WHAT IS A CONTAINMENT-RELATED SEEP?

A seep is a flow of water or solution that emanates from the ground surface or the surface of manmade features. A process related seep is defined as meeting the following criteria:

- Discharge as defined by the Clean Water Act to Waters of the U.S.;
- Has an observable and measurable flow of at least one gallon per minute; and
- Has continuous flow unrelated to storm events. Continuous flow unrelated to storm events is defined as flowing continuously 72 hours after a storm event.

At Morenci, areas where potential process related seeps might be observed are:

- Gold Gulch
- Tributaries south of the tailing impoundments
- Lower Chase Creek
- Rocky Gulch

Although Morenci no longer maintains as Arizona Pollutant Discharge Elimination System (AZPDES) permit, seep evaluations/inspections will continue on an annual basis as a Best Management Practice.

WHAT IS A DISCHARGE?

A discharge means the addition of any substance introduced by humans or manmade structures through a “point source”, such as a dam, that can change the quality of the water in “Waters of the U.S.” This substance can be a chemical (including metals), physical (dredged sediments for example) or biological (such as sewage).

WHAT ARE WATERS OF THE U.S.?

Only specialists can define “Waters of the U.S.” As such, for Morenci’s purposes, you should assume that the major waterways (Eagle Creek and the San Francisco River) and any tributaries leading to these water bodies meet the definition of “Waters of the U.S.”

WHY SHOULD WE IDENTIFY CONTAINMENT–RELATED SEEPS?

Except for unimpacted storm water, Morenci is a “zero discharge facility”. This means that we cannot discharge process related solutions to Eagle Creek, the San Francisco River or their tributaries because these solutions might affect the water quality. Unauthorized discharges can have a number of negative effects on Morenci operations. It may result in fines from state and federal authorities. It can lead to revoking operating permits, effectively shutting down portions or all of Morenci’s mining operations. Both civil and criminal penalties may be imposed by the regulatory agencies. Enforcement actions are generally directed against the “company” and “officers of the company”. However, any individual supervisor or operator who “knowingly and willfully” violates the law can be held personally liable.

A seep may signal the initial phase of a larger problem that could develop in the future. For example, a seep on the face of a containment structure, such as a dam face, may indicate a weakness in that structure that could ultimately result in complete failure and a major discharge.

WHAT SHOULD I KNOW AND DO IF I ENCOUNTER A SEEP?

Contact the Environmental Services Department Water Group and leave the following information:

- Your name
- Your telephone number
- The location of the seep (For example: "A potential seep in the channel approximately 50 yards downstream of the XYZ Dam").
- Any stakes or markings indicating prior identification of the seep. Note: the Environmental Services Department will be completing periodic surveys and maintaining a database for seeps in the area. Any identified seep will be marked in the field.
- Information regarding the nature of the seep (approximate flow rate, color of water, odors, the presence of salts or precipitates near the seep, etc.).

Report <u>all</u> seeps observed in Gold Gulch, tributaries south of tailing impoundments, Lower Chase Creek and Rocky Gulch, or other tributaries to Eagle Creek and the San Francisco River.

WHAT WILL ENVIRONMENTAL SERVICES DO TO IDENTIFY SEEPS?

The Environmental Services Department will complete the following activities to identify and evaluate process-related seeps:

Seep Identification

- Review existing documents in Morenci files to determine if seeps have been identified from past studies and/or work. If seeps are identified, Morenci Environmental staff will attempt to locate these seeps in the field for evaluation.
- Morenci Environmental personnel will complete at least one field survey annually to identify seeps near active containment facilities. The survey will be completed as follows:
    1. The survey will be completed in Gold Gulch and associated tributaries; tributaries of the San Francisco River south of tailing impoundments; Lower Chase Creek; and Rocky Gulch.
    2. The survey will begin at the last containment structure in the drainage (i.e., most down-gradient), and proceed to ¼ mile down-gradient of the containment structure. This ¼ mile area is consistent with practices for seep inspections at other mining properties in Arizona.
    3. The area will be inspected by physically walking each channel and looking for seeps.
    4. The survey will be documented in a dedicated, bound field notebook. Notes will at a minimum include:
        - date(s) of the survey;
        - name of Environmental personnel completing survey;
        - weather conditions;

- time and area surveyed;
- identification and evaluation of new and known seeps.

The evaluation of seeps will include measuring or estimating flow rates; recording the seep location based upon a hand-held global positioning system (GPS); field pH and field conductivity measurements.

5. Seeps identified within ¼ mile of containment structures will be marked in the field with a stake, flagging or similar method using a distinctive number to differentiate seep locations. This number will be recorded in the field logbook.
6. During rain events, a survey will be discontinued for a period of at least 72 hours.

Seep Evaluation

- The Environmental Services Department will complete seep evaluations.
- Based upon available information, including site history, geology, hydrology and observation, Environmental will determine whether the seep is potentially a "containment-related seep".
- Environmental will sample seeps identified within ¼ mile of containment structures that appear to constitute a "discharge" as defined by the Clean Water Act.
- An initial grab sample will be collected and analyzed for total recoverable metals, dissolved metals, pH, alkalinity and hardness. The results of the analytical testing will be compared to Arizona Water Quality Standards.
- If the seep meets Arizona Water Quality Standards, Environmental will sample the seep every two years.
- If it is not clear whether a seep is a "discharge" as defined by the Clean Water Act, any report to the U.S. Environmental Protection Agency (EPA) should state that no such determination has been made and should reserve all rights.

QUESTIONS OR NEED HELP? CONTACT:

Enviro Representatives Phone Extensions:	**Brian Chronowski (water) .. 865-6257** **Jimmy Hogan (water) 865-7399**
Enviro Representatives Cell Phones:	**Brian Chronowski (water) .. 965-0235** **Jimmy Hogan (water) 965-0061**
Environmental Services Office:	**865-6000**