



Copper Queen Branch/Freeport-McMoRan Corporation  
36 West Highway 92  
Bisbee, Arizona 85603

**CERTIFIED MAIL # 7011 3500 0001 0664 3256**  
**Return Receipt Requested**

March 7, 2013

Ms. Mindi Cross  
Water Quality Compliance Section  
Arizona Department of Environmental Quality  
1110 West Washington Street  
Phoenix, Arizona 85007

**Re: Mitigation Order on Consent No. P-121-07**  
**Private Well Mitigation**

Dear Ms. Cross:

Freeport-McMoRan Corporation, Copper Queen Branch (CQB) is submitting this letter to describe the private well mitigation actions selected by five of the affected well owners. The Feasibility Study and Mitigation Plan for Drinking Water Supplies Affected by Sulfate (Mitigation Plan) submitted March 28, 2012 identified mitigation actions for the affected wells based on site-specific data including well location, groundwater chemistry, hydrologic conditions, location of existing public water supplies, and discussion with owners of affected wells. During 2012, CQB implemented most of the recommendations of the Mitigation Plan.

The final mitigation actions implemented at five of the affected wells varied from the action identified in the Mitigation Plan due to site-specific conditions at the following properties:

- Bisbee Junction/Airport Area
  - Panagakos
  - Bailey (Noteman)
  - Seibold (BIMA)
  
- Naco Highway/Purdy Lane Area
  - Franco
  - Marcell

In each case, the owner of the affected water supply selected the final mitigation action from a list of potentially available actions. The final mitigation actions implemented were mutually agreeable mitigation measures that achieve the purposes of ARS. § 49-286.A.

### **BISBEE JUNCTION/AIRPORT AREA**

The Bisbee Junction/Airport area is on the east side of the sulfate plume and consists of one affected domestic well near Bisbee Junction, the Panagakos well, and two affected domestic wells at the north end of the Bisbee International Airport, Bailey (Noteman) and Seibold (BIMA). These wells are completed in bedrock and are not as productive as wells in basin fill due to the lower permeability of bedrock as compared to basin fill. These wells are susceptible to drying out in response to prolonged pumping as a result of the low permeability of the bedrock and the depth of the wells. Because of concerns over adequate water quantity, the three well owners in the Bisbee Junction/Airport area elected final mitigation actions other than whole house reverse osmosis treatment identified in the Mitigation Plan.

Pangakos' selected point of use reverse osmosis treatment because of concerns regarding low well yield and septic system capacity. Bailey and Seibold selected continuation of bottle water for potable supply based on their low well yields and the relatively low sulfate concentrations at their wells

### **NACO HIGHWAY/PURDY LANE AREA**

Well replacement was the mitigation action selected by owners of private drinking water supplies in the Naco Highway/Purdy Lane area. Well replacement activities were conducted during 2012. Well replacement proved difficult at the Franco and Marcell properties.

Franco initially selected well replacement as a mitigation action because their existing well was dry. Geologic logging of drill cuttings during installation of the replacement well determined that bedrock at the well site is disrupted by a geologic fault. Deformation and brittle fracture along the fault allows the plume to migrate to depth at this location and prevents the newly developed water supply from attaining sulfate concentrations less than 250 mg/L. Franco elected to connect the replacement well for domestic supply and to continue bottled water for potable supply.

Marcell initially selected well replacement as a mitigation action. During drilling activities on an adjacent property, the subsurface geology at the Marcell property was determined to have limited potential for water supply development. Thus, well replacement was determined to be infeasible a result of site-specific conditions that were unknown at the time the Mitigation Plan was developed. In lieu of a replacement well, Marcell elected to connect to Naco Water Company service as an alternate water supply. The connection to Naco Water Company is currently being implemented.

The Mitigation Plan submitted to ADEQ has been implemented as proposed except for the mitigation actions described above. CQB appreciates the oversight of ADEQ during implementation of the Mitigation Plan.

Please contact me if you have questions or require any additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rebecca A. Sawyer', with a stylized flourish at the end.

Rebecca A. Sawyer  
Sr. Environmental Engineer  
Freeport-McMoRan Corporation, Copper Queen Branch

cc: Stuart Brown/Freeport-McMoRan Copper and Gold  
Mike Jaworski/Freeport-McMoRan Corporation, Copper Queen Branch  
Jim Norris/Clear Creek Associates  
Sheila Deely/Freeport-McMoRan Copper and Gold