</u>. The listed habitat units were derived from quantifiable data taken from a highly detailed cover type map and carefully measured habitat parameters for the selected species models. Whereas, most habitat impacts presented in the draft EIS were developed from more general information and less quantifiable data.

Table 4.12.7 illustrates significant adverse impacts to 10 of the 11 evaluation species that were used. We also recommend HEP be used for measuring the effectiveness of proposed mitigation.

2. Page specific suggestions for corrections or clarifications within the draft EIS

a. Stream Flow, Seeps, Springs and Wetlands

4-63 Besides the jurisdictional wetlands identified that would be impacted by the action alternatives, there is a potential for others as yet unidentified wetlands within the Gold, Marias, Myers and Nicholson Creek watersheds to experience a reduction in size and productivity. If development of an action alternative occurs, these wetlands need to be identified and

compensatory mitigation in the form of enhancement, restoration or creation of other wetlands would be required prior to impacts occurring.

4-65 The minimum to maximum total average annual flow reductions for all of the Buckhorn Mountain drainage due to baseflow reduction and losses of overland flow would be 2.5 to 5.5% (Hydro-Geo, 1995). These figures appear low as they pertain to the entire drainage areas; however, these flow reductions will be substantial locally, particularly during the dryer months, as water supply and wetland/riparian habitat are scarce in the upper drainage of Buckhorn Mountain.

2-99 The Frog Pond provides important wetland habitat as it is one of the only open water systems on Buckhorn Mountain. Impacts include direct impacts from mining actions as well as indirect impacts through reduced water flow.

Page 72 (Appendix H: Draft Biological Evaluation for the Crown Jewel Mine Project puts the acreage of the Frog Pond at 3 acres. In the Draft EIS, the acreage is put at 1.6 acres (2-99) and 1.8 acres (3-127).

The draft Biological Evaluation for the Crown Jewel Mine Project also states that suitable foraging and breeding habitat for the spotted frog (Proposed, Endangered or Threatened candidate, USFWS and Washington State) at the Frog Pond should be unaffected by project-related activities. This seems unlikely as the wetland will have reduced flows for at least 10 years and probably greater than 15 - 20 years. As a consequence, the vegetational structure and diversity of the pond will reduce the size and value of the Frog Pond as a wetland. The alteration of the pond will negatively impact other wildlife dependent on wetland/riparian habitat.

2-96 Bear Trap Canyon is a proposed mitigation site to offset unavoidable tailings facility impacts to wetlands and the Gold Bowl drainage. No acreage is provided for the site.

Bear Trap Canyon is on US Forest Service land. Any wetlands found there should already be protected by existing laws and regulations. The US Forest Service is responsible for preserving wetlands on their holdings. Enhancement of these wetlands would not contribute significant mitigation credits.

b. Aquatic Resources

4-67, 4-70-71 An IFIM analysis was conducted to determine habitat/flow relationship for the protection of spawning and wintering habitat for rainbow trout and winter habitat for brook

trout. The draft EIS treats the findings very briefly; although, it is a reasonable treatment. It proposes to maintain 9 to 12 cfs during spawning habitat for rainbow trout (adjusted upward with increase in temperature) and 6 cfs to maintain winter habitat for both species. Twelve cfs are needed to insure adequate habitat for emerging trout fry during late spring and early summer. It should be noted that these are considered minimum flows and some habitat value may be lost, particularly winter habitat for brook trout as stated (4-71).

Construction of the diversion dam on Myers Creek to fill the Starrem Creek reservoir will require an Hydraulic Project Approval (HPA) which will specify screening of proper size and mesh to prevent emergent trout fry from entering the pumping station.

4-67 The draft EIS states flows in certain creeks including Marias and Nicholson Creeks are expected to decrease 3-4 percent, but no impacts to fish populations are expected. This seems doubtful when considering the existing low flows particularly during the dryer months. If fish habitat is lost in these streams as determined by the proposed weekly monitoring (2-107), how will it be mitigated?

Page 4 (Appendix I : Fisheries and Aquatic Habitat - Biological Evaluation). Stream and fisheries surveys conducted for the proposed project indicated sediment loading in channels from road wash and skid road sources, as well as from livestock trampling. Project related road construction and earth moving activities will augment sedimentation. Measures should be taken to reduce the amount of sediment entering stream channels.

Page 7 (Appendix I : Fisheries and Aquatic Habitat - Biological Evaluation). Although the partial backfilling of the mine pit is to prevent a lake formation, the BE anticipates that the hydraulics of the springs and overland flow will fill the voids between backfill materials, and a lake partially filled with rock will most likely result. Because of the increased surface area of the back fill material, increased leaching of cadmium and silver may occur. In addition, the discharge of the pit water is anticipated to be through springs and seeps, rather than at a defined outflow point. Testing and treatment of discharge effluent will be more difficult resulting in a higher potential for toxic cadmium and silver pit water discharge into the Nicholson Creek drainage. This could lead to greater impacts on fisheries and aquatic organisms in the Nicholson Creek drainage.

C. US Forest Service Compliance

4-73 None of the action alternatives would fully comply with the US Forest Service standards and guidelines for wildlife impacts prescribed in the Forest Plan. Most of the noncompliance actions would bring wildlife habitat below threshold levels. This project would therefore require Forest Plan amendments. Until these potential amendments are identified, WDFW is unable to support any amendment that would further reduce habitat below minimal levels as set forth in the Forest Plan. We are particularly concerned how deer winter cover will be addressed.

d. Roads

4-84 The current and Project road densities are estimated at greater than 6 mile/square mile. Road closure during and after the Project will return road densities to lower than current levels (4 miles/square mile), but still higher than pre-exploration densities of 3.4 miles/square mile. This level will be maintained until the end of monitoring. The prolonged use of roads will have long term effects on deer which are found to reduce habitat use adjacent to trafficked roads.

e. Recreation

4-118 Hunting pressures are expected to increase due to both Project-related and unrelated population growth. If deer population viability is diminished due to a reduction in winter range and harassment from human activity, reduced hunting quality could result.

f. Secondary Land-Use Development

The construction of transmission lines and electrical availability could lead to future residential development around the Analysis Area. Increased human presence could lead to future wildlife impacts.

g. Grazing

2-85 Cattle would be fenced out of mine footprint. This action may increase grazing pressure in other riparian areas. Effort should be taken to provide supplemental water sources and protect riparian sites.

2-90 Controlled grazing within the fenced perimeter is proposed during the 10 years after completion of reclamation as a possible measure to reduce competition between grasses and

planted trees. Grazing on recently revegetated soils may lead to soil compaction and/or erosion, loss of productivity and death or damage to planted tree seedlings.

h. Reclamation - Vegetation

Reclamation goals and objectives for revegetation as proposed are in very general terms. What are considered successful revegetation densities for grasses, forbs, shrubs and trees and in what time period? Criteria for success needs to be defined.

2-85 Alternative B vegetation reclamation proposes a clumped distribution of 50 - 100 trees/acre stocking levels. Other alternatives have 250 trees and 400 shrubs/acre. Why the discrepancy?

2-84 Within the species selection for revegetation, no mention of forbs is included with seeds and shrubs. Forbs are an important forage component for many wildlife species and should be included in reclamation activities.

I. Reclamation - Wildlife

2-101 The loss of soil productivity on reclaimed sites and consequent slow vegetative recovery of shrubs and trees will decrease the availability of perches and snags. Mitigation practices will include the placement of raptor perches and kestrel and songbird boxes within the Core Area. The use of stand-up logs to provide perches and act as snags throughout the reclaimed areas is suggested as a way to supplement creation of snags in surrounding forests.

4-88 Proposed mitigation plans for the tailings pond include a wildlife exclusion fence but not nets or chemical repellents. Such mitigative measures would reduce bird and bat exposure to possible toxin ingestion.

J. Monitoring

2-106 The draft EIS states agencies would meet annually with proponent to discuss the need for supplements or modifications to the Plan of Operation. Additional meetings should also be held as needed to address any unanticipated problems with wildlife.

2-106 Under the section for monitoring wildlife mortality in and around the tailings pond, no mention of monitoring levels of cyanide or other toxins is given. On page 2-26 under Cyanide Destruction, the draft EIS states levels of cyanide above 10

mg/liter will not be permitted and certain types of monitoring would be required, but no details are given. How will unanticipated increases in levels of cyanide and other harmful elements which could lead to increased wildlife mortality be monitored, rectified and if necessary mitigated?

2-107 Yarded deer during severe periods of winter weather should be monitored particularly in areas near transportation routes so preventative measures can be taken to minimize harassment and mortality.

Thank you for the opportunity to comment on the Crown Jewel Mine draft EIS. We hope our comments are helpful in providing a more complete understanding of impacts to the fish and wildlife resource. We will be looking forward to providing additional assistance on this project. Please call at (509) 754-4624 if you have any questions or need additional information on any of our comments.

Sincerely,

Ron Friesz
Habitat Biologist

cc: Tracy Lloyd, WDFW Ephrata
Gordy Zillges, WDFW Olympia
Curt Leigh, WDFW Olympia
Elizabeth English. WDFW Olympia
Connie Iten, WDFW Olympia
Phil Christy, USFS Tonasket
David Kaumheimer, USFWS Moses Lake

REFERENCES

Golder Associates. 1993. Groundwater inflow to the Crown Jewel pit, Okanogan County, WA. Prepared for Battle Mountain Gold Co., integrated plan of operations, Lakewood, CO.

Hydro-Geo Consultants, Inc. 1993. Impact of mining on area stream flows, Crown Jewel Project. Prepared for TerraMatrix, Inc., Lakewood, CO.

-----. 1994. Pit filling study, Crown Jewel Project. Prepared for Battle Mountain Gold Co., Lakewood, CO.

WASHINGTON STATE DEPARTMENT OF
Natural Resources

JENNIFER M. BELCHER
Commissioner of Public Lands
KALEEN COTTINGHAM
Supervisor

August 29, 1995

Phil Christy
NEPA Coordinator
1 West Winesap
Tonasket, WA 98855

Subject: Comment on the Crown Jewel Mine draft EIS

Dear Mr. Christy.

Alternative B (the proponents proposal) does not meet the minimum reclamation standards as set forth in the Surface Mine Reclamation Act (RCW 78.44).

Sincerely,

Raymond Lasmanis
Manager
Division of Geology and Earth Resources

dkn

STATE OF WASHINGTON
DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT
OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
111 21st Avenue S.W. • P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 753-4011

July 6, 1995

Mr. Sam Gehr, Forest Supervisor
Okanogan National Forest
1240 South Second Avenue
Okanogan, Washington 98840

Log: 111694-39-FS-OK
Re: Battle Mountain Gold/Crown Jewell Project, Draft EIS

Dear Mr. Gehr:

The Washington State Office of Archaeology and Historic Preservation (OAHP) is in receipt of the Draft Environmental Impact Statement (DEIS) for the proposed Crown Jewell Project. From the project summary, I understand that Battle Mountain Gold Company, and Crown Resource Corporation, propose to operate a surface mine operation and associated mill on 766 acres on Buckhorn Mountain in Okanogan County.

On behalf of OAHP, I have reviewed the DEIS in regard to discussion on project impacts to cultural resources. In general, I concur with the findings of the DEIS. For your information, I am enclosing a copy of our June 26, 1995 letter to Mr. Mark DeLeon addressing the status of our evaluation of cultural resources on Buckhorn Mountain. Briefly, our opinion is that historic mining resources on Buckhorn do not comprise a historic landscape eligible for listing in the National Register of Historic Places. However, it is our opinion that several historic cabins, camps, and mining related structures in the project area are National Register eligible.

As a result of this opinion, OAHP recommends the alternative resulting in the least impact to eligible cultural resources. For those National Register eligible resources which are to be adversely affected by the proposal, appropriate mitigation measures need to be identified and incorporated into a memorandum of agreement (MOA).

Thank you for the opportunity to review and comment on the DEIS. I would like to take this opportunity to recognize the efforts of Mark DeLeon of Okanogan National Forest, Rich Bailey and Judy Thompson of the Bureau of Land Management, and the consultants at Archaeological & Historical Services for their assistance in our review process. Should you have any questions, please feel free to contact me at (360) 753-9116.

Sincerely,

Greg Griffith

Gregory A. Griffith
Comprehensive Planning Specialist

GAG:tjt
Enclosure

cc: Rich Bailey
Mark DeLeon
Pat Spurgin

STATE OF WASHINGTON
DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT
OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
111 21st Avenue S.W. • P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 753-4011

June 26, 1995

Mr. Mark DeLeon, Forest Archaeologist
Okanogan National Forest
1240 South Second Avenue
Okanogan, Washington 98840-9723

Log: 111694-39-FS-OK
Re: Battle Mountain Gold/Crown Jewell Project, Buckhorn Mountain

Dear ~~Mr. DeLeon~~ Mark:

Once again, thank you for hosting Lauren and myself for the tour of Buckhorn Mountain on June 19. This on-site visit was very useful in helping us understand the nature of the resources to be affected by the Battle Mountain Gold project, not to mention historic mining resources in general.

As promised, I am responding in order to bring to closure some of the questions we've been wrestling with regarding the properties on the mountain. First, in regard to the historic landscape question, the conclusion we reach is that the properties on Buckhorn Mountain do not comprise such a resource. The site visit was convincing in conveying the feeling that each mining site, camp, prospect, etc. represents visually discrete resources, thereby making National Register eligibility of the project area as a historic landscape difficult to justify.

In regard to the Gold Axe Camp, our conclusion is that it does appear to be National Register eligible in view of the interesting juxtaposition of cabins spanning the region's period of significance from the 1890s into the 1930s. It is our recommendation that the camp be characterized as a "site" rather than as a historic district.

CLYDE BALLARD
SPEAKER

State of
Washington
House of
Representatives

STATE REPRESENTATIVE
12th DISTRICT

August 30, 1995

Mr. Phil Christie
Crown Jewel DEIS Comments
U.S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Mr. Christie:

I am writing to you regarding the Battle Mountain proposal. I believe it is referred to as "Alternative B." Although I do not have all of the exact details regarding this project, I know a lot of work has gone into the process.

Concerns have been raised regarding the use of cyanide which might pose a threat to wildlife. It has been my understanding that the issue has been examined and determined to be a safe alternative.

Another question was whether there was sufficient water in the streams to supply the mine's needs and maintain necessary base flows for fish. Again, it is my understanding that this also was determined to be sufficient.

There is no question in the fact that the mine would have a major impact on the region. As I look at proposals such as this, I look for important issues such as: Will the environment be protected? and Will the quality of life be affected? If the answers are "yes," and it is my understanding that they will be, then the economic impact should be very positive.

I've had a bit of a unique chance to look at proposals like this because the Cannon Mine operated in the Wenatchee area for several years. I am pleased to announce that they were very good neighbors, and to my knowledge, there was never any incident such as the ones raised in the Battle Mountain proposal. They were good employers and good neighbors for the community. It is unfortunate that some people just say an automatic "no" to any proposal of this nature.

I trust you will give this a fair, reasonable hearing. It is my hope that all concerns have been addressed and that this will turn out to be good for all those concerned.

Thank you for your consideration of my comments. .

Sincerely,

Clyde

CLYDE BALLARD
Speaker of the House

CB/tll

LEGISLATIVE OFFICE LEGISLATIVE BUILDING, PO BOX 40623, OLYMPIA, WA 98504-0623 • (360) 786-7999

STATE REPRESENTATIVE
9th DISTRICT
MARK SCHOESLER
ASSISTANT MAJORITY FLOOR LEADER

State of
Washington
House of
Representatives

RULES
AGRICULTURE AND ECOLOGY
FINANCE
CORRECTIONS

August 24, 1995

Mr. Phil Christy
Crown Jewel DEIS
US Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Phil,

I am writing to comment on the draft Environmental Impact Statement for the Crown Jewel mine near Chesaw. This document shows the Crown Jewel is a well though out plan that can be undertaken without causing any significant, permanent environmental impacts. The mine would also be a tremendous asset to an area hard pressed for jobs, especially family wage ones.

The necessary regulations are in place to see that Battle Mountain delivers on its planned design, construction, operations and reclamation of the mine. With all these facts in mind, I am in support of the DEIS and believe Alternative B properly balances environmental concerns with the economic realities of operating a mine.

Sincerely,

Mark G. Schoesler

Mark G. Schoesler
Washington State Representative
Ninth Legislative District

MGS:jed

c:\wpwin\letters\jewlmine

LEGISLATIVE OFFICE 402 LEGISLATIVE BUILDING, PO BOX 40617, OLYMPIA, WA 98504-0617 • (360) 786-7844
HOTLINE DURING SESSION: 1-800-562-6000 • TDD 1-800-635-9993
RESIDENCE ROUTE #1 BOX 151, RITZVILLE, WA 99169 • (509) 659-1774

TMI#: 4557

Good evening, I'm State Representative Kathy Morris, from the Seventh Legislative District. A district representing approximately a hundred thousand people. It's a very rural district whose economy depends on natural resources -- mining, timber, and agriculture. Ninety percent of the mining that happens in the state, happens in the seventh district. So mining is not new to this area, but it is accepted as a way of life. Tonight I speak in support of the proposals outlined in Alternative B. And encourage the state and federal agencies to cooperate to allow productive citizens to contribute to the economy of both Okanogan County and the State of Washington through this proposed mine. I have a number of comments about the draft environmental impact statement on the Crown Jewel regarding economics. In this period of diminishing opportunities for natural resource industries in eastern Washington, it will be my district's good fortune to have the Crown Jewel operating here. Family wage jobs are far and few between in this part of the state. With the company's commitment to hire so many of its employees locally, the financial impact of the mine on government units in area will be significant. As reflected in both the independent, socio-economic analysis conducted, as required by the 1994 Metal Minings Act. Regarding the selection of a preferred alternative, I hope you will weigh carefully the potential downside to making Battle Mountain modify any of its plans for meager, environmental gains outlined in the DEIS by selecting an alternative other than B.

Regarding wildlife impacts. After such delays in the EIS schedule, primarily due to the different agencies trying to decide what wildlife study to conduct, I'm glad to see that these exhaustive studies have resulted in identifying such minor impacts. It appears that the overall habitat acreage will be reduced in some cases, though mostly just temporarily, but never to the risk of an endangered, threatened, or sensitive species population. This fact is underplayed, however, and to find this conclusion one must weigh through considerable verbage. I thank you for your attention, and I ask the state and federal agencies to conclude the remaining necessary, and unnecessary steps, so the benefits of this operation can begin. (Applause).

STATE REPRESENTATIVE
35th DISTRICT
TIM SHELDON

State of
Washington
House of
Representatives

TRADE AND ECONOMIC DEVELOPMENT
RANKING MEMBER

NATURAL RESOURCES

FINANCE

August 22, 1995

Phil Christy
Crown Jewel Draft Environmental Impact Statement
United States Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Mr. Christy,

I am writing to add my comments to the EIS process on Battle Mountain Gold Company's proposal to develop a gold mine in Okanogan County and to express my support for Alternative B in the draft document. The mine obviously makes good sense economically. No less significant, the state has in place all the necessary regulations to adequately monitor this mine in every aspect of its development from design through reclamation.

Your analysis makes it appear that component alternatives may be substituted for one another interchangeably and still work. In the world of business this is not so and that methodology oversimplifies the highly complicated process of developing a business proposal of this magnitude.

Many people who comment on the proposal have never visited the site. I have spent time there as a member of the Natural Resources Committee. We heard testimony from the local residents and I felt that their concern for the economic viability of their area was genuine. Mining has been a mainstay of their economy for a very long time and this proposal fits very well with the occupations for which the residents are well qualified.

We owe companies wishing to do business in this state a straight forward decision making process about whether we will allow them to operate. Having watched just the opposite transpire in the case of Battle Mountain Gold Company, I hope the endpoint for their approvals is now in sight.

Sincerely,

Tim Sheldon

Tim Sheldon
Representative

LEGISLATIVE OFFICE: 414 LEGISLATIVE BUILDING, PO BOX 40600, OLYMPIA, WA 98504-0600 • (360) 786-7902
RESIDENCE: POTLATCH, BOX 474, HOODSPORT, WA 98548 • (360) 877-5768

STATE REPRESENTATIVE
9th DISTRICT
VAL STEVENS
ASSISTANT MAJORITY FLOOR LEADER

State of
Washington
House of
Representatives

CHILDREN & FAMILY SERVICES
VICE CHAIR

NATURAL RESOURCES

RULES

August 25, 1995

Crown Jewel DEIS Comments
U. S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket WA 98855

To Whom It May Concern:

Anticipating the development of the Crown Jewel Mine, two metals mining bills have passed the Washington State Legislature in as many years. From this legislative scrutiny and from having personally toured the Crown Jewel site, I have become familiar with what Battle Mountain is proposing, as well as their 3-1/2 year ordeal to get to this point.

The State is ready for this mine as can be seen by the exhaustive analysis contained in the draft Environmental Impact Statement on the proposal. Considering all potential environmental impacts of the mine, and weighing the individual impacts of the six "action" alternatives, the alternative proposed by Battle Mountain, Alternative B, appears to be the most solid of these proposals. It accomplishes Battle Mountain's objectives in a realistic time frame and does as much or more to minimize the impacts of the mine over the other alternatives.

Given the results of this environmental review, Battle Mountain should be allowed to proceed with its plan in tact with no further delays.

Sincerely,

Val Stevens
State Representative

/om

LEGISLATIVE OFFICE: 404 LEGISLATIVE BUILDING, PO BOX 40678, OLYMPIA, WA 98504-0678 • (360) 786-7804
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STATE REPRESENTATIVE
8th DISTRICT
JEROME DELVIN

State of
Washington
House of
Representatives

LAW & JUSTICE
VICE CHAIRMAN

AGRICULTURE

HIGHER EDUCATION

August 17, 1995

Crown Jewel DEIS Comments
US Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Attention: Phil Christy

Dear Mr. Christy:

I sit on the House Agriculture Committee so am particularly interested in both what Battle Mountain is proposing as a water plan for its Crown Jewel mine as well as the DEIS's evaluation of their plan and its impacts. The water plan appears efficient, using storage as a source of its water during periods of interruptibility and it enhances the site's wetlands. Though fisheries is not a key issue because of where the mine is to be located, studies conducted do show that the resource will not be affected by the proposed appropriations of new water the mine will require during its ten years of operation.

The proponent should be allowed to proceed with the plan (Alternative B) it has proposed. To require Battle Mountain to make major alterations in its proposal by selecting a different preferred alternative would result in negligible environmental gain and have impact on the viability of the mine.

I hope with the draft EIS now completed, the pace of the remaining steps will accelerate without any unwarranted delays.

Respectfully,

Jerome Delvin

JEROME DELVIN
State Representative

LEGISLATIVE OFFICE, 416 JOHN L. O'BRIEN BUILDING, PO BOX 40600, OLYMPIA, WA 98504-0600 • (360) 786-7986
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STATE REPRESENTATIVE
39th DISTRICT
JOHN KOSTER

State of
Washington
House of
Representatives

AGRICULTURE
VICE CHAIRMAN

CORRECTIONS

TRANSPORTATION

August 21, 1995

Crown Jewel DEIS Comments
U.S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Attention: Phil Christy

I am familiar with Battle Maintains proposal because there are some mining interests in my district and because my predecessor in the 39th district was the prime sponsor of the legislation that became the 1994 Metals Mining Act. I am pleased to see that in evaluating the Crown Jewel, the Draft Environmental Impact Statement concludes that several of the premises on which the Act was based are non-issues as it relates to the mine. These include:

1. It is possible to safely site the mine's tailings facility over Marias Creek with minimal environmental impact;

2. Battle Mountain's proposed tailings facility liner system will be adequate to prevent any contamination to the surrounding environment;

3. The likelihood of a mishap involving cyanide at the mine is nil;

4. There are no indications that a so-called "gold rush" is likely to occur in Washington as a result of the Crown Jewel project.

I am very much in support of Battle Mountain's plans as described in Alternative B as the best of the alternatives considered. I hope the agencies will do everything in their power to expedite what should be an uncomplicated conclusion to this long process.

Sincerely,

John Koster

John Koster
State Representative

JK/dls

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HERE'S MY CROWN JEWEL DEIS COMMENTS:

“ I join with the Okanogan County Citizens Coalitio (OC3) in supporting the Crown Jewel project. ”

- Like OC3, I support the responsible, multiple use of natural resources.
- Mining can be done in a manner that protects the environment and multiple uses.
- The Crown Jewel project will meet all relevant federal and state environmental laws and regulations.
- I support Battle Mountain Gold Company's proposal (Alternative B) for the Crown Jewel project.
- Please expedite the final EIS process and approval of all required permits.

Additional comments:

Name Rep. Bill Thompson

Address P.O. Box 40600 City Olympia State WA Zip Code 98504-

TMI#: 4583

I'm Steve Fuhrman, the state representative from the seventh district. I would like to concentrate on the social-economic portion of the EIS. I think it should be expanded as far as the historical perspective, basically, if you cut the state in the northeast section we consider this in some terms as being north-central, but really, on the map we are northeast. And you look at starting at Oroville, meaning the Spanish Gold Town, and you keep going towards the east, Republic, the economic vitality has been the mines. When you go on to Colville, the largest employer currently is the magnesium plant there. It's an open-pit mine, it's northwest alloys, a subsidiary of Alcoa. Colville, Chewelah, on over the hump to Ponderie, this, this portion of the state, the whole economic structure through the century since it developed, this town in 1908 on, if you look from when non-Indians moved in on the Indians, from that point forward the driving force for the development was agriculture and mining. That's, what it was based on. Especially, just twelve miles on, to the east, where you get into the major mining, and the development. Well, this is, is just one step further, and I guess maybe we're pushing that edge, and the people in this valley doe not realize the economic importance of what this whole corner of the state is. As Senator Morton mentioned, 90% of the mining in this state is done in this northeast section. I guess maybe to explain Kettle Falls where I've lived, the, the mountain right behind us is Gold Hill. This prospect in the mining that took place in Gold Hill. Where I went swimming as a kid was at the Evans Quarries, that was the old limestone quarrier. Northport, Orient, Colville, Metaline Falls, Ione, those are all towns. Chewelah, the magnisite plant. The brown lake quarry. There's no devastation. We still have clean water. It is part of our socio-economic structure in the northeast section of the state. Oroville, it's a shame that we've almost forgot that, and there's been so many people move in, in the last 20 years, that we forgot the importance of mining. And we have to reiterate that in the socio-economic perspective as far as the history in this area. Thank you. (Applause).

STATE REPRESENTATIVE
12th DISTRICT
DALE FOREMAN
MAJORITY LEADER

State of
Washington
House of
Representatives

APPROPRIATIONS

August 28, 1995

Mr. Phil Christy
Crown Jewel DEIS
U.S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Mr. Christy:

I am writing to comment on the Draft Environmental Impact Statement on the gold mine that Battle Mountain Gold Company hopes to develop in Okanogan County. To solve the fiscal problems of a large county with a small tax base is a challenge for the legislators representing Okanogan County in Olympia. The family wage jobs this mine will create and the economic stimulus it will inject into the Okanogan Highlands region will be a great help to its citizens wishing a better livelihood.

It is heartening to see from the Draft EIS that government and its consultants expect the environmental impacts of the proposed Crown Jewel to be modest. The stringency of the State's environmental laws and the mitigation proposed by Battle Mountain make Alternative B the logical choice for approval. Their combination of components are the most economically viable from their point of view while its overall impacts to wildlife and the number of acres distributed is the same or less than any of the other alternatives.

Having lived in Wenatchee where the Cannon mine operated for ten years, and having served on the Citizens Advisory Council to monitor the mine operations, I know what an asset a well designed and well run mine can be to a community. The Crown Jewel mine is eagerly sought by all who are concerned about the County's future. We look forward to your completing the remaining steps to its approval in a timely manner.

Sincerely,

Dale Foreman

Dale Foreman

DF/nh

LEGISLATIVE OFFICE 3rd FLOOR LEGISLATIVE BUILDING, PO BOX 40624, OLYMPIA, WA 98504-0624 • (360) 786-7832
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STATE REPRESENTATIVE
1st DISTRICT
IAN ELLIOT

State of
Washington
House of
Representatives

EDUCATION
VICE CHAIRMAN
NATURAL RESOURCES
TRANSPORTATION

August 23, 1995

Phil Christy
NEPA Coordinator
U.S. Forest Service
1 West Winesap
Tonasket, WA 98855

Dear Mr. Christy,

The 1994 Metals Mining Act contains two different performance security provisions which are designed to prevent tax dollars from having to pay clean up costs should any environmental problems occur (1) during the mine's operation, from construction through post-closure, or (2) legislative session, I prime sponsored a bill to clarify these provisions of the 1994 Act. There are certain references to these performance security requirements in the Draft Environmental Impact Statement on the Crown Jewel which ignore the changes that the 1995 Act made to the 1994 Metals Mining Act. These inaccuracies are found in the document as follows:

(1) Section 2 pg 2-85 column 1 paragraph 6: As a result of the 1995 Act, it is not an option for WADOE to hold the performance security for a large scale surface mine's reclamation.

(2) Section 2 pg 2-91 Permitting and Financial Assurances: The DEIS lists remediation financial security as a mitigation measure in relation to closure and post closure problems but makes no mention of the year of construction and critical 10 years of the mine's operations during which the requirement will also be in place for the Crown Jewel. Except that there is some overlap during which both financial assurances would be in place, the remediation performance security requirement has nothing to do with reclamation. The 1995 legislation separated these financial assurances. It would therefore be more appropriate for the subject of remediation performance security to appear as a separate item of mitigation.

(3) Appendix B Agency Responsibilities B-3 and B-9: The responsibilities of WADOE, and WADNR regarding performance security have changed as a result of the 1995 law.

These securities provisions were the subject of some concern during the 1995 legislative session, the formal language of the enacted legislation clarifies these provisions.

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Based on the slight differences in anticipated environmental impacts between Alternative B which embodies the company's plan and the remaining alternatives, Battle Mountain's plan is the alternative that makes the most sense to approve.

Sincerely,

Ian Elliot

Ian Elliot
State Representative
1st District

broadcast with a cyclone-type broadcaster where possible and, if necessary, inaccessible slopes would be hydroseeded. Broadcast seeding techniques would be used to create a more natural-appearing plant community. The seedbed would be harrowed or dragged following seeding to ensure proper seed burial, if necessary.

Tree and shrub seedlings would be planted randomly over the entire site at approximately 250 trees and 400 shrubs per acre except under Alternative B where 50 - 100 trees per acre would be planted in clumps. On south aspects, clumps of approximately 20-25 seedlings, with 4 to 5 clumps per acre would be planted. Tree and shrub seedlings would be planted from containerized stock.

Mulch Application Mulch would be applied to seeded areas after seeding to facilitate plant establishment and to protect the seeded areas from wind and water erosion until the plants have stabilized the soil.

Cattle Exclosures. Fencing would be left in-place to exclude cattle from reclaimed areas, until the revegetation success standards have been attained, an estimated 10 years.

2.11.5 Reclamation Guarantees

The statutory and regulatory authority of the Forest Service, BLM, WADOE, and WADNR would require the Proponent to execute a financial assurance agreement as part of any permit and plan approvals from these agencies. The agreement(s) would need to ensure that sufficient funds would be available to properly reclaim the areas disturbed at the Crown Jewel operation in the event that the Proponent would be unable to meet its reclamation obligations.

No mining or milling operations can commence without approval of the permits and plans by the previously mentioned agencies and the execution of financial assurance agreement(s) for sufficient reclamation funds to the agencies responsible for decommissioning and reclamation of the Crown Jewel Project. At this time, it has not been determined how many performance securities would be required, or if the Forest Service, BLM, WADOE, and WADNR would work together on determining the method or manner of a reclamation guarantee for the Crown Jewel mining and milling activities, and who would hold that assurance.

2.12 MANAGEMENT AND MITIGATION

Management and mitigation practices at the proposed Crown Jewel Project would be based on federal, state, and local laws and regulations, current technology, best management practices, and company policies. The purpose of these practices would be to reduce or avoid adverse impacts to the environment and to reclaim disturbed areas. Enforcement of management and mitigation measures would be the responsibility of the agencies issuing permits and approvals for the Project. This section is a summary of management and mitigation practices that would be applied based on applicable State and Federal regulations or agreed to previously by the Proponent to the Crown Jewel Project under all action alternatives.

Project activities are reviewed, controlled and/or regulated by a number of federal, state, and local agencies. Each agency enforces laws and regulations particular to their mission. A number of agencies, would be involved in regulating various aspects of the Crown Jewel Project (water discharge, reclamation, air emissions, wetlands, etc.). Some aspects, such as wetlands, are regulated by multiple agencies (EPA, the Corps of Engineers, WADOE, Forest Service, etc.). Management and mitigation measures are considered in predicting environmental consequences and assessing Project impacts and are an integral part of each alternative.

This section describes measures and techniques that would be required to lessen or eliminate impacts of the proposed action alternatives. It includes a discussion of management requirements that would be required of the mine operator, assuming that 1 of the action alternatives is selected. In addition to the management and mitigation measures described in this section, there are environmental requirements associated with various permits, licenses, approvals, and financial assurance necessary for the Project. Further, many agencies have environmental performance standards and guidelines that must be met by the operation but for which there are no permit or license requirements.

2.12.8 Noise

The operator would comply with all state and Okanogan County health and safety requirements pertaining to noise generation. MSHA governs worker health and safety which includes requiring noise protection for workers in high noise areas.

Effectiveness: Moderate

Noise would be monitored at Chesaw. In the event of routine exceedences of greater than 5 dBA above ambient from the mine (excluding blasting), then mitigation would be implemented. The haul trucks, bulldozers, loaders and graders used for the Crown Jewel Project would be purchased or retrofitted with a "quiet package" consisting of lower-speed fans and special noise barriers along the engine compartment. Commercially available "ambient sensitive" backup alarms would be used on all equipment to continuously adjust the volume of back-up alarms so that the alarms are only as loud as necessary based on the ambient noise in the work area (about 5 dBA above the ambient noise level). Exhaust fan noise from any underground mining would be reduced by providing a silencer, diffuser or sound absorbing materials which would lower the noise level from the fan.

Effectiveness: Moderate

2.12.9 Permitting and Financial Assurances

Federal mining laws authorize mineral exploration and development on Federal Lands. State and federal environmental laws are designed and implemented to minimize adverse impacts and to promote reclamation such that future long-term productivity of the surface resources is maintained to the extent practicable.

The Proponent must obtain any required approvals and permits from the federal, state, and local agencies. Approval of the Plans of Operation by the Forest Service and BLM is required prior to beginning any mining and milling activities on federal lands.

The Proponent would prepare and submit comprehensive mine site design plans prior to approval of the Plans of Operations. These plans, at a minimum, would show mine layout; dimensions of the buildings and other structures; volumes and cross sections of cuts and fills; location and dimensions of the tailings impoundment; water storage ponds; sediment catchment channels and ponds; fence lines; road ingress and egress; waste rock stockpiles and reclamation timing; and other details as needed.

Compliance with the approved Plans of Operation would be conditioned upon compliance with the terms of the other federal and state permits which govern the proposed actions of the Crown Jewel mining and milling.

Effectiveness: Moderate

The Proponent would bond for reclamation before operations can begin. The regulations of the Forest Service, BLM, WADOE, and WADNR require that the Proponent submit a reclamation bond (financial surety) to ensure that adequate reclamation and restoration of the land is achieved following mining and milling activities. A bond would provide the government with sufficient funds to reclaim the site, and provide environmental protection should the Proponent fail to do so. The WADOE and/or WADNR would hold the Washington State required financial assurances. The financial assurances would not be released without the consent of both the WADOE and WADNR. Either the Forest Service and/or BLM would hold the required Federal reclamation bonds. The bonds would not be released without the consent of both agencies.

RCW 78.56 requires the Proponent to provide financial assurance that would support long-term monitoring for water quality following mine closure and for clean-up of potential problems revealed during or after closure.

Effectiveness: Moderate

2.12.10 Recreation

Only authorized travel would be allowed into the Crown Jewel operation. No unauthorized vehicles or personnel would be permitted on the site. Plans would be implemented to control public access such as fencing and posting to prohibit unauthorized entry to hazardous areas. However, these plans would provide for

or more feet at its deepest point, or a dam or dike that will retain ten or more acre-feet of water. Dam special use permits require information on the use and capacity of the reservoir, proposed construction, and a legal description of the location of the structure. Processing time varies depending on the project complexity. Construction and yearly safety reviews are required.

Washington Department of Ecology Responsibilities

The "lead state agency" is the agency responsible for SEPA compliance for a particular project. For the Crown Jewel Project EIS, the WADOE is the lead state agency.

As required by WAC 197-11-938 (12), the WADOE is automatically the lead agency for the Crown Jewel Project, because the proposal includes a new metallic mineral processing plant. During consultations with the Proponent, the WADOE decided that an EIS would be prepared for the Crown Jewel Project in accordance with WAC 197-11-315.

The WADOE will follow the specific procedures outlined in the Chapter 197-11, WAC, SEPA Rules, that begin with scoping and data collection, and continues with an analysis of the data necessary to develop and evaluate alternatives, impacts of the project and mitigation. The results of this analysis will be documented in the EIS and will form the basis along with other regulatory requirements for the WADOE decisions on the various permits to be issued for the project.

In February 1994, the Washington State legislature passed the 1994 Metals Mining and Milling Act, Chapter 78.56 RCW. It gives the WADOE some additional responsibilities, some of which will affect the preparation of the EIS. This law directs the WADOE to issue a tailings facility site selection report for any proposal meeting the law's definition of a metals mining and milling proposal. This report is to be developed in conjunction with the EIS (see Appendix K, Tailings Site Selection Report). Some elements of the bill include requirements for: writing rules to secure a performance security (financial assurance), additional inspections, waste rock plans for new proposals, and tailings impoundment design guidelines.

National Pollutant Discharge Elimination System (NPDES). Under authority delegated by the U.S. Environmental Protection Agency (EPA), WADOE regulates the discharge of pollutants into Washington's surface waters through this permit system. An application for an individual NPDES permit requires information on water supply volumes, water utilization, wastewater flow characteristics and disposal methods, planned improvements, stormwater treatment, plant operation, materials and chemicals used, production and other related information. Depending upon the type of materials to be mined, EPA regulations may specify effluent limits for inclusion in an NPDES permit(s) for the discharge of waste waters and stormwater. Mines for which EPA has not promulgated stormwater effluent limits are required to obtain coverage under Ecology's NPDES Baseline General Stormwater Permit. The processing time for an individual NPDES permit ranges from about 180 days to one year but varies upon project complexity. A public hearing on a proposed NPDES permit may be required. The statutory authority for this permit is section 402 of the Federal Clean Water Act, as amended. The state implementing regulations are Chapter 173-220 WAC and Chapter 173-226 WAC.

Silvicultural Burning, Open Burning, Agricultural Burning. Silvicultural burning is regulated by WADNR, who would be contacted regarding requirements for slash burning or

Washington Department of Natural Resources Responsibilities

The Washington Department of Natural Resources (WADNR) is a cooperating agency with Forest Service and WADOE on the Crown Jewel Project EIS. In February 1994, the Washington State legislature passed the 1994 Metals Mining and Milling Act (Chapter 78.56 RCW) which gives the WADNR some additional responsibilities in conjunction with the WADOE. Some elements of the bill include requirements for: 1) to hold a joint performance security 2) to jointly develop performance security rules, and 3) requirements to conduct additional inspections. There are a number of permits required by the WADNR for mining operations. They are addressed below:

Surface Mine Reclamation Permit. Under Chapter 78.44 RCW and Chapter 332.18 WAC, the WADNR requires a permit to regulate surface mining activities. The purpose of the permit is to ensure the area is reclaimed and the natural resources are conserved on State and private land within the State of Washington. A performance security for reclamation activities is required before this permit is granted. Required engineering information includes topographic maps, sequence of mining, disposal and borrow sites, construction methods, equipment to be used, plans for mitigation of runoff and erosion, and the proposed schedule of reclamation. Environmental information includes soil characterization and topsoil management, erosion control measures, reclamation and revegetation plan, and methods to protect surface water quality. Processing time varies depending on the project complexity, but it can take six months or longer. The need for public hearings are assessed on a case by case basis.

Forest Practice Applications. Before any forest practice activities or site conversion activities (harvesting, reforestation, road construction or chemical application) can begin on private or State school lands in Washington State, the WADNR must approve such practices. The statutory authority is under Chapter 76.09 RCW and Chapter 222 WAC. The WADNR will require information on the location and extent of harvesting, road construction activities, borrow and disposal activities, methods and equipment size, need of right-of-ways, reforestation plans, stream crossing and drainage plans, indication of wildlife habitat to be removed, riparian protection, and location of water bodies.

The Burning Permit (Fire Protection). Under Chapter 76.04 RCW and Chapter 332-24 WAC, the WADNR regulates certain types of outdoor fires including burning permits for vegetation, forest or other wood debris, and recreational fires. The WADNR also helps protect air quality through its smoke management plan. A written burning permit is required year-round on land protected by the WADNR.

Dumping Permit. As part of its forest protection requirements under Chapter 76-04 RCW and Chapter 332-24 WAC, the WADNR also requires a permit for the dumping of forest debris of any kind in quantities that the agency declares would constitute a forest fire hazard on, or would threaten forest lands located within the state.

Bureau of Land Management Responsibilities

The Bureau of Land Management (BLM) is a cooperating agency with the Forest Service and the WADOE on the Crown Jewel Project EIS. As such, a number of BLM resource specialists representing various environmental and technical disciplines have and will continue to provide input into the Crown Jewel Project EIS process.

TOTAL P.06

Olympia Office:
101 D Legislative Building
P.O. Box 40482
Olympia, WA 98504-0482
(360) 786-7638

Washington State Senate

Senator Dan Swecker
20th Legislative District

District Office:
10420 173rd Ave. S.W.
Rochester, WA 98579
(360) 273-5890

August 23, 1995

Phil Christy, NEPA Coordinator
Tonasket Ranger District
1 West Winesap
Tonasket, Washington 98855

Dear Mr. Christy:

I have several comments on the draft Environmental Impact Statement for the Crown Jewel mine and some of the background on this project.

First, let me say, I am very familiar with this project and the Metals Mining and Milling (MM&M) legislation which governs it. I served as a member of the MM&M Interim Task Force set up by the 1994 act. I also served on the Senate Natural Resources Committee which adopted the 1995 MM&M Security legislation.

Both of these bills were considered solid compromises by all parties and were adopted unanimously or with strong majorities at every stage of the legislative process.

The 1995 bill dealt with certain sections of the 1994 Metals Mining Act that were needlessly complex and expensive, as well as in conflict with the 1993 Surface Mining Act. Again, representatives of the involved regulatory agencies, industry, the environmental community and local government worked by consensus as a task force to devise a modification without diluting the intent of the law. The legislature made its own minor changes to the new language and passed it unanimously.

Without the Crown Jewel project, there never would have been a 1994 Metals Mining Act. It is, and always has been, what this legislation is about. The process of developing the legislation has enabled the State to deliberate years in advance of any permitting decisions about this specific mine.

Although the 1994 Metals Mining Act is referenced throughout the DEIS document, the fact that the legislation was developed with this particular project in mind should be mentioned in the DEIS.

My second comment: It is important for DEIS readers to have a perspective about the number of gold mines operating in the State whose techniques and scale have singled them out for these expanded regulations.

When the 1994 Act was being deliberated by the legislature, four such mines were operating here. Since then, one has closed and one has begun the process of closing. Since the Crown Jewel is not yet permitted, one sole operating mine (Echo Bay Minerals Company) is covered under this Act and must bear the cost of the required increased inspections. The Act costs Echo Bay approximately $20,000 per year. Once permitted, this act will require substantial additional costs by the Crown Jewel project.

My third comment concerns the "gold rush" mentality predicted by opponents to this project.

While the DEIS discussion of future gold mining in the State aptly describes the minuscule likelihood of a "gold rush", those opposed to the Crown Jewel continue to try to raise this fear in the community. Gold mining is an expensive and lengthy proposition, and getting from exploration to mining is a rarity. Anyone who believes that the permitting of the Crown Jewel portends a gold rush in the state doesn't know much about modern mining. Mining properties in Washington State with substantial commercial potential are almost non-existent. This subject should therefore be discussed in more detail.

My fourth comment is about the Model Toxics Control Act public participation grant that was awarded to the Crown Jewel's opposition group:

Section 1 of the DEIS details the public involvement processes that were conducted concerning this mihing proposal. Noticeably missing is mention of the $10,000 grant awarded by DOE to the Okanogan Highlands Alliance and the Columbia River Bioregional Education Project to assist the public in being involved in the SEPA process. While it might be a source of embarrassment to DOE that the organizations awarded these funds are fighting to stop the mine, mention of this dubious grant should not be omitted.

In conclusion, the scrutiny that the Crown Jewel will be under and the standard it must meet as a result of recent legislative actions should put to rest the concerns of all but a very few whose sole intent is to stop the mine by any means possible. For them, there could be no laws stringent enough.

Of the alternatives described in the DEIS, I support Battle Mountain's plan (Alternative B). Any other approach would be economically unjustified and, I believe, environmentally questionable.

Thank you.

Sincerely,

Dan Swecker
State Senator
District 20

Washington State Senate

Residence:
P.O. Box 531
Long Beach, WA 98631
(360) 642-2519

Senator Sid Snyder
19th Legislative District
Majority Caucus Chairman

Olympia Office:
312 Legislative Building
P.O. Box 40482
Olympia, WA 98504-0482
(360) 786-7636

August 22, 1995

Mr. Phil Christy
Crown Jewel DEIS
U. S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Mr. Christy:

I am pleased to relay my comments on the Crown Jewel mine which is undergoing the EIS process.

I have followed the development of this mine since 1993 when the Senate Natural Resources Committee, of which I am a member, began its review of the State's metals mining regulations. From what I know of the company's plans for the Crown Jewel, Battle Mountain Gold has taken into account all significant environmental issues in order to design a mine that minimizes its impacts. It would seem to me, therefore, that the company's plan, Alternative B, will be the most feasible alternative.

Coming from a county where unemployment is chronically high, I empathize with the citizens of Okanogan County who would like to see the Crown Jewel permitted without delay.

I am confident that the laws and regulations which we have in place will assist the mine in operating as it was designed, and that permitting it will prove to have been wise decision-making on the part of the state and federal governments.

Sincerely,

Sid Snyder
State Senator, 19th District

Committees: Agriculture and Agricultural Trade & Development • Natural Resources • Rules • Ways & Means

Washington State Senate

Senator George L. Sellar
Republican Caucus Chair
12th Legislative District

August 23, 1995

Phil Christy
Crown Jewel DEIS
U.S. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Mr. Christy:

This letter is intended as a public comment regarding the Crown Jewel gold mine. I support Battle Mountain's proposal and the Alternative in which it is described in the Draft Environmental Impact Statement, Alternative B.

I have personally met with representatives of Crown Jewel several times. They have repeatedly expressed to me their intention to "be a good neighbor". Their DEIS, Alternate B reflects their sensitivity to the environment.

The public should expect that regulatory agencies will base their permitting decisions on sound science, whether considering a wildlife refuge or a gold mine. It is clear from this Draft EIS that the mine will not do irreparable harm to the environment and should be approved. While the document spells out a number of unlikely scenarios that could hurt wildlife and the area's environment, the assessments ultimately show that with mitigation, these impacts can be minimized during and/or after the closure of the mine.

This project is very important to Okanogan County. I urge that the system deliver its decisions in a timely way. Many people are counting on it.

Sincerely,

George Sellar

GEORGE L. SELLAR
State Senator

Olympia Office: 302 Legislative Building • P.O. Box 40412 • Olympia, Washington 98504-0412 • (360) 786-7622
Home Address: 1324 Terrace Drive • East Wenatchee, Washington 98802 • (509) 884-7511

Recycled

Olympia Office:
414 John A. Cherberg Building
P.O. Box 40410
Olympia, Washington 98504-0410
(206) 786-7618

Washington State Senate

Senator Mary Margaret Haugen

10th Legislative District

Home:
1268 N. Olsen Road
Camano Island, Washington 98292
(206) 387-5181

August 29, 1995

Phil Christy
U.S. Forest Service
Tonasket Ranger Dist.
1 West Winsesap
Tonasket, WA 98855

Dear Mr. Christy:

I am writing to comment on the draft document of the Environmental Impact Statement for Battle Mountain's gold mine proposal in Okanogan County. I have seen the site first hand and know that while its isolated setting is pristine, the clear-cut which presently inhabits the space where the pit will be located can hardly be considered so. The proposal as defined by Battle Mountain in Alternative B represents the best configuration for extracting the resource with the minimum cumulative impacts to the environment; so I support Alternative B.

I am a member of the Senate Natural Resources Committee, and served in this capacity during the 1994 legislative session when the 1994 Metals Mining Act became law. I would call your attention to two of the Act's provisions which are not mentioned in the DEIS. Though I believe both are unnecessary and set bad precedents in State law, they should be described in the document to give readers a complete picture of the scrutiny this mine will be under as well as the penalties it will be subject to should it violate any of its permit conditions.

The first is the citizen observation provision which allows citizens to observe and verify DOE's taking of water samples on the mine site. This enables individuals concerned about water quality and about the government's veracity in monitoring the mine to see for themselves that the samples have been taken and the results of the tests are in compliance with permit requirements.

The second is the citizen suit provision which allows citizens to file against the regulatory agencies or the mining operator if a mine is out of permit compliance and all other citizen suit provisions in other statutes have been exhausted.

Thank you for your attention to the above comments.

Sincerely,

Mary Margaret Haugen

MARY MARGARET HAUGEN
Senator 10th District

MMH:jw

The Draft Environmental Impact Statement demonstrates that the Crown Jewel gold mine can be operated in an environmentally responsible manner. This state of the art mine will meet all applicable federal and state regulatory requirements.

We support this project as proposed by the Battle Mountain Gold Company (Alternative B). We urge our public officials to expedite the Final EIS and the remainder of the permitting process.

NAME Earl Marcellus - Chelan County Commissi

STREET ADDRESS Chelan County Courthouse

CITY Wenatchee STATE Wa ZIP CODE 98826

TOWN of TONASKET

POST OFFICE BOX 487 TONASKET, WASHINGTON 98855 TELEPHONE 509/486-2132

August 25, 1995

U.S.D.A. Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, Washington 98855

RE: Crown Jewel Mine Draft Environmental Impact Statement

Dear Ladies and Gentlemen:

The City Council of the City of Tonasket, Washington took action at the regularly scheduled Council meeting on August 22, 1995 to support the Crown Jewel Mine Alternative B - Proposed Action, as stated in the Draft Environmental Impact Statement.

The vote was unanimous, one councilmember absent from the meeting.

Sincerely,

Thomas W. Fancher

Thomas W. Fancher, Mayor

TWF/aja

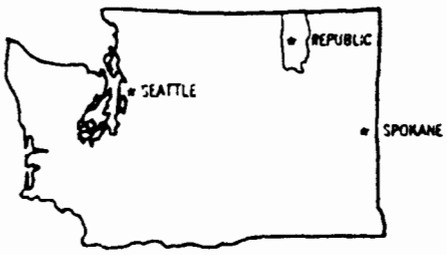
TMI#: 4584

Hello, I'm Tom Fancher, Mayor of the City of Tonasket. Tonight I would like to comment on the economics of the DEIS. The demand for improvement of roads, streets, sewer, water system, and other services provided by state, county, and local government, is on the increase. Our governments have no way to generate more money to cover these services except to increase taxes, which nobody wants. Or, we can broaden our tax by encouraging new business in our county. The Crown Jewel Mine will broaden this by property taxes, increased wage base, and helping solve the high unemployment rate in the north end of the county by employing 80% local people. Also, as a tax base broadens, the burden of property, taxes, school, and other taxes are decreased on taxpayers of Okanogan County. With the help of the Crown Jewel Mine and spinoff business to serve the mine, our economic structure will improve and encourage other businesses to locate in the county, and broaden our tax base. I also support Alternative B, as the most environmentally and economically sound plan of all the alternatives. With the new stringent mining laws in the state of Washington, Okanogan County will have a state-of-the-art mine, which residents can be proud of. It is time to get this project started, and no more hold-ups. Thank you. (Applause).

TMI#: 4596

Thank you. My name is Don Lane. I'm the Chief of Police of Oroville, Oroville Chamber of Commerce president, past Kiwanis president, and I also own land on Pontiac Ridge. I also have cattle, in the Okanogan. So, I found out tonight that I'm not a local. My cattle aren't local, they'll be devastated when I tell them. (Laughter).

I've come here tonight to talk, not about the draft EIS, which a lot of people have not talked about it. I've come to talk about Battle Mountain Gold, and the money that they've given to the community. They've given to up and down the valley over $15,000 per year in
donations which each one of us has benefitted in some way, even though some of us may not want to admit it. On behalf of the Chamber of Commerce I want to read a statement out of a letter that we sent out. "Creating new well-paying jobs in our local community is something chambers members think about every day. Instead of just thinking about it today, we decided to do something about it by speaking with you. I am here to tell you about the single biggest jobs-issue that will face the citizens of north central Washington this year--the future of our local mining industry. Mining has been an important part of our history for over a century. Mining industry has fed a lot of families over the years. We know we can mine and protect the environment, especially under today's tough regulations. Now mining has come under attack by some who want to kill the Crown Jewel Gold Mine as part of the bigger effort to shut down the mining industry in our state. It's up to us, as citizens, to defend this historic industry, our traditional way of life, in the proposed mine. We support Battle Mountain Gold Alternative B." Thank you. (Applause).



ED F. WINDSOR, Curlew-District 1
JAMES M. HALL, Republic-District 2
GARY W. KOHLER, Inchelium-District 3

FERRY COUNTY
BOARD OF COMMISSIONERS
and BOARD OF EQUALIZATION

POST OFFICE BOX 498
REPUBLIC, WASHINGTON 99166-0498
TELEPHONE (509) 775-5229 • FAX (509) 775-2492
Shilah Moores, CMC
Clerk of the Board

August 28, 1995

Phil Christy
U.S. Forest Service
Tonasket Ranger District
P.O. Box 466
Tonasket, WA 98855

RE: Crown Jewel EIS

Dear Mr. Christy:

The Ferry County Board of Commissioners supports the proposed Crown Jewel Mining Project i Okanogan County, Washington, as outlined in Option B of the EIS. With all of the new technology an safeguards in place, we do not feel that this project will pose a threat to the health and welfare of the resident in the surrounding area. The Crown Jewel project will be a strong economic benefit to both Okanogan Count and Ferry County, as it will provide employment to residents of both counties.

After closure of this mine, we would like to see the pit left open to eventually fill in and become a lak This lake would hold back spring runoff waters and help to maintain the year-around stream flows in th drainage areas. It would also provide an additional recreation area for the residents and visitors of Okanoga and Ferry Counties.

We do not feel that any further delay of this project is warranted, and strongly encourage the U.S. Fore Service and the Department of Ecology to proceed with issuing the necessary permits to allow these operatio to proceed. Thank you for your consideration of our comments.

Sincerely,

FERRY COUNTY BOARD OF COMMISSIONERS

Ed F. Windsor
ED F. WINDSOR, Chairman

James M. Hall
JAMES M. HALL, Member

Gary W. Kohler
GARY W. KOHLER, Member

cc: Department of Ecology
Okanogan County Board of Commissioners

TMI#: 4562

I'm Ed Windsor, Ferry County Commissioner, but I would like to put that aside, and because I'm a downstream person, that Nicholson Creek runs in to Toroda Creek in my property. I have no feeling, whatsoever, that the mine will impact Nicholson Creek, or Toroda Creek where they enter into my property. I have allowed the mine, for the Crown Jewel, for the last two years to take water samples, water flows, in my property, so that they would have a good baseline to measure the future of this mine. I feel that Alternate B would be the way to go. I've lived in Ferry County practically all my life, I've been around, around all of the mines there. The Knob Hill Mine, Echo Bay's mines. They've had cyanide leaching ponds, I have to date, to see anyone, or any thing harmed or damaged by these ponds. I really feel that there's a lot of hate and discontent here, and people that don't like this, when indeed, they are not knowledgeable of what an open-pit mine, or a cyanide leaching pond is all about. Thank you.
(Applause).

TMI#: 4534

Good evening. My name is Jim Hall. I'm a county commissioner from Ferry County. My wife and I drove down here because we're very concerned about the time it's taken to permit this mine. Either it's right or it's wrong. You can break business. We have too much socialism, too much welfare in our country. This is not the way our country was founded. Our country was founded, people breaking their backs, and being able to keep what they earned. Back in the late-1800s, early 1900s, the counties were the ones that had the power. Seventy-five percent of the money went to the county, 25 went to the state. It worked out well. That way we were able to govern and do what was right for our constituents. Obviously this is turned around, with liberalism and socialism. In 1994 we had an election, and it was to throw the bums out, because the bums weren't doing what was right. Now, I might have three-and-a-half years left, if I'm a bum they can throw me out, but I ran to defend the rights of our people. We are also very dependent on resources, we're a neighbor, right adjacent, to Okanogan County. The tributaries, a couple of them, come down into our county. We're very concerned about the environment, that things are done right, but we also know how important it is that we have jobs. We deal with the BLM trying to help out Echo Bay. It's very important, I could talk on some of these other issued, but they've been beat to death tonight. But I feel it's important that these agencies get the message. Get the job done. Either it's right or it's wrong. It doesn't take forever to do this, and you can break companies, you can break people, but the paid environmentalists, they go right on. It doesn't seem to hurt them. I think it's time for our government to start helping the people that are paying the welfare bums that fight us. To me it's that simple. Thank you. (Applause).

Proposed Crown Jewel Project

COMMENT FORM

Your comments must be submitted *no later than August 29, 1995* *to the Tonasket Ranger trict. For more information see addresses at bottom of page.*

Your Name FERRY COUNTY NOXIOUS WEED CONTROL BOARD
Address POBOX 372 REPUBLIC WA 99166

Your Property Description Township _____ Range _____ Section _____

YOUR COMMENTS concerning Draft Environmental Impact Statement for proposed Crown Jewel Gold Mine.

THE FERRY COUNTY NOXIOUS WEED CONTROL BOARD'S CONCER. IS FOR NOXIOUS WEEDS. ALL DISTURBED SITES SHOULD BE RECLAIMED AND SEEDED TO THE APPROPRIATE VEGETATION AS SOON AS POSSIBLE AFTER IT IS DISTURBED BOTH FOR WEED CONTROL AND FOR EROSION CONTROL. ALSO A POLICY FOR CLEANING OF EQUIPMENT BROUGHT FROM OTHER AREAS SHOULD BE MADE PART OF THE PLAN IF IT IS NOT ALREADY.

...Continue comments on back

Send comments about proposed Crown Jewel Project, by Aug 29, 1995 to:

Phil Christy, Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855
(509) 486-5137

For more information or questions, you may also contact:

Patricia Betts
WA Dept. of Ecology
POB 47703
Olympia, WA 98504
(360) 407-6925

Stuart R. Gillespie
Columbiana—CRBEP
Chesaw Route, Box 83-F
Oroville, WA 98844
(509) 485-3844

TMI#: 4551

I'm Ed Teeley, I'm a county commissioner in Okanogan County, but I'm going to speak tonight from my own personal perspective. The draft EIS is covered in great detail. All of the problems, and the proposed operation of the Crown Jewel Project, as well as many other perceived problems and solutions. After a very, very, very, VERY long process, the two lead agencies have come up with the draft EIS. Nowhere in that document does it show that there are a serious deficiencies in Battle Mountain's plan. This plan is not some pie-in-the-sky-type operation. There are some 30 other operations worldwide, and within 50 miles of here, we have a operating mine just like the one that's going be here, and that's been operating now for three years, and has not caused any problems. Our correspondence with the Federal Bureau of Mines supports Alternative B of the EIS as the best alternative for the project. I have one concern that the future permitting of this project and the water portion, especially, it not lost in the great black hole of the DOE. We have been three and four years trying to get some water permits out of that thing, and I feel that the precedents should be set, and that the DOE spend some time looking at and processing the permits for the Battle Mountain Gold. Thank you very much. (Applause).

Battle Mountain Gold Final Draft EIS comments - Ed Thiele, Okanogan County Commissioner

June 24, 1996

1. The text is too voluminous and the answers do not adequately cover many questions, thus leaving the readers to make their own (possibly incorrect) assumptions.

2. Too often the exception is emphasized, rather than the norm, allowing room for challenge.

3. It is hard to grasp the concept as a whole, without the missing notes.

4. The format and consistency do not follow through, section to section. Some sections address problems well and are readable and understandable. Others contain too much scientific jargon. The conclusions are too technical - they need to be written in language that the average citizen could read and understand.

5. The document is too political, and is not truly a technical document. Why are tribal water rights addressed (pg. 344, chapter/section 3.91, Introduction to Waters, summary section 4.8 - 4.11)?

6. Does "Fish and Wildlife" refer to the Washington State Department of Fish and Wildlife? Are they currently working on all of the items listed as: "Defer to Fish and Wildlife"?

7. The non-accomplishable alternatives should be omitted, as most of them need 15 - 20% more work to make a true and complete EIS.

8. The document needs a better cover letter or preamble.

9. Under "Wildlife", it was stated several times that if a spill occurs, significant impacts would occur. However, no specifics are given. What would it affect?

10. Water fluctuation occurs more under the east side of the lookout fault than under the west side of the lookout fault. How do they know, as no test wells are in the area, despite the fact that it is where the main deposit is located? Is it based on scientific data, or just a guess/wish?

OCCED

Okanogan County Council
for Economic Development

August 17, 1995

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL # of pages ▶ 2
To Phil Christy From Pat
Dept./Agency Phone # 9/8
Fax # Fax #
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Mr. Sam Gehr, Forest Supervisor
Okanogan National Forest
1240 South Second Avenue
Okanogan, WA 98840

Mr. Pat Spurgin, Regional Director
Central Regional Office
106 South 6th Avenue
Yakima, WA 98902

Dear Sirs:

Thank you for the opportunity to comment on the Crown Jewel Mine Draft Environmental Impact Statement. I want to commend you for the information contained within the Draft Environment Impact Statement Summary. It was well written and easy to follow. We appreciate the complexities of this project and look forward to the final record of decision after the first of the year, 1996.

Historically mining has been an important part of Okanogan County's economy. It is one of our earliest forms of economic development, second only to fur trading in 1800's. Mining ultimately lead to the settlement of many areas within the county. Although it has slipped as an economic force during the 20th century, we are delighted with the potential resurgence of this important industry.

With the decline of the timber industry and the loss of many family wage jobs, the timing of this project has become extremely important. Many of the skills of those formerly employed in the wood products industry is readily transferable to the mining industry. We have been encouraged by Battle Mountain Gold's (BMG) commitment to hire the majority of their employees locally, thus replacing, and in some cases adding family wage employment to this economic and timber distressed area. Okanogan County has been designated an economically distressed and a Tier 1 Timber Impacted county (we have been identified as one of Washington's 10 most timber impacted counties) and is presently participating in President Clinton's Federal Economic Adjustment Initiative.

The OCCED's long-term economic diversification plan recognizes the importance of this project, but also realize that there is still work that needs to be completed before we have a diverse, well balanced economy.

P.O. Box 741 Okanogan, WA 98840 (509) 826-5107

The Crown Jewel Project will create over 200 construction jobs and at a minimum over 150 permanent jobs during the life of the project. The majority of these jobs will pay an annual salary well above our county's annual average. In addition to these direct jobs there will be a number of spin-off employment opportunities. We anticipate the development of no less than five new businesses as a direct result of the Crown Jewel Project.

Local and state government will enjoy a substantial one-time windfall of new taxes. Taxes paid by BMG during the life of the project will provide badly needed local tax revenue. Local municipalities, school districts, and county government will all benefit with the increased tax revenue. As a future major employer and a member of Okanogan County's business community, BMG has been exemplary in its contributions to community affairs.

We would like to see additional emphasis placed on the above mentioned aspects. We feel that they have been downplayed.

After a through review of the Draft Environment Impact Statement Summary, we would like to provide the following testimony. The OCCED Board of Directors supports the implementation of Alternative B and its plan of operation in its entirety. After careful consideration of the other Alternatives, we find that Alternative E would also be a feasible plan, but would place an unreasonable monetary hardship on the company with no significant environmental benefit. Alternatives C, D, F, and G raise serious questions regarding the economic feasibility and in fact we feel that they are not economically viable. As private industry is in business to make a profit, we recognize the importance of BMG's purpose and objectives to recover as much of the mineral deposit as is technically and economically possible, at a maximum rate of return for its investors. We also recognize the importance of federal, state, and local governments responsibility to the environmental concerns, as well as public safety and the safety and well being of those employed at the mine.

We encourage the U.S. Forest Service in its record of decision to select Alternative B. It is our hope that with the participation and coordination of all entities involved in the permitting process that there will be no further delays. Thank you again for the opportunity to provide this testimony.

Sincerely,

Ron D. Nielsen

Ron D. Nielsen
Executive Director/OCCED

cmd

cc: BMG
cc: 7th District Legislative Representatives

TMI#: 4592

I'm Ron Nielsen. The executive director of the Okanogan County Council for Economic Development, and Small Business Development Center. We are the associate development organization for Okanogan County. Historically, mining has been an important part of Okanogan County's economy. It is one of our earliest forms of economic development. Second only to trading. Mining ultimately has lead to the settlement of many areas within the county. Although it has slipped as an economic force in the 20th century, we are delighted with the potential resurgence of this important industry. With the decline of the timber industry, and the loss of many family-wage jobs, the timing of this project has become extremely important. Many of the skills of those formerly employed in the wood-products industry is readily transferrable to the mining industry. We have been encouraged with Battle Mountain Gold's commitment to hire the majority of their employees locally, thus replacing, and in some cases, adding family-wage employment to this distressed economically and timber-distressed area. OSED's long-term economic diversification plan recognizes the importance of this project. But we also realize that there still is work that needs to be completed before we have a diverse and well-balanced economy. The Crown Jewel Project will create over 200 construction jobs. And at a minimum over a hundred-and-fifty permanent jobs. The majority of these jobs will pay an annual salary well above our county's annual average. In addition to these direct jobs, there will be a number of spinoff employment opportunities. We anticipate the development of no less than five new businesses as a direct result of the Crown Jewel Project. Local and state government will enjoy a substantial one-time windfall of new taxes. Taxes paid by Battle Mountain Gold during the life of this project will provide badly needed local tax revenue. After a thorough review of the draft environmental impact summary, we would like to provide the following testimony.

The OSED Board of Directors supports the implementation of Alternative B, and its plan of operation, in its entirety. After careful consideration of other alternatives, we find that Alternative E would also be a feasible plan, but would place unreasonable monetary hardship on the company with no significant environmental benefits. Alternative C, D, F, and G raise serious questions regarding their economic feasibility. And in fact, we feel that they are not economically viable options. As private industry is in business to make a profit, we recognize the importance of Battle Mountain Gold's purpose, and objectives to recover as much of the mineral deposits as is technically and economically feasible at a maximum rate of return for its investors. We encourage the U.S. Forest Service, and its record of decision, to select Alternative B. It is our hope that with the participation and coordination of the entities involved in the permitting process, there will be no further delays. Thank you for this opportunity to testify. (Applause).

Commissioners
Spencer W. Higby
Dave Schulz
Edwin E. Thiele

Okanogan County Commissioners' Office

237 Fourth North - Administration Building

Administrative Coordinator
Dan Powers

Clerk of the Board
Brenda J. White

August 24, 1995

Phil Christy
U.S.F.S.
1 W. Winesap
P.O. Box 466
Tonasket, WA 98855

RE: Comments on Crown Jewel Project

Dear Mr. Christy:

The enclosed are copies of both negative and positive comments received by this office on the Crown Jewel Project. Most of the negative comments were directed to the economic report prepared by Huckell / Weinman for Battle Mountain Gold. Negative comments were made by 23 people.

The bulk of the positive comments (142) includes a senior citizen petition and letters of support by the cities of Oroville and Tonasket, Chambers, Granges, resource organizations, and Okanogan County Council for Economic Development (OCCED). It is our assessment after these letters, phone calls, and many personal conversations with local citizens that the Crown Jewel Project has overwhelming support in Okanogan County.

Please review these letters in your deliberations.

Sincerely,
BOARD OF COUNTY COMMISSIONERS

Spence W. Higby, Member

Enclosures

Phone (509) 422-7100 *P.O. Box 791, Okanogan, Washington 98840* *FAX (509) 422-7106*

July 7, 1995

To: Okanogan County Commissioners
POB 791, Okanogan WA 98840.
FAX 509-422-7106

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

From: Geraldine Payton & Stuart Gillespie
Chesaw WA

RE: Crown Jewel Project
ECONOMIC & FISCAL ANALYSIS
Prepared by Huckell/Weinman Associates Inc.
for the Okanogan County Commissioners

We respectfully request that you hold a meeting in Chesaw before making a decision to accept the Huckell/Weinman Associates Fiscal analysis for the Crown Jewel Project (CJP).

Mining development has the potential to affect the north Okanogan country just as much as the proposed Early Winters development had on the Methow Valley. The county has provided extensive planning services in the Methow Valley as a result of development. Fairness dictates that good public process be extended to the residents of the Highlands who will be affected by mining development.

The Commissioners have demonstrated in adopting the Local Control Land Use Resolution that they consider local land use decisions to be a proper function of county government. This responsibility calls for excellent public process to be successful.

The quality of life associated with purchasing property for a wholesome living environment in the Highlands will be impacted by the CJP. Every effort should be made to balance minerals development with safeguards for the properties and quality of life of existing residents. It is our hope that the Commissioners will extend themselves to ensuring that such a balance is diligently sought.

Chelan County offers a good example of how a county government can offer a process whereby resident's concerns are brought to the table, and balanced with the necessities of mineral development. Chelan County Planner, Ed Lloydhammer, spoke extensively to this process in his role of representing county government in the Legislative Task Force on Mining in Olympia, during the winter of 1993-94. We hope that Okanogan County will follow the example of Chelan County in this matter.

1. What is the real potential impact of mining development in the Highlands ?
The Crown Jewel Project on Buckhorn Mt. is said to encompass approx. 1,000 acres.
Yet, a **Battle Mountain Gold Company stock prospectus** states that the Crown Jewel project covers approx. 9,000 acres of land in northeastern Washington. (Salomon Brothers Inc., Lehman Brothers, May 13, 1993.)
Where are the other 8000 Crown Jewel Project acres located ?
Washington Geology Journal of March 1995, on pages 9-10 lists 4 other active gold claims in the Highlands, 3 more close to Oroville, and 3 others between Oroville and Loomis. (WA Dept. Natural Resources [DNR], Division of Geology & Earth Resources, Olympia WA).
Once a mining/milling facility is in place, will other nearby ore bodies ("replacement reserves" in mine

industry language) be mined and trucked to Buckhorn Mt. for processing?
Patenting of Crown Jewel Mining Claims. On page 3-191 of the CJ DEIS, it is stated that BMG has applied to patent a total of 925 acres. 605 acres are for mill sites, located on the headwaters of both Marias and Nicholson Creeks. We believe the number of mill site acres represents the increase in land necessary to expand the tailings facility to incorporate tailings from other ore bodies which will be processed after the Buckhorn Mt. ore body is exhausted.
What impact on the visual landscape, roads, air, water, services, etc. will excavating other ore bodies in the North Okanogan have on the environmental quality new residents have moved here for ?

Roads. Does the Huckell/Weinman analysis accurately portray the impacts to county roads from potential minerals development? What if other ore bodies are excavated and trucked for processing?
Pontiac Ridge Road. Residents on this road will be severely impacted by mine traffic. This is a dirt road. A great deal of water will be used to keep the dust down. Or chemicals, which could leach into ground water supplies. This situation will last ten years, at least. Please consider the need to pave Pontiac Ridge Road. Paving would take care of both dust and reduce traffic noise. The residents deserve this. Pontiac Ridge is a beautiful place with views of the valley and superlative quiet, making homesites here very desirable.
Chesaw to Lost Lake & Bonaparte Resort. This road is already dangerous, with several blind spots on narrow road next to steep canyon. Increased use of this road should be examined.

The Village of Chesaw. People here expect that there will be residential development if the mine goes in. Among the concerns are routing the main road away from the village, past the Leslie Ranch, as was suggested by the State DOT several years ago.
Sewage treatment plant, possibly on the wetlands, similar to Conconully. As it is now, businesses and residences on the west side of the village cannot expand because there is not enough room for approved septic systems on the small lots.
Recreation. There are no recreation opportunities for adults or children. The tavern is the only gathering spot. This is not healthy.
Police. The CJP DEIS stated that it will probably be necessary to have a law enforcement officer for the Highlands if the mine goes in. Living next to the tavern, and seeing the numbers of people who drive while drunk gives us cause for concern.
Litter, trash collection, recycling.

3. People coming to work at the Mine. Where will they live ?

Housing. Huckell/Weinman says that about half of immigrating employees will build homes. This does not jibe with experience in other mining communities, i.e., Montana (*Hard Rock Mining Impact Board, personal communication*). The ten year life of mine will not encourage people to take on a 20 year mortgage. When mine closes, a surplus of housing may occur, making it difficult to sell home. They will most likely bring trailers onto a site, which does not provide the same employment and tax base.

Mine construction is estimated to require approx. 250 people. In Ferry County, during construction of the new Echo Bay mine, construction workers lived in parks, tents, trailers, and mobile homes. Litter and garbage collection became a problem. Parks and public restrooms were impacted. Many were single males; increases in police and substance abuse services were needed. (*Results of Contacts with Other Mine Operations*; E.D. Hovee & Co., for USFS & WDOE, Crown Jewel Project; January 1993).

Operations Employees. A table on the last page of the DEIS Summary gives a range of anticipated mine related population increase from 140 to 406 residents.
However, the Huckell/Weinman analysis (prepared for county govt.) uses only 87 new residents for their projections. This is due to a conflict over BMG's assertions that they will hire 80% of their

workforce locally.
In Ferry County, the new Echo Bay mine hired only 28.6% of its workforce from Ferry County. 27.1% were from other WA counties, while 44.3% were hired from out of state.

Unemployed seeking jobs. See next section.

What other impacts to local government might occur ?

A series of interviews conducted for a legislative briefing book produced the following information from Ferry County: "While wages for some locals have gone up, housing and taxes have gone up as well. Local government has become more complicated and costly." "The most important negative impact...is associated with a decline in the area's visual resources produced by mine development. Visual impacts from poorly planned mobile housing development have lowered property values." "The availability of jobs in new mining have brought increased numbers of unemployed to Ferry County seeking those jobs. Although more people are employed in mining, the overall numbers of unemployed in the county has increased, and the governmental services needed to address the needs of unemployed have likewise increased." (*Cyanide-Leach Mining in Washington - Creating A New Regulatory Structure For A New gold Rush*, Washington Coalition for Responsible Mining, 1993; page 26).

Public Process - Must the Conflict Continue ?

Other mining states require that a *Local Impact Committee* be established. This brings affected landowners and the mining company to the table to discuss things, and work out solutions to everyone's concerns.
In Wenatchee the Asamera Canon Mine operated in a nice residential neighborhood. The Chelan Co. Planning Office set up a committee of residents and company to work out the problems. *Trust* was established between the stakeholders.
By contrast, in San Luis Colorado, site of another Battle Mountain Gold Mine, the company did not work with established landowners and community interests. High levels of tension and mistrust still occur in San Luis between the community and the mine operation.
In Okanogan County there is a high level of conflict over the proposed mine. Newer residents of the Highlands who value the high quality of life here are left out of county level public process. This is not good government.

3. Acknowledge that growth and vitality of Okanogan's economy is due to people moving here because Okanogan County is a quiet, clean, and beautiful place to live.
Dr. Tom Power, Chairman of the Economics Department at the University of Montana has reviewed the socio-economic studies done for the Crown Jewel DEIS. This review has been sent to the County Commissioners.
Dr. Power shows that in Okanogan & Ferry Counties the extraction industries - mining, agriculture and logging - show no growth trend in the last 25 years. Yet the economy of the two counties has nearly doubled in that time.

a. Real income expanded by 80%.
b. employment expanded 55%.
c. population grew 45%.

What explains this substantial economic vitality despite the overall lack of growth in the natural resource extraction base?

Dr. Power explains that in the U.S. since World War 11, people have moved to preferred living environments, and economic growth has followed them. Since the 1970's, many western U.S. counties have seen a constant in-migration of new residents drawn to live here because of the

"quality-of-life amenities of the region. **The high quality natural & social environment is attracting new residents and businesses.** Hundreds of jobs and tens of millions of dollars per year have been added to the Okanogan and Ferry County economies as a result of amenity-based economic vitality.
Power says, "Given that the quality of the County's natural environment is an important part of its economic base and the source of the ongoing economic vitality, anything that threatens that natural environment has to also be seen as threatening that economic base and that economic vitality."
Power's analysis shows that the Crown Jewel Project will add only a 1.1% increase in the income of the two county area.
If the gold mine undermines the area's reputation for a high quality living environment, it kills the goose that has been laying the golden eggs in the region.

In Conclusion, please:

1. Don't sign off on the Huckell/Weinman Economic Analysis without further consideration. Wait at least until the DEIS comment process is finished.
2. Represent all existing landowners. Seek out the concerns of people in the Highlands. Establish a Local Impacts Committee, made up of people in the Highlands who will be impacted because of the mine.
3. Keep your options open. Be aggressive about protecting the county's long term interests. This agreement will last the life of the mine.

I hereby state that
I Paul Wakefield Discipio
of Battle Mountain Golds
Fiscal Impact Statement
ANALYST

RECEIVED
JUL 1 0 1995
OKANOGAN COUNTY COMMISSIONERS

June 26, 1995

To: Okanogan Board of Commissioners
From: Geraldine Payton and Stuart Gillespie, Chesaw

RE: Crown Jewel Project Economic and Fiscal Impact Analysis

GOAL: A SOCIETY TO MATCH THE SCENERY

The Beauty and Quality of the Okanogan Highlands has been chronicled in several places, locally, regionally and nationally.

As *Wallace Stenger*, a well known historian and writer about the west has said, "What we need in this great West facing many challenges for the future, is a Society to Match the Scenery." Only then will the will and resources to preserve what is best about the West become available.

We ask the County Commissioners to appoint a Local Impacts Committee, under the direction of the professional guidance of the Planning Dept. or a planning contractor.

PRECEDENT:

CHELAN COUNTY: Local Impacts Committee under direction of Planning Dept. During legislative hearings on the proposed Washington Metals Mining Act, **Ed Lloydhammer** of Chelan County testified extensively to the **excellent results** of having local property owners, interested citizens, company and county facilitate issues and concerns regarding impacts to the private lands and county infrastructure surrounding the mine operation.
MONTANA: Hard Rock Mining Impact Board
JUNEAU: Borough Planning Authority
MICHIGAN: **Local Impacts Committee** 1. facilitates communications between company and itself. 2. Analyzes implications of mining on private lands and local infrastructure. 3. Reviews and comments on reclamation plans. 4. Develops solutions to mining-induced growth problems. 5. Formulates recommendations to Board of Commissioners.

PLEASE EXAMINE CAREFULLY THE FOLLOWING DOCUMENTS

1. Washington Geology, March 1995. Shows extent of mineral development potential in the Okanogan highlands and valley.

2. BMG Stock Prospectus: Shows project area to be **9000 acres**.

3. Results of Contacts with Other Mine Operations. Prelim. Draft #1. Jan 19, 1993. ED

BOARD OF COUNTY COMMISSIONERS
Grant County, Washington

A RESOLUTION OF THE GRANT COUNTY COMMISSIONERS SUPPORTING OKANOGAN COUNTY IN IT'S REQUEST FOR AN INQUIRY INTO THE DELAY IN PREPARATION OF THE DRAFT EIS FOR THE CROWN JEWEL PROJECT

RESOLUTION NUMBER 95- 50 -CC

WHEREAS, officials from all counties in eastern Washington State gathered together at Sun Mountain, Okanogan County, Washington for the purpose of education and briefings from the Washington Association of Counties' staff; and

WHEREAS, the County Commissioners from Okanogan County presented a history of the delays in the development of a draft Environmental Impact Statement on the Crown Jewel gold mining project in northern Okanogan County; and

WHEREAS, the Co-lead agencies in the development of the draft EIS are the U.S. Forest Service and the Washington State Department of Ecology; and

WHEREAS, the following has been the schedule for the development and completion of the draft EIS on this project:

1. The first draft EIS deadline was stated in the initial publication notice as December, 1992.

2. By the fall of 1992 the applicant was advised not to expect a draft EIS until the spring of 1993.

3. On April 15,1993 the agencies announced publicly that the draft EIS would be ready by June of 1993.

4. In June, 1993 the applicant was advised that the draft would be out in the fall of 1993.

5. In August of 1993 the deadline was changed to October, 1994

6. In August 1994 the deadline was changed to March 31,1995.

7. On March 31,1995 the deadline was moved to June, 1995.

WHEREAS, a representative of the forest service, who is involved in the preparation of the EIS. has appeared at meetings related to this project wearing an anti-mining shirt. And in addition, a representative of the Wildlife division of the Forest Service has made public statements that this project will never receive approval. The record indicates that the wildlife portion of the EIS has been studied three separate times during this process; and

WHEREAS, as with any such document, a consultant was hired to prepare the draft document We understand that the consultant hired to prepare the draft EIS, a company with considerable expertise in the preparation of such documents for mining operations, has written several letters to the joint lead agencies, the Forest Service and Department of Ecology, complaining that the continual unwarranted delays in the release of a draft document could damage said firm's reputation in the mining industry; and

WHEREAS, this concern by the consultant is warranted by the disclosure of facts relating to a study of mining projects from April of 1988 to late 1993. During this period the National Forest Service and Bureau of Land Management processed draft EIS documents for 16 mining projects in an average of 13.5 months. There appears to be nothing involved in the current proposal which could warrant a process three times as long as the average; and

WHEREAS, the only difference between this project and those processed during the above referenced project time frame is the presence of the Department of Ecology as co-lead agency; and

WHEREAS, Okanogan County has a history of mining and resource development and has determined that this project clearly fits within its customs and culture as defined by a recent citizen report. The Commissioners of Okanogan County believe that the time has come to investigate why the officials that were entrusted with this project have totally failed that trust. Based upon the facts set forth above the County Commissioners of Grant County support such an investigation so that what has happened in this case will not be repeated on public lands in other counties, and

WHEREAS, County officials recognize the need to protect the environment during these types of projects and are directly responsible to the citizens who reside in eastern washington, We desire to see as little disruption as possible to the natural beauty of the region. However, the Okanogan County Commissioners have reviewed the mitigation proposed by the applicant and believe that they have provided sufficient safeguards to protect the environment. The draft, which sets forth these mitigation proposals, should be published immediately so a comment period can begin on these proposals;

NOW, THEREFORE, THE GRANT COUNTY COMMISSIONERS TO HEREBY RESOLVE AS FOLLOWS:

SECTION 1. We fully support the request of the Okanogan County Commissioners for a Congressional Inquiry into the performance of the U.S. Forest Service in the preparation of the draft EIS for the Crown Jewel gold mining project in said county.

SECTION 2. We fully support the request of the Okanogan County Commissioners to the Governor for a State Inquiry into the performance of the Department of Ecology in the preparation of the draft EIS for the Crown Jewel gold mining project in said county.

SECTION 3. That these agencies should not use these investigations as an excuse to further delay this project, but on the contrary, they should be instructed to devote the necessary resources to publish the draft EIS by June 1995 and complete the permitting process by the end of January 1996.

Dated this 24th day of April, 1995

_____, Chairman

ATTEST:

_____
Clerk of the Board

_____

_____

GRANT COUNTY COMMISSIONERS
Grant County, Washington

OC 3 Okanogan County Citizens Coalition
Box 273
Omak, WA 98841
509-826-0100
Fax 826-3929
United For Mulitple Use Resources and Constitutional Government

December 29, 1994

RECEIVED
DEC 30 1994

Department of Ecology
3601 W. Washington Ave.
Yakima, WA 98903

SUBJECT: Crown Jewel Project - Water Resources Plan

The Okanogan County Citizens Coalition (OC3) is made up of 13 grassroots member groups which support multiple land and resource management. OC3 fully supports the water resources plan put forward by Battle Mountain Gold Company for the Crown Jewel Project.

Battle Mountain Gold (BMG) developed the water resources plan through extensive research done by highly qualified hydrology and hydrogeology experts. This scientific research shows there is adequate water to implement the plan as presented. The plan is very well designed to protect water quality downstream and conserve water wherever possible. BMG's plan is in full accordance with Washington State water laws. BMG has complied well with the requirements of the permitting process. We urge you to approve this water plan without delay.

OC3 represents more than 5,000 citizens of Okanogan County. We believe Battle Mountain Gold has designed a mine plan that addresses the very important and relevant concerns of conservation, environmental protection and impacts on wildlife. We strongly urge you to accept the adequacy of the extensive research and planning that went into this water resources plan. We would hope that the Department of Ecology would not cave in to the vocal minority of environmental extremists calling for yet another delaying round of water studies and public meetings.

Sincerely,

John P. Andrist
Chairman

The following Okanogan County Citizens Coalition member groups support these comments:

Agriculture Communities Alliance
Common Sense Resource League
Loomis-Similkameen Community Club
Methow Valley Backcountry Horsemen
Methow Valley Resource Alliance
Okanogan County Cattlemen Association
Okanogan County Farm Bureau
Okanogan County Pomona Grange
Okanogan Mining Association
Okanogan Resource Council
Okanogan Valley Backcountry Horsemen
Okanogan Wildlife Council
Washington Log-Truckers Conference

cc: Okanogan County Commissioners
Washington State 7th and 12th District Legislators
Mary Riveland, Director, Department of Ecology
Sam Gehr, Forest Supervisor, USFS
Governor Mike Lowry
U.S. Senator Slade Gorton
U.S. Senator Patty Murray
U.S. Representative Doc Hastings

Congress of the United States

Washington, DC 20515

May 25, 1995

RECEIVED

JUN 0 1 1995

Mary Riveland
Director
Ecology Department
P.O. Box 47600
Olympia, WA 98504-1100

Dear Director Riveland:

We write to express our concerns regarding the unusually long time it is taking the United States Forest Service and the Washington State Department of Ecology, as joint lead agencies, to complete the environmental impact statement (EIS) for the proposed Crown Jewel Mine Project.

The Crown Jewel Project is located mostly on unpatented mining claims on federal lands in Okanogan County, Washington. When eventually approved, the Project will provide a badly needed infusion of jobs and money into Okanogan County, which like much of northern Washington is suffering from an extremely high rate of unemployment, due largely to the loss of natural resource related jobs. Accordingly, we think it imperative that the lead agencies should be conducting the environmental review and permitting process for the Project in an aggressive and timely manner.

Quite apparently, however, this has not been the case to date. We understand that the agencies may still be months away from completing and releasing a draft EIS for the Crown Jewel Project, even though the Project was proposed, and the EIS process was begun, over 3 years ago. Yet, we are informed that mining experts consider the Crown Jewel Project to be a well planned and modern open-pit gold mine, which is not particularly large or technically complex.

We further understand that Battle Mountain Gold, the Project proponent, has been forced to spend literally millions of dollars to prepare or fund an ever-growing list of agency required studies, many of which are unprecedented, and some of which, in the end, may not even be used in the EIS. Both the Project proponent and the people of Okanogan County have been forced to endure a long string of broken agency promises regarding the expected completion date for the Crown Jewel draft EIS. We understand this has created tremendous tensions in the local community, and has caused a planning and business nightmare for the proponent. We both know from firsthand experience that there is overwhelming community support for the project.

This disregard for time delays and expenses on behalf of the proponent not only discourages other potential business ventures from locating in Washington, but also denies the State one of the few sources of high paying jobs it can generate in a rural county like Okanogan.

We believe that the further unreasonable delays associated with the completion of the Crown Jewell EIS to be unacceptable. We urge the Department of Ecology, together with the U.S. Forest Service, therefore, from this point forward, do whatever is reasonably possible to ensure that the remainder of the Crown Jewel EIS and permitting process is completed in a timely fashion. In light of the extreme length of time that has been consumed in preparation of the still-unfinished draft EIS, we believe the agencies should take particular care to ensure that no time is wasted in processing the final EIS, and completing the permitting process.

In order to guard against further delay, and to allow us to monitor the progress of the remaining EIS and permitting process for the Crown Jewel Project, we ask that you keep our offices informed of the schedule and status of the process as it proceeds toward conclusion and to provide our offices with a copy of the D.E.I.S.

Thank you for your consideration of this important matter. We look forward to hearing from you at your earliest opportunity.

Sincerely,

Slade Gorton
United States Senator

Doc Hastings
Member of Congress

cc. Governor Mike Lowry
Jack Ward Thomas, Chief, U.S. Forest Service
Senator Bob Morton
Ed Thiele, Okanogan County Commissioner
Spence Higby, Okanogan County Commissioner
Dave Schulz, Okanogan County Commissioner

RICHARD DOC HASTINGS
4TH DISTRICT, WASHINGTON

COMMITTEE ON NATIONAL SECURITY
SUBCOMMITTEES:
VICE CHAIRMAN
RESEARCH AND DEVELOPMENT
MILITARY PROCUREMENT

COMMITTEE ON NATURAL RESOURCES
SUBCOMMITTEES:
WATER AND POWER RESOURCES
NATIVE AMERICANS AND INSULAR AFFAIRS

RECEIVED
JUN 2 . 1995
OKANOGAN COUNTY COMMISSIONERS

RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-5816

320 N. JOHNSON, SUITE 500
KENNEWICK, WA 99336
(509) 783-0310

302 E. CHESTNUT
YAKIMA, WA 98901
(509) 452-3243

25 NORTH WENATCHEE AVENUE
SUITE 202
WENATCHEE, WA 98801
(509) 662-4294

Congress of the United States
House of Representatives

June 19, 1995

Mr. Dave Schulz
Chairman
Okanogan County Commissioners' Office
P.O. Box 791
Okanogan, WA 98840

Dear Dave:

Thank you for expressing your concerns regarding the unusually long time it is taking the United States Forest Service and the Washington State Department of Ecology to complete the environmental impact statement (EIS) for the proposed Crown Jewel Mine Project. We are in complete agreement on this issue

Like you, I am strong supporter of this project and believe it will provide a badly needed infusion of jobs and money into Okanogan County once it is finally approved. I don't need to tell you how important this is to northern Washington, which as you know is suffering from an extremely high rate of unemployment, due largely to the loss of natural resource related jobs.

Because of the importance of this project to the economic future our communities, I am greatly disappointed that the agencies involved are still months away from completing and releasing a draft EIS for the Crown Jewel Project, even though the Project was proposed, and the EIS process was begun, over 3 years ago. The disregard for time delays and expenses on behalf of the Battle Mountain Gold not only discourages other potential business ventures from locating in Washington, but also denies the State one of the few sources of high paying jobs it can generate in a rural county like Okanogan.

For these reasons, you will be pleased to know that I have joined with Senator Gorton in sending the enclosed letters to U.S. Forest Service Chief Jack Ward Thomas and Department of Ecology Director Mary Riveland asking that they provide us with assurances that the remainder of the Crown Jewel EIS and permitting process

be completed in a timely fashion. You can be sure that I will continue to monitor this issue very carefully and put pressure on these agencies to get this job done.

Again, I appreciate your taking the time to express your views.

Sincerely,

Doc Hastings
Member of Congress

DH:CB

Congress of the United States

Washington, DC 20515

May 25, 1995

RECEIVED

JUN 0 2 1995

OKANOGAN COUNTY

Jack Ward Thomas
Chief
United States Forest Service
Auditor's Building-4th Floor
201 14th Street S.W.
Washington, DC 20250

Dear Chief Thomas:

We write to express our concerns regarding the unusually long time it is taking the United States Forest Service and the Washington State Department of Ecology, as joint lead agencies, to complete the environmental impact statement (EIS) for the proposed Crown Jewel Mine Project.

The Crown Jewel Project is located mostly on unpatented mining claims on federal lands in Okanogan County, Washington. When eventually approved, the Project will provide a badly needed infusion of jobs and money into Okanogan County, which like much of northern Washington is suffering from an extremely high rate of unemployment, due largely to the loss of natural resource related jobs. Accordingly, we think it imperative that the lead agencies should be conducting the environmental review and permitting process for the Project in an aggressive and timely manner.

Quite apparently, however, this has not been the case to date. We understand that the agencies may still be months away from completing and releasing a draft EIS for the Crown Jewel Project, even though the Project was proposed, and the EIS process was begun, <u>over 3 years ago.</u> Yet, we are informed that mining experts consider the Crown Jewel Project to be a well planned and modern open-pit gold mine, which is not particularly large or technically complex.

We further understand that Battle Mountain Gold, the Project proponent, has been forced to spend literally millions of dollars to prepare or fund an ever-growing list of agency required studies, many of which are unprecedented, and some of which, in the end, may not even be used in the EIS. Both the Project proponent and the people of Okanogan County have been forced to endure a long string of broken agency promises regarding the expected completion date for the Crown Jewel draft EIS. We understand this has created tremendous tensions in the local community, and has caused a planning and business nightmare for the proponent. We both know from firsthand experience that there is overwhelming community support for the project.

This disregard for time delays and expenses on behalf of the proponent not only discourages other potential business ventures from locating in Washington, but also denies the State one of the few sources of high paying jobs it can generate in a rural county like Okanogan.

We believe that the further unreasonable delays associated with the completion of the Crown Jewell EIS to be unacceptable. We urge the Forest Service, together with the Washington state Department of Ecology, therefore, from this point forward, do whatever is reasonably possible to ensure that the remainder of the Crown Jewel EIS and permitting process is completed in a timely fashion. In light of the extreme length of time that has been consumed in preparation of the still-unfinished draft EIS, we believe the agencies should take particular care to ensure that no time is wasted in processing the final EIS, and completing the permitting process.

In order to guard against further delay, and to allow us to monitor the progress of the remaining EIS and permitting process for the Crown Jewel Project, we ask that you keep our offices informed of the schedule and status of the process as it proceeds toward conclusion and to provide our offices with a copy of the D.E.I.S.

Thank you for your consideration of this important matter. We look forward to hearing from you at your earliest opportunity.

Sincerely,

Slade Gorton
United States Senator

Doc Hastings
Member of Congress

cc. Governor Mike Lowry
Mary Riveland, Director, Washington Department of Ecology
Senator Bob Morton
Ed Thiele, Okanogan County Commissioner
Spence Higby, Okanogan County Commissioner
Dave Schulz, Okanogan County Commissioner

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3531, 476-4142
April 24, 1995

RECEIVED
APR 27 1995

The Honorable Senator Slade Gorton
730 Hart Senate Office Building
Washington, D. C. 20510

Dear Senator Gorton:

Re: Proposed Crown Jewel Mine Project,
Okanogan County, Washington

The Okanogan County Commissioners have requested a Congressional Inquiry into U. S. Forest Service practices that have led to 7 missed deadlines for the draft EIS for the proposed Crown Jewel Mine Project, from the earliest deadline of December 1992 to the latest deadline of sometime in June, 1995.

This request for the Inquiry is endorsed by a resolution from the Eastern District of the Washington State Association of Counties.

Members of the Common Sense Resource League have followed the progress of the Crown Jewel proposal from the very beginning and have thoroughly researched the proposed plan. The conclusion is that the proposed plan meets, and exceeds, all of the requirements of state and federal regulations.

We want you to know that we believe that the delays in the release of the draft EIS are unreasonable, and that we are in full support of the Okanogan County Commissioners request for a Congressional inquiry into the matter.

You will recall that the Common Sense Resource League, comprised of concerned citizens in and around the area of the proposed Crown Jewel Project, formed to study issues relating to natural resources. Members are all volunteers, and CSRL is independent of any state or federal organizations, or of any industry.

The Commissioners have requested that the Congressional Inquiry not cause an additional delay in the EIS process. CSRL members agree that it would be undesirable for an Inquiry to result in further delays.

We will appreciate any help you are able to afford to the Okanogan County Commissioners in this matter.

Sincerely yours,

COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

COPY

Enclosed, for your information, is the most recent CSRL study of the Crown Jewel Project.

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3531, 476-4142

April 24, 1995

The Honorable Senator Patty Murray
B-34 Dirksen Building
Washington, D. C. 20510

Dear Senator Murray:

Re: Proposed Crown Jewel Mine Project,
Okanogan County, Washington

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Richard Dart

Richard Dart
President

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CC: Okanogan County Commissioners ✓

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3531, 476-4142

April 24, 1995

The Honorable Representative Doc Hastings
U. S. House of Representatives
Washington, D. C. 20515

Dear Representative Hastings:

Re: Proposed Crown Jewel Mine Project,
Okanogan County, Washington

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COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

Enclosed, for your information, is the most recent CSRL study of the Crown Jewel Project.

CC: Okanogan County Commissioners

FOR THE URGENT ATTENTION OF SENATOR BOB MORTON
FAX TRANSMITTAL - 7 Pages follow

TO: The Honorable Senator Bob Morton

FROM: The Common Sense Resource League
(new FAX # (509) 476-4059
H. C. 71 Box 78A., Oroville, WA 98844
(Phone, Richard Dart (509) 485-3531, Bob Hirst 476-4142)

We are transmitting the results of a CSRL in-depth study of the proposed Crown Jewel Mine Project (Pages 1 - 6). We hope it will prove useful to you.

We want you to know that CSRL is standing firm behind the Okanogan County Commissioners in their request for an inquiry into the Department of Ecology participation in the draft EIS because it has taken a much longer time to process than we feel is reasonable.

Many individuals and other groups are also in support of the stand of the Okanogan County Commissioners.

Also transmitted (page 7) is the chronological listing of missed deadlines for the draft EIS for the project.

If you want any other information, just let us know.

We appreciate your help !!

COPY

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3531, 476-4142
April 24, 1995

The Honorable Representative Cathy McMorris
P. O. Box 40614
Olympia, WA 98504-0614

Dear Representative McMorris:

Re: Proposed Crown Jewel Mine Project,
Okanogan County, Washington

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COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

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CC: Okanogan County Commissioners ✓

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3531, 476-4142
April 24, 1995

The Honorable Representative Steve Fuhrman
John L. O'Brien Building
Olympia, WA 98504-0433

Dear Representative Fuhrman:

Re: Proposed Crown Jewel Mine Project,
Okanogan County, Washington

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COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

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CC: Okanogan County Commissioners ✓

COPY

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3531, 476-4142
April 24, 1995

The Honorable Representative Dale Foreman
412 John L. O'Brien Building
Olympia, WA 98504

Dear Representative Foreman:

Re: Proposed Crown Jewel Mine Project,
Okanogan County, Washington

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COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

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CC: Okanogan County Commissioners ✓

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3531, 476-4142
April 24, 1995

The Honorable Representative Val Stevens
414 John L. O'Brien Building
Olympia, WA 98504

Dear Representative Stevens:

Re: Proposed Crown Jewel Mine Project,
Okanogan County, Washington

The Okanogan County Commissioners have requested a Congressional Inquiry into Department of Ecology practices that have led to 7 missed deadlines for the draft EIS for the proposed Crown Jewel Mine Project, from the earliest deadline of December 1992 to the latest deadline of sometime in June, 1995.

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COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

Enclosed, for your information, is the most recent CSRL study of the Crown Jewel Project.

CC: Okanogan County Commissioners ✓

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3607, FAX (509) 485-2904
June 3, 1994

The Honorable Mary Riveland
Director
State of Washington, Department of Ecology
Mail Stop PV-11
Olympia, WA 98504-8711

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Dear Ms. Riveland:

Our letter to you dated May 2nd, requesting information about the delay in completing a Draft Environmental Impact Statement (DEIS) has not been answered.

As we stated in that letter, we cannot understand the reason for the delay in publishing the DEIS. We are concerned that the economic development of our area is being stifled because this project has not been allowed to go into production.

We also stated that there have been no public meetings since last October to up-date our community as to the status of the EIS. We do get a periodic Baseline Data Status Chart, and it appears to us that most all the baseline studies are complete or nearly so.

As citizens interested in the responsible development of natural resources, which we believe the Crown Jewel Project will be, we request that a public meeting be held by July 15th, 1994, to inform us of the status of the DEIS and then give us a realistic and firm schedule for its publication.

Sincerely yours,

COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

COPY

CC: Okanogan County Commissioners
The Honorable Senator Bob Morton
The Honorable Representative Steve Fuhrman
The Honorable Representative Cathy McMorris

ENDORSED BY THE FOLLOWING GROUPS AND ORGANIZATIONS:

**OKANOGAN RESOURCE COUNCIL
John Shaver, Chairman

**AGRICULTURE COMMUNITY ALLIANCE
Richard L. Forrester
D. L. Taber

**METHOW VALLEY RESOURCE ASSOC.
Don Maples, President

**OKANOGAN COUNTY FARM BUREAU
John W. Umberger, President

**OKANOGAN COUNTY CATTLEMEN'S ASSOC
Daryl Asmussen, President

**LOOMIS COMMUNITY CLUB
Brent Dell, President

RECEIVED
JUN 10 1994
OKANOGAN COUNTY COMMISSIONERS

COPY

COMMON SENSE RESOURCE LEAGUE
H. C. 71, Box 78A., Oroville, WA 98844
Phone (509) 485-3607, FAX (509) 485-2904
June 3, 1994

Mr. Sam Gehr
Forest Supervisor, Okanogan National Forest
1240 South Second
Okanogan, WA 98840

CERTIFIED MAIL -RETURN RECEIPT REQUESTED

Dear Mr. Gehr:

Our letter to you dated May 2nd, requesting information about the delay in completing a Draft Environmental Impact Statement (DEIS) has not been answered.

As we stated in that letter, we cannot understand the reason for the delay in publishing the DEIS. We are concerned that the economic development of our area is being stifled because this project has not been allowed to go into production.

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COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

COPY

CC: Okanogan County Commissioners
The Honorable Senator Bob Morton
The Honorable Representative Steve Fuhrman
The Honorable Representative Cathy McMorris

CC: Tonasket Ranger District
Regional Office, USFS
CC: Regional Forester, Portland
CC: Director, Minerals & Geolog
Washington, D. C.

ENDORSED BY THE FOLLOWING GROUPS AND ORGANIZATIONS:

**OKANOGAN RESOURCE COUNCIL
John Shaver, Chairman

**AGRICULTURE COMMUNITY ALLIANCE
Richard L. Forrester
D. L. Taber

**CITY OF OROVILLE
JOHN G. SHAW, MAYOR

**OKANOGAN COUNTY FARM BUREAU
John W. Umberger, President

**OKANOGAN COUNTY CATTLEMEN ASS
Daryl Asmussen, President

** LOOMIS COMMUNITY CLUB
Brent Dell, President

**METHOW VALLEY RESOURCE ASSOC.
Don Maples, President

COMMON SENSE RESOURCE LEAGUE
HC 71, BOX 78-A
OROVILLE, WA 98844
PHONE 509-485-3607
FAX 509-485-2904

COPY

May 2, 1994

Mr. Sam Gehr, Forest Supervisor
Okanogan National Forest
1240 South Second
Okanogan, WA 98840

SUBJECT: Draft Environmental Impact Statement
Crown Jewel Gold Mining Project

Dear Mr. Gehr:

Our community is concerned about the delay in publishing a Draft Environmental Impact Statement (DEIS) for the subject Crown Jewel Project.

Over two years have gone by since this project was proposed, and April 24, 1994 marked exactly two years since the deadline for written input to the scoping for this project.

On April 15, 1992, the *Common Sense Resource League*, an organization of local citizens dedicated to the responsible development of natural resources, sent a list of sixteen areas of concern to the Tonasket District of the Okanogan National Forest and to the Washington State Department of Ecology, co-leaders for the EIS. On July 2, 1992 DOE amd USFS published a list of significant issues to be studied for the EIS, most of which were identical to the list we proposed.

This study seems to be going on endlessly. For a while the DOE and USFS were holding monthly or bi-monthly meetings to update the public on the status of the EIS, but no meetings have been held since October, 1993. At every meeting we asked when the DEIS would be issued, and everytime we were told there would be another delay.

The last Crown Jewel Baseline Data Status Report we received indicated that most of the baseline studies were complete or nearly so. We have heard that the EIS contractor has been asked to repeat studies, and that the new results verified the initial results.

We made inquiry of the DOE about the status of the DEIS on August 3, 1993, and were answered on September 28, 1993 with a letter signed by Patricia L. Crumley of their Environmental Review Section. At that time she explained the complexity of the EIS

procedure and the importance of doing everything correctly, which we fully understand and with which we agree. However, it does seem to us that this particular EIS is taking an inordinately great amount of time.

As citizens interested in the well-being of our community -- not only that it is environmentally safe, but that it is economically viable, we question whether there is a planned, concerted effort to delay this project or perhaps kill it altogether.

Will you tell us what the reasons are for the delay in publishing a DEIS on this project, and who is responsible for the delay?

We would appreciate having your answers at your earlist convenience.

Sincerely yours,

COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart, President

cc: Tonasket District Ranger

Okanogan, WA 98844
April 24, 1995

GT Suit

Mr. Jack Ward Thomas
U.S.D.A Forest Service
14th St. & Independence Ave. S.W.
Washington, D.C. 20250

Re: Proposed Crown Jewel Mine Project
Okanogan County, Washington

Dear Mr. Thomas,

We are writing you to urge you to expedite the completion of the draft EIS for the proposed Crown Jewel Mine Project. The Forest Service and the Dept. of Ecology have missed 7 self-imposed deadlines. They have spent 3 times as long preparing this document as has been spent on 16 comparable mining projects. This is costly to everyone, including the lost revenue to the County and to the local economy. It would provide many needed jobs in a County which posted an unemployment rate of 13.1% in February of 1995.

We feel the Battle Mountain Gold's proposed plan meets, and exceeds, all of the requirements of state and federal regulations. Any concerns can be addressed during the comment period after the draft EIS is out.

Because of this, we fully support the Okanogan County Commissioners request for a Congressional inquiry into the matter.

Sincerely
Paul & Mary Jane Lee

cc. Okanogan County Commissioners

Orcas Island, WA 98840
April 24, 1995

Ms Mary Kimland, Director
Washington State Dept. of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Re: Proposed Crown Jewel Mine Project
Okanogan County Washington

Dear Miss Kimland,

We are writing to urge you to expedite the completion of the draft EIS for the proposed Crown Jewel Mine Project. Your department and the Forest Service have missed 7 self-imposed deadlines. These delays have already cost the county and the local economy hundreds of thousands of dollars. After studying the Crown Jewel proposed plan we feel it meets and exceeds all of the requirements of the state and federal regulations.

We want you to know that we believe that the delays in the release of the draft EIS are unreasonable and fully support the Okanogan County Commissioners request for a Congressional inquiry into the matter.

Sincerely,
Paul & Mary Lonnie Lee

cc. Okanogan Co. Commissioners

188

Star Route 85
Oroville, WA 98844
May 1, 1995

The Honorable Representative Cathy McMorris
P.O. Box 40614
Olympia, WA 98504-0614

RECEIVED
MAY 1 1995

Re: Crown Jewel Mine - Draft EIS Delay

Dear Representative McMorris,

For over three years I have been studying the Crown Jewel gold mine proposal near Chesaw in Okanogan County. Along with many of my neighbours we have determined it to be a safe project that meets and surpasses the requirements of a multitude of Federal and State environmental laws.

On March 31, 1995 the U.S. Forest Service and Department of Ecology announced the 7 th missed deadline for the Crown Jewel draft EIS. The gravity of the situation has prompted the County Commissioners to request a Congressional Inquiry into U.S. Forest Service practices. That the request for an Inquiry is supported well beyond Okanogan County has been demonstrated by the unanimous approval of the Crown Jewel Resolution by the Eastern District of Washington State Association of Counties.

I would like you to know that the regular parade of delays plaguing this project are unwarranted and unreasonable.

Since the study began 3 1/4 years ago in January 1992 the project has been generously funded. This allowed for the hiring of an experienced and reputable environmental consultant whose responsibility included management and coordination of all technical studies. This arrangement was established so the Forest Service could concentrate on project supervision thereby expediting the process.

The question that arises then is how can a well funded EIS with its technical responsiblities delegated to a third party contractor still be in progress after **40 months** , when 16 similar projects undertaken by the **same agency** (USFS and BLM) have taken on average only 13.5 months ? Even more puzzling is that the proposed Crown Jewel project represents a rather routine type of mine facility that will operate with basic and conventional technology !

Based on these facts I believe the Okanogan County Commissioners deserve your full support in their investigation of both agencies. Caution must be taken however to insure that any investigation spare the already burdened EIS process any additional delay.

Any effort you could make in support of the Okanogan County Commissioners would be greatly appreciated.

Yours sincerely,

Myron Sawiuk

Myron Sawiuk

cc Okanogan County Commissioners
Mr. John Lowe U. S. Forest Service
Ms. Mary Riveland Wash. State Dept. of Ecology

Star Route 85
Oroville, WA 98844
May 1, 1995

The Honorable Representative Steve Fuhrman
P.O. Box 40613
Olympia, WA 98504-0613

Re: Crown Jewel Mine - Draft EIS Delay

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Myron Sawiuk

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cc Okanogan County Commissioners
Mr. John Lowe U. S. Forest Service
Ms. Mary Riveland Wash. State Dept. of Ecology

Star Route 85
Oroville, WA 98844
May 1, 1995

The Honorable Senator Patty Murray
302 Senate Hart Office Building
Washington, D.C. 20515-4704

Re: Crown Jewel Mine - Draft EIS Delay

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The question that arises then is how can a well funded EIS with its technical responsiblities delegated to a third party contractor still be in progress after **40 months** , when 16 similar projects undertaken by the **same agency** (USFS and BLM) have taken on average only 13.5 months ? Even more puzzling is that the proposed Crown Jewel project represents a rather routine type of mine facility that will operate with basic and conventional technology !

Based on these facts I believe the Okanogan County Commissioners deserve your full support in their call for a Congressional Inquiry. Caution must be taken however to insure that any investigation spare the already burdened EIS process any additional delay.

Any effort you could make in support of the Okanogan County Commissioners would be greatly appreciated.

Yours sincerely,

Myron Sawiuk

cc Okanogan County Commissioners
Mr. John Lowe U. S. Forest Service
Ms. Mary Riveland Wash. State Dept. of Ecology

Star Route 85
Oroville, WA 98844
May 1, 1995

The Honorable Congressman "Doc" Hastings
1229 Longworth House Office Building
Washington, D.C. 20515

Re: Crown Jewel Mine - Draft EIS Delay

Dear Congressman Hastings,

For over three years I have been studying the Crown Jewel gold mine proposal near Chesaw in Okanogan County. Along with many of my neighbours we have determined it to be a safe project that meets and surpasses the requirements of a multitude of Federal and State environmental laws.

On March 31, 1995 the U.S. Forest Service announced the **7 th** missed deadline for the Crown Jewel draft EIS. The gravity of the situation has prompted the County Commissioners to request a Congressional Inquiry into U.S. Forest Service practices. That the request for an Inquiry is supported well beyond Okanogan County has been demonstrated by the unanimous approval of the Crown Jewel Resolution by the Eastern District of Washington State Association of Counties.

I would like you to know that the regular parade of delays plaguing this project are unwarranted and unreasonable.

Since the study began 3 1/4 years ago in January 1992 the project has been generously funded. This allowed for the hiring of an experienced and reputable environmental consultant whose responsibility included management and coordination of all technical studies. This arrangement was established so the Forest Service could concentrate on project supervision thereby expediting the process.

The question that arises then is how can a well funded EIS with its technical responsiblities delegated to a third party contractor still be in progress after **40 months** , when 16 similar projects undertaken by the **same agency** (USFS and BLM) have taken on average only 13.5 months ? Even more puzzling is that the proposed Crown Jewel project represents a rather routine type of mine facility that will operate with basic and conventional technology !

Based on these facts I believe the Okanogan County Commissioners deserve your full support in their call for a Congressional Inquiry. Caution must be taken however to insure that any investigation spare the already burdened EIS process any additional delay.

Any effort you could make in support of the Okanogan County Commissioners would be greatly appreciated.

Yours sincerely,

Myron Sawiuk

Myron Sawiuk

cc Okanogan County Commissioners
Mr. John Lowe U. S. Forest Service
Ms. Mary Riveland Wash. State Dept. of Ecology

RECEIVED
JUL 06 1995
OKANOGAN COUNTY COMMISSIONERS

July 3, 1995

Okanogan County Commissioners
P.O. Box 791
Okanogan, WA 98840

Dear Commissioners:

I would like to thank the Board for the opportunity to give written testimony on the **Crown Jewel Project Economic and Fiscal Impact Analysis**. As per the Revised Code of Washington (RCW) 78.56 Sec. 13 (2) *the applicant for a large-scale metals mining and milling operation ....must submit to the relevant county legislative authority an impact analysis describing the economic impact of the proposed mining operation on the local governmental units.* Furthermore, Sec 13 (3) specifies the minimum requirements by the applicant for this analysis. The **Crown Jewel Project Economic and Fiscal Impact Analysis** meets and exceeds the requirements of RCW 78.56 Sec. 13.

Battle Mountain Gold has established itself as a responsible corporate citizen of Northern Okanogan County over the past five years, and has brought an opportunity for a new and diverse economic potential to an otherwise slow economy. Although this project has been in the development and permitting stages since 1987, and has yet to realize any economic benefits (approximatly $50,000,000.00 has been expended to date) and does not anticipate any tangible revenue from the operating mine for some time to come, the Company continues to employ a work force, pay state and county taxes, and support the various communities of Okanogan County through participation, charitable donations, and support funding. The following is an example for your to consideration. How many business are you aware of that would spend $50,000,000.00 on a business venture that will take at least nine years to develop and could still be delayed or stalled because of increasing and changing regulations or public sentiment? Modern day mining has the potential to generate enormous income, however, it also requires a tremendous amount of risk.....**by the Company!**

A reference was made at the June 26th public hearing about royalties and how more dollars from minerals extracted from public lands is necessary. However, I do not believe the general public would tolerate the use of tax payers dollars to fund typically risky grass-roots and exploratory mineral development. No, the risk part is left for the company. Only after the mineral resource is identified, quantified, deemed economic to extract and permitted, is the risk taking mining company transformed in to the multinational abusers of public resources. Modern day mining companies must be responsible corporate citizens

and exhibit a level of environmental stewardship and economic impact accountability well beyond that of their predecessors.

Another key issue discussed in the public hearing was the issue of what is "local" in relationship to the percentage of people that could be hired by the mine . The intent of BMG to hire local people at the mine is simple - whenever possible, attempts will be made to strengthen economic conditions of the surrounding communities by giving the people who live in these areas the opportunity to achieve a higher than average income, receive a comprehensive benefits package, and provide an opportunity for job training to diversify and enhance existing job skills. The general intent of this concept is to provide an economic opportunity for the surrounding communities and there citizens and give something back to the communities for the future. Any attempt to narrow and/or restrict this concept could jeopardize the original intent of this voluntary commitment. This commitment was made by the company as a good faith effort and should not fall victim to public abuse.

The report was prepared by professionals with the intent to address the potental economic and fiscal impacts of the Crown Jewel Project on the local governmental units as outlined in law, and should not address ghost employees that may, or may not ever be a reality, or impacts of potential future ore bodies developed by other companies in the region. This report has successfully addressed the objectives of the law and I ask that you accept the **Crown Jewel Project Economic and Fiscal Impact Analysis** as presented. Thank you for your consideration.

Sincerely,

Jon F. Winter

Jon F. Winter
P.O. Box 378
Tonasket, Washington 98855

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

CORA M. HOWE, A.B.I., I.B.I.
P.O. BOX 1059
603 GOLDEN STREET
OROVILLE, WA 98844

July 5, 1995

Okanogan County Commissioners
237 4TH N.
Okanogan, WA 98840

Dear Commissioners Higby, Schultz, and Thiele,

I am writing this letter to urge you to accept the Huckell/Weinman Associates Economic/Fiscal Impact Study on the Crown Jewel Project in its entirety.

After graduating from college in 1993 (as a returning adult student) I found the job market in the county to be sadly lacking. The jobs that were available at that time and to the present were low paying, to say the least. Minimal wage or barely above does not pay off student loans. I finally found a job at $6.00 an hour in Omak. At this point in time I had to pay for gas to and from work, two teenage daughters left at home and student loans to repay. I was grateful to be hired at Battle Mountain Gold Company as a receptionist with no gas bills.

I have worked for Battle Mountain Gold Company for the past two years. I started as a receptionist and have had three advances with pay increases to match. Battle Mountain Gold Company has shown their appreciation and support in several different ways. I have accomplished several things that would **not** have been possible had I not had the support of this company. The following is a few of these accomplishments.

- Notary Public
    - * Member National Notary Association
- Member National Association of Female Executives
- Listed - Sterling Who's Who Directory
    - * Executive Member
- Listed - International Biographical Institute, Inc.
    - * Member of Advisory Board
- Listed - American Biographical Institute, Inc. Two Thousand Notable American Women
    - * Inaugural Invitation to the Board Of Governors
    - * Governing Board of Editors Dedication invitation

I also, fit the local hire suggestion made by Commissioner Schultz (i.e., born in 1950 and remained a resident of Oroville).

I would like to thank you for your time and again ask that you accept the Huckell/Weinman Associates Economic/Fiscal Impact study in its entirety.

Sincerely,

Cora M. Howe

Cora M. Howe
P.O. Box 1059
Oroville, WA 98844

OCCED

Okanogan County Council
for Economic Development

"SOARING TO NEW HEIGHTS"

RECEIVED
MAY 0 1 1995

May 4, 1995

Okanogan County Commissioners
PO Box 791
Okanogan, WA 98840

Dear Commissioners:

The OCCED Board of Directors wishes to express our support for the Crown Jewel Project. The OCCED Board represents all areas of our vast county and has representation from local businesses, and municipal, county, and tribal governments. We are extremely concerned over the lack of due process on the part of the U.S. Forest Service and the Washington State Department of Ecology. With the announcement of another delay in the Draft Environmental Impact Statement, we feel that the lead agencies should be held accountable for their actions. This kind of breakdown in due process has not only threaten this project, but stands to threaten other resource base economic projects in Okanogan County.

We hope that you will continue to stand fast on this Crown Jewel Project. If we can be of any assistance please contact us.

Sincerely,

Mick Munson, President
OCCED/Board of Directors

cmd

MOLSON GRANGE 1069
HC 71, BOX 128
OROVILLE, WA 98844

June 25, 1992

Okanogan County Commissioners
Okanogan County, Washington
P O Box 1009
Okanogan, WA 98840

Gentlemen:

The Molson Grange urges you to consider the traditions of mining in Okanogan County, and requests that you take a positive stand in regard to the Crown Jewel Gold Mining project on Buckhorn Mountain.

It is our considered opinion that if the project meets all the requirements of the present environmental and other laws relating to mining, that this operation will be a positive factor in improving the economic conditions in the county.

Not only will there be an opportunity for increased employment in the county, but the sale of products and services will be increased, thereby increasing revenue at all government levels.

Sincerely yours,

Richard Dart
Master

Mary Louise Loe
Secretary

Paul Loe
Treasurer

George J. Miller
Overseer

May 0, 1995

91

Okanogan County Commissioners,
Court House
Okanogan, WA 98840

RECEIVED
MAY 0 0 1995

Dear Sirs -

As a landowner & a business person I would like to say that I feel the proposed Crown Jewel project mine is an excellent idea - I appreciate your efforts to speed up this project. I realize this project has many persons opposed to it, however, there are many, such as myself who wish it could get started. Many requirements have been met, studies made & I feel this should go ahead soon - I support any action you take - Sincerely,

Carol P. Hall

195

SWI

May 7, 1995

Okanogan County Commissioners
Okanogan, Wn

RECEIVED
MAY 0 8 1995
OKANOGAN COUNTY COMMISSIONERS

Gen:

This is just a short letter to let you know that I am supporting your action on the DEIS report.

I feel that the different citizen groups have studied these federal mining & environmental laws pretty thoroughly & we are adequately protected from problems that might come up.

Our economy in this county is bad enough that we should be encouraging the development of natural resources projects instead of looking for ways to halt them

Yours Truly
Everett Turner

Sat

April 30-1995

RECEIVED
MAY 0 2 1995
OKANOGAN COUNTY COMMISSIONERS

Okanogan County Commissioners

In regards to the Battle Mt. Crown Canal Project and the repeated delays on the draft E.I.S statement. We feel the delays on the draft E.I.S. are ~~in~~ excessive. We feel that your action on the Crown Canal Project is the right way to go.

Truly Yours

Cindy, Darrel Bunch

1785 Havillah Rd
Tonasket, Wa. 98855

My name is Annette White. My husband and I and our three children moved to this community nearly 2 years ago. My husband works for Battle Mountain Gold. We are a mining family. I come from a mining family and have lived in mining and ranching communities most of my life. In the scoping for this project concerned was raised about the so-called "undesirable element" that would come into the community as a result of opening a mine. I've come today to dispel that myth and to share the economic contribution that my own family makes. When we arrived here 2 years ago we went to a local real estate agent and purchased a home with a loan from a local bank. We spend on an average of 30,000 a year on goods and services here in this area, not including the cost of our home. On top of that we pay taxes and have contributed to various local organizations. To quote a line from Walter Mathau in a favorite old movie of mine, "I believe money is like manure, I like to spread it around and watch young things grow".

In reference to the impact on the local schools, I can only say, and I know that their teachers would concur, that my children have been a positive influence to the school. One teacher wrote in a note to us, that she wished she could have a classroom full of students like my oldest son.

I spent my high-school years in a mining town, the same town where my parents still live. As a community we were proud to produce the raw material for many needed products as well as wealth for the country. It is my contention that only a country that can produce wealth has the luxury to be truly "environmentally responsible".

I urge you to approve the report submitted by Battle Mountain Gold.
Thank you.

July 5, 1995

JUL 0 1995

Okanogan County Commissioners
P.O. Box 791
Okanogan, WA

Subject: Crown Jewel Project Fiscal Impact Analysis

To complete our testimony of June 26, we wish to add:

① Since purchasing property in Chesaw in 1980 we have been hearing and reading of the poor economic prospects in Okanogan County. This is the best chance for fifteen years to improve those prospects.

②. We also own a vacant lot in the City limits of Wenatchee. With its greater density and more business and industry to support the needed services, the tax rate on that lot is about $2.00 per thousand less than our Chesaw property. Okanogan County <u>needs</u> this project!

③. About two years ago I attended a meeting in Republic. At that meeting the mayor of Republic talked about the economic impact of the local gold mine. I remember she said that the first full year brought in about $90,000 in <u>extra</u> sales taxes so they were able to purchase a badly needed snowplow. She was thrilled!

Sincerely,
Zella M. McFarland
Lawrence H. McFarland
HC 71, Box 8.3E

731 Havillah Road
Tonasket, WA 98855

RECEIVED
JUL 06 1995
OKANOGAN COUNTY COMMISSIONERS

4 July 1995

Okanogan County Board of Commissioners
PO Box 791
Okanogan, WA 98840

Dear Commissioners:

Thank you for this opportunity to comment on the *Crown Jewel Project - Economic and Fiscal Impact Analysis* report. The economic benefits of the Crown Jewel Project are substantial. The report clearly demonstrates this. The analysis presented in the report is quite conservative yet still shows exceptional economic benefit to the County. When I gave oral testimony before you on 26 June 1995, I emphasized some of the economic benefits on which the report did not elaborate. I urge you to visit with County officials in the areas where modern mining has revitalized stagnant or moribund economies and giver people - most important many young people - the opportunities they deserve. When communities experience the prosperity of a robust, diverse economy, opportunities for building desirable futures abound. The very things I spoke about.

As I indicated in my testimony, most people want a healthy environment in which to live and work. I emphasize work because I believe most people want and need to work in a productive manner to support themselves and their families, provide for their children's future, and contribute to their communities. Jobs - a choice of jobs - meet those needs. The combination of an enthusiastic workforce and available resource opportunities - such as we have here - is a very powerful component of the 'economic engine' which generates wealth. Creation of wealth - and subsequent distribution of that wealth - is the foundation upon which our country has been built. Indeed, before our society can distribute its great wealth among its members, that wealth must be created. The Crown Jewel Project provides the opportunity to create wealth and benefit society while maintaining a healthy environment!

I look forward to your swift and decisive action in approving this report. This action would be yet another step in Battle Mountain Gold's efforts to develop the hidden mineral resource at Buckhorn Mountain and generate wealth for the area, state, and nation!

Sincerely,

Jeffrey S. White

Jeffrey S. White

RECEIVED
JUL 0 6 1995
OKANOGAN COUNTY COMMISSIONERS

July 5, 1995

Okanogan County Commissioners
P.O. Box 791
Okanogan, WA 98840

Dear Commissioners,

I appreciate the support that you gentlemen have given to the Crown Jewel Project !

I would only like to mention that of the eight Battle Mountain Gold employees now present, seven of us have purchased a home and property in the county (the eighth is now busy doing the same), have been paying all appropriate taxes and do support the local economy with a gross payroll (annual) in excess of $300,000.00, as well as taking part in local activities which better the community we live in.

Battle Mountain Gold Company, like all other mining companies, believes very strongly in support of the community they live in and around. We will be, as I feel we have been, a positive and progressive part of the county.

Our commitment to try and hire 80% "Local" is real. We will look forward to meeting with you to define "Local" in a manner that will make you (and us) comfortable. I do want to follow that statement by saying that I see no reason for us to go further than that in "proving" ourselves to certain other parties. I think that we have put down a good track record which shows us to be honest and integral, both in private and business matters and that we do not deal or believe in innuendo or audacity.

Thank you for allowing the time for written comment towards the Crown Jewel Project Economic and Fiscal Impact Analysis. I ask you to accept the document as professionaly presented-- and-- thank you for taking the time to read this letter.

Sincerely,

Frank E. Lytle

July 6, 1995

RECEIVED
JUL 0 6 1995
OKANOGAN COUNTY COMMISSIONERS

Okanogan County Commissioners
P.O. Box 791
Okanogan, WA 98840

Dear Commissioners:

Thank you for the opportunity to give written testimony on the issue of the Battle Mountain Gold (BMGC) Crown Jewel Economic Impact Analysis (EIA). As you know, the EIA has been submitted as a result of the requirements within the 1994 Metals Mining Act and the subsequent Revised Code of Washington (RCW) 78.56 Sec. 13 (2). Also, as you are aware, Battle Mountain Gold played a large part in developing the 1994 Act and supported the EIA concept within the Act even though it singled out the mining industry and imposed special considerations that was precedence setting.

I urge the approval of the EIA because it does meet or exceed the requirements of the law (RCW) 78.56 Sec. 13 (2). Also, the document, authored by Huckell/Weimann, has been developed in a professional manner by a professional consultant that has considerable experience in developing such documents.

Battle Mountain Gold is proud of the positive economic impacts that we will bring to Okanogan County with such an environmentally responsible proposal. We believe that this document shows that this type of a proposal is a partnership with the communities and jurisdictions in which we operate. Not only does the BMGC proposal offer opportunities relative to future construction, operations, and closure but we are currently adding to the economy of Okanogan County by the current jobs that have been provided and the existing tax assessments.

BMGC has recognized the partnership concept in many ways including the commitment to local hire. It is the stated objective of Battle Mountain Gold to hire 80% of our operating workforce locally. Battle Mountain Gold will do everything within our ability to accomplish this. The objective is one that has been met by other Battle Mountain Gold projects and in particular, the San Luis Project in Southern Colorado. The current San Luis Mine workforce is 91.5% local. These are people who commute as far away as 60 miles to their place of work or as close as just down the road. San Luis currently has a total workforce of 94 persons, eight of which have been hired from outside the local area. High level supervisory positions are being held by those that lived within a reasonable commute distance before Battle Mountain came to town. This is an example of how BMGC is meeting self imposed commitments. BMGC looks forward to a long and successful relationship with the communities of Okanogan County.

I, as an employee of BMGC and as an Okanogan County resident, urge your approval of the EIA.

Sincerely,

Brant E. Hinze

- 29 - Written Comments

21

RECEIVED
JUL 06 1995
OKANOGAN COUNTY COMMISSIONERS

Paul Schumacher
P.O. Box 1443
Oroville, WA 98844

July 5, 1995

Okanogan County Commissioners
P.O. Box 791
Okanogan, WA 98840

RE: Crown Jewel Project - Economic and Fiscal Impact Analysis

Dear County Commissioners,

Thank you for the opportunity to provide written comment on the report prepared by Huckell/Weinman Associates, Inc. I am writing as a citizen of Okanogan County as well as an employee of Battle Mountain Gold Company in support of the report on economic and fiscal impacts of the Crown Jewel Project. As a 2 1/2 year resident of Oroville, my family and I enjoy living and working in North Central Washington and feel we have been actively contributing to our community through participation in school, civic organizations, church, and of course our local spending and taxes.

As I spoke at the June 19th public hearing, I urge you to approve the impact analysis report which conservatively analyzes the economic and fiscal impacts of the Crown Jewel Project. Though conservative in its estimates of economic and fiscal impacts, the report is unbiased and comprehesive in covering the expected effects of the mine on our county.

What I heard from some opponents of the mine is that the report is flawed because certain postulated circumstances were not presented. One example was the suggestion that because of the mine, there will be an influx of jobless people who will move into the area with unfulfillable hopes of obtaining employment. Another suggestion was that existing business will not be able to survive the "competition" of outside businesses moving in. I believe these types of comments are driven by a desire to delay the project.

A person might ask , *" Should a report such as this one consider all possible scenarios that may occur in the future ?"* Of course not! This task would prove impossible. The report as presented projects as reasonably as possible the future economic and fiscal impacts of the mine.

Sincerely,

Paul Schumacher

July 5, 1995

RECEIVED
JUL 0 6 1995
OKANOGAN COUNTY

Okanogan County Board of Commissioners
P.O. Box 791
Okanogan, WA 98840

Dear Commissioners:

Thank you for this opportunity to once again comment on the Economic and Fiscal Impact Analysis report for the Crown Jewel Project. My family has enjoyed being a part of this community for the last two years. I do a lot of business with the local merchants and service people in the area. Everywhere I go I am asked about the mine. People want to know when it will become a reality. These are hard-working folks who recognize mining as the essential wealth producing, raw material producing industry that it is. In the words of an old friend, "people want things, and things are made of stuff. Stuff is what we mine."

I feel that I and my family have made a positive impact on the local schools, service organizations and churches. Talk of itinerant in-migration seems to be a scare tactic designed to delay the project rather than a genuine concern.

Please accept the report as submitted.

Sincerely,

Annette C. White

Annette White

June 6, 1995

RECEIVED
JUL 0 [illegible] 1995

Okanogan County commissioners
P.O. Box 791
Okanogan, Wa 98840

Dear Commissioners:

The Crown Jewel Project proposed by Battle Mountain Gold Company will provide a valuable economic boost for Okanogan county. Even in the conservative approach taken by Huckell/Weinman Associates the economic outlook for the project is positive. When the project is permitted it will become among the most stable employer in the county. I encourage you to approve the Huckell/Weinmenn report.

In addition to the tangibles mentioned in the study there will be positive social and economic impacts from the Crown Jewel project that include the following:

* reduced dependency on social services
* increased household income
* increased entrepreneurial incentive for resource industries and support businesses
* increased community pride due to increased financial ability to care for community needs.

Most rural communities in America are involved in a constant search for ways to increase and diversify their economic base. In today's competitive economy easy sure things don't exist. The two largest employers in the state, Boeing and Hanford, have recently reduced their work force by more than Okanogan County's entire employment base. Cut backs and business closures have become a fact of life. In contrast the Crown Jewel proposal provides a relatively stable employment base for a defined period of time.

Battle Mountain Gold Company has already demonstrate its commitment to be supportive and actively involved in the community. Their proposed plan of operations is also evidence of the company commitment to environmental responsibility. They except the fact that they will be held to higher standards than most businesses in the state. Please help move the process forward by approving the economic and fiscal impact analysis.

Sincerely;

Mike Poulson

Mike Poulson, Molson

RECEIVED

JUL 1 0 1995

OKANOGAN COUNTY

Star Route 85
Oroville, WA 98844
July 6, 1995

Okanogan County Commissioners
P O Box 791
Okanogan, WA
98840

Dear Commissioners,

I have reviewed the socio-economic impact analysis which has been submitted to the County for Battle Mountain's Crown Jewel project and would like to make the following comments.

The analysis is well researched, comprehensive and clearly documents what an asset the mine project will be to Okanogan County.

Since the projections and estimates contained in the report are a minimum case scenario then even better economic results may be expected With decreasing budgets for schools , social programs and infrastructure this project could yield positive benefits to offset the ever mounting burden on taxpayers.

With an average annual salary of $ 34,000.00 per year there will be 144 new high paying jobs which to this degree is not common for our part of the State. The economic multiplier from secondary spending will provide a real boost to our local economy. This would be a welcome relief to those of us in the northern part of the County now that tourist spending has slipped from previous years.

The estimates indicate that fiscal deficits to the County will only involve local fire districts and that these at their worst will be negligible.

With so little cost to the County it would be our good fortune to see this project become established.

I urge the County Commisioners to vigorously welcome and expedite the permitting process. To do so will shorten the time period before Crown Jewel's positive economic influence begins to benefit both residents and local government.

Yours truly,

Myron Sawiuk

Myron Sawiuk

POGUE FLAT GRANGE
NO. 1027

RECEIVED
APR 1 1995
OKANOGAN COUNTY COMMISSIONERS

April 17, 1995

Okanogan County Commissioners
Okanogan, Washington 98840

Gentlemen;

We, of the Pogue Flat Grange #1027, are in full support of the commissioners in their affirmative action regarding Battle Mountain Gold.

We feel this is a well organized company and that they are trying to their utmost to comply with ecological regulations.

Sincerely yours,

F. Tritle
Master

Francis Tritle

cc: Dept of Ecology
Forest Service

Okanogan Resource Council
P.O. Box 928
Omak, Washington 98841-0928
FAX (509) 826-3917

RECEIVED
MAY 0 3 1995

May 2, 1995

Okanogan County Commissioners
PO Box 791
Okanogan, WA 98840

Commissioners:

The Okanogan Resource Council is aware of the efforts the Commissioners are making in support of Battle Mountain Gold's Crown Jewel Project. We want you to know that we approve of your actions and that you have the wholehearted support of the Council. We believe, like you, that the repeated delays in producing the draft EIS is unconscionable and that an inquiry of the agencies involved is appropriate.

We further commend the Commissioners' strong stand regarding BMG's water resource plan; the Nicholson timber sale; Evergreen Legal Services; and the Loomis State Forest.

If Okanogan Resource Council can be of any assistance in your efforts in these, or any future issues, do not hesitate to call on us. Keep up the good work!

Sincerely,

Bonnie Lawrence

Bonnie Lawrence
Chairman

OMAK
Chamber of Commerce

MAY 0 1 1995

April 27, 1995

Okanogan County Commissioners
PO Box 791
Okanogan WA 98840

RE: Congressional Inquiry
Delayed Environmental Impact Statement
Crown Jewel Mining Project

Dear Commissioners:

On behalf of the Omak Chamber of Commerce, please accept our support of your recent decision to request an inquiry as to why there has been such a delay in receiving the Environmental Impact Statement for the proposed Crown Jewel mining project. Although the Omak Chamber has been supportive because of the project's economic benefits and potential of jobs, we also feel that Battle Mountain Gold has provided sufficient safeguards to protect the environment. We realize that this is a complicated project with lots of issues and questions, but simply cannot understand why the Impact Statement is taking so long.

Again, thank you, Commissioners, for your interest and support in the economic growth of our area.

Sincerely,

Mike Striggow
President

City of Oroville

Clerk's Office, P.O. Box M, Oroville, Washington, 98844, (509) 476-2926

OFFICERS:
Joseph E. King, Mayor
Kathy M. Jones, Clerk-Treasurer
Rodney L. Noel, Town Superintendent

COUNCIL MEMBERS
Jimmie D. Walker
Linda L. Schwilke
John G. Shaw
Ethel E. Lindaue
Jack C. Hughes

October 21, 1992

Okanogan County Commissioners
Commissioners Office
Okanogan, WA 98840

Dear Commissioners,

The City Council and I wish to extend our support of the continued development of the Battle Mountain Gold Co. mining project east of Oroville.

Although we do have some concerns about environmental issues, we feel that the probable benefits to our community outweigh the negatives.

Again, our continued support.

Sincerely,

John G. Shaw

John G. Shaw
Mayor

TOWN of TONASKET

POST OFFICE BOX 487 TONASKET, WASHINGTON 98855 TELEPHONE 509/486-2132

April 27, 1995

RECEIVED
MAY 0 1995

Okanogan County Commissioners
P. O. Box 791
Okanogan, Washington 98840

Dear County Commissioners,

The Tonasket Town Council and I support your efforts in investigating the actions of the U. S. Forest Service and the Department of Ecology regarding the lengthy delay of the draft EIS, of the Crown Jewel Project, in Okanogan County.

At one time the main issue was whether one supported the mine or not. Now it appears to have changed to an "appearance of fairness". The history of the Crown Jewel Project draft EIS is one that would make any developer hesitant to apply for a major project in our County.

Our town and County have suffered an economic loss during this lenghty process. There is no way of knowing the number of jobs that have been lost as a result of the delay.

The important issue now is that there is a determination made on the Crown Jewel Project in hopes of increased employment for our town and County.

Sincerely,

Thomas W. Fancher
Mayor

TWF/fc

May 8, 1995
Okanogan County Commissioners
P O Box 791
Okanogan, WA 98840

RECEIVED
MAY 09 1995
OKANOGAN COUNTY COMMISSIONERS

Dear Sirs:

This letter is to support your request for an investigation into the many delays of the draft environmental impact statement (DEIS) for the Crown Jewel Project in Okanogan County

We have followed and studied this project since it was first announced in February of 1992 and we feel that it can and will be done in an environmentally sound manner. Considering all the federal and state laws that must be followed, it is hard for us to understand the level of opposition.

The additional taxes that will be paid into the county and state coffers during the life of the Crown Jewel Project will enhance schools, roads, law enforcement and the many other items financed by taxes. Okanogan County Social and Health Services reported that one-third of all county residents received some form of public assistance during January of this year. Taxes cover this cost! It seems to us that more and better jobs are badly needed in this county so people won't need so much assistance and to help cover the cost for those who are truly needy.

Any inquiries into this delayed DEIS shall not cause any further delays of the project!

Sincerely,

Zella and Lawrence McFarland
HC 71, Box 83E
Oroville, WA 98844

[illegible]

[illegible]

Chelan, Washington 98816

48

MAY 1 1 1995

Dear Sirs.

I wish to give you my full support in your action to question the delays of the dept of E. S. on the Crown Jewel mining project.

I feel that this project should move forward through the process, comment period, and permitting process in an orderly and timely manner. The sooner this project can get in production, the sooner we can get this project in production, the sooner we can reaping the benefits of jobs, taxes, and all spin off benefits.

I feel that when this process is completed it will be a safe and environmentally clean project, located in a very secluded area and will bring advantages to the area, such as roads and updated power supply.

Sincerely

Paul Lee

Okanogan County Commissioners
May 3, 1995

Dear Commissioners,

I would like to congratulate you for coming out in support of the Crown Jewel Battle Mt. Project on Buckhorn Mt. It has taken far to long to get the EIS finished for this Project, this Mine will help the economy in a very Positive way, Dont you to know you have my full support.

Thank you

Rudy Pelt

Pt. 1 Box 59

Oroville, W.A. 98844

91 DS

Don Wilts
4759 Finson Dr.
Clinton, WA. 98236
360-341-2265

RECEIVED
MAY 11 1995
OKANOGAN COUNTY

9 May 1995

Okanogan Cty Commissioners
Okanogan, WASH:

Dear Sirs:

I urg and encourage you to execute your Vested Responsibility regarding - 'go ahead' with 'Battle Mountain Mine' near Chesaw.

Respectfully
Don Wilts

Star Route 85
Oroville, WA 98844
April 25, 1995

SWS

Okanogan County Commissioners
P O Box 791
Okanogan, WA 98840

RECEIVED
APR 27 1995
OKANOGAN COUNTY COMMISSIONERS

Re: Crown Jewel Draft EIS Delay

Dear Sirs,

I am a deeply concerned County resident who fully supports your actions to resolve the problems that have plagued and unfairly delayed the Crown Jewel EIS for over three years.

My experience with this project goes back almost four years when I joined several of my neighbours in Chesaw to study this proposal in all its aspects. The results of our research highlighted the following features:

1) the project design as proposed meets numerous **Federal** and **State** environmental laws and regulations

2) **over three years** and **seven missed deadlines** have passed since the plan of operations was first presented to the USFS and DOE (January 1992) -- this far exceeds the average **13.5 month** completion time by the USFS and BLM for 16 similar gold mining projects between 1988 to 1993

The Crown Jewel proposal represents a very common and routine type of gold mining project ! To subject it to such exhaustive scrutiny is needless, unjust and grossly excessive. The end result has been the denial of jobs, loss of economic opportunities and erosion of our County's tax base that otherwise could have relieved some of the financial stress on our current social and school programs. It is clear that the vast number of laws and regulations designed to evaluate and promote responsible and safe mining projects cannot deliver and are now having a negative impact on all people in this County.

For these reasons I view your request of a Congressional Inquiry into the U.S. Forest Service's handling of the Crown Jewel DEIS as absolutely critical to re-establishing a functional permitting process which would spare any future resource-based projects a similar fate. As a member of the Common Sense Resource League which in turn is represented by the Okanogan County Citizen's Coalition, I can confirm that you have overwhelming grassroots approval. That your concerns have received acceptance beyond Okanogan County has been resoundingly demonstrated by the unanimous endorsement of the Crown Jewel resolution in April 1995 by the Eastern District of Washington State Association of Counties.

All your actions whether they be at the Federal or State level are greatly appreciated. Efforts such as these leave myself as well as many of my neighbours much more encouraged about the future of Crown Jewel. Thank-you for your firm and prompt intervention and if I can be of any assistance I would be glad to help.

Yours Sincerely,

Myron Sawink

Myron Sawink

cc Senator Slade Gorton
Congressman "Doc" Hastings
Senator Patty Murray
Senator Bob Morton
Rep. Cathy McMorris
Rep. Steve [illegible]
Mr John Lowe USFS
Ms Mary Riveland DOE

MAY 0 : 1995

Star Route 85
Oroville, WA 98844
April 27, 1995

The Honorable Slade Gorton
730 Hart Senate Office Building
Washington, D.C. 20510-4701

Re: Crown Jewel Mine -Draft EIS Delay
Okanogan County, WA

Dear Senator Gorton:

For over three years I have been studying the Crown Jewel gold mine proposal near Chesaw in Okanogan County. Along with many of my neighbours we have determined it to be a safe project that meets and surpasses the requirements of a multitude of Federal and State environmental laws.

On June 30, 1995 the U. S. Forest Service announced the 7 th missed deadline for Crown Jewel's draft EIS. The gravity of the situation has prompted the County Commissioners to request a Congressional Inquiry into U.S. Forest Service practices. That the request for an Inquiry is supported well beyond Okanogan County has been demonstrated by the unanimous approval of the Crown Jewel resolution by the Eastern District of Washington State Association of Counties.

I would like you to know that the regular parade of delays plaguing this project are unwarranted and unreasonable.

Since the study began 3 1/4 years ago in January 1992 the project has been generously funded. This allowed for the hiring of an experienced and reputable environmental consultant whose responsibility included management and coordination of all technical studies. This arrangement was established so the Forest Service could concentrate on project supervision thereby expediting the process .

The question that arises then is how can a well funded EIS with its technical responsibilities delegated to a third party contractor , still be in progress after 40 months, when 16 similar projects undertaken by the **same** agency (USFS and BLM)have taken on average only 13.5 months ? Even more puzzling is that the proposed the Crown Jewel project represents a rather routine type of mine facility that will operate with basic and conventional technology!

Based on these facts I believe the Okanogan County Commissioners deserve your full support in their call for a Congressional Inquiry. Caution must be taken however to insure that any investigation spare the already burdened EIS process any additional delay.

Any effort you could make in support of the Okanogan County Commissioners would be greatly appreciated.

Yours sincerely,

Myron Savuk

Myron Savuk

cc Okanogan County Commissioners
Mr. John Lowe U.S. Forest Service
Ms. Mary Riveland Wash. State Dept. of Ecology

MAY 0 . 1995

Star Route 85
Oroville, WA 98844
April 27, 1995

Senator Robert Morton
P.O. Box 40107
Olympia, WA 98504-0407

Re: Crown Jewel Mine -Draft EIS Delay
Okanogan County, WA

Dear Senator Morton:

For over three years I have been studying the Crown Jewel gold mine proposal near Chesaw in Okanogan County. Along with many of my neighbours we have determined it to be a safe project that meets and surpasses the requirements of a multitude of Federal and State environmental laws.

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Based on these facts I believe the Okanogan County Commissioners deserve your full support in their call for a Congressional Inquiry. Caution must be taken however to insure that any investigation spare the already burdened EIS process any additional delay.

Any effort you could make in support of the Okanogan County Commissioners would be greatly appreciated.

Yours sincerely,

Myron Sawiuk

Myron Sawiuk

cc Okanogan County Commissioners
Mr. John Lowe U.S. Forest Service
Ms. Mary Riveland Wash State Dept of Ecology

May 3, 1995

Okanogan County Commissioners

RECEIVED
MAY 0 8 1995
OKANOGAN COUNTY COMMISSIONERS

Dear Sirs:

I would like to say I support your efforts to help get the D & E.I.S Crown Jewel project going. The economy really needs it and I think the ones who are against the mine use products that are mine all the delays have been so cruel and unfair to the company

Sincerly Yours,

Marie Turner
Box 543
Oroville, Washington 98844

POGUE FLAT GRANGE
NO. 1027

RECEIVED
APR 2 7 1995

April 25, 1995

Okanogan County Commissioners
Okanogan, Washington 98840

Gentlemen;

We, of the Pogue Flat Grange #1027, are in full support of the commissioners in their affirmative action regarding Battle Mountain Gold. We would like to recommend the permit to Battle Mountain Gold be issued as soon as possible but not later than May 15, 1995.

We feel this is a well organized company and that they are trying their utmost to comply with ecological regulations.

Sincerely Yours,

Francis Tritle

F. Tritle
Master

cc: Dept of Ecology
Forest Service

COMMON SENSE RESOURCE LEAGUE
H. C. 71 Box 78A.
Oroville, WA 98844
Phone (509) 485-3531, FAX (509 476-4059)

RECEIVED
APR 20 1995

April 17, 1995

Okanogan County Commissioners
P. O. Box 791
Okanogan, WA 98840

Dear Sirs:

Re: Proposed Crown Jewel Mine Project

This letter is to reaffirm our support for your efforts and planned action in regard to the DEIS for the proposed Crown Jewel Mine Project.

Members of the Common Sense Resource League have studied all of the available material on the proposed project since 1991. A good deal of research has gone into state and federal mining and environmental laws.

We have noted that the proponent of the project has willingly cooperated with the agencies in fulfilling their requirements from the very beginning. As of this date, the cost to the proponent amounts to $4 million dollars.

A good share of this expenditure could have served to boost the sluggish economy of Okanogan County if the DEIS, EIS and permitting processes had been done in a reasonable amount of time.

As you are aware, the DEIS process has already taken 2 1/4 years beyond the first self-imposed agency DEIS release date of December 1992, and the most recent (8th) projected release date is an unspecified time in June 1995.

We have concluded that the project proponent has gone far beyond what would normally be required; that the proposed plan is protective of the environment; that laws in place which will monitor the project are more than adequate; that county administrators are more than capable of overseeing the safety of the operation.

We want you to know that the 167 members of CSRL stand solidly behind you in your efforts to facilitate the project - whatever you decide is appropriate action.

We have the assurance of other grass-roots groups that you also have their support.

In addition, we have both technical and practical information on all the aspects of mining which may be of assistance - just let us know.

Sincerely yours,

COMMON SENSE RESOURCE LEAGUE

Richard Dart

Richard Dart
President

Wilbur G. Hallauer

Route 1, Box 35 Dairy Point
Oroville, Washington 98844
(509) 476-2486

RECEIVED
APR 27 1995

April 25, 1995.

Okanogan County Commissioners
Court House
Okanogan, Washington. 98840

Re: Crown Jewel mining project.

Sirs:

Your efforts toward speeding up the bureaucracy in its consideration of the Crown Jewel mining project are appreciated. One has to conclude that the process established by law for such projects has simply failed in this case. The question arises as to the reasons this particular project has a record of failing to meet the time deadlines of the lead agencies time after time for a total of seven. Other projects have managed to run the gauntlet in their scheduled times — and this one is behind by multiples of the originally alloted time.

It is well known that the project has attracted the opposition of the Washington Environmental Council, the leading environmental group in the state. Do these continual delays confirm the suspicion that political leverage is at work ?

I have been personally interested in mining exploration since about 1950 and admit to a selfish interest in mining activity being allowed here in Okanogan county. I know from personal contact with major mining companies that they are sitting back and waiting to find out if the Crown Jewel project will fly before they will do any active exploration in Okanogan county and even the state of Washington itself.

Thank you for what you have done. Keep up the good work.

Yours truly,

W G Hallauer

P.S. I have no personal ownership interest in any way in the Crown Jewel project. The mining properties that I do have here are adversely affected by the obvious difficulty in obtaining permits to mine that confront the Crown Jewel project. Small time explorationists such as myself could never afford the kind of environmental war that engages Crown Jewel.

APR 1 7 1995

Mrs. Mary Seaman
P O Box 4198
Omak, Washington 98841
(509) 826-3363

Okanogan County Commissioners
P O Box 791
Okanogan, Washington 98840

Congratulations!

Listening to my radio today, I heard about your award for Procrastination awarded to the agencies responsible for delays to the Battle Mountain Gold Project.

You have selected a humorous, to the point approach to a problem that helps the general public to "lighten up" a little bit. I know that in your heart of hearts you are dead serious about the progress of this mining project -- at least to the point of wanting to know just what prohibitions there could be to it.

You are to be commended for "rattling the sabres" with a smile. I, of all people, like the "dead serious, right from the shoulder, get you where you live" approach, even though I know that sometimes causes more trouble and pressure than is needed at the time. My favorite picture of Christ is not the meek servant, but the conquering fighter, clearing the temple with a whip.

Thank you for being humorous leaders as well as men of conviction. Okanogan County should go far -- America will be improved by citizens who follow your examples.

Mary Seaman
"BROOK"

Mine to open May

Okanogan County Commissioners
P.O. Box 791
Okanogan, Wash. 98840

RECEIVED
JUN 21 1995
OKANOGAN COUNTY COMMISSIONERS

Dear Sirs

We the Seniors of in Oroville, Molson and Loomis, Wish to let you know We support you in going forward, to get the E.I.S for the Little Mountain Gold Crown Jewel Project started on Buckhorn Mountain, it has taken far too long to get this mine in operation, When the need is so great to get the economy moving in Okanogan County.

We thank you for moving forward on this Buckhorn Mountain Project.

Business is down 35% in Oroville from last year @ this time.
Information from County Commissioners Office

Tonasket, Omak & Okanogan are approximately the same as last year

Sharon MacKenzie
Richard A. Kane
Judy Kane
Kathy Kane
Jerry MacKenzie
Jill Greene
Robert Pollard
Linda Nelson
Bonnie E. Neil
Lorrie Moran
[illegible]

Ronald F. Stig	P.O. Box 1336 Oroville, Wa. 98844
[illegible]	P.O. Box 497 Oroville Wa. 98844
[illegible]	" " 31 Oroville Wa. 98844
Michael L. Rieger	402 16th Oroville Wa. 98844
[illegible]	Rt 1 Box HD 2104 Oroville Wa
Ada Forrester	Box 370 Oroville Wa 98844 get started hurry up
Elizabeth Depoteaux	501 Kay St WA 98844
Floyd Kuipers	815 16th Oroville 98844
[illegible] Kuipers	815 16th Oroville Wa 98844
[illegible] Barnes	Box 931-Oro. 98844
M.H. Baker	" " "
Clarence Newton	Rt 1 Box 19 Oroville Wa 98842
Betty Stig	P.O. Box 1662 Oroville, Wa 98844
[illegible]	PO Box 1662 Oroville, 98844
[illegible]	PO Rt 2- Box 1015A 98844
Bryce Emry	Box 204 Oroville Wa
Clayton Emry	Box 204 Oroville, WA
Allen Sawtelle	Rt 1 Box HD 2104 Oroville Wa 98844
Clara Schell	Box 1095 Oroville, Wa
Vera Swain	" 1531 " "
[illegible]	P.O. Box 432, Oroville, Wa 98844
Jerry Mills	PO Box 544 Tonasket, WA 98844
[illegible]	2046 HWY 7 Oro., WA 98844

RECEIVED
JUL 14 1995
OKANOGAN COUNTY COMMISSIONERS

RECEIVED
JUL 14 1995
OKANOGAN COUNTY COMMISSIONERS

May 10, 1995

Okanogan County Commissioner
P.O. Box 791
Okanogan, Wash. 98840

Dear Sirs

We the Seniors of the Oroville, Nelson and Tonasket, Wish to let you know We support you in going forward to get the EIS for The Cattle Mountain Gold Crown Jewel Project started on Buckhorn Mountain, it has taken far to long to get this mine in Operation, When the need is so great to get the economy moving in Okanogan County.

We thank you for moving forward with this Buckhorn Mountain Project.

NAME	Address
Ida Thrasher	Box 891 Oroville, Wash.
Earl Thrasher	" " "
Alfred Finnell	Box 664 Oroville, Wash.
Florence Finnell	Box 664 Oroville Wa
Perky Sherling	Oroville Wa
Margaret Wilson	Box 1046 Oroville Wa
Emma G. Black	Box 387 Oroville, Wa
Hattie Bowers	PO Box 74 Oroville
Tom Lima	Rt 1 Box 65 Oroville, Wash.
Celia Ewbert	P.O. Box 773 Oroville Wash
Simon Brown	Rt. 1 Box 12 Oroville
Inez Brown	Box Rt. 1 Box 12 Oroville
Virginia Frazier	RR 1 - Box 186 A Oroville Wash
Victor Bigger	Box 462 Oroville, Wa.
Ken E. Wilson	Rt 2 Box 1298 D
Joy Eisenman	Rt 2 Box 1298 D
Irene Hansen	Tonasket
Irene Moore	"

Jay Asmussen, P.O. Box 417. TONASKET. WA 98855

Lloyd Asmussen Tonasket Wa.

Fred Beix Box 1379 KASLO BC V0G1M0

Jim Jackson Rt. 1 Box 22 Oroville 98844

Walter Hennigs HC 71 Box 1287 Oroville 98844

Lawrence McFarland Star Route Box 83-E Oroville 98844

Robert E Lawrence Box 1714, Omak, 98841

Darrel Bunch 1785 Havillah Rd, Tonasket Wa. 98855

[illegible] Box F 1 Oroville 98844

May 18, 1993

Okanogan County Commissioners
P.O. Box 791
Okanogan, Wash. 98840

Dear Sirs,
We the Seniors of the Oroville, Nelson and Chesaw, Wish to let you know We support you in going forward to get the E.I.S. for the Cattle Mountain Gold Crown Jewel Project started on Buckhorn Mountain, it has taken far too long to get this mine in operation, When the need is so great to get the economy moving in Okanogan County.
We thank you for moving forward on this Buckhorn Mountain Project.

[illegible] F. Brazle	HC 71 Box 80-1	Oroville Wa
[illegible] M Brazle	" "	" " "
[illegible] Fitzhugh	HC71 Box 52	Oroville Wa
[illegible] Fitzhugh	HC71 Box 52	Oroville Wa
[illegible]		
[illegible]		
[illegible]		
[illegible] Tingell	PO Box 534	Oroville Wa. 98844
[illegible]	PO Box 32	Curlew WA 99118
[illegible]	Box 45 HC-71	Chesaw, Oroville, Wa.
[illegible] Hunt	Chesaw HC71 Box 83	Oroville, WA 98844
[illegible] Hunt	HC 71 Box 18A	Oroville WA 98844
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible] Turner	Box 543	Oroville, Wash. 98844
[illegible] Turner	" "	" " "
[illegible] McFarland	HC 71, Box 83E	Oroville, WA 98844

anogan County Commissioners
O. Box 791
Okanogan, Wash. 98840

Dear Sirs
e the Seniors of the Oroville, Nelson and
iesau, Wish to let you know We support
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tarted on Buckhorn Mountain, it has
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peration, When the need is so great to get
e economy moving in Okanogan County.
We thank you for moving forward on
is Buckhorn Mountain Project.

NAME	Address
Steve Bagley	Box 706 Oroville Wash 98844
Jim Kittleson	P.O. Box 546 Oroville Wash.
Guy F. Noel	RT. I Oroville Wash.
Bob Noel	P.O. Box 852 Oroville WA
[illegible] Knight	P.O. Box 573 Oroville
[illegible] Bailey	706 3rd St Oroville
Marvin M. Mills	P.O. Box 535 Oroville
Susan Klinkert	Box 216 Twisp 98856
Bob Reese	PO Box 529 Oroville
Michael J. Gamache	PO Box 520 Oroville
Michael Roberts	Oroville Wash
[illegible] Kyser	" " P.O. Bx. 571
Sandra Thompson	Rt 2 Box 1248 Oroville
[illegible]	P.O. Box 573 Oroville WA.
[illegible] + Betty E Hart	PO Box 808 Oroville
[illegible]	Rt 1 Box 235 Oroville Wa
[illegible]	Rt 1 Box 137 Oroville Wa.
[illegible] L Wilty	St Rt Chesaw WA
Floyd C Thistle	Chesaw WA

Page 5

Alice M Stevens Box 91 Riverside 95949
Bill Roth Box CC ~~Roth~~ Oroville 95965
Linda Denning, II RT 1 Box 220 Colusa
Gloria M. Engelbretson PO Box 876, Ayanbire

Woody Rehanek

Crown Jewel Project: Economic & Fiscal Impact Analysis Prepared by Huckell/Weinman Associates, Inc.

Comments by Woody Rehanek, OHA Secretary

The members of the Okanogan Highlands Alliance [OHA] thank you for the opportunity to comment on the Economic & Fiscal Analysis of Battle Mtn. Gold's [BMG's] proposed open-pit, chemical leach gold mine on Buckhorn Mtn. Reading research papers is like Forrest Gump & his proverbial box of chocolates--"you never know what you're gonna get." Reading Huckell & Weinman's information is a lot like trying to swallow chocolate-covered ants--they're sweet on the outside, sour on the inside, and the sour part doesn't always get along with the sweet part.

Here comes the sour part. In the opening paragraph of Huckell/Weinman's Economic & Fiscal Impact Analysis, the authors state:

"BMG's proposed Crown Jewel mining project would generate a variety of economic and fiscal impacts within Okanogan County and surrounding areas. In response to Washington Metals Mining and Milling Act of 1994 (RCW 78.56), an analysis was performed to estimate economic and fiscal impacts that would be experienced by local governmental units (counties, cities, towns, school districts, and special purpose districts) as a result of the proposed project."

Yet when we examine the law as written, Sections 13.4b/c require "the estimated number of persons coming into the impacted area as a result of the development of the mining operation; and an estimate of the increased capital and operating costs to local governmental units as a result of development of the mining and milling operation."

OHA respectfully suggests that this study is fatally flawed and out of compliance with the letter and intent of state law as written because it focuses on the 20% of BMG's projected workforce which would be nonlocal. They would migrate to this area and work at the proposed mine. The other 80% would presumably be local people in Okanogan & Ferry counties. However, **the study has not one word--not one--which addresses an "invisible" in-migration of the hopeful unemployed who would come here looking for work or attracted by the glamor of a New Gold Rush.** This hidden population will be discussed in a comparison of the DEIS later in this review.

State law does not limit this study to the in-migration of people who have guaranteed jobs with BMG; it requires an analysis of **all** persons coming into the impacted area as a result of the development of the mining operation. In fact, during the writing of this law, the potential impacts of this "hidden" or "ghost" population were discussed in hearings and committees.

This is why it requires an analysis of the increased capital

and operating costs [if any] to local government units as a result of a **total influx, not only people with guaranteed mine employment, as a result of a mining "boom."** The concept was to evaluate potential mining boom/bust cycles in local communities by considering **all** the people, not simply mine employees, who would average the highest average incomes in the region.

It is logical to assume that more than 87-88 people [34 nonlocal workers and their families] will move into the area. Dr. Tom Power, Economics Chair at University of Montana, and others,[1] have documented that part of the boom/bust cycle of resource extraction is a net influx of unemployed persons.

These people will need facilities and services. They will impact housing, schools, roads, police, fire, medical services, etc. They may not have the jobs or job skills necessary to sustain themselves. Some of them will be unemployed miners from other areas whose mines have played out. "It'd be nothing new for us to have to say we're done here and move on," said Tina Hunter of Lead, SD [**Spokesman-Review,** 10/18/92, p. E4]. "I don't care if he's rich or poor," said Kim Johnson of her son, Scott. "But I want him to get an education...so he can get a job wherever he wants. Maybe he'll even be able to stay in one place."

Modern-day career miners are traditionally mobile people. The average life of an open-pit gold mine in the West is 7 to 10 years. Unless an entire local area is opened up to metals mining, miners must either move on or seek education or job retraining. In fact, page 8, paragraph 2 of the **Economic & Fiscal Impact Analysis** suggests that **most of the mine employees, local and nonlocal, will leave the area:**

"As mining activities approach the end of operations and total employment at the mining facility begins to decrease, it is likely that many workers could either out-migrate to jobs elsewhere, find other local jobs, or collect unemployment for some period after the mine ceased operations. Based on similar mining operations, it is likely that out-migration will account for the majority of former BMGC workers."

Yet this study does not analyze the economic and fiscal impacts of this net out-migration.

The "Mine Closure" section [p.14] emphasizes a net outflow of both local and nonlocal persons after mine closure: "Closure of the mine will result in the lay-off and/or transfer of mining workers. Study area employment will likely decrease and the area will likely experience out-migration of former project employees (both in-migrants and possibly locals) if no local replacement jobs can be found...It is expected that unemployment rates will rise for most of the local governmental units, as would associated governmental payments typically associated with unemployed skilled workers. A slowing in the rate of housing price growth could also result from mine closure, as more houses become vacant from out-migration and demand for housing decreases."

The "In-Migrants" section [p.8, par.2] states: "As mining activities approach the end of operations and total employment at the mining facility begins to decrease, it is likely that many workers will either out-migrate to jobs elsewhere, find other local jobs, or collect unemployment for some period after the mine ceases operations. **Based upon similar mining operations, it is likely that out-migration will account for the majority of former BMG workers.**" [Italics mine.]

A decline in business activity would parallel a downfall in employment: "Project related income in the local economy will also decline as a result of mine closure...These potential impacts, in turn, could result in a general decline in business activity and/or isolated business closures. It is also possible that new businesses could be discouraged from coming into the area if they perceive that a critical industry in the local economy is closing."

The most serious flaw in this study is that all of the numbers are crunched in relation to a totally employed workforce of 80% local employees and 20% nonlocal. Impacts to towns and unincorporated areas in Okanogan and Ferry counties, as well as impacts to local government units (Okanogan County, Oroville School District, Hospital District #4, three fire districts, and the Oroville EMS District), **are figured only in terms of in-migrants who have full employment at the proposed gold mine. This is a major fallacy which should be corrected. Yet, in order to do this, all the numbers would have to be recalculated in relation to this "ghost" population of unemployed in-migrants. An accurate analysis of socioeconomic impacts cannot be completed unless and until this is done.**

In addition, the Huckell/Weinman study is based on other seriously flawed assumptions. The Sensitivity Analysis on page 10 discusses several of these. The "80% local hiring assumption" depends on defining a "local." In the article "Mine Created New Jobs, But Number of Locals Depends on Who's Talking" [**Omak Chronicle, 6/3/92**], BMG claimed most its work force was composed of local residents, according to reporter Cheryl Probst. Yet mine opponents said that only 41 out of 110 mine employees could be considered "local."

Of the assumed 80% local hires, only 13 are projected from Republic's defunct Hecla gold mine, and only one worker from unincorporated Ferry County. A total projection of only 14 workers from Ferry County seems inaccurate. Although BMG has stated its preference for hiring Okanogan Valley locals, it is unlikely that they would so lightly tap a reservoir of highly skilled miners in Ferry County.

The Curlew area has been targeted as having the potential facilities & services to serve an in-migration of mining families [DEIS Summary, p.S-39]. This is likely to occur if BMG's mine goes

online. Due to the proximity of the mine to Ferry County and its potential impacts on that County, a socioeconomic impacts analysis may also be needed there. Section 13.2 of the Metals Mining Act states, "The relevant county is the county in which the mine and mill are to be sited, unless the economic impact to local governmental units are projected to substantially affect more thatn one county. In that case, the impact plan must be submitted to the legislative authority of all affected counties."

Charlie Jacquez, secretary-treasurer of the Costilla County Committee for Environmental Soundness, said that he considers a local to be anyone who has lived in the community for many years. He stated that BMG brought in peoples from Wyoming, Utah, Nevada, and New Mexico, "but Battle Mountain considers them local once they're brought in." San Luis mine manager Gary Dodson disputed this claim, saying that 93 out of 110 employees were local. **Nowhere in either the DEIS or in the present study is a "local" precisely defined.** Therefore, the definition of a "local" means different things to different people.

Another eminently challengeable assumption is in the report's taxable retail sales projections. "Each year, BMGC expects to purchase an average of $7 million worth of operating supplies and services from vendors within Okanogan County," the report states [p. 17, paragraph 1]. BMG's track record in Colorado suggests that they have a tendency to purchase locally in the early stages of mine production, then to buy from the lowest bidder anywhere. "Everything they buy, they try to get as low as they can, just like anyone else," said fuel dealer Rupert Gallegos Omak **Chronicle** 6/3/92, p.29]. He supplied BMG with its fuel and oil during the mine's early operation, and then was out-bid by nonlocal dealers.

The analysis continues, "Similar to assumptions used for evaluating retail sales impacts from the construction of the mining facility, it was assumed that 20 percent of the value of construction sales would "leak" outside the study area." We believe that these figures are artificially low. In fact, total sales leakages outside the study area were presumed to be only 10%. This kind of distorted information is what we used to call "cooking the books."

BMG is now paying property taxes on approximately $19.6 million of assessed valuation due to mineral rights. During the 15-year time frame from 1995 to 2010, Okanogan County government revenues are projected to exceed costs by $1,718,000. Total net local government revenues (including schools, hospitals, towns, etc.) are estimated at $2.75 million, and may be exaggerated. If accurate, this would constitute an extremely minute percentage of an overall ore body worth $550 million. In the event that the proposed gold mine becomes operational, it would behoove our County Commissioners to negotiate a bigger slice of the pie.

If BMG successfully patents 350 acres of public land, this acreage would be subject to County property taxes and the tax base should be raised substantially. However, under the Clean Water Act, potential financial liability is incurred by the owners of lands which contaminate surface waters. Fines of up to $25,000, retroactive to the onset of contamination, may be levied against the owner/operator.

OHA recommends that Okanogan County require BMG to post a scioeconomics impact bond in case costs exceed revenues, especially after mine closure. **Another serious deficiency in the Huckell/Weinman research is its artificial cutoff point at the end of mine reclamation.** This conveniently ignores an inevitable downward economic spiral which is typical of mining-dependent communities in the post-mining syndrome. The shape & substance of this downtrend remains to be seen, but it should be delineated so that affected counties can adequately plan for the long-term future.

Furthermore, there is no apparent correlation between the revenue/cost analysis for Okanogan County and the Commissioners' claim that $363,000 in revenue has been lost by the County due to delays. In fact, it is illogical to assume that County revenues are "lost" at all, since the life of the mine remains the same, whether the mine startup is yesterday or tomorrow. This assumes that dollars retain their approximate 1995 value.

However, during the life of the mine, **property values** would rise; along with them, **taxes** would also be rise. Four reasons are given for increased property values: mine building construction; acquisition of valuable private land through patenting of mineral claims; the value of the mineral rights per se; and new home construction in the area. North County residents would experience increases in assessed valuation of property and **a corresponding increase in property taxes. In other words, if Okanogan County government did, in fact, benefit from an increase in revenues over costs, all North County taxpayers would pay for it in the long-term future.**

However, at mine closure, the opposite might occur. Property values could plummet due to environmental liability involved in living in close proximity to a potential toxic waste site. Huckell/Weinman report:

"Over the life of the project, mining activites would likely decrease the value of the site through earth moving and similar mining activities Okanogan County Assessor, 1995). However, this decrease in assessed valuation would be offset to some extent by reclamation activities planned after mining operations cease. The precise offset and timing of these two changes on assessed valuation are unknown [p. 19]."

The mine site would have ongoing mineral potential (through remining,etc.) but would also carry with it high financial liability.

Under the Clean Water Act, the current owner assumes liability for contamination of surface water due to point sources of mine waste runoff (e.g., waste rock piles, tailings) even if the pollution did not originate from their operation. Post-mine taxes, however, would tend to remain high, putting landowners in a potential double-bind of nosediving land values and escalting taxes.

Of the 34 theoretical in-migrating families, 17 are assumed to build new homes worth $90,000 each. Yet a significant percentage of new homes are manufactured elsewhere with nonlocal materials and labor, then brought in to local outlets like Hub Homes in Riverside. A mid-level range manufactured home may cost $45,000. The other 17 in-migrating families are assumed to buy existing homes.

Due to a saturation in the rental market, rentals by nonlocals are not even considered in this report, although word-of-mouth communication among well-connected people may still be a viable means of renting a home which is not included in the statistical analysis.

41% of incoming nonlocal mine employees are projected to move into the Oroville School District. This would be 14 families, each with a multiplier of 1.19 school children. A grand total of 17 new students are projected by Huckell/Weinman. This figure is artificially low because it ignores a "ghost population" of unemployed nonlocals who would move to the area in the hope of landing a job and may not find one.

In the Roadway Operation & Maintenance section [p. 29], it is stated that "BMG will adhere to County-imposed road closures due to frost heaving...However, if a BMG supply truck would need to get to the site during a road closure period and the truck would cause roadway damage, this damage would be mitigated by BMG, as required by the County." We suggest that BMG reimburse the County for road improvement on Jones Hill and Beaver Lake Road between Pontiac Ridge and Toroda Creek Road, as well as Toroda Creek Rd. itself. These are country roads not intended for heavy industrial use. The Beth/Beaver Lake road is extremely perilous in the winter and abuts significant lakes and wetlands. Lakefront portions of the road are narrow and treacherous, with high accident potential in winter.

Okanogan Highlands Alliance respectfully submits that this study is not adequate for the above reasons, and should be rejected by the County Commissioners. Under the 1994 Metals Mining Act [Sec. 6], the County Commissioners

"must approve or disapprove the impact analysis and any associated proposals from the applicant...If the applicant does not submit an adequate impact analysis to the relevant county legislative authority or if the county legislative authority does not find the applicant's proposals to be acceptable because of their failure to adequately mitigate adverse economic impacts, the

county legislative authority shall refuse to issue any permits under its jurisdiction necessary for the construction or operation of the mine and associated mill."

OHA recommends that no permits--conditional use or otherwise--should be issued by the County until this study is redone and until it can be compared to socioeconomic data in the Environmental Impact Statement by E.D. Hovee & Company. Theoretically, the data in both studies should essentially match up. If any blatant discrepancies exist, they should be critically examined to determine which, if any, is based on accurate information.

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The following examples are gleaned from the DEIS which demonstrate glaring disparities and blatant discrepancies between the E.D. Hovee and the Huckell/Weinman socioeconomic impacts analyses. Note: the Forest Service & BLM chose a "modified Alternative E" rather than the BMG's Alt.B in the DEIS. This would consist of an open-pit mine with a partial backfill & no pit pond; operate about 10 years, using cyanide tank leaching and the INCO process; waste rock would be piled north of the pit only; and tailings would be impounded on Marias Creek. However, years of operation, employment, percent of local employment, annual wages, capital expenditures, and assessed valuation are approximately the same for both Alts.B & E.

In the DEIS study, once again much depends on precisely defining a "local" and consistently adhering to it:

"Many of the socioeconomic effects evaluated are directly related to the question of how many workers are hired locally versus from outside the area. Experience with other comparable mine projects suggests that the proportion of non-local hires could be greater than what has been indicated by the Proponent, in the absence of active efforts to encourage local hiring."[p. 4-154.]

It also states that non-local workers "would also generate added community and public service expense, limit the degree to which existing local residents benefit, and could be more disruptive to existing social values of the area."

The construction phase would involve 60-75% non-local people. This is due to the specialty work involved in mine and mill construction, requiring technical skills and training. Construction workers would tend to improvise temporary housing situations. "Experience with other mine projects suggests that many construction workers can be expected to use recreation vehicle campsites and motels as well as rent homes and apartments, to the extend that space is available." [p. 4-167.]

Social services predictions vary widely according to the

assumptions used. The authors state that "there should be no disproportionate increase in demand for social services as a result of mine construction and operation." However, if the worker population is "disproportionately comprised of young adult males," the situation changes. This could "result in disproportionate effects on social services such as alcohol and substance abuse programs, as has occurred in other mining communities..." [pp. 4-164-5.]

In addition, major impacts to social services are predicted if "the Project draws more people into the area than would actually be employed directly or indirectly as a result of the Project. Heavy demands on social service agencies have been reported in other mining communities." [p. 4-166.] Contrary to what the County Commissioners would **like** to believe, these people will not necessarily drift away: "It is also possible that the Project will attract other people to the area hoping to find work, who may remain even in the absence of securing employment." [p. 4-168.]

In housing, "a range of between 53 to 183 new permanent housing units during the years of active mining operations" would be needed...A potential downside to this housing effect is that 40 to 164 homes may come on the real estate market as active mining operations end." [p. 4-169.]

If significant populations of workers chose to live in the Chesaw/Molson area, **"existing local public facilites that are related to community water, sewage, law enforcement and fire capabilities could be severely strained."** [p. 4-170.] Unfortunately, this is precisely the area closest to the mine, where commuting would be minimal. It may, therefore, be considered highly desirable despite its low inventory of available facilities and services.

The DEIS concludes that the proposed mine's revenue/cost balance, limned out over construction, operation, & reclamation, would amount to $21.5 million in net revenues for Alternatives B & E, and presumably for modified Alt.E. These Alternatives also cost the public the least amount for facilities and services ($4.5 million).

At this point the authors offer a word of caution. Instead of planning for a downturn in revenues at mine closure, many local governments--like mineworkers themselves--become addicted to increased cash flows:

"It is important to note that revenue increases are relatively temporary in nature. Government revenues would be high during construction and during the 4 to 16 years of mine operation. During reclamation, the net revenue surplus created by the Project would decrease sharply, followed by further reductions once reclamation activities are completed."

"Consequently, mine related governmental revenues could appropriately be viewed as a means to fund short-term programs or capital improvements rather than long-term continuing government programs. However, experience indicates that the impetus to increase ongoing governmental programs may be difficult to avoid. Other mining communities, including Ferry County, reportedly have

experienced public agency funding problems when mines have curtailed or ceased operations because local governments had come to rely on mine-related revenues." [p. 4-171.]

Moreover, E.D. Hovee & Co. admits that potentially overpcwering "ripple effects" may occur from any of the following [p. 4-173]:

* A lower rate of hiring local residents than is projected for the action alternatives considered.

* More in-migrants drawn to the area in hopes of employment than can actually be employed as a direct and indirect result of the Project.

* Potential notoriety of the Project which draws additional visitors or residents (whether as supporters, opponents or interested observers).

* Increase in mining exploration and claims as a result of an in-place, permitted mine Project.

* Increase in other industrial development, ranging from suppliers interested in locating closer to the mine or unrelated industries drawn by increase awareness of Okanogan & Ferry Counties.

Any or all of the above are feasible scenarios which have not been seriously addressed in either the E.D. Hovee [DEIS] research or the Huckell/Weinman research [1994 Metals Mining Act]. By E.D. Hovee's own admission, any one of these could significantly alter socioeconomic impacts in Okanogan County.

The **real** question is to what extent North Okanogan & Ferry counties would become industrialized as a result of a new gold rush which would be initiated by this project. Dr. Tom Power and others offer a sustainable economic model of rural communities. In this model, the short-term value of resource extraction is outwieghed by the long-term ability of high-quality rural communities to attract and hold people.

OHA respectfully suggests that, rather than adhering to a "rear-view mirror" model of resource extraction as the primary means of economic development, the County Commissioners enter the 21st century with a creative vision of rural economics based on sustainable timber harvest, diversified agriculture, local entrepreneurial activities, and a burgeoning service sector based on retiree incomes, recreational tourism [already valued at $75 million a year], and a high-quality living environment.

--Woody Rehanek, Secretary (509) 486-1003
Okanogan Highlands Alliance
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Footnotes: The Boomtown Syndrome

1. Gedicks, Al: **The New Resource Wars**, South End Press, Boston, 1993, pp. 72-3:

"By 1985, however, the local Wisconsin Resources Protection Council [WRPC] began to focus public attention on the potential 'boomtown' problems resulting from the large influx of workers and their families to the Crandon area. Forest County had the lowest population density of any county in the state and had geared its facilities & services to that low density. Yet the DEIS projected a low estimate of a 12% population increase in the project area during the peak year of mine construction. **This sudden influx of population had the potential not only to disrupt traditional rural lifestyles but also to impose economic hardships on the township because public facilities & services would be needed before local revenues became available...**"

"...During the spring of 1986, George Rock, president of of the local WRPC chapter, appeared at numerous town board meetings and presented **documented case histories of energy boomtowns in the western United States** where communities were burdened with excessive costs that were not offset by increased tax revenues..."

"In April 1986, the township adopted a socioeconomic mitigation provision to its zoning ordinance. This provision, modeled after similar legislation in the western United States [cf. Montana's Hardrock Mining Impacts Act], made the **issuance of a mine construction permit contingent upon Exxon's agreement to reimburse the township for any project-related expenses that exceeded the tax revenues available to the community.** This action effectively shifted the economic burden of socioeconomic impact mitigation from the community to Exxon." [Emphases mine.]

Note: Dr. Gedicks teaches Sociology at the Univ. of Wisconsin/La Crosse and has served as director at the Center for Alternative Mining Policy and as executive secretary of the Wisconsin Resources Protection Council. He is a member of the Citizens' Mining Information Network.

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OKANOGAN COUNTY COMMISSIONERS

Dr. Thomas Michael Power's Socioeconomic Analysis: Highlights by Woody Rehanek, OHA Secretary

To the Okanogan County Commissioners,

Please find enclosed Dr. Thomas Michael Power's socioeconomic impacts analysis of Okanogan & Ferry counties. Dr. Power is Professor & Chairman of the Economics Dept. of the University of Montana at Missoula; he is a leading expert on the impacts of mining to rural communities. Although Power's research is specifically aimed at critiqueing the DEIS, it is extremely relevant to the Huckell/Weinman study, since both E.D. Hovee and Huckell/Weinman operate under a similar set of flawed assumptions.

Possibly the most serious flaw in the Huckell/Weinman study is that it, like E.D. Hovee's work, relies on BMG's assumption that it will hire 80% "locally," despite ample evidence to the contrary. In pp. 87-88 of Hovee's paper, "Existing Socioeconomic Conditions," miners are characterized as mostly **single men** who **move frequently** and **rent** rather than buying housing.

When Echo Bay opened its gold mine in Ferry County in 1989, **only 29% of the jobs went to Ferry County residents despite a long history of local mining**. Almost 50% of the jobs went to out-of-state people [p.105, above study]. Hovee admits [p.110], "The 'local area' for hiring may be considered by the mine operator as up to a 65 mile radius or inclusive of even an entire state." Finally, in its paper, "Affected Socioeconomic Environment," the 80% projection of local hires is "higher than is suggested by the actual local hiring experience of other mines."

Dr. Power asserts, "This type of uncritical adoption of the CJP's optimistic claims casts doubt on the integrity of the entire DEIS...When most of the jobs are assumed to go to current residents who are unemployed, the local income and employment impacts get exaggerated while the demands on housing, schools, social services, etc. are minimized. This unrealisitic assumption has the impact of exaggerating the benefits and minimizing the costs. That is a useful distortion for the CJP but not an appropriate bias in a DEIS." [Power study, p.16.]

In addition, without a clear and precise definition of a "local," it becomes an ever-moving and elusive target. [Cf. Frank Lyttle's assertion at the 6/26/95 Commissioners meeting that a "local" would include someone who owned land near Buckhorn Mtn., lived in Seattle, and was planning to move here if the mine opened.] Thomas Power concludes on p.17 of his study that an 80% local hiring preference may be **illegal and discriminatory**.

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Power's analysis exposes other major flaws in Huckell & Weinman's "crude economic base model." For example, Huckell/Weinman research claims the mine would bring economic prosperity to Okanogan County while ignoring environmental costs

associated with environmental degradation. Yet if we examine the total impact of BMG's proposal as a **percentage of the total existing economy**, Table 1 [p.11], Dr. Power's study paints quite a different picture: employment is 1.2% of the total; income, 1.1%; and effect on city & county governments, 0.8%. In other words, the potential benefits are minor in the context of over-all economics.

Dr. Power suggests [p.11]: "The benefits, although calculable, are quite small. Each year, the ongoing expansion of the regional economy creates many times this number of jobs & dollars of income...To the extent the environmental consequences of the mine discourage this ongoing expansion of the economy, these small gains could be more than offset by undermining the current sources of economic vitality—the attractiveness of the area as a place to live, work, and do business...Put slightly differently, given the very small potential gains, what risks of substantial losses are citizens willing to undertake? **The DEIS [and the Huckell/Weinman report], by ignoring the economic risks of undermining the regions's amenity reputation because of the open pit chemical mining, never analyzes this crucial question.**" [Emphasis mine.]

Okanogan & Ferry County economies have been expanding by about 600 jobs, $35 million in income, and 500 new residents each year. Contrary to the bleak economic picture painted by the Huckell/Weinman paper, Power's Figures 1-3 graph "an unusually dynamic & vital economy :

"Since 1986 jobs have been created within the two county area at a relatively rapid rate, an average of about 600 jobs per year for a total of 3,700 jobs (BEA, REIS)...Clearly the problem was not lack of job creation. The problem is that job seekers were growing faster than jobs were being created. Since those jobs seekers were largely migrating into the area voluntarily, it would appear that the unemployment 'problem' is not that the local economy is failing in some sense but that the area, overall, is so attractive that despite low wages and high unemployment rates, employment-aged immigrants continue to arrive." [Power, p.12.]

Dr. Power continues: "This voluntary choice is evidence that those money income statistics are misleading indicators of local economic well-being. They should not be reported as 'facts' that tell us something about local economic well-being. This also applies to calculated poverty rates. To the extent that costs of living are significantly lower in these rural areas' **and** there are opportunities for subsistence activities, poverty rates may be significantly over-estimated." [Power, p.13.]

For example, housing costs are major factors in local cost-of-living, yet median home valuation in Chesaw/Oroville is $46,300, whereas for Washington State it is $93,400. "The difference in housing costs reported in the DEIS suggests that major adjustments have to be made for cost of living before comparisons can be made between the two county area and the state as a whole," Power states [p.13].

Another significant assumption made by the Huckell/Weinman paper which is not borne out by facts is that "growth pays for

itself by generating tax and other revenues in excess of any additional government expenses."[Power, p.14.] Yet "as one moves from Republic to Oroville to Okanogan to Omak, population quadruples and total local government expenditures **per capita** doubles."

Power continues, "One of the reasons that the DEIS calculates such a sizeable 'fiscal bonus' associated with the project is that it apparently projected tax and other revenues to rise in proportion to population, with each new resident providing tax and other revenues at exactly the current average government revenues per capita...The mine requires no additional government expenditures directly and the needs of the new population are covered by an assumed separate expansion of the local economy implicit in the assumption that government taxes unassociated with the mine will rise proportionally with population. The taxes paid by the mine then are 'pure gravy' since the costs of the new population are covered by some mysterious other source. **This approach creates a fiscal surplus simply through the assumptions used.**" [Emphasis mine.]

I respectfully urge the County Commissioners to read Dr. Power's research in its entirety and to reject the Huckell/Weinman study as biased and based on false assumptions. Please note Figures 1-5 & Table 1 in Power's analysis which illustrate his main points.

OHA respectfully repeats that the Huckell/Weinman study is fatally flawed in terms of the requirements of Sec.13 of the 1994 Metals Mining Act because all the numbers are crunched in relation to an 80% local hiring assumption. A number of other false assumptions, outlined in Power's report as well as in oral & written input to the Commissioners at the 6/26/95 public hearing, underscore its inadequacies. We therefore urge the Okanogan County Commissioners to reject the Huckell/Weinman study.

Sincerely,

Woody Rehanek

Woody Rehanek, Secretary
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The Crown Jewel Project and the Economies of Okanogan and Ferry Counties, Washington

[DRAFT]

An Analysis of the Socioeconomic Analysis Contained in the Crown Jewel Project Draft Environmental Impact Statement

Prepared for the

Okanogan Highlands Alliance

by

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June, 1995
[DRAFT]

1. Introduction

Battle Mountain Gold Company has proposed to develop a large scale open-pit cyanide heap leach mine at Buckhorn Mountain, 3.5 miles east of Chesaw, Washington. The project, named the Crown Jewel Project (CJP), would extract gold and silver. Because part of the proposed mineral operation is on federal and state lands, the U.S. Forest Service and the Washington Department of Ecology have prepared a draft environmental impact statement (DEIS) on the project. That DEIS contains socioeconomic analysis prepared by E.D. Hovee and Company. This report reviews that socioeconomic analysis and finds it seriously incomplete and inconsistent[1]. In its current form, it cannot provide accurate guidance to public land use managers about the actual socioeconomic impacts associated with the CJP.

This report is organized in seven sections. The first section reviews what the DEIS socioeconomic analysis ignored, the important role that environmental quality or amenities play in supporting local economic vitality. The second section considers the impact of the proposed mine in the context of the changes that are currently taking place in the local and regional economy. The third section analyzes the impact that the instability and short term nature of the mining industry has on local communities. The fourth section considers the relative size of the CJP compared to the overall regional economy and the contribution it could make to local economic development if it had no negative economic aspects. The fifth section corrects the impression left by the DEIS that residents of the Okanogan Highlands and surrounding area are economically "desperate" and badly in need to the "benefits" that the CJP would provide. The sixth section examines the "fiscal bonus" the DEIS suggests the mine will produce for local governments. It shows that this "bonus" is largely the result of unsupportable assumptions. Finally, the seventh section discusses the DEIS's failure to make use of the very data it has collected.

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[1]This analysis is based upon the "baseline" and "background" reports that were done in support of the DEIS. These two reports provide the detailed background material upon which the DEIS socioeconomic analysis was based. The page references are to these detailed reports rather than to the DEIS summary of those reports. The reports referred to are "Existing Socioeconomic Conditions: Baseline Report, Crown Jewel Project," February 8, 1994, and "Affected Socioeconomic Environment: Background Report, Crown Jewel Project," December 23, 1994. Both reports were prepared by E.D. Hovee & Company.

2. The Role of Environmental Quality in Supporting Local Economic Vitality

a. The Inadequacy of an "Economic Base" Approach

The DEIS makes a complete separation between the impact of the CJP will have on the natural environment and its socioeconomic impacts. The implicit assumption made by the DEIS is that either the CJP will have no significant environmental impacts or that those environmental impacts have no significant economic implications. If the former were true, there would be little or no concern about the project and the whole environmental impact statement process would not be necessary. This report assumes that there <u>are</u> significant environmental concerns related to the project. As for the latter assumption, it is directly contradicted by economic theory, thirty years of empirical economic research, and most of this nation's post-WW2 economic history.

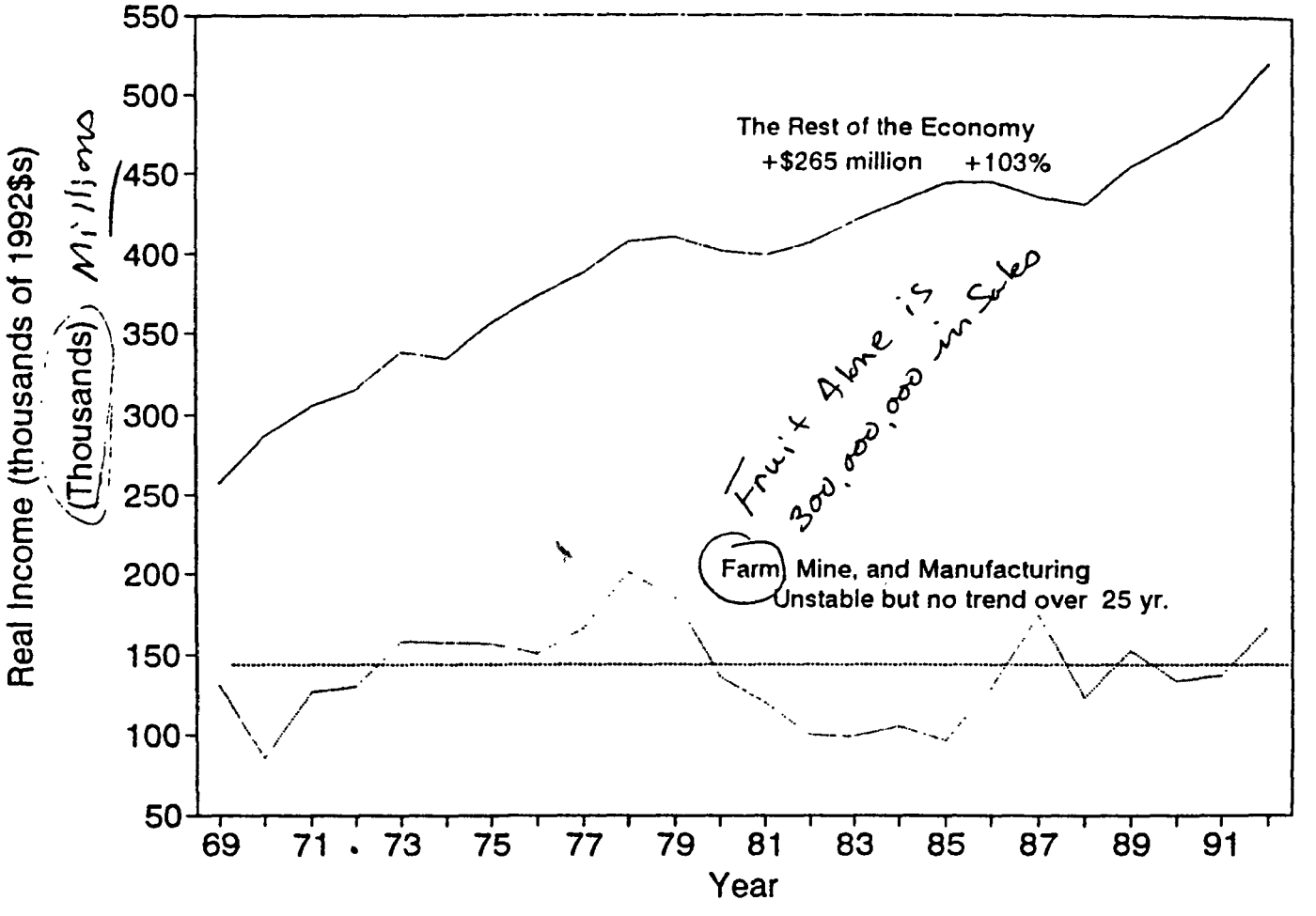
The DEIS's approach to describing the local economy involves a crude "economic base" model. This approach assumes that people can live in a particular area only because certain local economic activities bring income into the local economy by exporting products such as the output of mines, farms, and lumber mills. According to the economic base view, without this inflow of income from export oriented activities, there would be no income available to support local residents, locally oriented businesses, or local government services. In this view, residence is possible in the local area primarily because of the activities of the area's natural resource industries.

Although this view of the local economy may be popular and widely shared by the lay public, it does not provide an accurate analysis of the Okanogan and Ferry County economies. It is incapable of explaining the changes that have been taking place within those economies and, for that reason, is incapable of accurately describing the impact of the CJP. This can be seen in Figures 1 through 3.

The economic base view of the local economy asserts that it is changes in the "basic" or export sector income that drives the rest of the economy. Figure 1 compares changes in real (inflation adjusted) income from agriculture, mining, and manufacturing (wood products) with changes in the rest of the economy since 1969. Even though the "basic" natural resource sectors showed not upward trend over that period, the rest of the economy doubled in size in real terms. That is, when inflation is subtracted out, the natural resource sectors show considerable instability but no overall growth. If the economic base view of the local economy were correct, one would see the same pattern in the rest of the economy. One does not. The rest of the economy shows considerable vitality despite the lack of the same in the natural resource sectors. Figure 2 shows the same view from an employment perspective. Again, the vigorous expansion outside of the natural resource sectors (+82 percent) cannot be explained by the flat or very modest

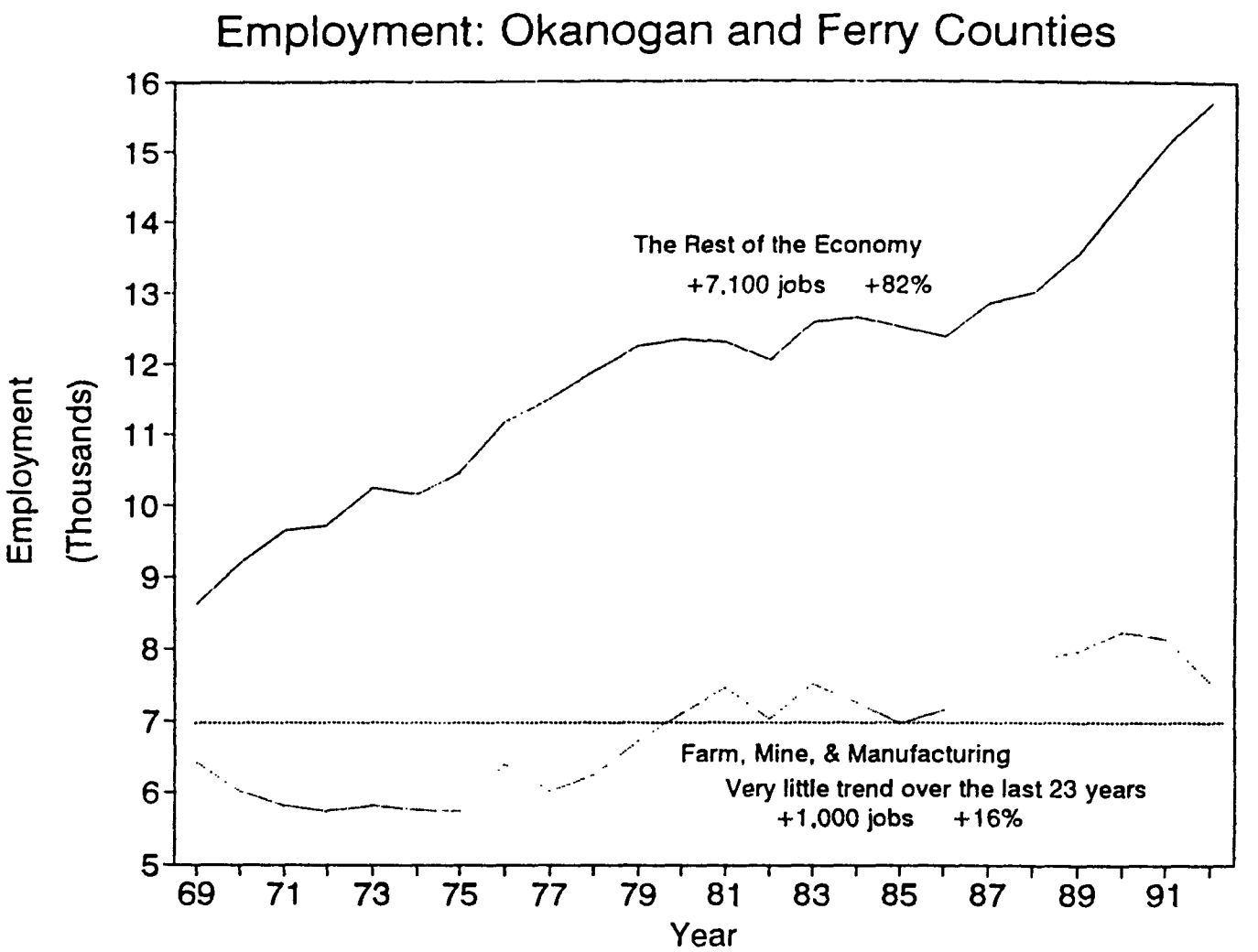
FIGURE 1

Real Income: Ferry & Okanogan Counties



Sources: BEA REIS CD ROM; mining income estimated.

FIGURE 2



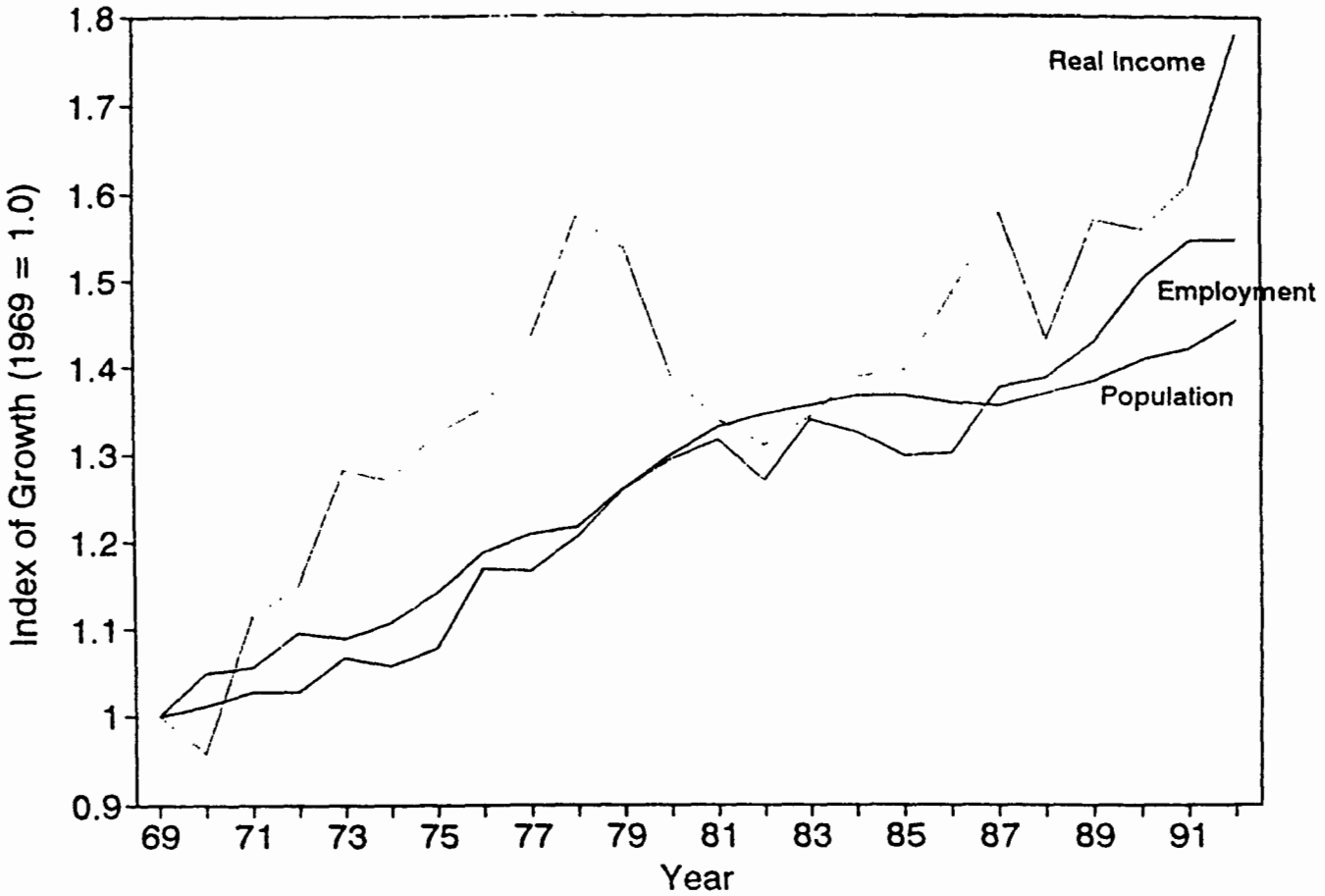
Sources: BEA REIS CD ROM; mining employment estimated.

Jobs - 1991 - Almost 16,000

Population Okanogan 33,000

FIGURE 3

Growth in Ferry and Okanogan Counties



Sources: BEA REIS CD ROM.

expansion in the natural resource sectors[2].

This can be put slightly differently Figure 1 shows the lack of growth in real income being injected into the local economy by the natural resource industries. Figure 3, on the other hand, shows that significant expansion took place in those economies nonetheless: Total real income expanded by almost 80 percent, employment expanded 55 percent, and population grew 45 percent. The challenge to any empirical analysis of the Okanogan and Ferry County economies is to explain this substantial economic vitality despite the instability and overall lack of growth in the natural resource "economic base." The DEIS does not provide that economic analysis and, because of that, the role that natural resource industries are actually playing in the local economy is never determined. This makes any projection of socioeconomic impacts from additional mining impossible.

b. The Economic Role of Environmental Quality

The economic base approach to the analysis of the local economy assumes that people move to where jobs are while businesses move to where natural resources are. Those assumptions can be restated in the following form:

i. People do not care where they live. They only care about income and employment opportunities.
ii. Businesses do not care about the availability, quality, and cost of the labor force and do not care about the location of markets for their products. They only care about the location of raw materials.

Neither of these assumptions are supported by either economic theory or empirical economic analysis. People do care about the quality of life supported by particular residential locations and migrate in pursuit of preferred environmental qualities. Businesses do care about where the population is located because the cost and quality of employees is a dominant determinant of business profitability. In addition, firms shift to follow people because that population represents the market for their products.

Since the end of World War Two, the location of economic activity in this nation has been heavily influenced by people moving to preferred living environments and economic activity following them. The move from center cities to suburbs, from the "frost belt" to the "sun belt", from metropolitan to nonmetropolitan areas, and the most recent "resettlement" of the West are all examples of this phenomenon. The growing population and expanding economies in Okanogan and Ferry Counties also are partially driven by this phenomenon.

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[2]Figures 1 through 3 provide results for the combination of Okanogan and Ferry Counties. If the counties are looked at separately, the same patterns would be seen.

It has become standard practice in regional economic analysis to include this amenity driven migration in the analysis[3]. For instance, the U.S. Forest Service, in its economic analysis for the Interior Columbia River Basin Ecosystem Management Project, which includes Okanogan and Ferry Counties, has developed a regional economic model that has population and employment partially determined by regional amenities[4]. Land management decisions that damage those amenities deter inmigration and job growth. The DEIS completely ignores this crucial link between the attractiveness of an area and its ability to attract both residents and businesses and support a vital economy.

The DEIS, in its description of the various groups that make up the local population, implicitly recognizes the role that local quality of life has been playing in expanding the regional economy. The DEIS identifies "recent arrivals and newcomers" as a distinct and significant population group. Among these "newcomers" the DEIS identifies several amenity driven groups of migrants: "educated wilderness migrants," "urban refugees," and "retired middle class." (pp.83-86) The only hint of the economic importance of these inmigrants is provided in a comment on the last subgroup, the retired middle class. "This group has had a great impact on the region in the past 20 years and is growing at a significant rate. In fact, this is a class of people that has been a marketing target for many Washington communities wanting to attract them to move in."

One indication of the relative importance of these retirement age inmigrants to the local economy is the income flows that accompany them when they make a residential location decision. The "footloose" income they carry with them includes government pensions,including social security and medicare reimbursement, the income from private retirement investments (dividends, rent, and interest), private pension programs associated with previous employment, and income from the sale of past financial investments. Only the first two of these four retirement-related income flows are reported regularly by county in federal economic statistics. Figure 4 provides an estimate of this part of retirement-related

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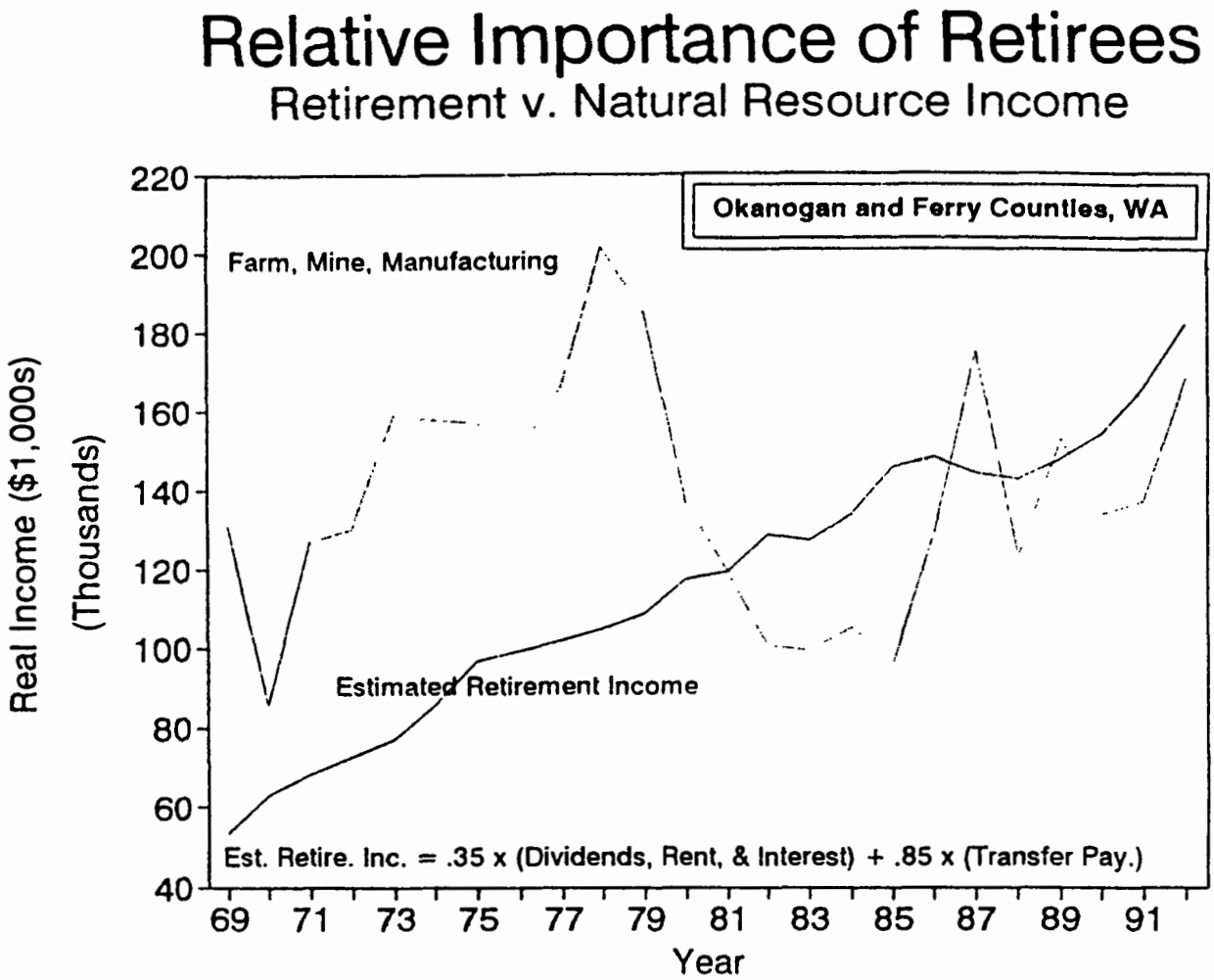
[3]See, for instance, "Migration, Regional Equilibrium, and the Estimation of Compensating Differentials," Michael J. Greenwood et al., 1991, **American Economic Review**, 81(5):1382-1390; "The Dynamics of U.S. Internal Migration," George I. Treyz et al., 1993, **Review of Economics and Statistics**, 75(2):209-214. Treyz who is a coauthor of both of these studies has also developed the REMI economic and demographic forecasting and simulation model that includes quality of life variable that influence shifts in economic activity. See George I. Treyz et al., "The REMI Model," **International Regional Science Review**, 14(3):221-253, 1992.

[4]Amy Horne, "GROWTH: A Regional Economic Model" Science Integration Team, Interior Columbia River Basin Ecosystem Management Project, Pacific Northwest Research Station, U.S. Forest Service, Portland, Oregon.

FIGURE 4


Relative Importance of Retirees
Retirement v. Natural Resource Income
Okanogan and Ferry Counties, WA
Farm, Mine, Manufacturing
Estimated Retirement Income
Est. Retire. Inc. = .35 x (Dividends, Rent, & Interest) + .85 x (Transfer Pay.)
Real Income ($1,000s)
(Thousands)
220
200
180
160
140
120
100
80
60
40
69
71
73
75
77
79
81
83
85
87
89
91
Year

income flows into Okanogan and Ferry Counties[5]

Figure 4 shows the retirement income flowing into the local economy rising in real terms from about $50 million to $180 million over the last twenty-five years. In order to put this income flow into perspective in terms of both size and reliability, it is compared to the real income from the area's natural resource industries, agriculture, mining, and manufacturing (wood products). There is little trend in the latter. That natural resource income was about $150 million in 1969, 1975, 1980, 1987, and 1992. It fluctuated widely but showed no significant trend. While retirement income was a consistent source of economic vitality, natural resource industries were a regular source of local economic instability[6]. By 1992, estimated retirement income significantly exceeded the combined incomes earned in agriculture, mining, and manufacturing. If one is analyzing the "economic base" of the area, one cannot, as the DEIS does, ignore this major income flow.

It is not only retirement-aged inmigrants that have a stimulating effect on the local economy. Empirical economic analysis indicates that for each working age inmigrant there is an expansive impact that generates approximately one additional job. That is, working age inmigrants tend to stimulate economic activity that supports themselves[7]. This stimulating effect of working age inmigrants is associated with the expansion of the local labor pool, the infusion of entrepreneurial energy, the "footloose income" inmigrants bring with them, the increased private and public investment associated with growing population, and

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[5]These estimates are based upon including 85 percent of "transfer payments" and 35 percent of property income (dividends, rent, and interest). The 85 percent is tied to clearly labeled retirement-related transfers listed in the REIS data. The 85 percent is based upon a statistical analysis of the relationship between social security payment to local areas and the flow of property income to those areas. To the extent that some significant part of retirement income is spend outside of the local economy, these estimates may overestimate the actual impact on the local economy. Of course, the same could be said about mining income or any other income source too. Finally, it should be kept in mind that two sources of retirement income, private pensions and the sale of investments, are not included in these estimates.

[6]Although the DEIS suggests that Okanogan County attracts "quality of life" migrants but Ferry County attracts "job oriented" migrants, estimated retirement income in Ferry County grew a third faster than in Okanogan County.

[7]Muth, R.F., 1971, "Migration: Chicken or Egg?" Southern Economic Journal, 37(3):295-306; Greenwood, M.J. and G.L. Hunt, 1984, "Migration and Interregional Employment Redistribution in the United States," American Economic Review, 74:957-969; Greenwood, M.J., 1981, Migration and Economic Growth in the United States, New York: Academic Press.

the expanded markets the larger population creates[8]. In addition, working age inmigrants often are associated with small businesses that are relocating in the pursuit of the same environmental amenities that attract individuals[9].

It is clear that the residential choice decisions being made by both retiree and working age households are having a significant positive effect on many nonmetropolitan areas throughout the West and the nation, including Okanogan and Ferry Counties. In the western states this has been labeled the "resettlement" of the West. But the phenomenon is much broader than the West. During the 1990s there has been widespread population growth in nonmetropolitan areas of the United States driven by these residential choices[10] Okanogan County is one of the rapidly growing nonmetropolitan counties that has been identified as an "amenity" county in national economic analysis of all counties[11].

This nonmetropolitan economic vitality cannot be explained by expansion in the traditional natural resource industries. Throughout the West and across the nation, this new economic vitality has coincided with instability and decline in those industries. There is an altogether different source for this new economic vitality: The high quality social and natural environments these areas offer to new residents and businesses. The same can be said for Okanogan and Ferry Counties.

This has very important implications for the economic analysis of the impact of the CJP. Given that the quality of the region's natural environment is an important part of its economic base and the source of the region's ongoing economic vitality, anything that threatens that natural environment has to also be seen as threatening that economic base and that economic vitality. Industrial economic activity that undermines environmental quality cannot be seen as having only positive economic impacts, which is the DEIS's approach to the CJP. Rather, the negative economic impacts associated with a degraded environment have to be

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[8]See T.M. Power, "Residential Choice and Local Economic Vitality," Chapter 2 in **Extraction and the Environment**, Island Press, Washington, DC, forthcoming fall 1995.

[9]Johnson, J. and R. Rasker. 1993. "The Role of Amenities in Business Attraction and Retention." **Montana Policy Review** 11-19 and Ray Rasker and Dennis Glick, 1994, "Footloose Entrepreneurs: Pioneers of the New West?" **Illahee**, 10:34-43.

[10]Johnson, K.M. and C.L. Beale, 1994, "The Recent Revival of Widespread Population Growth in Nonmetropolitan Areas of the United States," **Rural Sociology**, 59(r):655-667.

[11]"Nonmetropolitan Recreational Counties: Identification and Fiscal Concerns," K.M. Johnson and C.L. Beale, Working Paper No. 6, Demographic Change and Fiscal Stress Project, Loyola University, Chicago, January, 1995.

taken into account. An economic analysis that fails to do this is grossly incomplete and biased and cannot be used to guide decision making. The DEIS in its current form can be characterized in that way.

This is not a fine point of economic theory. Hundreds of jobs and tens of millions of dollars per year have been added to the local economy as a result of amenity-based economic vitality. See Figures 1 through 4. The CJP involves a tiny fraction of this impact. If the CJP undermines the regions reputation for a high quality living environment, it kills the goose that has been systematically laying the golden eggs in the region. The negative economic impacts of the CJP could far exceed any positive impacts it might have. This is not a matter to be taken lightly. It has to be carefully considered as the local costs and benefits of the CJP are weighed. Open pit chemical mining, because of its dramatic impact the landscape and potential impact on water quality, may not be compatible with protecting the region's amenity reputation.

3. Economic Implications of the Short Term and Unstable Impacts of Metal Mining

The CJP plans to operate for only eight years. When the construction and reclamation activities are included, the life span of this set of economic activities will be only a decade. In that sense, the CJP would be only a temporary part of the economic base. This has important implications for its expected impacts on the local economy. In addition to being short term in nature, metal mining also tends to be an unstable and a declining source of employment and income. These characteristics, too, are important in analyzing the local impacts. The DEIS does not adequately explore or discuss either of these aspects of the CJP.

Modern gold mining operations tend to be relatively short run operations that quickly deplete the ore deposit. The CJP is explicit about this in its projected 8 year life. The Cannon mine outside of Wenatchee and the Echo Bay Kettle Projects remind us of the reality of these short term time spans. The Cannon mine began production in July of 1985 and began to cutback production and reduce output because of dwindling reserves in 1992. [redacted] The Kettle Projects in Ferry County began producing in 1990 and by 1992 were abandoned because the ore was exhausted[12]. Hecla's operations in Ferry County, on the other hand, have regularly been extended in time because of the discovery of new ore bodies in the vicinity of the original mine. The Hecla operation was originally projected to shut down in 1984 but has continued in operation at a relatively high level. The risk of shut down in the mid-1980s, however, was real. This modern instability in mining is just a more recent version of what has happened in the region in the past. A mining industry came and went, leaving behind primarily ghost towns. It is not clear that one can expect a significantly different performance from the industry in the future.

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[12]Mineral Yearbook, Vol. II, Area Reports: Domestic, Department of Interior, Bureau of Mines, 1982-1992.

The viability of mining operations is also determined by international commodity prices that can be extremely unstable. See Figure 5. Fluctuating copper, silver, and gold prices have alternately set off mining booms and sudden mining industry collapses. Operations that are profitable when gold prices are at $400 per ounce or copper prices are at $1.40 per pound may have to be abandoned if prices fall to $300 or eighty cents.

There is one other feature of mining that affects its long run employment and income potential. That is rising labor productivity. Mining is a mature industry producing a relatively uniform product. Technological development has been spectacularly successful in finding ways of reducing the labor cost of mineral extraction. New processes and new equipment have steadily reduced the direct labor content of an ounce of gold or a pound of copper or a ton of coal. This rising labor productivity and the falling commodity prices are at least partially linked. As new production techniques have been adopted worldwide, supply potential has increased, and, in the international competition, commodity prices have been driven downward adding to the pressure on all mining operations to reduce costs, including labor costs, even further. The reductions in the use of labor per unit of mine output has been impressive. While economists and policy makers have wrung their hands over the slow growth in productivity in the overall American economy, productivity in mining has been growing rapidly. While three-quarters of American industries saw productivity grow by less than two percent per year, in mining it grew at five to ten percent per year[13]. Mining was in the top ten percent of American industries in terms of productivity growth.

If demand for a mineral is limited by national and international markets, rising labor productivity is likely to translate into declining employment in that industry. Where demand is rising, the rising labor productivity can allow the increased demand to be satisfied without any increase in employment. The impact on the employment potential can be impressive. Metal mining productivity growth of 10.8 percent per year over a decade would reduced the direct labor content of metal ores by two-thirds.

In summary, metal mining employment and income opportunities can be characterized in the follow ways:

i. They are short term in nature.
ii. They are unstable, subject to sudden changes in international

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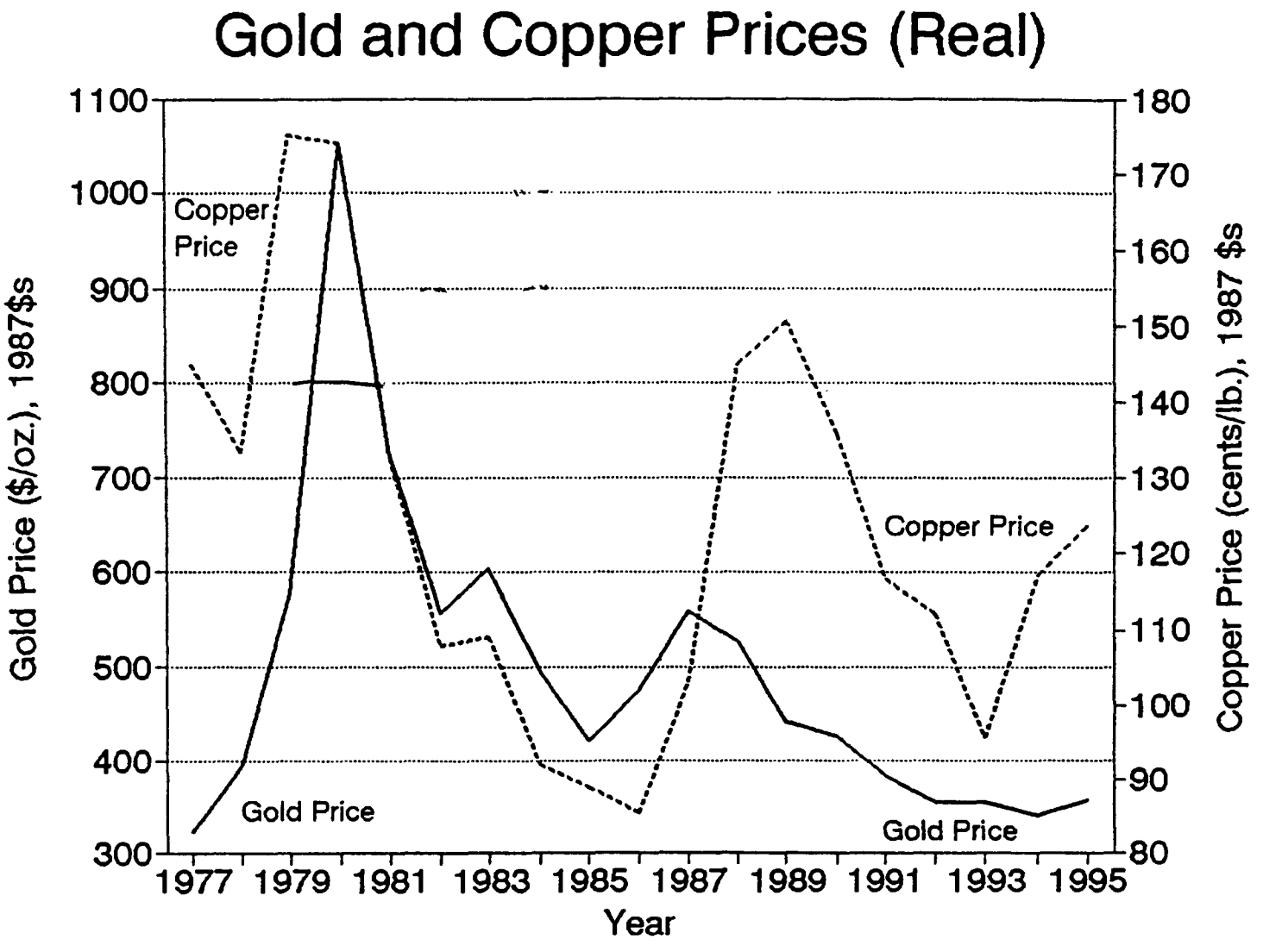
[13]Productivity Measures for Selected Industries and Government Services, Bureau of Labor Statistics, Bulletin 2421, U.S. Department of Labor, April, 1993. Evans Economics, Inc., reported metal mining productivity rising over the last decade at 10.8 percent per year, "far more than any other basic industry." Testimony of Michael K. Evans before the Mineral Resources Development and Production Subcommittee of the Senate Committee on Energy and Natural Resources, March 16, 1993.


Gold and Copper Prices (Real)
Gold Price ($/oz.), 1987$s
Copper Price (cents/lb.), 1987 $s
Year
Copper Price
Copper Price
Gold Price
Gold Price
1100
1000
900
800
700
600
500
400
300
180
170
160
150
140
130
120
110
100
90
80
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995

conditions.

iii. They are in long term decline due to limited demand and technological change that is constantly reducing the labor content.

These characteristics have significant economic implication for local economies and the calculation of the expected economic impacts of mining. Because mining income is short term and unstable, those who rely upon it have to take defensive steps to protect themselves against that instability. One defensive strategy is to minimize the fixed investment that is tied to mining and the location of the mine. Business owners in mining towns are very cautious about investments in commercial infrastructure that might be stranded by another mine shut-down. Miners are very cautious about setting down roots in a mining dependent town. Given how uncertain the term of employment at the mineral operation is, employees will live in temporary residences, retain residences elsewhere, and commute long distances to work. Others will leave their families behind and move temporarily to the mine site. The result is a transient work force with personal and economic commitments elsewhere. The investment made in the local area will be depressed.

The environmental degradation associated with most mineral operations compounds the problem. Mining often gnaws away at the earth, producing toxic water flows that kill streams and poison ground water supplies. The smelting or refining of the mineral often produces air pollution on a massive scale that at best is unpleasant to experience and at worst is toxic to both vegetation and human health. As a result, mining towns tend to be located amidst scenes of massive environmental disruption where air and water quality are of questionable safety. Since people care where they live, this has a real impact on both residential and business location decisions. Even miners do not want to live within these degraded environments if they have a choice. They look for residential locations far removed from the mine operation. Those not connected with the mine avoid these areas altogether.

This has a significant impact on the economic prosperity of the mining town itself. Both commercial and residential investment is depressed because neither workers nor businesses that rely upon miners spending their paychecks want to risk their savings on a short term and unstable industry. As a result, residential industry, construction, retail trade, and services, are depressed. In addition, because workers are not willing to relocate to the mining community, much of the income that is earned in mineral production never flows through the community. It immediately "leaks out" to other communities and trade centers. This is compounded, of course, by the under-developed commercial infrastructure in the mining town itself which is unable to capture and hold the income being generated. Finally, the reduced level of commercial and residential investment and continuously marginal nature of the mineral operation itself, lead to a depressed tax base and reduced levels of public services. The result is a core industrial sacrifice area to which workers travel daily but which receives little economic benefit from all of the wealth and income that originates there.

The short term, unstable nature of mining income and the depressing effect it has on local investment and spending explain the contrast between the high wages paid in mining and the depressed character of most mining towns. It is hard to find a mining region that is prosperous despite the spectacularly high wages paid in the industry. From Butte, Montana, to Lead and Deadwood, South Dakota, to the Silver Valley of Idaho's Panhandle to the Arizona and Minnesota copper towns to the Appalachian coal fields, mining is not synonymous with prosperity despite the high incomes associated with it. Given this history, one would expect any economic analysis of the impact of a new mine to go beyond praising the high wages that the mine will pay. We know that high wages have not always or usually brought prosperity to mining towns in the past. Some discussion and explanation of the implications of the short term, unstable character of these incomes is central to understanding the actual impacts. The DEIS provides none of this. This has implications for the distance from which potential miners are willing to commute, the likelihood that new housing and businesses will be constructed to serve them, and the size of the actual tax base available to local governments. There is a reason that the Stevens County mine developed 20 years ago did not have the impact planner expected at the time. Similar examples can be given for other new mines having little or no positive impacts on local economies because of the mine workers' limited commitment to the local area. When the short term, unstable character of mining is taken into account, the local economic impacts of mining look quite different than those suggested by an emphasis on the high wages paid.

4. The Size of the CJP in the Context of the Larger Economy

In evaluating the costs and benefits associated with the CJP, the size of its potential impact on the local economy has to be put in the context of the overall economy. Table 1 below summarizes the DEIS estimates of the impacts.

According to the DEIS the proposed CJP will directly create 150 production jobs, generate payroll income of $5.5 million a year, and lead population to rise by 73. The Okanogan and Ferry County economies have been expanding by about 600 jobs, $35 million in income, and 500 new residents each year. Thus the direct impact of the CJP would represent only a small fraction (one seventh to one quarter) of a year of normal growth in the regional economy. As a percentage increase in the existing economy, the direct impact would be a fraction of one percent. In short, the impacts calculated by the DEIS will be submerged in a much larger economy that is expanding at many times the rate associated with the mine. The economic impact will be very minor, possibly not actually felt at all.

Table 1

CJP Economic Impacts as Percent of Total Economy
Okanogan and Ferry Counties

Impact	Direct Impact	Dir.Impact as % of Existing Total Econ	Total Impact	Total Impact as % of Existing Total Econ	Existing Totals	Historical Annual Growth in Economy
Employment	150 jobs	0.7 %	280 jobs	1.2%	23,000	600 jobs
Income	$5.5 million	0.8 %	$7.4 million	1.1%	$690 million	$35 million
Population	73	0.2 %	164	0.4%	42,900	500
Effect on City & Co. Government			$0.5 million	0.8 %	$60.7 million	

Source: DEIS; BEA REIS CD-ROM; City County Data Book, 1994.

The actual impacts are likely to be smaller than the DEIS calculates since the DEIS inexplicably used CJP estimates of what part of the jobs would go to local residents. CJP claims that 80 percent of mining jobs will go to existing residents. The DEIS surveyed other mining projects and concluded that it was unlikely that CJP could attain this level of local hires. If more of the jobs go to non-residents who commute or live temporarily in the area, less of the income will stay in the area and less investment will be made locally. As a result, the "indirect" impacts will be smaller than projected.

This is important to keep in mind when weighing the benefits and costs associated with the project. The benefits, although calculable, are quite small. Each year, the ongoing expansion of the regional economy creates many times this number of jobs and dollars of income. As mentioned above, to the extent the environmental consequences of the mine discourage this ongoing expansion of the economy, these small gains could be more than offset by undermining the current sources of economic vitality, the attractiveness of the area as a place to live, work, and do business. In the pursuit of very small gains, the current economic foundation of the economy could be eroded leaving residents worse off. Put slightly differently, given the very small potential gains, what risks of substantial losses are citizens willing to undertake? The DEIS, by ignoring the economic risks of undermining the region's amenity reputation because of the open pit chemical mining, never analyzes this crucial question.

5. Economic Well-Being in Okanogan and Ferry Counties

The DEIS paints a somewhat grim picture of economic conditions in Okanogan and Ferry Counties. Per capita incomes, we are told, are low while the incidence of poverty and unemployment are high. The 1990 labor market data shows the two county area with an unemployment rate almost twice that of the state of Washington as a whole (p. 11, Table 6). Median household income in the Chesaw/Oroville area is reported to be only about half that of Washington state as a whole, $16,000 v. $31,000 (page 14, Table 8). The incidence of poverty in the Chesaw/Oroville area is reported to be almost three times that of the state as a whole, 28% v. 11% (ibid).

These numbers suggest a seriously failing economy that has mired residents in generalized poverty. In that setting, any set of employment opportunities, not to mention employment opportunities paying over twice the median household income in the area, has got to look like a godsend. Assumedly, people who live in poverty do not have the luxury of being "picky" about the employment opportunities they would prefer.

Recall, however, Figures 1 through 3. They do not show a failing economy. They show an unusually dynamic and vital economy. If the regional economy is in a state of collapse, offering no employment opportunities, and very low wages, then why are people moving there? People, voting with their feet, are clearly indicating that there is something very attractive, on net, about the area. That judgement and the economic information in Figures 1 through 3 contradict the negative picture painted of the local economy in the DEIS. This apparent contradiction has to be resolve before decision makers can evaluate actual economic conditions.

Questionable Assumption

Since 1986 jobs have been created within the two country area at a relatively rapid rate, an average of about 600 jobs per year for a total of 3,700 jobs (BEA, REIS). Total unemployment in 1991 was about 1,500 (p. 13, Table 7). If the "natural" unemployment rate is 4 percent, there were about 570 "excess" unemployed persons. Just one average year's annual job growth should have been sufficient to eliminate that excess unemployment. Clearly the problem was not lack of job creation. The problem is that job seekers were growing faster than jobs were being created. Since those job seekers were largely migrating into the area voluntarily, it would appear that the unemployment "problem" is not that the local economy is failing in some sense but that the area, overall, is so attractive that despite low wages and high unemployment rates, employment-aged inmigrants continue to arrive. In that setting it is not clear that any level of job creation can solve the "problem." The problem is simply that outsiders find the area attractive and, because of that, their voluntary residential choices cause the unemployment rate to rise. This is not a sign of inferior economic well-being or those people would stop coming or leave. It is not clear that unemployment is a problem in the area at all except for those long term unemployed who have particular problems getting and holding jobs. General expansion of employment

opportunities are unlikely to solve these people's unemployment problems. It has not in the past.

The DEIS reports the rural incomes for the Chesaw/Oroville area and compares them with those of the state as a whole without making any adjustment for the relative costs of living between Washington's metropolitan and rural areas. 83 percent of Washington's population lives in metropolitan areas. State averages, therefore, are dominated by conditions in those metropolitan areas. The family incomes reported for the state as a whole largely reflect income received in metropolitan areas where the cost of living is significantly higher. The problem here is clearly indicated by the reported housing costs. Median home valuation in Chesaw/Oroville is reported as $46,300 while that for the state as a whole is $93,400, over twice as high (p. 37, Table 22). The differences in rents are similar. The largest determinant of local cost of living is housing costs. The difference in housing costs reported in the DEIS suggests that major adjustments have to be made for cost of living before comparisons can be made between the two county area and the state as a whole. We know that something is wrong with the income statistics since they indicate dramatically lower economic well-being for residents of the area. Yet, rather than people moving out of the region because of the miserable economic conditions, people are moving in. This voluntary choice is evidence that those money income statistics are misleading indicators of local economic well-being. They should not be reported as "facts" that tell us something about local economic well-being. This also applies to calculated poverty rates. To the extent that costs of living are significantly lower in these rural areas and there are opportunities for subsistence activities, poverty rates may be significantly over-estimated.

Basic Assumptions

It is important to realize that one of the characteristics of areas that offer significant environmental amenities is that wage levels will be depressed while unemployment rates will be higher. These negative characteristics are necessary in order to compensate for the value of the environmental amenities. Those negative characteristics are not a sign of how poor the area is or a sign of the failure of the local economy but, rather, a sign simply of how attractive the area's amenities are. This is not a controversial statement. Empirical analyses are regularly published estimating what the value of local amenities are by estimating <u>how much lower</u> equilibrium local wages are[14]. The DEIS, by ignoring this fundamental relationship as well as cost of living differences, paints an inaccurate picture of existing economic conditions. This has the effect of suggesting that existing residents are economically desperate and are not in a position to weigh the costs and benefits associated with the CJP simply because "beggars cannot be choosers." This is a false characterization.

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[14]Blomquist, G.C. et al., 1988. "New Estimates of Quality of Life in Urban Areas." American Economic Review 78(1):89-108. Greenwood, M.J. et al. 1991. "Migration, Regional Equilibrium, and the Estimation of Compensating Differentials." The American Economic Review 81(5):1382-1390.

6. Growth Is Not Costless

The DEIS calculates a "fiscal bonus" of about $2 million per year from the CJP for the city, county, and state governments taken together. This is a familiar claim in economic development circles: growth pays for itself by generating tax and other revenues in excess of any additional government expenses. This "bonus" could, in theory, allow taxes to be reduced on existing businesses and residents. This popular assertion, in general, is contradicted by the fact that tax rates tend to rise with size of the population, not fall. There appear to be "diseconomies of scale" when in comes to population and government expenditures: Those expenditures rise more than proportionately with population. This can be seen in the Ferry and Okanogan County taxing jurisdictions. As one moves from Republic to Oroville to Okanogan to Omak population quadruples and total local government expenditures per capita doubles[15]. In general, rising population leads to increased government spending and taxes on a per capita basis, not a decrease.

One of the reasons that the DEIS calculates such a sizeable "fiscal bonus" associated with the CJP is that it apparently projected tax and other revenues to rise in proportion to population, with each new resident providing tax and other revenues at exactly the current average government revenues per capita. Since current average government revenues per capita include revenues tied to economic activity associated with the population, this approach involves the DEIS projecting a "double" economy supporting the new residents: They bring a proportional increase in the local economy and the new mine gets built. This allows the taxes paid directly by the mine to be a pure "fiscal bonus." The mine requires no additional government expenditures directly and the needs of the new population are covered by an assumed separate expansion of the local economy implicit in the assumption that government taxes unassociated with the mine will rise proportionally with population. The taxes paid by the mine then are "pure gravy" since the costs of the new population are covered by some mysterious other source. This approach creates a fiscal surplus simply through the assumptions used.

For local governments, knowing that there is a fiscal surplus when all taxing jurisdictions are looked at in the aggregate may not be reassuring. As the DEIS points out, the primary recipients of the fiscal surplus are the state government and the Oroville school district. Okanogan county is also projected to gain[16]. If the population associated with the mine settles in other taxing jurisdictions and enroll

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[15]Table 31; p. 52, Existing Socioeconomic Conditions. One does not expect a perfect correlation given the diversity in local government programs and funding sources. Some small towns such as Tonasket also have relatively high local government expenditures per capita.

[16]Pp. 28-29, Affected Socioeconomic Environment Background Report.

their children in other school districts, they will have to carry the costs of the larger population without receiving tax revenues associated with the mine. Instead of seeing a "bonus," they will see a net cost.

Given the unstable and short run nature of the mining industry, local taxing jurisdictions should be very careful of how they "spend" any "bonus" that is projected to be available. These revenues may be short term in nature and their loss several years from now has the potential to disrupt government services even more than those services are supported originally by the "bonus." Downsizing government services and budgets is always more painful than expanding them.

7. **The DEIS Ignores Its Own Analysis**

In evaluating the impact of the CJP, the DEIS adopts the assumption made by the mining company itself about the number of mining jobs that will be filled "locally." The CJP has claimed that 80 percent of the jobs will go to local residents. The DEIS provides considerable evidence that this will not be the case, but, then, when it does its socioeconomic impact analysis, it abandons the results of its own investigations and uses instead the CJP's assumption. There is no justification for this in an objective analysis.

The E.D. Hovee & Company analysis of the qualifications for the mining jobs and the likelihood that they will be filled locally comes to the following conclusions:

a. Today's miners are highly trained, skilled, and experienced and very mobile. "Today's miners tend to be better educated, specialists in their fields and highly paid." They tend to "move frequently to follow job opportunities" and "tend to rent rather than own housing." Also, "they are mostly single men unfettered by family responsibilities." (p. 87-88, Existing Socioeconomic Conditions)

b. Based on actual recent experience with the opening of a new mine in the CJP area, it is very unlikely that 80 percent of the mining jobs can be filled by local residents. In Ferry County when the Echo Bay mine opened in 1989, only 29 percent of the positions went to residents of Ferry County despite the historical presence of mining activities in Republic. Almost 50 percent of the mining jobs went to out-of-state residents (p.105, Existing Socioeconomic Conditions). This is the area's most recent experience with expanded mining.

c. An earlier mine opening in the area, the Alcoa Mine in Stevens County, opened in 1975, also indicates that the economic and employment impacts in the immediate vicinity of the mine will be much smaller than projected. "According to a Stevens County planner, the growth initially anticipated when the mine began operation 20 years ago did not materialize as expected. Many mine

workers instead commute to and from Spokane or are dispersed throughout the nearby towns in Stevens County.(p. 113, Existing Socioeconomic Conditions)

d. Jobs going to "local" residents may not be very local. "The 'local area' for hiring may be considered by the mine operator as up to a 65 mile radius or inclusive of even an entire state." (p. 110, Existing Socioeconomic Conditions)

e. The CJP projection of 80 percent local hires is "higher than is suggested by the actual local hiring experience of other mines contacted during 1993 as part of the socioeconomic research conducted for [the socioeconomic] analysis (p. 5, Affected Socioeconomic Environment).

Given these conclusions from the independent socioeconomic analysis, it is unclear why that analysis then adopted the unsupported CJP claim about local hires. This type of uncritical adoption of the CJP's optimistic claims casts doubt on the integrity of the entire DEIS.

One way this assumption distorts the socioeconomic analysis is the way it leads to the assumption that most of the mining jobs (as well as the indirect employment) will be filled by local unemployed workers (p. 6, Affected Socioeconomic Environment). The impact of this assumption is to reduce the demand for housing, schools, and all other potential socioeconomic impacts[17]. A total of 280 jobs are projected to be created directly and indirectly. The study area has a ratio of 2.8 residents (under age 65) for each worker in the local labor force (p. 6). Thus the population associated with this employment is 784. The DEIS, however, projects that only 164 or about a fifth of this number will actually move into the area. Thus, the claim made by the CJP and uncritically accepted by the DEIS eliminates 80 percent of the potential socioeconomic impacts while dramatically reducing (on paper) the number of unemployed. The 224 jobs claimed to go to local residents would almost entirely eliminate unemployment in the Chesaw/Oroville area which only had 272 unemployed or reduce unemployment levels in the whole study area from well above normal levels to about normal levels (p. 13, Existing Socioeconomic Conditions). That is an amazing and altogether

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[17]In discussions above, it was asserted that by overstating the percentage of jobs that would go to local residents, the local economic impact was exaggerated. Here the assertion is that that overstatement of local hires leads to an understatement of other socioeconomic impacts. This is not a contradiction. When most of the jobs are assumed to go to current residents who are unemployed, the local income and employment impacts get exaggerated while the demands on housing, schools, social services, etc. are minimized. This unrealistic assumption has the impact of exaggerating the benefits and minimizing the costs. That is a useful distortion for the CJP but not an appropriate bias in a DEIS.

unlikely result from the opening of a single relatively small mine. Arbitrary assumptions can produce almost any result one might wish!

CJP claims that it will be able to achieve these very high levels of local hires by giving preference to local residents in the hiring process. This, combined with a local training program, might significantly increase the level of local hiring. Before this assumptions is accepted, however, the legality and practicality of such a local hiring preference needs to be investigated. Such a preference would require discriminating against applicants from outside of the study area, rejecting their applications for the jobs even when their skill, training, and experience were superior to those of local residents who apply. Whether CJP could legally do this needs to be analyzed. Whether CJP would be willing to engage in such un-business-like behavior is also open to question. Finally, whether there are local educational institutions that could very quickly establish the programs that would be required to create the necessary workforce also needs to be analyzed rather simply assuming that such programs already exist or can practically be created in time to actually produce the needed workforce. Without this type of analysis, the assumptions about drawing the workforce from the local population consists of little more than wishful thinking that is inappropriate in an objective socioeconomic analysis.

JUL 0 3 1995 July 7, 1995

OKANOGAN COUNTY COMMISSIONERS

County Commissioners,

Having just spent this weekend in Chesaw at the Rodeo, i was struck by the beauty of the Highland i would glance up to Buckhorn Mt & i could visualize the 24 Lights, roar & dust of the proposed crown jewel project. i wondered if the residents in Chesaw can fully appreciate the impact that such a mine will make on their lifes. At the Rodeo i talked to a man who had just bought land & a house in Chesaw & he was shocked to find out that Buckhorn Mt. was right there!

i urge you to consider the whole aspects of this mine, not just the imaginary economic benefits. ~~Lost~~ Quality of Life in the Highlands is a draw, just like the man i talked to who recently bought property

I urge you not to sign off on the Huckell/Weiman Economic Analysis until the DEIS comment process is finish If you sign now, All your options are closed for the life of the mine. If you want the mine to benefit the county, then you want it to be responsible of all the impact it will cause, not to be a drain on our budget trying to accomodate the effects of this huge project.

I suggest you seek out the concerns of the people in the Highlands & establish a Local Impact Committee to work with the miners on potential problems & negative imparts.

Sincerely,
Mary Goodwin

Sub

RECEIVED
JUL 06 1995
OKANOGAN COUNTY COMMISSIONERS

7/5/95

Dear County Commissioners,

I am writing to say don't agree on the Huckell/Weiman Economic Analysis without further consideration and more adequate communication with your constituents, particularly those of us who will be personally impacted by the mine. I feel you should wait at least until the DEIS comment period is finished. Considering this agreement will last the life of the mine I feel it is not being given adequate consideration. I feel we should have a Local Impacts Committee made up of people who WILL be impacted by the mine, such as myself & my neighbors.

Please listen!!

Kay McDonald
Rt. Box 74
Oroville, WA
98844

485-3816

Swb 9T

Star Route Box 115
Croville, Wa. 98844
July 6, 1995

RECEIVED
JUL 0 6 1995
OKANOGAN COUNTY COMMISSIONERS

Spence Higby,

We moved here five years ago to farm because this was the most beautiful place we had ever seen. In addition, the soil is rich, the water pure, the air is clean and it is quiet and peaceful. Friends and neighbors have moved to the area for the very same reasons.

Our very way of life would be destroyed by the proposed Open Pit Cyanide Leach Gold Mine. The beauty, peace and quiet would be gone. Our water in jeopardy because of blasting destroying our aquifer, digging the pit below the origin of our streams, and generation of acid mine drainage in our water supply. The air will be dirty and dusty from smokestacks and dust from the huge trucks. We will never see the stars again because of the night lights. We will never have quiet day or night, hearing blasting and trucks rumbling and shifting gears.

What could possibly be in your mind coming out in favor of such an insane proposal as blasting off the top of a mountain, the origin of our aquifer for a 55 square mile area? Aren't there zoning laws to protect agriculture and farming communities in our county? What could possibly convince you that short term "promises" of prosperity would over-ride Long-term economic growth in our county because of the quality of life here. Property values will plummet as trailer parks and garbage ruin a pristine area,as the out of state workers come here from other mines played out. The droves of "hopefuls" will need assistance when they come and don't have the resources to leave.

Have you <u>ever</u> seriously considered our concerns, the people that live here? Or are you falling for the "Quick-buck" bust and boom economy that so may other depressed areas have fallen for-only to find themselves in a worse condition than before. I <u>urge</u> you to examine the pitfalls to the future of our county before you get taken in by the "fast-buck" promises. I urge you to listen to the people of the Highlands, I voted for you in the election, because I believed you were a person of insight and fore-sight. I know it must be difficult being in your position of pressure from store owners for a quick-fix, but I do believe we will destroy the potential of this county when we destroy the Highlands, one of the few truly beautiful, pristine places left anywhere to live. I urge you to search your soul and do the right thing.

Yours truly,

Judy Howlett

Judy Howlett
Highland Meadows (Organic Vegetables, Herb & Dried Flower Farm)

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6/3/95

RECEIVED
JUL 06 1995
OKANOGAN COUNTY COMMISSIONERS

Susan Iannello
PO Box 1456
Tonasket WA 9885

Dear Okanogan County Commissioners -

I am writing to let you know that I disapprove of the Economic + Fiscal Impact Analysis made by Huckell + Weinman Assoc. Inc. which was submitted by Battle Mtn. Gld. for proposed Crown Jewel Project.

I dont believe it is a wise choice for the long term. BMG does not have a good track record. In Colorado they got fined $688,000 for too high a cyanide level. Also last month they lost 6 months worth of Water Monitoring Data in Colorado. These have cost taxpayers.

In Nevada their Tailings Pond leaked into the ground water. Now if you ask BMG about this they might say that they bought the mine from another company. Well this is true - But they still havent fixed the leak + the mine is still going.

Please take heed + investigate deeper. Our water is of great importance to the economy + well being of the people of our county. Fancy words + promises arent enough.

Thank you Susan Iannello

DB 47 41

Elizabeth Widel

PO Box 957, Omak, WA 98841

July 6, 1995

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

Okanogan County Commissioners
PO Box 791
Okanogan, WA 98840

Gentlemen:

With regard to the Huckell/Weinman Economic Analysis, please do not take final action until the DEIS comment process is finished. Since the agreement will last for the life of the mine, any hurried decision now will be a thing to be lived with for a long time.

There also is feeling that Highlands residents are being bypassed because they oppose the mine. Whether or not they agree with the mine, or whether or not you agree with them, they are entitled to the same process as any other citizen.

Let us make decisions carefully.

Very truly yours,

Elizabeth Widel

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

1177 N. Pine Creek
Tonasket, WA 98855
July 5, 1995

Dear Commissioners:

Please include this letter as part of the public comment on BMG's economic and fiscal impact analysis presented to you for your approval. This analysis has some serious flaws and omissions. There is potential for legal action against the County (and the Commissioners) if these are ignored. These include:

1. Failure to analyze the economic impacts to the community of the rest of the 9,000 acres which the BMG prospectus claims the project covers. Only the 1,000 acre Buckhorn site was included in the analysis.

2. Failure to analyze the net impact on jobs in the community. Although jobs related to the mining industry will increase, jobs in other sectors, such as farming, real estate, tourism and recreation could decrease.

3. The economic effects on "quality of life" are not mentioned. According to Dr. Tom Powers, University of Montana economist, the high quality natural and social environment is attracting new residents and businesses into the County, He states that "given that the quality of the County's natural environment is an important part of its economic base and the source of the ongoing economic vitality, anything that threatens that natural environment has to also be seen as threatening that economic base and that economic vitality." Given that the area will be irrevocably changed from high quality rural/scenic to heavy duty industrial mining and milling, it is a valid assumption that the "quality of life" will be negatively impacted and the results of this on in-migration and growth need to be part of this analysis.

4. Given the above (#3), property values in the North Okanogan area will also be adversely affected. If it is true that 70% or more of the landowners near the mine site are absentee landowners, we must assume they bought their land for retirement or investment purposes before the mine became an issue. There will be many who will find the value of their property will be lower, if and when they try to sell. The loss of land value is an issue that requires definition. There is much potential here for class action suits against the County by angry Seattlelites who find that through no fault of their own their property value has been reduced. Under Initiative 164 this could even be considered a "takings" issue.

Given the above, we hope you will wait until the DEIS comment period is completed before signing off on this agreement. The agreement will last the life of the mine, Regardless of your obvious personal biases in favor of the mine, you have the responsibility to be careful watchdogs for all the citizens of the County and to maintain a measured, cautious and judicious judgement on their behalf. It would also be advisable to consult with people of the Highlands area, including absentee landowners, before signing off on this analysis.

Sincerely,

Tom Mulgrew
P.O. Box 1667
OKANOGAN WA 98840

Wed. 7-5-95

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

Commissioner Ed Thiele
PO Box 791
OKANOGAN WA 98840

Mr. County Commissioner Thiele:

If what I read in the local paper is true (Omak Chronicle, June 28, pg. 15), then you and your fellow commissioners are poised to readily accept one of the hokiest ill-prepared Economic & Fiscal Analysis to come down the pike in a long time!

I cannot buy this: No effort was made by Battle Mtn. Gold's contractor Duwayne Huckell to do a "similar mine" study NOR was a "worst-case-senario" figured in, either. Can you buy this as a true and complete analysis? Ed, I hope not! In my eyes, all it amounts to is a lot of big money waved under your noses, some winking to each other... and business as usual.

One truth, which you may already know, is that state Employment Security / Labor & Industries reports that in these parts, employment in actual mining amounts to nearly nothing. It's been that way for decades — it is not one of our major industries. No way.

(cont.)

Even if BMG should get the green light, and hire 80% of their work force "locally" (which is something you and BMG did not want to discuss publically), that would still NOT make mining a major force!

All our county growth and potential is coming from QUALITY OF LIFE: Clean air and water (and plenty of both), beautiful scenery, wide open spaces, wildlife, peace and quiet, recreational opportunities, etc. Just ask ANY real estate agent! Services related to Q. of L. are on the grow!

Dr. Tom Power, chair of Economics Dept. at Univ. of Montana (in his book 'All that glitters') reports the only winners from hard rock mining are MINI-MARTS, TRAILER SALES and LIQUOR STORES!

Get proud, stand up straight and represent us, the citizens of our county, and not some outfit from out of state. You and your fellow commissioners are really embarrassing me going around sniffing at the wallet in BMG's back pocket, like a bunch of mongrels.

Don't sign the Huckell/Weinman Economic Analysis — establish a Local Impacts Committee — do it right!

Sincerely,

RECEIVED
JUL 07 1995

Honorable Commissioners

I would like you to seriously consider the long-term economic viability of maintaining our natural scenic beauty of Buckhorn Mtn. For the purpose of a college debate, I've studied the economic/social studies of Dr. Tom Powers, they reveal the small, short-term role that extractive industries (ie, mining) play locally. Our county is coming along fine economically, transition pains?, sure, I used to log for a living - now am back in college. On a certain scale we'll always have logging + ranching, but not like the last 80 years.

We can't look in the rear-view mirror to plan our future economy. Although, I consider ranching + logging as sustainable

industries. They differ from short-term open-pit mining. The mining interests have only served to polarize our community. I've lived near Chesaw for 15 years so have personally witnessed the negative impact from Crown Resources/Battle Mtn for years.

Please don't sign off on the Hackell/Weinman Economic Analysis without more perspective. Look at Dr. Power's studies. I live locally + never heard of a "poll" til the results were in our newspaper. I don't feel my + many other local residents views are represented.

Thank You,

Michael K. Dick

July 5, 1995

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

Dear Okanogan County Commissioners,

It has come to my attention that you are about to consider adopting the Economic and Fiscal Analysis prepared by Huckell and Weinman. As a neighbor of the proposed mine site, I feel the full impacts of the the Crown Jewel project have not been addressed, either in this study or by the commissioners in general. The formation of a Local Impacts Committee, as done in other states, would allow the most directly impacted population involvement in the development process.

Not enough time has been allowed to comment on this agreement between the county and Battle Mountain Gold. The DEIS comment period hasn't ended yet. Public debate is still in process. Shouldn't the county **wait for all the facts** before estimating the demands the mining will place on our public services or other externalities the hoped for benefits may produce?

I have invested my time and energy in creating a home and career in Okanogan County. We should be looking at the changing economic trends at work in the domestic and world markets and reevaluate our resources in light of the new knowledge available. Okanogan County deserves a fair reward for the use of its irreplaceable natural resources. We should look at all our options before deciding a course for economic development. Signing this agreement now could place the burden of support for mine services on our county.

Thank you for considering the facts of this matter.

Your constituent,

Deborah Vester

Deborah Vester
Star Route Box 74
Oroville, WA 98844

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

Stephanie Clark
P.O. Box 3181
Omak WA 98841

July 7, 1995

Okanogan County Commissioners
Okanogan County Administration Bldg. P.O. 70
Okanogan, WA 98840

Dear Commissioners,

I am concerned about the impact of the Battle Mountain Gold project on our natural resources and on the quality of life in our county.

Based upon the wide variety of informat I have read on the subject our county would not profit enough to offset the destruction to an area which, if preserved, would continue to draw recreational income and provid subsistence lifestyles for many, many years.

This is to say nothing of the dangers of cyanide poisoning from a cyanide leaching system. I would like to refer you to American Family Physician July 1993 for details about

Sut

RECEIVED
JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

7/4/95

Dear Okanogan County Commisioners,

I am very opposed to the Crown Jewel Gold Mine project because of the dangers of loosening cyanide on the environment and the dangers involved with this toxic poison on human & animal life. I appreciate the time spent by Ecology on studying the problems involved in placing a cyanide leach mine in Okanogan Co. Cyanide is one of the most rapidly acting poisons known to man. It is the same poison used in the Jonestown Massacre, when many people died very quickly. Most of the population cannot smell or taste cyanide until it reaches post-toxic levels.

The drinking water standard for cyanide is 200 ppb, and a '78 EPA survey of drinking water has shown that 7% of samples have low-level cyanide (> 10 ppb). With any leak in BMG's cyanide waste pond, multiple families, ecosystems and environments will be polluted forever, and all for a short term monetary gain.

With any leak or 1 persons mistake, or the environmental damage over time, one cyanide leak will cause symptoms within minutes. It is absorbed

I would recommend that all local physician read "Cyanide Toxicity" by the US Agency for Toxic substances and disease registry in the 7/93 American Family Physician. It seems as though our County Commissioners are heading full bore into accepting BMG as they see money coming into their pockets. I wish that they would move more cautiously and look at all sides of the issue, instead of just cash flow (short term flow only, followed by years of financial burden spent on toxic waste clean-up)

This is our County and so far has remained a fairly safe county to raise children and make a living. Please do not let a pushy Gold Company cause you to let down your guard and make this one descision to allow BMG to come in, strip mine our land, make off with our resources and leave a fatal toxic waste dump behind. We have voted you into a position of trust to make sound long term descisions for our health and safety. Do not let the glint of gold detract you from your job.

Sincerely, Wendy Dellyn RN

David C. Miller
Star Route, Box 75
Oroville, WA 98844

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JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

July 7, 1995

Okanogan County Commissioners:

As a landowner residing about two miles from Buckhorn Mtn., I am alarmed to see this monolithic project steamrolling full speed ahead. I am an opponent of this mine primarily for environmental concerns, practically residing adjacent to it. I think that there is a desperate need for some sort of citizen's forum to address the grievances of us that have to live next to the proposed mine. You commissioners have unaminously tipped your hands as to how you feel about this mine, but what about us who disagree? I think a one-sided democracy leaves a lot to be desired and I would like to see you practicing more equanimity in judgment by providing for some avenue of opposition instead of alienating us into submission with no rights or voice. It only makes sense to have an operative pressure relief valve in a pressure cooker of not all the same views.

When I bought this place I had no intention of living next to a major industrial "park," in my backyard. Whose going to compensate me if I find my residence intolerable due to dust and noise? If I move away I want a comparable quality of life that I've been enjoying here, on ten acres. I hate to think what ten acres elsewhere might cost, yet I would expect to be reimbersed through State Initiative #610.

Oroville ?

Sincerely, David C. Miller

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JUL 07 1995
OKANOGAN COUNTY COMMISSIONERS

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DEAR COUNTY COMMISSIONERS: PLEASE ADD TO HUCKELL-WENMAN DATA. TX, WOODY RICHARDS

Here is some information regarding local hiring practices in the mining industry in general, and by Battle Mountain in particular. There are two aspects to mine's hiring practices. First is the construction work force, the second aspect is the hiring of the mine production workers.

The hiring of the construction work force is a very important socio-economic aspect from mining that is often neglected. Several hundred workers may be required for one to two years to construct a mine's crushers, conveyors, vats, liners, tanks, pipes, roads, and to prepare the site for the onset of mining. Construction wages are relatively high compared to production workers, so the construction payroll is frequently a multi-million dollar budget item.

Construction work is measured in "man-hours." So if an average of 100 workers will work for one year (2000) hours, it is a 200,000 man-hour job. If the workers are making union wages and benefits of $30/hour, that is a $6 million payroll, for instance.

The problem is that the mining industry, and Battle Mountain in particular, have a very poor record regarding hiring of local workers to construct (and operate) their mines. By local workers, I mean workers who currently reside within 75 miles of the mine site. There have been studies on construction work forces, that show that 75 miles each way is about the peak commuter distance for a construction worker, and that a 75 mile radius circle is a reasonable distance to assume an "economic community."

That is, a pay check given to a worker who lives within 75 miles of the mine site, for instance in Republic, Oroville, or Okanogan, will spend 90% of their pay locally, and that money will be re-spent within this area, creating a benefit for this general vicinity. But a worker from Spokane or Boise, however, will probably send 50% of that money back to Spokane or Boise, and spend only about 50% locally, near the job site. this demonstrates how a local work force increases the economic benefit from a project.

Also, an imported work force means that many workers will bring their families with them, who will need social services such as schools, welfare, recreation, parks, and medical care. This will cause a cost to many local social services.

Battle Mountain has a very poor local hiring record for its

construction work force. It have frequently used specialized mining construction contractors from far outside the local area of its mines. The following remarks will dwell on one of Battle Mountain's favorite contractors, called "T.I.C." (The Industrial Company of Steamboat Springs), but these remarks would apply to any contractor from outside the local area, who would import its construction labor force.

There are many other specialized mining and construction contractors, like Brown & Root of Texas, CDK of New Mexico, Ledoor of Canada, Kiewit of Nebraska, that would also perform the construction of the Crown Jewel mine with imported workers, creating the same adverse impacts from an imported work force as would TIC.

For instance, when Battle Mountain built its San Luis Mine in southwestern Colorado, it hired TIC for the construction work in 1990. Althouh TIC is based in Colorado, its home office was over 200 miles north of the San Luis mine site. This meant that few local workers were hired for this construction job. TIC's own promotional literature show it worked 195,000 man-hours for Battle Mountain on the San Luis job.

In late 1993-early 1994, Battle Mountain instituted the Reona expansion at its existing Fortitude Mine in Nevada. This was a large project, over 520 acres, and included 3 open pits, a new leach pad, roads, crushers, conveyors, and a carbon absorption recovery plant.

Battle Mountain initially promised the Nevada construction worker unions that their members, who lived in the loca area, would be hired to construct the Reona expansion. But ultimately, Battle Mountain hired TIC for this work. TIC imported the vast majority of its construction workers from outside the local area and many from out-of-state. Here is a picture of TIC-The Industrial Company building the Battle Mountain crusher.

TIC's published "reference list" shows listings for Battle Mountain's mines in both Nevada and Colorado, indicating the favored position of TIC at Battle Mountain. I have several articles about the influx of out of town workers at Battle Mountain's San Luis job that you also have, since they were in the Omak, Washington paper.

I am sending you a letter regarding TIC from the Wyoming Division of Employment. In Wyoming, large industrial projects are supposed to hire Wyoming residents first, by law. still, less than one-half of TIC's workers on the Tenneco Mine expansion were local referrals. This illustrates that even when there is a legal requirement for local hire, TIC and similiar contraotos will hire a minority of local workers, even for unskilled positions.

Also, here is a copy of an want ad. TIC, a Colorado contractor, runs an ad in an Arizona newspaper to hire employees for jobs in Wyoming and Nebraska. Here is an article from the TIC newsletter about one of their veteran employees; he has worked in at least four different states. Here are three articles about TIC at a Utah coal fired power plant, an Illinois gas plant, and a North Dakota coal mine; in every case most of the construction workers were from out-of-state. What chance do local workers have, under these circumstances?

Regarding the general hiring policies of the Mining industry, here is a portion of a study of a proposed mine in Alaska; 10% of the construction workers, and only 5% of the operations work force will be hired locally.

Regarding the socio-economic impacts of recruiting out of area workers, I am sending some articles about the flood of out of area workers into Elko, Nevada; the result is many drug arrests, warnings for the State Employement Division that: "Construction workers often come with the Contractor, leaving few opportunities," that Mine employees must have technical training, there are 10 unsuccessful applicant for every job, that people are camped out in tents and in parks,

I hope this information is helpful.

Yours, John Williams
12770 SW Foothill Dr.
Portland, OR 97225
503-626-5736, 503-641-2093

18 mining projects search for gold in Okanogan County

by Bill Stevenson
Staff Writer

OKANOGAN- Battle Mountain Gold's Crown Jewel Project is only one of eighteen mining projects are under development in Okanogan County

In neighboring Ferry County there are currently fifteen mining projects that are under development, being explored or where mining took place.

A recent issue of Washington Geology presented a list mining projects that are underway in northeastern Washington as of 1994

Out of the eighteen mining projects in the county, the Crown Jewel Project has gathered the most attention with a long delayed Environmental Impact Statement and the potential to have the largest financial impact on the county, especially the north county region.

Every mining project listed gold and silver as commodities that are being searched for Other minerals such as copper, iron and zinc are also being sought by several mining companies.

Westmont Gold Inc., a subsidiary of Rainrod Gold USA, maintains property on Manhattan Mountain, which is in both Okanogan and Ferry counties Along with silver and epithermal gold, the company believes that copper, lead, and zinc will be found in the volcanic rocks of Toroda Creek graben

A graben is a section of depressed earth that is has at least two sides which are faults

The Silver Bell project, maintained by Jopec Resources Limited, is also looking for gold and silver in the Toroda Creek graben.

Crown Resources Corporation maintains property, project Ida, near Klondike Mountain formation of the Toroda Creek graben where they are looking for gold, silver and copper.

The Crystal project is Keystone Gold Incorporated's property where they hope to find gold, silver, zinc and copper in the Permian Spectacle Formation.

The Crown Resources Corporation has the Molson Gold property as well as Crown Jewel on Buckhorn Mountain. At Molson Gold they believe they will find gold an silver on the maintained property.

The Colville Confederated Tribes

Continued A2

Nighthawk mining company denied access to claims by Okanogan PUD

by Bill Stevenson
Staff Writer

OKANOGAN- Great Expectations Mining Inc., which owns the mineral rights to five claims on approximately 450 acres between Nighthawk and Oroville, has been denied access to their property by the Okanogan County Public Utility District (PUD).

According to documents filed in Okanogan County Superior Court, Great Expectations charges that the PUD took ownership of land surrounding an alleged public road.

Great Expectations state that the road in question has been used for over ten years by the public and miners to access their claims along the Similkameen River.

The PUD states that in the spring of 1990 they had purchased property that had been formerly owned by Burlington Northern Railway Company and that the road on the property is not a public road.

A "Non-exclusive License for Ingress and Egress With Indemnification" was given to Great Expectations on May 3, 1993.

Harlan Warner, Manager of the PUD, states in the PUD response that the PUD District staff had discussions on whether or not to extend the license to 1994 after Great Expectations had made a request.

"The District concluded Great Expectations Mining had not been responsible, had violated the terms of License on numerous occasions, had in fact needed to be shut down by the District to enforce compliance," Warner stated in court records.

The exact violations were not described in the court records.

The plaintiff states that without use of the road that there is "no other reasonable nor practical way to get to and from said mining claims".

The PUD stated that there is more than one way to access the claims and that it had a made a reasonable offer to the plaintiff for use of the road.

The argument lies with whether the road is private property owned by the PUD or a public road.

Testimony was entered from Norman Cutchie, who has owned approximately 600 acres on the south side of the Similkameen River since 1938, and he states that the road had been used by the public for over fifty years, until the PUD put up a gate and locked it.

The lawsuit was heard by Judge Jack Burchard on June 27, 1995 and he ruled in favor of the PUD and denied Great Expectations Mining from using the road.

Okanogan Highlands All 5094853361

Oroville Gazette July 6 95

P.04

Thousands flock to booming Elko

This is the first of a two-part series on Nevada's new gold rush.

By Jim Mitchell/Gazette-Journal

ELKO — Jeffery Wiggens pushed his way through the front door of the Nevada Employment Security Department office in Elko, still bleary-eyed from an all-night drive.

"I'm bare," Wiggens announced to no one in particular. "So where's the jobs?"

Like thousands of others, Wiggens had pulled up stakes, leaving his wife and children in a ramshackle rented home in Fargo, N.D., while he went off to make his fortune in Nevada's newest gold rush.

Never mind that Wiggens, an unemployed laborer, never worked in the mining industry; never mind that the 38-year-old man has few skills, other than a strong back and a willingness to work.

"I figure any place is better than where I came from," he said. "Some guys told me there was work here, so here I am."

Before the morning was over, Wiggens learned the hard, cold truth about Nevada's mining boom: Yes, there are jobs, but only for the lucky few who happen to have the right combination of skills and experience.

For Wiggens and others like him, the dream of riches — or even the dream of a decent-paying job — remains as elusive as the invisible specks of gold being mined out of the barren eastern Nevada landscape.

A long strip of land in the Tuscarora Mountains 25 miles northwest of Elko has become Nevada's new Mother Lode — probably the richest deposit of gold ever found in North America. To the unpracticed eye, there is nothing to distinguish the gold field, called the Carlin Trend, from the thousands of square miles of semi-arid desert surrounding it.

Sunday, June 25, 1989
Reno Gazette-Journal

But a geological quirk scattered millions of ounces of gold through the rocks and soil in particles smaller than the average flu virus. This so called micro-gold has transformed Elko from a backwater ranching and railroad town into a city bursting at the seams, and turned Nevada into the world's third largest gold producing area, ranking only behind South Africa and the Soviet Union.

Mining micro-gold means moving millions of tons of dirt and rock through crushers, conveyors and chemical baths to extract gold that can only be seen in its original state using an atomic absorption analyzer. This is a high-tech operation where every shovelful of dirt is turned over in a computer long before dynamite charges are set.

"We couldn't do what we do without computers," said Ann Tyson, director of environmental relations for Newmont Gold Company, now the largest gold producer in America. "Most of our employees are high school graduates and probably 70 percent of them have some form of technical training."

While men in laboratory coats have replaced miners with pickaxes in Nevada's latest bonanza, there is an inescapable truth that hasn't changed since the first prospector led a burro into these sagebrush-covered hills: For every man or woman who strikes it rich, there will be thousands, like Wiggens, who will count themselves lucky to find a job, a place to live, or even their next meal.

"The frustration level is incredible," said Dennis Latten, the Elko employment office supervisor. "Last year this office registered 25,000 people for 2,000 mining and mine construction jobs. That means there's about 10 qualified workers who come for every good-paying job available. We try to tell people that, but nobody's listening."

Latten said most of the men looking for jobs are "pleasant and down-to-earth," but telling people their luck has run out can produce volatile confrontations. "There were a couple of times when I felt my life was in danger," he said.

Jeffery Wiggens' shoulders sagged as he looked up and down the job offers posted on a lobby bulletin board.

"I didn't come here to be no dishwasher," he said. "Where's the mining jobs?"

A more experienced job seeker explained to Wiggens that he will have to fill out an employment application for a mining job — and those without experience need not apply.

"You ever drive a Haulpak?" he asked.

A Haulpak is a gargantuan truck used to transport ore from open-pit mines.

"What's a Haulpak?" Wiggens replied.

Later, over a cup of coffee, Wiggens pondered his decision to seek his fortune in Elko.

"I got a couple hundred bucks," he said. "I figured that's all I'd need to see me through to my first paycheck. The way everybody back home was talkin' about mining jobs out here, I never figured I'd need more."

Hundreds sleeping in their cars

It's a story Dee Waters, the director of a community service group called Friends in Service Helping (FISH), has heard time and time again. Working out of an old fire station, Waters and a half dozen volunteers play host to a constant stream of workers and their families who find themselves stranded in Elko.

Last year, more than 1,000 people lined up for whatever assistance FISH could offer.

"A lot of the new people show up here," she said, "because they're just not prepared at all. They pull in here with a car packed down with belongings, but no money. It's like the 1930s during the dust bowl."

Drug arrests ride hard on heels of Elko mining boom

Gannett News Service

ELKO, Nev. — Drug arrests and prosecutions have risen dramatically in this cow-town-turned-quiet-desert town. But local authorities aren't sure what to blame — a year-old gold mining boom that has lured thousands of fortune-seeking high-paid miners to the area, or a frontier-style ethic that doesn't look kindly upon easy recreation.

"People have basic needs," Elko Police Detective Bill Bauer said. "Miners work long hours, little time for recreation and they make a lot of money. They want to get up and come far for recreation, and drugs fulfill that demand."

Bauer and other Elko officials waging the war on drugs point out that drug abuse did not come to town on the backs of miners; it was always here in a substantial manner. What the boom brought was more drug cops and a higher law enforcement priority against drugs, which has netted longtime locals as well as newly arrived miners.

"The assumption by everyone who lives in Reno and Las Vegas is that everybody who lives out here ... is living a much different life than the people in the cities," said Dorothy North, chairman of the State Drug Commission, who also runs the Healthy Center for alcohol abuse rehabilitation in Elko. "That's just not true. We have a fast track right here. Everybody is running."

North says miners making $15 an hour start to come and with the opportunity to greatly enhance paychecks with overtime, suffer the same stress as city dwellers, especially considering some commute two hours to mines.

> "The assumption by everyone who lives in Reno and Las Vegas is that everybody who lives out here ... is living a much different life than the people in the cities. That's just not true."
>
> Dorothy North
> Nevada Drug Commission

She points out that a recent study shows drugs are more prevalent in rural counties than where there is not a mining boom than they are in urban areas.

"Let's face it, Nevada is a very fortunate state," North said. "We have a high income level, a lot of jobs, more disposable income and jobs in Elko in particular pay extremely well. So it's a good market, and if you're a drug dealer, you go where people can afford to buy drugs. Isn't free enterprise wonderful?"

Cocaine seems to be the drug of choice in Elko right now, and it cuts across all economic and social lines. Recently, an elementary school teacher was arrested on a charge of trafficking in cocaine.

"Although neither Elko County nor the state keeps statistics on types of arrests, law enforcement and court officials say there is no doubt drug arrests and prosecutions have gone up fast in the county since the mining boom began in January 1987. The Elko County Jail's average daily population of those serving sentences, awaiting bail or awaiting trial has more than doubled since 1987, from 35 inmates to 87.

Sheriff Neal Harris said at any given time nearly everyone held in the jail is under arrest with either a drug or alcohol-related offense.

One thing newcomers quickly learn and old-timers always knew is that drug offenses of any magnitude are not treated lightly.

"Nevada has a horrible reputation among dopers, and sophisticated dealers won't come here," District Attorney Mark Torvinen said.

Someone caught selling drugs in Elko County is almost certainly going to do prison time, Torvinen said, regardless of their previous record. Dealers are just not tolerated.

But even possession of marijuana usually will get an offer of a plea bargain that includes some jail time, if only 15 days. This often shocks people new to the area.

"In Salt Lake City, for example, it may be like a traffic ticket to get caught with a small amount of marijuana. I've had attorneys and defendants from other Jurisdictions ask me if I'm kidding when I say they'll have to do some time even if they plead guilty. When I tell them I'm not, they say 'Yeah, but you're not really serious.'"

Torvinen assures there is a

07-06-95 02:58PM 331 421

July 7, 95

Lori Bialic 509-485-2015

By the amount of negitive press out of Colorado and Nevada concerning the mineing practices and the hiring of locals BMG, despite all PR experts and state-of-the-art rhetoric, continued to do a piss poor job. Last month, MLRB found them guilty again of their permits, failure to complete necessary testing. In addition to a token fine, the MLRB doubled their bond from 3 to 6 million dollars and made the Water Conservancy District of Costilla County the auditor for their reports. "Tell them there in Okanogan not to be afraid to come here and visit and see for themselves what BMG is talking about" (Costilla Co. Water Conservancy District member). When I asked him how many locals had jobs - he said, "It doesn't really matter because in 18 monthes they're all going to be out of work anyhow, and can only come to Chesaw".

The Rito Secco is the only piece of public land in Costilla County, a river with aspens and willows in a country that is otherwise high desert sage brush. It has been the only public and cherished spot for picnics, celebrations etc. The mine is located directly across the primitive road running alongside the Rito Secco. At this spot there is and has been an ancient spring with a tap running into a bowl and back into the river. Mind you this tap has run continuously up until recently. This is the "oldest town in the state of Colorado". Erase the water coming out of the ancient spring tap, none comes out now. BMG is pumping to keep the water out of the pit. The opposition to BMG predicted it would be affected by the mine. This was the wettest winter in the county ever with a 500% of the average snow and rainfall and the spring went dry in a year like this. High price to pay for a few jobs.

"When Battle Mountain built its San Luis Mine in Southwestern Colorado, it hired TIC (contractor) for the construction work in 1990. Although TIC is based in Colorado, its home office was over 200 miles north of the San Luis mine site. This meant that few local workers were hired for this construction job. TIC's own promotional literature show it worked 195,000 man-hours for Battle Mountain on the San Luis job."

"Battle Mountain initially promised the Nevada construction worker unions that their members, who lived in the local area, would be hired to construct the Roona expansion. But ultimately, Battle Mountain hired

TIC for this work. TIC imported the vast majority of its construction workers from outside the local area and many from out-of-state. Here is a picture of TIC - The Industrial Company building the Battle Mountain crusher. TIC's published "reference list" shows listings for Battle Mountain's mines in both Nevada and Colorado, indicating the favored position of TIC at Battle Mountain."

In Wyoming, large industrial projects are supposed to hire Wyoming residents first, by law. Still, less than one-half of TIC's workers on the Tenneco Mine expansion were local referrals. This illustrates that even when there is a legal requirement for local hire, TIC and similar contractors will hire a minority of local workers, even for unskilled positions.

POB 979
Oroville, WA 98844

July 6, 1995

RECEIVED
JUL 1 0 1995
OKANOGAN COUNTY COMMISSION

Okanogan County Commissioners POB 791
Okanogan, WA 98840

Gentlemen:

I has come to my attention that the Commissioners have, in response to State law, had an analysis made of the economic and fiscal impacts of the proposed mine on Buckhorn Mtn. Responses to this analysis are due by July 7, 5 pm.

I have found it a bit difficult to review the two volume DEIS and read the Huckell.Weinman analysis and formulate my comments by July 7, since the DEIS only came out June 30. Nevertheless I have done so.

Newspaper reports state that the County is preparing to sue the Forest Service because of delays in the issuance of the DEIS. As a person who would be vitally affected by the proposed mine, it is appropriate that I comment on the documents and the delay in their issuance. I am a resident on the side of Buckhorn Mtn., roughly one mile from the proposed mine site and the person probably mos affected were it to go forward.

There has been no effort to compensate those adversely affected and much of the opposition to the mine is traceable to this riding rough shod over the rights of others, while giving the fast track to the rights of a few. The claim that there is a trickle down effect to the money spent to compensate for these losses is specious. As an erstwhile economist that did a thesis (roughly equivalent to a Masters) on the subject of urbanization, I will state my opinion that the claim is not to be credited. In short, many are robbed to enrich a very few. Whose property rights are you defending?

To characterize the effort of the Forest Service (FS) and the Washington Dept. of Ecology (DOE) to b even-handed as somehow base and improper is scurrilous slander. The threat to sue is unconscionable. I think the hard working people of the FS and DOE are due an apology for denigrating their efforts to bring about a just and peaceful resolution to "an irresistible force meeting an immovable object." Mediators are never given the credit they deserve. Thank therefore the FS and DOE for doing a difficult job of conflict resolution. For shame that you should sue them! That these things all too often escalate into violence is all too well known and rhetoric of the Wise Use Movement is unsettling, to say the least. Be thankful, therefore that you are dealing with people who eschew violence and are willing to do the hard homework of exploring the issues objectively. This is one of the foundation stones of successful conflict resolution.

Would that the Commissioners were equally dedicated! I would have ample grounds for suing both you and BMG, except that I have religious scruples against suing at law. Instead, I believe in conflict resolution and the admonition to "Agree with your adversary."

The issue is of course much more than the property rights of those (both vocal and silent) who are adversely affected. Important as it is to respect the property rights of all, there are issues of equal or greater importance:

(1) The Huckell/Weinman analysis naively assumes that the mine will decrease unemployment. It will do nothing of the sort. The reports of the mine appearing in the media will cause an influx of job seekers. Among them will be a group of unemployables who believe that this is the solution to their problems. Studies show that a rise in employment is accompanied also by a rise in persons seeking

employment, many of whom then become a burden on local social services.

(2) There is an assumption that an increase in monetary income will result in an increase in well-being. Not so. This is a low cost-of-living area. The mine would result in skyrocketing cost-of-living which will erase any benefit from increased income.

(3) There is no excuse for unemployment. There is no space here to discuss it, but as a lifelong student of local economics, I can assure you that if given the authority I could abolish unemployment in Okanogan County. The hitch: Monetary incomes would not increase, only the things that money can buy and some things that money can't buy. The name Chesaw should be changed to Esau. We are making a fool's bargain. For a handful of jobs we are giving away part of our birthright forever. Parts of Nevada are a moonscape from open-pit gold mining. With exploration and patenting actively going on all over North Okanogan County it is safe to predict that we will become a moonscape too unless something is done to stop it. The DEIS acknowledges that the figures for income are a poor measure of the well-being of the Chesaw-Molson area. Exchange what we have for a few jobs and a moonscape?

(4) As noted above, there are things money can't buy, things that are more precious that life itself. If your child is in danger, what would it be worth to save her (him)? Again and again people have shown that there is no limit. For me the wetland on our property is such a thing. Naturalists who have visited it find now rare plants and animal life that is almost priceless. Repeal the endangered species act? The endangered species is Homo sapiens. Congress, the State legislature and the local Board of Commissioners are busily pounding nails in the coffin of Homo sapiens. What is worth living for? The cloying surfeit of gadgets at Prince's or WalMart? The mine, as proposed, would ruin the wetland.

"No man can serve two masters; for either he will hat the one and love the other; or he will hold to the one and despise the other. You cannot serve both God and mammon." –Matthew, VI-24

Sincerely yours,

Roger S. Lorenz

Roger S. Lorenz
(Signed copy is in the mail)

Commissoners, Greetings,

JUL 07 1995

I've owned property in Ok Co. since 1982. I've come here for its peace & quiet & beautiful landscape. I've started a small business & it could grow well, it depends on my efforts & money coming into the area. People w/ money <u>are</u> coming here, for the same reasons I did & the flow of them will steadily increase over time. I've worked the mines of New Mexico, I know the attitudes & values of the men, & these projects will destroy the aesthetics of these highlands & for one will sell out & go, I've no interest in hearing 20 yard dump trucks 24 hrs. a day for the next 10 years. Don't allow

this project, its not for ~~our~~ our collective good!

Sincerely

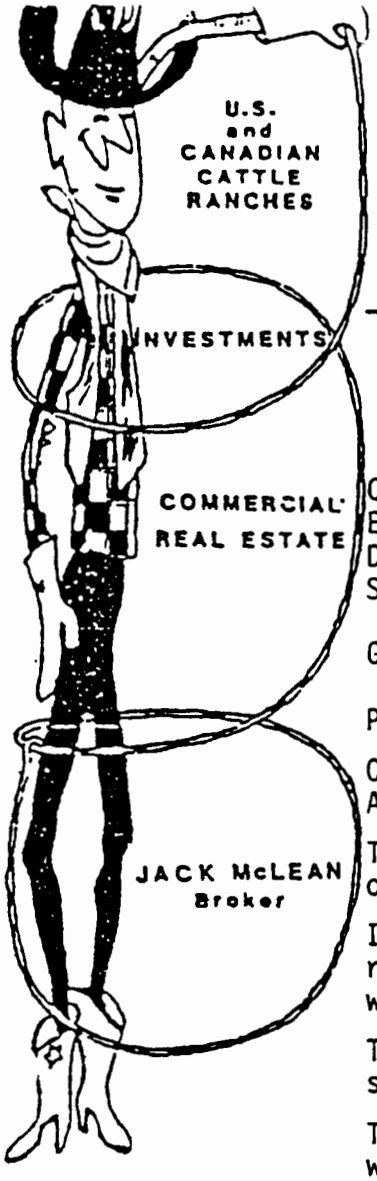
Mark Lynch

P.O. 251
Tonasket Wa.
98855

Please <u>at least</u> for now:

① represent all existing landowners & establish an Impacts Commitee of local people.

② Don't sign off this Huckell/Weinman E.A. w/o further consideration of all points. My personal views <u>resound</u> through these hills. <u>We the People</u>



Western Realty

OMAK

75 North Weatherstone Road
Route 1, Box 1159-M
Omak, Washington 98841

TELEPHONE: (509) 826-5877

RECEIVED
APR 21 1995

April 20, 1995

Commissioners
Ed Theile
Dave Shultz
Spence Higby

Gentlemen:

Please do no interpret this letter as any disrespect.

On a whole, I believe you are all very competent administrators. And I have enjoy ed your consideration and courtesy.

That said; I have to point out that when you place a dollar bill over each ey e, the whole world looks green.

I find that you are letting yourself be blinded by the need for revenue. This is not an uncommon happening in areas of government where the pressure for money is a constant problem.

This is God's country, according to the immigrants from other states who have despoiled there land, are and water.

The Battle Mountain Gold, will increase country revenue, but will also increase county problems, that will exceed the revenue produced. This is also so.

I want you to know that your efforts in trying to get the Battle Mountain boys approved... does not represent this Okanogan Valley Citizen

Our whole nation is being run on a short run profit for long range destruction. It is only a mtter of time, before it hits us full in the face. When it does, it will be too late to correct.

We are all environmentalists. Even the most virulent anti environmentalist, will become an environmentalist, when he goes to the tap for a drink of water and draws a glass of piss or toxic waste.

We have to look at long range. Undeer us all is the planet. The MCLEAN PLAN " Enclosed is the only plan that will save the planet. All else is folly. Unchecked over population and unchecked immigration, is certain destruction.

Kindest Personal Regards

Jack McLean

Tonasket, WA 98855
April 6, 1993

RECEIVED
APR 6 1993
OKANOGAN COUNTY COMMISSIONERS

Dear Commissioner.

I am enclosing some interesting material in re to the Summitville mine in Colorado. I hope you will circulate this, read, and discuss among yourselves.

Speaking as a state & County taxpayer, I would like to see a balance sheet re the proposed economic benefits of the Buckhorn Mine vs. the environmental costs - in particular the costs of damages we will need to pay Canada should the Kettle River be polluted with mine spill. Are these figures available?

Sincerely,

Jessica McNamara

Mining and Fish Habitat

—By Charles Stearns

A new gold rush has been gripping the Western States since the 1980's. Far from being led by individual miners with picks, shovels and hope, the new gold rush is characterized by mining consortiums, heavy machinery and a seemingly reckless attitude towards the environment.

While gold production has increased tenfold in the last decade, our rivers have been polluted with the wastes from mines. Modern mining techniques promise to do terrible injury to fragile river ecosystems. However, it is important to note that much of the riverine damage being felt today has been caused by mines that haven't been in operation for 20 or more years. Both heavy metals from conventional mines and sodium cyanide from modern mines have damaged western water ways equally.

The problem lies within the land itself. Most of the big veins of gold have been mined clean. By using a process known as open-pit cyanide leaching, however, the microscopic gold that lies in common ores can be retrieved at a profit. Unfortunately our Western rivers are paying the price.

Containing as little as 0.02 ounces of gold to the ton, the rock is crushed into a talcum-powder consistency. This powder is then exposed to a sodium cyanide leachate which removes the gold particles. The remaining wastes, called tailings, are then disposed of in tailings containment ponds.

The wastes are a ticking time bomb. Theoretically, the tailings have been cleaned of most of the highly toxic cyanide before they reach the ponds. In practice, however, lethal doses of chemicals refuse to be exorcised from the tailings.

That is what threatens water and wildlife. Tailing containment facilities are not leak-proof. While it is possible to keep most small animals and birds away from the polluted ponds using fences, few mining companies do so adequately. While the eventual seepage of hazardous wastes into the water table could be prevented by using triple thickness of either clay or plastic pond liners, present mining laws do not require companies to take responsibility for their wastes in the long term. Thus, the tailings ponds go unmonitored and insufficiently protected.

They will leak. Already, several open-pit cyanide leach mines have poisoned their local water sources. Either by seepage or by mishandling of the cyanide leaching agents, riverine wildlife end up harmed. Last November, the Summitville Mine in Colorado leaked cyanide-laced waste-water into the Alamosa River in such quantities that fish were wiped out completely as far as 17 miles downstream. Similar episodes have occurred in South Dakota, Nevada and Montana.

Cyanide leach mining is a two-fold threat. In the short term, there is the ever present risk of a cyanide accident similar to Summitville; as well as the danger of tailing containment facilities leaking into the water table. In the long term, the waste rock left behind by the leaching operation is susceptible to acid mine drainage in which heavy metals and acids form and seep into the water table, poisoning it.

One of the most significant threats from cyanide leach mining is from the fact that it involves the processing of such vast amounts of material to produce a relatively small amount of mineral. Cyanide process technology produces a vastly greater amount of waste material than other mining methods. This greatly increases the scope of the groundwater pollution threat from cyanide, heavy metals, and acid mine drainage.

Acid mine drainage, though, is not unique to modern mines. All mineral mines can develop it, and in fact it is old, abandoned mines which are now poisoning the Blackfoot River in Montana.

The last mine to operate on the Blackfoot closed during the 1950's, but the effects of the mining are still felt. Waste rock left to the elements has been leaking heavy metals and acids such as cadmium, zinc, arsenic, copper and silver into the water table. The process has taken years for the metals to seep into the river, but now present, their effect is sudden and obvious. In 1991, the lowest population of Cutthroat and Bull trout were recorded in the Blackfoot River. As more metals leak into the river, the fish population will sink further into jeopardy. In Colorado, the Brown trout in some poisoned rivers are living truncated life spans as metals accumulate in their bodies.

For rivers and ground water reservoirs, the problem continues to worsen. Aged, abandoned mines are slowly polluting western rivers and killing aquatic life with heavy metals, and cyanide-laced tailings will be upon our rivers in much the same way soon. Currently, legislation requiring long term mining waste management and monitoring has not been passed, leaving the way clear for mine wastes to harm local waterways and degrade fish habitats

Please cir. Mate

Mine disaster worsens to tune of $33,000 a day

By Mark Obmascik
Denver Post Environment Writer

RIO GRANDE COUNTY — When the Summitville gold mine killed 17 miles of streams, polluted farm water supplies and converted a southern Colorado mountain into a toxic stew of cyanide and heavy metals, government regulators consoled themselves with a simple relief.

Summitville, they thought, couldn't get any worse.

It just did.

Instead of serving as a mere environmental disaster, Summitville is becoming a full-blown financial nightmare. The U.S. Environmental Protection Agency has been forced to hire 55 full-time workers — and spend $33,000 a day — to prevent the bankrupt mine from spilling 160 million gallons of cyanide solution into the headwaters of the Rio Grande River.

In less than three months, the government's emergency response at Summitville has drained $2.3 million of taxpayers' money. And the cash hemorrhaging shows no sign of easing.

The ultimate cleanup of Summitville, EPA says, is expected to cost at least $60 million.

What's remarkable about the extent of Summitville's environmental destruction is that it took so little time to create. The mine, constructed near the Continental Divide along the western rim of the San Luis Valley, didn't even open until 1986; it filed for Chapter 7 bankruptcy protection in December 1992.

During those seven years of operations, Summitville became the classic slow-motion accident, witnessed by many but stopped by no one. It was a scandal that resulted from botched construction, reckless mining, brutal weather, failed state government regulation and budget-slashing politics at the Colorado Legislature.

"Everything that could go wrong at Summitville did go wrong," said Mike Long, director of the Colorado Division of Minerals.

The fiasco prompted Ken Salazar, director of the Colorado Department of Natural Resources, to call this month for a moratorium on state approval of all new chemical mining operations. And in

Please see SUMMITVILLE on 14A

actually gets more snowfall — an annual total of more than 35 feet — than the nearby Wolf Creek ski area, which gets more snow than any other Colorado resort. Summitville engineers miscalculated the site's water balance by 14 inches of water a year, state officials said. To give an idea of the magnitude of that error, that's the same amount of total precipitation that the Denver metro area gets in an entire year.

At Summitville, the mistake was staggering. Instead of having the level of cyanide-contaminated fluid drop inside the 127-foot-deep leach pad every year, the fluid level actually rose by 10 or so feet per year, state regulators said.

From an economic standpoint, the water level error was a serious blow. To compensate for the increasing water level inside the gold ore heap, Summitville was forced to pour in more cyanide to achieve the same chemical reaction. That requirement increased the mines operating costs, reduced its profitability and made less money available for company cleanup projects.

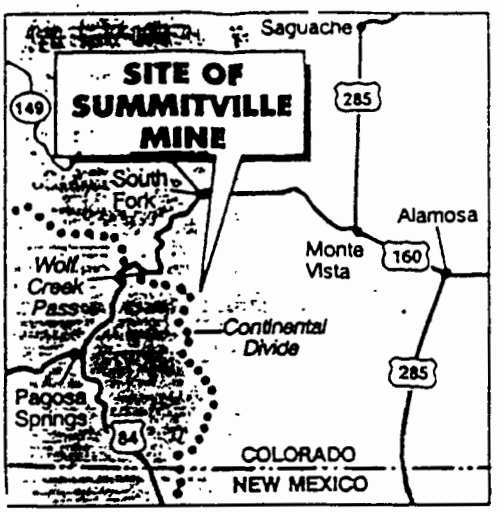
But from an environmental standpoint, the water level error proved disastrous. From June to October 1987, Summitville suffered nine separate spills totaling 85,000 gallons of cyanide-tainted fluid into Cropsy Creek, a tributary of the Rio Grande.

The Colorado Health Department responded in 1988 by levying a $27,000 penalty against Summitville.

In its original state mining permit, Summitville was banned from discharging any chemicals from mine operations. But mine executives later argued that this requirement was impossible to meet because of the water-level miscalculation.

So the health department in May 1989 agreed to issue Summitville a new permit allowing the mine to discharge treated liquids into Rio Grande tributaries.

Summitville tried to handle its waste problem by "land application," which called for contaminated liquid wastes to be pumped into



ground for natural filtration.

When David Holm, director of the health department's division of water quality control, personally inspected Summitville in 1990, he found a mess.

"It was apparent that the distribution system was failing all the time," Holm said. "The hoses would clog with particles and blow apart. The liquid would rush down into the creek. I saw it happen when I was just standing there at the site."

Nevertheless, the health department didn't take immediate action. The water quality division just had been subject to a bruising political fight with state Sen. Tom Norton, now the Senate president, over the health department's jurisdiction in water quality issues. Norton's 1989 bill transferred much enforcement power for mining water quality from the health department to the Mined Land Reclamation Board, which already was understaffed.

Holm said that political brawl in the legislature made it unclear whether the health department had any remaining legal authority to take enforcement action against Summitville. "Politics can'i r be far from my mind," Holm said.

"You have to be sensitive to wh: going on in the legislature."

But the state's inaction ange others. The Sierra Club Legal fense Fund made noises about ing a citizen's lawsuit agai Summitville, and the EPA in vember 1990 vowed to penal Summitville if the state didn't.

The outside pressure work From February to June 1991, health department and Mi Land Reclamation Division n fied Summitville that the m once again was violating state vironmental standards. In Ju Summitville agreed to $100,000 of fines for repeated e ronmental law-breaking.

But the penalty didn't stop problems. The next month, in gust, Summitville suffered more cyanide leaks. And in S tember, the mine spilled anot 1,000 gallons of cyanide-tain fluid.

By this time, all the le and spills had exacte heavy toll on the Alam River. Three different Luis Valley landowners repor that all the trout in their fa ponds were killed after they t in Alamosa River water t flowed from Summitville. A ch ist, Mary Mueller, blamed the kill on Summitville's discharge highly acidic water and exces levels of copper and zinc.

In June 1990, the Colorado D sion of Wildlife stocked 15,000 gerling trout in Terrace Reserv 17 miles downstream from S mitville. But when state biolog took a fish census of the reser less than a month later, they fo no fish living anywhere in the l

Further tests showed that the e tire 17-mile stretch of the Alamo River downstream from Summ ville was devoid of fish, officia said.

"The flows out of Summitvil decimated the fishery," said Jo Alves, a division of wildlife biol gist in Monte Vista. "Before Sur mitville, we did have a small b viable fishery. After Summitvill the acidity, zinc and copper leve got high enough to kill fish."

Meanwhile, in the San Luis Va ley, where 45,000 acres are irriga ed by Alamosa River flows, farr ers began reporting water quali problems.

SUMMITVILLE from Page 1A

Washington, where Congress already was considering a sweeping overhaul of the nation's mining laws, conservation groups are citing Summitville as proof that the 1872 Mining Act needs environmental reforms.

All the political fallout worries industry executives, who fear the Summitville horror story will be used by mining critics to cripple their business with more government regulation. Other mine companies headquartered in Denver are trying to make the best of a bad situation by donating more than 1,000 hours of engineering work at the Summitville site.

But there's still one interested party that hasn't been heard from yet about the mess. That's Summitville Consolidated Mining Co. executives themselves. Peter Guest, director of the firm, owned by the bankrupt Galactic Resources of Vancouver, Canada, didn't respond to repeated requests for interviews.

The Summitville operation was a product of the gold rush that swept through the West in the 1980s. At that time, the price of the precious metal had soared to as high as $800 per ounce — more than double the current market rate.

Galactic Resources tried to ride that wave of high gold prices by acquiring the Summitville site. A world-class ore body in the San Juan Mountains that had been featured for years in geology textbooks, Summitville was home to relatively small-scale mineral operations since the 1870s.

To extract gold from Summitville, Galactic proposed to use a cyanide heap-leach technology. The idea was to excavate a 127-foot-deep valley, fill it with 12 million tons of crushed ore and then sprinkle a cyanide solution over it to chemically remove the gold and other precious metals. Cyanide heap-leach technology allowed companies to recover as little as 0.04 ounces of gold from every 2,000 pounds of rock.

The 1,231-acre mine site was one of the biggest and most complicated hard-rock mineral operations ever proposed in Colorado. But when Galactic formally delivered its Summitville plans to the Colorado Mined Land

A 1976 state law, which regulates all hard-rock mining, forces state regulators to approve or reject all proposed new mines — regardless of size and complexity — within four months.

"Under the law, if we don't give the mine operator a decision within 120 days, they get a freebie — automatic approval," said Jim Pendleton of the reclamation division. The approval process was further complicated by the fact that the legislature gave the board enough money in 1984 to hire just 15 workers. They had to track the Summitville application as well as 2,000 other mining operations across the state.

Short staffing meant the state had to rely largely on the integrity and judgments of the Summitville operator and its consulting engineers during the approval and construction process. That turned out to be a colossal mistake.

Galactic got its state permit in the fall of 1984. Construction of the vast cyanide heap-leach pad began less than a year later.

The Summitville operation soon ran into trouble. According to legal documents, Galactic was under heavy pressure from a financier, Bank of America, to complete construction of the cyanide heap-leach pad quickly. As a result, Summitville managers decided to build the pad, at an elevation of 11,500 feet, in the dead of winter — despite the staunch protests of the mine's design engineers.

In March and April 1986, a series of avalanches blasted through the cyanide pad's protective liner, which was supposed to prevent mine chemicals from leaking and polluting several creeks that feed the Rio Grande. The avalanches, Galactic lawyers admitted in court records, tore and shifted the protective liner.

Summitville's design engineers, Klohn Leonoff, accused the mine company of a negligent rush to build the anti-cyanide liner. In court documents filed in Vancouver, the engineers said Galactic "improperly laid out large areas" of the protective liner; "did nothing to correct the inadequate backfilling and compaction" of soil in trenches around the liner; allowed "poor operation of construction equipment" that ripped the protective liner; and was "ignoring proper practice for seam repairs."

Despite those problems, the Summitville operators proceeded to fill the 45-acre mining p[illegible] until it literally overflowed with cyanide, the engineering firm said.

The pad and protective liner were discovered to be leaking cyanide solution in June 1986.

"The leakage was aggravated by the incorrect decision by (Galactic) to rush the commencement of leaching operations in disregard for the causes or consequences of the leakage," the Klohn Leonoff engineers said in court documents. "In their haste to complete the liner, the (Summitville managers) disregarded the quality of its construction."

The Summitville contractor that was hired to install the protective liner, Gundle Lining Systems, agreed with criticisms of Galactic in 1986 court documents. "Summitville has conspired with its parent companies, Galactic and Galactic Ltd., to terminate the contract and agreement with Gundle in order to conceal its own violation of the applicable laws governing environmental safety," the records said.

In another legal memo, the lawyer for the lining pad company wrote, "Numerous actions have taken place at the Summitville mine which may create an environmental hazard, and which may endanger the safety of the public."

The problem was, no state regulator even knew about these accusations. In 1986, the year that Summitville began operations, the Colorado Legislature cut the state hard-rock mining inspection budget from $561,000 to $250,000. The number of government mine inspectors, who had to monitor Summitville and 2,000 other state mine operations, was slashed from 15 to six.

Those stiff budget cuts prevented state regulators from conducting regular inspections of the Summitville site during construction, officials said. [illegible]

In the spring of 1986, a surge of snowmelt caused clay and sand around the protective liner to be "severely eroded" by water, Galactic attorneys said.

State mine regulators responded by slapping Summitville with a $3,600 fine — the first in a long series of government penalties.

Another major design flaw became apparent in the mine's first year of operations. Although executives originally estimated that more water would evaporate from the mine than would seep in from rainfall and snowmelt, the opposite proved to be true

to last 20 years, now are covered with rust after just four years of exposure to the newly acidic water in the Alamosa River. And cattle rancher Jim Braiden said one of his steel irrigation pipes, which usually lasts at least 20 years, sprouted a 2-inch rust hole after being exposed to just seven years of acidic Alamosa River flows. Braiden also suspects the mine's acid discharges may be responsible for killing a 12-acre alfalfa field.

By March 1992, after extracting 280,000 ounces of gold from Summitville, Galactic stopped mining. Company executives assured state regulators that they planned to clean up the site.

The problem was that state regulators only had required Galactic to deposit a $4.7 million reclamation bond for cleanup. If they forced Galactic to put more money into a higher bond, state mine officials said, the extra requirement might bankrupt the company and leave state government with the whole mess.

However, regulators did manage to force Galactic to conduct a new study detailing needed cleanup projects and required cleanup costs.

On Nov. 30, 1992, Galactic gave the state a report saying that the Summitville mine site would take at least $20 million to clean up. Three days later, Galactic announced it was filing for bankruptcy.

Regulators were stunned. A $15 million gap existed between what Galactic had posted for bond and what was needed for cleanup.

Meanwhile, the level of cyanide-contaminated liquid in Summitville's 127-foot-deep heap-leach pond stood at 122 feet — 5 feet from overflow.

EPA dispatched an emergency response team to Summitville on Dec. 8. The crew found a disaster in the making.

Summitville was discharging 3,000 gallons per minute of contaminated fluid from at least six different places. Many of the discharges were a foul color; one liquid stream was called "red zinger" because it looked like tea.

With winter winds blasting away at Summitville, EPA faced a tough decision. If the agency didn't do anything, the 160 million gallons of cyanide waste in the heap-leach pile, laden with toxic levels of copper and zinc, could spill into creeks that feed the Alamosa River, which in turn feeds the Rio

"If we left everything alone, it could go over any time. The whole pond would overflow," said Hays Griswold, who is directing EPA's effort. "The pipes would freeze. The pumps would fail. All the equipment would have to be replaced at very high expense in the spring. We didn't want to let that happen. So we took over the site."

The EPA had to hire 55 people to prevent Summitville from spilling. The site, 17 miles up a dirt road, requires a 24-hour-a-day snow removal crew. Wind-exposed walls of some mine buildings are buried under 40-foot snow drifts. Hundreds of gallons of chemicals must be transported weekly to the mine, through blizzards and whiteouts, to reduce the toxic effect of the liquids being released from Summitville.

The agency's work is being made more difficult by heavy snowfalls. The snowpack at Summitville stands at 138 percent of normal, with 16 feet of snow already on the ground. EPA workers are trying to remove and treat as much cyanide-contaminated fluid as possible from Summitville's heap-leach pile before an expected 270 million gallons of snowmelt come rushing through the pile during the May, June and July snowmelt.

"They keep asking me at headquarters: When are you going to get Summitville turned off and shut down?" said EPA's Griswold, who estimates the cleanup cost to be at least $60 million. "I tell them: You need to come out here an[illegible]ok at what we're up against. It's [illegible]ot pretty."

Founded 1975

Methow Valley Citizens Council

Post Office Box 774
Twisp, Washington 98856

(509) 997-2556

April 23, 1992

Okanogan County Commissioners
P.O. Box 791
Okanogan, WA 98840

Dear Commissioners,

For your information, here is a copy of our comment for the scoping process now underway for the Buckhorn Mountain Mine. Although the proposed site is not in the Methow Valley, the MVCC is very concerned for several reasons:

1) Proliferation of open pit heap leach mines and the off-site support developments will have a county wide effect. The potential for adverse environmental and social effects is extremely great.

2) The mine proposal is similar to the Early Winters project, in that the Forest Service is pre-disposed to permit activity on public lands with little thought of off-site consequences.

3) The Methow Valley could face any day the threat of a very similar proposal up at Flagg Mountain next to Mazama. We would like to see the county, the state, and the Forest Service face the environmental, social, and economic issues of short term extractive industries sooner than later.

The county should be very concerned about who will pay for the new roads, schools, hospitals, libraries and all of the other necessary infrastructure. We feel that the developer should be required to pay. The long term picture is also of interest. Will the mine be allowed to export most of the proceeds from the activity and then leave behind depleted ground and a distressed economy? How can the long term economic health of eastern Okanogan County be assured? How will the certain adverse environmental consequences be mitigated should the project be allowed to proceed?

It would be wise to confront the problems posed by the proposed mine head on and not low ball the adverse effects in hopes of allowing a quick go ahead. The Early Winters experience has shown that not dealing with the real issues in a straight forward manner just causes years of delay. The mine opponents are digging in for the long haul.

The county should use this opportunity to clearly define the issue and legislate comprehensive guidelines for all such activity. Given the present situation the proposal should not be allowed. Open pit heap leach mines are most likely not worth it given any conceivable mitigation package.

Sincerely, Jason Smith

Jason Smith, MVCC Staff for the MVCC Co-Chairs

Founded 1975

Methow Valley Citizens Council

Post Office Box 774
Twisp, Washington 98856

(509) 997-253

April 21, 1992

Elaine Zieroth, District Ranger
Tonasket Ranger District
P.O. Box 466
Tonasket, WA 98855

Dear District Ranger Zieroth,

We appreciate the opportunity to submit scoping comments for the Buckhorn Mountain mine proposal.

The Methow Valley Citizens' Council is very concerned about the prospect of large scale heap leach gold mining operations in Okanogan County. The Buckhorn Mine is no doubt just the first of many such proposals, each one of which could have the potential to irreversably and irretrievably affect the local environment.

The scenic degradation to the Okanogan Highlands with several hundred acres of open pit and tailings dumps is only one of many concerns. Patterns of use and migration for wildlife will be altered. Great quantities of water will be used and possibly polluted, affecting birds, fish, riparian habitat, and drinking water. The present quality of life enjoyed by local residents will be changed. Governmental agencies will struggle to provide the necessary public infrastructure and if history is a guide will shoulder the clean-up and welfare costs after the mine has played out.

The Forest Service must thoroughly consider the long-term versus short-term gains of mining Buckhorn Mountain. We think a truly valid evaluation would show beyond a doubt that Buckhorn Mountain should remain as it is.

We feel that reponsible stewardship requires the Forest Service to assume responsibility for the off-site effects created by the project. Most of the potential adverse effects would occur outside the Forest Service boundary. Polluted aquifers, damaged fisheries, de-watered rivers, and the detriments of short term extractive economies should not become someone elses problems.

Thank you again for this opportunity to comment.

Sincerely yours,

David Sabold Isabelle Spohn Vicky Welch

MVCC Co-Chairs

0

SPECIFIC COMMENTS

The EIS should fully evaluate:

WATER

1) The hydro/geology of the mine site drainage basin. In the event of toxic run-off from the leach pond where will it go? Where will "day to day" waste water go?

2) The effect of removing water from the surface or groundwater source to supply the mine on senior water rights, instream flows, fish habitat, and other instream and out of stream resources. How will water rights be distributed in times of drought? What effect will adding water (in the mines drainage basin) have downstream from the mine?

3) The potential for radio-active material to be produced at the mine and carried away in waste water. What materials will be in the waste water? How will waste water be treated?

4) The effects on surface and ground water quantity and quality. How much water will be evaporated in processing? List all wetlands which will be effected regardless of size. Will a Section 404 permit be required for any areas?

5) Tribal fishing rights established by treaty.

6) The effect on drinking water supplies down drainage.

7) The containment strategy for mine wastes in the event of unusually heavy precipitation. Will such safeguards work and to what point?

8) Treatment of sewage from the facility.

9) What will be the effect on any local wells?

10) Will toxic substances in holding ponds affect wildlife in contact with the ponds?

11) Will a NPDES permit be required?

12) Will Hydraulic permits be required?

13) What mitigations have proven most successful for similar problems in other areas?

14) What mitigations are most advisable in this case?

15) What is the likelihood of implementation of those measures?

16) What is percent of effectiveness that can be expected from

31) What mitigations are most advisable in this case?

32) What is the likelihood of implementation of those measures?

33) What is percent of effectiveness that can be expected from these mitigations?

34) What is the likelihood of enforcement of these mitigation measures?

35) What will be the cost of enforcement of these mitigation measures? Who will pay?

WILDLIFE

36) An inventory of all resident plants and animals and all migratory animals. What species are of concern or are threatened, endangered, or sensitive species? Where are they and how will the mine affect them? Are there any critical habitats?

37) A study of the migration routes and behaviors for all migratory animals. How will the mine affect migratory species including the Mule Deer? What large scale corridors exist? How does the area interact biologically with the portion of the ecosystem in Canada? Will there be violations of the Federal Migratory Bird Treaty?

38) The effects of increased human activity (traffic, noise, dirt bike riding, dogs, cats etc.) in the area on resident species incuding humans.

39) Any change in the bio-diversity of the area. Will the mine result in an increase or decrease in bio-diversity. How does this relate to the official Forest Service goal of maintaining and improving bio-diversity?

40) The economic losses to be expected given the decline of any resident or migratory species. Will there be any impacts to traditional hunting areas?

41) The effect on the Jackson Creek, Granite Mt., and Bodie Roadless Areas?

42) The safeguards planned to prevent birds and land animals from being poisoned by the leach ponds. How will any potential problems be mitigated?

43) The effects of increased fire wood cutting in nearby forests on cavity nesting species.

effects upon wildlife and humans?

60) The role of land use planning by Okanogan County. Does the county have in place a plan to provide for the orderly secondary growth engendered by the mine? How will mine workers be housed and where? Will public services be provided and how will they be paid for?

61) The social and economic needs when the mine has been exhausted. What will the needs be and who picks up the tab?

62) During what hours will bright lights be visible?

63) How will lights effect night-time visibility of stars and aurora borealis for local residents and tourists?

64) What effects will mine noise have on wildlife and human populations? Will hours of operation interfere with normal activities, such as sleeping of humans in the area?

65) Will noise berms be required? Where will materials for noise berms be obtained?

66) What mitigations have proven most successful for similar problems in other areas?

67) What mitigations are most advisable in this case?

68) What is the likelihood of implementation of those measures?

69) What is percent of effectiveness that can be expected from these mitigations?

70) What is the likelihood of enforcement of these mitigation measures?

71) What will be the cost of enforcement of these mitigation measures? Who will pay?

INFRASTRUCTURE

72) Potential new roads. Where and how will they be financed and maintained?

73) Electrical power supply needs. What are the needs, what are the impacts of power line construction, and how will it be financed?

74) What will be the public service needs, who will pay, and will the services be in place when needed? Included would be

90) What is percent of effectiveness that can be expected from these mitigations?

91) What is the likelihood of enforcement of these mitigation measures?

92) What will be the cost of enforcement of these mitigation measures? Who will pay?

SOILS

93) Are there any fine blue clays or other materials which can result in deposition of colloids into the watershed?

94) What will be the stability of holding ponds? What likelihood of damage in the case of leaching or holding ponds caving in?

95) Will excavations release natural elements such as arsenic into local wells or water supplies?

96) What will be the combined effect of exposes soils and precipitation upon any bodies of water?

97) What mitigations have proven most successful for similar problems in other areas?

98) What mitigations are most advisable in this case?

99) What is the likelihood of implementation of those measures?

100) What is percent of effectiveness that can be expected from these mitigations?

101) What is the likelihood of enforcement of these mitigation measures?

102) What will be the cost of enforcement of these mitigation measures? Who will pay?

END

Comments compiled and typed by Jason Smith, MVCC Staffperson.

Rebecca Hauser
PO Box 25
Omak, WA 98841

Dear Commissioner,

I am writing to you of my concerns about the proposed Battle Mountain Gold Mine.

Last year I moved to this area and purchased some land near Molson. I was enchanted by the pristine nature of the Okanogan Highlands and decided to settle here. Now, however, I am questioning that decision as we face what could be an enviromental catastrophe and a detrimate to the health of our community.

As a Registered Nurse in this community, I am very concerned about the cyanide tailings pond which would threaten our water table for generations to come. I am also concerned about the safety of our roads as the Molson grade is in no way prepared to handle semi trucks, heavy equipment or the increased traffic that the mine will bring.

I am also concerned about the impact of virtually destroying a mountain. Our wildlife and vegetation are sure to suffer. All of this for the greed of gold?!!! Have we learned nothing from the past devastating mining ventures that have left hazardous wastelands throughout our country?

I really feel that the law which enables this type of project must be changed. However, our immediate concern must be to stop this from happening in our community. The few short-term jobs it will bring to our area will in no way compensate for the negative effects of the mine.

As a registered voter in this community, I will be very interested in your stand on this issue. Please don't let this proposed mine become a tragic reality!

Sincerely,

Rebecca C. Hauser

RECEIVED
APR 20 1993
OKANOGAN COUNTY COMMISSIONERS

Omak, WA 98
April 15, '93

Commissioner Ron Weeks
49 Third North
Okanogan, WA 98840

Dear Sir:

Our county still has a chance to oppose handing over control to large industrial gold mining firms without environmental ethics. Okanogan County cherishes its rural character which will rapidly end with a population of hard rock miners and truck drivers entering it all of a sudden. In a county the size of Conneticut with only one stoplight, such a population influx will represent about a 10% population increase, this in an area with hardly enough rainfall to support the current agricultural base.

The current guidelines for this company are the 1872 mining law which was designed to open up the west at little cost to mining interests, and it is a blatant rip-off in today's world of capitalism.

Please support bills such as Senator Dale Bumpers' S. 257 or West Virginia's Representative Nick Rahall's H. 322 that would curb many of the major faults in the 1872 mining law.

In Washington state please support bills such as the "Metals Mining Act", S-5662 and HB-1706. This bill will not affect existing mines, it will not affect existing jobs, it will not affect gravel, sand or coal mines.

Thank you very much.

Sincerely yours,

George Wooten

George Wooten

JUL 0 1 1993

OKANOGAN COUNTY COMMISSIONERS

Rt. 1 Box 313-B
Okanogan, WA. 9884

Dear County Commissioner Dave Schulz,

I am writing you to express my concern over the proposed cyanide leach mining in Okanogan County. I believe sensible safeguards should be established in the State of Washington governing cyanide leach mining.

We, the residents of Okanogan County don't need some fly-by-night company (from out-of-state) to come in here and rape the land in order to muster huge profits and then, cut and run and leave us with the mess.

Sincerely Concerned,
Mark Brundage

* I'm a Registered voter; Okanogan County ...

also; Thank you for helping s[illegible] critical wildlife habitat in the Methow Valley.

RECEIVED
JUL 07 1993
OKANOGAN COUNTY COMMISSIONERS

July 3, 1993

Dear Dave,

I was dismayed to read in the paper that you and the other commissioners supported the Crown Jewel gold mine development. All the arguments made in favor of the mine don't hold up if you look at the history of mining in the United States.

Please skim this newspaper article. Yes, of course, it presents the environmental viewpoint - on the other hand everything stated in the article is based on fact. The mining industry has a terrible track record and abominable reputation in this country.

Ask yourself this: Would we in the Methow Valley welcome a cyanide-leach gold mine here? Are you

over →

Kidding! That would be the worst nightmare unimaginable! If we'd hate the very thought of such destruction here, why ever support it for a neighboring community?

Thanks for thinking about this, Dave.

Sincerely,

Sally Portman

Cyanide is one of the deadliest poisons known. Just add arsenic and a stew of heavy metals. Stir it all up with sulphuric acid. What have you got? The same kind of open pit, cyanide-leach gold mines that have blighted so many other Western states. Now they're headed our way! *Can we stop them?*

Those who prize Washington State's spectacular vistas, crystalline waters and undisturbed wildlife call it Buckhorn Mountain, a peak in northeast Washington's Okanogan National Forest.

But unless you act now, it's going to become the Crown Jewel gold mine — an open pit as deep as the Space Needle is tall amid hundreds of acres of waste rock leaking acid, and a lake of toxic waste.

Pushed by out-of-state mining interests headquartered in Houston and Denver, Crown Jewel will be the first large-scale open pit mine in Washington State. And if two dozen other mining companies swarming over eastern Washington get their way, it will be just one of many.

CYANIDE MINING FOR GOLD IS LIKE DYNAMITING FOR FISH.

Right now, there are no regulations in Washington State strong enough to stop hit-and-run mine operators from ripping off thousands of acres of public land and dumping thousands of tons of cyanide over low-grade ore, leaving a devastated, contaminated moonscape behind when they pull up stakes a few years later.

Haunted by newspaper headlines in states already victimized by their gold-plated rip-off (see box), mining companies hope to bushwhack Washington before we have time to protect ourselves.

"When you fly over [Nevada] you see huge pits," says a spokesman for that state's governor. "In thirty years, this finite resource...will be gone. What will be left behind are cyanide pools and stripped-down mountains and holes in the ground."

According to Montana's Water Quality Bureau, "The use of cyanide in ore processing probably poses the single greatest threat to the aquatic environment that we're dealing with

leach mines in Montana have let cyanide loose in the environment. Just last year, one of the partners in Crown Jewel was fined $168,000 for letting cyanide reach dangerously high levels at its new mine in Colorado — a mine which was supposed to be a model of environmental sensitivity.

What about federal law? Dating back to the days when mining was a matter of pickaxes and mule-trains, the 1872 Mining Law is nothing more than a giveaway. The corporate partners in the Crown Jewel pit will get hold of Buckhorn Mountain for $1,500 — and plan to leach out more than half a billion dollars in gold.

Federal law doesn't even require mining companies to restore the land or clean up future toxic leaks. From Nevada to South Dakota, state and federal taxpayers are left holding the

What kind of reviews are cyanide-leach mines getting in other states?

An open-pit gold mine in Montana — Phillip M. Hocker / Mineral Policy Center

ACID, METALS FOUND IN MINE DISCHARGE
— Billings Gazette, 2/21/91

COLORADO OFFICIALS WANT MORATORIUM ON CHEMICAL MINES
— Rapid City Journal, 1/3/91

CYANIDE LEAK FROM COLORADO MINE ANNIHILATES LIFE IN RIVER
— Santa Fe New Mexican, 11/12/92

TAXPAYERS GET $15 MILLION SHAFT IN SUMMITVILLE MINE FIASCO
— Denver Post, 12/12/92

bag when things go wrong.

"The 1872 Mining Law permits more damage to our environment, ever enacted," said former Secretary of the Interior Stewart Udall.

It's "America's biggest ongoing scam, rotten to the core," declares U.S. Senator Dale Bumpers.

COLOSSAL ENVIRONMENTAL RISKS, WITH NO ECONOMIC BENEFITS.

Is a pick-up truck full of gold worth ruining a public landscape, risking Washington State's wildlife, jeopardizing our water supply, and burdening future generations with tons of toxic waste?

The mine will create a few jobs, sure. But reports from other states show that most jobs go to out-of-state technicians, not the local unemployed.

The mining companies pay no royalties on the wealth of gold they extract. And when the gold plays out, in an average of seven years, we'll still face decades of toxic danger.

And what will the gold be used for? Over 80% of the gold mined today goes into jewelry — most of it manufactured abroad by cheap labor.

There's really nothing in all this for the people of Washington.

DON'T LET CYANIDE MINERS INTO WASHINGTON BEFORE WE HAVE LAWS TO SAFEGUARD OUR STATE.

Corporate front groups like "People for the West," backed by a partner in the Crown Jewel mine, are blocking any reform of the 1872 Mining Law. Without federal reform, it's up to each state to defend itself.

As the mining companies well know, Washington State simply isn't prepared.

The problem is under urgent study in Olympia, but legislation won't be ready in time to limit the harm from Crown Jewel.

That's why we're asking you to mail these coupons immediately. We must declare a moratorium on new cyanide-leach mines until strict controls are on the books.

South Dakota, Nevada, Colorado and Montana have already learned how much environmental damage these mines can do.

It's up to you to save Washington State before it's too late.

— *Thank you.*

WASHINGTON ENVIRONMENTAL COUNCIL
WASHINGTON WILDERNESS COALITION

TMI#: 4497

Thank you, Winnie. I appreciate the opportunity to be here. I'm Spence Higby, Okanogan County Commissioner, and I represent the district in the north end of Okanogan County that this mine is to be cited in. I guess for the record, I want to start out by saying that according to the state's SEPA laws, and the procedures outlined in the laws, this hearing that we are having today is not needed, not necessary. I want to point out to you few that the lead agency in this case, the Washington Department of Ecology, has a choice to schedule a hearing, or not to schedule a hearing. They did choose, and advertise a hearing well in advanced, that hearing being in Tonasket, which was moved to Oroville. That hearing satisfies the intent of the law. The petition issue that has been brought up, of 50 or more signatures, only applies if the lead agency did not schedule a public hearing. This hearing has been decided upon for other reasons other than the interpretation of the SEPA regulations.

My second issue. Any comments that may come forth this evening, or Thursday evening, that are concerning the Memorandum of Understanding between Okanogan County Commissioners, and Battle Mountain Gold, the issue of local hire, the issue of taxes within the county, or the issue of maintenance of roads, should properly be addressed to the county commissioners. Those issues have already been dealt with, are in the process of continuing to be dealt with, with Battle Mountain directly, and we feel that they have been handled satisfactorily at that level, and do not have an effect upon the DEIS.

The last one that, no, the third one out of four, the third one that I want to mention is either items that have floated around in the press, floated around in memos, even come out of a memo directed to Governor Lowry from his staff people of Mr. Jack DeYoung, indicated that the environmentalist had a fear of coming to Okanogan County. I have a letter that I quote parts from. The entirety is available to interested parties or the press if they need to. This letter is from Okanogan County Sheriff, Jim Reid.

For the past eight years there has not been to this date one scratch or one fist-fight recorded. Several people have indicated that they felt intimidated by others, yet we have ardently investigated every indication of trouble, and have found no proof of any crime. After all the talk and publicity, when you bear it open to provable facts, there is little to no reason for either side to feel intimidated by any one. I suspect that this report is fear, is not based on reason, but in the imagination of the press, and a few people for their own purposes. I hope this clears up the question of intimidation and fear of being in Okanogan County.

Again, that is taking excerpts of a letter that Jim Reed wrote to me at my request. Time. Thank you, I have to admit I was reading, didn't see it, Phil, I appreciate this opportunity. I'll be there Thursday. (Applause).

TMI#: 4577

Spence Higby.

Before I get into the story I'm going to tell you, I would caution the press, unfortunately I think Mr. Louie is left. Before you jump too far and write your story, contact the entire tribal council. It is my understanding, only by second-hand source, that there are either thirteen or fourteen members of the council; the meeting that was held today, there were eight members there, and the vote was five-to-three. I could be wrong because I did say it was second-hand. I only ask that you be accountable, and check before you print.

Reluctantly I'm going to tell you a story, briefly. John, I'm going to do probably what I shouldn't do, and I will go slightly political. This morning, only this morning, there was a contact directed from Mr. Teeley and myself, with the U.S. Forest Service and the Department of Ecology, informing them ahead of time that we felt that it would be very appropriate for us as commissioners, to set in this public hearing with them as a show of cooperation, communication, working together towards coming up with a final impact statement, a selection of alternatives, and a direction to go on the permit. When I talked with Mr. Gehr, he was very supportive of that idea. When I talked to Mr. Spurgin, and I want to not be negative to Pat, because we have had recently very good communication, very open discussion, and I believe a very good relationship, but somewhere someone higher than Mr. Spurgin put a mix on that type of arrangement. When we arrived, we were told that the second table to the side was for all the elected representatives. I'm probably going to ignore that half-minute for a few minutes and finish my story. Sorry about that. You can boo, too, if you want. The other elected officials chose to sit in the audience because they were going to speak. Ed and I had both agreed not to speak at all, but we chose to be set on the side. Symbolic, of where we are placed with some higher officials somewhere. Again, I want to strongly let you know that the Forest Service and DOE, as represented by Mr. Gehr, and Mr. Spurgin, have been very cooperative with us, but all political levels have not. Thank you. (Applause).

OKANOGAN COUNTY

Department of Public Works

P. O. BOX 232 • 237 4th AVENUE NORTH
OKANOGAN, WASHINGTON 98840

(509) 422-7300 (FAX) 422-7301

August 21, 1995

Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

RE: Comments to the Crown Jewel Mine draft EIS.

Dear Sir:

Thank you for the opportunity to comment on the draft Environment Impact Statement for the Crown Jewel Mine Project. Our comments are as follows:

Page 2-86 under "Air Quality" regarding Dust Control.

> **All County roads considered routes to the proposed mine are paved except Pontiac Ridge Road. BMG has agreed to upgrade a portion of Pontiac Ridge Road to Okanogan County's minimum standards regarding gravel roads.**
>
> **The County excepts this with the understanding that BMG will control dust on Pontiac Ridge Road when necessary, with water or other palliative treatment approved by the County Engineer.**

Page 2-107 under "Transportation Monitoring".

> **Okanogan County should be involved in any meetings that involve review of transportation as well as any other safety issues.**

Page 3-180 under "Project Access Routes".

> **There are five County Roads that are listed as "All Weather Roads". Under the Okanogan County criteria these roads are not considered "All Weather". The only two routes that are "All Weather" are State Route 97, and State Route 20.**

All County Roads are subject to restrictions during the Spring thaw.

Page 4-145 under "Road Maintenance".

A written agreement between Okanogan County and BMG will be necessary for maintenance of any Okanogan County Road that would require increased maintenance such as snow plowing or removal, that is directly attributable to the mining activity.

If there are any questions pertaining to theses comments please contact this office at (509) 422 - 7300.

Sincerely,

Joseph H. Nott, P.E.
County Engineer

BY: Tom Hinger
Transportation Development Coordinator

GENERAL OFFICES
OKANOGAN WASHINGTON 98840

POST OFFICE BOX 912
(509) 422-3310
(FAX) 422-4020

PUBLIC UTILITY DISTRICT NO. 1 OF OKANOGAN COUNTY

August 24, 1995

Editor
Oroville Gazette-Tribune
Post Office Box 250
Oroville, WA 98844

The District has been provided with a copy of an article from a local publication by the *Columbia River Bioregional Education Project*, which implies the cost to receive electric service in the "Highlands" will increase when the Crown Jewel Project comes on line. This claim is false. Unfortunately, the author did not contact the District for any information on the capacity charge or service to the Crown Jewel Project.

The capacity charge implemented by the District was to reduce the rate increases needed to generate adequate capital funds to rebuild lines serving developments. These developments are mainly residential and commercial accounts.

Battle Mountain Gold will be paying the District for the cost of building a transmission line from Oroville to Buckhorn Mountain. They have already paid for all engineering costs and made a substantial contribution to rebuilding the Oroville Substation in 1993. Battle Mountain Gold has been the most responsible developer the District has worked with.

The facilities installed by Battle Mountain Gold will save PUD ratepayers millions of dollars and may also substantially reduce the capacity charge for new services in the Highlands. These facilities will provide the needed capacity to serve District customers in the Molson, Chesaw and Havillah areas for decades after the mine has closed.

Sincerely,

Harlan Warner

HARLAN WARNER
Manager

bc: Phil Christy - Forest Service
Patricia Betts - WDOE
Brant Hinze - Battle Mountain Gold
Rod Leavell - Oroville PUD

Okanogan County Sheriff's Office

James K. Weed
Sheriff
Post Office Box 32
149 N. Fourth
Okanogan Washington 98840

Telephone (509) 422-7200
Fax (509) 422-7236

Date: 8/4/95

Spence Higby, Commissioner
Okanogan County Courthouse
Okanogan, Washington

Re: Threats / Danger to Environmentalists

For the past eight years there have been many people on both sides of the environmental issues who had hot tempers, more than assertive styles and were very vocal in their viewpoints. There has not to this date been even one scratch or one fist fight recorded. There has been one person who has related a phone call received on their answering machine which was left when they were out back in 1993. This could not be independently verified as it was reported days later and the recording was not kept.

Several people have indicated that they felt intimidated by others yet we have ardently investigated every indication of trouble and have found no proof of any crime. We work these issues even when no complaint is made to stop any of this before it gets started. Both sides are equally liable for arrest, yet no valid case has been found.

There have been several pieces of logging equipment burned or otherwise vandalized in the woods and one incident about six years ago where a logging equipment guard reported that he was fired upon from the woods. This could not be independently verified either.

After all the talk and publicity, when you bare it open to provable facts, there is little to no reason for either side to feel intimidated by anyone. I suspect that this reported fear is not based in reason, but in the imagination of the press and a few people for their own purposes. I am somewhat surprised that there has not been more physical conflict, as neither side has been bashful about their verbalization in any meeting where I have been in attendance, and that is a lot of meetings. A physical assault would serve either side well to prove their point, but so far it has not occurred. Rest assured that if it does occur we will investigate it vigorously and push hard for as heavy a penalty as we can get, so this does not become a pattern. So far we have settled our differences as adults in public meetings and that must continue.

I hope this clears up the question of intimidation and fear of being in Okanogan County. These are the facts. I am sorry I can't help what the westside press wishes to print. Facts and reality are not the stuff newspeople are much interested in these days, their industry has fallen victim to chasing the dollar instead of the truth. When competition replaced quality, facts were lost in the need to sensationalize and sell print/airtime. It is as irresponsible for them to characterize us as backwoods hicks who only want to rape the world as it is for us to categorize them as people who have made a sewer out of their backyard and now wish to tell us what to do. There are a lot of good well meaning and responsible people on both sides who have done well in a tough process to this point.

Sincerely yours,

James K. Weed
Sheriff

Pend Oreille County

Board of Commissioners

Mike Hanson
District #1

Joel Jacobsen
District #2

Karl D. McKenzie
District #3

Chris Mylar
Clerk of the Board

(509) 447-4119
FAX: (509) 447-5890

Post Office Box 5025
Newport, WA 99156-5025

August 28, 1995

U. S. Forest Service
P.O. Box 466
Tonasket, WA 98855

RE: Proposed Crown Jewel Mine Project

We are in support of the Crown Jewel Mine Project.

We have read the draft environmental impact statement dated August, 1995, and support Alternative B as it is stated to avoid or minimize impact to wildlife and sensitive habitats and additionally, because of the high impact expected on the job market and economy.

Thank you.

Sincerely,

PEND OREILLE COUNTY COMMISSIONERS

Karl D. McKenzie/cm
Karl D. McKenzie, Chairman

Mike Hanson
Mike Hanson, Member

BOCC/cm

recycled

City of Oroville

Clerk's Office, P.O. Box M, Oroville, Washington, 98844, (509) 476-2926 FAX (509) 476-2943

OFFICERS:
John G. Shaw, Mayor
Kathy M. Jones, Clerk-Treasurer
Rodney L. Noel, City Superintendent

COUNCIL MEMBERS
Jimmie D. Walker
Nancy Young
Forrest D. Boyer
M.W. "Mick" Munson
C.F. "Chuck" Spieth

U.S. Forest Service
P.O. Box 466
Tonasket, WA 98855

Subject: Proposed Crown Jewel Mine Project

Dear Sirs;

As Mayor of the City of Oroville, I have been asked to convey the Oroville City Council's and my support of the Crown Jewel Mine Project and urge that the final EIS be completed without delay. I will briefly outline our support that is based upon the following facts:

1. Battle Mountain Gold Co.'s proposal (Alternative B) meets and exceeds all federal, state and local regulations and adequately addresses safety and environmental issues and benefits.

2. Water use issues have been positively addressed. The stated annual usage is 675 acre feet. This amount is not overly significant, as it is quite comparable to the irrigations needs of a 160 acre pasture. The Water Conservation plan includes recycling of water from mill operations, conversion of existing agricultural use water rights to an industrial use during the normal irrigation season, and storage of spring runoff surplus water. Nine water quality and quantity monitoring wells have already been installed and are monitored on a monthly basis. Monitoring will continue long after the mine closure.

3. The proposals design for cyanide destruction, (the INCO cyanide leach process), in addition to the strict laws already in existence, sufficiently and safely responds to our concerns about cyanide use and that the proposed destruction levels are significantly lower than other permitted mines in this state.

Opponents of the project negatively stress the re-training needed after the mine closes.
I TOTALLY AND COMPLETELY DISAGREE! This project will actually provide training, (at no cost to the employee), that will actually BETTER prepare them for future jobs. Computer and accounting skills, general and specific types of construction, and administration, are just some of the fields in which on-the-job training will be provided. Local unemployment rates can be reduced with this golden opportunity to "EARN WHILE YOU LEARN".

Each of us believe that adequate research and studies have been conducted, meetings held and reports have been issued regarding all aspects of the seriousness and depth of this proposal. Wildlife, reclamation, the soils, air quality, noise, vegetation, economic and social impacts are just a few of the other issues that have been included in these meetings and studies. The draft EIS Alternative B meets all the desired objectives and minimizes all identified environmental impacts.

Okanogan County and area communities are suffering depressed economies and high unemployment rates.
No other project proposed within the county would yield such a variety of benefits with such minimal environmental impact.

In closing, we strongly agree that the Crown Jewel Mine Project proposal is a "model" project, designed with complete safety and environmental answers. If this project is turned down, essentially all mining in the state is then turned down! And we must not forget that mining is not constrained to just extracting mineral ores from the ground....it includes ALL resources extracted from the ground. Therefore, the approval and permitting of this project most definitely will effect the future of all netural resource-based uses and developments.

Again, the City of Oroville supports Alternative B and strongly urges the completion of the final EIS without further delay.

Thank you for allowing this opportunity for comments.

Sincerely,

Jimmie Dale Walker,
Mayor

" We join the Molson Grange in supporting the Crown Jewel project. "

The Crown Jewel mine will meet all relevant federal and state environmental laws and regulations, including:

- National Environmental Policy Act
- State Environmental Policy Act
- Clean Air Act
- Clean Water Act
- Washington Metals Mining Act

Because of this, we support Battle Mountain Gold Company's proposed plan for the Crown Jewel mine. Please expedite your final review and approval of all required permits.

Additional comments:

It is in the best socio-economic interests of the local communities to procede with this project.

Name Ben Boswell, Commissioner, Wallowa County, Oregon

Address 101 S. River St. #207 City Enterprise State OR Zip Code 97828

1995-529

RESOLUTION

WHEREAS, the Colville Confederated Tribes have determined that due to the inherent rights retained by the Tribe and its membership in the former North-Half of the Colville Reservation, and because trust allotments are located within the boundaries of the former north-half, the Colville Confederated tribes have an obligation to protect and preserve the rights, resources, and tribal membership and lands located within the proposed area of the Crown Jewel Mine from unknown potential negative effects and impacts; therefore, the Colville Confederated Tribes are hereby opposed to any precious metals mining activity within the boundaries, or adjacent to the boundaries, of the former North-Half of the Colville Indian Reservation.

THEREFORE, BE IT RESOLVED, that we, the Colville Business Council, meeting in SPECIAL Session, this 17th day of AUGUST, 1995, at the Colville Agency, acting for and in behalf of the Colville Confederated Tribes, do hereby approve the recommendation of the Resource Management Committee of the Business Council.

The foregoing was duly enacted by the Colville Business Council by a vote of 7 FOR 0 AGAINST, 3 ABSTAINED under authority contained in Article V, Section 1(a) of the Constitution of the Confederated Tribes of the Colville Reservation, ratified by the Colville Indians on February 26, 1938, and approved by the Commissioner of Indian Affairs on April 19, 1938.

ATTEST:

Mathew Dick, Jr., Chairman
Colville Business Council

cc: Deb Louie, Chairman, Resource Management Committee
Dean Pilkington, Geology Dept.
Kathy Desautel, Financial Officer

Colville Confederated Tribes

P.O. Box 150 - Nespelem, Washington 99155 (509) 634-4711

FISH AND WILDLIFE DEPARTMENT

August 14, 1995

CROWN JEWEL MINE - DEIS
Okanogan County

CCT FISH & WILDLIFE

The proposed Crown Jewel Mine will affect tribal members and their ability to harvest fish and wildlife for subsistence purposes in usual and accustomed areas.

The proposed mine could affect 1,920 acres or more of huntable lands associated with the pit, facilities , roads and road traffic. This loss, coupled with increased NO TRESPASSING/NO HUNTING on private lands, will affect tribal members rights to subsistence hunting.

The proposed mine could affect 1,900 acres or more of habitat of huntable populations of game as well as non-game species. Loss of habitat will result in population losses. Reduced numbers of subsistence wildlife will affect tribal members.

The proposed mine will result in an increase in local / regional human population. This population increase may be good for economic benefits to some, but will increase the competition for local harvestable wildlife and fish and affect subsistence use of tribal members.

Increased traffic from local and regional population centers to staff and service the mine will increase wildlife / vehicle collisions. Reducing huntable populations of game and affecting the subsistence use by tribal members.

There is potential for the increased subdivision of lands, in the surrounding valleys, that can affect winter range use by game and result in population losses due to reduced habitat and human disturbance. Again, affecting subsistence use by tribal members.

The disturbance to wildlife populations by the operation of this mine may result in stress to these populations. negatively affecting reproduction, resulting in a loss of subsistence use by tribal members.

The transport and storage of fuel. 189,000 gallons of diesel and 2,500 gallons of unleaded gas, by accident or carelessness. could find its way into the groundwater or surface water and become a hazard to aquatic life and human life.

The transport and storage of chemicals, if accidently spilled, could poison fish and wildlife and human alike.

Tailings ponds and collection ponds can attract migratory birds and result in bird and other wildlife deaths. Destruction of cyanide in these ponds may appear to be at acceptable levels, however the pH in a birds digestive system can cause what was considerrd to be non toxic to be toxic.

Tailings ponds in the head of drainages is not a very good idea. Leaks in liners and / or structural failures in the dam can result in the transport of toxic materials, including trace elements, into ground and surface waters. These elements can result in fish and wildlife deaths and affect the human population too. Upwelling of ground water in a stream system, if it contained contaminants or toxic elements could effect fish reproduction, since upwelling of groundwater often occurs in gravels where fish spawn.

Ben Albrechtsen, MAM, R-4, USFS: Regarding deep wells to monitor cyanide migration into groundwater. "While this may provide useful information to research, if contaminated water is detected in the area, the problem will already be too advanced to solve."

The storage reservoir for water is in the Starrem Creek drainage, west of Meyers Creek. If this reservoir fails, sediments will be deposited in Meyers Creek and could affect fisheries in both the U.S. and Canada. Meyers Creek, from Mary Ann Creek to the Canadian boarder is a water/shoreline of the State. How can putting structures in this creek and or across this creek be consistent with the Shoreline Management Act?

We do not think that the negative effects on fish and wildlife resources of this mine proposal can be fully mitigated to off-set the losses to fish and wildlife and subsistence over the life of the mine (10 years, possibly 20).

Sincerely,

Deb Louie

Deb Louie, Colville Business Council
Colville Confederated Tribes

TMI#: 4572

Thank you ladies and gentlemen. I'm honored to be here tonight. My name is Deb Louie, I'm a councilman from the Colville Confederated Tribes. And I'm elected in the Nespelum District. I want to read a few things to you, and today the council from the Colville Tribe was in special session, and we passed Resolution 1995-529. And it says, "To the Colville Business Council From the Natural Resource Committee. Subject North-Half Mining. The Colville Confederated Tribes have determined due to the inherent rights retained by the tribe and its membership in the former north-half of the Colville Reservation, and because trust allotments are located within the boundaries of the former north-half, the Colville Confederated Tribes have an obligation to protect and preserve the right, resources, and tribal members, and lands located within the proposed area of the Crown Jewel Mine from unknown, potential negative effects it impacts. Therefore, the Colville Confederated Tribes are hereby opposed to any precious metals mining activity within the boundaries, or adjacent to the boundaries of the former north-half of the Colville Indian Reservation." This is passed today by the Colville Confederated Council. Also, the Colville tribes, we retain hunting and fishing rights, certain water rights, and land in trust of the area of the proposed Crown Jewel Mine at Buckhorn Mountain. The Colville Confederated Tribes have not had the opportunity to participate nor comment on the proposed mine. It is the duty of the Colville Business Council of the Colville Confederated Tribes to protect and preserve any and all rights and resources on behalf of the membership of the tribe. The area in question is significant in that it is a usual and accustom hunting and fishing area. It is an area where traditional foods and medicines have been gathered by trial members for years. The Colville Confederated Tribes have not been able to assess any of the impacts the proposed mine would have on the land, water, habitat, and environment. The Colville Confederated Tribes have not been officially included or notified in any of the studies or actions taken thus far on the proposed mine. The Colville Business Council is also very disappointed that the Bureau of Indian Affairs has not taken any steps to ensure the protection of the land held in trust in the area. They are. are by law, entrusted with this responsibility. We, the Colville Business Council, therefore request that the Colville Confederated Tribes be consulted and given the opportunity to conduct our own studies, if necessary to assess the impact of the proposed development on our resources, and further for the protection of the health and welfare of our people. We've only got this EIS, maybe two weeks ago, and I have reports here from the people in our offices that have done some work already which I will leave here at the desk. I want to say before I leave that you people are, are a good group tonight, you've listened to both sides, and you've been very, very good people. So, again, I'm honored to be here, and I represent our people below you. Thank you.

Thank you. (Applause).

DRAFT

CROWN JEWEL DRAFT EIS COMMENTS
G. PASSMORE 8-15-95

WATER QUALITY AND QUANTITY:
p 2-105: Text does not describe in detail the water monitoring program. It implies that it is not developed yet. When would the monitoring system be developed, and what would be the frequency and time period of monitoring? Who would monitor and how would quality assurance/quality control be provided? Will there be an independant advisory oversight committee? Have bioassays been considered for monitoring?

p 2-109 and 111: Table 2.14 doesn't express fish habitat or numbers loss impacts as a result of streamflow reductions. Habitat loss is not expressed in losses of fish or fishing opportunities. (See later comment under Indian Reserved Rights).

General comment regarding water management: There is no water balance analysis presented in the DEIS to assess the impact of the alternatives on various watersheds. There is no comprehensive presentation of water management at the mine site on a mass balance basis taking into account probable maximum storm events. No hydrogeology on Meyers creek, the main source of water, is presented. No analysis of impacts of transporting water from Meyers Creek watershed to Toroda Creek watershed is presented. What is the impact on water rights, and what's the safe annual yield of this aquifer? Will indian lands in the Meyers drainage be affected?

Watershed analysis and sediment transport modeling for the sub watersheds affected is not presented. Soil erosion rates are mentioned on 4-19 (table on 4-20) but are not translated into sediment generation and the impacts of that increased sediment.

p 4-27 Doesn't speak to location of monitoring wells in relation to groundwater velocities. Just installing them "downgradient" won't insure timely detection of contamination and head changes. They must be located to detect contamination as soon as possible, not after it has occurred for a number of years. Who has final approval authority on the water monitoring plan?

In more than one section reference is made to low permeablility glacial deposits. Due to complex deposition regimes these deposits are neither anisotrophic or homogeneous and may contain units of high permeability. Without extensive geotechnical evaluation they cannot be relied upon as leachate barriers.

As regards ore stockpiling, the best method is to prevent the leachate in the first place, rather than speculate about its impacts. Ore stockpiles should be covered with tarps and underlain by an engineered material of limited porosity. This is common practice in ore processing facilities.

TAILINGS FACILITY:
P2-46 mentions allowing the water to evaporate at cessation of operations. Evaporation will need to be induced. Drying of the saturated tailings themselves will probably need to be induced as well.

P4-30 Describes precipitation entering the reclaimed tailings mass. There should be a capillary break installed to minimize this possibility.

No mention is made of tailings dam(s) design. No crossectional diagrams are presented of proposed tailings facility construction. No plans are presented for tailings facility closure. The DEIS Volume I and II text descriptions of tailings management are sketchy at best. Given the history of tailings facility failures at a local mine (Hecla, Republic) this is a gross oversight. Based on the sketchy information provided there is no basis for evaluating the alternatives presented. At a minimum the facility should be double lined with a fully engineered dam(s), i.e., no tailings material used as dam material.

Text makes reference to design of tailings dams to meet state criteria. Will there be opportunities for independent evaluation and public comment on the designs as the plans are developed?

Regarding Decomposition/Weathering of Rock:
Was fracturing and exfoliation of waste rock and pit walls due to decompression taken into account? Are there examples of similar lithologies removed from similar depths in old mines that could be used as examples of what to expect decades into the future?

P4-35: What will be done to mitigate the exceedence of primary and secondary groundwater quality criteria within the pit lake. Will the water be treated? No mention is made of this.

P4-52: What will be done to mitigate the permanent exceedence of aquatic life criteria for Cd and Ag within the pit lake? Will the water be circulated through filters?

WATER RIGHTS AND INDIAN RESERVED RIGHTS:
General Comment Regarding Proposed Water Supply and Water Rights:
No hydrologic/hydrogeologic evaluation is included for the Meyers Creek Basin, the primary source of mine water. As a result it is not possible to evaluate the potential effects of the proposed mine alternatives on water rights appurtenant to Indian owned land. Evaluation of impacts on ground water levels in the basin are needed. The IFIM evaluation of Meyers Creek is a good method, but it needs to consider impacts in the U.S. portion. The study objectives concentrate on the Canadian portion and it is not clearly stated what the dewatering impacts will be.

P4-56: A water right is not, strictly speaking, a "private property right." It is a usufructory right held in a common public resource subject to a variety of limitations such as amount, time, and place of diversion and use. Non-consumptive uses are subject to additional limitations. Water rights are issued subject to existing (prior or senior) rights. Another distinction from a private property right is that a water right can be lost by non-use.

P4-57: Water right applications are not located on a map or by other means. Water right requests are not related to project alternatives which vary considerably in diversion duty volumes and periods of use. All of the water rights applications are not included in the list. This provides an inadequate basis upon which to evalua te the impact of the alternatives.

Indian owned land is located (the SW1/4 Sec.4, T39N, R30E W.M.) in the Myers Creek watershed. Additionally, Indian fishing rights exist in the area. The BLM and Forest Service have a fiduciary (trustee) reponsibility to protect these rights. No discussion of this issue is presented in the text. If these rights are determined to be impacted mitigation must be insured. In order to protect these rights they need to be quantified, particularly as regards fish and fish habitat loss. The IFIM analysis needs to be done for all affected streams to quantify impacts.

Other Indian land is located throughout the area. The secondary impacts related to population growth need to be evaluated. All new housing in the area near the mine site will of necessity require domestic wells. These wells will impact the Kettle and Okanogan rivers.

According to the May 95 watershed assessments of the Kettle and Okanogan drainages performed by the Department of Ecology both Rivers have not been adequately meeting statutory instream flow levels for some time. The Kettle River instream flows are typically are not met 50 percent of the time during the late summer and fall. Okanogan statutory instream flows are not met on average of 60 to 100 days per year depending on where you are in the system. This is damaging the Tribes' fishery. Any additional water rights granted for the Crown Jewel Project must be conditioned to minimum flows, i.e., shut down in favor of senior appropriators when flows are not met. The Forest Service and BLM as trustees have a responsibility to see that this is adhered to.

Regarding alteration of surface water flows: The State of Washington RCW 90 has prohibitions against wasting water. Drilling a hole and leaving an unplugged artesian well is usually considered a prohibited act. Are flows from abandoned mine workings also considered prohibited acts under state law, and, if so, how will this issue be dealt with?

DRAFT

REVIEW OF DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR CROWN JEWEL MINE, OKANOGAN COUNTY, WA

W. Hunner
8-16-95

The following comments are in response to review of the Draft Environmental Impact Statement (DEIS) for the Crown Jewel Mine, Okanogan County, WA. Specific attention was given to the sections on surface and ground water, water supply resources, wetlands, and aquatic resources.

A. Water Quantity

1a. The DEIS estimates that stream diversions, pit dewatering, reduced infiltration due to loss of soil and vegetation in activity area, and interception of overland flow will reduce surface flows by stated percentages. Water depletion for each stream should be quantified. Also, values or uses for which a stream resource is to be managed should be identified and established, and the necessary flow regimes (instream flows) should be quantified and protected.

b. The DEIS includes mean annual flow and mean annual peak flow data for all streams in the project area using regionalized regression equations. Hydrologic quantification should include analyses of low flows, high flows, "normal" monthly flows, and monthly or daily flow durations. It is often practical to quantify normal flows in terms of average median or mean daily flow by month; mean, minimum and maximum monthly flows commonly are determined.

c. Minimum instream flows for fish were established by the IFIM process for Myers Creek (which will have diversion for mine reservoir). Minimum instream flows for fish and water quality concerns should be determined for all potentially impacted streams.
The impact of reduced instream baseflows of local creeks due to pit dewatering is understated in the DEIS. Decreasing streamflows such that fish are impacted is illegal.
Also, quantified instream flows are necessary for water rights litigation and any additional appropriations.

2. A hydrologic study should include a water budget analysis. This procedure was not done for the area, and the data necessary to support a water budget, including precipitation and evapotranspiration, was not collected.

3. Also, the following concerns were not adequately addressed:

a. the effects of blasting a 400 foot deep pit into an aquifer that supplies five creeks in the area. Data is insufficient to evaluate impacts, including pit dewatering, to ground and surface water flow regimes.

b. the effects of 25 to 30 % reductions in Myers Creek flow on aquifers and wetlands.

c. anticipated impacts to drainages east of Buckhorn Mountain (needs expansion).

d. assessment of the impact of additional people in area (due to new jobs) on water quantity, availability and quality.

B. Water Quality

1. to state that acid or toxic spills "could cause acute short-term water degradation" is misleading; acid and heavy metals leaching and contamination of the groundwater system and creeks it feeds could persist for many years; an accumulation of low level contaminants over time could adversely impact aquatic resources and water usage.
2. the validity of surface water quality data is in question as no QA/QC data is presented in the DEIS.
3. other water quality concerns require further investigation:
   a. the effect of storm water runoff from waste rock piles on surface water quality including sediment loading is not completely addressed; sedimentation from site development activities would be common to all action alternatives and needs to be quantified (sediment yield budget).
   b. commonly occurring chemical compounds (e.g. nitrates and phosphates) that affect aquatic health and water use need to be identified and quantified. Nutrient loading and sediment loading are concurrent events (some parameters are delivered to water courses by attachment to sediment particles).
   c. some ambient water quality conditions were characterized, but the impact and long-term effects of low or reduced streamflows (baseflows) on temperature, dissolved oxygen, bacteria, and other parameters needs to be identified and assessed.
4. other landscape positions besides headwaters of streams should be evaluated for potential tailing sites; the engineering design for ponds / tailing impoundments is not clear; the use of Nicholson Creek as a mixing zone for dilution of heavy metals and Marias Creek as a tailings underdrain to collect leaks and recycle contaminated water to the mill has negative environmental connotations.
5. the section on reclamation monitoring needs more detail; monitoring measures for ground water and surface water are addressed but need further development- water resource site monitoring should continue for the long-term in order to evaluate reclamation success following a mining operation.

C. Wetlands

1. impact assessment of wetlands is vague, and a "low" rating of effectiveness for wetlands function mitigation is a concern.
2. replacing quality wetlands with wetlands degraded by man's activities is an unacceptable practice.

D. Other

Land status and water related maps in the DEIS only provide information south of the international boundary. Hence some watersheds are not completely shown. It is assumed, for instance, that Myers Creek flows into the Kettle River. The entire picture needs to be clearly presented in order to facilitate the understanding and interpretation of certain issues, such as potential impacts of water diversions and other activities to downstream resources.

DRAFT

ENVIRONMENTAL HEALTH PROGRAM

Colville Confederated Tribes

Memorandum

DATE: 14 August 1995

TO: Gary Passmore
Director, Environmental Trust Department

FROM: Chris Young
Environmental Health Program Manager

RE: Crown Jewel Mine Draft Environmental Impact Statement (EIS)

This proposed project of the applicant will have significant and irreversible environmental health impacts, except for option A (no project). It is extremely unfortunate that there is an extremely abbreviated period of time in which to ascertain the nature and extent of these potential environmental health impacts. It is preferable that time be made available to conduct computer searches of the literature, interviews with local health officials, review patient charts, examine roadway crash and injury data, obtain local health jurisdiction codes and regulations, and make sanitary surveys of the proposed site. In fact, the proposed site (site) probably has never received a sanitary survey by a qualified environmental health professional. This omission could result in an incomplete evaluation.

Inadequately addressed areas within the draft EIS include:

Ambient noise evaluations (1.10.6);
Sewage disposal (2.2.23);
Solid waste management (2.2.24);
Motor vehicle injuries and fatalities (no assigned section number);
Hazardous material management (no assigned section number).

Specific areas for additional investigations follow:

AMBIENT NOISE EVALUATION

The draft EIS noise evaluations remain problematic. Many references to "WADOE" "allowable limits" are mentioned without stating what these limits are, and with no procedure described as

to how an appropriate limit was selected. WADOE "limits for residential areas" may be appropriate rather than the lower limits such as for rural or wilderness areas, but in any event a method should be shown as to how the limit was selected.

The levels modeled have used the measurement of noise in decibels (Db) on the A scale. The A scale is a scale weighted toward speech frequencies, approximately 2000 Hz and may not be appropriate for pure tone noise and impact noise. Pure tones will be generated by fans, blowers, and other equipment, and there will be a large component of impact noise at any construction or mining site. In fact, a sound at 100 Hz such as that produced by a rock being dumped into a truck bed will be 30 Db louder if it is measured on the relatively linear C scale rather than the A scale. Although this 100 Hz tone may not cause hearing damage in a test subject, using the A scale will make the noise "quieter" than it actually is for the purpose of comparing it with ambient noise levels. I feel the Draft EIS overall evaluation that the ambient noise levels will be relatively insignificant is incorrect.

The Draft EIS statement in 4.13.5 that using half of the quarry equipment proposed under other alternatives would produce 3Db(A) lower sound pressure levels is only correct if the sound levels produced are very low, approximately 60Db(A) or less. Of course, 3Db(A) is a dimensionless unit which describes a doubling (or halving) of a measured sound pressure level. In fact, if four pieces of equipment operating together all produce 100Db(A), eliminating two of these machines will still result in a sound pressure level of 100Db(A).

In 4.13.1 proponent states "If noise levels are above regulatory limits within the confines of specific work areas, protective hearing apparel would be worn by employees in these areas. The MSHA (Mine Safety and Health Administration) regulations related to hearing conservation are identical to OSHA (Occupational Safety and Health Administration) regulations in that requiring exposed employees to wear personal protective equipment is a "last resort" of hearing protection after engineering and administrative controls fail to reduce a noise overexposure.

Applying these engineering and administrative controls will result in additional equipment being on-site, a greater maintenance load and larger industrial hygiene staff, and possibly will have other effects. In effect, a hearing conservation program will have to be in place with its attendant manpower requirements. It sounds as if the proponent has not planned for this impact.

SEWAGE DISPOSAL

Preliminary engineering evaluations should be made, and calculations shown, for the proposed on-site sewage disposal systems. The mill facility, shop complex, and likely other sites

(anywhere humans are) will generate wastewater and the proponent proposes using "leach fields" for this waste. It should be shown exactly where the systems are proposed to be constructed. It may not be possible to comply with county regulations regarding sewage disposal at one or more of the proposed areas.

SOLID AND HAZARDOUS MATERIAL MANAGEMENT

Section 2.2.24 is incomplete. The amount of solid waste to be generated by the proposed project, from all alternatives, all personnel and their families, support staff, contractors, visitors, and all other potential contributors should be calculated and stated, with justifications for the calculations.

The siting of solid waste disposal facilities off site is extremely problematic. The existing solid waste disposal site proponent proposes to use was engineered for a life span suitable to the local environment without the contribution of proponent's project. This project is large enough, and enough personnel will be brought into the area such that the life of the landfill site will be drastically reduced. Proponent apparently feels that local government and citizens should bear the cost of siting and planning the solid waste facility to be used next, once the existing site is no longer able to accept additional waste. These accelerated costs of planning and siting the next landfill should be described, with calculations shown. The proportion of these costs due to proponent's project should be calculated and described in detail.

Hazardous wastes, as defined by WA Department of Ecology regulations, will be generated from this project. In addition to process chemicals such as NaCN (sodium cyanide), maintenance operations such as vehicle repair, plant maintenance and operations, pesticides use and management, construction, and possibly other operations can generate hazardous waste.

No descriptions and calculations are provided describing the proponent's hazardous waste management plan. In fact, no plan has been presented. The amount of hazardous waste expected to be generated should be described in detail and a plan presented for its management, including waste stream management, methods for reducing the quantity generated, on-site storage, transport methods to be used, and disposal site(s) proposed. As in the solid waste plan (above) the expected reduction in the life of the hazardous waste disposal sites should be described, with calculations shown. Again, hazardous waste disposal facilities are designed with an engineered materials acceptance rate, and the affect of proponent's increase in this rate should be described. Even more so than with solid waste sites, hazardous waste sites are extremely problematic in siting, and proponent's impact on the life of these sites should be calculated, with

statements as to how local governments and communities will be compensated for the acceleration in siting permit costs.

Transportation-related hazardous material releases occur at a rate described in actuarial tables. The projected materials throughputs should be calculated for each of the hazardous materials planned to be transported, how often, where, and the quantities historically released during transport. Engineering evaluations should then be made as to how these materials will be contained and cleaned up, and the medical needs of any involved patients. Local emergency medical facilities including ambulance services, dispatch agencies, and trauma treatment centers should be surveyed to determine their capability to concurrently treat, say, 12 people with acute 95% body surface area sodium hydroxide burns. The local ambulance services in the area are staffed by volunteers, likely without adequate training and equipment for responding to a new class of industrial and transportation disasters. Proponent's plan to mitigate these impacts should be described in detail.

MOTOR VEHICLE INJURIES AND FATALITIES

The draft EIS has preliminary data on the amount of vehicular traffic generated by this project. The traffic calculations, however, appear to be only for supply trucks for consumable chemicals, steel balls, and other supplies. Many other sources of vehicular traffic are reasonably foreseeable, such as the proposed employee busses, contractors, regulatory officials, the media, emergency vehicles, law enforcement and security vehicles, families and visitors, tourists, sales staff making "cold calls", pilot vehicles, nonscheduled deliveries such as UPS (United Parcel Service), caterers, and likely other sources of traffic.

Vehicular fatality and injury rates can be expressed in a rate per 100,000 miles traveled. For each one of the types of traffic generated on the types of roads to be driven, in the weather conditions historically expected, and during the time frames and traffic density situations reasonably foreseeable, a fatality and injury rate should be determined. It should be determined what the normal percentage mix of who the likely victims/patients will be: local citizens, employees, tourists, etc. It is unfortunate but true that humans have not yet been able to avoid all traffic crashes, especially on the roads of the type near the area of the project. The EIS should state the expected fatality and injury rates and incidences and how they will be mitigated

The wear and tear on existing roadways will be enormous. the EIS does not state how these roadways will be kept at their current level of repair. If local government agencies are to conduct roadway repairs financed through a higher tax base no statement is provided as to how the roadways will be kept up while the local governments "ramp up" their maintenance fleet and staff. This increase in infrastructure maintenance equipment and

personnel will lag behind the roadway degradation by several years. As roadways deteriorate there are additional vehicular fatalities and injuries. These increases should be described, calculations given, with methods for mitigation (if one can mitigate a crippling injury or fatality).

14 AUG 95
NOTE TO DEB LOUIE
FROM GARY PASSMORE

RE CROWN JEWEL MINE

Deb:

I spoke with Steve Suagee last week about the public hearings. He and I agree that it doesn't make much sense for the tribal government to submit anything in writing at these hearings in advance of the final comment deadline. Our comments on the DEIS should be specific and consolidated. As far as advancing a personal or political statement at the meetings, that is a seperate matter.

In the absence of our complete review of the DEIS, I have prepared the following general statement:

The Environmental Trust Department of the Colville Confederated Tribes is reviewing the Crown Jewel Mine DEIS. All tribal technical comments will be consolidated by Environmental Coordinator Maurice Socula. Areas of deficiency thus far noted by Environmental Trust staff include insufficient information to evaluate the options in the DEIS regarding water management at the mine site, precipitation/water supply, water rights in general and Indian reserved water rights in particular, water monitoring, hydrogeology, surface water, tailings disposal, mitigation for wetlands and stream habitat loss, mitigation for water quality standards violations, sewage disposal, solid and hazardous waste, noise, and motor vehicle injuries and fatalities. Environmental Trust staff have not yet completed their review of the documents. A field trip to the mine site for CCT personnel is to be arranged.

cc: Steve Suagee
Maurice Socula

The Colville Confederated Tribes retain hunting and fishing rights, certain water rights, and land in trust in the area of the proposed Crown Jewel mine at Buckhorn Mountain. The Colville Confederated Tribes have not had the opportunity to participate nor comment on the proposed mine.

It is the duty of the Colville Business Council of the Colville Confederated Tribes to protect and preserve any and all rights and resources on behalf of the membership of the Tribe.

The area in question is significant in that it is a usual and accustomed hunting and fishing area. It is an area where traditional foods and medicines have been gathered by tribal members for years. The Colville Confederated Tribes have not been able to assess any of the impacts the proposed mine would have on the land, water, habitat, and environment.

The Colville Confederated Tribes have not been officially included or notified of any of the studies or actions taken thus far on the proposed mine.

The Colville Business Council is disappointed that the Bureau of Indian Affairs has not taken any steps to insure the protection of the land held in trust in the area. They are, by law, entrusted with this responsibility.

We, the Colville Business Council, therefore request that the Colville Confederated Tribes be consulted and given the opportunity to conduct our own studies, if necessary, to assess the impact of the proposed development on our resources, and further, for the protection of the health and welfare of our people.

COLVILLE CONFEDERATED TRIBES
Nespelem, Washington

MEMORANDUM: DATE: 8/17/95

TO: Colville Business Council

FROM: Natural Resources Committee

SUBJECT: North-Half Mining

Committee Recommendations:

The Colville Confederated Tribes have determined that due to the inherent rights retained by the Tribe and its membership in the former North-Half of the Colville Reservation, and because trust allotments are located within the boundaries of the former North-Half, the Colville Confederated Tribes have an obligation to protect and preserve the rights, resources, and tribal membership and lands located within the proposed area of the Crown Jewel Mine from unknown potential negative effects and impacts. therefore, the Colville Confederated Tribes are hereby opposed to any PRECIOUS METALS mining activity within the boundaries, or adjacent to the boundaries, of the former North-Half of the Colville Indian Reservation.

COMMITTEE MEMBERS	VOTE CAST (YES)	VOTE CAST (NO)	COMMITTEE MEMBERS	VOTE CAST (YES)	VOTE CAST (NO)
Del Louie	X				
Walt Cornell	✓				
Gloria Picard	✓				
Humphrey J.	✓				

Seconded by: Harvey Moses Jr.

Business Council Actions:

FOR 7 AGAINST 0

ABSTAINED 3 LA DR JJ

FOR:

AGAINST:

SIGNED: Del Louie
Committee Chairman

SIGNED: [illegible]
Chairman

Date Enacted: 8/17/95

DR - MODIFY TO SPECIFY PRECIOUS METALS MINING
SEC. R. Swan
[illegible]

CORPORATION OF THE VILLAGE OF MIDWAY

(INCORPORATED 1967) - "CENTENNIAL VILLAGE"

BOX 160
MIDWAY, B.C.
V0H 1M0
TELEPHONE 449-2222
FAX 449-2258

file: batmtn02.95
23 August 1995

Crown Jewel DEIS Comments
USDA, Forest Service
Tonasket Ranger District
1 West Winesap
Tonasket, WA 98855

Dear Sir/Madam:

Re: Battle Mountain Gold

The Council of the Village of Midway would like to comment on the following list of concerns and suggestions regarding the above, generated as a result of the recent public meeting in Midway.

1. Bonding should be set to ensure the reservoir is not allowed to remain at the site. Should the company be forced to abandon the project the dam might be left in place with no responsibility for maintenance. All bonding intended to protect Canadian jurisdictions must be Canadian bonding.

2. Full legal and financial protection must be accorded to Canadian citizens and property owners. People north of the border need the security of access to any avenues of redress for damages they may suffer. In no case should Canadians have lesser rights or opportunities than U.S. citizens for redress. This includes water rights issues.

3. Security of isolated infrastructure (reservoir, pumping stations, valves, etc.) is a concern.

4. Concern about the environmental impact of removing 30% of the spring freshet flow from Myers Creek upon sub-irrigation, riparian zones, and wetlands.

5. Water could be diverted during the winter months when water licences are not being used. However, this option must be balanced with the need to maintain minimum water levels during periods of freezing which may adversely affect fish stocks.

Yours truly,

VILLAGE OF MIDWAY

per

R.J. Hatton
Administrator

RJH:pb

TMI#: 4566

Good evening. Can everybody hear me alright? My name is John Stenson, I'm mayor in a community just to the north here, in another country -- Canada. I'd like to say thank you to allow me the opportunity to come down to your great country and maybe share a few views that we have north of the border. In our community we have a major mine, right on the river, and that river comes right down into your country. It's a Similkameer. We also have a major logging employer, Warehouser, Canada, who logs in our area. And we have found that by proper environmental standards, they're done properly, we can be part-and-parcel to industry. We can make industry welcome. At one time that was not always possible. In the seventies we had elected a government that chased everybody out because they one particular view. We found that if you listen to basically one side and not the other, you lose everything. So, what I'm saying is that pure water and pure gold are both possible. The thing that we have to really keep in mind between our two countries is that we all work together, and we don't just take one option or the other. If we lose industry, and if we lose the ability to be competitive in the open world markets, we won't have a country anymore. We will become working for other people. And the one thing I would really like to stress is the total cooperation between the two countries in regards to water facilities. These water facilities have to remain pure. And, we do have that technology to do that, but let's not stop industry. Industry feeds our families, it keeps everything happening, and gives us the life we've got possible. Once again, I would like to say thank you very much to this great country for allowing me to come down and speak to you. Thanks again. (Applause).