Verde Watershed

Watershed Description

This watershed is defined by the Verde River drainage that flows into the Salt River, including Big Chino Wash and its tributaries. This 6,624 square mile watershed has an approximate population of 153,000 people (2000 census), but is growing rapidly. Although this is only 3% of the state population, several communities are located in this watershed: Payson, Sedona, Cottonwood, Verde Valley, Prescott, and the southern outskirts of Flagstaff. Land ownership is 65% federal, 23% private, 10% state, and 2% tribal. Primary land uses are open range grazing, irrigated agriculture, recreation, forestry, and some mining.

Elevations range from more than 12,000 feet (above sea level) in the San Francisco Mountains to about 1,600 feet as the Verde River flows into the Salt River. The watershed is split between warmwater communities below 5,000 feet and coldwater communities above 5,000 feet where perennial waters exist.

Water Resources

The Verde Watershed receives slightly more precipitation than most watersheds in this state, with some areas receiving about 20 inches of rain and 3 inches of snow. Therefore, the Verde River and many of its tributaries are perennial waters.

An estimate of surface water resources in the Verde Watershed is provided in the following table. Waters on Tribal lands are not assessed by ADEQ; therefore, those statistics are shown separately.

Estimated Surface Water Resources in the Verde Watershed

	Perennial	Intermittent	Ephemeral
Stream miles	450	2,115	5,990
	Perennial	Non-perennial	
Lake acres	4,603	3,636	

Additional Surface Water Resources located on Tribal Land – Not Assessed

	Perennial	Intermittent	Ephemeral
Stream miles	15	5	230
	Perennial	Non-perennial	
Lake acres	6	0	

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

Assessments

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

15060201 Big Chino Wash Drainage Area
15060202 Upper Verde River Drainage Area
15060203 Lower Verde River Drainage Area

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.

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ALDER CREEK

Headwaters - Verde River
15060203-910
9.3 Miles

Category 1
Attaining all uses

Use Support

FC - Attaining • FBC - Attaining • AWW - Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	7/20/2010	3.3 mg/L	AWW is attaining. Low dissolved oxygen due to ponding/evaporation of stream.

Monitoring Summary

Sampling period: 7/20/2010 - 5/23/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR SUNFLOWER	VRALD007.86	107002	ADEQ	Ambient Monitoring

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, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Mercury (dissolved)

Priority	Monitoring Recommendations
Low	Good core parameter coverage.

ED_013248_00000558-00002

AMERICAN GULCH

Headwaters - No. Gila Co. WWTP
15060203-448A
2.551 Miles

Category 3
Inconclusive

Verde

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Draft

No Exceedances

Monitoring Summary

Sampling period: 3/30/2011 - 11/15/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ONE QUARTER MILE BELOW WWTP	VRAMG003.62	108582	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, boron, manganese, selenium	(1) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

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AMERICAN GULCH

No. Gila County WWTP - East Verde River
15060203-448B
3.614 Miles

Category 3
Inconclusive

PBC - Inconclusive • AWEDW - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	576 cfu/100 mL	3/29/2011	4611 cfu/100 mL	PBC is inconclusive with 1 exceedance outside the assessment window.

Monitoring Summary

Sampling period: 3/29/2011 - 11/27/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE FOREST SERVICE ROAD # 67	VRAMG000.76	108723	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(2-3) Arsenic, boron, manganese, selenium	(1) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Medium	Collect more *E. coli* samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ASPEN CREEK

Headwaters - Granite Creek
15060202-769
5.848 Miles

Category 4A
Not attaining

Verde

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	10/5/2010	3629.4 cfu/100 mL	FBC is not attaining. All exceedances were storm-related (6 exceedances in 9 samples). See Impairment discussion below.
		7/31/2013	1299.7 cfu/100 mL	
		8/30/2013	3629.4 cfu/100 mL	
		9/10/2013	1454 cfu/100 mL	
		11/23/2013	241 cfu/100 mL	
		8/13/2014	2755 cfu/100 mL	

Monitoring Summary

Sampling period: 10/5/2010 - 4/23/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE PARK AVENUE	VRASP000.37	107545	ADEQ	TMDL Monitoring
COPPER BASIN ROAD AT FS BOUNDARY	VRASP005.07	106183	ADEQ	Ambient Monitoring
AT MIDDLEBROOK ROAD	VRASP000.93	108622	ADEQ	TMDL Monitoring
AT RANCHO VISTA ROAD	VRASP002.70	108604	ADEQ	TMDL Monitoring
OFF MCCORMICK STREET	VRASP000.03	108623	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1-2) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(9-10) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-11) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

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Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Granite Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

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BANNING CREEK

Headwaters - Granite Creek
15060202-774
6.243 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	10/5/2010	5.23 mg/L	AWC is inconclusive with 1 exceedance in 1 sample.
E. coli	235 cfu/100 mL	10/5/2010	3629.4 cfu/100 mL	FBC is not attaining with 3 exceedances in 3 samples. All exceedances were storm-related. See impairment discussion below.
		11/23/2013	789 cfu/100 mL	
		8/13/2014	395 cfu/100 mL	

Monitoring Summary

Sampling period: 10/5/2010 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE GRANITE CREEK AND ROAD CROSSING	VRBAN000.06	106186	ADEQ	TMDL Monitoring
ABOVE GOLDWATER LAKE	VRBAN003.70	107549	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(2) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3-4) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00007

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Granite Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

BARTLETT LAKE

15060203-0110
2376 Acres

Category 5
Impaired

Verde

Mercury in fish tissue (EPA 2016)

IMPAIRMENT STATUS

DWS - Inconclusive • FC - Impaired • FBC - Inconclusive
AGI - Inconclusive • AGL - Inconclusive • AWW - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Mercury in fish tissue	0.3 mg/kg	9/24/2014	0.35 mg/kg (mean - 1SD) flathead catfish	FC is inconclusive.
		4/8/2015	0.53 mg/kg (mean - 1SD) largemouth bass	
		4/8/2015	0.39 mg/kg (mean - 1SD) channel catfish	

Monitoring Summary

Sampling period: 8/17/2010 - 4/8/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AZGF 09-174211 SITE	VRBAR-AZGF	110425	AGF	Data Sharing Partnership
AT DAM	VRBAR-A	100009	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Copper, manganese, zinc	(1) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-24) pH, total dissolved solids, fish tissue mercury

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Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
High	Collect more fish tissue samples due to the exceedances. Fish consumption advisory issued in 2015 for largemouth bass, channel catfish and flathead catfish.

Impairment Discussion
Fish consumption advisory issued in 2015 for largemouth bass, channel catfish and flathead catfish. EPA overfiled for mercury in fish tissue in 2016.

ED_013248_00000558-00010

BEAVER CREEK

Dry Beaver Creek - Verde River
15060202-002
9.269 Miles

Category 3
Inconclusive

Verde

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWW - Inconclusive

UseSupport

No Exceedances

Monitoring Summary

Sampling period: 2/3/2011 - 2/3/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW EUREKA DITCH RETURN	VRBEV000.96	102168	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00011

BRAY CREEK

Headwaters - Webber Creek
15060203-502
3.619 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 5/8/2012 - 5/8/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
UPSTREAM FROM CONTROL ROAD JUST WEST OF HOLBERT ROAD JUST	VRBRA001.82	107222	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, boron, selenium	(0) None	(1) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00012

BUTTE CREEK

Headwaters - Miller Creek
15060202-768
6.27 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2012/14)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	4/23/2015	4.3 mg/L	AWC is attaining. The exceedance due to low flow conditions.
E. coli	235 cfu/100 mL	10/5/2010	3629.4 cfu/100 mL	FBC remains impaired with 3 exceedances in the last 3 years of monitoring.
		10/20/2010	307.6 cfu/100 mL	
		12/16/2010	1046.2 cfu/100 mL	
		8/29/2013	1986.3 cfu/100 mL	
		11/22/2013	959 cfu/100 mL	
		8/13/2014	1017 cfu/100 mL	

Monitoring Summary

Sampling period: 10/5/2010 - 4/23/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT HEAD WATERS	VRBTT005.70	106189	ADEQ	Ambient Monitoring
ABOVE MILLER CREEK	VRBTT000.06	107550	ADEQ	TMDL Monitoring
AT STRICKLIN PARK	VRBTT001.82	108625	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1-2) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(8-10) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-10) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

ED_013248_00000558-00013

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not-attaining for *E. coli*. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00014

CITY CREEK

Headwaters - East Verde River
15060203-036
6.685 Miles

Category 3
Inconclusive

Verde

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWW - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 3/30/2011 - 3/14/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE FOREST SERVICE ROAD # 406	VRCIT000.37	108726	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1-3) Arsenic, boron, manganese, selenium	(0) None	(1-3) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	Selenium

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00015

D RIPPING SPRINGS

Springs Headwater - East Verde River
15060203-524
0.03 Miles

Category 3
Inconclusive

Use Support

PBC - Inconclusive • AGL - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: 3/29/2011 - 11/15/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
JUST ABOVE CONFLUENCE WITH EAST VERDE RIVER	VRWES000.03	108743	ADEQ	TMDL - East Verde Project

Metal Samples	Nutrients & Related Samples	Other Samples
(2) Arsenic, boron, manganese, selenium	(0) None	(1-2) Dissolved oxygen, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	pH, *E. coli*, copper, lead
Missing Seasonal Distribution	pH, *E. coli*, copper, lead
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00016

EAST VERDE RIVER

American Gulch - Verde River
15060203-022C
25.8 Miles

Category 1N
Attaining all uses

DWS - Not Attaining • FC - Attaining • FBC - Attaining
AGI - Attaining • AGL - Attaining • AWW - Attaining

Draft

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	10 ug/L (DWS) 30 ug/L (FBC)	7/27/2010	17.7 ug/L	DWS and FBC are attaining. All exceedances due to upwelling of groundwater, which has high levels of arsenic naturally.
		8/31/2010	12.9 ug/L	
		9/28/2010	58.415 ug/L	
		10/26/2010	42.12 ug/L	
		11/30/2010	37.705 ug/L	
		12/28/2010	20.7 ug/L	
		3/31/2011	23.2 ug/L	
Dissolved oxygen	6.0 mg/L	6/30/2011	5.29 mg/L	AWW is attaining. Low dissolved oxygen due to groundwater upwelling.
SSC	80 mg/L	9/11/2012	95 mg/L	AWW is attaining. This exceedance occurred during a storm event and was excluded from assessment.
Zinc	2100 ug/L (DWS) 5106 ug/L (FBC)	8/31/2010	6281 ug/L	DWS and FBC are attaining with 1 exceedance in 11 sample (binomial).

Monitoring Summary

Sampling period: 7/27/2010 - 7/26/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR CHILDS, AZ USGS 09507980	VREVR002.62	100739	ADEQ	TMDL Monitoring
BELOW CONFLUENCE WITH AMERICAN GULCH	VREVR023.23	108724	ADEQ	TMDL Monitoring
BELOW BABY DOLL RANCH, NEAR PAYSON, AZ	VREVR016.28	100473	ADEQ	TMDL Monitoring
BELOW CRACKER JACK	VREVR023.59	105441	ADEQ	Ambient Monitoring
ABOVE FS ROAD 502	VREVR023.39	109482	ADEQ	TMDL Monitoring

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Metal Samples	Nutrients & Related Samples	Other Samples
(13-27) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(12-13) Ammonia, nitrite/ nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-27) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Low	Delist arsenic from the 303(d) list. A review of the available ground and surface water data indicated that all exceedances observed in the reach were caused by naturally occurring arsenic in the geologic formation (N subcategory).

ED_013248_00000558-00018

EAST VERDE RIVER

Ellison Creek - American Gulch
15060203-022B
20.3 Miles

Category 2
Attaining some uses

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGI - Attaining • AGL - Inconclusive • AWW - Inconclusive

Disapproved

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 ml	6/29/2011	344.8 cfu/100 mL	FBC is inconclusive with 1 exceedance outside the assessment window.

Monitoring Summary

Sampling period: 3/29/2011 - 7/26/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE CONFLUENCE WITH AMERICAN GULCH	VREVR027.67	108722	ADEQ	TMDL Monitoring
BELOW HIGHWAY 87 BRIDGE, NEAR PUSGS	VREVR034.80	100474	ADEQ	TMDL Monitoring
BELOW ELLISON CREEK	VREVR044.96	100548	ADEQ	TMDL Monitoring
AT FOREST SERVICE ROAD 199 BRIDGE	VREVR043.98	108562	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4-17) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(15-17) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	*E. coli*
Missing Core Parameters	None
Missing Seasonal Distribution	Zinc (dissolved), nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), nitrite/nitrate, chromium, lead, copper, mercury
Lab Detection Limits Not Low Enough	Copper (dissolved)

ED_013248_00000558-00019

Priority	Monitoring Recommendations
Medium	Collect more *E. coli* samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period. Delist selenium (2004) from the 303(d) list. The last known exceedance occurred in January 2001. All 8 selenium samples collected in this assessment period were below the chronic criterion.

ED_013248_00000558-00020

EAST VERDE RIVER

Headwaters - Ellison Creek
15060203-022A
8.1 Miles

Category 2
Attaining some uses

DWS - Attaining • FC - Attaining • FBC - Attaining
AGI - Attaining • AGL - Attaining • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	4/17/2014	IBI 32	AWC is inconclusive with 1 violation.

Monitoring Summary

Sampling period: 6/29/2011 - 4/17/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE WILLOW SPRING CANYON	VREVR046.18	108842	ADEQ	TMDL Monitoring
BELOW WASHINGTON PARK	VREVR051.15	100546	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(6-13) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(6) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-13) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Medium	Collect a follow-up macroinvertebrate sample to confirm the biocriteria violation. Use a lower reporting limit for dissolved cadmium.

ED_013248_00000558-00021

ELLISON CREEK

Headwaters - East Verde River
15060203-459
10.77 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Attaining • AGL - Attaining
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	6/15/2011	272.3 cfu/100 mL	FBC is attaining with no exceedances in the last 3 years of the assessment period.
Biocriteria	IBI ≥ 52 attaining IBI 46 - 51 inconclusive IBI ≤ 45 violating	6/15/2011	IBI 39	AWC is inconclusive with 1 violation.

Monitoring Summary

Sampling period: 8/12/2010 - 1/30/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT HEADWATERS	VRELL009.02	100542	ADEQ	Ambient Monitoring
ABOVE EAST VERDE RIVER	VRELL000.18	100543	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(5-8) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(5) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-8) Dissolved oxygen, *E. coli*, pH, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Medium	Collect another macroinvertebrate sample to confirm the biocriteria violation.

ED_013248_00000558-00022

FOSSIL CREEK

Headwaters - Verde River
15060203-024
19.937 Miles
Outstanding Arizona Water

Category 1
Attaining all uses

Verde

FC - Attaining • FBC - Attaining
AGL - Attaining • AWW - Attaining

No Exceedances

Monitoring Summary

Sampling period: 7/21/2010 - 5/1/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
EAST OF MUD SEEP	VRFOS011.88	105624	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(8) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(8) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(4-8) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Low	Good core parameter coverage.

ED_013248_00000558-00023

GOLDWATER LAKE (UPPER)

15060202-0575
21 Acres

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AWC - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 9/8/2010 - 6/17/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
DAM SITE	VRGWU-A	108862	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(3-4) Arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), *E. coli*
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), *E. coli*, fluoride, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), selenium

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00024

GOVERNMENT CANYON

Headwaters - Granite Creek
15060202-775
4.35 Miles

Category 4A
Not attaining

Verde

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	8/29/2013	3629.4 cfu/100 mL	FBC is not attaining with 3 exceedances in 3 samples. All exceedances were storm-related. See Impairment discussion below.
		11/22/2013	1046 cfu/100 mL	
		8/13/2014	886 cfu/100 mL	

Monitoring Summary

Sampling period: 8/29/2013 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
VETERANS HOSPITAL	VRGOC000.60	107563	ADEQ	TMDL Monitoring
BELOW EAST PINE RIDGE DRIVE	VRGOC003.03	107562	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(3) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-4) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00025

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Granite Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

GRANITE CREEK

Headwaters - Yavapai Reservation
15060202-059A
6.2 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2010)

FC - Inconclusive • FBC - Not Attaining • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	7/31/2010	4.52 mg/L	AWC is inconclusive with 4 exceedances in 8 samples. All but two of these exceedances occurred during summer/fall convective storms under ephemeral conditions.
		10/20/2010	5.57 mg/L	
		4/13/2011	6.68 mg/L	
		5/29/2013	3.4 mg/L	
		7/31/2013	4.11 mg/L	
		8/20/2013	4.14 mg/L	
E. coli	235 cfu/100 ml	7/31/2010	3629.4 cfu/100 mL	FBC remains impaired with 10 exceedances in 12 samples.
		10/5/2010	3629.4 cfu/100 mL	
		10/20/2010	3629.4 cfu/100 mL	
		12/16/2010	2419.6 cfu/100 mL	
		3/22/2012	767 cfu/100 mL	
		8/20/2013	727 cfu/100 mL	
		8/29/2013	3629.4 cfu/100 mL	
		9/10/2013	2599.4 cfu/100 mL	
		11/22/2013	4106 cfu/100 mL	
		8/13/2014	933 cfu/100 mL	
SSC	25 mg/L	12/16/2010	71.4 mg/L	AWC is inconclusive with 2 single sample exceedances. Insufficient number of samples to calculate a median.
		11/22/2013	40 mg/L	

ED_013248_00000558-00027

Monitoring Summary

Sampling period: 7/31/2010 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT GRANITE PARK	VRGRA029.97	106184	ADEQ	TMDL Monitoring
AT PRESCOTT, AZ USGS 09502960	VRGRA029.64	101580	USGS	Data Sharing Partnership
AT LEROUX STREET	VRGRA031.19	107504	ADEQ	TMDL Monitoring
ABOVE BANNING (BANNON) CREEK	VRGRA032.67	104926	ADEQ	TMDL Monitoring
ABOVE PONDEROSA ROAD	VRGRA034.39	107502	ADEQ	TMDL Monitoring
AT GRANITE RD.	VRGRA030.36	111035	ADEQ	TMDL Monitoring
BELOW GURLEY STREET BRIDGE	VRGRA030.48	108624	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1-2) Arsenic, beryllium, boron, cadmium, chromium, copper, lead, nickel, zinc	(18-20) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-21) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	SSC, dissolved oxygen
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect more suspended sediment and dissolved oxygen samples due to the exceedances.

Impairment Discussion
Not attaining for *E. coli*. The Upper Granite Creek Watershed *E. coli* TMDL completed in 2015. Delist dissolved oxygen from the 303(d) list. Re-evaluation of historical data indicates that the reach is attaining for dissolved oxygen with less than 10% exceedance rate.

ED_013248_00000558-00028

GRANITE CREEK

Yavapai Reservation - Watson Lake
15060202-059B
2.81 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2010)

FC - Inconclusive • FBC - Not Attaining • AGI - Inconclusive
AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	8/1/2011	3.84 mg/L	AWC is inconclusive with 1 exceedance in 5 samples. The exceedance on 8/1/11 is due to low flow conditions.
		8/13/2014	5.43 mg/L	
E. coli	235 cfu/100 mL	10/5/2010	3629.4 cfu/100 mL	FBC remains impaired with 4 exceedances in the last 3 years of monitoring.
		7/8/2011	631.1 cfu/100 mL	
		9/14/2011	1413.6 cfu/100 mL	
		8/29/2013	3629.4 cfu/100 mL	
		9/10/2013	402.8 cfu/100 mL	
		11/22/2013	3873 cfu/100 mL	
		8/13/2014	1274 cfu/100 mL	
Lead	15 ug/L	10/5/2010	15.1 ug/L	FBC is inconclusive with 1 exceedance in 2 samples.

Monitoring Summary

Sampling period: 10/5/2010 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
MID WATSON WOODS	VRGRA027.35	107522	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1-3) Arsenic, beryllium, cadmium, chromium, copper, lead, manganese, zinc	(6) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-5) Dissolved oxygen, *E. coli*, pH, total dissolved solids

ED_013248_00000558-00029

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Lead
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), boron, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, cadmium (dissolved), copper (dissolved), *E. coli*, boron, copper, lead, mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), lead (dissolved)

Priority	Monitoring Recommendations
Medium	Collect more lead samples due to the exceedance.

Impairment Discussion
Not attaining for *E. coli*. The Upper Granite Creek Watershed *E. coli* TMDL completed in 2015.

ED_013248_00000558-00030

GRANITE CREEK

Watson Lake - Willow Creek @ 34 36'54.59"/112 25'8.66"
15060202-059C
1.6 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Draft

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	7/31/2013	4.11 mg/L	AWW is inconclusive with 2 exceedances in 2 samples (binomial).
		8/20/2013	5.51 mg/L	

Monitoring Summary

Sampling period: 7/31/2013 - 8/20/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT USGS GAGE 09503300	VRGRA023.85	104925	ADEQ	TMDL Monitoring

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

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00031

MAIL CREEK

Headwaters - East Verde River
15060203-485
1.751 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	5/8/2012	6.47 mg/L	AWC is inconclusive with 1 exceedance in 1 sample (binomial).

Monitoring Summary

Sampling period: 5/8/2012 - 5/8/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
UPSTREAM FROM WASHINGTON PARK	VRMAI000.78	107223	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, boron, selenium	(0) None	(1) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00032

MANZANITA CREEK

Headwaters - Granite Creek
15060202-772
2.788 Miles

Category 4A
Not attaining

IMPAIRMENT

E. coli (2012/14)

STATUS

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	10/5/2010	2419.6 cfu/100 mL	FBC remains impaired with 3 exceedances in the last 3 years of monitoring.
		10/20/2010	275.5 cfu/100 mL	
		12/16/2010	3629.4 cfu/100 mL	
		8/30/2013	2419.6 cfu/100 mL	
		9/10/2013	436 cfu/100 mL	
		8/13/2014	933 cfu/100 mL	

Monitoring Summary

Sampling period: 10/5/2010 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE GRANITE CREEK	VRMAN000.01	107548	ADEQ	TMDL Monitoring
ABOVE COUNTRY CLUB PARK	VRMAN001.03	108642	ADEQ	TMDL Monitoring
ABOVE TIMBER RIDGE ROAD	VRMAN002.15	107547	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, cadmium, chromium, copper, lead, manganese, zinc	(6-7) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-9) Dissolved oxygen, *E. coli*, pH, total dissolved solids

ED_013248_00000558-00033

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not attaining for *E. coli*. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00034

MILLER CREEK

Headwaters - Granite Creek
15060202-767
7.244 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2010)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	10/5/2010	5.29 mg/L	AWC is inconclusive with 2 exceedances in 6 samples (binomial). Exceedances on 11/6/14 and 4/23/15 due to low flow conditions.
		11/6/2014	6.05 mg/L	
		11/25/2014	6.15 mg/L	
		4/23/2015	6.6 mg/L	
E. coli	235 cfu/100 mL	10/5/2010	3629.4 cfu/100 mL	FBC remains impaired with 7 exceedances in the last 3 years of monitoring.
		12/16/2010	3629.4 cfu/100 mL	
		8/29/2013	3629.4 cfu/100 mL	
		9/10/2013	449.4 cfu/100 mL	
		11/22/2013	2613 cfu/100 mL	
		8/14/2014	2187 cfu/100 mL	
		2/23/2015	244.6 cfu/100 mL	
		3/2/2015	1632 cfu/100 mL	
		4/30/2015	436 cfu/100 mL	
SSC	25 mg/L	3/2/2015	191 mg/L	AWC is inconclusive. Insufficient number of samples to calculate a median.
		4/30/2015	49.8 mg/L	

Monitoring Summary

Sampling period: 10/5/2010 - 4/30/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ON THUMB BUTTE ROAD ABOVE DEARING ROAD CROSSING	VRMIL006.07	106188	ADEQ	Ambient Monitoring
AT THUMB BUTTE PARK	VRMIL003.64	107523	ADEQ	Ambient Monitoring
ABOVE BUTTE CREEK AND GRANITE PARK	VRMIL000.32	107525	ADEQ	TMDL Monitoring

ED_013248_00000558-00035

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW RODEO GROUNDS OFF MILLER VALLEY RD	VRMIL000.77	110502	ADEQ	TMDL Monitoring
AT DOUGHTY AND FAIR, ABOVE RODEO GROUNDS	VRMIL001.28	110503	ADEQ	TMDL Monitoring
PULLOUT BELOW MAYO ST ON OREGON AVE	VRMIL001.78	110523	ADEQ	TMDL Monitoring
AT DOWNER TRAIL	VRMIL002.14	108626	ADEQ	TMDL Monitoring
BELOW CORRALS	VRMIL002.40	110504	ADEQ	TMDL Monitoring
AT CROSSING WITH IDYL-WILD WAY (UPSTREAM OF HORSES)	VRMIL002.51	110524	ADEQ	TMDL Monitoring
AT CROSSING WITH LOWER PINE DRIVE	VRMIL002.66	108627	ADEQ	TMDL Monitoring
AT CROSSING WITH UP-PER PINE DR	VRMIL002.98	110505	ADEQ	TMDL Monitoring
AT PARR DR	VRMIL001.61	110522	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(2) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(1-39) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phos-phorus, total Kjeldahl nitrogen	(10-52) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen, SSC
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury
Lab Detection Limits Not Low Enough	Cadmium (dissolved), copper (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*. Collect more dissolved oxygen and SSC samples due to exceedances.

Impairment Discussion
Not-attaining for *E. coli*. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00036

NORTH FORK MILLER

Headwaters - Miller Creek
15060202-013
1.393 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 ml	2/23/2015	688.2 cfu/100 mL	FBC is not attaining with 2 exceedances in 5 samples. All exceedances were storm-related. See Impairment discussion below.
		3/2/2015	3972.6 cfu/100 mL	
SSC	25 mg/L	3/2/2015	154 mg/L	AWC is attaining. No median exceedances.

Monitoring Summary

Sampling period: 2/20/2015 - 4/30/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
MIDDLE SITE AT GAIL GARDNER AND PEACE LN	VRNMI000.28	110526	ADEQ	TMDL Monitoring
UPPER SITE OFF IRON SPRINGS BEHIND GOODWILL	VRNMI000.87	110527	ADEQ	TMDL Monitoring
LOWER SITE OFF SUNSET RD	VRNMI000.04	110525	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(6) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-9) *E. coli*, pH, SSC

ED_013248_00000558-00037

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Miller Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00038

NORTH GRANITE CREEK

Headwaters - Granite Creek
15060202-757
1.64 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	7/31/2010	4.53 mg/L	AWC is inconclusive with 2 exceedances in 2 samples (binomial).
		10/5/2010	5.98 mg/L	
E. coli	235 cfu/100 mL	7/31/2010	3629.4 cfu/100 mL	FBC is not attaining with 7 exceedances in 8 samples. All exceedances were storm-related. See impairment discussion below.
		10/5/2010	3629.4 cfu/100 mL	
		12/16/2010	3629.4 cfu/100 mL	
		8/29/2013	3629.4 cfu/100 mL	
		9/10/2013	279.2 cfu/100 mL	
		11/22/2013	1664 cfu/100 mL	
		8/13/2014	598 cfu/100 mL	

Monitoring Summary

Sampling period: 7/31/2010 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT 6TH AND NAVAJO	VRNGC000.14	107622	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(6-7) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-8) Dissolved oxygen, *E. coli*, pH, total dissolved solids

ED_013248_00000558-00039

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Collect more dissolved oxygen samples due to exceedances. Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not-attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Granite Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00040

OAK CREEK

Dry Creek - Spring Creek
15060202-017
10.049 Miles
Outstanding Arizona Water

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2006)

DWS - Inconclusive • FC - Attaining • FBC - Not Attaining
AGI - Attaining • AGL - Attaining • AWW - Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	10 ug/L	7/20/2010	19 ug/L	DWS is inconclusive with 4 exceedances in 4 samples (binomial).
		11/16/2010	15 ug/L	
		3/24/2011	12 ug/L	
		4/27/2011	16 ug/L	
E. coli	235 cfu/100 mL	8/2/2011	3628.8 cfu/100 mL	FBC remains not-attaining with 5 exceedances in 16 samples.
		9/11/2011	816.4 cfu/100 mL	
		9/15/2011	3628.8 cfu/100 mL	
		7/15/2012	7915 cfu/100 mL	
		8/2/2012	426 cfu/100 mL	
Phosphorus	0.3 mg/L	7/15/2012	2.55 mg/L	AWW and FBC are attaining with 2 exceedances in 11 samples (binomial).
		8/2/2012	1.34 mg/L	

Monitoring Summary

Sampling period: 7/20/2010 - 8/15/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MORMON CROSSING	VROAK013.95	101880	ADEQ	Ambient Monitoring
ABOVE PAGE SPRINGS HATCHERY	VROAK017.30	101811	OCWIC	Data Sharing Partnership
BELOW DRY CREEK	VROAK022.58	101878	OCWIC	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4-12) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-20) Dissolved oxygen, *E. coli*, pH, total dissolved solids, bottom deposits, biocriteria

ED_013248_00000558-00041

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Arsenic
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Mercury (dissolved)

Priority	Monitoring Recommendations
High	Collect additional arsenic samples. Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Oak Creek *E. coli* TMDL approved by EPA in late 2010. Ongoing water quality improvements being implemented through a 319(h) grant to Oak Creek Watershed Council.

ED_013248_00000558-00042

OAK CREEK

Headwaters - West Fork Oak Creek
15060202-019
7.407 Miles
Outstanding Arizona Water

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2006)

DWS - Inconclusive • FC - Inconclusive • FBC - Not Attaining
AGI - Inconclusive • AGL - Inconclusive • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 ml	7/24/2012	3628.8 cfu/100 mL	FBC remains not-attaining with 1 exceedance in the last 3 years of monitoring.

Monitoring Summary

Sampling period: 7/5/2011 - 8/22/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW PINE FLATS SUBDIVISION	VROAK048.92	101864	OCWIC	
AT PINE FLATS CROSSING	VROAK049.20	106502	OCWIC	
AT PINE FLATS LOWER BRIDGE	VROAK049.18	109623	OCWIC	

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(8-9) Ammonia, nitrate, nitrite, phosphorus	(2-12) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	*E. coli*
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, nitrogen, cadmium (dissolved), copper (dissolved), nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00043

Priority	Monitoring Recommendations
High	Continue effectiveness monitoring for *E. coli*. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Oak Creek *E. coli* TMDL approved by EPA in late 2010. Ongoing water quality improvements being implemented through a 319(h) grant to Oak Creek Watershed Council.

ED_013248_00000558-00044

OAK CREEK

Slide Rock boundary - Dry Creek
15060202-018C
20 Miles
Outstanding Arizona Water

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2006)

DWS - Attaining • FC - Attaining • FBC - Not Attaining
AGI - Attaining • AGL - Attaining • AWW - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	7/19/2010	4.68 mg/L	AWW is attaining with 1 exceedance in 10 samples (binomial).
E. coli	235 cfu/100 ml	8/2/2011	3628.8 cfu/100 mL	FBC remains not attaining with 5 exceedances in the last 3 years of monitoring.
		9/7/2011	2419.17 cfu/100 mL	
		9/15/2011	3628.8 cfu/100 mL	
		6/26/2012	478.6 cfu/100 mL	
		7/15/2012	4569 cfu/100 mL	
		8/2/2012	259 cfu/100 mL	
		7/23/2013	307.6 cfu/100 mL	
		6/10/2014	290.9 cfu/100 mL	
		7/8/2014	3628.8 cfu/100 mL	
pH	9.0 SU	7/5/2011	9.4 SU	AGI, AGL, AWW, DWS and FBC are attaining with 1 exceedance in 20 samples (binomial).
Phosphorus	0.3 mg/L	7/15/2012	2.55 mg/L	AWW and FBC are inconclusive with 3 exceedances in 15 samples (binomial).
		7/24/2012	0.4 mg/L	
		8/15/2012	0.74 mg/L	

Monitoring Summary

Sampling period: 7/19/2010 - 7/23/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW MANZANITA CAMPGROUND	VROAK042.78	101871	ADEQ	Ambient Monitoring
AT CHAVEZ CROSSING	VROAK034.02	100461	ADEQ	Ambient Monitoring

ED_013248_00000558-00045

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT LOMACASI	VROAK037.39	109633	OCWIC	Data Sharing Partnership
AT LIVING SPRINGS	VROAK039.76	109624	OCWIC	Data Sharing Partnership
BELOW INDIAN GARDENS	VROAK040.48	104019	OCWIC	Data Sharing Partnership
BELOW RED ROCK STATE PARK	VROAK027.60	109627	OCWIC	Data Sharing Partnership
BELOW GRASSHOPPER POINT	VROAK038.61	100459	FOF	Data Sharing Partnership
AT CRESCENT MOON	VROAK031.52	101874	FOF	Data Sharing Partnership
AT MIDGLEY BRIDGE	VROAK037.96	110422	FOF	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(8) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(8-35) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-129) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Parameters Needing More Samples to Assess	Biocriteria, phosphorus
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Selenium, mercury (dissolved)

Priority	Monitoring Recommendations
High	Collect more phosphorus samples due to the exceedances. Collect a verification sample for biocriteria (IBI on 4/23/13 was 49 and inconclusive). Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Oak Creek *E. coli* TMDL approved by EPA in late 2010. Ongoing water quality improvements being implemented through a 319(h) grant to Oak Creek Watershed Council.

ED_013248_00000558-00046

OAK CREEK

Spring Creek - Verde River
15060202-016
12.676 Miles
Outstanding Arizona Water

Category 5
Impaired

IMPAIRMENT STATUS

Add E. coli to the 303(d) list.

DWS - Inconclusive • FC - Inconclusive • FBC - Impaired
AGI - Inconclusive • AGL - Inconclusive • AWW - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	9/15/2011	3628.8 cfu/100 mL	FBC is impaired with 3 exceedances in 13 samples (greater than 10% exceedance rate). All exceedances were storm-related.
		7/15/2012	1011.1 cfu/100 mL	
		8/2/2012	345 cfu/100 mL	
pH	9.0 SU	7/11/2011	9.3 SU	AGI, AGL, AWW, DWS and FBC are attaining with 1 exceedance in 12 samples (binomial).
Phosphorus	0.3 mg/L	8/2/2012	0.72 mg/L	AWW and FBC are inconclusive with 2 exceedances in 7 samples (binomial).
		8/15/2012	0.81 mg/L	

Monitoring Summary

Sampling period: 2/1/2011 - 8/15/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR CORNVILLE ESTATES	VROAK002.26	109630	OCWIC	Data Sharing Partnership
ABOVE CORNVILLE BRIDGE	VROAK008.90	101881	OCWIC	Data Sharing Partnership
ABOVE VERDE CONFLUENCE	VROAK000.13	109631	OCWIC	Data Sharing Partnership
BELOW SPRING CREEK CONFLUENCE	VROAK012.61	109629	OCWIC	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(15) Ammonia, nitrate, nitrite, phosphorus	(6-28) Dissolved oxygen, *E. coli*, pH, total dissolved solids

ED_013248_00000558-00047

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Phosphorus
Missing Core Parameters	Zinc (dissolved), nitrogen, cadmium (dissolved), copper (dissolved), nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	*E. coli*

Priority	Monitoring Recommendations
High	Collect more samples in support of TMDL development. Collect more phosphorus samples due to the exceedances.

Impairment Discussion
Add *E. coli* to the 303(d) list. Impairments based on flood related *E. coli* exceedances are only considered when ten or more samples have been collected, and there is a greater than 10% exceedance rate.

ED_013248_00000558-00048

OAK CREEK

West Fork Oak Creek - Trib at 345709 / 1114513
15060202-018A
5 Miles
Outstanding Arizona Water

Category 4A
Not attaining

Verde

IMPAIRMENT STATUS

E. coli (2006)

DWS - Attaining • FC - Attaining • FBC - Not Attaining
AGI - Attaining • AGL - Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Cadmium (dissolved)	0.341 ug/L chronic @ 160 mg/L hardness	7/19/2010	1.8 ug/L	AWC is inconclusive with 1 exceedance in 4 samples.
E. coli	235 cfu/100 mL	7/15/2012	387.3 cfu/100 mL	FBC remains impaired with 2 exceedances in 19 samples.
		7/8/2014	3628.8 cfu/100 mL	
Selenium	2 ug/L	7/19/2010	2.6 ug/L	AWC is inconclusive with 1 exceedance in 4 samples.

Monitoring Summary

Sampling period: 7/19/2010 - 7/23/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT SLIDE ROCK CAMPGROUND	VROAK045.64	105370	ADEQ	Ambient Monitoring
ABOVE BOOTLEGGER CAMPGROUND	VROAK046.10	101866	OCWIC	

Metal Samples	Nutrients & Related Samples	Other Samples
(4) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(3-8) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-19) Dissolved oxygen, *E. coli*, pH, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

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

ED_013248_00000558-00049

Priority	Monitoring Recommendations
High	Collect more selenium and dissolved cadmium samples and use lower reporting limits. Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Oak Creek *E. coli* TMDL approved by EPA in late 2010. Ongoing water quality improvements being implemented through a 319(h) grant to Oak Creek Watershed Council.

ED_013248_00000558-00050

OAK CREEK

Tributary at 345709 / 1114513 - Slide Rock SP
15060202-018B
1.5 Miles
Outstanding Arizona Water

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2006)

DWS - Inconclusive • FC - Inconclusive • FBC - Not Attaining
AGI - Inconclusive • AGL - Inconclusive • AWW - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL SSM	7/4/2010	1300 cfu/100 mL	FBC remains impaired with 5 SSM exceedances in the last 3 years of monitoring. Also 6 geomean exceedances (7/10 and 7/11 at different sites).
		7/5/2010	3628.5 cfu/100 mL	
		7/12/2010	299 cfu/100 mL	
		7/19/2010	3628.5 cfu/100 mL	
		7/27/2010	1203 cfu/100 mL	
		8/2/2010	1733 cfu/100 mL	
		8/9/2010	461 cfu/100 mL	
		8/16/2010	308 cfu/100 mL	
		8/30/2010	579 cfu/100 mL	
		6/13/2011	3628.5 cfu/100 mL	
		6/28/2011	3628.5 cfu/100 mL	
		7/4/2011	3628.5 cfu/100 mL	
		7/25/2011	3628.5 cfu/100 mL	
		6/12/2012	1986 cfu/100 mL	
		6/26/2012	3628.5 cfu/100 mL	
		7/3/2012	3628.5 cfu/100 mL	
		7/10/2012	1553.1 cfu/100 mL	
		7/17/2012	435 cfu/100 mL	
		7/24/2012	3628.5 cfu/100 mL	
		7/30/2012	3628.5 cfu/100 mL	

ED_013248_00000558-00051

Monitoring Summary

Sampling period: 7/4/2010 - 6/24/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
SRSP AT HIGHWAY BRIDGE	VROAK043.73	100609	SRSP	Data Sharing Partnership
SRSP FOOT BRIDGE	VROAK043.79	102692	SRSP	Data Sharing Partnership
SRSP LARGE POOL	VROAK043.81	102693	SRSP	Data Sharing Partnership
SRSP MIDSLIDE	VROAK043.83	102694	SRSP	Data Sharing Partnership
SRSP UPSTREAM	VROAK043.88	102695	SRSP	Data Sharing Partnership
AT SLIDE ROCK	VROAK043.61	109632	OCWIC	Data Sharing Partnership
ABOVE SLIDE ROCK STATE PARK	VROAK044.04	101868	FOF	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(1) Ammonia, nitrate, nitrite, phosphorus	(2-208) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury (or fish tissue mercury)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
High	Collect core parameters to represent at least 3 seasons during an assessment period. Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Oak Creek *E. coli* TMDL approved by EPA in late 2010. Ongoing water quality improvements being implemented through a 319(h) grant to Oak Creek Watershed Council.

PATTON SPRING DRAW

Headwaters - Webber Creek
15060203-506
2.19 Miles

Category 3
Inconclusive

PBC - Inconclusive • AGL - Inconclusive • AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	7.0 mg/L	5/7/2012	5.55 mg/L	AWC is inconclusive with 1 exceedance in 1 sample.

Monitoring Summary

Sampling period: 5/7/2012 - 5/7/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NORTH OF RIM ROAD WEST OF BAKER BUTTE	VRPSD001.63	107224	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, boron, selenium	(0) None	(1) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Low	Collect more dissolved oxygen samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00053

PECK'S LAKE

15060202-1060
95 Acres

Category 4A
Not attaining

IMPAIRMENT STATUS

Low dissolved oxygen and high pH (1998)

AWC - Not Attaining • AGI - Not Attaining
AGL - Not Attaining • FBC - Not Attaining • FC - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

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

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
Medium	Collect samples during critical conditions to determine the effectiveness of watershed improvements to reduce nutrient loadings.

Impairment Discussion
It remains not-attaining for low dissolved oxygen and high pH. Nutrient TMDL completed in 2002.

ED_013248_00000558-00054

PINE CREEK (PIE)

Headwaters - Unnamed Trib
15060203-049A
8.5 Miles

Category 2
Attaining some uses

DWS - Attaining • FC - Attaining • FBC - Attaining
AGI - Attaining • AGL - Attaining • AWC - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 7/20/2010 - 5/7/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
NEAR HEADWATERS	VRPIE016.49	100621	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4-5) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-5) Dissolved oxygen, *E. coli*, pH, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Parameters Needing More Samples to Assess	Biocriteria
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Arsenic, cadmium (dissolved), copper (dissolved), mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect a biocriteria verification sample (IBI on 6/14/11 was 47 and inconclusive).

ED_013248_00000558-00055

PINE CREEK (PIE)

Unnamed Trib at 342151/1112646 - East Verde River
15060203-049B
11.9 Miles

Category 2
Attaining some uses

DWS - Attaining • FC - Attaining • FBC - Attaining
AGI - Attaining • AGL - Attaining • AWW - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	7/30/2010	238 cfu/100 mL	FBC is attaining. The exceedance occurred outside the assessment window, and there were no exceedances in the last 3 years of monitoring.
Biocriteria	IBI ≥ 50 attaining IBI 40 - 49 inconclusive IBI ≤ 39 violating	5/2/2013	IBI 35	AWW is inconclusive with 1 violation.

Monitoring Summary

Sampling period: 7/30/2010 - 5/2/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT TONTO NATURAL BRIDGE	VRPIE008.19	108362	ADEQ	Ambient Monitoring
ABOVE EAST VERDE RIVER	VRPIE000.29	100620	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(8-9) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(8) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(-9) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Medium	Collect another macroinvertebrate sample to confirm the biocriteria violation.

ED_013248_00000558-00056

ROUNDTREE CANYON CREEK

Headwaters - Tangle Creek
15060203-853
10.733 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGL - Attaining
AWW - Attaining

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 ml	7/25/2012	410.6 cfu/100 mL	FBC is inconclusive with 1 exceedance in the last 3 years of monitoring.

Monitoring Summary

Sampling period: 7/25/2012 - 4/22/2015

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
3 MILES ABOVE TANGLE CREEK	VRROU002.93	100631	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(4-5) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(5) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-5) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	*E. coli*
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect more *E. coli* samples due to the exceedance.

ED_013248_00000558-00057

SLAUGHTERHOUSE GULCH

Headwaters - Granite Creek
15060202-777
1.177 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWW - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	8/29/2013	3629.4 cfu/100 mL	FBC is not attaining with 3 exceedances in 3 samples. All exceedances were storm-related. See Impairment discussion below.
		11/22/2013	2851 cfu/100 mL	
		8/13/2014	588 cfu/100 mL	

Monitoring Summary

Sampling period: 8/29/2013 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MOUNTAIN HOLLOW DRIVE	VRSHG000.77	107564	ADEQ	TMDL Monitoring
ABV GRANITE CREEK	VRSHG000.13	111036	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(2-4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-4) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00058

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*. Prescott Creeks is currently funded by a 319(h) grant to implement channel restoration and wetland protection (grant contract # EV16-0002).

Impairment Discussion
Not attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Granite Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00059

SPRING CREEK (SPN)

Coffee Creek - Oak Creek
15060202-022
6.446 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2006)

FC - Inconclusive • FBC - Not Attaining • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	8/24/2011	249.5 cfu/100 mL	FBC remains not-attaining. Insufficient number of samples in the last 3 years of monitoring.
		9/16/2011	686.7 cfu/100 mL	

Monitoring Summary

Sampling period: 7/11/2011 - 8/22/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MOUTH	VRSPN000.01	109628	OCWIC	
ABOVE WWT POND	VRSPN000.40	109622	OCWIC	

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(4) Ammonia, nitrate, nitrite, phosphorus	(1-9) *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, nitrogen, cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00060

Priority	Monitoring Recommendations
High	Continue effectiveness monitoring for *E. coli*. Collect core parameters to represent at least 3 seasons during an assessment period.

Impairment Discussion
Oak Creek *E. coli* TMDL, expanded to include this reach, was approved by EPA in late 2010. Ongoing water quality improvements being implemented through a 319(h) grant to Oak Creek Watershed Council.

ED_013248_00000558-00061

STONEMAN LAKE

15060202-1490
125 Acres

Category 4A
Not attaining

IMPAIRMENT STATUS

High pH and low dissolved oxygen (1998)

FC - Inconclusive • FBC - Not Attaining • AGI - Not Attaining
AGL - Not Attaining • AWC - Not Attaining

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
N/A				

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

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters
Missing Seasonal Distribution	All core parameters
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
Medium	Collect samples during critical conditions to determine the effectiveness of watershed improvements to reduce nutrient loadings.

Impairment Discussion
Remains not-attaining for high pH and low DO (1998). TMDL completed in 2001.

ED_013248_00000558-00062

SYCAMORE CREEK (SYE)

Headwaters - East Verde River
15060203-880
7.685 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AWW - Inconclusive

Use Support

No Exceedances

Monitoring Summary

Sampling period: 3/30/2011 - 9/11/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
JUST BELOW UNNAMED SPRINGS	VRSYE000.95	108725	ADEQ	TMDL Monitoring

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

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	Mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00063

SYCAMORE CREEK (SYM)

Headwaters - Verde River
15060203-002
34.629 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Draft

No Exceedances

Monitoring Summary

Sampling period: 3/14/2011 - 3/14/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW LOG CORRAL CANYON	VRSYM021.25	100659	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(1) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1) Dissolved oxygen, *E. coli*, 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), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Mercury (dissolved)

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00064

SYCAMORE CREEK (SYW)

Cedar Creek - Verde River
15060202-026
11.696 Miles

Category 1
Attaining all uses

Verde

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWW - Attaining

Unofficial Draft

No Exceedances

Monitoring Summary

Sampling period: 8/27/2012 - 4/22/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE SUMMERS SPRING	VRSYW001.72	100199	ADEQ	Ambient Monitoring

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	(1-4) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Low	Good core parameter coverage.

ED_013248_00000558-00065

UNNAMED TRIB TO GRANITE CR

Headwaters - Granite Creek
15060202-3333
2.5 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	8/29/2013	3629.4 cfu/100 mL	FBC is not attaining with 3 exceedances in 3 samples. All exceedances were storm-related. See Impairment discussion below.
		11/22/2013	1046 cfu/100 mL	
		8/13/2014	1529 cfu/100 mL	

Monitoring Summary

Sampling period: 8/29/2013 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT EZ ST	VRACW0.2592	111077	ADEQ	TMDL Monitoring
ABV MOELLER ST	VRACW0.5683	111095	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(2) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3) *E. coli*

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00066

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Granite Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00067

UNNAMED TRIB TO UGC

Headwaters - Unnamed Tributary to Granite Creek (UGC)
15060202-3313
2.0 Miles

Category 4A
Not attaining

IMPAIRMENT STATUS

E. coli (2016)

FC - Inconclusive • FBC - Not Attaining • AWC - Inconclusive

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	8/29/2013	3629.4 cfu/100 mL	FBC is not attaining with 3 exceedances in 3 samples. All exceedances were storm-related. See Impairment discussion below.
		11/22/2013	11199 cfu/100 mL	
		8/13/2014	1616 cfu/100 mL	

Monitoring Summary

Sampling period: 8/29/2013 - 8/13/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABV WHITLOW ST	VRACE0.1002	111076	ADEQ	TMDL Monitoring
BELOW ACKER PARK	VRACE1.2473	111075	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(2) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(3) *E. coli*

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00068

Priority	Monitoring Recommendations
Medium	Continue effectiveness monitoring for *E. coli*.

Impairment Discussion
Not attaining for *E. coli*. Although the reach does not meet a minimum sample requirement for storm-related *E. coli* impairment (a minimum of 10 samples in the assessment period), the reach is listed based on a weight-of-evidence approach: - The reach is a tributary to Granite Creek, which is already impaired for *E. coli*, and - Intensive monitoring for Granite Creek and its tributaries identified *E. coli* to be a watershed-wide water quality problem. The reach is included in the Upper Granite Creek Watershed *E. coli* TMDL (completed in 2015).

ED_013248_00000558-00069

VERDE RIVER

15060202 - 065 - Railroad Dr
15060202-037
10.678 Miles

Category 2
Attaining some uses

FC - Inconclusive • FBC - Attaining • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Draft

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L	6/18/2011	32 ug/L	FBC is attaining with 2 exceedances in 13 samples (binomial).
		4/28/2012	31 ug/L	
Dissolved oxygen	6.0 mg/L	7/7/2012	5.3 mg/L	AWW is attaining with 2 exceedances in 13 samples (binomial).
		9/15/2012	5.5 mg/L	

Monitoring Summary

Sampling period: 8/21/2010 - 8/23/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW PERKINSVILLE BRIDGE	VRVER164.63	100487	SIER	Data Sharing Partnership
AT MORMON POCKET, USGS 345324112082000	VRVER157.28	110163	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(13) Arsenic	(7) Nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(13-14) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00070

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00071

VERDE RIVER

15060203 boundary - West Clear Creek
15060203-027
6.43 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Draft

No Exceedances

Monitoring Summary

Sampling period: 2/2/2011 - 2/3/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
0.25 MILE BELOW STATION 095055.50	VRVER112.88	104139	USGS	Data Sharing Partnership
ABOVE DAMND S FINAL WASTE NEAR CAMP VERDE, AZ.	VRVER108.95	104120	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(2) Dissolved oxygen, pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00072

VERDE RIVER

Bartlett Dam - Camp Creek
15060203-004
6.595 Miles

Category 5
Impaired

IMPAIRMENT STATUS

Arsenic (2010)

DWS - Impaired • FC - Attaining • FBC - Attaining
AGI - Attaining • AGL - Attaining • AWW - Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	10 ug/L	9/8/2010	10.7 ug/L	DWS remains impaired with 54 exceedances in 57 samples (binomial).
		10/11/2010	12 ug/L	
		11/8/2010	10.9 ug/L	
		12/2/2010	11.1 ug/L	
		12/13/2010	10.4 ug/L	
		1/10/2011	12 ug/L	
		2/14/2011	11.1 ug/L	
		3/15/2011	11 ug/L	
		3/22/2011	10.9 ug/L	
		5/16/2011	12.3 ug/L	
		6/13/2011	13.6 ug/L	
		6/24/2011	12.8 ug/L	
		7/19/2011	13.8 ug/L	
		8/18/2011	15.3 ug/L	
		9/7/2011	15.1 ug/L	
		10/10/2011	15 ug/L	
		11/14/2011	16.8 ug/L	
		12/6/2011	16.9 ug/L	
		12/12/2011	16.7 ug/L	
		1/16/2012	16.2 ug/L	
		2/13/2012	15.1 ug/L	
		3/8/2012	14.6 ug/L	
		3/15/2012	14.9 ug/L	
		4/16/2012	14.3 ug/L	

ED_013248_00000558-00073

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic (Continued)	10 ug/L	5/22/2012	15.5 ug/L	Continued
		6/7/2012	14.5 ug/L	
		6/11/2012	15.1 ug/L	
		7/16/2012	17 ug/L	
		8/14/2012	17.2 ug/L	
		9/12/2012	18.4 ug/L	
		10/15/2012	21 ug/L	
		11/12/2012	23 ug/L	
		12/17/2012	20 ug/L	
		12/27/2012	18.4 ug/L	
		1/21/2013	19 ug/L	
		2/11/2013	19.1 ug/L	
		3/6/2013	17.1 ug/L	
		3/11/2013	17.8 ug/L	
		4/15/2013	18.8 ug/L	
		5/15/2013	15.1 ug/L	
		6/10/2013	15.8 ug/L	
		7/15/2013	14.9 ug/L	
		8/8/2013	14.4 ug/L	
		8/12/2013	14.7 ug/L	
		9/16/2013	13.8 ug/L	
		10/14/2013	12.4 ug/L	
		11/11/2013	16.4 ug/L	
		12/16/2013	15.2 ug/L	
		1/13/2014	13.8 ug/L	
		2/10/2014	13.9 ug/L	
		3/12/2014	13.9 ug/L	
		6/12/2014	15.7 ug/L	
		8/21/2014	15.5 ug/L	
		11/20/2014	18.1 ug/L	

Monitoring Summary

Sampling period: 7/12/2010 - 11/20/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW BARTLETT LAKE	VRVER024.22	103133	SRP	Data Sharing Partnership
BELOW BARTLETT DAM USGS 09510000	VRVER022.53	100741	USGS	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(45-62) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, zinc	(17-62) Nitrate, nitrite, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-62) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, styrene, , tetrachloroethylene, toluene, trichlorobenzene, 111-trichloroethane, 112-trichloroethane, trichloroethylene, trihalomethanes, vinylchloride, xylene, tetrachloroethane

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Tetrachloroethane

Priority	Monitoring Recommendations
High	Collect more samples in support of TMDL development.

Impairment Discussion
Remains impaired for arsenic (2010).

ED_013248_00000558-00075

VERDE RIVER

Beaver Creek - 15060203 boundary
15060202-001
1.08 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Draft

No Exceedances

Monitoring Summary

Sampling period: 2/2/2011 - 10/16/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW BEAVER CREEK NEAR CAMP VERDE, AZ.	VRVER114.78	104157	USGS	Data Sharing Partnership
BLW BEAVER CR SITE 57, USGS 343425111511200	VRVER114.53	110062	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(1) Dissolved oxygen, pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00076

VERDE RIVER

Granite Creek - Hell Canyon
15060202-052
16.398 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Draft

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L	4/28/2012	33 ug/L	FBC is attaining with 1 exceedance in 13 samples.
Dissolved oxygen	6.0 mg/L	2/26/2011	4.7 mg/L	AWW is inconclusive with 7 exceedances in 12 samples (binomial).
		6/18/2011	3.6 mg/L	
		9/17/2011	4.9 mg/L	
		12/10/2011	3.7 mg/L	
		9/15/2012	5.2 mg/L	
		11/10/2012	4.1 mg/L	
		12/8/2012	5.3 mg/L	
E. coli	235 cfu/100 ml	9/17/2011	579 cfu/100 mL	FBC is inconclusive with 1 exceedance outside the assessment window (last 3 years of monitoring).

Monitoring Summary

Sampling period: 8/21/2010 - 10/16/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW GRANITE CREEK USGS	VRVER187.15	101556	SIER	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(13) Arsenic	(7) Nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(12-27) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

ED_013248_00000558-00077

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Dissolved oxygen, *E. coli*
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Collect more dissolved oxygen and *E. coli* samples due to the exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00078

VERDE RIVER

Hell Canyon - 15060202 - 065
15060202-038
5.969 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGL - Attaining
AGL - Inconclusive • AWW - Inconclusive

Draft

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	8/27/2012	4.9 mg/L	AWW is inconclusive with 1 exceedance in 8 samples.
pH	6.5 SU	11/16/2010	6.28 SU	AGL, AWW and FBC are inconclusive with 1 exceedance in 8 samples.

Monitoring Summary

Sampling period: 9/29/2010 - 8/23/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE PERKINSVILLE BRIDGE	VRVER165.07	100672	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(8) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(8) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-8) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Low	Collect more pH and dissolved oxygen samples due to the exceedances.

ED_013248_00000558-00079

VERDE RIVER

Oak Creek - Beaver Creek
15060202-015
12.169 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGI - Attaining
AGL - Attaining • AWW - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L	6/18/2011	32 ug/L	FBC is attaining with 1 exceedance in 14 samples (binomial).
Dissolved oxygen	6.0 mg/L	2/18/2012	4.6 mg/L	AWW is attaining. Only one of 16 samples exceeded (binomial).
E. coli	235 cfu/100 ml	9/17/2011	687 cfu/100 mL	FBC is inconclusive. Storm event.
		7/13/2013	517 cfu/100 mL	
SSC	80 mg/L	9/17/2011	236.6 mg/L	AWW is attaining. No median exceedances.

Monitoring Summary

Sampling period: 9/18/2010 - 10/26/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE BEAVER CREEK NEAR CAMP VERDE, AZ.	VRVER115.33	104144	SIER	Data Sharing Partnership
BELOW OK DITCH TURN OUT NEAR CORNVILLE, AZ.	VRVER124.79	104160	USGS	Data Sharing Partnership
DS OF HAYFIELD DRAW SITE 44A, USGS 343818111553000	VRVER123.65	110066	USGS	Data Sharing Partnership
DS VERDE DITCH SITE 47N, USGS 343626111523700	VRVER118.26	110064	USGS	Data Sharing Partnership
DS FORD SITE 46A, USGS 343722111535900	VRVER120.80	110065	USGS	Data Sharing Partnership
ABOVE I-17 BRIDGE, CAMP VERDE, AZ	VRVER117.07	100484	USGS	Data Sharing Partnership
ABV EUREKA DITCH RETURN FLOW SITE 54, USGS 343431111515700	VRVER115.29	110063	USGS	Data Sharing Partnership

ED_013248_00000558-00080

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT 1000 TRAILS MOBILE HOME PARK	VRVER127.02	100481	USGS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(14) Arsenic	(8) Nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(14-24) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Collect core parameters to represent at least 3 seasons during an assessment period. Collect additional *E. Coli* samples.

ED_013248_00000558-00081

VERDE RIVER

Sycamore Creek - Oak Creek
15060202-025
25.225 Miles

Category 5
Impaired

Add dissolved oxygen and E. coli to the 303(d) list.

IMPAIRMENT STATUS

FC - Attaining • FBC - Impaired • AGI - Attaining
AGL - Attaining • AWW - Impaired

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	12/1/2010	5 mg/L	AWW is impaired with 7 exceedances in 35 samples (binomial).
		2/18/2012	3.3 mg/L	
		5/8/2012	3.3 mg/L	
		7/7/2012	4.9 mg/L	
		8/13/2012	5.6 mg/L	
		8/27/2012	5.13 mg/L	
		11/10/2012	5.8 mg/L	
E. coli	235 cfu/100 mL	9/18/2010	248 cfu/100 mL	FBC is impaired. All exceedances in the past 3 years were storm related, but the exceedance rate in the assessment period was greater than 10% (9 exceedances in 39 samples).
		2/16/2011	380 cfu/100 mL	
		6/18/2011	435 cfu/100 mL	
		9/17/2011	613 cfu/100 mL	
		4/28/2012	1414 cfu/100 mL	
		8/27/2012	387.3 cfu/100 mL	
		5/11/2013	517 cfu/100 mL	
		7/13/2013	921 cfu/100 mL	
		8/27/2013	2200 cfu/100 mL	
Lead	15 ug/L	8/27/2012	22 ug/L	FBC is attaining with 1 exceedance in 21 sample (binomial).
SSC	80 mg/L	8/27/2012	260 mg/L	AWW is attaining. The exceedance on 8/27/12 occurred within 48 hours of a storm event. No median exceedance.
		8/28/2014	135 mg/L	

ED_013248_00000558-00082

Monitoring Summary

Sampling period: 8/25/2010 - 10/14/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE BRIDGE, BRIDGE-PORT, AZ	VRVER134.11	101828	SIER	Data Sharing Partnership
ABOUT 0.25MI US 89A BRIDGE SITE 31, USGS 344327111592900	VRVER133.83	110166	SIER	Data Sharing Partnership
AT REITZ PROPERTY	VRVER145.93	106079	SIER	Data Sharing Partnership
NEAR CLARKDALE, AZ USGS 09504000	VRVER150.65	100738	USGS	Ambient Monitoring
AT BLACK MESA TANK DELTA 1.3 MI US OAK CR, USGS	VRVER128.90	110068	USGS	Data Sharing Partnership
BELOW MINGUS BRIDGE SITE 28, USGS 344420111595500	VRVER135.01	110072	USGS	Data Sharing Partnership
ABOVE QUAIL CR SITE 21, USGS 344504112005600	VRVER136.93	110104	USGS	Data Sharing Partnership
ABOVE MOUTH OF SPRING WASH GULCH SITE 29, USGS	VRVER134.74	110071	USGS	Data Sharing Partnership
1.5 MI DS GAGE 09504000 SITE 3, USGS 345004112025400	VRVER148.22	110142	USGS	Data Sharing Partnership
BELOW COTTONWOOD RF 1&2 SITE 24, USGS 344458112003100	VRVER136.57	110073	USGS	Data Sharing Partnership
ABOVE COTTON-WOOD DITCH RF1&2 SITE 23, USGS 344458112003300	VRVER136.60	110074	USGS	Data Sharing Partnership
ABOVE HICKEY DITCH RF SITE 25A, USGS 344504112000300	VRVER136.05	110103	USGS	Data Sharing Partnership
BELOW COTTONWOOD DITCH SITE 15, USGS 344558112013600	VRVER139.37	110105	USGS	Data Sharing Partnership
BELOW DEAD HORSE STATE PARK USGS	VRVER137.53	101545	ADEQ	Ambient Monitoring
AT HEAD OF 2ND BEND BLW END CTWD SITE 36, USGS	VRVER130.84	110069	USGS	Data Sharing Partnership
BELOW COTTONWOOD, AZ	VRVER132.59	100483	USGS	Data Sharing Partnership
500FT ABV END OF COT-TONWOOD DITCH SITE 33, USGS	VRVER132.62	110070	USGS	Data Sharing Partnership

ED_013248_00000558-00083

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOUT 0.7MI US MOUTH OF OAK CR SITE38B, USGS 344026111565000	VRVER127.47	110067	USGS	Data Sharing Partnership
IN COTTONWOOD SOUTH OF BROZWICH PLACE	VRVER129.75	109182	ADEQ	Ambient Monitoring
AT TUZIGOOT BRIDGE USGS	VRVER139.99	101546	SIER	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(17-53) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(7-48) Ammonia, nitrite/nitrate, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(1-84) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Selenium, mercury (dissolved)

Priority	Monitoring Recommendations
High	Collect more samples in support of TMDL development.

Impairment Discussion
Add dissolved oxygen and *E. coli* to the 303(d) list.

VERDE RIVER

Tangle Creek - Ister Flat
15060203-018
4.112 Miles

Category 1
Attaining all uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWW - Attaining

Unofficial Draft

No Exceedances

Monitoring Summary

Sampling period: 8/31/2010 - 6/27/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW TANGLE CREEK USGS 09508500	VRVER053.21	100740	USGS	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(15) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(15) Nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-15) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Good core parameter coverage.

ED_013248_00000558-00085

VERDE RIVER

West Clear Creek - Fossil Creek
15060203-025
23.628 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	9/17/2011	345 cfu/100 mL	FBC is inconclusive with 1 exceedance in the last 3 years of monitoring.
		7/13/2013	1970 cfu/100 mL	
SSC	80 mg/L	9/17/2011	203.9 mg/L	AWW is attaining with no median exceedances.
		4/28/2012	139.2 mg/L	

Monitoring Summary

Sampling period: 9/18/2010 - 10/15/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT BEASLEY FLAT	VRVER103.60	100477	SIER	Data Sharing Partnership
BEASLEY FLAT BELOW CAMP VERDE	VRVER103.19	106122	SIER	Data Sharing Partnership
ABOVE THE FALLS NEAR CAMP VERDE, AZ.	VRVER101.15	104145	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(17) Arsenic	(16) Nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(22-31) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	*E. coli*
Missing Core Parameters	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

ED_013248_00000558-00086

Priority	Monitoring Recommendations
Medium	Collect more *E. coli* samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00087

VERDE RIVER

Wet Bottom Mesa - Tangle Creek
15060203-019
8.218 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGI - Attaining
AGL - Attaining • AWW - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Selenium	2 ug/L	3/11/2013	6.07 ug/L	AWW is inconclusive with 1 exceedance in 45 samples.

Monitoring Summary

Sampling period: 7/12/2010 - 3/10/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE HORSESHOE RESERVOIR	VRVER054.62	103408	SRP	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(45) Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, zinc	(45) Nitrate, nitrite, phosphorus	(1-45) pH, total dissolved solids, styrene, , tetrachloroethane, tetrachloroethylene, toluene, trichlorobenzene, 111-trichloroethane, 112-trichloroethane, trichloroethylene, trihalomethanes, vinylchloride, xylene

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Selenium
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, nitrogen, cadmium (dissolved), copper (dissolved), *E. coli*
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, nitrogen, cadmium (dissolved), copper (dissolved), *E. coli*
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Medium	Collect more selenium samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00088

WALKER CREEK

Headwaters - Wet Beaver Creek
15060202-259
7.829 Miles

Category 1
Attaining all uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWW - Attaining

Unsupported

No Exceedances

Monitoring Summary

Sampling period: 7/20/2010 - 4/25/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW FOREST SERVICE ROAD 618	VRWLK000.99	108382	ADEQ	Ambient Monitoring

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, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Good core parameter coverage.

ED_013248_00000558-00089

WATSON LAKE

15060202-1590
152 Acres

Category 5
Impaired

Nitrogen, low dissolved oxygen and high pH (EPA 2004)

IMPAIRMENT STATUS

FC - Inconclusive • FBC - Impaired • AGI - Inconclusive
AGL - Inconclusive • AWW - Impaired

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Dissolved oxygen	6.0 mg/L	9/14/2011	3.66 mg/L	AWW remains impaired with 4 exceedances in 17 samples (binomial).
		9/20/2011	4.6 mg/L	
		7/30/2013	1.86 mg/L	
		9/11/2014	4.68 mg/L	
Mercury (dissolved)	0.01 ug/L	8/31/2010	0.09 ug/L	AWW chronic is inconclusive. Note: This is an estimated value below the reporting limit.
pH	9.0 SU	6/16/2011	9.5 SU	AGI, AGL, FBC and AWW remain impaired. See Impairment Discussion below.
		7/20/2011	9.4 SU	
		8/9/2011	9.3 SU	
Total nitrogen	1.0 mg/L Annual mean	2011	1.1 mg/L	AWW and FBC remain impaired with 1 annual mean exceedance.

Monitoring Summary

Sampling period: 8/31/2010 - 9/11/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM	VRWAT-A	101353	ADEQ	Clean Lakes Program
MID LAKE	VRWAT-B	101354	ADEQ	TMDL Monitoring
SOUTH END	VRWAT-SO	102564	ADEQ	TMDL Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(1-19) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, silver, zinc	(19-43) Ammonia, nitrite/nitrate, nitrogen, phosphate, phosphorus, total Kjeldahl nitrogen	(7-45) Dissolved oxygen, *E. coli*, pH, total dissolved solids

ED_013248_00000558-00090

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	Mercury (dissolved)
Missing Core Parameters	None
Missing Seasonal Distribution	Zinc (dissolved), cadmium (dissolved), copper (dissolved), *E. coli*, boron, manganese, copper, lead, mercury
Lab Detection Limits Not Low Enough	Lead (dissolved), mercury (dissolved), selenium

Priority	Monitoring Recommendations
High	Collect more dissolved mercury samples due to the exceedance.

Impairment Discussion
TMDL pending approval from EPA. Although only 3 out of 17 samples exceeded the pH standard (attaining based on the binomial rule), it will remain on the 303(d) list as it is associated with high nutrient levels in the lake.

ED_013248_00000558-00091

WEBBER CREEK

Headwaters - East Verde River
15060203-058
14.27 Miles

Category 2
Attaining some uses

Use Support

FC - Attaining • FBC - Inconclusive • AGL - Attaining
AWC - Attaining

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 ml	7/20/2010	313 cfu/100 mL	FBC is inconclusive with 1 exceedance outside the assessment window. No data in the last 3 years of assessment period.

Monitoring Summary

Sampling period: 7/20/2010 - 5/9/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
BELOW GERONIMO BOY SCOUT CAMP	VRWEB009.13	100690	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(3-5) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(4) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(5) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	*E. coli*
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Cadmium (dissolved)

Priority	Monitoring Recommendations
Medium	Collect more *E. coli* samples due to the exceedance. Use a lower reporting limit for dissolved cadmium.

ED_013248_00000558-00092

WEBBER SPRING

Spring Headwater - Webber Creek
15060203-516
0.04 Miles

Category 3
Inconclusive

Use Support

PBC - Inconclusive • AGL - Inconclusive

No Exceedances

Monitoring Summary

Sampling period: 3/28/2011 - 3/28/2011

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE CONFLUENCE WITH WEBBER CREEK	VRWES000.03	108742	ADEQ	TMDL - East Verde Project

Metal Samples	Nutrients & Related Samples	Other Samples
(1) Arsenic, boron, manganese, selenium	(0) None	(1) Dissolved oxygen, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	pH, *E. coli*, copper, lead
Missing Seasonal Distribution	pH, *E. coli*, copper, lead
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00093

WEST CLEAR CREEK

Meadow Canyon - Verde River
15060203-026B
23.5 Miles

Category 1
Attaining all uses

FC - Attaining • FBC - Attaining • AGI - Attaining
AGL - Attaining • AWW - Attaining

Unsupported

No Exceedances

Monitoring Summary

Sampling period: 7/20/2010 - 12/2/2014

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE CONFLUENCE WITH VERDE RIVER	VRWCL000.10	104199	USGS	Data Sharing Partnership
NEAR CAMP VERDE, AZ USGS -0950580	VRWCL010.66	100749	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(8-9) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(6-26) Ammonia, nitrate, nitrite, nitrite/nitrate, nitrite/nitrate, nitrogen, phosphate, phosphorus, total Kjeldahl nitrogen	(2-28) Dissolved oxygen, *E. coli*, pH, SSC, simazine, total dissolved solids, biocriteria, bottom deposits

Data Gaps and Monitoring Needs

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

Priority	Monitoring Recommendations
Low	Good core parameter coverage.

ED_013248_00000558-00094

WEST FORK OAK CREEK

Headwaters - Oak Creek
15060202-020
15.834 Miles

Category 3
Inconclusive

FC - Inconclusive • FBC - Inconclusive • AGL - Inconclusive
AWC - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
pH	9.0 SU	8/2/2011	9.6 SU	AGL, FBC and AWC are inconclusive with 1 exceedance in 5 samples.

Monitoring Summary

Sampling period: 7/5/2011 - 8/15/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
ABOVE FOURTH TRAIL CROSSING	VRWOK000.82	100693	OCWIC	

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(3) Ammonia, nitrate, nitrite, phosphorus	(1-5) Dissolved oxygen, *E. coli*, pH, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	pH
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, nitrogen, cadmium (dissolved), copper (dissolved), copper, lead, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, copper, lead, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect more pH samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00095

WET BEAVER CREEK

Long Canyon - Rarick
15060202-004
6.529 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGI - Attaining
AGL - Attaining • AWW - Attaining

Unofficial

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
E. coli	235 cfu/100 mL	7/24/2012	275.5 cfu/100 mL	FBC is inconclusive with 1 exceedance in 4 samples.

Monitoring Summary

Sampling period: 8/20/2010 - 4/22/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
UPSTREAM OF USGS GAGE NEAR RIMROCK	VRWBV012.56	102468	ADEQ	Ambient Monitoring

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	(4-13) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	*E. coli*
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Copper (dissolved), lead (dissolved), selenium, mercury (dissolved)

Priority	Monitoring Recommendations
Medium	Collect additional *E. Coli* samples due to exceedance.

ED_013248_00000558-00096

WET BEAVER CREEK

Rarick - Dry Beaver Creek
15060202-003
6.595 Miles

Category 2
Attaining some uses

FC - Attaining • FBC - Inconclusive • AGI - Attaining
AGL - Attaining • AWW - Inconclusive

Use Support

Exceedances

Parameter	Applicable Standard	Date	Result	Designated use support comments
Arsenic	30 ug/L	7/24/2012	43 ug/L	FBC is inconclusive with 3 exceedances in 7 samples (binomial).
		8/15/2012	37 ug/L	
		12/5/2012	37 ug/L	
E. coli	235 cfu/100 mL	7/24/2012	2419.6 cfu/100 mL	FBC is inconclusive with 1 exceedance in 7 samples.
SSC	80 mg/L	7/24/2012	620 mg/L	AWW is attaining. Exceedance occurred within 48 hours of storm event and was excluded. No median exceedances.

Monitoring Summary

Sampling period: 7/24/2012 - 4/30/2013

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MONTEZUMA WELL	VRWBV006.54	100685	ADEQ	Ambient Monitoring
BELOW MONTEZUMA ROAD	VRWBV002.97	105440	ADEQ	Ambient Monitoring

Metal Samples	Nutrients & Related Samples	Other Samples
(8) Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, selenium, zinc	(8) Ammonia, nitrite/nitrate, nitrogen, phosphorus, total Kjeldahl nitrogen	(2-8) Dissolved oxygen, *E. coli*, pH, SSC, total dissolved solids, bottom deposits, biocriteria

Data Gaps and Monitoring Needs

Parameters Needing More Samples to Assess	Biocriteria, arsenic, *E. coli*
Missing Core Parameters	None
Missing Seasonal Distribution	None
Lab Detection Limits Not Low Enough	Copper (dissolved), selenium, mercury (dissolved)

ED_013248_00000558-00097

Priority	Monitoring Recommendations
Medium	Collect a verification sample for biocriteria (IBI on 4/30/13 was 40 and inconclusive). Collect additional arsenic and *E. Coli* samples due to exceedances.

WHITEHORSE LAKE

15060202-1630
41 Acres

Category 3
Inconclusive

DWS - Inconclusive • FC - Inconclusive • FBC - Inconclusive
AGI - Inconclusive • AGL - Inconclusive • AWC - Inconclusive

Incomplete

No Exceedances

Monitoring Summary

Sampling period: 6/30/2012 - 9/30/2012

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT DAM	VRWHH-A	100090	USFS	Data Sharing Partnership

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(2) Dissolved oxygen, pH

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury (or mercury in fish tissue)
Missing Seasonal Distribution	Zinc (dissolved), dissolved oxygen, pH, nitrogen, phosphorus, cadmium (dissolved), copper (dissolved), *E. coli*, nitrite/nitrate, fluoride, arsenic, chromium, lead, boron, manganese, copper, mercury
Lab Detection Limits Not Low Enough	None

Priority	Monitoring Recommendations
Low	Collect core parameters to represent at least 3 seasons during an assessment period.

ED_013248_00000558-00099

WILLOW CREEK RESERVOIR

15060202-1660
294 Acres

Category 5
Impaired

Ammonia (2012/14)

IMPAIRMENT STATUS

FC - Attaining • FBC - Inconclusive • AGI - Inconclusive
AGL - Inconclusive • AWW - Impaired

No Exceedances

Monitoring Summary

Sampling period: No samples

Site Name(s)	Site ID #	DEQ #	Sampling Agency	Purpose
AT MID LAKE	VRWIC-NLS	105804	ADEQ	Clean Lakes Program

Metal Samples	Nutrients & Related Samples	Other Samples
(0) None	(0) None	(9) Fish tissue mercury

Data Gaps and Monitoring Needs

Exceedances Needing More Samples to Assess	None
Missing Core Parameters	All core parameters except mercury
Missing Seasonal Distribution	All core parameters except mercury
Lab Detection Limits Not Low Enough	N/A

Priority	Monitoring Recommendations
High	Collect more samples to support TMDL development.

Impairment Discussion
Remains impaired for ammonia (2012/14).

ED_013248_00000558-00100