ROSEMONT PROJECT
Mine Plan of Operations

Electrical Power Supply and Water Supply Supplement

July 25, 2007
# Rosemont Project
## Electrical Power Supply and Water Supply Supplement

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1.0 Electrical Power Supply

1.1 Electrical Power Demand

The Rosemont mine and process facilities are estimated to generate a total connected load of 133 megawatts (MW) during peak operation. Provision of electrical power supply to the site will require a minimum transmission voltage of 138 kV. The estimated power load for the water supply wells and pump stations off site is about 7.2 MW. Appendix A provides a summary table of the connected loads by mine process area as well as the demand load and estimated running load. Appendix B includes a single line diagram of the Rosemont mine main power substation.

1.2 Electrical Power Sources

The electrical power supply for the Project facilities falls within both the Tucson Electric Power (TEP) and the TRICO service territories. The eastern area of the Project, which includes part of the mine and all the process facilities, falls in the TEP service territory. The western area of the Project, including the balance of the mine and the process water pumping system, falls in the TRICO service territory. Because most of the Project’s estimated electrical load and power requirements fall within TEP’s service territory area, TEP will be the main electric utility service provider for the entire facility, including the fresh water system. A joint-venture business arrangement between TEP and TRICO will be negotiated and established to compensate both service providers. The arrangement will probably be based on a percentage of actual electrical load between each of the service territories and the facilities located within each territory. However, Rosemont Copper will receive one electric utility rate and bill, with the breakdown of revenue between TEP and TRICO a matter of contract between the two utilities. The multiple service territory and provider agreement will be submitted, as required, to the Arizona Corporation Commission (ACC) for review and final approval prior to implementation.

In addition to traditional electrical service from commercial providers, Rosemont will generate energy on site using solar technologies. Passive solar installations will be used for appropriate applications, such as water heaters and fans, and photo-voltaic cell technology for supplemental electricity generation. By using the significant available surface area (approximately 300,000 sf) on facility roofs for the installation of solar systems, Rosemont Copper will be able to enhance the overall energy efficiency of the operation.

1.3 Preliminary Power Flow Analysis

A preliminary power flow analysis was prepared for two power supply options—one with the TEP system and another with the Southwest Transmission Co-op (SWTC) system. The power flow studies utilized a 2010 summer peak-load base-case prepared by the Western Electricity Coordinating Council (WECC). The studies assessed the impacts on the system in southern Arizona for both normal and outage contingency conditions and for both pre- and post-project scenarios. Contingencies were simulated on the 345 kV lines entering and within southern Arizona, and on all facilities in the area with an operating voltage greater than 100 kV.
The studies indicated that the TEP Vail substation could serve up to 75 MW of mine load if 20 MW of generation is on line at the Valencia generating facility, or up to 100 MW if the Gateway Project were in service. The Gateway Project is a new substation facility located near Sahuarita and is expected to come on line in 2010. The studies also indicated that shunt capacitors at Sonoita and the Rosemont Project substation would be required to maintain pre-project voltage levels. Upgrades to certain SWTC facilities would also be required to mitigate any impacts due to outages. The analysis of the SWTC substation at Sahuarita indicated that it could provide 100-plus MW of power to the mine; however, some upgrades to the facilities would be required to mitigate the impacts of outages. Shunt capacitors at Sahuarita and the Rosemont Project substation would also be required to maintain pre-project voltage levels.

1.4 Proposed Electrical Power Supply Facilities – Preferred Alignment

Based on analysis of several power supply alternatives, the preferred electrical power supply option was identified (Figures 1-1 and 1-2). This option was selected because the new transmission line to the project site, which covers 11.6 mi, will be the shortest possible route that avoids the Santa Rita Experimental Range (SRER). In addition, the TEP system will be capable of providing service to the Rosemont mine without upgrades, other than those already planned by TEP. This option would connect to the existing TEP power line serving Santa Cruz County, the Vail-Kantor line that runs approximately 9 mi northwest of the project site. The existing 115 kV TEP transmission line starts at the Nogales tap on the Western Area Power Administration (WAPA) line, and runs south through the SRER to Santa Cruz County and Nogales.

The line routing has been selected to avoid traversing the SRER. Administered by the University of Arizona, SRER is the oldest experimental range in the country, and was founded to study range recovery from drought and overgrazing, as well as sustainable grazing practices. The alignment avoids SRER where possible by traversing lands to the north and east. Where it cannot be entirely avoided, the line will follow the boundary of the range.

A new 138 kV switching station would be required to tap into this line with a new 138 kV transmission line running to the main substation at the plant site. The tap will be made at the intersection of the transmission line and the northern boundary of the SRER (Figure 1-1). A new switching station will be provided for the tap, which will be located just north of the location where the Vail-Kantor line enters the SRER. The new 138 kV transmission line will run about 4 mi east, along the northern boundary of the SRER. The transmission line will then turn south for another 4 mi until it intersects the west access road into the mine site. The new transmission line to the plant main substation is about 11.6 mi long and follows the same alignment as the proposed process water pipeline route from the well fields northwest of the tap near Sahuarita, Arizona (see Section 2.0).

The proposed 138 kV transmission poles will be single, steel, 90-ft, two-section, direct-buried poles, supporting a vertical-type, three-phase line configuration and will provide a minimum of 75 ft of ground clearance for the transmission line. Pole spacing will be about 800 ft on level ground and less where required to maintain ground clearance on varying and steep topography. A detail of the proposed power poles is included in Appendix B.
A new substation would also be located at the switching station, with a single 138 kV to 34.5 kV or 4.16 kV, step-down transformer, isolation switches, and circuit breakers to distribute electrical power to the process water wells and pump stations at either 34.5 kV or 4.16 kV, using a separate three-phase, overhead distribution wooden pole line. This distribution line will run in parallel to the 138 kV transmission line.

This scenario requires that the 115 kV Vail-Kantor line be upgraded to 138 kV and the connection moved from the Nogales tap on the WAPA 115 kV line to the Vail 345 kV substation. These changes are part of a previously planned TEP system upgrade to improve service to Santa Cruz County. Recent discussions with TEP have confirmed that the required Vail-Kantor transmission line upgrades will be completed in time to support the project and that the Vail substation can supply the 100-plus MW of power for the project.

### 1.5 Other Power Supply Options

Several other power supply options were evaluated for the Project, as discussed in the following sections.

#### 1.5.1 Interconnection with TEP Line Serving Santa Cruz County

A tap on the Vail-Kantor line was initially considered at the location where that line crosses Santa Rita Road. From there, the transmission line would have followed Santa Rita Road and the Rosemont Project’s west access road to the mine’s main substation at the west side of the site. The process water distribution system would have followed the same corridor. At 9 mi, this alignment would have been shorter than the preferred alternative. However, this option was not selected due to the location within the SRER and the potentially negative impacts of construction, operation, and maintenance of the system.

#### 1.5.2 Interconnection with SWTC Sahuarita 230 kV Substation

This option would have connected to the existing SWTC 230 kV substation located north of Sahuarita and included a new 230 kV transmission line running south. The alignment would run parallel to the existing SWTC transmission lines until the new line reaches Santa Rita Road. At this point, the line would follow the Santa Rita Road alignment to the mine’s main substation. This option was not selected due to the location within the SRER, the longer length of the transmission line, overload on the existing 345/230 kV SWTC Bicknell transformer, and the added cost for substation electrical equipment rated for the higher, 230 kV transmission voltage.

#### 1.5.3 Interconnection with TEP South 345/138 kV Substation

This option would have connected to the existing TEP South 345/138 kV substation located another 4 mi northwest of the SWTC Sahuarita substation. The new 21-mi 138 kV transmission line would run east about 2.3 mi and then south about 5.2 mi along the Santa Rita Road alignment to the mine site. This option was considered prior to determining that the planned upgrades to the TEP system for the Vail-Kantor line would be sufficient for service to the Rosemont mine site.
1.5.4 Interconnect the TEP South Line to the TEP Vail-Kantor Line

This option would connect the 138 kV transmission line from the TEP South 345/138 kV substation with the existing TEP Vail-Kantor line where the two lines cross at Santa Rita Road, when the Vail-Kantor transmission line is upgraded to 138 kV service voltage. This would be the most expensive option; however, the two sources of electrical power would provide greater reliability for the mine. This option was considered prior to determining that the planned upgrades to the TEP system for the Vail-Kantor line would be sufficient for service to the Project site.

1.6 Power Supply Line Corridor and Substation Sizing

The required corridor anticipated for the power supply lines, which will also accommodate the water supply line for the project, will be approximately 100 ft in width. The 100-ft corridor will provide sufficient width for both construction and ongoing operation and maintenance associated with the power and supply systems. The new substation at the Vail-Kantor line is anticipated to require approximately 150 ft by 150 ft. The power supply for each of the water well and booster station sites located remotely from the Project site will be incorporated into the water system facility site as discussed in Section 2.0.

2.0 Water Supply

2.1 Introduction

The Rosemont Project lies in the headwaters of the Davidson Canyon drainage in the Cienega Creek basin southeast of Tucson, Arizona. Historically, mining companies that have evaluated development of the ore deposits in the Rosemont area planned to develop the associated water supply for mining operations from groundwater aquifers that lie to the east of the Project site within the Cienega Creek watershed. Because of the recognized sensitivity of the Cienega basin, Rosemont Copper determined at the beginning of its planning process to acquire a water supply for the Project from the Santa Cruz basin to the west of the Project site.

This decision, though more costly, allowed Rosemont Copper to achieve two important water management goals in addition to meeting the mining operational requirements. First, the impact of the Rosemont Project on the water supply of the Cienega Creek drainage is minimized. Second, purchase and recharge of water from the Central Arizona Project (CAP) aqueduct, which reaches the Santa Cruz basin but not the Cienega basin, will allow Rosemont Copper to replace more than its entire consumption, thereby creating a net positive impact on the groundwater resources of the region.

In addition to the commitment to offset 105 percent of total project pumping with recharge in the Santa Cruz basin, Rosemont Copper also plans to utilize state-of-the-art water conserving technology, as described in the Mine Plan of Operations (MPO). Rosemont Copper is committed to having a cumulative recharge volume larger than its cumulative pumping quantity for mine operations. To this end, Rosemont Copper has begun its recharge program in calendar year 2007, well in advance of actual usage. Contracts are in place to recharge 15,000 acre feet (af) in 2007, which equals approximately three years of planned mine usage.
2.2 Legal and Regulatory Considerations

Process water for the Project will come from the aquifer within the Upper Santa Cruz sub-basin of the Tucson AMA groundwater basin. Water from this source will be used mostly at the mine site, which lies within the adjacent Cienega Creek groundwater basin. Both basins have been delineated by the Arizona Department of Water Resources (ADWR) pursuant to A.R.S. Section 45-403.

The right to extract and use groundwater from the Tucson AMA will be pursuant to a Mineral Extraction and Metallurgical Processing groundwater withdrawal permit (ME permit) issued by ADWR pursuant to A.R.S. Section 45-514. The permit application will be filed in 2007. This is a “shall issue” permit that must be granted unless reliable alternative water supplies (uncommitted municipal and industrial CAP water, surface water, or effluent) are available at comparable cost at the point where the mine’s wellhead or distribution system would otherwise exist (A.R.S. Section 45-514[2] and [3]). No such reliable alternative water supplies are available. An ME permit may be granted for a period of up to 50 years. The ME permit is expected to be issued for the quantity of water needed for the Rosemont Project on an annual basis, and for a term that will match the intended life of the Project.

Non-exempt water production wells for withdrawals regulated under an ME permit may be constructed in accordance with A.R.S. Section 45-596(B) without procuring a well permit pursuant to A.R.S. Sections 45-598 and -599. Thus, no well spacing or well interference analysis is required before siting such a well. Rosemont Copper has secured property for well sites as illustrated in Figures 2-1 and 2-2. The production wells will be constructed in accordance with the “shall issue” drilling authority described in a Notice of Intent to Drill filed under A.R.S. Section 45-596.

Groundwater extracted pursuant to an ME permit may be transported away from an active management area, such as the Tucson AMA, to another basin, such as the Cienega Creek basin, in accordance with A.R.S. Section 45-543. However, this transportation is subject to a claim of damages by groundwater users in the basin of origin. A.R.S. Section 45-545 provides, however, that such damages shall not be presumed from the fact of transportation. This section also provides that, in considering the effect of transportation, mitigating factors such as the procurement of additional sources of water for the basin of origin shall be considered.

To mitigate harm to the Tucson AMA basin, Rosemont Copper has procured an excess water subcontract from the Central Arizona Water Conservation District (CAWCD), which operates the CAP system. The subcontract allows Rosemont Copper to purchase CAP water on an annual basis, as available, and take delivery in the Tucson AMA. As described above, Rosemont Copper began the process of purchase and recharge in 2007 in order to offset any potential harm to the Tucson AMA. It is expected that, by the time actual mining operations commence, Rosemont Copper will have recharged several years of the supply required for mine operations. The Rosemont Copper CAP storage program will result in long-term storage credits issued by the State of Arizona to Rosemont Copper for approximately 95 percent of the CAP water stored.
Rosemont Copper will also have the option of modifying the ME permit wells to allow them to operate as recovery wells. This would allow some or all of the water pumped from the wells to be legally characterized as recovered CAP water, rather than as groundwater. For the portion of the pumping that is characterized as CAP water recovery rather than groundwater pumping, a quantity of long-term storage credits equal to the annual amount of CAP water recovered will be extinguished each calendar year. Other long-term storage credits will be voluntarily extinguished as needed to offset groundwater pumping pursuant to the ME permit.

2.3 Water Demands

During its first eight years of operation, the project will utilize a total of approximately 5,500 af of process water per year. Thereafter, with oxide ore leaching complete, annual water consumption will decline to approximately 4,700 af per year. Over the 20-year life of the project, water consumption will average approximately 5,000 af per year, which will be used on a continuous basis. At the maximum anticipated annual usage of 5,500 af per year, the average usage rate would be approximately 3,400 gallons per minute (gpm). Certain periods will require a higher peak flow; therefore, the water system will be designed to accommodate a peak flow of 5,000 gpm.

2.4 Production Plan

The wellfield and pipeline for the water supply system will be designed to accommodate both the peak delivery rate and the total annual supply requirement. The wellfield will have excess capacity so that it can meet the 5,000 gpm production requirement while maintaining at least one production well in reserve.

Rosemont Copper has acquired a 53-ac parcel along Santa Rita Road northwest of the SRER (Figures 2-1 and 1-2), which will be Production Site 1. Technical studies of this site have provided the following results:

- Pump testing of an exploration well drilled near the eastern boundary of Site 1 supports a production rate of at least 1,500 gpm from a large production well at that location.

- Site 1 can also likely provide a location for another production well of similar capacity near the western boundary of the property. Though the production capacity of two wells at Site 1 may exceed 3,000 gpm, the water production plan anticipates only 3,000 gpm of production from the site.

- The presence of nearby large-capacity agricultural wells may have some effect on the overall production capability if all wells are operating simultaneously. The depth to groundwater at the site appears to vary between 200 ft and 270 ft, and appears to fluctuate as a result of pumping by other wells in the region. The Montgomery and Associates report (2007) (Appendix C) provides details on the Site 1 exploration well.
Rosemont Copper is currently evaluating other properties in the vicinity of Site 1 for acquisition to provide well sites to meet the additional 2,000 gpm peak pumping requirement. This capacity requirement is expected to require two or three more production wells and will provide peak demand with adequate reserve capacity.

2.5 Delivery System

Figures 2-1 and 1-2 show the preferred water delivery pipeline route. The Arizona State Land Department (ASLD) owns most of the land that will be traversed by the alignment. This alignment was selected to avoid the SRER. Easement negotiations with private landowners and the ASLD will run concurrently with MPO review and analysis, allowing the finalized route to incorporate community input.

The water delivery system will consist of 20-in ductile iron or welded steel pipeline, a series of five forebay reservoirs and booster pump stations, and a power line along the pipeline alignment. The 20-in pipe will accommodate the expected maximum flow rate of 5,000 gpm at a flow velocity of 5.0 feet per second (fps). Each of the five pump station sites will consist of a forebay reservoir with a volume of 300,000 gallons, a pump station with three vertical turbine pumps (two active and one stand-by) totaling approximately 650 hp, and a 10,000-gallon hydropneumatic tank to absorb pressure fluctuations in the event of a power outage or equipment failure. Several options for concept site configurations for the reservoir and booster station sites are included in Appendix D. Options for the sites include above-ground steel or below-ground concrete reservoirs, and several configurations for the booster pumps, depending upon the type of reservoir used. The type and exact dimensions of each reservoir will be adjusted to the conditions at each site.

The first pump station will be located at Site 1 adjacent to the eastern water supply well. The forebay reservoir at that site will serve as a collection reservoir for all the wells that will provide the process water to the Project. Four additional pump stations, with associated forebay reservoirs, will be located at approximately 3,310 ft above mean sea level (msl) along the north boundary of the SRER, and at approximate elevations of 3,885 ft, 4,460 ft, and 5,035 ft in locations east of the SRER. Pumping stations at these elevations will help to maintain pipeline pressures at reasonable levels along the alignment. The maximum working pressure at each pump station ranges from 250 to 340 pounds per square inch (psi). A profile of the water supply pipeline and the proposed booster pump station locations is provided as Figure 2-2.

2.6 Pipeline Alignment and Construction

The alignment of the water supply pipeline is shown on Figures 1-2 and 2-1. The pipeline will be constructed with a minimum soil cover of 36 in within ASLD or BLM easements, and 24 in on the mine property. The pipe bedding requirements will follow the manufacturer’s recommendations. Isolation valves will be installed in the pipeline at intervals of approximately 3,000 ft and at elevation changes of 250 ft. The pipeline will cross a number of washes, including three with rated flows of 5,000 cubic feet per second (cfs) and a number of smaller washes. The pipeline at the wash crossings will be constructed below the calculated scour depth of the wash, and grade control structures will be provided at the large
washes to provide additional protection. A preliminary plan and profile of the pipeline alignment is provided in Appendix E.

2.7 Water Supply Line Corridor and Reservoir and Pump Station Sizing

The required corridor anticipated for the construction and maintenance of the water supply line is approximately 30 ft, as shown on Figure 2-3. This 30-ft corridor will be contained within the anticipated 100-ft corridor utilized for all the off-site utilities for the project. The 100-ft corridor will provide sufficient width for construction, ongoing operation, and maintenance associated with the water and power supply systems. Each new booster station is anticipated to require a site of approximately 200 ft by 200 ft, which will include all required facilities including the power supply. Each new well site is expected to require a site of approximately 100 ft by 100 ft. The route for the well collection pipelines will be selected as the final well locations are selected, and the corridor for those pipelines is expected to be approximately 30 ft.

2.8 Recharge Plan

Rosemont Copper has no legal obligation to replace any of the water it will produce for the operation of the mine. No other mining operation in the region has previously done so. However, Rosemont has made a commitment to the local community to utilize available CAP water to recharge 105 percent of the total water production over the life of the Project. The recharge will be within the Tucson AMA, and as close to the water production site as possible. The total life-of-mine usage is currently estimated to be 100,000 af, resulting in a recharge commitment of 105,000 af.

Rosemont Copper began recharging CAP water in the Santa Cruz basin in 2007, with contracts in place to recharge 15,000 af at three state-permitted underground storage facilities, which include Pima Mine Road near the terminus of the CAP aqueduct, and the Lower Santa Cruz and Avra Valley sites near Marana. Rosemont Copper contracted to utilize all of the available capacity at Pima Mine Road (about 600 af in 2007), with the balance to be stored at the Lower Santa Cruz and Avra Valley sites. Rosemont plans to continue this water storage program for the next several years. A volume of water equal to several years of mine water supply will likely have been stored by the time Rosemont mining operations begin.

Pima Mine Road is the state-permitted underground storage facility closest to Site 1. Because available capacity at this facility may remain limited for the foreseeable future, Rosemont Copper has also begun evaluating construction of a new recharge facility in close proximity. Although construction and operation of a nearby recharge facility is not required by law, regulation, or any contractual obligation, Rosemont Copper is committed to recharge available CAP water at groundwater storage facilities close to its production wells to lessen impacts of mine water production on local water users.
Figure 2-1
Incorporated City Boundary
AMA Boundary
Grazing Lease
Fee Land
Patented Mining Claims
Unpatented Mining Claims
Santa Rita Experimental Range

Land Ownership Categories
- Bureau of Land Management
- Indian Reservation
- Private Land
- State Trust Land
- U.S. Forest Service Land

EXPLANATION
- Proposed Water Pipeline Alignment
- Proposed Booster Station and Identifier
- Powerline
- Railroad
- Incorporated City Boundary
- AMA Boundary
- Grazing Lease
- Fee Land
- Patented Mining Claims
- Unpatented Mining Claims
- Santa Rita Experimental Range

WATER SUPPLY PIPELINE
Augusta Resource Corporation
July 24, 2007
Figure 2-1
### ELECTRICAL LOAD SUMMARY

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<td>1145.8</td>
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<td>0.90</td>
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<td></td>
<td>134666.5</td>
<td>65737.4</td>
<td>148513.6</td>
</tr>
</tbody>
</table>
APPENDIX B
STEEL POLE GENERAL NOTES:

1. STEEL POLE SHALL BE THREE (3) SECTION MINIMUM, DIRECT BURIED, WITH ALL WEATHER EXPOSED STEEL FINISH (BLACK TYPICAL).

2. STEEL POLES SHALL HAVE CLIMBING RINGS ON ENTIRE LENGTH OF THE UPPER POLE SECTION, TYPICAL.

3. PROVIDE GROUNDING BOND JUMPER USING 4 Gauge Stranded Copper Conductor and Extruding Wedges Between Steel Pole Sections, TYPICAL.

4. PROVIDE GROUNDING RODS TO BE TITAN 1/2 COPPER CLAD GROUNDING RODS AND AT EACH POLE BASE WITH 1/4 BORE STRANDED COPPER GROUNDING CONDUCTOR AND EXTRUSION WEDGES FROM RIDE TO STEEL POLE RAIL, TYPICAL.

5. SUSPENSION AND HORIZONTAL POST TYPE ISOLATORS SHALL BE PORCELAIN OR POROUS COMPOSITE MADE FOR POWER. 736 KV POSITIVE IMPULSE FINISHED MINIMUM, TYPICAL.

6. 138 KV TRANSPOSITION LUG AND VERTICAL STEEL POLE STRUCTURES SHALL BE CONSTRUCTED FOR TUXED ELECTRIC POWER COMPANY (Typical).

PRELIMINARY
NOT FOR CONSTRUCTION
Results of Construction, Development, and Testing for Exploration Water Well (D-17-14) Pima County, Arizona
April 27, 2007
REPORT

RESULTS OF CONSTRUCTION, DEVELOPMENT, AND TESTING FOR EXPLORATION WATER WELL (D-17-14)17bdd[E-1]
PIMA COUNTY, ARIZONA

Prepared for
AUGUSTA RESOURCE CORPORATION

ERROL L. MONTGOMERY & ASSOCIATES, INC.
CONSULTANTS IN HYDROGEOLOGY

1550 EAST PRINCE ROAD
TUCSON, ARIZONA 85719  (520) 881-4912
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APPENDIX

Appendix

A  LABORATORY RESULTS
EXECUTIVE SUMMARY

An exploration water well was installed near the southeast corner of the Sahuarita-53 property in Section 17, Township 17 South, Range 14 East, for Augusta Resource Corporation for evaluation of the availability of sustainable groundwater supplies to meet requirements of the proposed Rosemont mine. The data obtained and analyses of these data indicate that the groundwater supply available in the vicinity of the Sahuarita-53 site is sufficient to provide approximately 1,500 gallons per minute (gpm) of water supply for the mine.

1. Exploration water well E-1 was installed on the Sahuarita-53 land parcel, approximately 300 feet north of the southeast corner of the parcel.

2. Well E-1 was constructed with 8-inch diameter casing to a depth of 1,300 feet below land surface (bls). The perforated interval for the well is from 360 to 1,300 feet bls.

3. Drill cuttings obtained from well E-1 and from other wells drilled in the area are basin-fill alluvial deposits of the Fort Lowell Formation and Tinaja beds. These deposits are generally comprised of silty clay with some minor gravelly layers.

4. In March 2007, prior to the pumping tests, depth to groundwater in well E-1 was 226.7 feet bls. Three days after completion of the recovery test, depth to water was about 209.7 feet bls.
5. Pumping tests were conducted at well E-1 to determine aquifer hydraulic parameters, sustainable pumping rate, groundwater quality, and dependability of the groundwater supply. The design pumping rate for a production well drilled near the E-1 site should be about 1,500 gpm.

6. At least four active, large-capacity irrigation wells are located approximately ½ mile from well E-1. A substantial regional rise in water levels observed during and after the pumping test is believed to be a result of cessation of pumping at one or more of these wells shortly after testing began. While such fluctuations in water level should not substantially affect potential pumping rates at the E-1 site, a new production well located at the E-1 site may likewise cause impacts to water levels at the neighboring irrigation and domestic wells.

7. It is expected that a production well drilled on the west side of the 53-acre parcel would be capable of producing groundwater at rates similar to a production well at the E-1 site. However, such a well would be in much closer proximity to existing irrigation wells, and fluctuations in groundwater levels and pumping rates are expected to be much larger than observed at well E-1.

8. Groundwater samples were obtained from well E-1 and submitted to a State-approved laboratory for a complete set of drinking water analyses. Total dissolved solids content of the groundwater was 340 milligrams per liter. No exceedances of maximum contaminant levels were identified from results of laboratory analyses, indicating no pre-existing contamination at the E-1 well site. Results of laboratory chemical analyses indicate that the quality of groundwater is suitable for anticipated mine uses, including public water supply.

9. To obtain groundwater in sufficient quantity for the proposed mine, it is estimated that two to four additional wells would be required, depending on actual well production at the other well sites and the required backup water production capacity.
RESULTS OF CONSTRUCTION, DEVELOPMENT, AND TESTING FOR EXPLORATION WATER WELL (D-17-14)17bdd[E-1]
PIMA COUNTY, ARIZONA

Prepared for
AUGUSTA RESOURCE CORPORATION

INTRODUCTION

At the request of Augusta Resource Corporation (Augusta), exploration water well (D-17-14)17bdd[E-1] was constructed and tested to obtain data for evaluation of the physical availability of groundwater to meet anticipated water requirements of about 5,000 gallons per minute (gpm) for the proposed Rosemont Mine, southeast from the City of Tucson, Arizona. The data obtained from well E-1 provides a basis for determining potential locations and projected pumping rates for additional wells necessary to obtain the required water supply. Groundwater samples were obtained to characterize the chemical quality of groundwater.

Technical specifications for well E-1 were issued December 13, 2006, and were sent along with bid documents to selected drilling contractors. Between the date of the specifications and commencement of drilling, the location of the proposed well was changed from (D-17-14)29dcd to (D-17-14)17bdd. The drilling contract was awarded to WDC Exploration & Wells, Gilbert, Arizona. The well site was marked in the field and approved by Augusta personnel. An Arizona Pollution Discharge Elimination System (AZPDES) permit for "De Minimis" discharge was issued by Arizona Department of Environmental
Quality (ADEQ) in March 2007 for purposes of discharging pumped water to the channel of a nearby wash. The well site was cleared by Arizona Blue Stake in February 2007, prior to commencement of drilling operations.

Drilling operations for well E-1 began on February 24, 2007, and construction and development were completed on March 6, 2007. Total depth drilled was 1,307 feet. Blank and perforated steel casing was installed to a depth of 1,300 feet. The location of the well is shown on Figure 1, and a schematic diagram of well construction is shown on Figure 2. The State of Arizona file number for the well is (D-17-14)17bdd, and the state well registration number is 55-214277.
WELL CONSTRUCTION AND DEVELOPMENT

DRILLING

On February 24, 2007, the surface borehole for exploration water well E-1 was drilled from land surface to a depth of 20 feet using an 18-inch air-hammer bit. A 20-foot length of 12-inch inside diameter, ¼-inch wall thickness, steel surface casing was installed in the surface borehole. To provide a surface seal, the surface casing was cemented in place by placing cement in the annulus from the bottom of the borehole to near land surface.

On February 25, 2007, WDC began drilling at the bottom of the surface borehole with a 12-inch mill-tooth bit using the flooded reverse-circulation rotary drilling method. Drilling operations were conducted continuously by two crews. The borehole was drilled to a total depth of 1,307 feet. Drilling was completed on March 2, 2007.

Upon completion of drilling, borehole geophysical logging was conducted in the mud-filled borehole. Logs obtained included caliper, temperature, natural gamma ray, spontaneous potential, single-point resistance, fluid resistivity, guard resistivity, 16- and 64-inch normal resistivity, and sonic. Summary graphs of the geophysical logs are shown on Figure 2.

CASING INSTALLATION

On March 3, 2007, factory-slotted steel casing with 8.125-inch inside diameter and 0.25-inch wall thickness was installed from 360 to 1,300 feet below land surface (bls). Perforation schedule is 1/8-inch by 3-inch slots, 16 slots per round, 3 rounds per foot. Blank steel casing with 8.125-inch inside diameter was installed from 360 feet bls to about 2 feet
above land surface. Casing centralizers were installed on the casing at 60-foot intervals (Figure 2).

**DEVELOPMENT**

Beginning on March 4, 2007, the well was developed by swabbing 20-foot intervals beginning at the top of the perforated interval and proceeding to a depth of about 900 feet. During swabbing, the well was continuously air-lift pumped, using the air line installed inside the drill pipe. After swabbing each interval several times, the swab was moved down the well and the operation was repeated for each subsequent 20-foot interval. Swabbing and air-lift operations were conducted for a total of about 24 hours. At the end of development operations, the pumped water was reasonably clear with a trace of sand.

After the drilling rig was moved off the well, a pump rig was used to install a 2-inch air line to near the bottom of the well. Additional air-lift development was conducted using the 2-inch air line and a large air-compressor unit. Air-lift operations were conducted in this manner for approximately 6 hours.

**WELL SITE HYDROGEOLOGY AND LITHOLOGY**

Hydrogeologic data for the area of the proposed well are available from published groundwater reports and lithologic logs for exploration well E-1 and other wells in the vicinity of the proposed well site. Lithologic materials encountered in wells drilled in the area are basin-fill alluvial deposits of the Fort Lowell Formation and Tinaja beds. These deposits consist of interbedded sedimentary strata. Individual strata are comprised chiefly of silty sand with minor gravelly zones.
Depth to groundwater in well E-1 at the time of the constant-discharge pumping test was 226.7 feet bsl. Published reports for this area indicate that the general direction of groundwater movement is toward the northwest.

Representative samples of drill cuttings were obtained at 10-foot depth intervals during drilling of well E-1. Drilling personnel made continuous observations regarding drilling speed, bit action, and character of drilling fluids during drilling operations. A lithologic log of drill cuttings samples was prepared by a Montgomery & Associates hydrogeologist and is available upon request. Generalized lithologic data is shown on Figure 2.

The sediments penetrated at well E-1 consist chiefly of cemented silty sand with interbedded gravelly zones. Approximately 60 percent of the sediments encountered were dark gray and reddish volcanic rocks. Granitic rocks comprised most of the remaining fraction. Small percentages of limestone, sandstone, and quartzite were also present.
PUMPING TEST OPERATIONS

Following air-lift development, a step-discharge pumping test and a constant-discharge pumping test were conducted at exploration water well E-1 during the period March 21 through 24, 2007. Due to problems with conveyance of water to the wash channel, the step-discharge pumping test was aborted prematurely. Hydrologic data for the step-discharge test are summarized in Table 1. Hydrologic data for the constant-discharge pumping test are summarized in Table 2. A semi-logarithmic graph of uncorrected water level drawdown and recovery data for the constant-discharge test is shown on Figure 3. A similar graph of water level data, corrected to account for regional water level rise, is shown on Figure 4.

PUMPING TEST PROCEDURES

Pumping test operations at well E-1 were conducted using a submersible electric test pump installed to a depth of about 550 feet bgs. The pump was operated by a 200-kilowatt electric generator. The test pump, generator, 4-inch pump column pipe, and other appurtenances were provided and installed by WDC. Prior to initiation of the pumping tests, the test pump was operated for several hours to provide additional well development and to determine pumping rates for testing.

During the step-discharge and constant-discharge pumping tests, pumping rates were measured using a Henley totalizing flowmeter. Pumping rates were also measured using a 4-inch orifice plate and manometer tube installed near the downstream end of the 6-inch discharge pipe assembly. Pumping rate was controlled using a gate valve installed on the discharge assembly. Groundwater pumped during the tests was discharged to a large metal trough. Water was removed from the trough and transported to the adjacent wash channel.
using a trash pump and flexible tubing. The adjacent wash channel is a tributary to the Santa Cruz River. An AZPDES permit (Authorization No. AZDGP-00796) for this de minimus discharge was issued by ADEQ on March 19, 2007.

Two 1-inch diameter PVC access pipes were installed in the well from the wellhead to near the top of the pump intake. Groundwater level measurements were obtained in one of the access pipes using a calibrated electrical water level sounder. Water level measurements were referenced to the measuring point at the top of the 1-inch sounder access pipe which extended 2.18 feet above land surface. Pre-pumping water level measured on March 23, 2007, before start-up of the constant-discharge pumping test, was 226.7 feet bgs. Water level data were also obtained via a pressure transducer installed in the other 1-inch PVC access pipe. Data obtained by the pressure transducer were electronically recorded using a Campbell Scientific CR10 datalogger. Data from the datalogger were periodically downloaded and processed in the field via computer.

The step-discharge pumping test was conducted on March 21, 2007. The step-discharge test consisted of 2 pumping periods at different pumping rates. Each pumping rate was maintained until the rate of drawdown stabilized. Due to equipment problems, conveyance of water from the well site became problematic at rates larger than about 200 gpm. Therefore, the step-discharge test was aborted earlier than planned. Duration of the step-discharge test was about 2.5 hours. After the step-discharge test was stopped, water levels were allowed to recover prior to conduct of the constant-discharge test.

Pumping operations for the constant-discharge test occurred on March 23 through 24, 2007. An average pumping rate of 312 gpm was maintained throughout the 24-hour pumping period. Following the pumping period for the constant-discharge test, water level recovery was measured for a period of time equal to the pumping period.
During the pumping periods for the step-discharge and constant-discharge pumping tests, measurements of water level drawdown were obtained in the pumped well. Measurements of pumping rate, temperature, specific electrical conductance, pH, and sand content of the pumped water were also obtained. Near the end of the pumping period for the constant-discharge test, samples of the pumped water were obtained and subsequently submitted to an analytical laboratory for the full suite of chemical analyses.

Following the 24-hour recovery period, the test pump and ancillary equipment were removed from the well, and a steel cap was welded on top of the casing.

**ANALYSIS OF PUMPING TEST RESULTS**

Water level drawdown data obtained at the pumped well were analyzed for transmissivity using the modified non-equilibrium equation semi-logarithmic graphical procedure developed by Cooper and Jacob (1946). Transmissivity is the rate of flow of groundwater at the prevailing temperature through a vertical strip of aquifer 1 foot wide, extending the full saturated thickness of the aquifer, under a unit hydraulic gradient (Lohman, 1979). Transmissivity is expressed in gallons per day per foot width of aquifer (gpd/ft).

Water level recovery data obtained at the pumped well were analyzed for transmissivity using the Theis (1935) semi-logarithmic recovery method. For the Theis method, residual drawdown is plotted versus the ratio t/t', where "t" is the time after pumping started, and "t'" is the time after pumping stopped. Residual drawdown is the magnitude of drawdown remaining at any time after pumping stopped.

A step-discharge pumping test was conducted on March 21, 2007, to determine an appropriate pumping rate for the constant-discharge test. Pumping rates during the step-
discharge pumping test were 160 and 212 gpm. Duration of the steps were 75 and 90 minutes, respectively. Specific capacity of a well is computed by dividing the pumping rate by the water level drawdown at that rate. Specific capacity for the step-discharge pumping test ranged from 15.0 to 15.8 gallons per minute per foot of drawdown (gpm/ft). Hydrologic data for the step-drawdown pumping test are summarized in Table 1.

Pumping for the constant-discharge pumping test started at 13:05 hours on March 23, 2007. Pumping period for the test was 24 hours; average pumping rate was 312 gpm. Maximum drawdown during the test was about 22.1 feet. Specific capacity for the test was about 14.1 gpm/ft. Approximately 48 minutes after start-up of the test, it was necessary to shut down the pump for about 3 minutes due to water conveyance problems. Hydrologic data for the constant-discharge pumping test are summarized in Table 2.

During the 24-hour constant-discharge pumping test, temperature of the pumped water ranged from 25.4 to 26.4 degrees Celsius (°C). Specific electrical conductance measured in the field ranged from 505 to 520 micromhos per centimeter (µmho/cm). Specific electrical conductance is defined as the electrical conductivity of a cube of water, 1 centimeter on a side, at 25°C. Field measurements of pH of the pumped water ranged from 6.10 to 8.13. At the end of the pumping period, temperature was 25.9°C, conductance was 510 µmho/cm, and pH was 8.13 (Table 2). At the end of the pumping period, the pumped water was clear, and Imhoff cone measurements indicated that the water contained a trace of sand throughout the test.

Approximately 210 minutes after pumping started, the trend of drawdown flattened until about 600 minutes after pumping started. From that point until pumping was stopped, water levels rose approximately 2 feet. In addition, upon completion of the recovery period, water level in the well had risen approximately 6.9 feet above the pre-pumping water level. Upon inspection of the data and follow-up monitoring 3 days after the test, it was apparent that a regional rise in water levels of 3.2 to 3.7 feet per day had occurred during and after the test,
probably as a result of cessation of pumping at one or more neighboring irrigation wells shortly after testing began.

A semi-logarithmic graph of uncorrected drawdown and recovery data for well E-1 for the 24-hour constant-discharge pumping test is shown on Figure 3. In their uncorrected form, analysis of the water level trends are problematic. By applying a correction factor equivalent to 3.2 feet per day, the data were corrected to account for the regional rise in water levels. A semi-logarithmic graph of corrected drawdown and recovery data for well E-1 for the 24-hour constant-discharge pumping test is shown on Figure 4. Analysis of the trend of drawdown data for the period from 9 to about 210 minutes after pumping started indicates transmissivity of about 22,000 gpd/ft. Analysis of the trend of drawdown for the period from 900 to 1,440 minutes after pumping started indicates transmissivity of about 150,000 gpd/ft. Analysis of the trend of water level recovery for the full recovery period indicates a transmissivity of about 20,000 gpd/ft.

**SUMMARY OF PUMPING TEST RESULTS**

Because recovery data and early-time drawdown data indicate similar transmissivities, operative transmissivity in the vicinity of well E-1 is believed to be at least 20,000 gpd/ft, and possibly larger. Based on results of the pumping tests, a properly constructed and developed production well located near exploration well E-1 should be capable of producing 1,500 gpm. Depending on groundwater conditions encountered at other properties in the area, two to four additional wells may be required to provide the required water supply of 5,000 gpm and any required back-up capacity.
Groundwater samples were obtained from exploration water well E-1 near the end of the 24-hour constant-discharge pumping test. Samples were obtained for a complete set of drinking water analyses as would be required for a new public water system in the state of Arizona. Accordingly, the following analyses were conducted:

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<th>Common Inorganics</th>
<th>Chlorinated Acids (515.3)</th>
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</thead>
<tbody>
<tr>
<td>Trace Metals</td>
<td>Endothall (548)</td>
</tr>
<tr>
<td>Nitrate – Nitrite</td>
<td>PCBs (505)</td>
</tr>
<tr>
<td>Free Cyanide</td>
<td>Herbicides (515.1)</td>
</tr>
<tr>
<td>Radiochemicals</td>
<td>Semi-Volatile Organics (525.2)</td>
</tr>
<tr>
<td>VOCs (524.2)</td>
<td>Glyphosate (547)</td>
</tr>
<tr>
<td>EDB/DBCP/TCP (504.1)</td>
<td>Diquat (549.1)</td>
</tr>
<tr>
<td>Carbamate Pesticides (531.1)</td>
<td>Asbestos</td>
</tr>
</tbody>
</table>

Laboratory analyses were conducted by, or under the auspices of, Aerotech Laboratories, Phoenix, Arizona.

Results of laboratory chemical analyses for common inorganic constituents indicate that the dominant cation is calcium; the dominant anion is bicarbonate. Total dissolved solids content of the groundwater was 340 milligrams per liter (mg/L).

Results of laboratory analyses for common inorganic constituents, trace metals, radiochemicals, and organic constituents indicate that concentrations of all chemical constituents were less than Maximum Contaminant Levels (MCLs) for public water supply systems in Arizona, indicating no pre-existing contamination at the E-1 well site. The chemical quality of groundwater at well E-1 is suitable for the intended mining uses. Copies of the laboratory reports for the chemical analyses are given in Appendix A.
RESULTS OF DRILLING AND TESTING OPERATIONS FOR EXPLORATION WATER WELL (D-17-14)17bdd[E-1] INDICATE THE WELL IS LIKELY CAPABLE OF PRODUCING 500 GPM OR MORE. A PROPERLY CONSTRUCTED AND DEVELOPED, LARGE-DIAMETER WELL AT THIS LOCATION SHOULD BE CAPABLE OF SUPPLYING GROUNDWATER AT A RATE OF ABOUT 1,500 GPM ON A CONTINUOUS BASIS FOR THE FORESEEABLE FUTURE. HOWEVER, TWO TO FOUR ADDITIONAL PRODUCTION WELLS WILL ULTIMATELY BE REQUIRED TO MEET ANTICIPATED MINE WATER SUPPLY REQUIREMENTS, DEPENDING ON ACTUAL WELL PRODUCTION AND DESIRED BACK-UP CAPACITY. CHEMICAL QUALITY OF THE GROUNDWATER IS SUITABLE FOR ANTICIPATED USES AT THE SITE, INCLUDING DRINKING WATER SUPPLY.

WE RECOMMEND THAT A PRODUCTION WATER WELL WITH MINIMUM 20-INCH DIAMETER CASING BE INSTALLED NEAR WELL E-1. MINIMUM WELL DEPTH SHOULD BE 1,100 FEET. BECAUSE THE AQUIFER CONSISTS MOSTLY OF SILTY SAND MATERIAL, A GRAVEL PACK SHOULD BE INSTALLED IN THE ANNULAR SPACE OF THE WELL. TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, DEVELOPMENT, TESTING, AND EQUIPPING OF THE PRODUCTION WELL SHOULD BE DEVELOPED, ALONG WITH A BID PACKAGE FOR SELECTION OF A QUALIFIED DRILLING CONTRACTOR.

A SECOND PRODUCTION WELL COULD BE LOCATED NEAR THE NORTHWEST CORNER OF THE SAHUARITA-53 PARCEL. ALTHOUGH NO GUARANTEES ARE OFFERED AS TO POTENTIAL WELL PRODUCTION AT THIS LOCATION, IT IS LIKELY THAT SUCH A WELL WOULD BE CAPABLE OF PRODUCING WATER AT RATES SIMILAR TO A PRODUCTION WELL AT THE E-1 SITE.

AT LEAST FOUR ACTIVE, LARGE-CAPACITY IRRIGATION WELLS ARE LOCATED APPROXIMATELY ½ MILE FROM WELL E-1. AS OBSERVED DURING THE E-1 PUMPING TEST, PUMPING OF THESE IRRIGATION WELLS WILL IMPOSE A NOTICEABLE IMPACT ON GROUNDWATER LEVELS IN THE VICINITY OF WELL E-1. WHILE THIS SHOULD NOT SUBSTANTIALLY AFFECT POTENTIAL WELL PUMPING RATES AT THE E-1 SITE, A NEW PRODUCTION WELL LOCATED AT THE E-1 SITE MAY LIKELY CAUSE IMPACTS TO WATER LEVELS AT THE NEIGHBORING IRRIGATION AND DOMESTIC WELLS. A SECOND PRODUCTION WELL ON THE SAHUARITA-53 PARCEL WOULD BE
in much closer proximity to existing irrigation wells, and fluctuations in groundwater levels and pumping rates may be much larger than observed at well E-1.
REFERENCES CITED

Cooper, H.H., Jr., and Jacob, C.E., 1946, A generalized graphical method for evaluating formation constants and summarizing well-field history: Transactions, American Geophysical Union, v. 27, pp. 526-534.


TABLE 1. SUMMARY OF HYDROLOGIC DATA FROM
STEP-DISCHARGE PUMPING TEST
AT EXPLORATION WATER WELL (D-17-14)17bdd[E-1]
PIMA COUNTY, ARIZONA

<table>
<thead>
<tr>
<th>DATE PUMPING TEST STARTED</th>
<th>AVERAGE PUMPING RATE (gpm)a</th>
<th>DURATION OF PUMPING STEP (minutes)</th>
<th>OBSERVED DRAWDOWN AT END OF STEP (feet)</th>
<th>SPECIFIC CAPACITY (gpm/ft)b</th>
</tr>
</thead>
<tbody>
<tr>
<td>21Mar2007</td>
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<td>75</td>
<td>10.16</td>
<td>15.8</td>
</tr>
<tr>
<td>212</td>
<td>90</td>
<td>14.13</td>
<td></td>
<td>15.0</td>
</tr>
</tbody>
</table>

a gpm = gallons per minute

b gpm/ft = gallons per minute per foot of drawdown
TABLE 2. SUMMARY OF HYDROLOGIC DATA FROM CONSTANT-DISCHARGE PUMPING TEST
AT EXPLORATION WATER WELL (D-17-14) (17bdd[E-1])
PIMA COUNTY, ARIZONA

<table>
<thead>
<tr>
<th>DATE PUMPING TEST STARTED</th>
<th>AVERAGE PUMPING RATE (gpm)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>DURATION OF PUMPING TEST (minutes)</th>
<th>MAXIMUM DRAWDOWN (feet)</th>
<th>SPECIFIC CAPACITY (gpm/ft)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>pH OF PUMPED WATER AT END OF TEST</th>
<th>TEMPERATURE OF PUMPED WATER AT END OF TEST (°C)&lt;sup&gt;c&lt;/sup&gt;</th>
<th>ELECTRICAL CONDUCTANCE OF PUMPED WATER (µmho/cm)&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>23Mar2007</td>
<td>312</td>
<td>1,440</td>
<td>22.10</td>
<td>14.1</td>
<td>8.13</td>
<td>25.9</td>
<td>510</td>
</tr>
</tbody>
</table>

<sup>a</sup> gpm = gallons per minute

<sup>b</sup> gpm/ft = gallons per minute per foot of drawdown

<sup>c</sup> °C = degrees Celsius

<sup>d</sup> µmho/cm = micromhos per centimeter
FIGURE 1. WELL LOCATION MAP
FIGURE 2. SCHEMATIC DIAGRAM OF CONSTRUCTION AND LOGGING SUMMARIES FOR EXPLORATION WATER WELL E-1
FIGURE 3. GRAPH OF UNCORRECTED DRAWDOWN AND RECOVERY DATA FOR PUMPED WELL E-1 DURING CONSTANT-DISCHARGE PUMPING TEST
PREPUMPING WATER LEVEL 226.67 FEET BELOW LAND SURFACE
PUMPING STARTED 13:05 MARCH 23, 2007
PUMPING STOPPED 13:05 MARCH 24, 2007
AVERAGE PUMPING RATE 312 GALLONS PER MINUTE

TRANSMISSIVITY (DRAWDOWN DATA) = 150,000 GALLONS PER DAY PER FOOT
TRANSMISSIVITY (RECOVERY DATA) = 20,000 GALLONS PER DAY PER FOOT

NOTE: DATA CORRECTED TO ACCOUNT FOR REGIONAL WATER LEVEL RISE DURING TEST

FIGURE 4. GRAPH OF CORRECTED DRAWDOWN AND RECOVERY DATA FOR PUMPED WELL E-1 DURING CONSTANT-DISCHARGE PUMPING TEST
Tuesday, April 24, 2007

James S. Davis  
Errol Montgomery and Associates  
1550 East Prince Rd.  
Tucson, AZ 85719  
TEL: (520) 881-4912  
FAX (520) 881-1609  
RE: 1232.01

Order No.: 07030729

Dear James S. Davis:

Aerotech Environmental Laboratories received 2 sample(s) on 3/27/2007 for the analyses presented in the following report.

This report includes the following information:
- Case Narrative.
- Analytical Report: includes test results, report limit (Limit), any applicable data qualifier (Qual), units, dilution factor (DF), and date analyzed.
- QC Summary Report.

This communication is intended only for the individual or entity to whom it is directed. It may contain information that is privileged, confidential, or otherwise exempt from disclosure under applicable law. Dissemination, distribution, or copying of this communication by anyone other than the intended recipient, or a duly designated employee or agent of such recipient, is prohibited. If you have received this communication in error, please notify us immediately and destroy this message and all attachments thereto. If you have any questions regarding these test results, please do not hesitate to call.

Sincerely,

Melanie Lanier  
Project Manager
Analyses included in this report were performed by Aerotech Environmental Laboratories (AEL), 4645 E. Cotton Center Boulevard, Building 3, Suite 189, Phoenix, AZ.

AEL is licensed through the State of Arizona (License No. AZ0610), and holds NELAC accreditation (QR100001) through the State of Oregon for the analytical techniques noted on the scope of accreditation.

AEL is also accredited by the American Industrial Hygiene Association (AIHA) in the industrial hygiene program for the analytical techniques noted on the scope of accreditation.

Samples were analyzed using methods outlined in references such as:
- NIOSH Manual of Analytical Methods, Fourth Edition, 1994. NIOSH Method 7300 analyses are performed using a modified digestion procedure to eliminate the use of perchloric acid.

Analytical Comments:
All method blanks and laboratory control spikes met method and/or laboratory quality control objectives for the analyses included in this report.

EPA Methods 504.1, 508, 515.1, 531.1, 547, 548.1 and 549.2 were performed by Underwriters Laboratories in South Bend, IN. EPA Method 100.1 was performed by Fiberquant Analytical Services in Phoenix, AZ. Radiochemistry analyses were performed by Radiation Safety in Chandler, AZ. Copies of their reports are enclosed.

Method 525.2 analysis was canceled on 3/28/07 for Sample "4555" due to the sample was received without chemical preservation.

Data Qualifiers:
Listed below are the data qualifiers used in your analytical report to explain any analytical or quality control issues. You will find them noted in your report under the column header "QUAL". Any quality control deficiencies that cannot be adequately described by these qualifiers will be addressed in the report.
analytical comments section of this case narrative.

D2 Sample required dilution due to high concentration of target analyte.
H3 Sample was received and analyzed past holding time.
M3 The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
## Aerotech Environmental Laboratories

**Aerotech Environmental Laboratories**
a division of Aerotech Laboratories, Inc.

### Analytical Report

**Date:** 16-Apr-07

- **CLIENT:** Errol Montgomery and Associates
- **Lab Order:** 07030729
- **Project:** 1232.01
- **Lab ID:** 07030729-01A
- **Client Sample ID:** 4555
- **Tag Number:**
- **Collection Date:** 3/24/2007 8:45:00 AM
- **Matrix:** AQUEOUS

### Analyses

#### ANIONS BY ION CHROMATOGRAPHY

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<th>Analyst</th>
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#### RESIDUE, FILTERABLE

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### Footnotes

All analysis performed at AEL Phoenix laboratory unless indicated by footnotes.

1. The holding time for pH analysis is immediate. For the most accurate result, the pH should be taken in the field within 15 minutes of sampling.
**Aerotech Environmental Laboratories**

**Analytical Report**

**CLIENT:** Errol Montgomery and Associates

**Lab Order:** 07030729

**Project:** 1232.01

**Lab ID:** 07030729-01B

**Analytical Report Date:** 16-Apr-07

**Client Sample ID:** 4555

**Tag Number:**

**Collection Date:** 3/24/2007 8:45:00 AM

**Matrix:** AQUEOUS

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**Footnotes:** All analysis performed at AEL Phoenix laboratory unless indicated by footnotes.

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Aerotech Environmental Laboratories

Aerotech Environmental Laboratories, a division of Aerotech Laboratories, Inc.

Analytical Report

Date: 16-Apr-07

CLIENT: Errol Montgomery and Associates
Client Sample ID: 4555

Lab Order: 07030729
Tag Number: 4555

Project: 1232.01 Collection Date: 3/24/2007 8:45:00 AM

Lab ID: 07030729-01D
Matrix: AQUEOUS

Analyses

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Footnotes: All analysis performed at AEI Phoenix laboratory unless indicated by footnotes.
(1) The holding time for pH analysis is immediate. For the most accurate result, the pH should be taken in the field within 15 minutes of sampling.
### Aerotech Environmental Laboratories

#### Analytical Report

**Date:** 16-Apr-07

**CLIENT:** Errol Montgomery and Associates  
**Lab Order:** 07030729  
**Project:** 1232.01  
**Lab ID:** 07030729-01D  
**Client Sample ID:** 4555  
**Tag Number:**  
**Collection Date:** 3/24/2007 8:45:00 AM  
**Matrix:** AQUEOUS

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<td>Hexachlorobutadiene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>Isopropylbenzene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>m,p-Xylene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>Methylene chloride</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>Naphthalene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>n-Butylbenzene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>n-Propylbenzene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>o-Xylene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>sec-Butylbenzene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>Styrene</td>
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<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>tert-Butylbenzene</td>
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<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>Tetrachloroethene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
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<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>trans-1,2-Dichloroethene</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
<td>1</td>
<td>3/29/2007</td>
<td></td>
</tr>
<tr>
<td>trans-1,3-Dichloropropane</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
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<td>3/29/2007</td>
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</tr>
<tr>
<td>Trichloroethene</td>
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<tr>
<td>Trichlorotrifluoroethane</td>
<td>&lt; 0.00050</td>
<td>0.00050</td>
<td>mg/L</td>
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<tr>
<td>Trihalomethanes, Total</td>
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<td>Vinyl chloride</td>
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<td>Xylenes, Total</td>
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<tr>
<td>Surr: 1,2-Dichlorobenzene-d4</td>
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<td>%REC</td>
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<td>Surr: 4-Bromofluorobenzene</td>
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<td>70-130</td>
<td>%REC</td>
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</tbody>
</table>

**Footnotes:**  
All analysis performed at AEL Phoenix laboratory unless indicated by footnotes.  
(1) The holding time for pH analysis is immediate. For the most accurate result, the pH should be taken in the field within 15 minutes of sampling.
<table>
<thead>
<tr>
<th>Analyses</th>
<th>Result</th>
<th>Limit</th>
<th>Qual</th>
<th>Units</th>
<th>DF</th>
<th>Date Analyzed</th>
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<td>CYANIDE, TOTAL</td>
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<td>mg/L</td>
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<td>1</td>
<td>4/4/2007</td>
</tr>
</tbody>
</table>

Footnotes: All analysis performed at AEL Phoenix laboratory unless indicated by footnotes.

(1) The holding time for pH analysis is immediate. For the most accurate result, the pH should be taken in the field within 15 minutes of sampling.
Radiochemical Activity in Water (pCi/L)

Aerotech Environmental Labs
4455 S. Park Ave. # 110
Tucson, Arizona 85714

Sample Received: March 27, 2007
Analysis Completed: April 10, 2007

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Gross Alpha Activity Method 600/00-02 (pCi/L)</th>
<th>Uranium Activity Method 00-07 (pCi/L)</th>
<th>Adjusted Gross Alpha Activity Method 903.1 (pCi/L)</th>
<th>Radium 226 Activity Method 904 (pCi/L)</th>
<th>Radium 228 Activity Method 904 (pCi/L)</th>
<th>Total Radium (pCi/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4555</td>
<td>8.6 ± 1.4</td>
<td>5.7 ± 0.6</td>
<td>2.9 ± 1.5</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
</tr>
</tbody>
</table>

G. William Klingler, B.S.E., M.S.E.
Isotopic Uranium Analysis

Aerotech Environmental Labs.
4645 East Cotton Center Blvd., Bldg.3, Ste. 189
Phoenix, AZ 85040

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>$^{238}\text{U}$</th>
<th>$^{235}\text{U}$</th>
<th>$^{234}\text{U}$</th>
<th>Total</th>
<th>Activity (pCi/L)</th>
<th>Content (μg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4555</td>
<td>2.6 ± 0.4</td>
<td>0.123 ± 0.003</td>
<td>2.9 ± 0.4</td>
<td>5.7 ± 0.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.9 ± 1.2</td>
<td>0.058 ± 0.001</td>
<td>0.00046 ± 0.00007</td>
<td>7.9 ± 1.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

\[\text{Signature}\]

G. William Klingler, B.S.E., M.S.E.
Arizona Department Of Environmental Quality
Drinking Water Source Approval Form
Samples To Be Taken At Source Only

________________________
System ID# Errol L. Montgomery Associates, Inc.
System Name

03/24/2007
Sample Date

08:45 (24 Hr clock)
Sample Time

________________________
ADEQ Project Number

________________________
Well ID Number

New Source YES X NO
New System YES NO
New POE

________________________
Surface Water Intake ID Number

Owner/Contact Person Name

Owner/Contact Person Phone Number

Sample Type Compliance Monitoring
Sample Collection Point/ID
Point of Entry# ______

This form is to be filled out completely, and all pages are to be submitted together. If more than one laboratory participated in the analyses, please attach a copy of the original laboratory report, signed by the performing laboratory, to the back of this form.

All Results Shall Be Reported In Milligrams Per Liter (mg/L) Unless Otherwise Specified.

Please Mail This Completed Form To:

Arizona Department Of Environmental Quality
Technical Review Unit
Drinking Water Section (5415b-2)
1110 W Washington St,
Phoenix, AZ 85007

Page 1 of 2
### Radiochemical Analysis

<table>
<thead>
<tr>
<th>Analysis Method</th>
<th>MCL</th>
<th>Reporting Limit</th>
<th>Contaminant Name</th>
<th>Cont Code</th>
<th>Analysis Run Date</th>
<th>Result</th>
<th>Exceeds MCL</th>
<th>Exceeds Reporting Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted Gross Alpha</td>
<td>15 pCi/L</td>
<td>600/00-02</td>
<td>3 pCi/L</td>
<td>4000</td>
<td>04/02/2007</td>
<td>2.9±1.5</td>
<td>0</td>
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<tr>
<td></td>
<td>30ppb</td>
<td>(reserved)</td>
<td>Combined Uranium</td>
<td>4006</td>
<td>03/27/2007</td>
<td>7.9±1.2</td>
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<tr>
<td></td>
<td>5 pCi/L</td>
<td>1 pCi/L</td>
<td>Combined Radium</td>
<td>4010</td>
<td>03/29/2007</td>
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<tr>
<td>Radium 226</td>
<td>1 pCi/L</td>
<td>903.1</td>
<td>2 pCi/L</td>
<td>4020</td>
<td>03/29/2007</td>
<td>&lt;0.3</td>
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</tr>
<tr>
<td>Radium 228</td>
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<td>904.0</td>
<td>4 mrem</td>
<td>4100</td>
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<td>0</td>
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<tr>
<td>Tritium</td>
<td>20,000 pCi/L</td>
<td>1,000 pCi/L</td>
<td>10 pCi/L</td>
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<tr>
<td>Strontium-89</td>
<td>8 pCi/L</td>
<td>10 pCi/L</td>
<td>Iodine-131</td>
<td>4264</td>
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<td>0</td>
<td></td>
</tr>
<tr>
<td>Strontium-90</td>
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<td>Cesium-134</td>
<td>4270</td>
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<td>0</td>
<td></td>
</tr>
</tbody>
</table>

*Do not analyze for this contaminant unless notified by ADEQ

**Laboratory Information**

Specimen Number: RSE29995

Lab ID Number: AZ0462 Name: Radiation Safety Engineering, Inc.

Comments: 4555,P.N._1232.01

Authorized Signature: ______________________

Date Public Water System Notified: ___________________
# Determination of Asbestos in Water using TEM

## Job Number: 200702711

**Client:** AEROTECH ENV LABS

4645 E COTTON CTR BLVD

BLDG 3 STE 189

PHOENIX, AZ 85040-0000

Office Phone: (602) 437-3321

FAX: (623) 445-6192

### # Samples: 1

<table>
<thead>
<tr>
<th>Date Analyzed:</th>
<th>4/2/2007</th>
</tr>
</thead>
</table>

**Method and Analysis Information:** Fiberquant Internal SOP: TEMw

Samples are analyzed using the protocols given in EPA method 100.1, as amended by the 1993 EPA guidance. Samples should be un-preserved water in 1 L containers having about 200 ml headspace for shaking. There is a 48 hr deadline between the time the sample is taken and the time it is filtered to minimize loss of asbestos fibers due to biological interference. Each sample is shaken for 1 minute, and ultrasonicated for at least 10 minutes, shaking every 5 minutes to disperse any fibers that are present. A measured amount of sample is then filtered through a 0.1 um pore size polycarbonate filter, backed by a 5 um pore size MCE filter and a glass frit. Several volumes of liquid may be filtered for each sample in order to assure that a properly loaded sample is obtained. A portion of each resulting filter (and blanks) is then coated with 100-200 um of carbon in a Denton 502A Carbon Evaporator. The carbon encapsulates all of the larger and most of the smaller particulate on the filter. Three mm square pieces of the coated filter are placed on three or more copper TEM grids, and the original filter material is dissolved away in a Jaffel wick and/or condensation washer. The finished replica in carbon containing the particulate is then examined on a Jeol 1200 or Phillips CM 10 transmission electron microscope at 10,000 to 20,000x magnification. All asbestos fibers >10um in length are tabulated and characterized as asbestos or non-asbestos using a combination of morphology, electron diffraction characteristics, and elemental composition. The result is calculated in millions of fibers per liter greater than 10 microns in length (MFL>10um). The grid is scanned until 20 grid openings have been observed, or until an analytical sensitivity (the hypothetical observation of one fiber) of 0.2 MFL has been reached. The nominal 20 grid opening cut-off is used for those samples containing so much non-asbestos particulate that the desired analytical sensitivity is impractical to attain.

The method was designed to determine EPA drinking water compliance. The standard for drinking water is <7 MFL>10um as measured by this method. Fiberquant maintains Arizona Environmental Laboratory license #AZ0633 covering EPA Method 100.1.

Overall, the coefficient of variation can be expected to be approximately 0.5 for analyses in which >20 asbestos fibers have been counted, ranging up to 1.00 for analyses in which only a few asbestos fibers are counted.

The analysis was performed under an ongoing quality assurance program which includes: Lab blanks, prepared with each set of samples, and analyzed at the rate of one per 25 samples analyzed. Each analyst has suitable background credentials, such as at least a bachelor's degree in geology or chemistry, and has undergone extensive 2-6 month training in TEM techniques and mineralogy specific to TEM asbestos analysis before being allowed to perform client analyses. Unknown reference samples are routinely identified to ensure that each analyst can collect and correctly interpret TEM information. The TEM is aligned and its performance checked daily. Magnification, electron diffraction pattern size, and analytical performance characteristics are calibrated routinely. Samples are re-analyzed sometimes by the same analyst and sometimes by a different analyst in order to determine accuracy and precision. The total of QC analyses (blanks + recounts) are greater than 10% of analyzed samples. Each analyst participates in interlab round robin and proficiency testing in order to show correlation to other lab's analyses. Because TEM samples are not analyzed in batches, which would be traditional for most water analyses, and not every blank is read, and not every sample has a duplicate or replicate analysis associated with it, it is not possible to include a traditional QC report with the analysis. QC reports are produced monthly, and are available on request. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. Fiberquant is accredited by NVLAP to perform TEM analysis of asbestos in air samples, and has been found to be proficient in the EPA water proficiency program. Accreditation or proficiency does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

## Job Analysis Notes:

**Sample received after filtering window expired. Analyze sample per client request.**

**Sampled:** 3/24/2007 8:45

**Received:** 3/27/2007 10:15

**Filtered:** 3/27/2007 11:15

**Analyzed:** 4/22/2007 14:48

By: Carolyn Lambert
## Analysis Results:

<table>
<thead>
<tr>
<th>Lab Number</th>
<th>Client Number</th>
<th>Date</th>
<th>Condition</th>
<th>Filtered Vol (ml)</th>
<th>#GOs</th>
<th>GO Area</th>
<th>MFL&gt;10um</th>
<th>AsbestosType</th>
<th>Sensitivity (MFL&gt;10um)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-02711-1</td>
<td>07030729-1</td>
<td>3/24/2007</td>
<td>acceptable</td>
<td>35</td>
<td>12</td>
<td>0.00973</td>
<td>&lt;0.2</td>
<td></td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Job Number:** 200702711

---

**Analyst:** UWE STEIMLE

**Printed:** 02-Apr-07

**Original Print Date:** 02-Apr-07

---

**Larry S. Pierce, Approved Accreditation Signatory**
DRINKING WATER LABORATORY REPORT

This report contains 8 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

This report may not be reproduced, except in full, without written approval from Underwriters Laboratories Inc. (UL).
Laboratory Report

Client: Aerotech Environmental Laboratories, Inc
Attn: Melanie Lanier
4645 East Cotton Center Boulevard
Building 3, Suite 189
Phoenix, AZ 85040

Report: 179399
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Copies to: None

<table>
<thead>
<tr>
<th>Sample Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL ID #</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>1603685</td>
</tr>
</tbody>
</table>

The sample containers were broken en route to UL. The client was notified of the situation, and recollection of the samples was requested.

Note: Sample containers were provided by the client.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call us at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from Underwriters Laboratories (UL).

Authorized Signature: [Signature]

Project Manager: [Signature]

Date: 4/9/07

Page 1 of 1
Arizona Department of Environmental Quality
Drinking Water Aroclor Analysis Report
*** Samples To Be Taken At POE Only ***

Errol Montgomery Associates Inc.
System Name
James Davis
Owner/Contact Person
(520) 881-4912
Owner/Contact Phone Number

System ID
03/24/07
Sample Date
08:45 (24 hr clock)
Sample Time

Sample Type
☑ Compliance Monitoring

Sample Collection Point
Point of Entry#
4555
Sampling Site ID

***AROCHLOR (PCBs SCREENING TEST)***

>>> To be filled out by laboratory personnel <<<

<table>
<thead>
<tr>
<th>Analysis Method</th>
<th>Reporting Limit</th>
<th>Contaminant Name</th>
<th>Cont. Code</th>
<th>Analysis Run Date</th>
<th>Result</th>
<th>Exceeds** Reporting Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>505</td>
<td>0.00008</td>
<td>Aroclor 1016</td>
<td>2388</td>
<td>03/30/2007</td>
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<tr>
<td>505</td>
<td>0.02</td>
<td>Aroclor 1221</td>
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<tr>
<td>505</td>
<td>0.0005</td>
<td>Aroclor 1232</td>
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>>>Laboratory Information<<<
To be filled out by laboratory personnel

Specimen Number
1603683
Lab ID Number: AZ0432 Name: Underwriters Laboratories Inc.
Comments: Aerotech project #07030729.
Note: Sample containers were provided by the client.
Authorized Signature: (Signature)
Date Public Water System Notified:

All units must be reported in milligrams per liter (mg/L)
** If any reporting limit is exceeded, then further testing for Decachlorobiphenyl must be performed.
DWAR 3A: Revised 2003
Report # 179399

Note: This report may not be reproduced, except in full, without the written approval from Underwriters Laboratories (UL).
Arizona Department of Environmental Quality  
Drinking Water Synthetic Organic Chemical Analysis Report  
*** Samples To Be Taken At POE Only ***

<table>
<thead>
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<th>Analysis Method</th>
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<th>Reporting Limit</th>
<th>Contaminant Name</th>
<th>Cont. Code</th>
<th>Analysis Run Date</th>
<th>Result</th>
<th>Exceeds MCL</th>
<th>Exceeds Reporting Limit</th>
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<tbody>
<tr>
<td>515.3</td>
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Laboratory Information  
***To be filled out by laboratory personnel***

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<td>Date Public Water System Notified:</td>
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<td>All units must be reported in milligrams per liter (mg/L)</td>
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### SYNTHETIC ORGANIC CHEMICAL ANALYSIS

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### Laboratory Information

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<td>Zissier Wirks</td>
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ANALYTICAL REPORT

Job Number: 680-25601-1

Job Description: Errol Montgomery/ 07-04-0085

For:
Aerotech Environmental Laboratories
4645 East Cotton Center Blvd
Building 3, Suite 189
Phoenix, AZ 85040

Attention: Ms. Melanie Lanier

Bernard Kirkland
Project Manager I
bkirkland@stl-inc.com
04/12/2007

Project Manager: Bernard Kirkland

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the STL Project Manager who signed this report.

ADEQ Certification #AZ0684
## Analytical Data

**Client:** Aerotech Environmental Laboratories  
**Job Number:** 680-25601-1

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### 525.2 Semivolatile Organic Compounds in Drinking Water by GCMS

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**Analysis Batch:** 680-72226  
**Prep Batch:** 680-71796  
**Instrument ID:** GC/MS LC - V  
**Lab File ID:** 25601-1.d  
**Initial Weight/Volume:** 1055 mL  
**Final Weight/Volume:** 1 mL  
**Injection Volume:**
350,000 GAL. STORAGE TANK

2500 GPM PUMPS

36" PIPE

48" PIPE

36" PIPE

2500 GPM PUMP

20" PIPE

HYDROPNEUMATIC TANK (10,000 GAL.)

Client/Project:
AUGUSTA RESOURCES
ROSEMONT

Figure No.:
1.0

Title:
Booster Station
Schematic No.1
**Client/Project:** AUGUSTA RESOURCES

**Figure No.:** 1.0

**Title:** Booster Station Schematic No.2

**Dimensions:**
- 70' length
- 24' inlet
- 350,000 GAL. storage tank
- 2500 GPM pumps
- 20" pipe

**Schematic Details:**
- 350,000 GAL. storage tank
- 2500 GPM pumps
- 20" pipe

**Scale:** 1" = 20'

**Note:**
- Client/Project: AUGUSTA RESOURCES
- Figure No.: 1.0
- Title: Booster Station Schematic No.2
10,000 GALLON HYDROPNEUMATIC TANK

20" PIPE DISCHARGE

2500 GPM PUMP

350,000 GALLON STORAGE TANK

Client/Project
AUGUSTA RESOURCES

Figure No.
ROSEMONT

Title
Booster Station
Schematic No.3
2500 GPM PUMP

20" PIPE DISCHARGE

HYDROPNEUMATIC TANK (10,000 GAL.)

350,000 GAL. STORAGE TANK

 Client/Project
 AUGUSTA RESOURCES
 ROSEMONT
 Figure No. 1.0
 Title Booster Station Schematic No.2
APPENDIX E
The Contractor shall verify authorizations for binding.

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Scale 1" = 200 FEET

Plan/Profile

ROSEMEAD MINE
WATER SUPPLY LINE

Tucson AZ U.S.A.

Title: PLAN/PROFILE

Sheet No. 4 of 19

Sheet Date: 1/21/2019

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XM 300+00
20" GATE VALVE, RSC

MATCH LINE - SELL IN 400+00

HEX 20" MATERIAL MAIN

XM 320+00
20" GATE VALVE, RSC

Legend:

Stantec Consulting
201 N. Front Ave
Tucson, AZ 85701
Fax: 520.750.7470
www.stantec.com

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By App'd., [MM/DD/YYYY]

Client/Project
ROSEMEONT MINE
WATER SUPPLY LINE

Tucson, AZ U.S.A.

Title
PLAN / PROFILE

Project No.
48132019

Drawing No.
8 of 19

Revision

Scale
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To: Tucson, AZ U.S.A.

This:

PLAN / PROFILE

Sheet: 15 of 19

Scale: 1:200' = 1"
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ROSEMONT MINE
WATER SUPPLY LINE

Tucson AZ U.S.A.

PLAN / PROFILE

Client/Project
ROSEMONT MINE
WATER SUPPLY LINE

Tucson AZ U.S.A.

Sheet
PLAN / PROFILE

Revision
By
App.
11/4/01

Date
Rev.
Chk.
Date
11/4/01

Project No.
197132019

Drawing No.
16 of 19

Scale: 1" = 200' Feet
Scale: 1" = 200' Feet