ADEQ
Arizona Department of Environmental Quality

Nonpoint Source Pollution: FY2023 Annual Report for Arizona

Water Quality Division
September 1, 2023 FINAL

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Table of Contents

1 Introduction

1.1 Arizona Nonpoint Source Annual Report

The Arizona Nonpoint Source (NPS) Annual Report for state fiscal year 2023 (FY23) summarizes Arizona Department of Environmental Quality (ADEQ) NPS Program activities that occurred between July 1, 2022 and June 30, 2023. The state's FY23/24 PPG Work Plan Output Report also documents FY23 NPS-funded activities and is a companion document to this report.

The majority of work performed by ADEQ's NPS Program is funded by Clean Water Act Section 319(h) grant monies, awarded by the U.S. Environmental Protection Agency (EPA). Section 319(h) (11) requires states to report annually on progress in meeting the schedule of milestones contained in their Nonpoint Source Management Plans. It also requires, to the extent possible, nonpoint source pollutant loading reductions and improvements in water quality resulting from program implementation. For more information about Arizona's NPS Program's goals and structure for the FY20-24 reporting period, refer to the FY20-24 Five Year Plan.[1]

The FY20-24 NPS Five Year Plan has the following goals:

1. Identify and prioritize NPS threats and impairments
2. Plan and implement actions to prevent and reduce nonpoint source pollution discharges to protect and restore water quality
3. Evaluate state programs, rules, and authorities to protect and restore water quality for effectiveness and potential need for modification.

1.2 Executive Summary

To make this report as useful as possible as an evaluation tool for EPA and a planning tool for ADEQ, each milestone in the Five Year Plan Updates FY2023 Table was evaluated based on whether it was on track for the given year and whether it was on track for the overall five-year planning period. This allows staff to identify when additional resources may be needed to keep a milestone on track over a period of several years, and plan accordingly for the following fiscal year.

Milestone updates provide status information for the given reporting year. Milestones are identified as either "not applicable" (no activity for the reporting year), "ongoing" (activity took place in the reporting year and will be completed in a later year, or the task recurs each fiscal year), or "complete" (task is fully completed for the entire five-year planning horizon).

In addition, status updates are color-coded to denote whether they are on track relative to the overall five-year planning period. Milestones are identified as either:

[1] See http://azdeq.gov/node/315

-on track/ongoing ( ),
-at risk of falling off track ( )
-off track ( )
- completed ( )

The yellow, or "at risk" status update indicates that while the task may currently be on track (or is not yet due to have been initiated), ADEQ is aware of issues that could threaten the ability of the project to stay on track.

ADEQ was successful in staying on track with a majority of the milestones for FY23. ADEQ has completed 46 percent of milestones with the other 38 percent majority being ongoing. Only 3 percent of tasks were identified as at risk for falling behind schedule in coming years if additional focus and/or resources are not applied. Roughly 13 percent of tasks are off track, as a result of shifting priorities.

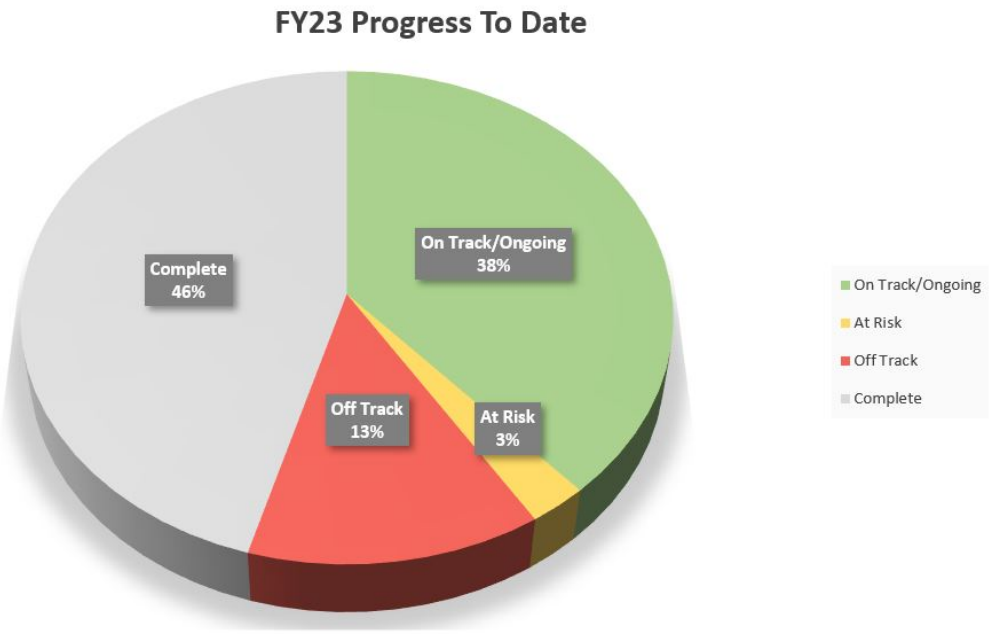

Figure 1: ADEQ Progress

1.3 FY23 Highlights

1.3.1 Efforts to Protect Oak Creek Honored at the 2023 National Association of Environmental Professionals Environmental Excellence Awards

ADEQ and its partners were recognized with the 2023 Environmental Excellence Award from the National Association of Environmental Professionals in May 2023 in Phoenix, AZ. Oak Creek is an Outstanding Arizona Water and one of the state's few perennial streams. An estimated three million people visit the area each year, making it one of the most popular and highly recreated spots in the state. The water is not meeting standards for *E. coli*, meaning people fishing, swimming, wading and camping are exposed. Certain strains of *E. coli* can cause health problems ranging from stomach cramps and diarrhea to anemia and kidney failure. Unintended consequences from visitation and insufficient infrastructure, such as toilets and trash disposal, put public health and the environment at risk.

In 2020, ADEQ decided to address this public health threat through a targeted approach that included collaborating with local, state, and federal entities to create a sustainable plan to improve water quality. In the past three years, ADEQ and its partners have closed over 30 unauthorized parking areas, rehabilitated over 240 unpermitted trails, installed a ½ mile of fencing to manage access to a popular state park, removed more than 15,000 pounds of litter that attracts animals and pollutes the water, and installed 37 pet waste stations. Additionally, a targeted social media campaign continues to educate recreators about how to do so responsibly at Oak Creek. To focus continued efforts on water quality improvement, ADEQ partnered with a local university to conduct multi-year intensive sampling and research efforts to identify the remaining major sources of *E. coli*.

Compared to the 10 years preceding 2020, when the first implementation project was completed, data show measurable improvements in water quality. From the headwaters to 6.5 miles downstream, Oak Creek flows through a highly recreated scenic canyon and is divided into two segments for purposes of monitoring water quality. Data show a 76 percent reduction in exceedance rate and 57 percent reduction in *E.coli* concentration on the lower segment, which includes an Arizona State Park. In the headwaters segment, data show a 55 percent reduction in exceedance rate and 45 percent reduction in *E. coli* concentration. ADEQ and its partners have invested more than $1 million in this collaborative effort. About 75 percent of the funds came from a federal Clean Water Act Section 319 grant awarded to ADEQ by the EPA. ADEQ also received a Water Protection Fund grant from the Arizona Department of Water Resources. Additionally, the City of Sedona and the Sedona Chamber of Commerce contributed $25,000. Recently, the U.S. Forest Service, one of our federal partners, was awarded nearly $1.8 million by the Collaborative Aquatic Landscape Restoration program, ensuring continued success in water quality improvements in Oak Creek Canyon.

Partners include:

AZ Department of Transportation
AZ State Parks and Trails
Arizona State University
Conservation Legacy and Ancestral Lands Crew
City of Sedona
Leave No Trace
Natural Channel Design
Northern Arizona University
Oak Creek Watershed Council
Sedona Chamber of Commerce
U.S. Forest Service and National Forest Foundation

1.3.2 Multiple Remediation Efforts at Gibson Mine Further Reduce Copper Concentrations in Pinto Creek

The Arizona Department of Environmental Quality (ADEQ) is prioritizing cleanup at abandoned mines in watersheds where metals concentrations are impairing surface waters. Pinto Creek is a prioritized watershed that has a 33-mile intermittent stream that discharges into Arizona's largest lake entirely within state borders, Roosevelt Lake. The upper half of the creek is located on the Tonto National Forest, about 1.5 hours east of Phoenix. The woodland and patchy shrubland is home to plants, animals, and a handful of ranchers. The watershed provides habitat for many flora and fauna, including endangered species like the Mexican spotted owl, yellow-billed cuckoo, and Arizona hedgehog cactus. Pinto Creek and its tributaries are fed by groundwater, snowmelt, and rainfall. In addition to storing drinking water for millions of homes and businesses in the Phoenix Metro Area, Roosevelt Lake is a popular recreation area. The watershed provides cattle grazing, hiking, hunting, and other land uses. Restoring the water quality of Pinto Creek to a natural state and minimizing anthropogenic impacts from abandoned mines was critical to protecting this ecologically and economically important water.

The Gibson Mine is the one of the six mines remediated and is privately owned. The Franciscan Friars of California were gifted the land that included Gibson Mine in 1969. Site unseen, they allowed sporadic, small-scale operations to continue into the early 1990s. ADEQ inquiries raised their awareness of the site, which led to modern operations ceasing and a partnership with ADEQ to address historic contamination.

The Gibson Mine was identified as a major contributor of copper in Pinto Creek by ADEQ. The mine left behind significant waste rock and tailings within the Gibson Mine Tributary to Pinto Creek, as well as former heap leaching operations. Initial investigations were conducted in 1991, which confirmed the leach solution ponds had been overfilled by precipitation and overflowed into Pinto Creek. Adits and many waste rock and tailings piles were also observed to be discharging.

Funded through the Clean Water Action Section 319 grant, initial reclamation and closure activities took place in 2006 and 2007. The activities included excavating and removing 100,000 tons of mine-impacted soil. This work resulted in a 50 percent reduction in the site's contribution of copper to the Gibson Mine Tributary of Pinto Creek. However, the tributary and Pinto Creek continued to exceed the standard for copper.

In 2011, ADEQ funded additional work at the site to control water impacting the waste rock and tailings piles. The work included site contouring, stormwater management and control structures, and re-vegetating disturbed piles. This second effort to mitigate the impacts of the mine reduced copper by 75 percent, but exceedances of the surface water standards continued.

In 2020, ADEQ supplemented water quality samples with soil X-Ray Fluorescence (XRF) to identify hot spots of contamination within the tributary and at the Gibson Mine. ADEQ contracted Arcadis in 2021 to remediate the hot spots. The third remediation effort began in October 2022 and was completed in June 2023. Materials in the identified hot spots were excavated and consolidated away from the tributary. Clean backfill replaced soil in the excavated areas and was seeded for revegetation. Improvements were also made to a stormwater bypass culvert headwall and a v-ditch to convey clean stormwater around the site. A turf-reinforced mat was installed to prevent erosion into the copper-rich bedrock. During and post-remediation, Arcadis and ADEQ used UAV/drones to visually examine the progress of the work and capture photographic records. The use of drones is becoming more commonplace at sites remediated by ADEQ due to their accessibility and birds-eye-view into expansive and often remote sites.

Now, after the remediation of Gibson Mine and several other abandoned mines in the watershed by the U.S. Forest Service, Pinto Creek is meeting the protective water quality standards for copper.

Five Year Plan Updates FY2023

1.0 Goal: Identify and prioritize NPS threats and impairments	
1.1 OBJECTIVE: **Monitor surface and groundwater quality and analyze data to fulfill state and Clean Water Act requirements.**	
1.1.1 STRATEGY: Develop a comprehensive monitoring strategy that coordinates with NPS priorities	
Milestones:	
1. Complete Comprehensive Monitoring Strategy Report (FY20)	Completed
Comments	
Completed and sent to EPA on 6/30/20	
1.1.2 STRATEGY: Conduct ambient water quality monitoring to aid in assessment determinations	
Milestones:	
1. Complete sampling per annual work plan (Annually)	Ongoing
Comments	
ADEQ reports that over 1,000 samples have been taken in FY23 throughout the state by internal staff, contractors and volunteers.	
2. Implement a focused sampling approach to combine data gap, source identification and effectiveness monitoring activities across the value stream (FY20)	Completed
Comments	
Completed.	
3. Close 20 data gaps annually to reduce the number of unassessed perennial waters from the previous 305(b) assessment report. (FY20-24)	Ongoing
Comments	
ADEQ continues to close data gaps using a dashboard programmed in R, a coding platform. Sampling is conducted by internal staff each year. Fifty one datagaps were closed in FY23 resulting in 49 waters that supported all uses and 2 waters that were determined to be impaired.	
1.1.3 STRATEGY: Conduct Probabilistic Survey and evaluate trends since last probabilistic survey	
Milestones:	

1. Complete probabilistic fish report (FY20)	Completed
Comments	
Completed November 2020. Report available at https://static.azdeq.gov/wqd/reports/fish.pdf.	
2. Select waterbody type for probabilistic study (FY21)	N/A
Comments	
Deferred to FY22 in the Performance Partnership Grant (PPG) workplan.	
3. Complete probabilistic survey on selected waterbody type (FY22)	Completed
Comments	
ADEQ completed the probabilistic study on mercury and PCBs in fish tissue and submitted it to EPA on 11/5/20. In FY22 and FY23, ADEQ worked with EPA to identify the next probabilistic study, which will be done in coordination with the National Rivers and Streams Survey (NRSA). ADEQ has already started gathering NRSA data in FY23 and will complete data gathering in FY24 and FY25.	
4. Conduct trend analysis on probabilistic survey data (FY23)	Ongoing
Comments	
The trend analysis will be conducted with ongoing data collection efforts.	
1.1.4 STRATEGY: Develop and implement in-field tools to increase the success of data collection efforts and identify potential sources and water quality improvements more efficiently.	
Milestones:	
1. Continued development and deployment of at least 10 remote environmental monitoring (REM) telemetry to improve sample and data collection (Annually)	Ongoing
Comments	
Additional REMs have been installed at the former Eugene Mine and Alum Gulch watershed in FY23. The REMs notify ADEQ of water flow in order to successfully obtain samples. REMs are a key component in the sampling strategy for mine remediation projects and Oak Creek projects.	
2. Perform dry soil metal characterization using X-ray Fluorescence (XRF) tool at 5 sites to aid in mine site prioritization (Annually)	Ongoing
Comments	
XRF analyses continue to be an additional method to characterize tailings and waste rock piles at abandoned mine sites.	
3. Expand use of field leach method to quantify potential runoff from 5 mine sites to aid in site prioritization (Annually)	Ongoing
Comments	

In addition to stream sampling and XRF, field leach method continues to be a method to characterize tailings and waste rock piles at abandoned mine sites.	
4. Use Unmanned Aerial Vehicles (drones) to aid in plan development and post- implementation effectiveness monitoring of both mine and grazing related projects (FY20-24)	Ongoing
Comments	
ADEQ continues to use drones to monitor remediation activities at former mine sites.	
5. Develop partnership and deploy a lake monitoring buoy to collect data that may help predict conditions resulting in Harmful Algal Blooms (HABs) (FY21)	Off Track
Comments	
ADEQ is working on finding another state agency or ADEQ team that can utilize the buoy. ADEQ participates in a monthly partnership meeting on HABs with EPA and the Arizona Department of Health Services to develop an approach to HABs.	
6. Reevaluate priorities for equipment needs on an annual basis, redeploy as necessary, and report in annual NPS report (Annually)	Ongoing
Comments	
ADEQ continues to evaluate equipment needs.	
1.1.5 STRATEGY: Conduct source identification monitoring to identify and quantify pollutant sources contributing to impaired/not-attaining waters	
Milestones:	
1. Determine monitoring needs to identify and quantify suspect pollutant sources to high priority waters (Annually) Six waterbodies in FY20: • Lynx Creek • Davidson Canyon • 3R Canyon • Copper Creek • Babocomari River • Walnut Gulch Five waterbodies in FY21: • Lynx Creek • Copper Creek • Babocomari River • Davidson Canyon • Walnut Gulch) Four waterbodies (Hassayampa; Cash Mine Creek; Big Bug Creek; Pinto Creek; Alum Gulch; Oak Creek) in FY22	Completed

Four waterbodies (Hassayampa; Cash Mine Creek; Big Bug Creek; Pinto Creek; Alum Gulch; Oak Creek; 3R Canyon; Humboldt Canyon; Eugenie Stream) in FY23 Three waterbodies (TBD) in FY24	
Comments	
In FY22, ADEQ completed its draft 305(b) Assessment of waterbodies. ADEQ continues to conduct site specific monitoring at the following seven waterbodies: Hassayampa River, Cash Mine Creek, Big Bug Creek, Pinto Creek, Alum Gulch, 3R Canyon, and Oak Creek. Sampling continues at these waterbodies to assess contamination levels and help inform watershed improvement projects (i.e. McCleur Mine, Cash Mine, Gibson Mine, Exposed Reef Mine, Three R Mine, Oak Creek improvements, etc.).	
2. Complete data collection according to annual FY sampling plan (FY20-24)	Ongoing
Comments	
Sampling for FY23 was completed according to plan. Results are submitted through the Water Quality Exchange database.	
3. Analyze data and update priority project rankings based upon results (Annually)	Ongoing
Comments	
ADEQ's hydrogeologists and scientists analyze sample data to determine load reductions and overall health of the waterbody. Results are submitted to EPA's Water Quality Exchange database. Prioritized waterbodies continue to be Hassayampa River and related tributaries (metals), Alum Gulch and related tributaries (metals), and Oak Creek (E.coli). ADEQ is seeing significant E.coli reductions in 2 impaired reaches of Oak Creek, contributed to its multi-year commitment and funding of watershed improvement projects. ADEQ is also seeing reductions in metal loads near several abandoned mine sites near the Hassayampa River. These results demonstrate that ADEQ's long-term commitment and strategic prioritization of waterbodies significantly increases the likelihood of waterbody load reductions.	
1.1.6 STRATEGY: Conduct effectiveness monitoring in waters where water quality improvement/protection efforts have been implemented.	
Milestones:	
1. Collect water quality data to determine if projects implemented were effective at improving water quality including NRCS NWQI projects as appropriate (Annually)	Ongoing
Comments	
ADEQ is collecting effectiveness samples at several remediated abandoned mine sites, including Storm Cloud Mine, McKinley Mill, Three R Mine, and Hillside Mine. ADEQ continues to collect samples in Oak Creek to determine the effectiveness of projects that reduce E.coli loadings.	
2. Determine effectiveness monitoring needs to quantify improvements to high priority waters: Five waterbodies (Alum Gulch, Boulder Creek, Mule Gulch, Pinto Creek, Copper Creek) (FY20) Seven waterbodies (Hassayampa River, Boulder Creek, 3R Canyon, Pinto Creek, French Gulch, Oak Creek, Big Bug Creek) (FY21) Six waterbodies (TBD) (FY22)	Ongoing

Six waterbodies (TBD) (FY23) Three waterbodies (TBD) (FY24)	
Comments	
ADEQ continues to conduct effectiveness monitoring on the following six waterbodies: Hassayampa River, 3R Canyon, Unnamed Trib to 3R Canyon, Boulder Creek, Harshaw Creek, and Oak Creek. ADEQ is measuring the effectiveness of past legacy mine remediation along the Hassayampa River (Storm Cloud Mine, McKinley Mill), 3R Canyon and Unnamed Trib (3R Mine), Boulder Creek (Hillside Mine), and Harshaw Creek (Lead Queen Mine). ADEQ continues to sample along Oak Creek to measure the effectiveness of several projects.	
8. Use effectiveness monitoring data to delist waters as applicable (FY22, 24)	Ongoing
Comments	
ADEQ is analyzing E.coli data collected at Oak Creek to determine if some reaches are eligible for Clean Water Act impairment delistings.	
9. Develop at least 1 NPS success story and submit to EPA via GRTS per waterbody below:	
•Boulder Creek (FY20) (annually by July 1st)	Completed
Comments	
Boulder Creek (Hillside Mine remediation): https://www.epa.gov/system/files/documents/2022-02/az_boulder-creek_2020_508.pdf ADEQ submitted an additional story for: Harshaw Creek (Lead Queen Mine Remediation): https://www.epa.gov/system/files/documents/2022-10/AZ_Harshaw%20Creek_2019_508.pdf	
• Oak Creek (FY23)	Completed
Comments	
ADEQ submitted NPS Success Stories for other watersheds listed below. ADEQ will work on a story for Oak Creek upon completion of projects and water quality data analyses. Hassayampa River (McKinley Mill Remediation): With EPA for review (as of 2/24/23) Pinto Creek (Gibson Mine remediation): With EPA for review (as of 5/1/23)	
• Big Bug Creek (FY24)	N/A
Comments	
10. Collect Data for the evaluation of bioassessment tools for effectiveness monitoring at 20 sites on metals impaired streams (FY20-FY23)	Ongoing
Comments	

ADEQ continues to collect bioassessment samples at Hassayampa River to compliment water quality data and determine the extent of metal contamination in the watershed. ● Downstream of McKinley Mill (MGHSR113.86) 3 replicate macroinvertebrate samples (proposed 2024-2028) ● Downstream of Senator Mine (MGHSR112.91) 3 replicate macroinvertebrate samples (proposed 2024-2028)	
11. Evaluate Index of Biological Integrity (IBI) and results of metals bioassessment study (FY24)	N/A
Comments	
12. Write a report summarizing the findings of the bioassessment study (FY24)	N/A
Comments	
1.1.7 STRATEGY: Work with external agencies and volunteer partners to collect data to fulfill monitoring goals.	
Milestones:	
1. Train at least 10 volunteer groups to assist in fulfilling sampling plan goals (Annually)	Completed
Comments	
Volunteer groups have been trained to assist with data gaps and pollution source identification. Sustained training continues for groups such as: Slide Rock State Park, Tonto National Forest, Friends of the Forest, and AZ Game and Fish- San Pedro.	
2. Develop or update volunteer visual aids including Sample and Analysis Plan, video lessons, handbook, and reference guides (FY20)	Completed
Comments	
A new Sample and Analysis Plan template has been created for volunteers to use as a reference. Microvideo lessons on Dilutions for E. coli Samples (https://www.youtube.com/watch?v=H2TiZhfv11c&feature=youtu.be) and Trash Clean Up Process (https://www.youtube.com/watch?v=BNFN2h_-r0U&feature=youtu.be) were completed. Additionally a new Arizona Water Watch Volunteer handbook is available for volunteers: https://static.azdeq.gov/wqd/azww/handbook.pdf	
3. Direct volunteer groups to focus on agency high priority water data needs (Annually)	Ongoing
Comments	
ADEQ has focused Arizona Water Watch volunteers on key reaches to better focus remediation efforts and understand project effectiveness. These waterbodies include the Santa Cruz River, Sonoita Creek, and Fossil Creek. Community Science data led to a proposed 2024 Clean Water Act Section 303(d) list removal of Sonoita Creek.	
1.1.8 STRATEGY: Complete and submit the 305(b)/303(d) integrated report on a biannual schedule.	
Milestones:	

Use a real-time assessment tool to guide data collection to minimize data gaps and determine the current status of monitored waters (Weekly)	Completed
Comments	
ADEQ continues to use its award-winning real-time assessment tool to track new impairments and provisional delistings. Metrics include Key Performance Indicators for individual reaches and individual pollutant parameters. ADEQ utilizes the weekly metrics to help inform decision-making.	
Enhance real-time assessment tool to an enterprise, ADEQ IT-supported tool (FY21)	Completed
Comments	
Assessment tool enhancements completed in April 2021.	
2020 CWA 303(d) List and supporting 305(b) report (FY20)	Completed
Comments	
The 2020 cycle has been combined with the 2022 cycle.	
2022 CWA 303(d) List and supporting 305(b) report (FY22)	Completed
Comments	
The 2022 Assessment was submitted to EPA for approval on 4/5/2022. The approved Assessment available online here: http://azdeq.gov/node/7813	
2024 CWA 303(d) List and supporting 305(b) report (FY24)	Ongoing
Comments	
ADEQ and EPA collaborated on the draft 2024 Assessment in FY23. ADEQ initiated the public comment period for the 2024 Assessment on 6/28/23.	
1.2 OBJECTIVE: Prioritize internal resources toward the protection of high priority waters	
1.2.1 STRATEGY: Protection of high priority waters including monitoring for antidegradation of outstanding Arizona Waters and identification of other high priority waters	
Milestones:	
1. Update and complete antidegradation implementation procedures for water quality standards (FY23)	At risk
Comments	
EPA approved ADEQ's antidegradation implementation procedures in the 2008/2009 Triennial Review. An update has not occurred since then. This commitment will need to be adjusted due to ADEQ's current prioritization of cleaning up impaired waters. However, ADEQ's Surface Water Protection team (permits, compliance, enforcement) regularly conducts anti-degradation reviews and distinguishes requirements for MS4 and CGP/MSGP permits.	
2. Use GIS tools to identify high-quality waters for protection (FY23)	At risk

Comments	
Similar to the update above, this commitment will need to be adjusted due to the current prioritization of cleaning up impaired waters.	
3. Evaluate water quality of existing Outstanding Arizona Waters for antidegradation (FY24)	At risk
Comments	
ADEQ has identified the need for a comprehensive plan for Outstanding Arizona Waters, which can be prioritized in future years.	
Note: Outstanding Arizona Waters are listed in the Arizona Administrative Code R18-11-112	
2.0 Goal: Plan and implement actions to prevent and reduce nonpoint source pollution discharges to protect and restore water quality	
2.1 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by mining-related nonpoint sources	
2.1.1 STRATEGY: Develop prioritization methodology for metals impaired stream reaches and contributing mine sites	
Milestones:	
1. Complete an inventory of potential sources on currently metal impaired waters (FY21)	Completed
Comments	
A surface-level inventory of potential sources has been identified using past TMDL and watershed plans. The potential sources are all legacy mining sites, distributed across currently prioritized waterbodies like Hassayampa River, Pinto Creek, and Humboldt Canyon/Alum Gulch. ADEQ will be developing an in-depth inventory of sources when it reviews and catalogues its current TMDLs and watershed plans. Potential sources will be prioritized as future KOUI (Known, Ongoing, Unauthorized Impact) sites.	
2. Prioritize stream reaches and mine sites, using ADEQ's surface water improvement priorities strategy for FY20 (FY20)	Completed
Comments	
High priority sites (stream name) for FY20 included 3R mine (3R Canyon), Poland Walker Tunnel (Big Bug Creek), McKinley Mill and Storm Cloud Mine (Hassayampa River), Gibson Mine (Pinto Creek). These will continue to be priorities in FY21 as we begin to implement remedial projects	
3. Rank impaired stream reaches and mine sites for project implementation based on ADEQ's surface water improvement priorities strategy (FY21)	Completed
Comments	
Based on ADEQ's priorities strategy, mine/KOUI sites are of highest priority. The sites are located on jurisdictional waters, making them even higher priority. ADEQ is implementing remediation at 7 mining sites: Gibson Mine, McKinley Mine, Storm Cloud Mine, Cash Mine, McCleur Mine, Eugene Mine, and Poland-Walker Tunnel. In FY21, remediation was completed at the Storm Cloud Mine and 3R Mine.	
4. Update prioritization list (Annually)	Completed
Comments	

No change to prioritization list in FY23. Significant time and monetary investments in consistent watersheds is demonstrating water quality improvements towards potential delists.	
Note: 3 See ADEQ's FY20-24 Nonpoint Source Pollution Five Year Plan, Executive Summary	
2.1.2 STRATEGY: Identify and pursue additional funding sources for mine remediation projects	
Milestones:	
1. Develop standard work to establish partnerships with external entities to cooperatively implement projects (private landowners, land management agencies) (FY20)	Completed
Standard work has been developed and current partnerships include US Forest Service, BLM, private landowners, volunteer groups, State Land Department, private consultants, Arizona Mining Association, Freeport McMoRan, and EPA.	
2. Develop talking points to approach external entities for possible funding support (FY20)	Completed
Comments	
ADEQ has engaged several external entities for funding support in FY20, including: the USFS, which will result in a Participating Agreement allowing ADEQ to perform remedial work at the Poland Walker Tunnel and Eugene mine (both degrade Big Bug Creek). This agreement will be finalized in FY21 and transfer $300,000 to ADEQ to perform the work; the Arizona Mining Association, who participated in a Kaizen event on abandoned mines in January 2020 and offered support and resources to remediate abandoned mines.	
3. Use priority ranking to pursue additional internal (non-319) and external funding sources for high priority projects (Annually)	Ongoing
Comments	
ADEQ continues to regularly assess its funding sources and has created metrics to measure how quickly they are being spent. ADEQ pursued internal (state) funding from the Water Quality Assurance Revolving Fund (WQARF) and external (federal) Performance Partnership Grant (PPG) funding for mining projects in FY23. ADEQ was also awarded a grant from the AZ Department of Water Resources for continued watershed improvement projects in Oak Creek (total awarded amount is over $238,000 for additional social trail rehabilitation to prevent erosion and E.coli loadings).	
4. Pursue the establishment of state funding source to address inactive mine sites (FY24)	N/A
Comments	
2.1.3 STRATEGY: Direct fund projects on high priority waters	
Milestones:	
1. Develop and implement standard work to secure internal approval for direct funded 319 projects (FY20)	Completed
Comments	
ADEQ's Watershed Improvement Unit utilizes a standard work to develop project pitches given to the WQD Director to obtain approval on direct-funded 319 projects.	

2. Develop a process to determine when surface water discharges from abandoned mines are impacting unregulated private drinking water wells (FY20)	Off track
Comments	
In FY20, this project was determined to be beyond the authority and expertise of the Surface Water Quality Improvement team. Efforts are prioritized to remediate abandoned mine sites and their impacts to nearby streams and rivers. ADEQ will be contemplating drinking water impacts, along with other impacts, on public health and the environment by following national Good Samaritan legislation development and any other national abandoned mine land clean-up efforts.	
3. Establish a process for ensuring that all 319 direct-funded projects meet EPA's 9 key elements for watershed-based plans (FY21)	Completed
Comments	
All current 319-funded projects meet EPA's 9 key elements for watershed plans. Arizona is covered by multiple, broad-scoped 8-digit HUC watershed plans called "NEMO Plans" (online here: http://azdeq.gov/node/664). NEMO plans cover 8 of the 9 elements from EPA's Watershed Planning Handbook. The remaining element, load reduction data, is provided by a contract with the University of Arizona (Master Watershed Steward Contract). Load reductions pre- and post- projects are calculated by Professor Guertin and provided to ADEQ for implemented projects at mining sites and Oak Creek. All load reduction data is submitted to EPA's Grants and Reporting Tracking System (GRTS). Additional Watershed Improvement Plans (WIPs) for smaller HUCs also provide the necessary key elements for certain watersheds.	
4. Use prioritized sources to compete for internal funding sources (319, WQARF, PPG) (Annually)	Ongoing
Comments	
ADEQ continues to utilize other funding sources to compliment the use of 319 funds. ADEQ pursued internal (state) funding from the Water Quality Assurance Revolving Fund (WQARF) and external (federal) Performance Partnership Grant (PPG) funding for mining projects in FY23. ADEQ was also awarded a grant from the AZ Department of Water Resources for continued watershed improvement projects in Oak Creek (total awarded amount is over $238,000 for additional social trail rehabilitation to prevent erosion and E.coli loadings).	
5. Continue to maximize internal match for 319 project funds to minimize grantee match requirements (Annually)	Ongoing
Comments	
In FY23, ADEQ continued to maximize internal match for 319-funded projects. ADEQ utilizes match from remaining sub-award grantees, the state-funded WQARF, personnel match, and Citizen Science/Arizona Water Watch volunteers.	
2.1.4 STRATEGY: Implement projects at high priority mine sites that are impacting human health or contributing to impairments of perennial and intermittent waters	
Milestones:	
1. Implement projects at Lead Queen Mine, 3R Mine, Poland Mine, Storm Cloud Mine, and McKinley Mill (FY20)	Completed
Comments	

Lead Queen Mine: The adit plug was installed in August 2019 and effectively ceased the discharge. Water quality has improved below the discharge point. ADEQ has submitted an NPS Success Story for this site to EPA. Publication is pending. 3R Mine: Remediation was completed by ADEQ and Tetra Tech in May 2021. ADEQ partnered with US Forest Service to complete the remediation, the mine is located on USFS land. ADEQ is conducting effectiveness monitoring at this site. Poland Mine: Remediation on the waste rock pile on U.S. Forest Service property was completed in January 2022. ADEQ contracted with Tetra Tech to continue site characterization of the remaining waste rock pile and discharging tunnel on private property. ADEQ is engaging with Freeport McMoRan, ASU, and other entities to develop a possible remedial approach. Storm Cloud Mine: Remediation was completed in December 2020. ADEQ is conducting effectiveness monitoring. The adit continues to discharge under storm flow conditions, and ADEQ is exploring new technologies to address the adit with external contractors. McKinley Mill Mine: Remediation was completed in early 2022. ADEQ is conducting effectiveness monitoring at this site.	
2. Implement projects at Gibson Mine, Cash Mine, Senator Mine, McCleur Mine, Zonia Mine (FY21)	Ongoing
Comments	
Gibson Mine: ADEQ spent FY23 remediating the former Gibson Mine site with its contractors, Arcadis. Remediation will be completed in July 2023. Cash Mine: ADEQ contracted with Tetra Tech to conduct a site investigation, complete a cultural survey and biological evaluation, and design a remediation method in FY22. Remediation began in Fall FY22 and is continuing in Spring/Summer FY23. Remediation is expected to be completed by July 2023. Senator Mine: This site has been referred to the Surface Water Protection team for formal enforcement. The owners of the mine are under a consent order and ADEQ continues to work with them on addressing the contamination. McCleur Mine: ADEQ contracted with Tetra Tech to conduct a site investigation, complete a cultural survey and biological evaluation, and design a remediation method in FY22. Remediation began in Fall FY22 and is continuing in Spring/Summer FY23. Remediation is expected to be completed by July 2023. Zonia Mine: This site has been identified as a future remediation site.	
3. Implement high priority projects in the Harshaw Creek watershed (FY22)	Completed
Comments	
ADEQ will include Harshaw Creek as a potential location for site identification for future remediation of abandoned mines. ADEQ is currently sampling in Harshaw Creek to assess the clean-up of the former Lead Queen Mine, which was remediated by U.S. Forest Service. ADEQ is continuing to complete remediation at its other prioritized waterbodies (Hassayampa, Santa Cruz watershed, and Oak Creek).	
4. Implement high priority projects in the Lynx Creek watershed (FY23)	Ongoing
Comments	
ADEQ has identified Lynx Creek as a potential watershed to conduct abandoned mine remediation, considering its proximity to the Hassayampa River, which has been a prioritized waterbody since 2019. ADEQ will complete current mine remediation projects and then assess if more needs to be done in Hassayampa or transition to Lynx Creek.	

In FY23, ADEQ identified another source of contamination to the Hassayampa River, Jersey Seep. The discharge is contributing high levels of metals to the impaired waterbody. ADEQ will begin monitoring and investigations of the seep in Summer 2023.	
5. Implement 2 high priority projects (FY24)	N/A
Comments	

2.1.5 STRATEGY: Measure the effectiveness of mine remediation projects

Milestones:

1. Conduct effectiveness monitoring (Annually)	Ongoing
Comments	
ADEQ continues to sample along the Hassayampa River to determine effectiveness at the completed Storm Cloud Mine remediation, as well as 3R Canyon near the 3R Mine remediation site. ADEQ is utilizing water quality sampling and XRF soil analysis at Pinto Creek to inform the remediation design for the Gibson Mine site. ADEQ continues to sample along Oak Creek to measure the effectiveness of several projects.	
2. Calculate actual versus estimated load reductions for each project implemented (As necessary for projects implemented in 2.1.4)	Ongoing
Comments	
Through its contract with the University of Arizona, ADEQ continues to receive load reduction calculations for projects and report them through EPA's Grants and Reporting Tracking System (GRTS). Load reductions were calculated for Oak Creek projects and remaining sub-award grantee projects in March 2023. Visit GRTS for more: https://www.epa.gov/nps/grants-reporting-and-tracking-system-grts	
3. Delist waters that are now meeting standards (FY22 and FY24)	Ongoing
Comments	
ADEQ is analyzing data collected at Hassayampa River as part of effectiveness monitoring for remediated abandoned mine sites to determine if some reaches are eligible for Clean Water Act impairment delistings. More data needs to be collected due to the intermittent flow of several reaches and to capture seasonality.	
4. Reevaluate implemented BMPs where expected load reductions are not realized (Annually)	Ongoing
Comments	
ADEQ continues to collect water quality samples to measure the effectiveness of projects. Once enough data and load reductions are collected to determine trends, ADEQ will reevaluate.	

2.2 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by recreation-related nonpoint sources

2.2.1 STRATEGY: Develop prioritization methodology for E. coli impaired stream reaches and contributing land uses/sources

Milestones:	
Develop an inventory of potential sources on currently E.coli impaired waters (FY21)	Ongoing
Comments	
As part of a DNA source tracking study with Northern Arizona University initiated in spring 2021 in Oak Creek, ADEQ completed a regional E. coli DNA reference library of mammalian sources for Oak Creek in FY22. DNA has been extracted from common fecal E.coli sources in Oak Creek: human, dog, cattle, horse, sheep, deer, elk, raccoon, skunk, beaver, and otter. Since February 2021, staff have been collecting monthly water samples for DNA and E. coli MPN at 11 baseflow sites over the length of the creek. Six high use recreation sites are bracket sampled during holiday weekends during the summer recreation season to document the degree of human influences on water quality at these sites. Stormwater and snowmelt sampling is taking place on the mainstem of Oak Creek and its ephemeral tributaries when these types of events occur. Sampling in these ephemeral drainages is being undertaken to determine which of the subwatersheds are contributing the greatest amounts of mammalian E. coli and the relative contributions of these sources. Isolating the biggest polluting subdrainages will lead to informed decision making about where to undertake watershed improvements. An inventory and identification of major sources is anticipated in 2024.	
Prioritize stream reaches and land uses, using ADEQ's surface water quality improvement priorities strategy (FY21)	Completed
Comments	
ADEQ has prioritized Oak Creek to focus watershed improvements. The creek is predominantly impacted by recreation, as well as other potential sources that will be identified through ADEQ's DNA source tracking study with Northern Arizona University.	
Rank impaired stream reaches and land uses for project implementation based on ADEQ's surface water quality improvement priorities strategy (FY21)	Ongoing
Comments	
This step will be completed once results are finalized from the DNA source tracking study. ADEQ will identify and rank the three highest polluting subwatersheds in Oak Creek and their sources in order to inform future targeted watershed improvement projects. The top polluting subwatersheds will be identified in 2024.	
Update prioritization list (Annually)	Ongoing
Comments	
No changes in FY23.	
Note: See ADEQ's FY20-24 Nonpoint Source Pollution Five Year Plan, Executive Summary	
2.2.2 STRATEGY: Develop a recreational outreach communications plan	
Milestones:	
1. Create recreation/healthy beach habits website (FY20)	Completed
Comments	

A “Protect Our Waters” website has been created: http://www.azdeq.gov/ProtectOurWaters. The website includes resources, actionable items for the public, and press release information.	
2. Develop a social media outreach strategy for promoting safe and no/low impact recreation practices (FY20)	Completed
Comments	
ADEQ implemented a social media outreach strategy prior to Memorial Day and Fourth of July holidays for Oak Creek. Several Facebook posts received the highest reach out of ADEQ's social media presence. The paid campaigns delivered a total of 1,385,267 impressions and 3,765 clicks between 5/22 and 7/12. ADEQ is working on another phase of social media outreach to be conducted in summer 2022.	
3. Test targeted social media outreach during high use recreation time in Oak Creek (Memorial Day weekend) (FY20)	Completed
Comments	
A “POO-llution” video (http://www.azdeq.gov/ProtectOurWaters) and a static image marketing campaign ran during spring break from 3/9/20 to 3/26/20. The same video ran for Memorial Day 2020. Mobile devices received more impressions than computers. Social media ad impressions were higher in Phoenix than when recreators were in Oak Creek Canyon. Heavy rain during spring break and recreational closures due to COVID most likely affected the outcomes and the strategy will continue in FY21.	
4. Evaluate success and adjust social media communications plan based on Oak Creek pilot results (FY21)	Completed
Comments	
ADEQ continued to communicate the importance of healthy beach habits and leave no trace principles to the general public through its social media accounts in FY21, especially before holiday weekends. ADEQ partnered with City of Sedona in FY21 to develop a second targeted outreach campaign which will now launch in summer 2022.	
5. Implement targeted ads – continue to use based upon FY21 engagement results (FY22)	Completed
Comments	
ADEQ partnered with Sedona Chamber of Commerce, City of Sedona, Oak Creek Watershed Council, and Leave No Trace to develop a second social media outreach campaign initiated in July 2022. Messaging focused on lessons learned from the 2020 campaign and encouraging pro-environmental behavior to alleviate trash, social trail usage/creation, and other forms of E.coli pollution during recreation. ADEQ is partnering with social scientists from Arizona State University to measure the effectiveness of the campaign utilizing survey techniques. Results will help inform future campaigns.	
6. Implement targeted ads- explore use on other high-risk recreation sites (FY23)	Completed
Comments	
ADEQ continued its partnership with the Sedona Chamber of Commerce, City of Sedona, Oak Creek Watershed Council, and Leave No Trace in FY23 to continue the targeted social media campaign in Oak Creek. Students and lead researchers from Arizona State University also implemented social surveys to visitors to assess the influence of the campaign on their behavior and actions while visiting and recreating. ASU will have a final report of results in Fall 2023.	
7. Implement targeted ads (FY24)	N/A

Comments	
2.2.3 STRATEGY: Partner with external entities to assist with healthy beach habits and public education	
Milestones:	
1. Engage land mangers on recreational management in high priority watersheds (FY20)	Completed
Comments	
San Pedro: Staff from ADEQ's Southern Regional Office attended all telephonic and in-person meetings hosted by the San Pedro and Hereford District NRCDs, the Upper San Pedro Partnership, and the Sentinel Landscape Restoration Partnership during FY-20. ADEQ has taken this opportunity to share its monitoring data, solicit ideas for new projects, and register feedback from stakeholders in support of a sustainable basinwide strategy for addressing the E.coli impairment on the San Pedro as well as the provisionally listed impairment on the Babocomari. Details are summarized in these links: https://youtu.be/d2oA1Wu8ZRY?t=1213 https://youtu.be/d2oA1Wu8ZRY?t=1735 Oak Creek: Additionally, ADEQ is engaging Arizona State Parks and US Forest Service to implement projects in Oak Creek. ADEQ continues to have ongoing meetings with land managers to identify hot spot areas and coordinate project implementation. Such projects include the pet waste stations, social trail rehabilitation, trash clean-ups, education and outreach, and car pullout closures (26) alongside Highway 89A.	
2. Collect pre and post-holiday E. coli samples during the high use recreational season (May-September) to quantify recreational impacts (FY20-21)	Completed
Comments	
ADEQ continues to collect pre- and post- holiday E.coli samples at Oak Creek and report results through the Water Quality Exchange database.	
3. Identify sustainable funding ideas/toolbox for external education programs (FY21)	Completed
Comments	
ADEQ continues to utilize 319 funds to help with outreach and education in Oak Creek. Many current projects, like the pet waste stations, include an educational component that encourages the use of the pet waste stations and raises awareness of E.coli sources near the creek.	
4. Implement trash clean ups (Annually)	Ongoing
Comments	
ADEQ partners with Oak Creek Watershed Council to conduct trash clean-ups in Oak Creek. Oak Creek Watershed Council has removed over 1,240 pounds of trash from the upper Oak Creek Canyon area. Additional trash clean-ups are conducted by volunteers with the Arizona Water Watch at various other waterbodies. Volunteers have removed a total of 5,260 pounds of trash from waterways around Arizona in FY23.	
2.2.4 STRATEGY: Implement projects to decrease E.coli loading in highly recreated waters (e.g. Oak Creek)	

Milestones:	
1. Review and prioritize highly recreated E. coli impaired waters (FY20) (see also Strategy 2.2.1)	Completed
Comments	
ADEQ has prioritized Oak Creek watershed to implement projects that mitigation E.coli exceedances. So far in FY20, ADEQ has invested $550,000 in the area through NPS grants through 5 projects.	
2. Analyze GIS system tools for high priority nonpoint source areas (FY20)	Completed
Comments	
ADEQ has identified areas within Oak Creek to target for projects, including Slide Rock State Park and Highway 89A.	
3. Implement 2 high priority projects (FY21)	Completed
Comments	
ADEQ completed more than two projects along Oak Creek in FY21 - rehabilitation of over 120 social trails along Highway 89A and Slide Rock State Park; closure of 27 unpermitted parking spots along Highway 89A that caused erosion and sediment/E.coli loading into the creek; installation of a safety barrier fence along Slide Rock State Park to minimize social trails and unpaid visitation; and numerous litter clean-up events with Oak Creek Watershed Council. Highlights can be seen in this video: https://www.youtube.com/watch?v=6uAlMCT_Jzk	
4. Implement 2 high priority projects (FY22)	Completed
Comments	
ADEQ is continuing a social media campaign in Oak Creek to encourage pro-environmental behavior among visitors to reduce trash and E.coli sources. ADEQ is also engaging with NAU to conduct a collection and analysis of DNA sources of E.coli in Oak Creek to determine the major contributing sources. Oak Creek Watershed Council also continues to conduct trash clean-ups in Oak Creek.	
5. Implement 2 high priority projects (FY23)	Completed
Comments	
In FY23, ADEQ and its partners closed an additional over 100 social trails near Oak Creek. More trails will be closed in Fall 2023 and Spring 2024 as funded through the Department of Water Resources state grant. Other projects include the continued social media campaign, social surveys, and DNA study with NAU.	
6. Implement 2 high priority projects (FY24)	N/A
Comments	
7. Delist 5 impaired/not-attaining stream reaches (FY24)	N/A
Comments	
2.2.5 STRATEGY: Measure the effectiveness of projects implemented on highly recreated waters	

Milestones:	
1. Conduct effectiveness monitoring (Annually)	Ongoing
Comments	
ADEQ continues to sample along Oak Creek to measure the effectiveness of several completed projects. This sampling is done in conjunction with the DNA source tracking study. Data is submitted to the Water Quality Exchange database.	
2. Calculate actual versus estimated load reductions for each project implemented (As necessary for projects implemented in 2.2.4)	Ongoing
Comments	
Through its contract with the University of Arizona, ADEQ continues to receive load reduction calculations for projects and report them through GRTS. Load reductions were calculated for Oak Creek projects and remaining sub-award grantee projects in March 2023.	
3. Delist waters that are now meeting standards due to nonpoint source program activities (FY22 and FY24)	N/A
Comments	
ADEQ is analyzing E.coli data collected at Oak Creek to determine if some reaches are eligible for Clean Water Act impairment delistings.	
4. Reevaluate impaired waters where expected load reductions are not realized (Annually)	Ongoing
Comments	
ADEQ will re-evaluate once projects have been implemented and enough time has passed to thoroughly analyze their impacts in Oak Creek.	
2.3 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by grazing-related nonpoint sources	
2.3.1 STRATEGY: Establish new and build upon existing relationships with land managers and owners to identify and plan implementation projects that will reduce pollutant loadings contributing to impairments related to grazing.	
Milestones:	
1.Develop a conceptual site model (CSM) following ADEQ's mitigation process for KOUI sites (Known, Ongoing, Unauthorized Impact to human health or the environment) for NPS mitigation to identify opportunities where source mitigation practices dovetail with the interest of the ranching community for the satisfaction of mutual goals (FY20)	Completed
Comments	
ADEQ developed a Conceptual Site Model (CSM) for the Babocomari sub-watershed of the San Pedro River as part of the agency's KOUI process. A major source identified includes cattle waste. A total of 7 projects were identified (see section 1.1.5 for more) for the Babocomari. ADEQ staff attended multiple USDA NRCS meetings and connected with other outreach groups to engage stakeholders in the area, including local ranchers.	
2.Develop and document strategy for addressing E. coli impairments in the Babocomari River Watershed (FY20-21)	Completed
Comments	

After engaging local stakeholders for over a year along the San Pedro and Babocomari, ADEQ is now preparing a strategy that meets EPA's 9 elements of a watershed plan for the San Pedro/Babocomari watersheds. This strategy will help influence and develop a concrete path forward for implementing projects.	
3. Coordinate with the NRCS State Office to identify new NWQI Watersheds (FY20)	Completed
Comments	
NRCS State Office is working on identifying watersheds for the Bulletin 10 requirement. ADEQ and NRCS conducted a call on 7/29/20 to coordinate and identified the Babocomari as a priority watershed. In FY21, ADEQ continued its partnership with NRCS to share water quality data, TMDL, and watershed plans to assist NRCS develop an assessment for the Babocomari sub-watershed of the San Pedro. In August, the NRCS State Office submitted an assessment report to the National NRCS office for review and input.	
4. Develop and implement sample plans within new NWQI watersheds (FY22-24)	Ongoing
Comments	
NRCS State Office completed and submitted an assessment of the Babocomari watershed to its headquarters in Fall 2021. ADEQ is committed to working with NRCS to complete tasks under the NWQI. ADEQ conducted a field trip to the Babocomari watershed with NRCS in Spring 2023.	
5. Determine next priority grazing impacted watershed to adapt Babocomari River strategy to (FY24)	N/A
Comments	
2.3.2 STRATEGY: Determine BMPS effectiveness to ensure future implementation projects will reduce E. coli loads that are contributing to impairments of perennial and intermittent waters in grazed lands	
Milestones:	
1. A minimum of four 319-funded rangeland improvement projects previously implemented will be evaluated on the effectiveness of respective BMPs (FY21)	Off track
Comments	
As discussed with EPA in meetings and through updates in the Performance Partnership Grant (PPG) Work Plan, although improvement projects have not been implemented, ADEQ continues to be engaged with the San Pedro watershed through other projects and initiatives. ADEQ continues to fund a previously awarded sub-grantee project on the Sonoran border of the river with Watershed Management Group, and is also a trustee in an AZ Game and Fish-led project that is addressing grazing and other issues on two impaired segments of the San Pedro. ADEQ continues to engage NRCS on the NWQI and assessment on the Babocomari sub-watershed. ADEQ is keeping the San Pedro as an option in the FY20-24 NPS Five Year Plan should the agency be able to contribute more resources and personnel.	
2. Effective BMPs will be cataloged and imported to GIS to generate a map of specific opportunities for projects (BMPs) that consider geographic and physical constraints (FY21)	Off track
Comments	

See update above.	
3. Implement 2 high priority projects based on developed strategy and landowner commitment (FY22)	Off track
Comments	
See update above.	
4. Implement 2 high priority projects (FY23)	Off track
Comments	
5. Implement 2 high priority projects (FY24)	N/A
Comments	
2.3.3 STRATEGY: Measure the effectiveness of implemented projects to reduce E. coli from grazed lands	
Milestones:	
1. Conduct effectiveness monitoring (Annually)	Off track
Comments	
See update above.	
2. Develop sediment vs E. coli rating curves using data collected from Walnut Gulch experimentation watershed (FY21)	Off track
Comments	
As communicated in PPG Work Plan updates and NPS Annual Reports, the Walnut Gulch watershed is not a priority watershed for ADEQ and was originally going to be used to help inform E.coli loading modeling. Instead of focusing on Walnut Gulch, 319 funds have been prioritized in Oak Creek, abandoned mines, and previously awarded sub-grantee watershed projects.	
3. Calculate actual versus estimated load reductions for each project implemented (As necessary for projects implemented in 2.1.3)	Ongoing
Comments	
Any E.coli load reductions for the San Pedro watershed will be coordinated through ADEQ's partnership with University of Arizona and NRCS for the Babocomari sub-watershed once projects are implemented.	
4. Delist waters that are now meeting standards (FY22 and FY24)	Off track
Comments	
See update above.	
5. Reevaluate impaired waters where expected load reductions are not realized (Annually)	Off track
Comments	

Re-evaluation will occur once projects are implemented in San Pedro/Babocomari watersheds.	
2.4 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by septic-related nonpoint sources	
2.4.1 STRATEGY: Identify high priority septic areas	
Milestones:	
1. Develop and implement an outreach strategy to municipal and county officials in unsewered areas near E. coli impaired waters (FY21)	Off track
Comments	
As communicated in PPG Work Plan updates, ADEQ's efforts targeting septic-related nonpoint sources will commence after results have been analyzed from the DNA source tracking study in Oak Creek and septic tanks are identified as a major contributor of E.coli pollution. New target dates will be set in the new PPG Work Plan per EPA. Current 319 funds are being used in the DNA source tracking study and the next round of projects in Oak Creek, including phase 2 of the social trail rehabilitation project and the installation of pet waste stations along trails.	
2. Update ADEQ septic density map with input from local entities to prioritize areas for additional investigation (FY21)	Off track
Comments	
See update above.	
3. Develop a risk matrix for prioritizing individual onsite systems or communities (FY22)	Off track
Comments	
See update above.	
2.4.2 STRATEGY: Determine potential funding options for addressing high priority septic areas	
Milestones:	
3. Potential funding sources for septic upgrades identified (FY23)	Off track
Comments	
In FY22 and FY23, ADEQ helped EPA identify potential communities at which Infrastructure Bill funding could be utilized to improve wastewater treatment for residents currently on septic systems.	
2.4.3 STRATEGY: Work with partners in high priority areas to identify and implement remedies for high priority septic system related issues	
Milestones:	
1. Develop necessary handouts, website, and a video to help inform the public about proper septic maintenance (FY21)	Off track
Comments	
See update above.	
2. Implement 2 high priority projects (FY23)	N/A

Comments	
3. Continue implementation of high priority projects (FY24)	N/A
Comments	

2.5 OBJECTIVE: Identify alternative funding sources to support priority restoration projects.

2.5.1 STRATEGY: Build effective relationships to identify or develop shared water quality restoration priorities, capitalize on existing programs and leverage funding

Milestones:

1. ADEQ will meet with local, state and federal agencies, environmental organizations and other groups to build new effective relationships, identify or develop shared water quality improvement priorities, capitalize on existing programs and leverage funding (Annually)	Ongoing
Comments	
ADEQ continues its partnerships with US Forest Service, Arizona State Parks, external contractors, watershed groups, citizen scientists, private landowners, and NRCS to implement its watershed initiatives. ADEQ hosted its annual meeting with USFS virtually in December 2022. ADEQ's partnership with USFS, AZ State Parks, Oak Creek Watershed Council, citizen scientists, AZ Department of Transportation, and local watershed groups led to the successful implementation of E.coli-reducing projects in Oak Creek. A majority of abandoned mines are situated on USFS and private lands, thereby allowing ADEQ to collaborate with federal personnel and private landowners to complete remediation. USFS, ADOT, and AZ State Parks have all contributed resources, including funding, in these projects.	
2. Identify other groups and/or agencies and organizations doing work in NPS priority watersheds and objectives for potential coordination and leveraging and track information (FY21)	Completed
Comments	
ADEQ continues to attend ACWA Watersheds Committee calls and local watershed group webinars to stay abreast of what local groups are doing in other watersheds. ADEQ further engaged USDA's NRCS to partner on the NWQI in FY21. Another new partner in FY21 includes Northern Arizona University, who is providing lab and analysis resources for the DNA source tracking study in Oak Creek. Additionally, ADEQ engaged with AZ Department of Water Resources to obtain a grant for Oak Creek projects.	
3. Develop a strategy to coordinate with other entities to develop possible collaboration and leveraging opportunities (FY22)	Completed
Comments	
See updates above.	
4. Increase the number of NPS-related priority watershed projects which collaborate with other local, regional, state and federal entities, or foundations, to leverage funding for projects that will provide load reductions. (FY22-FY24)	Ongoing

Comments	
See updates above. Additionally, ADEQ has sub-awarded 319 funds to local groups such as Watershed Management Group, Natural Channel Design, AZ Game and Fish, and the Nature Conservancy for watershed projects.	
2.5.2 STRATEGY: Secure or leverage funds from alternative (non-319) state, federal, and/or local sources to implement priority projects.	
Milestones:	
1. Develop a strategy to coordinate resources with other local, regional, state and federal entities via ADEQ project technical leads (FY20-21).	Completed.
Comments	
ADEQ's project managers and hydrogeologists excel at identifying and engaging local, state, and federal partners on projects in Oak Creek and at abandoned mines. These partnerships often lead to additional funding and other leveraged resources like technical expertise or sampling assistance. See the update above on partners engaged in FY21.	
2. Identify alternative NPS-related local, regional, state and/or federal resources identified NPS Programs/Projects and update NPS "funding toolbox" (Annually)	Ongoing
Comments	
ADEQ has a funding toolbox, or list of identified funding avenues, for NPS projects. Additional opportunities leveraged in FY23 include state WQARF funding on mining sites, funding from the US Forest Service for mining and Oak Creek projects, and funding from AZ Department of Water Resources.	
3. Apply for or leverage at least $500,000 of non 319 funds to implement high priority projects (Annually)	Ongoing
Comments	
ADEQ continues to search for external funding opportunities using EPA's Water Infrastructure and Resiliency Finance Center and other grant databases. ADEQ identifies grants and discerns if current or future projects will fit grant criteria and proceed with applying.	
2.5.3 STRATEGY: Implement priority projects via alternative or split funding sources **Milestones**	
Milestones:	
1. Implement ADOT pull out reduction project (ADOT/319 Funds) (FY20)	Completed
Comments	
ADEQ and AZ Department of Transportation completed the closure of 27 unpermitted parking spots along Highway 89A near Oak Creek in FY21.	
2. Implement 3R Mine remedial action using 319 and USFS funds (FY21)	Completed
Comments	
ADEQ and USFS, along with Tetra Tech, completed remediation of 3R Mine in May 2021.	

3. Complete site assessment (PPG) and remedial actions (319) at McKinley Mill and Storm Cloud Mine (FY21)	Completed
Comments	
ADEQ completed remediation at the Storm Cloud Mine in December 2020. McKinley Mill remediation was completed in early 2022.	
4. Implement Poland Mine remedial project on private (319) and USFS (USFS) land (FY21)	Ongoing
Comments	
ADEQ completed remediation on the waste rock pile located on U.S. Forest Service land in spring 2022. The site also has a waste rock pile and discharging tunnel (Poland-Walker Tunnel) located on private property. In FY22, ADEQ contracted with Tetra Tech to devise a site characterization plan, conduct additional sampling, and measure flow rates from the tunnel to best inform what remediation method to use. Remediation is expected to begin on the private side in 2023. The goal to complete remediation of the tunnel and waste rock pile on the private side in FY21 was determined to be too advantageous considering the extreme slope of the pile, proximity to a cabin community, and undetermined flow rate of the discharging tunnel. More data is needed to better inform the remediation strategy and long-term maintenance of the remediation and associated costs. More information is online here: http://azdeq.gov/node/7393	
5. Assist project sponsors or ADEQ technical leads in obtaining funding for water quality reclamation and improvement projects from a wide range of sources including but limited to those stated in the NPS Funding Tool Kit (Annually)	Ongoing
Comments	
ADEQ continues to search for external funding opportunities using EPA's Water Infrastructure and Resiliency Finance Center and other grant databases. ADEQ identifies grants and discerns if current or future projects will fit grant criteria and proceed with applying. In FY22, ADEQ was awarded over $238,000 by the AZ Department of Water Resources for continued social trail rehabilitation in Oak Creek.	
Actively administer, encourage and track volunteer opportunities at all priority project locations (Annually)	Ongoing
Comments	
Through its citizen science program, Arizona Water Watch, volunteers collected trash and water quality samples in FY23.	
3.0 Goal: Evaluate state programs, rules, and authorities to protect and restore water quality for effectiveness and the potential need for modification	
3.1 OBJECTIVE: Comply with or propose to modify state statutory requirement (ARS 49-203(A)(3)) to adopt, by rule, a nonpoint source management program to address discharges to navigable waters.	
3.1.1 STRATEGY: Engage in public outreach activities to gather input on the key benefits, features, and components for developing a rule-based NPS management program	
Milestones:	
1. Conduct stakeholder outreach and develop benefits, features, proofs document (FY24)	N/A
Comments	

2. Evaluate stakeholder input and decide on the need for rulemaking to implement the NPS Program (FY24)	N/A
Comments	
3.2 OBJECTIVE: Improve current water quality standards, assessment and listing rules to provide more effective protection for Waters of the U.S.	
3.2.1 STRATEGY: Evaluate current water quality standards, assessment and listing rules to provide more effective protection for Waters of the U.S.	
Milestones:	
1. Conduct a Triennial Review of surface water standards to update standards criteria per EPA updated criteria recommendations (FY22)	Ongoing
Comments	
ADEQ initiated a Triennial Review beginning in July 2022. The focus is revised Appendix A Human Health standards that were submitted in 2019 and subsequently rescinded. There is also limited Appendix B changes. Work continues in FY23.	
2.Evaluate current or create new "implementation procedures" documents for unused narrative standards in WQS rules (FY24)	N/A
Comments	
3.Evaluate and/or revise the Impaired Waters Identification Rule (IWIR) to include new standards (nutrient criteria), and revised assessment and listing criteria (FY24)	N/A
Comments	
3.3 OBJECTIVE: Improve current water quality standards, assessment and listing rules to provide more effective protection for Waters of the U.S.	
3.3.1 STRATEGY:Engage in stakeholder/customer/public outreach activities to gather input on actions necessary to close gaps resulting from the proposed WOTUS rule change	
Milestones:	
1. Develop draft Waters of Arizona program outline (FY20)	Completed
Comments	
ADEQ completed rulemaking for a state Surface Water Protection Program in December 2022. SWPP became effective in March 2023.	
2. Finalize program outline with stakeholder input (FY21)	Completed
Comments	

ADEQ engaged stakeholders to develop a program outline and state rule(s) framework for the State Surface Water Protection Program authorized by HB2691.	
3. Develop program (FY22)	Completed
Comments	
ADEQ completed the rulemaking to establish the state program. Rules were officially codified in the Arizona Administrative Code in Spring 2023. Updates are available at https://azdeq.gov/swpp and https://azdeq.gov/node/8173.	
4.Implement program (FY23)	Completed
Comments	
ADEQ continues to implement the program. Team members are establishing standard operating procedures to determine flow regimes and respond to requests from stakeholders to list waterbodies in the state program.	
3.3.2 STRATEGY: DETERMINE NPS PRIORITIES IF PROPOSED REVISED WOTUS RULE GOES INTO EFFECT IN ARIZONA	
Milestones:	
1.Revise the 5-yr NPS Plan, as needed, within 6 months of determining the final rule impacts to Arizona (FY21)	Ongoing
Comments	
Currently, there are no projects on SWPP waters.	