CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

direct ratio to the weight of the ore. The pug mill would mix the reagents with the ore and agglomerate the fine particles onto coarser particles. Agglomerated ore would underflow from the pug mill onto a feed conveyor and then pass to the agitated leach-CIP stockpile.

d. Grinding

Agglomerated ore would be withdrawn from the CIP ore stockpile by conveyor and transported to a two-stage sampling system, which would cut a 50-pound per shift sample. Rejects from the sample system would be collected by conveyor and fed into a 10 ½-foot by 13-foot primary ball mill. Incoming ore would be weighed by a belt scale attached to this conveyor and cyanide pillows would be added to the conveyor in ratio to the incoming feed ore (1.2 pounds NaCN per ton of ore). Water would be added to the ball mill to bring the solids content to about 65 percent by weight.

The ore would be ground in the ball mill from 5/8 inch to about 80 percent passing the 65 mesh in a single pass. The mill overflow would be pumped by a cyclone feed pump to a bank of three cyclones, where minus 200 mesh ground ore would be separated from the plus 200 mesh ore. Water from the mill solution tank would be added to the overflow to dilute the solids content in order to enhance separation of the minus 200 mesh fraction.

The plus 200 mesh ore would be sent to a second ball mill for further grinding. Overflow from the second ball mill would also be pumped to the cyclone bank for further separation.

e. Processing

(1) Leach - CIP

Overflow from the cyclone bank (at 42 percent solids and 80 percent passing the 200 mesh) flows by gravity to the leach-CIP circuit.

Incoming pulp from the grinding circuit would first pass over a screen to remove trash, such as wood chips and oversize material. Screen undersize pulp would then flow to the first of a series of tanks. (See Figure II-1). The first two of these tanks would serve as leach vessels only. The remaining tanks would be equipped with internal screens that would allow passage of the minus 200 mesh pulp.

In operation, the pulp would flow from tank to tank by gravity. Fresh and regenerated carbon sized at minus 6 mesh plus 16 mesh (from stripping) would be added to the last tank in the train and kept in the tank by the screens. Periodically some carbon in the tank, along with pulp, would be pumped to the preceding tanks while the pulp would overflow to the following tank. In this manner, the carbon would be transported counter-current to the flow of the pulp.

The gold would be dissolved by the cyanide and, in the last series of tanks, adsorbed by the carbon. Pulp and carbon pumped from the

first tank in the CIP train would be pumped to a screen in the stripping section where the carbon would be separated for subsequent treatment, and the pulp returned to the tank. Leached pulp (now gold barren) would overflow the last CIP tank to a stationary safety screen.

Pulp passing through the screen would flow to the CIP tailings sump tank and then be pumped to the tailings thickener, where flocculant would be added. The free and total cyanide content of the liquid phase of the slurry as it enters the tailings thickener would be roughly 30 ppm and 40 ppm, respectively. The mill solution released by this settling would overflow the settler to the mill solution tank and be pumped back to the grinding circuit for reuse. Underflow from the thickener at roughly 55 percent solids would be pumped to the tailings disposal area at an estimated maximum rate of 4,625 tpd.

(2) Carbon Stripping/Gold Recovery

Gold-loaded carbon from the CIP circuit would pass over a vibrating screen, where the carbon would be dewatered, rinsed and dropped into the loaded carbon surge tank. Once daily, the carbon in this tank would be fluidized with water and pumped to one of three stipping columns. In the columns, the carbon would be allowed to settle and the water would be drained off. Nitric acid solution (2 percent) would then be added to the tank and the carbon-nitric acid contents would be agitated with air for 30 minutes to dissolve out contaminants.

The carbon would again be allowed to settle and the acid solution would be drained off and returned to the dilute acid tank. The carbon would then be rinsed twice with fresh water (fill, agitate, drain) and the weak acid liquor would be pumped to a neutralization tank and then returned to the grinding circuit mill solution tanks.

The clean carbon would then be stripped by a hot (180°F), strong sodium hydroxide sodium cyanide solution. Gold eluted from the carbon by this solution would pass into an electrowinning cell where it would be electrically plated onto stainless steel wool. The gold-barren stripping solution would be returned to the carbon column.

The process would continue until no further gold could be stripped from the carbon. The carbon column would then be drained of solution and washed. The wash liquor drained from the column would be returned to the grinding circuit, and the carbon would be pumped to the carbon surge tank.

The gold bearing steel wool cathodes would be water washed, dried and refined in a gas fired Dore furnace, and Dore bars would be cast. Slag from this operation would be crushed and subjected to gravity separation of the free gold by the gold screw. Concentrate from this cleanup would return to the Dore furnace, and the slag tailing would be sent to the grinding circuit.

f. Primary Reagents

Primary mill circuit reagents, their estimated consumption (lb/ton ore), delivery units and storage and handling details are listed in Table II-2.

During operations, these reagents would be stored at various locations throughout the mine site, typically within covered areas to prevent direct exposure to sunlight, rain, and other adverse environmental conditions.

g. Tailings Disposal

The tailings disposal facility at the site would include two major components: a tailings impoundment, which would cover approximately 133,000 square feet, and a solution reclaim pond, which would cover approximately 28,000 square feet. (See Figure II-2.)

TABLE II-2

Cyprus Copperstone Project:

Primary Mill Circuit Reagents

Reagent	Consumption	Delivery	Storage/Handling
Sodium Cyanide (NaCN)	1.2	Bulk - 3,000-lb	Used in delivered form, added via flow bin.
Calcium Hydroxide (CaOH - Lime)	2.0	Bulk - 20T truckload	100T bin.
Cement	5	Bulk - 20T truckload	100T bin.
Sodium Hydroxide (NaOH)	0.05	400-lb drums	Drums used in delivered form, manual addition.
Nitric Acid (HNO_3)	0.10	5-gallon plastic carboys	Carboys used in delivered form, air pump to mix tank.
Fluxes (silica, sand, borax, flourspar, etc.)	0.02	50-lb bags or cans	Added dry and blended with precipitate for smelting.

Carbon	0.03	Bulk - 3,000-lb tote bags	Bags used in delivered form, manual addition.

Source: Plan of Operations for the Cyprus Copperstone Project, 1986

Tailings would be pumped at 55 percent solids through a high density polyethylene (HDPE) tailings line and deposited within the lined impoundment. The impoundment would include perimeter embankments, internal dikes to separate the impoundment into three cells, and a downstream flow-through drain. The impoundment area would be graded and covered with a 30-mil PVC liner to protect the underlying groundwater system. (HDPE pipes would be placed on top of the liner to promote flow and prevent the development of any significant fluid heads.) The initial downstream embankment drain would be constructed of coarse, free draining mine waste rock. The side embankments and internal dikes would be constructed of overburden from the mining operation.

The tailings would be allowed to flow an full length of an impoundment cell to drain fluid and develop a tailings beach. Fluid would flow into the downstream embankment drain and then into the reclaim pond. Tailings deposition would alternate in the three cells. Each cell would be filled to an incremental maximum depth of 1 to 2 feet then allowed to rest. The disposal period would be about 20 days and the rest period would be about 40 days.

The tailings impoundment would be constructed in stages as deposition occurs. Initially, about one-half of the impoundment area would be constructed and lined. During the first 2 years of operation, this area would be raised to a height of approximately 40 feet. Prior to the third year of operation, the second half of the impoundment area would be constructed and lined. This area would then be used for deposition during years 3 and 4 of operation. For the final 2 years, tailings would be deposited within the full impoundment area.

The solution reclaim pond, which is the only component of the tailings disposal operation that would involve a significant head of fluid, would be double-lined. (See Figure II-3.) The primary liner would be 40-mil HDPE, which is resistant to ultraviolet light and has a very good performance record in environmental settings similar to the Copperstone Project area. Underlying the HDPE would be either a minimum 1-foot layer of native sands or a drainage net (Tensar, Gundnet, or a similar synthetic drainage material) encapsulated in a geotextile. (Preliminary plans include placing the sand on the bottom of the pond and a drainage net on the sideslopes; however, final design could have either material used exclusively.) The secondary liner would be 20-mil PVC placed directly on a prepared and compacted subgrade.

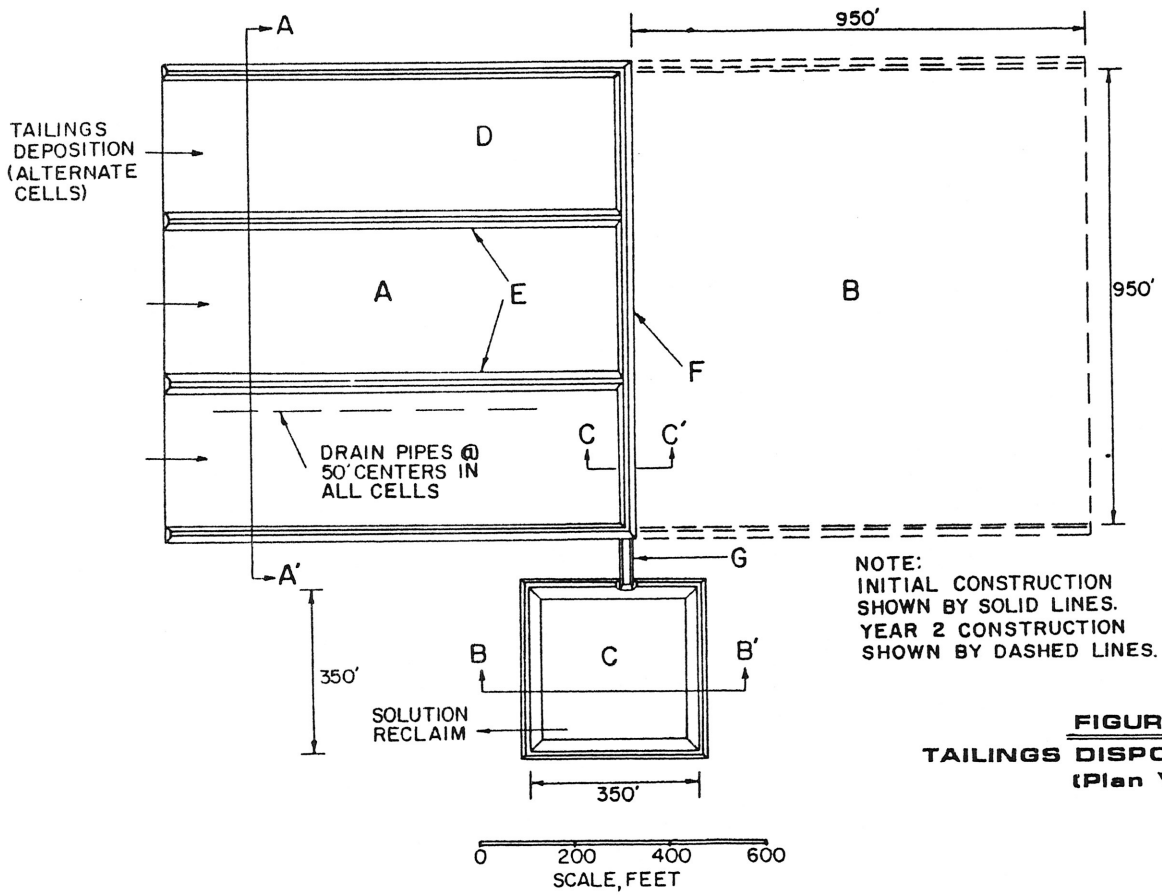


FIGURE 9
TAILINGS DISPOSAL FACILITY
(Plan View)

CYPRUS COPPERSTONE PROJECT
EA-050-7-14
Tailings Disposal Facility

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Figure II-2

Experience with similar soils indicates that the use of this type of liner is feasible -- site specific tests would be conducted to confirm the feasibility of its use in this project.

The drainage material between the two geomembrane liners would provide for leak detection. Any fluid leaking through the primary liner would flow through this layer to a collection sump located at one corner of the reclaim pond. A 4-inch diameter PVC pipe, which would be installed between the two liners to intercept the sump, would be used to monitor fluid collected by the drainage layer and sump. If required, any collected fluid could be pumped from the sump through the pipe and discharged back to the pond.

The reclaim pond would be located below existing ground, except for a 3-foot high perimeter berm that would divert any surface runoff. It would store 20 acre-feet of fluid with 3 feet of freeboard. This capacity would be equal to the combined volume of the runoff from a 9-inch precipitation event from the tailings disposal area, direct rainfall from the same precipitation event on the pond area, and three days of operating fluid should the reclaim pump fail. The 9-inch precipitation event utilized in design is approximately three times the average annual total rainfall and is representative of the Probable Maximum Precipitation (PMP) event. The PMP event is a hydrologic abstraction not defined in terms of a return period; however, it far exceeds the rainfall from a 100-year, 24-hour event.

Reclaim fluid from the pond would be pumped back to the mill through HDPE pipe. The feed and reclaim lines would be located in geomembrane lined ditches.

Surface runoff in and around the process facility would be diverted or channelized to minimize mixing of surface waters with any pollutants. Surface runoff that could impact the tailings disposal area would be diverted around the embankments and reclaim pond associated with this facility. There would be no discharge to the surface water systems from the tailings disposal area as all runoff will be stored temporarily in the reclaim pond for use in processing.

h. Access

An access road would be constructed to the project site. This road would extend west for approximately 6 miles from State Highway 95, in section 22, T. 6 N., R. 19 W. It would be approximately 40 feet wide, with a 24-foot roadway, and would follow the route of an existing access road for most of its length. (See Map I-2.)

A wood-pole transmission line would also be constructed to the project. This line would extend from an existing 69kV powerline, in section 22, and would parallel the access road.

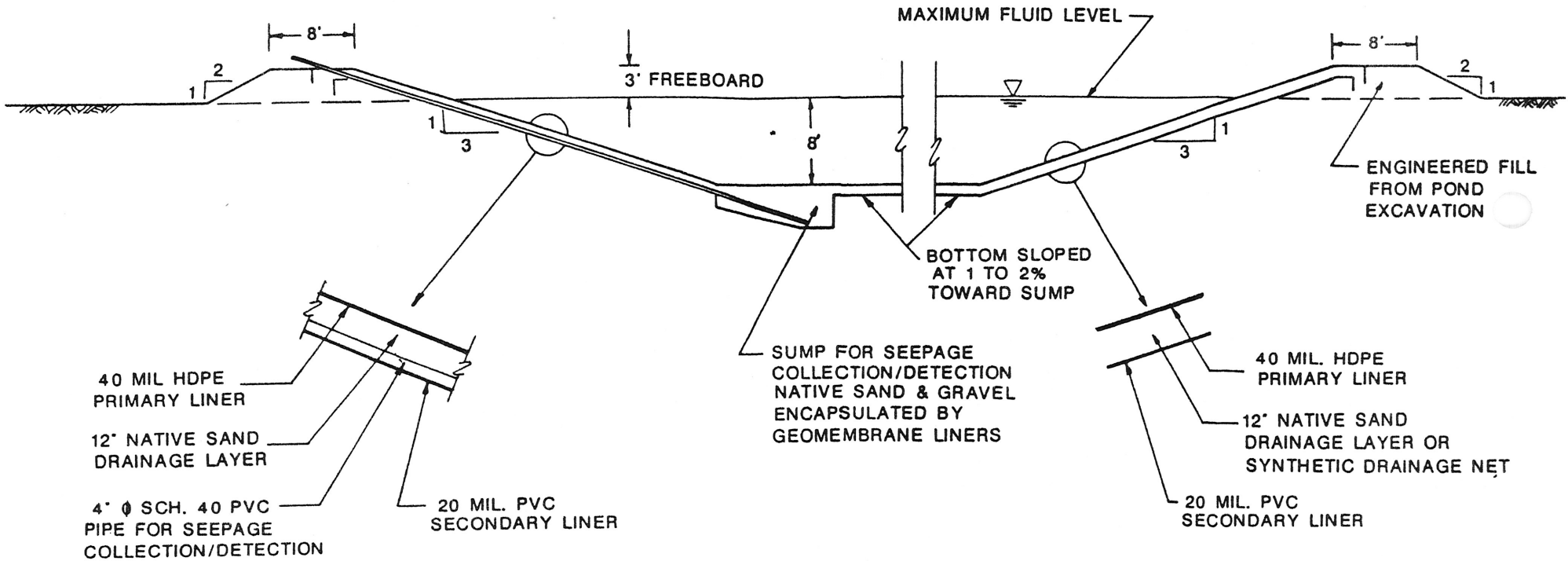


FIGURE 12

SECTION B - B'

TAILINGS FLUID RECLAIM POND

(Elevation View)

CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Fluid Reclaim Pond

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Figure II-3

i. Domestic Water and Storage

During the construction phase of the project, all water would be trucked to the site. Water would be stored on site in tanked trucks to be used in the event of fire and for dust control.

During the operational phases of mining, water would be supplied from wells located in T. 6 N., R. 19 W., section 22, approximately 6 miles east of the site and within 3,000 feet of State Route 95. Two wells have been pump tested and each is capable of yielding 250 gallons per minute. Development of a third well is planned.

Water from the project supply wells would be transported by a buried pipeline to the site. This pipeline would parallel the access road for the project.

Water from the wells would be stored at the site in a 375,000-gallon tank. The stored water would provide water requirements for processing, fire control and dust control. Separate pumps would be provided for fire and processing lines.

Water quality analyses of groundwater sampled from the project water supply source indicate that floride and nitrate concentrations exceeded Federal drinking water and Arizona noncommunity water system limits. Consequently, Cyprus proposes to import bottled water to the project site for drinking water.

j. Sewage

During construction, sewage would be disposed via portable equipment placed at various locations around the site.

Sewage disposal during operation of the Copperstone Project would be accomplished through an underground septic system. This septic system would be designed to meet all regulations, and have enough capacity to easily handle the needs, including shower facilities, of at least 81 employees. Percolation testing would be required to establish the minimum size of the facility.

2. Reclamation Resource Protection and Mitigation Plan

A reclamation plan for the project has been developed in accordance with the Section 3809 Regulations of the Bureau of Land Management (BLM), as existent in 1986. The primary purpose of this plan is to guide the direction and the methods of waste placement to allow for efficient permanent stabilization. A secondary purpose of the plan is to allow quantification of closure costs so that performance bonds can match reclamation cost exposure.

Primary objectives of the reclamation plan are discussed in the following subsections.

a. Objective No.1: Stabilize and Confine Wastes Against Wind and Water Erosion

Tailings will be confined during operations by overburden berms on all sides, and will ultimately be contained by overburden.

Erosive alluvium in the dumps will be graded at 3:1 (horizontal to vertical) slopes or confined with competent rock at closure.

Exposed soils or alluvium will be ripped and graded as needed to allow vegetation establishment. Overburden soils may be protected with wind fences (snow-type), if required.

Pit wall slopes will drain into the excavation and present no runoff hazard.

b. Objective No.2: Protect Surface Water Resources Against Stormwater Runoff From Process Wastes, Sediment or Leachates

Surface diversion of runoff will be maintained throughout the project life to protect processing and mine areas, particularly the tailings disposal area and reclaim pond against the 100-year flood event. The tailings reclaim pond is designed to contain runoff from approximately the PMP event.

The nearest surface water is over 6 miles away, across fairly level and permeable desert terrain. Containment of storm runoff will be straightforward.

c. Objective No. 3: Protect Groundwater Resources Against Contamination by Process Fluids

Conditions of the State of Arizona groundwater protection permit will delineate construction and operation requirements. A closure plan will also be required for the State permit application.

The proposed plan of operation includes a lined tailings disposal area and a process water recovery sump. During operation, tailings drainage and process water will be recycled from the collection sump for reuse. At closure, residual process water draining from the tailings will be chemically neutralized with hypochlorite or an equivalent chemical and pumped back to the surface at the tailings disposal area. Most of the post closure drainage will be lost to evaporation. The portion that is returned to the tailing surface and that percolates into the tailing mass will help neutralize any residual cyanide.

Drainage collection and neutralization may be continued post closure for a period of time before bond release.

Long-term control of the minimal residual seepage will be achieved by evaporation from the process water reclaim sump. A stoichiometric

excess of neutralizing chemicals can be maintained in the sump at low cost, and added as a batch treatment process to assure complete neutralization.

d. Objective No. 4: Minimize Long-Term Infiltration of Precipitation Into And Through Waste Rock And Tailing Disposal Areas

The surface of the tailings disposal area will be shaped to shed water at closure. Covering of the tails with overburden will be achieved by dozing stockpiled waste over the tailing surface.

Vegetation establishment will be encouraged on soil areas covering the waste materials. Natural establishment of local species will be favored, although seeding will be utilized where necessary.

e. Objective No. 5: Protect Non-Essential Public Lands from Surface Disturbance

The perimeter boundary of essential mining areas will be marked as necessary to restrict non-essential traffic. If marking is ineffective, a wire drift fence will be placed along the marked perimeter.

Employees and visitors will be instructed to stay within established mine access corridors. The access road will be maintained by Cyprus and closed to the public during the mine life. If necessary, a gated entry will be maintained.

f. Objective No. 6: Protect Wildlife from Access to Process Water Impoundments

Chain link security fencing will be constructed around the perimeter of the seepage recovery sump and process water ponds. Small mesh screening will be utilized along the bottom of the chain link fence to exclude small animals.

If conditions warrant, or if requested by State of Arizona Fish and Game Department biologists, or by the BLM, avian use of the area will be discouraged using sound or visual repellants. Attractive nuisances to wildlife will be eliminated as appropriate.

g. Objective No. 7: Provide for a Long-Term Post-Mining Land Use

The mine site will be allowed to return to a natural state following closure. The rock disposal areas will slowly retire to the surrounding environment. The roads and staging areas will be ripped and graded to allow for colonization by vegetation.

Buildings and structures and equipment with no postmining use will be razed, removed or buried on-site. The septic tank will be filled with sand in a manner approved by ADHS.

Remaining reagents, oils, greases, and similar products will be transported to other Cyprus operations for use or disposed of off-site in a facility approved by ADHS for such disposal.

The pit will be allowed to receive runoff from the nearby disturbed areas. Portions of the pit bottom may be prepared to provide for a livestock or wildlife pond, if requested by the Arizona Game and Fish Department or the BLM, at closure.

h. Objective No. 8: Provide Financial Assurance That Reclamation Objectives Can Be Met

The BLM regulations include provisions for a performance bond to assure reclamation. The amount can be reviewed throughout project life to adjust to changes in operating plans or environmental requirements.

Definitive estimates are not possible at this stage of project planning; however, the cost estimates presented in Table II-3 are proposed to cover project life through Year 5. The costs are developed using a disturbance type ranking utilized at other mine sites located on public lands. Detailed engineering estimates can be developed to refine or adjust these figures when needed.

B. Other Mining Processes

Because of the nature of the mineral resources, economically-feasible alternatives for developing the Copperstone Project are limited.

The only mining process that could feasibly be substituted for the proposed action is the heap leach process. With this process, however, additional land would be required for leach pads, a pregnant solution pond, a barren solution pond, closed conveyance systems, and a heap stockpile. Approximately 120 additional acres of disturbance would result. Moreover, the process could also require additional lands for the stockpiling of subeconomic ore.

The heap leach process would also be less efficient than agitation leaching in terms of mineral conservancy: Metalurgical studies indicate a 92% gold recovery using agitation leach vs 70+% recovery by a heap leach process. Consequently, any extra capital required for milling would be more than offset by mineral conservancy.

All other environmental impacts from use of the heap leach process at the Copperstone Project would be the same as would occur under the proposed action.

C. No Action

Under no action, no mining plan of operations for the Copperstone Project would be approved.

TABLE II-3
Cyprus Copperstone Project:
Environmental Protection and Closure Costs

Work Required	Units	Cost/Unit	Total
Fencing (if required)	25,000 feet	$1.00 per foot	$ 25,000.00
Removal or razing of buildings and debris	Lump Sum		50,000.00
Reclamation			
Pit	84 acres		
Rock Dumps	299 acres	$250.00 per acre	74,750.00
Tailing Area[3]	50 acres	$5,000.00 per acre	250,000.00
Surface Impoundments	5 acres	$1,500.00 per acre	7,500.00
Access Roads	22 acres	$250.00 per acre	5,500.00
Buildings & Shop Areas	10 acres	$1,500.00 per acre	15,000.00
Utility Corridors	7 acres	$250.00 per acre	1,750.00
Preconstruction Total Closure Estimate			$429,500.00

[1]Excludes capital expenditures required during initial construction.
[2]Examples of comparable project cost estimates are enclosed.
[3]Includes allowance for regrading, neutralizing and covering with rock.

Source: Plan of Operations for the Cyprus Copperstone Project, 1986

No action is not a feasible alternative since the claimant has rights under the Mining Law to conduct mining operations.

III. AFFECTED ENVIRONMENT

A. Topography

The Copperstone Project area is located about 12 miles east of the Colorado River in western Arizona in the Sonoran Desert section of the Basin and Range Province. It is situated on the northern portion of the La Posa Plain, a desert basin between the Plomosa Mountains to the east and Dome Rock Mountains to the southwest.

The site is on a relatively flat desert drainage divide with local northeast trending stabilized sand dunes. Surface elevations range from 860 to 885 feet MSL. The ground slopes are approximately 30 to 40 feet to the mile to the southwest.

The surface is covered by Quaternary eolion sand which overlies the Bouse formation. The Bouse Formation, which is Late Pliocene allvium, is composed of lenticular deposits of clay, sand, and gravel. Most of these lenses are moderately to highly cemented with calcium carbonate. The underlying bedrock is predominantly a quartzite latite porphyry.

B. Climate and Air Quality

The region has hot summers, mild winters, low rainfall, high evaporation rates, and low humidity. Approximately 110 days per year have average temperatures over 100°F; the daily average for July is 107°F. In January, the average daily temperature is 67°F. The average annual precipitation in the area is 3.4 inches, with rainfall intensities generally low during winter and spring and high during summer and fall. Approximately 60 percent of the precipitation results from winter storms and the remainder from summer cloudbursts. Relative humidity ranges from 10-40 percent in the summer and 25-42 percent during the winter months.

Wind speeds in the region average approximately 8 mph. The CRIT Air Facility at Parker, Arizona, describes average wind velocities as "calm, less than 10 mph." Prevailing wind direction is generally from the south during the spring and summer and from the north during the fall and winter. The annual wind rose estimated for the project site, based on data from the Blythe, California, meteorological station, indicates predominant wind directions are north (12 percent) and south (17.8 percent). Values for the 14 additional directions for which analyses have been made vary from 2.2 to 9.0 percent.

The area is a desert environment and during high wind conditions will produce periods of naturally blowing dust. Infrequently, very high particulate levels may result. Since there are no significant sources in the area, the ambiant air quality is good except during blowing conditions. A background has not been established for the site.

Generally, the region meets and exceeds the National Ambient Air Quality standards. The present air quality is good. The Yuma District is in

a Class II air quality area. In 1985, at Yuma, Arizona the mean particulate matter in the area was 96 micrograms/cubic meter and ozone average (ug/m^3) was 0.11 parts/million (ppm) (the Federal standard is 0.12 ppm). Carbon dioxide levels are insignificant. At Fort Mojave, Arizona, in 1985 the mean particulate matter was 38 ug/m^3 and ozone average was 0.104 ppm.

Air quality standards are regulated by the Arizona Division of Environmental Health, Office of Air Quality Management.

C. Soils

The soils of the subject area are light colored and sandy textured. They have a hyperthermic (hot) soil temperature regime and aridic (dry) soil moisture regime.

Site specific soils have not been mapped but it is likely that the soil type is Rositas sand. This light brown soil is predominately fine grain sands and silty sands. The maximum particle size is 1 inch and less than 30 percent will pass a 200-mesh screen.

The Rositas soil is described as deep, excessively drained, nearly level, and forms sand dunes. It is excessively drained with rapid permeability (6.0-20 in./hr.). Non-irrigated and irrigated areas of this soil have poor to very poor potential for rangeland and openland wildlife habitat. The soil is deficient in nitrogen, phosphorus, and potassium and has a low water capacity.

The soil limits recreation development because of the sandy texture and the hazard of soil blowing is high.

D. Water

1. Surface Water

No natural source of surface water at the site is readily available. No permanent streams exist and ephemeral drainages are poorly defined owing to low annual precipitation, short duration of events, and shallow sloping desert profile.

Surface drainage will pass from the general area to the west and south. The nearest significant surface drainage is Tyson Wash located 5 miles to the southwest, which drains the La Posa Plain.

2. Groundwater

The major water bearing units in the study are the sand and gravel zones of the Bouse Formation. Five wells penetrate this alluvium 5 to 7 miles to the northeast, and 5 miles to the east Cyprus has developed two wells. The average depth from surface to groundwater is 514 feet MSL. Pump test conducted on the Cyprus water supply investigation wells indicate that the alluvium at these depths has a transmissivity of 49,000 gallons per day per foot width of aquifer.

Groundwater underlying the site is found at depths that range from 550 to 685 feet MSL. Perched aquifers are not believed to be present. Groundwater level information is based on approximately 250 exploration drill holes in the open pit area and 30 exploration drill holes in the proposed tailings disposal area.

The groundwater quality approaches Arizona primary drinking water standards. Total dissolved solids averages 800 mg/l. The water chemistry indicates that the groundwater is a sodium sulfate type.

The nearest wells are northeast of the site. Registered ownership indicates that they were drilled to provide water for livestock should a grazing permit be exercised.

E. Vegetation

Perennial vegetation at the site is dominated by creosote (Larrea tridentata) and white bursage (Ambrosia dumosa). Annual plants include Chaenactis, sand verbena (Abronia vellosa), and evening primrose (Oenthera). Sand-adapted plants such as big galleta grass (Hilaria rigida) and Wiggin's croton (Croton wigginsii) occur in the large stabilized sand dunes in the northern portion of the mine site.

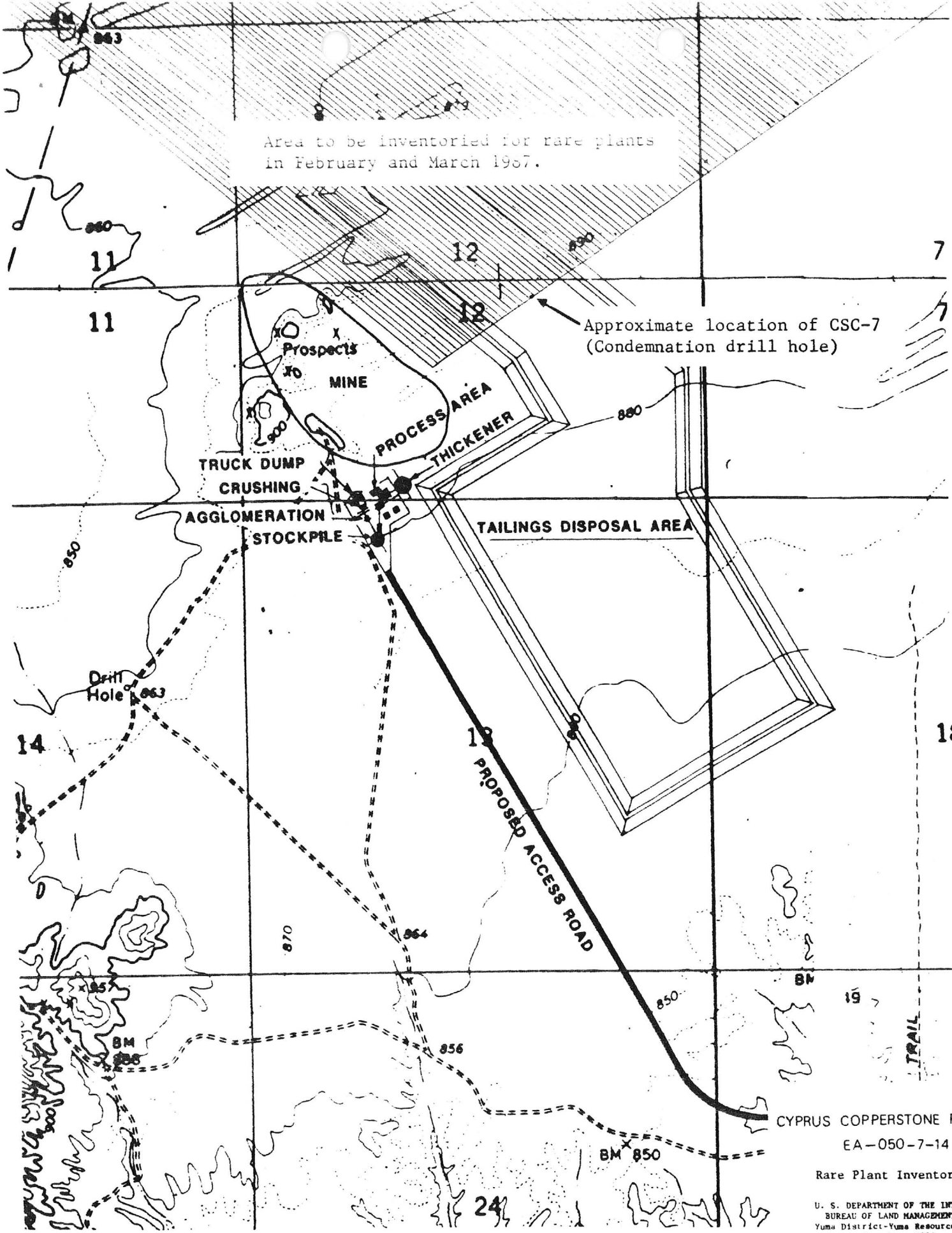
There are no Federally listed threatened or endangered plant species in the area. However, the presence of five species of plants that are candidates for listing as Federally threatened or endangered is suspected at the mine site. These plants are: night-blooming cereus (Cereus greggii), giant Spanish needle (Palafoxia arida var. gigantea), Wiggin's cholla (Opuntia wigginsii), flat-seeded surge (Euphorbia platysperma), and desert sunflower (Helianthus niveus ssp. tephrodes). All five species are listed as Candidate Category 2, which indicates that the U.S. Fish and Wildlife Service is searching for more information concerning these species' status.

A portion of the proposed overburden disposal area has been identified by the BLM Yuma District plant inventory contractor as the most likely place on the Cyprus mine site for these plants to occur. It is in the stabilized dune area. (See Map III-1.)

F. Wildlife

The Cyprus Copperstone mine site is used by a variety of desert wildlife common to the creosote bursage areas of the Desert Southwest.

The most common mammals include kangaroo rats (Dipodomys), pocket mice (Perognathus), blacktail jackrabbits (Lepus californicus), desert cottontails (Sylvilagus auduboni), and coyotes (Canis latrans). Mule deer (Odocoileus hemionus) and desert bighorn sheep (Ovis canadensis mexicanus) occupy the nearby desert mountain ranges and associated washes. Because of the lack of tall vegetative cover, it is unlikely that either bighorn sheep or deer use the area often.



CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Rare Plant Inventory

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Map III-1

The most common birds include black-throated sparrows (Amphispiza bilineata), sage sparrows (A. belli), red-tailed hawks (Buteo jamaicensis), and turkey vultures (Cathartes aura). Other birds that may frequent the area include black-tailed gnatcatchers (Piloptila melanura), verdins (Auriparus flaviceps), and yellow-rumped warblers (Dendroica dominica). There are two Federally-listed endangered bird species that may visit the area at times -- American bald eagle (Haliaeetus leucocephalus) and American peregrine falcon (Falco peregrinus). However, neither of these species is known to use the mine site area.

Common reptile species include sidewinders (Crotalus cerastes), Western diamondback rattlesnakes (Crotalus atrox), and side-blotched lizards (Uta stansburiana). Gila monsters (Heloderma suspectum) and desert tortoises Gopherus agassizii), which are candidate species (Category 2) for Federal listing as threatened or endangered, may frequent the area. Colorado Desert fringe-toed lizards (Uma notata notata), which are also a Category 2 species, most likely occur in the stabilized sand dune areas.

G. Cultural Resources

The Copperstone Project is situated in an area of relatively low cultural use.

A Class II cultural resource field inventory sampled 13 percent of the project area and identified two small surface-manifested lithic scatters, two isolated occurrences of stone tool forms and related debris, five .50 caliber shells, and one shell casing. (See Appendix B.) According to projections made from the number of lithic scatters encountered during the inventory, 13 additional small lithic scatters are theoretically present inside the project area. Additional isolated occurrences of stone tool forms and .50 caliber shells and shell casings are probably also present.

The lithic scatters identified in the field inventory (and those which were not identified) probably evidence expedient tool manufacture and use associated with the processing of small game (e.g., rabbits and small rodents). The artifact assemblages in the identified lithic scatters are of a relatively sophisticated nature and may belong to the Patayan complex which dates between circa 800 A.D.-1900 A.D. The unidentified lithic scatters also probably belong to the same archaeological complex.

None of the identified cultural resources possess enough significance to qualify for inclusion into the National Register of Historic Places. The resources that were not identified in the field inventory probably possess similar levels of significance.

The .50 caliber shells and the shell casing may relate to military exercises conducted during the early 1940s by U.S. Army troops under the command of General George S. Patton.

A detailed description of the cultural resource field inventory for the Copperstone Project is on file at the BLM Yuma District Office.

H. Wilderness

The mining claims are not within any wilderness study area. (See Appendix C -- Wilderness Impact Evaluation.)

I. Land Use and Ownership

The Copperstone Project area covers approximately 5,800 acres of public land located approximately 1 mile east of the Colorado River Indian Tribe (CRIT) Reservation boundary.

Access to the claims is by a dirt road that heads west from State Highway 95, approximately 15 miles north of Quartzsite. This road was in existence prior to Cyprus' original mining and drilling activities.

The project area is located within the Red Mountain Farming Company's Nine Mile grazing allotment. BLM permits the grazing of up to 50 head of cattle in this allotment at times when forage is available, usually in the late winter.

A barbed wire fence (range improvement AR-03456) is constructed and maintained on the west boundary of the public lands that adjoin the CRIT Reservation, in order to keep the grazing allottee's cattle out of the Reservation. State Highway 95 is also fenced, and a third barbed wire fence runs from east to west just south of the Cyprus access road.

Land uses in the general area include grazing, mineral prospecting, and exploration.

J. Visual Resources

The proposed sites for the Copperstone Project's mien and mill (in sections 11, 12, 13, and 14, T. 6 N., R. 20 W.) are within a Visual Resources Management (VRM) Class IV area. The general area has been impacted to a small extent by human activities such as ranching and mining, but these uses are not evident from State Highway 95.

VRM classes are based on scenic quality, sensitivity, and distance. They have been developed by BLM through the Resource Management Planning (RMP) process, using multiple use considerations. Each class has an objective which prescribes a level of acceptable change to the characteristic landscape from a visual resources standpoint.

The objective of VRM Class IV is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high, and these management activities may dominate the view and can be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

The route of the proposed access road for the project crosses lands in VRM Class III and Class IV areas.

The objective of VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

K. Floodplain Hazard

The proposed sites for the Copperstone Project's mine, mill, and disposal areas (in sections 11, 12, 13, and 14, T. 6 N., R. 20 W.) are all outside of the 100-year floodplain.

The route of the proposed access road for the project crosses the 100-year floodplain of two unnamed washes in section 21, T. 6 N., R. 19 W. The total length of this crossing is approximately 2,000 yards.

L. Prime and Unique Farmland

None of the soils in the project area have been classified by the Soil Conservation Service as prime or unique farmland.

M. Socio-Economic Factors

The Copperstone Project area is located approximately in the center of La Paz County which has a population of about 13,833 residents (Arizona Department of Commerce, 1985 estimate). Major population centers in the vicinity of the proposed mine include the towns of Parker (18 miles to the north), Quartzsite (15 miles to the south), and the Colorado River Indian Reservation (6 miles to the west). The current populations of these communities are approximately 2,765, 2,382 and 1,575 residents, respectively (Arizona Department of Economic Security, 1985 estimate). The estimated population of the Parker area, which takes into account areas on both sides of the Colorado River in Arizona and California within a 30 mile radius of Parker is 15,000 people (La Paz County Chamber of Commerce, 1985 estimate). This figure is important because Parker is the major trading and banking center in the area for both California and Arizona.

The population of each of these areas grows dramatically between October and May of each year as tourists and winter visitors come to Arizona to enjoy the mild winter weather. Quartzsite in particular experiences a signficant increase of up to 12,000 people between October and March of each year due in large part to the proximity of public land camping opportunities and a popular rock and mineral show in February.

The economies of Parker and the Colorado River Indian Reservation are largely based on year-round recreation, tourism, and agriculture, with recreation and tourism being slightly more important than agriculture. In

Quartzsite, the economy is based primarily on recreation and tourism during the winter and early spring months. During the summer and early fall months, Quartzsite businesses depend mainly on local highway traffic to generate revenues. In addition to agriculture, recreation, and tourism, wholesale and retail trade and service industries are important for Parker and Quartzsite while government employment and off-reservation employment is important to the Colorado River Indian Reservation.

Unemployment figures for Parker, Quartzsite, and the Colorado River Indian Reservation are approximately 10.3 percent, 13.9 percent (1985 estimate), and 45 percent (1984 estimate) respectively. Although jobs in La Paz County have been scarce in the last few years, some significant businesses in addition to the Copperstone Project could be starting up or actually doing business in the vicinity within the next 1-3 years. These businesses would tend to make full use of the local workforce as well as create the business atmosphere conducive to long-term growth and employment opportunities. New jobs created by the new businesses are expected to be in the 200-400 position range initially.

IV. ENVIRONMENTAL CONSEQUENCES

A. Impacts from the Proposed Action

1. Topography

Surface disturbances from mining and milling activities at the Copperstone Project site would cover an area of approximately 800 acres.

The mine pit would cover approximately 80 to 90 acres. It would be walled with 20-foot benches and extend to a depth of approximately 300 feet. The walls would slope at a ratio of 1½ to 1 (horizontal to vertical). The floor area would be approximately 15 acres.

The overburden, waste rock, and tailings disposal piles would rise to a height of 60 feet above the flat desert terrain and cover a total area of approximately 300 acres.

Additional surface disturbances would result from mining-related activities at the site: overburden from the open-pit area and sands from the dunes located on site would be borrowed for construction of various project facilities; cut and fill sections would be constructed along the new access road. The areas disturbed for these purposes would represent only a small part of the project area, however.

2. Air Quality

W. Gale Biggs Associates, Boulder, Colorado, conducted studies for the State of Arizona Air Quality Installation Permit. They concluded that mining operations at the Copperstone Project site would have a minimal impact on dust loading in the atmosphere.

The Industrial Source Complex (ISC) Dispersion Model was used in the evaluation of the air quality impacts. Both the long- and short-term standards were addressed. The joint frequency distribution for Blythe, California, was used in the long-term assessment and the hourly data were used for the short-term modeling. (Blythe is located about 26 miles southwest of the Copperstone site and is the closest, long-term, meteorological data available.)

Four receptor points were considered in the analysis. One was located east of the project site at the intersection of the access road and State Route 95. The other three were located west of the project area along the boundary of the Colorado River Indian Reservation, approximately due west, 1 mile north and 1 mile south.

The maximum area of impact from total suspended particulates would be to the west of the project.

Impacts from pollutants other than total suspended particulates would be minimal.

3. Soils

Operation of the Copperstone Project could result in soil losses due to wind erosion and, to a minor degree, the sheet wash that occurs during infrequent events of heavy precipitation.

Soil losses due to wind erosion could be severe, as the disturbed soils would be highly erodible. These losses would be moderated by the operator's use of wetting agents, however.

Soil losses due to water erosion would be minimal because: 1) the soils at the site have a high percolation rate and 2) Cyprus would install diversion ditches as part of the project.

Soils within the areas of mining disturbance would be removed and placed in the overburden disposal area.

The tailings and overburden disposal areas would contain clay from the Bouse formation, which could increase their soil water capacity.

4. Water

Impacts from the mining operation on surface water would be minimal, as localized drainages would be diverted around and away from all facilities, particularly the tailings disposal area and reclaim pond. Suspended solids would be contributed to surface flows outside the area -- however, because the percolation rates for predominantly sandy soils range from 3 to 5 inches per minute, it is not expected that large loads would be carried for significant distances.

Since cyanide breaks down in the presence of sunlight and warm ambient temperatures, a reduction in cyanide content would occur in thickener, tailings heap, and reclaim pond. Consequently, the potential for impacts to surface water from cyanide contamination is considered to be minimal.

No significant adverse impacts from the mining operations to groundwater are expected due to: 1) the lack of groundwater usage, 2) the depth to groundwater, and 3) the short project life of the operation.

Tests indicate that wells in the area are capable of being pumped at 250 gallons per minute. Since local well drawdown is 20 to 25 feet, the level of pumping from three supply wells would not adversely impact the existing aquifer.

5. Vegetation

During the operation, vegetation within the area of disturbance would be almost completely removed. Some vegetation would become

reestablished after the conclusion of mining activity. However, even if the reclamation measures in this Environmental Assessment are followed, portions of the area (such as the tailings disposal piles) would probably never completely revegetate.

After all buildings, foundations, and equipment are removed, all compacted areas, including roads, would be ripped and scarified. This would allow some reestablishment of native plants through volunteer growth. Seeding of native grasses in these areas could also help to reestablish vegetation.

Although there would be a net loss of vegetation, the creosote/white bursage plant association is not scarce or unusual in the Sonoran Desert Region. Therefore, the overall impact of the mining activity to this vegetation type would not be significant.

The stabilized dune area at the north end of the mine site would be surveyed for rare (Federal Candidate Category 2) plants in February and March 1987. If rare plants are found, measures would be decided upon at that time to transplant or protect the plants. Since the only portion of the proposed mining site that is stabilized sand dunes is proposed for tailings disposal, several options for amendment of the proposed mine plan to protect rare plants are possible.

6. Wildlife

Because of the removal of vegetation and the amount of human activity associated with the proposed mining activity, at least 800 acres of wildlife habitat would be lost through the life of the proposed mine. The area around the proposed mine and the entrance road influenced by the noise, dust, and vehicle and human activity would also be lost or severely reduced in quality as wildlife habitat.

Large animals such as coyotes, kit foxes and red-tailed hawks would be displaced from the area through the life of the mine. Numbers of small animals such as pocket mice, sidewinder rattlesnakes, kangaroo rats, and other ground-dwelling species would be directly reduced by soil compaction, being crushed by vehicles, and vegetation removal.

Populations of Colorado River fringe-toed lizards, Gila monsters, and desert tortoises (all candidate species for Federal listing as threatened or endangered) could also be reduced during mining activity. The desert tortoise and Gila monster populations could be reduced through the collapse of burrows or animals being crushed by vehicles.

A secondary impact on wildlife presented by the project is difficult to quantify but consists of habitat fragmentation and interruption of wildlife movement patterns. Wide ranging animals that would seem to be most susceptible to this potential effect are coyote, kit fox, and mule deer, although less mobile forms could also be affected. This type of impact

appears to be incremental on a regional basis and not significant at this time. However, if the area surrounding Cyprus mine site becomes more developed, habitat fragmentation could accrue into a significant impact.

If wildlife were to enter the cyanide processing/tailings area and ingest some of the sodium cyanide solution, fatal poisoning would occur. Depending on the effectiveness of controls, substantial wildlife losses could result. It is probable that losses would occur to birds that could easily enter the tailings fluid reclaim pond and tailings disposal areas. If adequate measures are taken to fence mammals, amphibians, and reptiles out of these areas, losses to these animals from cyanide poisoning would be minimal.

After completion of mining activity, the 20-foot lift sections of the pit could provide "cliff" nesting sites for such birds as red-tailed hawks, barn owls (Tyto alba), and great horned owls (Bubo virginianus).

Wildlife populations would increase after the completion of reclamation activities, as human disturbance decreases and some regrowth of vegetation takes place. Because of the net loss of wildlife habitat, however, wildlife populations would not return to their premining levels.

Because American bald eagles and American peregrine falcons are not known to commonly use the mine site, no impacts are expected to these or any other Federally listed threatened or endangered species.

7. Cultural Resources

Due to the extent to which the ground surface would be disturbed inside the project area, it is believed that all of the cultural resources within the area would be destroyed during mining operations.

Since none of the affected cultural resources qualifies for inclusion into the National Register of Historic Places, it is felt that the documentation of the resources during the field inventory is adequate mitigation for their loss.

8. Land Use and Ownership

Cattle on the Nine Mile grazing allotment could intrude on mining operations at the Copperstone Project.

Construction of an improved access road to the Copperstone Project could result in increased vehicular traffic in the area. This traffic could interfere with mine operations at the site and could also disturb easily-accessible areas of open desert to the north of the access road.

9. Visual Resources

Surface disturbances resulting from development of the Copperstone Project's mine, mill, and disposal areas would not conflict with the management objective for VRM Class IV. Consequently, no significant adverse impacts to visual resources would result from the project.

While the planned facilities and mining activities would change the aesthetic character of an extensive area, their overall effect on visual resources would be minor because of the area's remoteness and lack of scenic quality. The overburden, waste rock, and tailings disposal piles would be barely visible from State Highway 95. Mining and milling equipment would be visible during the operations but would be removed as part of reclamation.

Surface disturbances resulting from development of the access road, water pipeline, and transmission line would not conflict with the management objectives for VRM Classes III or IV. Changes to the landscape would be minor as the access corridor already includes surface disturbances from an existing road.

Impacts to visual resources could be minimized by: 1) using compact size buildings at the site; 2) using tan or brown paint colors an other aesthetic elements to blend the structures and facilities with the desert environment; 3) stabilizing and reclaiming the tailings disposal, mine waste rock, and overburden piles; and 4) benching or sloping the tailings disposal, mine waste rock and overburden piles during the later stages of operation so that they blend more fully with the existing environment.

10. Floodplain Hazard

No threat to human life or property would result from construction of the access road across the 100-year floodplain, provided that the culverts used at the crossings are designed to safely convey the projected 100-year flood flows.

Installation of the culverts at the crossings would have a negligible effect on natural and beneficial floodplain values in the two unnamed washes.

11. Socio-Economic Factors

The total estimated cost of the Cyprus Copperstone Project is approximately $20 million. Much of that cost would be directly added to the economies of the towns of Parker, Quartzsite, and the Colorado River Indian Tribes Reservation (CRIT) in payment for goods, services, and wages. During the early development phase in particular, but also during the life of the project, a significant, positive impact would be felt by the communities due to the new tax base. In addition, the State of Arizona would benefit by increasing its revenue from State income taxes levied against new employees and through the elimination of people on welfare rolls. Finally, as the labor force and their families move and settle into the area, additional demand for goods, services, housing, and recreational opportunies would be created which would attract private entrepreneurs and investment capital into the area.

The construction, development, and operation of the mine is expected to directly create approximately 80-100 jobs during the projected

6-year lifetime of the mine. An unknown number of jobs in the service and retail trade industries as well as in the real estate industry are also expected to occur as a direct result of the mine.

Impacts on public and private land in the area due to the expected growth caused by the mine would be minor. Increased recreation use would be the predominant impact, and much of that would occur only during the winter and spring months due to the temperature extremes. Off-road vehicle use would increase somewhat since the area supports that use at other times of the year. Local businesses would be able to accommodate these increases in recreation use.

Growth in the population could impact local utilities which could cause the towns to consider using public land to expand facilities or rights-of-way to accommodate the growth. Existing land use plans would mitigate any negative or long-term impact.

Developments adjacent to or on public land needed to support the mine operation include electric powerlines, possible water wells and water pipelines, fences and gates, cattle guards, and roads. Construction and maintenance of these developments would have a positive impact on local wholesale and retail businesses.

B. Mitigating Measures

Cyprus Metals Company would be responsible for all mining activities at the site and would bear all reclamation liabilities. As proposed in the Plan of Operations for the Cyprus Copperstone Project, a performance bond would be used to insure reclamation of the mine site.

The following mitigation and reclamation measures would also be adopted:

1. Air Quality

a. Access roads will be watered or maintained in order to reduce dust caused by the activity.

b. All toxic materials and garbage will be disposed of in accordance with the Solid Waste Disposal Act. No trash will be burned on site.

c. Particulate emissions will be controlled through stabilizing haul truck roads with chemical or equivalent techniques, watering scraper roads, and sonic water sprays on the crushing and conveying system.

2. Soils

a. Refueling, lubrication, or oil changes of vehicles and machines will be done in such a manner as to avoid spills and drainage onto

the ground. Grease, oils, and similar products required for vehicle servicing will be stored in the service area in appropriate containers. Used products will not be disposed of on-site nor mixed with sewage disposal.

b. At the beginning of mining activity, the top 18 inches of sand over the pit area (topsoil) will be stockpiled at the southeastern end of the tailings disposal area. Loss of this material due to wind shall be reduced by covering the topsoil pile with snow or drift fences. (These are approximately 5-foot tall fences made of thin wooden slats held together with small gauge wire.) The topsoil will be used at the end of the mining activity to cover areas of disturbance, such as the crushing area and the windward (southeast) portion of the tailings disposal pile.

c. At the end of the mining activity, all buildings, tools, vehicles, pipelines, powerlines, and mining equipment will be removed from the area. Concrete pads used as foundations will be broken up and buried in the pit.

d. At the end of mining activity and after all buildings, mining materials, powerlines, and pipelines are removed from the site, all compacted areas, including roads and storage areas, will be ripped and scarified and returned to original contour. Topsoil that has been saved from the initial pit excavation will be used as an added material in this process.

All access roads to the project area will be reclaimed.

3. Water

Other than through the leach field system, human waste will not be allowed to drain into the soil.

4. Vegetation

a. No pesticides or herbicides will be used at the site.

b. Removal of cacti from the site will be coordinated with the BLM and the Arizona Agriculture and Horticulture Commission.

c. At the end of the mining activity, small cuts or "windrows" (approximately 5 feet deep and 8 feet wide) will be made in the top surface of the tailings disposal piles. (These cuts will capture blowing sand to create a substrait for the establishment of plants.) The cuts will be approximately 60 feet apart. They will be placed parallel to the existing sand dune formation in the area, running northeast to southwest.

d. The portion of the overburden disposal area that has been identified by the BLM Yuma District plant inventory contractor as potential habitat for Candidate Category 2 plant species will be inventoried for these plants in February and March 1987. Until that time, no mining activity will take place in the area. (See Map III-1.)

If Candidate Category 2 plants are found during the inventory, measures will be agreed upon between Cyprus Metals Company and BLM to protect the plants. (These measures could include transplanting plants or slight alterations of the tailings disposal area alignment.)

e. Disturbed areas will be reseeded with native grasses, such as big galleta grass (Hilaria rigida). (The growth of grasses in these areas will improve soil stability and allow later volunteer establishment of shrubs such as creosote and white bursage.)

5. Wildlife

a. No wildlife will be purposefully harmed or harrassed during mining operations.

b. If any desert tortoises or Gila monsters are found near the mine site, they will be removed and released unharmed at least ½ mile from the mine site.

c. An 8-foot tall chain link fence will be constructed around the tailings fluid reclaim pond and all other areas where any toxic materials are stored or used. The bottom 1-foot of the fence will be hardware cloth or some similar material of ¼ inch or smaller mesh. This small meshed material will be buried at least 1 foot into the ground. (This fencing should adequately keep all ground dwelling and burrowing animals out of these areas.)

d. If a situation develops where birds are flying into the solution ponds to drink, additional measures will be taken to protect the birds. Initially, sound-making devices such as CO_2 horns or blasters will be used to frighten birds away from the area. (Gold Fields Operating Co. El Centro, California, has had some success with sonic repellants at cyanide ponds.) If birds become habituated to this noise, nylon mesh screening (such as the screening that is used to cover fruit trees) or poultry netting will be used to cover the ponds. This screening could be attached to the 8-foot fence that surrounds the ponds.

If during the mining operation BLM wildlife biologists in consultation with the Arizona Game and Fish Department determine that these measures are not protecting wildlife adequately, additional mitigating measures will be developed. These additional measures could include, but would not be restricted to, adding an alternate water source away from the mine site for wildlife.

e. To reduce human or predator harassment of red-tailed hawks, barn owls and great horned owls that may nest in the pit, some gravel and rocks will be pushed over the edge of the pit in two or three approximately 20-foot sections of the pit edge at the end of the mining activity. (This will create a "rockslide" effect that will cut off easy access to the lift sections by vehicles, humans, and natural predators.)

At the end of mining activity, the road down into the pit will be closed to vehicular access.

6. Cultural Resources

If American antiquities or other objects of historical or scientific interests are discovered in the area covered by this EA, they will be left intact and immediately brought to the attention of the BLM District Manager.

7. Land Use and Ownership

a. A fence will be constructed surrounding the entire pit/tailings pile/ore crushing area to prevent livestock access. The fence will be constructed by following the ADOT guidelines for a 4-strand barbed wire game fence. (See Figure IV-1.) This construction method will reduce the chances of deer becoming entangled in the fence.

b. For safety reasons, the mine site will be closed to public entry during all construction and mining activity. The area will be posted and special precautions taken to ensure that the closure is enforced, especially during periods of blasting.

c. A 3-foot berm or a 4-strand barbed wire fence wall be constructed along the north side of the entrance road to prevent vehicles from impacting the open desert. If a fence is constructed, it will conform to the Arizona Department of Transportation (ADOT) specifications for a 4-strand barbed wire game fence. (See Figure IV-1.)

d. The operator will mark and protect all survey monuments against destruction or damage during the life of the project.

8. Visual Resources

a. Compact-sized buildings will be used at the site.

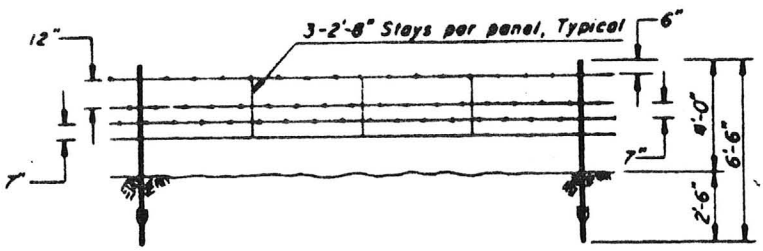
b. Structures and facilities will be painted tan or brown to blend in with the desert environment.

c. Tailings disposal, mine waste rock, and overburden piles will be benched or sloped during the later stages of the operation.

9. Floodplain Hazard

Culverts at wash crossings along the access road will be designed to safely convey projected 100-year flood flows.

Cyprus Metals Company supervisors and their contractors working at the mine site are required to be familiar with the mitigating measures and stipulations in this Environmental Assessment. They will have a copy of the mitigation and reclamation measures with them at the mine site. In addition, all employees will be informed of these.



BARBED WIRE GAME FENCE (GF)

GENERAL NOTES

1. Intermediate Post Assemblies shall be located as shown and at intervals not to exceed 650', or midway between all braced posts.
2. For game fence the bottom wire shall be barbless.
3. The stays on game fence shall have their ends turned up, to prevent injuries to game.

DESIGN APPROVED	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS STANDARD DRAWINGS	DATE 8/83
APPROVED FOR DISTRIBUTION	Fence, Barbed Wire	DRAWING NO. C-12.10 Sheet 2 of 5

STATE OF ARIZONA

DEPARTMENT OF TRANSPORTATION

CONSTRUCTION

19 83

DIVISION OF HIGHWAYS

STANDARD DRAWINGS

CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Guidelines for
Fence Construction

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Figure IV-1

C. Unavoidable Adverse Impacts

The primary unavoidable adverse impacts from the Copperstone Project would be surface disturbances at the mine pit and the overburden, waste rock, and tailings disposal piles. These disturbances would cover approximately 400 acres.

There would also be an unavoidable decrease in the quality of vegetative cover and wildlife habitat on the areas of surface disturbance at mine pit and the overburden, waste rock, and tailings disposal piles.

Other unavoidable adverse impacts at the Copperstone Project site would include: 1) some soil losses from wind erosion, 2) losses in numbers of small animals due to construction activities, 3) losses in numbers of birds due to poisonings, 4) the loss of cultural resources in place, and 5) some minor visual disturbances.

D. Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources from the Copperstone Project would include: 1) surface disturbances at the mine pit and the overburden, waste rock, and tailings piles and 2) the resultant reduction in the quality of vegetation and wildlife habitat on the disturbed areas.

Irretrievable commitments of resources from the Copperstone Project could include soil losses due to wind erosion.

E. Relationship of Short-Term Use to Long-Term Productivity

Short-term use would continue at the site through the life of the mine. During this time period, localized disturbances to air quality, soils, water, vegetation, wildlife, cultural resources, and visual resources would occur. Economic benefits to local communities and the State of Arizona would also occur.

In the long term, adverse impacts to vegetation and wildlife would persist. The overall effect of these impacts on the area's productivity would be minor, however.

V. PARTICIPATING STAFF

A. Charles E. Botdorf - Geologist, Yuma District (Air Quality, Soils, Water, Plan Coordination, and Mining Law)

B. J. J. Atkins - Planning and Environmental Coordinator, Yuma District (Visual Resources, Floodplains, and Environmental Coordination)

C. Susanna G. Henry - Wildlife Biologist, Yuma Resource Area (Vegetation, Wildlife, and Threatened and Endangered Species)

D. Clifford I. Oyama - Realty Specialist, Yuma Resource Area (Land Use and Ownership)

E. Darrell Sanders - Archaeologist, Yuma Resource Area (Cultural Resources)

F. Michael J. Werner - Surface Protection Specialist, Yuma Resource Area (Wilderness)

G. Douglas B. Stockdale - Public Affairs Specialist, Yuma District (Socio-Economic Factors)

H. Theresa E. Schutt - Secretary, Yuma Resource Area (Word Processing)

VI. PERSONS, AGENCIES, AND ORGANIZATIONS CONSULTED

A. Mike Dawson, Arizona Department of Transportation

B. Arizona Game and Fish Department
   Dawn Stanley, Wildlife Manager
   Bill Werner, Region IV Habitat Specialist
   Richard Remington, Region IV, Game Specialist

C. Ted Hopkins, Arizona Department of Health Services

D. James Matt, Arizona Office of the State Mine Inspector

E. Oleta Elliott, Arizona Department of Commerce

F. Dottie Randle, La Paz County Chamber of Commerce

The Cyprus Copperstone Project includes the upatented lode mining claims located in T. 6N., R. 20 W., secs. 1, 2, 10, 11, 12, 13, 14, 15, 22, 23, 24, 26 and 27, Gila and Salt River Principal Meridian and Plamosa Mining District, County of La Paz, State of Arizona.

Cyprus Mines Corporation Claim Group:

Name of Claim	Original Recordation Book	Page	Amended Recordation Book	Page	BLM Serial No.
COPPERSTONE 101	1254	76	86-2365		A MC 144884
COPPERSTONE 102	1254	79	86-2366		A MC 144885
COPPERSTONE 103	1254	81	86-2367		A MC 144886
COPPERSTONE 104	1254	83	86-2368		A MC 144887
COPPERSTONE 105	1254	85	86-2369		A MC 144888
COPPERSTONE 106	1254	87	86-2370		A MC 144889
COPPERSTONE 107	1254	89	86-2371		A MC 144890
COPPERSTONE 108	1254	91	86-2372		A MC 144891
COPPERSTONE 109	1254	93	86-2373		A MC 144892
COPPERSTONE 110	1254	95	86-2374		A MC 144893
COPPERSTONE 111	1254	97	86-2375		A MC 144894
COPPERSTONE 112	1254	99	86-2376		A MC 144895
COPPERSTONE 113	1254	101	86-2377		A MC 144896
COPPERSTONE 114	1254	103	86-2378		A MC 144897
COPPERSTONE 115	1254	105	86-2379		A MC 144898
COPPERSTONE 116A	1254	107	86-2380		A MC 144899
COPPERSTONE 117	1254	109	86-2381		A MC 144900
COPPERSTONE 118	1254	111	86-2382		A MC 144901
COPPERSTONE 119	1254	113	86-2383		A MC 144902
COPPERSTONE 120	1254	115	86-2384		A MC 144903
COPPERSTONE 122	1254	119	86-2385		A MC 144905
COPPERSTONE 123	1254	121	86-2386		A MC 144906
COPPERSTONE 124	1254	123	86-2387		A MC 144907
COPPERSTONE 125	1254	125	86-2388		A MC 144908
COPPERSTONE 126	1254	127	86-2389		A MC 144909
COPPERSTONE 127	1254	129	86-2390		A MC 144910
COPPERSTONE 129	1254	133	86-2391		A MC 144912
COPPERSTONE 130	1254	135	86-2392		A MC 144913
COPPERSTONE 131	1254	137	86-2393		A MC 144914
COPPERSTONE 132	1254	139	86-2394		A MC 144915
COPPERSTONE 133	1254	141	86-2395		A MC 144916
COPPERSTONE 134	1254	143	86-2396		A MC 144917
COPPERSTONE 136	1254	147	86-2397		A MC 144919
COPPERSTONE 137	1254	149	86-2398		A MC 144920
COPPERSTONE 138	1254	151	86-2399		A MC 144921
COPPERSTONE 139	1254	153	86-2400		A MC 144922
COPPERSTONE 140	1254	155	86-2401		A MC 144923
COPPERSTONE 141	1254	157	86-2402		A MC 144924
COPPERSTONE 142	1254	159	86-2403		A MC 144925
COPPERSTONE 143	1254	161	86-2404		A MC 144926
COPPERSTONE 144	1254	163	86-2405		A MC 144927
COPPERSTONE 145	1254	165	86-2406		A MC 144928
COPPERSTONE 146	1254	167	86-2407		A MC 144929
COPPERSTONE 147	1254	169	86-2408		A MC 144930
COPPERSTONE 148	1254	171	86-2409		A MC 144931
COPPERSTONE 149	1254	173	86-2410		A MC 144932
COPPERSTONE 150	1254	175	86-2411		A MC 144933
COPPERSTONE 151	1254	177	86-2412		A MC 144934
COPPERSTONE 152	1254	179	86-2413		A MC 144935
COPPERSTONE 153	1254	181	86-2414		A MC 144936
COPPERSTONE 154	1254	183	86-2415		A MC 144937

CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Mining Claim
Recordation Information

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Appendix A

Cyprus Mines Corporation Claim Group:

Name of Claim	Original Recordation Book	Page	Amended Recordation Book	Page	BLM Serial No.
COPPERSTONE 155	1254	185	86-2416		A MC 144938
COPPERSTONE 156	1254	187	86-2417		A MC 144939
COPPERSTONE 157	1254	189	86-2418		A MC 144940
COPPERSTONE 158	1254	191	86-2419		A MC 144941
COPPERSTONE 159	1254	193	86-2420		A MC 144942
COPPERSTONE 160	1254	195	86-2421		A MC 144943
COPPERSTONE 161	1254	197	86-2422		A MC 144944
COPPERSTONE 162	1276	349	86-2423		A MC 164418
COPPERSTONE 163	1276	355	86-2424		A MC 164419
COPPERSTONE 164	1276	357	86-2425		A MC 164420
COPPERSTONE 165	1276	359	86-2426		A MC 164421
COPPERSTONE 166	1276	361	86-2427		A MC 164422
COPPERSTONE 167	1276	363	86-2428		A MC 164423
COPPERSTONE 168	1276	365	86-2429		A MC 164424
COPPERSTONE 169	1276	367	86-2430		A MC 164425
COPPERSTONE 170	1276	369	86-2431		A MC 164426
COPPERSTONE 171	1276	371	86-2432		A MC 164427
COPPERSTONE 172A	1276	373	86-2433		A MC 164428
COPPERSTONE 183A	1276	395	86-2434		A MC 164439
COPPERSTONE 184	1276	397	86-2435		A MC 164440
COPPERSTONE 185	1276	398	86-2436		A MC 164441
COPPERSTONE 186	1276	400	86-2437		A MC 164442
COPPERSTONE 187	1276	402	86-2438		A MC 164443
COPPERSTONE 188	1276	404	86-2439		A MC 164444
COPPERSTONE 189	1276	406	86-2440		A MC 164445
COPPERSTONE 190	1276	408	86-2441		A MC 164446
COPPERSTONE 191	1276	410	86-2442		A MC 164447
COPPERSTONE 192A	1276	412	86-2443		A MC 164448
COPPERSTONE 210	1276	448	86-2444		A MC 164466
COPPERSTONE 211	1276	450	86-2445		A MC 164467
COPPERSTONE 212	1276	452	86-2446		A MC 164468
COPPERSTONE 213	1276	454	86-2447		A MC 164469
COPPERSTONE 214	1276	456	86-2448		A MC 164470
COPPERSTONE 215	1276	458	86-2449		A MC 164471
COPPERSTONE 216	1276	460	86-2450		A MC 164472
COPPERSTONE 217	1276	462	86-2451		A MC 164473
COPPERSTONE 218	1276	464	86-2452		A MC 164474
COPPERSTONE 219	1276	466	86-2453		A MC 164475
COPPERSTONE 220	1276	468	86-2454		A MC 164476
COPPERSTONE 221	1276	470	86-2455		A MC 164477
COPPERSTONE 222	1276	472	86-2456		A MC 164478
COPPERSTONE 223	1276	474	86-2457		A MC 164479
COPPERSTONE 224	1276	476	86-2458		A MC 164480
COPPERSTONE 225	1276	478	86-2459		A MC 164481
COPPERSTONE 226	1276	480	86-2460		A MC 164482
COPPERSTONE 227	1276	482	86-2461		A MC 164483
COPPERSTONE 228	1276	484	86-2462		A MC 164484
COPPERSTONE 229	1276	486	86-2463		A MC 164485
COPPERSTONE 230	1276	488	86-2464		A MC 164486
COPPERSTONE 231	1276	490	86-2465		A MC 164487
COPPERSTONE 232	1276	492	86-2466		A MC 164488
COPPERSTONE 233	1276	494	86-2467		A MC 164489
COPPERSTONE 234	1276	496	86-2468		A MC 164490
COPPERSTONE 235	1276	498	86-2469		A MC 164491
COPPERSTONE 236	1276	500	86-2470		A MC 164492
COPPERSTONE 237	1276	502	86-2471		A MC 164493
COPPERSTONE 238	1276	504	86-2472		A MC 164494
COPPERSTONE 239	1276	506	86-2473		A MC 164495
COPPERSTONE 240	1276	508	86-2474		A MC 164496
COPPERSTONE 241	1276	510	86-2475		A MC 164497
COPPERSTONE 242	1276	512	86-2476		A MC 164498
COPPERSTONE 243	1276	514	86-2477		A MC 164499
COPPERSTONE 244	1276	516	86-2478		A MC 164500
COPPERSTONE 245	1276	518	86-2479		A MC 164501
COPPERSTONE 246	1276	520	86-2480		A MC 164502
COPPERSTONE 247	1276	522	86-2481		A MC 164503
COPPERSTONE 248	1276	524	86-2482		A MC 164504
COPPERSTONE 249	1276	526	86-2483		A MC 164505

Cyprus Mines Corporation Claim Group:

Name of Claim	Original Recordation Book	Page	Amended Recordation Book	Page	BLM Serial No.
COPPERSTONE 250	1276	528	86-2484		A MC 164506
COPPERSTONE 251	1276	530	86-2485		A MC 164507
COPPERSTONE 252	1276	532	86-2486		A MC 164508
COPPERSTONE 253	1276	534	86-2487		A MC 164509
COPPERSTONE 254	1276	536	86-2488		A MC 164510
COPPERSTONE 255	1276	538	86-2489		A MC 164511
COPPERSTONE 256	1276	540	86-2490		A MC 164512
COPPERSTONE 257	1276	542	86-2491		A MC 164513
COPPERSTONE 258	1276	544	86-2492		A MC 164514
COPPERSTONE 259	1276	546	86-2493		A MC 164515
COPPERSTONE 260	1276	548	86-2494		A MC 164516
COPPERSTONE 261	1276	550	86-2495		A MC 164517
COPPERSTONE 262	1276	552	86-2496		A MC 164518
COPPERSTONE 263	1276	554	86-2497		A MC 164519
COPPERSTONE 264	1276	556	86-2498		A MC 164520
COPPERSTONE 265	1276	558	86-2499		A MC 164521
COPPERSTONE 266	1276	560	86-2500		A MC 164522
COPPERSTONE 267	1276	562	86-2501		A MC 164523
COPPERSTONE 268	1276	564	86-2502		A MC 164524
COPPERSTONE 269	1276	566	86-2503		A MC 164525
COPPERSTONE 270	1276	568	86-2504		A MC 164526
COPPERSTONE 271	1276	570	86-2505		A MC 164527
COPPERSTONE 272	1276	572	86-2506		A MC 164528
COPPERSTONE 273	1276	574	86-2507		A MC 164529
COPPERSTONE 274	1276	576	86-2508		A MC 164530
COPPERSTONE 275	1276	578	86-2509		A MC 164531
COPPERSTONE 276	1276	580	86-2510		A MC 164532
COPPERSTONE 277	1276	582	86-2511		A MC 164533
COPPERSTONE 278	1276	584	86-2512		A MC 164534
COPPERSTONE 279	1276	586	86-2513		A MC 164535
COPPERSTONE 280	1276	588	86-2514		A MC 164536
COPPERSTONE 281	1276	590	86-2515		A MC 164537
COPPERSTONE 282	1276	592	86-2516		A MC 164538
COPPERSTONE 283	1276	594	86-2517		A MC 164539
COPPERSTONE 284	1276	596	86-2518		A MC 164540
COPPERSTONE 285	1276	598	86-2519		A MC 164541
COPPERSTONE 286	1276	600	86-2520		A MC 164542
COPPERSTONE 287	1276	602	86-2521		A MC 164543
COPPERSTONE 288	1276	604	86-2522		A MC 164544
COPPERSTONE 289	1276	606	86-2523		A MC 164545
COPPERSTONE 290	1276	608	86-2524		A MC 164546
COPPERSTONE 291	1276	610	86-2525		A MC 164547
COPPERSTONE 292	1276	612	86-2526		A MC 164548
COPPERSTONE 293	1276	614	86-2527		A MC 164549
COPPERSTONE 294	1276	616	86-2528		A MC 164550
COPPERSTONE 295	1276	618	86-2529		A MC 164551
COPPERSTONE 296	1276	620	86-2530		A MC 164552
COPPERSTONE 297	1276	622	86-2531		A MC 164553
COPPERSTONE 298	1276	624	86-2532		A MC 164554
COPPERSTONE 299	1276	626	86-2533		A MC 164555
COPPERSTONE 300	1276	628	86-2534		A MC 164556
COPPERSTONE 301	1276	630	86-2535		A MC 164557
COPPERSTONE 302	1276	632	86-2536		A MC 164558
COPPERSTONE 303	1276	634	86-2537		A MC 164559
COPPERSTONE 304	1276	636	86-2538		A MC 164560
COPPERSTONE 305	1276	638	86-2539		A MC 164561
COPPERSTONE 306	1276	640	86-2540		A MC 164562
COPPERSTONE 307	1276	642	86-2541		A MC 164563
COPPERSTONE 308	1276	644	86-2542		A MC 164564
COPPERSTONE 309	1276	646	86-2543		A MC 164565
COPPERSTONE 310	1276	648	86-2544		A MC 164566
COPPERSTONE 311	1276	650	86-2545		A MC 164567
COPPERSTONE 312	1276	652	86-2546		A MC 164568
COPPERSTONE 313	1276	654	86-2547		A MC 164569
COPPERSTONE 314	1276	656	86-2548		A MC 164570
COPPERSTONE 315	1276	658	86-2549		A MC 164571
COPPERSTONE 316	84-002461		86-2550		A MC 220648
COPPERSTONE 317	84-002460		86-2551		A MC 220649

Cyprus Mines Corporation Claim Group:

Name of Claim	Original Recordation Book	Page	Amended Recordation Book	Page	BLM Serial No.
COPPERSTONE 318	84-002462		86-2552		A MC 220650
COPPERSTONE 319	84-002463		86-2553		A MC 220651
COPPERSTONE 320	84-002464		86-2554		A MC 220652
COPPERSTONE 321	84-002465		86-2555		A MC 220653
COPPERSTONE 322	84-002466		86-2556		A MC 220654
COPPERSTONE 323	84-002467		86-2557		A MC 220655
COPPERSTONE 324	84-002468		86-2558		A MC 220656
COPPERSTONE 325	84-002469		86-2559		A MC 220657
COPPERSTONE 326	84-002470		86-2560		A MC 220658
COPPERSTONE 327	84-002471		86-2561		A MC 220659
COPPERSTONE 328	84-002472		86-2562		A MC 220660
COPPERSTONE 329	86-4548				A MC 260459
COPPERSTONE 330	86-4549				A MC 260460
COPPERSTONE 331	86-4550				A MC 260461
COPPERSTONE 332	86-4551				A MC 260462
COPPERSTONE 333	86-4552				A MC 260463
COPPERSTONE 334	86-4553				A MC 260464
COPPERSTONE 335	86-4554				A MC 260465
COPPERSTONE 336	86-4555				A MC 260466
COPPERSTONE 337	86-4556				A MC 260467
COPPERSTONE 338	86-4557				A MC 260468
COPPERSTONE 339	86-4558				A MC 260469

Dan Patch Claim Group:

Name of Claim	Original Recordation Book	Page	Amended Recordation Book	Page	BLM Serial No.
COPPERSTONE # 46	1152	191	86-2345		A MC 98962
COPPERSTONE # 47	1152	193	86-2346		A MC 98963
COPPERSTONE # 48	1152	195	86-2347		A MC 98964
COPPERSTONE # 49	1152	197	86-2348		A MC 98965
COPPERSTONE # 50	1152	199	86-2349		A MC 98966
COPPERSTONE # 51	1152	201	86-2350		A MC 98967
COPPERSTONE # 52	1152	203	86-2351		A MC 98968
COPPERSTONE # 53	1152	205	86-2352		A MC 98969
COPPERSTONE # 54	1152	763	86-2353		A MC 98970
COPPERSTONE # 55	1152	765	86-2354		A MC 98971
COPPERSTONE # 56	1152	767	86-2355		A MC 98972
COPPERSTONE # 57	1152	769	86-2356		A MC 98973
COPPERSTONE # 58	1152	771	86-2357		A MC 98974
COPPERSTONE # 59	1152	773	86-2358		A MC 98975
COPPERSTONE # 60	1152	775	86-2359		A MC 98976
COPPERSTONE # 61	1152	777	86-2360		A MC 98977
COPPERSTONE # 62	1152	779	86-2361		A MC 98978
COPPERSTONE # 63	1152	781	86-2362		A MC 98979
COPPERSTONE # 64	1173	716	86-2363		A MC 108058
COPPERSTONE # 65	1173	719	86-2364		A MC 108059

Willis Rhea Claim Group:

Name of Claim	Original Recordation Book	Page	Amended Recordation Book	Page	BLM Serial No.
IRON REEF #1	1168	69			A MC 105953
IRON REEF #2	1168	72			A MC 105954
IRON REEF #3	1168	74			A MC 105955
IRON REEF #4	1168	76			A MC 105956
IRON REEF #5	1168	78			A MC 105957
IRON REEF #6	1168	80			A MC 105958
IRON REEF #7	1168	82			A MC 105959
IRON REEF #8	1168	84			A MC 105960
IRON REEF #9	1168	86			A MC 105961
IRON REEF #10	1168	88			A MC 105962

Case No. EA #050-7-14

TO : Area Manager, YRA

Date: December 29, 1986

FROM : Archaeologist, YRA

SUBJECT: Cultural Resource Clearance and Stipulations Pursuant to NEPA - Section 101; National Historic Preservation Act of 1966-Sec. 106; E. O. 11593-Sec. 1(3), 2(b); 36 CFR 800; BLM Manual 8100 - Cultural Resource Management

1. **Project:** Cyprus Copperstone Project **Applicant:** Cyprus Metals Englewood, Colorado

Type: Mining
Description: Open-pit gold mine operation

2. **Location:** **County:** La Paz **T.** 6 N. **R.** 19,20 W. **Sec.** various
USGS Quad Map: Moon Mtn. NE and Moon Mtn. SE **Planning Unit:**

3. __X__ **Class I Records Search Inventory** **Date:** September 1986

Sites:

4. __X__ **Class ~~III Intensive Study~~** II Field Inventory **Dates:** October 6-8, 1986

Sites Located: AZ-050-1392, AZ-050-1393, and Isolated Occurrences "A," "B," "C"

Sites Recorded: Same

5. __X__ **No surface or paleontological resources present on or near project area.**

6. **Area Surveyed:** 900 acres sampled **Person Days Used:** 2 **Survey Type:** II

Surveyors: Darrell Sanders **Time Code:** 4132-12

7. **Recommendations:**

__X__ **Archaeological clearance is recommended.**

_____ **Archaeological clearance is recommended subject to the attached stipulations.**

_____ **Archaeological clearance is not recommended until completion of:**

_____ **State Historic Preservation Officer Comment (required).**

_____ **Advisory Council on Historic Preservation Comment (required).**

CYPRUS COPPERSTONE PROJECT
EA-050-7-14

Cultural Resource Inventory

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986
Appendix B

P-1541-1
April 1973

_____ Additional Survey or Study of Resources.

_____ Mitigation.

_____ Other.

8. Cultural Resource Evaluation

Description of the Environment: Inland desert with little ground surface integrity due to shifting sand.

Description of Cultural Resources (attach site forms):
Small, focused lithic scatters

Evaluation of Cultural Resources: Not National Register of Historic Places status; probably evidence expedient resource processing of small animals.

Relationship of Cultural Resources to the Proposed Project:
All cultural resources will most likely be completely destroyed.

9. In my opinion, the proposed project will have the following effect on the cultural or paleontological properties present:

_____ No effect. ___X___ No adverse effect.

_____ Positive (beneficial) effect. _____ Adverse effect.

Explanation: The field documentation of the resources will mitigate any adverse effects they will receive.

10. In my opinion, the sites located within the project area are:

_____ Eligible for inclusion in the National Register of Historic Places.

___X___ Not eligible for inclusion in the National Register.

_____ Possible eligible for inclusion in the National Register - more study of the resource will be necessary.

11. Impact Mitigation:

It is Bureau policy to avoid inadvertent loss or destruction of cultural and paleonotological resources by Bureau actions or authorizations, irrespective of land ownership.

Protection and compliance with legal mandates would be accomplished by completion of inventory, evaluation, mitigation, and when required, by requesting comments from the SHPO and Advisory Council.

Recommended Mitigation of expected adverse impacts:

X Any sub-surface archaeological, historical, or paleontological remains discovered during construction should be left intact; all work in the area should stop immediately and the Yuma District Manager should be notified immediately. Commencement of work should be allowed upon clearance by the District Manager.

____ Any additional archaeological survey would be required in the event the proposed project location is changed or additional surface disturbing activities are added to the project after the initial survey. Any such survey would have to be completed prior to commencement of the project.

Others as required:

____

____

____

____

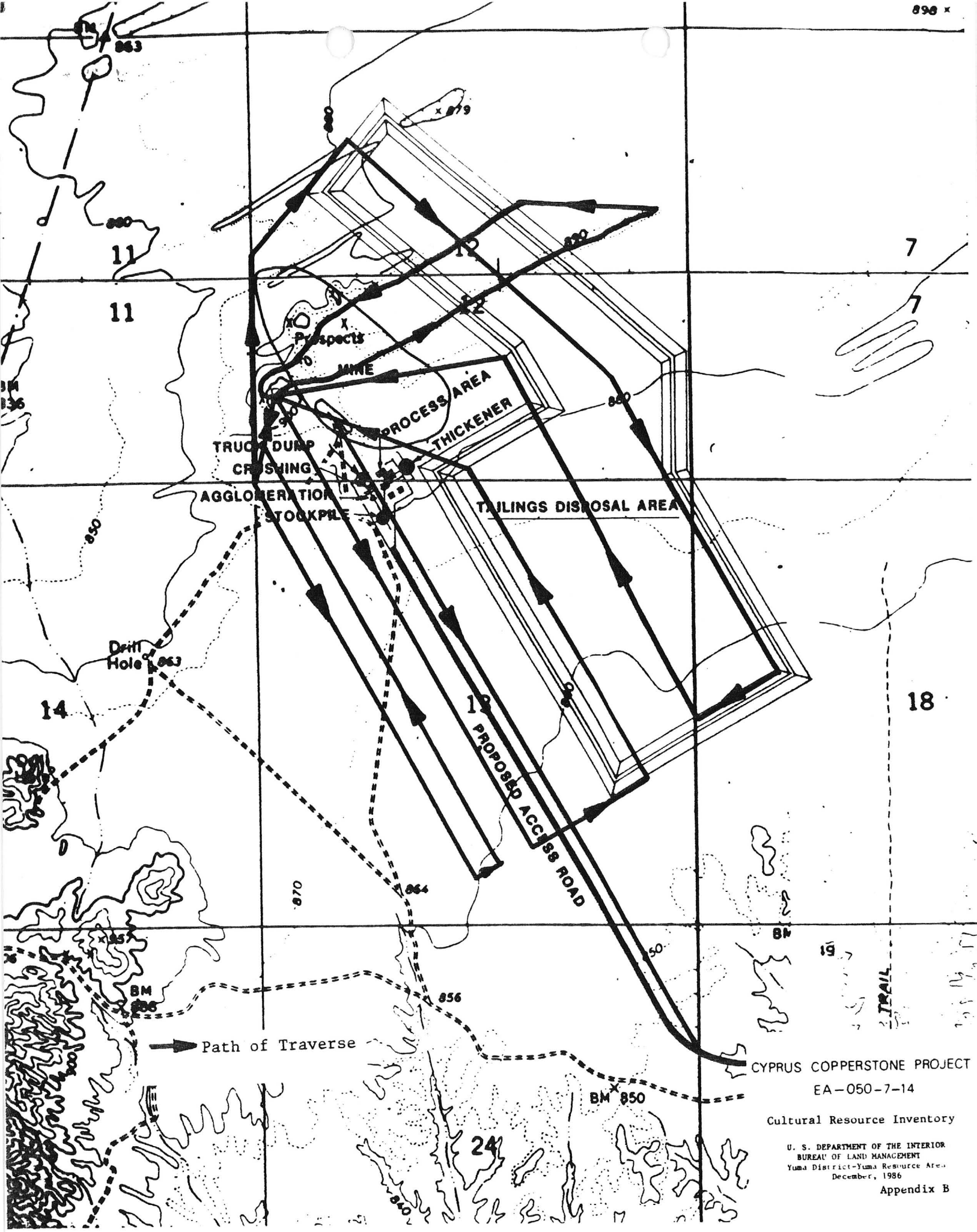
Attachments:

Comments: For further information, see cultural resource field inventory report # 103-260-86-26.

Maps Submitted		Coordinated w/Ops. Div.		Project is Feasible		Coordinated w/Res. Div.		Stipulation Provisions
(YES)	(NO)	(YES)	(NO)	(YES)	(NO)	(YES)	(NO)	(YES)

Darrell Sanchez

Archaeologist



CYPRUS COPPERSTONE PROJECT

EA-050-7-14

Cultural Resource Inventory

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Yuma District-Yuma Resource Area
December, 1986

Appendix B

Joe

85815400

COPPERSTONE (#)

STATE MINE INSPECTOR

NOV 22 1985

Office of State Mine Inspector

705 West Wing, Capitol Building
Phoenix, Arizona 85007
602-255-5971

DECEIVED

FEB 17 1986

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with Arizona Revised Statute Section 27-303* we are submitting this written notice to the Arizona State Mine Inspector (705 West Wing, Capitol Building, Phoenix, Arizona 85007) of our intent to start/stop (please circle one) a mining operation.

COMPANY NAME Cyprus Metals Co.

CHIEF OFFICER Kenneth Barr, president

COMPANY ADDRESS P.O. Box 3299, ENGLEWOOD, COLORADO 80155

COMPANY TELEPHONE NUMBER (303) 740-5623

~~MINE OR PLANT~~ Prospect NAME Copperstone prospect on federal land

MINE OR PLANT LOCATION (including county and nearest town, as well as directions for locating by vehicle)

Copperstone gold prospect, La Paz County, Arizona about 16 miles South of Parker. Milepost 21 about 10 mi N. of Quartzite on US 95, then 6 miles west on dirt road

TYPE OF OPERATION drilling PRINCIPAL ~~PRODUCT~~ target gold

STARTING DATE Jan 1986 CLOSING DATE May 1986

DURATION OF OPERATION 4 months.

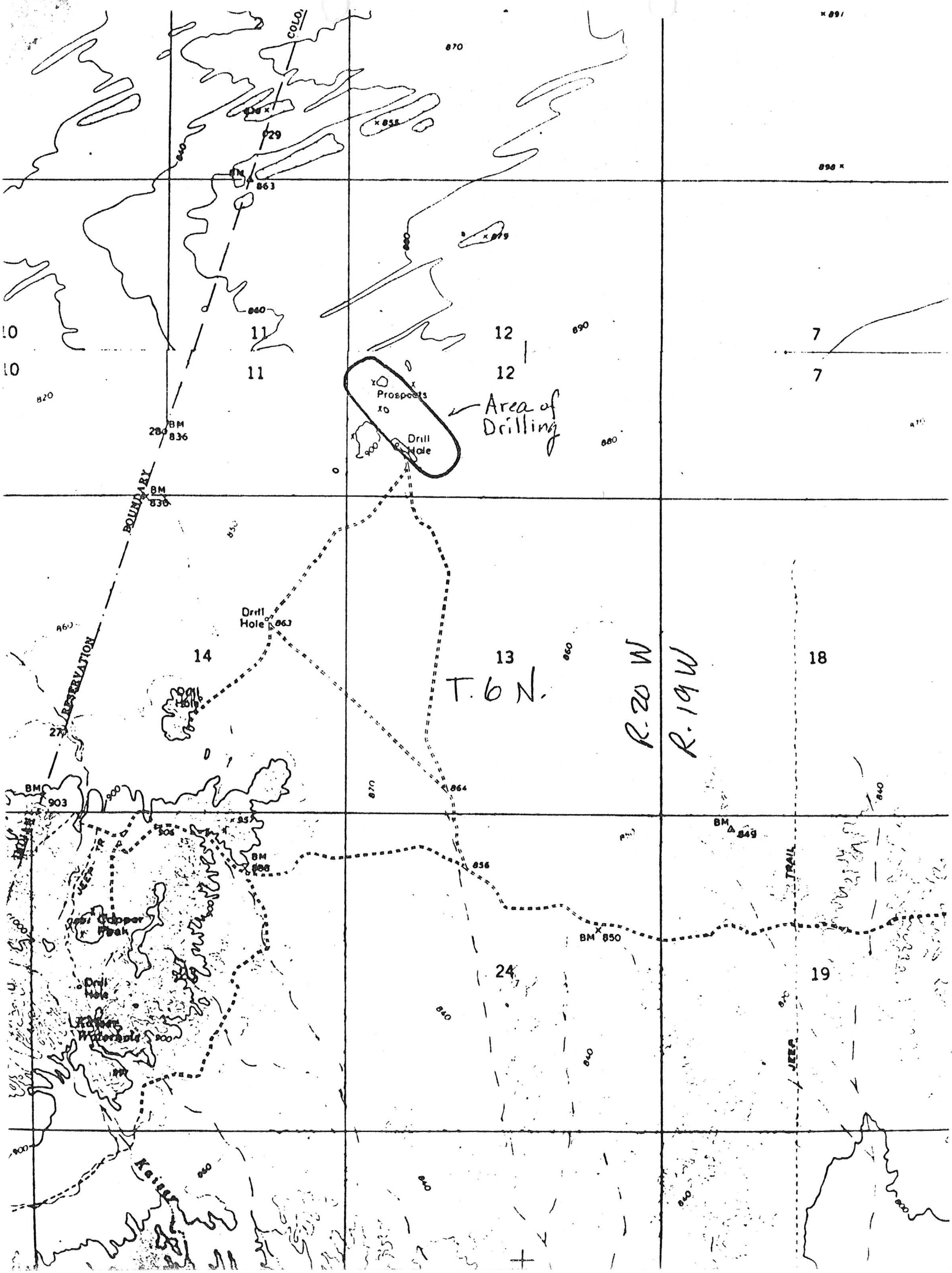
PERSON SENDING THIS NOTICE Ron Graichen

TITLE OF PERSON SENDING THIS NOTICE Senior Geologist

DATE NOTICE SENT TO STATE MINE INSPECTOR Nov. 18, 1985

*A.R.S. Section 27-303 NOTIFICATION TO INSPECTOR OF BEGINNING OR SUSPENDING OPERATIONS: When mining operations are commenced in any mine or when operations therein are permanently suspended, the operator shall give written notice to the inspector at his office prior to commencement or suspension of operations.

2/80


COLO.
870
891
858
929
898
BM
863
879
840
880
10
11
12
7
890
Prospects
Drill Hole
Area of Drilling
820
BM 836
280
BOUNDARY
RESERVATION
Drill Hole
863
14
13
18
T. 6 N.
R. 20 W
R. 19 W
864
BM 903
900
BM 849
856
TRAIL
BM 850
24
19
Copper Peak
Drill Hole
JEEP

GEOLOGY AND MINERALIZATION OF THE COPPERSTONE GOLD DEPOSIT, LA PAZ COUNTY, ARIZONA

Ronald E. Graichen and William D. Burton, Cyprus Minerals Company

Cyprus' new Copperstone gold deposit was discovered beneath alluvial cover at the north end of the Dome Rock Mountains in Western Arizona. A 30° dipping tabular breccia zone occurs in weakly metamorphosed Jurassic welded tuff. Specular hematite-quartz-amethyst veining is spatially associated with hydrothermal breccia containing specular hematite, quartz, amethyst, magnetite, barite, calcite and chrysocolla. Gold is associated with both breccia mineralization and veining. The 20- to 100-foot thick gold zone is 2,500 feet in strike length. Open pit reserves to 300 feet are 4.0 million tons of 0.08 ounce per ton gold with a 6:1 strip ratio.

Attn: Rusal

Joe

STATE MINE INSPECTOR

Office of State Mine Inspector

MAY 24 1985

705 West Wing, Capitol Building
Phoenix, Arizona 85007
602-255-5971

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with Arizona Revised Statute Section 27-303* we are submitting this written notice to the Arizona State Mine Inspector (705 West Wing, Capitol Building, Phoenix, Arizona 85007) of our intent to start/stop (please circle one) a mining operation.

COMPANY NAME Amoco Minerals Company

CHIEF OFFICER Kenneth Darr, President

COMPANY ADDRESS P.O. Box 3986

COMPANY TELEPHONE NUMBER (303)- 7405623

~~MINE OR PLANT~~ Prospect NAME Copperstone prospect on state land held by prospecting permit

MINE OR PLANT LOCATION (including county and nearest town, as well as directions for locating by vehicle)

Copperstone gold prospect, La Paz County, Arizona, about 40 miles south of Parker (see attached map). We plan to drill two rotary holes, each about 300 feet, for assessment purposes. Section 6 T, T6N, R19W

TYPE OF OPERATION assessment drilling PRINCIPAL ~~PRODUCT~~ target gold

STARTING DATE May 29 CLOSING DATE May 31

DURATION OF OPERATION 3 days

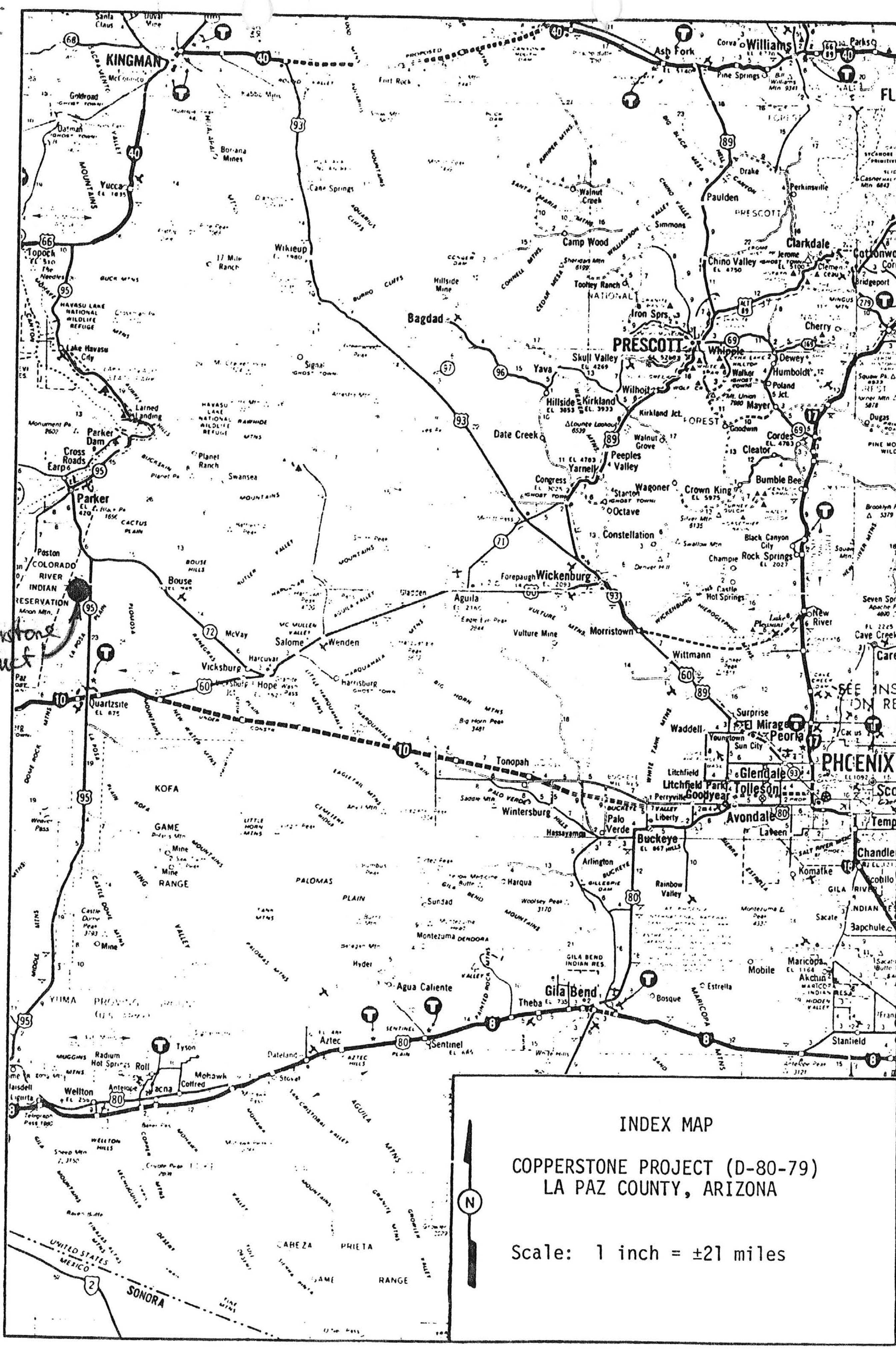
PERSON SENDING THIS NOTICE Bill Barton

TITLE OF PERSON SENDING THIS NOTICE Regional Geologist

DATE NOTICE SENT TO STATE MINE INSPECTOR May 23, 1985

*A.R.S. Section 27-303 NOTIFICATION TO INSPECTOR OF BEGINNING OR SUSPENDING OPERATIONS: When mining operations are commenced in any mine or when operations therein are permanently suspended, the operator shall give written notice to the inspector at his office prior to commencement or suspension of operations.

COPPERSTONE FILE



United States Department of the Interior

OFFICE OF HEARINGS AND APPEALS
INTERIOR BOARD OF LAND APPEALS
4015 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22203

AMOCO MINERALS CO.

IBLA 83-919 Decided May 15, 1984

Appeal from a decision of the Arizona State Office, Bureau of Land Management, declaring mining claims null and void ab initio, some in part and some in whole. A MC 144903, A MC 144904, A MC 144910, A MC 144911, A MC 144917, A MC 144918, A MC 164428, A MC 164439, A MC 164448, A MC 187304 through A MC 187330.

Affirmed in part, reversed in part.

1. Mining Claims: Lands Subject to—Mining Claims: Withdrawn Land—School Lands: Indemnity Selections—State Selections

   A mining claim wholly located on land which has been segregated from mineral location by the filing of a state school land indemnity selection application is properly declared null and void ab initio.

2. Applications and Entries: Amendments—Applications and Entries: Filing—Mining Claims: Lands Subject to—School Lands: Indemnity Selections—Segregation—State Selections

   When Arizona filed its original application for selection of land as part of its entitlement to compensation for deficiencies for school trust lands pursuant to its enabling act, the Department did not have segregation authority to protect the selections. During the promulgation of 43 CFR 2091.2-6, Arizona submitted a request to have the previous applications withdrawn, consolidated, and amended to include additional lands. This will be deemed a reapplication under the circumstances of this case, the filing of which enabled the Department to segregate the lands described therein under 43 CFR 2091.2-6. Mining claims subsequently initiated on lands that were segregated by the reapplication were properly declared null and void ab initio.

3. Mining Claims: Lands Subject to—Mining Claims: Location—Mining Claims: Lode Claims

   If the discovery on which location of a lode mining claim is based is on unappropriated land, exterior

INDEX CODE:
43 CFR 2091.2-6

> boundary lines may be laid within or across the surface of withdrawn or segregated land, solely for the purpose of claiming unappropriated ground within the end lines to secure the extralateral rights to lode deposits apexing in the unappropriated portion of the claim. Therefore, those portions of the claims thus situated on the segregated lands are not properly declared null and void ab initio.

APPEARANCES: Ralph W. Godell, Esq., Englewood, Colorado, for Amoco Minerals Company, appellant; Fritz L. Goreham, Esq., Department of the Interior, Office of the Field Solicitor, Phoenix, Arizona, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE STUEBING

Amoco Minerals Company (Amoco) appeals from a decision of the Arizona State Office, Bureau of Land Management (BLM), dated July 25, 1983, declaring certain of its Copperstone mining claims null and void ab initio, some in part and some in whole, because they are situated on land which became segregated from entry under the mining laws by the filing of State school land indemnity selection application A 17000 prior to the location of those claims.

This appeal involves lands within secs. 6 and 7, T. 6 N., R. 19 W., Gila and Salt River meridian, La Paz County, Arizona. On February 20, 1981, the State of Arizona filed, pursuant to 43 U.S.C. §§ 851, 852 (1976), a school land indemnity selection application, A 16473, which included the two subject sections. Under the provisions of the statutes, a state may acquire public lands in lieu of certain school lands which were encumbered by other rights or reservations before the state's title could attach, or were otherwise unavailable. Prior to August 1981, while such indemnity applications were being processed, the lands selected were considered open to application or entry under the various public land laws. To eliminate situations where conflicting rights could be established before the selected lands were clear listed to the state making application, the Department promulgated 43 CFR 2091.2-6, effective August 27, 1981. See 46 FR 38508 (July 28, 1981). The regulation provides in pertinent part:

> The filing of an application for selection under the provisions of Subpart 2621 of this title [State indemnity selections] shall segregrate the lands described in the application from settlement, sale, locations or entry under the public lands laws, including the mining laws * * * The segregrative effect of the selection applications on the public lands shall terminate upon issuance of a document of conveyance to such lands, or upon publication in the Federal Register of a notice of termination of the segregation or the expiration of 2 years from the date of the filing of the selection application, whichever occurs first.

Notice of application A 17000, consolidating lands listed in some previously filed applications, including A 16473, with other selected lands, and its August 27, 1981, segregation was provided in 46 FR 49953-49955 (Oct. 8, 1981). On November 24, 1981, BLM posted on the appropriate public land tract

index that secs. 6 and 7 were segregated from the mining laws. On certain BLM records the application's filing date was designated as October 31, 1980, which is the date of the first filing made by Arizona.

Meanwhile, Amoco entered upon the subject lands. On September 14, 1981, it located Copperstone 120, 121, 127, 128, 134, and 135, and filed with BLM the recorded notices on December 9, 1981. Copperstone 121, 128, and 135 are situated wholly within sec. 7, while Copperstone 120, 127, and 134 are partially within the section.

On February 25, 1982, Amoco located Copperstone 172 through 183 and 192 through 209, and filed the recorded notices on April 26, 1982. Of these claims, Copperstone 172, 183, and 192 are partially within secs. 6 and 7, while the remainder are totally within their boundaries.

On November 12, 1982, BLM received from Amoco recorded amended notices for Copperstone 172, 183, and 192 (thereafter designated 172A, 183A, and 192A) and recorded notices for Copperstone 173R through 182R and 193R through 209R. The lands located under Copperstone 173R through 182R and 193R through 209R are the same lands as located under Copperstone 173 through 182 and 193 through 209, respectively, but the notices differ in that the stated date of location for the latter claims is November 1, 1982. These latter notices did not mention the former locations and, consequently, they were assigned separate claim numbers. The amended notices for Copperstone 172A, 183A, and 192A were filed for the stated purpose of including additional lands. However, none of these differed from the original notices in their land descriptions.

On July 25, 1983, BLM declared Copperstone 121, 128, 135, 173 through 182, 193 through 209, 173R through 182R, and 193R through 209R null and void ab initio, and Copperstone 120, 127, 134, 172A, and 192A null and void in part as to those portions located on lands within secs. 6 and 7. 1/ Its decision was based on all the claims having been located after the subject lands were closed to mineral entry on August 27, 1981. The subject lands were "clear listed" (conveyed) to the State of Arizona on August 23, 1983.

[1] It is well established that mining claims wholly located on lands which were segregated and closed to entry under the mining laws are properly declared null and void ab initio. O. Glenn Oliver, 73 IBLA 56 (1983);[a] J & B Mining Co., 69 IBLA 73 (1982).[b]

1/ Appellant and BLM stipulated that the following claims are properly the subject of this appeal:

Copperstone 120 - A MC 144903
Copperstone 121 - A MC 144904
Copperstone 127 - A MC 144910
Copperstone 128 - A MC 144911
Copperstone 134 - A MC 144917
Copperstone 135 - A MC 144918
Copperstone 172A - A MC 164428
Copperstone 173R through 182R - A MC 187304 through A MC 187313
Copperstone 183A - A MC 164439
Copperstone 192A - A MC 164448
Copperstone 193R through 209R - A MC 187314 through A MC 187330

a) GFS(MIN) 123(1983)
b) GFS(MIN) 7(1983)

While it is not disputed that the subject lands were at some time closed to mineral entry, Amoco challenges BLM's decision that the segregation under 43 CFR 2091.2-6 remained effective beyond October 31, 1982. 2/ Amoco and BLM's respective arguments focus on a particular date when the subject lands, they assert, would have reopened to entry under the provisions of the regulation. Amoco relies on one record which reflects the application date of A 17000 as October 31, 1980. Another record indicates that the first application covering secs. 6 and 7, A 16473, was received on February 20, 1981. Yet, BLM argues that the 2-year segregation expired August 27, 1983.

[2] When the Department promulgated 43 CFR 2091.2-6, effective August 27, 1981, it explained, "The intent of the rulemaking is to expedite the in-lieu selection program through early segregation of lands desired by the State." 46 FR 38508 (July 28, 1981). The language of the regulation is clearly designed to apply the 2-year segregation period prospectively, for as of August 27, 1981, the Department was authorized to segregate lands upon the filing of an application for state in-lieu selections. See Leo Rhea Partnership, 80 IBLA 1 (1984).[c]

The action of the Department in this case also reveals that the Department thought it appropriate to apply the segregation authority to pending applications which had been consolidated and amended. There is some precedent for the Department's posture. In State of Alaska, 73 I.D. 1 (1966), aff'd sub nom. Udall v. Kalerack, 396 F.2d 746 (9th Cir. 1968), cert. denied, 393 U.S. 1118 (1968), the Department determined that where an amendment to an Alaska selection application was made during a time period when the lands applied for were open to selection, even though the original application had been filed when the land was withdrawn, the amended application could be deemed the refiling of the original selection and the State's rights were determined as though the original selection had been filed then. The Department looked to the fact that the State had at all times shown its intention to acquire the selected lands, while also looking at the public policy and public interest involved.

In the subject case, the State of Arizona filed applications for selection beginning in October 31, 1980, and extending over a staggered period as particular area determinations were made. All of those applications were filed prior to the promulgation of 43 CFR 2091.2-6. Thus, the Solicitor's office accurately noted that the Arizona in-lieu selection program was operating "at a peril since right up to the date of 'clear list' an entry could be made on the selected lands and deter the selection program" (Answer at 1). Then, during the time the segregation regulation was being promulgated, Arizona requested that all but five of the previous applications be withdrawn and consolidated with additional lands into a new application A 17000. On October 8, 1981, BLM published the notice of A 17000, which had consolidated the previous applications with additional lands. 46 FR 49953 (Oct. 8, 1981).

2/ Amoco bases its appeal of BLM's decision on its assertion that "the Copperstone mining claims in question were located on or after November 1, 1982." That statement is only partially correct. While Copperstone 173R through 182R, and 193R through 209R were located on that date, all the other claims in question were located prior in time.

c) GFS(MIN) 69(1984)

land was segregated. Accordingly, BLM properly held them null and void to the extent they were wholly situated on the segregated lands. 4/

[3] BLM, however, also declared Coppertone 120, 127, 134, 172A, and 192A null and void ab initio as to those portions of the claims on the segregated lands within secs. 6 and 7. This Board has recently held that a different rule applies where lode mining claims are only partially located on lands which were segregated and closed to entry under the mining laws. We ruled that "a locator whose discovery is on lands open to location may extend the end lines and side lines of his claim across patented or withdrawn land to define the extralateral rights to lodes or veins which apex within the claim." Marilyn Dutton Hansen, 79 IBLA 214 (1984).[d] See Santa Fe Mining Co., 79 IBLA 48 (1984).[e] This principle permits development of appropriated minerals in irregular parcels of land in compliance with the statutory requirement for parallel end lines (30 U.S.C. § 23 (1976)). The Hidee Gold Mining Co., 30 L.D. 420 (1901). See Del Monte Mining Co. v. Last Chance Mining Co., 171 U.S. 55 (1898). The exterior boundary lines may be laid within or across the surface of withdrawn (or segregated) land, however, solely for the purpose of claiming unappropriated ground to secure the extralateral rights to the lode deposit. Consequently, BLM improperly held those claims null and void ab initio as to those portions of the claims situated on the segregated lands within secs. 6 and 7. However, it must be understood that appellant has acquired no rights in the surface or mineral estate of the land segregated and conveyed to the State of Arizona.

BLM, therefore, should not attempt to adjudicate the validity of such partially projected lode claims, except in the context of a mining claim contest.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision is affirmed as to those claims located entirely within the area affected by the segregation, and reversed as to those claims only partly intruding the segregated area.

Edward W. Stuebing
Administrative Judge

We concur:

Bruce R. Harris
Administrative Judge

R. W. Mullen
Administrative Judge

4/ In order for a mining claim to be valid the discovery upon which the claim is based must be on lands open to mineral entry. If none of the lands are open to mineral entry the claim was never perfected. See El Paso Co. v. McKnight, 233 U.S. 250, 251 (1914).

d) GFS(MIN) 54(1984)
e) GFS(MIN) 48(1984)

The notice stated that the lands described, which included the subject lands, had been segregated from settlement, sale, locations, or entry under the public land laws, including the mining laws, as of August 27, 1981.

Under the circumstances of this case, application A 17000 is deemed a reapplication, a refiling of the original applications which enabled the Department to segregate the lands described therein under 43 CFR 2091.2-6. The publication of the notice of application A 17000, and the segregation of the described lands, properly complied with the requirement of the regulation.

To construe the circumstances of this case and the segregation regulation in this manner comports with the intent of the Department when it promulgated the segregation regulation to protect the in-lieu selection program. Further, it promotes the sound policy consideration of meeting the Federal Government's obligation to the State of Arizona. In 1980 Arizona was entitled to several hundred thousand acres in deficiencies for school trust lands pursuant to its enabling act. The Federal Government, committed to resolve the deficiency, was able to "clear list" the subject lands to Arizona on August 23, 1983. This conveyance was part of an effective transfer program which resulted in the Department meeting its committment by giving Arizona title to 187,930 acres in 1981-83. It obviously is in the public interest for the Department to meet its obligations to a sovereign State in satisfaction of the State's lawful entitlement.

Since the transfer occurred on August 23, 1983, the segregation ended at that time. 3/ See 43 CFR 2091.2-6. Amoco located the subject mining claims between September 14, 1981, and November 1982, during the time the

3/ A regulation should be construed in a way which provides for its utilization. Applying the segregative effect of 43 CFR 2091.2-6 retroactively to the date an in-lieu selection application was originally filed, could interfere with valid rights established by third parties in the interim when the lands were, in fact, open. Or, saying, as do appellants, that the regulation applies back to the 1980 application to start the running of time on the 2-year segregation, but that the segregative effect can only operate as of Aug. 27, 1981, would result in a segregation of the involved lands for less than 2 years, and would frustrate its intended purpose. Both constructions reach equally unaccceptable results—one eliminates third party rights and the other ignores the language of the regulation, and allows the very kind of pre-emption that the regulation was written to prevent. The comments written with the final rulemaking confirm that the public is advised of the 2-year segregation at the beginning of the period of segregation and, therefore, publication at the expiration of that 2-year period is unnecessary since the public can figure the 2 years from the segregation date published in the notice. See 46 FR 38508 (July 28, 1981). The notice in the subject case identified the segregation date as Aug. 27, 1981. Therefore, the 2-year segregation ends 2 years from the August date unless, as occurred in the subject case, the land is conveyed prior to the expiration of 2 years or a Federal Register notice which terminates the segregation is published prior to the running of 2 years.

United States Department of the Interior

OFFICE OF HEARINGS AND APPEALS
INTERIOR BOARD OF LAND APPEALS
4015 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22203

AMOCO MINERALS CO.

IBLA 83-919 Decided May 15, 1984

Appeal from a decision of the Arizona State Office, Bureau of Land Management, declaring mining claims null and void ab initio, some in part and some in whole. A MC 144903, A MC 144904, A MC 144910, A MC 144911, A MC 144917, A MC 144918, A MC 164428, A MC 164439, A MC 164448, A MC 187304 through A MC 187330.

Affirmed in part, reversed in part.

1. Mining Claims: Lands Subject to—Mining Claims: Withdrawn Land—School Lands: Indemnity Selections—State Selections

   A mining claim wholly located on land which has been segregated from mineral location by the filing of a state school land indemnity selection application is properly declared null and void ab initio.

2. Applications and Entries: Amendments—Applications and Entries: Filing—Mining Claims: Lands Subject to—School Lands: Indemnity Selections—Segregation—State Selections

   When Arizona filed its original application for selection of land as part of its entitlement to compensation for deficiencies for school trust lands pursuant to its enabling act, the Department did not have segregation authority to protect the selections. During the promulgation of 43 CFR 2091.2-6, Arizona submitted a request to have the previous applications withdrawn, consolidated, and amended to include additional lands. This will be deemed a reapplication under the circumstances of this case, the filing of which enabled the Department to segregate the lands described therein under 43 CFR 2091.2-6. Mining claims subsequently initiated on lands that were segregated by the reapplication were properly declared null and void ab initio.

3. Mining Claims: Lands Subject to—Mining Claims: Location—Mining Claims: Lode Claims

   If the discovery on which location of a lode mining claim is based is on unappropriated land, exterior

INDEX CODE:
43 CFR 2091.2-6

> boundary lines may be laid within or across the surface of withdrawn or segregated land, solely for the purpose of claiming unappropriated ground within the end lines to secure the extralateral rights to lode deposits apexing in the unappropriated portion of the claim. Therefore, those portions of the claims thus situated on the segregated lands are not properly declared null and void ab initio.

APPEARANCES: Ralph W. Godell, Esq., Englewood, Colorado, for Amoco Minerals Company, appellant; Fritz L. Goreham, Esq., Department of the Interior, Office of the Field Solicitor, Phoenix, Arizona, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE STUEBING

Amoco Minerals Company (Amoco) appeals from a decision of the Arizona State Office, Bureau of Land Management (BLM), dated July 25, 1983, declaring certain of its Copperstone mining claims null and void ab initio, some in part and some in whole, because they are situated on land which became segregated from entry under the mining laws by the filing of State school land indemnity selection application A 17000 prior to the location of those claims.

This appeal involves lands within secs. 6 and 7, T. 6 N., R. 19 W., Gila and Salt River meridian, La Paz County, Arizona. On February 20, 1981, the State of Arizona filed, pursuant to 43 U.S.C. §§ 851, 852 (1976), a school land indemnity selection application, A 16473, which included the two subject sections. Under the provisions of the statutes, a state may acquire public lands in lieu of certain school lands which were encumbered by other rights or reservations before the state's title could attach, or were otherwise unavailable. Prior to August 1981, while such indemnity applications were being processed, the lands selected were considered open to application or entry under the various public land laws. To eliminate situations where conflicting rights could be established before the selected lands were clear listed to the state making application, the Department promulgated 43 CFR 2091.2-6, effective August 27, 1981. See 46 FR 38508 (July 28, 1981). The regulation provides in pertinent part:

> The filing of an application for selection under the provisions of Subpart 2621 of this title [State indemnity selections] shall segregrate the lands described in the application from settlement, sale, locations or entry under the public lands laws, including the mining laws * * * The segregrative effect of the selection applications on the public lands shall terminate upon issuance of a document of conveyance to such lands, or upon publication in the Federal Register of a notice of termination of the segregation or the expiration of 2 years from the date of the filing of the selection application, whichever occurs first.

Notice of application A 17000, consolidating lands listed in some previously filed applications, including A 16473, with other selected lands, and its August 27, 1981, segregation was provided in 46 FR 49953-49955 (Oct. 8, 1981). On November 24, 1981, BLM posted on the appropriate public land tract

index that secs. 6 and 7 were segregated from the mining laws. On certain BLM records the application's filing date was designated as October 31, 1980, which is the date of the first filing made by Arizona.

Meanwhile, Amoco entered upon the subject lands. On September 14, 1981, it located Copperstone 120, 121, 127, 128, 134, and 135, and filed with BLM the recorded notices on December 9, 1981. Copperstone 121, 128, and 135 are situated wholly within sec. 7, while Copperstone 120, 127, and 134 are partially within the section.

On February 25, 1982, Amoco located Copperstone 172 through 183 and 192 through 209, and filed the recorded notices on April 26, 1982. Of these claims, Copperstone 172, 183, and 192 are partially within secs. 6 and 7, while the remainder are totally within their boundaries.

On November 12, 1982, BLM received from Amoco recorded amended notices for Copperstone 172, 183, and 192 (thereafter designated 172A, 183A, and 192A) and recorded notices for Copperstone 173R through 182R and 193R through 209R. The lands located under Copperstone 173R through 182R and 193R through 209R are the same lands as located under Copperstone 173 through 182 and 193 through 209, respectively, but the notices differ in that the stated date of location for the latter claims is November 1, 1982. These latter notices did not mention the former locations and, consequently, they were assigned separate claim numbers. The amended notices for Copperstone 172A, 183A, and 192A were filed for the stated purpose of including additional lands. However, none of these differed from the original notices in their land descriptions.

On July 25, 1983, BLM declared Copperstone 121, 128, 135, 173 through 182, 193 through 209, 173R through 182R, and 193R through 209R null and void ab initio, and Copperstone 120, 127, 134, 172A, and 192A null and void in part as to those portions located on lands within secs. 6 and 7. 1/ Its decision was based on all the claims having been located after the subject lands were closed to mineral entry on August 27, 1981. The subject lands were "clear listed" (conveyed) to the State of Arizona on August 23, 1983.

[1] It is well established that mining claims wholly located on lands which were segregated and closed to entry under the mining laws are properly declared null and void ab initio. O. Glenn Oliver, 73 IBLA 56 (1983);[a] J & B Mining Co., 69 IBLA 73 (1982).[b]

1/ Appellant and BLM stipulated that the following claims are properly the subject of this appeal:

Copperstone 120 - A MC 144903	Copperstone 121 - A MC 144904
Copperstone 127 - A MC 144910	Copperstone 128 - A MC 144911
Copperstone 134 - A MC 144917	Copperstone 135 - A MC 144918

Copperstone 172A - A MC 164428
Copperstone 173R through 182R - A MC 187304 through A MC 187313
Copperstone 183A - A MC 164439
Copperstone 192A - A MC 164448
Copperstone 193R through 209R - A MC 187314 through A MC 187330

a) GFS(MIN) 123(1983)
b) GFS(MIN) 7(1983)

While it is not disputed that the subject lands were at some time closed to mineral entry, Amoco challenges BLM's decision that the segregation under 43 CFR 2091.2-6 remained effective beyond October 31, 1982. 2/ Amoco and BLM's respective arguments focus on a particular date when the subject lands, they assert, would have reopened to entry under the provisions of the regulation. Amoco relies on one record which reflects the application date of A 17000 as October 31, 1980. Another record indicates that the first application covering secs. 6 and 7, A 16473, was received on February 20, 1981. Yet, BLM argues that the 2-year segregation expired August 27, 1983.

[2] When the Department promulgated 43 CFR 2091.2-6, effective August 27, 1981, it explained, "The intent of the rulemaking is to expedite the in-lieu selection program through early segregation of lands desired by the State." 46 FR 38508 (July 28, 1981). The language of the regulation is clearly designed to apply the 2-year segregation period prospectively, for as of August 27, 1981, the Department was authorized to segregate lands upon the filing of an application for state in-lieu selections. See Leo Rhea Partnership, 80 IBLA 1 (1984).[c]

The action of the Department in this case also reveals that the Department thought it appropriate to apply the segregation authority to pending applications which had been consolidated and amended. There is some precedent for the Department's posture. In State of Alaska, 73 I.D. 1 (1966), aff'd sub nom. Udall v. Kalerack, 396 F.2d 746 (9th Cir. 1968), cert. denied, 393 U.S. 1118 (1968), the Department determined that where an amendment to an Alaska selection application was made during a time period when the lands applied for were open to selection, even though the original application had been filed when the land was withdrawn, the amended application could be deemed the refiling of the original selection and the State's rights were determined as though the original selection had been filed then. The Department looked to the fact that the State had at all times shown its intention to acquire the selected lands, while also looking at the public policy and public interest involved.

In the subject case, the State of Arizona filed applications for selection beginning in October 31, 1980, and extending over a staggered period as particular area determinations were made. All of those applications were filed prior to the promulgation of 43 CFR 2091.2-6. Thus, the Solicitor's office accurately noted that the Arizona in-lieu selection program was operating "at a peril since right up to the date of 'clear list' an entry could be made on the selected lands and deter the selection program" (Answer at 1). Then, during the time the segregation regulation was being promulgated, Arizona requested that all but five of the previous applications be withdrawn and consolidated with additional lands into a new application A 17000. On October 8, 1981, BLM published the notice of A 17000, which had consolidated the previous applications with additional lands. 46 FR 49953 (Oct. 8, 1981).

2/ Amoco bases its appeal of BLM's decision on its assertion that "the Copperstone mining claims in question were located on or after November 1, 1982." That statement is only partially correct. While Copperstone 173R through 182R, and 193R through 209R were located on that date, all the other claims in question were located prior in time.

c) GFS(MIN) 69(1984)

land was segregated. Accordingly, BLM properly held them null and void to the extent they were wholly situated on the segregated lands. 4/

[3] BLM, however, also declared Coppertone 120, 127, 134, 172A, and 192A null and void ab initio as to those portions of the claims on the segregated lands within secs. 6 and 7. This Board has recently held that a different rule applies where lode mining claims are only partially located on lands which were segregated and closed to entry under the mining laws. We ruled that "a locator whose discovery is on lands open to location may extend the end lines and side lines of his claim across patented or withdrawn land to define the extralateral rights to lodes or veins which apex within the claim." Marilyn Dutton Hansen, 79 IBLA 214 (1984).[d] See Santa Fe Mining Co., 79 IBLA 48 (1984).[e] This principle permits development of appropriated minerals in irregular parcels of land in compliance with the statutory requirement for parallel end lines (30 U.S.C. § 23 (1976)). The Hidee Gold Mining Co., 30 L.D. 420 (1901). See Del Monte Mining Co. v. Last Chance Mining Co., 171 U.S. 55 (1898). The exterior boundary lines may be laid within or across the surface of withdrawn (or segregated) land, however, solely for the purpose of claiming unappropriated ground to secure the extralateral rights to the lode deposit. Consequently, BLM improperly held those claims null and void ab initio as to those portions of the claims situated on the segregated lands within secs. 6 and 7. However, it must be understood that appellant has acquired no rights in the surface or mineral estate of the land segregated and conveyed to the State of Arizona.

BLM, therefore, should not attempt to adjudicate the validity of such partially projected lode claims, except in the context of a mining claim contest.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision is affirmed as to those claims located entirely within the area affected by the segregation, and reversed as to those claims only partly intruding the segregated area.

Edward W. Stuebing
Administrative Judge

We concur:

Bruce R. Harris
Administrative Judge

R. W. Mullen
Administrative Judge

4/ In order for a mining claim to be valid the discovery upon which the claim is based must be on lands open to mineral entry. If none of the lands are open to mineral entry the claim was never perfected. See El Paso Co. v. McKnight, 233 U.S. 250, 251 (1914).

d) GFS(MIN) 54(1984)
e) GFS(MIN) 48(1984)

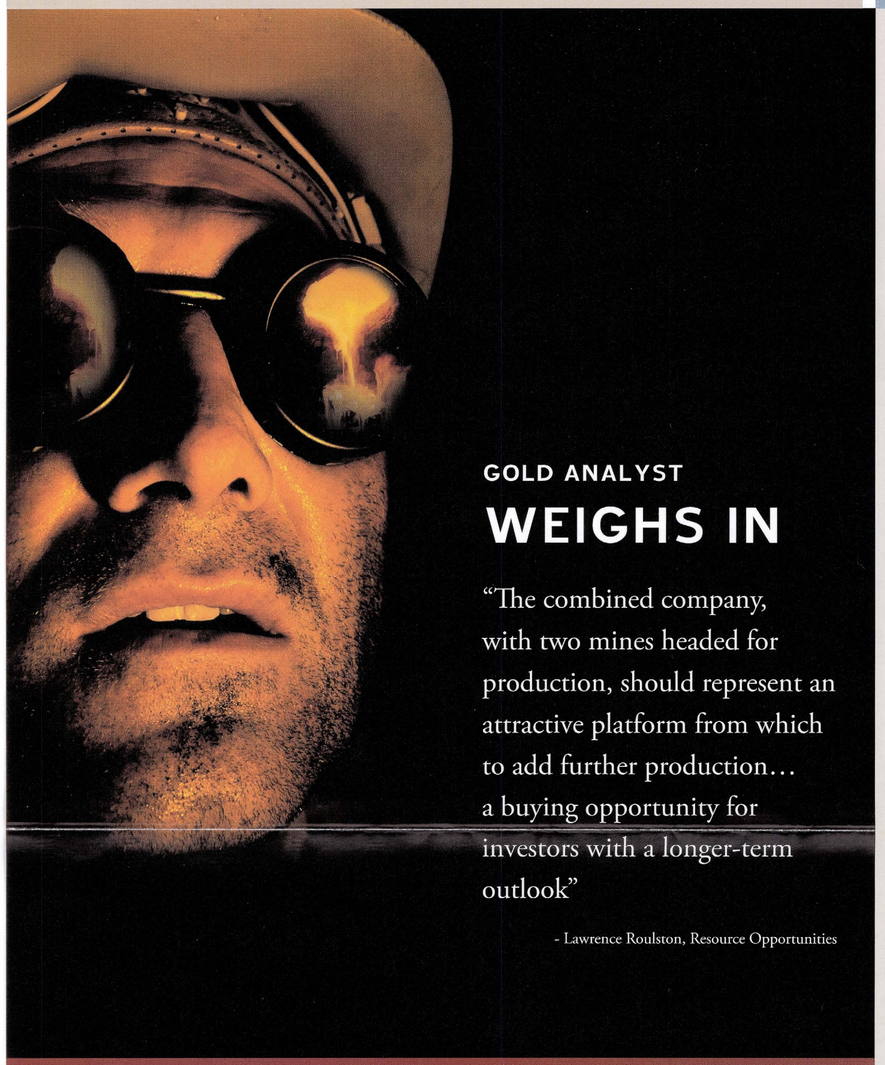
The notice stated that the lands described, which included the subject lands, had been segregated from settlement, sale, locations, or entry under the public land laws, including the mining laws, as of August 27, 1981.

Under the circumstances of this case, application A 17000 is deemed a reapplication, a refiling of the original applications which enabled the Department to segregate the lands described therein under 43 CFR 2091.2-6. The publication of the notice of application A 17000, and the segregation of the described lands, properly complied with the requirement of the regulation.

To construe the circumstances of this case and the segregation regulation in this manner comports with the intent of the Department when it promulgated the segregation regulation to protect the in-lieu selection program. Further, it promotes the sound policy consideration of meeting the Federal Government's obligation to the State of Arizona. In 1980 Arizona was entitled to several hundred thousand acres in deficiencies for school trust lands pursuant to its enabling act. The Federal Government, committed to resolve the deficiency, was able to "clear list" the subject lands to Arizona on August 23, 1983. This conveyance was part of an effective transfer program which resulted in the Department meeting its committment by giving Arizona title to 187,930 acres in 1981-83. It obviously is in the public interest for the Department to meet its obligations to a sovereign State in satisfaction of the State's lawful entitlement.

Since the transfer occurred on August 23, 1983, the segregation ended at that time. 3/ See 43 CFR 2091.2-6. Amoco located the subject mining claims between September 14, 1981, and November 1982, during the time the

3/ A regulation should be construed in a way which provides for its utilization. Applying the segregative effect of 43 CFR 2091.2-6 retroactively to the date an in-lieu selection application was originally filed, could interfere with valid rights established by third parties in the interim when the lands were, in fact, open. Or, saying, as do appellants, that the regulation applies back to the 1980 application to start the running of time on the 2-year segregation, but that the segregative effect can only operate as of Aug. 27, 1981, would result in a segregation of the involved lands for less than 2 years, and would frustrate its intended purpose. Both constructions reach equally unaccceptable results--one eliminates third party rights and the other ignores the language of the regulation, and allows the very kind of pre-emption that the regulation was written to prevent. The comments written with the final rulemaking confirm that the public is advised of the 2-year segregation at the beginning of the period of segregation and, therefore, publication at the expiration of that 2-year period is unnecessary since the public can figure the 2 years from the segregation date published in the notice. See 46 FR 38508 (July 28, 1981). The notice in the subject case identified the segregation date as Aug. 27, 1981. Therefore, the 2-year segregation ends 2 years from the August date unless, as occurred in the subject case, the land is conveyed prior to the expiration of 2 years or a Federal Register notice which terminates the segregation is published prior to the running of 2 years.



GOLD ANALYST

WEIGHS IN

"The combined company, with two mines headed for production, should represent an attractive platform from which to add further production… a buying opportunity for investors with a longer-term outlook"

- Lawrence Roulston, Resource Opportunities

Our Word, Our Bond: Maximizing Share Value

With the support of our shareholders, we can combine the management talents of Bonanza and Taurus to move the new company to a higher level of operations and market visibility.

The new company will immediately work to complete the development programs designed for its near-term gold producers at Copperstone and Fenelon. We will continue to acquire projects that can be quickly and economically advanced to the production stage, preferably those with the potential to provide quick cash flow and a generous net return on overall investment. To minimize risk and costs over the next few years, North America will continue to be the focus of our operations and acquisitions.

In all ventures, our aim is to serve our shareholders. Our success will be measured by the returns we create and the values we attain.

Brian Kirwin, MSc.
President & Chief Executive Officer
American Bonanza Gold Mining Corp

William H. Bird, Ph.D., PGeo.
President & Chief Executive Officer
International Taurus Resources Inc.

AN ELEGANT CONSOLIDATION OF FENELON OWNERSHIP

The proposed merger also combines various Fenelon interests into one, more substantial entity. On November 23, 2004, Taurus and its Fenelon joint venture partner Fairstar Explorations announced they had agreed to transfer Fairstar's 38 per cent interest in the Fenelon project and other Casa Berardi properties to the new company. Consideration for these interests is the issuance of 6.5 million common shares of the new company and a cash payment of CDN$300,000 to Fairstar. These transactions will resolve the existing Fenelon litigation between Fairstar and Taurus. The new company will then hold a 100 per cent ownership interest in the Fenelon project

LOGISTICS FOR THE TRANSITION TO THE NEW COMPANY

Materials for the shareholders' meetings will be prepared and mailed on February 28, 2005. The shareholders' meetings for each of the companies are scheduled for March 24, 2005. The proposed business combination is to be completed by way of a statutory Plan of Arrangement. The Toronto Stock Exchange has conditionally agreed to list the common shares of the new company subject to fulfillment of certain general listing requirements which are expected to be met in conjunction with the completion of the merger.

Check the Taurus and Bonanza websites for updates through the transition period:

www.americanbonanza.com
OR
www.taurusresources.com

BREAKING NEWS

As an underground drilling program nears completion at Copperstone, Bonanza is reporting fantastic drill intercepts, including a 10.5 metre zone grading 36.4 g/t gold, with 3.2 metres of 89.0 g/t gold; a 3.9 metre zone grading 47.1 g/t gold; and a 5.7 metre zone grading 1.6 g/t gold and 6.8 percent copper. Check Bonanza's website for complete drill results.

MANY MORE HIGH-GRADE INTERCEPTS HAVE BEEN REPORTED BY BONANZA AND ARE FULLY DESCRIBED ON OUR WEBSITE AT WWW.AMERICANBONANZA.COM.

THE DATA PRESENTED HERE SHOULD BE READ ALONG WITH THE FULL DISCLOSURE AVAILABLE ON BONANZA'S WEBSITE.

A NEW GOLD ALLIANCE AND A BULL'S BONANZA

Vote "Yes"

Double your gold investment by voting in favor of the proposed merger. For further information on corporate developments, including the proposed merger, please contact:

Catherine Tanaka,
Investor Relations, 604-688-7523

Wayne Marsden,
Investor Relations, (877) 366-4464
(888) 827-6611

American Bonanza Gold Mining Corp

INTERNATIONAL TAURUS RESOURCES INC

MERGER INFORMATION

eMERGING TIMES

No.01, 2005

CHARGING FORWARD

INVESTING IN THE FUTURE

CORPORATE COMBINATION

A BONANZA FOR GOLD BULLS

American Bonanza Gold Mining Corp. (TSX Venture: BZA) and **International Taurus Resources Inc.** (TSX Venture: ITS), as announced on November 23, 2004 and confirmed with an executed Arrangement Agreement on December 21, 2004, are seeking shareholder approval to form a new, merged company. This new company, to be named **American Bonanza Gold Corp.**, offers shareholders the value of two exceptional gold project portfolios for one investment.

Over the past few years, both Bonanza and Taurus have succeeded in building solid junior-resource exploration companies. Bonanza is engaged in the acquisition, exploration and development of high-grade precious metals properties in Arizona and Nevada. Its most notable project is Copperstone in Arizona, where a significant development-drilling program is underway to estimate reserves and explore for additional resources. Taurus has assembled a significant portfolio of near-production and exploration gold properties, including the high-grade Fenelon gold deposit, in the Casa Berardi area of northwestern Quebec.

Both companies have worked diligently to assemble the financial and technical resources to advance their projects. The proposed merger signals a near-term move to the next level in corporate development. The newly formed company will move rapidly to develop both Copperstone and Fenelon. Several other highly prospective exploration projects await and the new company is set to establish itself as a mid-tier gold company with ever-expanding exploration interests.

BROADER MARKET INTEREST TO BOOST SHAREHOLDER VALUE

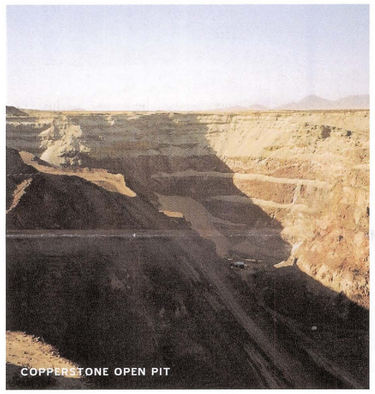
The planned merger of Bonanza and Taurus will forge a company with complete and competent management, solid financing, managed exploration risk and near-term cash-flow potential. The new company will attract broader analyst coverage and investor interest and gain access to a much larger group of funding sources. This will reduce the cost of capital and improve liquidity and value for shareholders. With this kind of momentum, the new company will be able to pursue investment by major institutions and acquire a listing on the Toronto Stock Exchange. A listing on the Toronto Stock Exchange has already been conditionally approved, subject to the completion of the merger. The added visibility and credibility will propel it toward new opportunities, including favourable joint-venture opportunities.

Most investors are aware that market size is a vital component of corporate sustainability. Small companies struggle to stay afloat, while larger companies can withstand the ebb and flow of market cycles. The proposed merger, with its impact in terms of size and holdings, will garner sufficient strength for the new company to flourish in fluctuating markets and outperform its peers in the current gold bull market, which is expected to continue.

MINE DEVELOPMENT IS PRIMARY OBJECTIVE

Bonanza's Copperstone property and Taurus' Fenelon property are two of the best near-term production, high-grade gold properties in North America. There potentials are similar. Since acquisition, through drilling and underground workings, these properties have been established as potential world-class mines. The next stage of evaluation will comprise the work programs required to complete bankable feasibility studies. This work will focus on reserve and resource definition, metallurgical testing, environmental and geo-technical studies and detailed estimates of the capital and operating costs.

Bonanza's Copperstone property is one of the best near-term, high-grade gold properties in North America. Since acquisition, Bonanza has, through drilling and underground workings, established and greatly improved the value of the property and its potential to become a world-class mine.


COPPERSTONE OPEN PIT

- As reviewed by the Mine Development Associates (MDA) report, the Preliminary Assessment by MRDI/Golder Associates estimates the resources for the C and D zones using capped grades as: an Indicated Resource containing 892,000 tons grading 0.32 opt Au (285,700 ounces of gold) plus an additional Inferred Resource containing 1.19 million tons grading 0.35 opt Au (423,000 ounces of gold). This February 1999 Preliminary Assessment by MRDI/Golder Associates is a "Preliminary Assessment" as defined by National Instrument 43-101.

- As reviewed by the MDA report, MRDI's uncapped resource estimate for these same zones is comprised of 2.1 million tons grading 0.58 opt Au, exceeding 1.2 million ounces of contained gold. The uncapped resource was estimated by MRDI for comparison purposes, providing an estimate of the affects of capping the gold grades.

- Within the Indicated and Inferred Resources, MRDI estimated "resources available for mining" as a total of 827,400 tons grading 0.56 opt Au (using capped, diluted grades, this equal 459,000 ounces of gold). Annual gold production in year one is forecast to be 156,000 ounces, with 72,000 ounces of production forecast for years two through five. All of these resource estimates by MRDI are not mineral reserves, are based on conceptual mine modeling, and have not yet been shown to be economically viable.

The new company's short-term plans for Fenelon are to extensively expand the Fenelon resource through underground and surface drilling. This is to be followed by the completion of a feasibility study to support a production decision. Fenelon is a key factor in the new company's plans to produce over 100,000 ounces of gold per year in the near term.

MERGER HIGHLIGHTS

THE NEW COMPANY:

Will have a strong balance sheet with approximately $10 million in cash.

Will be led by an experienced, entrepreneurial management team, which has excellent financial connections with analysts, brokers, investment bankers and other institutions.

Will have near-term, high-grade gold production potential at the Copperstone project in Arizona with a planned production decision in 2005.

Will have near-term production growth potential through the development of the high-grade Fenelon gold project in Quebec and the large Taurus gold project in British Columbia.

Will have several USA and Canada gold projects with excellent exploration potential. The combined portfolios will provide for a greater spread of exploration risk.

Will have the technical resources and personnel to advance its projects on several fronts simultaneously.

Merger Q&A

Two Mines are Better than One

Q Why merge now?

A Both companies have reached a classic growth decision: whether to soldier solo and continue their painstaking progress or to combine troops and make a giant leap forward. With our gold projects nearing production, merging companies would translate into a more productive deployment of financial, technical and management resources and a more energetic growth trajectory.

Q What are the financial benefits of merging the two entities?

A Cost savings from combined management, overheads, listing and regulatory fees, shared engineering and geological project administration staff, and capital cost containment through improved financing opportunities.

Q What will the new company do to ensure an increase in shareholder value?

A The new entity will launch an extensive program to communicate the company's enhanced investment potential and aggressively pursue its exploration and development plans.

Q Will the new company be pursuing other mergers/acquisitions?

A The new company intends to seek out complmentary projects requiring superior geological and financial expertise which will add to the company's future profit potential.

Q Does the new company intend to elevate its existing listing from the TSX-Venture exchange?

A The Toronto Stock Exchange has conditionally agreed to list the common shares of the new company subject to fulfillment of certain general listing requirements which are expected to be met in conjunction with the completion of the merger.

Q Aren't shareholders losing some stock?

A Again, a classic dilemma: do you want a large piece of a small pie, or a smaller piece of an entire delicatessen? This proposed merger provides immediate equity appreciation in the form of tangible assets; going forward, management fully expects returns to be commensurate with the new company's anticipated accelerated growth.

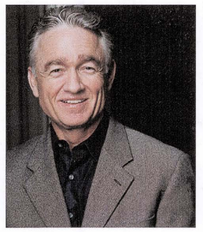
Management is unanimously in support of the proposed merger and urges shareholders to vote "YES" on the proposed corporate combination.

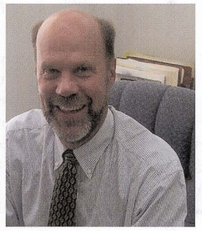
ASK US ABOUT THE MERGER

Management Team Expects Smooth Transition


Brian Kirwin, MSc.
will serve the new company as President and Chief Executive Officer.


William H. Bird, PhD, PGeo
Taurus's President and Chief Executive Officer, will serve as Vice President, Canadian Operations, of the new company.


Ian Telfer
Chairman and CEO of Wheaton River Minerals Ltd. will serve as an advisor to the board of directors.


Robert B. Blakestad, PGeo
will serve as an advisor to the board of directors.

Both companies have management teams that are highly regarded in the mining industry, and the new gold company is expected to benefit from the combined teams' wide range of technical and business experience, especially in exploration, development and production project management. The current boards of both companies are proposing to appoint Brian Kirwin as the President and Chief Executive Officer of the new company. His executive team will include Mr. Giulio T. Bonifacio as Executive Vice President and Chief Financial Officer, Mr. Joe Kircher as Vice President, Chief Operating Officer, and Dr. William Bird, Taurus' current President, as Vice President, Canadian Operations.

Brian P. Kirwin, MSc, will serve the new company as President and Chief Executive Officer. He is the former Vice President of Exploration of Vengold (1997-2000) and served in various senior capacities for Placer Dome between 1990 and 1997. His 20-year career has seen him involved in all aspects of international exploration evaluating deposits, mines and investment conditions worldwide. He is credited with three satellite deposit discoveries on advanced projects in Nevada.

Giulio T. Bonifacio, CGA, the former Vice President Finance and Secretary of Vengold Inc., will serve as Executive Vice President and Chief Financial Officer. He has been a professional accountant for over 22 years in the mining industry. The new company will benefit greatly from his in-depth knowledge of financial, regulatory and acquisition related matters as it continues to execute its growth strategy.

Joe G. Kircher will serve as Vice President, Chief Operating Officer. He is a mining engineer with 23 years of gold-sector experience, the last 17 years in executive or general manager positions. At Kinross Gold Corp. he served as General Manager with oversight of seven mines. Prior to Kinross, he was Vice President of Operations for Dakota Mining Corp. and for seven years was Vice President of Operations at Consolidated Nevada Goldfields. Mr. Kircher has extensive hands-on operations management experience at both open-pit and underground mine complexes. He has built three gold mines from the ground up.

William H. Bird, PhD, PGeo, Taurus's President and Chief Executive Officer, will serve as Vice President, Canadian Operations, of the new company. He has over 35 years of experience in the mining industry, mainly in the Americas. He has been on the board and served as an executive of several successful publicly traded resource companies. He is respected for his technical, financial and administrative abilities and he is credited with the property acquisition and exploration of two gold producers. Mr. Bird received his PhD in geology from the Colorado School of Mines (USA) and he is a registered Professional Geologist with the Association of Professional Engineers and Geoscientists of British Columbia.

THE BOARD OF DIRECTORS OF THE NEW COMPANY WILL CONSIST OF BRIAN P. KIRWIN, GIULIO T. BONIFACIO, ROBERT MCKNIGHT, RONALD NETOLITZKY, JIM BAGWELL, DON LAY AND CARL RAVINSKY.

Robert McKnight, a Professional Engineer and MBA with over 25 years of experience in the resource business, has a wealth of knowledge in project finance, mergers and acquisitions, feasibility studies and valuations. He has served as Vice President of Finance and Corporate Development for Expatriate Resources Ltd. and StrataGold Corporation since February 2004. Previously, he was Manager of Financial Services of AMEC Mining & Energy; Vice President of Pincock Allen & Holt Ltd.; Director and Principal of Endeavour Financial Corporation; and prior thereto held various senior corporate development roles with TOTAL CFP Group Minerals.

Ronald K. Netolitzky will contribute invaluable experience in the mining industry, having achieved exploration success on three major gold deposits which have subsequently been put into production: the Snip, Eskay Creek and Brewery Creek mines. Mr. Netolitzky holds a Bachelor of Science degree from the University of Alberta and a Master of Science degree from the University of Calgary, both in Geology. He was previously Chairman of Viceroy Resources Corporation after serving as its President and Chief Executive Officer. Mr. Netolitzky is also the former Chairman of both Loki Gold Corporation and Baja Gold Inc.

James F. Bagwell is a co-founder of EnviroGas and currently serves as its Chief Executive Officer. He is also co-founder of CEEWHY A FARMS, Inc., a hydroponics operation in Tampa, Florida and a founding partner of Global Service Group, L.C., a Tampa-based international consulting firm, where he specializes in the formation of management of international business trusts. Previously, he served as Vice President and CFO for a privately owned wholesale distributor where he helped grow revenues to approximately $170 million. He is presently a director of Taurus.

Don Lay has over 20 years experience in high-tech and financial areas and is a partner in One Degree Capital Corp., a Vancouver-based corporate finance boutique formed to provide finance and advisory services to emerging companies. Mr. Lay has held a variety of management, sales and technical positions in the enterprise software arena, with firms that include SAS Institute and Dun & Brad Street Software. Mr. Lay is a director of Taurus; Medallion Resources Ltd., a mineral resource junior; Contec Innovations, a global provider of mobile data infrastructure; and privately held China MobileSoft Ltd., a leading Chinese embedded software firm delivering component and platform solutions to major Chinese handset manufacturers.

Carl Ravinsky, Mr. Ravinsky has had extensive experience in the financing of junior resource corporations and has acted as legal counsel to Fairstar Explorations Inc. since April, 1993. Mr. Ravinsky is a lawyer with a Montreal based legal firm and is qualified to practice law in Quebec, Ontario and Alberta.

ADVISORS TO THE BOARD OF DIRECTORS INCLUDE:

Ian Telfer, Chairman and CEO of Wheaton River Minerals Ltd., with over 30 years experience in the mining industry. As a founding director of TVX, he served as its President and CEO during the first ten years and has also held positions as a Director of Lihir Gold and as President and CEO of Vengold Inc. In these capacities, Mr. Telfer has raised well over $1 billion for mining exploration and development around the world.

Robert B. Blakestad, PGeo, who most recently served as President & CEO of Taurus, resigned to take a senior position with Apex Silver Mines Limited. Before joining Taurus, he served as Vice President, Exploration for Amax Gold Inc. and held management positions with Homestake Mining Company and Cypress Amax Minerals Company. He is credited, mainly through his exploration activities, with the discovery and acquisition of deposits containing more than 10 million ounces of gold. Five of these discoveries have been developed into mines.