# APPENDIX F
## Water Quality Improvements

Water quality improvements have resulted in pollutants no longer impairing an assessment unit. Each is a success story! Significant resources have been used to identify sources and control pollutant contributions in each case.

These water quality improvements are dependent on continued application of the improvement noted in this table. Therefore, decision makers about future activities in the watershed or additional discharges need to be aware and continue to support these improvements.

### Colorado - Lower Gila Watershed

Lake Havasu (Thompson Bay) 15030101-0590 19,780 acres

*E. coli* bacteria
Delisted in 2002;
first listed in 1996

1. Improved sanitary facilities at beaches.
2. Public education concerning marine wastewater disposal.
3. Improvements in public wastewater treatment facilities to reduce nutrient loading.
4. Improvement in flow into Thompson Bay under London Bridge.

No remaining impairments

Painted Rock Borrow Pit 15070201-1010 185 acres

Pesticides in fish tissue
Delisted in 2014;
first listed in 1988

General use of the pesticide dieldrin and DDT banned
No remaining impairments

### Little Colorado Watershed

Nutrioso Creek 15020001-017A Headwaters to Nelson Reservoir 13.3 miles

Turbidity
Delisted in 2006;
first listed in 1992

Cattle removed from the riparian area through addition of fencing and alternative sources of water. Riparian area improvements noted. TMDL approved in 2002.
No remaining impairments

### Middle Gila Watershed

Gila River 15070101-001, 005, 007, 008, 009, 010, 014, 015 82.5 miles
Salt River to Painted Rock Reservoir

Pesticides in fish tissue
Delisted in 2014;
first listed in 1988

General use of the pesticide dieldrin and DDT banned

Hassayampa River 15070101-001B Buckeye Canal to Gila River 2.3 miles

Pesticides in fish tissue
Delisted in 2014;
first listed in 1998

General use of the pesticide dieldrin and DDT banned
No remaining impairments

Mineral Creek 15050100-012B Devils Canyon to Gila River 19.6 miles

Beryllium, zinc, and low pH
Delisted in 2004;
first listed in 1992

Mineral Creek is diverted around a large mining operation. Monitoring surface water quality to assure this is sufficient to protect water quality in the stream.
Listed in Category 5 for other pollutants



ED_013248_00000494-00001

## Middle Gila Watershed - continued

| | | | |
|---|---|---|---|
| Painted Rock Reservoir<br>Pesticides in fish tissue<br>Delisted in 2014;<br>first listed in 1988 | 15070101-1020A | 100 acres | |
| | General use of the pesticide dieldrin and DDT banned<br>No remaining impairments | | |
| Salt River<br>Pesticides in fish tissue<br>Delisted in 2014;<br>first listed in 1988 | 15060106B-001D | 23rd Avenue WWTP to Gila River | 14.1 miles |
| | General use of the pesticide dieldrin and DDT banned<br>No remaining impairments | | |

## Salt Watershed

| | | | |
|---|---|---|---|
| Christopher Creek<br>Phosphorus<br>Delisted in 2016;<br>first listed in 2006 | 15060105-353 | Lower Pinal Creek WTP to Salt River | 6.4 miles |
| | Through ADEQ Water Quality Improvement Grant (WQIG) funding and other projects, septic system upgrades were made throughout the impaired watershed. | | |
| Pinal Creek<br>Copper, manganese, zinc, and low pH<br>Delisted in 2002;<br>first listed in 1988 | 15060103-280D | Lower Pinal Creek WTP to Salt River | 6.4 miles |
| | Ground water is pumped so that surface water flow discontinues (flow was intermittent originally in this area). The water is treated and pumped back into the stream, providing clean perennial flow.<br>No remaining impairments | | |
| Tonto Creek<br>Nitrogen<br>Delisted in 2016;<br>first listed in 2004 | 15060105-013A<br>15060105-013B | Headwaters to 341810/1110414<br>341810/1110414 to Haigler Creek | 8.1 miles<br>8.5 miles |
| | Through ADEQ Water Quality Improvement Grant (WQIG) funding and other projects, septic system upgrades were made throughout the impaired watershed. AGFD also made several upgrades to the facility. These projects working in concert with each other were effective in reducing total nitrogen loads in Tonto Creek. | | |

## San Pedro Watershed

| | | | |
|---|---|---|---|
| Mule Gulch<br>Dissolved zinc, dissolved copper and low pH<br>Delisted in 2014;<br>first listed in 1998 | 15080301-090B<br>15080301-090C | Lavender Pit to former Bisbee WWTP<br>Bisbee WWTP to Highway 80 Bridge | 0.8 miles<br>3.8 miles |
| | Recent water quality data has shown that the concentrations of dissolved metals have declined and pH has risen within Mule Gulch. Freeport McMoRan Corporation (FMC) has implemented several projects within the last decade that have improved conditions in Mule Gulch. | | |

## Santa Cruz Watershed

| | | | |
|---|---|---|---|
| Santa Cruz River<br>Total residula chorline, ammonia, cadmium<br>Delisted in 2016;<br>first listed in 2010 and 2012/14 | 15050301-009 | Nogales WWTP to Josephine Canyon | 9.1 miles |
| | Improvements made in 2009 to the Nogales International Waste Water Treatment Plant have improved the effluent quaity and the Santa Cruz River. The reach is now attaining the applicable chlorine, ammonia and cadmium water quality standards. | | |



ED_013248_00000494-00002

## Santa Cruz Watershed- continued

| | | | |
|---|---|---|---|
| Santa Cruz River<br>Ammonia<br>Delisted in 2016;<br>first listed in 2010 | 15050301-003B | Roger Road WWTP Outfall to Intermittant Reach | 2.9 miles |

Pima County replaced the Roger Road WWTP with the Agua Nueva WRF in 2013 resulting in the reach now attaining the applicable ammonia water quality standards.
No remaining impairments

| | | | |
|---|---|---|---|
| Santa Cruz River<br>Dissolved copper<br>Delisted in 2016;<br>first listed in 2010 | 15050303-005A | HUC 150303 Boundary to Baumgartner Rd | 14.5 miles |

Ina Road WWTP was replaced by Tres Rios WRF in 2013. There were no copper exceedances in the post-upgrade water quality data.
No remaining impairments

## Verde Watershed

| | | | |
|---|---|---|---|
| Munds Creek<br>*E. coli* bacteria, nitrogen and phosphorus<br>Delisted in 2002;<br>first listed in 1994 | 15060202-415 | Headwaters to Oak Creek | 17.0 miles |

Wastewater reuse applications modified to keep effluent from contaminating Munds Creek.
No remaining impairments

| | | | |
|---|---|---|---|
| Ashbrook Wash<br>*E. coli* bacteria<br>Delisted in 2006;<br>first listed in 2004 | 15060203-989 | Grande Wash to Verde River | 2 miles |

Wastewater treatment plant no longer discharging to this wash.
No remaining impairments

| | | |
|---|---|---|
| Verde River<br>Turbidity<br>Delisted in 2010;<br>first listed in 1990 | 15060202-037, 025, 015, 15060203-027, 025<br>Unnamed Trib (15060202-065) - Fossil Creek | 78.1 miles |

Turbidity TMDL completed in 2002. Best management practices are implemented to minimize the impact of grazing and reduce soil erosion.
No remaining impairments



ED_013248_00000494-00003