Danielle R. Taber

From: Dennis H. Shirley <dennis.shirley@syn-env.com>
Sent: Wednesday, January 07, 2015 5:33 PM
To: Scott R. Green; Danielle R. Taber
Cc: Tina LePage; Laura L. Malone; Donovan L Neese; David Kimball; Sheryl Sweeney; Joel Peterson
Subject: RID Comments on WVBA WQARF Site Feasibility Study Reports
Attachments: _RID_Comments_on_WGFS_Report.010715.pdf; _Response_to_Comments_on_RID_FS_Report.010715..pdf

Dear Scott and Danielle,

Attached please find PDF copies of two documents submitted on behalf of Roosevelt Irrigation District and their legal counsel pertaining to:

1. RID Comments on the Working Group's Draft Feasibility Study Report, and
2. RID Response to Working Group Comments Dated November 6, 2014 on RID's Draft Feasibility Study Report

As always, RID is available to meet with ADEQ to brief you on these comments or answer any questions you may have regarding these submittals.

Thank you for your consideration,

Dennis H. Shirley, PG

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SYNERGY ENVIRONMENTAL, LLC

January 7, 2015

Mr. Scott Green, RG
Manager, Remedial Projects Manager
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
1110 West Washington Street
Phoenix, Arizona 85007

Re: **Roosevelt Irrigation District's (RID) Response to Comments from West Van Buren Working Group on RID's Feasibility Study Report**

Dear Mr. Green:

Synergy Environmental LLC, on behalf of the Roosevelt Irrigation District (RID) and in conjunction with RID legal counsel, has reviewed the comments submitted by Karen Gaylord, dated November 6, 2014, on behalf of the West Van Buren Working Group (WG Comments) regarding RID's Feasibility Study Report (RID FS Report). RID voluntarily submitted the RID FS Report to the Arizona Department of Environmental Quality (ADEQ) for approval pursuant to Ariz. Admin. Code (AAC) R18-16-413 and RID's Agreement to Conduct Work with ADEQ, dated October 8, 2009 and amended February 27, 2014. The RID FS Report was submitted for ADEQ approval in order to expeditiously cleanup and address the groundwater contamination that threatens public health, welfare and the environment and adversely impacts RID water supply wells in the West Van Buren Area (WVBA) Water Quality Assurance Revolving Fund (WQARF) Site. [1]

Contrary to the misinformation contained in the WG Comments, RID has submitted an FS Report to ADEQ that is not only consistent with Arizona law and WQARF program rules and policies, but recommends remedial actions that are extremely reasonable, cost-effective and consistent with remedial actions approved by ADEQ and the United States Environmental Protection Agency (EPA) at other similarly-contaminated groundwater sites in Arizona. However, RID understands the obvious bias of the Working Group and why there is so much misinformation contained in the WG Comments submitted to ADEQ regarding the RID FS Report, given that the members of the Working Group have documented "releases" of hazardous substances at their facilities[2] that have contaminated

[1] *See* fact sheet for WVBA WQARF Site as **Attachment 1**.

[2] The Working Group acknowledges that it "is an unincorporated association of parties that either had or have operating facilities within the [WVBA]." Working Group FS Report, 1 (November 2014). Members of the Working Group include: Air Liquide America Specialty Gases, LP; Arizona Public Service (APS); the City of Phoenix (COP); Dolphin, Incorporated; Freescale Semiconductor, Inc.; Holsum Bakery, Inc.; Honeywell International Inc.; ITT Corporation; Laundry & Cleaners Supply, Inc.; Maricopa Land and Cattle Co.; Milum Textile Services Co.;

groundwater[3] that is being addressed by RID's ADEQ-approved Modified Early Response Action (ERA) and/or will be addressed by the final remedy selected by ADEQ for the WVBA WQARF Site. Under federal law, these documented "releases" classify the owners and operators of these facilities as "potentially responsible parties" (PRPs) who are subject to joint and several liability for the response costs incurred by RID and ADEQ to protect public health, welfare and the environment.[4] In fact, the Working Group has acknowledged that "the entities listed [by ADEQ] in the West Van Buren Remedial Investigation Report … and entities that have been historically involved in the Motorola 52nd Street superfund" are PRPs for the groundwater contamination in the WVBA WQARF Site.[5]

Although RID previously has addressed many of the same issues raised in the WG Comments during the more than four years of significant community involvement activities[6] that occurred prior to ADEQ's approval of RID's ERA and Modified ERA pursuant to AAC R18-16-413, RID is compelled to provide this response in order, once again, to correct the administrative record, to protect public health and the environment, and to avoid criminal violations of applicable water quality standards as proposed by the Working Group's Feasibility Study Report (WGFS Report). RID also is compelled once again to highlight the applicable state laws which have been completely disregarded by the Working Group. Instead of responding to every misrepresentation or inaccuracy in the WG Comments, RID is addressing the substantive issues that are relevant to RID's written request for approval, pursuant to AAC R18-16-413, for the RID FS Report. Less substantive issues raised by the WG Comments are addressed in **Attachment 2** attached hereto.

Address Present Exposure Risks to Assure Protection of Public Health and Welfare

The Working Group argues that "[n]o VOCs were detected outside any of RID's well or treatment enclosures" and that "without having any detectable VOCs, there is no exposure, and thus no risk."[7] The Working Group opines that "with no risk, there is no reasonable justification for spending what RID has estimated … to treat extracted groundwater."[8] The Working Group boldly claims that not only is there no "imminent and substantial

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Prudential Overall Supply, Inc.; Salt River Project Agricultural Improvement and Power District (SRP); Schuff Steel Company; and Univar USA. – formerly Van Waters & Rogers. Penn Racket Sports (HTM Sport GmbH/HEAD USA/HEAD Penn Racquet Sports) participated in the early stages of the Working Group.

[3] The City of Phoenix has acknowledged that the WVBA and Motorola 52nd Street co-mingled plume "is the result of historical spills and other releases of commercial and industrial solvents from facilities throughout the area, which reached the groundwater and caused contamination." City of Phoenix, 2011 Water Resource Plan, page 22 (2011).

[4] 42 U.S.C. § 9607(a); *Carson Harbor Vill., Ltd. v. Unocal Corp*., 270 F.3d 863, 870-71 (9th Cir. 2001) (en banc)

[5] *See* Appendix F, WGFS Report (July 15, 2014).

[6] *See* http://www.azdeq.gov/environ/waste/sps/wvb.html (ADEQ website containing RID's prior work plans, ADEQ's approvals of such work plans and RID's responses to all PRP comments throughout the last four years addressing many of the same issues raised in WG Comments, but which never persuaded ADEQ to not approve the RID voluntary requests that comply with all applicable statutory and regulatory criteria).

[7] WG Comments, page 4 of 33.

[8] *Id*.

endangerment," but there are "no risks to children playing anywhere or to the public at large from RID's irrigation groundwater pumping."[9]

The Working Group's claim that there is "no exposure and thus no risk" was based on "ambient air samples [that] were collected during by-pass operations at each of RID's treatment plants."[10] The Working Group is correct. However, the reason there is "no exposure and thus no risk" at RID's treatment plants is because RID implemented engineering controls at those treatment plants at the specific request of ADEQ and as an express condition of ADEQ's approval of RID's Modified ERA, specifically to eliminate the otherwise present exposure and risk to the community. In fact, although RID's screening level health assessment determined there was "not an imminent (acute) risk to public health," ADEQ determined that since "long-term effects are uncertain and data also show that 'significant volatilization and transfer of contaminants, from the water into the air, is occurring and ongoing'" that RID was required by ADEQ "to implement measures to limit these exposures."[11] Without those engineering controls at the RID treatment plants, the present exposures that ADEQ has determined must be limited would go unaddressed. In fact, all of the remedial alternatives proposed in the WGFS Report would not only fail to place necessary engineering controls at the contaminated wellhead sites, but the Working Group has insisted[12] that ADEQ remove the existing engineering controls at RID's four wellhead treatment plants that the Working Group has acknowledged result in "no exposure and thus no risk."

ADEQ already has determined that the groundwater contamination "may present an imminent and substantial endangerment to the public health, welfare or the environment within the [WVBA] WQARF Site."[13] This "imminent and substantial endangerment" was evidenced in a 2009 KPHO Channel 5 story that captured video[14] of members of the minority community playing and swimming in the contaminated water. In fact, the video shows a woman using a soda bottle to drink the contaminated groundwater, which was many times the drinking water standard for TCE, a known human carcinogen. Promptly after viewing the video, RID voluntarily incurred costs to prevent similar exposures, to restrict access, and to control the releases of the hazardous substances at that site. Although RID already has implemented measures to limit exposures at certain areas within the WVBA WQARF Site, all potential exposure pathways that could adversely affect the

[9] WG Comments, pages 2 and 5 of 33.
[10] WG Comments, page 4 of 33.
[11] ADEQ Approval of RID's Modified ERA, 1-2 (February 1, 2013).
[12] Although the WGFS Report is silent on the issue, the Working Group confirmed at the recent WVBA Community Advisory Board meeting on December 1, 2014 that the ADEQ-approved remedial actions currently in place would be removed.
[13] *See* Agreement to Conduct Work between RID and ADEQ (October 9, 2009) and Agreement to Conduct Work between Working Group and ADEQ (January 15, 2013).
[14] The video showed that RID's fencing and warning signs that prohibited public access were disregarded by the public.

community within the WVBA WQARF Site will be addressed by the implementation of any of the remedial alternatives proposed in RID's FS Report to achieve "no exposure and thus no risk" to the community. Prior to the City of Phoenix becoming a PRP, subject to joint and several liability for the groundwater contamination in the WVBA WQARF Site, the City similarly noted that "water produced for irrigation or non-potable uses should be applied, or if necessary, treated appropriately, to prevent a health risk to end users or others with an exposure pathway to the water."[15]

RID takes strong exception to the Working Group's position that the level of community public health protection provided to the WVBA WQARF Site minority community should be less and inconsistent with the public health protection provided to other Arizona communities. In evaluating the requirement for air emission controls at the Scottsdale North Indian Bend Wash (NIBW) federal CERCLA Site, EPA maintains that it "can and should consider the communities' strong feeling that the air emission controls must remain on" even if there is no significant risk to public health.[16] In fact, EPA believes that "risk is not the only basis of the decision" and that the selected remedy "can take into account 'state and local' and 'any other relevant information.'"[17] As noted during the most recent Community Advisory Board meeting for the WVBA WQARF Site, there are strong feelings in the community against any WQARF remedial action that fails to address the uncontrolled VOC emissions into the community. Despite the Working Group's claim that "because no health risks exist, current treatment is not necessary to treat COCs,"[18] SRP, a Working Group member, requires that similarly contaminated groundwater within Operating Unit 2 of the upgradient and adjacent Motorola 52nd Street Superfund Site be remediated to drinking water standards to eliminate the present risk of exposure prior to entering SRP's delivery system for irrigation use even though no imminent health risks exist. Likewise, ADEQ has prohibited the "relocation of contaminants from one media (groundwater) to another (air)"[19] at other similar groundwater contaminant sites in Arizona. Similarly, ADEQ required RID, as a condition of ADEQ's approval of RID's Modified ERA, to implement measures to address the "'significant volatilization and transfer of contaminants, from the water into the air, [that] is occurring and ongoing'" within the WVBA WQARF Site because the "long-term effects are uncertain."[20] Given ADEQ's determination that the "long-term effects [of the transfer of hazardous contaminants from groundwater to air] are uncertain" in the WVBA WQARF Site, it is surprising that the Working Group continues to disregard ADEQ's determination and fails to address the transfer and release of hazardous contaminants from groundwater into the air of the community, particularly after committing to the Governor of Arizona that "[u]nder the WQARF rules, an effective

[15] Letter from Philip McNeeley to Julie Riemenschneider (January 7, 2010).
[16] Keith Takata letter dated 11/14/07.
[17] *Id.*
[18] WG Comments, page 6 of 33.
[19] Letter from Amanda Stone to Keith Takata (November 14, 2007).
[20] ADEQ Approval of RID's Modified ERA, 1-2 (February 1, 2013).

remedial plan … will be *fully* protective of public health."[21] There is no justification why the minority community in West Phoenix should not be provided the same level of public health protection provided through wellhead groundwater treatment that EPA and ADEQ provide in other communities in Arizona and that ADEQ has already required of RID in its Modified ERA in the WVBA WQARF Site.

Assure Protection of the Environment

In addition to the failure to address the present exposure risks required to "assure protection of public health and welfare" as described above, the Working Group fails to address the "imminent and substantial endangerment" to the "environment." The Working Group would have ADEQ and the public believe that the WQARF Program's statutory requirement that "remedial actions shall … assure the protection of public health and welfare and the environment"[22] is limited only to "public health" standards and does not include the "environmental" standards established by Arizona law. The Working Group noted that "RID's own screening level health assessment showed that there are no acute health risks associated with potential public exposures to the WVBA contamination … [y]et RID evaluated and developed its remedial alternatives based on the assumed existence of an imminent and substantial endangerment."

Pursuant to Ariz. Rev. Stat. (ARS) § 49-221.A, the ADEQ "*director shall adopt by rule, water quality standards* for all navigable waters and *for all waters in all aquifers to preserve and protect the quality of those waters for all present and reasonably foreseeable future uses*." (emphasis added.) Furthermore, ARS § 49-221.C states that in "setting standards pursuant to subsection A … of this section, the director shall consider … the protection of the public health and the environment." Additionally, ARS 49-221.D requires that the "[w]ater quality standards shall be expressed in terms of the uses to be protected and, if adequate information exists to do so, numerical limitations or parameters, in addition to any narrative standards which the director may deem appropriate."

In accordance with these statutory mandates, ADEQ has developed water quality standards necessary for the "protection of the public health and the environment." Pursuant to ARS § 49-224.B, "[a]ll aquifers in this state … shall be classified for drinking water protected use." Accordingly and pursuant to ARS § 49-223.A, the "[p]rimary drinking water maximum contaminant levels [MCLs] established by [EPA] … are adopted as drinking water aquifer water quality standards."[23] In addition to the enforceable numeric drinking water aquifer water quality standards established by ARS §49-223.A, there are equally enforceable narrative aquifer water quality standards that prohibit "a pollutant to be present in an

[21] Letter from Working Group to Governor Janice K. Brewer (February 16, 2010). (emphasis added)
[22] ARS § 49-282.06.A.1.
[23] These MCL standards were adopted by rule as the numeric aquifer water quality standards for aquifers classified for drinking water protected use in AAC R18-11-406.

aquifer for a drinking water protected use in a concentration which endangers human health" or "be present in an aquifer which impairs existing or reasonably foreseeable uses of water in an aquifer."[24] Violation of any applicable water quality standard is a serious offense. Under Arizona law, in addition to being a violation of the WQARF mandatory remedial action criteria of ARS § 49-282.06.A.1 and A.2, it is a criminal act to violate any applicable water quality standard.[25]

The aquifer underlying the WVBA WQARF Site, like "[a]ll aquifers in this state" is "classified for drinking water protected use." According to ADEQ's WVBA Regional Groundwater Monitoring Annual 2013-2014 Report, TCE, a known human carcinogen, is present in the WVBA aquifer in concentrations up to 50x the MCL *numeric* aquifer water quality standard. Accordingly, the TCE concentrations in the WVBA aquifer also clearly violate the applicable *narrative* aquifer water quality standards for being "present in an aquifer for a drinking water protected use in a concentration which endangers human health" and for being "present in an aquifer which impairs … reasonably foreseeable uses of water in an aquifer." ADEQ, COP, SRP and RID have all agreed that the "reasonably foreseeable uses" of the WVBA aquifer is for a drinking water use.[26]

Unlike RID's FS Report that will "assure the protection of … the environment," as established by Arizona's aquifer water quality environmental standards (both numeric and narrative), the WGFS Report fails to meet the applicable aquifer water quality environmental standards. Despite falsely claiming that "[c]ontaminant concentrations are relatively low," the WGFS Report acknowledges that upon completion of the Working Group's proposed remedial actions in 2026, TCE will remain present in the WVBA aquifer in concentrations up to 9x[27] the MCL *numeric* aquifer water quality standard and in clear violation of the applicable *narrative* aquifer water quality standards.[28] The Working Group

[24] AAC R18-11-405.

[25] ARS § 49-263.A.4. According to ARS § 49-263.C, a "person who knowingly performs an act prohibited under subsection A of this section is guilty of a class 5 felony," while a "person who knowingly or recklessly manifests an extreme indifference for human life in performing an act prohibited under subsection A of this section is guilty of a class 2 felony" under ARS § 49-263.D. The term "person" has the broad meaning defined in ARS § 13-105.

[26] *See* ADEQ, Final Remedial Objectives Report, pages 3-2 and 3-3 (August 8, 2012); WGFS Report, pages 12-13 (2014). "Reasonably foreseeable uses of water are those likely to occur within 100 years unless a longer time period is shown to be reasonable based on site-specific circumstances." AAC R18-16-406.D.

[27] *See* Figure A-29 in WGFS Report. However, there was no Figure in the WGFS Report that estimated the TCE concentrations in the UAU2 groundwater in 2026, so the TCE concentrations that will remain in the aquifer after the Working Group's remediation is completed in 2026 are likely to be up to more than 9x the MCL numeric aquifer water quality standards. It is telling that the Working Group has to identify "monitoring wells located off the main axis of the plume [to] exhibit declining VOC concentration trends" in the UAU2 because Figure A-27 acknowledged that TCE concentrations in UAU2 were increasing. WGFS Report, page 20. This increase was proven correct by ADEQ's Annual Water Report. Concentrations of TCE at two UAU2 monitor wells increased to 252 and 227 ug/L during the third quarter of 2013 compared to the first quarter of 2013 concentrations of 177 and 168 ug/L, respectively.

[28] Figures A-28 and A-29 in WGFS Report.

apparently expects ADEQ in 2026 simply to allow the contamination to remain in the aquifer in violation of the applicable aquifer water quality standards, something ADEQ is not legally authorized to do as it would constitute a criminal violation of applicable water quality standards.[29]

The Working Group has continually argued to ADEQ that "all WQARF remedies need not require restoration of all aquifers to drinking water standards, without regard to actual and foreseeable uses of the impacted aquifer."[30] However, the Working Group fails to disclose that ADEQ, pursuant to ARS § 49-282.06.D, only "may approve a remedial action that may result in water quality exceeding water quality standards *after the completion of the remedy* if the director finds that the remedial action meets the requirements of this section." (emphasis added.) The Working Group unlawfully is asking ADEQ to approve an initial remedy now with the knowledge that, if implemented, the remedy will unlawfully violate the applicable water quality standards for the WVBA aquifer. Fortunately for the local community, state law prohibits ADEQ from approving an FS report that does not "compl[y] with A.R.S. § 49-282.06"[31] which identifies mandatory remedial action criteria, including the requirement to "assure the protection of … the environment" as required by applicable Arizona law.

Control, Manage or Cleanup the Hazardous Substances

The Working Group falsely argues that the "goal of a WQARF remedy is to provide for reasonably foreseeable uses, not to remove contaminant mass simply for the sake of removing contaminant mass."[32] As with many of the Working Group's arguments, there is no legal support provided for such a statement. In fact, such a position is contrary to ARS § 49-282.06.A.2 that mandates that remedial actions shall "provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state," including all aquifers in the state that are classified for drinking water protected use.[33] Allowing the known human carcinogen, TCE, to remain in the aquifer above the current aquifer water quality standards would fail to meet the mandatory remedial action criterion in ARS § 49-282.06.A.1 that all remedial actions "assure the protection of public health and welfare and the environment," would fail to meet the mandatory remedial action criterion in ARS § 49-282.06.A.2 that all remedial actions "to the extent practicable, provide for the control, management or cleanup of the hazardous substances," would violate the standard in ARS § 49-221.A "to preserve and protect the quality of … [all aquifers] for all present and reasonably foreseeable future

[29] See ARS § 49-263.A.4. Not only does ADEQ constitute a "person" subject to a potential class 5 or class 2 felony, but so would the Working Group members and consultant.
[30] Letter to ADEQ from Working Group (December 1, 2014).
[31] *See* AAC R18-16-413.F; AAC R18-16-407.J; AAC R18-16-407.A and AAC R18-16-407.E.1. (emphasis added).
[32] WG Comments, page 18 of 33.
[33] ARS § 49-224.B.

uses," and constitute a criminal violation of state law.[34] Likewise, there are a number of groundwater contaminant sites in Arizona where extracted water is treated to meet drinking water standards despite the end use being irrigation,[35] particularly if the applicable WQARF remedial objectives require, as they do in the WVBA WQARF Site, treatment to "protect, restore, replace or otherwise provide a water supply … for current *and reasonably foreseeable uses*" by controlling, managing or cleaning up the hazardous substances. (emphasis added.) In fact, SRP requires that remediated water be treated to the applicable drinking water standard before entering SRP's irrigation distribution system.

Achievement of Statutory Obligation that Selected Remedial Action Address Specific Wells

Pursuant to ARS § 49-282.06.B.4.b, "the selected remedy *shall address, at a minimum, any well that at the time of selection of the remedial action … if the well would now or in the reasonably foreseeable future* produce water *that would not be fit for its current or reasonably foreseeable end uses without treatment* due to the release of hazardous substances."[36] RID has informed ADEQ and the Working Group that RID's wells within the WVBA WQARF Site will, within five years,[37] supply water for municipal use in the West Valley communities, within the borders of RID's service area. In fact, in 2010, the Town of Buckeye informed ADEQ that "the Town is very interested in the utilization of the treated water from the RID remediation effort as a much-needed resource to our future development."[38] The Town of Buckeye's expressed interest in RID's treated water, like other West Valley cities,[39] is because "there is no issue more important to the quality of life and economic viability in the West Valley communities than dependable sources of usable water."[40] According to ADEQ's recent monitoring data, RID's FS Report and the WGFS Report, the groundwater pumped from 13 of RID's existing wells within the WVBA WQARF Site is not fit for its reasonably foreseeable municipal end use without treatment due to the groundwater contamination exceeding the applicable MCL numeric and narrative aquifer water quality standards. RID's water management policy that "any RID wells located within any Federal or State Superfund Site and that are contaminated by hazardous

[34] ARS § 49-263.
[35] *See* M52 OU2 CERCLA Site, 56th St. and Earll Dr. WQARF Site, WOC WQARF Site, NIBW CERCLA Site, and PGA North CERCLA Site.
[36] ARS §49-282.06.B.4.b. (emphasis added).
[37] There are ongoing discussions with various private parties to fund a dedicated pipeline for remediated water, which would make moot the arguments raised by the PRPs regarding the effluent present in the RID Main Canal.
[38] Letter from Jackie A. Meck, Mayor of Town (now City) of Buckeye, to Benjamin Grumbles, Director of ADEQ (September 23, 2010).
[39] In 2010, the City of Goodyear informed ADEQ of "the City of Goodyear's interest in participating in the future utilization of the remediated water supply." Letter from Charles McDowell, City of Goodyear Public Works Director, to Benjamin Grumbles, Director of ADEQ (September 24, 2010).
[40] Letter from Jackie A. Meck, Mayor of Town (now City) of Buckeye, to Benjamin Grumbles, Director of ADEQ (September 23, 2010).

substances … must be remediated pursuant to an appropriate and timely groundwater remedial action plan to mitigate the actual and/or potential harm to public health, welfare, and the environment"[41] is consistent with ARS § 49-282.06.B.4.b and the WGFS Report in that the "selected remedy, at a minimum," shall require that "extracted groundwater would need to be treated to AWQS for WVBA COCs."[42]

However, the WGFS Report fails to address RID's impacted wells as required by ARS § 49-282.06.B.4.b even though each of the proposed remedial alternatives in the WGFS Report rely on the pumping of RID's wells and the extraction of hazardous substances, including a known human carcinogen.[43] Instead the Working Group alters the mandatory requirements and statutory language by stating that each Working Group proposed remedial alternative "addresses impaired wells … [and] a well is impaired if it is unfit for its *intended use* without treatment for COCs."[44] The Working Group's unlawful limitation to address only water supply wells unfit for their "current intended use" violates the requirement in ARS § 49-282.06.B.4.b that ""the selected remedy *shall address, at a minimum, any well that at the time of selection of the remedial action … if the well would now or in the reasonably foreseeable future* produce water *that would not be fit for its current or reasonably foreseeable end uses without treatment* due to the release of hazardous substances." Rather than address the wells pursuant to ARS § 49-282.06.B.4.b, which will "allow the maximum beneficial use of the waters of the state" pursuant to ARS § 49-282.06.A.2, the WGFS Report proposes to allow hazardous substances to remain unlawfully in the WVBA aquifer, even though ADEQ, COP, SRP and RID have acknowledged that the WVBA aquifer has the reasonably foreseeable end use as a municipal water supply. Consequently, all of the WGFS proposed remedial alternatives will continue to make the water produced "*now or in the reasonably foreseeable future"*[45] from RID's wells in the WVBA WQARF Site "*not [to] be fit for its current or reasonably foreseeable end uses without*

[41] Roosevelt Irrigation District Board of Directors Statement of Policy regarding Superfund Sites (Nov. 9, 2010).
[42] WGFS Report, 25. As noted above, the WGFS Report proposed remedial alternatives all require the pumping and extraction of groundwater from RID's wells but refuse to treat the extracted water to meet the reasonably foreseeable municipal water supply end use for the WVBA aquifer as established by ADEQ in the Remedial Objectives for the WVBA WQARF Site.
[43] "[T]he efficacy of the new extraction well primarily depends on operating alongside the current RID pumping regime" because "the capture zones of the RID irrigation wells encompass the current plume footprint … [and] [b]ecause the plume is already contained under current pumping conditions, remedial extraction wells were considered for the Reference Remedy and More Aggressive Remedy to provide for additional COC mass removal within the plume core." WGFS Report, pages 39, 49 and 54.
[44] WGFS Report, page 22. (emphasis added). To clarify that "intended use" is only limited to the current use, the Working Group states that "[i]f a well is likely to be impaired within the reasonably foreseeable future, the remedial alternative either provides for action to protect the well from impairment or provides for *future measures* to address the potential impairment." (emphasis added)
[45] Although in its November 24, 2014 letter to ADEQ the Working Group claims as "overly optimistic" RID's assumption "that potable use would not be viable for at least five years," the Working Group does not dispute that potable use is viable within the next 100 years, which is the timeframe established by the WQARF program for "reasonably foreseeable uses of water." AAC R18-16-406.D.

treatment due to the release of hazardous substances,"[46] in violation of ARS § 49-282.06.B.4.b.

Contingency Strategies or Measures to Achieve Remedial Objectives

In addition to knowingly violating the applicable numeric and narrative aquifer water quality environmental standards and mandatory remedial action criteria as discussed above, the Working Group does not intend to achieve the remedial objectives established by ADEQ for the WVBA WQARF Site despite their claim that "contingent measures may be necessary to ensure that impacted groundwater meets AWQS." The Working Group incorrectly states that the "issue for regulatory determination is what current *or contingent actions* can or should be taken to address protection of existing or future potable water-provider wells."[47] As noted above, the required regulatory determination is whether the FS Report "complies with A.R.S. § 49-282.06" and "is capable of achieving *all* of the remedial objectives."[48] Similarly, the WQARF rules clearly state that the "reference remedy and any alternative remedy also may include contingent remedial strategies or remedial measures [but only] *to address reasonable uncertainties regarding the achievement of remedial objectives or uncertain time-frames in which remedial objectives will be achieved.*"[49] Despite the clear and limited regulatory scope for considering any contingency strategies and measures in an FS Report, the Working Group unilaterally and unlawfully adopted and broadly applied "contingency strategies and measures to address: Uncertainties regarding the time frames in which future water uses might occur; Possible but uncertain future changes in regional pumping conditions that could affect plume migration, resulting in potential impairment of additional wells; Uncertainties regarding the development of future technologies …; and Other reasonable uncertainties regarding the achievement of ROs."[50] Despite the Working Group's unauthorized attempt, the applicable WQARF rules make it clear that if there are no "reasonable uncertainties regarding the achievement of remedial objectives or uncertain time-frames in which remedial objectives will be achieved," then there cannot be any "contingent actions."

One of the applicable municipal groundwater use remedial objectives for the WVBA WQARF Site is to "protect, restore, replace or otherwise provide a water supply for municipal use by currently and reasonably foreseeable future municipal well owners within the WVBA WQARF Site if the current and reasonably foreseeable future uses are impaired or lost due to contamination from the site."[51] The WGFS Report clearly acknowledges that "[g]roundwater extraction and treatment … is considered a feasible

[46] ARS §49-282.06.B.4.b. (emphasis added).
[47] WG Letter, page 6 of 33. (emphasis added).
[48] *See* AAC R18-16-413.F; AAC R18-16-407.J; AAC R18-16-407.A and AAC R18-16-407.E.1.
[49] AAC R18-16-407.E.1. (emphasis added).
[50] WGFS Report, page 22.
[51] *See* ADEQ, Final Remedial Objectives Report, 3-2,3-3 (August 8, 2012). WGFS Report, page 16.

technology within the WVBA" and that "extracted groundwater would need to be treated to meet AWQS for WVBA COCs prior to reinjection or discharge to an end user."[52] The certainty that groundwater extraction and treatment of contaminated water supply wells can "protect, restore, replace or otherwise provide a water supply for municipal use" has not only been acknowledged by the Working Group, but has been proven by the ADEQ-approved RID Modified ERA in the WVBA WQARF Site and by the cleanup of other similar groundwater contamination sites in Arizona. In fact, the liquid phase granular activated carbon (LGAC) treatment technology used by RID in implementing the ADEQ-approved Modified ERA and by regulatory agencies and private parties at other similar Arizona cleanup sites proves that the applicable remedial objective to "protect, restore, replace or otherwise provide a water supply" for "current and reasonably foreseeable future uses" of groundwater within the WVBA WQARF Site can be timely achieved[53] by the mere implementation of such proven LGAC treatment technology.[54] Given that there are no "reasonable uncertainties regarding the achievement of [the] remedial objectives [for the WVBA WQARF Site] or uncertain time-frames in which [the] remedial objectives [for the WVBA WQARF Site] will [or can] be achieved," no "contingent remedial strategies or remedial measures" are appropriate or necessary.

Achievement of ADEQ's Remedial Objectives for the WVBA WQARF Site

The Working Group falsely argues that RID has failed to meet the final remedial objectives established by ADEQ for the WVBA WQARF Site because "RID fails to consider the ROs of other water providers." First, there are no independent "ROs of other water providers." The WQARF regulations clearly mandate that ADEQ's remedial objectives "shall be generally consistent with the water management plans of all water providers whose water supplies are or may be impaired by the contamination."[55] The water provider members of the Working Group provided comments to ADEQ which were considered prior to ADEQ's final remedial objectives report for the WVBA WQARF Site.[56] Not only did ADEQ's final remedial objectives consider the water management plans of all water providers, so did RID's FS Report. RID's FS Report devoted 14 pages to a discussion and analysis of the

[52] WGFS Report, page 25.
[53] The WGFS Report acknowledges that a "groundwater extraction and [LGAC] treatment system has been operating at the M52 OU2/OU3 boundary since 2001 … [and] [o]perating the system for the past 13 years has effectively cut off the dissolved-phase groundwater plume at this location … [and] [b]ecause of this, overall VOC concentrations in OU3 groundwater, and in the eastern and central portions of the WVBA in UAU1, have declined significantly over time, in some cases up to approximately two orders of magnitude, and the overall plume width has diminished." WGFS Report, A-17.
[54] The WGFS Report acknowledges that "LGAC is the selected water treatment technology for the WVBA VOCs … due to its proven performance, relative low-cost and low maintenance, and treatment reliability." In fact, the WGFS Report states that "EPA considers LGAC the Best Available, Demonstrated Control Technology for treating groundwater containing VOCs." WGFS Report, page 25.
[55] AAC R18-16-406.I.3.
[56] WGFS Report, pages 8-9.

water management plans of all water providers (RID, COP, SRP, Tolleson and APS)[57] that could be impacted by the groundwater contamination within the WVBA WQARF Site.

The Working Group intentionally mischaracterizes the law, RID's FS Report and the facts surrounding RID's ADEQ-approved Modified ERA in an effort to have ADEQ approve the WGFS Report that is inconsistent with and contrary to applicable Arizona law. The Working Group falsely criticizes RID's FS Report for describing RID's wells "as being 'not suitable for current or reasonably foreseeable water end uses without treatment…'" because "groundwater produced from RID's irrigation wells is suitable for current end uses without treatment."[58] Yet again, the Working Group fails to recognize that state law[59] and ADEQ's remedial objectives require that the remedy must "protect, restore, replace or otherwise provide a water supply for municipal use … if the *current and reasonably foreseeable future uses are impaired or lost due to contamination from the site*."[60] Instead the Working Group alters the mandatory requirements and regulatory language by stating that each Working Group proposed remedial alternative "addresses impaired wells … [and] a well is impaired if it is unfit for its *intended use* without treatment for COCs."[61] The Working Group's unlawful limitation to address only water supply wells unfit for their "current intended use" failed to persuade ADEQ not to approve RID's ERA and Modified ERA that ensures that contaminated water supply wells are fit for their "current and reasonably foreseeable future uses" as required by state law and the remedial objectives for the WVBA WQARF Site.

Next, the Working Group falsely claims that RID's FS Report "only evaluated remedial alternatives for which RID thought it had the 'authority and access to implement the remedy'" and is based on the "unfounded assumption" that "no other water provider will locate new production wells in the WVBA in the foreseeable future."[62] First, the "authority and access" statement was made by RID regarding the "source control activities" at the Working Group's respective facilities, which was made clear in the footnote cited in the WG

[57] *See* RID FS Report Sections 4.6 and 4.7 and each remedial alternative in Section 7.
[58] WG Comments, page 6 of 33.
[59] ARS § 49-282.06.B.4.b. This statutory provision makes it absolutely clear that "for remediation of waters of the state, the selected remedial action shall address, at a minimum, any well that at the time of selection of the remedial action … if the well would now or in the reasonably foreseeable future [within at least the next 100 years] produce water that would not be fit for its current or reasonably foreseeable end uses without treatment due to the release of hazardous substances." In short, the selected remedy must address all RID wells that either "now or in the reasonably foreseeable future" (*i.e.*, within at least the next 100 years) would produce water that would not be fit for use as a municipal water supply which has been determined by ADEQ as one of the reasonably foreseeable end uses of the WVBA aquifer and by RID in its future water supply plans.
[60] ADEQ, Final Remedial Objectives Report, 3-3. (emphasis added).
[61] WGFS Report, page 22. (emphasis added). To clarify that "intended use" is only limited to the current use, the Working Group states that "[i]f a well is likely to be impaired within the reasonably foreseeable future, the remedial alternative either provides for action to protect the well from impairment or provides for future measures to address the potential impairment."
[62] WG Comments, page 7 of 33.

Comments. Unlike the WGFS Report, RID's FS Report was consistent with its ADEQ-approved FS Work Plan that clarified that source control would not be an element in the regional groundwater feasibility study performed by RID. Additionally, the Working Group apparently failed to read Section 4.7 of RID's FS Report that clearly acknowledged the interest of COP and SRP "in developing water supply resources in the area to augment drinking water supplies." In fact, RID noted that "COP would be expected, at least in the near future, to construct any new water supply wells exclusively in the LAU to target better inorganic water supply" and to be consistent with COP "long-standing policies that discourage or outright prohibit the introduction of contaminated groundwater through a treatment plant directly into the City distribution system."[63] Likewise, the probability was noted that SRP would first consider using its underutilized existing wells, which are outside of the WVBA WQARF Site and which could connect to the COP distribution system without violating COP's policies on remediated water. Similarly, SRP's current policies require remediated water to be treated to drinking water MCLs prior to entering SRP's water distribution systems. Nevertheless and regardless of these COP and SRP policies, each of RID's proposed remedial alternatives address "impacts to [any] existing water supply wells and any threatened or peripheral wells that are not currently impacted by COCs."[64]

Impact of Selected Remedy on Assured Water Supply and Water Rights

Once again, the Working Group raises issues that are not applicable to the selection of a remedy to address the groundwater contamination in the WVBA WQARF Site. In addition to raising inapplicable issues, the Working Group distorts the facts and law. For example, the Working Group continues to allege that "RID's proposed remedy … will have negative impacts on the [City of Phoenix's] Designation of Assured Water Supply"[65] and that the "Arizona Department of Water Resources (ADWR) has expressed concern about RID's authority to move groundwater from within the boundaries of a water provider that has obtained a Designation of Assured Water Supply (in this case the COP) and the potential to negatively affect that Designation (ADWR, 2010)."[66] In a blatant effort to mislead ADEQ and the public by including the prior ADWR statement, the Working Group intentionally failed to disclose ADWR's October 2013 letter to RID addressing ADWR's "May 7, 2010 letter suggest[ing] that 'a difference of opinion regarding the duration of the contract' between RID and [SRVWUA] could negatively affect the legal availability of groundwater pumped by RID."[67] To provide ADEQ with a complete record, ADWR stated in its October 2013 letter to RID that "[a]fter review, the Department has determined that the duration of

[63] RID FS Report, page 89. *See* WGFS Report, page 27 ("the COP currently does not allow direct discharge of treated groundwater into its municipal drinking water distribution system").
[64] RID FS Report, page 135.
[65] WG Comments, page 8 of 33.
[66] WGFS Report, pages 14-15.
[67] Letter from Andrew J. Craddock, Manager of Recharge, Assured & Adequate Water Supply Program, to Donovan Neese (October 21, 2013).

these agreements would not affect the legal availability of groundwater pumped by RID for use within its boundaries, for purposes of Assured Water Supply determinations."

Similarly, the Working Group would have one believe that "RID's proposed remedy … will negatively impact [the COP's] ability to rely on groundwater beneath the WVBA for droughts and future growth." However, the Working Group (of which the COP is a member) already has acknowledged that the COP is not relying on the contaminated portions of the groundwater beneath the WVBA for droughts and future growth. "If the COP needs to install a production well within the WVBA in the reasonably foreseeable future and the water quality is not fit for its intended use at that time … the well would be located in an area where water quality is sufficient for its intended use or the well deepened to produce water only from the LAU."[68] Such actions would be consistent with COP's published policy that "the COP currently does not allow direct discharge of treated groundwater into its municipal drinking water distribution system."[69]

The WG Comments also erroneously assume (without any legal or factual support) that the pumping of the RID wells will end in 2026 based on an alleged dispute of RID's water rights to pump its wells.[70] However, RID's water rights have no bearing on the remedy that ADEQ must select in order to comply with all applicable and mandatory remedial action criteria, including "to the extent practicable, provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state."[71] The Working Group has acknowledged that the pumping of RID's wells is "necessary and critical" to any remedial alternative[72] and that "the capture zones of the RID irrigation wells encompass the current plume footprint" and are "sufficient to control the plume migration at concentrations above the AWQS."[73] There are other regulatory means to ensure that these "necessary and critical" RID wells continue to operate in order to achieve applicable aquifer water quality environmental standards, to comply with the mandatory remedial action criteria in ARS § 49-282.06, including "the control, management or cleanup of the hazardous substances in order to allow the maximum

[68] WGFS Report, page 60.
[69] WGFS Report, page 27.
[70] WG Comments, pages 7-8 of 33. As noted above, ADWR reviewed the contracts that SRP alleges will terminate RID's existing water rights in 2026 and "determined that the duration of these agreements would not affect the legal availability of groundwater pumped by RID for use within its boundaries, for purposes of Assured Water Supply determinations."
[71] ARS § 49-282.06.A.2.
[72] WGFS Report, page 19.
[73] WGFS Report, page 39. In fact, the Working Group acknowledges that the additional extraction wells in the Working Group's Reference Remedy and More Aggressive Remedy simply "provide for additional COC mass removal within the plume core" (*Id.*) and that the additional wells are meaningless without the pumping of the RID wells (additional wells cease operating because "the efficacy of the new extraction well primarily depends on operating alongside the current RID pumping regime" (WGFS Report, page 49). The Working Group has made it clear that "the plume is not migrating and will not migrate as long as RID's pumping continues." (WG Comments, page 11 of 33).

beneficial use of the [ground]waters of the state," and to achieve all of the remedial objectives established by ADEQ for the WVBA WQARF Site. Other groundwater contaminant cleanups are implemented without the operating party possessing independent water rights. In fact, the Working Group recognizes the benefits of the Motorola 52nd Street Operable Unit 2 extraction system, which is operated without independent water rights, in reducing "the ongoing VOC mass flux across the WVBA border."[74]

Conclusion

The numerous mischaracterizations of law and fact in the WG Comments do not change the fact that ADEQ is required by state law to select a remedy that "shall … assure the protection of public health and welfare and the environment"[75] as established by applicable state and federal standards. Similarly, the selected remedy "shall … provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state"[76] and "shall … address, at a minimum, any well that at the time of selection of the remedial action … if the well would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably foreseeable end uses without treatment due to the release of hazardous substances."[77] Addtionally, the selected remedy must achieve "all of the remedial objectives" established by ADEQ for the WVBA WQARF Site,[78] including the remedial objective "to protect, restore, replace or otherwise provide a water supply [from the impacted RID wells] for municipal use."[79] The WGFS Report acknowledges that its proposed remedial alternatives will not reduce the transfer of hazardous contaminants from the groundwater into the air of the local community, will not meet applicable numeric and narrative aquifer water quality environmental standards, will not control or cleanup the hazardous groundwater contaminants after 2025, and will not address, protect or restore RID's impacted wells that "now or in the reasonably foreseeable future" will not produce water for its reasonably foreseeable use as a municipal water supply. On the other hand, the proposed remedial alternatives in RID's FS Report achieve all applicable public health and environmental remedial action criteria and standards and all ADEQ-established remedial objectives for the WVBA WQARF Site, including to "protect, restore, replace or otherwise provide a water supply for municipal use by … well owners within the WVBA WQARF Site if the current and reasonably foreseeable future uses are impaired or lost due to contamination from the site."[80]

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[74] WGFS Report, page 19.
[75] ARS § 49-282.06.A.1.
[76] ARS § 49-282.06.A.2.
[77] ARS §49-282.06.B.4.b.
[78] *See* AAC R18-16-407.A and AAC R18-16-407.E.1.
[79] *See* ADEQ, Final Remedial Objectives Report, page 3-3 (August 8, 2012).
[80] *See* ADEQ, Final Remedial Objectives Report, pages 3-2 and 3-3 (August 8, 2012). WGFS Report, page 16.

RID appreciates ADEQ consideration of the comments provided in this letter. Please give me a call with any questions or comments.

Best Regards,

SYNERGY Environmental, LLC

Dennis H. Shirley, PG

cc: Laura Malone, ADEQ Director Waste Programs
Tina LePage, ADEQ Manager Remedial Projects Section
Danielle Taber, ADEQ Project Manager
Donovan Neese, Roosevelt Irrigation District
David Kimball, Gallagher & Kennedy
Sheryl Sweeney, Ryley Carlock & Applewhite

SYNERGY ENVIRONMENTAL, LLC

ATTACHMENT 1

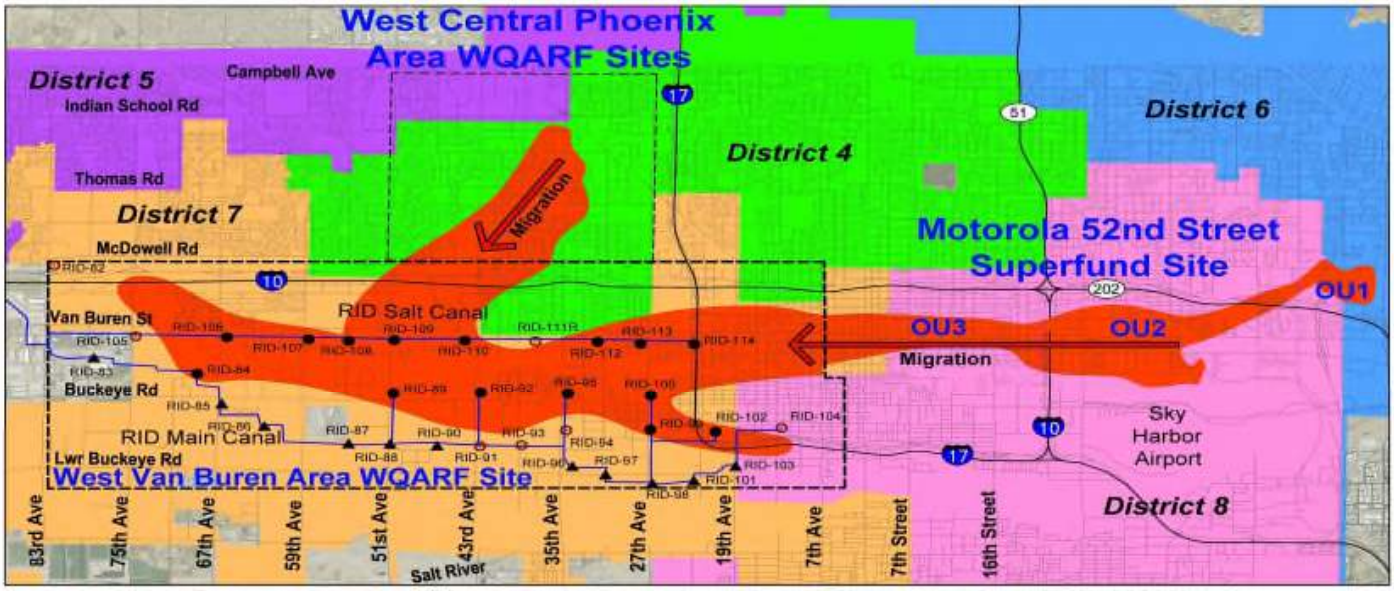
FACT SHEET

West Van Buren Area (WVBA) Site

(Prepared by the Roosevelt Irrigation District (RID))

WVBA Site Boundary and Background

- The WVBA Site is the western half of a massive 15-mile long plume of contaminated groundwater beneath central and west-central Phoenix (7th Ave. to 83rd Ave. and McDowell Rd. to Lower Buckeye Rd.)



- The Arizona Department of Environmental Quality (ADEQ) has been investigating the WVBA Site under the Arizona Water Quality Assurance Revolving Fund (WQARF) remediation program for over 20 years, but has not yet selected a groundwater remedy.
- Groundwater contamination has been caused by widespread releases of industrial volatile organic compounds (VOCs), including the known human carcinogen trichloroethene (TCE), from prominent businesses, corporations and public agencies, including the City of Phoenix, Maricopa County, United States Department of Energy, SRP, Honeywell, Univar, Dolphin and many others.

Impact to Local Community

- Because the pollutants are volatile, pumping of this contaminated groundwater annually releases nearly 3,000 pounds of these hazardous VOCs into the local community air (averaged over the last 10 years).
- Although the contaminated groundwater does not affect the City of Phoenix's current drinking water supply, the aquifer under the WVBA WQARF Site has been determined to be a future drinking water supply for Maricopa County, including West Valley communities.
    - Current contamination levels (max ~ 35-70 ppb TCE) exceed the current state Aquifer Water Quality Standards and federal drinking water standards for TCE (5 ppb). In fact, EPA has determined that TCE is significantly more toxic based on new toxicity studies, which have not yet been factored into the current water quality standards (expected to be much lower in the future).
- Unlike the following sites in other Arizona communities with similar groundwater contaminant plumes, the WVBA WQARF Site has not been aggressively pursued and remediated by systematically treating the polluted groundwater to remove the VOC contaminants to applicable drinking water standards and prohibiting any transfer of contaminants into the air from the contaminated groundwater:
    - North Indian Bend Wash (NIBW) Superfund Site - Scottsdale and Paradise Valley (EPA lead).
    - Motorola 52nd Street (M52) Superfund Site - East Phoenix (EPA lead).
    - Phoenix-Goodyear Airport (PGA) Superfund Site – Goodyear (EPA lead).
    - Tucson International Airport Area (TIAA) Superfund Site – Tucson (EPA lead).
- Years of additional delay in implementing an effective remedy will result if the parties legally responsible for the groundwater contamination continue their delaying tactics, avoiding financial responsibility, and shifting the financial burden onto the Arizona taxpayers and the State of Arizona.

RID's Voluntary Remediation Actions

- To date, the groundwater contamination has impacted over 20 RID wells and continues to threaten the remaining RID wells in the WVBA.
- RID voluntarily entered into an Agreement to Conduct Work with ADEQ in 2009 to begin addressing the groundwater contamination by implementing an Early Response Action (ERA) to address the most significant impacts to its wells, water supply, and to public health.
- RID has taken actions to limit public exposure to the VOCs:
    - Maintaining security fencing at all impacted RID well sites, sealing well discharge structures and enclosing several open laterals that have been used as local swimming and watering holes.
- Since 2012 RID has voluntarily implemented multiple ADEQ-approved groundwater cleanup actions in WVBA WQARF Site, including the ERA to capture and treat the hazardous VOCs from 4 of the most highly contaminated RID wells.
    - Captured over 1,750 pounds of hazardous contaminants and treated over 4 billion gallons of water.
    - The ERA wellhead treatment systems are the best-available-technology, applying the same fail-safe technology used and approved at other VOC-contaminated groundwater sites in Arizona (M52, NIBW, PGA, TIAA)
- RID has invested nearly $20 Million in pursuing these voluntary remedial actions and developing a Feasibility Study Report.
    - RID has been forced to file a lawsuit against the parties legally responsible for the groundwater contamination so that the polluters are compelled to pay to clean up their contamination and not the Arizona taxpayer.
    - Many of the parties legally responsible for the contamination have been opposing ADEQ's approval of RID's remedial actions. Not surprisingly, these responsible parties have now submitted a Feasibility Study Report that recommends virtually no remedial action to address the groundwater contamination or the public exposure to the hazardous VOCs in violation of applicable WQARF program requirements. *See* Comparison of Feasibility Study reports and the WQARF requirements below.

Roosevelt Irrigation District's (RID's) FS Report	WQARF Requirements	Working Group's FS (WGFS) Report
MEETS WQARF REQUIREMENT No. 1 All four RID proposed alternative remedies will control hazardous emissions and achieve the applicable Arizona aquifer water quality standards (*i.e.,* the drinking water standards adopted by EPA) that "assure protection of public health and welfare and the environment."	**1. Assure the protection of public health and welfare and the environment (ARS § 49-282.06.A.1)**	**FAILS WQARF REQUIREMENT No. 1** All three WGFS proposed alternative remedies fail to control hazardous emissions or to achieve the applicable Arizona aquifer water quality standards (*i.e.,* the drinking water standards adopted by EPA) that "assure the protection of public health and welfare and the environment."
MEETS WQARF REQUIREMENT No. 2 All four RID proposed alternative remedies include remedial strategies and measures used at other similarly Arizona sites that "provide for the control, management [and] cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state" as a drinking water source.	**2. To the extent practicable, provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state. (ARS § 49-282.06.A.2)**	**FAILS WQARF REQUIREMENT No. 2** All three WGFS proposed alternative remedies fail "to the extent practicable" to "provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state" as a drinking water source.
MEETS WQARF REQUIREMENT No. 3 All four RID proposed alternative remedies are "reasonable, necessary, cost-effective and technically feasible" when and as compared to all other major groundwater cleanup sites in Arizona. *See* cost comparison on page 24 of the document referenced through the hyperlink beneath this table.	**3. Be reasonable, necessary, cost-effective and technically feasible. (ARS § 49-282.06.A.3)**	**FAILS WQARF REQUIREMENT No. 3** All three WGFS proposed alternative remedies fail to satisfy this WQARF "comparative" requirement because, as noted above and below, all three WGFS proposed alternative remedies fail to meet the other mandatory and "substantive" WQARF requirements (Nos. 1, 2, 4 and 5) to enable an apples-to-apples comparison.
MEETS WQARF REQUIREMENT No. 4 All four RID proposed alternative remedies address any existing well in the WVBA WQARF Site that "would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably foreseeable end uses [*i.e.,* as a drinking water source] without treatment due to the release of hazardous substances."	**4. The remedial action shall address, at a minimum, any well that would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably foreseeable end uses without treatment due to the release of hazardous substances. These measures shall not reduce the supply of water available to the owner of the well. (ARS § 49-282.06.B.4.b)**	**FAILS WQARF REQUIREMENT No. 4** All three WGFS proposed alternative remedies fail to address, *at a minimum*, the 14 RID water supply wells impacted by groundwater contamination above the applicable numeric and narrative Arizona aquifer water quality standards and the applicable Remedial Objectives established for the WVBA WQARF Site that ADEQ has determined "may present an imminent and substantial endangerment to the public health, welfare or the environment within the [WVBA] WQARF Site"
MEETS WQARF REQUIREMENT No. 5 All four RID proposed alternative remedies will "protect, restore, replace or otherwise provide a water supply" for all well owners within or adjacent to the WVBA WQARF Site as required by the remedial objectives established by ADEQ for the WVBA WQARF Site.	**5. The reference remedy and alternative remedies shall be capable of achieving all of the remedial objectives. (AAC R18-16-407.E.1)**	**FAILS WQARF REQUIREMENT No. 5** All three WGFS proposed alternative remedies fail to "protect, restore, replace or otherwise provide a [drinking] water supply" for RID's existing water supply wells that "are impaired or lost due to contamination from the [WVBA] site" based on the groundwater contamination that currently impacts 14 RID wells above the applicable Arizona numeric and narrative aquifer water quality standards.

A more detailed chart with citations, including a chart comparing federal requirements, can be found starting on page 4 at
http://www.azdeq.gov/environ/waste/sps/download/wvb/WVB_FS_Correspondence_9_2014.pdf

ADEQ will be accepting public comments on the two proposed Feasibility Study Reports during December. Please let ADEQ and your elected officials know that the WVBA WQARF Site needs to be expeditiously cleaned up to meet all applicable standards and that the West Valley residents should be afforded the same environmental protections provided in the groundwater remedial actions for Scottsdale and Paradise Valley residents. Comments can be sent to: Danielle Taber, ADEQ Project Manager, Arizona Department of Environmental Quality, 1110 West Washington Street, Phoenix, Arizona 85007; or by email to: taber.danielle@azdeq.gov

SYNERGY ENVIRONMENTAL, LLC

ATTACHMENT 2

ATTACHMENT 2

DETAILED RESPONSES TO WORKING GROUP COMMENTS ON THE RID DRAFT FEASIBILITY STUDY REPORT

1. There are no current risks to public health that need to be addressed by Roosevelt Irrigation District (RID's) proposed draft West Van Buren Area (WVBA) remedy. RID's often-repeated references to "imminent and substantial endangerment" in WVBA are unsupported by the record and misleading.

Response included in the preceding cover letter.

2. RID provides no basis for its statement that its proposed remedy reduces or addresses current risks as provided in Water Quality Assurance Revolving Fund (WQARF) rules.

Response included in the preceding cover letter.

3. Contrary to RID assertions, groundwater in the WVBA is suitable for its current irrigation use without treatment.

Response included in the preceding cover letter regarding the Working Group's (i) mischaracterization of applicable state law and the remedial objectives established by ADEQ for the WVBA WQARF Site that require the selected remedy to address, at a minimum, all RID wells that "now or in the reasonably foreseeable future" would produce water that is not fit for its reasonably foreseeable use as a municipal drinking water supply as required by ARS § 49-282.06.B.4.b and AAC R18-16-407, and (ii) assertion that "RID fails to consider the ROs of other water providers including the objectives of Salt River Project (SRP) and the City of Phoenix to preserve groundwater supplies in the WVBA for future use."[1]

Additionally, the Working Group falsely argues that "RID's wells are suitable for their intended use without treatment … as evidenced by RID's recent prolonged self-imposed shutdown of its treatment systems."[2] Contrary to these statements and the statements made by Working Group members and PRPs at the recent Community Advisory Board, the decision to put RID's ADEQ-approved treatment plants into bypass was not "self-imposed." RID was first informed by ADEQ that the agency had received a complaint from the attorney of a PRP (who also represents Working Group members) that ADEQ had not formally approved the O&M Plan previously submitted to ADEQ by RID for the wellhead treatment systems that were installed pursuant to the ADEQ-agreed upon RID-95 Wellhead Pilot Treatment System Proposal and incorporated into the ADEQ-approved RID Modified ERA.

[1] WG Comments, page 30 of 33.
[2] *Ibid*.

ADEQ also acknowledged that similar O&M plans at other WQARF sites had not been formally approved prior to implementation. Therefore, ADEQ approached RID about providing a notice of public comment on the RID O&M Plan and concurred that the treatment systems should be placed in "bypass" mode until after formal ADEQ approval of RID's O&M Plan. Nevertheless, engineering controls at those wellhead systems remain in place to help protect against the uncontrolled release of VOCs from groundwater to air. In the interim, RID has used this approved bypass period to perform critical maintenance and warranty work on the GAC vessels. Furthermore, RID is obligated under the terms of ADEQ's approval of the Modified ERA not to pump these wells inconsistent with RID's historical practices.

4. RID's proposed remedy does not achieve the Remedial Objectives established by ADEQ for other regional water providers.

Response included in the preceding cover letter.

5. Even though RID's proposal to sell water to drinking water providers outside the WVBA is a contingent future use, RID includes immediate actions and immediate costs in its proposed remedy.

Response included in the preceding cover letter.

Additionally, it should be noted that RID's comments on the WGFS Report, submitted concurrently by RID with these comments, address many of the issues regarding what the Working Group calls "legal and contractual barriers" to RID pumping, delivery, and end use of groundwater from the WVBA WQARF Site that the Working Group continues to perpetuate. Also, the Working Group is intentionally misquoting the RID FS Report on page 133 in saying, "RID assumes that potable use would not be viable for at least five years". RID actually said, "RID anticipates a pipeline will be installed and available to deliver M&I water supplies within the next five (5) years". RID has had extensive discussions regarding delivering remediated water for M&I use in the District, including the financing and construction of a dedicated pipeline for direct delivery. Regardless, the legal time frame that determines what are the "reasonably foreseeable end uses" and what are the wells "now or in the reasonably foreseeable future" that are required to be protected and addressed, respectively, by the selected remedy is at least 100 years.[3] The resistance on the part of the Working Group and other PRPs to address this contamination and remove the hazardous VOCs from contaminated groundwater is the current barrier to the maximum beneficial use of the WVBA aquifer as established by the remedial objectives for the WVBA WQARF Site.

6. RID's Early Response Action may not be included in the final selected remedy unless it is demonstrated to be reasonable, necessary, and cost effective in compliance with the WQARF rules.

[3] *See* AAC R18-16-406.D.

The Working Group falsely argues that "RID's Early Response Action may not be included in the final selected remedy unless it is demonstrated to be reasonable, necessary, and cost-effective in compliance with the WQARF rules."[4] Yet again, the Working Group fails to acknowledge that RID's original ERA was approved by ADEQ as being "reasonable, necessary, and cost-effective in compliance with the WQARF rules." Similarly, the Modified ERA (which reduced projected capital and operation and maintenance costs by 50% from the original ERA) also was approved by ADEQ as being "reasonable, necessary, and cost-effective in compliance with the WQARF rules" and has been subsequently confirmed by ADEQ as "reasonable, necessary and cost-effective in compliance with the WQARF rules" on multiple occasions.[5] RID's recommended remedial alternative not only fully "complies with ARS § 49-282.06" and "is capable of achieving all of the remedial objectives" for the WVBA WQARF Site, but is smaller in scope and cost than the ADEQ-approved Modified ERA and, therefore, is even more "reasonable, necessary, and cost-effective in compliance with the WQARF rules." In fact, contrary to the WG Comments, the "standards for approving an ERA" are the same as approving an FS Report in that both must meet the requirements of ARS § 49-282.06. It is telling when the Working Group hopes that a twenty-year old 1994 ADEQ report about the applicability of pump and treat at the WVBA WQARF Site[6] would trump ADEQ's most recent decisions that pump and treat remedial actions within the WVBA and other WQARF sites are "reasonable, necessary and cost-effective."[7]

The Working Group falsely states that "the plume is not migrating" and that "no RID wells are likely to be impacted in the future as a result of declining VOC concentrations in the WVBA Area."[8] However, the facts are clear that the plume is migrating and encroaching on threatened wells as evidenced by the increasing TCE concentrations observed at RID wells 90, 91 and 93.[9] With respect to predicting future VOC impacts, RID disputes the Working Group's Site Conceptual Model and contentions that the regional plume will cleanup in any foreseeable timeframe. As stated in RID comments on the WGFS Report, the WVBA WQARF is a complex contaminated site that will likely take a long time, perhaps 50 to 100 years or more, to achieve restoration as defined by current aquifer water quality standards. Even, the WGFS Report acknowledges in Figure A-30 that certain RID wells will continue

[4] WG Comments, page 10 of 33.
[5] *See* ADEQ's approvals of WQARF funds for RID's Modified ERA (July 2013 and July 2014).
[6] Moreover, the 1994 ADEQ report did not address the obvious benefits of utilizing existing RID wells, water infrastructure, and end use to develop a comprehensive regional groundwater remedy.
[7] In fact, contrary to the WG Comments assertion on page 14 of 33, ADEQ's Director approved a large-scale pump and treat system as part of RID's ERA to restore and protect certain RID water supply wells and initiate remediation of a portion of the WVBA plume. Not only did ADEQ approve the RID ERA as "reasonable, necessary and cost-effective," but clearly noted that "[w]ithout treatment, these contaminants will continue to degrade the quality of the aquifer within the Site" and confirmed ADEQ's desire that "the ERA maximizes the benefit of pumping and treating contaminated groundwater within the Site, which is intended to result in aquifer restoration." ADEQ, Approval of RID's ERA (June 24, 2010)
[8] WG Comments, page 10 of 33.
[9] *See* Figure 16 in RID FS Report.

to be impacted at more than twice the currently applicable numeric aquifer water quality standard for TCE and that the concentration of TCE will exceed the applicable narrative aquifer water quality standards at many other RID wells, particularly since EPA has recently lowered the carcinogenic value previously used as screening levels for TCE.[10] The Working Group conveniently projects future conditions in Figure A-30 only for UAU1 groundwater since the Working Group believes dissolved-phase VOC mass can be flushed through the coarse-grained UAU1 aquifer relatively quickly[11] and fails to project future conditions in UAU2 groundwater where VOC concentrations are generally higher and more persistent. Finally, it is also important to note that the six RID wells that were designated for treatment in all RID remedial alternatives in the RID FS Report (RID wells 89, 92, 95, 106, 109, and 114) are located in the areas shown to have persistent VOC concentrations in Figure A-30 of the WGFS Report.

The Working Group alleges that the "WQARF rules do not require … immediate treatment for threatened wells." That is correct; however, that does not explain why the WGFS Report fails to address the existing RID water supply wells that are currently impacted above the applicable aquifer water quality environmental standards for a known carcinogen. In fact, the Working Group fails to explain why their new extraction well(s) that would discharge into RID's distribution system would be "treated to AWQS for WVBA COCs"[12] by LGAC prior to discharge to the RID system "based on RID's policy for accepting remediated groundwater," and yet all the other existing RID impacted water supply wells that are acknowledged as "necessary and critical" to each Working Group remedial alternative would not be "treated to AWQS for WVBA COCs" by LGAC prior to discharge to the RID system "based on RID's policy for accepting remediated groundwater." There is no consistency or logic in the Working Group's allegation.

7. ADEQ sampling of water at the end of the RID Salt Canal indicates that treatment for COCs will not be necessary for future uses.

The Working Group falsely alleges that "treatment for VOCs will not be necessary for future uses" because sampling at the end of the Salt Canal may be below applicable aquifer water quality standards. Fortunately for the health of the local community, that is not the law. The law requires that the selected remedy "*shall address, at a minimum, any well* that at the time of selection of the remedial action … *if the well would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably foreseeable end uses without treatment due to the release of hazardous substances*."[13] Surprisingly, the Working Group has contingency

[10] *See* fn. 29 of RID's FS Report; *see also* WGFS Report, page 29 (rejecting potential reinjection because "[i]f the reinjection well(s) are along the downgradient extent of the plume, there is the possibility of forming a new downgradient plume. This circumstance could occur if an MCL is significantly reduced and the MCL concentration has not been met in the treatment system effluent during historical operations.")
[11] WGFS Report, A-17.
[12] WGFS Report, page 28.
[13] ARS §49-282.06.B.4.b. (emphasis added).

measures to address any COP, SRP and Tolleson well that may be impacted in the future, but no similar protection, as mandated by state law, is provided for each existing RID well that is currently impacted above the applicable aquifer water quality state standards and the applicable MCLs for a municipal water supply, which is an applicable remedial objective for the WVBA WQARF Site.

The Working Group assertion that treatment is or will not be needed to meet potable standards at the end of the Salt Canal is inconsistent with the mandatory requirement in ARS § 49-282.06.B.4.b that individual wells shall be addressed but also disregards the fact that the higher TCE and PCE concentrations in groundwater discharges into this canal dissipate in surface water due to volatilization. The VOC contaminants in groundwater are released to air and contribute to public exposures in the local community. At the WVBA WQARF Site and other adjacent WQARF and CERCLA sites, ADEQ (as well as EPA) has taken the position that it is unacceptable to transfer VOC contaminants from groundwater to air and requires that groundwater remedial actions require a high degree of public protection against potential exposure to VOCs in extracted groundwater.

RID's approach for blending of water quality in the Salt Canal that is defined in remedial alternatives presented in its FS Report is the minimal approach that RID would consider acceptable. This action would only be conducted under an RID Well Operation and Blending Plan approved by ADEQ and only after engineering controls have been implemented to minimize any point source emissions from wells not equipped with treatment.

8. RID does not provide a contingency to deal with uncertainties regarding future pumping.

Response included in the preceding cover letter.

9. RID overstates its authority to implement work in the WVBA.

Response included in the preceding cover letter.

10. RID incorrectly states that ADEQ has approved plume remediation as the WVBA remedial strategy.

The RID FS Report did not state that ADEQ approved plume remediation as *the WVBA remedial strategy* (emphasis added). Rather, RID referenced ADEQ's approval of the RID ERA Work Plan as the basis to conclude that plume remediation within the WVBA WQARF Site resulting from the ERA pump and treat remedial action is deemed to be "reasonable, necessary, cost-effective and technically feasible". Indeed, the ADEQ letter, dated June 24, 2010, which is cited twice in footnotes, confirmed that ADEQ had analyzed the ERA Work Plan and determined the remedial action was in compliance with applicable State statutes and rules, including the

requirements of A.R.S. § 49-282.06(A)(3) that the action shall be reasonable, necessary, cost-effective, and technically feasible. Moreover, ADEQ's stated intent in approving the ERA was to "ensure the ERA maximizes the benefit of pumping and treating contaminated groundwater within the Site … to result in aquifer restoration".

Prior to the RID ERA, Modified ERA and FS Report, ADEQ representatives in 1994 were not aware of how reasonably and cost-effectively the regional groundwater contaminant plume could be addressed by a large-scale pump and treat system. RID has presented the agency with a very viable proposed regional groundwater remedy that meets ROs to protect and restore groundwater quality to meet the needs of all water providers in the Site while controlling the extent of the plume and enhancing mass removal to achieve plume remediation. The use of existing RID wells, water infrastructure, and end use makes the proposed remedy in the RID FS highly cost effective. For example, the WVBA WQARF Site groundwater remedy proposed by RID not only costs 20 percent less than the M52 OU-2 groundwater remedy (constructed over 12 years ago), but is capable of treating a two and a half times greater flow of contaminated groundwater.

11. RID's portrayal of Monitored Natural Attenuation (MNA) as a remedial approach that does not assure protection of public health and welfare and the environment is directly contrary to WQARF rules and statutes, ignores use of the strategy at successful groundwater remediation sites within the Salt River Valley, and is inconsistent with U.S. EPA policy.

The Working Group claims that "RID's portrayal of Monitored Natural Attenuation (MNA) as a remedial approach that does not assure protection of public health and welfare and the environment is directly contrary to WQARF rules and statutes."[14] First, the Working Group's proposed remedial alternatives are not, in fact, MNA. Actually, all of the Working Group's remedial alternatives are contingent upon the continued pumping of all of RID's "critical and necessary" wells until 2025. This is not MNA. ADEQ sampling confirms that many of the RID wells are impacted above the applicable aquifer water quality environmental standards and must be pumped, as a matter of state law, to achieve those applicable state environmental standards in order "to allow the maximum beneficial use of the [ground]waters of the state" and "to preserve and protect the quality of those waters [in all aquifers] for all present and reasonably foreseeable future uses."[15] The Working Group already has acknowledged that "WQARF … requires the maximum beneficial use of any water that must be pumped." In fact, the Working Group has clearly admitted that "[f]or each end use scenario, extracted groundwater would need to be treated to meet AWQS for WVBA COCs,"[16] which includes the existing RID wells that have been acknowledged by the Working Group as "necessary and critical" to any Working

[14] WG Comments, page 14 of 33.
[15] *See* ARS § 49-221, ARS § 49-223.A, ARS § 49-224.B, ARS § 282.06.A.1 and A.2
[16] WGFS Report, page 25.

Group proposed remedial alternative. In short, the Working Group's characterization of its proposed remedial alternatives as MNA is false and misleading and contrary to state law.

With respect to the SIBW CERCLA Site and according to *The First Five-Year Review, Indian Bend Wash Superfund Site, Scottsdale and Tempe, Maricopa County, Arizona*, prepared by EPA and dated September 2011,*"only four of the 41 groundwater monitor wells sampled semi-annually indicate concentrations of TCE or PCE slightly above the maximum contaminant level (MCL) of 5 µg/L."*[17] Selecting MNA as the groundwater remedy makes sense at the SIBW where only four monitor wells have PCE/TCE concentrations slightly above the respective MCLs. Obviously, the Working Group should know that comparing the SIBW Site to the WVBA Site is very misleading.

See Attachment 3 in response to the Working Group's reference to EPA's CERCLA policy.

12. RID confuses treatment for end use with containment or mass reduction.

There is no confusion by RID between end use, containment or mass reduction. RID fully understands that plume containment is a physical phenomenon resulting from hydraulic gradients in the aquifer resulting from RID's long-standing pumping in the area. The Working Group obviously is confused by the statements in its own WGFS Report that ties "extraction and treatment" together: (i) "Groundwater extraction and treatment via one or more pumping wells is considered a feasible technology within the WVBA;" (ii) "For each end use scenario, extracted groundwater would need to be treated to AWQS for WVBA COCs prior to reinjection or discharge to an end user"; and (iii) "A critical component of groundwater extraction is finding a beneficial use for the treated groundwater that allows for the maximum beneficial use of the waters of the state and is consistent with end user policies and the ADWR remediated groundwater use policy."[18]

What the Working Group seems to be confused about, however, is that pumping the contaminated groundwater and transferring on average 2,900 pounds of known and suspected human carcinogens annually into the local air and surface water does not constitute protection of public health and welfare. RID agrees that treatment is driven by end use *as well as* by other institutional and legal requirements, and institutional controls such as those in place at all of the other similarly contaminated sites locally and statewide. Prohibiting uncontrolled releases of these hazardous chemicals into the local environment is, for all intents and purposes, institutionally prohibited as demonstrated in ADEQ's (and EPA's) policy against transfer of contaminants from one environmental media to another.

[17] First Five-Year Review, Indian Bend Wash Superfund Site, September 2011, Exec Summary, page 2.
[18] WGFS Report, 25-26.

The Working Group seems to believe that mass reduction only applies to the aquifer and that, by slight of hand, the mass of hazardous chemicals, once pumped from the aquifer, simply cease to exist. In reality, these known and suspected human carcinogens do not go away, they are simply transferred into the air we breathe. Therefore, RID asserts that pumping without treatment is not protective of public health and welfare or the environment.

13. RID's FS did not evaluate system modifications to eliminate or minimize extraction of contaminated water to reduce COC levels in produced water and eliminate the need for treatment systems.

The Working Group improperly argues that RID should examine "adjustments to increase pumping from uncontaminated wells" and other "well modification or adjustments of pumping to eliminate or minimize capture of impacted groundwater from contaminated portions of the aquifer."[19] Yet again, such a request would not maximize the "control, management and cleanup" of the hazardous substances impacting the WVBA WQARF Site as required by ARS § 49-282.06.A.2 and would violate ARS § 49-282.06.B.4.b, which requires that "specific measures to address any such well shall not reduce the supply of water available to the owner of the well." Similarly, COP and SRP previously "expressed concern that neither water quality nor water quantity [can] be sacrificed."[20]

14. The goal of a WQARF remedy is to provide for reasonably foreseeable uses, not to remove contaminant mass simply for the sake of removing contaminant mass.

Response included in the preceding cover letter.

15. RID's calculation of the contaminant mass removed by its proposed remedy is misleading.

The Working Group is correct in indicating that RID's FS Report indicates that 2,900 pounds per year of contaminant mass has been released to the local environment annually; however, the Working Group did not properly describe how that number was derived. As presented in RID's FS Report, "Based on the last 10 years of data (2004-2013), the magnitude of the impact at the WVBA [WQARF] site, estimated by ADEQ wellhead sample results from impacted RID water supply wells (see Table 2) and RID historical pumping records (discharge volume), is approximately 2,900 pounds of target COCs[21] released to the local environment annually." Therefore, the 2,900 pounds is actually an average mass of target COCs released to the environment over a 10 year period, not the contaminant mass removal included for

[19] WG Comments, page 17 of 33.
[20] WG Comments, page 7 of 33.
[21] The target COCs are PCE, TCE, and 1,1-DCE compounds; calculations of VOC mass removed do not include the contribution from other contaminants of concern in WVBA Site groundwater.

RID's proposed remedial action. RID's FS Report goes on to indicate that for its proposed remedial action, the estimated annual VOC mass removal rate (Table 10) is approximately 2,500 pounds, which is based on reported 2013 concentrations of PCE, TCE, and 1,1-DCE and projected pumping in groundwater modeling scenarios.

In addition, the Working Group asserts that, "…treating water withdrawn from RID's wells is not necessary to obtain contaminant mass removal, because contaminant mass removal will occur without treatment, just has [sic] it has been occurring for the past several decades."[22] For some reason, the Working Group believes that the transfer of contaminant mass from groundwater to local air is "acceptable." At the WVBA WQARF Site and other adjacent WQARF and CERCLA sites, ADEQ (and EPA) has taken the position that it is "unacceptable" to transfer VOC contaminants from groundwater to air and that groundwater remedial actions require a high degree of public protection against potential exposure to VOCs in extracted groundwater.

16. RID's comparisons to Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedies and its calculation of the cost and efficiency of its proposed mass reduction are erroneous.

The Working Group falsely criticizes as being "irrelevant" RID's FS Report for comparing RID's proposed remedial alternatives for the WVBA WQARF Site with other VOC groundwater contaminant cleanups in Arizona. This criticism drips with hypocrisy as the Working Group, only a few pages before, criticizes RID's FS Report for failing to consider MNA as a viable remedial approach based on its use at the federal South Indian Bend Wash Superfund Site. Nevertheless, state law mandates that ADEQ consider remedial actions at other sites. Pursuant to ARS § 49-282.06.C.7, "in selecting remedial action, the director shall consider the following factors: … the availability of other appropriate federal or state remedial action." Such consideration assists ADEQ in determining what selected remedy will comply with the requirements in ARS § 49-282.06 and the applicable remedial objectives established by ADEQ. This is particularly true when Arizona's aquifer water quality standards are based upon EPA's primary drinking water maximum contaminant levels.[23] Unlike the WGFS Report, RID's proposed remedial alternatives are not only fully consistent with applicable Arizona law and WQARF rules and policies,[24] but they are consistent with the guidelines established by EPA[25] and prevent EPA from overfilling on the WVBA WQARF Site, as EPA did on the East Washington WQARF Site.

RID's comparison of the cost and efficiency of RID's remedial alternatives are not in error. The comparisons are not *flawed* or *irrelevant* or *incorrect* as the Working

[22] WG Comments, page 19 of 33.
[23] *See* ARS § 49-223.A; *see also* ARS § 49-221.C that mandates that ADEQ "shall consider, but not be limited to … guidelines, action levels or numerical criteria adopted or recommended by the United States environmental protection agency or any other federal agency."
[24] *See* **Attachment 4**.
[25] *See* **Attachment 3**.

Group falsely asserts. While each site included in these comparisons is unique in some respect, that is certainly no reason not to benchmark against what has been done at other, similarly contaminated sites.

The Working Group has asserted that *"... RID misstates its O&M costs ..."* since the costs in Table 10 differ from Tables 7 and 8. These costs are not misstated. The O&M costs included in Table 10 do differ from the costs shown in Tables 7 and 8, adjusted in order to provide an apples-to-apples comparison with remedies at other sites. Certain costs included in Tables 7 and 8, such as the cost of area-wide monitoring and associated capital equipment, were subtracted in Table 10, as clearly stated in Table 10 footnotes, again to provide a representative comparison.

In fact, the O&M costs provided in RID's FS Report are particularly well substantiated as they are based on several years of data accumulated during operation and maintenance of the four wellhead treatment systems installed under the ADEQ-approved Modified ERA Work Plan.

The Working Group's claim that its recommended remedy is more cost effective than RID's proposed remedy is laughable and pure charade. The Working Group's proposed remedy does not "remove" 26,492 pounds of contaminants over 30 years as they falsely claimed in its comment letter; it removes approximately 2,200 pounds (assuming the EW-2 pump and treat system would capture ~74 pounds per year). The remaining 24,000+ pounds that the Working Group falsely claims to have "removed" will simply be transferred from the groundwater into the local air. RID, on the other hand, has a recommended remedy that will truly remove an estimated 2,500 pounds of contaminants per year.[26]

The Working Group would like to take credit for "removing" contaminants when all that is proposed is to move them from one environmental media (groundwater) to another (air). Their proposed remedy, costing $12,930,000, is estimated to remove 2,200 pounds over 30 years. This results in a dollar per pound, "cost effectiveness" of about $5,824. RID's proposed remedy, on the other hand, has a cost effectiveness metric of ~$677/pound.

Taking the Working Group's self-serving and flawed analysis to its ultimate, illogical conclusion, it would be even more cost effective if we all just agreed to do absolutely nothing. It draws into question why the WGFS Report recommends installing the EW-2 pump and treat system. Indeed, the 500 gpm EW-2 pump and treatment system provides only two to three percent of the VOC mass removed compared to RID groundwater wells. Certainly the Working Group understands that its recommended remedy has no practical value in addressing the regional groundwater contamination problem. In fact, the WGFS Report acknowledges that a disadvantage to the Reference Remedy and More Aggressive Remedy is "the relative

[26] VOC mass removal is anticipated to decrease over time.

cost of any potential additional benefit."[27] It can only be reasoned that the true motivation for the Working Group to recommend such a token response action and then highlighting the $13 million cost of its recommended remedy is so that the Working Group members are perceived as doing something rather than not offering to do anything at all to clean up the massive groundwater contamination for which they are legally responsible.

17. The RID proposed remedy is actually *more costly* on a dollar-per-pound basis than regional CERCLA remedies, including both the OU2 remedy and the NIBW Central Treatment Facility remedy.

As stated in the previous response (assertion 16), the Working Group has selectively ignored the underlying basis of the cost estimates provided in Table 10. The RID cost numbers included in Table 10 were adjusted in order to provide the most analogous, apples-to-apples comparison possible given the data available from the CERCLA sites.

The Working Group falsely claims that the RID treatment systems have only removed an average of 830 pounds per year instead of the 2,500 pounds per year estimated in RID's proposed remedy. While the Working Group has obviously reviewed RID's Monthly Progress Reports, and even cited them in footnote 2 of its comment letter, the Working Group fails to elaborate on the reasons for this seeming disparity:

- ADEQ has required RID to operate these wells (and treatment systems) only to historical use patterns until the agency has evaluated more continuous operation. This means the wells, and treatment systems, are off for 4 to 5 months per year.
- ADEQ has concurred with RID to cease treatment at these wells beginning on May 30, 2014 until such time as ADEQ has reviewed and approved the O&M Plan (which has been in place since the beginning of system operations in early 2012).

The estimated 2,500 pounds per year of contaminant removal provided by RID's recommended remedy includes operation at higher projected pumping rates than currently operated and incorporates treatment at two additional wells. The pumping forecast for each RID remedial alternative was based on reasonable (not best case) projections of well use that is benchmarked to seasonal demands over the past five years. In this regard, the Less Aggressive alternative projected an average annual pumping rate of 11,758 gpm, out of a total production capacity of 13,285 gpm, for the six wells equipped with treatment. This represents an 88% utilization rate of these wells under priority pumping conditions.

[27] WGFS Report, pages 53 and 57.

The Working Group also criticizes RID for proposing treatment at two additional well locations that *"... would have the two lowest groundwater COC concentrations in its system* (of wellhead treatment systems)*."* RID presently has treatment in place at the four wells with the highest COC concentrations of all impacted RID wells. Treating the next two highest COC concentration wells, and in doing so effectively addressing "all of RID's impacted wells", seems quite logical and efficient. Again, the Working Group seems to have a particular knack for misinformation and a penchant for the illogical.

18. The RID Model Report is fundamentally deficient and fails to explain modifications of its model.

The groundwater flow model in the RID FS Report is an updated version of the Central Phoenix Plume Model (CPPM) that was originally developed for the WVBA WQARF Site by an expert modeling technical contractor working for ADEQ. Certain issues raised by the Working Group in this comment that pertain to the basis for the conceptual model, model construction, model grid, hydraulic properties, and boundary conditions developed for the CPPM are documented in the model report prepared by ADEQ's contractor, which is cited in the RID FS Report. ADEQ has evaluated these same issues and concluded in the WVBA Remedial Investigation Report that the CPPM "meets its intended purpose to evaluate remedial alternatives and contaminant movement".

Montgomery & Associates, on behalf of RID, updated and recalibrated the CPPM in accordance with the ADEQ-approved work plan[28] as described and documented in the *Feasibility Study Groundwater Modeling Report* contained in Appendix F of the draft RID FS Report. As stated in the Model Objectives in this report, the FS groundwater modeling program was designed to be consistent with the expected use and importance of the model results in the FS and subsequent decision-making process for the regional groundwater remedy. RID believes this report adequately documents the sources of information used and steps taken to update and calibrate the CPPM for its intended use in the FS.

Working Group Comments assert that RID modeling objectives are poorly defined and RID has not demonstrated that the model produces reliable results that satisfy those objectives. This is not true. RID was clear in the modeling work plan and report that the fundamental objective of the groundwater modeling exercise was to conduct a comparative assessment of projected hydrologic impacts for a range of regional-scale response actions. RID was also clear to indicate the change in pumping associated with any remedial alternative is very minor in comparison to the large-scale RID pumping that occurs within the WVBA Site and, as a consequence, the projected hydrologic effects from the remedial alternatives would be difficult to discern on the scale of the modeling conducted. Indeed, the results of

[28] *Work Plan for Feasibility Study Groundwater Modeling – West Van Buren Area Water Quality Assurance Revolving Fund Site*, prepared by Montgomery & Associates, November 1, 2013.

model simulations indicated that implementation of any of the remedial alternatives "would not significantly alter future hydrologic or plume conditions of the WVBA Site or surrounding area, compared to the Baseline Scenario (continued current RID operations)".[29]

Given that the modeling exercise was intended as a comparative evaluation of overall limited changes in the area-wide pumping regime, there is no valid basis to criticize RID's development and use of the groundwater model applied to the FS. For that matter there is no reason for RID to criticize the Working Group's use of the ground water flow model it developed in the WGFS Report. It is for this reason that RID chose not to provide critical comments on the Univar groundwater flow model and feels further work to revise or refine groundwater flow models would be unproductive. In both cases, the use of groundwater flow modeling to compare the hydrologic effects from the slightly different proposed pumping regimes has little significance. For example, there is no practical value in modeling the added 500 gpm UAU extraction well (or approximately 800 acre-feet per year [AFY] if pumped continuously) associated with the WGFS recommended remedial alternative, given that RID, SRP, and COP pump over 100,000 AFY of groundwater within the model domain.

Finally, it bears noting that the Working Group and RID groundwater flow models arrive at similar conclusion that are significant to the overall hydrologic impacts associated with regional groundwater pumping and any alternatives evaluated in the respective FS reports:

- RID pumping within the WVBA Site hydraulically contains the regional groundwater contaminant plume;
- If RID pumping in the WVBA Site is significantly reduced or ceases altogether, groundwater flow would shift and migrate toward the northwest to areas not currently impacted by groundwater contamination in the WVBA WQARF Site and WOC WQARF Site; and,
- The RID proposed groundwater remedial alternatives do not materially impact regional groundwater levels nor capture and containment of the regional commingled contaminant plume.

19. RID portrays a contaminant plume that is much more extensive than it would actually be 30 years from now. In fact, by that time the actual plume may not impact or even threaten downgradient water provider wells.

The Working Group's contention that RID's portrayal of the contaminant plume "is much more extensive than it would actually be 30 years from now" is specious on many levels.

[29] RID FS Report, page 176.

The "portrayal" of the contaminant plume is, as accurately described in the RID FS Report, based on forward particle tracking of advective groundwater flow in UAU1 model layer from the current estimated boundaries of the commingled contaminant plume, assuming pumping from the 33 RID wells within and near the WVBA WQARF Site were to cease. Projected pathlines illustrate the direction and extent of advective migration of groundwater to the west-northwest over 30 years. The groundwater flow and particle tracking simulation provide the support for this statement. Given that the WGFS Report notes, "the apparent limited retardation of the coarse-grained UAU1 allowed for formation of a regional scale groundwater plume",[30] this is also not an unreasonable interpretation. Further, the WGFS Report also concludes, "if irrigation pumping within and adjacent to the WVBA is significantly reduced or ceases altogether, the resulting groundwater flow direction within the WVBA would likely shift more towards the northwest."[31]

The Working Group seems to believe that the declining TCE and PCE concentrations that have occurred over time are expected to continue as the result of source control measures. RID contends, as stated in its comments on the WGFS Report, that the primary reason VOC concentrations have declined in the regional plume is due to extraction of contaminated groundwater by RID pumping. RID pumping is likely to have removed in excess of 100,000 pounds of VOCs in the past 30 to 50 years. Absent RID pumping, there is no reason to believe TCE and PCE concentrations would significantly decline in groundwater migrating to west-northwest of the current VOC plume.

The Working Group is incorrect in stating RID failed to account for ongoing operation of the OU2 groundwater extraction system. Pumping of OU2 extraction wells is included in this and all model simulations over the next 30 years.

20. RID misrepresents the impact of VOC transfers from water to air.

The Working Group asserts that RID's use and description of data from the JATAP report is somehow misleading and that *"RID would have the reader conclude that these data result from VOC emissions from its canal system and wells."* Additionally, *"RID implies that the JATAP report indicates that RID pumping increases concentrations of VOCs in ambient air at levels greater than the national average."*

The Working Group has again misrepresented what was stated in RID's FS Report. RID included two sentences referring to the JATAP Report which communicated the two following salient facts:

- Air quality monitoring data (from the JATAP Report) has shown that TCE and PCE are commonly found in ambient air samples at several monitoring sites in close proximity to the WVBA WQARF Site; and,

[30] WGFS Report, page A-17, footnote 13.
[31] WGFS Report, page A-9.

- the average concentrations exceed national averages.

These are facts, as reported in the JATAP Report. The Working Group argues that the data are old, the monitoring sites are not "close", and TCE and PCE were not the worst contaminants observed. Again, the Working Group is attempting to employ semantics and distractions to obscure the uncontestable fact in this regard:

- Contaminated groundwater pumped from RID wells in recent years has resulted in release of an average of 2,900 pounds of VOCs, known and suspected human carcinogens, into the local environment each year.

As to whether RID misrepresented the impact of VOC transfers from water to air, RID made no explicit or implied representations in these two sentences regarding the impact of these toxic transfers. While it was not the intention of RID to *"have the reader conclude"* anything, the implications are fairly obvious. RID's pumping of groundwater, contaminated by others due to releases of VOCs from their facilities, does increase concentrations of VOCs in ambient air. As to the impacts of these airborne toxics (since the Working Group brought it up), they do increase public exposure and they do increase the associated human health risk. While the Working Group contends that this increase in public exposure and the increased human health risk are somehow "acceptable", RID strongly disagrees.

21. The RID canal that transports contaminated water is not, in fact, "largely open to public access".

The Working Group has been very consistent in its creativity regarding its claims and arguments of the RID FS Report. Yes, RID states in footnote 88 that "The RID water supply system is largely open to public access." Even though "42 percent of RID's system in WVB (49.370 feet of 118,800 feet total) is open to the atmosphere,"[32] RID still considers its canal system "largely open".

The "contaminated water" highlighted by the Working Group in its argument refers to the contaminated water transported in the open segments downstream of supply wells 92 and 114 that were sampled as part of the Public Health Exposure Assessment and Mitigation Work Plan[33] where COC concentrations in groundwater in these open sections do pose risks to human health. However, since that time, the open section south of RID-92 has been replaced with a buried pipeline by RID to limit public access.

As included with RID's response to Working Group argument #7 (above), the law requires that the selected remedy "*shall address, at a minimum, any well* that at the time of selection of the remedial action … if the well would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably

[32] WG Comments, page 28 of 33.
[33] RID FS Report, pages 62-63.

foreseeable end uses without treatment due to the release of hazardous substances." However, the Working Group continues its tired quest to argue that the water is fine for its current use by plainly focusing on water quality in the RID's canals/laterals instead of following the law which, *at a minimum*, protects individually impacted wells and by stating "Regardless, the COC concentrations in groundwater in its open channel conveyances would not pose risks to human health."[34] What is actually "misleading" is the Working Group's claim that there are no risks.

22. Assumptions relied on in RID's evaluation of water supply measures are inaccurate.

The Working Group misstates RID's FS Report when they state, "Based on RID's numbers presented in Table F-4, that pumping rate would amount to no more than 7,500 gpm, the annualized production volume of the six RID wells RID proposes to treat as part of its proposed remedial alternative". Table F-4 indicates that the six wells with treatment are anticipated to have an annual pumping rate of 11,758 gpm, which is 88% of the total treatment capacity of 13,285 gpm.

Additionally, in suggesting it may be possible to provide adequate replacement water for "contaminated groundwater to keep RID whole", the Working Group conveniently overlooks the fact that if you do not extract groundwater at the contaminated wells, the VOC mass will merely migrate and impact other down-gradient RID wells. Consequently, provision of replacement water supplies is not a viable option.

23. RID's status as a WVBA Potential Responsible Party (PRP) is uncertain but it nonetheless has a duty to cooperate.

RID strongly disagrees with the statements made that it may somehow be a responsible party for the releases or threatened releases of hazardous substances that impact regional groundwater contamination in the WVBA WQARF Site and adjacent, upgradient WOC WQARF Site and Motorola 52nd Street CERCLA Site. This is untrue and RID resents the implication. The contamination in the WVBA WQARF Site and the adjacent sites results from third party contribution of numerous responsible parties, including those parties in the Working Group consortium. In fact, the City of Phoenix has acknowledged that the WVBA and Motorola 52nd Street co-mingled plume "is the result of historical spills and other releases of commercial and industrial solvents from facilities throughout the area, which reached the groundwater and caused contamination."[35]

RID has and will continue to cooperate fully to address the widespread groundwater contamination impacts on its well field in the WVBA vicinity, which must necessarily

[34] WG Comments, page 28 of 33
[35] City of Phoenix, 2011 Water Resource Plan, page 22 (2011).

include treatment as a means to permanently remove VOC contaminants affecting the RID water supplies and the public health, welfare, and the environment.

24. RID is required to address any conduit wells located in the WVBA to prevent cross-contamination.

The Working Group indicates RID's failure to address potential well modification to prevent cross contamination is a critical oversight. This is not true and seems to indicate the Working Group did not read RID's FS Report. RID summarized the results of well investigations conducted as partial fulfillment of Task 2 of the ERA approval letter dated June 24, 2010, to indicate RID found no indication of downward conduit flow at RID-95. Instead, there was upward flow from the LAU to the UAU under non-pumping conditions. Under these conditions, the deep RID wells in the WVBA Site do not cause cross-contamination.

25. RID fails to provide sufficient data to support its claims.

The Working Group falsely asserts that RID "... fails to provide any level of detail supporting the capital and O&M costs of the remedies that are evaluated." RID suggests that the Working Group refer to Table 7 of the RID FS Report where detailed cost breakdown is provided. This level of detail is consistent with WQARF rules and AAC R18--16-407.E.1 where it is stated that *"... alternate remedies shall be developed and described in the feasibility study report in sufficient detail to allow evaluation using the comparison criteria, but plans at construction level detail are not required."* Furthermore, as noted in the RID FS Report, the information gained from implementation of the RID-95 Wellhead Pilot Initiative provides the basis to estimate RID remedial action costs more precisely and consistent with the expected cost accuracy (+15% to -10%) of the remedial design activity.

26. RID attempts to increase its production capacity in the WVBA area beyond what is allowed by the rules.

The Working Group incorrectly asserts that "RID cannot justify improvements to and expansion of its system due to treatment losses because treatment is not required for current uses in the first place." Table 5 of RID's FS Report clearly summarizes how changes in production capacity will allow RID to only recover lost capacity due to increased pressure head in the LGAC vessels at the wellhead treatment system sites, not increase its overall production capacity.

27. RID misapplies well modification considerations in order to increase its production capacity.

The Working Group asserts that *"... RID failed to consider well modifications to address the potential for contaminant migration in its conduit wells."* RID is not aware of any conduit wells among its wells in the WVBA WQARF Site. To the

contrary, what is known about groundwater flow between the alluvial units in the area is that flow is upward, not down as would be reflective of a conduit well. Nevertheless, RID's remedial alternatives all included priority pumping of the wells with the highest concentrations of contaminants, making this issue moot as the contamination would be addressed within the alluvial unit where it resides. This is likely the reason that the Working Group did not include "well modifications to prevent conduit flow" in their remedial alternatives.

Regarding the Working Group contention that *"... there is no justifiable basis for increasing production from those wells ..."*, it is important to note that those wells are located in key areas of the plume and increasing production in those wells serves to improve contaminant removal/treatment (as described in more detail in the following response). Increasing production in those wells also provides production to recover capacity losses that result from implementation of treatment systems.

RID's pumping of this groundwater may be *"in conflict with the interests of the City of Phoenix and SRP ..."*, as claimed by the Working Group, but RID's rights and authority is assured by law. Even the suggestion that this FS process should somehow be aligned to serve the best interests of the PRPs is incredible. RID has and will continue to pump groundwater in this area, to serve the needs of its District, and RID requires nothing more than to be made whole, in quality *and quantity* of water, as required by law. In fact, RID contends that the WGFS Report may be "in conflict with the interests" of Arizona's laws, criminal codes, public health, welfare and the environment.

28. RID's proposal to replace Well RID-106 is unnecessary and contrary to statute and rule.

The Working Group is completely misguided in their understanding of the proposed replacement of RID well 106. First, RID proposed the installation of a replacement well at RID-106 primarily to enhance hydraulic containment at the leading edge of the contaminant plume and not as indicated by the Working Group "for the sole purpose of increasing its groundwater production capacity". As indicated in the RID FS, RID-106 is the westernmost well on the Salt Canal within the WVBA WQARF Site contaminant plume. Yet the full extent of the contamination beyond RID-106 is not well defined. Recent sampling of RID-82, which is 2.25 miles west-northwest of RID-106, indicates 3.5 µg/l PCE, 1.2 µg/l TCE, and 1.1 µg/l 1,1-DCE are found in groundwater at this location.

A closer reading of the RID FS Report would have revealed that the proposed replacement well at RID-106 would significantly benefit the WVBA WQARF Site groundwater remedy. Presently, RID-106 produces approximately 1,500 gpm of groundwater from a screened interval of 80 to 776 feet below land surface (bls). Sampling conducted in March 2014 indicates groundwater at RID-106 contains 21.5 µg/l PCE, 8.1 µg/l TCE, and 4.7 µg/l 1,1-DCE. Based on experience gained from the

drilling of replacement well RID-111R, the expected extraction rate for a new shallow RID-106 replacement well is about 3,000 gpm.

RID proposed to construct the replacement well solely in the contaminated portions of the UAU and MAU aquifer. RID indicated the targeted depth of completion would be into the upper MAU to at least a depth of 420 feet bls. It was clarified that completion into the upper MAU is warranted to encompass contamination present in nearby MAU monitoring wells AVB 82-01 and AVB 82-02 (well AVB 82-01 had 70.2 µg/l PCE, 21.2 µg/l TCE, and 29.4 µg/l of 1,1-DCE in a sample obtained in March 2013) located at 6800 West Van Buren Street.

The Working Group also falsely stated that "RID proposes to construct the RID-106 replacement well with perforated well casing and gravel pack across both the UAU and Middle Alluvial Unit, thereby creating a new potential conduit well". It goes on to say "RID's proposal to create a new potential conduit pathway for vertical cross-contamination is contrary to law and should be rejected".

These accusations are entirely untrue. In fact, RID is doing the opposite of what the Working Group asserted. RID is proposing to replace a well that was formerly completed across the UAU, MAU, and upper LAU, ostensibly a conduit well, and replacing it with a well completed only in the contaminated intervals of the aquifer. The replacement well will enhance containment of the leading edge of the plume, expand mass removal, assist in preventing further migration of contaminants to the west, and protect threatened wells outside of the WVBA WQARF Site groundwater contaminant plume.

29. RID overestimated the cost of its proposed remedy by using an inappropriate discount rate to calculate present value costs.

The Working Group falsely argues that the overall costs of RID's recommended remedial alternative is both not cost-effective and overestimated. Although RID disagrees with the Working Group as to the appropriate discount rate, the Working Group admits, that if RID implemented the same discount factor, that "RID overestimated the cost of its proposed remedy by more than $14MM for the 30-year net present value estimate and more than $24 MM for its 50-year."[36] If this overestimation were applied to the Working Group's calculation of RID's costs referenced on page 20 of the Working Group Comments, RID's cost per pound of VOC removed would be comparable to the Working Group's ($490 compared to $488). However, for comparable costs, RID's recommended remedial alternative would include engineering controls to limit the transfer of hazardous contaminants from the groundwater into the air of the local community, would meet all applicable state environmental standards and would produce more than 25,000 AFY (compared to the 800 AFY under the WGFS recommended remedial alternative) of remediated water that could be used for economic development.

[36] WG Comments, page 32 of 33.

RID disagrees with the use of a seven percent (7%) discount rate in present value calculations. EPA guidance[37] that had specified the seven percent (7%) discount rate was based on economic conditions in 2000 and prior years. Economic conditions have changed in the past 15 years. Over recent years, there has been little upward inflationary pressure on the U.S. economy and consequently the average return on investments in the private sector and the cost of money for government has shrunk. Due to the inherently lower productivity of capital in the marketplace, the investment return that would be available to fund future payments is considerably lower than the prevailing conditions in year 2000. Consequently, RID selected a lower and more realistic discount factor to calculate the net present value of the long-term groundwater remedy. As indicated in the EPA guidance document, "[t]here may be circumstances in which it would be appropriate to consider the use of a lower or higher discount rate than 7% for the FS present value analysis. If a different discount rate is selected for the analysis, a specific explanation should be provided."[38] RID very clearly stated that the use of a three percent (3%) discount factor in calculation of the present value of long-term O&M costs was due to the current lower productivity costs of capital.

Given that current economic conditions warrant the use of a lower discount rate in present value calculation, RID finds the Working Group's use of a discount rate that assumes a nine percent (9%) investment return to be very unrealistic and unsupportable.

30. Section 4.4 of the FS is unnecessary and irrelevant.

RID strongly disagrees with the Working Group's false statements that discussion of remedial objectives at other sites is unnecessary and irrelevant. In fact, ADEQ is required as a matter of law, in selecting a remedial action, to consider the "availability of other appropriate federal or state remedial action."[39] Furthermore, as was stated in the RID FS Work Plan, RID was very clear of the importance of documenting relevant information concerning remedial objectives, regulatory requirements, development and selection of remediation technologies, and groundwater end use at adjacent WQARF and CERCLA sites to provide benchmarks of the response actions taken to ensure the consistency and protectiveness for the WVBA WQARF Site groundwater remedy selection.

31. RID's references to U.S. EPA Regional Screening Levels are misleading, inaccurate, and not applicable to the WVBA WQARF evaluation.

[37] *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, prepared by US Environmental Protection Agency and US Army Corps of Engineers, EPA 540-R-00-002, July 2000.
[38] *Ibid*
[39] ARS § 49-282.06.C.7.

As stated in response to comment 30, RID's FS Work Plan emphasized the importance of documenting relevant information concerning remedial objectives, regulatory requirements, development and selection of remediation technologies, and groundwater end use at adjacent WQARF and CERCLA sites to provide benchmarks of the response actions taken to ensure the consistency and protectiveness for the WVBA WQARF Site groundwater remedy selection. As explained in the footnote accompanying the reference to RSLs, the inclusion of EPA Regional Screening Levels is relevant to evaluating potential changes that may affect applicable *numeric* aquifer water quality standards as well as consistency with applicable *narrative* aquifer water quality standards. In fact, the WGFS Report recognized this potential change to the numeric aquifer water quality standards when it rejected reinjection of the treated groundwater "along the downgradient extent of the plume, [because] there is the possibility of forming a new downgradient plume. This circumstance could occur if an MCL is significantly reduced and the new MCL concentration has not been met in the treatment system effluent during historical operations."[40]

[40] WGFS Report, page 29.

SYNERGY ENVIRONMENTAL, LLC

ATTACHMENT 3

Five CERCLA Requirements[1] that Must be Addressed Specifically during Remedy Selection and Must be Discussed in any EPA Record of Decision

Roosevelt Irrigation District's (RID) FS Report[2]	CERCLA Requirements[4]	Working Group's FS (WGFS) Report[5]
MEETS CERCLA REQUIREMENT No. 1 **All four RID proposed alternative remedies "eliminate, reduce, or control risks to human health and the environment" posed by the hazardous substances present in the groundwater within the WVBA WQARF Site.** • All four RID proposed alternative remedies "eliminate, reduce or control" the risks posed to the community from the contaminated groundwater by the "significant volatilization and transfer of contaminants from the water into the air,"[3] and the risks posed to the environment by continued contaminant migration resulting in	**1. Protect human health and the environment (CERCLA Section 121(b))** • "The purpose of the remedy selection process is to implement remedies that eliminate, reduce, or control risks to human health and the environment." (NCP, 40 CFR § 300.430(a)(1)). • "Alternatives shall be developed that protect human health and the environment by recycling waste or by eliminating, reducing and/or controlling risks posed through each pathway by	**FAILS CERCLA REQUIREMENT No. 1** **All three WGFS proposed alternative remedies fail to "eliminate, reduce, or control risks to human health and the environment" posed by the hazardous substances present in the groundwater within the WVBA WQARF Site.** • All three WGFS proposed alternative remedies fail to address the risks posed to the community from the contaminated groundwater by the "significant volatilization and transfer of contaminants from the water into the air,"[3] or the risks posed to the environment by continued contaminant migration resulting in contamination of additional

[1] EPA, *Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites,* 2-1 (December 1988) (noting that this guidance "has been prepared on the basis of CERCLA as amended by SARA [the Superfund Amendments and Reauthorization Act] and the existing NCP [National Contingency Plan] and is consistent with the proposed NCP and directives issued by the Office of Solid Waste and Emergency Response.").

[2] RID is an irrigation district operating in Arizona since 1923 with 32 wells located within or adjacent to the West Van Buren Area (WVBA) Water Quality Assurance Revolving Fund (WQARF) Site, 14 of which are contaminated by hazardous volatile organic compounds (VOC) in the groundwater above Arizona aquifer water quality standards and Arizona drinking water standards, the remaining RID wells are threatened by the groundwater contamination. The RID Feasibility Study Report can be found on ADEQ's website at http://www.azdeq.gov/environ/waste/sps/download/wvb/2014-07%20Draft%20RID%20FS_1.pdf.

[3] ADEQ, Approval of RID's Modified Early Response Action (February 1, 2013).

[4] The CERCLA requirements are applicable or relevant and appropriate to cleanups under the Arizona WQARF Program. First, Arizona law mandates that "in setting [water quality standards for all waters in all aquifers], the director shall consider, but not be limited to, … guidelines, action levels or numerical criteria adopted or recommended by the United States environmental protection agency or any other federal agency." (ARS § 49-221.C) Arizona law also authorizes, "the director [of ADEQ] may adopt CERCLA rules, guidelines or procedures by reference to the extent consistent with this article." (ARS § 49-282.06.B) Additionally, the WQARF Program is "Arizona's version of the federal 'superfund' program" and was "modeled on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the federal superfund statute." Ariz. Admin. Register at 1492 (2002). More importantly, the WVBA WQARF Site is directly downgradient of the Motorola 52nd Street federal Superfund Site from which contaminated groundwater enters the WVBA Site. As a result, failure of a WQARF cleanup to substantially comply with CERCLA requirements could provide EPA the opportunity to overfile, as it did on the East Washington WQARF Site, and take over control of the WVBA WQARF Site, which will delay cleanup of the WVBA WQARF Site and may impose additional cleanup requirements at substantial cost.

[5] The Working Group's Feasibility Study Report can be found on ADEQ's website at: http://www.azdeq.gov/environ/waste/sps/download/wvb/2014-07%20Draft%20WVBWG%20FS.pdf.

contamination of additional groundwater resources. o Each RID proposed alternative remedy will "eliminate" by removal and treatment more than 2,500 pounds per year of hazardous substances (*i.e.,* volatile organic compounds (VOCs) that are known and suspected carcinogens) that would otherwise volatize and transfer from the water into the air in the community, or remain and continue to migrate in the groundwater, resulting in contamination of additional groundwater resources. **All four RID proposed alternative remedies will "protect human health and the environment by restoring ground water to its beneficial uses within a reasonable time frame" and provide "especially long-term effectiveness and performance, short-term effectiveness, and compliance with ARARs [applicable or relevant and appropriate requirements under federal or state laws]."** • Each RID proposed alternative remedy will remove and treat hazardous substances present in the	a site." (NCP, 40 CFR § 300.430(e)(2)).[6] • "The goal of Superfund ground-water remediation is to protect human health and the environment by restoring ground water to its beneficial uses[6] within a reasonable time frame."[7] • "Remediation goals shall establish acceptable exposure levels that are protective of human health and the environment and shall be developed by considering the following: applicable or relevant and appropriate requirements [(ARARs)][7] under federal or state environmental or facility siting laws … [and] the MCL[8] [maximum contaminant level] promulgated for that contaminant … shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water." (NCP, 40 CFR § 300.430(e)(2)(i)(A) and (C)) • "Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term	groundwater resources." o All three WGFS proposed alternative remedies fail to comply with applicable EPA and ADEQ policies and guidance prohibiting "the relocation of contaminants from one media (groundwater) to another (air)."[9] o According to the assertions in the WGFS, after 2025, all three WGFS proposed alternative remedies cease any measures to control contaminant migration, to achieve plume containment or remediation, or to treat groundwater contamination.[10] **All three WGFS proposed alternative remedies fail to "protect human health and the environment by restoring ground water to its beneficial uses within a reasonable time frame" or to provide "especially long-term effectiveness and performance, short-term effectiveness, and compliance with ARARs."** • According to the WGFS Report, "the WVBA regional plume is too large, however, for full plume remediation." (WGFS, 24). However, in an

[6] "A remedy that achieves an acceptable risk level in one medium may not be preferred if it only achieves this level by transferring contaminants to another medium." *Guidance on Remedial Actions, 4-9*. "Regions should ensure that cleanup levels established to restore groundwater to beneficial use, consistent with the NCP (e.g., restoration to MCLs for current or potential drinking water aquifers), also adequately address other routes of exposure associated with the groundwater, including groundwater as a source of contamination to other media." *Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration,* 9 (June 26, 2009). *See also* Letter from Amanda Stone to Keith Takata (November 14, 2007).

[7] "Chemical-specific standards that define acceptable risk levels (e.g., non-zero MCLGs, MCLs) also may be used to determine whether an exposure is associated with an unacceptable risk to human health or the environment." EPA, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions* (OSWER Directive 9355.0-30, April 22, 1991).

[8] "Superfund groundwater remedies for existing or potential sources of drinking water should reduce concentrations to existing MCLs or to more stringent State standards." *Guidance on Remedial Actions*, 2-8. "Although MCLs are developed using cost and technical considerations, they are also protective of human health." *Id.* at 2-9.

[9] "A remedy that achieves an acceptable risk level in one medium may not be preferred if it only achieves this level by transferring contaminants to another medium." *Guidance on Remedial Actions, 4-9*. "Regions should ensure that cleanup levels established to restore groundwater to beneficial use, consistent with the NCP (e.g., restoration to MCLs for current or potential drinking water aquifers), also adequately address other routes of exposure associated with the groundwater, including groundwater as a source of contamination to other media." *Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration,* 9 (June 26, 2009). *See also* Letter from Amanda Stone to Keith Takata (November 14, 2007).

[10] "Remedial actions should be designed to prevent, as quickly as possible and to the extent practicable, further spread of a plume in these complex systems." *Guidance on Remedial Actions*, 5-4

groundwater to applicable Arizona and federal maximum contaminant levels (MCLs) in order to restore the aquifer to its reasonably foreseeable beneficial use (as a drinking water source[11]) within a reasonable time[12] and to protect human health and the environment from unacceptable "exposure levels." • The RID wellhead treatment pilot project performed at four highly-contaminated RID wells in the WVBA WQARF Site, as agreed to by ADEQ, has demonstrated that removal and granular-activated-carbon (GAC) treatment of the existing groundwater contaminants can achieve short- and long-term effectiveness that will comply with Arizona and federal ARARs. **All four RID proposed alternative remedies will achieve "acceptable exposure levels that are protective of human health and the environment" as established by Arizona and federal ARARs and the MCLs.** • Consistent with other Phoenix-area Superfund and WQARF Sites, each RID proposed alternative remedy will treat contaminated groundwater extracted from the WVBA WQARF Site[13] (with concentrations up to 75 ppb for TCE, a known carcinogen with an ARAR and MCL of 5 ppb) to "acceptable exposure levels that are protective of human health and the environment" (*i.e.*, to	effectiveness, and compliance with ARARs." (NCP, 40 CFR § 300.430(e)(9)(iii)(A)). • "Alternatives shall be assessed to determine whether they can adequately protect human health and the environment, in both the short- and long-term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site by eliminating, reducing, or controlling exposures to levels established during development of remediation goals. (NCP, 40 CFR § 300.430(e)(9)(iii)(A)). • "Alternatives that do not provide adequate protection of human health and the environment shall be eliminated from further consideration." (NCP, 40 CFR § 300.430(e)(7)(i)).	apparent contradiction of that statement, the WGFS Report acknowledges that removal and granular-activated-carbon (GAC) treatment of contaminated groundwater to drinking water standards at the Motorola 52nd Street federal Superfund Site directly upgradient of the WVBA WQARF Site has resulted in "significant declines in VOC concentrations … in some cases by an order of magnitude or more" along with "an overall narrowing of the plume width" within a relatively short period of current groundwater pumping. (WGFS, 20) • According to the WGFS Report, only two WGFS proposed alternative remedies provide any "localized remediation," but those only include one or two new smaller wells that "would cease operating at the end of 2025." (WGFS, 49 and 54). **All three WGFS proposed alternative remedies fail to meet "acceptable exposure levels that are protective of human health and the environment" as established by Arizona and federal ARARs and the MCLs.** • All three WGFS proposed alternative remedies fail to treat all contaminated groundwater extracted from the WVBA WQARF Site[13] (with concentrations up to 75 ppb for TCE, a known carcinogen with an ARAR and MCL of 5 ppb), as

[11] Arizona's law defines "reasonably foreseeable uses of water" as "those likely to occur within 100 years unless a longer time period is shown to be reasonable. Arizona law also requires "all aquifers in this state…shall be classified for drinking water protected use…(ARS § 49-224.B) and "primary drinking water maximum contaminant levels [MCLs] established by the [EPA] administrator…are adopted as drinking water aquifer water quality standards…" (ARS § 49-223.A)

[12] *Guidance on Remedial Actions*, 1-1. EPA identifies "a reasonable time frame" as being "less than 100 years." *Id.* at 5-8. "A rapid remedial alternative generally should be developed for groundwater that is a current or potential source of drinking water. This alternative should achieve the selected cleanup level throughout the area of attainment within the shortest time technically feasible." *Id.* at 5-9.

[13] "Factoring this regional pumping [from RID's wells] and potential future changes to regional pumping into the FS remedial alternatives is necessary and critical." (WGFS, 19). However, the RID wells that are "necessary and critical" to each WGFS proposed alternative remedies are not treated to address the risks to "public health and welfare and the environment" posed by the contaminated groundwater or included in the cost estimate of the WGFS alternatives.

applicable Arizona and federal ARARs and the MCLs). • Each RID proposed alternative remedy will provide for removal and treatment of the contaminated groundwater to ensure compliance with Arizona's aquifer water quality standards and federal ARARs (*i.e.*, MCLs)[14] in order to "preserve and protect the quality of those waters for all present and reasonably foreseeable future uses" (*i.e.*, as a drinking water source). (ARS § 49-221.A; § 49-224.B)		treated at all other Phoenix-area Superfund and WQARF Sites.[15] • All three WGFS proposed alternative remedies fail to meet applicable Arizona water quality standards and federal ARARs for "all waters in all aquifers to preserve and protect the quality of those waters for all present and reasonably foreseeable future uses."[16] (ARS § 49-221.A) Arizona state law has determined that the "primary drinking water maximum contaminant levels [MCLs] established by the [EPA] administrator …are adopted as drinking water aquifer water quality standards" (ARS § 49-223.A) and, therefore, are federal ARARs at the WVBA WQARF Site. **Failure of all three WGFS proposed alternative remedies to "provide adequate protection of human health and the environment" is sufficient evidence that all three WGFS proposed alternative remedies "shall be eliminated from further consideration."**
MEETS CERCLA REQUIREMENT No. 2 **All four RID proposed alternative remedies treat all extracted contaminated groundwater to attain "acceptable exposure levels" established by Arizona and federal ARARs, which include the MCL of 5 ppb for the known carcinogen TCE.** • All four RID proposed alternative remedies attain the same "acceptable exposure levels" (*i.e.*, groundwater restoration to MCLs, treatment to MCLs for reasonably foreseeable end use as a drinking water source, and prohibition of the transfer of contaminants from groundwater into air) as required by Arizona and federal ARARs at	**2. Attain the applicable or relevant and appropriate requirements (ARARs) of Federal and State laws (CERCLA Section 121(d)(2)(A)).** • "Maximum contaminant level goals … that are set above zero" or the "maximum contaminant level [MCL] shall be attained where relevant and appropriate." (NCP, 40 CFR § 300.430(3)(B) and (C). • The "effectiveness" criterion "focuses on the degree to which an alternative … complies with ARARs. … Alternatives providing significantly less effectiveness than other, more promising	**FAILS CERCLA REQUIREMENT No. 2** **All three WGFS proposed alternative remedies fail to treat all extracted contaminated groundwater to attain "acceptable exposure levels" established by Arizona and federal ARARs, which include the MCL of 5 ppb for the known carcinogen TCE, unlike the other groundwater remedies in Scottsdale, Goodyear, East Phoenix and elsewhere in the State.** • As noted above, all three WGFS proposed alternative remedies fail to attain water quality ARARs established under Arizona's groundwater classification system that "all aquifers in this state … shall be classified for drinking water protected

[14] *See* ARS § 49-223.A.

[15] North Indian Bend Wash Superfund Site, Motorola 52nd Street Superfund Site, Phoenix-Goodyear Airport Superfund Site, 56th Street and Earl WQARF Site, and a West Central Phoenix WQARF Site.

[16] Arizona has determined that "reasonably foreseeable uses of water are those likely to occur within 100 years unless a longer time period is shown to be reasonable." AAC R18-16-406.D.

the groundwater remedies in Scottsdale, Goodyear, East Phoenix and elsewhere in the State. • Each RID proposed alternative remedy will allow ADEQ to fulfill its duty[17] and comply with Arizona and federal ARARs to restore the aquifer to meet its drinking-water protected use aquifer classification[18] and to meet the applicable Arizona aquifer water quality standards (*i.e.*, the MCLs "are adopted as [Arizona] drinking water aquifer water quality standards"). (ARS § 49-223.A) • All four RID proposed alternative remedies comply with Arizona's legal mandate (and federal ARAR) that, at a minimum, the selected remedy shall address any existing well that is not now or will not be fit for its current or reasonably foreseeable end use[19] (which ADEQ has established as a drinking water source in its Remedial Objectives Report for the WVBA WQARF Site).[20] • All four RID proposed alternative remedies comply with Arizona's Remedial Objectives (and federal ARAR) for the WVBA WQARF Site requiring "remedial actions will be in place for as long as need for the water exists, the resource remains available and the contamination associated with the WQARF Site prohibits or limits groundwater use."[21]	alternatives may be eliminated." (NCP, 40 CFR § 300.430(e)(7)(i)). • "For ground water that is a current or potential source of drinking water … cleanup levels generally will be based on chemical-specific ARARs [*i.e.*, MCLs] or health-based levels."[22] • "Some states have developed and promulgated their own ground-water classification systems. A State's classification system may be used to determine remediation goals. Furthermore, a promulgated State system may be an ARAR."[23] • "Alternatives that do not meet ARARs … should be screened out."[24]	use." (ARS § 49-224.B) Arizona has clearly established that the "primary drinking water [MCLs] established by the [EPA] administrator …are adopted as drinking water aquifer water quality standards" (ARS § 49-223.A) and, therefore, are federal ARARs at the WVBA WQARF Site. • All three WGFS proposed alternative remedies fail to comply with the federal ARAR established by Arizona state law that mandates "for remediation of waters of the state, the selected remedial action shall address, at a minimum, any well that at the time of selection of the remedial action either supplies water for municipal, domestic, industrial, irrigation or agricultural uses or is part of a public water system if the well would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably foreseeable end uses without treatment due to the release of hazardous substances."[19] • All three WGFS proposed alternative remedies fail to comply with the federal ARAR established by ADEQ in the Remedial Objectives Report for the WVBA WQARF Site that "remedial actions will be in place for as long as need for the water exists, the resource remains available and the contamination associated with the WVBA WQARF site prohibits or limits groundwater use."[21] **Failure of all three WGFS proposed alternative remedies to "meet ARARs" is sufficient evidence that all three WGFS alternatives "should be screened out."**

[17] Pursuant to Ariz. Rev. Stat. § 49-104.A.13, "the department shall … promote the restoration and reclamation of degraded or despoiled areas and natural resources."
[18] *See* ARS § 49-224.B.
[19] *See* ARS § 49-282.06.B.4.b.
[20] *See* ADEQ, Remedial Objectives Report, West Van Buren Area WQARF Registry Site, Phoenix, Arizona, 3-3 (August 8, 2012) and ARS § 49-282.06.B.4.b.
[21] Remedial Objectives Report, 3-3.
[22] *Guidance on Remedial Actions*, 4-1.
[23] *Id*. at 2-5.
[24] *Id.* at 5-11.

MEETS CERCLA REQUIREMENT No. 3	3. Reflect a cost-effective solution, taking into consideration short- and long-term costs (CERCLA Section 121(a))	FAILS CERCLA REQUIREMENT No. 3
All four RID proposed alternative remedies "reflect a cost-effective solution taking into consideration short and long-term costs" when and as compared to all other existing major groundwater cleanup sites in Arizona.[25] • RID's FS Report includes all costs to operate and maintain the RID proposed alternative remedies until "acceptable exposure levels" established by federal and Arizona ARARs are achieved. • Each RID proposed alternative remedy utilizes existing water infrastructure and established end uses to derive a very "cost-effective solution" compared to all other existing groundwater cleanup sites in Arizona.[25]	• "The costs of construction and any long-term costs to operate and maintain the alternatives shall be considered." (NCP, 40 CFR § 300.430(e)(7)(iii)). • "Costs that are grossly excessive compared to the overall effectiveness of alternatives may be considered as one of several factors used to eliminate alternatives." (NCP, 40 CFR § 300.430(e)(7)(iii)).	**All three WGFS proposed alternative remedies fail to satisfy this comparative CERCLA requirement because, as noted above and below, all three WGFS proposed alternative remedies fail to comply with the other mandatory and substantive CERCLA requirements (Nos. 1, 2, 4 and 5) to enable an apples-to-apples comparison.** • All three WGFS proposed alternative remedies fail to include the costs to operate and maintain the RID wells that are factored "into the [WG] FS remedial alternatives [as] necessary and critical." (WGFS, 19). • The WGFS Report also acknowledges that "the relative cost of any potential additional benefit" is a disadvantage for both the proposed Reference Remedy and More Aggressive Remedy, which cease to operate after 2025, according to the assertions in the WGFS Report (WGFS, 53 and 57), making them a less "cost-effective solution" as compared to RID's proposed alternative remedies. **Failure of all three WGFS proposed alternative remedies to "reflect a cost-effective solution" and the WGFS Report admission that the costs are "excessive compared to the overall effectiveness" of the RID proposed alternative remedies is sufficient evidence that all three WGFS alternatives should be eliminated.**
MEETS CERCLA REQUIREMENT No. 4 **All four RID proposed alternative remedies incorporate "permanent solutions and treatment technologies" (utilized and proven at other similarly contaminated Arizona sites) to remove the elevated concentrations of known and suspected carcinogens**	**4. Use permanent solutions and treatment technologies or resource recovery technologies to the maximum extent practicable (CERCLA Section 121(b))** • "The national goal of the remedy selection process is to select remedies that are protective	**FAILS CERCLA REQUIREMENT No. 4** **All three WGFS proposed alternative remedies fail to provide "permanent solutions" that are "protective of human health and the environment, that maintain protection over time, and that**

[25] See Table 3.

in the groundwater, to "minimize untreated waste" being transferred from groundwater to air, and to achieve applicable Arizona and federal ARAR cleanup standards and exposure levels. • All four RID proposed alternative remedies will be permanently "protective of human health and the environment" by treating the contaminated groundwater to "acceptable exposure levels" (*i.e.*, applicable MCLs) and ensuring that such protection will continue until the applicable cleanup standards are achieved. • All four RID proposed alternative remedies will return a significant groundwater supply to its "maximum beneficial use" as a drinking source, which has been demonstrated as "practicable" at the Motorola 52nd Street federal Superfund Site directly adjacent to the WVBA WQARF Site. • All four RID proposed alternative remedies will ensure "long-term effectiveness" by removing and treating the contaminated waters until applicable cleanup standards and exposure levels are achieved to minimize any residual risk to the community or to the environment from "untreated waste."	of human health and the environment, that maintain protection over time, and that minimize untreated waste." (NCP, 40 CFR § 300.430(a)(1)). • "EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site." (NCP, 40 CFR § 300.430(a)(1)(iii)(F)). • The "effectiveness" criterion "focuses on the degree to which an alternative … minimizes residual risks and affords long-term protection. … Alternatives providing significantly less effectiveness than other, more promising alternatives may be eliminated." (NCP, 40 CFR § 300.430(e)(7)(i)). • "Alternatives shall be assessed for the long-term effectiveness and permanence they afford, along with the degree of certainty that the alternative will prove successful. Factors that shall be considered, as appropriate, include the following: (1) Magnitude of residual risk remaining from untreated waste or treatment residuals at the conclusion of the remedial activities … (2) Adequacy and reliability of controls such as containment systems." (NCP, 40 CFR § 300.430(e)(9)(iii)(C)).[26]	**minimize untreated waste" to the "maximum extent practicable."** • As noted above, all three WGFS proposed alternative remedies fail to attain "acceptable exposure levels that are protective of human health and the environment" as established by Arizona and federal ARARs and the MCLs. • All three WGFS proposed alternative remedies fail to provide "long-term effectiveness and permanence" as any "treatment technologies" cease in 2025,[27] according to the assertions in the WGFS, regardless if applicable cleanup standards have not been achieved, public health and environmental risks remain, or the contamination associated with the WVBA WQARF Site prohibits or limits groundwater uses. • All three WGFS proposed alternative remedies leave elevated concentrations of "untreated waste" in the form of known and suspected carcinogens in the WVBA WQARF Site groundwater that after 2025, according to the assertions in the WGFS, will be "uncontained" and allowed to migrate uncontrolled downgradient "towards the regional pumping depression known as the Luke Sink, near the Luke Air Force Base" (WGFS, 7) and contaminate additional groundwater resources and other existing water supply wells. • All three WGFS proposed alternative remedies fail to "return usable ground waters to their beneficial uses wherever practicable."

[26] "Remedial actions should be designed to prevent, as quickly as possible and to the extent practicable, further spread of a plume in these complex systems." *Guidance on Remedial Actions*, 5-4.

[27] Based on the false assertions in the WGFS that RID's wells cease operating in 2025, the one or two new smaller extraction wells proposed in all three WGFS alternative remedies will cease operating in 2025 "based on the assumption that the efficacy of the new extraction well primarily depends on operating alongside the current RID pumping regime." WGFS, 49 and 54. Similarly, the Less Aggressive Remedy relies solely on RID's wells for any benefit, which the Working Group inaccurately claims will cease pumping in 2025.

		o This is contrary to applicable Arizona and federal ARARs and the removal and treatment of contaminated groundwater to drinking water MCL standards performed at the Motorola 52nd Street federal Superfund Site directly upgradient of the WVBA WQARF Site that the Working Group acknowledges has resulted in "significant declines in VOC concentrations … in some cases by an order of magnitude or more" along with "an overall narrowing of the plume width" within a relatively short period of current groundwater pumping. (WGFS, 20) o Contrary to the WGFS Report, treatment of the upper aquifer unit (UAU) to achieve the beneficial uses of that portion of the aquifer that has been "classified for drinking water protected use" (ARS § 49-224.B) is "practicable" given that ADEQ already has approved such treatment as "reasonable, necessary and cost-effective" and consistent with A.R.S. § 49-282.06.A within the WVBA WQARF Site.[28] **Failure of all three WGFS proposed alternative remedies to "maintain protection over time," to "return usable ground waters to their beneficial uses" and to "minimize residual risks" as required at other federal Superfund and WQARF sites in Arizona, including ADEQ's prior early response action approvals for the WVBA WQARF Site, is sufficient evidence that all three WGFS alternatives should be eliminated.**

[28] *See* ADEQ, Approval of RID's Early Response Action (June 24, 2010); ADEQ, Approval of RID's Modified Early Response Action (February 1, 2013); ADEQ, Approval of RID's Request for ADEQ Reimbursement for Incurred Costs in FY2013 (August 16, 2013); ADEQ, Approval of RID's Request for ADEQ Reimbursement for Incurred Costs in FY2014 (July 21, 2014)

MEETS CERCLA REQUIREMENT No. 5	5. The preference for remedies that permanently and significantly reduce the mobility, toxicity, or volume of hazardous substances as a principal element or explain why such a remedy was not selected (CERCLA Section 121(b))	FAILS CERCLA REQUIREMENT No. 5
All four RID proposed alternative remedies through groundwater extraction and treatment will "permanently and significantly reduce the mobility, toxicity and volume of hazardous substances" present in the groundwater within the WVBA WQARF Site by utilizing proven and preferred "treatment" technologies that will "permanently" ensure that the remedy is "protective of human health and the environment." • "Treatment" is the principal element of each of the four RID proposed alternative remedies in order to address the "principal threats posed" at the WVBA WQARF Site and to "return usable ground waters to their beneficial uses." • All four RID proposed alternative remedies not only remove and treat the contaminated groundwater to meet the applicable MCLs, as required by Arizona and federal ARARs, but also address the transfer of contaminants from one environmental media (the groundwater) to another (the air).	"EPA expects to use treatment to address the principal threats posed by a site, wherever practicable. Principal threats for which treatment is most likely to be appropriate include liquids, areas contaminated with high concentrations of toxic compounds, and highly mobile materials." (NCP, 40 CFR § 300.430(a)(1)(iii)(A)).[29] • When balancing trade-offs among alternatives, "the balancing shall emphasize long-term effectiveness and reduction of toxicity, mobility, or volume through treatment. The balance shall also consider the preference for treatment as a principal element." (NCP, 40 CFR § 300.430(f)(1)(ii)(E)). • "EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site." (NCP, 40 CFR § 300.430(a)(1)((iii)(F)).[30] • "Regions should ensure that cleanup levels established to restore groundwater to beneficial use, consistent with the NCP (e.g., restoration to	**All three WGFS proposed alternative remedies fail to treat all the extracted contaminated groundwater included in their proposed alternative remedies[31] (even though elevated concentrations are present up to 75 ppb for a known carcinogen TCE with an ARAR and MCL of 5 ppb), and thereby fail to "permanently and significantly reduce the mobility, toxicity or volume of the hazardous substances" in the WVBA WQARF Site.** • The "preference" for "treatment" is not the "principal element" in the three WGFS proposed alternative remedies. Instead and according to the WGFS Report, the elevated TCE concentrations will be "uncontained" and allowed to transfer to the air of surrounding communities until 2025 and then will be allowed to migrate uncontrolled downgradient "towards the regional pumping depression known as the Luke Sink, near the Luke Air Force Base" (WGFS, 7) and contaminate additional groundwater resources and other existing water supply wells. • As noted above, all three WGFS proposed alternative remedies cease any "treatment technologies" in 2025,[32] according to the assertions in the WGFS, regardless if applicable cleanup standards (for protection of public health

[29] "Emphasis is placed on destruction or detoxification of hazardous materials rather than on protection simply through prevention of exposure," as proposed in the three WGFS alternative remedies. *Guidance on Remedial Actions*, 2-2. "A natural attenuation response action … should not, however, substitute for active response measures, unless such measures have been determined not to be practicable." *Id.* at 5-7.

[30] The preamble to the NCP states that "remediation levels generally should be attained throughout the contaminated plume." (55 FR 8754, March 8, 1990)

[31] "Factoring this regional pumping [from RID's wells] and potential future changes to regional pumping into the FS remedial alternatives is necessary and critical." (WGFS, 19). However, the RID wells that are "necessary and critical" to each WGFS proposed alternative remedy are not treated to address the risks posed to human health and the environment by the contaminated groundwater or included in the cost estimates of the WGFS alternatives.

[32] Based on the false assertions in the WGFS that RID's wells cease operating in 2025, the one or two new smaller extraction wells proposed in all three WGFS alternative remedies will cease operating in 2025 "based on the assumption that the efficacy of the new extraction well primarily depends on operating alongside the current RID pumping regime." WGFS, 49 and 54. Similarly, the Less Aggressive Remedy relies solely on RID's wells for any benefit, which the Working Group inaccurately claims will cease pumping in 2025.

	MCLs for current or potential drinking water aquifers), also adequately address other routes of exposure associated with the groundwater, including groundwater as a source of contamination to other media."[33]	and the environment or for an aquifer that is classified as a drinking water aquifer) have not been achieved, public health and environmental risks remain, or the contamination associated with the WVBA WQARF site prohibits or limits groundwater uses. **Failure of all three WGFS proposed alternative remedies to treat or control the contaminated groundwater so as not to "permanently and significantly reduce the mobility, toxicity or volume of hazardous substances" in the WVBA WQARF Site is sufficient evidence that all three WGFS alternatives should be eliminated.**

[33] *Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration*, 9 (June 26, 2009).

SYNERGY ENVIRONMENTAL, LLC

ATTACHMENT 4

Five WQARF Requirements[1] that must be Addressed Specifically during Remedy Selection and in the Proposed Remedial Action Plan

Roosevelt Irrigation District's (RID's) FS Report[2]	WQARF Requirements[4]	Working Group's FS (WGFS) Report[5]
MEETS WQARF REQUIREMENT No. 1 **All four RID proposed alternative remedies "assure the protection of public health and welfare and the environment" posed by the hazardous substances present in the groundwater within the WVBA WQARF Site.** • All four RID proposed alternative remedies eliminate the risks posed to the community by the "significant volatilization and transfer of contaminants from the [contaminated ground] water into the air" as required by ADEQ,[3] and the risks posed to the environment from continued contaminant migration resulting in contamination of additional groundwater resources.	**1. Assure the protection of public health and welfare and the environment (ARS § 49-282.06.A.1)** • Remedial actions include "taking such other actions as may be necessary to prevent, minimize or mitigate damage to the public health or welfare or to the environment which may otherwise result from a release or threat of release of a hazardous substance." (ARS § 49-281.12) • "In setting [water quality standards for all waters in all aquifers], the director shall consider, but not be limited to, … the protection of the public health and the	**FAILS WQARF REQUIREMENT No. 1** **All three WGFS proposed alternative remedies fail to "assure the protection of public health and welfare and the environment" posed by the hazardous substances present in the groundwater within the WVBA WQARF Site.** • Contrary to ADEQ's determination that the groundwater contamination "may present an imminent and substantial endangerment to the public health, welfare or the environment within the [WVBA] WQARF Site,"[6] all three WGFS proposed alternative remedies fail to address the risks posed to the community by the "significant volatilization and transfer of contaminants, from
o Each RID proposed alternative remedy will	environment … the provisions and	the [contaminated ground] water into the air" as

[1] The five mandatory WQARF requirements are found in ARS §§ 49-282.06.A.1, A.2, A.3 and B.4.b and AAC R18-16-407.E.1.

[2] RID is an irrigation district operating in Arizona since 1923 with 32 wells located within or adjacent to the West Van Buren Area (WVBA) Water Quality Assurance Revolving Fund (WQARF) Site, 14 of which are contaminated by hazardous volatile organic compounds (VOCs) in the groundwater above Arizona aquifer water quality standards and Arizona drinking water standards, the remaining RID wells are threatened by the groundwater contamination. The RID Feasibility Study Report can be found on ADEQ's website at http://www.azdeq.gov/environ/waste/sps/download/wvb/2014-07%20Draft%20RID%20FS_1.pdf.

[3] See ADEQ, Approval of RID's Modified Early Response Action (February 1, 2013).

[4] "The [WQARF] feasibility study is a process to identify a reference remedy and alternative remedies that appear to be capable of achieving remedial objectives and to evaluate them based on the comparison criteria to select a remedy that complies with ARS § 49-282.06. (AAC R18-16-407.A) CERCLA remedial selection requirements (See Attachment 2) also are applicable or relevant and appropriate as WQARF was "modeled on the … CERCLA, the federal superfund program" (Ariz. Admin. Register at 1492 (2002)) and Arizona law provides, "in setting [water quality standards for all waters in all aquifers], the director shall consider,…guidelines, action levels or numerical criteria adopted or recommended by the United States environmental protection agency or any other federal agency" (ARS § 49-221.C) and "the director [of ADEQ] may adopt CERCLA rules, guidelines or procedures by reference to the extent consistent with the article" (ARS § 49-282.06.B). More importantly, the WVBA WQARF Site is directly downgradient of the Motorola 52nd Street federal Superfund Site from which contaminated groundwater enters the WVBA Site. As a result, failure of a WQARF cleanup to substantially comply with the CERCLA requirements could provide EPA the opportunity to overfile, as it did on the East Washington WQARF Site, and take over control of the WVBA WQARF Site, which will delay cleanup of the WVBA WQARF Site and could impose additional cleanup requirements at substantial cost.

[5] The Working Group's Feasibility Study Report can be found on ADEQ's website at: http://www.azdeq.gov/environ/waste/sps/download/wvb/2014-07%20Draft%20WVBWG%20FS.pdf.

[6] Agreement to Conduct Work between ADEQ and RID, dated October 8, 2009.

remove and treat more than 2,500 pounds per year of hazardous substances (*i.e.,* volatile organic compounds (VOCs) that are known and suspected carcinogens) that would otherwise volatize and transfer from the groundwater into the air, or remain and continue to migrate and contaminate additional groundwater resources.

All four RID proposed alternative remedies will achieve the applicable Arizona aquifer water quality standards (*i.e.,* the MCLs adopted by EPA) that "assure protection of public health and welfare and the environment."

- Arizona law has established that the "primary drinking water maximum contaminant levels (MCLs) established by the [EPA] administrator… are adopted as drinking water aquifer water quality standards." (ARS § 49-223.A)
- Each RID proposed alternative remedy includes physical containment, controlled migration, and removal and treatment measures in order to control and cleanup the groundwater contaminants and to ensure compliance with applicable Arizona aquifer water quality standards (*i.e.,* the MCLs adopted by EPA) in order to

requirements of the safe drinking water act…[and] guidelines, action levels or numerical criteria adopted or recommended by the United States environmental protection agency or any other federal agency."[7] (ARS § 49-221.C)

- "The department shall … promote the restoration and reclamation of degraded or despoiled areas and natural resources." (ARS § 49-104.A.13)
- **"**The director shall adopt, by rule, water quality standards for…all waters in all aquifers to preserve and protect the quality of those waters for all present and reasonably foreseeable future uses."[8] (ARS § 49-221.A)
- "All aquifers in this state … shall be classified for drinking water protected use." (ARS § 49-224.B)
- "Remedial actions will be in place for as long as need for the water exists, the resource remains available and the contamination associated with the WVBA WQARF site prohibits or limits groundwater use." (ADEQ, Remedial Objectives Report, WVBA WQARF Registry Site, 3-3 (August 2012))

required by ADEQ[3], and the risks posed to the environment by continued contaminant migration resulting in contamination of additional groundwater resources.

- All three WGFS proposed alternative remedies fail to comply with applicable ADEQ and EPA policies and guidance prohibiting "the relocation of contaminants from one media (groundwater) to another (air)."[9]
- All three WGFS proposed alternative remedies leave elevated concentrations of hazardous substances in the form of known carcinogens in the WVBA WQARF Site that after 2025, according to the assertions in the WGFS, will be allowed to migrate uncontrolled downgradient "towards the regional pumping depression known as the Like Sink, near the Luke Air Force Base" (WGFS, 7), resulting in contamination of additional groundwater resources.

All three WGFS proposed alternative remedies fail to achieve the applicable Arizona aquifer water quality standards (*i.e.,* the MCLs adopted by EPA) that "assure the protection of public health and welfare and the environment."

- All three WGFS proposed alternative remedies fail to treat all the contaminated groundwater extracted from the WVBA WQARF Site at RID well

[7] Chemical-specific standards that define acceptable risk levels (e.g., non-zero MCLGs, MCLs) also may be used to determine whether an exposure is associated with an unacceptable risk to human health or the environment." EPA, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions* (OSWER Directive 9355.0-30, April 22, 1991).

[8] Arizona has determined that "reasonability foreseeable uses of water are those likely to occur within 100 years unless a longer time period is shown to be reasonable." AAC R18-16-406.D.

[9] Letter from Amanda Stone to Keith Takata (November 14, 2007). *See also* "A remedy that achieves an acceptable risk level in one medium may not be preferred if it only achieves this level by transferring contaminants to another medium." *Guidance on Remedial Actions, 4-9*. "Regions should ensure that cleanup levels established to restore groundwater to beneficial use, consistent with the NCP (e.g., restoration to MCLs for current or potential drinking water aquifers), also adequately address other routes of exposure associated with the groundwater, including groundwater as a source of contamination to other media." *Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration,* 9 (June 26, 2009).

preserve and protect the quality of those [ground] waters for all present and reasonably foreseeable future uses" (*i.e.*, as a drinking water source) (ARS § 49-221.A). • Consistent with other Phoenix-area Superfund and WQARF sites, each RID proposed alternative remedy will remove and treat contaminated groundwater at RID well sites in the WVBA WQARF Site[10] (with concentrations up to 75 ppb for TCE, a known carcinogen with a MCL of 5 ppb) to applicable Arizona water quality standards that "assure the protection of public health and welfare and the environment".[11] • All four RID proposed alternative remedies employ remedial strategies and measures to remove and treat contaminated groundwater that "will be in place for as long as need for the water exists, the resource remains available and the contamination associated with the WVBA WQARF site prohibits or limits groundwater uses."		sites[10] (with concentrations up to 75 ppb for TCE, a known carcinogen with a MCL of 5 ppb), to applicable Arizona water quality standards that "assure the protection of public health and welfare and the environment," and as treated at all other Phoenix-area Superfund and WQARF sites.[11] • All three WGFS proposed alternative remedies fail to include remedial strategies and measures necessary to control and cleanup the groundwater contaminants and ensure compliance with applicable Arizona aquifer water quality standards (*i.e.,* the MCLs adopted by EPA) in order to "preserve and protect the quality of those waters for all present and reasonably foreseeable future uses" (*i.e.*, as a drinking water source) (ARS § 49-221.A.) • All three WGFS proposed alternative remedies cease any treatment after 2025, according to the assertions in the WGFS,[12] regardless if applicable Arizona water quality standards (for protection of "public health and welfare and the environment" or for an aquifer classified as a drinking water aquifer) have not been achieved, "public health and welfare and environmental" risks remain, or the contamination associated with the WVBA WQARF Site prohibits or limits any "reasonably foreseeable future uses" of the aquifer.

[10] "Factoring this regional pumping [from RID's wells] and potential future changes to regional pumping into the FS remedial alternatives is necessary and critical." (WGFS, 19). However, the RID wells that are "necessary and critical" to each WGFS proposed alternative remedy are not treated to address the risks posed to "public health and welfare and the environment" by the contaminated groundwater or included in the cost estimate of the WGFS alternatives.

[11] North Indian Bend Wash Superfund Site, Motorola 52nd Street Superfund Site, Phoenix-Goodyear Airport Superfund Site, 56th Street and Earl WQARF Site, and the West Central Phoenix WQARF Site.

[12] Based on the false assertions in the WGFS that RID wells cease operating in 2025, the one or two new smaller extraction wells proposed in all three WGFS alternative remedies will cease operating in 2025 "based on the assumption that the efficacy of the new extraction well primarily depends on operating alongside the current RID pumping regime." (WGFS, 49 and 54) Similarly, the Less Aggressive Remedy relies solely on RID's wells for any benefit, which the Working Group inaccurately claims will cease pumping in 2025.

		Failure of all three WGFS proposed alternative remedies to "assure protection of public health and welfare and the environment" is sufficient evidence that all three WGFS proposed alternative remedies fail to meet Arizona's mandatory WQARF requirement No. 1
MEETS WQARF REQUIREMENT No. 2 **All four RID proposed alternative remedies include remedial strategies and measures commonly utilized at other similarly contaminated Arizona sites that "provide for the control, management [and] cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state."** • All four RID proposed alternative remedies will "control, manage [and] cleanup the hazardous substances in order to allow the maximum beneficial use of the waters of the state" by physically containing, controlling and removing the contaminants to "preserve, protect and restore" the quality of the aquifer in the WVBA WQARF Site to its Arizona drinking water protected use classification and by utilizing preferred and proven technologies to treat the extracted groundwater to applicable Arizona drinking water MCLs for its "reasonably foreseeable use" as a drinking water source. • All four RID proposed alternative remedies will return a significant groundwater supply to its "maximum beneficial use" as a drinking water source, which has been demonstrated as "practicable" at the Motorola 52nd Street Superfund Site directly adjacent to the WVBA WQARF Site.	**2. To the extent practicable, provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state. (ARS § 49-282.06.A.2)** • "The department shall … promote the restoration and reclamation of degraded or despoiled areas and natural resources." (ARS § 49-104.A.13) • **"**The director shall adopt, by rule, water quality standards for…all waters in all aquifers to preserve and protect the quality of those waters for all present and reasonably foreseeable future uses."[13] (ARS § 49-221.A) • "All aquifers in this state…shall be classified for drinking water protected use." (ARS § 49-224.B) • "Remedial actions will be in place for as long as need for the water exists, the resource remains available and the contamination associated with the WVBA WQARF Site prohibits or limits groundwater use." (ADEQ, Remedial Objectives Report, WVBA WQARF Registry Site, 3-3 (August 2012))	**FAILS WQARF REQUIREMENT No. 2** **All three WGFS proposed alternative remedies fail "to the extent practicable" to "provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state."** • All three WGFS proposed alternative remedies fail to include remedial strategies and measures commonly utilized at other similarly contaminated Arizona sites to "control, manage or cleanup the hazardous substances in order to allow the maximum beneficial use of the waters of the state." o All three WGFS proposed alternative remedies fail to include any physical contaminant, controlled migration, plume remediation or treatment strategies or measures in order to "preserve, protect or restore" the quality of the aquifer in the WVBA WQARF Site to its Arizona drinking water protected use classification or to "preserve, protect or restore" the quality of the extracted groundwater to applicable Arizona drinking water MCLs for its "reasonably foreseeable use" as a drinking water source. o All three WGFS proposed alternative remedies cease any "control, management or cleanup" of

[13] Arizona has determined that "reasonability foreseeable uses of water are those likely to occur within 100 years unless a longer time period is shown to be reasonable." AAC R18-16-406.D.

• All four RID proposed alternative remedies not only address the contaminated groundwater in the WVBA WQARF Site to meet both the applicable Arizona aquifer water quality standards for aquifer classification and protection purposes and the applicable Arizona drinking water standards (*i.e.,* the MCLs) for human consumption purposes which will "allow the maximum beneficial uses of the waters of the state", as required by state law, but they also address the exposure and health risks posed to the community by the transfer of contaminants from one environmental media (the groundwater) to another (the air). • All four RID proposed alternative remedies employ remedial strategies and measures to remove and treat contaminated groundwater that "will be in place for as long as need for the water exists, the resource remains available and the contamination associated with the WVBA WQARF site prohibits or limits groundwater uses."		the hazardous substances after 2025, according to the assertions in the WGFS,[14] regardless if applicable cleanup standards have not been achieved, public health and welfare and environmental risks remain, or the contamination associated with the WVBA WQARF Site prohibits or limits the "reasonably foreseeable future uses" of the groundwater.[15] o All three WGFS proposed alternative remedies leave elevated concentrations of hazardous substances in the form of known carcinogens in the WVBA WQARF Site groundwater that after 2025, according to the assertions in the WGFS, will be allowed to migrate uncontrolled downgradient "towards the regional pumping depression known as the Luke Sink, near the Luke Air Force Base" (WGFS, 7) and contaminate additional groundwater resources, adversely affecting the future beneficial uses of such waters of the state. **Failure of all three WGFS proposed alternative remedies, "to the extent practicable, [to] provide for the control, management or cleanup of the hazardous substances in order to allow the maximum beneficial use of the waters of the state" is sufficient evidence that all three WGFS proposed alternative remedies fail to meet Arizona's mandatory WQARF requirement No 2.**

[14] Based on the false assertions in the WGFS that RID wells cease operating in 2025, the one or two new smaller extraction wells proposed in all three WGFS alternative remedies will cease operating in 2025 "based on the assumption that the efficacy of the new extraction well primarily depends on operating alongside the current RID pumping regime." WGFS, 49 and 54. Similarly, the Less Aggressive Remedy relies solely on RID's wells for any benefit, which the Working Group inaccurately claims will cease pumping in 2025.

[15] According to EPA, there is "a preference for remedies that employ treatment that permanently and significantly reduce the mobility, toxicity, or volume of hazardous substances as a principal element. Emphasis is placed on destruction or detoxification of hazardous materials *rather than on protection strictly through prevention of exposure,"* as proposed in all three WGFS alternative remedies. *EPA, Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites*, 2-2 (December 1988).

MEETS WQARF REQUIREMENT No. 3	3. Be reasonable, necessary, cost-effective and technically feasible. (ARS § 49-282.06.A.3)	FAILS WQARF REQUIREMENT No. 3
All four RID proposed alternative remedies are "reasonable, necessary, cost-effective and technically feasible" when and as compared to all other existing major groundwater cleanup sites in Arizona. • Each RID proposed alternative remedy is "reasonable, necessary, … and technically feasible" since it utilizes proven and preferred state-of-the-art "pump and treat" (with granular activated carbon) technology to remove and treat elevated concentrations of hazardous VOCs in the groundwater that are known and suspected carcinogens and to prohibit the hazardous VOCs being transferred from groundwater to air, consistent with applicable Arizona and federal standards and policies.[16] • Each RID proposed alternative remedy utilizes existing water infrastructure and established end uses to derive a very "reasonable" and "cost-effective solution" compared to all other existing major groundwater cleanup sites in Arizona.[17] • ADEQ already has determined that similar remedial actions, submitted by RID to achieve the same cleanup standards but generally larger in scope than the RID proposed alternative remedies, were "reasonable, necessary, cost-effective and		**All three WGFS proposed alternative remedies fail to satisfy this WQARF "comparative" requirement because, as noted above and below, all three WGFS proposed alternative remedies fail to meet the other mandatory and "substantive" WQARF requirements (Nos. 1, 2, 4 and 5) to enable an apples-to-apples comparison.** • All three WGFS proposed alternative remedies also fail to include the costs to operate and maintain the RID wells that are factored "into the [WG]FS remedial alternatives [as] necessary and critical." (WGFS, 19).[18] • The WGFS Report, in fact, acknowledges that "the relative cost of any potential additional benefit" is a disadvantage for both the proposed Reference Remedy and More Aggressive Remedy, which cease to operate after 2025, according to the assertions in the WGFS (WGFS, 53 and 57), making them less "reasonable, necessary, or cost-effective" as compared to RID's proposed alternative remedies. **Failure of all three WGFS proposed alternative remedies to meet the other mandatory and substantive WQARF requirements by not incorporating the previous ADEQ-approved "reasonable, necessary, cost-effective and**

[16] Letter from Amanda Stone to Keith Takata (November 14, 2007). *See also* "A remedy that achieves an acceptable risk level in one medium may not be preferred if it only achieves this level by transferring contaminants to another medium." *Guidance on Remedial Actions, 4-9*. "Regions should ensure that cleanup levels established to restore groundwater to beneficial use, consistent with the NCP (e.g., restoration to MCLs for current or potential drinking water aquifers), also adequately address other routes of exposure associated with the groundwater, including groundwater as a source of contamination to other media." *Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration,* 9 (June 26, 2009).

[17] See Table 3.

[18] "Factoring this regional pumping [from RID's wells] and potential future changes to regional pumping into the FS remedial alternatives is necessary and critical." (WGFS, 19). However, the RID wells that are "necessary and critical" to each WGFS proposed alternative remedy are not treated to address the risks posed to "public health and welfare and the environment" by the contaminated groundwater or included in the cost estimate of the WGFS alternatives.

technically feasible" and consistent with A.R.S. § 49-282.06.A within the WVBA WQARF Site.[19] • Each RID proposed alternative remedy is "necessary" as a matter of Arizona law in order to "protect or provide a water supply" at any RID well within the WVBA WQARF Site that either is "threatened"[20] by the groundwater contamination or "would not be fit for its current of reasonably foreseeable end uses [*i.e.,* as a drinking water source as established by the Remedial Objectives for the WVBA WQARF Site] without treatment due to the release of hazardous substances"[21]		**technically practicable" remedial actions for the WVBA WQARF Site[19] and the WGFS Report admission that the WGFS costs are excessive compared to the overall effectiveness of the RID proposed alternative remedies is sufficient evidence that all three WGFS proposed alternative remedies fail to meet Arizona's mandatory WQARF requirement No. 3.**
MEETS WQARF REQUIREMENT No. 4 **All four RID proposed alternative remedies address any existing well in the WVBA WQARF Site that "would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably foreseeable end uses [*i.e.,* as a drinking water source] without treatment due to the release of hazardous substances."** • ADEQ has established the "reasonably foreseeable end use" for the groundwater in the WVBA WQARF Site as a drinking water source in its Remedial Objectives Report for the WVBA WQARF Site[22] and ADEQ's Land and Water Survey for the WVBA WQARF Site.[23]	**4. <u>For remediation of waters of the state, the selected remedial action shall address, at a minimum, any well</u> that at the time of selection of the remedial action either supplies water for municipal, domestic, industrial, irrigation or agricultural uses or is part of a public water system <u>if the well would now or in the reasonably foreseeable future produce water that would not be fit for its current or reasonably foreseeable end uses[24] without treatment due to the release of hazardous substances.</u> The specific measures to address any such well shall not reduce the supply of water available to the owner of the well. (ARS § 49-282.06.B.4.b)**	**FAILS WQARF REQUIREMENT No. 4** **All three WGFS proposed alternative remedies fail to address, *at a minimum*, the RID water supply wells impacted by groundwater contamination above the applicable numeric and narrative Arizona aquifer water quality standards and the applicable Remedial Objectives established for the WVBA WQARF Site that ADEQ has determined "may present an imminent and substantial endangerment to the public health, welfare or the environment within the [WVBA] WQARF Site."[25]** • The failure of all three WGFS proposed alternative remedies to address such impacted RID wells is contrary to the findings in the WGFS Report that each RID well within the WVBA WQARF Site, at the

[19] *See* ADEQ, Approval of RID's Early Response Action (June 24, 2010); ADEQ, Approval of RID's Modified Early Response Action (February 1, 2013); ADEQ, Approval of RID's Request for ADEQ Reimbursement for Incurred Costs in FY2013 (August 16, 2013); ADEQ, Approval of RID's Request for ADEQ Reimbursement for Incurred Costs in FY2014 (July 21, 2014).
[20] Cite R18-16-405.I, included text.
[21] ARS § 49-282.06.B.4.b.
[22] *See* ADEQ, Remedial Objectives Report, West Van Buren Area WQARF Registry Site, Phoenix, Arizona, 3-3 (August 8, 2012).
[23] http://www.azdeq.gov/environ/waste/sps/download/wvb/apps/app_k.pdf.
[24] Arizona has determined that "reasonably foreseeable uses of water are those likely to occur within 100 years unless a longer time period is shown to be reasonable." AAC R18-16-406.D.
[25] Agreement to Conduct Work between ADEQ and RID, dated October 8, 2009.

		time of the selection of the remedy, "supplies water for irrigation"[26] and that the RID wells within the WVBA WQARF Site "would now or in the reasonably foreseeable future produce water that would not be fit for its … reasonably foreseeable end uses without treatment due to the release of hazardous substances."[27] • All three WGFS proposed alternative remedies include future measures to address all threatened, but not yet impacted, City of Tolleson, City of Phoenix, Salt River Project and private wells, but fail to address, as required by this mandatory requirement, the existing RID water supply wells that are currently impacted above the applicable Arizona numeric and narrative aquifer water quality standards, the Remedial Objectives established for the WVBA WQARF Site, and the reasonably foreseeable end uses established by ADEQ's Land and Water Survey for the WVBA WQARF Site. **Failure of all three WGFS proposed alternative remedies to address, at a minimum, the existing RID water supply wells impacted by the groundwater contamination above the applicable Arizona numeric and narrative aquifer water quality standards, the Remedial Objectives established for the WVBA WQARF Site, and the reasonably foreseeable end uses established by ADEQ's Land and Water Survey for the WVBA WQARF Site is sufficient evidence that all three WGFS proposed alternative remedies fail to meet Arizona's mandatory WQARF requirement No. 4.**

[26] "RID has approximately 32 irrigation wells located within or adjacent to the WVBA. Although those wells are presently used exclusively for irrigation, RID's water provider plan states that RID may seek to pump those wells to supply drinking water." (WGFS, 38)

[27] The WGFS acknowledges that the WVBA COCs are currently above the AWQS and would require treatment before the water could be pumped for its reasonable foreseeable water end use as a drinking water supply: "If the COP is required to pump the UAU aquifer in the WVBA in the future prior to the time COCs have been reduced to AWQS, then a contingent measure such as well-head treatment … may be appropriate." (WGFS, 41)

MEETS WQARF REQUIREMENT No. 5	5. The reference remedy and alternative remedies shall be capable of achieving all of the remedial objectives. (AAC R18-16-407.E.1)	FAILS WQARF REQUIREMENT No. 5
All four RID proposed alternative remedies will "protect, restore, replace or otherwise provide a water supply" for all well owners within or adjacent to the WVBA WQARF Site whose "current and reasonably foreseeable future uses are impaired or lost due to contamination from the site," including a drinking water source as established by applicable Arizona law, the Remedial Objectives for the WVBA WQARF Site, and the reasonably foreseeable end uses established by ADEQ's Land and Water Survey for the WVBA WQARF Site. • All four RID proposed alternative remedies will achieve all Remedial Objectives for the WVBA WQARF Site by including remedial strategies and measures that will control further migration of the plume, contain the plume within its current boundaries and remove and treat the contaminants "to protect, restore, replace or otherwise provide a water supply…if the current and reasonably foreseeable future uses [including a drinking water source] are impaired or lost due to contamination from the site." • All four RID proposed alternative remedies "shall remain in effect as long as required to ensure the continued achievement of those [remedial] objectives."	• ADEQ has established the following mandatory Remedial Objective for the WVBA WQARF Site: "To protect, restore, replace or otherwise provide a water supply for municipal use by currently and reasonably foreseeable future municipal well owners within the WVBA WQARF Site if the current and reasonably foreseeable future uses are impaired or lost due to contamination from the site. Remedial actions will be in place for as long as need for the water exists, the resource remains available and the contamination associated with the WVBA WQARF Site prohibits or limits groundwater use." (ADEQ, Remedial Objectives Report, WVBA WQARF Registry Site, 3-3 (August 2012)) • "Where remedial measures are relied upon to achieve Remedial Objectives, such remedial measures shall remain in effect as long as required to ensure the continued achievement of those objectives." (AAC R18-16-407.G). • ADEQ acknowledges that RID constitutes a "reasonably foreseeable future municipal well owner[] within the WVBA WQAR Site." (ADEQ, Remedial Objectives Report, WVBA WQARF Registry Site, 3-3 (August 2012))	**All three WGFS proposed alternative remedies fail to include remedial strategies or measures that will "protect, restore, replace or otherwise provide a [drinking] water supply" for RID's existing water supply wells that "are impaired or lost due to contamination from the [WVBA] site" based on the groundwater contamination that currently impacts 14 RID wells above the applicable Arizona numeric and narrative aquifer water quality standards, the Remedial Objectives for the WVBA WQARF Site, and the reasonably foreseeable end uses established by ADEQ's Land and Water Survey for the WVBA WQARF Site.** • Also, each WGFS proposed alternative remedy after 2025, according to the assertions in the WGFS, would allow for the uncontrolled downgradient migration of the hazardous substances "towards the regional pumping depression known as the Luke Sink, near the Luke Air Force Base" (WGFS, 7) that could threaten and impact additional groundwater resources and other existing water supply wells, and thereby impair "reasonably foreseeable future uses." • All three WGFS proposed alternative remedies cease any treatment after 2025, according to the assertions in the WGFS, regardless if all the Remedial Objectives and cleanup standards (for "protection of public health and welfare and the environment" or for an aquifer classified as a drinking water aquifer) have not been achieved, "public health and welfare and environmental" risks remain, or the contamination associated with the WVBA WQARF Site prohibits or limits present or reasonably foreseeable future groundwater uses.

		Failure of all three WGFS proposed alternative remedies "to protect, restore, replace or otherwise provide a [drinking] water supply" for RID's existing water supply wells that "are impaired or lost to [groundwater] contamination from the [WVBA] site" is sufficient evidence that all three WGFS proposed alternative remedies fail to meet Arizona's mandatory WQARF requirement No. 5.