ADEQ Arizona Department of Environmental Quality

NONPOINT SOURCE MANAGEMENT PLAN

Planning Horizon: State Fiscal Years 2015 - 2019

This document was prepared by the ADEQ Water Quality Division, Surface Water Section to address requirements of Section 319(h) of the Clean Water Act.

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EXECUTIVE SUMMARY

I. Purpose of Document

This document is Arizona's 5-year Nonpoint Source Management Plan (5-year NPS Plan). It updates the State's Nonpoint Source Management Program (NPS Program) originally developed under Clean Water Act (CWA) Section 319(h) in 1989-90 and subsequently updated every five years. This document was developed by the Arizona Department of Environmental Quality (ADEQ) as part of its State Fiscal Year (FY) 2014 work plan with the U.S. Environmental Protection Agency (EPA). According to EPA guidance, states should periodically review and evaluate their NPS Programs (i.e. every five years), assess goals and objectives, and revise the program as appropriate.

NPS pollution, unlike pollution from industrial and sewage treatment plants (also known as point sources), comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, and groundwater.

Arizona's NPS Program Mission: *To achieve and maintain water quality standards through the reduction of nonpoint source pollutant contributions to Arizona's surface and groundwater.*

ADEQ administers Arizona's NPS Program. In Arizona and nationally, investigations have demonstrated that most water quality impairments are due to pollutant loadings from nonpoint sources. A few examples of common nonpoint sources in Arizona include soil erosion caused by stormwater, runoff from abandoned mines, wastes from pets or livestock, road crossings, poorly maintained or failing septic systems, and runoff from impervious areas (urban areas). Instead of establishing additional permit requirements, reductions in nonpoint source pollutant contributions are generally accomplished through technical and financial assistance, training, education, planning, and implementation of water quality improvement projects. This requires grass-roots involvement, effective education and outreach, and active participation of local, state, tribal, and federal agencies. ADEQ takes an integrated approach to NPS management, with programs throughout the Water Quality Division contributing to achieving NPS goals. This plan describes how these programs will work together and with other partners over the next five years to identify, prioritize and address NPS issues. Annual work plans will provide more in-depth details for specific tasks. The document is organized as follows:

Chapter 1: Overview of Arizona's NPS program – internal program descriptions and external partnerships. Identifying all of the tools that Arizona uses to identify and address nonpoint source concerns.

Chapter 2: Background information about Arizona and its NPS concerns.

Chapter 3: Detailed information about updates to the Strategic Planning Table, an overview of the structure of the table, and the table itself.

A. What Influences our Goal Development?

The overall mission Arizona's NPS Program is: "To achieve and maintain water quality standards through the reduction of nonpoint source pollutant contributions to Arizona's surface and groundwater." Four goals are established in this 5-year Plan to achieve this mission:

1. Identify impairments to surface and groundwater quality.
2. Prevent and reduce NPS pollution discharges to protect and restore surface or groundwater resources.
3. Coordinate efforts of various programs within ADEQ and with other agencies and partners to prevent and reduce NPS impacts to surface and groundwater.
4. Evaluate and improve the effectiveness of the nonpoint source pollution program and communicate success.

Each of these goals has specific objectives and strategies (identified in the Strategic Planning Table, found in Chapter 3 of this document) that will be implemented in order to achieve measurable outcomes over the next five years. Measures of success will include removing waters from the state 303(d) list, satisfying existing ADEQ and EPA performance measures, and increasing the quantity and quality of grant applications in Targeted Watersheds (see sidebar). More information on how ADEQ will specifically measure its success in implementing this plan can be found in Chapter I Section IV.

The main drivers that influenced the development of goals, objectives, and strategies for this 5-year Plan include:

EPA'S CWA SECTION 319 NONPOINT SOURCE PROGRAM GUIDANCE

EPA's Nonpoint Source Program and Grants Guidelines for States and Territories (NPS guidelines) were revised in December 2013. The revisions provide updated program direction, an increased emphasis on watershed project implementation in watersheds with impaired waters, and increased accountability measures. These guidelines also emphasize the importance of states updating their NPS management programs to ensure that CWA Section 319 funds are targeted to the highest priority activities. In addition, the guidelines encourage coordination with state Total Maximum Daily Load (TMDL) programs to identify and prioritize watershed implementation needs, as well as coordination with Farm Bill programs as a way to leverage investments in water quality. The full guidance can be accessed on the EPA website.

WHAT IS A "TARGETED WATERSHED"?

A Targeted Watershed is a drainage area that ADEQ has identified as being a high priority for nonpoint source related restoration and/or protection activities. Criteria for identifying Targeted Watersheds include the existence of: a NPS-related impairment, local stakeholders that are interested in doing something to address the impairment, and the potential for partnerships with other local, state, and federal entities to implement projects. For more information about ADEQ's current Targeted Watersheds, see Chapter 1 Section III.

EPA'S VISION FOR THE CWA SECTION 303(D) PROGRAM

On December 5, 2013, EPA announced a new collaborative framework for implementing the CWA Section 303(d) Program with States — A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program (303(d) Vision).

This 303(d) Vision enhances overall efficiency of the CWA 303(d) Program, and in particular encourages focusing attention on priority waters and provides States flexibility in using available tools beyond TMDLs to attain water quality restoration and protection. It reflects the successful collaboration among States and EPA, which began in August 2011. EPA looks forward to continuing its partnership with States to implement specific actions to realize the new Program Vision. With the recognition that there is not a "one size fits all" approach to restoring and protecting water resources, States will now be able to develop tailored strategies to implement their CWA 303(d) Program responsibilities in the context of their water quality goals. Accountability will be ensured through a new CWA 303(d) Program measure for FY 15 for tracking success in implementing these efforts that restore and protect the Nation's streams, rivers and lakes.

The primary goals of the 303(d) Vision are "Prioritization", "Assessment", "Protection", "Alternatives", "Engagement", and "Integration". Proposed improvements and associated timelines for TMDL programs have been incorporated into this 5-year Plan (see Chapter 1, Section II.A for additional details).

ADEQ'S STATE FY2014-2018 STRATEGIC PLAN

This NPS 5-year Plan (state FY15-19) overlaps with ADEQ's 5-year strategic planning horizon (state FY14-18). As a result, the agency plan's performance measure for the Water Quality Division is reflected in this document as well. The ADEQ FY2014-FY2018 Strategic Plan (ADEQ Strategic Plan) goal for the Water Quality Division is to **improve water quality in 50% of monitored waters over the next five years.** For the purpose of this performance measure, the universe of monitored waters is defined by the Master Target List (MTL) of waters, which is discussed in greater detail in Chapter 1, Section II.A. of this document. The NPS program will play an important role in meeting this goal by directing outreach, implementation and monitoring resources towards reducing pollution and evaluating project success in MTL waters.

ADEQ'S "LEAN" GOAL FOR INVESTIGATING IMPAIRMENTS AND IMPLEMENTING PROJECTS

As part of ongoing efforts to improve and streamline processes at ADEQ, NPS staff has set a goal to **reduce the amount of time that it takes to go from identifying an impairment to implementing projects to address it.** In the past, the process of identifying an impairment, developing a Total Maximum Daily Load (TMDL) report, developing an implementation plan, and finally implementing projects could take ten or more years to complete. In order to reduce this time frame, staff identified processes for combining TMDL and implementation efforts, creating abbreviated planning documents to guide implementation when appropriate, and going straight to implementation when sources of pollution can be clearly identified. These processes are discussed throughout this document.

B. Changes to the NPS Program

The heart of the 5-year NPS Plan is its strategic approach outlined in the Strategic Planning Table, found in Chapter 3 of this document. The Strategic Planning Table describes in detail how resources will be allocated to achieve the mission of Arizona's Nonpoint Source Program.

This 5-year Plan reflects several innovative changes to Arizona's NPS Program. It re-defines goals and identifies new tools needed to support internal decision making and empower local efforts. The new components were selected to produce and track improvements in water quality. This plan will improve upon strategies introduced in the previous plan, such as focusing resources on Targeted Watersheds as well as introduce new tactics such as identifying the most direct path to water quality improvements—whether that looks like a traditional "Nine Key Element" watershed plan, or something slightly different. Appendix B provides details on how this plan builds upon the previous 5-year NPS Plan.

MAJOR UPDATES TO ARIZONA'S NPS PROGRAM:

- *Integration of TMDLs and watershed planning*
- *Investigating alternatives strategies for improving water quality*
- *Implementing a more robust monitoring strategy*
- *Developing water quality protection criteria*
- *Enhancing education and outreach activities*

Integration, cooperation, and education are three key words that reflect the priorities of this planning effort. Arizona has been at the forefront of CWA 319 and 303(d) integration. Changes made to these programs at the state level fall in line with new national integration priorities and will streamline our efforts to identify pollutant sources and high-priority implementation projects. Cooperation with other internal programs as well as external partners is a common theme throughout this plan, as all watershed partners are striving to maximize effectiveness with stretched resources. Increasing education and understanding of water quality impacts in our Targeted Watersheds and a two-way street—this plan reflects both the objective of improving stakeholder understanding of water quality issues, as well as agency understanding of what the public values most about their water resources. Creating better connections between local and agency priorities and identifying ways that both can be satisfied is critical to encouraging participation in voluntary implementation programs. The State FY15-19 Arizona Nonpoint Source Management Plan carries these three themes throughout its strategic planning effort. ADEQ is confident that this plan sets a course for increased efficiency in meeting our water quality improvement and protection goals.

CHAPTER I: AN OVERVIEW OF ARIZONA'S NPS MANAGEMENT PROGRAM

I. Process Improvement and "Lean"

Accomplishing the goals established in the 5-year NPS Plan with limited resources in this vast and diverse state requires effective planning followed by a continuous cycle of implementation, progress assessment, and adaptive management. Arizona's 5-Year NPS Plan is guided by an emphasis on a watershed management approach, integration amongst programs to protect and restore water quality, and a commitment to streamlining processes to maximize efficiency. This plan aims to create more direct paths to the restoration of water quality in lakes and streams identified as "impaired" waters, protect waters that are meeting water quality standards (high quality waters), and reduce pollutant loading to groundwater in areas where state aquifer water quality standards are being exceeded. These outcomes are a reflection of ADEQ's adoption of "Lean" management principles.

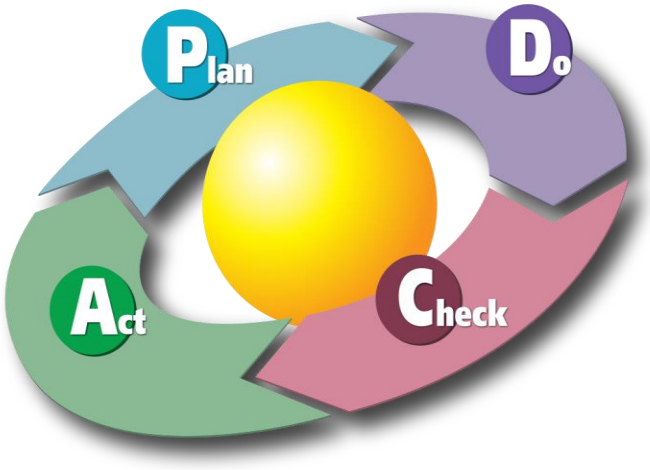


Figure 1: This four-step process, known as the Deming Cycle, allows for continuous improvement and is part of an overall strategy being embraced by ADEQ to increase efficiency and eliminate waste.

"Lean" is a system of tools and principles geared toward eliminating waste and increasing value for customers. It is a way to improve systems and processes to eliminate unnecessary, time-consuming steps and wasteful time-killers that reduce the capacity to focus on what matters most. Process improvement events called "Kaizens" are used to identify the areas where our processes can be improved so that we can better achieve our goals. ADEQ staff have participated in Kaizens and related process improvement events that will result in a more efficient, productive NPS program. Relevant topics have included the integration of TMDL and watershed planning efforts, how monitoring activities can be focused to best help us meet agency and program goals, and how to determine and communicate the effectiveness of implementation projects and practices. The recommendations from these events have informed the strategies identified in the FY15-19 Strategic Plan, and are discussed throughout this document.

II. Cross-program Coordination: Arizona's Integrated Nonpoint Source Program

A. Integration with Water Quality Division Programs

Programs and teams across ADEQ's Water Quality Division share responsibilities for implementing portions of the Nonpoint Source Program. Integration encourages interactions, even with programs that control point source discharges to surface water. In a given fiscal year, the programs that are funded by NPS or used as match for NPS funds may vary. Subsequently, many of these programs perform functions that may not be directly tied to NPS funds, but still provide benefits to the NPS program. Annual work plans should be consulted for up-to-date information regarding funding allocations. This section includes information on each of the five parts of the cycle depicted below and the programs that contribute to them.

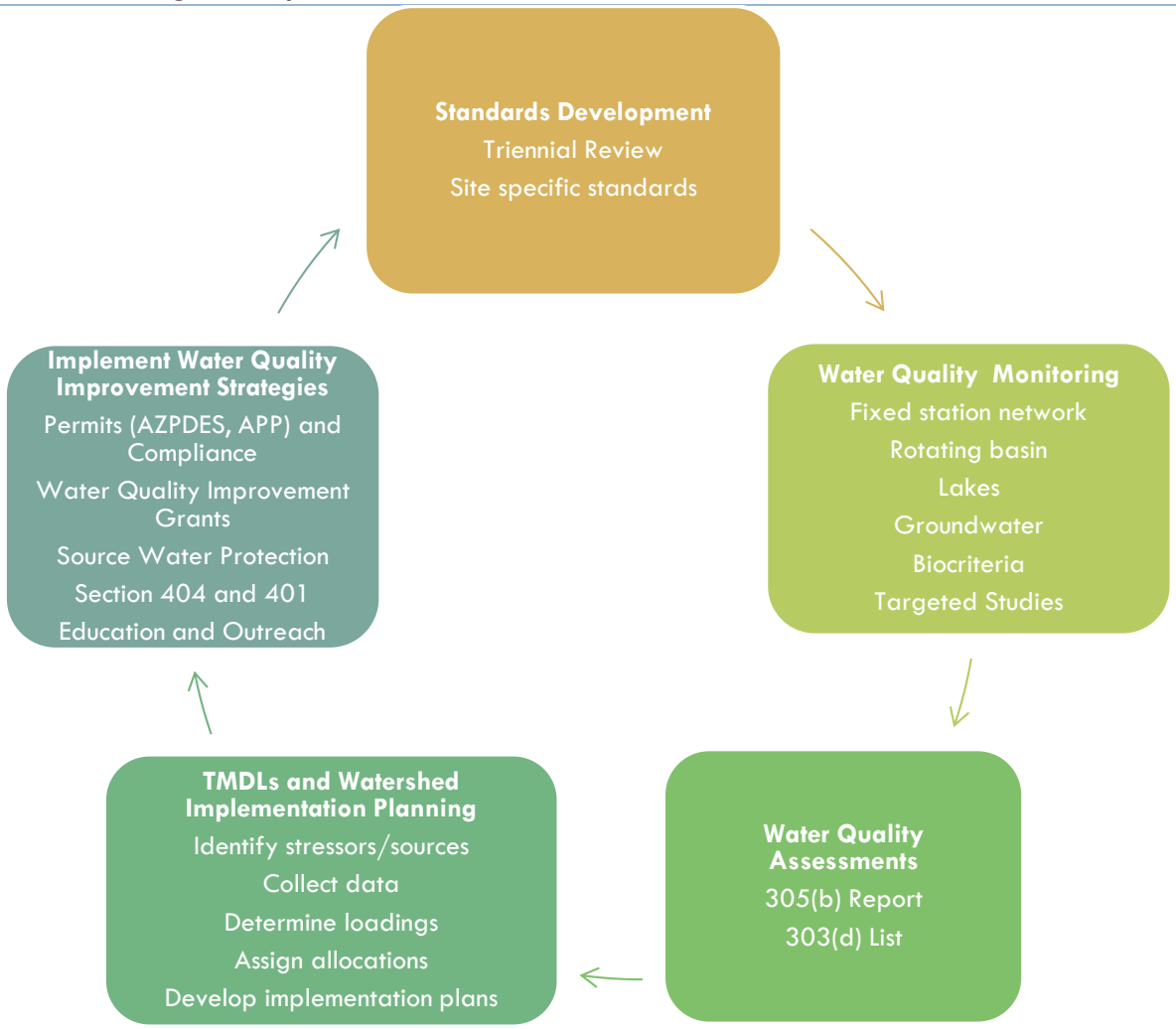


Figure 2: Arizona's NPS goals are achieved via the coordination of many programs.

STANDARDS DEVELOPMENT

States, rather than the federal government, establish water quality standards for surface and groundwater. Standards are set based on how the water is used – "designated uses." In Arizona, groundwater is protected for drinking water use; therefore, aquifer water quality standards echo public drinking water quality standards established under the Safe Drinking Water Act. Surface water quality standards are established to protect the health of Arizona's streams and lakes. Both narrative and numeric standards are established to protect the following designated uses:

- Aquatic and wildlife
  - Cold water communities (above 5,000 feet in elevation)
  - Warm water communities (below 5,000 feet in elevation)
  - Ephemeral (channel dry except in direct response to precipitation)
  - Effluent Dependent Water (ephemeral conditions except for treated effluent)
- Full body contact (swimming) or partial body contact (incidental contact only)
- Fish consumption (human consumption of aquatic life)
- Domestic water source (drinking water)
- Agricultural livestock watering
- Agricultural irrigation

Types of Water Quality Standards

Numeric criteria are water, sediment, or animal tissue concentration thresholds for chemical parameters and physical conditions that must be achieved (for example, a maximum chemical concentration).

Narrative standards describe conditions that must be maintained. For example, "A surface water shall be free from pollutants in amounts or combinations that…(5) are toxic to humans, animals, plants, or other organisms" *(Arizona Administrative Code R18-11-108(A)(5))*.

Biocriteria use the number and kinds of biological organisms in the surface water to assess its biological integrity or its health.

Biocriteria and bottom deposits narrative standards more directly measure impacts to the Aquatic and Wildlife designated uses than numeric standards. These standards became established in the 2009 Surface Water Quality standards and while violations of these standards can be determined, there have been no listings of impaired waters using these standards to date due to procedural issues. In order for impaired waters determinations to be made, implementation procedures documentation must be formally adopted by ADEQ and assessment guidance updated in the Impaired Waters Implementation Rule (IWIR). While the Implementation procedures documents were written at the time of the new rules in 2009, they are still in the process of formal adoption by ADEQ and the IWIR has not yet been updated. Biocriteria and bottom deposits violations of these standards are presented in the 305b Assessment Report but no 303d listings or TMDLS have yet been made. These implementation procedures are expected to more accurately identify impacts of nonpoint source pollution.

In FY14 ADEQ received approval to move forward with an abbreviated Triennial Review process. Please note that changes to standards as outlined in Strategy 1.a.ii. of the Strategic Planning Table Update in Chapter 3 are dependent upon the current state agency rules moratorium being lifted. Current water quality standards can be downloaded from the Secretary of State's website.

WATER QUALITY MONITORING

ADEQ has both surface water and groundwater quality monitoring programs as required by ARS 49-225. Where possible, water quality studies are conducted in collaboration with other monitoring programs (U.S. Geological Survey, Sonoran Institute, Salt River Project). Information about these monitoring programs is available on ADEQ's website.

»Surface water monitoring

Water quality data are collected to characterize baseline conditions and to support assessments, to conduct trend studies, to determine reference conditions, and to develop new water quality standards.

Data are collected to assess a surface water's chemical, biological, and physical integrity. For example, aquatic macroinvertebrate community and habitat evaluations within perennial, wadeable streams are completed to evaluate the biological integrity of the stream (a bioassessment). Water and sediment are analyzed to determine

its chemical integrity. ADEQ continues to develop its physical integrity program and hopes to one day propose physical integrity standards.

Currently, Arizona uses a probabilistic monitoring design to assess wadeable perennial streams in Arizona in addition to targeted monitoring. A probabilistic monitoring design allows statistically valid inferences to be made about sites that have not actually been visited. Approximately 50 sites per year are selected for monitoring. Every five years, a state-wide assessment of water quality in Arizona streams is developed based on probabilistic monitoring data. Probabilistic monitoring supports NPS program decisions by allowing limited data to be applied in a much larger context. Relationships between water quality conditions and particular stressors can be interpreted, and can help direct NPS resources toward problems that are common throughout the state.

»Groundwater Monitoring

ADEQ conducts ongoing monitoring of aquifers to detect the presence of pollutants and determine changes in contamination, compliance with aquifer water quality standards, and effectiveness of best management practices (BMPs).

Groundwater sampling is conducted and reported by groundwater basin. Based on the groundwater sampling results and statistical analyses, index wells are selected for re-sampling to determine water quality changes over time (trends). Fact sheets and completed basin studies can be viewed on the ADEQ website.

»Biocriteria

The biocriteria program monitors benthic macroinvertebrates in Arizona's perennial streams. Biological assemblages provide a different picture of water quality than chemical data. Chemical data tends to give a snapshot of what is happening at the time of sample collection, while biocriteria describe how healthy a biological community (for example macroinvertebrates or fish) is over a longer period of time.

»Implementing a More Robust Monitoring Strategy

ADEQ's current agency-level Strategic Plan sets an ambitious goal for the Water Quality Division: Improvement in 50% of the state's monitored waters over five years (FY14 -18). In this context, "Improved water quality" is defined as: (a) reduction of in-stream concentration (mg/L) for a pollutant of concern (aka causing impairment) or (b) prevention of pollutant (lbs or tons) from entering surface waters, as a result of WQIG-funded, federally funded or TMDL funded on-the-ground water quality improvement projects or (c) waters the move from assessment Category 3 to Category 2 (attaining some uses) or 1 (attaining all uses). The Master Target List (MTL) dictates which waters will be monitored for improvement over the 2014 – 2018 agency planning period. 78% of the MTL waters fall within NPS-identified Targeted Watersheds and/or are expected to show improvements as a result of WQIG grants or post-TMDL activities. Of the remaining waters, 20% are expected to show improvement due to the natural attenuation of historic pollutants (DDT metabolites, toxaphane and chlordane in fish tissue in the Middle Gila watershed). The remaining 2% reflects waters that are being monitored in support of Focused TMDL development.

This 5-year Plan reflects that goal with the adoption of a robust monitoring strategy that will focus on increasing effectiveness monitoring of implementation activities and learning more about water quality issues in intermittent streams and waters that receive high recreational use. This helps the NPS program prioritize specific locations and types of BMPs in order to get the most water quality returns on its funding investments. Focusing more closely on

identifying and mitigation water quality concerns in highly recreated areas reflects the interests of the general public, increasing the likelihood of public participation in related implementation opportunities.

Increased Effectiveness Monitoring and BMP Evaluations

Arizona's WQIG Program has awarded approximately 20 million dollars in NPS grant funding since 2000. Due to limited resources, there has been minimal concerted effort to extensively monitor these projects to determine their long-term effectiveness. Arizona's unique climate and characteristics mean that BMPs designed with other parts of the country in mind may not work as well when implemented here. Post-implementation monitoring and BMP evaluations, particularly in Targeted Watersheds, are an important part of ensuring that BMPs recommended in WIPs and other planning documents are proven to function properly in arid climates and in similar situations. In addition, increased effectiveness monitoring has been identified as a methodology for meeting the ADEQ Water Quality Division's performance measure to "improve water quality in 50% of monitored waters."

The purpose of effectiveness monitoring is to develop data to track progress on water quality improvements based on TMDLs and NPS grants. Improvement data will be used in water quality assessments, and will contribute to removing waters that are able to achieve water quality standards as a result of these activities from the 303(d) list of impaired waters.

The purpose of BMP evaluations is to evaluate effectiveness of specific BMPs to inform future watershed improvement projects funded through 319 grants. It helps us answer important questions such as "what works well (and doesn't) in our arid climate?" and "what are the important considerations that need to be taken to ensure long-term maintenance and functionality of a given BMP?". Answering these questions with documented data and observations provides us with a strong foundation more making more informed funding decisions in the future.

Increased Monitoring of Lakes, Intermittent Waters and Recreational Waters

Most of what we know about water quality in AZ (the assessment) is based on a very small percentage of Arizona's waters. For example, in the 2012-2014 integrated report 32% of lake acres and just 2.3% of stream miles were assessed. This is primarily due to the fact that the majority of waters in Arizona are ephemeral (flowing in response only to precipitation events) and not easily sampled. Most ambient monitoring conducted by ADEQ is focused on perennial waters (waters that flow year round). Currently, monitoring of lakes, ephemeral and intermittent waters is limited to special investigations, such as TMDL development. This gives us an incomplete picture of water quality in the state, and limits the scope of our decision-making for the NPS program.

Arizona's perennial surface waters are intensely recreated during summer months, but there is no program to determine if PBC/FBC standards are met during those times of high recreational use. The only site being regularly sampled at this time is Oak Creek. While some highly recreated lakes and perennial waters are included in current sampling efforts, critical conditions for recreational impacts (for example, holiday weekends) are not targeted. In order to effectively mitigate human health risks from nonpoint source pollution, we must develop a focused effort on collecting and analyzing data from waters where people swim, fish, and otherwise recreate.

CWA Section 319 funding is our most powerful tool for addressing nonpoint source issues in Arizona. However, it is only used to restore and protect water quality in places where there is a documented impairment or threat. Increasing monitoring in critical areas will provide ADEQ with better input on sources of impairment and potential risks to unimpaired waters. This data will be used to help inform NPS Program prioritization decisions for watershed planning, project implementation, education and outreach, and coordination with external partners.

WATER QUALITY ASSESSMENTS

The Integrated 305(b) Assessment and 303(d) Listing Report (Integrated Report) is completed every two years to detail the status of surface water and groundwater quality in Arizona. The Integrated Report contains a list of Arizona's impaired surface waters (Category 5) and those that are not attaining standards (Category 4—surface waters previously designated as impaired for which either a TMDL has been approved or a plan is being implemented to attain water quality standards by the next assessment cycle). This report fulfills requirements of the Clean Water Act sections 305(b) (assessments), 303(d) (impaired water identification), 314 (status of lake water quality), and 319 (identification of nonpoint source impacts on water quality). Information concerning this program and the latest assessment and impaired waters list can be found at ADEQ's website.

Monitoring data from all readily available sources are used for assessments, including data from volunteer monitoring groups, grantees doing effectiveness monitoring, other agencies, and permitted dischargers. ADEQ works with outside monitoring entities to assure that all data used is scientifically defensible and meets Arizona's credible data requirements (A.A.C. R18-11-112).

As indicated in the Standards Development sub-section above, a lake or stream reach can have between two and six designated uses. Each designated use is assessed based on the number of times surface water quality standards were exceeded. If sufficient core parameter samples were collected and no/an acceptable number of exceedances exist, then the designated use can be assessed as "attaining." If sufficient exceedances exist, then the designated use can be assessed as "impaired," regardless of whether sufficient core parameter samples were collected. Once each designated use has been assessed, then the surface water is assessed as being in one of the five categories shown in Table 1.

Table 1 – Assessment Categories

Category Number	Category	Description
1	Attaining All Uses	All uses were assessed as "attaining uses", all core parameters monitored
2	Attaining Some Uses	At least one designed use was assessed as "attaining," and no designated uses were not attaining or impaired
3	Inconclusive or Not Assessed	Insufficient samples or core parameters to assess *any* designated uses
4	Not Attaining	One or more designated use is not attaining, but a TMDL is *not* needed
5	Impaired	One or more designated use is not attaining, and a TMDL is needed

A surface water would be placed in category 4 instead of category 5 if a TMDL has been adopted and strategies to reduce loading are being implemented (4a) or if other actions are being taken so that standards will be met in the near future (4b). Note that this 5-year NPS Plan establishes a number of new strategies in Chapter 3 that when implemented are intended to result in delisting impairments listed for waters in category 4 and 5.

TOTAL MAXIMUM DAILY LOADS (TMDLS) & WATERSHED IMPLEMENTATION PLANNING

A TMDL is the maximum amount (load) of a water quality parameter which can be carried by a surface water on a daily basis, without causing an exceedance of surface water quality standards. A TMDL must be prepared for each surface water listed as impaired unless other actions are being taken that will result in the surface water meeting standards (see discussion above about category 4 or 5). Calculating a TMDL is an important first step in planning what needs to be done in a watershed in order to attain water quality standards.

A TMDL is the sum of the load allocations (LAs) plus the sum of the wasteload allocations (WLAs) plus a margin of safety (MOS): $TMDL = \sum LA + \sum WLA + MOS$

Load allocations include nonpoint source pollutant contributions, like loads from runoff from fields, streets, rangeland, or forest land. Natural background is included in the load allocation for nonpoint sources. Wasteload allocations include point source contributions, like the loads from sewage treatment plant discharges and mine adit discharges. Load allocations and wasteload allocations are based on historic and recent water quality measurements and other environmental information. Once a TMDL is calculated, necessary load reductions are determined by comparing the TMDL to the total measured or modeled load on a source-by-source basis.

TMDL development has long supported many aspects of the Nonpoint Source Program. Monitoring to identify source categories (such as septic systems, grazing, or urban runoff) is used to target key remediation projects. The data can also identify critical conditions when exceedances tend to occur. Critical conditions may be climactic (summer, winter, monsoons), hydrologic (high flows, low flows), or event-based (discharges, spills). These conditions must be considered when identifying strategies to reduce loading and when performing effectiveness monitoring.

In the past, once the TMDL was developed ADEQ worked with watershed partners to develop a TMDL Implementation Plan and/or supported locally-driven development of a Watershed Implementation Plan to identify what projects needed to be implemented to reduce pollutant loads so that standards could be met. These plans are used to prioritize watershed activities and to support the use of CWA Section 319(h) funding to implement watershed projects. 50% of a state's Section 319(h) funding allocation must be used for the implementation of projects that are guided by EPA-approved watershed plans. These watershed plans must contain the nine elements identified in EPA's Handbook for Developing Watershed Plans to Restore and Protect Our Waters in order to justify the use of funding for restoration activities (Appendix A).

Under this 5-year Plan, ADEQ has placed a priority on coordinating efforts to develop implementation plans with efforts to develop and implement TMDLs. EPA's NPS Guidelines encourage states to coordinate their efforts to develop and implement watershed plans with efforts to develop and implement TMDLs. This sentiment is echoed EPA's 303(d) Vision goals, which are detailed below:

- **"Prioritization"** For the 2016 integrated reporting cycle and beyond, States review, systematically prioritize, and report priority watersheds or waters for restoration and protection in their biennial integrated reports to facilitate State strategic planning for achieving water quality goals
- **"Assessment"** By 2020, States identify the extent of healthy and CWA Section 303(d) impaired waters in each State's priority watersheds or waters through site-specific assessments
- **"Protection"** For the 2016 reporting cycle and beyond, in addition to the traditional TMDL development priorities and schedules for waters in need of restoration, States identify protection planning priorities and approaches along with schedules to help prevent impairments in healthy waters, in a manner consistent with each State's systematic prioritization
- **"Alternatives"** By 2018, States use alternative approaches, in addition to TMDLs, that incorporate adaptive management and are tailored to specific circumstances where such approaches are better suited to

implement priority watershed or water actions that achieve the water quality goals of each state, including identifying and reducing nonpoint sources of pollution

- **"Engagement"** By 2014, EPA and the States actively engage the public and other stakeholders to improve and protect water quality, as demonstrated by documented, inclusive, transparent, and consistent communication; requesting and sharing feedback on proposed approaches; and enhanced understanding of program objectives
- **"Integration"** By 2016, EPA and the States identify and coordinate implementation of key point source and nonpoint source control actions that foster effective integration across CWA programs, other statutory programs (e.g., CERCLA, RCRA, SDWA, CAA), and the water quality efforts of other Federal departments and agencies (e.g., Agriculture, Interior, Commerce) to achieve the water quality goals of each state.

In March of 2013, TMDL and Grants Unit staff hosted a TMDL and Watershed Planning Kaizen to review and streamline the steps for identifying and mitigating water quality impairments. External stakeholders participated with staff in mapping out the steps involved in the current state of TMDL and watershed plan development, and identifying ways in which the processes could be improved in a proposed future state.

The primary outcome of this event was the development of a process to integrate the traditional TMDL and watershed implementation plan documents into a single, combined watershed plan. This will be ADEQ's approach for the majority of nonpoint source impaired watersheds where a TMDL has not already been developed moving forward, beginning with the Santa Cruz River watershed (see Strategy 2.a.vi of the Strategic Planning Table Update later in this chapter for more details). These integrated watershed plans will be designed to reduce NPS pollutant loadings that are contributing to water quality threats and impairments. The goal of these plans will be to attain water quality standards if possible, or will describe how the implementation of the plan will make progress towers achieving water quality standards. These plans will contain the load calculations found in traditional TMDL documents, and will meet EPA's "Nine Key Elements" for watershed plans (Appendix A).

Where a TMDL has already been developed and approved or is being developed, any corresponding watershed plan will be designed to achieve the NPS pollutant load reductions called for in the TMDL. Existing watershed plans will be modified as appropriate to be consistent with the load allocation in the TMDL. Conversely, as TMDLs in Targeted Watersheds are completed, existing watershed plans will be updated to make better connections between the load reductions expected from the projects proposed within the plan, and the load reductions that are necessary to meet water quality standards. ADEQ plans on making updates to this NPS Plan with specific goals for delisting waters in Targeted Watersheds (see Objective 2.a.) on an annual basis.

Due to the complex and diffuse nature of NPS pollution, the substantial cost to addressing it, and frequent reliance on voluntary action by individual landowners, successfully addressing NPS pollution to achieve water quality standards often requires years of support from a coalition of stakeholders, programs, and funding sources. **Watershed-based planning** helps address water quality problems in a holistic manner by fully assessing the potential contributing causes and sources of pollution, then prioritizing restoration and protection strategies to address those problems." *– from EPA's 2104 Nonpoint Source Programs and Grants Guidelines for States and Territories.*

»Investigating Alternative Strategies for Improving Water Quality

Additional outcomes of the TMDL and Watershed Planning Kaizen included the identification of alternatives to integrated "Nine Key Element" watershed plans (a flow chart depicting when each of these options as well as the integrated watershed plan alternative described above would be pursued can be seen in Appendix D). EPA recognized in both the updated NPS Guidelines and the long term vision for the 303(d) program that in some cases, approaches other than watershed plans and TMDLs may prove more effective for achieving water quality goals. Like watershed plans and TMDLs, alternative approaches have the ultimate goal of attaining water quality standards. However, they provide a quicker path to implementation in cases where the issues are relatively clearly defined and there are stakeholders that are interested in taking action to address the problem. The two general alternative approaches defined in the Kaizen were:

- Focused TMDLs- Focused TMDLs will be developed when pollutant sources are already known but not well-characterized, and implementation planning is in process or already completed by an external entity. 319 project funding will not necessarily be required for developing or carrying out the implementation plan. Without the need for source identification and implementation plan development, focused TMDLs will require less data collection and analysis and will be more concise and faster to complete than traditional TMDL documents. The load reduction requirements identified in the focused TMDL will be used to support management and implementation activities.
- Straight to Implementation (STI)- The STI approach refers to situations where large-scale watershed planning is not necessary to justify implementation activities. ADEQ may utilize this approach when the impairment is primarily due to point sources and can be addressed via permit conditions (such as waters identified as Category 4b on Arizona's Non-Attaining Waters list) , or when implementation needs are already known. This alternative may be used in conjunction with the watershed plan development approach if a clear implementation priority is identified during the course of a planning effort.

In the event that further investigation in to an impairment listing reveals that the listing was made in error or that conditions in the watershed have changed, the Kaizen also identified a "delist" path:

- Delist- Develop data set and report to support removing the water from the impaired water list. This approach would be used in instances where impairment decisions were made in error or conditions in the watershed have changed.

In addition to these strategies, states also have the ability to use "alternative plans" (watershed plans that do not necessarily meet all of EPA's "Nine Key Elements") to justify the use of NPS funding for implementation projects. These alternative plans must be reviewed by EPA Region 9 to ensure that planning elements are adequately addressed to justify use of NPS funding for implementation. Alternative plans must:

- Identify to causes or sources of NPS impairment, water quality problem, or threat to unimpaired/high quality waters
- Include watershed project goals and an explanation of how the proposed projects will achieve or make advancements toward achieving water quality goals,
- Include a schedule and milestones to guide project implementation

- Propose specific management measures and explain how they will address the impairment/water quality concern
- Include a water quality results monitoring component

EPA may approve the use of certain NPS funds to implement alternative plans containing the above elements in the following circumstances:

- When the impairment is not specific to a pollutant (i.e. flow regime)
- When responding to a NPS pollution emergency or urgent HPS public health risk
- When protecting assessed unimpaired/high quality waters
- When addressing an isolated, small-scale water quality problem resulting from one or few sources of pollution

This flexibility allows states to respond to pollutant concerns as efficiently as possible, waiving the requirement for larger-scale planning efforts when more focused plans are sufficient.

One of the goals presented in the 303(d) Draft Computational Guidance is identifying and using alternative approaches to restoration that may be better suited to achieving water quality goals than a traditional TMDL. This goal fits well with the 319 guidance allowance for alternative plans, and also with the Arizona NPS Program's identified alternatives described above.

»Planning for Protection

NPS funding has been focused over the past several years on impaired (versus high-quality) waters based on criteria set forth in the Section 319 guidelines. However, the 2013 update of these guidelines gave states the ability to use a limited amount of watershed project funds for projects to protect unimpaired/high quality waters when protection in cited as a priority in the state's updated NPS management program and process for identifying these waters is defined. To take advantage of this important opportunity to utilize NPS funding to protect water quality in Arizona, this 5-year Plan includes strategies for developing NPS-focused criteria for prioritizing protection activities.

Currently, ADEQ protects water quality from point and nonpoint source pollution via enforcing special protections to waters that are identified as an Outstanding Arizona Water (OAW) (A.A.C. R18-11-112). The current list of OAWs is located in Appendix E. A surface water must be classified as an OAW by rule by the ADEQ Director. Nominations may be made to the Director based upon the following criteria:

1. The surface water is a perennial or intermittent water;
2. The surface water is in a free-flowing condition;
3. The surface water has water quality that meets or is better than applicable surface water quality standards. A surface water that is listed as impaired under A.A.C. R18-11-604(E) is ineligible for OAW classification; and
4. The surface water meets one or both of the following conditions:
    a. It is of exceptional recreational or ecological significance because of its unique attributes, such as the geology, flora and fauna, water quality, aesthetic value, or the wilderness characteristic of the surface water;

b. An endangered or threatened species is associated with the surface water and the existing water quality is essential to the species' maintenance and propagation or the surface water provides critical habitat for the threatened or endangered species.

Currently, ADEQ protects OAWs by:

- Enforcing stricter requirements on permits regulating discharges and other impacts to OAWs
- Creating site-specific standards for OAWs
- Awarding 'bonus points' when scoring projects impacting OAW's for NPS grant funding

OAW's will continue to receive priority for NPS funding in this manner. However, ADEQ feels that to properly direct NPS resources, more nuanced criteria should be considered for protection priorities. OAW's can only be added or removed by rule; ADEQ is currently operating under a rules moratorium. In addition OAW's must be either perennial or intermittent, excluding 93% of Arizona's surface waters from consideration. To create a more meaningful prioritization method for NPS resources, ADEQ may consider the following as protection criteria in addition to OAW status:

- Waters where data trends indicate water quality degradation is occurring
- Unimpaired waters or watersheds contributing high pollutant loads to downstream impairments
- Protection of high quality waters in watersheds that contain some impairments
- Waters near geographic areas where rapid land use development is occurring
- Watersheds or portions of watersheds with unique, valuable, or threatened species or critical aquatic habitats of these species
- Waters and watershed areas (including ground waters where appropriate) that serve as source water for a public drinking water supply
- Restored waters requiring continued water quality monitoring and BMPs to assure unimpaired status

ADEQ will establish distinct criteria and priorities for NPS protection projects over the first two years of this plan. In the meantime, identified threats to OAW's will be considered on a case-by-case basis by ADEQ and EPA for their eligibility for NPS funding. Additional information about protection priorities can be found under Strategy 1.b.ii of the Strategic Planning Table.

IMPLEMENTING WATER QUALITY IMPROVEMENT STRATEGIES

ADEQ utilizes many different avenues to address sources of water quality pollution. This section provides information on the Water Quality Improvement Grant program, nonpoint source education and outreach, the Aquifer Protection program, and nitrogen management areas.

»Water Quality Improvement Grant Program

The Water Quality Improvement Grant Program is a reimbursement-based grant program which allows watershed partnerships, land owners, state agencies, local governments, universities, and other entities to leverage their money and resources on projects and activities that will quantifiably reduce nonpoint source pollution in Arizona water bodies. Water Quality Improvement Grants are sub-awards of Arizona's CWA Section 319 funding from EPA. All projects must include methods for measuring success. Funding is prioritized toward implementation projects that are supported by a watershed plan, and will have the outcome of measurably reducing impairment-causing nonpoint source pollutants. The strategic plan in Chapter 3 outlines strategies to expand funding eligibility to not just restoring but also protecting water quality in high-quality or threatened waters.

»Education and Outreach

In informed public is critical to efforts to reduce nonpoint source pollution. ADEQ has identified "Increased Outreach" as one of the five main strategies of its Agency Strategic Plan for FY14 -18. This focus is reflected in the 5-year NPS plan, as well. Education and outreach efforts funded by the NPS Program are focused on improving the public's understanding of nonpoint source pollution and what role they can play in reducing it, facilitating coordination between various stakeholders to address watershed-scale concerns, developing strong stakeholder relationships within Targeted Watersheds, and encouraging participation in the Water Quality Improvement Grant program and other conservation and restoration programs such as Natural Resource Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) grants.

The non-regulatory nature of Arizona's NPS Program means that improvements to water quality hinge on the willingness of local stakeholders to take on implementation projects and actively change their behaviors. While the term "stakeholders" is generally used as a catch-all term for those who live in, work in, recreate in, or just generally care about a watershed, the realities are much more complex. These individuals come from diverse backgrounds and have a wide array of perspectives regarding what water quality and healthy watersheds mean to them. Taking the time to understand these perspectives and find meaningful ways to make connections between them and what can be done to improve water quality is critical to the success of the NPS Program. Objective 3.b. of the Strategic Planning Table provides additional detail on this effort.

»Aquifer Protection Permits (APP)

Arizona has a unique and effective program for protecting groundwater. Anyone owning or operating a facility that discharges a pollutant directly to an aquifer, to the land surface, or to the vadose zone (the area between an aquifer and the land surface) in such a manner that there is a reasonable probability that the pollutant will reach an aquifer must obtain an Aquifer Protection Permit. The following facilities are considered to be "discharging" and require either a general or individual permit:

- Surface impoundments, pits, ponds, and lagoons
- Solid waste disposal facilities
- Injection wells
- Land treatment facilities
- Facilities adding pollutants to a salt dome, salt beds, or salt formations, drywells, underground caves, or mines
- Mine tailings piles and ponds, or mine leaching operations
- Underground water storage facilities, if wastewater-effluent is used
- Sewage or wastewater treatment facilities, including point source discharges to navigable waters and onsite wastewater treatment systems (e.g., septic systems).

Rules implemented under this program govern a variety of nonpoint pollutant sources which are not regulated under the Clean Water Act or other federal laws, such as:

- Onsite wastewater treatment systems (septic systems)
- Stockpiles at mining sites
- Certain wastewater discharges (constructed wetlands, reclaimed water reuse)

- Grazing
- Nitrogen fertilizer use for crop production
- Concentrated animal feeding operations (not discharging to a surface water)

The APP program further assists in nonpoint source activities by providing technical support for nonpoint source-funded projects. Examples include participating in technical reviews for nonpoint source grant applications, conducting engineering reviews for grant-funded treatment system installations and upgrades, and coordinating with grant staff to ensure that permit reviews and approvals are completed in a timeline consistent with the grant agreement.

»401 Certification/404 Permitting

CWA Section 401 states that no federal permit or license may be issued that may result in a discharge to waters of the US unless the EPA, State, or tribal authority certifies that the discharge is consistent with water quality standards and other water quality goals, or waives certification. Failure to secure a 401 certification or waiver means that the federal permit or license cannot be obtained. Applicants seeking the following are required to obtain a CWA Section 401 Water Quality Certification from ADEQ:

- A CWA Section 404 Permit from the U.S. Army Corps of Engineers (USACE)
- A Rivers and Harbors Act Section 9 or 10 Permit
- A license from the Federal Energy Regulatory Commission for a hydropower facility, or
- Other federal permit or license that may result in a discharge to waters of the U.S.

Under the CWA 404 Program, the USACE has both individual and general permits. General permits can be issues for use in all states (known as Nationwide Permits) or for a region of the country (known as Regional General Permits). An individual permit is required for projects that potentially have significant impacts. Individual permits require an application form describing the proposed activity be submitted to the USACE. Once the application is complete, the USACE issues a public notice containing the information needed to evaluate the likely impact of the activity. Notice is sent to all interested parties including adjacent property owners, government agencies and others who have requested notice. A hearing may be requested for cause. It is during the public notice of the individual permit that ADEQ performs its CWA Certification review. Issuance of a certification means that ADEQ expects that the applicant's project will comply with state surface water quality standards.

»Groundwater Source Protection

In addition to the APP program, the Pesticide Groundwater Quality Protection Program also protects Arizona's groundwater from nonpoint source pollution by preventing or eliminating the pollution of groundwater aquifers from routine use of agricultural pesticides. The program is responsible for evaluating groundwater data submitted in support of new pesticide product registration, and identifying which active ingredients and products have the potential of polluting Arizona groundwater. The program generates the Groundwater Protection List (GWPL), enforces any data gap violations and conducts regular groundwater monitoring. An annual report on pesticide use is presented to the state legislature.

Pursuant to the Environmental Quality Act of 1986, ADEQ requires applicants intending to register new agricultural-use pesticides with the Arizona Department of Agriculture to submit groundwater protection data for review and approval. After completing a substantive technical review, ADEQ determines if the product's active ingredient poses a threat to groundwater quality.

The term "agricultural use" is defined to include all applications of substances to repel, kill or control any "pest". This includes weeds, insects, rodents, fungi, and microorganisms in the following areas:

- Commercial greenhouses
- Cropland
- Food and fiber production
- Forests
- Irrigation ditches
- Rangeland
- Ground applied seed protection
- Soil fumigation
- Tree and sod farms
- Aquatics

All pesticide product data submitted to ADEQ, including the product chemistry and environmental fate studies of the corresponding active ingredient(s) must be consistent with EPA guidelines for these studies and comply with Arizona environmental (soil) requirements. ADEQ will evaluate the data submitted by applicants, determine their adequacy, validity, and completeness, and inform the intended registrant of the outcome within specific time frames for administrative completeness and substantive technical review.

»Bio-solids Management Program

Biosolids are the treated residuals from wastewater treatment that can be used beneficially. Sewage sludge is not referred to as biosolids unless it has been treated so that it can be beneficially used. On March 31, 2004, the EPA Region 9 approved ADEQ's Biosolids/Sewage Sludge Management Program for implementation in Arizona, except in Indian Country. As of that date, ADEQ serves as the sewage sludge program and enforcement authority in Arizona. The EPA maintains an oversight role.

ADEQ's Biosolids/Sewage Sludge Management Program implements section 503 of the Clean Water Act and requires that any person applying, generating or transporting biosolids/sewage sludge in Arizona must register that activity with the department. Biosolids, if not applied properly, have the potential to contribute nutrients and other pollutants to surface and groundwater. If ADEQ determines that the site restrictions and management practices will not protect public health or the environment, ADEQ may require an Arizona Pollutant Discharge Elimination System (AZPDES) Permit.

The Biosolids Program is regulated under A.A.C. R18- 9-A10 and includes requirements for:

- Treatment, transportation, land application, and management of biosolids
- Septage pumping services
- Class I Management Facilities, other major wastewater treatment plants and treatment works treating domestic sewage
- Management practices and application of biosolids to reclamation sites

In addition to complying with the requirements in 40 CFR 503, Subpart C, the owner or operator of a biosolids surface disposal site must apply for an APP. Other facilities that must apply for an APP include biosolids composting operations and biosolids processing facilities.

»Nitrogen Management Areas

Arizona has rules in place to designate Nitrogen Management Areas to control nitrogen pollutant loading to groundwater (A.A.C.R18-9-A317(c)). ADEQ may establish a Nitrogen Management Area when existing conditions or trends in nitrogen loading to an aquifer will cause or contribute to an exceedance of the aquifer water quality standard for nitrate. The following restrictions occur within a designated Nitrogen Management Area:

- Agricultural BMPs to reduce nitrogen discharges are required
- Performance of impoundment liners installed before November 12, 2005 must be assessed
- A new onsite wastewater system must employ technologies that achieve a discharge of not more than 15 mg/L of total nitrogen (i.e., a nitrogen reducing, alternative treatment system is required)
- Additional special provisions may be established as needed

The connection between shallow groundwater and surface water cannot be ignored. Therefore, when a surface water is impaired by nutrients (nitrogen and phosphorus), ADEQ may investigate whether the aquifer water quality standards are being met and if the establishment of a Nitrogen Management Area is warranted.

B. Other Federal, State, Tribal, and Local Partnerships

Clean water is everyone's responsibility. It will take a concerted effort to achieve clean water over the long term. Individual homeowners, businesses, municipalities, non-governmental organizations, and state and federal agencies all have a role to play in protecting and restoring clean water.

Arizona uses a variety of formal and informal mechanisms to form and sustain partnerships with State, Tribal, regional, and local entities, private sector groups, and Federal agencies to help implement the NPS Program. Examples include memoranda of understanding (MOU) and other cooperation agreements, letters of support, intra-state agency agreements, cooperative projects, environmental reviews and meetings to share information and ideas. Cooperation agreements such as MOUs are particularly beneficial to the NPS program in that they define clear commitments on behalf of ADEQ and partners to work towards common goals. Examples of these commitments include granting access for monitoring and implementation activities, reporting on land management activities that might impact impaired waters, and submitting changes in land management planning to ADEQ for review and comment. These agreements ensure that ADEQ and its partners are consciously working toward common goals in regard to water quality protection and restoration.

This section highlights some of the partnerships that ADEQ participates in to ensure that nonpoint source concerns are prioritized and addressed throughout the state of Arizona.

NATIONAL WATER QUALITY INITIATIVE

EPA and the United States Department of Agriculture's Natural Resource Conservation Service (NRCS) initiated the National Water Quality Initiative (NWQI) in 2012. The NWQI encourages state and federal level coordination between nonpoint source funded programs and the NRCS-managed conservation programs such as the Environmental Quality Incentives Program (EQIP). ADEQ has developed a strong relationship with Arizona NRCS staff, identifying joint priority watersheds for NPS and EQIP funding, encouraging stakeholder involvement in these programs, and coordinating resources to monitor the success of projects implemented under the initiative. ADEQ has established an MOU with the state NRCS office to outline commitments toward meeting NWQI goals. This includes ADEQ entering into a Conservation Cooperator agreement, which acknowledges the protections afforded to Farm Bill funding program participants under Section 1619 of the bill. This partnership will remain a

priority of ADEQ's NPS Program in all subsequent years in which the NWQI continues. Arizona's current priority watersheds for the NWQI are:

- Coyote Creek (Hydrologic Unit Code (HUC): 01502000103) – tributary to Little Colorado River sediment impairment
- Road Tank - San Pedro River (HUC: 150502020705) – *E. coli* impairment
- Spring Creek - San Pedro River (HUC: 150502020401) – *E. coli* impairment
- Lower Greenbush draw- San Pedro River (HUC: 150502020203) – *E. coli* impairment

NRCS is required to monitor the effectiveness of EQIP-funded projects in all NWQI watersheds. In accordance with EPA's NPS guidance, ADEQ has committed to coordinating with NRCS to conduct this monitoring for one priority watershed (Coyote Creek). ADEQ may conduct additional monitoring on behalf of NRCS in the remaining NWQI watersheds; the extent of these additional efforts will be determined during FY15 and reported to EPA.

HILLSIDE MINE LOWER TAILINGS PILE REMEDIATION PROJECT

The NPS Program is currently coordinating with Arizona State Land Department, Arizona Department of Administration, private landowners, and the Bureau of Land Management to address tailings piles at the former Hillside Mine site, which is within the Boulder Creek Targeted Watershed. The Boulder Creek watershed includes federal, state, and private land. A 2004 TMDL study identified three tailings piles and an adit discharge as contributing to the arsenic, copper, and zinc impairments in the creek. Working closely with state, federal, and private partners has moved this project to a phase where planning activities have been initiated for all of the major pollutant sources. ADEQ will continue to coordinate with partners to ensure that implementation timelines are developed. More information about this ongoing project can be found in the Strategic Planning Table in Chapter 3 of this document.

COORDINATED RESOURCE MANAGEMENT

One forum for interagency coordination is Arizona's Coordinated Resource Management (CRM). CRM is a voluntary natural resource planning process to enhance resource management and resolve resource concerns. Coordinate planning brings together people who are concerned about the land. Land owners, uses, resource managers, and other interested parties are teamed together to achieve common goals and meet resource needs. A MOU between federal and state agencies established an Executive Committee and task groups to coordinate natural resource management across Arizona. Both ADEQ and EPA Region 9 participate in this effort. The MOU provides a mechanism for resource management agencies in Arizona to work together, share resource information, and develop complementary policies, procedures, and methodologies.

Agencies participate in planning, implementation of resource improvements, and monitoring of resource areas. Past focus of this planning has been on development of ranch management plans on ranches where land ownership is a checkerboard of state and federal agencies, which could result in different management objectives. These CRM Plans (CRMPs) outline the resource concerns in the ranch and/or watershed and provide details about the land manager's planned actions and how they will impact those concerns.

CRM has been successful at two levels. One is at the local level, bringing together land owners (federal, state, and private), environmentalists, and resource managers (other agencies) as a team to formulate and implement plans for the management of resources or to resolve conflicts. Another important function has occurred at the Executive Committee or State Technical Committee level. These meetings provide a forum to exchange information concerning agency priorities, new techniques, and funding opportunities which can then be shared with the local Working Groups. ADEQ's goal for CRM involvement moving forward is participate in CRM plan

reviews for activities that occur within targeted watersheds. This will help to ensure that water quality concerns are being adequately addressed in these high priority areas.

CROSS-BORDER COORDINATION

The Office of Border Environmental Protection (OBEP) is a specialized branch of the ADEQ Director's Office that focuses on the border region of Arizona across the boundary from the Mexican state of Sonora and is located in Tucson at the agency's Southern Regional Office. OBEP's emphasis is on cross-border or trans-boundary issues that impact Arizona's environment and its citizens. This entails working in a bi-national and bicultural setting to facilitate efforts aimed at improving air quality, waste management and water quality conditions in Arizona border communities. These efforts are further supported through ADEQ's collaboration with other organizations and programs addressing environmental issues along the U.S.-Mexico border region. For purposes of projects or activities undertaken by OBEP, this area is defined in the 1983 La Paz Agreement as a 100 kilometer (62.5 mile) buffer zone on either side of the international boundary between the United States and Mexico. OBEP staff assists the NPS program by working closely with partners on both sides of the border to identify water quality threats and strategies for addressing them. OBEP provides education, outreach and technical support and assists in TMDL development, watershed planning, and groundwater monitoring activities.

UNIVERSITY OF ARIZONA PARTNERSHIPS

Arizona's NPS Program has partnered extensively with the University of Arizona to fund efforts that provide technical support and education to watershed stakeholders. These efforts include water quality monitoring and data analysis, education and outreach efforts focused on Targeted Watersheds, load reduction modeling for planning and reporting purposes, and technical assistance to Water Quality Improvement Grant recipients. These partnerships have played a significant role in the development of watershed planning efforts over the last five years. Over the course of the next five years, U of A will continue to assist ADEQ with watershed planning and education, and will expand their role to helping with the development of a volunteer monitoring program.

TRIBAL PARTNERSHIPS

Waters on tribal lands are not assessed by the state and are not included in the development of the 305(b)/303(d) Integrated Report. This fact, combined with Arizona's focus on restoring waters that are assessed as impaired, has limited the potential for extensive partnerships with tribal entities in recent years. Arizona's NPS program will work with our agency Tribal Liaison, EPA Region 9, and tribal contacts to identify and act upon opportunities for partnerships where tribal lands influence or are influenced by water quality impairments, as well as new opportunities to coordinate on protection activities moving forward. Annual state work plans will identify more specific partnership goals as these opportunities develop.

LOCAL PARTNERSHIPS

Due to the non-regulatory nature of Arizona's NPS Program, a high level of importance is place upon encouraging voluntary participation in watershed planning and implementation efforts. An informed, involved public is a critical part of making nonpoint source improvements to water quality. Arizona's NPS Program has provided funding to watershed groups to lead local monitoring efforts and develop watershed plans, and provided technical support via internal programs and partnerships like those with the University of Arizona detailed above. Staff also works with local schools and community groups across the state to fund or provide expertise to programs and events such as Water Education for Teachers (Project WET), the World Water Monitoring Challenge, Master Watershed Stewards classes, and many other education events throughout the year. In addition to providing education to the public, strong partnerships educate ADEQ about local concerns and priorities and how we can make better connections between them and our standards-based water quality

improvement goals. Focusing on expanding and strengthening local partnerships is an important piece of this 5-year Plan.

III. Prioritization

A. Coordinated Prioritization Strategies

Prioritization is important. Spreading investments all over the state without defined focus does not achieve the measureable results that the NPS Program is required to demonstrate at the agency division, state, and federal levels. ADEQ has committed to an approach of identifying Targeted Watersheds, determining what needs to be done to address the problems in those areas, and implementing strategies to restore/protect accordingly.

Having an integrated NPS Program means that many different factors must be taken into consideration when prioritizing nonpoint source activities. In addition to coordinating CWA Section 319 and 303(d) goals as described above, Arizona's NPS Program coordinates between internal programs to look at water body and watershed prioritization based on many factors, including:

- Local interest in implementing projects
- Human health concerns
- Ecosystem health including ecological risk
- The beneficial uses of water
- Value of the watershed or groundwater basin to the public
- Vulnerability of the surface or ground water to additional environmental degradation
- Implement-ability
- Likelihood of achieving demonstrable environmental results
- Extent of alliance with other federal agencies and states to coordinate resources and actions
- Readiness to proceed
- Emergency response needs (for example, in response to wildfires)

Watersheds that display a strong combination of these factors may be prioritized as Targeted Watersheds where staff and financial resources will be allocated to implement and document water quality improvements. Arizona's current Targeted Watersheds and pollutants of concern are:

- San Francisco River/Blue River watershed (Blue River from headwaters to San Francisco River, San Francisco River from Blue River to Limestone Gulch and from Limestone Gulch to the Gila River; *E. coli*)
- Granite Creek watershed (headwaters to Watson Lake; nutrients and *E. coli*)
- Oak Creek watershed (headwaters to Spring Creek and the Spring Creek drainage; *E. coli*)
- San Pedro River watershed (Babocomari River to Dragoon Wash; *E. coli*)
- Little Colorado River Headwaters watershed (West Fork LCR to Lyman Lake –; sediment/turbidity)
- Santa Cruz River watershed (Mexico border to Sapori Wash; *E. coli*)
- Boulder Creek watershed (Wilder Creek to Butte Creek; arsenic, copper, and zinc)
- Tonto Creek (headwaters to unnamed tributary) and Christopher Creek (headwaters to Tonto Creek) watershed (*E. coli*, phosphorus, low dissolved oxygen, and nitrogen)

The strong focus on sediment and *E. coli* impairments reflects the level of interest of the general public and agency partners in addressing these issues. Sediment concerns are closely tied to agricultural producers' concerns

regarding soil loss and improved grazing. *E. coli* impairments garner interest due to their potential impact on human health, particularly in areas where recreating in the water is common.

ADEQ has no current plans to deviate from the existing list of Targeted Watersheds in the State FY15-19 time frame; however, watersheds may be removed or added from the list as conditions or priorities change. Targeted Watersheds may receive different levels of resource prioritization depending on the presence of applicable watershed planning documents and the specific NPS program priorities identified from year to year.

In addition to Targeted Watersheds, resources are also prioritized toward waters that have the potential to achieve internal and external performance measures (discussed in greater detail in section IV, below). Tracking for ADEQ's Water Quality Division Performance Measure for FY2014-2018 i is based on the Master Target List (MTL) (Appendix C). The MTL is a master list of the waters in which ADEQ anticipates being able to document water quality improvements over the next 5 years. This list includes waters in NPS program Targeted Watersheds, as well as other waters where pollution reduction activities have taken place via the WQIG program or in response to a TMDL or a permit requirement. Waters that are likely to achieve EPA performance measures SP-12 and WQ-10 (see Section IV) are also included in the MTL. While the MTL is a comprehensive list of waters where ADEQ will direct resources towards implementing and documenting the success of water quality *restoration* activities over the next five years, it focuses on impairments and does not include waters that will be identified as *protection* priorities. ADEQ will develop prioritization criteria for protecting unimpaired waters during state FY15 (see Strategy 1.b.ii in the Strategic Planning Table), which may result in updated priorities for the NPS program.

Table 2, below, outlines the general plans for allocating resources in the current Targeted, SP-12, and WQ-10 watersheds over the next five years. It is important to note that these allocations may change, and that annual work plans are the most accurate source of information regarding NPS fund usage in any given year.

Table 2: Resource Focus Table for Targeted Watersheds

Watershed Information					Resource Allocation by Fiscal Year				
Watershed	Targeted	SP-12	WQ-10	Pollutant	TMDL/ Watershed Plan Status (as of Oct. 2014)	Plan development/ update (D/U)	On-the-ground projects†	ADEQ Effectiveness Monitoring†	NWQI Effectiveness Monitoring†
San Francisco River/Blue River	X			*E. coli*	WIP developed 2012.	No plans to revise at this time.	All years	FY16, FY18	n/a
Granite Creek	X			*E. coli* (streams), nutrients (lake)	WIP developed 2012; scheduled for update FY15. TMDLs scheduled for completion FY15.	Update FY15	All years	FY15-16, FY19	n/a
Oak Creek	X			*E. coli*	TMDLs completed FY11, WIP developed 2012.	Update FY17	All years	FY17	n/a
San Pedro River	X			*E. coli*	WIP developed 2013.	Update FY16	All years	All years	All years
Little Colorado River Headwaters	X			sediment/ turbidity	TMDL completed FY02. Alternative plan developed FY13.	No plans to revise at this time.	All years	All years	All years
Boulder Creek	X	X	X	As, Cu, Zn	TMDL/TIP completed FY05.	No plans to revise at this time.	FY15-16	FY15, FY18-19	n/a
Tonto and Christopher Creek	X	X	X	*E.coli*, P, N, low D.O.	TMDL developed FY05; planning/ implementation needs TBD FY16.	TBD	FY16 - 19	FY15, FY18-19	n/a
Santa Cruz River	X			*E. coli*	WIP development initiated FY14.	Develop combined TMDL/WIP FY15-17	FY17-19	FY15, FY18-19	n/a
Pinto Creek		X	X	dissolved Cu	TMDLs completed FY01.	No plans to revise at this time.	TBD	FY15	n/a
Turkey Creek		X	X	Cu, Pb	TMDLs completed FY06.	No plans to revise at this time.		FY15	n/a
Mule Gulch		X	X	pH, Zn, Cu	Coordinating monitoring with FMI.	Develop TMDL FY15-16	TBD by USFS	FY15-16	n/a

**Includes both water quality monitoring for TMDL and WQIG effectiveness, and the evaluation of individual BMP effectiveness*

†Dates are estimated; consult annual work plans for up to date activity planning

IV. Measuring Success

A. Delisting Impaired Waters

Although most water quality improvement project proposals will result in water quality improvements at a specific site, it can be difficult to determine which projects will lead to lasting improvements in watershed health and will significantly reduce pollutant loading at the watershed-level.

This plan refocuses resources to reduce pollutant loadings causing surface waters to be listed as impaired. Although other goals are included in the strategic plan, the strategies are primarily aimed at identifying impairments and sources of pollutant loading, and then implementing water quality improvement and education projects. ADEQ wants to move beyond mitigation to actual re-designation of these impairments to be attaining all uses.

This plan sets new goals, objectives, and strategies to achieve long-term success in reducing pollutant loads. Although focused on delisting surface water impairments, the strategic plan provides broader goals and strategies to also address groundwater issues and protection of water resources.

This plan reflects a shift to decision making based on the potential of achieving measurable, beneficial outcomes. ADEQ wants to be able to measure improvements in surface water and groundwater quality. Water Quality Improvement Grant project funding will be primarily directed to projects that lead to removing surface waters from the state's impaired waters list. Grants must contain an effectiveness monitoring component, with meaningful measurements to determine project success. Locally-driven efforts need to be empowered to implement water quality improvement projects that will have a quantifiable benefit to the larger watershed. Education efforts should induce measurable and lasting behavioral changes.

B. EPA Performance Measures

NONPOINT SOURCE REDUCTIONS IN NITROGEN, PHOSPHORUS, AND SEDIMENT (WQ-9)

EPA performance measure WQ-09 tracks the estimated annual reduction in millions of pounds of nitrogen and phosphorus (WQ09a and b) and in tons of sediment (WQ09c) from nonpoint sources to water bodies. Load reductions must result from CWA Section 319-funded projects in order to be considered for the measures. ADEQ reports required nitrogen, phosphorus, and sediment reductions on an annual basis via EPA's Grant Reporting and Tracking System (GRTS), and in the Nonpoint Source Annual Report (see Objective 4.B.i. of the Strategic Planning Table Update). In addition, pollutants of concern in Targeted Watersheds such as *E. coli* and metals are also reported in GRTS.

WATERBODIES WITH PRIMARILY NPS-IMPAIRMENTS RESTORED (WQ-10)

EPA performance measure WQ-10 measures the number of water bodies identified by States (in 2000 or subsequent years) as being **primarily NPS-impaired** that are partially or fully restored.

By "fully restored", EPA means that all designated uses are now being met. By "partially restored", EPA means either of the following two conditions are being met:

a. A water body that has a use that is initially impaired by more than one pollutant, but after restoration efforts meets the criteria for one or more (but not all) of those pollutants, or

b. A water body that initially has more than one use that is less than fully supported, but after restoration efforts one or more (but not all) of those uses becomes fully supported.

The measure includes not only water bodies restored by 319-funded projects, but all primarily NPS-impaired water bodies that a state fully or partially restores, regardless of funding source.

As of the writing of this report, ADEQ anticipates delisting the following waters that are considered to be impaired or non-attaining based on the 2010 Integrated Report over the next five years:

- Tonto Creek (Headwaters to Haigler Creek (two reaches), nutrients).
- Turkey Creek (Tributary 341928/1122128 to Poland Creek, copper and lead)
- Five Point Mountain Tributary (Headwaters to Pinto Creek, copper)
- Gibson Mine Tributary (Headwaters to Pinto Creek, copper)
- Pinto Creek (Headwaters to Tributary at 331927/1105456 to Roosevelt Lake (three reaches), copper)
- Mule Gulch (Lavender Pit to Bisbee WWTP Discharge, pH; Bisbee WWTP Discharge to Highway 80 Bridge, zinc and pH)
- Boulder Creek (Wilder Creek to Butte Creek, zinc)

As indicated in Objective 4.b.i of the Strategic Planning Table Update, specific information about when ADEQ anticipates submitting success for these waters will be outlined in yearly work plans.

WATERSHED IMPROVEMENT PERFORMANCE MEASURE (SP-12)

Implementation of strategies in this 5-year NPS Plan will also help ADEQ meet targeted watershed improvements established under EPA's Watershed Improvement Performance Measures SP-12. The objective of SP-12 is to use the watershed approach to obtain measurable improvements of water quality conditions in a 12-digit HUC that contains an impaired surface water. Improvements may pertain to point source and/or nonpoint source pollutants. There are two options for submitting Measure SP-12 "success stories":

- Option 1: Watershed improvement based on impairment removal, where "improved" means that one or more of the impairment causes identified are removed for at least 40 percent of the impaired water bodies or impaired miles/acres
- Option 2: Reporting watershed-wide improvement, where "improved" means there is significant watershed-wide improvement, as demonstrated by valid scientific information, in one or more water quality parameters associated with the impairments. This can be supported either by statistical procedures (2a) or multiple lines of evidence (2b).

In 2005, ADEQ targeted four impaired surface waters for improvement by 2012:

- Pinto Creek (success story documenting showing significant watershed-wide improvement submitted to EPA FY13)
- Alum Gulch (success story documenting showing significant watershed-wide improvement submitted to EPA FY13)
- Turkey Creek (success story documenting showing significant watershed-wide improvement submitted to EPA FY13)
- Boulder Creek (extensive multi-agency coordination; no success story submitted)

As of the writing of this report, ADEQ anticipates submitting SP-12 documentation for the following watersheds over the next five years:

- Boulder Creek
- Pinto Creek
- Upper Little Colorado River
- San Pedro River
- Tonto Creek

As indicated in Objective 4.b.i of the Strategic Planning Table Update, specific information about when ADEQ anticipates submitting SP-12 documentation for these waters will be outlined in yearly work plans.

ADEQ may also submit progress summaries for watersheds where progress is being made toward addressing nonpoint source impairments, but where data is not yet present to support either a decision to delist (WQ-10 Success Story) or statistical/significant watershed improvement (SP-12). Anticipated progress summaries will be identified in annual work plans.

303(D) PERFORMANCE MEASURES (WQ-27 AND WQ-28)

As part of the 303(d) Vision process, EPA had developed new performance measures to replace the former measure WQ-8 (often referred to as the "pace" metric). Rather than using the pace of TMDL development to measure program success, the new approach will be to measure the percent of state priority areas that are being impacted by TMDLs or alternative restoration approaches. There are two new 303(d) performance measures:

- WQ-27 ("Key Measure"): This required measure tracks the extent of priority areas that are identified by each state that are addressed by EPA-approved TMDLs or alternative restoration approaches for impaired waters that will achieve water quality standards. These areas may also include protection approaches for unimpaired waters to maintain water quality standards. This measure is expressed as a percentage of watershed area.

WQ-28 ("Complementary Measure"): WQ-28 tracks state-wide extent of activities leading to completed TMDLs or alternative restoration approaches for impaired waters, or protection approaches for unimpaired waters. This is an indicator metric and reporting on it is not required by EPA. However, since it allows reporting on incremental activities and activities outside of state-identified priority areas, it provides states with an opportunity to present a more complete picture of its restoration and protection activities. ADEQ will assess the suitability of this measure as a reporting tool as EPA further develops the 303(d) performance measure computational guidance.

C. ADEQ Strategic Plan Performance Measure

ADEQ's FY14-18 Strategic Plan identifies a performance goal for the Water Quality Division (WQD) to document improved water quality in 50% of monitored waters of the state over 5 years. The NPS program plays a significant role in meeting this performance measure, as TMDL recommendations and WQIG projects are two of the primary drivers for improvements to water quality being made. TMDL effectiveness monitoring and WQIG project evaluations (guided by the MTL as discussed in the "Prioritization" section of this chapter) will provide data to report on the success of meeting this measure. The WQD anticipates documenting improvement in a minimum of 10% of the monitored MTL waters per year for each of the 5 years covered by the strategic plan.

D. Success Measures for Protecting High Quality and Threatened Waters

Once ADEQ has developed criteria for identifying high priority waters for protection (see Strategy I.b.ii.) a list of priority waters for protection activities will be developed. Specific goals for these waters will vary depending on the reason for their prioritization. Overall, ADEQ will strive to document either maintenance of water quality in healthy waters, or an improvement in water quality or decrease in threat to water quality in waters that are identified as being at risk for impairment. Future work plans will provide more specific goals for protecting water quality as this program develops further. This 5-year Plan identifies the success measure of ensuring that no water identified as a protection priority will be moved to the 303(d) list (see strategy 2.c.i in the Strategic Planning Table).

E. Success Measures for Increasing Public Understanding of Nonpoint Source Water Quality Issues

Measuring changes in the public's understanding and/or their subsequent changes in behavior based on that understanding is one of the most challenging pieces of the NPS puzzle. As funding priorities have become more tightly focused over the past several years, ADEQ has seen a decrease in both the number and diversity of applicants for WQIG grants. We can't make improvements to water quality without the participation of an educated and motivated public. The impacts of education and outreach efforts can be difficult to quantify, but some ways to measure the effectiveness of our efforts include:

- An increase in the overall quality of grant applications received – all projects submitted are eligible for funding and show a clear understanding of the potential impacts of the project on water quality impairment or threat.
- An increase in the diversity of grant applicants – stakeholder groups that have historically been reluctant to pursue NPS funding become more willing to apply for project support and/or discuss their project ideas with NPS staff.
- An increase in implementation activities in priority watersheds – NPS funded or otherwise (for example, USDA Environmental Quality Incentives Program (EQIP) projects funded under the National Water Quality Initiative).
- Active local involvement in watershed planning activities.

CHAPTER TWO: CONDITIONS IN ARIZONA

Arizona is a Southwest desert state, with significantly different physical, social, and economic conditions from those across most of the United States. These conditions must be considered when implementing any environmental protection program and to be effective, Arizona's NPS program must also be innovative.

I. Physical Conditions

So how hot and dry is it? Figure 3 shows Arizona's four deserts: Sonoran, Mohave, Great Basin, and Chihuahuan. The desert regions of the state receive between three to twelve inches of rain a year.

Arizona is also one of the hottest places to live in the United States with average high temperatures around 104º F between June and August. In Phoenix it has reached as high as 122º (1990) and Lake Havasu City has recorded the state's highest temperature of 128º (1994).

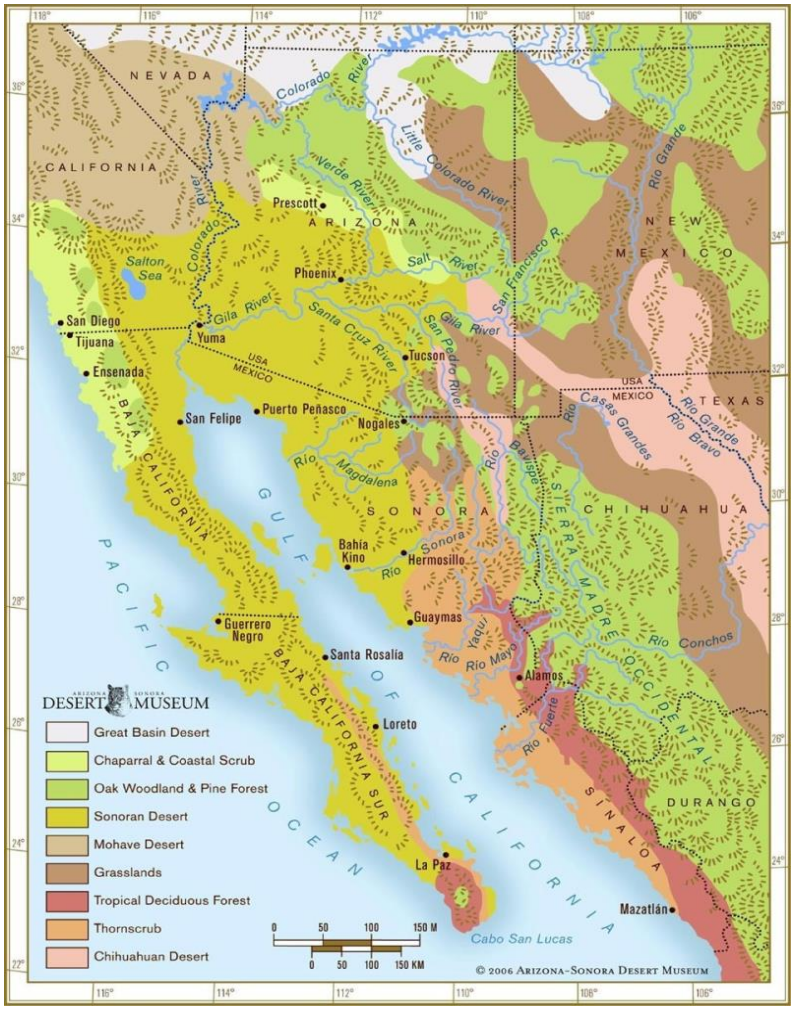


Figure 3: Arizona's Deserts

The hydrologic impact of such dryness and heat is that 89% of the surface waters are ephemeral washes that flow only in response to runoff events and many lakes dry out to become mud flats or meadows, especially during droughts. Actually only a handful of lakes in Arizona are natural, while several hundred lakes were created as water reservoirs or for recreation or irrigation purposes. Many of these constructed lakes are shallow and eutrophic (i.e., high production of organic compounds, resulting in excess algae and submerged aquatic plants, low oxygen, and high pH).

Sediment transport in ephemeral desert streams is an issue in Arizona. When naturally vegetated deserts are disturbed (grazing, recreation, agricultural land, or urban development), the natural, organic safeguards that hold the topsoil against erosion are destroyed.

Groundwater in Arizona is naturally replenished (recharged) at very slow rates because of little precipitation, high evaporation losses, and the depth to which water must travel to recharge deep aquifers. Deeper groundwater sources that have not been impacted by human activities are generally the source of drinking water for rural residences or mixed with surface water for municipal drinking water systems.

Monsoon rains and wildfires are legendary. Monsoon rains are locally intense and rapidly swell streams to flood stage which carry a large amount of sediment and associated pollutants.

Strategies to implement Arizona's NPS program must consider the state's size and physical variability. Arizona extends over 114,000 square miles, which is approximately the size of Pennsylvania, Ohio, and West Virginia combined.

Portions of the Arizona desert landscape are frequently interrupted by "sky islands," which are mountain ranges that support temperate and alpine habitats by absorbing rainfall at the expense of the surrounding flatlands. By climbing from the Tucson desert to the alpine environment on top of Mount Lemmon in the Santa Catalina Mountains, people can experience a climate change equivalent to driving from Arizona to Northern Canada. Typical of western states, elevations range from 12,633 feet above sea level at the top of Humphreys Peak near Flagstaff to only 70 feet above sea level near Yuma. Elevation changes result in different vegetation, aquatic communities, and soil types. This diversity adds complexity to watershed remediation activities because multiple reference conditions may be needed within even a relatively small watershed.

II. Land Ownership

Arizona is a patchwork of federal, state, tribal, and private land ownership (see Figure 4). Only 17% of the land is available for private and corporate ownership. In Arizona, federal land management agencies have frequently taken the lead in bridging jurisdictional divides that occur within a watershed. This has been encouraged by the Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (2000) that sought broad community-based planning and management, and resulted in the Arizona Coordinated Resource Management Memorandum of Understanding (MOU) (1999).

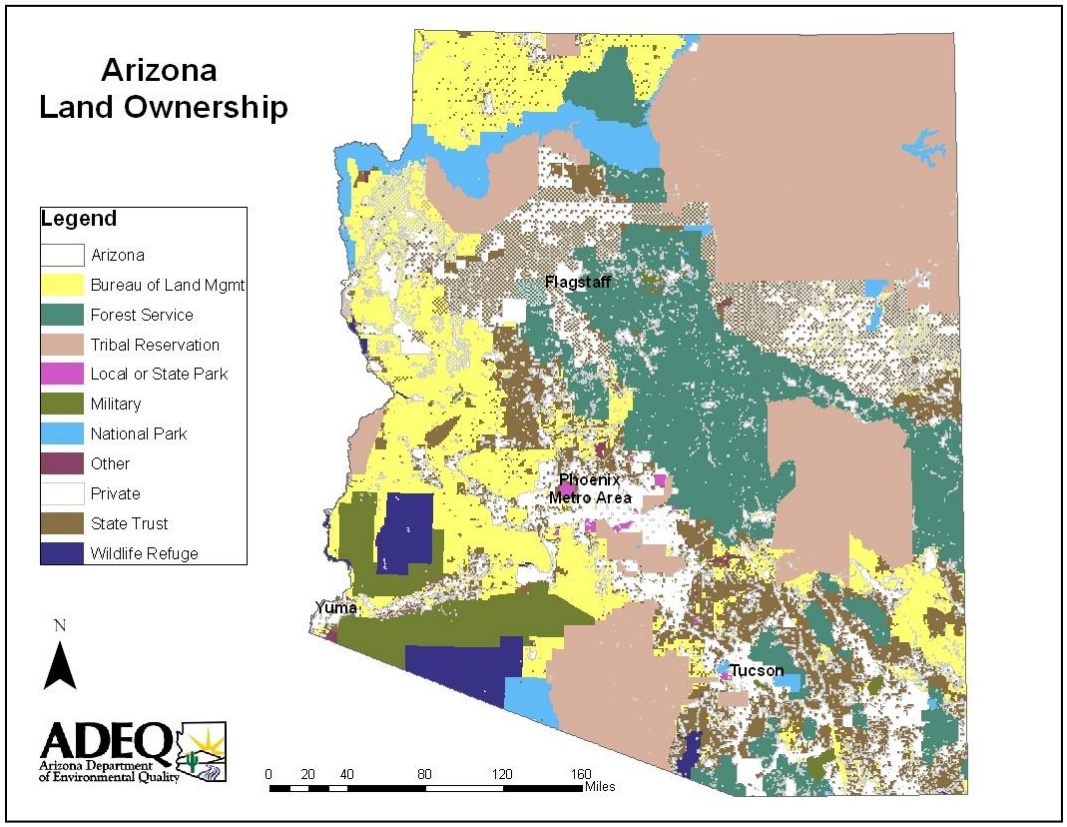


Figure 4: Arizona land ownership

Arizona is also home to 21 federally recognized Native American Nations and tribal reservations occupy about 28% of the land. Arizona's water quality statutes and rules do not apply on these lands. Each tribe, in conjunction

with the EPA, may develop its own standards, monitor and assess waters, develop a NPS program, and implement water quality improvement projects. Water quality protection programs have developed independently on each reservation, and with few exceptions, have not been integrated with ADEQ's water quality protection programs. ADEQ continues to invite tribes to investigate ways to better collaborate in the integration of our respective programs, participate in resource planning, and better target resources to reduce nonpoint source discharges to surface and groundwater.

III. Land Use Impacts

A. Managing Crop Production

Areas of the state involved in crop production in 2005 are shown in Figure 5, created by the Arizona Geographic Information Council, the Arizona Cotton Research and Protection Council, and the University of Arizona in 2008.

- Blue = Townships with 6-356 fields under production
- Green = Townships with 1-5 fields under production
- White = Townships with no fields under production
- Yellow = Tribal lands (no crop info)
- Beige = Land grant areas (no crop info)

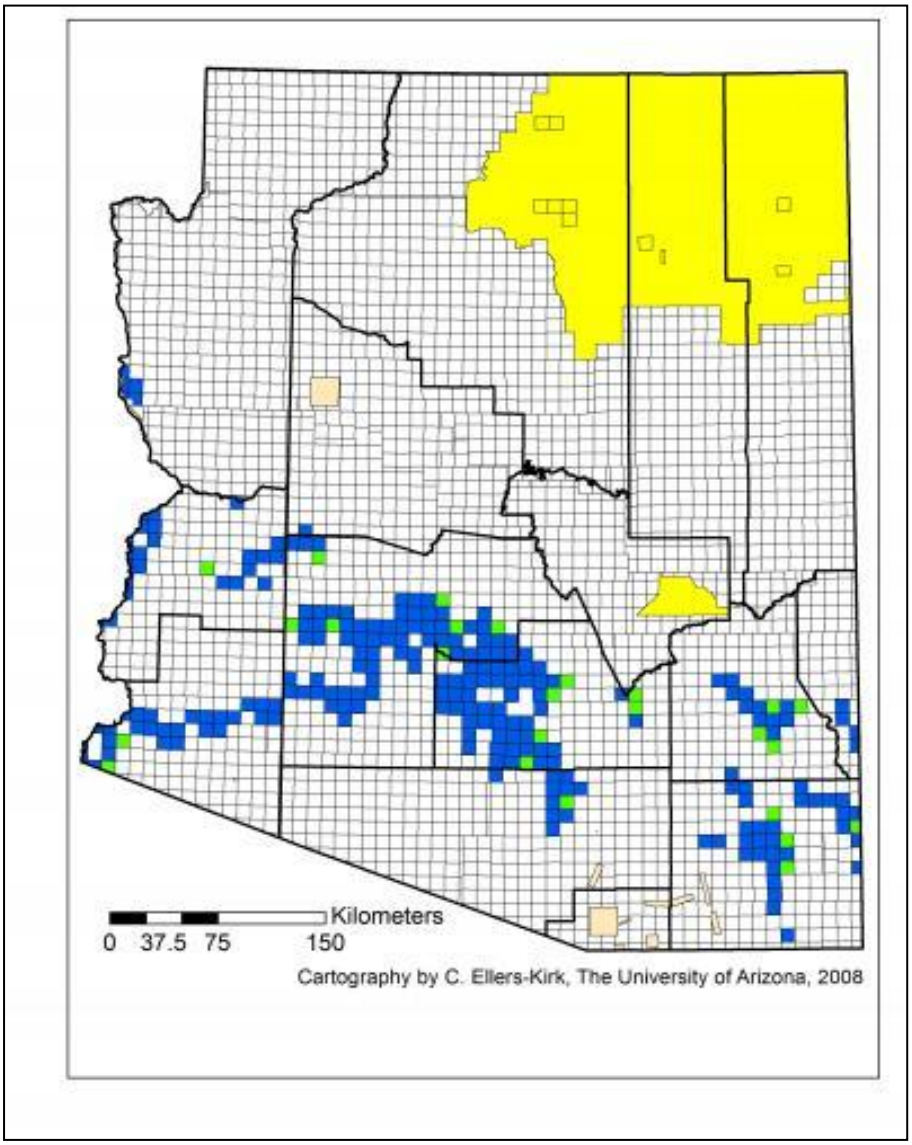


Figure 5: Crop production in Arizona

Although crop production is limited, it is intense in some areas such as Yuma, a leading supplier of winter vegetables throughout the United States.

The major pollutants contributed by crop production are sediment, pesticides, total dissolved solids (salinity), selenium, and nutrients (nitrogen and phosphorus from fertilizers). When nutrients are applied in excess of plant needs, nutrients can wash into aquatic ecosystems where they cause excessive plant or algae growth, reduce swimming and boating opportunities, create foul tasting water, and can lead to fish kills. Wind can also carry soil particles from a farm field and transport them to surface water.

Irrigation water is applied to supplement natural precipitation or to protect crops against freezing or wilting. Inefficient irrigation can cause water quality problems. In arid areas like Arizona, rainwater does not carry residues deep into the soil. Excessive irrigation can then concentrate residues such as pesticides, nutrients, disease carrying microorganisms, selenium, and salts (total dissolved solids) in the top layers of soil. Irrigation return flows from the fields may also include these concentrated residues. In Arizona, canals frequently provide both the water for irrigated crop production and a conduit for pollutant-laden runoff being returned back to surface waters.

Pesticides, herbicides, and fungicides are used to kill pests and control growth of weeds and fungus. Pesticide application to, including over and near, Waters of the United States is regulated under the Pesticide General Permit (PGP) (A.A.C. R18-9-C90). The permit applies to all areas in Arizona, except Indian Country. The PGP authorizes chemical and biological pesticide discharges to, over, and near Waters of the U.S. for the following five use patterns:

- Mosquito and Other Flying Insect or Pest Control;
- Weed, Algae, and Vegetation Control;
- Animal Pest Control;
- Forest Canopy Pest Control; and
- Specific Approvals (a pesticide discharge activity not covered by one of the other four patterns, but determined to be within the purpose and intent of the PGP by the department in advance of the pesticide discharge).

If the proposed pesticide discharge activity does not fall within one of the use patterns and cannot be covered as a specific approval, the operator must obtain coverage under another permit in order to discharge to a water of the U.S. Additional information about the PGP can be found online on ADEQ's website.

Pesticides can contaminate water through direct application, runoff, and wind transport. They can kill fish and wildlife, poison food sources, and destroy the habitat that animals use for protective cover. To reduce contamination from pesticides, farmers apply Integrated Pest Management (IPM) techniques based on the specific soils, climate, pest history, and crops. IPM helps limit pesticide use and describes application techniques that will minimize pesticide movement from the field. The Arizona Pest Management Center at the University of Arizona provides technical support for implementing IPM in Arizona.

Application of nitrogen fertilizer in Arizona is regulated under general permit A.A.C.-R18-9-401 through the Aquifer Protection Permit Program. This is a general permit, in rule, which outlines BMPs that if followed should result in compliance with the rule requirements. Another APP general permit (A.A.C. R18-9-403) applies to concentrated animal feeding operations (CAFOs) to address runoff, storage, and disposal of animal manure. The use of BMPs is required to reduce pesticide, nitrogen, and phosphorus loadings to Arizona's surface waters and groundwater.

B. Managing Livestock Grazing

Much of Arizona is used for grazing, with more than 1,000 grazing allotments on public lands and grazing on tribal lands. Because of urban expansion, ranchettes with assorted livestock now occur even in urban areas.

Livestock and other grazing wildlife are drawn to water and to the surrounding riparian vegetation in an arid climate. In some cases a perennial stream or spring is the only source of water for livestock and wildlife. Grazing can contribute sediment and animal wastes containing nutrients (nitrogen and phosphorus) and disease-causing

organisms (bacteria) to surface waters. Soil disruption and reduction in natural vegetative cover associated with grazing can increase the erosion and destabilize stream channels.

Overgrazing can expose soils, increase erosion, encourage invasion by non-native plants, destroy fish habitat, and reduce the filtration of sediment necessary for building stream banks, wet meadows, and floodplains.

Grazing impacts on surface water can be minimized by properly managing these agricultural activities. Arizona has adopted grazing Best Management Practice rules (A.A.C. R18-9-501) to encourage implementation of these practices. The U.S. Forest Service has adopted an Adaptive Management Approach that can require modifying the number of animals grazing on the property or BMP implementation to promote the carrying capacity of the land before the permit is renewed. Permit adjustments are based on monitoring the soil, vegetation, and riparian conditions. This Adaptive Management Approach is successfully improving rangeland conditions in Arizona.

In addition, ADEQ utilizes NPS funding to identify and fund grazing-related projects via TMDL, watershed planning, and WQIG activities. Water Quality Division staff also participate in CRM activities and environmental reviews for changes to grazing land management on lands owned by other state and federal agencies.

C. Managing Forested Areas

Arizona's harvestable forests extend from the Colorado Plateau in northern Arizona along the Mogollon Plateau into southeastern Arizona (see Conifer Forests and Evergreen Woodlands in Figure 6). This area consists mainly of steep foothills and mountains.

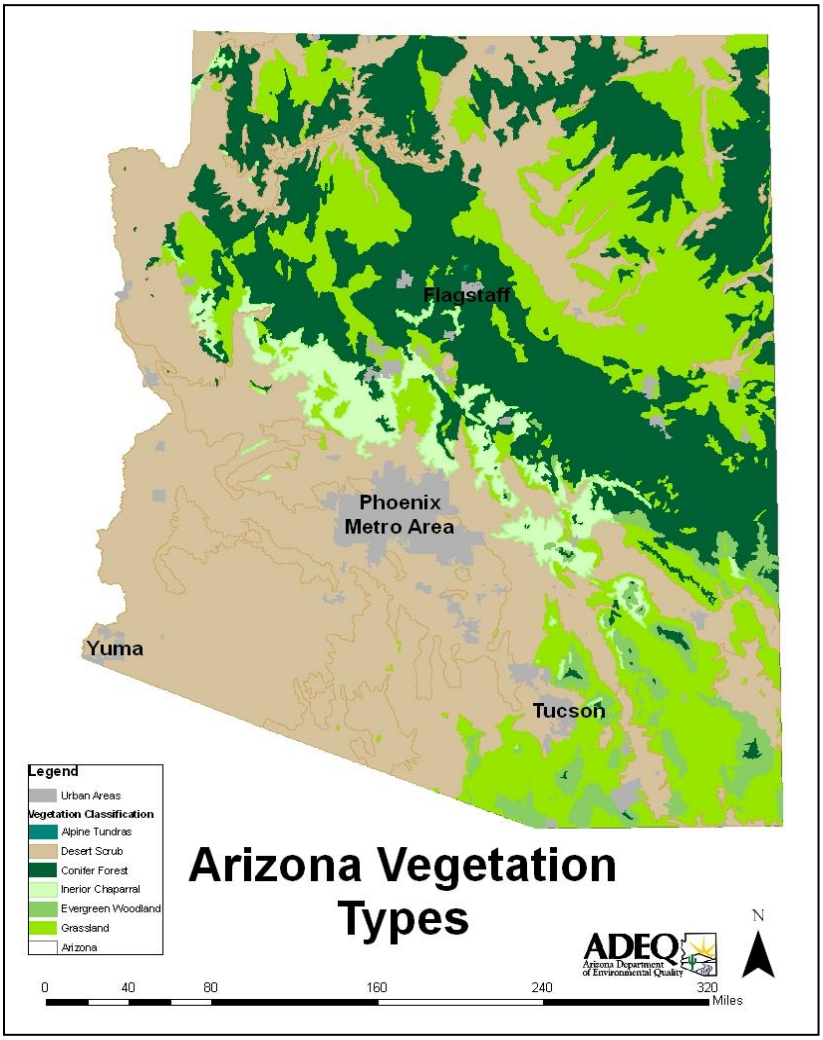


Figure 6: Arizona vegetation types

Water quality related issues associated with timber harvesting are caused by riparian vegetation destruction, road construction and use, and the dragging and loading of logs. Poor harvesting and transport techniques can result in increased erosion and sediment production. Timber harvesting BMPs address maintenance and protection of riparian buffers, road management, re-vegetation of disturbed areas, the use of sediment control structures, and prescribed burns.

Wildfires are another source of nonpoint source pollution from forested lands. Drought conditions, dense tree stands, and a bark beetle infestation have recently increased the likelihood of wildfires in Arizona. When wildfires occur in Arizona's pine forests, the effects on soil conditions, hardening of the surface soils, and removal of vegetation buffer areas can increase erosion rates exponentially. A 5-year flood event can act like a 100-year flood event when wildfires consume most of the vegetative buffers that formerly slowed the rate of water flow. The effects of fire on a watershed depend on burn severity and hydrologic events that follow a fire. The U.S. Forest Service is now using prescribed burns to control the intensity of the burn and impacts to water quality.

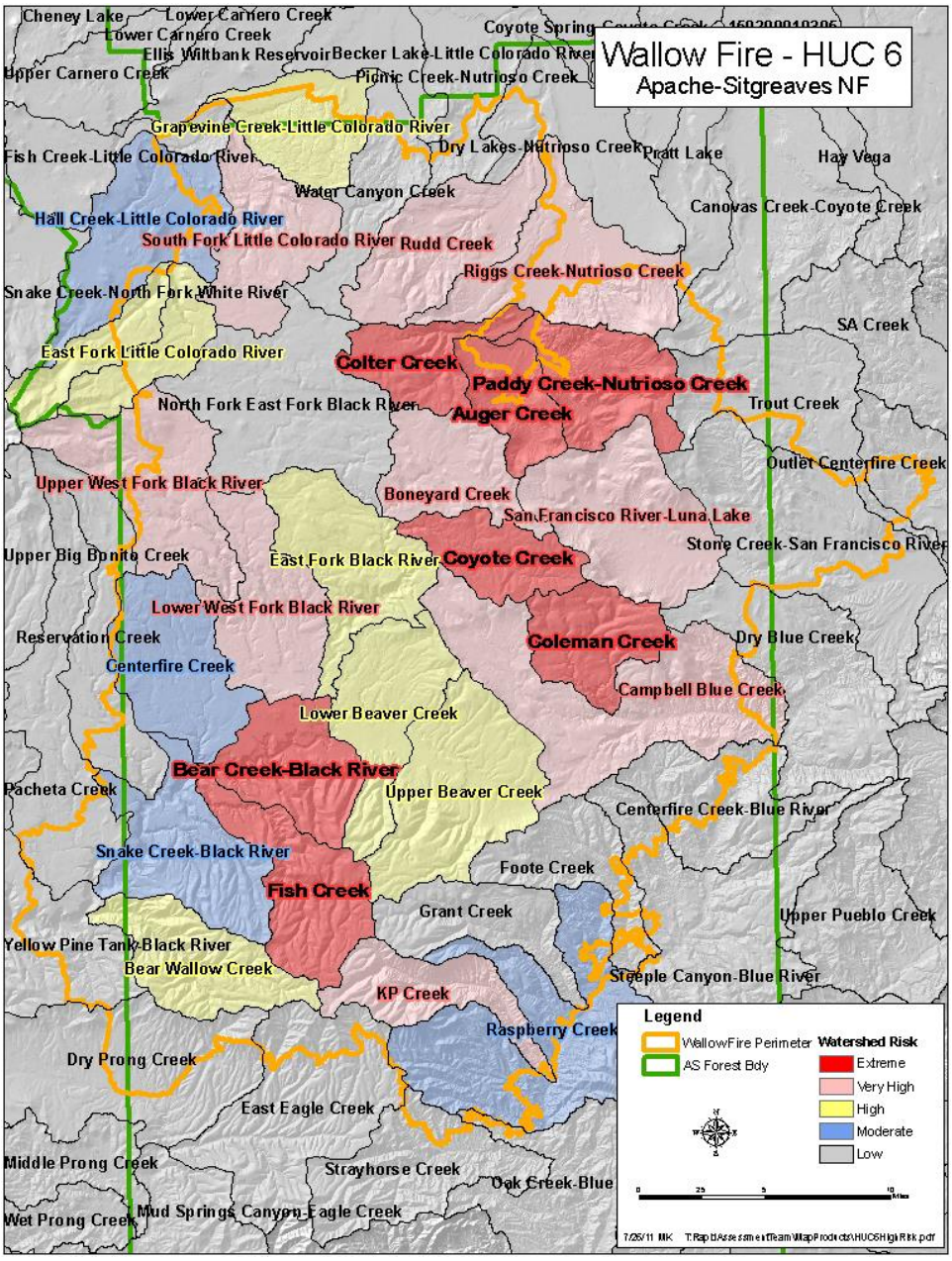


Figure 7: Wallow Fire burn area (map created by Apache-Sitgreaves National Forest)

Arizona's Water Quality Improvement Grants have funded projects to restore watershed health after severe wildfires. Most recently, ADEQ partnered with the Arizona Department of Emergency and Military Affairs (DEMA) to make $250,000 in NPS funding available to support emergency erosion control projects in the impaired San Francisco, Blue, and Little Colorado River watersheds that were impacted by the Wallow Fire. In June 2011, the Wallow fire burned 538,049 acres throughout these and the Salt River watersheds (Figure 7). Post-fire projects were funded to help prevent erosion from severely burned areas from contributing to existing sediment and sediment-related impairments in these watersheds. Secondary benefits to these projects included well-head protection and flood control.

D. Managing Urban and Developed Areas

Urban areas contain "hardscapes" (e.g., pavement, sidewalks, and buildings) which prevent rain water from percolating into the ground. This increases the amount of flood flows, and therefore, the potential force of runoff. Flood waters can result in erosion and stream bank deterioration, and in urban areas pavement can also be a source of grease and oils from automobiles and a variety of pollutants spilled on the pavement.

Arizona's urban areas are also shown in Figure 6. The Phoenix metropolitan area is by far the largest metropolitan area in Arizona, with an estimated population of 4.2 million, or 65% of the State's total population of 6.4 million (2010). Arizona has experiences periods of extremely rapid population grown in recent years. For example, between 2000 -2007 Phoenix population grew an estimated 20%. By 2019 (the end of this 5-year Planning horizon), Arizona's total population is anticipated by the Arizona Department of Administration to be over 7.1 million.

Flood events in the late 1970s led the Maricopa County Flood Control District (the greater Phoenix metropolitan area), to establish flood control regulations to reduce the impacts of flood waters in this urban area. A drainage report and stormwater or flood management plan is now required for each commercial, industrial, and multi-family residential development. The plan must define the stormwater hydrology for the drainage area, outline potential problems, and recommend solutions. Drainage retention basins, which are often required by these plans, double as parks and greenbelts across this metropolitan area.

Stormwater management is also regulated under the Clean Water Act provisions administered by ADEQ through the Arizona Pollutant Discharge Elimination System (AZPDES) permit program. These regulations apply to storm water runoff once the water enters the streets in heavily populated urban areas (at least 50,000 people and density of 1,000 people per square mile). To reduce negative impacts from storm water, the NPS Program works with numerous agencies such as county flood control agencies, municipalities, the AZPDES Stormwater Permit Program, and other watershed partners.

SUSTAINABLE GROWTH

Arizona recognizes the need to invest in communities that are committed to developing in a sustainable manner. Communities that consider environmental impacts related to growth and development are more likely to develop in a way that reduces impacts on their watersheds. The NPS Program is coordinating with local and state efforts to provide low impact and sustainable land development. Growth and construction in Arizona offers many opportunities to apply new Low Impact Development (LID) approaches to land development (or re-development). LID promotes principles such as preserving and recreating natural landscape features, minimizing effective impervious surfaces so that a site captures storm water as a resource rather than discharging it as waste. By implementing LID principles and practices, water can be managed in a way that reduces the impact of "built" areas and promotes the natural movement of water within an ecosystem or watershed.

In 2008, the Arizona Department of Commerce introduced the Smart Growth Scorecard. "Smart Growth" is a continuous planning process to guide the preservation, development, or redevelopment of a neighborhood, community, or region to promote the goals and ambitions of its residents. The Scorecard is an incentive-based tool to help cities, towns and counties evaluate their growth management efforts and encourage more comprehensive strategies that lead to smarter land use decisions. Entities applying for grants and loans from participating state discretionary funding programs must reference a Scorecard. This approach also encourages citizens, non-profit organizations, and other entities to talk with their community leaders, make sure a Scorecard

is filled out, and ultimately encourages implementation of Smart Growth practices. The NPS Program requires that all Water Quality Improvement Grant applications from counties and incorporated municipal entities reference a completed Smart Growth Scorecard to be considered eligible for grant funding.

PHYSICAL ALTERATIONS

Land development has resulted in many physical alterations to stream channels that have left the stream banks less stable and more susceptible to erosion and related water quality degradation. For example, the straightening or hardening of a stream channel removes a stream's natural ability to absorb energy from large volumes of water. This increases the speed at which the water flows, increasing erosion, undermining streambanks, and degrading habitat.

Removal of properly functioning riparian areas, excessive pumping of groundwater, and surface water diversions can also alter stream channels and result in hydromodification. In drier states like Arizona, over pumping of groundwater near stream beds can change the water level and may actually cause the stream to dry up. Water rights and other water supply issues involved in these hydro-modifications are a major concern for communities throughout Arizona.

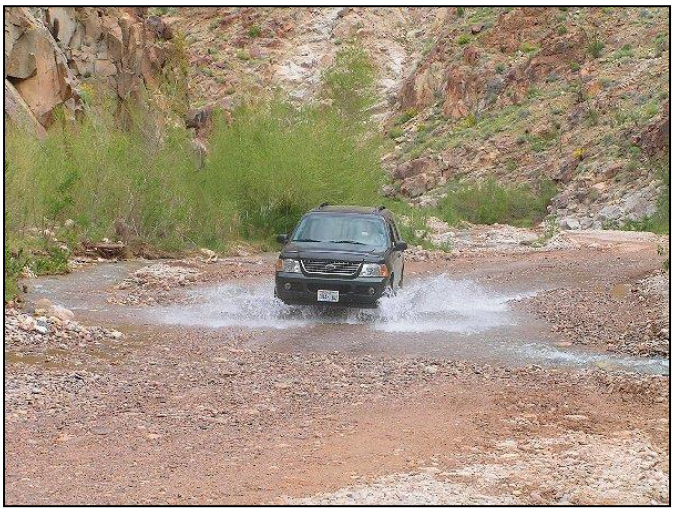


Figure 8: Stream crossing

Road and infrastructure crossings of streams also must be considered because of impacts on stream characteristics. The design of a stream crossing will determine whether a stream behaves naturally. Improperly constructed bridges and culverts can increase downstream erosion and create potentially unstable and dangerous situation at the crossing. In remote areas of Arizona, some road crossings are actually in-stream experiences (see Figure 8). If not properly "hardened," these crossings can be a significant source of sediment.

ADEQ identifies and addresses impacts to water quality due to physical alterations via 401 certifications, TMDLs, watershed planning, and WQIG activities. BMPs for addressing these unstable physical alterations focus on restoration of stream channels to more stable meandering streams and development of healthy riparian areas. This restoration work relies on stream bank bioengineering which uses plant materials in combination with natural and synthetic support materials for slope stabilization, erosion reduction, and vegetation establishment.

ONSITE WASTEWATER TREATMENT SYSTEMS

Onsite household wastewater disposal systems (e.g., septic systems) treat and dispose of domestic wastewater. Even a new conventional septic system will remove only 15-20% of the nitrogen discharged into the system and may allow nitrate concentrations to build up in aquifers. In many areas septic systems were built before current onsite wastewater system rules were established. Although they may continue to be used until they fail, these "grandfathered" systems are more likely to be inadequately sized or improperly located. Improperly designed or maintained systems can become conduits for pollutants to groundwater or surface water. Because of these issues and concerns, septic systems are considered a significant nonpoint source of pollutants to groundwater and surface water. The control of nutrient and pathogen loadings to waters begins with proper design and installation of an onsite wastewater disposal system. The absorption field should never be situated within the 100-year floodplain or within close proximity to groundwater. Onsite systems need to be inspected and maintained

regularly. Bacteria present in the system decompose the sewage; therefore, chemicals should not be poured down the drain because they could destroy the beneficial bacteria and impair the effectiveness of the sewage treatment process.

In Arizona, onsite wastewater systems are regulated under the Aquifer Protection Permit Program (see APP discussion Chapter 1). ADEQ has delegated authority to issue many of these permits to county health departments based on staffing proficiencies.

As of July 2006, any person transferring property served by an onsite wastewater treatment system is required to perform an inspection of the system and report to ADEQ the location and physical condition of the system, operational deficiencies, and description of any repairs completed prior to transfer. The inspector must also report whether the septic tank or other treatment container was pumped or otherwise serviced, or if not serviced, why not. This inspection report must be provided to the person to whom the property is being transferred. This record may become very useful in developing water quality improvement strategies in watersheds where surface waters or aquifers are impaired by bacteria, nutrients, or other pollutants associated with onsite wastewater treatment systems (A.A.C. R18-9-A316).

E. Managing Recreation Areas

Arizona's beautiful landscapes and mild winters attract many tourists to rural areas of the state. Surface waters are a magnet for recreation, which can result in water quality impairments through off-road vehicle use, boating, horseback riding, fishing, swimming, hunting, hiking, mountain biking, and camping (Figure 9).

Use of off-road vehicles can increase erosion and sediment issues. Scars from off-road traffic cover both dry desert and forested areas. Reducing off-highway vehicle traffic in already damaged areas can help initiate restoration and in turn reduce erosion and sediment.

Boating is also a popular outdoor activity on Arizona's reservoirs, lakes, and streams. Disposal of human waste can be an issue on large reservoirs and motorized boats can degrade water quality due to petroleum related discharges.

Figure 9: Camping along the Colorado River in the Grand Canyon

Strategies to control pollution sources from recreation activities have included: composting toilet facilities, providing garbage bags and containers at trail heads, improving parking facilities near trail heads, restrictions on gas-powered motors, and "leave-no-trace" education. It appears that the most important strategies for reducing impacts have been to provide adequate supervision and maintenance at recreational areas. Having a "presence" at a recreational area cannot be overrated.

The Nonpoint Source Management Program will continue to find and support innovative strategies to reduce wastes

left at recreational sites and damage to riparian areas, stream banks, and upland areas from a variety of activities along and in Arizona's surface waters. Planned strategies such as increased monitoring of recreational areas are described in Chapter 3.

F. Managing Mining Operations

Arizona's Department of Mines and Mineral Resources (now part of the Arizona Geological Survey) declares that Arizona is the number one mining state in the nation with the largest value of non-fuel mineral production in the United States. Two subsets of mines should be considered: active mines and inactive mines. An inactive mine has not been abandoned, but is not operating. The State Mine Inspector's office has inventoried over 10,000 abandoned mines (see Figure 10) but estimates as many as 100,000 abandoned mines in Arizona. In 2007, Arizona listed 187 companies with 402 active mines.

Historically, mines have engaged in large-scale physical alterations of stream channels, creating large pits which collect water after rain events, and flowing adits. Typically, mining operations are located near sources of water to aid in extraction and delivery of mined ores and byproducts. Abandoned mine workings, tailings piles, and overburden stockpiles often erode directly into the stream channels when it rains. Active mining operations in Arizona are regulated under point source programs (NPDES on tribal lands, AZPDES, and the APP Program). However, historic mining areas may be significant sources of pollutant loading to both surface water and groundwater. Management strategies to address pollutants from mining operations include stormwater detention berms, re-vegetation, passive wetland treatment cells, geotextile encapsulation, and other erosion control practices. In some cases, remediation may require more expensive treatments, such as removal of tailings piles from a stream bank or pumping of contaminated groundwater. If pollutant impairment is significant, contamination may be addressed through the federal and state "Superfund" remediation programs, such as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the state's Water Quality Assurance Revolving Fund (WQARF).

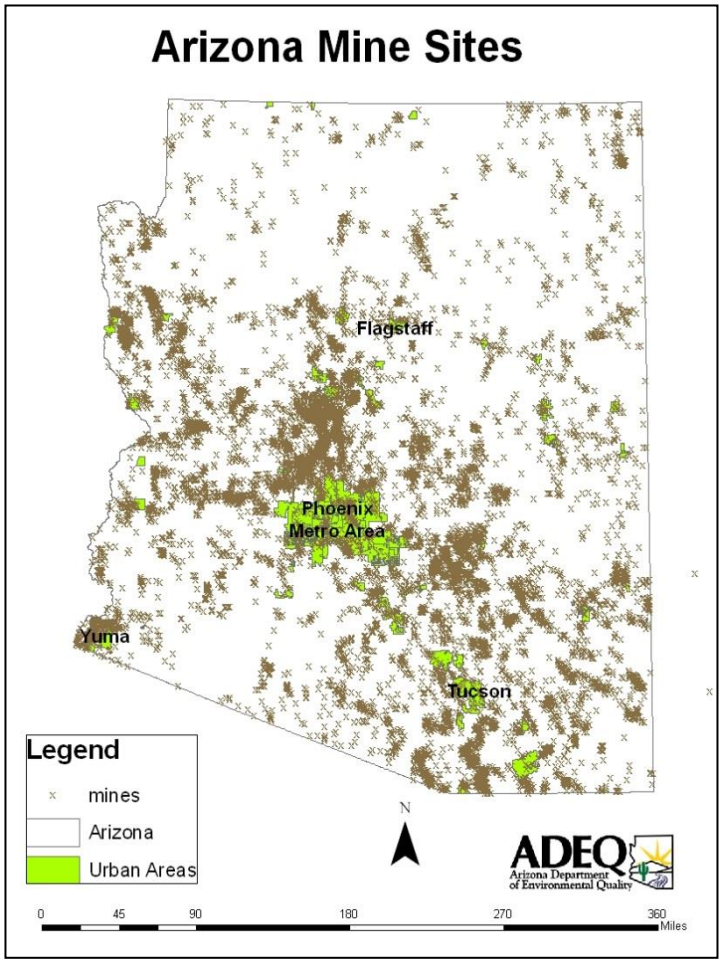


Figure 10: Arizona mine sites

The U.S. Department of Interior and U.S. Department of Agriculture have made a concerted effort to identify, prioritize, and remediate abandoned mines on federal lands in Arizona. These efforts have led to several mine remediation actions in areas where mine wastes have impaired surface waters. Clean-up of mine wastes is expensive and complex. It will take coordinated efforts to identify funding sources and bring agencies and private entities together to implement corrective actions at even the highest priority areas. The NPS Program is currently

coordinating with Arizona State Land Department, Arizona Department of Administration, private landowners, and the Bureau of Land Management to address tailings piles at the former Hillside Mine site, which is within the Boulder Creek Targeted Watershed and covers federal, state, and private land. More information about this project can be found in the Strategic Planning Table in Chapter 3 of this document.

G. Land Use Implications

It is clear that inadequate land management practices cause significant nonpoint source problems. For each land use, BMPs have been identified that are likely to reduce or mitigate pollutant loadings. Regulations to control land uses have also been created. To aid watershed partners in identifying appropriate measures to reduce pollutant loadings, ADEQ partnered with the University of Arizona NEMO program in 2010 to develop a BMP manual of watershed remediation methods specifically appropriate for Arizona's hydrological and geological conditions. The manual is available online for view and download. ADEQ plans to expand upon these recommendations based on actual data collected from BMPs implemented within Arizona, as well as provide additional education and training for watershed partners about BMPs and the legal authorities available to reduce nonpoint source loadings.

V. Pollutants of Concern

Every two years, ADEQ provides a comprehensive report on the status of surface water quality that identifies impaired waters and pollutants causing impairments to fulfill requirements of Clean Water Act sections 305(b) and 303(d). The most current report can be downloaded from the Assessments page of the ADEQ website.

A. Pollutants Causing Stream and Lake Impairments

NPS pollution remains the nation's largest source of water quality problems. It is the main reason that approximately 40 percent of our surveyed streams and lakes are not clean enough to meet basic uses such as fishing or swimming. The primary nonpoint source pollutants causing impairments based on Arizona's 2010 305(b) /303(d) Integrated Report are:

- Suspended sediment
- Nutrients or related parameters (nitrogen, phosphorus, low dissolved oxygen, high pH)
- *E. coli* bacteria
- Metals and low pH
- Selenium
- Boron
- Historic pesticides

Sources of these pollutants include livestock grazing, recreation, crop production, mining, forestry, and wildlife. A breakdown of pollutant stressor categories impacting lakes and streams can be seen in Figures 11 and 12, below. Please refer to the full Integrated Report at the link above for additional details. Some lakes and streams are listed as impaired for more than one pollutant. The 2012-2014 Integrated Report indicates that Arizona has 22 lakes listed as impaired for 28 pollutants and 60stream reaches for 90 pollutants. Although in a few drainages point sources may be contributing, these impairments are primarily the result of nonpoint source contributions. The pollutants causing impairments in Arizona's surface waters are similar to nationally identified concerns; however, strategies to reduce nonpoint source pollutant impacts must consider sources of pollutants and conditions discussed in this Chapter that are not similar to eastern or Midwestern states.

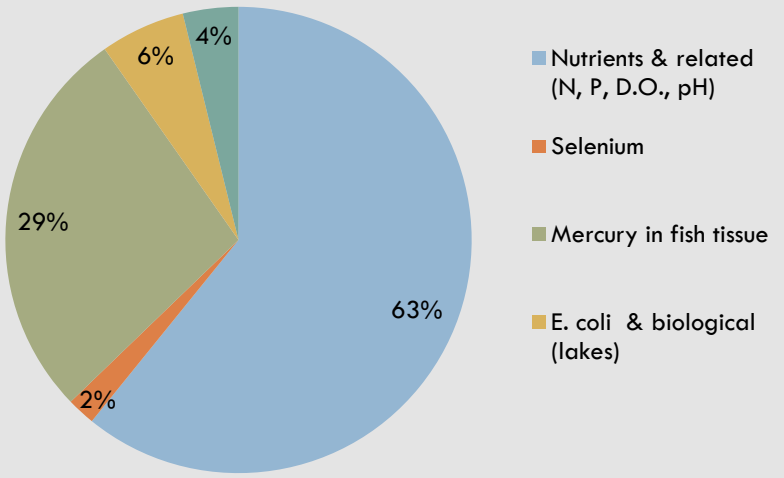


Figure 11: Percent Lake Impairments per Pollutant Stressor (based on 2012-2014 Integrated Report data). *(Note: legend lists colors on pie chart clockwise from top).*

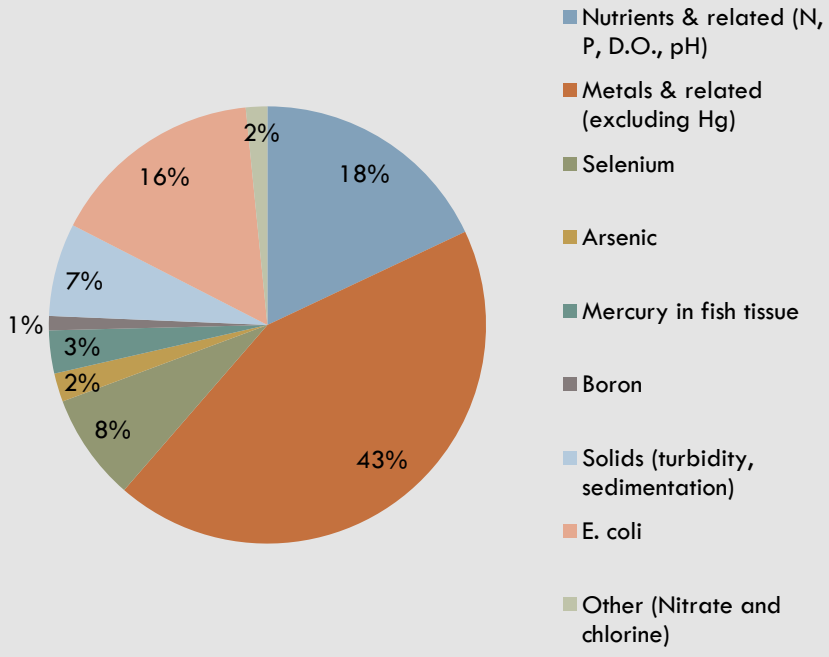


Figure 12: Percent Stream Impairments per pollutant stressor (based on 2012-2014 Integrated Report data). *(Note: legend lists colors on pie chart clockwise from top).*

B. Groundwater Pollutants of Concern

Groundwater contamination problems in Arizona can be separated into the general source categories depicted in Table 3, below. Potential groundwater contamination from point sources is generally controlled through APP Program requirements. An APP is required for anyone owning or operating a facility that discharges a pollutant either directly to an aquifer or to the land surface in such a manner that there is a reasonable probability that the pollutant will reach an aquifer (see discussion of APP Program in Chapter 1).

Table 3 – Major Pollutants of Concern in Groundwater

Pollutants	Major Source
Nitrates Bacteria Total dissolved solids (TDS)	Agriculture crop production and Animal feeding operations
Volatile organic compounds (VOCs)	Commercial and industry users of solvents
Nitrate Bacteria Total dissolved solids (TDS)	Inadequate on-site wastewater treatment
Metals Sulfate Radioactive constituents Total dissolved solids (TDS)	Mining (Current and historic mines and associated facilities)
Petroleum products	Underground storage facilities (e.g. gas stations)
Arsenic Fluoride Nitrate Radioactive constituents Total dissolved solids (TDS)	Natural deposition

Nitrate and total dissolved solids (TDS) are commonly sampled pollutants of concern in groundwater. These constituents occur naturally in Arizona, sometimes at concentrations exceeding water quality standards. A variety of nonpoint sources, however, can increase the concentrations of these constituents in groundwater. The 1,477 wells and springs that have been monitored for nitrate by the ADEQ ambient groundwater monitoring program between 1995 and 2009 are shown in Figure 13. Eight percent of the sites sampled had nitrate concentrations above the aquifer water quality standard of 10 mg/L. The sites exceeding nitrate standards were commonly wells located in or near major expanses of irrigated farmland in central and western Arizona. Elevated nitrate concentrations can also occur in wells impacted by septic systems, especially in areas having a high density of these onsite wastewater disposal systems. Not all elevated nitrate concentrations, however, are caused by human activities. Nitrogen accumulated in the soil by native legume plants in the Sonoran desert can also dramatically impact nitrate concentrations.

The same group of 1,477 wells and springs was also monitored for TDS (Figure 14). About 37 percent of the sites sampled had TDS concentrations above the aesthetic guideline for drinking water (a secondary maximum contaminant level) at 500 mg/L set by the EPA. The elevated concentrations of TDS can occur due to natural deposits of salts, but they are also associated with human activities such as irrigation recharge, mining, and wastewater treatment. High TDS concentrations occur throughout the state but are common in wells located near major expanses of irrigated farmland in central and western Arizona.

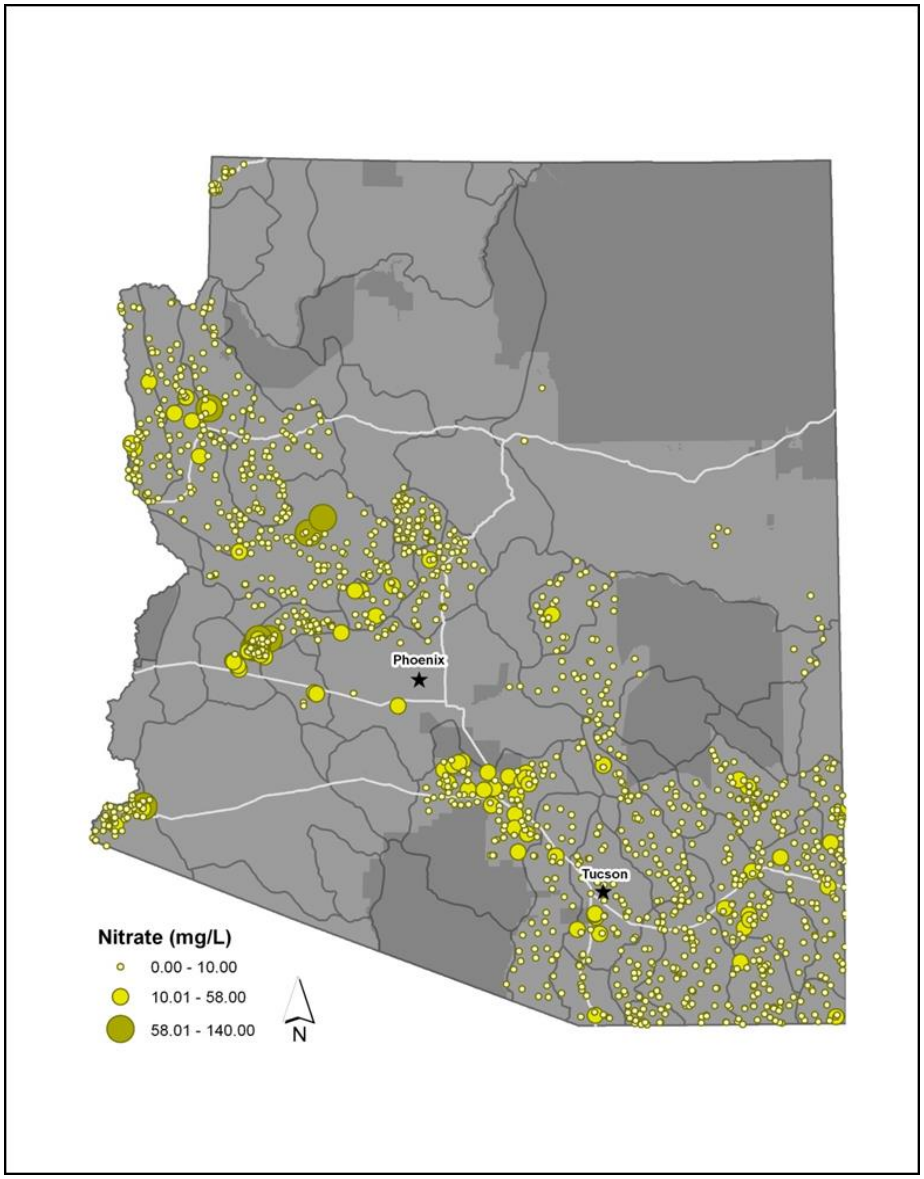


Figure 13: Nitrate concentration in wells

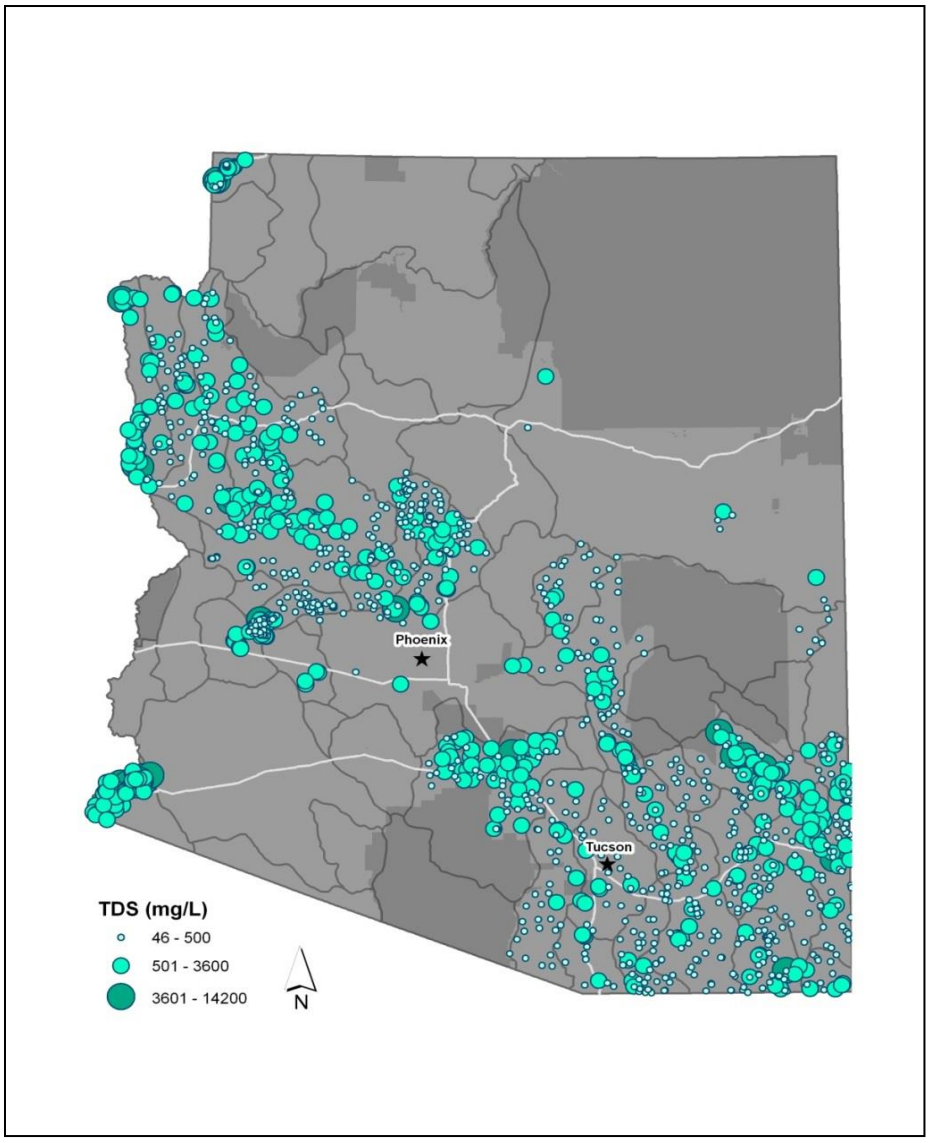


Figure 14: TDS concentration in wells

C. Reducing These Pollutant Impacts

To reduce pollutant loading, all activities within the watershed must be reviewed to determine the types of pollutants they may contribute to surface water and groundwater. As discussed in the first chapter of this plan, Arizona has many programs to prevent pollutant loading, identify impairments, and reduce these loadings.

Additional innovative strategies have been identified in the next chapter that will support Arizona's Nonpoint Source Program further in preventing and mitigating these impairments.

CHAPTER 3: NONPOINT SOURCE STRATEGIC PLAN

I. The Components of a Strategic Plan

The strategic plan describes how resources will be allocated to achieve the mission of Arizona's Nonpoint Source Program: **to achieve and maintain water quality standards through the reduction of nonpoint sources pollutant contributions to Arizona's surface and groundwater.** The components of the strategic plan are goals, objectives, strategies, milestones, and responsible parties.

- **Goals** are 'the big picture'. Goals show us what the world will look like after we achieve our objectives—our desired outcomes. They are broad and inclusive, but attainable and realistic.
- **Objectives** break down the goals by describing the types of changes that will need to be made in order to achieve the goal.
- **Strategies** are the specific actions that will accomplish the changes (objectives) needed to meet our goals.
- **Milestones** are the steps, stages, or phases of implementing the strategy. They should be quantifiable and their completion should indicate a clear measure of success toward achieving the associated goal.
- **Responsible parties** are the major players who are committed to and necessary for successful implementation of the strategy.

Strategic planning begins with the end in mind by establishing broad goals and objectives. Four broad goals were established for this strategic plan:

Goal #1: Identify impairments to surface and groundwater quality.
Goal #2: Prevent and reduce nonpoint source pollution discharges to protect and restore surface or groundwater resources.
Goal #3: Coordinate efforts of various programs within ADEQ and with other agencies and partners to prevent and reduce nonpoint source pollution impacts to surface and groundwater.
Goal #4: Evaluate and improve the effectiveness of the nonpoint source pollution program and communicate success.

Objectives and strategies are then selected to achieve each goal. Responsible parties and definable milestones that function as measures of success are then developed for each strategy to direct implementation of the plan and to evaluate success. Milestones will be monitored and results analyzed to document whether and how well desired outcomes were achieved. Analyses provide the information needed to direct strategic plan changes. Annual reports to EPA will use these milestones to report on the progress of the Nonpoint Source Program. ADEQ anticipates that this strategic planning table may need to be updated during the 5-year Planning period to reflect changes in resources, shifting priorities, or improved strategies. Any future amendments to the strategic plan will be posted to the ADEQ website at the following location: http://www.azdeq.gov/environ/water/watershed/nonpoint.html.

This table will be used to track progress in meeting 5 year planning goals as part of the NPS Annual Report.

II. Arizona's FY15-19 Strategic Planning Table

	GOAL #1: Identify and prioritize NPS threats and impairments to surface and groundwater quality		
Identify the Problems	**Objective a:** Assess water quality of surface and groundwater.		
	Strategy i: Conduct statewide surface and groundwater monitoring according to ADEQ's monitoring strategy and analyze data to fulfill requirements of the Clean Water Act and state water statutes.		
	Milestones:		
	1. Identify potential NPS contributions to surface and groundwater.		
		a. Submit Integrated 305(b)/303(d) Report and assessment database to EPA.	(FY16, 18)
		b. Integrated Report identifies priority watersheds or waters for restoration and protection to facilitate State strategic planning for achieving water quality goals.	(FY16, 18)
	2. Increase probabilistic monitoring on intermittent streams.		
		a. Program development.	(FY15, 16)
		b. Increased monitoring of intermittent streams (25 sites).	(FY17, 18, 19)
	3. Increased monitoring on recreational waters		
		a. Monitoring plan development.	(FY15)
		b. Begin monitoring of highly recreated waters (both lakes and streams; 10 sites/year).	(Start FY16, con. annually)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, Ambient Monitoring Program, contracted entities as identified		
	Strategy ii: Develop, revise, and implement water quality standards to support water quality assessments and identification of impairments, sources, and key projects.		
	Milestones:		
	1. Water quality standards developed or revised in accord with the Triennial Review Process. *		(FY17)
	2. Arizona's Impaired Water Identification Rule is revised to incorporate new water quality standards and better reflect EPA's impaired waters listing guidance. *		(FY17)
	**Note: These milestones may be delayed due to state agency rules moratorium. See annual work plans for updates.*		
	Responsible Parties: Ambient Monitoring Program, TMDL & Assessments Program, Standards and Rule Development Program		
Prioritize Known and Potential Future Problems	**Objective b:** Prioritize resources toward high-priority waters for both restoration and protection activities.		
	Strategy i: Prioritize impaired waters for restoration activities and resources.		
	Milestones:		
	1. High priority (Targeted and/or MTLS) watersheds are identified for directing resources such as 319(h) Grant resources, monitoring, education and outreach, and potential legal authorities.		(Annually)
		a) Integrated Report identifies priority watersheds or waters for restoration and protection to facilitate State strategic planning for achieving water quality goals.	(FY16, FY18)
	2. As new watersheds are identified, integrated teams including internal and external partners are created for each to identify resources and potential legal and implementation actions.		(Annually/as needed)
	3. Internal programs develop common goals for addressing point and nonpoint source concerns in priority watersheds.		
		a. NPS, Stormwater, and Compliance programs identify shared goals and strategies for the Granite Creek watershed.	(FY15)
		b. NPS, Stormwater, and Compliance programs identify shared goals and strategies for the Oak Creek watershed.	(FY15)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, Stormwater & General Permits Program, APP Program, Compliance Program, other programs as identified		
	Strategy ii: Develop criteria to identify and prioritize high quality or threatened waters for protection activities.		
	Milestones:		
	1. Develop criteria for identifying high-priority protection waters.		(FY15)
	2. Identify protection planning priorities and approaches.		(FY16)
	3. Develop outreach materials to educate the public about protection-prioritized watersheds.		(FY17)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, Ambient Monitoring Program, NPS grantees (e.g. University of Arizona), other programs as identified		
Create a Plan to Address the Problems	**Objective c:** Identify critical pollutant sources and implementation activities needed to meet and/or maintain water quality standards in impaired and protected waters.		
	Strategy i: Complete in-progress traditional TMDLs to determine sources and load allocations.		
	Milestones:		
	1. Granite Creek - low D.O., *E. Coli* (includes Miller, Butte, and Manzanita Creek tributaries - *E. coli*); Watson Lake (nutrients)		(FY15)
	2. Queen Creek - copper, lead		(FY16)
	3. Mule Gulch - copper		(FY16)
	4. East Verde River - arsenic		(FY15)
	5. Middle Gila - selenium, boron		(FY15)
	6. Lower Gila - selenium (potential delist), boron		(FY15)
	Responsible Parties: TMDL & Assessments Program		
	Strategy ii: Develop comprehensive watershed plans that incorporate TMDLs and create clear paths to pollutant reduction and restoration of water quality and watershed health.		
	Milestones:		
	1. Santa Cruz River watershed plan:		
		a. Initiate local stakeholder involvement.	(FY14)
		b. Complete data collection phase.	(FY15)
		c. Complete data analysis phase.	(FY16)
		d. Identify priority projects and complete draft plan.	(FY16)
		e. Submit final plan to EPA for approval.	(FY17)
	2. Identify watershed(s) for future plan development.		(FY16)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, OBEP, NPS grantees (e.g. University of Arizona)		
	Strategy iii: Update existing WIPs; create framework for future updates.		
	Milestones:		
	1. Update existing WIPs to include analysis of how individual projects relate to the overall load reductions necessary for standards attainment and indicate projects that have been completed (Granite, Oak, San Fran/Blue, San Pedro).		(1/year)
	2. Develop and implement a schedule and process for reviewing and updating watershed plans.		(FY15)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees (e.g. University of Arizona)		

Create a Plan to Address the Problems

Strategy iv: Pursue alternative restoration approaches for situations when a full "9 Key Element" plan may not be necessary to address a pollutant source.

Milestones:

1. Complete focused TMDLs/data summaries for work plan-identified watersheds where alternative funding sources are available to address sources of pollution.		
	a. Big Bug	(FY15)
	b. Additional projects as identified in annual work plans.	(TBD)
2. Submit list of watersheds to EPA where alternative planning documents (for protection projects and other situations as outlined in the EPA Guidelines) may be used to justify use of NPS funding for project implementation.		(FY17)
	a. Develop alternative planning documents for work plan-identified watersheds.	(See Work Plan)
	b. Implement alternative plans as prioritized by annual work plans.	(See Work Plan)

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees (e.g. University of Arizona)

GOAL #2: Implement projects to prevent and reduce NPS pollutant contributions to high priority impaired and protected waters.

Fix the Problems

Objective a: Implement projects to address impairments in Targeted Watersheds.

Strategy i: Implement Granite Creek WIP

Milestones:

1. Complete implementation of Whipple Street Detention Basin and Prescott Community Center projects.	(FY15)
2. Identify projects to pursue funding.	(Annually)
3. Implement at least one project per grant cycle as funding and competitive project scoring allows.	(See NPS Annual Report)
4. Reduce nutrient loads to Watson Lake by 5% (baseline = TMDL).	(FY19)
5. Set percent reduction goals for *E. coli* loads to Granite Creek.	(FY15)

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees, other programs as identified

Strategy ii: Implement Oak Creek WIP

Milestones:

1. Complete Implementation of Midgely Bridge project.	(FY15)
2. Complete Implementation of Oak Creek Ambassadors project.	(FY16)
3. Identify projects to pursue funding.	(Annually)
3. Implement at least one project per grant cycle as funding and competitive project scoring allows.	(See NPS Annual Report)
4. *E. coli* loads to Oak Creek are reduced by 15% (baseline = TMDL).	(FY19)

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees, other programs as identified

Strategy iii: Implement San Pedro WIP

Milestones

1. Begin implementation of San Pedro WIP projects.	(FY15)
3. Identify projects to pursue funding.	(Annually)
3. Implement at least one project per grant cycle as funding and competitive project scoring allows.	(See NPS Annual Report)
4. Set reduction goals for *E. coli* loads to the San Pedro River.	(FY15)

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NRCS, NPS grantees, other programs as identified

Strategy iv: Implement San Francisco/Blue River WIP

Milestones:

1. Complete implementation of Clifton Restroom project.	(FY15)
2. Complete implementation of San Francisco River Restroom and Menges Ranch projects.	(FY16)
3. Identify projects to pursue funding.	(Annually)
4. Implement at least one project per grant cycle as funding and competitive project scoring allows.	(See NPS Annual Report)
5. *E. coli* loads to the San Francisco/Blue are reduced by 10% (baseline = 2010 IR data).	(FY19)

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees, other programs as identified

Strategy v: Implement projects in the Little Colorado River Headwaters Watershed

Milestones:

1. Using existing Upper Little Colorado River watershed plan, Natural Channel Design planning document and ADEQ project evaluations as prioritization tools, implement at least one project per grant cycle as funding and competitive project scoring allows.	(See NPS Annual Report)
2. Sediment loading into LCR from the Coyote Creek subwatershed is reduced by 21% (baseline = 2010 IR data).	(FY19)

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NRCS, NPS grantees, other programs as identified

Strategy vi: Implement Santa Cruz River WIP

Milestones:

1. Release funding opportunity upon completion of watershed plan.	(FY18)
2. Implement at least one project in support of the Santa Cruz watershed plan.*	(FY19)
**Note: Implementation in this watershed may begin prior to plan completion as "straight to implementation" projects are identified.*	

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, OBEP, NPS grantees, other programs as identified

Strategy vii: Implement portions of the Boulder Creek TMDL Implementation Plan pertaining to the lower tailings pile at the former Hillside Mine site.

Milestones

1. MOU between ADEQ, ASLD, and ADOA/State Risk detailing long-term commitments to the Hillside project is finalized.	(FY15)
2. Implementation planning for project is completed and agreed upon by all involved parties.	(FY15)
3. Project implementation complete.	(FY16)
4. Total zinc loads to Boulder Creek are reduced by 25%.	(FY18)

Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, ASLD, ADOA/State Risk, other partners as identified

Fix the Problems	**Strategy viii:** Implement projects in the Tonto/Christopher Creek watershed	
	Milestones	
	1. Implement at least one project per grant cycle as funding and competitive project scoring allows.	(See NPS Annual Report)
	2. Document progress toward achieving required NPS load reductions to meet water quality standards.	(FY15)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, USFS, NPS Grantees, other partners as identified	
Ensure that the "Fixes" are Done Right	**Objective b:** Ensure that WQIG funding is invested in the projects that are most likely to provide long-term load reductions to achieve watershed-wide improvements.	
	Strategy i: Require that implementation grant proposals demonstrate: · Connection to an approved watershed-based plan · The estimated pollutant load reductions and how they relate to the reductions needed to meet water quality standards (if established in an approved plan) · That the applicant has sufficient resources, technical skills, and commitments to implement the project and provide for long-term maintenance · How education and outreach components will encourage water quality improvements, behavior changes, and citizen involvement · How project success will be measured in both the short and long term	
	Milestones	
	1. Revise grant materials to account for NPS guideline changes.	(FY15; as needed)
	2. Conduct training on monitoring plan development.	(FY15, 16)
	3. Provide technical assistance to applicants for the development and implementation of projects.	(Annually)
	4. Plan, market, and oversee WQIG funding opportunities.	(Annually)
	Responsible Parties: Grants & Outreach Unit, NPS grantees (e.g. University of Arizona), TMDL & Assessments Program	
	Strategy ii: Oversee WQIG projects and contracts to ensure that deliverables and timelines are met, and that anticipated outcomes are achieved.	
	Milestones	
	1. Review projects at least quarterly to ensure that timelines and deliverables are on track. Work with grantees and subgrantees as necessary to resolve issues as they arise and schedule site visits.	(Annually)
	2. Review, approve, and process reimbursement requests.	(Annually)
	3. Conduct project close-out site visits to ensure that all work was completed and long-term management plans are in place.	(Annually)
	Responsible Parties: Grants & Outreach Unit	
Address Potential Problems	**Objective c:** Implement projects to protect healthy surface and groundwater resources	
	Strategy i: Utilize prioritization scheme identified in Strategy 1.b.ii to rank waters for protection projects and implement protection projects.	
	Milestones:	
	1. Release funding opportunity for protection projects.	(FY17)
	2. Receive and award applications for protection projects.	(FY17)
	3. No water bodies or reaches in protection-prioritized waters are moved to the 303(d) list for the 2018 assessment.	(FY18)
	Responsible Parties: Grants & Outreach Program, other programs as identified for technical support purposes	
	GOAL #3: Coordinate efforts of various programs within ADEQ with other agencies and partners to prevent and reduce NPS pollution impacts to surface and groundwater.	
Use the Tools Available to Address the Problem	**Objective a:** Utilize legal authorities to reduce NPS contributions to surface and groundwater.	
	Strategy i: Coordinate with internal Groundwater, Compliance, Sourcewater Protection and 401 programs and with delegated county authorities to ensure that permit reviews and inspections take potential nonpoint source contributions to surface water impairments into account, and to identify potential nonpoint source threats to drinking water sources.	
	Milestones:	
	1. Update Groundwater, Compliance, Sourcewater Protection, and 401 Certification programs and delegated authorities on changes to NPS targeted watersheds.	(Annually/as needed)
	2. Evaluate potential for agricultural use pesticide active ingredients to reach/impact groundwater.	(Annually)
	3. Publish the annual Groundwater Protection List (GWPL).	(Annually)
	2. Conduct inspections of biosolids facilities to ensure that disposal and/or surface applications are not impacting surface/groundwater quality.	(Annually)
	Responsible Parties: APP Program, Groundwater Program, Sourcewater Protection Program, 401 Certification Program, Community Liaisons/other agency outreach staff	
	Strategy ii: Coordinate with state and federal partners to ensure that grazing permits and resource management plans, specifically in targeted watersheds, appropriately consider water quality concerns.	
	Milestones:	
	1. ADEQ is included in the development and review of Coordinated Resource Management Plans in priority watersheds.	(FY16)
	Responsible Parties: Grants & Outreach Program, CRM Partners (including NRCS and ASLD), TMDL & Assessments Program	
Involve Local Stakeholders	**Objective b:** Encourage public involvement in locally-driven efforts to improve and protect water quality.	
	Strategy i: Provide technical assistance, education, and training to empower watershed partners to develop and implement projects supported by watershed plans	
	Milestones:	
	1. Provide education and training opportunities on water quality topics of concern to watershed partners.	(As requested)
	2. Conduct workshops in watersheds with completed watershed plans to encourage the implementation of high-priority projects.	(Annually)
	3. WQIG FAQ, alternative/match funding resources, and interactive map with links to project information are added to website to make program information readily accessible to the public.	(FY15)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees (e.g. University of Arizona), Community Liaisons/other agency outreach staff, Communications Office, Data Management Program	
	Strategy ii: Develop outreach strategies that identify direct benefits of project implementation beyond water quality improvements to stakeholders.	
	Milestones:	
	1. Coordinate with NRCS to produce outreach materials that highlight soil conservation, range health, and other potential secondary benefits of WQIG project implementation.	(FY15, 16)
	2. Applications for WQIG funding are received from all eligible targeted watersheds.	(Annually)
	3. Applications for project leveraging Farm Bill funding to improve water quality are received from all NWQI watersheds.	(Annually)
	Responsible Parties: Grants & Outreach Program, NRCS	

Involve Local Stakeholders	**Strategy iii:** Train volunteer monitoring groups to collect credible data that can be used in ADEQ water quality assessments.	
	Milestones:	
	1. Partner with U of A to implement a startup volunteer monitoring support program.	(FY15, 16)
	2. Develop training protocols that can be used throughout the state for volunteer monitoring groups.	(FY15)
	3. Hire internal staff to support and oversee volunteer monitoring. *	(FY 17)
	4. Targeted Watersheds have at least one active volunteer monitoring entity, where feasible. †	(FY 17)
	5. Credible external data from priority watersheds is incorporated into the surface water quality database for use in future assessment reports.	(Annually)
	**Note: Completion of this milestone is dependent on the availability of funding in future fiscal years.*	
	†Note: Factors that impact the practicality of volunteer monitoring may include type of monitoring required to track improvements and the proximity of local stakeholders to the project/monitoring sites.	
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees (e.g. University of Arizona), Community Liaisons/other agency outreach staff	
Resources to Address Shared Problems Pool Limited	**Objective c:** Encourage and work with land and resource management agencies, tribal authorities, bordering states and Mexico to identify and mitigate nonpoint source pollution impacts in Arizona.	
	Strategy i: Continue to strengthen relationships with other agencies, tribes, bordering states, and Mexico to encourage development of effective water quality improvement projects and avoid project practices that would contribute to impairment of surface or groundwater quality or degradation of protected watersheds.	
	Milestones:	
	1. Work with NRCS to develop and implement monitoring strategies for existing and new NWQI projects.	(Annually)
	2. Memoranda of Understanding with agencies and tribes updated to better support this 5-year strategic plan. This list reflects planned MOU activities as of July 2014 and may be updated in the future.	
	a. Update USFS MOU to reflect new NPS program strategies and leverage partnership opportunities.	(FY15)
	b. Develop MOU with AZG&F to facilitate increased fish tissue and recreation area monitoring.	(FY16)
	c. Coordinate with ASLD to develop an MOU that facilitates the use of NPS funds to implement projects on State Lands.	(FY19)
	3. ADEQ participation in coordinate resource planning efforts of federal and state agencies (e.g. planning, federal action reviews).	(Annually)
	4. Participation in meetings with binational stakeholders regarding issues and remedies to water quality impairments in shared watersheds across the US/Mexico border including the targeted Santa Cruz and San Pedro watersheds.	(Annually)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, OBEP, NRCS, USFS, AZG&F, ASLD, WQD Director's Office, APP Program, Community Liaisons/other agency outreach staff, Administrative Counsel	
	GOAL #4: Evaluate and improve the effectiveness of the NPS program and communicate successes.	
Check Progress Toward Meeting Goals	**Objective a:** Evaluate WQIGs and TMDL implementation activities to determine effectiveness toward achieving water quality standards.	
	Strategy i: Conduct effectiveness monitoring and BMP evaluations in watersheds prioritized on ADEQ's Master Target List (MTL), including NWQI waters.	
	Milestones:	
	1. MTL monitoring and evaluation priorities identified for each fiscal year.	(See Work Plan)
	2. Site visits, evaluations, monitoring and/or modeling conducted for projects in work plan identified MTL waters.	(Annually)
	3. 10% of MTL waters monitored on an annual basis show improvements to water quality (50% of all monitored waters over 5-year time frame).	(Annually)
	4. Coordinate with NRCS to develop a monitoring plan for ADEQ assistance in NWQI watersheds.	(FY15)
	5. Coordinate with NRCS to conduct effectiveness monitoring in the Coyote Creek watershed and other NWQI watersheds as identified in state FY work plans.	(Annually)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, other programs/monitoring staff as identified	
	Strategy ii: Increase staff capacity to recommend, design, and evaluate the effectiveness of BMPs.	
	Milestones:	
	1. Provide BMP training to staff.	(Start FY15, con. annually)
	2. Hire staff with expertise in BMP design and evaluation.	(FY15)
	3. Develop updated BMP guidance for WQIG applicants based on effectiveness monitoring.	(FY19)
	Responsible Parties: Grants & Outreach Program, TMDL & Assessments Program, NPS grantees, other contractors as identified	
Share Successes and What We've Learned	**Objective b:** Document and communicate program successes and lessons learned.	
	Strategy i: Report to EPA and the public on NPS program success	
	Milestones:	
	1. Report annually on NPS 5-year Plan progress.	(Annually)
	2. Report on state fiscal year work plan progress.	(Semi-annually)
	3. Develop success stories to document de-listings (WQ-10) as well as documentation of interim progress toward restoration (SP-12) in accordance with EPA requirements. (Minimum 2 stories and/or documentations of progress per year). In addition, progress summaries for non WQ-10 or SP-12 watersheds may be identified on an annual basis.	(See Work Plan)
	4. Report to EPA on effectiveness of NWQI implementation activities.	(Annually/as requested by EPA)
	5. Report mandated elements for all projects in EPA's Grant Reporting and Tracking System (GRTS), including load reduction estimates as applicable (WQ-09).	(Annually)
	Responsible Parties: Grants & Outreach Unit Program, TMDL & Assessments Program, NRCS, other programs as identified	
Update the Plan as Needed	**Objective c:** Update NPS Plan as needed	
	Strategy i: Update plan as needed to reflect shifting priorities as they occur over the current planning horizon and to re-frame goals for the next 5-year planning horizon.	
	Milestones:	
	1. NPS Plan is evaluated for update needs.	(Annually)
	2. Updates, if required, are submitted to EPA and a review and approval schedule is established.	(As needed)
	3. Initial FY20-25 5-year NPS Plan draft plan submitted to EPA.	(FY18)
	4. FY20-25 5-year NPS Plan approved by EPA.	(FY19)
	Responsible Parties: Grants & Outreach Program, other programs as identified, EPA Region 9	

APPENDICES

APPENDIX A: MINIMUM ELEMENTS OF A WATERSHED-BASED PLAN

Although many different elements may be included in a watershed plan, EPA has identified nine minimum elements that are critical for achieving improvements in water quality. In general, EPA requires that nine-element watershed-based plans (watershed plans) be developed prior to implementing project(s) funded with § 319 watershed project funding. In many cases, state and local groups have already developed watershed plans and strategies for their rivers, lakes, streams, wetlands, estuaries, and coastal waters that address some or all of the nine elements. EPA encourages states to use these plans and strategies, where appropriate, as building blocks for developing and implementing watershed plans. If these existing plans contain all nine elements listed below, they can be used to fulfill the watershed plan requirement for watershed projects. If the existing plans do not address all nine elements or do not include the entire watershed planning area, they can still provide valuable components to inform, develop, and update watershed plans.

For example, some watershed management plans contain information on hydrology, topography, soils, climate, land uses, water quality problems, and management practices needed to address water quality problems but lack the quantitative analysis of current pollutant loads or expected load reductions from proposed management practices. In this case, the watershed plan developer could incorporate such existing information into the plan to help fulfill the nine watershed plan elements. If separate documents contain information that help meet the nine watershed plan elements listed below but are too lengthy to be included in the watershed plan, they can be summarized and referenced in the appropriate sections of the plan, as long as the information is readily available.

Note: EPA recognizes that in select cases (outlined in section IX.B.ii of the Nonpoint Source Program and Grants Guidelines for States and Territories) alternatives to watershed plans can provide an effective roadmap to achieve the water quality goals of a § 319 funded watershed project. These alternative plans do not need to address the nine elements listed below, but must include the planning components listed in section IX.B.ii of the Guidelines). EPA still encourages plan developers to build on prior planning efforts and incorporate related information, as described above, when developing these alternative plans.

Nine Elements of Watershed-based Plans (watershed plans)

The nine elements, as well as short explanations of how each element fits in the context of the broader watershed plan, are provided below. Although they are listed as a through i, they do not necessarily take place sequentially. For example, element d asks for a description of the technical and financial assistance that will be needed to implement the watershed plan, but this can be done only after you have addressed elements e and i.

The level of detail needed to address the nine elements of watershed plans will vary in proportion to the homogeneity or similarity of land use types and variety and complexity of pollution sources. For example, densely developed urban and suburban watersheds often have multiples sources of pollution from historic and current activities (Superfund sites, point sources, solid waste disposal, leakage from road salt storage, oil handling, stormwater-caused erosion, road maintenance, etc.) in addition to some agricultural activities. Plans will be more complex than in predominantly rural settings in these cases. For this reason, plans for urban and suburban watersheds may need to be developed and implemented at a smaller scale than watersheds with agricultural lands of a similar character.

Element a. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the

significant subcategory level along with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).

WHAT DOES THIS MEAN?

Your watershed plan source assessment should encompass the watershed of the impaired waterbody(ies) throughout the watershed, and include map(s) of the watershed that locates the major cause(s) and source(s) of impairment in the planning area. To address these impairments, you will set goals to meet (or exceed) the appropriate water quality standards for pollutant(s) that threaten or impair the physical, chemical, or biological integrity of the watershed covered in the plan.

This element will usually include an accounting of the significant point and nonpoint sources in addition to the natural background levels that make up the pollutant loads causing problems in the watershed. If a TMDL or TMDLs exist for the waters under consideration, this element may be adequately addressed in those documents. If not, you will need to conduct a similar analysis (which may involve mapping, modeling, monitoring, and field assessments) to make the link between the sources of pollution and the extent to which they cause the water to exceed relevant water quality standards.

Element b. An estimate of the load reductions expected from management measures.

WHAT DOES THIS MEAN?

On the basis of the existing source loads estimated for element a, you will similarly determine the reductions needed to meet water quality standards. After identifying the various management measures that will help to reduce the pollutant loads (see element c below), you will estimate the load reductions expected as a result of implementing these management measures, recognizing the difficulty in precisely predicting the performance of management measures over time.

Estimates should be provided at the same level as that required in the scale and scope described in element a (e.g., the total load reduction expected for dairy cattle feedlots, row crops, eroded streambanks, or implementation of a specific stormwater management practice). For waters for which TMDLs have been approved or are being developed, the plan should identify and incorporate the TMDLs; the plan needs to be designed to achieve the applicable load reductions in the TMDLs. Applicable loads for downstream waters should be included so that water delivered to a downstream or adjacent segment does not exceed the water quality standards for the pollutant of concern at the water segment boundary. The estimate should account for reductions in pollutant loads from point and nonpoint sources identified in the TMDL as necessary to attain the applicable water quality standards.

Element c. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in element b, and a description of the critical areas in which those measures will be needed to implement this plan.

WHAT DOES THIS MEAN?

The plan should describe the management measures that need to be implemented to achieve the load reductions estimated under element b, as well as to achieve any additional pollution prevention goals outlined in the watershed plan (e.g., habitat conservation and protection). Pollutant loads will vary even within land use types, so the plan should also identify the critical areas17 in which those measures will be needed to implement the plan. This description should

be detailed enough to guide needed implementation activities throughout the watershed and can be greatly enhanced by developing an accompanying map with priority areas and practices. Thought should also be given to the possible use of measures that protect important habitats (e.g. wetlands, vegetated buffers, and forest corridors) and other non-polluting areas of the watershed. In this way, waterbodies would not continue to degrade in some areas of the watershed while other parts are being restored.

Element d. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan.

WHAT DOES THIS MEAN?

You should estimate the financial and technical assistance needed to implement the entire plan. This includes implementation and long-term operation and maintenance of management measures, information/education (I/E) activities, monitoring, and evaluation activities. You should also document which relevant authorities might play a role in implementing the plan. Plan sponsors should consider the use of federal, state, local, and private funds or resources that might be available to assist in implementing the plan. Shortfalls between needs and available resources should be identified and addressed in the plan.

Element e. An information and education component used to enhance public understanding of the plan and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.

WHAT DOES THIS MEAN?

The plan should include an I/E component that identifies the education and outreach activities or actions that will be used to implement the plan. These I/E activities may support the adoption and long-term operation and maintenance of management practices and support stakeholder involvement efforts.

Element f. Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.

WHAT DOES THIS MEAN?

You should include a schedule for implementing the management measures outlined in your watershed plan. The schedule should reflect the milestones you develop in g and you should begin implementation as soon as possible. Conducting baseline monitoring and outreach for implementing water quality projects are examples of activities that can start right away. It is important that schedules not be “shelved” for lack of funds or program authorities; instead they should identify steps towards obtaining needed funds as feasible.

Element g. A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.

WHAT DOES THIS MEAN?

The watershed plan should include interim, measurable implementation milestones to measure progress in implementing the management measures. These milestones will be used to track implementation of the management measures, such as whether they are being implemented according to the schedule outlined in element f, whereas element h (see below) will develop criteria to measure the effectiveness of the management measures by, for example, documenting improvements in water quality. For example, a watershed plan may include milestones for a problem pesticide found at high levels in a stream. An initial milestone may be a 30% reduction in

measured stream concentrations of that pesticide after 5 years and 50 percent of the users in the watershed have implemented Integrated Pest Management (IPM). The next milestone could be a 40% reduction after 7 years, when 80% of pesticide users are using IPM. The final goal, which achieves the water quality standard for that stream, may require a 50% reduction in 10 years. Having these waypoints lets the watershed managers know if they are on track to meet their goals, or if they need to re-evaluate treatment levels or timelines.

Element h. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards.

WHAT DOES THIS MEAN?

As projects are implemented in the watershed, you will need water quality benchmarks to track progress towards attaining water quality standards. The criteria in element h (not to be confused with water quality criteria in state regulations) are the benchmarks or waypoints to measure against through monitoring. These interim targets can be direct measurements (e.g., fecal coliform concentrations, nutrient loads) or indirect indicators of load reduction (e.g., number of beach closings). These criteria should reflect the time it takes to implement pollution control measures, as well as the time needed for water quality indicators to respond, including lag times (e.g., water quality response as it is influenced by ground water sources that move slowly or the extra time it takes for sediment bound pollutants to break down, degrade or otherwise be isolated from the water column). Appendix B of the CWA Section 319(h) guidelines, “Measures and Indicators of Progress and Success,” although intended as measures for program success, may provide some examples that may be useful. You should also indicate how you will determine whether the watershed plan needs to be revised if interim targets are not met. These revisions could involve changing management practices, updating the loading analyses, and reassessing the time it takes for pollution concentrations to respond to treatment.

Element i. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under element h.

WHAT DOES THIS MEAN?

The watershed plan should include a monitoring component to determine whether progress is being made toward attaining or maintaining the applicable water quality standards for the waterbody(ies) addressed in the plan. The monitoring program should be fully integrated with the established schedule and interim milestone criteria identified above. The monitoring component should be designed to assess progress in achieving loading reductions and meeting water quality standards. Watershed-scale monitoring can be used to measure the effects of multiple programs, projects, and trends over time. Instream monitoring does not have to be conducted for individual BMPs unless that type of monitoring is particularly relevant to the project.

For more detailed information on developing watershed-based plans, please see A Handbook for Developing Watershed Plans to Restore and Protect Our Waters, U.S. EPA, EPA 841-B-08-002 March 2008, (www.water.epa.gov/polwaste/nps/handbook_index.cfm). Other resources for watershed planning are available on the Watershed Central website - including the Watershed Central Wiki and Plan Builder tool at (www.water.epa.gov/type/watersheds/datait/watershedcentral/index.cfm).

APPENDIX B: PLAN COMPARISON TABLE

This table compares the goals, objectives, and strategies of the FY15-19 NPS 5-Year Plan with those of the FY10-14 5-Year Plan to show how we are building upon the achievements of past planning efforts. In addition, this table links NPS 5-year plan strategies to the goals identified in EPA's 303(d) Long Term Program Vision and Goals, released December 2013.

APPENDIX B: PLAN COMPARISON TABLE

	GOAL 1: Identify and prioritize NPS threats and impairments to surface and groundwater quality		
	FY15-19 NPS Plan Objectives and Strategies	**How does this relate to build on the previous NPS 5-year plan?**	**Related Strategies and 303(d) Program Long Term Vision Goal(s)**
Identify the Problems	Objective a: Assess water quality of surface and groundwater.	This on-going objective remains the same, with updated strategies (see below).	
	Strategy i: Conduct statewide surface and groundwater monitoring according to ADEQ's monitoring strategy and analyze data to fulfill requirements of the Clean Water Act and state water statutes.	As in previous planning cycles, ADEQ will continue to monitor and analyze water quality throughout the state. This is a key step in identifying nonpoint source priorities for both restoration and protection activities.	Prioritization, Protection, Assessment
	Strategy ii: Develop, revise, and implement water quality standards to support water quality assessments and identification of impairments, sources, and key projects.	While other milestones identified in last plan for this strategy were successfully met, standard and rule related milestones were not due to a state-level rules moratorium. The new 5 year plan will focus on achieving these milestones.	n/a
Prioritize the Known and Potential Future Problems	Objective b: Prioritize resources toward high-priority waters for both restoration**and protection** activities.	ADEQ will continue to prioritize resources toward existing and newly defined targeted watersheds. Note that based on new CWA Section 319 guidelines and 303(d) Long Term Vision Goals, prioritization will include both impaired waters (for restoration) and high-quality or threatened waters (for protection).	
	Strategy i: Prioritize impaired waters for restoration activities and resources.	Staff will continue to update impairment priorities.	Prioritization
	Strategy ii: Develop criteria to identify and prioritize high quality or threatened waters for protection activities.	This strategy is new to the FY15-19 plan. Criteria for how waters will be identified as in need of protection must be created before prioritization can occur.	Prioritization, Protection
Create a Plan to Address the Problems	Objective c: Identify critical pollutant sources and implementation activities needed to meet and/or maintain water quality standards in impaired and protected waters.	In the FY15-19 plan, all planning activities that will result in defining what projects need to be done to improve water quality are represented under this objective. WIPs will now be written by ADEQ, although there will continue to be stakeholder input and active involvement in the entire process.	
	Strategy i: Complete in-progress traditional TMDLs to determine sources and load allocations.	Moving forward, TMDLs will largely be incorporated into watershed plan development. Full-scale TMDLs initiated during the previous planning cycle will be completed in the first years of the FY15-19 planning cycle.	Assessment, Integration
	Strategy ii: Develop comprehensive watershed plans that incorporate TMDLs and create clear paths to pollutant reduction and restoration of water quality and watershed health.	Watershed planning remains a high priority in the new planning cycle. WIPs completed under the last 5-year Plan will be updated, and new WIPs will be developed and initiated. In areas where full "Nine Element Plans" may not be necessary to address pollutant sources, alternative approaches such as focused TMDLs will be pursued.	Alternatives, Engagement, Integration,
	Strategy iii: Update existing WIPs; create framework for future updates.		Alternatives, Engagement
	Strategy iv: Pursue alternative restoration approaches for situations when a full "9 Key Element" plan may not be necessary to address a pollutant source.		Alternatives
	GOAL 2: Implement projects to prevent and reduce NPS pollutant contributions to high priority impaired and protected waters.		
	FY15-19 NPS Plan Objectives and Strategies	**How does this relate to build on the previous NPS 5-year plan?**	**Related Strategies and 303(d) Program Long Term Vision Goal(s)**
Fix the Problems	Objective a: Implement projects to address impairments in Targeted Watersheds.	This objective expands upon the targeted watershed and watershed planning activities carried out in the previous planning cycle. See the strategies below for additional details.	
	Strategies I - iv, vi: Implement the Granite Creek, Oak Creek, San Pedro, Santa Cruz and San Fran/Blue River WIPs	These WIPs were developed during the FY10-14 planning cycle. ADEQ will build on past work by implementing projects identified as high priority within these plans over the next 5 years. Only Granite and Oak Creeks have both WIPs and traditional TMDLs.	Alternatives, Engagement, Integration
	Strategy v: Identify priority projects in the LCR watershed.	During prior 5-year planning cycles, documents were created for the overall Upper Little Colorado River watershed and the Coyote Creek subdrainage by external parties. These documents will help prioritize projects within the LCR Headwaters targeted watershed.	Alternatives, Engagement
	Strategy vii: Implement portions of the Boulder Creek TMDL Implementation Plan pertaining to the lower tailings pile at the former Hillside Mine site.	Planning for this project has taken place between multiple state and federal partners over the last several planning cycles. The plan will be implemented and effectiveness monitoring will begin during the FY15-19 planning cycle.	Engagement, Integration
	Strategy viii: Implement projects in the Tonto/Christopher Creek watershed	Tonto Creek was initially established as a Targeted Watershed under the previous 5-year Plan, and already has a traditional TMDL in place. ADEQ will work with local stakeholders to develop project ideas and re-invigorate local watershed partnerships.	Engagement
Ensure that the "Fixes" Are Done Right	Objective b: Ensure that Water Quality Improvement Grant (WQIG) funding is invested in the projects that are most likely to provide long-term load reductions to achieve watershed-wide improvements in water quality.	This objective specifically refers to restoration projects on impaired waters in the new plan. A separate objective has been established to allow for the implementation of protection projects, which were not differentiated in the previous plan.	
	Strategy i: Require that implementation grant proposals demonstrate: *• Connection to an approved watershed-based plan* *• The estimated pollutant load reductions and how they relate to the reductions needed to meet water quality standards (if established in an approved plan)* *• That the applicant has sufficient resources, technical skills, and commitments to implement the project and provide for long-term maintenance* *• How education and outreach components will encourage water quality improvements, behavior changes, and citizen involvement* *• How project success will be measured in both short and long term*	Further refining application requirements to align with updated planning requirements, ensure that the anticipated load reductions associated with the project will move us towards meeting standards, and define specific measures of success for each project.	n/a
	Strategy ii: Oversee WQIG projects and contracts to ensure that deliverables and timelines are met, and that anticipated outcomes are achieved.	This is a new objective to the plan, but not to the workings of the NPS program. WQIG project oversight is an integral part of our program that was not specifically called out in prior plans.	n/a

Address Potential Problems	Objective c: Implement projects to protect healthy surface and groundwater resources	This new objective, linked to Strategy 1.b.ii above, will allow ADEQ to focus resources on protecting high-quality or threatened waters from nonpoint source pollution.	
	Strategy i: Utilize prioritization scheme identified in Strategy 1.b.ii to rank waters for protection projects.	ADEQ anticipates making a portion of funding available for protection projects during FY17.	Prioritization, Protection
	GOAL 3: Coordinate efforts of various programs within ADEQ with other agencies and partners to prevent and reduce nonpoint source pollution impacts to surface and groundwater.		
	FY15-19 NPS Plan Objectives and Strategies	**How does this relate to build on the previous NPS 5-year plan?**	**Related Strategies and 303(d) Program Long Term Vision Goal(s)**
Use the Tools Available to Address Problems	Objective a: Utilize legal authorities to reduce NPS contributions to surface and groundwater.	The previous NPS plan included a similar objective which focused very broadly on educating the public about enforceable authorities (Objective 1.C). The objective will be more focused on the active utilization of these authorities, specifically in previously identified Targeted Watersheds (i.e. septic concerns in Tonto & Christopher creeks, grazing permits in San Pedro, Santa Cruz, and the LCR)	
	Strategy i: Coordinate with internal Groundwater, Compliance, Sourcewater Protection and 401 programs and with delegated county authorities to ensure that permit reviews and inspections take potential nonpoint source contributions to surface water impairments into account, and to identify potential nonpoint source threats to drinking water sources.	Targeted watersheds with nutrient and bacteria impairments for which septic/onsite wastewater treatments systems are a suspected source will be the focus of this strategy.	Integration
	Strategy ii: Coordinate with state and federal partners to ensure that that grazing permits and resource management plans, specifically in targeted watersheds, appropriately consider water quality concerns.	The need for increased coordination with land management agencies in targeted watersheds became evident during the last planning cycle. Objective 2.b.i of the FY10-14 NPS plan.	Integration
Involve Local Stakeholders	Objective b: Encourage public involvement in locally-driven efforts.	This on-going objective will focus primarily on identifying and addressing the barriers between identifying priority projects and getting them implemented. See strategies for additional details.	
	Strategy i: Provide technical assistance, education, and training to empower watershed partners to develop and implement projects supported by watershed plans	ADEQ will build on previous work to develop watershed plans by actively promoting stakeholder participation in implementation projects and providing the needed technical assistance and training to carry these projects out.	Engagement
	Strategy ii: Develop outreach strategies that identify direct benefits of project implementation beyond water quality improvements to stakeholders.	Changes to the NPS program over the past five years have limited the pool of projects that are eligible for WQIG funding. This has left past applicants feeling wary of the program, and created the need to connect with new and different stakeholders in order to get projects implemented. Outreach techniques and materials that worked for the program in the past--even during the past planning cycle--need to be updated and better focused on the interests and concerns of stakeholders in our targeted areas.	Engagement
	Strategy iii: Train volunteer monitoring groups to collect credible data that can be used in ADEQ water quality assessments.	Strategy 3.A.2. of the previous plan focused on establishing updated guidelines for credible data requirements. This information will now be actively shared with volunteer groups throughout the state in conjunction with training opportunities and technical support.	Alternatives, Engagement, Assessment
Pool Limited Resources to Address Shared Problems	Objective c: Encourage and work with land and resource management agencies, tribal authorities, bordering states and Mexico to identify and mitigate nonpoint source pollution impacts in Arizona.	This is another on-going objective that will be focused on Targeted Watersheds in the coming five years.	
	Strategy i: Continue to strengthen relationships with other agencies, tribes, bordering states and Mexico to encourage development of effective water quality improvement projects and avoid project practices that would contribute to impairment of surface or groundwater quality or degradation of protected watersheds.	ADEQ will continue to partner with other agencies, tribes, bordering states and Mexico, particularly when land use practices impact impaired and other high-priority waters, to coordinate resources and implementation efforts.	Integration, Engagement
	GOAL 4: Evaluate and improve the effectiveness of the NPS program and communicate successes.		
	FY15-19 NPS Plan Objectives and Strategies	**How does this relate to build on the previous NPS 5-year plan?**	**Related Strategies and 303(d) Program Long Term Vision Goal(s)**
Check Progress Toward Meeting Water Quality Goals	Objective a: Evaluate WQIGs and TMDL implementation activities to determine effectiveness toward achieving water quality standards.	During the last planning cycle, staff focused on developing frameworks for evaluating past projects in way that would minimize duplication of WQIG, TMDL, and Ambient monitoring efforts. Work was also done to establish the need and position description for additional staff to support this effort. The FY15-19 plan will see additional training for staff and active implementation of the effectiveness monitoring effort.	
	Strategy i: Conduct effectiveness monitoring and BMP evaluations in watersheds prioritized on ADEQ's Master Target List (MTL), including NWQI waters.		Integration, Assessment
	Strategy ii: Increase staff capacity to recommend, design, and evaluate the effectiveness of BMPs.		Integration
Share Successes and What We've Learned	Objective b: Document and communicate program successes and lessons learned.	ADEQ will continue to report on program successes and lessons learned to both EPA and the public.	
	Strategy i: Report to EPA and the public on NPS program success		Engagement
Update the Plan as Needed	Objective c: Update NPS Plan as needed	While the FY10-14 plan existed as a standing document with program changes largely identified in annual work plans, ADEQ anticipates updating the FY15-19 plan as needed to ensure that it is an accurate reflection of adapting resources and priorities.	
	Strategy i: Update plan as needed to reflect shifting priorities as they occur over the current planning horizon and to re-frame goals for the next 5-year planning horizon.		Prioritization

APPENDIX C: MASTER TARGET LIST (MTL)

(as of 10/16/14; contact ADEQ for most up-to-date list)

Water Body ID	Watershed	Name	Description	Category	Assessment Category	Impairment
AZ15050301-561A	BW	Boulder Creek	Wilder Creek - Butte Creek	Category 4A	NotAttaining	Arsenic, copper, zinc (TMDL completed 2004)
AZ15050301-561C	LC	Little Colorado River	Coyote Creek - Lyman Lake	Category 4A	NotAttaining	Turbidity (TMDL completed 2002)
AZ15050301-561B	MG	Big Bug Creek	Eugene Gulch-Agua Fria River	Category 3	Inconclusive	Suspected Metals
AZ15070101-007	MG	Gila River	Gillespie Dam - Rainbow Wash	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15040004-025B	MG	Gila River	Sand Tank - Painted Rock Reservoir	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15030202-005A	MG	Gila River	Rainbow Wash - Sand Tank	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15060105-353	MG	Gila River	Salt River - Agua Fria River	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15060105-353	MG	Gila River	Agua Fria River - Waterman Wash	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15060103-885	MG	Gila River	Centennial Wash - Gillespie Dam	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15060103-887	MG	Gila River	Hassaympa River - Centennial Wash	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15070101-007	MG	Gila River	Waterman Wash - Hassayampa River	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15070101-001	MG	Hassayampa River	Buckeye Canal - Gila River	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15070101-005	MG	Salt River	23rd Ave WWTP - Gila River	Category 5	EPA - Impaired	DDT metabolites, toxaphane and chlordane in fish tissue (EPA)
AZ15070101-015	MG	Turkey Creek	Tributary 341928/1122128 - Poland Creek	Category 4A	NotAttaining	Copper, lead (TMDL completed 2006)

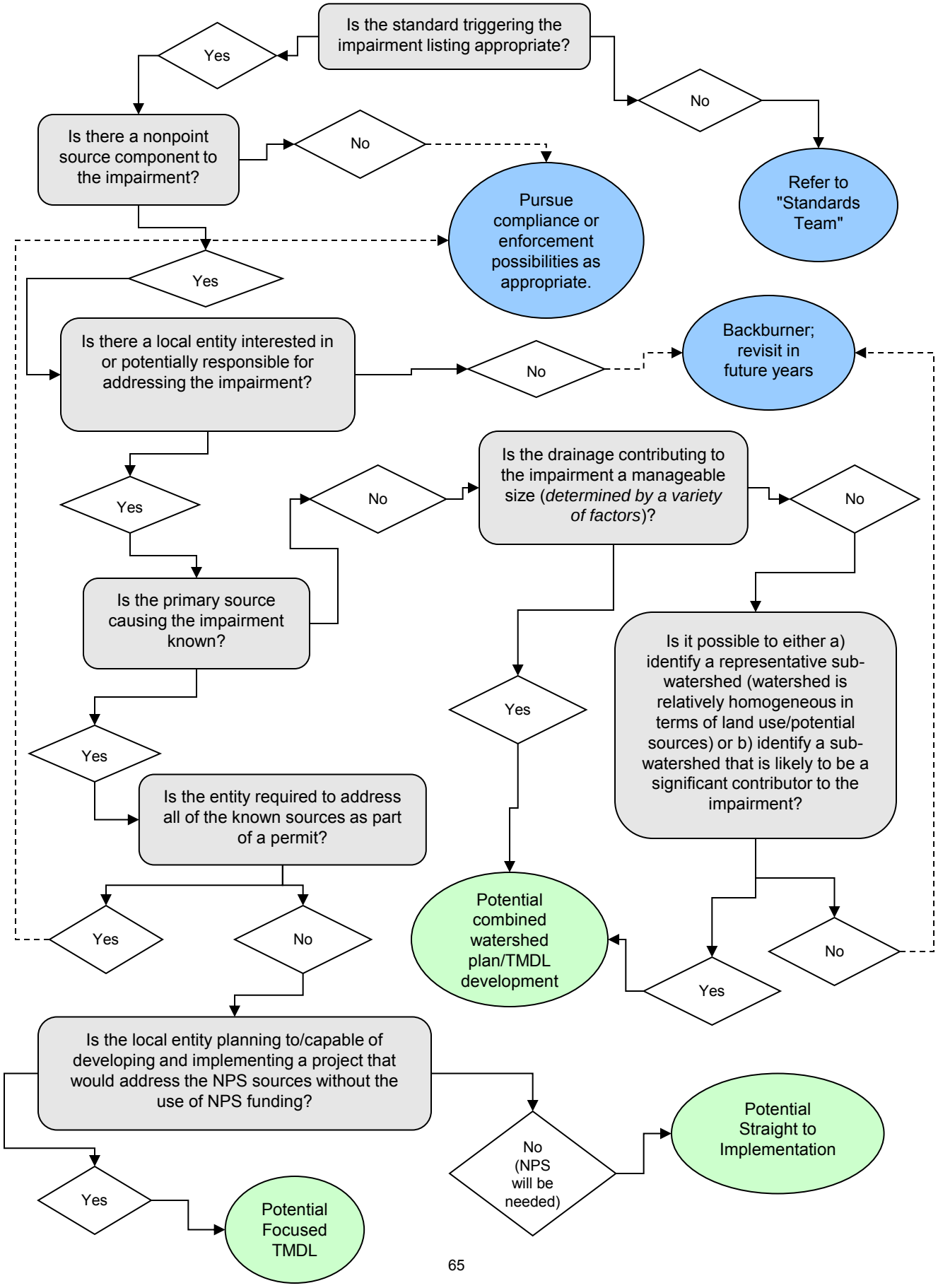
Water Body ID	Watershed	Name	Description	Category	Assessment Category	Impairment
AZ15070101-014	SC	Alum Gulch	Headwaters - 312820 / 1104351	Category 4A	NotAttaining	Cadmium, copper, zinc, low pH (TMDL completed 2003)
AZ15070101-008	SC	Alum Gulch	312917/1104425 - Sonoita Creek	Category 4A	NotAttaining	Cadmium, copper, zinc, low pH (TMDL completed 2003)
AZ15070101-009	SC	Alum Gulch	312820/1104351 - 312917/1104425	Category 4A	NotAttaining	Cadmium, copper, zinc, low pH (TMDL completed 2003)
AZ15050301-340	SC	Humboldt Canyon	Headwaters - Alum Gulch	Category 4A	NotAttaining	
AZL15050301-1070	SC	Pena Blanca Lake		Category 4A	NotAttaining	Mercury in fish tissue (TMDL completed in 1999)
AZ15050301-500B	SC	Potrero Creek	Interstate 19 - Santa Cruz River	Category 5	Impaired	Chlorine, low dissolved oxygen, E. coli
AZ15040002-001	SC	Santa Cruz River	Roger Road WWTP outfall - Intermittatn Reach	Category 4B	NotAttaining	Ammonia
AZ15040002-002	SC	Santa Cruz River	HUC 15050303 Boundary - Baum	Category 4B	NotAttaining	Copper (dissolved), lead (dissolved)
AZ15040002-004	SC	Santa Cruz River	Josephine Canyon - Tubac Bridge	Category 5	Impaired	Ammonia, E. coli
AZ15040005-022	SC	Santa Cruz River	Canada del Oro - HUC 15050303	Category 4B	NotAttaining	Ammonia
AZ15060202-059A	SC	Santa Cruz River	Nogales WWTP - Josephine Canyon	Category 4B	NotAttaining	Chlorine
AZ15080301-090B	SP	Mule Gulch	Lavender Pit - Bisbee WWTP discharge	Category 5	Impaired	Copper (dissolved), low pH
AZ15080301-090A	SP	Mule Gulch	Headwaters - Lavender Pit	Category 5	Impaired	Copper (dissolved)
AZ15080301-090C	SP	Mule Gulch	Bisbee WWTP Discharge - Highway 80 bridge	Category 5	Impaired	Copper (total and dissolved), cadmium (dissolved), zinc (dissolved), low pH
AZ15080301-337	SP	Brewery Gulch	Headwaters to Mule Gulch	Category 5	Impaired	Cu
AZ15060202-059A	SP	San Pedro River	Babocomari River - Dragoon Wash	Category 5	Impaired	E. coli
AZ15070103-001B	SR	Christopher Creek	Headwaters - Tonto Creek	Category 5	Impaired	Phosphorus
AZ15020001-005	SR	Christopher Creek	Headwaters - Tonto Creek	Category 4A	Not Attaining	E. coli (TMDL completed 2005)

Water Body ID	Watershed	Name	Description	Category	Assessment Category	Impairment
AZ15060202-767	SR	Five Point Mountain Tributary	Headwaters To Pinto Creek	Category 5	Impaired	Copper (dissolved)
AZ15060202-018A	SR	Gibson Mine Tributary	Headwaters To Pinto Creek	Category 4A	Not Attaining	Copper (dissolved) (TMDL completed 2001)
AZ15060202-019	SR	Pinto Creek	West Fork Pinto Creek - Roosevelt Lake	Category 4A	Not Attaining	Copper (dissolved) (TMDL completed 2001)
AZ15060202-018C	SR	Pinto Creek	Headwaters - Tributary at 331927/1105456	Category 4A	Not Attaining	Copper (dissolved) (TMDL completed 2001)
AZ15060202-018B	SR	Pinto Creek	Trib at 331927/1105456 - West Fork Pinto Creek	Category 4A	Not Attaining	Copper (dissolved) (TMDL completed 2001)
AZ15060202-017	SR	Tonto Creek	Headwaters - Tributary at 34180/1110414	Category 5	Impaired	Low dissolved oxygen
AZ15060103-018C	SR	Tonto Creek	Headwaters - Tributary at 34180/1110414	Category 4A	Not Attaining	Nutrients (TMDL completed 2005), E. coli (TMDL completed 2004)
AZ15060103-018A	SR	Tonto Creek	Tributary at 341810/1110414 - Haigler Creek	Category 4A	Not Attaining	Nutrients (TMDL completed 2005), E. coli (TMDL completed 2004)
AZ15060103-018B	UG	Blue River	Strayhorse Creek - San Francisco River	Category 5	Impaired	E. coli
AZ15050301-500B	UG	Gila River	Skully Creek - San Francisco River	Category 5	Impaired	E. coli
AZ15060106B-001D	UG	Gila River	Apache Creek - Skully Creek	Category 4A	Not Attaining	E. coli
AZ15040004-001	UG	Gila River	New Mexico border - Bitter Creek	Category 5	Impaired	E. coli, SSC
AZ15040004-003	UG	Gila River	Bonita Creek - Yuma Wash	Category 5	Impaired	E. coli, SSC, lead (total)
AZ15050202-003	UG	San Francisco River	Limestone Gulch - Gila River	Category 5	Impaired	E. coli
AZ15050301-003B	UG	San Francisco River	Blue River - Limestone Gulch	Category 5	Impaired	E. coli
AZ15050303-005A	VR	Granite Creek	Headwaters - Willow Creek	Category 5	EPA - Impaired	Low dissolved oxygen (EPA- 2004)
AZ15050301-008A	VR	Granite Creek	Headwaters - Willow Creek	Category 5	Impaired	E. coli

Water Body ID	Watershed	Name	Description	Category	Assessment Category	Impairment
AZ15050301-001	VR	Miller Creek	Headwaters to Granite Creek	Category 5	Impaired	E. coli
AZ15050301-009	VR	Oak Creek	West Fork Oak Creek - Trib at 345709/1114513	Category 4A	NotAttaining	E. coli (TMDL completed 2010)
AZ15060202-022	VR	Oak Creek	Headwaters - W. Fork Oak Creek	Category 4A	Not Attaining	E. coli (TMDL completed 2010)
AZ15060105-013A	VR	Oak Creek	Slide Rock SP - Dry Creek	Category 4A	NotAttaining	E. coli (TMDL completed 2010)
AZ15060202-018B	VR	Oak Creek	Trib at 345709/1114513 - Slide Rock SP	Category 4A	NotAttaining	E. coli (TMDL completed 2010)
AZ15060105-013B	VR	Oak Creek	Dry Creek - Spring Creek	Category 4A	Not Attaining	E. coli (TMDL completed 2010)
AZ15070102-036B	VR	Spring Creek	Coffee Creek - Oak Creek	Category 4A	NotAttaining	E. coli (TMDL completed 2010)
AZL15060202-1590	VR	Watson Lake		Category 5	EPA - Impaired	Nitrogen, low dissolved oxygen, high pH

APPENDIX D: POTENTIAL PATHS TO IMPLEMENTATION

Once it is determined that a water body is not meeting water quality standards, there are several potential ways to begin addressing the pollutant of concern. Options may include taking compliance or enforcement action, partnering with local stakeholders to develop a combined TMDL/watershed based plan, developing a focused TMDL to aid an external party in restoration efforts, moving straight to implementation if sources are known, or perhaps re-evaluating the listing or standard for applicability. The following flow chart summarizes the key variables in deciding which path to choose.


Is the standard triggering the impairment listing appropriate?
Yes
No
Refer to "Standards Team"
Is there a nonpoint source component to the impairment?
No
Pursue compliance or enforcement possibilities as appropriate.
Yes
Is there a local entity interested in or potentially responsible for addressing the impairment?
No
Backburner; revisit in future years
Yes
Is the primary source causing the impairment known?
No
Is the drainage contributing to the impairment a manageable size (*determined by a variety of factors*)?
No
Yes
Is it possible to either a) identify a representative sub-watershed (watershed is relatively homogeneous in terms of land use/potential sources) or b) identify a sub-watershed that is likely to be a significant contributor to the impairment?
Yes
Yes
Is the entity required to address all of the known sources as part of a permit?
Potential combined watershed plan/TMDL development
Yes
No
Yes
No
Is the local entity planning to/capable of developing and implementing a project that would address the NPS sources without the use of NPS funding?
Yes
Potential Focused TMDL
No (NPS will be needed)
Potential Straight to Implementation

APPENDIX E: OUTSTANDING ARIZONA WATERS

OUTSTANDING ARIZONA WATERS (OAWs)

A.A.C. R18-11-112(G)

1. West Fork of the Little Colorado River, from its headwaters at 33°55'02"/109°33'30" to Government Springs at 33°59'33"/109°27'54" (approximately 9.1 river miles);
2. Oak Creek, from its headwaters at 35°01'30"/111°44'12" to its confluence with the Verde River at 34°40'41"/111°56'30 (approximately 50.3 river miles);
3. West Fork of Oak Creek, from its headwaters at 35°02'44"/111°54'48" to its confluence with Oak Creek at 34°59'14"/111°44'46" (approximately 15.8 river miles);
4. Peeples Canyon Creek, from its headwaters at 34°23'57"/113°19'45" to its confluence with the Santa Maria River at 34°20'36"/113°15'12" (approximately 8.1 river miles);
5. Burro Creek, from its headwaters at 34°52'46.5"/113°05'13.5" to its confluence with Boulder Creek at 34°374.5"/113°18'36" (approximately 29.5 miles);
6. Francis Creek, from its headwaters at 34°54'38"/113°20'30" to its confluence with Burro Creek at 34°44'29"/113°14'37" (approximately 22.9 river miles);
7. Bonita Creek, from its boundary of the San Carlos Indian Reservation at 33°03'08"/109°33'41" to its confluence with the Gila River at 32°53'36"/109°28'43" (approximately 14.7 river miles);
8. Cienega Creek, from its confluence with Gardner Canyon and Spring Water Canyon at 31°47'38.5"/110°35'21.5" to the USGS gaging station at 32°02'09"/110°40'34" (approximately 28.3 river miles);
9. Aravaipa Creek, from its confluence with Stowe Gulch at 32°52'10"/110°22'03" to the downstream boundary of the Aravaipa Canyon Wilderness Area at 32°54'23"/110°33'42" (approximately 15.5 river miles);
10. Cave Creek, from its headwaters at 31°50'30"/109°17'04.5" to the Coronado National Forest boundary at 31°54'38"/109°08'40" (approximately 10.4 river miles);
11. South Fork of Cave Creek, from its headwaters at 31°50'20"/109°16'33" to its confluence with Cave Creek at 31°53'04"/109°10'30" (approximately 8.6 river miles);
12. Buehman Canyon Creek, from its headwaters at 32°52'0.5"/110°39'54.5" to its confluence with unnamed tributary at 32°24'31.5"/110°32'08" (approximately 9.8 river miles);
13. Lee Valley Creek, from its headwaters at 33°55'49"/109°31'34" to its confluence with Lee Valley Reservoir at 33°56'28"/109°30'15.5" (approximately 1.6 river miles);
14. Bear Wallow Creek, from its headwaters at 33°35'54"/109°26'54.5" to the boundary of the San Carlos Indian Reservation at 33°37'52"/109°29'44" (approximately 4.25 river miles);
15. North Fork of Bear Wallow Creek, from its headwaters at 33°34'47.5"/109°21'59.5" to its confluence with Bear Wallow Creek at 33°35'54"/109°26'54.5" (approximately 3.8 river miles);
16. South Fork of Bear Wallow Creek, from its headwaters at 33°34'38.5"/109°23'58" to its confluence with Bear Wallow Creek at 33°35'54"/109°26'54.5" (approximately 3.8 river miles);
17. Snake Creek, from its headwaters at 33°37'21.5"/109°26'11" to its confluence with the Black River at 33°40'31.5"/109°28'58.5" (approximately 6.2 river miles);
18. Hay Creek, from its headwaters at 33°51'00"/109°28'48" to its confluence with the West Fork of the Black River at 33°48'30"/109°25'19" (approximately 5.5 river miles);
19. Stinky Creek, from the White Mountain Apache Indian Reservation boundary at 33°52'36.5"/109°29'45" to its confluence with the West Fork of the Black River at 33°51'21.5"/109°27'09.5" (approximately 3.0 river miles);
20. KP Creek, from its headwaters at 33°34'03"/109°21'19" to its confluence with the Blue River at 33°31'44"/109°12'04.5" (approximately 12.7 river miles);
21. Davidson Canyon, from the unnamed spring at 31°59'00"/110°38'46" to its confluence with Cienega Creek; and
22. Fossil Creek, from its headwaters at the confluence of Sandrock and Calf Pen Canyons above Fossil Springs at 34°26'48.7"/111°32'25" to its confluence with the Verde River at 34°18'21.8"/111°40'31.6" (approximately 17.2 river miles).