Staff Report: Review of Arizona's 2006-2008 Section 303(d) Waterbody List

Attachment to letter from Alexis Strauss, EPA Region 9 to Henry R. Darwin, Arizona Department of Environmental Quality

Date of Transmittal Letter from State: November 21, 2008
Date of Receipt by EPA: December 17, 2008
Date of Supplemental Transmittal Letter from State: January 12, 2009
Date of Receipt by EPA: January 13, 2009

PURPOSE

The purpose of this staff report is to describe the rationale for EPA's partial approval and partial disapproval of Arizona's 2006-2008 Section 303(d) Water Quality Limited Segments (WQLSs) list, and EPA's determination to identify additional waters and pollutants for inclusion in Arizona's list. The following sections identify those key elements to be included in the list submittal based on the CWA and EPA regulations, and present EPA's review of Arizona's description of the data and information it considered as well as the methodology used by the State in developing the 303(d) list. See 40 Code of Federal Regulations (CFR) §130.7. EPA's review of Arizona's 303(d) list is based on EPA's analysis of whether the State reasonably considered existing and readily available water quality-related data and information and identified all waters required to be listed

STATUTORY AND REGULATORY BACKGROUND

Identification of WQLS for Inclusion on Arizona's Section 303(d) List

The CWA Section 303(d)(1) directs States to identify those waters within its jurisdiction for which effluent limitations required by §301(b)(1)(A) and (B) are not stringent enough to achieve any applicable water quality standard, and to establish a priority ranking for addressing such waters, taking into account the severity of the pollution and the uses to be made of such waters. The 303(d) listing requirements apply to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of 303(d).

EPA regulations provide that States do not need to list waters where the following types of controls are adequate to implement applicable standards: (1) technology-based effluent limitations as required by the CWA, (2) more stringent effluent limitations required by federal, State or local authority, or (3) other pollution control requirements required by State, local, or federal authority. See 40 CFR 130.7(b)(1).

Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing 303(d) lists, States are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the State's most recent 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate nonattainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any 319 nonpoint assessment submitted to EPA. See 40 CFR 130.7(b)(5). In addition to these considerations, States are required to also consider other data and information that is existing and readily available. EPA's 2006 assessment and listing guidance describes types of water quality-related data and information that should be assembled and evaluated for developing state lists (EPA 2006a, p. 30). While States are required to evaluate all existing and readily available water quality-related data and information, States may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring States to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR 130.7(b)(6) require States to include as part of their submittals to EPA documentation to support decisions to rely or not rely on particular data and information, and decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; and (3) any other reasonable information requested by EPA.

Priority Ranking

EPA regulations also address and interpret the CWA §303(d)(1)(A) requirement that States establish a priority ranking for listed waters. The regulations at 40 CFR 130.7(b)(4) require States to prioritize waters on their 303(d) lists for development of total maximum daily loads (TMDLs), and also to identify those WQLSs targeted for TMDL development in the next two years. In prioritizing and targeting waters, States must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters. See 303(d)(1)(A). States may consider other factors relevant to prioritizing waters for TMDL development, including: immediate programmatic needs; vulnerability of particular waters as aquatic habitats; recreational, economic, and aesthetic importance of particular waters; degree of public interest and support; and, State or national policies and priorities. See 57 Federal Register (FR) 33040, 33045 (July 24, 1992). The CWA does not prescribe a particular method of expressing priority ranking, and EPA believes a TMDL schedule is a reasonable, efficient way to demonstrate priority ranking (EPA 2006a, p. 63).

ANALYSIS OF ARIZONA'S SUBMITTAL

EPA has reviewed the State's submittals and concludes that the State developed its 303(d) list in partial compliance with CWA §303(d) and 40 CFR 130.7. As detailed below, EPA finds that Arizona's submittal only partially satisfies the statutory and regulatory requirements of Section 303(d) of the CWA and 40 CFR §130.7, because Arizona's submittal does not include all waters that meet 303(d) listing requirements. Therefore, EPA is partially approving and partially disapproving Arizona's submittal of their 2006-2008 Section 303(d) list. Specifically, EPA is approving those waters listed as impaired in the States Integrated Report Appendix B table "Category 5 (ADEQ) – Assessed Impaired by ADEQ." EPA has also identified other waters and pollutants that meet the listing requirements and require a TMDL, and therefore EPA is partially disapproving the ADEQ submittal and adding several waters to Arizona's 2006-2008 Section 303(d) list. The specific waters and pollutants that EPA is adding are identified in Table 1 of this Staff Report.

EPA's Review of Arizona's Listing Assessment

Arizona's Section 303(d) has presented waters assessed as impaired in Appendix B of the State's 2006-2008 Integrated Report, in two tables:

- "Category 5 (ADEQ) – Assessed Impaired by ADEQ" − This table identifies 54 WQLSs identified as impaired by ADEQ.
- "Category 5 (EPA) – Assessed Impaired by EPA" – This table identifies the 36 WQLS identified by EPA in our final 2002 or 2004 listing decisions for addition to Arizona's 303(d) lists.

Arizona's 2006-2008 Section 303(d) list of impaired waters is unclear with regard to whether those waters added by EPA to the State's previous impaired waters lists in 2002 and 2004 are included. EPA notes that some of Arizona's statements in the 2006-2008 Integrated Report imply that there are separate state and EPA 303(d) lists, and other statements suggest the state has only one list. Under the CWA and 40 CFR §130.7, a state submits to EPA one Section 303(d) list of impaired waters requiring TMDLs.

Although there is ambiguity in the way in which Arizona refers to their 2006-2008 Section 303(d) list, EPA is taking formal action on the list that Arizona refers to as "Category 5 (ADEQ) - Assessed Impaired by ADEQ," consistent with our regulations, guidance and practice. Several factors support this decision, including: the subtitle for table "Category 5 (ADEQ) – Assessed Impaired by ADEQ," which states "These assessment units are to be on Arizona's 2006/2008 303(d) List, once approved by EPA."; Arizona's deferral to EPA regarding updating the table "Category 5 (EPA) – Assessed Impaired by EPA," specifying that waterbodies on that list remain "until EPA determines that they are no longer impaired."; and, the state has made assessment conclusions in Arizona's submittal that differ from assessments indicated in the table "Category 5 (EPA) – Assessed Impaired by EPA".

Each biennial State Section 303(d) list, once approved (or, if necessary, established by EPA following a disapproval of a state's list) replaces the state's previous list. Regardless of previous approvals or disapprovals, each subsequent list must be completed based on existing and readily available data assembled and evaluated by the state. Likewise, EPA reviews and makes a determination on each list submitted by a State. Each listing cycle generates a 'new' State Section 303(d) list, with waters added to or omitted from the list discussed as appropriate in the submittal's documentation. Thus Table 1, EPA's additions to Arizona's 2006-2008 303(d) list, takes the place of those WQLSs identified in table "Category 5 (EPA) – Assessed Impaired by EPA," in Appendix B of the State's submittal. These additions together with the State's submittal are considered to be the final Arizona 2006-2008 Section 303(d) list.

EPA has reviewed the State's Section 303(d) list, Arizona's description of the data and information it considered in its methodology for identifying waters, and the State's responses to comments. EPA has considered the State's methodology, and has reviewed the data and information provided by the State as part of its listing submittal to determine whether the State listed all waters meeting the federal listing requirements and identified the pollutants causing the water quality standards violations in those waters.

States Assessment Methodology - In July 2000, Arizona enacted a statute governing its identification of impaired waters. See Arizona Revised Statutes (ARS) §49-232. ADEQ regulations known as the "Impaired Water Identification Rule" or "IWIR" became effective in 2002. See Arizona Administrative Code R18-11-601 *et seq.* Additionally, ADEQ has prepared a document entitled *Surface Water Assessment Methods and Technical Support* (ADEQ, Appendix G 2008b), describing ADEQ's methods to evaluate water quality data and assess designated use support of surface water. As EPA has previously indicated, implementation of the IWIR has resulted in the submission of 303(d) lists that omit some waters meeting federal listing requirements. (See also EPA letters dated 2002, 2003, 2004 and 2007.) Arizona's IWIR remains unrevised and we continue to believe that implementation of the State's assessment methodology will lead, under various circumstances, to the erroneous omission of waters meeting federal listing requirements. EPA is anxious to work with the State to amend the current assessment methodology to be consistent with federal listing requirements.

Use of credible and scientifically defensible data - The IWIR and associated methodology provide that the State can consider only "reasonably current credible and scientifically defensible" data (ARS §49-232.B), and that results of water sampling or other assessments of water quality shall be considered credible and scientifically defensible only if ADEQ has determined that each of several criteria set forth in the statute have been met (ARS §49-232.B(1 – 4)). The IWIR establishes data conventions to be used to interpret data for Arizona's impaired water identifications (R18-11-603.A), identifies data that can not be used for placing surface waters on the 303(d) list (R18-11-603.B), and identifies other conditions under which the State may not place a surface water or segment on its 303(d) list. Additionally, ADEQ's document *Surface Water Assessment Methods and Technical Support* (ADEQ, 2008b) provides information on the processes ADEQ uses to

identify impaired waters; information concerning ADEQ's credible data requirements and actions to be taken where those requirements are not met are provided at ADEQ 2008b, p. G-13. ADEQ prepared the 2006-2008 Section 303(d) list in accordance with the IWIR.

EPA has reviewed the State's evaluation of data quality for the 2006-2008 CWA 303(d) listing process and finds that data were evaluated in a manner consistent with the description in the document *Surface Water Assessment Methods and Technical Support* (ADEQ 2008b). Arizona determined that available data were unreliable in very few cases as part of its 2006-2008 assessment. EPA finds that the State's decision to omit such data sets was reasonable because the State identified legitimate problems with the data in question. In these cases, the State had supplemental monitoring data that supplied evidence that applicable standards were being attained for these waters (e.g., Boulder Creek).

Compilation of existing and readily available water quality data - In reviewing Arizona's 303(d) list, EPA analyzed whether the State reasonably considered existing and readily available water quality-related data and information for identifying all waters required to be listed. ADEQ based its 2006-2008 303(d) list on data collected during the five-year period beginning January 2000 and ending December 2005, along with limited additional data submitted through June 2006 (ADEQ 2008b, p. G-9). EPA finds it reasonable for the State to make its assessment based on water quality data collected during this timeframe. Additionally, EPA finds it may be reasonable to consider some older data (i.e., data collected before the start of the reporting period). EPA believes that surface water data "should not automatically be treated as unrepresentative of relevant segment conditions solely on the basis of its age without supporting information indicating that the data are not a good indicator of current conditions" (EPA 2006a). Sediment and tissue data often change more slowly than ambient water column data, and thus provide reliable information for assessing water quality conditions for a longer period of time. In the absence of new data that would alter the basis of listing decisions EPA may continue to rely on older data.

EPA regulations also provide that states should actively solicit organizations and individuals, such as other government agencies, permitted entities, universities, and citizen monitoring groups, for data and information. See 40 CFR 130.7(b)(5)(iii). ADEQ encouraged the submittal of water quality data from the general public (e.g., volunteer monitoring groups), other agencies, and permitted dischargers throughout the year (ADEQ 2008b, p. G-9). Except as noted below, ADEQ assembled and evaluated all existing and readily available water quality data and information collected during the assessment period, and completed a good synthesis of individual monitoring data for each waterbody.

Evaluation of Numeric Water Quality Standards - Arizona compiled its 2006-2008 303(d) list based on evaluation of existing and readily available water chemistry data. In accordance with ARS §49-232.4, identifications of waters assessed as impaired are based on evidence of exceedences of numeric water quality standards. Arizona applied differing methods for evaluating whether numeric water quality standards were exceeded depending upon the type of pollutant and designated use.

Listing of water bodies with aquatic and wildlife designated uses for toxic pollutants generally required fewer exceedences of water quality standards than for other pollutant types and designated uses. The State listed waters as impaired due to toxic pollutants in cases where more than one sample exceeded the applicable numeric standard for aquatic and wildlife designated uses in any three-year period (ADEQ 2008b, p. G-25). This approach is consistent with EPA's assessment guidance (EPA 2006a, p. 35) and State water quality standards. EPA concludes that the State's toxic pollutant listing decisions on this basis are consistent with federal listing requirements.

To list water bodies due to exceedences of human health and agricultural designated use criteria, for parameters such as pH and dissolved oxygen (referred to here as conventional pollutants) the State required, with some exceptions, a minimum of 20 spatially independent samples (ADEQ 2008b, p. G-25). The State's methodology complies with an IWIR provision requiring a minimum of 20 spatially or temporally independent samples collected over three or more temporally independent sampling events to support placing a waterbody on the 303(d) list (R18-11-605D.1), unless alternative listing criteria (set forth in R18-11-605D.2) are satisfied. EPA previously commented on the analytical basis of applying the 20-sample minimum listing methodology for conventional pollutants (EPA comments on the IWIR, EPA's 2002 and 2004 listing decisions (EPA 2003 and 2005), and the draft 2006 integrated report (EPA 2007)). EPA indicated that application of a 20-sample minimum could result in an assessment that omits waters which exceed applicable water quality standards. EPA's *Guidance for 2006 Assessment, Listing and Reporting Requirements* (EPA 2006a, p. 36) states "EPA has not established, required, nor encouraged the establishment of rigid minimum sample set size requirements in the water quality standard attainment status determination process…[S]ample set sizes should not be applied in an assessment methodology as absolute exclusionary rules, and even the smallest data sets should be evaluated and, in appropriate circumstances, used."

Additionally, for conventional pollutants, the State listed waters only in cases where there was greater than 90% statistical confidence that a numeric standard was exceeded at least 10% of the time (i.e., the "binomial" approach) (R18-11-605.D.2). Use of the binomial approach translates into at least 5 exceedences for a minimum sample size of 20 in order for a waterbody to be listed as impaired (ADEQ 2008b, p. G-27). EPA finds the State should not have considered 10% as an allowable exceedence rate for many conventional pollutants because such an exceedence rate is inconsistent with the relevant State water quality standards. Our 2006 guidance (EPA 2006a) clarifies that EPA does not recommend the application of a 10% exceedence threshold, particularly within the context of a binomial statistical test, unless the 10% rule is specifically consistent with the State water quality standards (e.g., for a standard expressed as a 90^{th} percentile value).

EPA's review evaluated waterbody data sets, both those with more than 20 samples and those with less than 20 samples, to determine whether applicable water quality standards were exceeded for conventional pollutants. For waters not listed by the State and having less than 20 samples, where data are sufficient to support a conclusion that such waters violate State water quality standards, EPA has determined they meet federal listing

requirements and added them to the State's list of impaired waters (e.g., Bear Canyon Lake and Watson Lake).

Evaluation of Narrative Water Quality Standards - ADEQ is prohibited from listing a waterbody as impaired based on violation of narrative or biological water quality standards where the State has not adopted implementation procedures identifying the objective bases for determining that a violation of the standard exists. To date, Arizona has not adopted such procedures.

EPA, however, finds it reasonable to assess waters for 303(d) listing purposes by considering other types of monitoring data and information, such as fish kills and fish tissue consumption advisories, excessive sediment, contaminated sediment, bioassessments and physical integrity. EPA utilizes current fish consumption advisories, based on segment specific information, to demonstrate impairment of CWA section 101(a) "fishable" uses, and sediment data to provide reliable information for assessing water quality conditions. Additionally, data older than five years of age may be considered valid for use; these types of data often change more slowly than ambient water column data, and in the absence of new data that would alter the basis of listing decisions EPA might continue to use such data for listing decisions.

Nonpoint sources of Impairment - The State properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with 303(d) and EPA guidance. Section 303(d) lists are to include all WQLSs still needing TMDLs, regardless of whether the source of the impairment is a point and/or nonpoint source. EPA's long-standing interpretation is that 303(d) applies to waters impacted by point and/or nonpoint sources. In *Pronsolino v. Marcus*, the District Court for the Northern District of California held that 303(d) of the CWA authorizes EPA to identify and establish TMDLs for waters impaired by nonpoint sources. *Pronsolino v. Marcus*, 91 F.Supp.2d 1337, 1347 (N.D.Ca. 2000). See also EPA 1991 and EPA 1997.

Clarification of Certain Impaired Waters

Category 4N - Not attaining solely due to Natural Conditions - As part of Arizona's response to EPA comments on the State's draft 303(d) list (EPA 2007 and ADEQ, 2008a), the State provided additional documentation for several water bodies classified as not attaining of dissolved oxygen standards solely due to natural conditions (Category 4N[1]). One waterbody (Roper Lake, AZL 15040006-1250) was erroneously

[1] The State's Category 4N classification describes waters not attaining standards solely due to natural conditions (no anthropogenic influences) for which TMDL development is not necessary (Integrated Report, Appendix B, p. B-19). While EPA's 2006 guidance does not refer to a Category 4N classification, it provides that "if the state's water quality standards include a specific exclusion for exceedences caused by "natural conditions," these segments would not be considered impaired (i.e., they could be excluded from Categories 4 and 5)." Arizona water quality standards provide an exemption from surface water quality standards when pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of water quality standards (R18-11-604.C(1)). Thus, ADEQ's exclusion of water bodies from the 303(d) list that exceed solely due to natural conditions is consistent with EPA's guidance.

classified by ADEQ as Category 4N and will be removed from Category 4N in the integrated report prepared for the next listing cycle. The Dankworth Ponds (AZL 15040005-0440) have been reassessed from Category 2 in the 2004 submittal to Category 4N for dissolved oxygen, as additional information (ADEQ 2002) documented that the primary source of water are artesian springs, naturally low in dissolved oxygen. Additionally, Granite Basin Lake (AZL 15060202-0580) has been assessed for low dissolved oxygen as Category 4N due to seasonal turnover in the lake.

Three waterbodies assessed as Category 4N for dissolved oxygen in the State's draft 303(d) list were re-assessed as Category 2 (Attaining Some Uses) in the States 2006-2008 submittal: Beaver Creek (AZ 15060101-008), Big Sandy River- Sycamore Wash to Burro Creek (AZ 15030201-001), and Santa Maria River (AZ 15030203-009). EPA recommends that, for the next listing cycle, ADEQ update these classifications and provide more detailed information in the waterbody specific summaries to support its listing decisions with respect to dissolved oxygen exceedences for these waterbodies.

Category 4a – TMDL Completed – ADEQ has removed Nutrioso Creek (AZ 15020001-017A) from Category 4a - TMDLs completed and reclassified it as Category 1 – Attaining All Uses. The State has presented evidence that this reach of Nutrioso Creek should be delisted for turbidity/suspended sediment, supported by post-TMDL monitoring data in the 2004-2006 timeframe (ADEQ 2007b), which shows zero exceedences (n=26) of the SSC standard and compliance with the turbidity TMDL load allocations. We concur with ADEQ's assessment that this WQLS is attaining for SSC and turbidity.

Two waterbody-pollutant listings were erroneously removed from Category 4a; ADEQ has indicated these errors will be corrected (ADEQ 2009a).

- Humboldt Canyon (AZ 15050301-340) for pH – TMDLs were completed in 2003 for parameters including copper and acidity (pH). This waterbody is listed as Category 4a for copper; however, pH should also be identified (ADEQ 2003 and 2009b).
- Verde River - Beaver Creek to HUC Boundary (AZ 15060202-001) for turbidity/SSC – A TMDL for turbidity (ADEQ 2001) was approved by EPA in 2002, and this WQLS was classified as Category 4a for turbidity and suspended sediment concentration on the 2004 303(d) list. However, it has been omitted from the 2006-2008 Integrated Report in the Assessments of Individual Surface Waters and the list of Category 4a waters.

We encourage ADEQ in the next listing cycle to verify that all waters assessed as Category 4a are presented and subject to a TMDL for the pollutant listed.

Assessed Impaired by ADEQ – As described above, the Arizona 2006-2008 Integrated Report presents the State's final 303(d) list of impaired waters requiring development of total maximum daily loads (TMDLs) in table "Category 5 (ADEQ) – Assessed Impaired by ADEQ." ADEQ is unclear regarding the status of those waters added by EPA to the State's previous lists (EPA 2002 and 2004), and presented in the table "Category 5 (EPA) – Assessed Impaired by EPA." EPA commented on this confusing presentation of two separate lists as part of our 2007 letter on the State's draft list (EPA

2007). Specifically, we noted there may be new data and information to yield a different assessment conclusion, thus creating a change in assessment status for such waters. Indeed, the State has reviewed available monitoring results and concluded three waters (previously listed by EPA) are impaired and therefore has included them on the State's 303d list presented in table "Category 5 (ADEQ) – Assessed Impaired by ADEQ." These are: Brewery Gulch (AZ 15080301-337) for copper, Little Colorado River (AZ 15020002-004) for suspended sediments, and Tonto Creek (AZ 15060105-013A) for dissolved oxygen. We concur with ADEQ's assessment conclusion for each of these WQLSs.

Good Cause for De-listing

In our review of the State's Integrated Report assessments for each waterbody pollutant combination, the State has indicated a change in status of certain waters, or omitted from its 2006-2008 Section 303(d) list several waters included on the 2004 list. EPA asked the State to provide rationale for these decisions not to list several previously listed waters. EPA has reviewed the State's rationale and assessment conclusions for these waters and in the following cases, the State has demonstrated to EPA's satisfaction, good cause for not listing these waters and/or pollutants, as provided in 40 CFR 130.7(b)(6)(iv).

Attaining Water Quality Standards – ADEQ has reassessed the following WQLSs, previously assessed as impaired, and concluded they attain water quality standards; therefore, these WQLSs are not included in the 2006-2008 303(d) list (table "Category 5 (ADEQ) – Assessed Impaired by ADEQ"):

- Whitehorse Lake (AZ 15060202-1630) for dissolved oxygen;
- Humboldt Canyon (AZ 15050301-340) for zinc and cadmium;
- Turkey Creek (AZ 15070102-036B) for cadmium and zinc;
- Salt River (AZ 15060106A-003) for copper;
- Verde River (AZ 15060203-004) for copper and selenium;
- San Pedro River (AZ 15050202-008) for copper; and
- San Francisco River (AZ 15040004-023) for suspended sediment concentration (SSC).

We concur with the State's decision not to list these water bodies as assessed impaired.

TMDLs Completed - Consistent with EPA's 2006 assessment guidance (EPA 2006a), Arizona's Integrated Report classifies waters for which TMDLs have been completed and approved by EPA as Category 4a (TMDL Completed and being implemented). We concur with the State's decision to move these WQLSs from the 303(d) list as Category 5, to Category 4a.

- Alum Gulch (AZ 15050301-561A) for pH;
- Lakeside Lake (AZL 15050302-0760) for nitrogen, phosphorus and chlorophyll;
- Three R Canyon (AZ 15080301-558A) for pH; and
- Tonto Creek (AZ 15060105-013A and -013B) for nitrogen.

Assessment of Inconclusive Data – In the 2006-2008 Integrated Report, ADEQ has considered new mercury data and reevaluated three WQLSs listed by EPA in 2004:

- Boulder Creek (AZ 15030202-005A and 006B) and
- Burro Creek (AZ 15030202-004).

In the Integrated Report, both segments of Boulder Creek were assessed as fully attaining for mercury while inconclusive for dissolved mercury; Burro Creek was assessed as fully attaining for mercury. These assessments infer non-impairment due to mercury and in effect signal the State's conclusion to remove these waterbody-pollutant combinations from the 303(d) list. EPA has reviewed all available data, and concurs with the State's assessment to remove these WQLSs for mercury from Category 5 (Assessed Impaired). In the 2006-2008 Integrated Report, the State has reassessed Boulder Creek (AZ 15030202-006B) and Burro Creek (AZ 15030202-004) as Category 2 (Attaining Some Uses); and Boulder Creek (AZ 15030202-005A) as Category 4 (due to other causes of impairment).

EPA Decisions to Add Waters to Arizona's List

This section describes the basis for EPA's decisions to (1) disapprove the State's omission of several water bodies and/or pollutants from the submitted list of water bodies, and (2) identify these water bodies for addition to the final 2006-2008 Section 303(d) list with associated priority rankings. Briefly, EPA has identified WQLSs as impaired if the following apply: fish consumption advisories are in effect (providing evidence that the fish consumption use is impaired); or, less than 20 samples are available and a sufficient percentage of available samples exceed the applicable numeric water quality standard for conventional pollutants (e.g., dissolved oxygen, pH, nitrogen or sediment). Those waters and pollutants identified for addition are discussed below and identified in Table 1 - EPA Additions to Arizona's 2006-2008 Section 303(d) list.

EPA will open a public comment period to receive comments concerning our decision to add waters and pollutants to the State's Section 303(d) list. After considering comments received from the public, and making any necessary revisions, the final 2006-2008 Section 303(d) list will be transmitted to the State.

Fish Consumption Advisories

Fish consumption advisories are identified in Chapter III of the State's submittal for various Arizona waters. These advisories are due to elevated concentrations of mercury or pesticide levels found in fish tissue. In spring of 2009, two additional fish consumption advisories were issued for Lake Pleasant (AZL 1507012-1100) and Roosevelt Lake (AZL 15060103-1240) (ADEQ 2009c). Fish consumption advisories currently in effect for waterbodies provide evidence that the fish consumption use is impaired.

Federal regulations require the assessment of whether waters are attaining all applicable standards, including narrative standards [40 CFR 130.7(b)(3)]. If a state does not consider particular existing and readily available data and information in deciding

which segments are impaired and must be placed on the section 303(d) list, they must provide an explanation to EPA of why they did not use such data and information.

Where a state is unable to evaluate potential exceedences of narrative standards (e.g., in cases where consumption advisories are in effect or where sediment, fish tissue, or biological data and information indicate that narrative standards are not attained), then EPA, based on its own evaluation, determines if it is necessary to add waters to the states Section 303(d) list due to violations of those narrative standards. EPA's 2006 assessment guidance indicates that fish consumption advisories based on segment-specific information demonstrate impairment of CWA section 101(a) "fishable" uses (EPA 2006a, p. 60).

EPA had determined that 23 WQLSs with fish consumption advisories currently in effect meet federal listing requirements, and are being added to Arizona's Section 303(d) list (See Table 1).

Water Quality Standard Exceedences

EPA has reviewed ADEQ's assessments of conventional pollutants in waters for which less than 20 samples are available. ADEQ has identified "inconclusive" impairment in five WQLSs due to low sample numbers. ADEQ did not consider listing these waters because the Impaired Waters Rule does not authorize the State to list conventional pollutants in cases where fewer than 20 samples are available. EPA is adding 5 WQLSs to Arizona's 2006-2008 Section 303(d) list due to exceedences of numeric water quality standards for pH, suspended sediment concentration, and nitrogen and dissolved oxygen.

EPA finds that four (4) waterbody segments did not meet water quality standards for pH: Mule Gulch (AZ 15080301-090B), Bear Canyon Lake (AZL 1502008-0130), and Rose Canyon Lake (AZL 15050302-1260) had low pH in 80 - 100% of sampling events; and, Watson Lake (AZL 15060202-1590) had elevated pH. While ADEQ recommends additional monitoring for pH as a priority to support TMDL development (scheduled to be completed between 2009 and 2012), the available data (most is from 2002 or earlier) supports listing these waters.

In addition to pH, Watson Lake (AZL 15060202-1590**)** data indicate the lake is also impaired for excessive nitrogen and low dissolved oxygen. ADEQ has characterized monitoring data as "inconclusive" for listing due to low sample number and because the pH and nitrogen results were collected during the 2000 fish kill investigation. Between 20% and 50% of available results ($n \leq 6$) for these three pollutants did not meet State designated numeric water quality standards. Whereas the State has deemed each data set too small for consideration, EPA has assessed these results, along with the occurrence of the fish kill event, and finds these multiple lines of evidence support listing this waterbody for nitrogen, pH and dissolved oxygen.

Exceedences of suspended sediment concentration (SSC) criterion were found for the Gila River – Bontia Creek to Yuma Wash (AZ 15040005-022) in 45% of samples (n=20). Additionally, after eliminating data associated with high flow events, the remaining exceedences were 2.5 to 11 times above the SSC criterion (80 mg/L). EPA has assessed the available data and finds these data support listing this segment for suspended sediment.

EPA had determined that these five WQLSs, which do not attain applicable standards for conventional pollutants, meet federal listing requirements and are being added to Arizona's Section 303(d) list (See Table 1).

Public Comments

ADEQ provided opportunity for public comments on a February 2007 draft Section 303(d) list from March 1st to 31st, 2007. ADEQ's Notice of Public Information, published on August 22, 2008, includes a responsiveness summary addressing public comments received (ADEQ 2008c). ARS §49-1092.03 provides for a 45-day period following publication during which any party that submitted written comments may challenge a listing of an impaired water by submitting a notice of appeal to ADEQ. ADEQ received no appeals challenging the 2006-2008 Section 303(d) list in the Notice of Public Information.

Priority Ranking and Targeting

EPA reviewed Arizona's priority ranking of listed waters for TMDL development (Integrated Report, Appendix C), and concludes the State properly took into account appropriate ranking factors to make its determination. The State's decision process for ranking the listed waters is established in the IWIR and includes numerous relevant factors including: imminent harm to public health or wildlife based on toxicity of the pollutant and magnitude or duration of the exceedences; jeopardy to threatened and endangered species; special protection classifications, e.g., impairment of (State designated) "unique waters;" degree of public interest; recreational and economic significance; anticipated revision of a federal or state permit for discharge to an impaired waterbody; and, whether the waterbody has been listed for eight or more years. Arizona also considers whether more than one designated use is impaired and whether seasonal conditions are contributing to the impairment.

EPA concludes that the State properly considered those factors required to be considered by Section 303(d) and applied a reasonable set of additional ranking factors, consistent with the priority ranking provisions of 40 CFR 130.7(b). EPA reviewed the State's identification of high priority WQLSs targeted for TMDL development in the next two years and concludes that the targeted waters are appropriate for TMDL development in this time frame. The State has targeted an appropriate mix of complex and relatively simple TMDLs addressing both point and nonpoint sources.

For those waters and pollutants added to the list by EPA, priority rankings are shown in Table 1. We have updated the priority rankings of previously listed waters generally in accordance with Arizona's priority ranking factors and in consultation with ADEQ. We have ranked as high priority several waters, including two water bodies newly added to Arizona's 303(d) list – Lake Pleasant and Roosevelt Lake since these waters have important recreational and economic significance (i.e., frequent visitation and fishing pressure statistics).

Administrative Record Supporting This Action

Arizona's December 17, 2008 submittal consists of:

- cover letter to EPA dated November 21, 2008.
- Notice of Public Information published in the Arizona Administrative Register on August 22, 2008. The Notice includes Arizona's draft 303(d) list of impaired waters and ADEQ's responses to comments received on the draft list.
- final *2006-2008 Status of Ambient Surface Water Quality in Arizona, Arizona's Integrated* Section*305(b) Assessment and* Section*303(d) Listing Report* ["Integrated Report"].

Arizona's January 13, 2009 supplemental submittal consists of:

- cover letter to EPA dated January 12, 2009.
- spreadsheet dated November 2008 with water quality data for 11 water bodies.
- spreadsheet with dissolved oxygen water quality data for Roper Lake.
- non-impairment rationale for Dankworth Pond for dissolved oxygen and fluoride.
- de-listing report for Granite Basin Lake for dissolved oxygen.

In additionally, we are also considering those documents, and personal communications (e.g., email exchanges) between ADEQ and EPA, indicated in the references, below.

In support of this decision to approve Arizona's listing decisions, EPA carefully reviewed the materials submitted by Arizona with its 303(d) listing decision. The administrative record supporting EPA's decision is comprised of the materials submitted by the State, copies of Section 303(d) and associated federal regulations, EPA guidance concerning preparation of 303(d) lists, this decision letter and supporting report, and other information provided by the State referenced in this document. EPA determined that the materials provided by the State with its submittal provided sufficient documentation to support our analysis and findings that the State listing decisions meet the requirements of the CWA and associated federal regulations. We are aware that the State compiled and considered additional materials (e.g., raw data and water quality analysis reports) as part of its list development process that were not included in the materials submitted to EPA. EPA did not consider all these additional materials as part of its review of the listing submittal. It was unnecessary for EPA to consider all of the materials considered by the State in order

to determine that, based on the materials submitted to EPA by the State, the State complied with the applicable federal listing requirements. Moreover, federal regulations do not require the State to submit all data and information considered as part of the listing submittal.

References

ADEQ 2009a. Email from Steve Pawlowski, ADEQ, to Karen Irwin, EPA, February 11, 2009. (Email regarding Verde River.)

ADEQ 2009b. Email from Steve Pawlowski, ADEQ, to Karen Irwin, EPA, February 24, 2009. (Email regarding Humboldt Canyon.)

ADEQ 2009c. Fish Consumption Advisories - April 2009, Publication Number: FS 09-01. http://www.azdeq.gov/environ/water/assessment/download/fish-0409.pdf, accessed June 12, 2009.

ADEQ 2009d. Letter from Steve Pawlowski, ADEQ, to Karen Irwin, EPA, January 12, 2009. (Cover letter for Arizona's supplemental submittal.)

ADEQ 2008a. *2006/2008 Status of Ambient Surface Water Quality in Arizona, Arizona's Integrated §305(b) Assessment and §303(d) Listing Report*, November 2008. http://www.azdeq.gov/environ/water/assessment/assess.html

ADEQ 2008b. *Surface Water Assessment Methods and Technical Support*, November 2008, Integrated Report, Appendix G.

ADEQ 2008c. Notice of Public Information 3340, August 22, 2008. http://www.azsos.gov/aar/2008/34/contents.shtm

ADEQ 2007a. *Dissolved Oxygen De-List Report for Whitehorse Lake*, March 27, 2007.

ADEQ 2007b. *AZ Dept of Environmental Quality Nutrioso Creek Turbidity TMDL Effectiveness Monitoring Report Recommendation for Delisting*, January 2007.

ADEQ 2006. *Turkey Creek Total Maximum Daily Loads For Copper and Lead and Cadmium and Zinc De-Lists*, ADEQ & PBS&J, September 22, 2006.

ADEQ 2005. *Risk analysis for the consumption of organochlorines in fish tissue from the Middle Gila River drainage,* ADEQ, April 12, 2005.

ADEQ 2004. *Dissolved Oxygen De-List Report for Granite Basin Lake* (AZL15060202-0580), May 18, 2004.

ADEQ 2003. *Total Maximum Daily Load For: Upper Alum Gulch, Sonoita Creek Basin, Santa Cruz River Watershed, Coronado National Forest near Patagonia, Santa Cruz County, Arizona HUC 15050301-561A, Parameters: Cadmium, Copper, Zinc, and Acidity*, June 30, 2003.

ADEQ 2002. *Arizona Department of Environmental Quality Water Quality Division, Total Maximum Daily Load Case Study*, September 2002.

ADEQ 2001. *Arizona Department of Environmental Quality Water Verde River TMDL for Turbidity*. February 2001.

EPA 2009. Letter from Alexis Strauss, EPA, to Joan Card, ADEQ, January 21, 2009. (Approval of new and revised Arizona standards.)

EPA 2007. Letter from Alexis Strauss, EPA, to Joan Card, ADEQ, April 23, 2007. (Comments on the February 2007 draft Arizona Integrated Report.)

EPA 2006a. *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act*, July 29, 2005.

EPA 2006b. Letter from Alexis Strauss, EPA, to Joan Card, ADEQ, October 31, 2006. (Approval of Turkey Creek TMDLs for copper and lead.)

EPA 2005. Letter from Alexis Strauss, EPA, to Karen Smith, ADEQ, March 17, 2005. (Final action on Arizona's 2004 303(d) list.)

EPA 2004. Letter from Alexis Strauss, EPA, to Karen Smith, ADEQ, November 16, 2004. (Action on Arizona's 2004 303(d) list and solicitation of public comment.)

EPA 2003. Letter from Catherine Kuhlman, EPA, to Karen Smith, ADEQ, February 27, 2003. (Final action on Arizona's 2002 303(d) list.)

EPA 2002. Letter from Catherine Kuhlman, EPA, to Karen Smith, ADEQ, December 5, 2002. (Action on Arizona's 2002 303(d) list and solicitation of public comment.)

EPA 1997. August 27, 1997 memorandum from Robert H. Wayland III, Director, Office of Wetlands, Oceans, and Watersheds, Office of Water, EPA Headquarters, to Water Division Directors, Regions I - X, and Directors, Great Water Body Programs, and Water Quality Branch chiefs, Regions I - X, regarding *National Clarifying Guidance For 1998 State and Territory Section 303(d) Listing Decisions*.

EPA 1991. *Guidance for Water Quality Based Decisions: The TMDL Process*, App. C.

EPA 440/4-91-001 U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Table 1: Waters Added by EPA to Arizona's Section 303(d) 2006-2008 List

Description of Table Columns:
"Water Body" column identifies the water bodies to be added to the State's 303(d) list.
"Watershed" column identifies the geographical location of the waterbody based on State's designation.
"Water body ID" column specifies the waterbody segment based on State's designation.
"Pollutants" column identifies the specific pollutant(s) for which the water bodies were found to exceed water quality standards.
"Basis for Listing" column identifies the basis for individual listing decisions.
"Priority Ranking" column indicates the priority ranking for TMDL development associated with an individual listing decision
(H = High priority; M = Medium priority; L = Low priority)

Water Body	Watershed	Water body ID	Pollutants	Basis for listing	Priority ranking
Fish Consumption Advisories					
Alamo Lake [1]	Bill Williams	15030204-0040	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Coors Lake	Bill Williams	15030204-5000	Mercury in fish tissue	Fish consumption advisory currently in place.	L
Painted Rocks Borrow Pit Lake [1]	Colorado -Lower Gila	15070201-1010	DDT metabolites, Toxaphene, Chlordane	Fish consumption advisory currently in place.	M
Lake Mary (lower)	Little Colorado	15020015-0890	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Lake Mary (upper)	Little Colorado	15020015-0900	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Long Lake	Little Colorado	15020008-0820	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Lyman Lake	Little Colorado	15020001-0850	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Soldier's Annex Lake	Little Colorado	15020008-1430	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Soldier's Lake	Little Colorado	15020008-1440	Mercury in fish tissue	Fish consumption advisory currently in place.	H

Water Body	Watershed	Water body ID	Pollutants	Basis for listing	Priority ranking
Gila River Gillespie Dam-Rainbow Wash	Middle Gila	15070101-007	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Gila River Agua Fria- Waterman Wash	Middle Gila	15070101-014	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Gila River Centennial Wash-Gillespie Dam [1]	Middle Gila	15070101-008	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Gila River Hassayampa-Centennial Wash	Middle Gila	15070101-009	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Gila River Rainbow Wash- Sand Tank	Middle Gila	15070101-005	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Gila River Sand Tank-Painted Rocks Rsvr	Middle Gila	15070101-001	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Gila River Waterman Wash-Hassayampa	Middle Gila	15070101-010	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Gila River Salt-Agua Fria	Middle Gila	15070101-015	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Hassayampa River Buckeye Canal-Gila River	Middle Gila	15070103-001B	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Lake Pleasant	Middle Gila	1507012-1100	Mercury in fish tissue	Fish consumption advisory currently in place.	H

Water Body	Watershed	Water body ID	Pollutants	Basis for listing	Priority ranking
Painted Rocks Reservoir	Middle Gila	15070101-1020A	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Salt River	Middle Gila	15060106B-001D	DDT metabolites, Toxaphene, Chlordane in fish tissue	Fish consumption advisory currently in place.	M
Roosevelt Lake	Salt	15060103-1240	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Parker Canyon Lake	Santa Cruz	15050301-1040	Mercury in fish tissue	Fish consumption advisory currently in place.	H
Water Quality Standard Exceedences					
Bear Canyon Lake	Little Colorado	1502008-0130	pH	Numeric water quality standards exceeded	L
Mule Gulch [1]	San Pedro	15080301-090B	pH	Numeric water quality standards exceeded	M
Rose Canyon Lake	Santa Cruz	15050302-1260	pH	Numeric water quality standards exceeded	L
Gila River Bonita Ck - Yuma Wash [1]	Upper Gila	15040005-022	Suspended Sediment	Numeric water quality standards exceeded	H
Watson Lake	Verde	15060202-1590	Nitrogen, Dissolved Oxygen, pH	Numeric water quality standards exceeded	M

Note:
[1] – This water body is already listed for other pollutants in Arizona's 2006-2008 303(d) list