Enclosure 1:
Responsiveness Summary
EPA Decision Concerning Arizona's 2006-2008 CWA Section 303(d) List

Introduction

On July 31, 2009, EPA partially approved and partially disapproved Arizona's 2006-2008 Section 303(d) list (EPA 2009), as submitted in Arizona's 2006-2008 Integrated Section 305(b) Assessment and 303(d) Listing Report ["Integrated Report," ADEQ 2008a]. In that action, EPA identified for inclusion on Arizona's Clean Water Act (CWA) Section 303(d) list (as identified in the Integrated Report table captioned "Category 5 (ADEQ) – Assessed Impaired by ADEQ") 23 additional water bodies, and additional pollutants for 5 waters already listed by Arizona. EPA published a notice of availability of its listing decision in the Federal Register on August 20, 2009, inviting public comment on its decisions to disapprove Arizona's decision to omit certain waters and pollutants and identifying these waters and pollutants for inclusion on Arizona's section 303(d) list (as identified in the Integrated Report table captioned "Category 5 (ADEQ) – Assessed Impaired by ADEQ") (Federal Register 2009). EPA also notified several individuals and organizations, and posted the notice of availability and decision documents on its Region IX web site. Decision documents were also available upon request. The period for public comment closed on September 21, 2009.

In response to the public notice, EPA received one set of comments, from Gallagher & Kennedy, P.A., on behalf of Freeport-McMoRan Morenci Inc ("FMMI"). FMMI provided comments in support of its request that "EPA remove the segment of the Gila River from Bonita Creek to Yuma Wash from the set of waters that EPA had added to Arizona's CWA section 303(d) 2006-2008 list as impaired for alleged suspended sediment standard exceedances." This responsiveness summary identifies comments (summarized in the comment heading) with excerpted text from the "FMMI" comments, and presents EPA's response.

EPA has considered the comments and reached a final decision to identify for inclusion on Arizona's 303(d) list all of the waters identified in EPA's July 31, 2009 decision, which includes 23 additional waters and 5 additional pollutants for waters already listed by the State, in addition to the 54 waters listed by the State. The additional waters and pollutants being added to Arizona's 2006-2008 Section 303(d) list are identified in Enclosure 2.

Comments by FMMI and EPA Responses

Comment 1: EPA should remove the segment Gila River - Bonita Creek to Yuma Wash

EPA should remove the segment of the Gila River from Bonita Creek to Yuma Wash from the set of waters that EPA had added to Arizona's CWA section 303(d) 2006-2008 list as impaired for suspended sediment.

Response:

Arizona's 2006-2008 Integrated Report presents suspended sediment concentration (SSC) data for the five-year period beginning January 2000 and ending December 2005, along with limited additional data submitted through June 2006 (ADEQ 2008a, p. UG-29; ADEQ 2008b, page G-9). The Integrated Report presents 9 data points for the Gila River – Bonita Creek to Yuma Wash segment (15040005-022) for the SSC assessment.

After receiving the Integrated Report, EPA learned of and reviewed additional data regarding the Gila River – Bonita Creek to Yuma Wash segment (15040005-022). The additional data consists of SSC data collected at the US Geological Survey (USGS) Gila Solomon gage (site 09448500). The USGS dataset of samples taken at the Gila Solomon gage during the Integrated Report's assessment period includes 28 data points, 9 of which were included in the data compilation and assessment described in the state's Integrated Report. Table 1 presents the 28 data points; the far right column differentiates the 9 data points included in the Integrated Report from the additional data. All data were within the State's Integrated Report assessment timeframe from 2000 to 2006.

After evaluating the 28 data points EPA determined that there were three exceedances of the suspended sediment concentration standard of 80 mg/L, expressed as a geometric mean (four-sample minimum), as established in A.A.C. R18-11-109(D).

As part of its evaluation, EPA used 18 data points representing conditions at or near base flow. EPA did not use the other 10 data points for the geometric mean calculations because the samples were collected during flows greater than the 50^{th} percentile of flow. Calculation of the rolling geometric means of the concentrations of the 18 retained data points is presented in Table 1. The three geometric mean exceedances of the suspended sediment concentration's limit of 80 mg/L are identified in **bold** in Table 1.

Accordingly, EPA has determined that the segment of the Gila River from Bonita Creek to Yuma Wash meets the Federal requirements for listing as an impaired water pursuant to CWA section 303(d) and 40 CFR 130.7, and that the segment should *not* be removed from the list of waters previously identified by EPA for inclusion on Arizona's Section 303(d) list.

Table 1: USGS Gila River - Solomon gage site Suspended Sediment Concentration (mg/L)

DATES	TIMES	Flow, cfs	SSC, mg/L	Rolling geo-means	Presented in IR
Mar 15 2000	1150	141	13	21.28	
Jun 14 2000	1235	41	10	26.85	
Jun 6 2001	1010	94	8	31.53	
Sep 6 2001	1010	149	197	33.34	X
Dec 6 2001	1205	139	33	43.65	
Mar 20 2002	1225	121	19	35.23	
May 22 2002	1150	56	10	27.45	
Aug 22 2002	1205	103	579	71.98	X
Nov 13 2002	1210	108	14	39.96	
Jun 19 2003	1130	56	7	40.65	
Sep 10 2003	1110	74	473	**136.28**	X
Dec 9 2003	1225	145	55	**81.33**	
Jun 3 2004	1210	61	15	69.90	
Aug 11 2004	1115	162	884	**101.99**	X
Jun 8 2005	1245	141	60	57.77	
Dec 7 2005	1145	129	30		
Apr 6 2006	1055	115	68		
Jun 21 2006	1040	31	91		
Data eliminated from assessment for exceeding 50th percentile flow conditions.					
Aug 30 2000	1140	334	6410		X
Oct 13 2000	1040	3220	3060		X
Mar 28 2001	1245	578	88		X
Mar 27 2003	1355	628	150		X
Mar 24 2004	1130	545	313		X
Dec 8 2004	1110	278	145		
Mar 31 2005	1305	646	115		
Aug 17 2005	1125	298	3740		
Aug 16 2006	1140	2770	5410		
Dec 6 2006	1240	218	26		

Comment 2: EPA's Use of State's Assessment Methodology

The only water quality standards applicable to the segment at issue (or any waters in Arizona) are the state's surface water quality standards and the related assessment methodologies, including the suspended sediment standard and associated methodology for assessing that criterion. As such, to the extent EPA adds waters to Arizona's CWA 303(d) list inconsistent with the state's surface water quality standards and associated assessment methodology, EPA has acted beyond its authority.

> This standard [i.e., the suspended sediment standard at A.A.C. R18-11-109(d)] also is reflected in Arizona's surface water assessment methodologies, which have been adopted as part of Arizona's surface water quality standards under A.A.C. R18-11-601 *et seq.* ADEQ published the most recent version of its "Surface Water Assessment Methods and Technical Support" document in November of 2008, which provides (p. 26) that an exceedance of the suspended sediment concentration criterion occurs when "the geometric mean of at least 4 consecutive samples exceeds the criterion, excluding samples collected during elevated flows."
>
> ADEQ's surface water quality standards and its assessment methodologies have been developed after extensive studies and stakeholder participation, negotiation on informal drafts, and formal public notice and comment, all with EPA oversight and approval and consistent with the statutory provisions of in 33 U.S.C. § 1313(c).

Response:

EPA disagrees with the comment in several respects. EPA does not consider ADEQ's "Surface Water Assessment Methods and Technical Support" (ADEQ 2008b) to be a water quality standard. When determining whether a waterbody in Arizona meets the federal requirements for listing under CWA section 303(d) and 40 CFR 130.7, EPA is not barred from using a methodology that differs from a methodology described in ADEQ's "Surface Water Assessment Methods and Technical Support" (ADEQ 2008b).

EPA finds nothing in ADEQ's "Surface Water Assessment Methods and Technical Support" (November 2008) indicating that ADEQ has determined that the document itself is a water quality standard. EPA understands that the document is not an ADEQ rulemaking. ADEQ has not submitted it to EPA for review and approval as a new or revised water quality standard pursuant to Clean Water Act section 303(c) or 40 CFR Part 131, and EPA has not reviewed, or approved or disapproved, it as a standard pursuant to 40 CFR 131.21.

A State water quality standard for purposes of the CWA remains the applicable standard until EPA approves a change to it, or until EPA promulgates a more stringent standard. See, 40 CFR 131.21(e). Accordingly, although EPA has considered the assessment methodologies described in ADEQ's "Surface Water Assessment Methods and Technical Support" (ADEQ 2008b), the applicable water quality standard in this matter is the suspended sediment standard at A.A.C. R18-11-109(d), *not* A.A.C. R18-11-109(d) *and* an assessment methodology described in ADEQ's "Surface Water Assessment Methods and Technical Support" (ADEQ 2008b).

EPA has, in guidance, addressed the circumstances under which EPA "will consider" a State's methodology, and the circumstances under which EPA "will apply" such a methodology, when approving or disapproving a State's list. EPA's *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act* (EPA 2005) states, in part, (pp. 29-30, EPA 2005):

"*B. What will EPA do with the methodology?*

When a state has by rulemaking adopted a methodology as part of its approved water quality standards and the water quality standards are applicable for CWA purposes, 40 CFR § 131.21, EPA will apply the approved methodology as it reviews the state's submission in order to determine whether to approve or disapprove the section 303(d) list (Category 5). If a state has not by rulemaking adopted a methodology into its water quality standards, EPA will consider the state's methodology, to the extent that it reflects a reasonable interpretation of the state's water quality standards and sound science, in determining whether to approve or disapprove the section 303(d) list. ….

For methodologies that are not part of the state's applicable water quality standards, EPA will consider the methodology as it assesses whether the state conducted an adequate review of all existing and readily available water quality-related information, whether the factors that were used to make listing and removal decisions were reasonable, whether the process for evaluating different kinds of water-quality related data and information is sufficient, and whether the process for resolving jurisdictional disagreements is sufficient. If EPA finds that the state's methodology is inconsistent with its water quality standards, and its application has resulted in an improper section 303(d) list, EPA may disapprove the list. Regardless of the suitability of the methodology, EPA must review the list for consistency with the relevant provisions of the CWA and the regulations."

Accordingly, where, as here, the assessment methodology referenced in the comment is neither a water quality standard, nor adopted by rulemaking, nor approved by EPA under 40 CFR 131.21, EPA concludes that it is not required to apply it.

In addition, EPA notes that the comment's contentions regarding the suspended sediment assessment methodology's binding effect upon EPA is difficult to reconcile with ADEQ's position regarding the issue. Evidently addressing the contingency that one or more of its assessment methodologies may be deficient in EPA's view, ADEQ does not indicate that EPA will nevertheless be bound by them; rather, as ADEQ states: "Any deficiency in these methods can be cited as a factor in an EPA decision to disapprove of a part of Arizona's 303(d) List." "Surface Water Assessment Methods and Technical Support," p. 33.

Comment 3: Severity of Exceedances regarding assessment as impaired

> EPA's statements in its Staff Report that… individual samples were 2.5 to 11 times higher than the applicable standard have no relationship to Arizona's water quality standards, and thus should have no bearing at all on a listing decision.

Response:

EPA disagrees. EPA may consider the severity of the exceedances of a standard when EPA disapproves the omission of an impaired water from a list pursuant to 40 CFR 130.7, and EPA has determined that it is appropriate to do so in this instance.

Section 303(d) of the CWA requires States to identify waters for which technology based effluent limitations are not stringent enough "to implement" any applicable water quality standard. CWA, section 303(d)(1)(A); 40 CFR 130.7(b)(1)(iii). In addition, 40 CFR 130.7(d)(2) states EPA shall approve the list of waters identified by the State "only if it meets the requirements of §130.7(b)." For reasons summarized above, when making its assessment, EPA is not barred from using a methodology that differs from a methodology described in ADEQ's "Surface Water Assessment Methods and Technical Support" (ADEQ 2008b). In this case, EPA has determined that the severity of the exceedances of the suspended sediment standard in the subject reach of the Gila River is relevant to EPA's assessment and has considered data indicating the magnitudes, as well as the frequency, by which the State's standard has been exceeded.

EPA guidance (EPA 2003) recognizes that the magnitude or severity of the exceedances of a standard may be considered when a State makes a listing decision.

> "*The State should provide for listing in cases where numeric standard decision rule thresholds are not met but the data indicate a reasonable likelihood of a WQSs exceedance, - **very high magnitude digressions from a criterion magnitude**, corroborating evidence from independent lines of evidence to demonstrate violations of narrative standards*." (EPA 2003, p. 30; emphasis added); and
>
> "*Still, the methodology should provide decision rules for concluding nonattainment even in cases where the target data quantity expectations are not met, but the available data and information indicate a reasonable likelihood of a WQC exceedance (e.g., available samples **with major digressions from the criterion concentration**, corroborating evidence from independent lines of evidence such as biosurveys*).
>
> *However, small sample sets often provide sufficient information to support decisions to list waters **because the** frequency and/or **magnitude of observed excursions and digressions are high enough to support a reliable impairment determination***." (EPA 2003, p. 26; emphasis added)

Comment 4: Number of Exceedances regarding assessment as impaired

> [Surface Water Assessment Methods and Technical Support (ADEQ 2008b)] provides that a water will be assessed as impaired for the suspended sediment concentration criterion only if there have been two or more exceedances (requiring at least 8 representative samples) during the applicable assessment period.

Response:

EPA disagrees. In "Surface Water Assessment Methods and Technical Support" (ADEQ 2008b) the section captioned "Using the Suspended Sediment Concentration Standard", states on page G-44: "To determine if more than one exceedance occurred, a rolling geometric mean is calculated, using each four consecutive SSC values not excluded due to high flow." The commenter's assertion that "at least 8 representative samples" are needed to determine if more than one exceedance has occurred is contradicted by ADEQ's calculation example, where only five samples (taken on 9/15/03, 11/03/03, 7/27/04, 10/27/04 and 8/3/05) are needed to determine that two exceedances have occurred (ADEQ 2008b, pp G-44 and G-45, example tables and calculation illustrating how a rolling geometric mean is to be calculated in the context of that document).

In addition, EPA notes the applicable water quality standard, as defined in A.A.C. R18-11-109(d), states:

> "*The following water quality standard for suspended sediment concentration, expressed as a geometric mean (four-sample minimum) shall not be exceeded. The standard applies to a surface water that is at or near base flow and does not apply to a surface water during or soon after a precipitation event. 80 mg / L.*"

The standard does not provide that a waterbody will be assessed as impaired only if there have been two or more exceedances of the suspended sediment concentration standard during an applicable assessment period.

Comment 5: ADEQ performed Bioassessments

> FMMI is aware that ADEQ performed bioassessments in this segment of the Gila River and determined that there is no impairment or other impacts to macroinvertebrate or fish populations in the segment. .... The available bioassessment results suggest that there is <u>no</u> correlation between EPA's listing decision to list the segment as impaired for suspended sediment and potential impairment to aquatic life. This information suggest that there is no real impairment issue, because the basis for the suspended sediment standard is protection of aquatic life and ADEQ has found that the segment does not have an impaired or degraded fish population or microinvertebrate [sic] community. [Underlining in original.]

Response:

After inquiry to ADEQ staff, EPA has been unable to identify (a) determination by ADEQ of "no impairment or other impacts to macroinvertebrate or fish populations in the segment" or (b) ADEQ's finding that the segment does not have an impaired or degraded fish population, as referenced in the above comment.

ADEQ has published a notice pertaining to its draft TMDL (ADEQ, 2009) addressing suspended sediment concentrations in the Gila River from Yuma Wash to Bonita Creek (water body ID: 150400005-022), which states:

> "*The Arizona Department of Environmental Quality (ADEQ), in accordance with Section 303(d) of the Clean Water Act, is in the process of developing Total Maximum Daily Load (TMDL) analyses for two reaches of the Gila River in the Upper Gila River Watershed near Safford and Duncan, Arizona.* ***ADEQ has determined that these reaches are impaired due to*** *Escherichia coli and* ***excessive sediment***." [Emphasis added.]

In its fact sheet related to the Upper Gila River TMDLs, ADEQ states:

> *"**The 2004 305(b) Assessment Report concluded that two stream reaches in the upper Gila River did not meet surface water quality standards for** selenium, E. coli and **suspended sediment**. The two reaches have been listed on Arizona's 2004 303(d) List of Impaired Waters and TMDL studies have been initiated to analyze the impairments. The TMDL study on the upper Gila River will reach from Cottonwood Creek for 15 miles to the confluence with the San Francisco River and will concentrate on exceedances in selenium. Concurrently, the reach from Yuma Wash for 6 miles to Bonita Creek (northeast of Safford) will be examined for Escherichia coli (E. coli) and suspended sediment exceedances."* [Emphasis added.]

Additionally, the draft TMDL includes the following text (ADEQ, 2009b. pp. 22-23; see also Table 4, p. 24.):

> *"5.1 Narrative Bottom Deposits Standard and Relation to Suspended Sediment Concentrations*
>
> *Reach 15040005-022 was previously listed on the state's 303(d) list for violations of the turbidity standard in 2002. Arizona repealed its turbidity standard in 2002, while simultaneously adopting a suspended sediment concentration standard. With the repealing of the turbidity standard, the previous listing was dropped for the 2004 assessment. EPA overfiled on Reach 15040005-022 in 2004, asserting that violations of the Arizona narrative standard for bottom deposits (A.A.C. R18-11-108(A)(1)) had occurred, based upon exceedances of Arizona's former turbidity standard. Insufficient suspended sediment concentration data points had been*

collected by ADEQ by the time of the 2004 assessment to comply with the requirements of Arizona's Impaired Water Identification Rule, ***though continued sampling since then has in fact fulfilled these requirements and shown that a problem does exist based on suspended sediment concentration values****.*

....

Corroborating evidence of violations of the narrative bottom deposits standard would consist of impaired or degraded fish populations or macroinvertebrate communities, among other measures such as percent fines in reach pebble counts. Historically, ADEQ has assessed whether impairments to these communities have taken place through macroinvertebrate sampling, classification and analysis. In recognition of this, ADEQ collected macroinvertebrate samples leading to Index of Biotic Integrity (IBI) scores for three locations in and just above the putative impaired reach. Other geomorphic variables in the Gila River at and above Reach 15040005-022 were also surveyed and analyzed. See Table 4 for a summary of the metrics compiled to assess impairment in a weight of evidence approach. ***The supplemental data has been mixed in its results, with the preponderance of data suggesting that there is a problem with excessive sediment in 15040005-022****. It is worth noting, however, that the macroinvertebrate IBI scores, the prime indicators for the health of aquatic communities that the narrative bottom deposit standard was designed to protect, did not support an assessment of bottom deposits impairment*." [Emphasis added.]

If the comment's references are to the portions of the draft TMDL to which EPA cites above, EPA does not agree that it constitutes an ADEQ determination of "no impairment or other impacts to macroinvertebrate or fish populations in the segment" or an ADEQ finding that the segment does not have an impaired or degraded fish population. The document is in draft. In addition, in EPA's view, the text noted does not state a determination of "no impairment or other impacts" or a finding that the segment does not have an impaired or degraded fish population. EPA does not concur with the commenter's interpretation of the draft text as constituting ADEQ's determination or finding of "no impairment or other impacts", in light of: ADEQ's determination of impairment stated in ADEQ's public notice; the statements in ADEQ's fact sheet; and, the related text from the draft which EPA has italicized above.

References

ADEQ 2008a. *2006/2008 Status of Ambient Surface Water Quality in Arizona. Arizona's Integrated 305(b) Assessment and 303(d) Listing Report*. Arizona Department of Environmental Quality. November 2008. http://www.azdeq.gov/environ/water/assessment/download/2008/binder1.pdf

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Federal Register 2009. 74 FR 42069, FRL 8944-6. Notice of availability and request for public comment. August 20, 2009. http://edocket.access.gpo.gov/2009/pdf/E9-20045.pdf