Buena Vista Mine - A Case Study for Water Quality and Coordination

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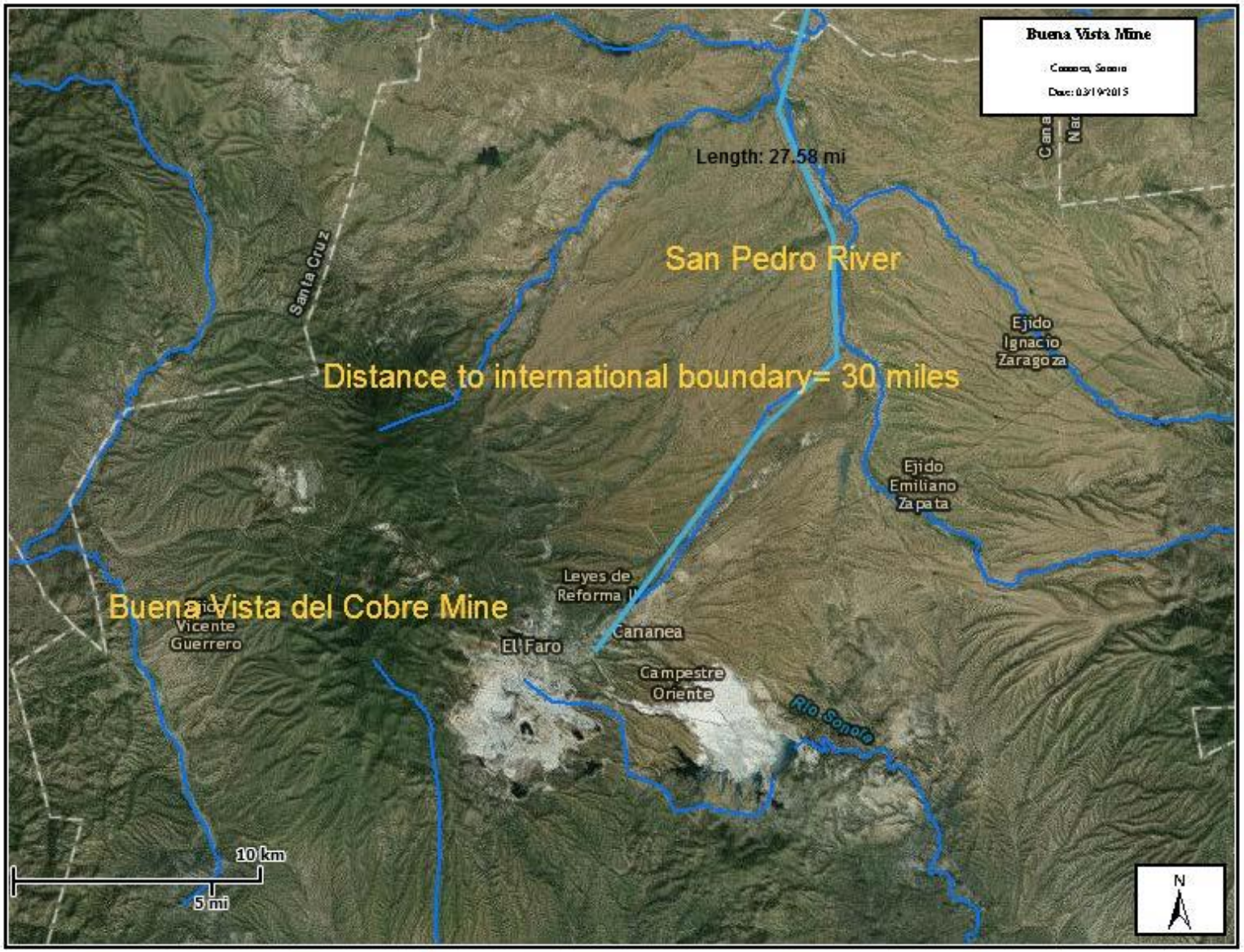
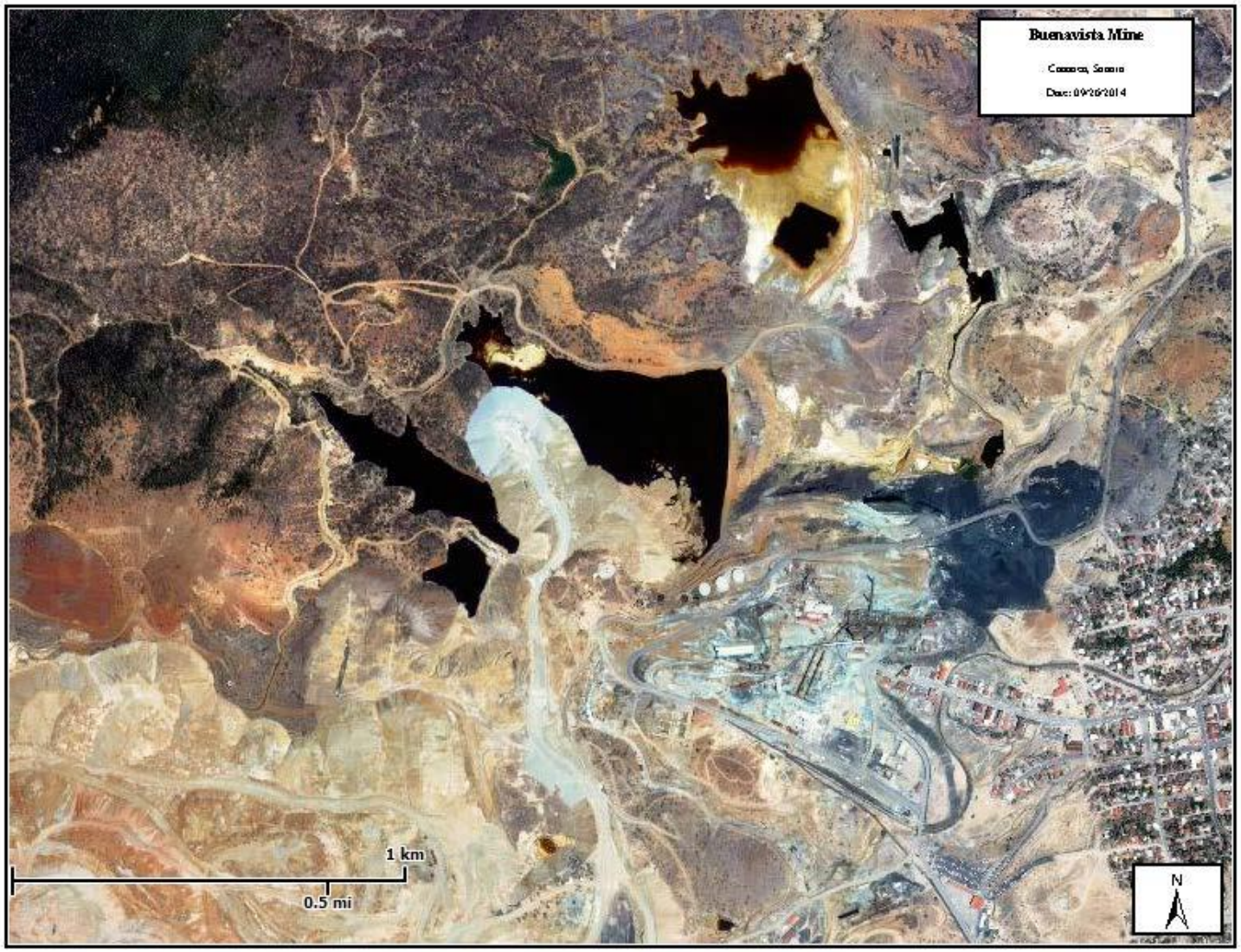
Southeast Arizona Citizens Forum

Sierra Vista, Arizona

Excellence through teamwork.


Buena Vista Mine
Length: 27.58 mi
San Pedro River
Santa Cruz
Distance to international boundary= 30 miles
Ejido Ignacio Zaragoza
Ejido Emiliano Zapata
Buena Vista del Cobre Mine
Leyes de Reforma
Cananea
El Faro
Campestre Oriente
Rio Sonoita
Vicente Guerrero
10 km
5 mi
N

Buena Vista Mine



Summary of Events

- Mexico reports that a small overflow of a detention pond occurred on September 20, affecting the San Pedro River
- Coordination between Mexican and U.S. entities is initiated
- Field surveys followed by water quality sampling
- Reporting of results by U.S. from the boundary, and Mexico's results from the San Pedro River

ARIZONA, ESTADOS UNIDOS DE NORTE AMERICA
SONORA, MEXICO
RIO SAN PEDRO
El Sauz
Milpillas
Laguna Los Patos
Agua Prieta - Cananea
2
SITIO FOTOGRAFIAS
Cananea
Cuitaca
Aguaje
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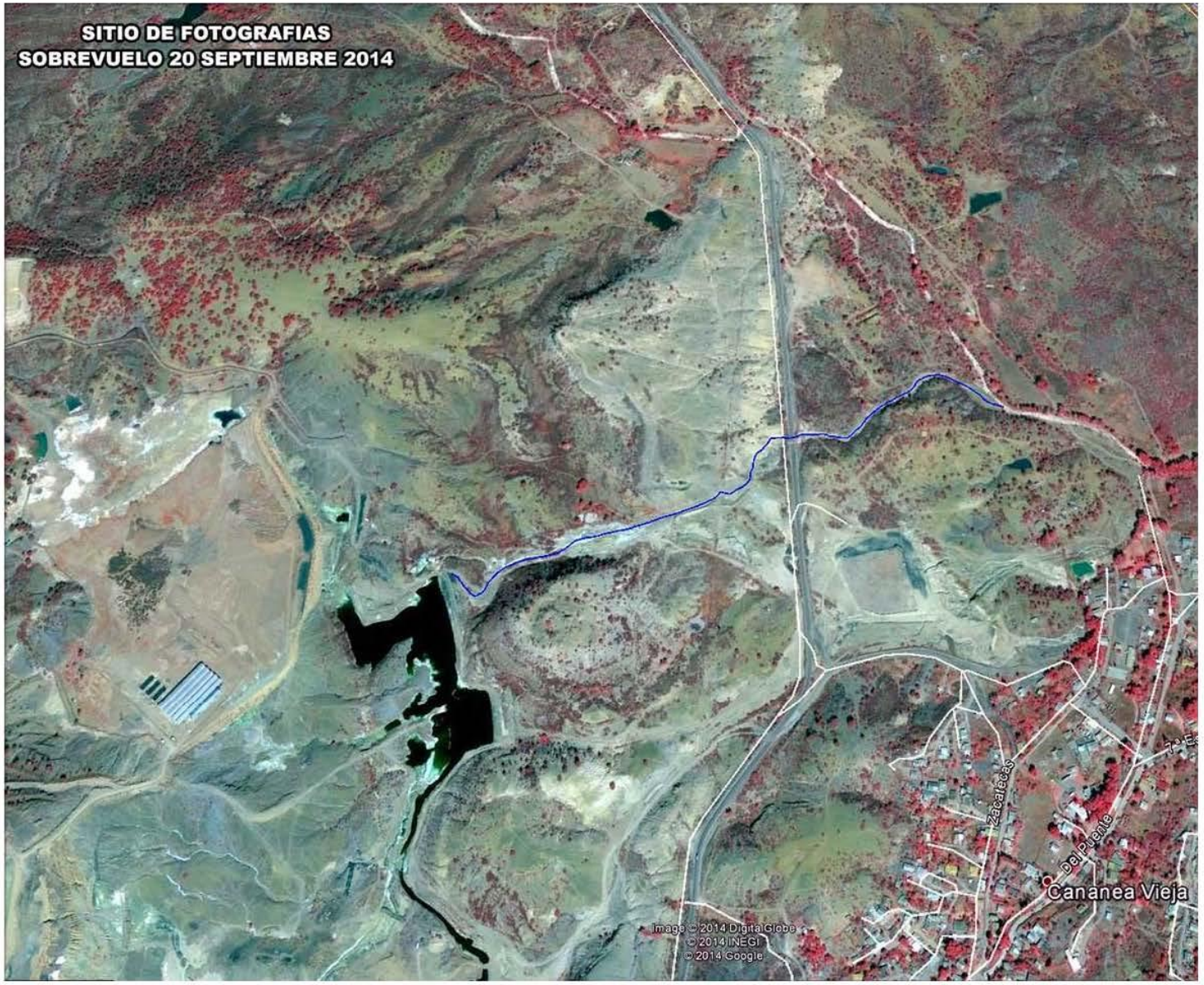
SITIO DE FOTOGRAFIAS
SOBREVUELO 20 SEPTIEMBRE 2014
Zacatecas
Del Puente
Cananea Vieja
Image © 2014 DigitalGlobe
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Notification

- Mexico
  - PROFEPA- Attorney General for Environmental Protection
  - UEPC- State Civil Protection Unit- Sonora
  - Mexican Section, IBWC
  - National Water Commission- CONAGUA
- U.S.
  - USEPA, USIBWC
  - ADEQ, AZDEMA, AZDHS,
  - Cochise and Santa Cruz County
  - U.S. Consulate- Nogales

Plan de Contingencias Hidroecológicas para casos con potencial impacto transfronterizo

- Como resultado del Programa de Monitoreo
- Por notificación de terceros

Detección de la emergencia

Notificación de la emergencia

- **E.U.A.** → Se envía Nota Informativa
- **Autoridades locales** → Llamada telefónica y correo electrónico (coordinación)

Atención de la emergencia

Verificación en campo

- **No** → Se cancela el Plan de Contingencia
- **Si** → Se documentará y/o se realizarán las siguientes acciones:
  - Fecha de la visita a campo
  - Tipo de cuerpo acuático
  - Longitud de zona afectada
  - Fenómenos meteorológicos ocurridos
  - Organismos afectados
  - Muestreo de peces, sedimentos y agua
  - Registro de parámetros básicos de campo
  - Coordenadas geográficas de sitios muestreados
  - Evidencia fotográfica
  - Realizar análisis de las muestras en laboratorios

Medidas correctivas o de mitigación

- Limpieza de cuerpo de agua.
- Acciones de control y vigilancia.
- Investigar plaguicidas y fertilizantes aplicados.
- Evitar el consumo humano de especies afectadas
- Evitar que la contaminación llegue a EUA.

Resultados: Informe Final

Field Surveys

Field Surveys

Field Surveys

Reporting

CONAGUA
COMISIÓN NACIONAL DEL AGUA

RESULTADOS MONITOREO RÍO SAN PEDREO EFECTUADO EL DÍA 23 DE SEPTIEMBRE DE 2014

NOMBRE DEL SITIO DE MONITOREO	pH	Aluminio	Antimonio	Arsénico	Bario	Cadmio	Cobre	Cromo	Hierro	Manganeso	Mercurio	Niquel	Plomo	Zinc
	UpH	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RESULTADOS DEL LABORATORIO ABC													
Vaso del Represo de Control #3	2.69	462.9	0.0406	ND	0.0256	0.2888	42.92	0.140	1655	279	0.00065	1.309	ND	82.18
Arroyo El Barrilito 100 m aguas abajo del Represo de Control #3	2.76	539.6	0.0209	ND	ND	0.3482	38.43	ND	1138	424.4	0.00069	1.621	ND	103.1
Arroyo El Riito	7.34	7.878	ND	0.0124	0.1459	ND	0.084	0.005	9.418	0.3919	0.00022	0.006	0.022	0.070
Río San Pedro	7.62	8.559	ND	0.0184	0.2319	ND	0.09	0.006	10.09	0.5372	ND	0.006	0.023	0.059

Reporting

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

Reporting

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

Lessons Learned

- Local support is outstanding!
- Binational coordination needs to occur on a routine basis
  - Protocols for notification/contacts/numbers
- Standardized response for water quality issues is needed
  - Parameters to be tested
  - Training
- Close out
  - Report to stakeholders, agencies, format
  - "All clear"

USIBWC Briefing
Southeast Arizona Citizens Forum

http://www.ibwc.gov/home.html

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