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From: Mark Shaffer

Sent: Friday, October 03, 2014 3:04 PM

Subject: Results of metals and chemical compound tests on San Pedro River

Based on tests for presence of eight metals and two chemical compounds at two sites on the San Pedro River on Sept. 23, the Arizona Department of Environmental Quality has found no indication of impact of a reported release from a holding pond at Buenavista Mine in Cananea, Sonora last month.

Water samples were collected at the Palominas and Fairbank locations on the San Pedro for analysis of total (unfiltered sample) and dissolved (filtered sample) metals for cadmium, chromium, copper, nickel, arsenic, lead, zinc, and manganese as well as hexavalent chromium and free cyanide. Standard field parameters including pH, dissolved oxygen, and specific conductivity were also measured at both sites.

Attached are the results of total and dissolved metals concentrations. Dissolved metals analyses are considered by ADEQ to be the primary indicators of direct impacts to surface water quality of any potential mine spill/release. Dissolved metals for this investigation showed no exceedances of state water quality standards and were all at or below the historical range of sampling results reaching back to the mid-1990s.

Of the total metals results, exceedances of Arizona state water quality standards occurred for total lead at both sites. The state standard is 15 µg/L (micrograms per liter or parts per billion). The Fairbank site exhibited a total lead concentration of 54 µg/L, while the Palominas site showed a total lead concentration of 32 µg/L. These results are not unusual to see in Arizona waters in a turbid storm flow condition as existed during sampling. The concentrations also fall within observed historical ranges for both sites. No other total analyses showed exceedances of state water quality standards.

The pH for both sites, testing results of which were released last week, was within a normal range.

Mark Shaffer

Media Relations Director

Arizona Department of Environmental Quality

1110 W. Washington

Phoenix, Az. 85007

San Pedro River at Palominas		Water Quality Standard*, µg/L	Sampling Results, µg/L	Detected Values Historical Range, µg/L
Total Metals				
	Cadmium	50	ND	1 - 4
	Copper	500	100	4 - 1200
	Chromium	100	11	12 - 57
	Lead	15	32	3 - 230
	Nickel	511	11	ND - 58
	Zinc	5,106	94	8 - 520
	Manganese	10,000	820	18 - 4700
	Arsenic	50	18	9 - 86
Dissolved Metals				
	Cadmium	8.06	ND	No detections historically
	Copper	23.34	10	1.87 - 82
	Chromium	922.07	ND	No detections historically
	Lead	121.70	ND	No detections historically
	Nickel	769.88	ND	No detections historically
	Zinc	192.82	4.5	7 - 80
	Manganese	-	14	35 - 320
	Arsenic	340	4.9	ND - 12
Cyanide, Total		41	ND	No records
Hexavalent chromium		150	ND	No records
pH		6.5 - 9 SU	7.84 SU	7.31 - 8.53 SU

* Standard for most protective designated use

ND - Not Detected SU - Standards units

Table 1. San Pedro River at Palominas results, standards, and historical ranges

San Pedro River at Fairbank		Water Quality Standard*, µg/L	Sampling Results, µg/L	Detected Values Historical Range, µg/L
Total Metals				
	Cadmium	50.00	ND	No detections historically
	Copper	500	160	18 - 547
	Chromium	100	18	29 - 42
	Lead	15	54	3 - 130
	Nickel	511	20	ND - 42
	Zinc	5,106	140	12 - 434
	Manganese	10,000	1400	21 - 5400
	Arsenic	50	22	8 - 66
Dissolved Metals				
	Cadmium	13.00	ND	No detections historically
	Copper	35.38	8.3	ND - 21
	Chromium	1324.09	ND	No detections historically
	Lead	194.09	ND	No detections historically
	Nickel	1118.82	ND	No detections historically
	Zinc	280.37	ND	No detections historically
	Manganese	-	3.5	No detections historically
	Arsenic	340	4.6	ND - 13
Cyanide, Total		41	ND	No records
Hexavalent chromium		150	ND	No records
pH		6.5 - 9 SU	7.93 SU	7.79 - 8.74 SU

* Standard for most protective designated use

ND - Not Detected SU - Standards units

Table 2. San Pedro at Fairbank results, standards, and historical ranges