

Rumrill, Nancy

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From: John Anderson <[jala@johnlanderson.com](mailto:jala@johnlanderson.com)>  
Sent: Tuesday, January 6, 2015 9:05 AM  
To: Rumrill, Nancy  
Subject: Objection to the Florence Copper Project.  
Attachments: Aquifer.bmp

Nancy Rumrill,

I have written several letters over the years, expressing my objections to the proposed Insitu mining by the Florence Copper Project. My objections and the reasons the EPA should deny the request by FCP are simple. The EPA has stated that they will not allow in-situ injection into an aquifer that is used for drinking water (see <http://www.epa.gov/rpdweb00/tenorm/copper.html>). [John Anderson] AZ well no. 212514 is less than 2 miles north west of the FCP site and is at a depth of 600 ft. Attached is a map (Aquifer), which was prepared by Southwest Ground-water Consultants, on July 8, 2011 which shows injection zone flow in the aquifer that supplies my drinking water. The ADEQ originally granted Florence Copper a temporary testing permit. These permits have now been rescinded.

The Town of Florence has denied a request for a zoning change to allow Florence Copper to mine the property they own within the town limits. The property in question was zoned residential when it was purchased by Florence Copper. Florence Copper is now proposing to contain their operations on 212 acres of state owned land which is totally surrounded by the town limits. It is not feasible to operate a mine, leaching ponds, processing and storage facilities on such a limited space.

The EPA was involved in testing on the site with the previous owner, BHP, in 1966. This report shows levels of radioactivity in excess of federal MCLs or Arizona guidelines. The data indicates that the PLS produced from the Magma Florence in-situ projects contain very high levels of radionuclides.

The following is an excerpt from that report:

Pages 30 through 32 from the following EPA report:

United States Environmental Protection Agency	Office of Radiation & Indoor Air (6602J) Washington, DC 20460	EPA 402-R-99-002 October 1999
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## 1. BHP Copper Florence In-Situ Project

BHP Copper Florence (formerly Magma Florence) was granted a UIC permit (No 396000001) and aquifer exemption to operate an in-situ copper mine located two miles northwest of Florence, Arizona. The Gila River flows southwest and its floodplain is about 1/4 mile south of the mine. The copper ore body is between 400 feet and 1600 feet deep in highly fractured Precambrian granite, gneiss, and schist. The ore zone is about 250 acres wide. The water table is 130 feet below the surface and the ore body is within the saturated zone. The local stratigraphy consists of four hydrogeologic units. The uppermost alluvial unit is an upper basin fill that consists of interbedded gravels, sands, and silt lenses. The second unit is a middle silt and clay fine grained formation. A lower alluvial unit consists of conglomeratic gravel and sand. The basin fill are underlain by fractured igneous and metamorphic rocks that contain the ore body. ADEQ is currently in the process of reviewing BHP s APPA.

In January of 1996, BHP (Magma) conducted a column leach test to characterize the leachability of the mineralized zone and determine the chemical composition of the resultant PLS. Samples of ore-bearing quartz monzonite and granodiorite

were leached for 58 days with 10 liters of sulfuric acid and maintained in a closed system at a pH of 1.5 to 1.7. The PLS was analyzed for common ions, metals and radiochemicals. The TDS and sulfate concentration at the end of the test was 26000 to 37000 mg/L for the quartz monzonite and 18000 to 23000 mg/L for the granodiorite. The gross alpha and beta activities for the quartz monzonite were 8649 and 3683 pCi/L, respectively. Similarly, the gross alpha and beta activities for the granodiorite were 897 and 612 pCi/L, respectively. The Ra-226 concentration of both samples was 33.6 pCi/L for the quartz monzonite and 19.5 pCi/L for the granodiorite. The total uranium, U-234, U-235, U-238 for the quartz monzonite were 4362, 1745, 598, and 1611 pCi/L and for the granodiorite 0.835, 254, 11.6, and 248 pCi/L, respectively (Table 18).

Subsequently, the raffinate from the PLS was recirculated into the leach system for another 19 days. Then the samples were drained and washed with groundwater for another 14 days in an open system. At the end of the wash test, the solution was tested for radiochemicals. The gross alpha and beta activities for the quartz monzonite and granodiorite were reduced to 11 and 3 (alpha) and <8 and <8 (beta) pCi/L for both the quartz monzonite and granodiorite. The Ra-226 and Ra-228 concentration was also reduced in both samples. The total uranium, U-234, and U-238 were 10, 27.3, 20.7 and 1.2, 6.8, and 4.82 pCi/L, respectively (Magma, 1/1996). The analytic results are shown in Table 18 (Magma, 1/1996). In all cases the quartz monzonite showed higher levels of radiochemicals than the granodiorite. The range of background levels alpha and beta activity and Ra-222 are shown at the bottom of the Table 18.

**Table 18**

**Radiochemical Analysis of Leach Test Samples Magma Florence In-Situ Copper Project, January 1996 (pCi/L)**

Sample	Gross Alpha	Gross Beta	Total-U	U-234	U-235	U-238	Ra-226	Ra-228	Rn-222
Leach Test									
quartz monzonite	<b>8649</b>	<b>3683</b>	<b>4362</b>	<b>1745</b>	<b>598</b>	<b>1611</b>	<b>33.6</b>	<2	810
granodiorite	<b>897</b>	<b>612</b>	0.84	<b>254</b>	<b>11.6</b>	<b>248</b>	<b>19.5</b>	<2	243
Wash Test									
quartz monzonite	11	3	10	<b>27.3</b>	0.6	20.7	2.5	4	5.3
granodiorite	<8	<8	1.2	6.8	<0.6	4.82	<0.6	<3	7.9
Bgd Florence <sub>1</sub>									
High	3.0	14.0	-	-	-	-	0.1	-	236
Low	1.0	4.0	-	-	-	-	197.8		

Levels of radioactivity in excess of federal MCLs or Arizona guidelines are shown in bold

Reference: Magma, 1/1996 = No data

<sup>1</sup>Background data from Table 8, Florence, Arizona

These data indicate that the PLS produced from the Magma Florence in-situ projects contain very high levels of radionuclides and that they are leachable.

*The page 32 of the same EPA report list results from the Santa Cruz Insitu mine, southwest of Casa Grande:*

These results confirm that uranium occurs in the PLS and raffinate of the process streams at the Santa Cruz.

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The EPA and the USGS have numerous reports on the negative effects of Insitu mine operation's ability to return the aquifer to safe drinking water standards. These reports indicate that there is not a known insitu mine that has been closed where the aquifer was restored to safe drinking water standards.

How can the EPA even consider permitting the Florence Copper Project insitu mine when their own data shows contamination that exceeds standards and there is no proof of maintaining the aquifer to safe drinking water standards?

PLEASE PROTECT OUR ENVIRONMENT. DO NOT APPROVE ANY TYPE OF INSITU TESTING OR MINING IN FLORENCE, AZ.

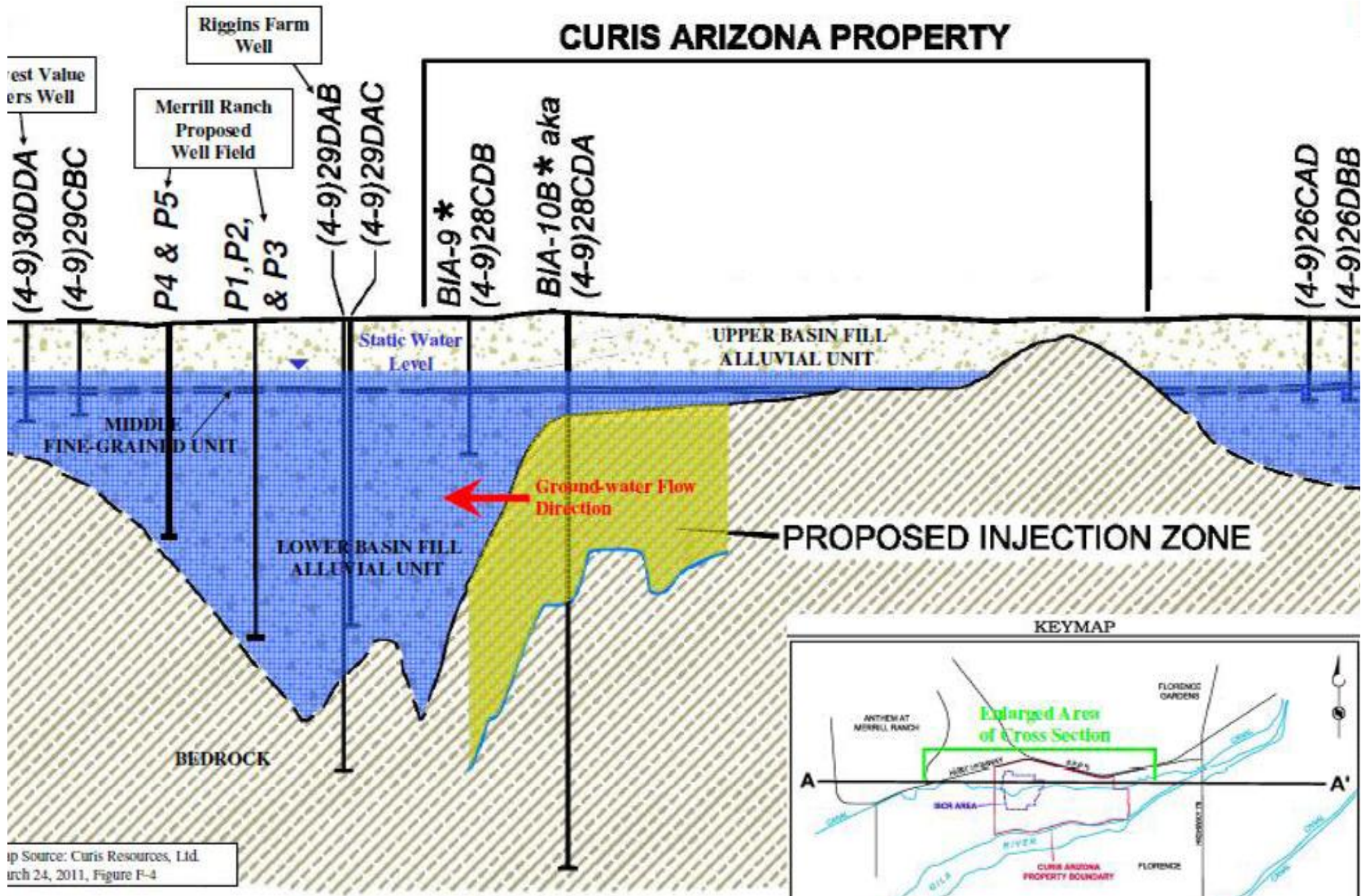
Regards,

*John L. Anderson*

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# CURIS ARIZONA PROPERTY



ip Source: Curis Resources, Ltd.  
 arch 24, 2011, Figure F-4