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Vol. 8, Bk. 17

TOMBSTONE

**Mining District
Cochise Co., AZ**

**Environmental
Clean-up & Monitoring
TEI Operation**

M E M O

TO: James A. Briscoe
FROM: Robert J. Macer
DATE: October 12, 1993
RE: Organization of TEI/CSM/PBR/TDC/ADEQ Environmental Volumes.

Jim:

All environmental materials in hand dealing with TDC's Tombstone property have been organized into five volumes. In the front of each volume is a chronological listing of the contents. All of the materials have also been entered into a bibliographic database for purpose of ready access in finding specific materials. Since this compilation was a four-fold accumulation process, the materials are a bit spread out between each of volumes. Consequently, enclosed with this memo is a complete chronological listing of every item in all five volumes, and a listing of the <data type codes> used in the database.

Sincerely,



Robert J. Macer

RJM:rjm13.93
Enclosures

Data Type Codes Used in Database for Environmental Materials

action+ profile
analysis quotation
billing letter
carbon analysis
chain of custody
cover letter
cyanide analyses
cyanide literature
demand letter
draft letter
drilling contract
drilling intent notice
drilling invoice
drilling quote
drilling report
fax
fax letter
fax memo
fax note
field summary report
geochemical report
geohydrologic report
graph
groundwater permit
hearing transcript
impoundment pad map
lab analyses
land & water well map
leach pad analyses
letter
letter report
meeting notes
memo
monthly report
newspaper article
note
notes
notice of disposal
ore analysis
ore assay
pad neutralization log
permit proposal
phone notes
pond analyses
pond maps
pond sample analyses
press release
quality control plan
quarterly report
sample plan
self-monitoring report
site inspection report
slimes assays
tailings analysis
tailings pond analyses
tailings sample analysis
water & sediment assays
water analyses
water analysis report
water quality report
water report
water sample analysis
water well testing
weekly report letter
well driller report
well sampling log

- 08/23/75 <newspaper article> [8:17:3] Negri, Sam., Contamination threat closes one water well in Tombstone.
- 08/25/75 <newspaper article> [8:17:4] St. Cyr, Chuck., Sewage Danger Getting Worse In Tombstone.
- 12/28/83 <letter> [8:24:1-3] Lindeman, John E., Letter To: Lee, Robert G. Cyanide Spill of November 7, 1983.
- 01/10/84 <water sample analysis> [8:24:4-9] Smith & Smith.,
Water Quality Analysis for samples DWW #1, TWW #1-2, LWW #1, CWW #2-3.
- 01/23/84 <analysis quotation> [8:24:12] Amalfi, Rick., Laboratory Analysis Request and Fee Quotation.
- 01/23/84 <letter> [8:24:10-11] Devereaux, Stephen B., Letter To: Lee, Robert G.
Confirmation of discussions outlining sampling and monitoring program.
- 01/30/84 <letter> [8:24:13] Lindroos, Gary A., Letter To: Rendes, Andrew M. Implementation of water sampling program.
- 03/22/84 <water & sediment assays> [8:24:14-16] Amalfi, Frederick A., Water and Sediment Analysis.
- 03/22/84 <water analysis> [8:24:17-19] Amalfi, Frederick A., Water Analysis.
- 04/23/84 <cyanide analysis> [8:24:20-23] Amalfi, Frederick A., Cyanide Analysis.
- 05/24/84 <memo> [8:24:24] Lindroos, Gary A., Letter To: Schloss, Thomas. Cyanide Spill.
- 06/29/84 <water analysis> [8:24:125] Atkinson, Beth., Inorganic Chemical Analysis Reporting Form.
- 07/02/84 <cover letter> [8:24:25] Lindroos, Gary A., Letter To: Doughty, Allen.
Enclosure of water well and sediment samples for analysis.
- 07/24/84 <weekly report letter> [8:24:126-127] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of July 16-22, 1984.
- 07/27/84 <cover letter> [8:24:26] Lindroos, Gary A., Letter To: Western Technology.
Enclosure of water well samples for analysis.
- 07/31/84 <cover letter> [8:24:27] Lindroos, Gary A., Letter To: Western Technology.
Enclosure of water well samples for analysis.
- 08/01/84 <weekly report letter> [8:24:128] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of July 23-31, 1984.
- 08/31/84 <weekly report letter> [8:24:130] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of August 25-31, 1984.
- 09/10/84 <weekly report letter> [8:24:131] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of September 1-7, 1984.
- 09/17/84 <weekly report letter> [8:24:132] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of September 8-14, 1984.
- 09/21/84 <weekly report letter> [8:24:133] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of September 15-21, 1984.
- 09/28/84 <weekly report letter> [8:24:134] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of September 22-28, 1984.
- 10/05/84 <weekly report letter> [8:24:135] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of September 29 to October 5, 1984.
- 10/17/84 <water analysis> [8:24:136-137] Hoppe, Steven P., Laboratory Report - Water Sample Analysis.
- 10/19/84 <weekly report letter> [8:24:138] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of October 14-19, 1984.
- 10/29/84 <weekly report letter> [8:24:139] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of October 20-26, 1984.
- 11/09/84 <weekly report letter> [8:24:140] Lee, Bob G., Letter To: Martin, Eddie.
Report on TEI, Inc. well water samples for the week of November 3-9, 1984.
- 03/29/85 <memo> [8:17:5-6] Gordon, Arthur J., Letter To: Kennett, Roger.
Tombstone Exploration, Inc. (TEI) NOD.
- 09/05/85 <water sample analysis> [8:17:264] Smith & Smith., Water Quality Analysis - City of Tombstone Well #1.
- 09/05/85 <water sample analysis> [8:17:265] Smith & Smith., Water Quality Analysis - City of Tombstone Well #2.
- 09/05/85 <water sample analysis> [8:17:266] Smith & Smith., Water Quality Analysis - City of Tombstone Well #3.
- 09/08/85 <water well testing> [8:17:120] T.D.C., Log of Tests on TDC Wells #1 & #2 to Determine Amount of Cyanide Therein.
- 10/11/85 <water report> [8:25:79-118] Montano, Manuel T.,
Water Distribution System Analysis and Master Plan for the City of Tombstone, Arizona.
- 03/28/86 <letter> [8:24:28-29] Traywick, Ben T. and Gradillas, Alex., Letter To: Cochise Co. Health Dept.
The many headed Hydra monster "cyanide contamination" has reared its head.
- 04/28/86 <permit proposal> [8:17:9-33] Larson, Scott M., Tombstone Development Mining Operation Preliminary Permit Proposal.
- 05/08/86 <memo> [8:17:7-8] Gordon, Arthur J., Letter To: Kennett, Roger.
Tombstone Development Proposal for Permit Application.
- 06/02/86 <cover letter> [8:24:35] Columbus, Wm. L., Letter To: Escapule, Dustin.
Enclosure of two "Applications for Installation Permit" forms.
- 06/02/86 <letter> [8:24:30-31] Kennett, Roger., Letter To: Magini, Frank.
Contention Mine; Cochise Silver Mines, Site Inspection.

- 06/02/86 <site inspection report> [8:24:32-34] Kennett, Roger.,
Report of Site Inspection, Contention Mine (Tombstone); Cochise Silver Mines.
- 06/03/86 <letter> [8:24:36] Magini, Frank., Letter To: Kennett, Roger.
Response to your letter dated June 2, 1986. [Draft]
- 01/09/87 <groundwater permit> [8:17:98-118] Dover, Boyd., Groundwater Quality Protection Permit No. G-0011-02.
- 01/19/87 <well sampling log> [8:18:1-39] Lindroos, Gary A., Well Sampling Log Book - 1/19/87 thru 6/15/89.
- 01/27/87 <memo> [8:24:37] Lind, Audrey M., Letter To: Magini Contracting.
Cost to analyze water samples and required payment.
- 02/02/87 <cover letter> [8:24:38] Lindroos, Gary A., Letter To: Arizona Testing Lab.
Enclosure of well samples and "Self-Monitoring Form".
- 02/18/87 <self-monitoring report> [8:24:141-144] Drake, Robert J.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Well and Tap Water.
- 03/12/87 <letter> [8:24:39] Kennett, Roger., Letter To: Lindroos, Gary A.
Cochise Silver Mines, Inc., Groundwater Quality Protection Permit No. G-0011-02.
- 03/25/87 <water sample analysis> [8:17:197-199] Davis, Thomas S., Laboratory Report - TEI Well #2.
- 03/27/87 <water sample analysis> [8:17:267-269] Davis, Thomas S., Laboratory Reports - City of Tombstone Well #1, 3/17 to 6/2, 1987.
- 04/01/87 <pond maps> [8:18:134-136,331] Graves, A. J., Maps of cyanide solution ponds showing sampling stations.
- 04/06/87 <self-monitoring report> [8:24:145-148] Drake, Robert J.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Well and Tap Water.
- 04/28/87 <memo> [8:17:34] Rendes, Andrew., Letter To: Kennett, Roger.
Cochise Silver Mine Groundwater Quality Protection Permit No. G-0011-02.
- 05/01/87 <tailings analysis> [8:18:54-56] Lindroos, Gary A., Assay of Sandscreen Discharge - by Bottle Roll.
- 05/06/87 <cover letter> [8:24:40] Zimmerman, Jeffrey C., Letter To: Harper, Raymond. Enclosed Environmental Law Letter.
- 05/06/87 <letter> [8:24:41-52] Zimmerman, Jeffrey C., Letter To: Harper, Raymond. Arizona Environmental Quality Act.
- 05/11/87 <tailings sample analysis> [8:18:40] Drake, Robert J., Report of Laboratory Tests - Impoundment Tailings.
- 05/12/87 <letter> [8:17:35] Lindroos, Gary A., Letter To: Rendes, Andrew. Request to remove washed tailings.
- 05/15/87 <chain of custody> [8:24:149] Lindroos, Gary A., Chain of Custody - Water Samples.
- 05/18/87 <cyanide analyses> [8:24:166] Drake, Robert J., Report of Laboratory Tests - Cyanide Sludge Cake.
- 05/19/87 <cyanide analyses> [8:24:167] Drake, Robert J., Report of Laboratory Tests - Soil.
- 05/22/87 <self-monitoring report> [8:24:150-153] Hoppe, Steven P.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Well and Tap Water.
- 05/26/87 <letter> [8:18:41] Lindroos, Gary A., Letter To: AZ Testing Lab.
Enclosure of 41 soil samples for total cyanide analysis.
- 05/29/87 <letter> [8:17:36-37] Curlett, James E., Letter To: Magini, Frank.
Request for further info and additional sampling and analysis.
- 06/03/87 <letter> [8:17:39] Lindroos, Gary A., Letter To: ADHS
Apology for being negligent in sampling for April 1987.
- 06/03/87 <memo> [8:17:38] Escapule, Dustin., Letter To: Lindroos, Gary A. Reprimand.
- 06/04/87 <slimes assays> [8:18:57] Lindroos, Gary A., Slimes Assays.
- 06/09/87 <letter> [8:17:40] Lindroos, Gary A., Letter To: Curlett, James E.
Explanation for missing April 1987 samples, and enclosure of requested additional samples.
- 06/09/87 <letter> [8:18:42] Lindroos, Gary A., Letter To: AZ Testing Lab.
Enclosure of 14 soil samples for mercury analysis.
- 06/09/87 <letter> [8:18:43] Lindroos, Gary A., Letter To: AZ Testing Lab.
Enclosure of 4 soil samples for total cyanide analysis.
- 06/12/87 <cyanide analyses> [8:24:168-169] Smith, Kathryn W., Laboratory analysis of solid impound samples.
- 06/12/87 <tailings sample analysis> [8:18:44] Drake, Robert J., Report of Laboratory Tests - Impoundment Tailings.
- 06/16/87 <self-monitoring report> [8:17:178-196] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - TEI Well #1 for 6/16/87 thru 1/12/89.
- 06/16/87 <self-monitoring report> [8:17:200-234] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - TEI Well #2 for 6/16/87 thru 1/12/89.
- 06/16/87 <self-monitoring report> [8:17:245-263] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Tap Water in Lab for 6/16/87 thru 1/12/89.
- 06/16/87 <self-monitoring report> [8:17:270-289] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - City of Tombstone Well #1 for 6/16/87 thru 1/12/89.
- 06/18/87 <cyanide analyses> [8:24:170] Smith, Kathryn W., Laboratory analysis of pregnant solution.
- 06/18/87 <cyanide analyses> [8:24:171] Smith, Kathryn W., Laboratory analysis of solid impound samples.
- 06/18/87 <letter> [8:18:45] Lindroos, Gary A., Letter To: AZ Testing Lab.
Enclosure of 4 impound tailings samples for total cyanide analysis.
- 06/18/87 <tailings sample analysis> [8:18:46-48] Drake, Robert J., Report of Laboratory Tests - Impoundment Tailings.
- 06/18/87 <tailings sample analysis> [8:18:137] Drake, Robert J., Report of Laboratory Tests - Pregnant Solution Pond.

- 06/19/87 <letter> [8:17:41] Lindroos, Gary A., Letter To: Maston, James A.
Request for approval to remove washed tailings to Houghton Pad.
- 06/23/87 <tailings sample analysis> [8:18:49] Drake, Robert J., Report of Laboratory Tests - Impoundment Tailings.
- 06/24/87 <meeting notes> [8:24:55-60] Unknown Author., Notes from State Meeting 6/24/87.
- 06/24/87 <memo> [8:24:53-54] Lindroos, Gary A., Letter To: Escapule, Dustin.
ADHS Inspection (Inspectors: Mr. Andrew Rendes, Mr. John Best).
- 06/30/87 <self-monitoring report> [8:24:154-156] Lindroos, Gary A.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Field Summary for April, May & June 1987.
- 07/01/87 <impoundment pad map> [8:24:61] Graves, A. J., Waste Containment Facilities.
- 07/01/87 <memo> [8:24:62] Rendes, Andrew M., Letter To: Maston, James A.
Site Visit to Cochise Silver Mines, Inc., Tombstone, Arizona.
- 07/02/87 <carbon analysis> [8:18:50] Smith, Kathryn W., Laboratory analysis of carbon for mercury content.
- 07/07/87 <memo> [8:17:42] Lindroos, Gary A., Letter To: Escapule, Dustin.
Extension of Impound Area and Materials Handling.
- 07/08/87 <letter> [8:17:43] Maston, James A., Letter To: Escapule, Dustin.
Confirmation of double liner for all pads, and cease order for any treatment to old tailings.
- 07/10/87 <letter> [8:17:44-45] Kennett, Roger., Letter To: Moyes, Jay I.
Cochise Silver Mines, Inc., Renewal of Permit No. G-0011-02.
- 07/10/87 <letter> [8:18:283-284] Kennett, Roger., Letter To: Moyes, Jay I.
Cochise Silver Mines, Inc., Renewal of Permit No. G-0011-02.
- 07/13/87 <lab analyses> [8:18:58-62,65-68] Lindroos, Gary A., Various analyses for cyanide of ore, slimes, tailings, and solution.
- 07/13/87 <letter> [8:18:51] Lindroos, Gary A., Letter To: AZ Testing Lab.
Enclosure of 4 ore samples for mercury analysis.
- 07/14/87 <ore analysis> [8:18:53] Smith, Kathryn W., Laboratory analysis of ore samples for mercury content.
- 07/17/87 <ore assay> [8:18:52] McLean, Claude E., Assay Certificate for mercury - ore samples.
- 07/22/87 <memo> [8:24:63] Lindroos, Gary A., Letter To: Escapule, Dustin. Inspection and Sampling by ADHS.
- 07/23/87 <letter> [8:17:46] Curlett, James E., Letter To: Lindroos, Gary A.
Enclosure of ADEQ results from February 23, 1987 sampling.
- 07/23/87 <letter> [8:23:315-316] Curlett, James E., Letter To: Lindroos, Gary A. Need to retest wells for mercury content.
- 07/24/87 <cover letter> [8:24:157] Lindroos, Gary A., Letter To: Arizona Testing Lab.
Enclosure of well and tap water samples for analysis.
- 07/29/87 <self-monitoring report> [8:24:160-163] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Well and Tap Water.
- 07/29/87 <water analysis> [8:24:158] Drake, Robert J., Report of Laboratory Tests - Water Sample Analysis.
- 07/29/87 <water analysis> [8:24:164] Drake, Robert J., Report of Laboratory Tests - Water Sample Analysis.
- 08/03/87 <letter> [8:17:47] Maston, James A., Letter To: Escapule, Dustin.
Approval for construction of staking/impounding expansion area.
- 08/05/87 <letter> [8:17:48] Lindroos, Gary A., Letter To: Curlett, James E.
Resampling of wells and mercury contamination by laboratory.
- 08/05/87 <letter> [8:24:159-164] Lindroos, Gary A., Letter To: Curlett, James E.
Reference to your letter of July 23, 1987 - resampling of wells and tap water.
- 08/06/87 <self-monitoring report> [8:17:236-241] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - TEI Well #3 for 8/6/87 thru 1/18/88.
- 08/10/87 <letter> [8:17:49] Lindroos, Gary A., Letter To: Curlett, James E. Request to move washed tailings.
- 08/18/87 <letter> [8:24:64-65] Kennett, Roger., Letter To: Escapule, Dustin.
Cochise Silver Mines, Inc., Groundwater Quality Protection Permit No. G-0011-02.
- 08/18/87 <letter> [8:24:66] Lindroos, Gary A., Letter To: Curlett, James E.
Request for approval to remove washed tailings to Houghton Pad.
- 08/19/87 <memo> [8:17:50] Lindroos, Gary A., Letter To: Escapule, Dustin. Impound Tailings Samples.
- 08/19/87 <water analyses> [8:24:165] Smith & Smith., Laboratory Results of TEI well water 8/6-19/87.
- 08/24/87 <letter> [8:17:52] Lindroos, Gary A., Letter To: Curlett, James E. Second request to move washed tailings.
- 08/24/87 <memo> [8:17:51] Lindroos, Gary A., Letter To: Escapule, Dustin. Impound Tailings Samples.
- 08/26/87 <memo> [8:17:53] Lindroos, Gary A., Letter To: Escapule, Dustin. Visit from ADEQ (Mr. John Best).
- 09/17/87 <letter> [8:17:54] Lindroos, Gary A., Letter To: Curlett, James E. Third request to move washed tailings.
- 09/23/87 <letter> [8:17:55] Lindroos, Gary A., Letter To: Curlett, James E. Fourth request to move washed tailings.
- 09/29/87 <letter> [8:17:56] Lindroos, Gary A., Letter To: Curlett, James E. Fifth request to move washed tailings.
- 10/07/87 <letter> [8:17:57] Lindroos, Gary A., Letter To: Rampe, John. Sixth request to move washed tailings.
- 10/16/87 <letter> [8:17:58] Lindroos, Gary A., Letter To: Rampe, John. Seventh request to move washed tailings.
- 10/27/87 <letter> [8:17:59] Lindroos, Gary A., Letter To: Nixon, Perry. Eighth request to move washed tailings.
- 10/30/87 <letter> [8:24:67-69] Magini, Frank., Letter To: PBR Minerals Board. Irregularities at the Tombstone mine site.

- 11/03/87 <self-monitoring report> [8:18:63] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Form - CSM Old Preg Pond.
- 11/04/87 <letter> [8:17:60] Lindroos, Gary A., Letter To: Nixon, Perry. Ninth request to move washed tailings.
- 11/05/87 <self-monitoring report> [8:18:64-65] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Form - CSM Impound West.
- 11/10/87 <letter> [8:17:61] Lindroos, Gary A., Letter To: Rampe, John. Tenth request to move washed tailings.
- 11/10/87 <self-monitoring report> [8:18:138-250] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Old Preg Pond from 11/10/87 thru 1/29/88.
- 12/15/87 <letter> [8:17:62] Maston, James A., Letter To: Lindroos, Gary A.
Reduction of free cyanide and mercury in well No. 2.
- 12/21/87 <memo> [8:17:63] Lindroos, Gary A., Letter To: Harper, Ray.
Reducing Mercury and Cyanide Concentrations in Well 2.
- 01/08/88 <pond analyses> [8:18:129-133] Lindroos, Gary A., Pond Clean-up log Book, 1/8/88 thru 7/25/88.
- 02/01/88 <tailings pond analyses> [8:18:69] Lindroos, Gary A., Cyanide analysis of various tailings pond station samples.
- 02/08/88 <letter report> [8:18:280-281] Lindroos, Gary A., Letter To: Nixon, Perry.
Results of well assays and pond clean-up.
- 02/16/88 <letter> [8:17:64] Kennett, Roger., Letter To: Moyes, Jay I.
Cochise Silver Mines, Inc., Groundwater Quality Protection Permit No. G-0011-02.
- 02/16/88 <letter> [8:18:70-71,285] Kennett, Roger., Letter To: Moyes, Jay I.
Cochise Silver Mines, Inc., Groundwater Quality Protection Permit No. G-0011-02.
- 02/19/88 <letter> [8:17:65] Moyes, Jay I., Letter To: Harper, Raymond.
Preparation of a revised version of the report assessing the cleanup operation.
- 02/19/88 <letter> [8:18:72,282] Moyes, Jay I., Letter To: Harper, Raymond.
Enclosure of letter dated February 16, 1988 from Roger Kennett.
- 03/02/88 <letter> [8:17:66-69] Escapule, Dustin., Letter To: Moyes, Jay.
Removal of contaminated materials form Old Preg Pond and Lined Pond.
- 03/02/88 <letter> [8:18:73-76,286-291] Escapule, Dustin., Letter To: Moyes, Jay.
Removal of contaminated materials form Old Preg Pond and Lined Pond.
- 03/04/88 <self-monitoring report> [8:18:261-279] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Forms - Pad Expansion East & West, 3/4/88 thru 4/20/88.
- 03/07/88 <letter report> [8:18:292-293] Escapule, Dustin., Letter To: Moyes, Jay I. Cleanup Progress Report.
- 03/31/88 <letter report> [8:18:294-299] Lindroos, Gary A., Letter To: Nixon, Perry.
Assay results for TEI Wells, City of Tombstone Well, and Tap Water.
- 04/27/88 <memo> [8:24:71] Ashworth, J. Michael., Letter To: All Employees. Temporary Plant Closure.
- 04/27/88 <press release> [8:24:70] Ashworth, J. Michael.,
Press Release - PBR Minerals to begin final testing and closure of cleanup operation.
- 05/01/88 <letter> [8:24:72] Vineyard, William L., Letter To: PBR Minerals. Proposed Leach Operation.
- 05/05/88 <letter> [8:17:121] Lindroos, Gary A., Letter To: Western Technologies. Enclosure of well samples.
- 05/16/88 <self-monitoring report> [8:17:242] Smith & Smith.,
Groundwater Quality Protection Permit Self-Monitoring Report Form - TEI Well #6.
- 05/17/88 <memo> [8:24:73] Ashworth, J. Michael., Letter To: All Suppliers. Accounts Payable.
- 06/08/88 <letter> [8:24:74-106] Rouse, Jim V., Letter To: Ashworth, Mike.
Enclosure of items for your review and input.
- 06/09/88 <water sample analysis> [8:17:122-124] Western Technologies.,
Laboratory Report - TEI Wells #1 #2, and Tombstone City Well #1.
- 06/13/88 <letter> [8:24:107-114] Escapule, Dustin L., Letter To: Rouse, Jim V.
Enclosure of filled out "Notice of Disposal" application.
- 06/14/88 <letter> [8:24:116] Ashworth, J. Michael., Letter To: All Suppliers. Trade Payables.
- 06/14/88 <letter> [8:24:115] Smith, Kathryn W., Letter To: Lindroos, Gary A.
Contaminated sample (TEI well #3) in 1987.
- 06/15/88 <geochemical report> [8:24:172-196] Unknown Author., Geochemical Evaluation of Clay-Subliner Material. [Draft]
- 06/30/88 <sample plan> [8:23:1-16] DuBois, James F., Sample Plan for PBR Minerals, Inc. Site.
- 07/01/88 <geochemical report> [8:23:97-114] Unknown Author., Geochemical Evaluation of Clay-Subliner Material.
- 07/13/88 <notice of disposal> [8:24:117-123] Lindroos, Gary A., Notice of Disposal - Grand Central Leaching Facility.
- 07/14/88 <letter> [8:17:70] Thatcher, Bruce K., Letter To: Lindroos, Gary A. ADEQ site visit.
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- 08/03/88 <geochemical report> [8:24:197-223] Unknown Author., Geochemical Evaluation of Clay-Subliner Material.
- 08/10/88 <water analyses> [8:24:129] Lindroos, Gary A., Daily analyses of TEI, Inc. well water samples for 8/1-10/84.
- 09/01/88 <quality control plan> [8:24:224-290] Unknown Author.,
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- 09/21/88 <memo> [8:17:71-94] Thatcher, Bruce K., Letter To: Kennett, Roger.
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- 09/29/88 <letter> [8:18:107-108,300-301] Kennett, Roger., Letter To: Moyes, Jay I.
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- 10/03/88 <letter> [8:18:326-327] Ashworth, J. Michael., Letter To: Rouse, Jim.
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- 10/04/88 <water quality report> [8:17:125-129] Lindroos, Gary A., Letter To: ADEQ.
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- 10/07/88 <pond sample analyses> [8:18:109-115] Lindroos, Gary A., Pond Clean-up cyanide analyses, 10/7/88 thru 10/27/88.
- 10/13/88 <letter> [8:17:130-132] Rouse, Jim V., Letter To: Kennett, Roger.
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- 11/01/88 <memo> [8:18:116-126] Lindroos, Gary A., Letter To: Ashworth, Mike. Pond Clean-up (CN Testing).
- 11/06/88 <letter> [8:18:332-335] Moyes, Jay I., Letter To: Gessner, Richard A.
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- 11/18/88 <letter> [8:18:328-329] Kennett, Roger., Letter To: Rouse, Jim V.
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- 12/02/88 <cyanide analyses> [8:18:127] Lindroos, Gary A., Cyanide analyses of wells, pond, and tailings.
- 12/09/88 <pond analyses> [8:18:128] Lindroos, Gary A., Pond Clean-up cyanide analyses.
- 12/15/88 <hearing transcript> [8:23:17-24,26-57] Landsman, Paul H.,
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- 12/18/88 <note> [8:17:119] Baxter, LaVerne., Letter To: Ashworth, Mike. Enclosure of Wells #1 & #2 testing.
- 01/12/89 <water quality report> [8:17:133-136] Lindroos, Gary A., Letter To: ADEQ.
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- 01/20/89 <groundwater permit> [8:23:338-370] Miller, Ronald L.,
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- 01/29/89 <well driller report> [8:18:336-344] Titan Drilling., Well Driller Report.
- 02/20/89 <leach pad analyses> [8:18:251-260] Lindroos, Gary A., Pad Neutralization Clean-up log Book, 2/20/89 thru 4/20/89.
- 02/20/89 <pad neutralization log> [8:23:203-208] Lindroos, Gary A., Pad 4 Neutralization Log, 2/20/89 thru 4/4/89.
- 02/23/89 <letter> [8:17:97] Ramirez, Carolyne., Letter To: Perotti, Joe.
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- 03/13/89 <letter report> [8:23:94-96] Poshard, R. Howard., Letter To: Lindroos, Gary. In-Place Density Tests, Tailings Pad.
- 03/30/89 <letter report> [8:23:91-93] Poshard, R. Howard., Letter To: Lindroos, Gary. Field Density Tests, Waste Disposal Pad.
- 04/07/89 <letter> [8:23:296] Ashworth, J. Michael., Letter To: ADEQ.
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- 04/20/89 <field summary report> [8:23:209-212] Lindroos, Gary A., Letter To: ADEQ.
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- 04/20/89 <letter> [8:23:90] Ashworth, J. Michael., Letter To: ADEQ.
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- 04/24/89 <memo> [8:24:124] Ashworth, J. Michael., Suspension of tailing leach operation.
- 05/01/89 <letter> [8:23:213] Lindroos, Gary A., Letter To: ADEQ. Results of pump test on TEI Well No. 2.
- 05/01/89 <quarterly report> [8:23:141-201] Lindroos, Gary A., Letter To: ADEQ.
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- 06/09/89 <self-monitoring report> [8:17:243-244] Hankins, S.,
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- 06/09/89 <self-monitoring report> [8:23:220-232] Hankins, S.,
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- 07/07/89 <memo> [8:23:305] Chen, Chiou-Lian., Letter To: Woodruff, David.
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- 07/13/89 <phone notes> [8:23:306] Davis, Gordon., From William Brett / Complaint.
- 07/15/89 <newspaper article> [8:23:307] Bagwell, Keith., Mercury is tainting 1 of Tombstone's 2 water wells.
- 07/18/89 <newspaper article> [8:23:308] Bagwell, Keith., Well might have had mercury for 7 months, officials tell Tombstone.
- 07/19/89 <memo> [8:23:309-314] Pulsifer, Doris., Letter To: Mayor & Council members.
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- 07/25/89 <letter report> [8:17:138-143] Rouse, Jim V., Letter To: Kennett, Roger.
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- 07/25/89 <letter report> [8:23:234-241] Rouse, Jim V., Letter To: Kennett, Roger.
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- 07/26/89 <field summary report> [8:23:214-219] Lindroos, Gary A., Letter To: ADEQ.
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- 07/27/89 <phone notes> [8:23:317] Davis, Gordon.,
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- 07/28/89 <memo> [8:23:318] Woodruff, David H., Letter To: Maston, Jim.
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- 07/28/89 <memo> [8:23:319] Woodruff, David H., Letter To: Daniel, Debra.
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- 08/01/89 <memo> [8:23:320-323] DuBois, James F., Letter To: Wiley, Bill.
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- 08/03/89 <self-monitoring report> [8:17:235] Hankins, S.,
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- 08/03/89 <self-monitoring report> [8:17:290] Hankins, S.,
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- 08/08/89 <memo> [8:23:233-241] Kennett, Roger., Letter To: Woodruff, Dave.
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- 08/09/89 <fax memo> [8:17:168-169] Rouse, Jim V., Letter To: Lindroos, Gary A. Protocol for Aquifer test.
- 08/16/89 <letter> [8:17:137] Vaught, Clark., Letter To: Lindroos, Gary A. Test pumping results as of 4-20-89.
- 08/16/89 <memo> [8:23:242-243] Rendes, Andrew M., Letter To: Woodruff, David. PBR Minerals, Inc. - Permit G-0020-02.
- 08/19/89 <letter report> [8:17:171-176] Rouse, Jim V., Letter To: Kennett, Roger.
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- 08/20/89 <fax memo> [8:17:170] Rouse, Jim V., Letter To: Lindroos, Gary A. Review Draft Aquifer Evaluation.
- 08/21/89 <fax> [8:17:166-167] Lindroos, Gary A., Letter To: Rouse, Jim V. Final Reading of TEI Well 2.
- 08/21/89 <land & water well map> [8:23:254A] Rouse, Jim V., Facility Location Map, Land Ownership, and Registered Water Wells.
- 08/21/89 <letter report> [8:23:244-254A] Rouse, Jim V., Letter To: Kennett, Roger.
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- 10/02/89 <memo> [8:23:283-285] DuBois, James F., Letter To: Woodruff, Dave.
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- 10/05/89 <memo> [8:23:87] Vandermark, Brad., Letter To: PBR Minerals.
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- 10/09/89 <fax memo> [8:17:177] Rouse, Jim V., Letter To: Lindroos, Gary A. 2 Additional Monitor Wells.
- 11/15/89 <letter> [8:23:324-337] DuBois, James F., Letter To: Perotti, Joe.
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- 01/17/90 <self-monitoring report> [8:23:286-289] American Analytical Lab.,
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- 01/23/90 <quarterly report> [8:23:115-120] Lindroos, Gary A., Letter To: ADEQ.
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- 03/20/91 <letter> [8:23:379-382] Smith, Russell A., Letter To: Ashworth, J. Michael.
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- 05/05/92 <memo> [8:17:1-2] Waldrip Jr., Thomas E., Letter To: Briscoe, James A.
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- 07/09/92 <memo> [8:23:399] Engstrom, Bill., Letter To: Kennett, Roger. Phone conversation with Jim Briscoe.
- 07/09/92 <phone notes> [8:23:400-405] Engstrom, Bill., Phone conversation with Jim Briscoe.
- 08/05/92 <letter> [8:23:413-415] Bell, Donald., Letter To: Niedfelt, Jerry.
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- 08/05/92 <letter> [8:23:416-418] Bell, Donald., Letter To: Ashworth, J. Michael.
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- 08/11/92 <memo> [8:23:420] Fox, Edward Z., Letter To: Cunningham, Patrick.
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- 08/11/92 <memo> [8:23:419] Munson, Brian., Letter To: Cunningham, Patrick.
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- 08/12/92 <phone notes> [8:23:421-422] Engstrom, Bill., Typed Phone conversation with Jim Briscoe 8/12/92, 10:30am.
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- 12/08/92 <meeting notes> [8:25:1-5] Briscoe, James A.,
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- 12/10/92 <letter> [8:25:6] Niedfelt, Jerome., Letter To: Bell, Don.
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- 12/10/92 <notes> [8:25:7] Briscoe, James A., Preliminary Plan Items.
- 12/11/92 <letter> [8:25:8-12] Bell, Donald., Letter To: Niedfelt, Jerry.
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- 12/22/92 <letter> [8:25:13] Briscoe, James A., Letter To: MacKenzie, Douglas.
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- 12/22/92 <letter> [8:25:14-15] Briscoe, James A., Letter To: Niedfelt, Jerry.
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- 12/22/92 <letter> [8:25:16-21] Briscoe, James A., Letter To: Bell, Donald G.
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- 12/23/92 <fax letter> [8:25:22-28] Bell, Donald., Letter To: Briscoe, James A. Comments to letter dated December 22, 1992.
- 12/26/92 <letter report> [8:25:29-33] Briscoe, James A., Letter To: Bell, Donald G.
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- 01/03/93 <letter report> [8:25:34] Lindroos, Gary A., Letter To: Briscoe, James A.
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- 01/05/93 <letter> [8:25:62-67] Davis, Bruce S., Letter To: Well Owner.
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- 01/12/93 <water analysis report> [8:25:35-40] American Analytical Lab., Laboratory Analysis Reports - Well Water.

- 01/21/93 <letter> [8:25:55-58] Bell, Donald., Letter To: Niedfelt, Jerry.
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- 01/21/93 <letter report> [8:25:41-53] Briscoe, James A., Letter To: Bell, Donald G.
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- 01/26/93 <graph> [8:25:54] Lindroos, Gary A.(?), TEI Well No. 2 - Graph of Nitrates Level, 1/2-25/93.
- 01/29/93 <cover letter> [8:25:59-67] Hemming, Robert F., Letter To: Briscoe, James A.
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- 02/13/93 <drilling intent notice> [8:25:68-71] Niedfelt, Jerome., Notice of Intention to Drill Monitor/Piezometer Well. [Draft]
- 02/18/93 <letter> [8:25:72-77] Davis, Bruce S., Letter To: Well Owner.
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- 02/19/93 <cover letter> [8:25:78] Briscoe, James A., Letter To: Henderson, Steve.
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- 04/01/93 <letter report> [8:25:119-120] Briscoe, James A., Letter To: Bell, Donald G.
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- 04/22/93 <drilling quote> [8:25:121] Histed, Rich., Letter To: Niedfelt, Jerry.
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- 05/13/93 <letter> [8:25:122-123] Munson, Brian E., Letter To: Ashworth, J. Michael.
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- 06/11/93 <monthly report> [8:25:124-129] Briscoe, James A., Letter To: Bell, Donald G.
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- 06/30/93 <draft letter> [8:25:130-137] Bell, Donald., Letter To: Niedfelt, Jerry.
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- 07/15/93 <demand letter> [8:25:190-213] Niedfelt, Jerome., Letter To: Gianetto, Bill.
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- 08/05/93 <drilling contract> [8:25:217-232] Histed, Rich., Letter To: Niedfelt, Jerry.
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- 08/05/93 <drilling quote> [8:25:216] Histed, Rich., Letter To: Niedfelt, Jerry.
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- 08/06/93 <action+ profile> [8:25:215] Briscoe, James A., Personal Contact Profile - Steve Henderson,
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- 08/06/93 <fax note> [8:25:214] Briscoe, James A., Letter To: Niedfelt, Jerry.
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- 08/16/93 <letter> [8:25:233-234] Briscoe, James A., Letter To: Niedfelt, Jerry.
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- 08/19/93 <drilling report> [8:25:235] Marolf, Walt W., Driller's Daily Drill Report - Hole No. TDC-1.
- 08/20/93 <drilling report> [8:25:236] Marolf, Walt W., Driller's Daily Drill Report - Hole No. TDC-1.
- 08/21/93 <drilling report> [8:25:237] Marolf, Walt W., Driller's Daily Drill Report - Hole No. TDC-1.
- 08/24/93 <letter> [8:25:238-239] Briscoe, James A., Letter To: Niedfelt, Jerry.
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- 08/30/93 <drilling invoice> [8:25:240-241] Histed, Rich., Letter To: Niedfelt, Jerry. Drilling Invoices No. 08-4056-3.
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Lindroos, Gary A. (06/09/87) Letter To: Curllett, James E.
Explanation for missing April 1987 samples, and enclosure of requested additional samples.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #59 [8:17:178-196] <self-monitoring report>
Smith & Smith. (06/16/87)
Groundwater Quality Protection Permit Self-Monitoring Report Forms - TEI Well #1 for 6/16/87 thru 1/12/89.
Smith & Smith Environmental Consultants, Sierra Vista, AZ.

Record #61 [8:17:200-234] <self-monitoring report>
Smith & Smith. (06/16/87)
Groundwater Quality Protection Permit Self-Monitoring Report Forms - TEI Well #2 for 6/16/87 thru 1/12/89.
Smith & Smith Environmental Consultants, Sierra Vista, AZ.

Record #66 [8:17:245-263] <self-monitoring report>

Smith & Smith. (06/16/87)

Groundwater Quality Protection Permit Self-Monitoring Report Forms - Tap Water in Lab
for 6/16/87 thru 1/12/89.

Smith & Smith Environmental Consultants, Sierra Vista, AZ.

Record #71 [8:17:270-289] <self-monitoring report>

Smith & Smith. (06/16/87)

Groundwater Quality Protection Permit Self-Monitoring Report Forms - City of Tombstone Well #1
for 6/16/87 thru 1/12/89.

Smith & Smith Environmental Consultants, Sierra Vista, AZ.

Record #13 [8:17:41] <letter>

Lindroos, Gary A. (06/19/87) Letter To: Maston, James A.

Request for approval to remove washed tailings to Houghton Pad.

Cochise Silver Mines, Inc., Tombstone, AZ.

Record #14 [8:17:42] <memo>

Lindroos, Gary A. (07/07/87) Letter To: Escapule, Dustin.

Extension of Impound Area and Materials Handling.

Cochise Silver Mines, Inc., Tombstone, AZ.

Record #15 [8:17:43] <letter>

Maston, James A. (07/08/87) Letter To: Escapule, Dustin.

Confirmation of double liner for all pads, and cease order for any treatment to old tailings.

Arizona Department of Environmental Quality, Tucson, AZ.

Record #16 [8:17:44-45] <letter>

Kennett, Roger. (07/10/87) Letter To: Moyes, Jay I.

Cochise Silver Mines, Inc., Renewal of Permit No. G-0011-02.

Arizona Department of Environmental Quality, Phoenix, AZ.

Record #17 [8:17:46] <letter>

Curlett, James E. (07/23/87) Letter To: Lindroos, Gary A.

Enclosure of ADEQ results from February 23, 1987 sampling.

Arizona Department of Environmental Quality, Phoenix, AZ.

Record #18 [8:17:47] <letter>

Maston, James A. (08/03/87) Letter To: Escapule, Dustin.

Approval for construction of staking/impounding expansion area.

Arizona Department of Environmental Quality, Tucson, AZ.

Record #19 [8:17:48] <letter>

Lindroos, Gary A. (08/05/87) Letter To: Curlett, James E.

Resampling of wells and mercury contamination by laboratory.

Cochise Silver Mines, Inc., Tombstone, AZ.

Record #63 [8:17:236-241] <self-monitoring report>
Smith & Smith. (08/06/87)

Groundwater Quality Protection Permit Self-Monitoring Report Forms - TEI Well #3 for 8/6/87 thru 1/18/88.
Smith & Smith Environmental Consultants, Sierra Vista, AZ.

Record #20 [8:17:49] <letter>
Lindroos, Gary A. (08/10/87) Letter To: Curlett, James E.
Request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #21 [8:17:50] <memo>
Lindroos, Gary A. (08/19/87) Letter To: Escapule, Dustin.
Impound Tailings Samples.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #23 [8:17:52] <letter>
Lindroos, Gary A. (08/24/87) Letter To: Curlett, James E.
Second request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #22 [8:17:51] <memo>
Lindroos, Gary A. (08/24/87) Letter To: Escapule, Dustin.
Impound Tailings Samples.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #24 [8:17:53] <memo>
Lindroos, Gary A. (08/26/87) Letter To: Escapule, Dustin.
Visit from ADEQ (Mr. John Best).
PBR Minerals, Inc., Tombstone, AZ.

Record #25 [8:17:54] <letter>
Lindroos, Gary A. (09/17/87) Letter To: Curlett, James E.
Third request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #26 [8:17:55] <letter>
Lindroos, Gary A. (09/23/87) Letter To: Curlett, James E.
Fourth request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #27 [8:17:56] <letter>
Lindroos, Gary A. (09/29/87) Letter To: Curlett, James E.
Fifth request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #28 [8:17:57] <letter>
Lindroos, Gary A. (10/07/87) Letter To: Rampe, John.
Sixth request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #29 [8:17:58] <letter>

Lindroos, Gary A. (10/16/87) Letter To: Rampe, John.
Seventh request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #30 [8:17:59] <letter>

Lindroos, Gary A. (10/27/87) Letter To: Nixon, Perry.
Eighth request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #31 [8:17:60] <letter>

Lindroos, Gary A. (11/04/87) Letter To: Nixon, Perry.
Ninth request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #32 [8:17:61] <letter>

Lindroos, Gary A. (11/10/87) Letter To: Rampe, John.
Tenth request to move washed tailings.
Cochise Silver Mines, Inc., Tombstone, AZ.

Record #33 [8:17:62] <letter>

Maston, James A. (12/15/87) Letter To: Lindroos, Gary A.
Reduction of free cyanide and mercury in well No. 2.
Arizona Department of Environmental Quality, Tucson, AZ.

Record #34 [8:17:63] <memo>

Lindroos, Gary A. (12/21/87) Letter To: Harper, Ray.
Reducing Mercury and Cyanide Concentrations in Well 2.
PBR Minerals, Inc., Tombstone, AZ.

Record #35 [8:17:64] <letter>

Kennett, Roger. (02/16/88) Letter To: Moyes, Jay I.
Cochise Silver Mines, Inc., Groundwater Quality Protection Permit No. G-0011-02.
Arizona Department of Environmental Quality, Phoenix, AZ.

Record #36 [8:17:65] <letter>

Moyes, Jay I. (02/19/88) Letter To: Harper, Raymond.
Preparation of a revised version of the report assessing the cleanup operation.
Meyer, Hendricks, Victor, Osborn & Maledon, Phoenix, AZ.

Record #37 [8:17:66-69] <letter>

Escapule, Dustin. (03/02/88) Letter To: Moyes, Jay.
Removal of contaminated materials form Old Preg Pond and Lined Pond.
PBR Minerals, Inc., Tombstone, AZ.

Record #45 [8:17:121] <letter>

Lindroos, Gary A. (05/05/88) Letter To: Western Technologies.
Enclosure of well samples.
PBR Minerals, Inc., Tombstone, AZ.

Record #64 [8:17:242] <self-monitoring report>

Smith & Smith. (05/16/88)

Groundwater Quality Protection Permit Self-Monitoring Report Form - TEI Well #6.
Smith & Smith Environmental Consultants, Sierra Vista, AZ.

Record #46 [8:17:122-124] <water sample analysis>

Western Technologies. (06/09/88)

Laboratory Report - TEI Wells #1 #2, and Tombstone City Well #1.
Western Technologies Inc., Phoenix, AZ.

Record #38 [8:17:70] <letter>

Thatcher, Bruce K. (07/14/88) Letter To: Lindroos, Gary A.
ADEQ site visit.

Arizona Department of Environmental Quality, Phoenix, AZ.

Record #39 [8:17:71-94] <memo>

Thatcher, Bruce K. (09/21/88) Letter To: Kennett, Roger.

PBR Minerals, Inc. Temporary Groundwater Quality Protection Permit.
Arizona Department of Environmental Quality, Phoenix, AZ.

Record #40 [8:17:95-96] <letter>

Kennett, Roger. (09/29/88) Letter To: Moyes, Jay I.

PBR Minerals, Incorporated, Groundwater Quality Protection Permit No. G-0019-02T - Site Closure Plan.
Arizona Department of Environmental Quality, Phoenix, AZ.

Record #47 [8:17:125-129] <water quality report>

Lindroos, Gary A. (10/04/88) Letter To: ADEQ.

Permit No. G-001-02 field summary for the months of July thru September, 1988.
PBR Minerals, Inc., Tombstone, AZ.

Record #48 [8:17:130-132] <letter>

Rouse, Jim V. (10/13/88) Letter To: Kennett, Roger.

Request for plan and time schedule for cleanup tasks.
Geochemical Engineering Inc., Lakewood, CO.

Record #43 [8:17:119] <note>

Baxter, LaVerne. (12/18/88) Letter To: Ashworth, Mike.

Enclosure of Wells #1 & #2 testing.
Tombstone Development Co., Grand Island, NE.

Record #49 [8:17:133-136] <water quality report>

Lindroos, Gary A. (01/12/89) Letter To: ADEQ.

Permit No. G-001-02 field summary for the months of October thru December, 1988.
PBR Minerals, Inc., Tombstone, AZ.

Record #41 [8:17:97] <letter>

Ramirez, Carolyne. (02/23/89) Letter To: Perotti, Joe.

Enclosure of test results from Smith & Smith Consultants.
PBR Minerals, Inc., Tombstone, AZ.

Record #65 [8:17:243-244] <self-monitoring report>

Hankins, S. (06/09/89)

Groundwater Quality Protection Permit Self-Monitoring Report Forms - TEI Well #2, 6/9/89 & 8/3/89.
Arizona Testing Laboratories, Phoenix, AZ.

Record #51 [8:17:138-143] <letter report>

Rouse, Jim V. (07/25/89) Letter To: Kennett, Roger.

Geohydrologic evaluation of the PBR Minerals site south of Tombstone.
Geochemical Engineering Inc., Lakewood, CO.

Record #52 [8:17:144] <letter>

Lindroos, Gary A. (07/26/89) Letter To: Rouse, Jim V.

Water Well Monitoring.

Cowichan Resources, Inc., Tombstone, AZ.

Record #53 [8:17:146-165] <water quality report>

Lindroos, Gary A. (07/26/89) Letter To: ADEQ.

Quarterly Interpretative Assessment Report for the period of April thru June, 1989.
PBR Minerals, Inc., Tombstone, AZ.

Record #62 [8:17:235] <self-monitoring report>

Hankins, S. (08/03/89)

Groundwater Quality Protection Permit Self-Monitoring Report Form - TEI Well #2.
Arizona Testing Laboratories, Phoenix, AZ.

Record #72 [8:17:290] <self-monitoring report>

Hankins, S. (08/03/89)

Groundwater Quality Protection Permit Self-Monitoring Report Form - City of Tombstone Well #1.
Arizona Testing Laboratories, Phoenix, AZ.

Record #55 [8:17:168-169] <fax memo>

Rouse, Jim V. (08/09/89) Letter To: Lindroos, Gary A.

Protocol for Aquifer test.

Geochemical Engineering Inc., Lakewood, CO.

Record #50 [8:17:137] <letter>

Vaught, Clark. (08/16/89) Letter To: Lindroos, Gary A.

Test pumping results as of 4-20-89.

Farmers Pump Co., Wilcox, AZ.

Record #57 [8:17:171-176] <letter report>

Rouse, Jim V. (08/19/89) Letter To: Kennett, Roger.

PBR Minerals Aquifer Characteristics Report (Draft).

Geochemical Engineering Inc., Lakewood, CO.

Record #56 [8:17:170] <fax memo>

Rouse, Jim V. (08/20/89) Letter To: Lindroos, Gary A.

Review Draft Aquifer Evaluation.

Geochemical Engineering Inc., Lakewood, CO.

Record #54 [8:17:166-167] <fax>
Lindroos, Gary A. (08/21/89) Letter To: Rouse, Jim V.
Final Reading of TEI Well 2.
Cowichan Resources, Inc., Tombstone, AZ.

Record #58 [8:17:177] <fax memo>
Rouse, Jim V. (10/09/89) Letter To: Lindroos, Gary A.
2 Additional Monitor Wells.
Geochemical Engineering Inc., Lakewood, CO.

Record #1 [8:17:1-2] <memo>
Waldrip Jr., Thomas E. (05/05/92) Letter To: Briscoe, James A.
Cochise silver Mines, PBR Environmental clean up and monitoring of cyanide and heavy metal pollution from
Tombstone Exploration's operations during the early 1980's on Tombstone Development Co.'s property,
Tombstone Mining District, Cochise County, Arizona - JABA Project #159-01.
JABA, Inc., Tucson, AZ.

M E M O

TO: J. A. BRISCOE
FROM: T. E. WALDRIP, JR.

DATE: May 5, 1992

RE: Cochise Silver Mines, PBR Environmental clean up and monitoring of cyanide and heavy metal pollution from Tombstone Exploration's operations during the early 1980's on Tombstone Development Co.'s property, Tombstone Mining District, Cochise County, Arizona - JABA Project #159-01

Jim,

Pursuant to your request, please find following a brief synopsis of information contained in files provided by Dustin Escapule to our office on April 24, 1992, on the above-referenced environmental clean up and monitoring at Tombstone.

A copy of the paper work was made initially. From this duplicated copy, an organized file notebook was constructed, removing all duplicate copies, and placing general categories of information into chronological order (please refer to attached notebook). This notebook was then duplicated to provide a back-up copy, should the need ever arise. This duplicate notebook will be retained in JABA's Tombstone Mining District notebook file system.

A careful review of information provided has not been undertaken because of time restraints placed on the undertaking of this activity. However, in general, it would appear that the information so far provided is limited to mainly:

1. Analytical data circa 1987 and 1988 on monitoring of ground water pollution;
2. 1988 clean up of cyanide contaminated soils under water ponds;
3. Correspondence with Arizona State agencies;
4. Ground Water Quality Protection Permit (GWQPP) No. G-0011-02; and
5. Miscellaneous other documents including a technical report on clay sub-liner materials.

In general, this information pertains to clean up and monitoring operations only. These operations were undertaken primarily during 1987 and 1988. From correspondence and Ground Water Quality Protection Permit No. G-0011-02, effective on January 9, 1987, and valid for one (1) year, most information provided evolved from activities associated in carrying out the terms of this particular GWQPP. Nevertheless, subsequent references in correspondence indicate that at least two additional GWQPPs were in effect during 1988 or possibly 1989. Namely, G-0019-02T and G-

Memo to JAB from TEW
RE: Environmental clean up-Tombstone
May 5, 1992
Page 1 of 2

000001

0020-02. We have no information for these particular permits.

To date, I have not referenced any permits related to the new recovery plant and operations. Of more interest is the fact that no correspondence seems to address the signing off by state officials or departments for cyanide contaminated soil clean up measures or discontinuance of monitoring activities on potential ground water contamination in wells. I find this interesting, in fact, that these were the files requested pursuant to my understanding.

Several other interesting facts came to light while reviewing correspondence. Namely, it would appear through correspondence dated August 5, 1987 that the mercury contamination as reported in the local news media was in fact a contamination problem from the reporting lab. One well appears to have actual mercury concentrations. Obviously, there was a poor public relations program in effect at the time, as to my knowledge, nothing was ever done to refute the original false reports in the media. Secondly, during the washing operations during 1987, it would appear that sodium thiosulfate (déveloper) was being used to treat cyanide contaminated soil (memo of July 7, 1987). It would appear that games were being played with the state. Sodium thiosulfate as a reagent to oxidize cyanide is of minor benefit, generally. You can use it to get silver halides into solution and possibly through luck dilute the free cyanide to acceptable levels. It would appear that solutions of this same solution were being sprayed on tailings, reference correspondence of July 8, 1987, prior to having the material going through the wash plant. Although no information was reviewed to indicate exacting means of clean up by the state of contaminated soils and tailings, a more acceptable method may have been to treat these contaminated materials with sodium or calcium hypochlorite, a much stronger oxidant, capable of oxidizing cyanide to its elemental components.



Tom

TEW/ms

average Disposal
CIRCA 1975

TUCSON Daily Citizen 8/23/75

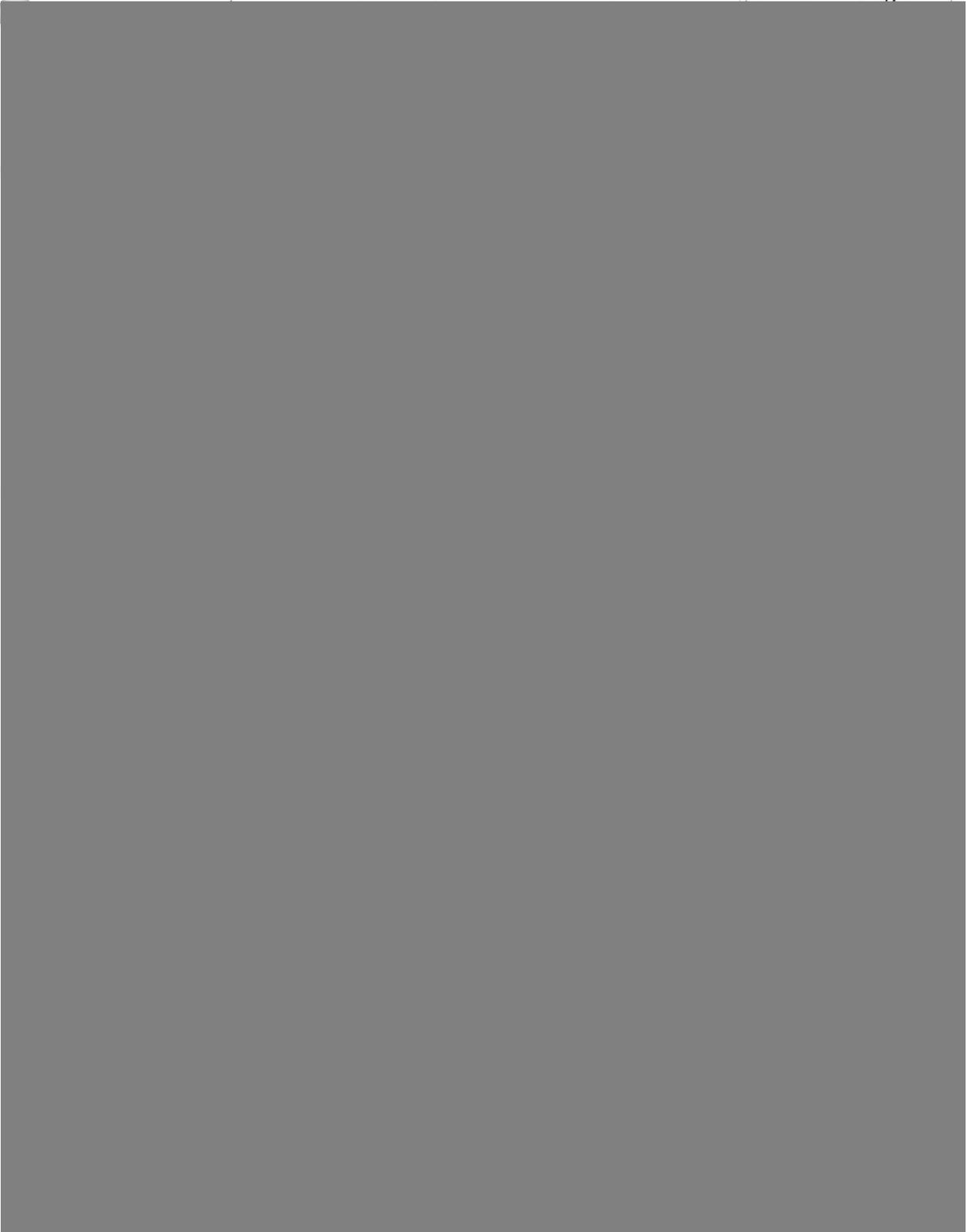


The Arizona Daily Star

TUCSON, MONDAY, AUGUST 25, 1975

SECTION B — PAGE ONE

Fig



000004

Correspondence
TEI-ADHS

ARIZONA DEPARTMENT OF HEALTH SERVICES

Inter-Office Memorandum

March 29, 1985

TO: Roger Kennett
 Environmental Engineer Specialist

THRU: Susan Keith, Chief Hydrologist *SK*
 Ambient Water & Waste Section

FROM: A. J. Gordon, Hydrologist III *AJG*

RE: Tombstone Exploration, Inc. (TEI) NOD

In accordance with R9-20-205.C.2, it has been determined that TEI is required to submit a permit application. The NOD has been reviewed to indicate where information is deficient.

<u>Item No.</u>	<u>Comment</u>
2.a.	No map was supplied with the NOD. It appears that at least two maps are needed. A 7½' map showing locations of all wells and mine shafts in a two mile radius of the facility is required. A well and shaft inventory should be supplied with this, containing pertinent data, including 1985 water levels. A detailed site plan should also be supplied, showing locations of all potential sources of contamination (tailings ponds, effluent impoundments, leach pads, etc.)
7.a.	Disposal activities need to be described. Disposal, as defined in R9-20-203.9, would include tailings ponds, effluent impoundments, leach dumps, etc.
7.c.	Groundwater use within a two mile radius of the facility should be identified. In this case, the use would be drinking water.
7.d.	Depth to groundwater, measured in 1985 for all wells and shafts within a two mile radius of the facility, should be supplied.
7.e.	Chemical characterization of each disposal waste stream need to be performed. Individual waste streams include discharge to tailings ponds, collection of leaching effluent from the base of leach dumps, effluent stored or disposed of in impoundments, etc. After complete characterization, all constituents identified should then be analyzed for from groundwater beneath the facility.

000005

Roger Kennett
Page 2
March 29, 1985

- 8.a. Wastes generated by each process need to be identified. For example, tailings in tailings ponds, effluent in effluent impoundments, etc.
- 8.d.,e. The disposal schedule needs to be supplied. Included in this should be schedule of disposal of tailings ponds, effluent impoundments, and schedule of collection of pregnant effluent from leach dumps.
- 9. Supporting data should be supplied.
- 10. Much more detail is required than supplied here.

In addition to the deficiencies noted above, a comprehensive hydro-geologic description of the area within a two mile radius of the facility is required for the proposal for permit application. Deficiencies in existing information need to be identified, and a scope of work addressing these deficiencies is required. A description of proposed monitor wells is also needed. If no new monitor wells are planned, a complete justification is required, such as an adequate number of existing wells or shafts, etc.

AJF:bjk

000006

62 QPM-0011-02

ENVIRONMENTAL HEALTH SERVICES

INTER-OFFICE MEMORANDUM

TO: Roger Kennett, ENV ENG SP
Water Permits Unit

DATE: May 8, 1986

THRU: Bill Wiley, Manager *WJW*
Hydrology Unit

FROM: Arthur J. Gordon, Hydrologist *AJG*
Hydrology Unit

RE: Tombstone Development Proposal for Permit Application

The above-referenced proposal has been reviewed. In its present form, the proposal is inadequate and must be resubmitted. There is no general description of the hydrogeology of the site from existing information and subsequent indication of where this information is deficient as required by R9-20-206.B.1. Also required is a detailed scope of work outlining exactly how the deficiencies identified above will be addressed. Specific comments on the proposal are as follows:

Page 1

Second paragraph. How will the removed barrels and soil be disposed of? A comprehensive sampling plan for the tailings is required to assess the extent of contamination in the tailings.

Third paragraph. Copies of the original lab analysis sheets should be submitted. Standard sampling protocols should be followed in well sampling, including calculating the number of well volumes removed from the well. How will the pumped water be disposed of? Is it currently proposed to pump this well continuously for one month?

Fourth paragraph. How was the hypchlorite solution disposed of?

Page 2

Second paragraph. Construction details of all onsite structures, such as dikes, ponds, pads, and tanks etc. will be required in the permit application.

Third paragraph. A work plan describing how the hydrology of the site will be studied is required. The drainage area should be outlined on a topographic map.

Fifth paragraph. Details of the proposed vadose zone monitoring system are required. More specificity is required than just making reference to "meters".

000007

Roger Kennett
Page 2
May 8, 1986

Sixth paragraph. Investigation of wells in the area should also be included in the work plan. Before existing wells are proposed for monitoring, the owners, uses, locations, and construction details should be specified. Why does the Christ well appear to be in a good location?

Page 3

First paragraph. The locations of the onsite wells should be identified. Parameters to be monitored should be proposed. Documentation of the mining company laboratory's capability to produce legally valid data is required.

Third paragraph. Figures submitted are difficult to interpret. New figures clearly drawn and adequately labeled are required.

AJG:b

*Initial 1986
Permit Proposal*

125 operation

TOMBSTONE DEVELOPMENT
MINING OPERATION
PRELIMINARY PERMIT PROPOSAL

American Engineering Company

Consulting Engineers



000009

TOMBSTONE DEVELOPMENT
MINING OPERATION
PRELIMINARY PERMIT PROPOSAL

SUBMITTED TO:
ARIZONA DEPARTMENT OF HEALTH SERVICES

APRIL 28, 1986



PREPARED BY:
SCOTT M. LARSON
AMERICAN ENGINEERING COMPANY
3864 NORTH 27TH AVENUE
PHOENIX, ARIZONA 85017
PHONE: (602) 277-3386



000010



AMERICAN ENGINEERING COMPANY

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PHOENIX, ARIZONA 85017
TELEPHONE 277-3386

MARVIN E. LARSON, P.E. & L.S.
DANIEL R. BRYCE, P.E. & L.S.
E. CLAIRE GARDNER, P.E. & L.S.

SCOTT M. LARSON, P.E. & L.S.
MICHAEL R. BRYCE, P.E. & L.S.
KAM KIN SIN, P.E. & L.S.
LARRY R. GATES, L.S.
DOUGLAS L. BAKER, L.S.

April 28, 1986

Water Permits Unit
Office of Waste and Water Quality Management
Arizona Department of Health Services
2005 N. Central Avenue
Phoenix, AZ 85004

Dear Gentlemen:

Having spent about a month checking into the Tombstone Development mining operation, I now have a proposal for cleaning up the existing cyanide leaching site to avoid any further contamination. After the clean up procedures are completed, then the new mining group wants to move the operation to the other side of the hill, further away from the town. This would enable the heap leaching operation to be over an area that has not been mined and would also increase the distance from the town's domestic aquifer.

The first thing in the clean up operation is to remove all the cyanide barrels, remove the soil in the ponds which contains a high concentration of cyanide, and fill in the ponds with uncontaminated fill. Then the mining company even proposes to do some natural landscaping to help restore the area to its natural state.

The monitoring well has been tested and I am told that it does not have cyanide contamination. The ponds have been empty for several weeks. I propose that the monitoring well be tested, by starting the pump and taking a sample, then pump for 15 minutes and take a sample and then after an hour take a sample. Then take a sample once a week for a month to be sure the well is clear.

The barrels, which contained cyanide, have been rinsed with a hyperchlorite solution. I would suggest that these be inspected to determine they have been oxidized and then crush and bury the barrels.

000011

The ponds need to have the soil containing cyanide removed and oxidized. The proposal will contain the steps to oxidize the soils which are removed. Tests should be made on soil borings to determine the depth of cyanide contamination.

The hydrology of the existing site will be discussed in the permit application. Currently no water flows from the site because of the existing man made dike. The retention of this dike will be considered. Once all the cyanide contamination is oxidized, then perhaps a culvert may be put through the dike to allow drainage to go back to its natural state.

The hydrology of the proposed leaching site will be studied. A dike will be built to prevent any runoff from the leaching site. The site is quite high on the hill, therefore, it has very little drainage area.

The proposed leaching process will include three ponds holding cyanide solution, a leaching pad and a tank holding cyanide solution. There will also be a fresh water pond.

The ponds will be built over a caliche deposit. The pad will be on an exposed rock area with a 4 to 1 slope. The rock face will be closely inspected for any faults. The ponds will have clay layers placed over the caliche. These will be designed by Dr. Wallace Fuller from the University of Arizona. He has designed many of these clay ponds which have high salt content for the ionization of the clay. It is proposed these will be two feet in depth prepared in 6" layers. This is deeper than most cyanide ponds, but because of the closeness of the town, extra precautions will be taken for further protection. We propose to have borings into the rock below the leach pad with meters to monitor moisture. If moisture is detected, then it will be tested for cyanide. These test holes will be under the pad, the ponds and down hill from the overall leaching operations.

The wells in the area will be studied to determine the aquifer and the direction of the flow. From a preliminary investigation of the wells in the area, the Tombstone water supply well is a very critical well in that no cyanide contamination can be tolerated. There are two wells that are nearer the mining operation that should be monitored to determine if any cyanide is seeping towards Tombstone's city well. To the south, which is in the opposite direction as the Tombstone well, is a well owned by a Mr. Crist. He said that it would be alright to use his well as a test well. This well seems to be in a good location for a monitoring well.

There is information available on the geology of the area. However, it seems most important to make sure the ponds and pads do not leak and the abandoned ponds are oxidized. Attached are copies of mining areas superimposed over existing mines and fault areas.

000012

The mining company has three wells on their site. The water from these wells will be checked at least three times a week. The mining company is set up with all the testing equipment on site. The Tombstone City well will be tested by the City and Mr. Crist's well will be tested regularly by the mining company.

As soon as this proposal is accepted, then the permit information will be gathered as outlined by the AHDS draft of "Groundwater Quality Permit Process." The mining company wants to start work as soon as possible on making the new ponds and correcting and filling the existing dried ponding areas.

Attached to this proposal is a copy of the Tombstone Quadrangle with the Department of Water Resources' well registration printouts. Also attached is a copy of the existing and proposed mining operation areas.

Please call me if you have any questions concerning this proposal.

Sincerely,



Scott M. Larson, P.E.

SML/emw
Enclosures

000013



Map of principal claims and workings in central part of Tombstone district (upon transparent paper over Plate IV). Mine levels are indicated by numerals and stepped areas by dots.

000014

D 200 220 10 ADB WR 646123 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 05 26 982 PLANNED PUMP CAP:

NAME: PIONEER NAT TRUST CO IN CARE OF: TRUST # 10640
PO BOX 5998
SISBEE AZ 85603

ACCURACY: NOT VERIFIED WATER USES: STOCK
AREA: OUTSIDE DOMESTIC

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: CORPORATION DRILLER:

WELL DPTH: 150 FT CASE DIAM: 6 IN CASE DPTH: 150 FT METH DET:

PUMP CAP: 15 GPM FINISH: OTHERS ACRES IRR: YIELD: 15 GPM

DRAW DOWN: WATER LVL: 70 FT LIFT: POWER:

DATE COMPLETED: 00 00 879

POU #1: POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR: IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

O 200 220 10 DCB WR 644489 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 05 19 982 PLANNED PUMP CAP:

NAME: LEE M J IN CARE OF:

ST RT BOX 30 A

BENSON AZ 85602

ACCURACY: NOT VERIFIED

WATER USES: DOMESTIC

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH: 60 FT CASE DIAM: 6 IN

CASE DPTH: 10 FT METH DET:

PUMP CAP: FINISH: OTHERS

ACRES IRR: YIELD:

DRAW DOWN: WATER LVL:

LIFT: POWER:

DATE COMPLETED: 00 00 976

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000016

D 200 220 10 DCB WR 644490 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 05 19 98Z PLANNED PUMP CAP:

NAME: LEE M J IN CARE OF:

ST R TBOX 30 A

BENSON AZ 85602

ACCURACY: NOT VERIFIED

WATER USES: DOMESTIC

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH: 140 FT CASE DIAM: 6 IN

CASE DPTH: 10 FT METH DET:

PUMP CAP: FINISH: OTHERS

ACRES IRR: YIELD:

DRAW DOWN: WATER LVL: 40 FT

LIFT: POWER:

DATE COMPLETED: 10 29 976

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000017

D 280 220 10 DCB WR 644491 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 05 19 982 PLANNED PUMP CAP:

NAME: LEE M J IN CARE OF:

ST RT BOX 30 A

SENSON AZ 85602

ACCURACY: NOT VERIFIED WATER USES: DOMESTIC

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE DRILLER:

WELL DPTH: 40 FT CASE DIAM: 5 IN CASE DPTH: METH DET:

PUMP CAP: FINISH: WALLED ACRES IRR: YIELD:

DRAW DOWN: WATER LVL: 35 FT LIFT: POWER:

DATE COMPLETED:

POU #1: POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR: IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

5

D 200 220 10 DCB WR 644492 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 05 19 98Z PLANNED PUMP CAP:

NAME: LEE M J IN CARE OF:

ST RT BOX 30 A

Benson AZ 85602

ACCURACY: NOT VERIFIED WATER USES: DOMESTIC

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE DRILLER:

WELL DPTH: 270 FT CASE DIAM: 6 IN CASE DPTH: 10 FT METH DET:

PUMP CAP: 5 GPM FINISH: OTHERS ACRES IRR: YIELD: 5 GPM

DRAW DOWN: WATER LVL: 35 FT LIFT: POWER:

DATE COMPLETED: 10 29 976

POU #1: POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR: IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000019

6 1
D 200 220 11 ADB WR 616498 FILE TYPE: REGISTRATION WELL TYPE: NON-EXEMPT

DATE ISSUED: 01 19 782 PLANNED PUMP CAP:

NAME: TOMBSTONE, CITY OF IN CARE OF:

315 E FREMONT ST

TOMBSTONE AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MUNICIPAL

AREA: OUTSIDE

DOMESTIC

SUB-BAC IN:

INDUSTRIAL

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: CITY

DRILLER:

WELL DPTH: 612 FT CASE DIAM: 4 IN

CASE DPTH: 511 FT METH DET:

PUMP CAP: 225 GPM FINISH: STEEL

ACRES IRR:

YIELD: 225 GPM

DRAW DOWN: WATER LVL: 490 FT

LIFT:

POWER:

DATE COMPLETED: 00 00 941

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER -- READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000020

D 200 220 11 DDB WR 086448 FILE TYPE: APPLICATION WELL TYPE: NON-EXEMPT

DATE ISSUED: 12 00 980 PLANNED PUMP CAP:

NAME: TOMBSTONE DEVELOPMEN IN CARE OF:

PO BOX 1445

GRAND ISLAND NE 68801

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

SUB-BASIN:

WATERCHCD: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COURTY: COCKISE

OWNER: CORPORATION

DRILLER: 152

WELL DPTH: 715 FT CASE DIAM: 6 IN

CASE DPTH: 715 FT METH DET: CURRENT

PUMP CAP: 100 GPM FINISH: PVC

ACRES IRR: YIELD: 100 GPM

DRAW DOWN: WATER LVL: 510 FT

LIFT: CENTRIFUG POWER: ELE 15HP

DATE COMPLETED: 01 10 981

POU #1:

POU #2:

STATUS: DATA OWN LOG X CRT X PQ NBR:

IPQ STATUS:

ENTER -- READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000021

8
D 200 220 12 CCD WR 505610 FILE TYPE: APPLICATION WELL TYPE: NON-EXEMPT

TEI
DATE ISSUED: 06 13 983 PLANNED PUMP CAP: 500 GPM

NAME: T I E INC

IN CARE OF:

BOX 610

10-BSYONE

AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: CORPORATION

DRILLER: 137

WELL DPTH: 620 FT CASE DIAM: 6 IN

CASE DPTH: 580 FT. METH DET:

PUMP CAP: FINISH: STEEL

ACRES IRR: YIELD:

DRAW DOWN: WATER LVL:

LIFT: POWER:

DATE COMPLETED: 06 30 983

POJ #1: SE SW SW 12 200 S 220 E

POJ #2:

STATUS: DATA OWN LOG X CRT C PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000022

9)

D 200 220 13 CBC WR 622882 FILE TYPE: REGISTRATION WELL TYPE: NON-EXEMPT

DATE ISSUED: 06 14 982 PLANNED PUMP CAP:

NAME: CRIST R B IN CARE OF:

5045 E CALLE GUEBABI

TUCSON AZ 85718

ACCURACY: NOT VERIFIED

WATER USES: IRRIGATION

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH: 1000 FT CASE DIAM: 4 IN

CASE DPTH: 1000 FT METH DET:

PUMP CAP: 35 GPM FINISH: STEEL

ACRES IRR: YIELD: 35 GPM

DRAW DOWN: WATER LVL: 550 FT

LIFT: POWER:

DATE COMPLETED: 00 00 945

POU #1: SE NE SE 14 200 S 220 E

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000023

D 200 220 23 BB WR 649055 FILE TYPE: REGISTRATION L WELL TYPE: EXEMPT

DATE ISSUED: 07 13 982 PLANNED PUMP CAP:

NAME: SILVER RIDGE MINING IN CARE OF:

PO BOX 748

TOMBSTONE AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

INDUSTRIAL

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: CORPORATION

DRILLER:

WELL DPTH:

CASE DIAM:

CASE DPTH:

METH DET:

PUMP CAP:

FINISH:

ACRES IRR:

YIELD:

DRAW DOWN:

WATER LVL:

LIFT:

POWER:

DATE COMPLETED:

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000024

D 200 220 23 BB WR 649054 FILE TYPE: REGISTRATION L WELL TYPE: EXEMPT

DATE ISSUED: 07 13 982 PLANNED PUMP CAP:

NAME: SILVER RIDGE MINING IN CARE OF:

PO BOX 748

TOMBSTONE AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

INDUSTRIAL

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: CORPORATION

DRILLER:

WELL DPTH: 1000 FT CASE DIAM: 4 IN

CASE DPTH: 1000 FT METH DET:

PUMP CAP: 35 GPM FINISH: PVC

ACRES IRR:

YIELD: 35 GPM

DRAW DOWN: WATER LVL: 425 FT

LIFT:

POWER:

DATE COMPLETED: 00 00 980

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000025

D 200 220 23 B WR 642574 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 06 08 982 PLANNED PUMP CAP:

NAME: WINTERS W IN CARE OF:

PO BOX 146

TOMBSTONE AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH:

CASE DIAM:

CASE DPTH:

METH DET:

PUMP CAP:

FINISH:

ACRES IRR:

YIELD:

DRAW DOWN:

WATER LVL:

LIFT:

POWER:

DATE COMPLETED:

POU #1:

POU #2:

STATUS: DATA

OWN

LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000026

D 200 220 23 B WR 642573 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 06 08 982 PLANNED PUMP CAP:

NAME: WINTERS W IN CARE OF:

PO BOX 146

TOMBSTONE AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH:

CASE DIAM:

CASE DPTH:

METH DET:

PUMP CAP:

FINISH:

ACRES IRR:

YIELD:

DRAW DOWN:

WATER LVL:

LIFT:

POWER:

DATE COMPLETED:

POU #1:

POU #2:

STATUS: DATA

OWN

LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000027

D 200 220 23 AB WR 649056 FILE TYPE: REGISTRATION L WELL TYPE: EXEMPT

DATE ISSUED: 07 13 982 PLANNED PUMP CAP:

NAME: IRVINE

J A IN CARE OF:

PO BOX 968

TOMBSTONE

AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

INDUSTRIAL

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH:

CASE DIAM:

CASE DPTH:

METH DET:

MP CAP:

FINISH:

ACRES IRR:

YIELD:

DRAW DOWN:

WATER LVL:

LIFT:

POWER:

DATE COMPLETED:

POU #1:

POU #2:

STATUS: DATA

OWN

LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000028

D 200 220 16 AC WR 601135 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 11 17 981 PLANNED PUMP CAP:

NAME: TOMBSTONE SILVER IN CARE OF:

8238 E INDIAN SCH RD

SCOTTSDALE AZ 85251

ACCURACY: NOT VERIFIED

WATER USES: DOMESTIC

AREA: OUTSIDE

INDUSTRIAL

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: CORPORATION

DRILLER:

WELL DPTH: 500 FT CASE DIAM: 5 IN

CASE DPTH:

METH DET:

PUMP CAP: 20 GPM FINISH: STEEL

ACRES IRR:

YIELD:

20 GPM

DRAW DOWN: WATER LVL: 200 FT

LIFT:

POWER:

DATE COMPLETED: 07 00 968

POU #1: SW NE 16 200 S 220 E

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IFQ STATUS:

ENTER -- READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000029

ED WR 650956 FILE TYPE: REGISTRATION L WELL TYPE: EXEMPT EXEMPT

DATE ISSUED: 07 13 982 PLANNED PUMP CAP:

AMERICAN MINING IN CARE OF:

ROY 130
BSTONE AZ 85638

NOT VERIFIED WATER USES: MINING

OUTSIDE

SAN PEDRO RIVER WELL USES: WATER PRODUCTION

COCHISE CORPORATION DRILLER: ION

CASE DIAM: CASE DPTH: METH DET: DET:

FINISH: ACRES IRR: YIELD: ELD:

WATER LVL: LIFT: POWER: WER:

D:

POU #2:

ATA OWN LOG R CRT R PQ NBR: IPQ STATUS:

NEXT RECORD CLEAR TO RETURN TO SELECTION CRITERIA ON CRITERIA

D 200 220 15 A WR 642575 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT

DATE ISSUED: 06 08 982 PLANNED PUMP CAP:

NAME: WINTERS W IN CARE OF:

PO BOX 146

TOMBSTONE AZ 85638

ACCURACY: NOT VERIFIED

WATER USES: MINING

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH:

CASE DIAM:

CASE DPTH:

METH DET:

P CAP:

FINISH:

ACRES IRR:

YIELD:

DRAW DOWN:

WATER LVL:

LIFT:

POWER:

DATE COMPLETED:

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000031

D 200 220 01 — WR 650661 FILE TYPE: REGISTRATION L WELL TYPE: EXEMPT

DATE ISSUED: 06 21 98Z PLANNED PUMP CAP:

NAME: HANSEN

R G IN CARE OF:

PO BOX 790

TOMBSTONE

AZ 85638

ACCURACY: NOT VERIFIED

WATER USES:

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES:

COUNTY: COCHISE

OWNER: PRIVATE

DRILLER:

WELL DPTH: 376 FT CASE DIAM: 8 IN

CASE DPTH:

METH DET:

PUMP CAP: FINISH: STEEL

ACRES IRR:

YIELD:

DRAW DOWN: WATER LVL: 315 FT

LIFT:

POWER:

DATE COMPLETED:

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IPQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000032

D 200 220 01 — WR 650365 FILE TYPE: REGISTRATION L WELL TYPE: EXEMPT

DATE ISSUED: 06 18 982 PLANNED PUMP CAP:

NAME: MONESMITH M Y IN CARE OF:

231 MOSER

BULLHEAD CITY AZ 86430

ACCURACY: NOT VERIFIED

WATER USES: DOMESTIC

AREA: OUTSIDE

SUB-BASIN:

WATERSHED: SAN PEDRO RIVER

WELL USES: WATER PRODUCTION

COUNTY: MOHAVE

OWNER: PRIVATE

DRILLER:

WELL DPTH: 80 FT CASE DIAM: 2 IN

CASE DPTH: 25 FT METH DET:

P CAP: FINISH:

ACRES IRR: YIELD:

DRAW DOWN: WATER LVL: 20 FT

LIFT: POWER:

DATE COMPLETED: 10 00 952

POU #1:

POU #2:

STATUS: DATA OWN LOG R CRT R PQ NBR:

IFQ STATUS:

ENTER - READ NEXT RECORD

CLEAR TO RETURN TO SELECTION CRITERIA

000033

CORRIGENDOS

Inter-Office Memorandum

April 28, 1987

TO: Roger Kennett, E.E.S.
Existing Facilities Permits Unit

THRU: James A. Maston, P.E., Manager *JAM*
Southern Regional Office

FROM: Andrew Rendes, E.E.S. *AR*
Southern Regional Office

RE: Cochise Silver Mine
Groundwater Quality Protection Permit No. 6-0011-02

On Monday, April 27, 1987, a site visit was made to Cochise Silver Mine in Tombstone Arizona. The purpose was to observe the leaching pad construction and leak detection/collection system.

The leach pad I observed consisted of: a liner on top of compacted material, slotted pipe wrapped in loose-woven cloth-like material laid in a below-grade depression, in turn covered by a layer of sand and overlaid by another synthetic liner. The top liner is in turn covered with approximately three to four inches of sand, with several inches of compacted material on top of the sand. The firm is in the process of expanding the leach pad area.

Mr. Dustin Escapule also showed me the old pond area where the soil is to be removed. The area is staked out on a grid pattern. He also gave me a drawing of the site. At that time Mr. Escapule gave me the required 48-hour prior notice that the firm intends to begin soil removal. He will follow the verbal notice with a written one.

The facility is in operation; actively washing the previously crushed material and stacking it on the pad.

COCHISE SILVER MINES, INC.
P. O. BOX 158
Tombstone, Arizona 85638

12 May 1987

Arizona Department of Health Services
4040 East 29th Street
Tucson, Arizona 85711
ATTENTION: Mr. Andrew Rendez

Dear Mr. Rendez:

Per our telephone conversation of this morning, we request approval to remove the washed tailings which are on the Impoundment Area, to the Houghton Pad (approved by Martin Engineering) just north of our impoundment area.

Arizona Testing Laboratories has analyzed the tailings samples which we submitted and all samples were confirmed to be below their detection limit of 0.5 ppm for Total Cyanide.

If you have any questions please feel free to contact me at 457-2282 at any time. Thank you.

Sincerely yours,

GARY A. LINDROOS

*File Copy
GAL*

000035



ARIZONA DEPARTMENT OF HEALTH SERVICES

EVAN MECHAM, GOVERNOR
TED WILLIAMS, DIRECTOR

May 29, 1987
REF#: 145

Certified Mail
Return Receipt Requested

Mr. Frank Magini
Cochise Silver Mine
4831 N 42nd Ave
Phoenix, Az 85019

Dear Mr. Magini;

The Department is not currently in receipt of either the April 1987 water monitoring (TEI Wells #1 and #2, Tombstone City Well #1, and Tombstone tap water) and the summary of field checks for free cyanide on TEI Well #3. The field test summaries from Mr. Lindroos dated 4/27/87 are a composite report for 3 months but are referred to on the sample date as January-April 1987. Would you please explain this discrepancy. The information and explanation are due, within fifteen (15) days of receipt of this letter.

The Department is also requesting, under section D.2.d. of your permit No. G-0011-02, that you preform the following sampling and analysis at your facility and submit the results to the Department within thirty (30) days:

<u>Number of Samples</u>	<u>Type</u>	<u>location</u>	<u>Analysis</u>
3 Total	Tailings	from 3 different areas of the mine	Mercury
2 Total	Tailings	after processing	Mercury
9 Total	Soil	1,3, and 5 feet of depth beneath old pond, at three locations	Mercury
1 Total	Process Water	after Charcoal filtration	Mercury

EPA methodolgy 245.5 shall be used for soils and tailings and EPA method 245.1 shall be used for water

Please send the requested data, along with a diagram of the sampling sites to:

Arizona Department of Health Services
Water Pollution Compliance Unit
2005 N Central Room 413
Phoenix, Az 85004

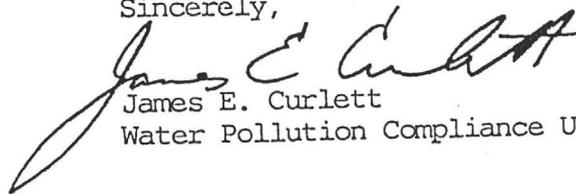
The Department of Health Services is An Equal Opportunity Affirmative Action Employer

000036

Mr. Frank Magini
Page 2
5/29/87

If you have any questions please contact me at 257-6818. Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read "James E. Curlett". The signature is written in dark ink and is positioned above the typed name and title.

James E. Curlett
Water Pollution Compliance Unit

JEC:lm

000037

COCHISE SILVER MINES, INC.

MEMO

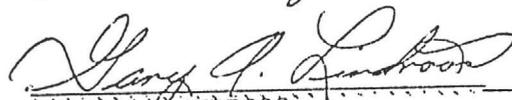
TO: GARY A. LINDROOS
FROM: DUSTIN L. ESCAPULE
REF: REPRIMAND
DATE: JUNE 3, 1987

A written reprimand will be filed for the following reasons:

1. Negligence in duties, failing to take water samples from TEI Wells No. 1, No. 2, Tombstone City Well No. 1 and Tombstone Tapwater for the month of April, 1987.

2. Failing to send samples to Arizona Testing Lab. for the month of April, 1987 from TEI Wells No. 1, No.2, Tombstone City Well No. 1 and Tombstone Tapwater for the month of April, 1987.


DUSTIN ESCAPULE


GARY A. LINDROOS

000038

Incl

2

COCHISE SILVER MINES, INC,
P.O. BOX 158
TOMBSTONE, ARIZONA 85638

June 3, 1987

To Whom It May Concern:

Dear Sirs,

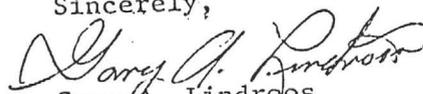
It is with deep regret I must inform you I was negligent in my duties as assayer and chemist and did not submit water samples for testing of TEI Wells No. 1, No. 2, Tombstone City Well No, 1 and Tombstone Tapwater for the month of April, 1987,

My workload at the time was extremely heavy and I did not have assistance in the laboratory. Since that time we have hired a qualified Laboratory Assistant which will lighten my workload considerably.

I neither offer nor intend any excuses and accept full responsibility for my actions. I was simply remiss in my duties and assure everyone, sampling, in the future, will be handled properly and in an expeditious manner.

I have received a written reprimand from my superiors. It is my sincere desire that my actions will not jeopardize the future operations of Cochise Silver Mines.

Sincerely,


Gary A. Lindroos

GAL/pdd

000039

Cochise Silver Mines, Inc.
P.O Box 158
Tombstone, Arizona 85638

Arizona Department of Health Services
Water Pollution Compliance Unit
2005 N. Central Ave., Room 413
Phoenix, Arizona 85004

June 9, 1987

Dear Mr. Curlett:

Reference your letter of May 29, 1987 to Mr. Frank Magini, Ref. #145, the following is submitted:

Water monitoring samples for April, 1987 from TEI wells #1 and #2, Tombstone City Wells #1 and Tombstone Tapwater were not submitted. Explanation can be found in enclosures one (1) and two (2),

TEI Well #3 has been inoperable until this date and future sampling will be taken and analyzed in accordance with Section B.1,b. and Contingency Requirements Part II.C.1. of Groundwater Permit No. G-0011-02,

The field test summaries we submitted were erroneously marked January-April, 1987. Corrected copies are enclosed,

A total of three (3) tailings samples from three (3) different areas of the mine, two (2) tailings samples after processing, nine (9) soil samples at 1,3 and 5 feet of depth beneath old pond and one sample of process water. After charcoal filtration have been collected and shipped to Arizona Testing Laboratories in Phoenix for mercury analysis as per instructions in your letter. Copies of these results will be forwarded to your office upon completion,

Mr. Frank Magini informs me that your hydrologists may want to visit our property and verify these samples. I welcome their arrival and will be glad to resample these or other areas as they suggest.

If you have any questions please contact me at 457-2282. Thank You,

Respectfully Submitted,


Gary A. Lindroos
Cochise Silver Mines, Inc.

COCHISE SILVER MINES, INC,

P.O. BOX 158

TOMBSTONE, ARIZONA 85638

Arizona Department of Health Services
4040 E. 29th St.
Tucson, Arizona 85711

June 19, 1987

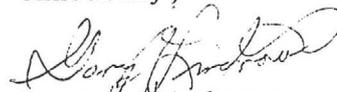
Dear Mr. Maston,

Per our telephone conversation of yesterday afternoon, we request approval to remove the washed tailings from the Impoundment area to the Houghton Pad (approved by Martin Engineering) north of the Impoundment area.

Smith and Smith Laboratories has analyzed the tailings we submitted and all samples were confirmed to be below their detection limit of 0.01 mg/Kilogram Total Cyanide.

If you have any questions, please contact me at 457-2282 at any time.
Thank you.

Sincerely,



Gary A. Lindroos
Assayer/Chemist
Cochise Silver Mines, Inc.

GAL/pdd

000041

COCHISE SILVER MINES, INC.

MEMO

7 July 1987

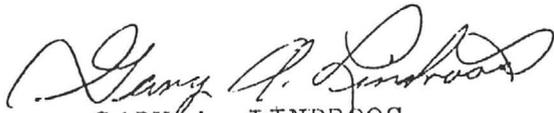
TO: Mr. Dustin Escapule
FR: Gary Lindroos
RE: Extension of Impound Area and Materials Handling

At 9:00 a.m. I called Mr. Andrew Rendes, ADHS Tucson. He is sending copies of his approval reference the extension of the Impound Area to Mr. Ray Harper, Mr. Frank Magini and Mr. Dustin Escapule. Copies of all correspondence will be sent to all concerned in the future.

Mr. Rendes stated that he does not want any unwashed-untreated tailings placed on the impound area. I explained to Mr. Rendes that all material is being washed and treated with Sodium Thio-sulphate and that samples are being sent to Smith and Smith Laboratories on a regular basis for analysis of total cyanide.

In a second telephone conversation with Mr. Rendes at 9:30 a.m. he stated that any tailings which are analyzed and still have a cyanide concentration higher than 0.1 mg/Kilo should be returned to the stock-pile and retreated, in the wash plant.

Respectfully Submitted:



GARY A. LINDROOS
Cochise Silver Mines, Inc.

cc - Mr. Andrew Rendes
Arizona Department of Health Services
4040 East 29th Street
Tucson, Arizona 85711

000042



EVAN MECHAM, GOVERNOR
Gerald Teletzke, Director

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Waste & Water Quality Mgmt.
4040 East 29th Street
Tucson, Arizona 85711
Telephone 628-5321

July 8, 1987

Mr. Dustin Escapule
Cochise Silver Mines
P.O. Box 158
Tombstone, AZ 85638

Dear Mr. Escapule:

Pursuant to Mr. Andrew Rendes' conversation with Mr. Gary Lindroos on or about Thursday July 2, 1987, I am writing to confirm that the pad stacking area for the washed material must be double lined.

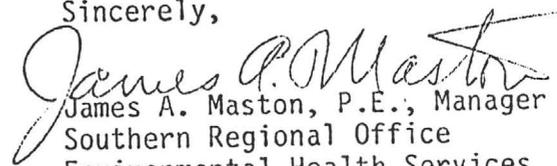
Mr. Rendes spoke with Mr. Roger Kennett late Monday, July 6, 1987 and this was confirmed. Due to the history and circumstances of the problem at the mine site, all areas of stacking must be double-lined.

In addition, the practice of applying a solution to the previously-processed tailings, prior to going through the wash process, must immediately cease. One reason for this is to avoid any possibility or appearance of cyanide being applied to the old tailings. Another reason is that it was understood that the old tailings would be washed only, without any further treatment prior to washing.

Thirdly, Mr. Escapule, our office will be very happy to continue working closely with you and your personnel. However, all requests for expansion of any washing and stacking areas will have to be approved by Mr. Roger Kennett first. Mr. Rendes is available to continue inspecting your leak detection system on an as-requested basis.

Please feel free to contact our office.

Sincerely,


James A. Maston, P.E., Manager
Southern Regional Office
Environmental Health Services

JAM:AMR:ps

CC: Roger Kennett
Gary Lindroos, Cochise Silver Mines
Ray Harper, P.O. Box 32040, Phoenix, AZ 85064
Frank Magini, 4831 N. 42nd Ave., Phoenix, AZ 85019
Cochise County Health Department
Alex Gradillas, Mayor, Town of Tombstone

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cc: DE
JS



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

IVAN MICHAM, GOVERNOR
Gerald Teletzke, Ph.D., Director

July 10, 1987

Mr. Jay I. Moyes
Meyer, Hendricks, Victor, Osborn & Maledon
Suite 4000
2700 North Third Street
Phoenix, Arizona 85004

Dear Mr. Moyes:

RE: Cochise Silver Mines, Inc.
Renewal of Permit No. G-0011-02

This is in response to your letter of June 26, 1987 and a follow up to our phone conversation of July 7, 1987 concerning the proper format for requesting a renewal of the above referenced Groundwater Quality Protection Permit.

As you correctly stated, R9-20-220.B requires the permittee to submit a renewal application in the form of an amended Notice of Disposal (NOD). The amendment may take the form of a letter, provided the letter references the NOD and other documents which provided the basis for issuance of the permit.

The letter should include a reiteration of your request to modify the soil sampling frequency from two feet to five feet. As discussed in the meeting on June 24, this minor modification is acceptable to the Department. Also include details of anticipated changes to the facility, utilizing amended site plans where appropriate. Finally, provide an assessment of clean up work performed on the pond area to date in terms of the amount of material removed, the depth from original grade the excavation has proceeded, and the related analysis results. The applicant should base his request for duration of the renewed permit upon this assessment, and the Department shall evaluate the request based on same.

Prior to finalizing this letter, we received your letter of July 9, 1987 containing some of the items mentioned above. Your letters of June 26 and July 9 meet the requirements for requesting renewal of permit No. G-0011-02.

000044

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Mr. Jay I. Moyes
Page 2
July 10, 1987

The additional information may follow, but be advised that delays in providing the information could forestall the final determination concerning permit renewal.

If you have any questions concerning this letter, please feel free to call.

Sincerely,



Roger Kennett
Water Permits Unit

RK:mm

cc: Frank Magini ✓
Nancy Jameson
Jim Curlett
James Maston

000045



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

EVAN MECHAM, GOVERNOR
Gerald H. Teletzke, Ph.D., Director

July 23, 1987
REF#: 245

Certified Mail
Return Receipt Requested

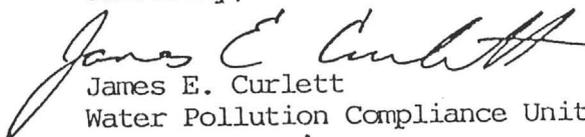
Gary Lindroos
Cochise Silver
P.O. Box 158
Tombstone, Arizona 85638

Dear Mr. Lindroos:

We have received the analytical results, from Smith and Smith Laboratories, of your June 16, 1987 sampling. We are quite concerned that the laboratory results indicate 0.0011 mg/l of mercury in Tombstone City well #1 and 0.001 mg/l of mercury in TEI well #1. These results are the first indication of mercury in these wells. In order to assess the veracity of these results the Department is requesting that Cochise Silver resample the Tombstone City well #1, TEI wells #1, and #2 for mercury, cyanide, and nitrate. We are requesting that these samples be split and then taken to two different certified laboratories. We are requesting that these samples receive priority status. Additionally we are requesting that you extend your traditional courtesy to a representative of the Department's Southern Regional Office who will be visiting your facility to sample TEI wells #1, #2, and #3. This representative will also sample all the Tombstone City wells at this time.

Enclosed for your information are the results of the Department's samples of February 23, 1987. These results correspond quite well with the data submitted by Cochise Silver. If you have any questions or comments please contact me at 257-6818.

Sincerely,


James E. Curlett
Water Pollution Compliance Unit

JEC:lm

cc: James Maston, Southern Regional Office
Robert Manuri, Manager, Field Services Station, ADEQ
Sarah Mapes, Manager, Compliance Section, ADEQ
Roger Kennett, Hydrology
Ronald L. Miller, Ph. d., ADEQ
Alex Gradillas Mayor of Tombstone
Carol Mordhorst Director Cochise Co. Health Dept.
David Baron, Center for Law in the Public Interest
Nancy Janison, Civil Division, Attorney General's Office

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EVAN MECHAM, GOVERNOR
GERALD TELETZKE, Director

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Waste & Water Quality Mgmt.
4040 East 29th Street
Tucson, Arizona 85711
Telephone 628-5321

August 3, 1987

Mr. Dustin Escapule
Cochise Silver Mines
P.O. Box 158
Tombstone, AZ 85638

Dear Mr. Escapule:

I am writing as a follow-up to the site visit/evaluation conducted by Andrew Rendes and John Best of my staff on Wednesday, July 29, 1987.

Mr. Rendes gave his approval of the construction concept of the stacking/impoundment expansion area. The logic of having the grade break between the existing stacking area and the designated expansion area is reasonable. It is Mr. Rendes' understanding that the vertical configuration of the stacking/impoundment area is to be, from base upward: sand; 10-mil liner; sand with leak detection piping; 10-mil liner; compacted, washed granular material; slurry fines.

As Mr. Rendes stated, he is required to inspect the area at the stage/time when the leak detection system is being installed. He would also like to again view the completed site prior to introduction of the slurry/slime material. As you are well aware, care must be taken at the splice/joint of the existing stack area and the expansion area. There must be at least a one-foot overlap at the seam/joint. This overlap is required for the lower and upper liner. The seam is to be appropriately bonded by cementing, adhesive, or welding to ensure absolutely no passage of any fluid. Mr. Rendes is to also inspect the seam/joint.

As always, this office is willing to help whenever we can. If you should have any questions, do not hesitate to call.

Sincerely,


James A. Maston, P.E., Manager
Southern Regional Office
Environmental Health Services

JAM:AMR:ps

CC: Roger Kennett w/attachment
Cochise County Health Department
Ray Harper, P.O. Box 32040, Phoenix, AZ 85064
Frank Magini, 4831 North 42nd Ave., Phoenix, AZ 85019

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Central Palm Plaza Building

2005 North Central Avenue

Phoenix, Arizona 85004

000047

COCHISE SILVER MINES, INC.
P. O. Box 158
Tombstone, Arizona 85638

August 5, 1987

Mr. James E. Curlett
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
2005 North Central Avenue
Phoenix, Arizona 85004

Dear Mr. Curlett:

Reference your letter of July 23, 1987. We have resampled Tombstone City Well No. 1, Tombstone City Tap Water, TEI Well No. 1 and TEI Well No. 2. Smith and Smith Laboratories had a representative here on July 24, 1987 and samples were split for Smith and Smith Laboratories and Arizona Testing Laboratories. Copies of test results from both laboratories are enclosed.

Mrs. Kathy Smith has informed me that they had mercury contamination of the nitric acid they used at their laboratory. This is evidently why they had higher mercury readings on the July samples which were tested. As you can see from the reports the mercury levels for TEI Well No. 1, Tombstone City Well No. 1 and Tombstone Tap Water are all less than their detection limits.

Smith and Smith Laboratories this morning sampled TEI Wells 1, 2, and 3, Tombstone City Well No. 1 and Tombstone Tap water for the August sampling period.

If I can be of any assistance to you please contact me at 457-2282

Sincerely yours,


Gary A. Lindroos
Cochise Silver Mines, Inc.

5 Incl

cc: Mr. James Maston, Southern Regional Office, ADEQ
Mr. Robert Manuri, Manager, Field Services Station, ADEQ
Ms. Sarah Mapes, Manager, Compliance Section, ADEQ
Mr. Roger Kennett, Hydrology, ADEQ
Mr. Ronald E. Miller, Ph. D., ADEQ
Mr. Alex Gradillas, Mayor of Tombstone
Ms. Carol Mordhorst, Director Cochise Co. Health Dept.
Mr. David Baron, Center for Law in the Public Interest
Ms. Nancy Jamison, Civil Division, Attorney General's Office
Mr. Dustin Escapule, Vice President, Cochise Silver Mines, Inc.

000048

COCHISE SILVER MINES, INC.
P. O. Box 158
Tombstone, Arizona 85638

August 18, 1987

Mr. James E. Curlett
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 North Central Avenue
Phoenix, Arizona 85004

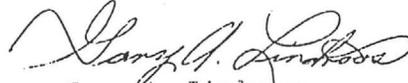
Dear Mr. Curlett:

Per our telephone conversation of this morning, we request approval to remove the washed tailings from the Impoundment Area to the North end of the Houghton Pad (approved by Martin Engineering).

Smith and Smith Laboratories has analyzed the tailings we submitted and has confirmed all samples to be below their detection limit of 0.04 mg/Kilogram Total Cyanide.

If you have any questions, please contact me at 457-2282.
Thank you.

Sincerely,



Gary A. Lindros
Assayer/Chemist
Cochise Silver Mines, Inc.

000049

COCHISE SILVER MINES, INC.

MEMO

August 19, 1987

TO: Dustin Escapule
FR: Gary Lindroos
RE: Impound Tailings Samples

On August 17, 1987 I submitted two samples from the Impound Tailings Area to Smith and Smith Laboratories for analysis of total Cyanide.

Smith and Smith Laboratories analyzed the tailings and confirmed that all samples were below their detection limit of 0.01 mg/Kilo Total Cyanide.

I then phoned Mr. James Curlett of Arizona Department of Environmental Quality, Water Pollution Compliance Unit requesting that permission be given us to move the tailings to the North end of the Houghton Pad. Mr. Curlett had already talked to Smith and Smith Laboratories and was aware that the tailings were in compliance with the Groundwater Permit and gave me verbal approval to have the tailings moved.

I followed this up with a letter to Mr. Curlett on August 18, 1987.

Respectfully Submitted:

Gary A. Lindroos

000050

COCHISE SILVER MINES, INC.

MEMO

August 24, 1987

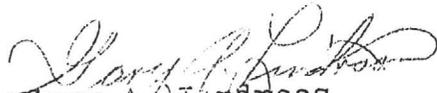
TO: Dustin Escapule
FR: Gary Lindroos
RE: Impound Tailings Samples

On August 21, 1987 I submitted two samples from the Impound Tailings area to Smith and Smith Laboratories for analysis of total cyanide. They confirmed that these samples were below their detection limit of 0.01 mg/Kilogram Total Cyanide.

I then phoned Mr. James Curlett's office and talked to Mr. John Rampe who gave me verbal approval to move that portion of the tailings which were analyzed to the North end of the Houghton Pad.

I followed up with a letter to Mr. Curlett on August 24, 1987.

Respectfully submitted:


Gary A. Lindroos

000051

COCHISE SILVER MINES, INC.
P. O. Box 158
Tombstone, Arizona 85638

August 24, 1987

Mr. James E. Curlett
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 North Central Avenue
Phoenix, Arizona 85004

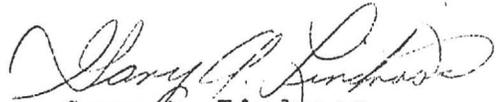
Dear Mr. Curlett:

On Friday, August 21, 1987, I received verbal approval from Mr. James Rampe to move the Impound Tailings to the North end of the Houghton Pad (approved by Martin Entineering).

Smith and Smith Laboratories has analyzed the tailings we submitted and has confirmed all samples to be below their detection limit of 0.01 mg/Kilogram Total Cyanide.

If you have any questions, please contact me at 457-2282.
Thank you.

Sincerely,



Gary A. Lindroos
Assayer/Chemist
Cochise Silver Mines, Inc.

000052

PBR MINERALS, INC.

MEMO

26 August 1937

TO: Dustin Escapule
FR: Gary Lindroos
RE: Visit from ADEQ (Mr. John Best)

At 1143 hours this date Mr. John Best arrived on the property to sample TEI Wells 1, 2, and 3. He also stated that he had sampled all the Tombstone City Wells this date.

He sampled the wells and then requested to look at the impound area. Satisfied that we had not made any changes since their last visit, Mr. Best departed.

Respectfully submitted:


Gary A. Lindroos

000053

COCHISE SILVER MINES, INC.

P.O. BOX 153

TOMBSTONE, ARIZONA 85638

September 17, 1987

Mr. James E. Curlett
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 North Central Avenue
Phoenix, Arizona 85004

Dear Mr. Curlett:

Per our telephone conversation of this afternoon, we request approval to remove the washed tailing from the Impoundment Area to the North end of the Houghton Pad (approved by Martin Engineering).

Smith & Smith Laboratories has analyzed the tailings we submitted and has confirmed all samples to be below their detection limit of 0.01 mg/Kilogram Total Cyanide.

If you have any questions, please contact me at 457-2282. Thank You.

Sincerely,



Gary A. Lindroos
Assayer/Chemist
Cochise Silver Mines, Inc.

GAL/pdd

000054

COCHISE SILVER MINES, INC.

P.O. BOX 158

TOMBSTONE, ARIZONA 85638

September 23, 1987

Mr. James E. Curlett
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 North Central Avenue
Phoenix, Arizona 85004

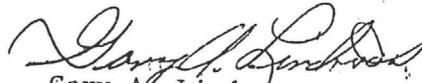
Dear Mr. Curlett:

Per our conversation of the morning, we request approval to remove the washed tailing from the west Impoundment Area to the North end of the Houghton Pad, (approved by Martin Engineering).

Smith & Smith Laboratories has analyzed the tailing we submitted and has confirmed all samples to be below their detection limit of 0.01 mg/Kilogram Total Cyanide.

If you have any questions, please contact me at 457-2282. Thank You.

Sincerely,



Gary A. Lindroos
Assayer/Chemist
Cochise Silver Mines, Inc.

COCHISE SILVER MINES, INC.
P.O. BOX 158
TOMBSTONE, ARIZONA 85638

September 29, 1987

Mr. James E. Curlett
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 N. Central Avenue
Phoenix, Arizona 85004

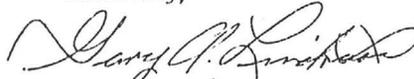
Dear Mr. Curlett:

Per our telephone conversation of this afternoon, we request approval to remove the washed tailing from the Impoundment Area to the North end of the Houghton Pad (approved by Martin Engineering).

Smith & Smith Laboratories has analyzed the tailing we submitted and has confirmed all samples to be below their detection limit of 0.01 mg/Kilogram Total Cyanide.

If you have any questions, please contact me at 457-2282. Thank You.

Sincerely,


Gary A. Lindroos
Assayer/Chemist
Cochise Silver Mines, Inc.

GAL/pdd

000056

P.B.R. MINERALS, INC.
P.O. BOX 158
TOMBSTONE, ARIZONA 85638

October 7, 1987

Mr. John Rampe
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 N. Central Avenue
Phoenix, Arizona 85004

Dear Mr. Rampe:

Per our telephone conversation of yesterday afternoon; we request written approval to remove the washed west Impound tailings to the north end of the Houghton Pad. (Approved by Martin Engineering)

Smith & Smith Laboratories has analyzed the washed tailing and confirmed all samples to be below their detection limit of 0.01 mg/Kilo total cyanide.

If you have any questions, please contact me at 457-2282. Thank you.

Sincerely,



Gary A. Lindrods
Technical Supervisor

GAL/pdd

000057

P.B.R. MINERALS, INC.
P.O. BOX 158
TOMBSTONE, ARIZONA 85638

October 16, 1987

Mr. John Rampe
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 N. Central Ave.
Phoenix, Arizona 85004

Dear Mr. Rampe:

Per our telephone conversation of this morning, we request written approval in addition to verbal approval to remove the washed west and east impound tailings to the north end of the Houghton Pad. (Approved by Marin Engineering)

Smith & Smith Laboratories has analyzed the washed tailing and confirmed all samples to be below their detection limit of 0.01 mg/Kilo total cyanide.

If you have any questions, please contact me at 457-2282. Thank you.

Sincerely,



Gary A. Lindroos
Technical Supervisor

GAL/pdd

000058

P.B.R. MINERALS, INC.
P.O. BOX 158
TOMBSTONE, ARIZONA 85638

October 27, 1987

Mr. Perry Nixon
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 N. Central Avenue
Phoenix, Arizona 85004

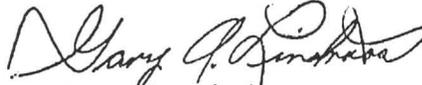
Dear Mr. Nixon:

Per our telephone conversation of this afternoon, we request approval to remove the washed East impound tailings to the north end of the Houghton Pad. (Approved by Martin Engineering)

Smith and Smith Laboratories has analyzed the washed tailing and confirmed all samples to be below their detection limit of 0.01 mg/Liter total cyanide.

If you have any questions, please contact me at 457-2282. Thank you.

Sincerely,


Gary A. Lindroos
Technical Supervisor

GAL/pdd

000059

P.B.R. MINERALS, INC.
P.O. BOX 158
TOMBSTONE, ARIZONA 85638

November 4, 1987

Mr. Perry Nixon
Arizona Department of Environmental Quality
Water Pollution Compliance
Central Palm Plaza Building
2005 N. Central Avenue
Phoenix, Arizona 85004

Dear Mr. Nixon:

Per our telephone conversation of this afternoon, we request approval to remove the washed West impound tailing to the north end of the Houghton Pad. (Approved by Martin Engineering)

Smith & Smith Laboratories has analyzed the washed tailing and confirmed all samples to be below their detection limit of 0.01 mg/Liter total cyanide.

If you have any questions, please contact me at 457-2282. Thank you.

Sincerely,


Gary A. Lindroos
Technical Supervisor

GAL/pdd

000060

P.B.R. MINERALS, INC.
P.O. BOX 158
TOMBSTONE, ARIZONA 85638

November 10, 1987

Mr. John Rampe
Arizona Department of Environmental Quality
Water Pollution Compliance Unit
Central Palm Plaza Building
2005 N. Central Ave.
Phoenix, Arizona 85004

Dear Mr. Rampe:

Per our telephone conversation of this afternoon, we request approval to remove the washed West Impound tailing to the end of the Houghton Pad.
(Approved by Martin Engineering)

Smith & Smith Laboratories has analyzed the washed tailing and confirmed all samples to be below their detection limit of 0.01 mg/Liter total cyanide.

If you have any questions, please contact me at 457-2282. Thank You.

Sincerely,


Gary V. Lindroos
Technical Supervisor

GAL/pdd

000061

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Water Quality
4040 East 29th Street
Tucson, Arizona 85711
Telephone 628-5321

EVAN MECHAM, GOVERNOR
GERALD H. TELETZKE, PH.D., DIRECTOR

December 15, 1987

Mr. Gary Lindroos
Cochise Silver Mines
P.O. Box 158
Tombstone, AZ 85638

Dear Mr. Lindroos:

As was discussed by you and John Best of my staff; you are encouraged to implement any possible means of reducing the free cyanide and maybe the mercury concentration in your well No. 2. A suggested experiment is to add calcium hypochlorite to well No. 2 for the purpose of neutralizing free cyanide and possibly precipitating Mercury.

Please keep this office informed of any progress in reducing Mercury and Cyanide concentrations in this well.

Thank you for your cooperation.

Sincerely,


James A. Maston, P.E., MANAGER
Southern Regional Office
Office of Water Quality

JAM:JB:ps

CC: Roger Kennett

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Central Palm Plaza Building

2005 North Central Avenue

Phoenix, Arizona 85001

Incl #1

000062

P.B.R. MINERALS, INC.

MEMO

December 21, 1987

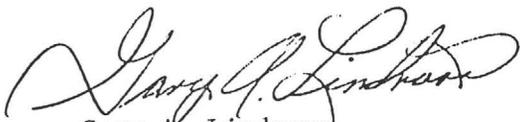
TO: Mr. Ray Harper
FR: Gary Lindroos
RE: Reducing Mercury and Cyanide Concentrations in Well 2

On December 15, 1987 I received a call from Mr. John Best, Arizona Department of Environmental Quality, Tucson, Arizona requesting that we consider treating Well No. 2 with calcium hypochlorite in an effort to reduce the free cyanide and precipitate the mercury. He stated that it is possible that the free cyanide is leaching a natural mercury deposit near well No. 2 and is responsible for the slight rise in mercury levels during the past few weeks.

After discussion with Mr. Dustin Escapule and Mr. John Schissler I called Mr. Best and requested that he submit his proposal in writing to P.B.R. Minerals. On Saturday, December 18, 1987 I received a letter from Mr. James Maston, Manager, Southern Regional Office, Office of Water Quality confirming Mr. Bests proposal. (see Incl #1).

Before proceeding with any chemical treatments to the well and the aquifer I felt it best you and your staff be advised. Any comments or recommendations from you will be greatly appreciated.

Respectfully Submitted:



Gary A. Lindroos
Technical Superintendant

cc: Mr. J.H. Schissler
Mr. Dustin Escapule
Mr. Les Bowyer

1 Incl

000063

APRIL DEPT OF
SOUTH. QUARRY

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

EVAN MECHAM, GOVERNOR
GERALD H. TELETZKE, PH.D., DIRECTOR

February 16, 1988

Jay I. Moyes
Meyer, Hendricks, Victor, Osborn & Maledon
Suite 400 C
2700 North Third Street
Phoenix, Arizona 85004

COPY

Dear Mr. Moyes:

RE: Cochise Silver Mines, Inc.
Groundwater Quality Protection Permit No. G-0011-02

After having visited the site on January 27, 1988, I have a better understanding of the extent of soils removal from the old ponds area. However, I have yet to receive an assessment from the owner/operator of the clean up work performed as I requested in my letter of July 10, 1987.

The assessment should include the total amount of material removed, the depth from original grade the excavation has proceeded, and the related analysis results. Also include a proposed schedule for completion of the clean up of the old ponds area. This information is necessary in developing permit conditions.

If you have any questions, please feel free to call me at 257-6806.

Sincerely,



Roger Kennett
Water Permits Unit
Office of Water Quality

RK:mm

cc: Perry Nixon
James Maston
Ray Harper
Nancy Jamison

000064

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MEYER, HENDRICKS, VICTOR, OSBORN & MALEDON

A PROFESSIONAL ASSOCIATION

cc DE.
JS

PAUL J. MEYER
DAVID VICTOR
WILLIAM J. MALEDON
ANDREW D. HURWITZ
RANDALL C. NELSON
R. DOUGLAS DALTON
VINCENT F. CHIAPPETTA
COLIN F. CAMPBELL
JAY I. MOYES
THOMAS H. CURZON
JOHN A. LASOTA, JR.
HOWARD N. SINGER
HELEN PERRY GRIMWOOD
THOMAS D. PROFFITT
BRETT L. DUNKELMAN
JEAN K. FITZSIMON
DAVID B. ROSENBAUM
W. SCOTT BALES
JOHN R. HANNAH
WILLIAM J. SIMS II
MARK D. SAMSON
JUDITH M. DWORKIN
THAYNE G. LOWE
* ON LEAVE

EDWIN F. HENDRICKS
JONES OSBORN II
LARRY A. HAMMOND
ROBERT L. PALMER
JEFFREY L. SELLERS
DONALD W. BIVENS
MARK S. WALLACE
RON KILGARD
DONALD M. PETERS
DAVID G. CAMPBELL
C. TAYLOR ASHWORTH
JAMES G. DEROUIN
GARY A. GOTTO
WILLIAM M. HARDIN
ANNA L. DURAND
JEFFREY C. ZIMMERMAN
DIANE M. JOHNSON
JON M. SANDS
TANNIS L. FOX
HELEN M. SANDALLS
SHANE R. SWINDLE
DAWN LEE DAUPHINE
CLARK M. PORTER

SUITE 4000
2700 NORTH THIRD STREET
PHOENIX, ARIZONA 85004
602-263-8700

TELEX TWX 910-950-1101
TELECOPY (24 HOURS)
602-266-6751

FILE NO.

RECEIVED FEB 22 1988

3622.4

February 19, 1988

Mr. Raymond Harper
PBR Minerals, Inc.
3104 E. Camelback Road
Suite 603
Phoenix, Arizona 85016

Dear Ray:

I am enclosing a copy of a letter from Roger Kennett dated February 16, 1988. You will recall having shown me draft report assessing the cleanup operation, and that we opted against turning that in to the Department in that form, prior to our recent visit to the site.

It is important that PBR now prepare a revised version of that assessment, specifically addressing the points Roger makes in his enclosed letter. It would probably be well to have Dusty prepare a current cleanup assessment report and then forward it to me for review.

I assume that the analysis reports of the soils that were taken from the grids, which we were expecting at the time of our visit to the site, have now been received and forwarded on to the Department, although that is not clear from Roger's letter.

Feel free to call if you have any questions.

Very truly yours,



Jay I. Moyes

JIM:kla
enclosure

cc: Mike Ashworth
Brian Zemp

000065



March 2, 1988

Mr. Jay Moyes
Meyer, Hendricks, Victor, Osborn & Maledon
Suite 4000
2700 North Third Street
Phoenix, Arizona 85004

Dear Jay:

Please find the enclosed cross-sections indicating the volume of materials that have been removed from the old TEI ponds. Exhibit A, is a cross section of the Old Line Pond and Exhibit B, is a cross section of the Old Spray Pond. These exhibits will correlate with Exhibit C which is a Grid Map of the Clean-up area. The numbers (or Stations) establish the fifty foot grid which is required by Part 2, Section A1 para c of the Groundwater Protection Permit G-001-02. The circled numbers on Exhibit C indicate the total cyanide as reported by Smith and Smith Laboratories.

As of today we have removed approximately 30,000 tons of contaminated material from the Old Preg Pond and Lined Pond. Unfortunately we have been unable to remove a significant amount of material from the Overflow Pond due to the fact the material was saturated to the point where it has been virtually impossible to put any equipment in that area. Due to the fact that it has been dry for the past two months we are going to once again attempt to put the dozer into the pond area to push the mud out and transport it to the process facility.

We have conducted numerous in house analysis for free cyanide on the materials from all three areas and approximately 95 per cent of these samples have shown virtually no free cyanide. As you can see on Exhibit C all of the total cyanides are way above our allowable limits. This is of great concern to us due to the fact that we have removed virtually all of the material down to the natural soils and still are indicating high total cyanides. ADEQ has recently issued a permit for a cyanide leaching operation located about a mile west of our facility and has no mention of total cyanide and has allowable limits 100 times the limit stated in our permit. If the State would ammend our permit to read as this new cyanide leaching permit does, 95 per cent of our clean-up would be completed.

If the State does not ammend our current permit we are looking at a considerable amount of material which still has to be removed from three areas. To remove the next five foot increment from the entire area would represent approximately 51,000 tons. At our current rate of excavation it would require approximately two months to complete this phase of the clean-up. This does not necessarily mean that the clean-up would be completed, it would only mean that we would be at a point to re-sample and re-assay the fifty foot grid. At this point it is impossible to predict a completion date of the clean-up with our current limits of total cyanide.

3104 EAST CAMELBACK RD.
SUITE 603
PHOENIX, ARIZONA 85016
PHONE 602/457-2282

000066

Mr. Jay Moyes
Page 2
March 2, 1988

If you have any questions about the contents of this letter please feel free to call me.

Sincerely yours,



Dustin Escapule

DE:gl

cc - Ray Harper
Jack Schissler
Mike Ashworth

000067

TEI PREGNANT SOLUTION POND

Cross Section Facing South

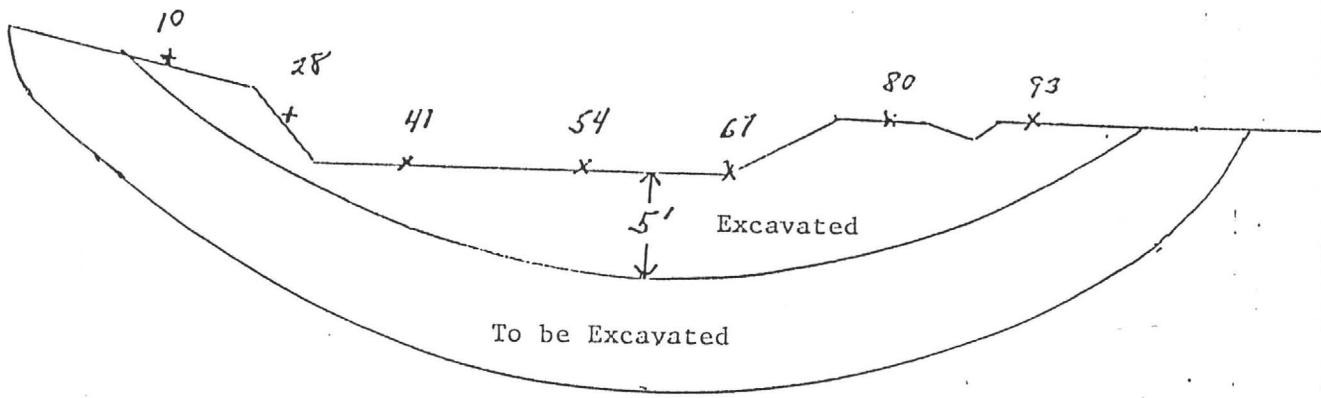


Exhibit A

000068

TEI WATER SPRAY POND

Cross Section Facing South

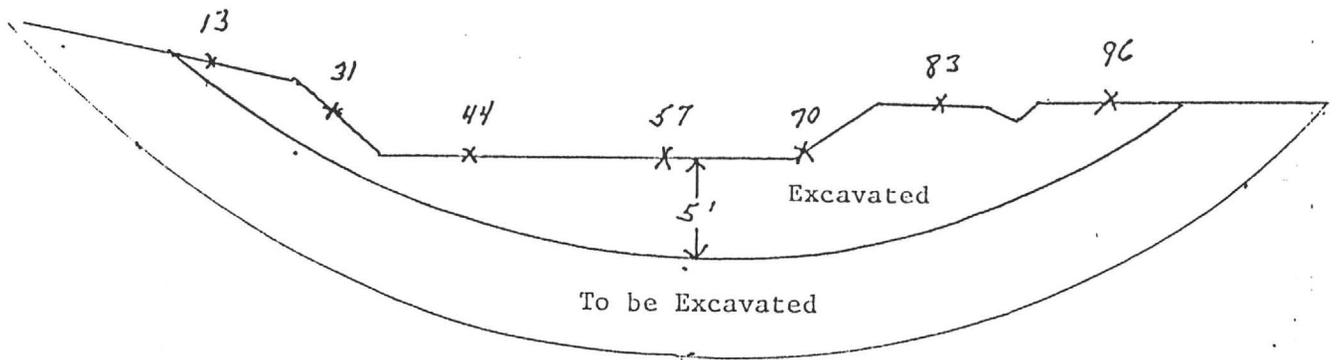


Exhibit B

000069

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Rose Mofford, Governor
Ronald L. Miller, Ph.D., Acting Director

July 14, 1988

Mr. Gary Lindroos
PBR Minerals, Inc.
950 Skyline Drive
Tombstone, AZ 85638

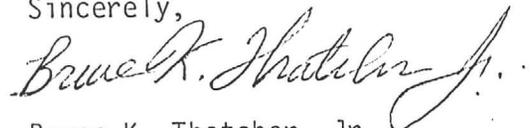
Dear Mr. Lindroos:

As we discussed in our phone conversation on Thursday, July 14, 1988, the Arizona Department of Environmental Quality (ADEQ) is planning a site visit on Monday, July 25, 1988. The purpose of our visit will be to conduct verification soil sampling at the cyanide soil cleanup area where the former pregnant solution, spray and overflow water ponds were located. It is possible that soil sampling will extend into Tuesday, July 26th. However, we expect the sampling to be completed by Tuesday evening.

The ADEQ representatives will include Dave Quinn (Safety Officer), Cindy Cohagan (Hydrologist) and Bruce K. Thatcher, Jr. (Hydrologist).

Should you have any questions or concerns regarding our planned site visit, please call Bruce K. Thatcher, Jr., Hydrologist, at (602)257-2361.

Sincerely,



Bruce K. Thatcher, Jr.
Hydrologist

BT.d1

*Sampling Completed
7-25-88
7-26-88*



The Department of Environmental Quality is An Equal Opportunity Affirmative Action Employer

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Inter-Office Memorandum

DATE: September 21, 1988

TO: Roger Kennett
Water Permits Unit (Existing Facilities)

THRU: Debra Daniel, Manager *DND*
State Permits Hydrology Unit

FROM: Bruce K. Thatcher, Jr., Hydrologist *BKT*
State Permits Hydrology Unit

RE: PBR Minerals, Inc. Temporary Groundwater Quality Protection Permit



The following tasks are recommended prior to closure of the PBR Minerals, Inc. (formerly Cochise Silver) facility in Tombstone, Arizona.

- 1) Additional soil removal and treatment
- 2) Pump test of well #2
- 3) Construction of a water table elevation map
- 4) Collection of a water sample from the open mine shaft (if possible)

In addition, I recommend post-closure monitoring of wells immediately down-gradient of the old ponds.

Soil samples were collected by ADEQ personnel at the site of the old ponds on July 26, 1988. These soil samples were analyzed by the ADHS State Lab for total cyanide, free cyanide, nitrate, mercury and pH. Total cyanide in excess of the soil cleanup level of 2 mg/kg was detected in two samples from the overflow water pond, three samples from the water spray pond, and one sample from the pregnant solution pond (see figure attached). The high total cyanide levels in both the overflow water and water spray ponds indicate that additional soil removal and treatment is necessary in these areas. Additional soil sampling and analysis should follow the excavation. The single elevated level in the pregnant solution pond exceeded the soil cleanup level by 0.65 mg/kg. This sample is being reanalyzed by the State Lab for verification. In addition, the analysis of sample O2 in the overflow water pond is being rechecked by the State Lab due to nearly identical total and free cyanide measurements.

It has been suggested by PBR Minerals, Inc., but not substantiated, that all contaminated groundwater has been recovered by pumping Tombstone Exploration well #2. Although, the levels of free cyanide in well #2 has decreased from a level of 93.9 mg/l in July, 1984 to a level of approximately 0.01 mg/l in May, 1988, this in itself is not evidence that the entirety of the contaminants were recovered. At the present time, there is no hydraulic conductivity data which can be used to estimate the limits of the capture zone created by well #2 during remediation. A pump test would allow a judgement to be made on this issue.

My suggestion is to pump Tombstone Exploration well #2, and measure both draw-down and recovery in wells #1, #2 and possibly the exposed mine shaft near the old pregnant solution pond. Data collected in wells #1 and #2 could be used to calculate aquifer parameters. With this information, the water table elevation map, and an average pumping rate for well #2 during its operation, an estimate can be made of the capture zone. Note that with only one observation

well, we will be forced to assume that the aquifer is homogeneous and isotropic. These assumptions are likely in error as the nature of the aquifer porosity has been described as fractures and solution cavities.

An attempt should also be made to collect a water sample from the exposed mine shaft. If a water sample can be obtained, it should be analyzed for total cyanide, free cyanide, trace metals (including mercury), major cations, major anions and nitrate.

Quarterly post-closure monitoring should be conducted for five years with water samples collected from Tombstone Development Wells #1 and #2 and the City of Tombstone Well #1. Constituents monitored should include total cyanide, free cyanide, nitrate and mercury.

If the groundwater elevation map indicates that wells #1 and #2 are not adequate for post-closure monitoring, an additional downgradient monitoring well may need to be installed. This may also be the case if the calculated capture zone of well #2 is small. If necessary, I would recommend it be placed downgradient of wells #1 and #2 based on groundwater velocity considerations which include the hydraulic conductivity derived from the pump test, the hydraulic gradient derived from the water table elevation map, regional fracture trends and the time since the start of Cochise Silver's operation. It should be kept in mind that an indicated large capture zone for well #2 may negate the need for an additional downgradient monitoring well.

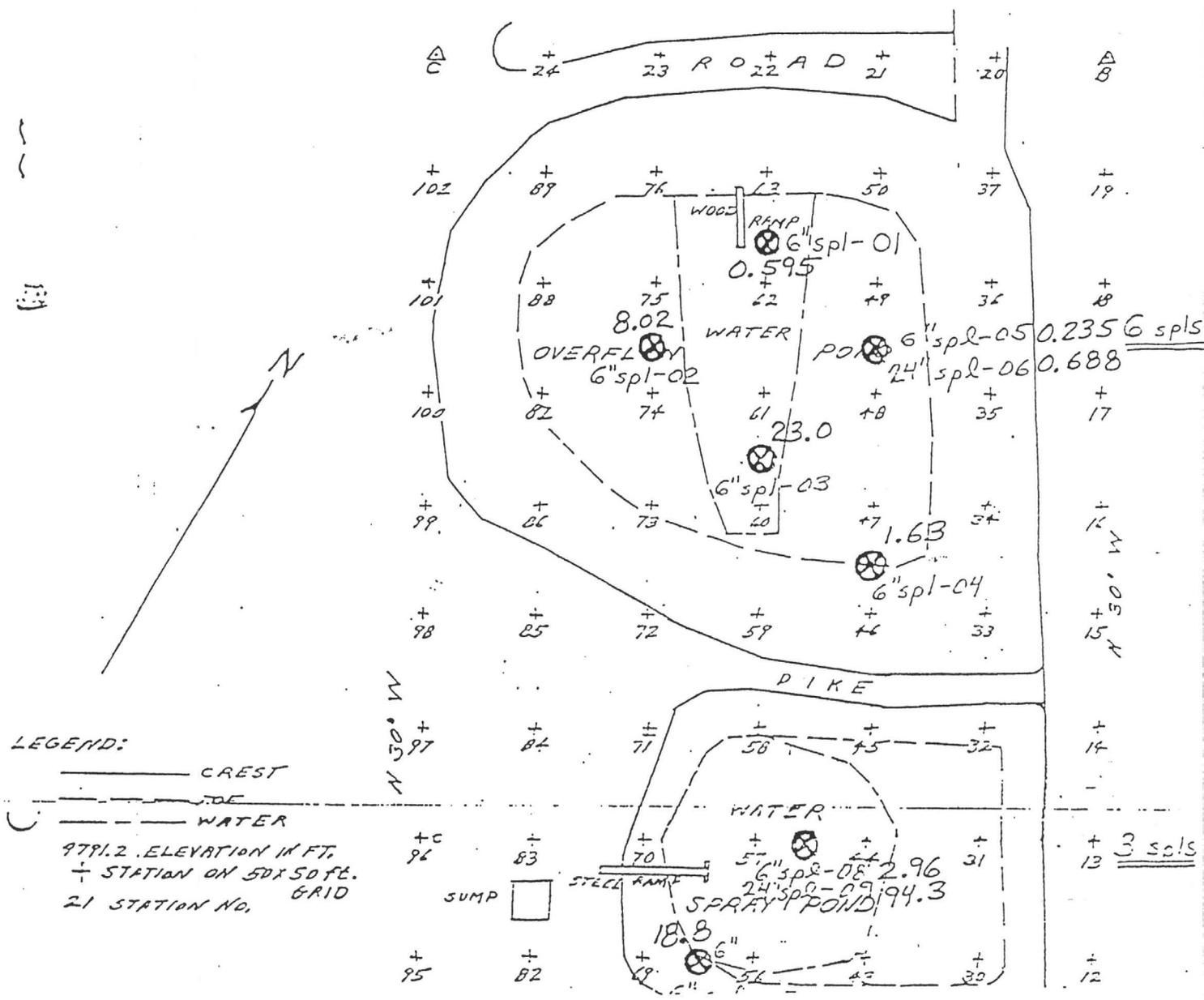
BT:d1

000072

Cochise	Cyanide, mg/kg		Extractable	Hg, mg/kg	pH, 50
	Total	Direct	NO ₃ , mg N/l		
01	0.595	<0.05	5.54	<0.25	8.5
02	8.02	8.0	51.5	<0.25	7.55
03	23.0	4.0	53.5	<0.25	8.1
04	1.63	<0.05	34.0	<0.25	8.33
05	0.235	<0.05	3.79	<0.25	8.53
06	0.688	<0.05	19.7	<0.25	8.2
07	18.8	0.45	22.6	0.37	8.5
08	2.96	<0.05	8.69	<0.25	8.6
09	94.3	<0.05	5.93	<0.25	8.5
10	2.65	<0.05	30.8	0.26	8.46
11	0.754	<0.05	27.1	<0.25	8.5
12 (dup. 11)	0.855	<0.05	25.0	<0.25	8.5
13	0.522	<0.05	32.8	<0.25	8.3
14	1.92	<0.05	7.04	0.25	8.7
15	1.31	<0.05	20.8	0.52	8.4
16	0.238	<0.05	25.0	<0.25	8.5
17	1.16	<0.05	35.6	0.31	8.4
	mg/l	ug/ml	→		
Field Blank 18	0.082	<0.05	<0.10	0.0008	
Field Blank 19	0.118	<0.05	<0.10	0.0012	
Trip Blank 20	<0.05	<0.05	<0.10	<0.005	

000073

Total LN mg/KG
7/26/88
ADEQ Sp19



000074

ARIZONA DEPARTMENT OF HEALTH SERVICES

August 22, 1988

PWS Number:

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director

1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 01
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11409	08/22/88	Cyanide, Total	0.595 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug
	08/22/88	Extractable Nitrate	5.54 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.5	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005 ug/l	EPA 7470	0.05 ug

Reviewed and Approved:



Thomas S. Davis, Manager

Director, Office of Environmental and Analytical Chemistry

000075

ARIZONA DEPARTMENT OF HEALTH SERVICES

OWS Number:

August 22, 1988

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

THATCHER, BRUCE K.
DED
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 02
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11410	08/22/88	Cyanide, Total	8.02 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/l
	08/22/88	Cyanide, Direct	8.0 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/l
	08/22/88	Extractable Nitrate	51.5 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	7.55	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/l

Prepared and Approved:
S. S. Davis, Manager
Director of Environmental and Analytical Chemistry



000076

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

August 22, 1988

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director

THATCHER, BRUCE K.
 DEB
 DEPT. ENVIRON. QUALITY
 HYDROLOGY SECTION
 2005 N CENTRAL
 PHOENIX, AZ 85004

1520 West Adams, Phoenix, Arizona 85007
 (602) 255-1188
 TYPE OF SAMPLE: SOIL SLUDGE
 Custody: Y
 Priority: 3

Sample Name: COCHISE
 Station: 03
 Date Sampled: 07/26/88
 Time Sampled:

PROCESSING:
 Total Recoverable
 Dissolved (Filtered)
 Leachate/EP Tox
 Other:

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIM FOR SOL
1411	08/22/88	Cyanide, Total	23.0 ug/g	720	EPA 335.2	1.0 mg/l	EPA 9010	1.0 mg
	08/22/88	Cyanide, Direct	4.0 ug/g	722	EPA 335.1	1.0 mg/l	EPA 9010	1.0 mg
	08/22/88	Extractable Nitrate	53.5 ug/g	630	EPA 353.2	0.01 mg-N/l	N/A	
	08/22/88	pH	8.1	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 mg

Prepared and Approved: *J. M. Davis*
 by S. Davis, Manager
 Director of Environmental and Analytical Chemistry

000077

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

August 22, 1988

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 04
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11412	08/22/88	Cyanide, Total	1.63 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/g
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/g
	08/22/88	Extractable Nitrate	34.0 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.33	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 ug/g

Reviewed and Approved:
Thomas S. Davis, Manager
Director of Environmental and Analytical Chemistry



000078

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

August 22, 1988

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 05
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11413	08/22/88	Cyanide, Total	0.235 ug/g	720	EPA 335.2	1.0 mg/l	EPA 9010	1.0 mg/g
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 mg/l	EPA 9010	1.0 mg/g
	08/22/88	Extractable Nitrate	3.79 ug/g	630	EPA 353.2	0.01 mg-N/l	N/A	
	08/22/88	pH	8.53	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 mg/g

Reviewed and Approved:
Sas S. Davis, Manager
Director of Environmental and Analytical Chemistry

Sas S. Davis

000079

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

State Laboratory

August 22, 1988

Jon M. Counts, Dr. P. H., Assistant Director

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 06
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
 Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11414	08/22/88	Cyanide, Total	0.688 ug/g	720	EPA 335.2	1.0 mg/l	EPA 9010	1.0 mg/g
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 mg/l	EPA 9010	1.0 mg/g
	08/22/88	Extractable Nitrate	19.7 ug/g	630	EPA 353.2	0.01 mg-N/l	N/A	
	08/22/88	pH	8.2	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 mg/g

Reviewed and Approved:

Thomas Davis

Thomas S. Davis, Manager

Director, Office of Environmental and Analytical Chemistry

000080

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

August 22, 1988

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 07
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIM FOR SOL
1415	08/22/88	Cyanide, Total	18.8 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug
	08/22/88	Cyanide, Direct	0.45 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug
	08/22/88	Extractable Nitrate	22.6 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.5	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	0.37 ug/g	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug

Prepared and Approved:

J. Thomas Davis

J. Thomas Davis, Manager

Director of Environmental and Analytical Chemistry

000081

ARIZONA DEPARTMENT OF HEALTH SERVICES

WS Number:

August 22, 1988

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 08
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
 Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other:

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11416	08/22/88	Cyanide, Total	2.96 ug/g	720	EPA 335.2	1.0 mg/l	EPA 9010	1.0 mg
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 mg/l	EPA 9010	1.0 mg
	08/22/88	Extractable Nitrate	8.69 ug/g	630	EPA 353.2	0.01 mg-N/l	N/A	
	08/22/88	pH	8.6	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 mg

Reviewed and Approved:
Thomas S. Davis, Manager
Director of Environmental and Analytical Chemistry

Thomas S. Davis

000082

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

September 22, 1988

Lab Number:

WATCHER, BRUCE W.
388
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COOHISE
Station: 09
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
1417	08/22/88	Cyanide, Total	94.3 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 mg/l
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 mg/l
	08/22/88	Extractable Nitrate	5.93 ug/g	430	EPA 353.2	0.01 ug-N/l	N/A	0.1 mg/l
	08/22/88	pH	8.5	403	EPA 150.1	0.1 EU	EPA 9040	0.05 mg/l
	08/22/88	Mercury	< 0.25 ug/g	71930/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 mg/l

Reviewed and Approved:

Thomas Davis

Thomas S. Davis, Manager

Office of Environmental and Analytical Chemistry

000083

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 10
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11418	08/22/88	Cyanide, Total	2.65 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/l
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/l
	08/22/88	Extractable Nitrate	30.8 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.46	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	0.26 ug/g	71900/71890	EPA 245.1	0.0005 ug/l	EPA 7470	0.05 ug/l

Reviewed and Approved:
Thomas S. Davis, Manager

Thomas S. Davis

000084

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 11
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
 Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other:

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11419	08/22/88	Cyanide, Total	0.754 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/k
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/k
	08/22/88	Extractable Nitrate	27.1 ug/g	630	EPA 353.2	0.01 mg-N/l	N/A	
	08/22/88	pH	8.5	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/k

Prepared and Approved: Thomas Davis
S. Davis, Manager

000085

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DED
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 12
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11420	08/22/88	Cyanide, Total	0.855 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/l
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/l
	08/22/88	Extractable Nitrate	25.0 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.5	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/l

Reviewed and Approved:
S. Davis, Manager

Thomas Davis

000086

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 13
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
 Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11421	08/22/88	Cyanide, Total	0.522 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/kg
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/kg
	08/22/88	Extractable Nitrate	32.8 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.3	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/kg

Prepared and Approved:
S. S. Davis, Manager

S. S. Davis

000087

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 14
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMIT FOR SOLID
1422	08/22/88	Cyanide, Total	1.92 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/k
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/k
	08/22/88	Extractable Nitrate	7.04 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.7	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	0.25 ug/g	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/k

Prepared and Approved:
S. Davis, Manager

Thomas Davis

000088

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 15
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIM FOR SOL
11423	08/22/88	Cyanide, Total	1.31 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/g
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/g
	08/22/88	Extractable Nitrate	20.8 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	pH	8.4	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	0.52 ug/g	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/g

Reviewed and Approved:
S. S. Davis, Manager



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ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 16
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

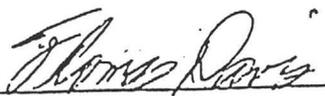
Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11424	08/22/88	Cyanide, Total	0.238 ug/g	720	EPA 335.2	1.0 mg/l	EPA 9010	1.0 mg/l
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 mg/l	EPA 9010	1.0 mg/l
	08/22/88	Extractable Nitrate	25.0 ug/g	630	EPA 353.2	0.01 mg-N/l	N/A	
	08/22/88	pH	8.5	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	< 0.25 ug/g	71900/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 mg/l

Reviewed and Approved:
S. S. Davis, Manager



000090

ARIZONA DEPARTMENT OF HEALTH SERVICES

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director
1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

August 26, 1988

PWS Number:

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: SOIL SLUDGE
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 17
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:
X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
11425	08/22/88	Cyanide, Total	1.16 ug/g	720	EPA 335.2	1.0 mg/l	EPA 9010	1.0 mg/l
	08/22/88	Cyanide, Direct	ND < 0.05 ug/g	722	EPA 335.1	1.0 mg/l	EPA 9010	1.0 mg/l
	08/22/88	Extractable Nitrate	35.6 ug/g	630	EPA 353.2	0.01 mg-N/l	N/A	
	08/22/88	pH	8.4	403	EPA 150.1	0.1 SU	EPA 9040	0.1 SU
	08/22/88	Mercury	0.31 ug/g	71900/71890	EPA 245.1	0.0005mg/l	EPA 7470	0.05 mg/l

Reviewed and Approved:
S. Davis, Manager

Thomas Davis

000091

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

State Laboratory

August 22, 1988

Jon M. Counts, Dr. P. H., Assistant Director

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

TYPE OF SAMPLE: WATER
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 18
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:

X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
08/22/88	Cyanide, Total	0.082 ug/ml	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/l
08/22/88	Cyanide, Direct	ND < 0.05 ug/ml	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/l
08/22/88	Nitrite/Nitrate Total	< 0.10 ug/ml	630	EPA 353.2	0.01 ug-N/l	N/A	
08/22/88	Mercury	0.0008 ug/ml	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/l

Prepared and Approved:



Thomas S. Davis, Manager

Manager of Environmental and Analytical Chemistry

000092

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

August 22, 1988

State Laboratory

Jon M. Counts, Dr. P. H., Assistant Director

THATCHER, BRUCE K.
DEQ

1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

Sample Name: COCHISE

Station: 19

DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION

TYPE OF SAMPLE: WATER

Date Sampled: 07/26/88

2005 N CENTRAL
PHOENIX, AZ 85004

Custody: Y

Time Sampled:

Priority: 3

PROCESSING:

X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

-- ANALYTICAL RESULTS --

LAB #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMIT FOR SOLIDS
11427	08/22/88	Cyanide, Total	0.118 ug/ml	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/k
	08/22/88	Cyanide, Direct	ND < 0.05 ug/ml	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/k
	08/22/88	Nitrite/Nitrate Total	< 0.10 ug/ml	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	Mercury	0.0012 ug/ml	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/k

Prepared and Approved:
as S. Davis, Manager



Chief of Environmental and Analytical Chemistry

000093

ARIZONA DEPARTMENT OF HEALTH SERVICES

PWS Number:

State Laboratory

August 22, 1988

Jon M. Counts, Dr. P. H., Assistant Director

1520 West Adams, Phoenix, Arizona 85007
(602) 255-1188

THATCHER, BRUCE K.
DEQ
DEPT. ENVIRON. QUALITY
HYDROLOGY SECTION
2005 N CENTRAL
PHOENIX, AZ 85004

TYPE OF SAMPLE: WATER
Custody: Y
Priority: 3

Sample Name: COCHISE
Station: 20
Date Sampled: 07/26/88
Time Sampled:

PROCESSING:

X Total Recoverable
Dissolved (Filtered)
Leachate/EP Tox
Other: X

Note: All samples, including chain-of-custody, will be disposed of within 60 days unless a "Save Sample" form is received by the Chemistry Laboratory.

Comments:

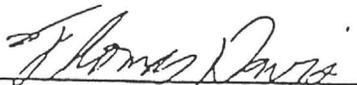
-- ANALYTICAL RESULTS --

AS #	DATE REPORTED	COMPOUND	RESULT	STORET NUMBER	METHOD FOR WATERS	DET. LIMITS FOR WATERS	METHOD FOR SOLIDS	DET. LIMITS FOR SOLIDS
1428	08/22/88	Cyanide, Total	< 0.05 ug/g	720	EPA 335.2	1.0 ug/l	EPA 9010	1.0 ug/kg
	08/22/88	Cyanide, Direct	ND < 0.05 ug/ml	722	EPA 335.1	1.0 ug/l	EPA 9010	1.0 ug/kg
	08/22/88	Nitrite/Nitrate Total	< 0.10 ug/g	630	EPA 353.2	0.01 ug-N/l	N/A	
	08/22/88	Mercury	< 0.0005 ug/ml	71900/71890	EPA 245.1	0.0005ug/l	EPA 7470	0.05 ug/kg

Reviewed and Approved:

S. Davis, Manager

of Environmental and Analytical Chemistry



000094

ARIZONA DEPARTMENT OF

JAY I. MOYES
ATTORNEY AT LAW

Rose Mofford, Governor
Ronald Miller, Acting Director

MEYER, HENDRICKS, VICTOR
OSBORN & MALEDON
A PROFESSIONAL ASSOCIATION

2700 NORTH THIRD ST
SUITE 4000
PHOENIX, ARIZONA 85

NOTE: THIS is different than
OUT OF A FILE ^{below} September 29, 1988

Mr. Jay I. Moyes
Meyer, Hendricks, Victor
Suite 4000
2700 North Third Street
Phoenix, Arizona 85004

FOLDER LABELED
GROUND WATER
Quality Protection
Permit #G-0020-02

REC'D MEYER, HENDRICKS,
VICTOR, OSBORN & MALEDON

SEP 29 1988

COPY

Dear Mr. Moyes:

Re: PBR Minerals, Incorporated
Groundwater Quality Protection
Permit No. G-0019-02T - Site Closure Plan

The closure plan for the above referenced facility has been received and reviewed by the Water Permits Unit and the State Permits Hydrology, and we offer the following comments. Although overall we feel the area has been adequately excavated, results of soil sampling performed by the Department reveals several areas of elevated total cyanide levels remain. Copies of the laboratory results and the map showing sample locations are enclosed. We are having the lab reanalyze samples from locations 02 and 10. Sample 10 is from the pregnant solution pond. The result from that location indicated a level of total cyanide of 2.65 mg/kg, just over the cleanup limit, which is why we are proceeding with reanalysis. It appears that additional excavation and treatment of the other "hot spot" areas must occur.

In order to substantiate the contention that the contamination in TEI well #2 has been contained through pumping, we feel the following tasks must be performed:

- Pump test of well #2.
- Collect and tabulate pumping records of well #2 during the period of known contamination including pumping rate(s) and periods of down time.
- Construction of a water table elevation map.
- Collection of a water sample from the open mine shaft underlying the pregnant solution pond, if possible.

The Hydrology Unit recommends pumping TEI #2, measuring drawdown and recovery in wells #1, #2 and possibly the exposed mine shaft. Data collected in wells #1 and #2 could be used to calculate aquifer parameters. With this information, the water table elevation map, and an average pumping rate for well #2 during its operation, an estimate can be made of the capture zone. They note that with only one observation well, we will be forced to assume that the aquifer is homogeneous and isotropic even though these assumptions are likely in error as the nature of the aquifer porosity has been described as fractures and solution cavities.

The Department of Environmental Quality is An Equal Opportunity Affirmative Action Employer

Mr. Jay I. Moyes
Re: PBR Minerals, Inc.
Page 2
September 29, 1988

If a water sample can be obtained from the exposed mine shaft, it should be analyzed for total cyanide, free cyanide, trace metals (including mercury), major cations, major anions and nitrate-nitrogen.

It is also recommended that quarterly post-closure monitoring should be conducted for five years in TEI wells #1 and #2 and the City of Tombstone well #1. Constituents to be analyzed should include total cyanide, free cyanide, nitrate-nitrogen and mercury.

Hydrology cautions if the groundwater elevation map indicates that wells #1 and #2 are not adequate for post-closure monitoring, an additional downgradient monitoring well may need to be installed. This may also be the case if the calculated capture zone of well #2 is small. It is further recommended that if necessary, it be placed downgradient of wells #1 and #2 based on groundwater velocity considerations which include the hydraulic conductivity derived from the pump test, the hydraulic gradient derived from the water table elevation map, regional fracture trends and the time since the start of Cohise Silver's operation. However an indicated large capture zone for well #2 may negate the need for an additional downgradient monitor well.

Please develop and provide a time schedule for performing these tasks within 30 days of the date of this letter. If you have any questions concerning this matter, feel free to call me at 257-2270 or Bruce Thatcher in the Hydrology Section at 257-2142.

Sincerely,



Roger Kennett
Water Permits Unit

RK:mls

cc: Perry Nixon
Nancy Jamison
James Maston
Bruce Thatcher

000096

CORRESPONDENCE TO
CITY OF TOMAHAWK

PBR MINERALS, INC.
P.O. BOX 370
TOMBSTONE, ARIZONA 85638
(602) 457-2282
FAX (602) 457-3020

February 23, 1989

Mr. Joe Perotti
Director of Public Works
CITY OF TOMBSTONE
P.O. Box 323
Tombstone, Arizona 85638

Dear Joe:

Please find enclosed test results from Smith & Smith Consultants. We received these results today and are forwarding copies to you.

Should you have any questions, please feel free to contact Mr. Gary Lindroos at the number listed above.

Sincerely,

PBR MINERALS, INC.

Carolyn Ramirez
Carolyn Ramirez
Office Manager

000097

Grain Storage Unit
P. No. # 6-0011-02

STATE OF ARIZONA

GROUNDWATER QUALITY PROTECTION PERMIT

Part I. AUTHORIZATION FOR FACILITY OPERATION SUCH THAT GROUNDWATER QUALITY OF THE STATE OF ARIZONA IS NOT ADVERSELY IMPACTED.

In compliance with the provisions of A.R.S. 36-1851 et seq; A.C.R.R. Title 9, Chapter 20, Article 2; A.C.R.R. Title 9, Chapter 21, Article 2; and conditions set forth in this permit:

Facility Name:	Owner:
Cochise Silver Mines, Inc. 4831 N. 42nd Avenue Phoenix, Arizona 85019	Frank Magini Cochise Silver Mines, Inc.

is authorized to operate the Cochise Silver Mine facility located 1/4 mile south of Highway 80 in Tombstone, Arizona in Cochise County over groundwaters of the Upper San Pedro Basin in Township 20 South; Range 22 East; Section 12, SW 1/4, SW 1/4 - Gila and Salt River Base Line and Meridian.

This permit shall become effective on this 9th day of January, 1987, and shall be valid for one (1) year provided that the facility is operated and maintained pursuant to the specific conditions, general conditions, and information documented or referenced in Parts II, III and IV of this Permit and such that groundwater quality standards are not violated.

Signed this 9th day of January, 1987.

Frank Magini
Cochise Silver Mines, Inc.

Boyd Dover
Boyd Dover, Acting Director
Arizona Department of Health Services

Signed this _____ day of _____
_____ 19 _____

Signed this 9th day of January
January 19 87

Part II. SPECIFIC CONDITIONS (R9-20-208.C)

A. Containment/Disposal Requirements

1. Containment

- a. The permittee is authorized to operate a pilot scale slurry leach milling plant for the purpose of treating soils and/or tailings contaminated with cyanide. The facility shall consist of the plant and an impoundment lined with thirty-six (36) mil thick Hypalon as described in the referenced proposal for remedial action, and shall be constructed in such a manner to allow no discharge of solutions to the land surface or subsurface. The facility shall be surrounded by berms to prevent overland flow as a result of a 100-year, 24-hour rainfall event from entering the facility. All rainfall up to and including the 100-year, 24-hour event shall be contained in the lined impoundment.
- b. The impoundment shall have a leak detection/collection system constructed beneath the liner consisting of a laterally transmissive layer containing perforated pipe draining to a collection sump.
- c. Soils located at the site of the three old ponds labeled Overflow Pond, Old Spray Pond, and Pregnant Solution Pond, on the referenced site plan, shall be excavated and treated on site to remove cyanide according to a proposed grid system. As the contaminated soils are removed, for every two feet of soil removed vertically, samples for each 50-foot grid within each aforementioned pond area shall be taken and analyzed for total cyanide, by EPA Method 9010. When it is determined that soils have been removed so that no soils remaining within the pond areas contain more than 0.1 milligrams per kilogram (mg/kg) of total cyanide, samples shall be taken at 25-foot grid intervals within the pond areas. Soils shall be removed until all samples taken at 25-foot grid intervals are found to contain less than 0.1 mg/kg of total cyanide. The Department shall be notified forty-eight (48) hours prior to beginning excavation of the contaminated soils.
- d. No cyanide shall be added at any point in the plant. The treated soils and any extracted tailings resulting from the process shall be contained in the lined impoundment.

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2. Discharge Source Limits

- a. There shall be no discharge of pollutants to the vadose zone or groundwater that violate the State of Arizona Groundwater Quality Standards (R9-21-401, et seq).
- b. The treated materials contained in the lined impoundment shall not be removed from the impoundment until representative samples have been taken and analyzed by EPA Method 9010 and show that the materials contain 0.1 mg/kg or less of total cyanide. Sampling and analytical results shall be submitted to the Department and the Department's concurrence must be given prior to the removal of the treated materials from the impoundment.

B. Monitoring Requirements, Record Keeping (R9-20-215)

1. Monitoring Type and Conditions

a. Leak Detection Monitoring

The leak collection sump specified in Part II.A.1.b. shall be monitored weekly for the presence of fluid. Any fluid collected shall be analyzed by standard field methods for pH and free cyanide. A log of these results shall be kept at the facility available for inspection by Department personnel. Manufacturer's Quality Assurance/Quality Control Procedures for instrument operation shall be adhered to for each measuring instrument. Calibration shall be performed prior to sample analysis and noted on the log along with the instrument model numbers. Any modifications or repairs to the instruments shall also be noted on the log. Any fluid collected shall not exceed a pH of 8.5 or show the presence of free cyanide.

b. Groundwater Monitoring

- (1) Groundwater quality shall be monitored in four (4) wells as designated below and in accordance with the associated conditions:

WELL ID REGISTRATION NO. WELL LOCATION	PARAMETER	SAMPLING FREQUENCY	EPA ANALYSIS METHOD	MAXIMUM GROUNDWA LIMIT
TEI #1 55-086448 (D-20-22)11DDB	Cyanide (free)	Weekly	335.1	0.20
	Cyanide (free)	Monthly	335.1	0.20
	Cyanide (Total)	Monthly	335.2	0.20
	Mercury	Monthly	245.1	0.002
	Nitrate (as N)	Monthly	353.2	10.0
	Static Waterlevel	Monthly		
TEI #2 55-505610 (D-20-22)12CCD	Cyanide (free)	Daily	335.1	0.20
	Cyanide (free)	Monthly	335.1	0.20
	Cyanide (Total)	Monthly	335.2	0.20
	Mercury	Monthly	245.1	0.002
	Nitrate (as N)	Monthly	353.2	10.0
	Static Water Level	Monthly		
TEI #3 55-516482 (D-20-22)12CCA	Cyanide (free)	Monthly	335.1	0.20
	Cyanide (free)	*	335.1	0.20
	Cyanide (Total)	*	335.2	0.20
	Mercury	*	245.1	0.002
	Nitrate (as N)	*	353.2	10.0
	Static Water Level	Monthly		
City of Tombstone #1 55-616498 (D-20-22)11ADB	Cyanide (free)	Weekly	335.1	0.20
	Cyanide (free)	Monthly	335.1	0.20
	Cyanide (Total)	Monthly	335.2	0.20
	Mercury	Monthly	245.1	0.002
	Nitrate (as N)	Monthly	353.2	11.0
	Static Water Level	Monthly		

* See Contingency Requirements
 Part II.C.

- 2) Samples shall be taken at the well head. Three times the volume of the static water column in each well should be pumped immediately prior to sampling. The static water levels in the wells shall be measured and recorded prior to pumping. If evacuation results in the well going dry, fewer volumes may be pumped, and an explanation of the reason for pumping fewer volumes shall be reported on the monitoring form.
- 3) A laboratory certified by the State of Arizona shall be

contacted for accepted sampling and preservation techniques. All samples, except leak detection samples and field measurements for free cyanide, shall be analyzed by a laboratory certified by the State of Arizona for the specific parameters. A list of certified laboratories can be obtained from the ADHS Laboratory Licensure Office at 255-1188. For results to be considered valid, all analytical work shall meet quality control standards specified by the ADHS Laboratory Licensure Office.

2. Monitoring Forms

All monitoring results shall be recored and reported on the Self-Monitoring Report Form supplied by ADHS. This form shall be given to hte laboratory performing the analysis. The report shall include:

- a. date and time of sampling;
- b. sampler name and affiliation;
- c. well identification;
- d. water level measurements;
- e. analytical results presented in milligrams per liter (mg/l);
- f. analytical procedures followed for each parameter;
- g. laboratory chain of custody records.

3. Reporting Frequency

For daily and weekly field monitoring, including leak detection monitoring, the results obtained during the previous 3 months shall be summarized for each month and submitted in triplicate in accordance with the schedule below.

For monthly sampling, monitoring results obtained during the previous 3 months shall be summarized, compiled, and submitted in triplicate on forms supplied by ADHS in accordance with the schedule below.

The results of all monitoring required by this permit shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this permit. All forms shall be sent to the following address:

Arizona Department of Health Services
Office of Waste and Water Quality Management
Compliance Section
2005 North Central Avenue
Phoenix, Arizona 85004

The following schedule shall be followed in submitting monitoring forms:

<u>Self-Monitoring Report Forms for</u>	<u>are due by</u>
Jan, Feb, Mar	Apr 28
Apr, May, Jun	Jul 28
Jul, Aug, Sep	Oct 28
Oct, Nov, Dec	Jan 28

C. Contingency Requirements (R9-20-206.D.2.)

1. TEI Well #3 shall be field checked monthly for free cyanide as indicated in Part II.B.1.b of the permit. If free cyanide is detected, a sample shall be taken and analyzed by a certified laboratory for the parameters listed in the above referenced groundwater monitoring section, by the listed methods. If the laboratory results confirm the presence of cyanide, the Department shall be notified within 72 hours; then the well shall be field checked weekly for free cyanide and analyzed monthly by a certified laboratory for free cyanide (using EPA Method 335.1), total cyanide (using EPA Method 335.2), mercury (using EPA Method 245.1), and nitrate expressed as N (using EPA Method 353.3).
2. Should any fluid collected in the leak detection sump exceed the limits of section B.1.a., the permittee shall contact the Water Permits/U.S.T. Compliance Unit within 72 hours of discovering the exceedance, and determine the action (s) necessary to mitigate the problem.

D. Compliance Schedule (R9-20-219)

1. No later than thirty (30) days prior to the expiration date of this permit, or cessation of clean up activities, the permittee shall submit a plan to the Department for closure of the site as indicated on the site plan contained in the referenced documents. This closure plan shall describe, at a minimum, the following:
 - a. Methods whereby equipment shall be decontaminated, disassembled, or removed from the site;
 - b. Methods whereby any and all further migration of cyanide and other pollutants, either to the subsurface or via surface runoff or airborne dust

from the site shall be eliminated;

- c. The proposed disposition of all reagents remaining at the site;
- d. A schedule for implementaion fo all required actions.

Following approval of a site closure plan by the Department, site closure activites shall be conducted in accordance with the schedule contained in the final, approved closure plan.

Part III. REFERENCES: PERTINENT INFORMATION

A. References

The terms and conditions set forth in this permit have been developed based upon the information contained in the following:

1. Groundwater Field Inspection Form(s) dated May 22, 1986
2. Notice of Disposal dated August 7, 1986
3. Groundwater Impact Review dated September 3, 1986
4. Plan Review File Number _____
5. Permit Application dated _____
6. Groundwater Impact Review dated _____
7. Amendments to 2 and 4 dated April 28, 1986 & August 8, 1986
September 30, 1986
8. Public Notice dated December 3, 1986
9. Public hearing comments, correspondence letters, and any additional supplemental information contained in the facility permit file.
10. Other _____

B. Facility Information

1. Facility Contact Person Frank Magini or Dustin Escapula
2. Address 4831 North 42nd Avenue & P.O. Box 158
Phoenix, Arizona 85019 Tomstone, Arizona
3. Emergency Telephone Number: Business (602) 242-7315
Dustin Home (602) 457-3873

The Department shall be notified within 30 days of a change in the facility contact person.

4. Landowner of Facility Site Tomstone Development Corporation
c/o Ms. Laverne Baxter, P.O. Box 1445 Grand Island, NE, 68801

C. Definitions

1. "Abandoned" means permanent cessation of facility operation, as determined by the facility owner. Facilities, which are temporarily shut down are not considered abandoned within the context of these regulations.
2. "Activity" means any human activity including institutional, commercial, manufacturing, extraction, agricultural, or residential land use which may involve disposal of wastes or pollutants which may result in pollution of groundwaters of the State.
3. "Adverse impact upon groundwater quality" means any measurable change to the physical, chemical or biological character of groundwater caused by addition of pollutants or wastes.
4. "Approved" or "approval" means approved in writing by the Director.
5. "Aquifer" means a geologic unit that contains saturated permeable material to yield usable (drinking water, agriculture, industry, etc.) quantities of water to a well or spring.
6. "Composite sample" means a combination of 4 individual portions obtained at equal time intervals for 1 hour. The volume of each individual portion shall be directly proportional to the discharge flow rate at the time of sampling. The sampling period shall coincide with the period of maximum discharge flow.
7. "Department" means the Arizona Department of Health Services.
8. "Director" means the Director of the Arizona Department of Health Services or his duly authorized representative.
9. "Discharge" means the addition, spilling, leaking, pumping, pouring, emitting or dumping of any pollutant into waters of the State from any point source.
10. "Discharge Impact Area" means the potential areal extent of waste or pollutant migration, as projected on the land surface, as a result of a discharge or disposal from a facility.
11. "Discrete sample" means any individual sample collected in less than 15 minutes.

12. "Disposal" means the discharge, deposit, well injection, dumping, spilling, leaking, or placing of any wastes or pollutants into or on any land or water such that groundwater is or may be affected. For the purposes of this Article, irrigation with effluent from a wastewater treatment facility is disposal if the application rate exceeds that amount necessary to satisfy the consumptive use and leaching requirements of the crop or landscaping being irrigated.
13. "Disposal system" means a system for disposing of wastes either by surface or underground methods and includes sewerage systems, treatment works, disposal wells and other systems.
14. "Facility" means any system or activity in which or by which disposal occurs or has occurred on either a continuous or intermittent basis.
15. "Flow rate" means the volume per unit time given to the flow of fluids.
16. "Geologic unit" means a geologic formation, group of formations, or part of a formation.
17. "Groundwater" means water under the surface of the earth regardless of the geologic structure in which it is standing or moving. Groundwater does not include water flowing in underground streams with ascertainable beds and banks.
18. "Groundwater Quality Standards" means the standards in A.C.R.R. R9-21-403.
19. "Hazardous waste" means a waste as defined by the Federal Resource Conservation and Recovery Act (P.L. 94-580).
20. "Hydraulic conductivity" means a measure of the capability of a geologic unit to transmit a fluid.
21. "Individual disposal system" means a device or system for the treatment or disposal of sewage from a single housing unit or equivalent.
22. "Maximum Disposal Limit (MDL)" means the maximum permissible level for a contaminant in an effluent stream.
23. "Maximum Groundwater Limit (MGL)" means the maximum permissible level for a contaminant in water.

24. "Modification" means a change in the location, volume, constituent(s) or constituent concentration(s) of a disposal which is described in the permit issued pursuant to R9-20-208.
25. "Operator" means any person who makes management decisions regarding facility operations.
26. "Owner" means any person holding legal or equitable title in any real property subject to these regulations.
27. "Permit" means a rule, certificate, letter, or any other document issued by the Director authorizing and conditioning the discharge of any pollutant to groundwater from any point source or disposal of wastes from any disposal system identified in A.R.S. Sec. 36-136.G.8.
28. "Pollute" means to cause pollution.
29. "Regulations" means A.C.R.R. Title 9, Chapter 20, Article 2, requirements for facilities affecting groundwater quality.
30. "Schedule of compliance" or "compliance schedule" means a written document issued by the Director which identifies requirements and times for compliance with either or both the water quality standards in A.C.R.R. Title 9, Chapter 21 or the permit regulations in A.C.R.R. Title 9, Chapter 20.
31. "Sewage" means wastes from toilets, baths, sinks, lavatories, laundries and other plumbing fixtures in residences, and wastes from institutions, commercial buildings, mobile homes and other places of human habitation, employment or recreation which are similar in content to residential wastes.
32. "Site" means the area where any facility is physically located or an activity is conducted, including adjacent land used in connection with the facility.
33. "Treatment works" means any plant or other works used for the purpose of treating, stabilizing, or holding wastes.
34. "Vadose zone" means the zone between the land surface and the principle zone of saturation.

Part IV. GENERAL CONDITIONS: RESPONSIBILITIES

A. Permit Duration (R9-20-210)

1. Permits shall be valid for the expected operational life of the facility under the ownership as set forth in the permit unless otherwise limited by Federal or State statute or transferred pursuant to R9-20-221.C.
2. A permit may be modified or terminated pursuant to R9-20-221.
3. The owner or operator of the facility may request that a permit be issued for a duration that is less than the full allowable term.

B. Permit Rights (R9-20-214)

1. A permit does not convey any property or water right of any sort, or any exclusive privilege.
2. A permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of Federal, State, or local laws or regulations.

C. Monitoring Requirements; Record Keeping (R9-20-215)

1. The permittee shall implement and maintain an approved monitoring system if required as a condition of a permit.
 - a. The permittee shall install, use and maintain all monitoring equipment in acceptable condition or provide alternate methods approved by the Department.
 - b. The permittee is required to conduct monitoring of a type and frequency sufficient to yield data which are representative of the monitored activity.
2. The permittee shall retain records or have access to all monitoring information, for a period of at least three (3) years from the date of the sample, or measurement. This period may be extended by written request of the Department at any time. Copies of records shall be furnished to the Department upon written request.
 - a. Records of monitoring information shall include but are not limited to the following:
 - 1) the date, time, exact place, and name of individual(s) who performed the sampling or measuring;

- 2) the date(s) of, and name(s) of the individual, who performed the analyses; and
 - 3) the analytical techniques or methods used to perform the analyses.
- b. Monitoring results shall be reported at intervals specified in the permit.
 - c. Calculations which require the averaging of measurements shall utilize an arithmetic mean unless it can be demonstrated by the permittee that another method would more accurately describe or be representative of the monitored activity.
3. Information submitted as a result of any well boring shall include a complete driller's log and drawings showing details of the well's construction. If information must be submitted more than once for the same well, then subsequent submittals shall note that the driller's log and construction drawings have already been submitted and the date of the initial submittal shall be documented.

D. Reporting Requirements (R9-20-216)

1. The permittee shall give ninety (90) days written advance notice to the Department of any modification to the facility which is not described in the approved Notice of Disposal or permit application.
2. The permittee shall notify the Department within seventy two (72) hours of becoming aware of any permit violation. The Department may require the permittee to submit a written report within thirty (30) days documenting the following:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact date(s) and time(s), and the anticipated time period during which the noncompliance is expected to continue if it has not been completely corrected;
 - c. Action taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance: If applicable, such action shall be in accordance with an approved contingency plan;
 - d. Monitoring or other information which indicates that any waste or pollutant may cause an endangerment to an aquifer;

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- e. Noncompliance with a permit condition, or malfunction of the disposal system which may cause fluid migration into or between aquifers.
3. The Department shall be notified in writing at least one hundred eighty (180) days prior to abandonment of the facility.
- a. The permittee may be required to submit a detailed post-closure plan to the Department for approval which shall describe what the physical condition of the facility will be on the date operations are terminated.
 - b. The Department may require the post-closure plan to include any or all of the following:
 - 1) a description of monitoring procedures to be implemented by the permittee including monitoring frequency, type, and location which will be implemented to ensure post-closure activities will not violate groundwater quality standards;
 - 2) a description of procedures for maintaining existing groundwater quality protection systems;
 - 3) a schedule and description of physical inspections to be conducted at the facility following abandonment;
 - 4) a description of future land or water uses or both which may be precluded as a result of facility abandonment; and,
 - 5) identification of responsibilities for post-closure cleanup or remedial action in the event of pollution of waters of the State.

E. Site Examination (R9-20-217)

- 1. The Department may routinely inspect the facility or an activity used for the generation, storage, treatment, collection, or disposal of any waste or pollutant, and where records are kept, for the purpose of determining compliance with these regulations or water quality standards, or verifying information submitted in a Notice of Disposal, or permit application, or documented in a permit including any permit conditions.
- 2. The Department may:
 - a. Obtain samples of wastes or pollutants;

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- b. Analyze or cause to be analyzed any samples either on site or at another location;
- c. Take photographs of waste and equipment processes and conditions at the site;
- d. Inspect and copy any pertinent records, reports, information, and test results.

3. Any pertinent information required by the permit to be maintained by the permittee shall be available for on-site inspection during normal business hours. Split samples and copies of photographs will be provided to the facility owner or operator if the owner or operator requests them at the time the sample(s) is obtained or the photograph(s) is taken as the case may be.

4. Inspections shall be conducted pursuant to the appropriate provisions of the Arizona Revised Statutes and policies established by the Department.

F. Proper Operation and Maintenance (R9-20-218)

The permittee shall at all times maintain in good working order and operate properly all treatment works installed or used for water pollution control and abatement to achieve compliance with the terms and conditions of the permit and water quality standards. If required by Article 5 of A.C.R.R. Title 9, Chapter 20, the permittee shall retain the services of an operator certified by the Department at the level appropriate to the permitted facility.

G. Permit Conditions (R9-20-220)

1. Duty to Mitigate

The permittee shall take all steps to minimize and correct any adverse impact on groundwater quality as defined in A.C.R.R. Title 9, Chapters 20 and 21 resulting from noncompliance with the permit.

2. Duty to Reapply

If a permittee has not been issued a permit for the life of the facility, a renewal application in the form of an amended Notice of Disposal or permit application shall be submitted to the Department no less than one hundred eighty (180) days prior to expiration of the existing permit.

3. Duty to Comply

The permittee shall comply with all terms and conditions

of the permit, and take such action as is necessary to ensure compliance.

H. Permit Actions (R9-20-221)

1. This permit may be modified, transferred, renewed, or revoked for cause. The filing of a request by the permittee for a permit action does not stay any existing permit condition.
2. Permit Modification
 - a. Request for modification of a permit may be made by the permittee, the Department, or any affected person and shall identify the specific item(s) to be considered for modification.
 - b. Public requests for modification of a permit shall be in writing to the Department and shall contain technical facts or reasons which justify the requested changes. The Department upon receipt of the request will notify the permittee, and evaluate and determine whether any request for modification shall be granted.
 - c. The permittee may be required to submit additional information, including an updated Notice of Disposal or permit application.
 - d. Only those items considered for modification may be changed, and all other conditions of the existing permit will remain in effect.
 - e. The following circumstances and occurrences shall require modification of a permit:
 - 1) modification to the facility, which justify application of permit conditions that are different from or absent in the existing permit;
 - 2) other information that was not available when the existing permit was issued, and which justifies application of different permit conditions;
 - 3) changes in the regulations or standards upon which the permit was based which have been made after the permit was issued;
 - 4) good cause exists for changes in a compliance schedule because of conditions over which the permittee has little or no control, and a change to the permit by

modification is a reasonable remedy;

- 5) reason(s) exists for revocation of the permit, and the Department determines that modification is an appropriate method for change; and
- 6) amendment to an approved abandonment plan or contingency plan or any other portion of an approved Notice of Disposal or permit application.

- f. The suitability of the location of the facility will not be reconsidered during the process of changing the permit unless new information or change to regulations indicate that a violation of adopted groundwater quality standards exist and no other action is possible to mitigate the violation and comply with groundwater quality standards.
- g. The Department will publish a notice of intent pursuant to R9-20-223 to modify a permit before any final action is taken.

h. With the concurrence of the permittee, the Department may make minor modifications to a permit for any of the following reasons:

- 1) to correct typographical errors;
- 2) to require more or less frequent monitoring or reporting by the permittee;
- 3) to change an interim compliance date in a schedule of compliance, provided the new date is not more than sixty (60) days after the date specified in the existing permit, and does not interfere with attainment of the final compliance date requirement;
- 4) to change quantities or types of fluids discharged which are within the capacity of the facility as permitted, and in the judgment of the Department would not interfere with the operation of the facility or its ability to meet conditions prescribed in the permit, and would not change its classification, if the facility is an injection well;
- 5) to change construction requirements approved by the Department, provided that any such alteration shall comply with the requirements of these regulations.

3. Permit Transfer

- a. This permit is transferrable to any person after thirty (30) days advance written notice to the Department. The Department may require modification of the permit to change the name of the permittee and incorporate any requirements which may be necessary to ensure compliance with State statutes and regulations.
- b. The permittee shall notify by registered letter a new owner or operator of a permitted facility of the existence of the permit thirty (30) days prior to transfer of responsibility. The notice shall include a copy of the permit. A copy of the letter shall be transmitted to the Department.
- c. The new owner or operator shall be responsible for compliance with the permit upon transfer of ownership or operation without regard to whether said owner or operator has in fact received the notice required by R9-20-221.C.2.
- d. Permit transfer does not absolve the previous permittee of any liability existing at or before the time the permit was transferred.

4. Permit Revocation

- a. Request for revocation of a permit may be made by the permittee, Department, or any affected person.
- b. Public requests for permit revocation shall be in writing to the Department and shall contain technical facts or reasons which justify the requested action. The Department upon receipt of the request will notify the permittee and evaluate the request and determine whether any request for revocation should be granted.
- c. Revocation of a permit is initiated when the Department issues a notice of intent to revoke a permit pursuant to R9-20-223 to the permittee and may be initiated for the following reasons:
 - 1) noncompliance by the permittee with any permit condition;
 - 2) deliberate failure by the permittee to fully disclose all relevant facts when applying for a permit;

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- 3) intentional or deliberate misrepresentation of any relevant fact at any time by the permittee; or
 - 4) if it is determined by ADHS that the permitted activity is causing a violation of groundwater quality standards and such violation can only be regulated to acceptable levels by revoking the permit.
- d. If disposal to an aquifer causes a clear, present, and immediate danger to the health or welfare of persons, the Department may immediately suspend a permit. Within fourteen (14) days of the suspension, the Department shall issue a notice of intent to revoke the permit. The permit shall be considered revoked thirty (30) days after the notice of intent is issued by the Department unless and until a hearing is requested by the permittee pursuant to R9-20-222.

I. Confidentiality of Information (R9-20-224)

1. Any information submitted to or obtained by the Department pursuant to these regulations may be claimed as confidential by the facility owner or operator. Any such claim shall be asserted at the time the information is submitted or obtained. If no claim is made at that time, the Department may make the information available to the public without further notice.
2. Claims of confidentiality for the following information shall be denied:
 - a. The name and address of any permit applicant or permittee;
 - b. Information which deals with the present or future existence, absence, or level of waste(s) or pollutant(s) in water.
3. Criteria for determining confidentiality are:
 - a. A confidentiality claim has been made at the time the information was submitted or obtained;
 - b. The facility owner or operator has shown that reasonable measures have been taken to protect the confidentiality of the information; and intends to continue to take such measures;
 - c. The information is not, and has not been, reasonably obtainable without the facility owner or operator's consent;

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- d. No statute specifically requires disclosure of the information; and,
- e. The facility owner or operator has shown that disclosure of the information is likely to cause harm to its competitive position; or, the information is voluntarily submitted and disclosure would be likely to impair the State's ability to obtain necessary information in the future.

J. Enforcement and Penalties (R9-20-225)

Any person who constructs, operates, or maintains a facility, disposal system, or introduces wastes or pollutants to waters of the State contrary to the provisions of this permit, falsifies data or information submitted to the Department as a result of the requirements of this permit, or otherwise violates the provisions of this permit, shall be subject to enforcement and penalties pursuant but not limited to A.R.S. 36-1864.01.

PART V.

GROUNDWATER QUALITY STANDARDS

A. General Standards Applicable to all Groundwaters (R9-21-403)

1. Discharges of any pollutants and disposal of any wastes shall not impair the uses which have been made, are being made, or will be made of groundwater for every purpose.
2. Discharges of any pollutants and disposal of any wastes to groundwaters of the State shall not cause a public health hazard.
3. Disposal of any hazardous waste, radioactive waste or other waste shall not cause toxic substances to be present in groundwaters of the State in concentrations which are or may be hazardous to public health or which interfere with present and future uses of the groundwater.
4. Discharges of any pollutants and disposal of any wastes to groundwaters of the State shall not directly or indirectly cause violation of surface water quality standards established pursuant to Article 2 of this chapter.

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LaVERNE BAXTER

Rt. 2, Box 67

Grand Island, NE 68803

Phone Area Code (308)

384-0789, 382-7265, 382-7365 Bret

12-18-88

Mike:

This is all I can find now
Bill must have filed them in
other files. I try and come up with
more.

If you order the Sand Cat
mailing list from Arizona Water
resources that they were talking
about at meeting the other night
we should probably be on that
mailing list also.

I was not surprised too
much about Schloo's reaction.
LaVerne

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TOMBSTONE DEVELOPMENT CO

LOG OF TESTS ON TDC WELLS #1 & #2 TO DETERMINE
AMOUNT OF CYANIDE THEREIN.

COLUMN WRITE

DATE	Well #1	Well #2	Remarks
9/8/85	-	-	Assumed responsibility for testing. Sarco tore up U.G. Electric Service to wells. Being unsuccessful in attempts to have Sarco and/or TEI repair damaged cable, I ran a new ON Service.
9/30/85	0 mg/Ltr	.10 mg/Ltr	
10/9/85	0 "	.09 "	
10/14/85	0 "	.03 "	Could not flush well into sealed pond as Charlie Escapule destroyed pipes to well.
10/21/85	0 "	.03 "	
10/28/85	0 "	.03 "	Heavy rain
11/4/85	0 "	.09 "	
11/11/85	0 "	.04 "	
11/18/85	0 "	.035 "	
11/25/85	0 "	.03 "	
12/2/85	0 "	.02 "	
12/9/85	0 "	.015 "	
-	-	-	Skipped week to determine if build-up.
12/23/85	0 "	.035	
12/31/85	0	-	Installed steel pipe at well #2 so well could be flushed into sealed pond.
1/4/86	0 "	.02	After 1 1/2 hr. flushing dropped to zero.
1/15/86	0 "	.03	" 2 Hrs. " " " "
1/25/86	0 "	.01	" 2 Hrs. " " " "
2/8/86	0	-	Flushed Well #2 for 2 Hrs. into sealed pond. to raise water level and thus protect plastic seal.
2-10-86	0	.03	After 2 hrs. .02
2-17-86	0	.02	" " .02
3-5-86	0	.03	" 3 1/2 hrs. .02



PBR MINERALS,
INCORPORATED

May 5, 1988

Western Technologies, Inc.
P.O. Box 21387
Phoenix, Arizona 85036

Dear Sirs:

Please find enclosed well water samples. Please test the following parameters:

MAJOR IONS: Ca, Mg, Na, K, HCO₃, CO₃, Cl, SO₄, TDS, and F

NITROGEN SERIES: Cyanide (free and total)
Nitrate

PRIMARY METALS: As, Ba, Cd, Cr, Pb, Hg, Se, and Ag

SECONDARY METALS: Cu, Fe, Mn, and Zn

Thank you for your cooperation in this matter.

Sincerely,

Gary A. Lindroos
Technical Superintendent

GAL:cr

3104 EAST CAMELBACK RD.
SUITE 603
PHOENIX, ARIZONA 85016
PHONE 602/457-2282

000121



**WESTERN
TECHNOLOGIES
INC.**

3737 East Broadway Road
P.O. Box 21387
Phoenix, Arizona 85036
(602) 437-3737

LABORATORY REPORT

CLIENT PBR Minerals Inc.
P.O. Box 370
Tombstone, AZ 85638

SAMPLE NO. : 8806489
INVOICE NO.: 2998W016
DATE : 06-09-88
REVIEWED BY: *Beck Peterson*
PAGE : 1 OF 1

CLIENT SAMPLE ID : TEI Well 1
SAMPLE TYPE : Water
SAMPLE SOURCE : --
SAMPLED BY : PBR/Lindroos
SUBMITTED BY : PBR/Lindroos

AUTHORIZED BY: PBR/Personnel
CLIENT P.O. : --
SAMPLE DATE : 05-05-88
SUBMITTED ON : 05-06-88

* DATA TABLE *

[----- PARAMETER -----]	[- RESULT -]	[- UNIT -]
Total Arsenic	<0.02	mg/L
Total Barium	<0.1	mg/L
Total Cadmium	<0.005	mg/L
Total Calcium	54.	mg/L
Total Chromium	<0.02	mg/L
Total Copper	<0.05	mg/L
Total Iron	<0.1	mg/L
Total Lead	<0.02	mg/L
Total Magnesium	15.	mg/L
Total Manganese	<0.05	mg/L
Total Mercury	<0.001	mg/L
Total Potassium	4.	mg/L
Total Selenium	<0.01	mg/L
Total Silver	<0.02	mg/L
Total Sodium	17.	mg/L
Total Zinc	<0.05	mg/L
Alkalinity, Total	163.	mg/L
Bicarbonate	199.	mg/L
Carbonate	<2.	mg/L
Chloride	12.	mg/L
Cyanide, Total	<0.01	mg/L
Fluoride	2.0	mg/L
Nitrate Nitrogen	1.9	mg/L
Sulfate	26.	mg/L
Total Dissolved Solids	282.	mg/L
Cyanide, Free	<0.01	mg/L



**WESTERN
TECHNOLOGIES
INC.**

3737 East Broadway Road
P.O. Box 21387
Phoenix, Arizona 85036
(602) 437-3737

LABORATORY REPORT

CLIENT PBR Minerals Inc.
P.O. Box 370
Tombstone, AZ 85638

SAMPLE NO. : 8806488
INVOICE NO.: 2998W016
DATE : 06-09-88
REVIEWED BY: *Beth Atkinson*
PAGE : 1 OF 1

CLIENT SAMPLE ID : Tombstone City Well #1
SAMPLE TYPE: Water
SAMPLE SOURCE: --
SAMPLED BY: PBR/Lindroos
SUBMITTED BY: PBR/Lindroos

AUTHORIZED BY: PBR/Personnel
CLIENT P.O. : --
SAMPLE DATE .: 05-05-88
SUBMITTED ON : 05-06-88

* DATA TABLE *

[----- PARAMETER -----]	[- RESULT -]	[- UNIT -]
Total Arsenic	<0.02	mg/L
Total Barium	<0.1	mg/L
Total Cadmium	<0.005	mg/L
Total Calcium	72.	mg/L
Total Chromium	<0.02	mg/L
Total Copper	<0.05	mg/L
Total Iron	<0.1	mg/L
Total Lead	<0.02	mg/L
Total Magnesium	20.	mg/L
Total Manganese	<0.05	mg/L
Total Mercury	<0.001	mg/L
Total Potassium	5.	mg/L
Total Selenium	<0.01	mg/L
Total Silver	<0.02	mg/L
Total Sodium	29.	mg/L
Total Zinc	<0.05	mg/L
Alkalinity, Total	180.	mg/L
Bicarbonate	220.	mg/L
Carbonate	<2.	mg/L
Chloride	33.	mg/L
Cyanide, Total	<0.01	mg/L
Fluoride	1.7	mg/L
Nitrate Nitrogen	8.2	mg/L
Sulfate	47.	mg/L
Total Dissolved Solids	414.	mg/L
Cyanide, Free	<0.01	mg/L



**WESTERN
TECHNOLOGIES
INC.**

3737 East Broadway Road
P.O. Box 21387
Phoenix, Arizona 85036
(602) 437-3737

LABORATORY REPORT

CLIENT PBR Minerals Inc.
P.O. Box 370
Tombstone, AZ 85638

SAMPLE NO. : 8806490
INVOICE NO.: 2998W016
DATE : 06-09-88
REVIEWED BY: *Beth Ottinson*
PAGE : 1 OF 1

CLIENT SAMPLE ID : TEI Well 2
SAMPLE TYPE: Water
SAMPLE SOURCE: --
SAMPLED BY: PBR/Lindroos
SUBMITTED BY: PBR/Lindroos

AUTHORIZED BY: PBR/Personnel
CLIENT P.O. : --
SAMPLE DATE .: 05-05-88
SUBMITTED ON : 05-06-88

* D A T A T A B L E *

[----- PARAMETER -----]	[- RESULT -]	[- UNIT -]
Total Arsenic	<0.02	mg/L
Total Barium	<0.1	mg/L
Total Cadmium	<0.005	mg/L
Total Calcium	130.	mg/L
Total Chromium	<0.02	mg/L
Total Copper	<0.05	mg/L
Total Iron	<0.1	mg/L
Total Lead	<0.02	mg/L
Total Magnesium	36.	mg/L
Total Manganese	<0.05	mg/L
Total Mercury	0.027	mg/L
Total Potassium	6.	mg/L
Total Selenium	<0.01	mg/L
Total Silver	<0.02	mg/L
Total Sodium	26.	mg/L
Total Zinc	0.08	mg/L
Alkalinity, Total	157.	mg/L
Bicarbonate	192.	mg/L
Carbonate	<2.	mg/L
Chloride	44.	mg/L
Cyanide, Total	0.18	mg/L
Fluoride	1.2	mg/L
Nitrate Nitrogen	23.	mg/L
Sulfate	160.	mg/L
Total Dissolved Solids	666.	mg/L
Cyanide, Free	0.04	mg/L

GEOCHEMICAL ENGINEERING, INC.,

274 Union Blvd. Suite 460, Lakewood, Colorado 80228
Phone: (303) 988-8902 Telefax: (303) 988-8903 Telex No.: 4930676 DRWC UI

*** ** ** T E L E F A X *** ** **

Page 1 of 1

FAX No.

Date: 9 Oct, 1989

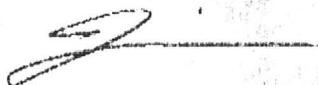
To: Conihan Resources 602-457-3020

Attn: Gary Lindros / Mike Ashworth

From: Jim V Rouse

Ref: 2 Additional Monitor Wells

Just a reminder that one of the permit conditions call for the installation of two additional monitor wells down gradient of the site, which turned out to be south of the site. Specific locations were cited in my report to the state, in August. I believe the requirement was for a 9-month period from permit issuance, which is overdue, but could be argued from expanded report. Has there been any action on this requirement?



000177

ENVIRONMENTAL
TER-0211 #1



PBR MINERALS,
INCORPORATED

October 4, 1988

Arizona Department of Environmental Quality
Office of Waste and Water Quality Management
Compliance Section
2005 North Central Avenue
Phoenix, Arizona 85004

Re: Permit No. G-001-02

Dear Sirs:

The following is the field summary for the months of July, August,
and September, 1988.

<u>LOCATION</u>	<u>FREE CYANIDE</u>	<u>LAB ANALYSIS</u>
TEI Well No. 1	Mg/L	<0.01
TEI Well No. 2	Mg/L	<0.01
TEI Well No. 3	Mg/L	<0.01
Leak Detection Systems	no moisture detected	

Please be advised that the Method of Analysis for all samples was
Hach DR 1/A Colorimeter.

Should you have any questions concerning this report, please do
not hesitate to contact me.

Sincerely,

PBR MINERALS, INC.



Gary A. Lindroos
Technical Superintendent

GAL:cr

Old Bisbee Highway
P.O. Box 370
Tombstone, Arizona 85638
(602) 457-2282

000125



GEOCHEMICAL ENGINEERING
INCORPORATED

October 13, 1988

Mr. Roger Kennett
Water Permits Unit
Arizona Department of Environmental Quality
2005 N. Central Avenue
Phoenix, AZ 85004

Dear Roger:

Mr. Mike Ashworth of PBR Minerals has requested that I respond to your letter of September 29 to Mr. Jay I. Moyes of Meyer, Hendricks, Victor, Osborn & Maledon. In this letter, dealing with Permit G-0019-02T site closure, you note the fact that certain "hot spots" still remain to be cleaned up, and request the preparation of a plan and time schedule for completion of four identified tasks. These include:

- aquifer testing of Well No. 2
- tabulation of Well No. 2 pumping records
- construction of a water-table map, and
- collection of a water sample from the recently discovered shaft, if possible.

This letter is designed to serve as the requested plan and time schedule, and as such is an addendum to the material furnished to you in Mr. Moyes' letter of August 17, 1988.

As you know, Geochemical Engineering, Inc. was not involved in the early discussions and conditions associated with the old site plan. As we discussed in our telephone conversation last month, it is unfortunate that the permit and clean-up levels address total, rather than WAD, cyanide, since there are certain metallo-cyanide complexes which are of very low mobility, but are also highly resistant to degradation. Such complexes bind tightly to metallic hydroxide coatings, and continue to report as cyanide in the total procedure. Our experience has shown that these complexes can be biodegraded by common soil bacteria, when supplied with aerobic conditions and phosphorus. We have recommended that the site be plowed, to provide oxygen, and fertilized with superphosphate, in an attempt to ascertain if existing micro-organisms are capable of biodegrading the cyanide complexes. Such site preparation will also enhance plant growth on the site. Sampling of the soil will ascertain if biodegradation is occurring.

To address the four tasks initially recommended in Mr. Thatcher's memo and repeated in your letter, I would like to briefly discuss each task, in a revised order to your listing. I will then provide a time schedule, for the various tasks.

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Sample Collection from the Old Shaft

Indications (derived from dropping rocks and experience on other nearby shafts) are that the recently-discovered shaft is plugged with rubble at a depth above the water table. The shaft collar is unsound rock, which would mean a severe risk, due to falling rock, to anyone lowered into the shaft. Thus, it is my professional opinion that the shaft is not likely accessible to water and it is unsafe to try to enter the feature.

Tabulation of Well No. 2 Pumping Records

It is my understanding that no formal record of pumping and down times is kept for this well. I have asked Mr. Lindroos to put together the best information available on pumping times, for my review when I return to the U. S. in mid-November. I anticipate being able to provide you this information by the end of November, 1988; however, I also expect that much of the information will be antidotal in nature.

Aquifer Testing of Well No. 2

As I noted in my "Geohydrologic Assessment of Cyanide Contamination of PBR Minerals Well No. 2, Tombstone, Cochise County, Arizona," provided by Mr. Moyes, aquifer characteristics have been determined by Hollyday, based on dewatering efforts in various shafts in the immediate vicinity of Well No. 2. Table 1 of the geohydrologic assessment provided these characteristics, as determined by Hollyday. The characteristics reflect a remarkably narrow range of transmissivity values (10,000 to 15,000), considering the fractured and mined nature of the area. I therefore do not agree with Mr. Thatcher's statement that "there is no hydraulic conductivity data which can be used to estimate the limits of the capture zone created by Well No. 2 during remediation." In fact, there are remarkably consistent data. Despite the presence of existing data, PBR has agreed to the conduct of an aquifer test, using Well No. 2 as the pumping well and Wells Nos. 1 and 3 as monitor wells. The existing pump will be used for aquifer pumping. It will be necessary to plumb in a flow meter and discharge valving, to allow for flow measurement and control. I propose to use In-Situ Hermit units to measure water levels, with back-up data in the form of electric-tape measurements of water levels in the three wells. I will also make occasional water-level measurements in the Tombstone well. I believe barometric pressure data are available at the USDA facility adjacent to the site; if not we will record barometric pressure during the conduct of the test.

Hollyday found that long-term pumping data provided the best information. Our present plans call for pumping to be conducted for 72 to 96 hours, with final determination to cease the test to be based on an evaluation of the data. Frequency of readings (both electronic and physical) will be on a log-time basis.



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000131

After pumping is stopped, recovery measurements will be made with the same equipment. The data will be analyzed by means of recognized hydrologic techniques to calculate aquifer parameters.

During the pumping, we will collect water-quality samples at the start, middle, and end of the test, and apply trilinear plotting techniques to see if there is a shift in major-ion type with pumping. Such a shift would indicate dissimilar waters due to vertical or lateral migration.

It is planned that the aquifer testing will be conducted during early December followed by data analysis and chemical determinations, which means the final determination of aquifer characteristics would be in mid-January, considering the holiday disruption.

Water-table Mapping

As we note in the PBR application for their heap-leach facility, at present there are only four data points (the three PBR wells and the Tombstone well) available for water-table mapping. I would recommend that water-table mapping wait for the completion of the proposed pumped-monitor well, upgradient of Well No. 2. While the resultant five points are not a large number, it is quite a bit better than four. Construction of this well will have to wait for issuance of the state permit. I would propose that the well be completed within a month of permit issuance, and that a water table map be completed within a month of the well completion.

Schedule

To summarize, I propose the following time schedule.

November 30, 1988 - Tabulation of Well No. 2 pumping
December 16, 1988 - Aquifer testing completed
January 16, 1989 - Report of aquifer testing
Permit issuance + 30 days - Upgradient well drilled
Permit issuance + 60 days - Water-table map prepared.

Roger, I appreciate the chance to prepare this plan, and look forward to working with you again. I'll be out of the country until November 10, but look forward to your response to this plan.

Very truly yours,

Jim V. Rouse, R. G.

JVR:kj

cc: Mike Ashworth
Jay Moyes



GEOCHEMICAL ENGINEERING
INCORPORATED

000132



PBR MINERALS,
INCORPORATED

January 12, 1989

Arizona Department of Environmental Quality
Office of Waste and Water Quality Management
Compliance Section
2005 North Central Avenue
Phoenix, Arizona 85004

Re: Permit No. G-001-02

Dear Sirs:

The following is the field summary for the months of October, November,
and December, 1988.

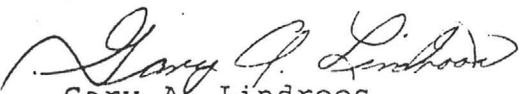
<u>LOCATION</u>	<u>FREE CYANIDE</u>	<u>LAB ANALYSIS</u>
TEI Well No. 1	Mg/L	0.01
TEI Well No. 2	Mg/L	0.01
Leak Detection Systems	---- NO MOISTURE DETECTED----	

Please be advised that TEI Well No. 3 is obsolete, therefore no testing was performed. Also, the Method of Analysis for all samples was Hach DR 1/A Colorimeter.

Should you have any questions pertaining to this report, please feel free to contact me at the number listed below.

Sincerely,

PBR MINERALS, INC.


Gary A. Lindroos
Technical Superintendent

GAL:cr

Old Bisbee Highway
P.O. Box 370
Tombstone, Arizona 85638
(602) 457-2282

000133

