**Water Resource Assessment Requirements Guideline**

As required by the Department of Environmental Quality’s (DEQ) letter regarding: “*Pre-Application Meeting Results: Water Resource Assessment Required*,” a **Water Resource Assessment** must be included with any future amendment application adding acreage as proposed during the Pre-Application Meeting.

An **experienced environmental professional** must conduct and submit the Water Resource Assessment in order to attain a “complete” application. A listing of consultants is at this link: <http://deq.mt.gov/Land/Lust/consultantlist>.

When submitting the application, be sure to check the appropriate boxes on page 2 of the Plan of Operation form under “Supplemental Documents” for the various included reports (e.g. Monitoring Well Installation Plan, Ground Water Monitoring Plan, Water Resource Assessment, etc.).

The Act stipulates that the Department may not accept a Plan of Operation (Plan) unless the Plan provides that:

* 1. Surface water and groundwater will be given appropriate protection, consistent with state law, from deterioration of water quality and quantity that may arise as a result of the Opencut operation [§ 82-4-434(3)(l), MCA]; and,
	2. Any additional procedures, including monitoring, that are necessary will be implemented to prevent significant physical harm to the affected land or adjacent land, structures, improvements, or life forms [§ 82-4-434(3)(n), MCA].

In addition, the Act’s implementing rules [ARM 17.24.218(1)(h)] stipulate that:

* 1. The Plan must provide for water quality protection and management including:
		1. A description of the source, quantity, storage, use, and discharge of water to be used for Opencut operations.
		2. An explanation of measures to prevent pollution of state waters or impairment of a water right including, but not limited to:
			1. An explanation of water management and erosion control plans for stormwater, groundwater, and surface disturbances that discharge off-site or intercept any waterway with a defined channel; and
			2. An explanation of proposed measures to protect the water rights of other parties or to replace an adversely affected water source that has a beneficial use.
	2. The Department may require on- and off-site surface water and groundwater quality and quantity monitoring before, during, and after Opencut operations.

Many water wells and irrigation ditches are located within and near the proposed pit. As a result, prior to submitting an amendment application, the Department will require the submittal of a comprehensive “Water Resources Assessment and Protection Plan” for the purpose of characterizing current water resources at and near the site, the anticipated influence the proposal would have on these resources, with a detailed description of how water resources would be protected and water levels monitored.

The Water Resources Assessment and Protection Plan (Assessment) must respond to, address, and include the information below.  Note that the Assessment may identify additional information needed to ensure compliance with requirements of the Act and rules.

* 1. Water Resource Assessment
		1. Provide thorough, complete, and well substantiated documentation (text, tables, maps, figures, cross-sections, and graphs) characterizing current hydrologic and Water Resource conditions at and near the site.
		2. The data and information must be gathered, analyzed, and presented according to current professionally accepted standards and practices.
		3. All field data must be accompanied by the names and addresses of the parties that collected and analyzed the data, and by a description of the methodologies used to gather and analyze the data [ARM 17.24.222(2)].

The following information required to characterize current conditions must include, but is not limited to:

1. A summary of hydrologic and Water Resource information available for the site and vicinity from the scientific literature and other public sources, as well as pertinent data collected at the site.  Information regarding lithology, hydraulic conductivity, and transmissivity of the aquifer(s) underlying the site vicinity must be included.
2. Results of a field inventory conducted to physically locate each water well located within 1,000 feet of the proposed permit boundary; show each well on a Well Locations Map when the application is submitted.
3. Water Resource cross-sections and interpretive text describing the ground water system(s) at and near the site, including discussion of ground water flow and gradient beneath the site and across the downgradient area.  Initial cross-sections must be based on the lithologic and completion logs for new water level monitoring wells (refer to b. below), as well as the existing wells in the vicinity.  Cross-sections must include topography, well depths, screened intervals, lithology, and depth to ground water (including seasonal high and seasonal low water levels).
4. Currently available ground water flow direction and gradient data in the form of tables, graphs, and representative maps, as well as written interpretations of historic trends and seasonal variations in ground water elevations.
5. Information on operation and uses of the ditches adjacent to and within the proposed site, as well as interpretations regarding ditch effects on ground water elevations over time and how ditch flows could be affected by proposed Opencut operations.
6. Tables and laboratory reports for currently available ground water analytical data from the site (if any), as well as text, figures, and diagrams as necessary to characterize the existing water quality.
7. Determine if wetlands exist near or within the proposed permit boundary and whether mining would impact them.
	1. Monitoring well installation and water level monitoring
		1. The installation of monitoring wells and/or piezometers would be necessary both

 for portions of the Water Resource Assessment above and for continued observation

 throughout mining and final reclamation.

* + 1. The additional wells or piezometers would be required to determine lithology,

 groundwater levels, seasonal variations in flow direction before, during, and after

 Opencut operations.

The well installation plan proposal must be approved by the Department prior to implementation and must respond to, address, and include the following:

1. Describe the wells to be included in the water level monitoring program and the

 rationale and justification for their selection.

1. Wells to monitor groundwater levels must be proposed at upgradient and downgradient locations to provide representative groundwater levels and flow direction.
2. The intended monitoring purpose and function of each well must be described.
3. The proposed wells must be shown on a map, and be in locations where they would

 not be disturbed by Opencut operations so as to remain accessible throughout the

 mine life and reclamation.

1. Describe how all wells to be used in the monitoring program would be protected

 and maintained before, during, and after Opencut operations.

1. Describe the methods and procedures to be used to collect ground water elevation

data.

* + - 1. For the first two years, ground water levels must be measured monthly.
			2. Thereafter, monitoring must be conducted semiannually during the approximate

 high and low seasonal water levels.

* + - 1. The plan must also provide for additional monitoring as warranted based on

 findings of the Water Resource Assessment, and if the wells are of appropriate

 construction, to be used in the event of a spill of petroleum or other hazardous

 substance at the site.

* + - 1. The presence or absence of water in the irrigation ditches must be noted during

 each monitoring event.

1. Field measurements must be collected using current professionally accepted standards and practices.
2. The proposal must also describe the well installation and construction materials and methods to be used.
3. Field notes, well construction, and lithologic logs must be provided, and the wells must be included in the cross-sections as part of the Water Resource Assessment required above.
	1. Discussion and Analysis

 Based on data obtained from parts “f” and “g” above, provide the following:

* + 1. Discussion of the anticipated effect(s), if any, of the proposed opencut operations and subsequent pond on domestic water supply wells.
		2. Discussion of the anticipated interaction, if any, between the proposed pit and the irrigation canals.
		3. Discussion of anticipated impacts to water quantity within the local hydrologic system as water evaporates from final pond surface, etc.
		4. Discussion of any other pertinent findings or details.

If you have any questions on the above, contact the Opencut Section at (406) 444-4970.