

# San Pedro Watershed

## Watershed Description

This watershed encompasses three hydrological areas:

- San Pedro River, which begins in the mountains near Cananea Sonora, Mexico, and flows north about 100 miles through the southeast corner of Arizona to join the Gila River near Winkelman, Arizona;
- Willcox Playa, a terminal basin (does not drain out of the area), which contains a 30,000 acre ephemeral lake (playa); and
- Two relatively short drainages that flow to the Rio Yaqui in Mexico: Whitewater Draw and Black Draw.

It is a 7,015 square mile watershed is lightly populated with only 130,000 people (2000 census). Communities in the area include the rapidly growing Sierra Vista area and several historic towns, such as Tombstone, Douglas, and Bisbee. Grazing is widespread, with significant areas of irrigated agriculture located on the eastern side of the watershed. Historic copper, silver, and gold mining took place across the watershed; however, only a few mines are still active. Land ownership is divided approximately as: 40% private, 40% state, 20% federal (no tribal land). The Bureau of Land Management established a 50,000 acre San Pedro Riparian National Conservation Area in 1988 to protect this critical habitat.

Elevation varies from 4,000 feet (above sea level), with desert grassland and warmwater aquatic communities, to 10,700 feet at Mount Graham, with alpine forest. Areas above 5,000 feet typically support coldwater aquatic communities where perennial waters exist.

## Water Resources

The area gets little precipitation, with 10-15 inches of rain and 0-5 inches of snow. Springs provide perennial flow to segments of the San Pedro River and other streams in this watershed. Concerns have been raised about ground water pumping and water demand in the rapidly growing Fort Huachuca Army Base – Sierra Vista area and the potential impact on perennial flow in the San Pedro River. In 2003, a Fort Huachuca Preservation Legislation required the Secretary of Interior to develop water use management and conservation measures necessary to restore and maintain the sustainable yield of the aquifer.

An estimate of surface water resources in the Salt Watershed is provided in the following table.

Estimated Surface Water Resources in the San Pedro Watershed

	Perennial	Intermittent	Ephemeral
Stream miles	195	665	6,610
	Perennial	Non-perennial	
Lake acres	1,319	29,471	

Estimated miles and acres are based on U.S. Geological Survey digitized hydrology at 1:100,000 and have been rounded to the nearest 5 miles or 5 acres. Ambient monitoring focuses on perennial waters; however, special investigations have identified water quality problems on intermittent and even ephemeral waters.

## Assessments

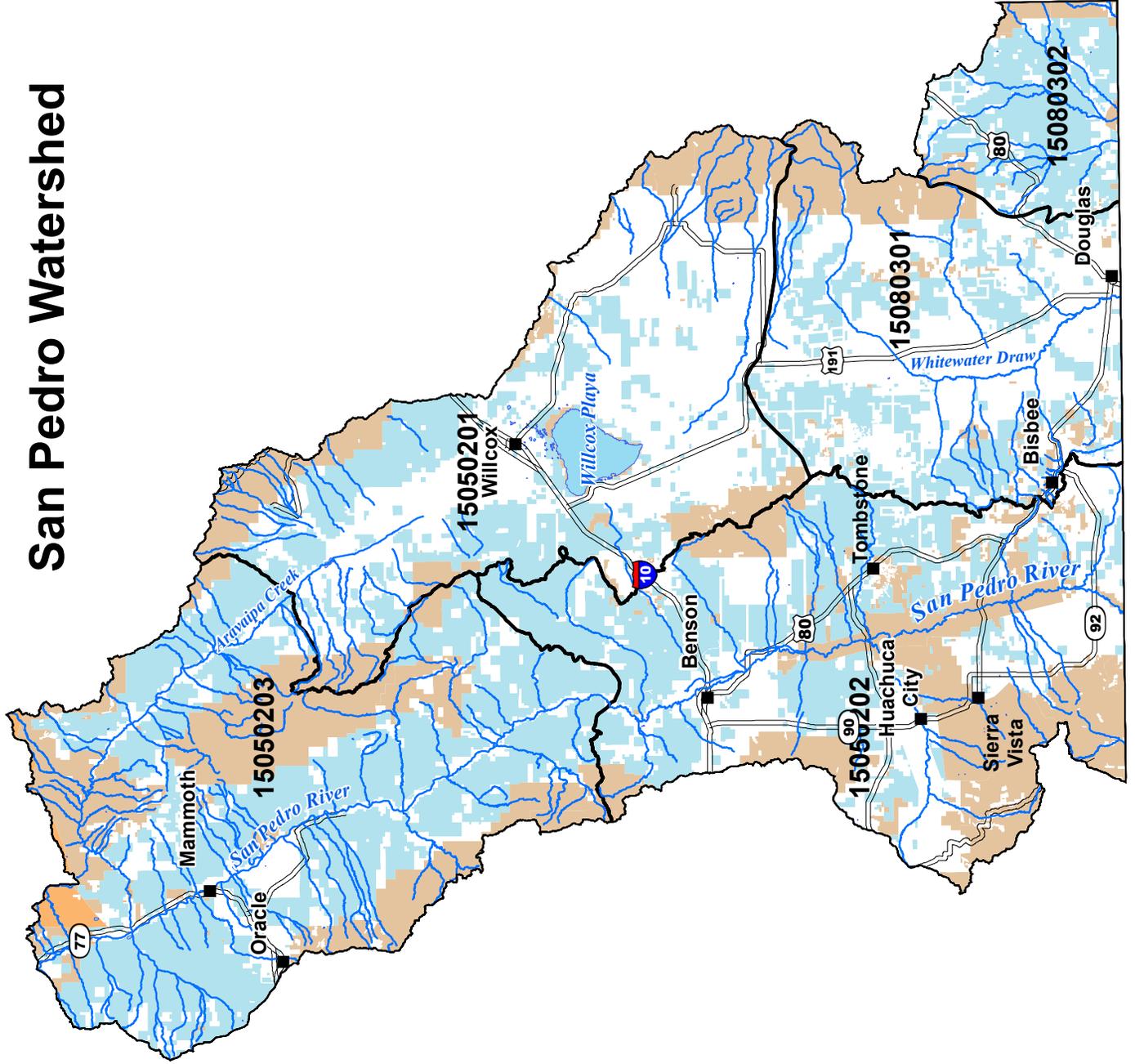
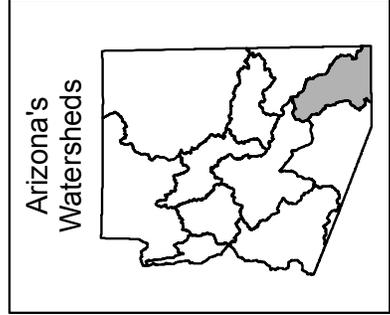
The San Pedro Watershed can be separated into the following drainage areas (subwatersheds):

15050201	Willcox Playa
15050202	Upper San Pedro
15050203	Lower San Pedro
15080301	Whitewater Draw
15080302	San Bernardino Valley

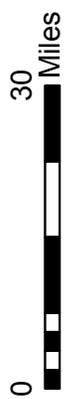
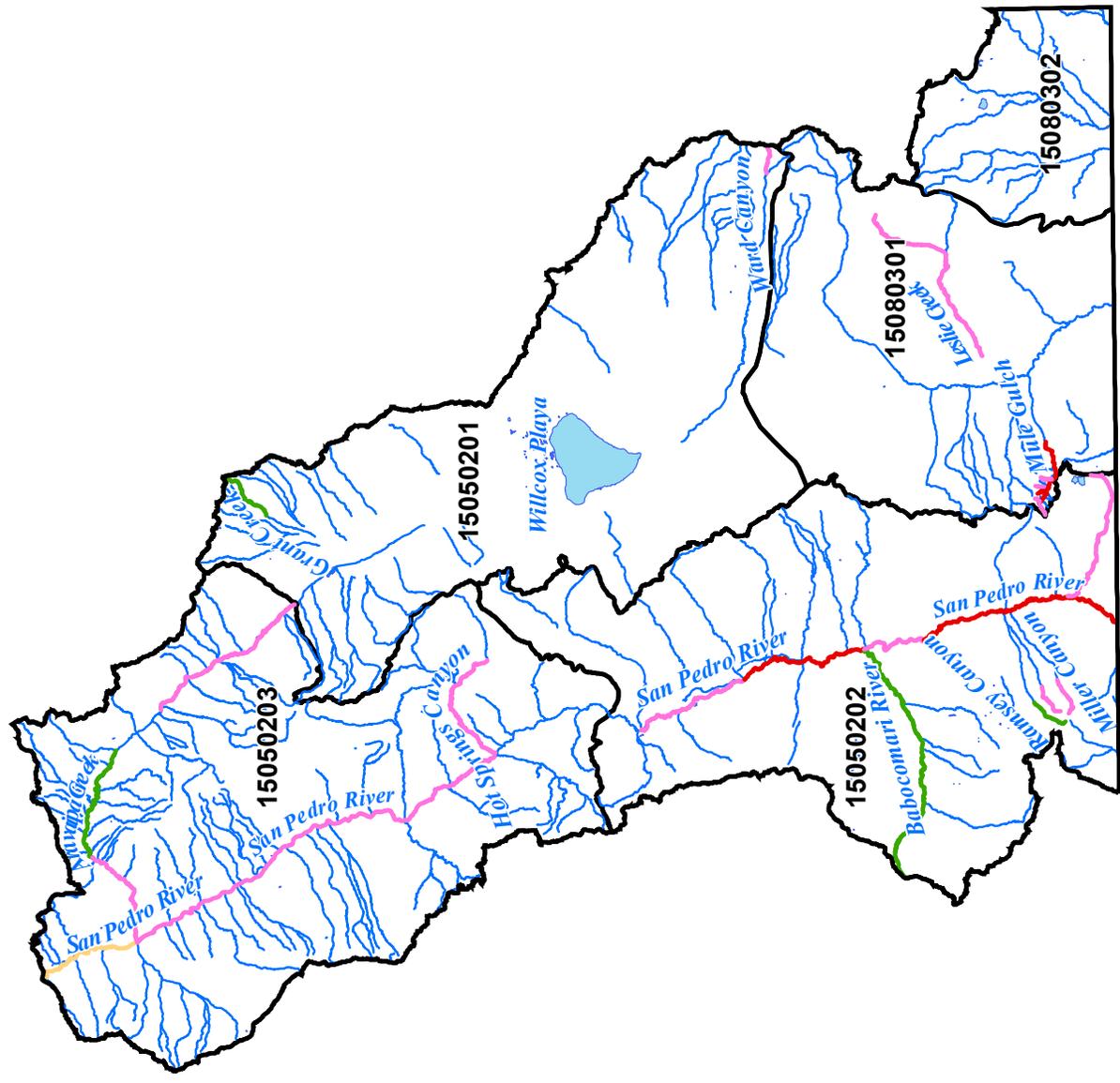
These drainage areas and the surface waters assessed as “attaining” or “impaired” are illustrated on the following watershed map. Methods used to complete these assessments are described in the “Surface Water Assessment Methods and Technical Support” document.

# San Pedro Watershed

- Legend**
- Towns
  - ~ Streams
  - Highways
  - ☪ Lakes
  - ▭ HUC Watershed Boundaries
- Land Ownership**
- Federal
  - Private
  - State/County/Municipal
  - Tribal



# San Pedro / Willcox Playa / Rio Yaqui Watershed 2012/2014 Assessment for Streams and Lakes



<p><b>Legend</b></p> <p><b>Assessed Lakes - 2012</b></p> <p><b>ADEQ and EPA Listings</b></p> <ul style="list-style-type: none"> <li>Attaining</li> <li>Inconclusive</li> <li>Not Attaining</li> <li>EPA Impaired</li> <li>Impaired</li> </ul> <p>HUC Watershed Boundaries</p> <p><b>Assessed Streams - 2012</b></p> <p><b>ADEQ and EPA Listings</b></p> <ul style="list-style-type: none"> <li>Attaining</li> <li>Inconclusive</li> <li>Not Attaining</li> <li>EPA Impaired</li> <li>Impaired</li> </ul> <p>Lakes</p> <p>Streams</p>		<p>See Individual HUC Printouts for Waters not Labeled</p> <p>N</p>
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FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive  
 A&Ww - Inconclusive

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	7/21/2008	5.54 mg/L	A&Ww is inconclusive with 2 exceedances in 4 samples (binomial).
		8/18/2010	4.94 mg/L	
<i>E. coli</i>	235 cfu/100 ml, SSM	7/16/2008	1120 cfu/100 mL	FBC is inconclusive with 1 exceedance in 2 samples. One exceedance (7/16) excluded as analyzed past holding time. All single sample exceedances were storm related.
		7/21/2008	313 cfu/100 mL	
Lead	15 ug/L	7/16/2008	21.4 ug/L	FBC is inconclusive with 1 exceedance in 1 sample (binomial).
SSC	80 mg/L	7/11/2008	1104 mg/L	A&Ww is inconclusive. All single sample exceedances except 8/18/10 occurred within 48 hours of storm events and were excluded. Not enough samples left to calculate a median.
		7/16/2008	819 mg/L	
		7/21/2008	15288 mg/L	
		8/18/2010	1052 mg/L	

## Monitoring Summary

Sampling period: 5/30/2007 - 8/18/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT HIGHWAY 77 BRIDGE	SPARA000.28	105601	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(1-7) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, nickel, selenium, silver, zinc	(1) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-5) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen, <i>E. coli</i> , lead, SSC
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), copper, lead
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , copper, lead
Lab Detection Limits Not Low Enough	Selenium

Priority	Monitoring Recommendations
Medium	Collect more <i>E. coli</i> , lead, dissolved oxygen, and SSC samples due to exceedances. All core parameters need seasonal coverage and many need sample number coverage as well.

# ARAVAIPA CREEK

Stowe Gulch - end Aravaipa C  
15050203-004B  
15.5 Miles  
Outstanding Arizona Water

**Category 2**  
Attaining some uses

FC - Attaining • FBC - Attaining • AGL - Attaining  
A&Ww - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	5/14/2009	5.59 mg/L	A&Ww is inconclusive with 1 exceedance in 4 samples (binomial).

## Monitoring Summary

Sampling period: 8/20/2008 - 6/24/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT NATURE CONSERVANCY NEAR KLONDYKE	SPARA026.35	106882	ADEQ	Ambient
AT HELLS HALF ACRE CANYON	SPARA013.78	100716	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(6-7) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, zinc, selenium	(7) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(7) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Lead (dissolved), mercury (dissolved), nickel (dissolved), selenium

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples to determine A&W attainment status. Good core parameter coverage.

# BABOCOMARI RIVER

Banning Creek - San Pedro River  
15050202-004  
32.7 Miles

**Category 2**

Attaining some uses

FC - Attaining • FBC - Attaining • AGL - Attaining  
A&Ww - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
<i>E. coli</i>	235 cfu/100 mL, SSM	8/17/2006	1414 cfu/100 mL	FBC is attaining. 1 single sample exceedance outside the analysis window.
SSC	80 mg/L	8/7/2006	326 mg/L	A&Ww is inconclusive. The exceedance on 8/17 occurred during a storm event and was excluded from assessment. Not enough samples left to calculate a median.
		8/17/2006	3900 mg/L	

## Monitoring Summary

Sampling period: 8/7/2006 - 11/4/2008

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
MOUTH NR FAIRBANK TOWNSITE ON HWY 82	SPBBR000.06	103548	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(1-2) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-21) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	SSC
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Antimony (dissolved), arsenic, arsenic (dissolved), cadmium (dissolved), copper (dissolved), lead, lead (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect SSC samples to investigate exceedances. Good core parameter coverage.

# BREWERY GULCH

Headwaters - Mule Gulch  
15080301-337  
1.1 Miles

**Category 5**

Impaired

## Copper (EPA 2004 and ADEQ 2006/08)

PBC - Inconclusive • A&We - Impaired

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper <sup>d</sup>	6.8 ug/L <sup>acute</sup> @ 27 mg/L hardness	3/23/2007	13 ug/L	A&We remains impaired. No new data collected in the last 3 years of monitoring.
	13.2 ug/L <sup>acute</sup> @ 55 mg/L hardness	7/20/2007	99 ug/L	
	36.2 ug/L <sup>acute</sup> @ 160 mg/L hardness	7/31/2007	49 ug/L	
Lead	15 ug/L	3/23/2007	36 ug/L	PBC is inconclusive with 4 exceedances in 5 samples (binomial).
		7/20/2007	30 ug/L	
		7/31/2007	94.5 ug/L	
		8/9/2007 1	18 ug/L	
pH	6.5 SU	7/20/2007	5.82 SU	A&We and PBC are inconclusive with 1 exceedance in 5 samples (binomial).

## Monitoring Summary

Sampling period: 3/23/2007 - 8/9/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT OLD BISBEE STORM DRAIN TO MULE GULCH	SPBRG000.03	103441	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(10) Cadmium, copper, lead, zinc	(0) None	(2-11) pH

# Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	pH, lead
Missing Core Parameters	Dissolved oxygen, pH
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	All core parameters need seasonal distribution coverage, pH & <i>E. coli</i> need sample number coverage as well (at least 3 samples).

Impairment Discussion
Remains impaired for copper (EPA 2004 & ADEQ 2006/8). Reach is included with the Mule Gulch TMDL.

# CARR CANYON CREEK

Headwaters - Tributary at 31  
15050202-406A  
3.8 Miles

**Category 3**

Inconclusive

AGL - Inconclusive • A&Wc - Inconclusive  
FBC - Inconclusive • FC - Inconclusive

## No Exceedances

## Monitoring Summary

Sampling period: 12/17/2008 - 7/10/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR HEADQUARTERS	SPCRC013.37	100428	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(2) Dissolved oxygen, pH, total dissolved solids, turbidity

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	pH, copper, lead, zinc (dissolved), dissolved oxygen, <i>E. coli</i> , cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	pH, copper, lead, zinc (dissolved), dissolved oxygen, <i>E. coli</i> , cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	All core parameters need seasonal distribution and sample number coverage as well (at least 3 samples representing 3 seasons)

# DODSON WASH

Headwaters - Rattlesnake Canyon  
15050203-006  
20.5 Miles

**Category 3**  
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive  
A&Ww - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Selenium	2 ug/L	7/22/2010	18.1 ug/L	A&Ww chronic is attaining. These exceedances only represent acute conditions. Note: Actual dates of flows are unknown.
		8/12/2010	30.8 ug/L	

## Monitoring Summary

Sampling period: 5/30/2007 - 8/12/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE SAN PEDRO RIVER	SPDDW000.13	105623	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(2) Selenium	(0) None	(0) None

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , copper, lead
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , copper, lead
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	All core parameters need sample number and seasonal distribution coverage.

# DUBACHER CANYON

Headwaters - Mule Gulch  
15080301-075  
1.0 Miles

**Category 3**

Inconclusive

PBC - Inconclusive • A&We - Inconclusive

Use Support

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper <sup>d</sup>	25.4 ug/L	7/31/2007	680 ug/L	A&We is inconclusive. Exceedances attributed to natural conditions.
		8/9/2007	440 ug/L	
pH	6.5 SU	7/31/2007	3.7 SU	A&We and PBC are inconclusive with 2 exceedances in 2 samples (binomial).
		8/9/2007	3.44 SU	

## Monitoring Summary

Sampling period: 7/31/2007 - 8/9/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE MINE AREA	SPDBC000.42	102923	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(2) Cadmium, copper, lead, zinc	(0) None	(1-2) pH

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	pH
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Conduct follow-up monitoring once the Mule Gulch TMDL and site specific copper standards are established. Collect at least 3 of each core parameter to represent 3 seasons of year.



# GRANT CREEK

Headwaters - Tributary at 323809 / 1095635  
15050201-033A  
6.8 Miles

## Category 2

Attaining some uses

DWS - Attaining • FC - Attaining • FBC - Attaining  
AGL - Attaining • A&Wc - Inconclusive

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	6/25/2009	IBI 40	A&Wc is inconclusive. Please see Appendix G for a discussion of the application of the Biocriteria water quality standard.

## Monitoring Summary

Sampling period: 10/16/2008 - 6/25/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW POST CREEK	SPGRA007.71	100561	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, zinc, selenium	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3-4) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids, biocriteria

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), copper (dissolved)
Missing Seasonal Distribution	Zinc (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), zinc (dissolved), selenium

Priority	Monitoring Recommendations
High	Reassess biocriteria when Implementation Procedures are adopted. Dissolved copper and zinc need sample and seasonal distribution coverage to complete core parameter coverage.

# GREENBUSH DRAW

Tributary at 312156 / 1100214 - Tributary at 312257 / 1100417  
 15050202-425  
 11.5 Miles

**Category 3**  
 Inconclusive

## PBC - Inconclusive • A&We - Inconclusive

# Use Support

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
<i>E. coli</i>	576 cfu/100 mL, SSM	7/27/2006	691 cfu/100 mL	PBC is inconclusive with 1 exceedance in 1 sample. Note: This exceedance is storm-related.
Lead	15 ug/L	7/27/2006	110 ug/L	PBC is inconclusive with 1 exceedance in 1 sample (binomial).

### Monitoring Summary

Sampling period: 7/27/2006 - 7/27/2006

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT HWY 92	SPGBD3.81	103546	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(1) Ammonia, nitrate, nitrite, nitrogen, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, <i>E. coli</i> , pH, SSC

### Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	<i>E. coli</i> , lead
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	Lead (dissolved)

Priority	Monitoring Recommendations
Medium	Collect more lead and <i>E. coli</i> samples to ascertain attainment. All core parameters need sample and seasonal distribution coverage.

# HOT SPRINGS CANYON

Headwaters - San Pedro River  
15050203-013  
25.9 Miles

Category 3

Inconclusive

San Pedro

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive  
AGL - Inconclusive • A&Ww - Inconclusive

## No Exceedances

## Monitoring Summary

Sampling period: 11/12/2008 - 5/11/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW WILDCAT CANYON	SPHSC010.67	100574	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(3-4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , copper, lead
Lab Detection Limits Not Low Enough	Lead (dissolved), selenium

Priority	Monitoring Recommendations
Low	All core parameters need seasonal distribution coverage, dissolved cadmium and copper need sample number coverage as well.



# LESLIE CREEK

Headwaters - Whitewater Draw  
15080301-007  
24.5 Miles

## Category 3

Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive  
A&Ww - Inconclusive



### No Exceedances

## Monitoring Summary

Sampling period: 6/3/2008

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT LESLIE CANYON NATL WILDLIFE REFUGE	SPLES012.75	101500	USGS	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(1) Nitrate, nitrite, nitrite/nitrate, nitrogen, phosphate, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, pH, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), copper, <i>E. coli</i>
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), copper, <i>E. coli</i>
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Not enough data to assess. Collect at least 3 of each core parameter to reflect 3 seasons of year.



# LOCKLIN CANYON

Headwaters - Mule Gulch  
15080301-345  
1.0 Miles

## Category 3

Inconclusive

# Use Support

PBC - Inconclusive • A&We - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Lead	15 ug/L	7/20/2007	39 ug/L	PBC is inconclusive with 1 exceedance in 3 samples (binomial).
pH	6.5 SU	7/20/2007	6.28 SU	A&We and PBC are inconclusive with 1 exceedance in 3 samples (binomial).

## Monitoring Summary

Sampling period: 7/20/2007 - 7/31/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
LOCKLIN AVE CANYON	SPLKC000.29	103437	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Cadmium, copper, lead, zinc	(0) None	(1-3) pH

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	pH, lead
Missing Core Parameters	Dissolved oxygen, pH
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	Copper (dissolved)

Priority	Monitoring Recommendations
Low	Collect more lead and pH samples to ascertain attainment status. Copper needs lower detection limit. Many core parameters need seasonal distribution and/or sample number coverage.

# MILLER CANYON

Headwaters - Broken Arrow Ranch  
15050202-409A  
4.3 Miles

**Category 3**  
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive  
AGL - Inconclusive • A&Wc - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	4/29/2009	37	A&Wc is inconclusive. Please see Appendix G for a discussion of the application of the Biocriteria water quality standard.

## Monitoring Summary

Sampling period: 8/21/2008 - 4/29/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
SOUTH OF CARR PEAK	SPMLC013.56	106505	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, zinc, selenium	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-3) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids, biocriteria

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Dissolved oxygen
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , nitrate, fluoride, arsenic, copper, lead
Lab Detection Limits Not Low Enough	Cadmium (dissolved), lead (dissolved), mercury (dissolved), selenium

Priority	Monitoring Recommendations
High	All core parameters need seasonal distribution, and dissolved oxygen needs sample number coverage.

# MORALES CREEK

Headwaters - Mule Gulch  
15080301-331  
2.0 Miles

## Category 3

Inconclusive

A&We - Inconclusive • PBC - Inconclusive

Use Support

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper <sup>d</sup>	8.0 ug/L <sup>acute</sup> @ 32 mg/L hardness	7/30/2007	15 ug/L	A&We is attaining. One acute exceedance outside the analysis window.

## Monitoring Summary

Sampling period: 3/23/2007 - 7/31/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT HIGHLAND PARK ROAD	SPMOR000.27	102937	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(2) Cadmium, copper, lead, zinc	(0) None	(2) pH

### Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Many core parameters need seasonal distribution and/or sample number coverage.

# MULE GULCH

Bisbee WWTP Outfall - Highway 80 bridge  
15080301-090C  
3.8 Miles

**Category 5**  
Impaired

## Copper (1990)

# IMPAIRMENT STATUS

A&Wedw - Impaired • PBC - Impaired

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper	1300 ug/L	3/27/2007	3800 ug/L	PBC remains impaired with 2 exceedances in 4 samples (binomial).
		7/20/2007	2800 ug/L	
Copper <sup>d</sup>	22.8 ug/L <sup>acute</sup> @ 175 mg/L hardness	3/27/2007	28 ug/L	A&Wedw remains impaired with 3 acute exceedances in the assessment period.
	22.2 ug/L <sup>acute</sup> @ 170 mg/L hardness	7/31/2007	60 ug/L	
	33.1 ug/L <sup>acute</sup> @ 260 mg/L hardness	8/9/2007	89 ug/L	
Lead	15 ug/L	3/27/2007	440 ug/L	PBC is inconclusive with 2 exceedances in 4 samples (binomial).
		7/20/2007	350 ug/L	

## Monitoring Summary

Sampling period: 3/27/2007 - 8/9/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW ELFRIDA CUTOFF	SPMLG007.81	100225	ADEQ	TMDL
AT MG-200 B NEW	SPMLG010.61	102491	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(5) Cadmium, copper, lead, zinc	(0) None	(1-5) pH

# Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Lead
Missing Core Parameters	Dissolved oxygen, pH, <i>E. coli</i>
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i>
Lab Detection Limits Not Low Enough	Lead (dissolved)

Priority	Monitoring Recommendations
Medium	Many core parameters need seasonal distribution and/or sample number coverage as well (at least 3 samples representing 3 seasons).

Impairment Discussion
Remains impaired for dissolved copper (1990). As a result of Freeport Minerals Corporation projects pH, dissolved cadmium and zinc have been delisted. See Appendix E for additional information.

# MULE GULCH

Headwaters - Lavender Pit  
15080301-090A  
3.0 Miles

**Category 5**  
Impaired

## Copper (1990)

# IMPAIRMENT STATUS

FC - Inconclusive • PBC - Inconclusive • A&Ww - Impaired

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper <sup>d</sup>	13.2 ug/L <sup>acute</sup> @ 98 mg/L hardness	7/27/2007	14 ug/L	A&Ww remains impaired with 2 acute exceedances.
	13.1 ug/L <sup>acute</sup> @ 97 mg/L hardness	7/30/2007	15 ug/L	
Lead	15 ug/L	7/30/2007	20.8 ug/L	PBC is inconclusive. Only 1 exceedance in 3 samples (binomial).

## Monitoring Summary

Sampling period: 7/27/2007 - 8/9/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT INN AT CASTLE ROCK	SPMLG014.59	100506	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Cadmium, copper, lead, zinc	(0) None	(1-3) pH

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Dissolved oxygen, pH, <i>E. coli</i>
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, <i>E. coli</i> , cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	Lead (dissolved)

Priority	Monitoring Recommendations
Medium	Collect at least 3 of each core parameter to represent 3 seasons of year.

Impairment Discussion
Remains impaired for copper (1990).

# MULE GULCH

Lavender Pit - Bisbee WWTP Discharge  
15080301-090B  
0.8 Miles

**Category 5**  
Impaired

## Copper (1990)

# IMPAIRMENT STATUS

PBC - Inconclusive • A&We - Impaired

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper <sup>d</sup>	22.4 ug/L <sup>acute</sup> @ 96 mg/L hardness	3/23/2007	52 ug/L	A&We remains impaired. No data collected in the last 3 years of monitoring.
	25.4 ug/L <sup>acute</sup> @ 110 mg/L hardness	7/31/2007	39 ug/L	
Lead	15 ug/L	3/23/2007	18 ug/L	PBC is inconclusive with 3 exceedances in 4 samples (binomial).
		7/20/2007	130 ug/L	
		7/31/2007	35 ug/L	

## Monitoring Summary

Sampling period: 3/23/2007 - 8/9/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MG 150	SPMLG012.79	102490	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Cadmium, copper, lead, zinc	(0) None	(1-4) pH

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Lead
Missing Core Parameters	Dissolved oxygen, pH
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Many core parameters need seasonal distribution and/or sample number coverage (at least 3 samples representing 3 seasons).

Impairment Discussion
Remains impaired for dissolved copper (1990). As a result of Freeport Minerals Corporation projects, pH has been delisted. See Appendix E for additional information

# RAMSEY CANYON

Headwaters - Forest Road 110  
15050202-404A  
4.4 Miles

**Category 2**  
Attaining some uses

FC - Attaining • FBC - Attaining • AGI - Attaining  
AGL - Attaining • A&Wc - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	4/28/2009	6.38 mg/L	A&Wc is inconclusive with 1 exceedance in 6 samples (binomial).
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	4/28/2009	IBI 31	A&Wc is inconclusive. Please see Appendix G for a discussion of the application of the Biocriteria water quality standard.

## Monitoring Summary

Sampling period: 8/17/2006 - 4/28/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT BOX CANYON	SPRMC011.11	101060	ADEQ	Ambient
ABOVE NATURE CONSERVANCY	SPRMC010.62	104499	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(3-7) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(2-6) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(4-7) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids, biocriteria

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Antimony (dissolved), arsenic, arsenic (dissolved), cadmium (dissolved), copper (dissolved), lead, lead (dissolved), mercury (dissolved), selenium

Priority	Monitoring Recommendations
High	Collect more dissolved oxygen to ascertain attainment status. Good core parameter coverage.

# SAN PEDRO RIVER

Aravaipa Creek - Gila River  
15050203-001  
13.3 Miles

Category 4A

I Not Attaining

San Pedro

## IMPAIRMENT STATUS

### E. coli (2004)

FC - Inconclusive • FBC - Impaired • AGL - Inconclusive  
A&Ww - Inconclusive

### Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L (FBC) 80 ug/L (FC)	8/19/2008	160 ug/L	FBC and FC are inconclusive with 1 exceedance in 7 samples (binomial).
Chromium	100 ug/L	8/19/2008	150 ug/L	FBC is inconclusive with 1 exceedance in 6 samples (binomial).
Copper	500 ug/L (AGL) 1300 ug/L (FBC)	8/19/2008	2300 ug/L	AGL and FBC are inconclusive with 1 exceedance in 7 samples (binomial).
Dissolved oxygen	6.0 mg/L	7/21/2008	5.16 mg/L	A&Ww is inconclusive with 4 exceedances in 14 samples (binomial).
		7/22/2010	0.75 mg/L	
		7/27/2010	3.16 mg/L	
		8/18/2010	4.17 mg/L	
E. coli	235 cfu/100 mL, SSM	7/16/2008	961 cfu/100 mL	FBC remains impaired with 7 exceedances in 15 samples. Field notes indicate many exceedances were storm related.
		7/21/2008	36294 cfu/100 mL	
		7/31/2008	921 cfu/100 mL	
		8/19/2008	5900 cfu/100 mL	
		7/22/2010	36294 cfu/100 mL	
		7/27/2010	41060 cfu/100 mL	
		8/18/2010	129970 cfu/100 mL	
	126 cfu/100 mL Geometric mean	7/16/2008 -7/31/2008	4433 cfu/100 mL	
Lead	100 ug/L (AGL) 15 ug/L (FBC)	7/16/2008	34.6 ug/L	AGL and FBC are inconclusive with 1 and 2 exceedance respectively in 7 samples (binomial).
		8/19/2008	610 ug/L	

Parameter	Applicable Standard	Date	Result	Designated use support comments
SSC	80 mg/L	7/16/2008	1959 mg/L	A&Ww is inconclusive with 1 median exceedance. 7/08 & 7/10 samples excluded due to field notes indicating rain within 48 hours of sampling.
		7/21/2008	67319 mg/L	
		7/31/2008	1610 mg/L	
		8/19/2008	13200 mg/L	
		12/17/2008	206 mg/L	
		7/22/2010	91920 mg/L	
		7/27/2010	56091 mg/L	
		8/18/2010	66261.5 mg/L	
Selenium	2 ug/L (A&Ww chronic) 50 ug/L (AGL)	7/22/2010	158 ug/L	A&Ww chronic is attaining. All exceedance occurred under acute conditions. AGL is attaining with 2 exceedances in 13 samples (binomial).
		7/27/2010	64.7 ug/L	
		8/18/2010	36.6 ug/L	

## Monitoring Summary

Sampling period: 5/29/2007 - 8/18/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ON SRP ADOBE PROPERTY	SPSPR012.17	105598	ADEQ	TMDL
ABOVE ROACH WASH	SPSPR003.85	101348	ADEQ	TMDL
ABOVE CONFLUENCE WITH ROMERO WASH	SPSPR001.54	106563	ADEQ	TMDL
ABOVE DODSON WASH	SPSPR006.75	106483	ADEQ	Ambient, TMDL
ABOVE CONFLUENCE WITH SWINGLE WASH	SPSPR006.27	108482	ADEQ	TMDL
ABOVE CONFLUENCE WITH SWINGLE WASH	SPSPR006.27	106322	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(3-21) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, zinc	(6-8) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(14-21) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Copper, lead, dissolved oxygen, SSC, arsenic, chromium
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Selenium

Priority	Monitoring Recommendations
High	Collect <i>E. coli</i> samples to support TMDL development. Collect sediment, arsenic, chromium, copper, lead and DO due to exceedances. Good core parameter coverage.

Impairment Discussion
Remains impaired for <i>E. coli</i> (2004) with new <i>E. coli</i> exceedances in this assessment period. <i>E. coli</i> TMDL completed in 2013. Chronic selenium impairment de-listed in 2010.

*E. coli* (2004)  
**IMPAIRMENT STATUS**

FC - Attaining • FBC - Impaired • AGL - Inconclusive  
 A&Ww - Inconclusive

**Exceedances**

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L	7/27/2006	79 ug/L	FBC is inconclusive with 2 exceedances in 3 samples (binomial).
		8/17/2006	63 ug/L	
Copper	500 ug/L	8/17/2006	580 ug/L	AGL is inconclusive with 1 exceedance in 6 samples (binomial).
Dissolved oxygen	6.0 mg/L	8/30/2006	3.13 mg/L	A&Ww is inconclusive with 2 exceedances in 9 samples (binomial).
		4/12/2007	4.21 mg/L	
<i>E. coli</i>	235 cfu/100 mL, SSM	7/27/2006	2420 cfu/100 mL	FBC remains impaired with 1 single sample exceedance in the last 3 years of monitoring.
		8/17/2006	2420 cfu/100 mL	
		4/12/2007	308 cfu/100 mL	
		9/9/2010	461 cfu/100 mL	
Lead	100 ug/L (AGL) 15 ug/L (FBC)	7/27/2006	220 ug/L	AGL & FBC are inconclusive with 2 exceedances in 5 and 3 samples respectively (binomial).
		8/17/2006	240 ug/L	
SSC	80 mg/L	7/27/2006	13380 mg/L	A&Ww is inconclusive - Exceedances on 7/27, 8/7, and 8/17 occurred during storm events and were excluded from assessment. Not enough samples left calculate a median.
		8/7/2006	695 mg/L	
		8/17/2006	5100 mg/L	
		8/30/2006	282 mg/L	
		12/7/2006	173 mg/L	
Selenium	2 ug/L	7/13/2006	20 ug/L	A&Ww chronic is inconclusive. One of the exceedances is very close to the detection limit (2 ug/L). They are also storm related and may not represent chronic conditions.
		8/17/2006	2.1 ug/L	

# Monitoring Summary

Sampling period: 7/13/2006 - 9/9/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NORTH OF HIGHWAY 80	SPSPR101.25	100276	ADEQ	TMDL
AT FAIRBANKS, AZ	SPSPR117.97	100287	ADEQ	TMDL
AT ESCALANTE CROSS-ING	SPSPR105.49	103674	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(13-15) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3-37) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3-35) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Arsenic, copper, dissolved oxygen, selenium, SSC, lead
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Antimony (dissolved), arsenic, arsenic (dissolved), cadmium (dissolved), copper (dissolved), lead, lead (dissolved), selenium

Priority	Monitoring Recommendations
High	Collect more <i>E. coli</i> samples in support TMDL development. Collect arsenic, copper, lead, dissolved oxygen, SSC, and selenium samples to investigate exceedances. Good core parameter coverage.

Impairment Discussion
<i>Remains impaired for E. coli (2004).</i>

# SAN PEDRO RIVER

Buehman Wash - Peppersauce Wash  
15050203-008  
16.4 Miles

**Category 3**  
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive  
A&Ww - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L (FBC) 80 ug/L (FC)	8/19/2008	190 ug/L	FBC and FC are inconclusive with 1 exceedance in 4 samples (binomial).
Chromium	100 ug/L	8/19/2008	160 ug/L	FBC is inconclusive with 1 exceedance in 4 samples (binomial).
Copper	500 ug/L (AGL) 1300 ug/L (FBC)	8/19/2008	1700 ug/L	AGL and FBC are inconclusive with 1 exceedance in 4 samples (binomial).
Dissolved oxygen	6.0 mg/L	8/19/2008	5.03 mg/L	A&Ww is inconclusive with 1 exceedance in 3 samples (binomial).
<i>E. coli</i>	235 cfu/100 mL, SSM	8/19/2008	4900 cfu/100 mL	FBC is inconclusive with 1 exceedance in the last 3 years of monitoring. Note: This exceedance is storm related.
Lead	100 ug/L (AGL) 15 ug/L (FBC)	8/19/2008	740 ug/L	AGL and FBC are inconclusive with 1 exceedance in 4 samples (binomial).
SSC	80 mg/L	8/19/2008	13600 mg/L	A&Ww is attaining. This exceedance occurred within 48 hours of a storm event.
Selenium	2 ug/L	8/19/2008	12 ug/L	A&Ww chronic is inconclusive with 1 exceedance during the assessment period. Note: Lab detection limits were above the A&W chronic criterion for all other samples.

## Monitoring Summary

Sampling period: 8/19/2008 - 6/9/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT VALLEY ROAD, NEAR SAN MANUEL	SPSPR035.01	100285	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(4) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

# Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Copper, lead, dissolved oxygen, selenium, arsenic, chromium, <i>E. coli</i>
Missing Core Parameters	None
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , copper, lead
Lab Detection Limits Not Low Enough	Arsenic (dissolved), nickel (dissolved), selenium

Priority	Monitoring Recommendations
Medium	Collect arsenic, chromium, copper, lead, selenium, dissolved oxygen, and <i>E. coli</i> samples due to exceedances. All core parameters need seasonal distribution.

# SAN PEDRO RIVER

Charleston - Walnut Gulch  
15050202-006  
8.9 Miles

**Category 3**  
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive  
AGL - Inconclusive • A&Ww - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
<i>E. coli</i>	235 cfu/100 ml, SSM	8/17/2006	2420 cfu/100 mL	FBC is attaining. 1 single sample exceedance outside the analysis window. Note: This exceedance occurred during a flood flow.
Lead	15 ug/L (FBC) 100 ug/L (AGL)	8/17/2006	120 ug/L	AGL & FBC are inconclusive with 1 exceedance in 2 samples (binomial).
SSC	80 mg/L	8/17/2006	2800 mg/L	A&W is attaining. This exceedance occurred during a storm flow and was excluded from assessment.
Bottom deposits	< 50%	12/18/2008	52%	A&Ww is inconclusive. Please see Appendix H for a discussion of the application of the bottom deposits water quality standard.
		5/28/2009	51%	

## Monitoring Summary

Sampling period: 8/17/2006 - 5/28/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE BOQUILLAS RANCH	SPSPR120.47	104005	ADEQ	TMDL
BELOW GRAVEYARD GULCH	SPSPR126.35	100653	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(2) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(0) None	(2-4) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids, bottom deposits

# Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Lead
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , boron, manganese, copper, lead
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , boron, manganese, copper, lead
Lab Detection Limits Not Low Enough	Antimony (dissolved), arsenic (dissolved), beryllium (dissolved), lead, lead (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
High	Collect more lead to determine attainment status. All core parameters except pH need sample and seasonal coverage.

# SAN PEDRO RIVER

Dragoon Wash - Tres Alomos Wash  
15050202-002  
15.4 Miles

**Category 3**  
Inconclusive

AGI - Inconclusive • AGL - Inconclusive  
A&Ww - Inconclusive • FBC - Inconclusive • FC - Inconclusive

## No Exceedances

## Monitoring Summary

Sampling period: 11/15/2006 - 11/19/2008

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
APACHE NITROGEN CONTAMINATION AREA	SPSPR100.16	103662	Apache Nitrogen Products, Inc	Permit monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(9) Nitrate	(0) None

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	pH, boron, manganese, <i>E. coli</i> , copper, lead, zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	pH, boron, manganese, <i>E. coli</i> , copper, lead, zinc (dissolved), dissolved oxygen, cadmium (dissolved)
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	All core parameters need seasonal distribution and sample number coverage as well (at least 3 samples representing 3 seasons).

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive  
 AGL - Inconclusive • A&Ww - Inconclusive

**No Exceedances**

**M**onitoring Summary  
 Sampling period: 2/9/2009 - 2/9/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT CASCABEL, AZ	SPSPR059.21	100289	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, zinc, selenium	(1) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

**Data Gaps and Monitoring Needs**

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , boron, manganese, copper, lead
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , boron, manganese, copper
Lab Detection Limits Not Low Enough	Selenium

Priority	Monitoring Recommendations
Low	Not enough data to assess. All core parameters need sample number and seasonal distribution coverage.

*E. coli and copper (2010)*

IMPAIRMENT STATUS

FC - Attaining • FBC - Impaired • AGI - Attaining  
 AGL - Inconclusive • A&Ww - Impaired

**Exceedances**

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L (FBC) 80 ug/L (FC)	7/27/2006	110 ug/L	FBC and FC are inconclusive with 1 exceedance in 2 and 5 samples respectively (binomial).
Copper	500 ug/L (AGL) 1300 ug/L (FBC)	7/5/2006	555 ug/L	AGL and FBC are inconclusive with 2 exceedances and 1 exceedance respectively in 6 samples (binomial).
		7/27/2006	3152 ug/L	
Copper <sup>d</sup>	49.6 ug/L <sup>acute</sup> @ 514 mg/L hardness	7/5/2006	180 ug/L	A&Ww acute remains impaired. No new samples collected since last assessment. A&Ww chronic is attaining. One exceedance occurred during a storm event and does not represent chronic conditions.
	27.0 ug/L <sup>acute</sup> @ 210 mg/L hardness 29.3 ug/L <sup>chronic</sup> @ 400 mg/L hardness	7/26/2006	37 ug/L (max) 32 ug/L (median)	
Dissolved oxygen	6.0 mg/L	7/27/2006	4.4 mg/L	A&Ww is attaining with 2 exceedances in 13 samples (binomial).
		8/30/2006	5.8 mg/L	
<i>E. coli</i>	235 cfu/100 mL, SSM	7/27/2006	2420 cfu/100 mL	FBC remains impaired with 2 exceedances. No new data in this assessment period.
		8/17/2006	2420 cfu/100 mL	
Lead	100 ug/L (AGL) 15 ug/L (FBC)	7/27/2006	270 ug/L	AGL and FBC are inconclusive with 2 exceedances in 5 and 3 samples respectively (binomial).
		8/17/2006	130 ug/L	
SSC	80 mg/L	7/5/2006	4126 mg/L	A&Ww is inconclusive. All exceedances except 8/7/08 and 7/31/08 occurred during storm events and were excluded from assessment. Not enough samples left to determine median values.
		7/27/2006	10610 mg/L	
		8/7/2006	208 mg/L	
		8/17/2006	2160 mg/L	
		7/31/2008	188 mg/L	

# Monitoring Summary

Sampling period: 7/5/2006 - 11/5/2008

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT CHARLESTON, AZ USGS 09471000	SPSPR127.50	100291	ADEQ, USGS	TMDL, Ambient
AT PALOMINAS, AZ USGS 09470500	SPSPR150.09	100275	ADEQ, USGS	TMDL, Ambient
NEAR HEREFORD ROAD, AZ USGS	SPSPR144.76	101497	ADEQ, USGS	TMDL, Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(13-14) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(2-12) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphate, phosphorus, total Kjeldahl nitrogen	(2-16) Dissolved oxygen, <i>E. coli</i> , pH, SSC, simazine, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Copper, SSC, arsenic, lead
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Antimony (dissolved), arsenic, arsenic (dissolved), cadmium (dissolved), copper (dissolved), lead, lead (dissolved), mercury (dissolved), diphthalate

Priority	Monitoring Recommendations
High	Collect additional <i>E. coli</i> and dissolved copper samples in support of TMDL development. Collect arsenic, copper, lead, and suspended sediment samples to ascertain attainment. Good core parameter coverage but many parameters have detection limit issues.

Impairment Discussion
<i>Remains impaired for E. coli and dissolved copper (2010),</i>

**SAN PEDRO RIVER**Peppersauce Wash - Aravaipa  
15050203-003  
21.3 Miles**Category 3**

Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive  
A&Ww - Inconclusive**Exceedances**

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L	7/21/2008	56 ug/L	FBC is inconclusive with 1 exceedance in 3 samples (binomial).
Chromium	100 ug/L	7/21/2008	110 ug/L	FBC is inconclusive with 1 exceedance in 3 samples (binomial).
Copper	500 ug/L (AGL) 1300 ug/L (FBC)	7/21/2008	2360 ug/L	AGL and FBC are inconclusive with 1 exceedance in 3 samples (binomial).
Dissolved oxygen	6.0 mg/L	7/21/2008	5.31 mg/L	A&Ww is inconclusive with 3 exceedances in 7 samples (binomial).
		7/22/2010	5.78 mg/L	
		8/18/2010	4.32 mg/L	
<i>E. coli</i>	235 cfu/100 mL, SSM	7/21/2008	36294 cfu/100 mL	FBC is inconclusive with only 1 non storm related single sample exceedance in 8 samples.
		7/22/2010	36294 cfu/100 mL	
		7/27/2010	30760 cfu/100 mL	
		8/18/2010	57940 cfu/100 mL	
Lead	100 ug/L (AGL) 15 ug/L (FBC)	7/21/2008	3580 ug/L	AGL and FBC are inconclusive with 1 exceedance in 3 samples (binomial).
Mercury <sup>d</sup>	0.010 ug/L	7/21/2008	0.0116 ug/L	A&Ww chronic is attaining. 1 exceedance occurred during a local storm event. This value does not represent chronic conditions.
SSC	80 mg/L	1/24/2008	90 mg/L	A&Ww is inconclusive. All single sample exceedances except 1/24/08 occurred within 48 hours of storm events and were excluded from median value determination. Not enough samples left to calculate a median.
		7/11/2008	14512 mg/L	
		7/21/2008	75468 mg/L	
		7/22/2010	11378 mg/L	
		7/27/2010	53859 mg/L	
		8/18/2010	85320 mg/L	
Selenium	50 ug/L (AGL) 2 ug/L (A&Ww chronic)	7/22/2010	22.3 ug/L	AGL is inconclusive with 1 exceedance in 9 samples (binomial). A&Ww chronic is attaining. All exceedance occurred under acute conditions.
		7/27/2010	34.6 ug/L	
		8/18/2010	53.35 ug/L	

# Monitoring Summary

Sampling period: 5/30/2007 - 8/18/2010

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT ARAVAIPA CREEK	SPSPR013.38	106164	ADEQ	TMDL
AT HIGHWAY 77 NEAR MAMMOTH	SPSPR022.15	105599	ADEQ	TMDL
ABOVE ARAVAIPA CREEK	SPSPR013.99	105600	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(1-10) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, zinc	(2-3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(4-9) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Copper, dissolved oxygen, arsenic, chromium, <i>E. coli</i> , lead, SSC, selenium
Missing Core Parameters	None
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), copper, lead
Lab Detection Limits Not Low Enough	Lead, selenium

Priority	Monitoring Recommendations
Medium	Collect arsenic, chromium, lead, dissolved oxygen, copper, <i>E. coli</i> , sediment, and selenium due to exceedances. Several core parameters need seasonal distribution coverage.

# UNNAMED TRIB TO WINWOOD CANYON

Headwater - Winwood Canyon  
15080301-342  
0.2 Miles

## Category 3

Inconclusive

# Use Support

PBC - Inconclusive • A&We - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Copper <sup>d</sup>	8.4 ug/L <sup>acute</sup> @ 34 mg/L hardness	7/31/2007	27 ug/L	A&We is inconclusive with 1 acute exceedance. No data in the last 3 years of monitoring.
Lead	15 ug/L	7/31/2007	16.8 ug/L	PBC is inconclusive with 1 exceedance in 1 sample (binomial).

## Monitoring Summary

Sampling period: 7/17/2007 - 8/5/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
FROM MURAL HILL ABOVE MINERALIZED ZONE	SPUWM000.01	102926	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Cadmium, copper, lead, zinc	(0) None	(1) pH

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Copper (dissolved), lead
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	Copper (dissolved)

Priority	Monitoring Recommendations
Low	Collect more lead and dissolved copper due to exceedances. Many core parameters need seasonal distribution and/or sample number coverage as well (at least 3 samples representing 3 seasons).

FC - Inconclusive • FBC - Inconclusive • A&Ww - Inconclusive

Use Support

**No Exceedances**

**M**onitoring Summary  
Sampling period: 6/3/2008

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
MID LAKE	SPTWP-USGS	101581	USGS	USGS Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(1) Nitrate, nitrite, nitrite/nitrate, nitrogen, phosphate, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, pH, total dissolved solids

**Data Gaps and Monitoring Needs**

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i>
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i>
Lab Detection Limits Not Low Enough	Ammonia

Priority	Monitoring Recommendations
Low	Not enough data to assess. All core parameters need sample number and seasonal distribution coverage.

# WARD CANYON

Headwaters - Turkey Creek  
15050201-433  
3.0 Miles

**Category 3**  
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive  
A&Wc - Inconclusive

## Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	9/8/2008	6.8 mg/L	A&Wc is attaining . Low dissolved oxygen due to low flow and groundwater upwelling.

## Monitoring Summary

Sampling period: 9/8/2008 - 3/10/2009

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW SAULSBURY CANYON	SPWRC000.09	102892	ADEQ	Ambient

Metal Samples	Nutrients & Related Samples	Other Samples
(3) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, zinc, selenium	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-3) Dissolved oxygen, <i>E. coli</i> , pH, SSC, total dissolved solids

## Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Dissolved oxygen
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), <i>E. coli</i> , copper, lead
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), zinc (dissolved), selenium

Priority	Monitoring Recommendations
Low	All core parameters need seasonal distribution and dissolved oxygen needs sample number coverage as well.

# WINWOOD CANYON

Headwaters - Mule Gulch  
15080301-340  
1.4 Miles

Category 3  
Inconclusive

A&We - Inconclusive • PBC - Inconclusive

Use Support

## No Exceedances

### Monitoring Summary

Sampling period: 7/31/2007 - 7/31/2007

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE AUTO SAMPLER TRIB	SPWNC000.70	106963	ADEQ	TMDL

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Copper, lead, zinc	(0) None	(1) pH

### Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved)
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Many core parameters need seasonal distribution and/or sample number coverage as well (at least 3 samples representing 3 seasons)