Memorandum

To: Bev Everson  
Cc: Tom Furgason  
From: Kathy Arnold  
Doc #: 8.6.9.1-076/09  
Subject: Transmittal of Rosemont Water Supply Project Design Concept Report  
Date: July 17, 2009

Rosemont is pleased to transmit three hardcopy versions as well as two CDs containing an electronic version of the Water Supply Project Design Concept Report. This report was developed after discussion with the Arizona State Land Department and the University of Arizona contains conceptual pipeline routing. In addition, I am transmitting two hardcopies and one CD containing the electronic version of the document to SWCA.

As described in our last transmittal, Rosemont has also been also developing an updated figure package based on some of the engineering updates we have been working on. The target date for final edits for this package was July 15 however there are some details on facility placement still being finalized. We are however happy to present a draft version of this package that includes:

1. Title Sheet and Project Location Map
2. Facility Layouts at the End of Pre-Production Year -2 of Operations
3. Facility Layouts at the End of Pre-Production Year -1 of Operations
4. Facility Layouts Year 1 of Operations
5. Facility Layouts Year 2 of Operations
6. Facility Layouts Year 3 of Operations
7. Facility Layouts Year 4 of Operations
8. Facility Layouts Year 5 of Operations
9. Heap Leach Facility Layout at the End of Year 5 of Operations
10. Facility Layouts Year 10 of Operations
11. Facility Layouts Year 15 of Operations
12. Plant Site Facility Layout at the End of Year 15 of Operations
13. Facility Layouts at the End of Project Operations
14. Perimeter Access Road and Fenceline Layout

Additional figures associated with the Reclamation Plan development will be presented in a separate figure package. Rosemont would appreciate feedback on the proposed figure package and the anticipated number of copies of these figure packets.
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1.0 Project Background

1.1 GENERAL

The Rosemont Copper Project (Rosemont) is located in southern Arizona and is owned by Augusta Corporation (Augusta). Augusta is a mineral exploration and development company that will also operate Rosemont upon full development. The Rosemont property is more specifically located in Pima County, approximately 35 miles southeast of Tucson, Arizona, and contains an open-pit copper/molybdenum/silver (“Cu/Mo/Ag”) deposit. This Rosemont Water Supply Design Concept Report presents updated recommendations for the water supply facilities and project design criteria. It should be recognized, however, that the recommendations and proposed design criteria presented in this report are conceptual and should not be considered final. Additional evaluations and engineering will need to be more fully developed through the predesign, design and final design phases. General locations of the water supply facilities are depicted on Figure 1A.

It is estimated that Rosemont could utilize the full permitted rate of up to 6,000 acre-feet of water per year during its first eight years of operation. Water consumption will be on a continuous basis with a demand 24 hours a day, seven days a week. Based upon the estimated average volume of 6,000 acre-feet per year, the consumption rate will be approximately 3,800 gallons per minute (GPM). The operational criteria for the water supply system will be to provide a continuous flowrate that matches the proposed consumption rate of 3,800 GPM. It has been identified that process operations will utilize water conservation and recycling systems to minimize the total water requirements.

It will be necessary to deliver water at a higher rate than 3,800 GPM during the initial start up of the facility and during times of seasonal peak water demand. There is also a desire to incorporate operational flexibility into the water supply design capacity. The water delivery system will therefore be designed to accommodate a continuous peak flow up to 5,000 GPM for unspecified duration to provide capacity for operational startup, seasonal peak water demand, and make-up water supply in the event the delivery system is out of service for a short period of time.

1.2 GROUNDWATER SUPPLY AND SITES

Water for the operations will be supplied from wells located on at least three parcels of property within Sections 17, 21, and 29 of T17S, R14E (See Figure 1A). Water supply hydrogeology is further discussed in Section 2.0 (Groundwater Well Criteria). The wells will be located on two of these properties and will be drilled to a depth of approximately 1,200 feet. Ground water in the vicinity of the new wells is at a depth of 200 to 300 feet. Pumping of test wells located on the property has shown the potential for a production rate of up to 1,500 GPM. Water will be pumped from the wells, conveyed to the water transmission pipeline Pump Station No. 1 site,
and stored in ground level tank(s) prior to being boosted to the Rosemont site. The elevation of the Pump Station No. 1 site is 2,835 feet (mean sea level) and the highest point of the water delivery line is located at an elevation of 5,600 feet. The total static lift of 2,765 feet will require the construction of several booster pump stations operating at discharge pressures up to 350 pounds per square inch.

### 1.3 PIPELINE AND PUMP STATIONS

Figures 1A and 1B depict the proposed alignment of the water transmission pipeline and power transmission corridor currently being considered and evaluated in conjunction with the University of Arizona and the Arizona State Land Department (ASLD). ASLD owns most of the land that will be traversed by the alignment and the University of Arizona is the coordinating agency for the Santa Rita Experimental Range (SRER). Although the proposed alignment generally follows Santa Rita Road and falls within the SRER, the proposed pipeline alignment and location of the proposed booster pump stations have been conceptually selected to minimize impacts to the SRER. Because the location of the alignment also follows an established roadway corridor, it also provides minimal relative environmental impact to the Santa Rita Experimental Range. The installation of this water infrastructure and the option for a power corridor will additionally provide improvements for future development of the area property after Rosemont is closed. Detailed discussions of the proposed alignments for the well field water supply pipeline and the water transmission pipeline can be found in Sections 2.0 and 3.0 respectively.

### 1.4 PROJECT POWER SUPPLY

The power supply alignment for the Rosemont water supply booster pump stations will generally be provided to each site by others. The primary power line will need to be stepped down for the booster station requirements. Each booster station will be equipped with two duty pumps to provide the required project water flow demand and at least one standby pump to be used for maintenance or backup in the event of a pump failure. The final electrical requirements will be determined when the final pump selection is completed.

Pump Station No. 1 and the groundwater production well pumps will receive their power from the local Trico distribution system. The remaining booster pump stations will be supplied power from either Tucson Electric Power or Rosemont.
2.0 Groundwater Well Criteria

2.1 HYDROGEOLOGY

This section is a summary of information provided by Montgomery & Associates, Inc. of Tucson.

The Sahuarita area is in the Upper Santa Cruz Sub-basin of the Tucson Active Management Area (TAMA), in the Basin and Range Lowlands Province of southern Arizona. The upper Santa Cruz basin is a broad, north-trending alluvial valley drained by the Santa Cruz River and its tributaries. In the Sahuarita area, the upper Santa Cruz basin is bounded on the east by the Santa Rita Mountains and on the west by the Sierrita Mountains. These mountain ranges are comprised of complex configurations of igneous, sedimentary, and metamorphic rocks. The crystalline rocks which comprise these mountain ranges are collectively referred to as the “basement complex” because they also occur beneath the alluvial sediments in the valley between the mountain ranges.

At the deepest points, the upper Santa Cruz basin contains several thousand feet of alluvial materials eroded from the surrounding mountain ranges. The basin is filled chiefly with alluvial and sedimentary deposits of Quaternary and upper Tertiary age (Davidson, 1973). The floor and margins of the basin are formed chiefly by low-permeability rocks of the bedrock complex that also comprise the surrounding mountain ranges. The Santa Cruz River and its tributaries are generally ephemeral in the Sahuarita area, flowing only in response to periods of intense or prolonged rainfall. Precipitation tends to occur during mid to late-summer and during the winter months. Based on climatological data, annual precipitation in the study area ranges from about 10 to 22 inches per year with an average of approximately 15 inches per year (Western Regional Climate Center, 2009). Most precipitation is lost through evapotranspiration and runoff, and the remaining fraction infiltrates permeable and recent alluvium and moves downward to the basin-fill deposits aquifer as natural groundwater recharge.

The principal units in the study area, in descending order, are:

- Recent alluvium consisting of unconsolidated modern stream channel and floodplain sediments;
- Fort Lowell Formation of Quaternary age;
- Tinaja beds of Tertiary age;
- Pantano Formation and the stratigraphically equivalent Helmet Fanglomerate of Tertiary age; and
- A bedrock complex of Precambrian to Tertiary age.

Descriptions of geologic units in the vicinity of the study area are given in numerous published hydrologic reports.
ROSEMONT COPPER
WATER SUPPLY PROJECT

2.2 GROUNDWATER SUPPLY SITE

Peak water requirements for the proposed Rosemont Project have been identified as approximately 5,000 gallons per minute (GPM). Therefore the well field and water supply pipeline will be designed to produce and deliver a minimum of 5,000 GPM. A total of seven wells are currently anticipated to meet water supply requirements, including six production wells and one well in reserve as a back-up source of water supply. A typical well pump station plan and section are shown on Figures 5 and 6.

The most practical, viable source of water supply for the Rosemont Project has been determined to be groundwater from the basin-fill deposits aquifer of the upper Santa Cruz basin (Tucson basin). Proposed well locations are in the Sahuarita area, approximately 14 miles west of the proposed Rosemont Project. Well yields in this area vary greatly by location, producing in the range of a few GPM to as much as a few thousand GPM. Although groundwater produced during pit dewatering operations could augment the water supply, it will not be the principal source of water.

Proposed water supply wells will be located on three properties owned by Rosemont Copper in the Sahuarita area. These three sites are identified on Figure 1A as Sanrita West, Sanrita East and Pump Station No. 1. Upon ultimate well field development, three wells are proposed for Sanrita West, two wells for Sanrita East and two wells for the Pump Station No. 1 site. One production well, RC-2 (Sanrita East site), has already been installed. Additionally, it is anticipated that the third well will be constructed at the Sanrita West property to provide a back-up water supply in the event of well or pump failure.

2.3 WELLS AND WELL FIELD

Rosemont Copper has acquired a 53-acre land parcel near Santa Rita and Davis Roads (Sanrita West), a 20-acre land parcel near Alvernon and Dawson Roads (Sanrita East), and a 20-acre parcel near Santa Rita Road and Country Club Drive (Pump Station No. 1 site), for the purpose of constructing and operating a production well field for Rosemont water supply. These parcels are depicted on Figure 1A. Summaries of results of drilling and testing of the E-1 and RC-2 wells are given in Montgomery & Associates (2007 and 2009a).

Based on the results of pumping tests at wells E-1 and RC-2, sustainable long-term pumping rates for proposed production wells at the Sanrita West and Sanrita East properties are estimated to be approximately 1,500 GPM and 500 GPM, respectively. Although wells have not yet been drilled or tested at the Pump Station No. 1 property, it is assumed for purposes of this document that wells constructed at this site will produce approximately 1,000 GPM each. Until well(s) are constructed and tested at the Pump Station No. 1 property, the total number and locations of wells should be considered tentative.

At present, one production well, RC-2 has been installed at the Sanrita East property. One test well, E-1, has been installed at the Sanrita West property, although this well will not be used for water supply. For purposes of estimating costs for future production wells, it was assumed that
three production wells (including one back-up well) will be installed at the Sanrita West property, two production wells will be installed at the Pump Station No. 1 property, and one additional production well will be installed at the Sanrita East property. It is assumed that each future production well will be approximately 1,200 feet deep, will have 12-inch to 16-inch diameter well casing perforated from about 360 feet to total well depth, and will be completed with a gravel pack in the well annulus. Anticipated well design for a typical production water well is depicted on Figure 7. Final construction details for each well may vary, depending on subsurface conditions encountered during drilling.

Based on the hydrogeologic investigations and well construction in the Sahuarita area, anticipated well production for each well site are summarized as follows:

<table>
<thead>
<tr>
<th>Rosemont Property</th>
<th>Number of Wells</th>
<th>Anticipated Production Rate for Each Well (GPM)</th>
<th>Total Anticipated Production Rate (GPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanrita East</td>
<td>2*</td>
<td>500</td>
<td>1,000</td>
</tr>
<tr>
<td>Pump Station No. 1</td>
<td>2</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Sanrita West</td>
<td>2</td>
<td>1,500</td>
<td>3,000</td>
</tr>
<tr>
<td>Sanrita West (Back-up)</td>
<td>1</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td><strong>TOTAL (w/Back-up)</strong></td>
<td><strong>7</strong></td>
<td><strong>---</strong></td>
<td><strong>7,500</strong></td>
</tr>
</tbody>
</table>

*Includes existing Well RC-2

Based on an assumed average pumping lift of 300 feet and a pump motor efficiency of 70 percent, the average power requirement to pump 5,000 acre-feet per year (3,100 gpm on a continuous basis) to land surface was computed to be 336 horsepower. The power requirement to pump the peak demand of 5,000 gpm was computed to be 541 horsepower. These power requirements are for lifting groundwater from the aquifer to land surface and do not include transmission of water from the well field to the proposed Rosemont site.

The groundwater well water supply pipeline alignment will start near the center of Section 17, (T17S, R14E) at a groundwater well supply site designated Sanrita West. The alignment will then extend due south from Sanrita West to the center of section 20 (T17S, R 14E), then head east to the east section line of section 20, where it connects to a groundwater well supply pipeline from the center of section 21 (T17S, R14E) designated Sanrita East. The alignment then turns south along the east section lines of section 20 and 29 (T17S, R 14E) to the southeast corner of section 20 where it turns west to the middle of the south section 29 line at the site designated Pump Station No. 1. The six proposed groundwater wells will all discharge to a proposed water storage facility to be located at the Pump Station No. 1 site.
3.0 System Hydraulics

The system hydraulics are critical to the selection of pipeline material and pressure class. In addition, the water delivery system hydraulics are integral to design of the pump stations and analysis of system transients. The proposed pipeline alignments from the groundwater well fields, to Pump Station No. 1, and to the Rosemont site storage reservoir traverses terrain that increases rapidly in elevation. Figure 1C provides a concept of the steep water supply pipeline profile in conjunction with a schematic of the proposed project alignment.

The starting elevation of the pipeline at Pump Station No. 1 is approximately 2,835 feet with the maximum elevation reached by the water transmission line at approximately 5,600 feet. Preliminary hydraulic calculations based on the pipeline alignment and topography, and the peak flowrate of 5,000 GPM indicates a need to divide the total pressure gradient into segments. Each segment will consist of an upstream pump station supplying a downstream pump station reservoir, with the final pump station conveying water to the Rosemont site groundwater storage reservoir. A total of 4 to 5 hydraulic segments have been determined to be required for pumping the water supply between Pump Station No. 1 and the Rosemont site. While dividing the pipeline into several segments significantly reduces the static head between pump station sites, the resulting discharge pressures at the pump stations will still be high, ranging from 250 to 350 psi depending upon the particular segment. Figure 1A and Figure 1B depict the general location and topography of the proposed pump stations.

For Pump Station No. 1 through No. 5, the table below summarizes pump station elevation, static head, length to downstream station, total head assuming a 24-inch pipeline and 5,000 GPM flowrate, horsepower requirements, and pump station power demand. Total head requirements for Pump Station No. 5 assume an alignment over the Santa Rita Mountains at Lopez Pass.

<table>
<thead>
<tr>
<th>Station No.</th>
<th>Elevation (Feet)</th>
<th>Lift (Feet)</th>
<th>Pipe Length (Feet)</th>
<th>Total Head (Feet)</th>
<th>Water Horsepower (HP)</th>
<th>Brake Horsepower (HP)</th>
<th>Kilowatt (KW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS No. 1</td>
<td>2,835</td>
<td>565</td>
<td>25,600</td>
<td>673</td>
<td>851</td>
<td>1,250</td>
<td>930</td>
</tr>
<tr>
<td>PS No. 2</td>
<td>3,400</td>
<td>640</td>
<td>14,100</td>
<td>700</td>
<td>886</td>
<td>1,300</td>
<td>970</td>
</tr>
<tr>
<td>PS No. 3</td>
<td>4,040</td>
<td>500</td>
<td>9,700</td>
<td>541</td>
<td>684</td>
<td>1,000</td>
<td>750</td>
</tr>
<tr>
<td>PS No. 4</td>
<td>4,540</td>
<td>500</td>
<td>5,700</td>
<td>524</td>
<td>663</td>
<td>950</td>
<td>710</td>
</tr>
<tr>
<td>PS No. 5</td>
<td>5,040</td>
<td>580</td>
<td>3,000</td>
<td>592</td>
<td>749</td>
<td>1,100</td>
<td>820</td>
</tr>
</tbody>
</table>
4.0 Pipeline Criteria

4.1 PROPOSED ALIGNMENT

Figures 1A and 1B depict the proposed alignment of the water transmission pipeline. The pipeline begins at Pump Station No. 1 and utilizes groundwater from the site storage reservoir. The pipeline alignment will extend east along the south section line of Sections 32, 33 and one-quarter mile of Section 34 (T17S, R14E), then turns southeasterly generally along the Santa Rita Road alignment.

The alignment will typically follow Santa Rita Road in a series of tangent lines between the north section line of Section 34 to section 35 (T17S, R14E). Figures 2A and 2B are sections referenced from Figure 1A and provide typical sections of the water supply and power line easements adjacent to Santa Rita Road. The alignment continues along Santa Rita Road between the northeast corner of Section 2 and across Sections 1 and 12 (T18S, R14E). The alignment then continues along Santa Rita Road between Section 7 and across Sections 18, 17, and 20 to the center of section 21 (T18S, R15E). The proposed site for Pump Station No. 2 is located along the west side of Santa Rita Road near the section line between Sections 7 and 18.

The alignment then extends from the center of Section 21 to the northeast corner of Section 21, then east along the north section line of Section 22 (T18S, R15E) to Peach Knob; then aligns southeasterly around the southern perimeter of Peach Knob. The alignment from this point meanders extensively through sections 22, 23 and 24, following the old Pima County pioneered road alignment for much of the length. The proposed alignment passes along the south side of the Helvetia Site Ruins, the north side of the Old Dick Mine hill, and into Section 24 and National Forest Land toward the west side peak of the Santa Rita Mountains. Two alternatives are being considered for the pipeline alignment over the Santa Rita Mountains to the Rosemont site. One alternative routes the pipeline over Lopez Pass near the mid-section of Section 24. The other alternative routes the pipeline through a tunnel in an alignment more southeasterly toward Gunsight Pass. The pipeline will discharge to the Rosemont one-million gallon storage tank system, which serves to provide storage and reserve for the operations. The location of the tank system has not been finalized. The alignment for these last 3 miles of pipeline includes a significant amount of vertical elevation change and the requirement for installation of two to three pump stations with associated water storage reservoirs.

4.2 CAPACITY AND PIPELINE DESIGN VELOCITY CRITERIA

The water transmission pipeline and pump stations shall be designed to convey an average daily usage of 3,800 GPM. However, during operational startup and seasonal peak demands, the system will be required to provide a peak flowrate of 5,000 GPM for unspecified periods of time to the Rosemont site. The maximum recommended fluid velocity within the pipeline is 5 feet per second (fps) in order to minimize hydraulic losses and long-term pumping costs. Taking
into consideration the peak flowrate and the maximum recommended velocity, the pipeline diameter is estimated at 20 to 24-inches depending upon pipeline material, nominal diameter of the pipeline material selected and other design requirements.

The requirement for maximum flowrate and the constraint for maximum velocity, when considered with the pipeline material options that are feasible for this project, are the components that will be used to determine the pipeline diameter. The different pipeline materials have varying internal diameters and friction factors that will affect the pipeline design. Regardless of the material selected, the design must ensure the selected pipeline material conveys the maximum flow at a velocity less than 5 fps.

4.3 SYSTEM PRESSURES

Pipeline operating pressure will range from 250 to 350 psi for the various pipeline segments. The system pressures will be generated by pump station operation and are primarily dependent upon pipeline diameter and roughness, elevation gain for the pipeline segment, and length of segment.

The high system pressures will influence the pipeline material selection, pump station design elements and criteria, and pump station operation and maintenance. In addition, careful consideration must be given to mitigation of pipeline hydraulic transients, which are primarily dependent upon operational pressures and the potential fluid velocity generated.

4.4 MATERIAL OPTIONS

The preliminary pipeline material options to be evaluated for this project will include welded steel pipe (WSP), ductile iron pipe (DIP), high density polyethylene (HDPE), and concrete cylinder pipe (CCP). The pipe material selected must be capable of meeting the associated surge or transient pressures in addition to the design operating pressure conditions. The pipeline design and material selection must consider the following minimum criteria:

- Operating Pressure
- Flowrate and Velocity
- Hydraulic Transients
- External Pipe Loads
- Corrosion
- Constructability
- Operation & Maintenance

The requirement for maximum flowrate and the constraint for maximum velocity, when considered with the pipeline material options that are feasible for the project, will dictate pipeline diameter. The potential pipeline materials have different internal diameters and friction factors that will affect the transmission pipeline sizing.
4.5 
**DEPTH**

It is generally most economical to limit the depth of a pipeline to a minimum cover whenever possible. For this project, the minimum recommended depth of cover will generally be between 3 to 5 feet. Depth of bury may be reduced to less than two feet due to site specific considerations and excavation requirements. However, several factors will affect the design depth including air valve design, scour depth, constructability considerations, regulatory authority requirements, pipeline material constraints and system operation. The pipeline designer ultimately will need to establish pipeline depth of bury and profile criteria based upon the specific reaches of the alignment.

4.6 
**TRANSIENTS**

A detailed analysis of pressure transients will be critical to the design of the pipeline and pumping systems and all related components. Because of the importance of a consistent and continual supply of water to the operations, and because there is not a redundant supply of water to Rosemont, it is essential that this project deliver water without interruption. Failure to determine transient or surge pressure conditions and to properly mitigate their effects could lead to catastrophic failure of the delivery system. Transient conditions can also lead to fatigue failure of pipeline and pump station accessories including gaskets, seals, instrumentation, and pipeline supports.

There are several options to protect the system from transient pressure, including increasing pipe class, air/vacuum release valves, surge anticipation valves, surge tanks, variable frequency (speed) drives (VFD's), reducing pipeline velocity, increasing pump and motor inertia, and increasing valve opening and closing speeds. The design phase will need to determine which options are viable based on the transient analysis and the options’ associated costs.

4.7 
**AIR VALVES**

Combination air relief/vacuum and air release valves are utilized to allow venting of large volumes of air during pipeline filling, to permit air to enter the pipe should vacuum conditions occur, and for the venting of entrained air that collects in-line and localized high points in the pipeline. It is good practice, at a minimum, to follow standard manufacturer criteria for determination of the number and location of air valves. The selection of air valves should consider maintenance requirements for the valves, site installation, and access issues.

4.8 
**JACK AND BORE**

Jack and bore pipeline construction may be a consideration for selected wash crossings of the project, although above-ground free span installations are preferred when possible. The design should consist of a casing pipe for the full length of the jack and bore. The carrier pipeline, fitted with casing spacers, would pass through the casing pipe. Typically voids between the casing and carrier pipe are filled with pea gravel or sand, and any annular space between the casing and the wall of the borehole will need to be filled by pressure grouting.
4.9 TUNNELING

There are currently two pipeline routes being considered for the alignment from Pump Station 5 to the Rosemont site. Both alternatives are depicted in Figure 1A and 1B. One alternative routes the pipeline over the mountain pass within the middle of Section 24, and the other alternative routes the pipeline through a tunnel in an alignment more southeasterly toward Gunsight Pass. If the alignment with the tunnel is selected as the preferred route, Rosemont Copper Company proposes to construct the tunnel outside the scope of this project. The pipeline designer will have the responsibility of providing the necessary pipeline criteria, plans, and specifications required to construct, maintain, and operate the pipeline through the tunnel. If the tunnel option is selected and constructed by Rosemont, the construction contractor for the pipeline may be required to install the pipeline within the tunnel according to the pipeline construction plans and specifications. However, the pipeline installation in the tunnel may be performed by Rosemont.

4.10 ABOVE-GROUND FREE SPAN INSTALLATIONS

As discussed and as may be concluded from review of Figure 1A and 1B, the 3 miles of Santa Rita Mountain topography along the pipeline alignment is considered difficult to traverse. This is particularly true with respect to several of the wash crossings. Some of the deep washes are wide while others are relatively narrow. For these deep wash crossings, it may be advantageous to consider aerial or free span pipeline crossings. Construction of the pipeline outside of the wash, even if intermediate piers are required, may avoid significant Corps of Engineers 404 permitting issues. Given the approximate pipeline diameter of 24 inches, and assuming a steel carrier pipe with support rings, an approximate free span of 60 to 80 feet is estimated.
5.0 Pump Station Criteria

5.1 BOOSTER PUMP STATIONS

Water pumped from the proposed groundwater wells is proposed for delivery to Rosemont via a proposed 20 to 24-inch diameter constructed pipeline approximately 14-miles in length. A series of booster pumping facilities will lift the water from an elevation of approximately 2,735 feet to 5,600 feet. A conceptual booster pump station schematic plan and section are shown on Figure 3 and 4.

There are substantial total dynamic head (TDH) requirements for the overall water transmission system and physical constraints imposed on system configuration as a result of alignment selection. The pumping facility configurations were evaluated to mitigate potential impacts from transient surge pressures and provide reasonable TDH requirements for multiple system reaches. Based on these considerations, design and construction of five individual pumping facilities is recommended as shown in Table 3 below.

<table>
<thead>
<tr>
<th>STATION NO.</th>
<th>STATIC HEAD (feet)</th>
<th>REACH LENGTH (feet)</th>
<th>TDH* (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS No. 1</td>
<td>565</td>
<td>25,600</td>
<td>673</td>
</tr>
<tr>
<td>PS No. 2</td>
<td>640</td>
<td>14,100</td>
<td>700</td>
</tr>
<tr>
<td>PS No. 3</td>
<td>500</td>
<td>9,700</td>
<td>541</td>
</tr>
<tr>
<td>PS No. 4</td>
<td>500</td>
<td>5,700</td>
<td>524</td>
</tr>
<tr>
<td>PS No. 5</td>
<td>580</td>
<td>3,000</td>
<td>592</td>
</tr>
</tbody>
</table>

*TDH calculation assumes peak flow rate of 5,000 gpm

Pump Station No. 5 may be eliminated and the additional gradient handled by Pump Station No. 4 if the tunnel option is selected instead of a pipeline alignment over Lopez Pass.

Various pumping facility configurations were considered and evaluated including wet well, wet pit/dry pit, below grade, above grade, enclosed, and open air. The configuration of the pumping facility selected will also influence other ancillary facility considerations such as aesthetics, site security, and future operation and maintenance requirements. Consideration will also need to be given to pressure ratings of various pipeline materials, material cost, and construction costs that may affect pump station configuration.

Based upon the proposed system operating parameters, system hydraulics, remote nature of each pumping facility, and pipeline material considerations, the current recommendation is to design each pumping facility with two or three vertical turbine duty pumps and one standby pump. Constructed steel pump cans are proposed to house the vertical turbine pumps and be connected to a water storage reservoir to reduce TDH requirements for each pumping reach and provide storage volume for 20-minutes of pump operation. A hydropneumatic tank will be incorporated to control transient surge pressures.
Configuration of all booster pumping facilities should be similar to leverage economies of construction and reduce future maintenance costs associated with maintaining multiple pumping facilities.

5.2 BOOSTER PUMPS

It is recommended that the booster pumping systems be configured using vertical turbine pumps. Each facility will include two duty pumps and one stand-by pump each with a pump capacity of 2,500 gpm.

Schematic of Proposed Pumping Configuration

Based on a peak flowrate of 2,500 gpm per pump, the TDH required for each pumping reach, and a motor efficiency of 70 percent, a table of the estimated pump brake horsepower (BHP) required for each pump is provided below.

<table>
<thead>
<tr>
<th>Station No.</th>
<th>STATIC HEAD (feet)</th>
<th>TDH (feet)</th>
<th>BHP (Hp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS No. 1</td>
<td>565</td>
<td>673</td>
<td>625</td>
</tr>
<tr>
<td>PS No. 2</td>
<td>640</td>
<td>700</td>
<td>650</td>
</tr>
<tr>
<td>PS No. 3</td>
<td>500</td>
<td>541</td>
<td>500</td>
</tr>
<tr>
<td>PS No. 4</td>
<td>500</td>
<td>524</td>
<td>475</td>
</tr>
<tr>
<td>PS No. 5</td>
<td>580</td>
<td>592</td>
<td>550</td>
</tr>
</tbody>
</table>
5.3 SYSTEM STORAGE FACILITIES

Stantec has assumed that adequate facilities will be provided at the Rosemont site for pumped and reclaimed process water storage to meet the operational needs of the processing facilities as defined in the Mine Plan of Operation. Therefore, intermediate storage within the water transmission system to provide for extended facilities operation has not been included in the conceptual water transmission system planning.

Intermediate water transmission system storage provides several principal advantages over design and operation of multiple in-line pumping facility configurations. Advantages include:

- Provides a break in static head which allows the system to be designed and operated in multiple independent reaches;
- Provides greater flexibility in developing system control and operating logic;
- Allows for controlled pump shut down procedures in the event of a pipeline failure.

Stantec evaluated various system operating scenarios and determined that sizing of the intermediate system storage should provide for approximately 10 to 20 minutes of water transmission system operation. This will also provide adequate volume to limit multiple pump starts/stops resulting from rapid changes in water levels within the storage tank.

The intermediate storage facilities may be constructed of concrete or steel and should be partially or completely buried to enhance security and reduce the constructed profile of the facilities.

5.4 BOOSTER PUMP STATION EQUIPMENT

5.4.1 Transient analysis and surge control

Each booster pump facility will include ancillary equipment necessary for system operation and monitoring. Of critical importance to system operation will be management and control of transient surge pressure resulting from the start and stop of pumping operations.

To mitigate potential system transient surge pressures, the designer will need to consider hydropneumatic tanks to dissipate surge pressure fluctuations associated with rapid changes in flowrate such as regular pump starts and stops or more critically, power outages or equipment failures.

It is recommended that a detailed transient analysis of the water transmission system be completed. The analysis will evaluate system impacts due to surge pressures and be utilized for final sizing and design of the hydropneumatic tank.

5.4.2 Facility Security

Due to the remoteness of the proposed pumping facilities, Stantec recommends that all pumping facility equipment be housed within buildings with limited building access.
5.4.3 Standby power

At this time, inclusion of standby power units to operate the water transmission system booster pumping facilities is not recommended due to the capital and maintenance costs associated with these units.

5.4.4 Instrumentation and controls

Detailed considerations related to system instrumentation and control has not been completed. It is anticipated that control system interlocks between booster pump stations and well field pumping facilities will be incorporated along with local pump control based on water levels within the facility storage reservoir.

Due to the remote nature of the groundwater well pumps and booster pumping facilities, Stantec recommends that system operating data and alarm status be transmitted to operations through SCADA system. In addition, it is recommended that system alarms be transmitted to mobile devices, such as cell phone, PDA, or other wireless communication devices of key operations personnel.

5.5 PUMPING SYSTEM POWER REQUIREMENTS

Based on a peak flowrate of 5,000 gpm, an estimated 16-hour pumping day, and the system hydraulics presented in Section 3, an estimated annual operating cost for the proposed pumping facilities are presented in the table below.

<table>
<thead>
<tr>
<th>PUMP STATION</th>
<th>BHP* (HP)</th>
<th>Total Power (KW)</th>
<th>Annual Operating Cost ($)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>625</td>
<td>930</td>
<td>$467,626</td>
</tr>
<tr>
<td>2</td>
<td>650</td>
<td>970</td>
<td>$487,739</td>
</tr>
<tr>
<td>3</td>
<td>500</td>
<td>750</td>
<td>$377,118</td>
</tr>
<tr>
<td>4</td>
<td>475</td>
<td>710</td>
<td>$357,000</td>
</tr>
<tr>
<td>5</td>
<td>550</td>
<td>820</td>
<td>$412,315</td>
</tr>
</tbody>
</table>

*Estimated BHP for each pump
**Annual operating cost based on Trico Energy Charge of $.08610/kWh
6.0 Right-of-Way and Land Acquisition

Although the water supply pumping locations are owned by Rosemont, a substantial amount of the required easements will be across ASLD. Application for easements within ASLD will require approval by ASLD. A separate access agreement is required for hydrogeology, geotechnical or other engineering services that could require access to the site.

Pipeline easements required within the SRER are being coordinated by Rosemont. Design criteria intended to minimize impacts due to the pipeline construction and number of pump stations required within the SRER will be required. The pipeline design consultant will need to work closely with Rosemont and possibly the University of Arizona on criteria for pipeline depth of burial, air valve locations, visual impacts from manholes, isolation valves or air valves; and maintenance access.

Private pipeline easements required for the project are minimal. A 30-foot wide permanent easement is recommended. The easement may be used for almost any other purpose as long as access can be maintained, no permanent structure or building is placed within the easement, and trees are not planted within the easement. Small shrubs and other landscape vegetation are acceptable. Rosemont Copper will coordinate the permanent and temporary pipeline easement acquisition for the project, but the pipeline design consultant will be required to provide exhibits and legal descriptions necessary to support the acquisitions.
7.0 Geotechnical

A thorough geotechnical and geological investigation will be required for all of the components of the Rosemont Water Supply system. Specifically, geotechnical investigations will be required for each of the following water supply features:

1. Three groundwater well sites
2. Groundwater supply pipeline alignment
3. Water supply pump stations and reservoirs
4. Water supply pipeline alignment

Additionally, a geological investigation will be required for 3 miles of the water supply pipeline that are conveyed through the mountainous and bedrock reaches of the Santa Rita foothills. This geological investigation will need to consider the contractor requirements for trench excavation, blasting, and backfill. An evaluation will also need to be completed for sources of suitable backfill material, since the pipeline reach will not be practically suitable for large haul vehicles.

It will be the responsibility of the design engineer to insure that the trench design, dewatering systems, shoring systems, soil support systems, pipe plug design, bedding and backfill are adequately addressed, which will require a thorough geotechnical analysis for this project. Short-comings may result from too little emphasis on the importance of the geotechnical or geological aspects of this project.

Consideration should also be given to the evaluation of pipe failure due to soil migration if a flexible pipe alternative is selected. This is a common occurrence when no filter criteria are checked and when suitable material is not designed in the trench zone. Thus, the pipe loses its lateral support, becomes over-deflected, fails to meet the design criteria and in some cases even collapses. Although means and methods are the responsibility of the contractors, the success of the pipeline project depends heavily on knowing enough about what is in the ground, how ground conditions behave toward buried pipelines, and how to cope with difficult site conditions.
Figures – Rosemont Water Supply
PUMP STATION

<table>
<thead>
<tr>
<th>STATION NO.</th>
<th>ELEVATION</th>
<th>LIFT</th>
<th>PIPE LENGTH</th>
<th>TOTAL HEAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS #1</td>
<td>2835±</td>
<td>565±</td>
<td>25,565±</td>
<td>673.4</td>
</tr>
<tr>
<td>PS #2</td>
<td>3400±</td>
<td>640±</td>
<td>14,130±</td>
<td>700.0</td>
</tr>
<tr>
<td>PS #3</td>
<td>4040±</td>
<td>500±</td>
<td>9,710±</td>
<td>541.2</td>
</tr>
<tr>
<td>PS #4</td>
<td>4540±</td>
<td>500±</td>
<td>6,950±</td>
<td>530.0</td>
</tr>
<tr>
<td>PS #5</td>
<td>5040±</td>
<td>580±</td>
<td>3,000±</td>
<td>592.7</td>
</tr>
</tbody>
</table>

Scale of Feet

0 5000 10000

Project Vicinity and Alignment Map
130' TYPICAL PIPELINE AND POWER LINE EASEMENT
WITHIN THE NORTH HALF OF SECTION 21, T18S, R15E
LOOKING WEST
N.T.S.

138 KW POWER LINE

100.00' POWER LINE EASEMENT

30.00' PIPELINE EASEMENT

50.00'

50.00'

14.00' SERVICE ROAD

10.00'

24" WATER LINE

07-14-2008
180120301

Client/Project
ROSEMONT COPPER
WATER SUPPLY PROJECT
SANTA RITA ROAD ALIGNMENT

Figure No. 2B

Typical Section Within the North Half of Section 21, T18S, R15E

Stantec Consulting
201 North Bonita Ave
Tucson AZ U.S.A.
85715-2999
Tel. 520.750.7474
Fax. 520.750.7470
www.stantec.com
JULY 2009 FACILITY LAYOUTS
ROSEMONT COPPER PROJECT

PROJECT LOCATION MAP

LIST OF FIGURES
01 - TITLE SHEET AND PROJECT LOCATION MAP
02 - JULY 2009 FACILITY LAYOUTS PRE-PRODUCTION YEAR -1, Q4 OF OPERATIONS
03 - JULY 2009 FACILITY LAYOUTS PRE-PRODUCTION YEAR -2, Q4 OF OPERATIONS
04 - JULY 2009 FACILITY LAYOUTS PRE-PRODUCTION YEAR -1, Q4 OF OPERATIONS
05 - JULY 2009 FACILITY LAYOUTS PRE-PRODUCTION YEAR -2, Q4 OF OPERATIONS
06 - JULY 2009 FACILITY LAYOUTS PRE-PRODUCTION YEAR -3, Q4 OF OPERATIONS
07 - JULY 2009 FACILITY LAYOUTS PRE-PRODUCTION YEAR -4, Q4 OF OPERATIONS
08 - JULY 2009 FACILITY LAYOUTS PRE-PRODUCTION YEAR -5, Q4 OF OPERATIONS
09 - JULY 2009 HEAP LEACH FACILITY LAYOUT YEAR -1, Q4 OF OPERATIONS
10 - JULY 2009 HEAP LEACH FACILITY LAYOUT YEAR -2, Q4 OF OPERATIONS
11 - JULY 2009 PLANT SITE LAYOUT YEAR -2, Q4 OF OPERATIONS
12 - JULY 2009 PLANT SITE LAYOUT YEAR -3, Q4 OF OPERATIONS
13 - JULY 2009 PLANT SITE LAYOUT YEAR -4, Q4 OF OPERATIONS
14 - JULY 2009 PLANT SITE LAYOUT END OF PROJECT OPERATIONS
15 - JULY 2009 PERIMETER ACCESS ROAD AND FENCELINE LAYOUT

Tucson, Arizona 85741
ROSEMONT COPPER 320833
Location: PIMA COUNTY, ARIZONA
Date: 07/09

TETRA TECH
3031 West Ina Road
Tucson, Arizona 85750
(520) 297-1750 (520) 297-1750

DRAFT
NOTES:
1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PWS POND, ACCESS ROADS, AND TEMPORARY STOCKPILES COMPLETED BY M3 ENGINEERING & TECHNOLOGY.
2. DESIGN OF THE DRY STACK TAILINGS, AND ASSOCIATED DIVERSIONS COMPLETED BY AMEC.
3. DESIGN OF THE OPEN PIT, WASTE ROCK STORAGE AREA, AND HAUL ROADS COMPLETED BY WASTE MOUNTAIN.
4. DESIGN OF THE HEAP LEACH PAD, HEAP LEACH CHANNELS, COMPLIANCE POINT DAM, PWS POND, PUMP POND, AND STORMWATER POND COMPLETED BY TETRA TECH.
5. MINOR/TEMPORARY STORMWATER PONDS AND DIVERSIONS ARE NOT SHOWN. SEDIMENT CONTROL STRUCTURES NOT SHOWN. CONVEYOR STAGING AREAS AND ACCESS ROADS NOT SHOWN. ACCESS ROADS AROUND HEAP LEACH PADS NOT SHOWN.
6. PROPOSED UTILITY CORRIDOR ALIGNMENT IS APPROXIMATE.
7. NO WELL CURRENTLY INSTALLED AT POC LOCATION NO. 4.
8. CONTOURS SHOWN FOR EXISTING GROUND AND PIT ARE IN 50'-INTERVALS. CONTOURS SHOWN FOR THE WASTE ROCK STORAGE AREA AND HAUL ROADS ARE SHOWN IN 25'-INTERVALS.
9. PHASE 2 HEAP LEACH PAD READY TO RECEIVE ORE.
10. ALL PRE-OPERATIONAL ROADS AND FACILITY LIMITS ARE APPROXIMATE. CONVEYOR STAGING AREAS AND ACCESS ROADS NOT SHOWN.
11. FORMATED ACCESS ROAD AND FENCELINE SHOWN ON FIGURE 14.
12. PLANT SITE FACILITY NAMES SHOWN ON FIGURE 12.
1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PONDS, AND TEMPORARY STOCKPILING COMPLETED BY M3 ENGINEERING & TECHNOLOGY.

2. DESIGN OF THE DRY STACK TAILINGS AND ASSOCIATED DIVERSIONS COMPLETED BY AMEC.

3. DESIGN OF THE OPEN PIT WASTE ROCK STORAGE AREA AND HAUL ROADS COMPLETED BY MOOSE MOUNTAIN.

4. DESIGN OF THE HEAP LEACH PAD, OPEN PIT DIVERSION CHANNEL, COMPLIANCE POINT DAM, PWTS POND, RAFFINATE POND, AND STORMWATER POND COMPLETED BY TETRA TECH.

5. MINOR/TEMPORARY, STORMWATER PONDS AND DIVERSIONS ARE NOT SHOWN. EXISTING CONSTRUCTION STRUCTURES NOT SHOWN. EXISTING STORAGE AREAS AND ACCESS AREAS NOT SHOWN. ACCESS ROADS AROUND HEAP LEACH PADS NOT SHOWN.

6. PROPOSED UTILITY CORRIDOR REALIGNMENT IS APPROXIMATE.

7. NO WELL CURRENTLY INSTALLED AT POC LOCATION NO. 4.

8. CONTOURS SHOWN FOR EXISTING GROUND AND SURFACE ARE IN 50' INTERVALS. CONTOURS SHOWN FOR THE WASTE ROCK STORAGE AREA, HAUL ROADS AND OPEN LEACH FACILITIES ARE SHOWN IN 25' INTERVALS.

9. PERIMETER ACCESS ROAD AND PENICULAR SHOWN ON FIGURE 14.

10. PLANT SITE FACILITY NAMES SHOWN ON FIGURE 12.

NOTES:

1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PONDS, AND TEMPORARY STOCKPILING COMPLETED BY M3 ENGINEERING & TECHNOLOGY.

2. DESIGN OF THE DRY STACK TAILINGS AND ASSOCIATED DIVERSIONS COMPLETED BY AMEC.

3. DESIGN OF THE OPEN PIT WASTE ROCK STORAGE AREA AND HAUL ROADS COMPLETED BY MOOSE MOUNTAIN.

4. DESIGN OF THE HEAP LEACH PAD, OPEN PIT DIVERSION CHANNEL, COMPLIANCE POINT DAM, PWTS POND, RAFFINATE POND, AND STORMWATER POND COMPLETED BY TETRA TECH.

5. MINOR/TEMPORARY, STORMWATER PONDS AND DIVERSIONS ARE NOT SHOWN. EXISTING CONSTRUCTION STRUCTURES NOT SHOWN. EXISTING STORAGE AREAS AND ACCESS AREAS NOT SHOWN. ACCESS ROADS AROUND HEAP LEACH PADS NOT SHOWN.

6. PROPOSED UTILITY CORRIDOR REALIGNMENT IS APPROXIMATE.

7. NO WELL CURRENTLY INSTALLED AT POC LOCATION NO. 4.

8. CONTOURS SHOWN FOR EXISTING GROUND AND SURFACE ARE IN 50' INTERVALS. CONTOURS SHOWN FOR THE WASTE ROCK STORAGE AREA, HAUL ROADS AND OPEN LEACH FACILITIES ARE SHOWN IN 25' INTERVALS.

9. PERIMETER ACCESS ROAD AND PENICULAR SHOWN ON FIGURE 14.

10. PLANT SITE FACILITY NAMES SHOWN ON FIGURE 12.
EXISTING CONTOURS
EXISTING UNPAVED ROAD
EXISTING PAVED ROAD
PROPOSED ROAD
TECHNICAL RANGE LINE
SECTION LINE
PATENTED CLAIMS
FEE LANDS
PROPOSED CONTOURS
DIVERSION CHANNEL ALIGNMENT
POLLUTANT MANAGEMENT AREA (PMA)
PROPOSED UTILITY CORRIDOR
HEAP LEACH
WASTE ROCK, MAJOR HAUL ROAD FILLS, SCREENING
BERMS, AND BUTTRESSES
OPEN PIT LIMIT
DRAINAGE TAILINGS
REWORKED DRAINAGES
POINT OF COMPLIANCE (POC) LOCATION
WELL LOCATIONS

NOTES
1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PITS POND,
ACCESS ROADS, AND TEMPORARY STOCKPILE, COMPLETED BY M3
ENGINEERING & TECHNOLOGY.
2. DESIGN OF THE DRY STACK TAILINGS, AND ASSOCIATED DIVERSIONS
COMPLETED BY AMEC.
3. DESIGN OF THE OPEN PIT, WASTE ROCK STORAGE AREA, AND HAUL
ROADS COMPLETED BY MOOSE MOUNTAIN.
4. DESIGN OF THE HEAP LEACH PAD, OPEN PIT DIVERSION CHANNEL,
COMPLIANCE POINT DAM, PLS POND, RAFFINATE POND, AND STORMWATER
POND COMPLETED BY TETRA TECH.
5. MINOR/TEMPORARY STORMWATER PONDS AND DIVERSIONS ARE NOT
SHOWN. SEDIMENT CONTROL STRUCTURES NOT SHOWN. CONVEYOR
STAGING AREAS AND ACCESS ROADS NOT SHOWN.
6. PROPOSED UTILITY CORRIDOR ALIGNMENT IS APPROXIMATE.
7. NO WELL CURRENTLY INSTALLED AT POC LOCATION NO. 4.
8. CONTOURS SHOWN FOR EXISTING GROUND AND PIT ARE IN 50'
INTERVALS. CONTOURS SHOWN FOR THE WASTE ROCK STORAGE AREA,
HAUL ROADS AND HEAP LEACH FACILITY ARE SHOWN IN 25' INTERVALS.
9. PERIMETER ACCESS ROAD AND FENCELINE SHOWN ON FIGURE 14.
10. PLANT SITE FACILITY NAMES SHOWN ON FIGURE 12.

JULY 2009 FACILITY LAYOUTS
YEAR 4, Q4
OF OPERATIONS
1. Design of the plant site and associated diversions, PWTS pond, access roads, and temporary stockpiles, completed by M3 Engineering & Technology.

2. Design of the dry stack tailings, and associated diversions completed by AMEC.

3. Design of the open pit, waste rock storage area, and haul roads completed by Moose Mountain.

4. Design of the heap leach pad, open pit diversion channel, compliance point dam, PWTS pond, raffinate pond, and stormwater pond completed by Tetra Tech.

5. Minor/temporary stormwater ponds and diversions are not shown. Remaining structures not shown. Conveyance staging areas and access roads not shown. Access roads around heap leach pads not shown.

6. Proposed utility corridor alignment is approximate.

7. No well currently installed at POC location No. 4.

8. Contours shown for existing ground and are in 50' intervals. Contours shown for the waste rock storage area, haul roads, and heap leach facility are shown in 25' intervals.

9. Perimeter access road and fencing shown on Figure 14.

10. Plant site facility names shown on Figure 12.
1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PWTS POND, ACCESS ROADS, AND TEMPORARY STOCKPILE, COMPLETED BY M3 ENGINEERING & TECHNOLOGY.

2. DESIGN OF THE DRY STACK TAILINGS, AND ASSOCIATED DIVERSIONS COMPLETED BY AMEC.

3. DESIGN OF THE OPEN PIT, WASTE ROCK STORAGE AREA, AND HAUL ROADS COMPLETED BY MOOSE MOUNTAIN.

4. DESIGN OF THE HEAP LEACH PAD, OPEN PIT DIVERSION CHANNEL, COMPLIANCE POINT DAM, PLS POND, RAFFINATE POND, AND STORMWATER POND COMPLETED BY TETRA TECH.

5. MINOR/TEMPORARY STORMWATER PONDS AND DIVERSIONS ARE NOT SHOWN. SEDIMENT CONTROL STRUCTURES NOT SHOWN. CONVEYOR STAGING AREAS AND ACCESS ROADS NOT SHOWN.

6. PROPOSED UTILITY CORRIDOR ALIGNMENT IS APPROXIMATE.

7. CONTOURS SHOWN FOR EXISTING GROUND AND PIT ARE IN 50' INTERVALS. CONTOURS SHOWN FOR THE WASTE ROCK STORAGE AREA, HAUL ROADS AND HEAP LEACH FACILITY ARE SHOWN IN 25' INTERVALS.

8. PERIMETER ACCESS ROAD AND FENCELINE SHOWN ON FIGURE 14.

9. PLANT SITE FACILITY NAMES SHOWN ON FIGURE 12.
NOTES:
1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PLANT SITE Ponds, ACCESS ROADS, AND temporary Stockpiles completed by M3 Engineering & Technology.
2. DESIGN OF THE DRY STACK TAILINGS, AND ASSOCIATED DIVERSIONS completed by AM EC.
3. DESIGN OF THE OPEN PIT, WASTE ROCK STORAGE AREA, AND HAUL ROADS completed by Moose Mountain.
4. DESIGN OF THE HEAP LEACH PAD, OPEN PIT DIVERSION CHANNEL, COMPLIANCE POINT DAM, PLS POND, RAFFINATE POND, AND STORMWATER POND completed by TETRA TECH.
5. MINOR/TEMPORARY STORMWATER PONDS AND DIVERSIONS ARE NOT SHOWN. SEDIMENT CONTROL STRUCTURES NOT SHOWN. CONVEYOR STAGING AREAS AND ACCESS ROADS NOT SHOWN.
6. PROPOSED UTILITY CORRIDOR ALIGNMENT IS APPROXIMATE.
7. NO WELL CURRENTLY INSTALLED AT ROC LOCATION NO. 4.
8. CONTOURS SHOWN FOR EXISTING GROUND, DRY STACK TAILINGS AND PIT ARE IN 50' INTERVALS. CONTOURS SHOWN FOR THE WASTE ROCK STORAGE AREA ARE SHOWN IN 25' INTERVALS.
9. PERIMETER ACCESS ROAD AND PERIMETER SHOWN ON FIGURE 14.

SCALE
300' 0 300'

JULY 2009 PLANT SITE FACILITY LAYOUT
YEAR 15, Q4
OF OPERATIONS
NOTES:

1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PWTS POND, ACCESS ROADS, AND TEMPORARY STOCKPILES COMPLETED BY M3 ENGINEERING & TECHNOLOGY.
2. DESIGN OF THE OPEN PIT DRY STACK TAILINGS AND ASSOCIATED DIVERSIONS COMPLETED BY AMEC.
3. DESIGN OF THE OPEN PIT WASTE ROCK STORAGE AREA AND MAIN ROADS COMPLETED BY MAXSE MINING.
4. DESIGN OF THE HEAP LEACH PAD, OPEN PIT DIVERSION CHANNEL, COMPLIANCE FLOW POND, PWTS POND, PARTNERS POND, AND STORMWATER POND COMPLETED BY TETRA TECH.
5. MINOR/TEMPORARY STOCKWATER PONDS AND DIVERSIONS ARE NOT SHOWN. MINOR ACCESS ROADS ARE NOT SHOWN. SEDIMENT CONTROL STRUCTURES NOT SHOWN. CONVEYOR STAGING AREAS AND ACCESS ROADS NOT SHOWN.
6. PROPOSED UTILITY CORRIDOR ALIGNMENT IS APPROXIMATE.
7. NO WELL CURRENTLY INSTALLED AT POC LOCATION NO. 4.
8. CONTOURS SHOWN FOR EXISTING GROUND AND PIT ARE IN 50' INTERVALS. CONTOURS SHOWN FOR THE WASTE ROCK STORAGE AREA, HAUL ROADS AND HEAP LEACH FACILITY ARE SHOWN IN 25' INTERVALS.
9. PERIMETER ACCESS ROAD AND FENCING SHOWN ON FIGURE 14.
10. PLANT SITE FACILITY NAMES SHOWN ON FIGURE 12.
NOTES:
1. DESIGN OF THE PLANT SITE AND ASSOCIATED DIVERSIONS, PWTS POND, ACCESS ROADS, AND TEMPORARY STOCKPILE, COMPLETED BY M3 ENGINEERING & TECHNOLOGY.
2. DESIGN OF THE DRY STACK TAILINGS AND ASSOCIATED DIVERSIONS COMPLETED BY AMEC.
3. DESIGN OF THE OPEN PIT, WASTE ROCK STORAGE AREA, AND HAUL ROADS COMPLETED BY MOOSE MOUNTAIN.
4. DESIGN OF THE HEAP LEACH PAD, OPEN PIT DIVERSION CHANNEL, COMPLIANCE POINT DAM, PWTS POND, RAWINATE POND, AND STORMWATER POND COMPLETED BY TETRA TECH.
5. MINOR/TEMPORARY STORMWATER PONDS AND DIVERSIONS ARE NOT SHOWN. MINOR ACCESS ROADS ARE NOT SHOWN. SEDIMENT CONTROL STRUCTURES NOT SHOWN. CONVEYOR STAGING AREAS AND ACCESS ROADS NOT SHOWN.
6. PROPOSED UTILITY CORRIDOR ALIGNMENT IS APPROXIMATE.
7. NO WELL CURRENTLY INSTALLED AT POC LOCATION NO. 4.
8. CONTURS SHOWN FOR EXISTING GROUND AND PIT ARE IN 50' INTERVALS. CONTURS SHOWN FOR THE WASTE ROCK STORAGE AREA, HAUL ROADS AND LOAD FACILITY ARE SHOWN IN 25' INTERVALS.
9. PERIMETER ACCESS ROAD AND FENCELINE SHOWN ON FIGURE 14.
10. PLANT SITE FACILITY NAMES SHOWN ON FIGURE 12.

TETRA TECH
DRAFT
JULY 2009 PERIMETER ACCESS ROAD AND FENCELINE LAYOUT
1000' 2000'

Legend:
- EXISTING CONTOURS
- EXISTING UPGRADED ROAD
- EXISTING PAVED ROAD
- PROPOSED ROAD
- Hamburg Permit Line
- Section Line
- PATENTED CLAIM
- FEED LANDS
- Proposed Contours
- DIVERSION CHANNEL ALIGNMENT
- POLLUTANT MANAGEMENT AREA (PMA)
- PROPOSED UTILITY CORRIDOR
- PERIMETER ACCESS ROAD
- PERIMETER FENCE
- PERIMETER MAXIMUM STORAGE AREA AND PERIMETER ACCESS ROAD
- REWORKED DRAINAGES
- POINT OF COMPLIANCE (POC) LOCATION
- WELL LOCATIONS
- POINTS OF COMPLIANCE (POC) LOCATION
- SCALE