Attachment A

Janice K. Brewer
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Henry R. Darwin
Director

February 1, 2013

RPU:13-155

Mr. Donovan L. Neese
Superintendent
Roosevelt Irrigation District
103 West Baseline Road
Buckeye, Arizona 85326

RE: Conditional Approval of RID's Modified Early Response Action Work Plan
West Van Buren WQARF Registry Site
Phoenix, Arizona

Dear Mr. Neese:

The Arizona Department of Environmental Quality (ADEQ) Remedial Projects Unit (RPS) has completed its review of the *Modified Early Response Action Work Plan* (Modified ERA Work Plan), *West Van Buren WQARF Registry Site, Phoenix, Arizona*, dated October 2012, and prepared by Synergy Environmental, LLC on behalf of the Roosevelt Irrigation District (RID). The Modified ERA Work Plan serves as a modification to RID's original Early Response Action (ERA) Work Plan dated February 3, 2010. ADEQ has reviewed the Modified ERA Work Plan only as it pertains to the objectives outlined in the Modified ERA Work Plan. Specifically, RID's objective to protect RID's supply of water and addressing current and future risks to public health, welfare, and the environment [Arizona Administrative Code (AAC) R18-16-405(A)].

Based on our analysis of available information, ADEQ conditionally approves, the October 2012 Modified ERA Work Plan. This approval supersedes ADEQ's approval of the previous ERA Work Plan dated February 3, 2010. The conditional approval is contingent upon the following:

1. RID must maintain historical pumping rates to ensure that there are no adverse impacts to groundwater quality and levels within the West Van Buren Area. Water levels must be maintained at or near current levels taking into account natural variations.

2. As stated in the Public Health Exposure Assessment and Mitigation Summary Report, prepared by Synergy Environmental, LLC and dated September 16, 2011, "there is not an imminent (acute) risk to public from the contamination being released from the RID

water systems." However, long-term effects are uncertain and data also shows that "significant volatilization and transfer of contaminants, from the water into the air, is occurring and is ongoing." Based on these statements, RID intends to implement measures to limit these exposures. ADEQ's conditional approval is contingent on RID's implementation of these measures.

ADEQ analyzed the Modified ERA Work Plan to determine compliance with applicable State statutes and rules. ADEQ has not reviewed whether the Modified ERA Work Plan is consistent with any federal laws or regulations. ADEQ also did not review information contained in the Modified ERA Work Plan not relevant to the stated objectives. This includes, but is not limited to, the ancillary benefits from implementing the RID Modified ERA Work Plan. ADEQ agrees that these can be considered during the West Van Buren WQARF Feasibility Study. ADEQ's conditional approval also does not include an analysis or approval of the transport or final disposition and use of the treated water.

As stated, the Modified ERA Work Plan incorporates all relevant and applicable information from the original ERA Work Plan

I look forward to working with you and other parties as you begin this process. Please contact me at 602-771-4567 or llm@azdeq.gov should you have any questions.

Sincerely,

Laura L. Malone

Laura L. Malone, Director
Waste Programs Division
Arizona Department of Environmental Quality

cc: Henry Darwin, ADEQ
Tina LePage, ADEQ
Andre' Chiaradia, ADEQ
Kevin Snyder, ADEQ

Attachment B

Roosevelt Irrigation District Groundwater Remediation Project in the West Van Buren Area WQARF Site

Meeting with
U.S. Environmental Protection Agency

March 13, 2018

AGENDA

- Purpose of meeting
- History of WVBA and EPA Involvement
- Site Demographics
- Regional groundwater contaminant plume
- Timeline of RID remedial actions
  - RID Early Response Action / Modified ERA
  - RID Feasibility Study and Selected Groundwater Remedy
- NCP Compliance of RID's Remedial Actions
- Next Steps
  - Cooperative Agreement
  - Future Optimization, if appropriate

PURPOSE OF MEETING

- Brief EPA on the RID Remediation Project:
  - Regional Groundwater P&T Remedy in the West Van Buren Area WQARF Site
  - Voluntary
  - P3 Funded and Performed
  - ADEQ-approved and NCP-compliant
  - Addressing the Largest Groundwater VOC Contaminant Plume in Arizona (one of the largest in the country)
    - Geographic extension of the groundwater contamination migrating from the Motorola 52nd Street Superfund Site
- Seeking EPA administrative help – NOT MONEY

PURPOSE OF MEETING

- RID Project should be the poster-child example of EPA's new Superfund Initiative
  - Administrator Pruitt commissioned the Superfund Task Force on May 22, 2017 … to "provide recommendations on an expedited timeframe on how the agency can restructure the cleanup process, realign incentives of all involved parties to promote expeditious remediation, reduce the burden on cooperating parties, incentivize parties to remediate sites, encourage private investment in cleanups and sites and promote the revitalization of properties across the country."
- EPA administrative help needed because of the:
  - On-going violations of applicable groundwater cleanup and water quality end use standards,
  - On-going obstruction and delay of needed remediation by PRPs, and
  - On-going social and environmental injustice for exposure of the low income, minority local community to uncontrolled releases of toxic substances

WVBA WQARF Site Timeline

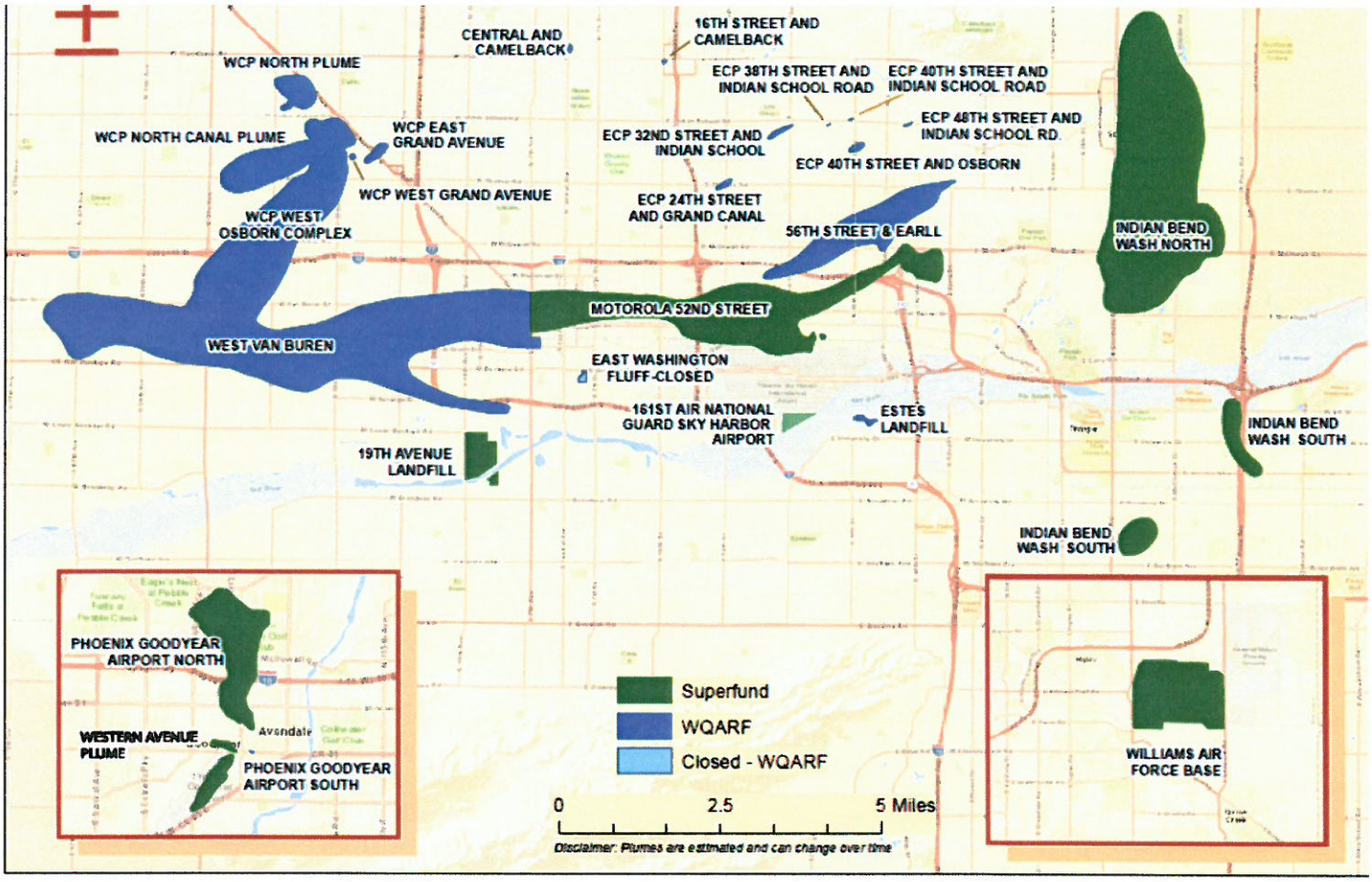
Early History (1987 – 2009):

- WVBA Site listed on WQARF Registry in 1987
- Site characterization, PRP search, facility regulatory actions, and groundwater modeling
  - Over 50 Facilities investigated

  [****WQARF Reform Legislation in 1997 ****]
- Draft Remedial Investigation Report – 2008
  - Nine primary source areas identified
  - Draft RI Report finalized in 2012
- RID/ADEQ/EPA/P3 meetings – 2009
  - Potential OU4 Overfile and Gentleman's Agreement

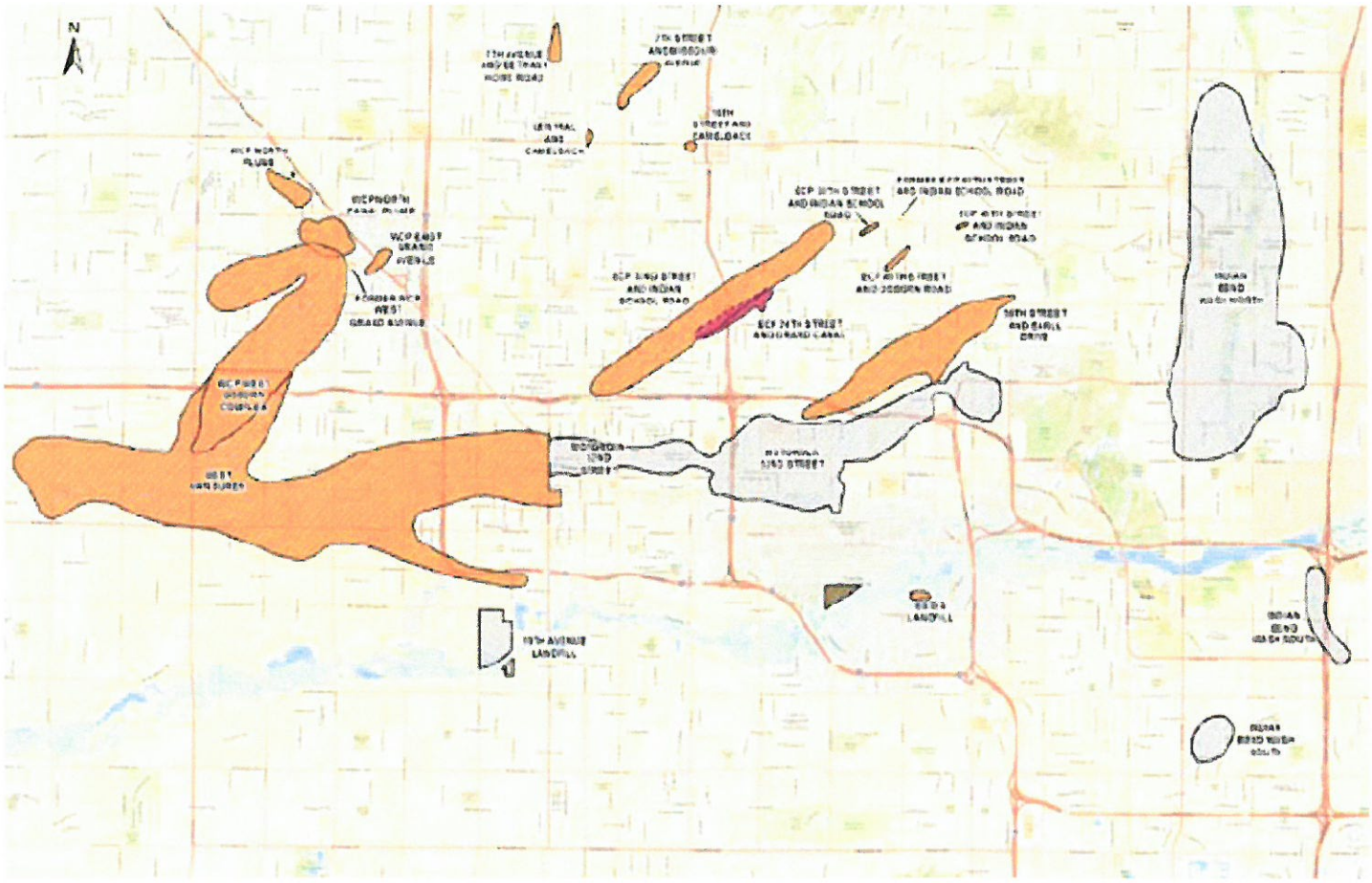
METROPOLITAN PHOENIX SITES

Source: ADEQ FY15 WQARF Annual Report

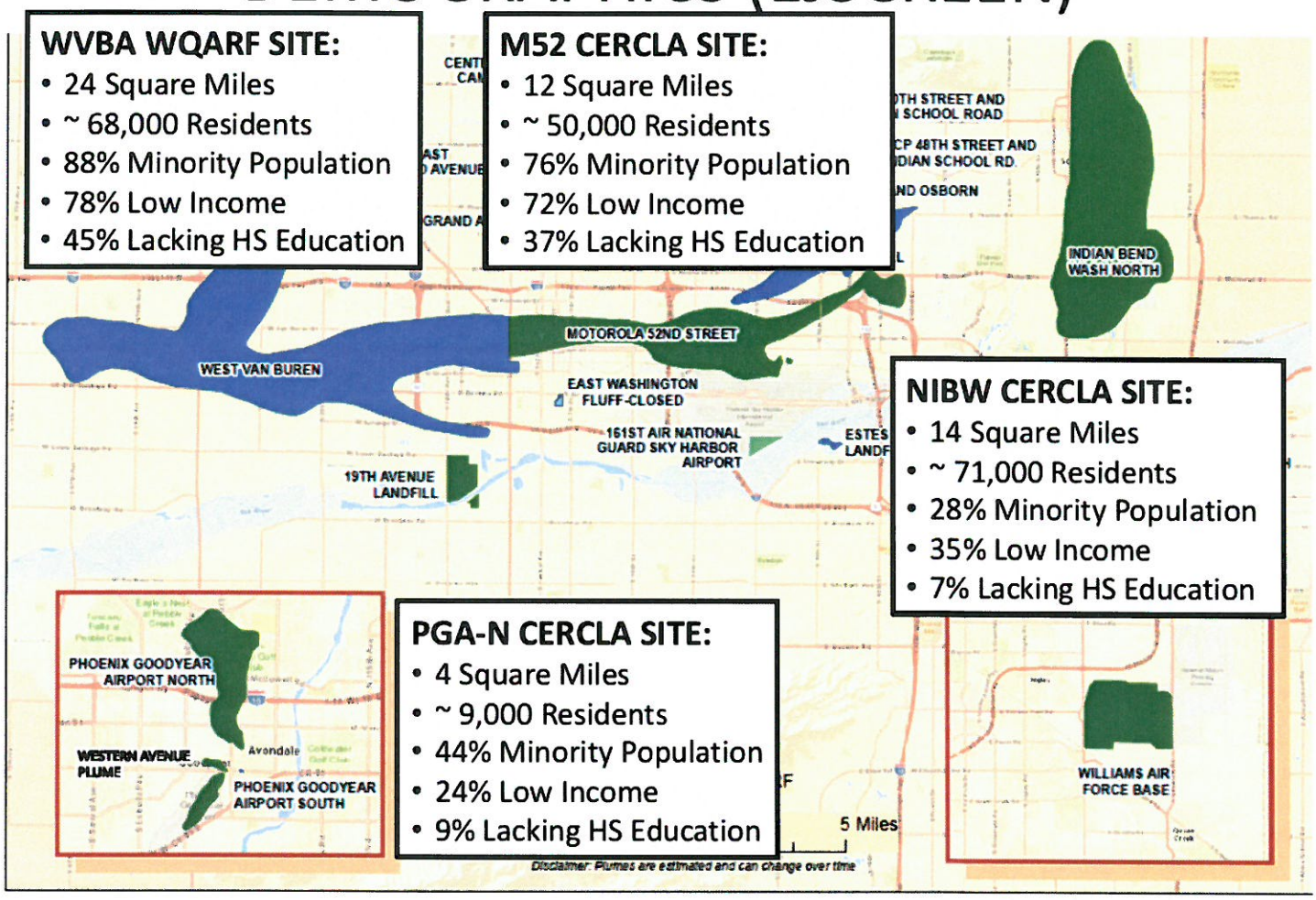


METROPOLITAN PHOENIX SITES

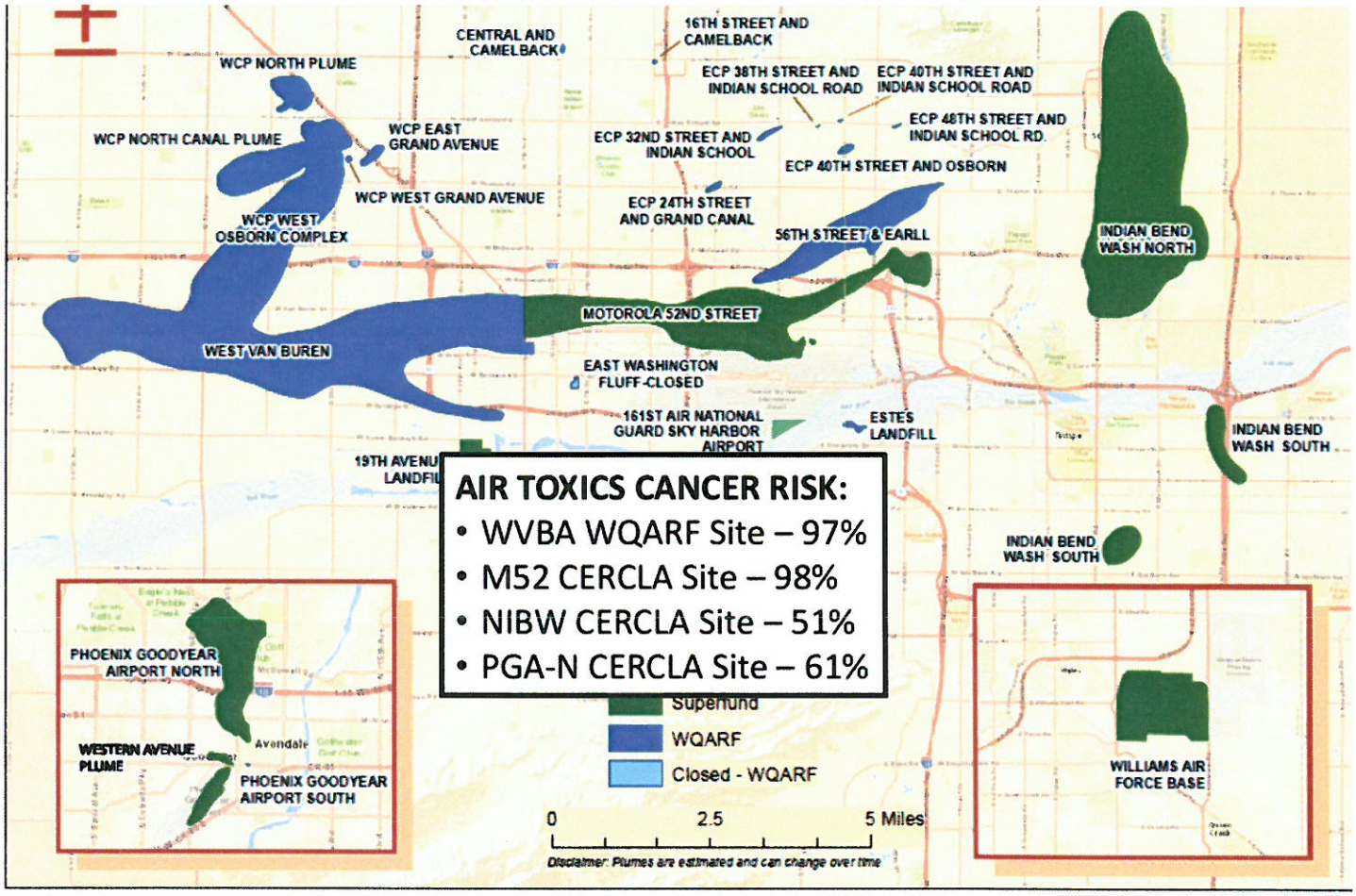
Source: ADEQ FY17 WQARF Annual Report



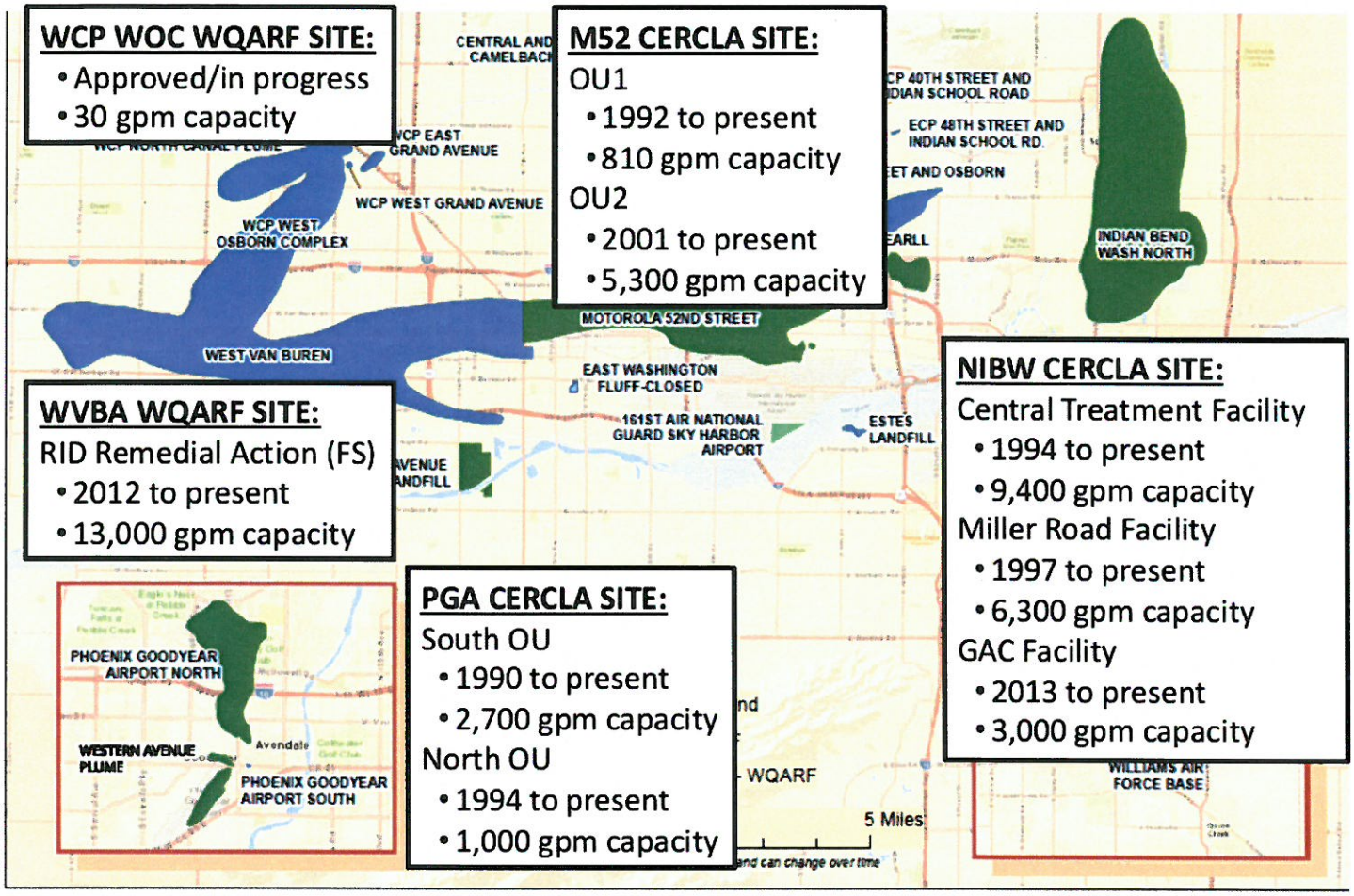
DEMOGRAPHICS (EJSCREEN)



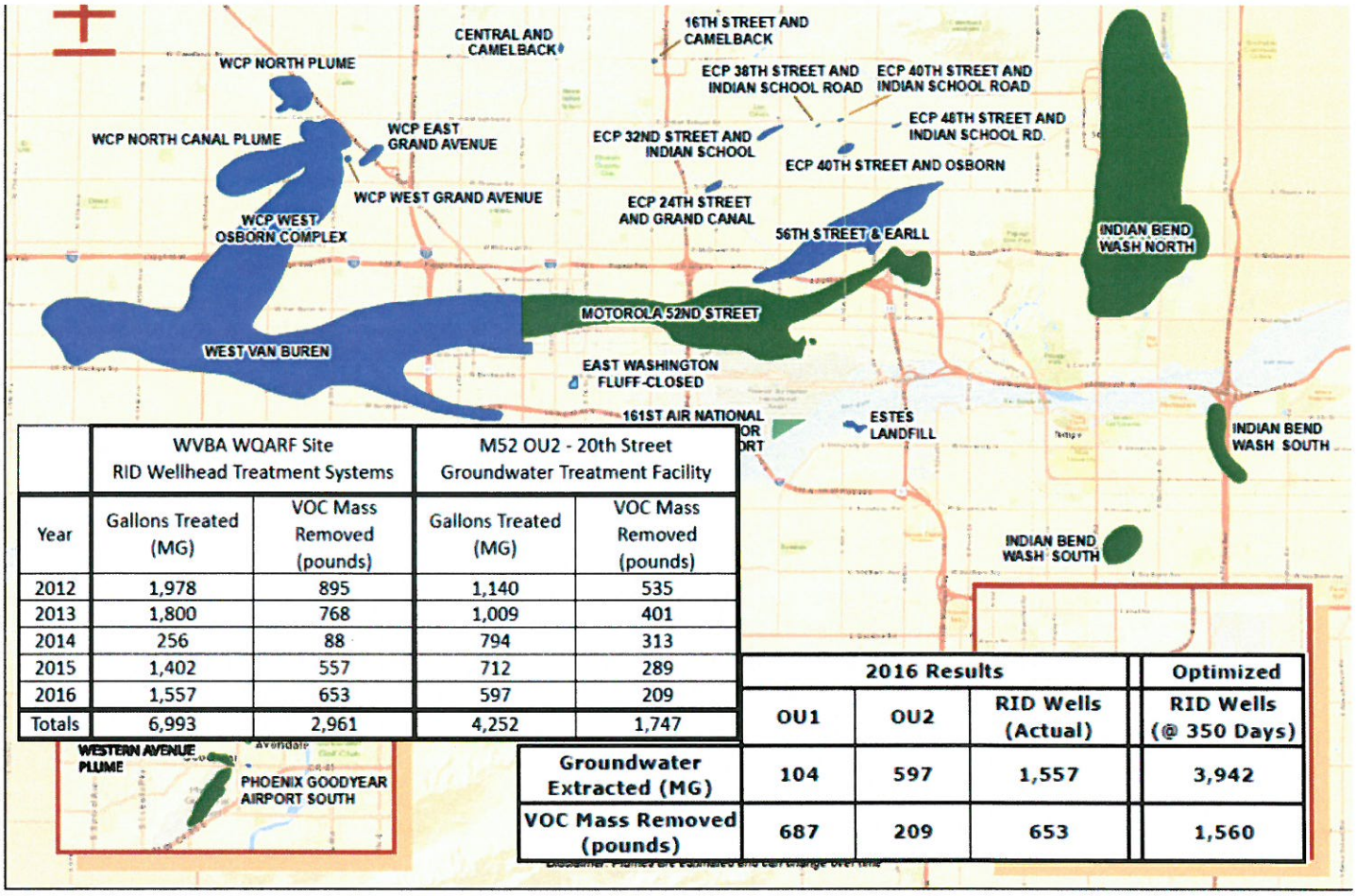
DEMOGRAPHICS (EJSCREEN)



GROUNDWATER P&T REMEDIAL ACTIONS



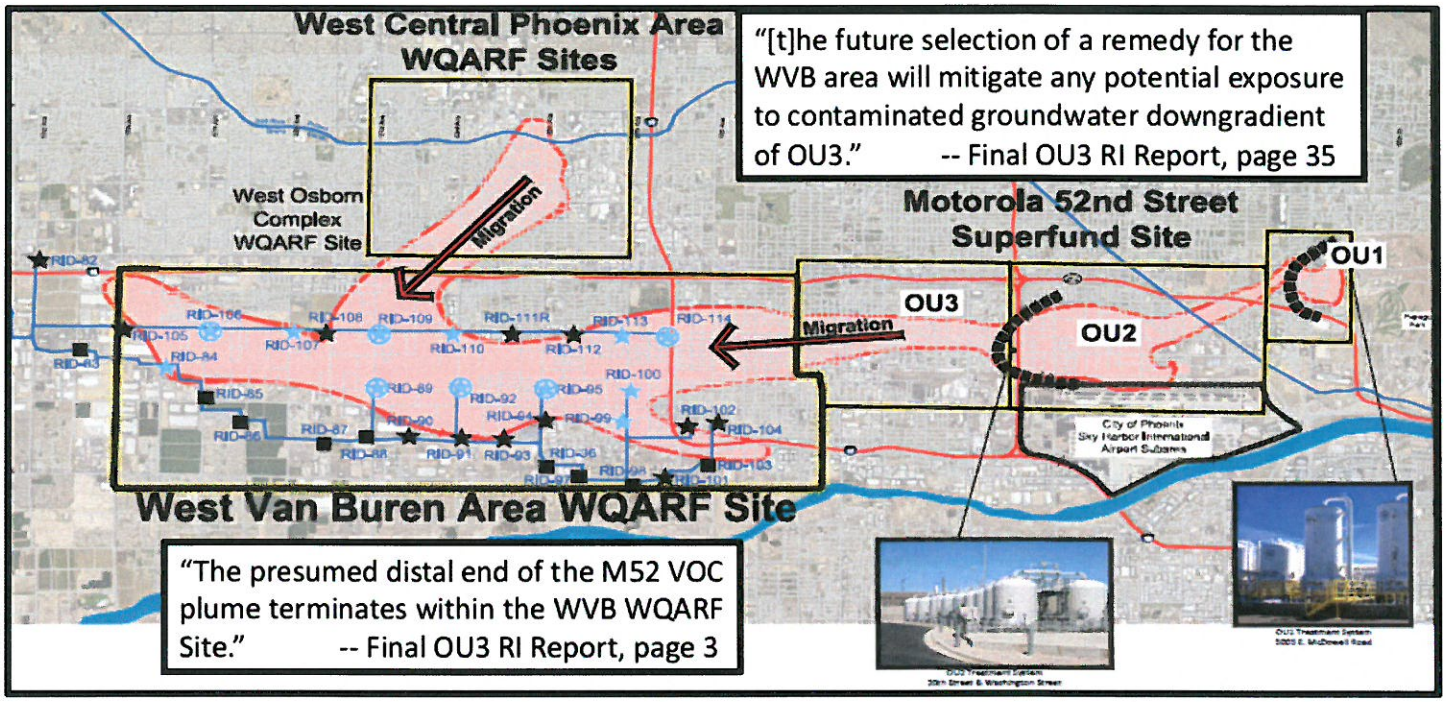
REMEDIAL ACTION METRICS



	WVBA WQARF Site RID Wellhead Treatment Systems		M52 OU2 - 20th Street Groundwater Treatment Facility	
Year	Gallons Treated (MG)	VOC Mass Removed (pounds)	Gallons Treated (MG)	VOC Mass Removed (pounds)
2012	1,978	895	1,140	535
2013	1,800	768	1,009	401
2014	256	88	794	313
2015	1,402	557	712	289
2016	1,557	653	597	209
Totals	6,993	2,961	4,252	1,747

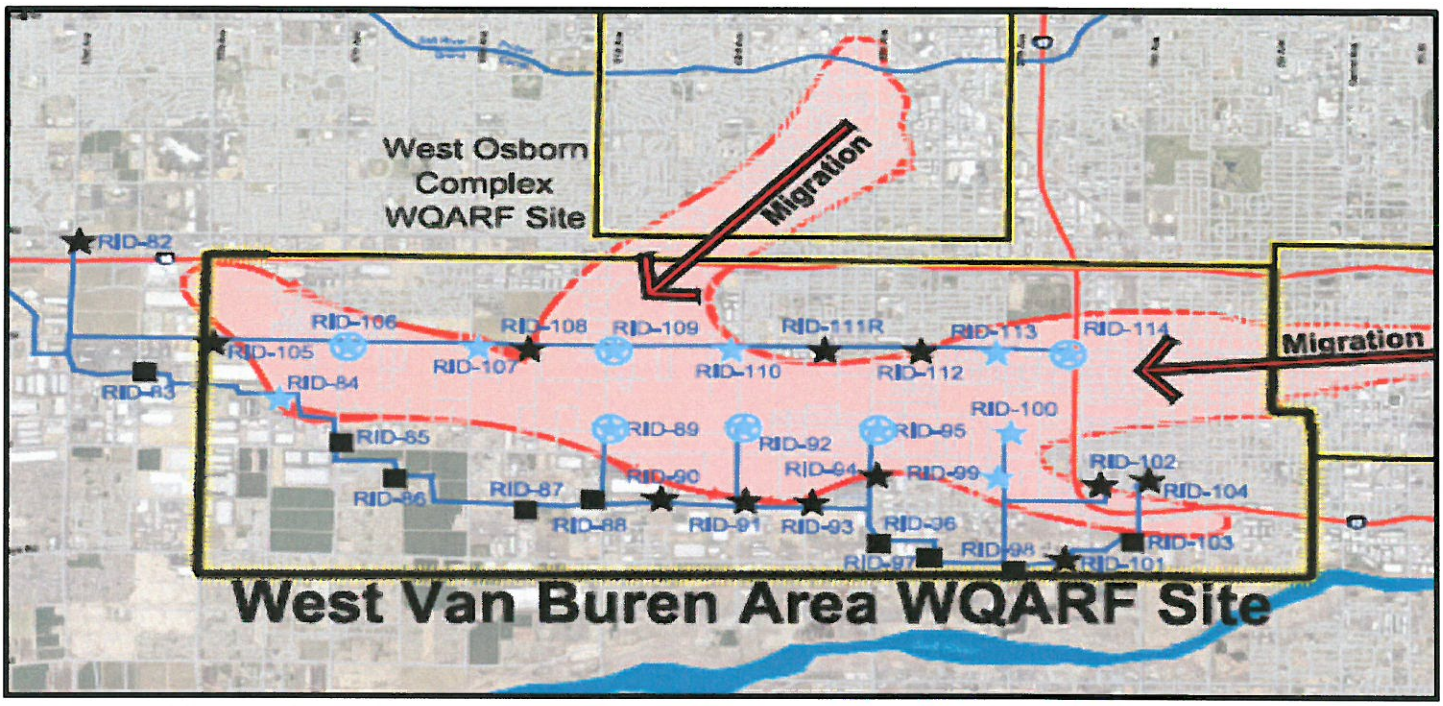
	2016 Results			Optimized
	OU1	OU2	RID Wells (Actual)	RID Wells (@ 350 Days)
Groundwater Extracted (MG)	104	597	1,557	3,942
VOC Mass Removed (pounds)	687	209	653	1,560

CENTRAL PHOENIX REGIONAL PLUME



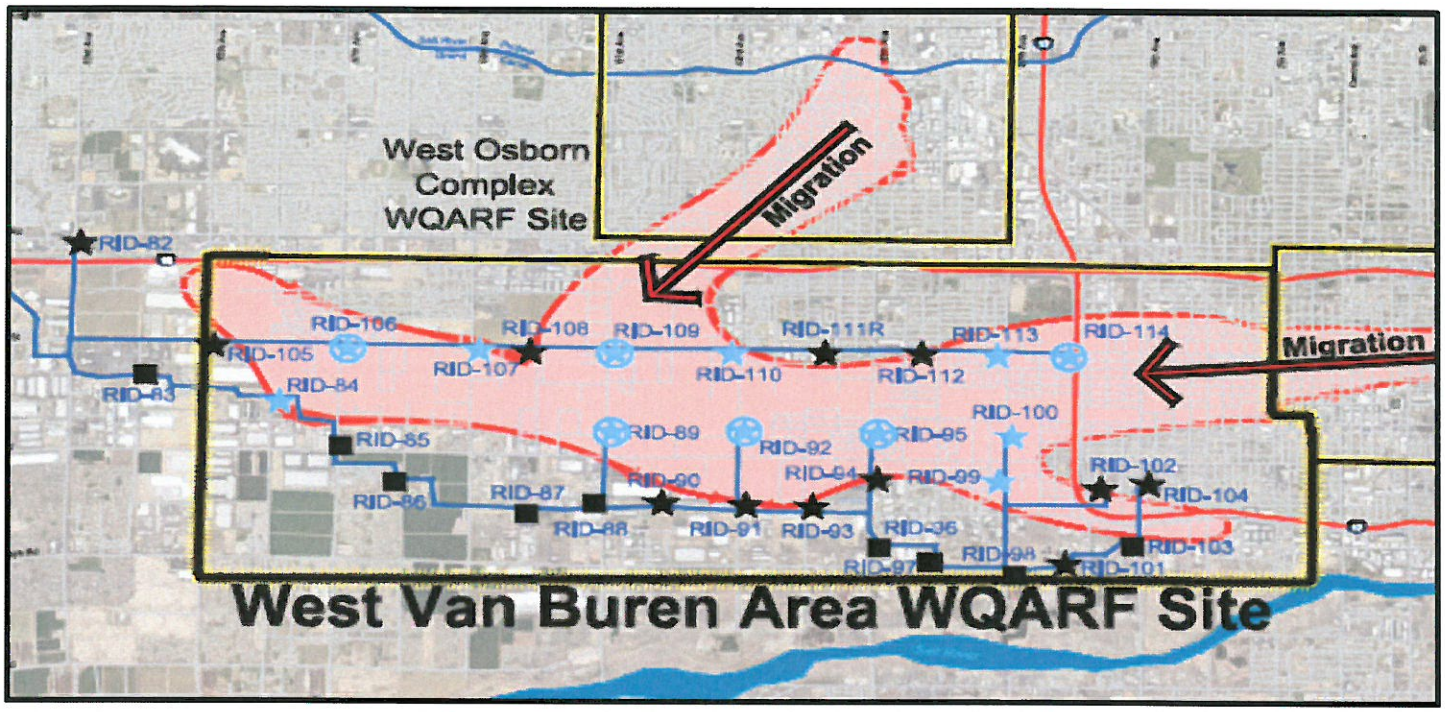
- Single, nearly 15-mile long commingled plume originating from numerous, widespread VOC releases within 3 separate "Superfund" sites
- VOC contamination generally limited to shallow (UAU) groundwater system
- RID pumping creates regional hydraulic trough or sink within the WVBA Site, resulting in area-wide hydraulic control of the shallow groundwater system (*See* Feasibility Study Report prepared by the West Van Buren Working Group, December 2015)

DEGREE OF WVBA CONTAMINATION



- Upper Alluvial Unit (UAU1)
  - Up to 68 ppb TCE and 84 ppb PCE
  - Concentrations declining
- Upper Alluvial Unit (UAU2)
  - Up to 189 ppb TCE and 12 ppb PCE
  - Concentrations steady
- Middle Alluvial Unit (upper MAU) – not well defined

RID OPERATIONS IN WVBA SITE



- RID operates 33 wells in WVBA Site vicinity; pump ~ 80,000 acre-feet per year
- At least 23 RID wells impacted by VOCs with 12 wells exceeding TCE and/or PCE MCLs … with up to 92 ppb TCE and 21 ppb PCE
- RID conveys water in Salt and Main Canal to Goodyear and Buckeye; for irrigation & future M&I uses

RID'S VOLUNTARY REMEDIAL ACTIONS

- RID Agreement to Conduct Work (2009)
- RID Early Response Action (2010)
- RID Wellhead Treatment Pilot Proposal (2011)
- RID Installs LGAC Treatment Systems at 4 wells (2012)
- RID Modified Early Response Action (2012)
- RID Feasibility Study Work Plan (2013)
- RID Feasibility Study Report (2014)
- RID Proposed Remedial Action Plan (2015, later withdrawn at ADEQ's request)
- RID Requests for Funding Options (2016-2017)
  - ADEQ (Orphan Share, Reimbursement, Cost Sharing)
  - Private Funds (Secured but no government assurance of right to implement ADEQ-approved remedial action)
  - EPA (oversight or funds)

ADEQ APPROVALS OF RID WORK

KEY WORK PRODUCTS:

- **Agreement to Conduct Work** – ADEQ execution on October 9, 2009
  - "ADEQ has determined that releases or threatened releases of hazardous substances have occurred … resulting in groundwater contamination that impacted multiple RID water supply wells which may present an imminent and substantial endangerment to the public health, welfare, or the environment."
  - "Parties desire that RID conduct the ERA and FS (collectively the 'Work')"
  - "RID agrees to conduct all Work under the approved Plan. … All Work conducted by RID shall be performed in accordance with rules adopted under A.R.S. § 49-282.06."

ADEQ APPROVALS OF RID WORK

- **ERA Work Plan** – ADEQ approval on June 24, 2010
  - ADEQ "has reviewed … the ERA Work Plan. The Work Plan summarizes technical information regarding the Site, provides justification for an ERA, and describes an ERA remedy designed to remediate contaminated groundwater within the Site."
  - "In addition to the ERA Work Plan, ADEQ has also carefully analyzed technical and legal documents and correspondence contained in the State file, including submittals by RID and other interested parties since September 2009, and comments received through the public participation process."
  - "RID has a unique opportunity to increase the removal of contamination from the aquifer via its wells … [and] [w]ithout treatment, these contaminants will continue to degrade the quality of the aquifer within the Site."
  - The ERA will "maximize the benefit of pumping and treating contaminated groundwater within the Site, which is intended to result in aquifer restoration and reduce the cost of the final remedy."
  - "ADEQ analyzed the ERA Work Plan to determine compliance with applicable state statutes and rules."

ADEQ APPROVALS (cont.)

- **Wellhead Treatment System Pilot Proposal** – ADEQ approval on Sept. 2, 2011
  - The work is "being undertaken to determine whether well head treatment can be an effective treatment technology … [to reduce] the costs of the final remedy … and/or mitigating contaminant exposure."
  - "ADEQ concurs that the implementation of the work plan may yield data justifying a modification to the ERA, and therefore agrees to its implementation."
- **Modified ERA Work Plan** – ADEQ approval on Feb. 1, 2013
  - "ADEQ has reviewed the Modified ERA Work Plan only as it pertains to the objectives … <u>to protect RID's supply of water and addressing current and future risks to public health, welfare, and the environment</u>."
  - "ADEQ conditionally approves the October 2012 Modified ERA Work Plan [and] this approval supersedes ADEQ's approval of the previous ERA Work Plan."
  - "ADEQ's conditional approval is <u>contingent on RID's implementation of … measures to limit these exposures" from volatilization of hazardous VOCs since the "long-term effects are uncertain and data also shows that … 'significant volatilization and transfer of contaminants, from water into the air, is occurring and ongoing</u>.'"
- **Feasibility Study Work Plan** – ADEQ approval on July 6, 2013

ADEQ APPROVALS (cont.)

- **Wellhead Treatment System O&M Plan** – ADEQ approval in April 2015; most recent version approved in Feb. 2016
- **Revised Draft Feasibility Study Report** – ADEQ approval on April 13, 2015
  - "ADEQ has determined that the FS Report meets the requirements of Arizona Revised Statutes 49-287.03 and Arizona Administrative Code R-18-16-407."
  - "... because competing State-wide budget priorities have resulted in continued underfunding of WQARF, ADEQ will be discontinuing all discretionary work on the WVB WQARF Site at this time."
- **WQARF Reimbursement** – ADEQ approval in FYs 2013-2015 for a total of more than $600,000
  - ADEQ reimbursed RID "for its reasonable, necessary and cost-effective remedial action costs that were incurred in response to a release or threat of a release of a hazardous substance ... that presents an immediate and substantial endangerment to the public health or environment."

RID EARLY RESPONSE ACTION

Original ERA Work Plan – As Approved

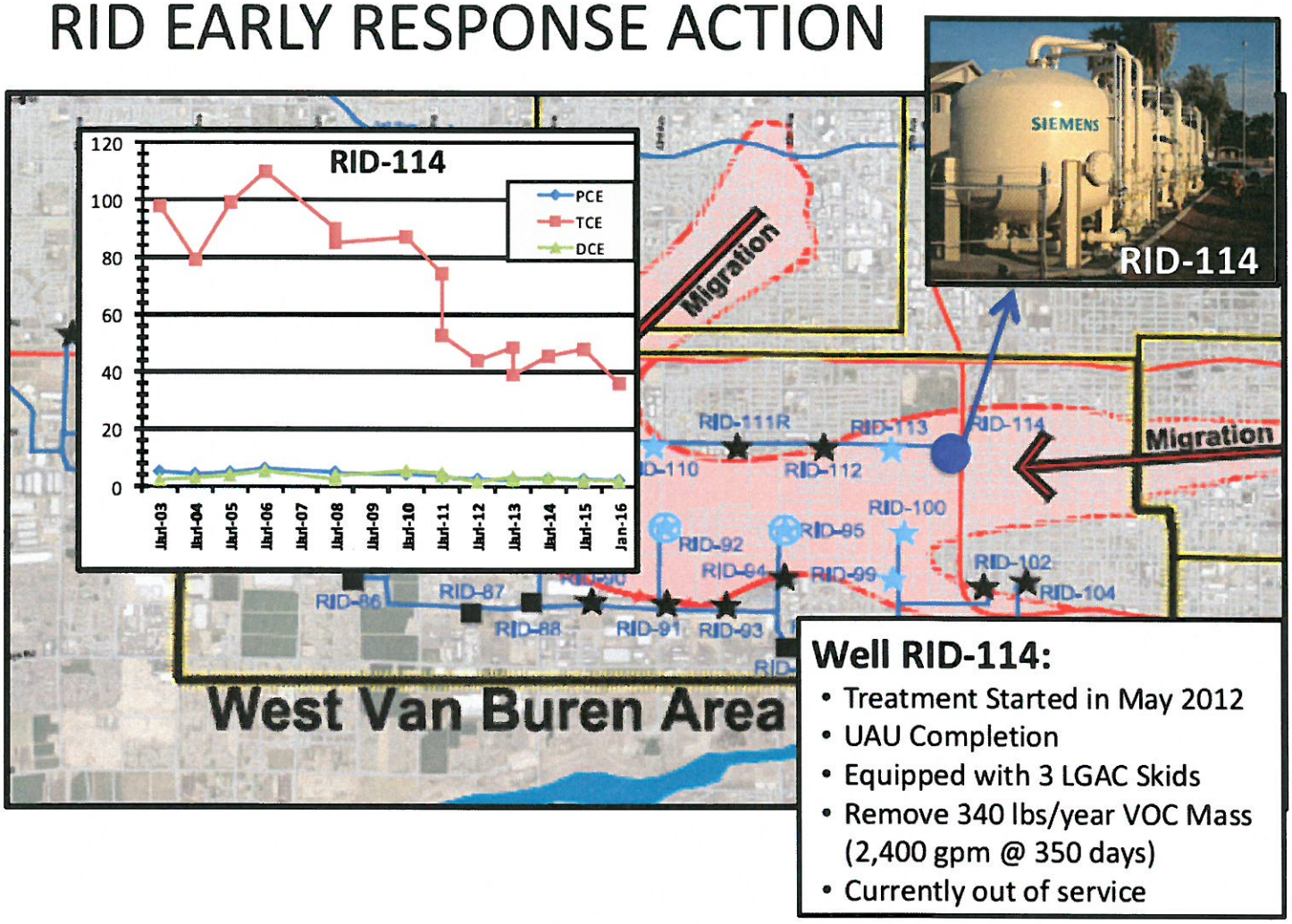
- A new priority pumping regimen for the RID wellfield to maximize removal of hazardous substances from the groundwater while maintaining current annual groundwater withdrawal
- Address the 10 most highly contaminated RID wells to remove thousands of pounds of VOCs from the groundwater annually
- Construction of a new centralized treatment facility to reliably remove VOCs and reduce their concentrations to meet standards applicable for all beneficial uses.
- Physical improvements to selected RID wells and canals to reduce emission of VOCs from water to air and to reduce exposure to VOCs
- Discharge of treated water to the RID Main Canal for irrigation use or to a new pipeline for potable use.

RID EARLY RESPONSE ACTION

"Modified" ERA Work Plan – As Approved

- Utilizes wellhead treatment systems with LGAC at 8 most highly contaminated RID wells in lieu of the central water treatment facility
- Eliminates lateral pipelines to connect southern tier wells and the Salt Canal
- Utilizes a combination of treatment and blending to effectively reduce the concentration of VOCs from several additional wells with lower contaminant concentrations, resulting in lower volume of contaminated water being directly treated while ensuring RID water supplies meet applicable MCLs to ensure protection of all current and reasonably foreseeable end uses
- Reduces capital and O&M costs by 50%

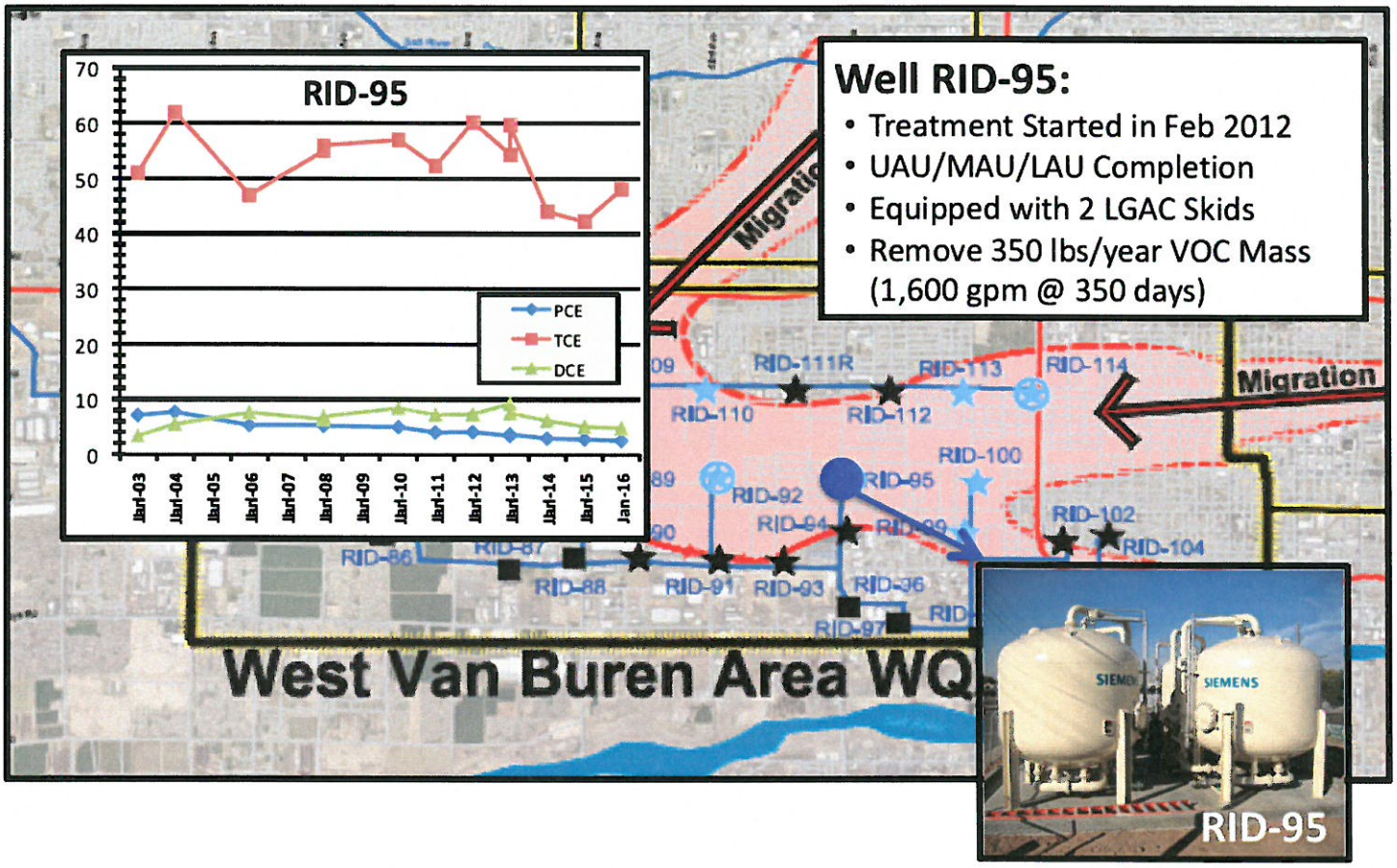
RID EARLY RESPONSE ACTION



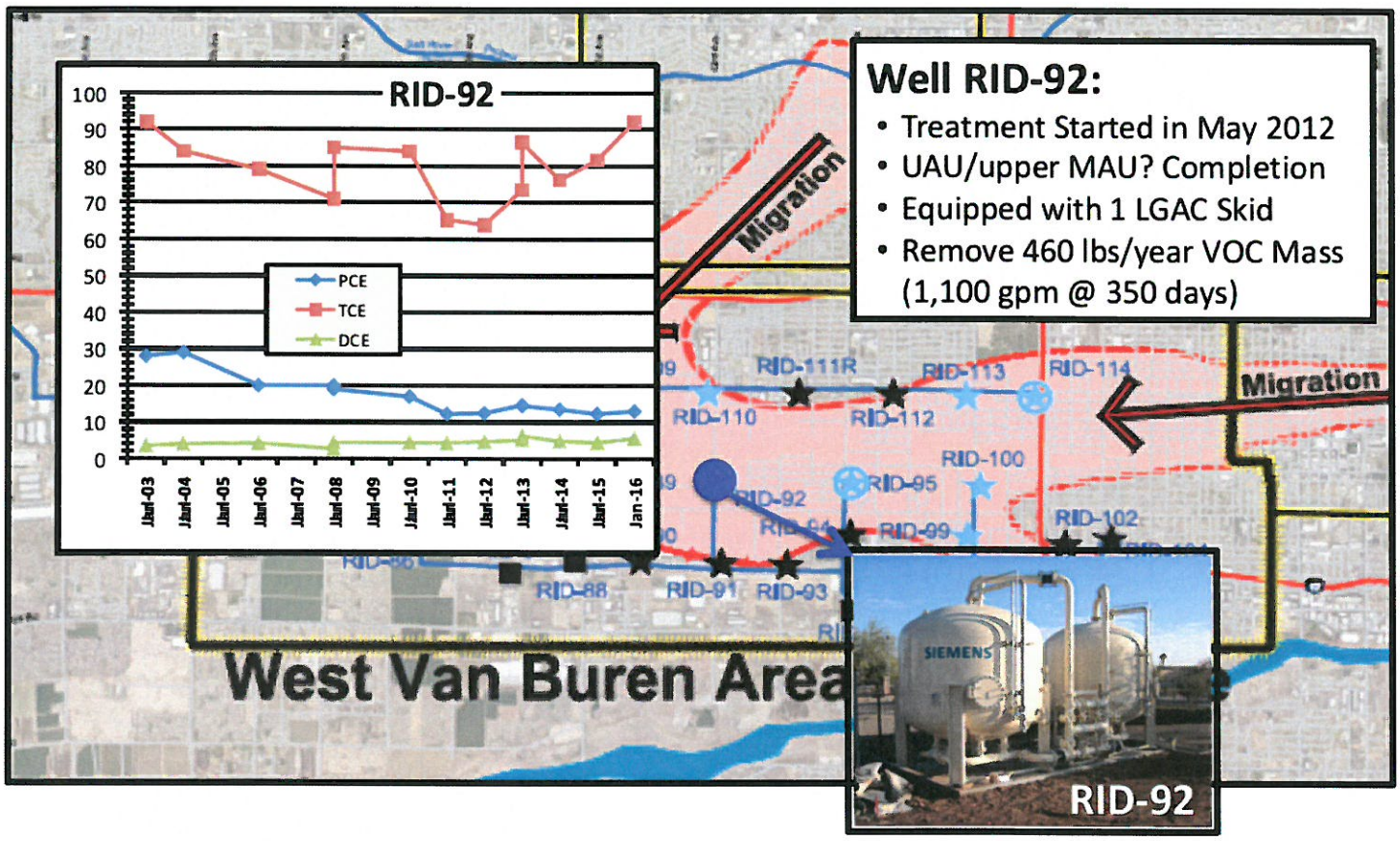
Well RID-114:

- Treatment Started in May 2012
- UAU Completion
- Equipped with 3 LGAC Skids
- Remove 340 lbs/year VOC Mass (2,400 gpm @ 350 days)
- Currently out of service

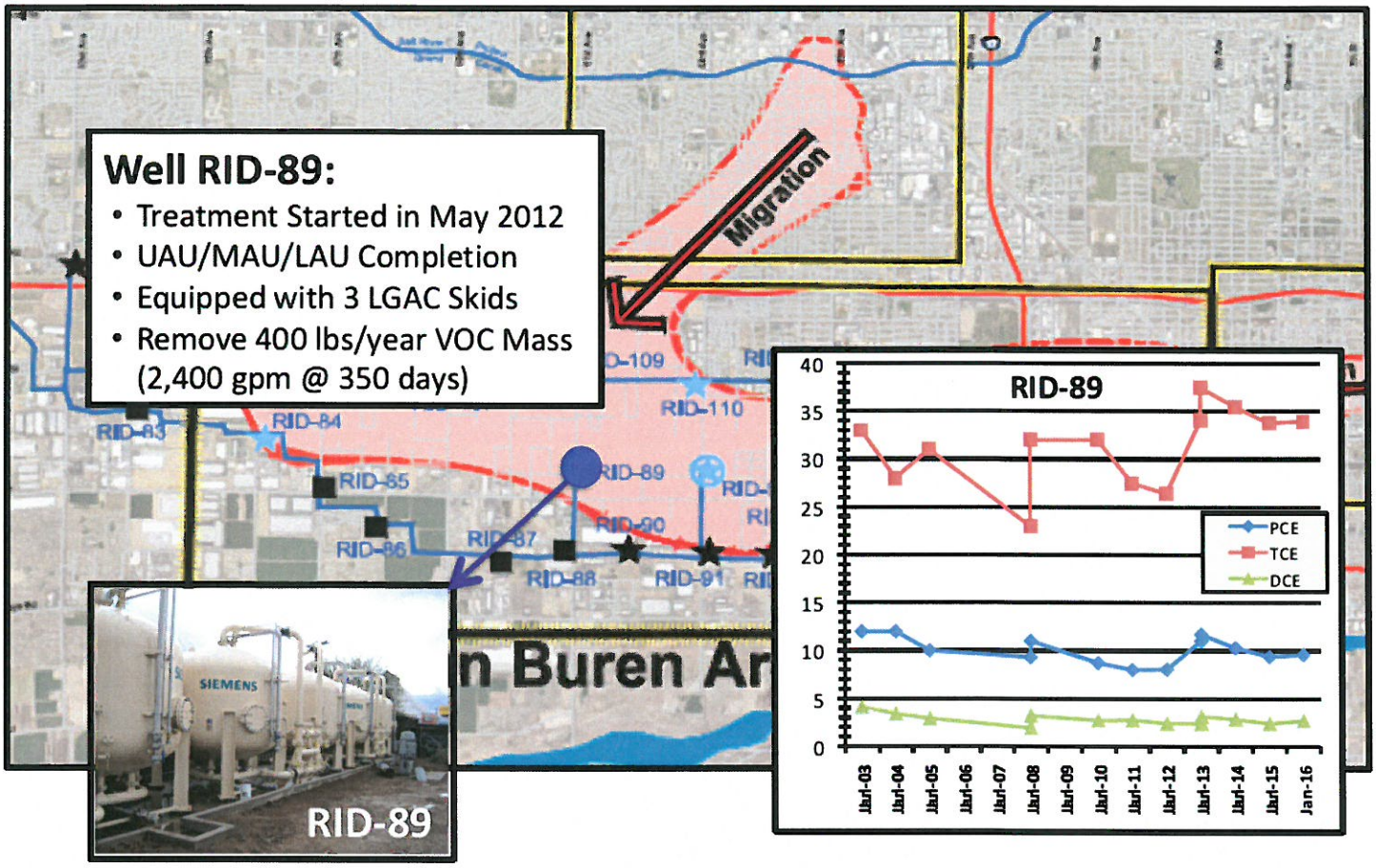
RID EARLY RESPONSE ACTION



RID EARLY RESPONSE ACTION



RID EARLY RESPONSE ACTION



RID FEASIBILITY STUDY REPORT

Feasibility Study Report – As Approved

- Updated ADEQ Central Phoenix Plume Model applied to comparative analysis of remedial alternative
- Four Remedial Alternatives Evaluated:

  Reference Remedy – treatment at 9 RID well sites with blending to address other impacted wells; 2 replacement wells

  Less Aggressive Alternative – treatment at 6 RID well sites with blending to address other impacted wells; 1 replacement well

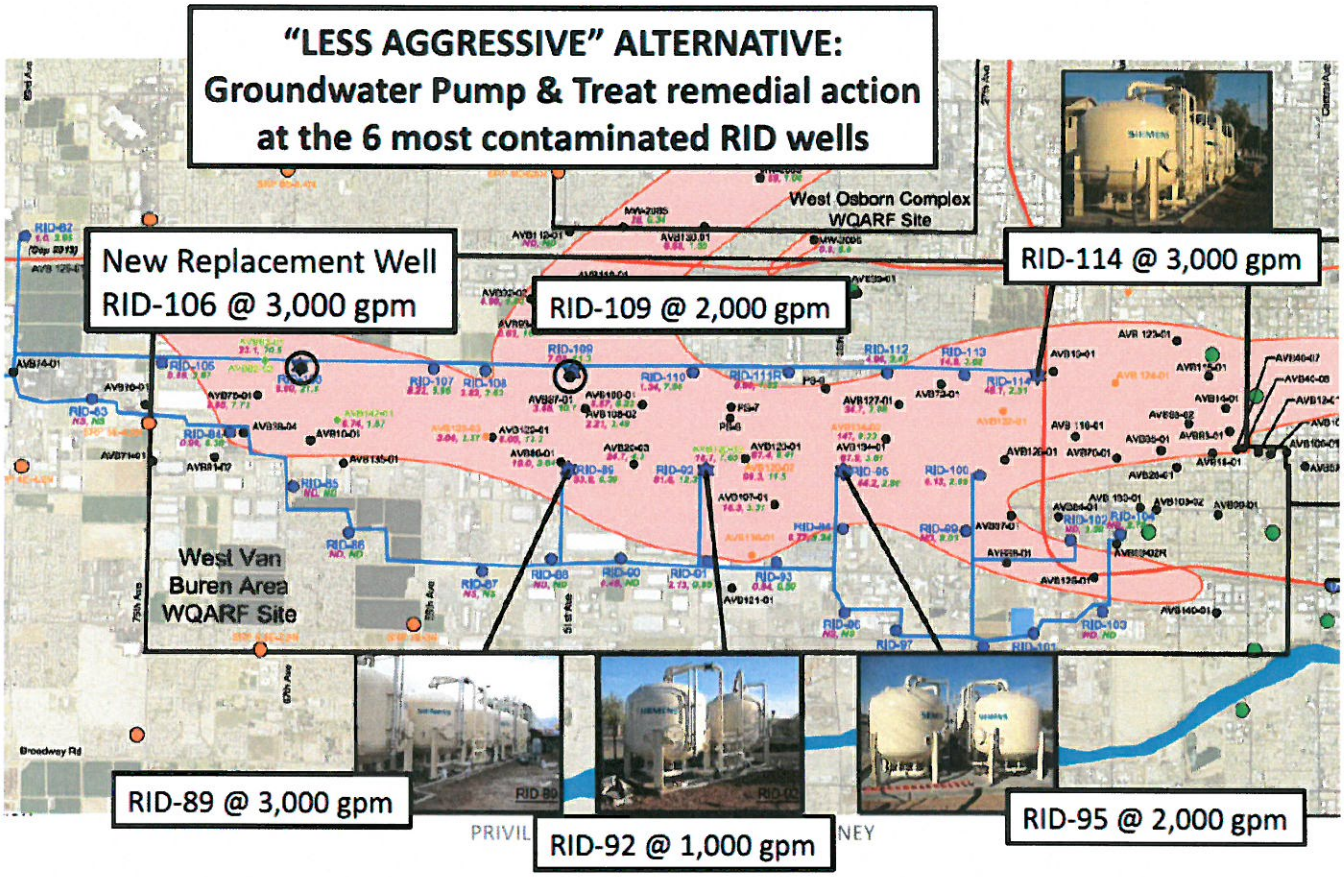
  More Aggressive Alternative – treatment at 6 RID well sites with blending and re-injection to address other impacted wells; 1 replacement well

  Most Aggressive Alternative –treatment at all 12 RID well sites exceeding MCLs; 2 replacement wells
- Less Aggressive Alternative was selected remedy

  $9.4 Million – Capital Cost

  $2.0 Million – Annual O&M

ADEQ-Approved FS Remedial Action



RID COMPLIANCE WITH NCP

- **Reasonable, necessary and cost-effective course of action to protect public health and the environment**
  - ADEQ approvals determined RID remedial actions to be "reasonable, necessary and cost-effective"
  - RID remedial actions meet applicable state water quality standards and USEPA maximum contaminant levels (MCLs) that are exceeded at WVBA Site and RID's water supply wells
  - RID remedial actions utilize reliable LGAC treatment for VOCs
  - RID remedial actions are more cost-effective than other Arizona VOC-contaminated groundwater cleanups (See attached comparison chart)
- **Provide public information and community input**
  - RID prepared and submitted at least 70 letters, responding to 37 ADEQ letters and/or requests and 114 PRP communications and/or work products
  - RID attended at least 45 meetings with ADEQ
  - RID attended at least 73 meetings with other stakeholders (e.g. CAB, ADWR, PRPs, elected officials, water providers, cities, etc)

RID COMPLIANCE WITH NCP (cont.)

- **Evaluation of the health and environmental threat**
  - RID remedial actions prevent exposure to groundwater containing COCs exceeding USEPA MCLs
  - RID remedial actions contain and capture groundwater containing COCs exceeding MCLs
  - RID remedial actions restore aquifer to beneficial use, which is potable water
- **Evaluate alternatives to achieve remedial objectives**
  - ADEQ approval determined that RID's FS Report complied with the requirements of ARS § 49-287.03 and AAC R-18-16-407
- **Comply with all ARARs**
  - RID remedial actions achieve ADEQ's remedial action criteria in A.R.S. § 49-282.06.A-B (See attached WQARF/ Superfund comparison charts)

U.S. DISTRICT COURT'S SUMMARY JUDGMENT

Compliance with NCP:

- "RID was able to meet its burden of providing evidence that it substantially complied with CERCLA."
- "In considering RID's overall methods, however, the Court finds that 'while certainly not in perfect compliance,' RID did as a matter of law substantially comply with the applicable requirements set forth in the NCP."

Compliance with Public Participation:

- "RID has demonstrated that it engaged in an extensive public vetting process of its ERA and MERA proposals, and that Defendants themselves participated in this process."

Compliance with ARARs:

- "The record indicates that RID gave substantial thought and attention to compliance with site-specific Arizona law."

U.S. DISTRICT JUDGE'S STATEMENTS

Remediation is Necessary:

- "It … astounds me, to be honest with you, as to why the public entities here didn't step up more forcefully on all bases to do something about what is admittedly a very serious problem."
- "I don't think anybody disagrees, or if they do, I don't know on what basis they could possibly suggest that there aren't plumes of very deadly carcinogenic chemicals floating around underneath the city of Phoenix, Arizona."

RID Remedial Actions are Cost-Effective:

- "Defendants have not presented evidence of the existence of any other 'significantly more cost effective permanent remedial alternative'"

Next Steps

- Cooperative Agreement to accelerate implementation of NCP-Compliant and ADEQ-approved remedial action
- Future optimization of NCP-Compliant and ADEQ-approved remedial action, if appropriate

Cooperative Agreement with RID to Implement NCP-Compliant and ADEQ-approved P&T Remedial Action

- "A State or political subdivision thereof ... may apply to the President to carry out actions authorized in this section." 42 U.S.C. § 9604(d)(1)(A)
- "Whenever any hazardous substance is released or there is a substantial threat of release into the environment … which may present an imminent and substantial danger to the public health or welfare, the President is authorized to act, consistent with the national contingency plan, … and provide for remedial action relating to such hazardous substance … or take any other response measure consistent with the [NCP] which the President deems necessary to protect the public health or welfare or the environment." 42 U.S.C. § 9604(a)(1)
- "When the President determines that such action will be done properly and promptly by the owner or operator of the facility … the President may allow such person to carry out the action." 42 U.S.C. § 9604(a)(1)
- "[T]he President may respond to any releases or threat of release if in the President's discretion, it constitutes a public health or environmental emergency and no other person with the authority and capability to respond to the emergency will do so in a timely manner." 42 U.S.C. § 9604(a)(4)

COOPERATIVE AGREEMENT COMPLIES WITH NEW SUPERFUND INITIATIVE

- Promotes expeditious remediation of Arizona's largest groundwater contaminant plume and one of the largest in the country
- Reduces the burden on cooperating parties
- Incentivizes parties to remediate site
- Encourages private investment in cleanups
- Avoids Environmental Justice issues with local minority community
- Promotes economic development with remediated water
- Avoids EPA Superfund expenditures/costs

Arizona and ADEQ Unable to Respond to WVBA Contamination

- Despite ADEQ's position that "the State of Arizona will no longer accept delays at the [WVB Site]" and requires a "remedial action plan that is comprehensive and covers all activities necessary to conduct a final regional remedy for the WVB Site," Arizona and ADEQ have no money for the WVBA Site
  - "… because competing State-wide budget priorities have resulted in continued underfunding of WQARF, ADEQ will be discontinuing all discretionary work on the WVB WQARF Site at this time." (April 2015)
  - ADEQ current budget is $0 for the WVBA Site
  - Governor's current budget will discontinue General Fund support for the WQARF program.

Arizona Refuses to Provide Certainty for the RID Remedial Actions to be Implemented with Private Funds

- The Arizona Department of Water Resources (ADWR) has stated that no Poor Quality Groundwater Withdrawal Permit (PQGWP) will be issued at WVBA Site (unlike virtually all groundwater cleanups in Arizona)
- Although ADWR acknowledged in June 2017 that no PQGWP is necessary because of RID's existing water rights, the current ADWR Director is unwilling to confirm RID's water rights to implement duration of remedy
  - Former ADWR Director noted that "the Department concurs that RID has the ability to deliver the remediated groundwater to non-irrigation customers within its service area [and] [b]ecause RID was in existence and engaged in the withdrawal, delivery and distribution of groundwater as of January 1, 1977, it has the right to withdraw and transport groundwater to landowners within its service area, which may include new non-irrigation customers." (ADWR's November 7, 2011 letter)
  - ADWR "determined that the duration of the [RID-SRP] agreement would not affect the legal availability of the groundwater for purposes of [Assured Water Supply] determinations." (ADWR's October 21, 2013 letter)
- Current ADWR Director revoked ADWR's October 21, 2013 letter and granted a PRP the ability to veto any clarification letter
  - ADWR's draft clarification letter reaffirmed its October 21, 2013 determination because it "was based on ADWR's reading of the face of the agreements, and the fact ADWR did not see an expiration date in the most recent agreement."
  - Although ADWR rejected that PRP's effort to draft ADWR's response, ADWR's legal counsel noted that no clarification letter would be forthcoming without that PRP's approval

*Current ADWR Director actively opposed the RID remedial actions while employed for the City of Phoenix. Although the current Director was the supervisor for Mr. Craddock, the ADWR staffer that signed the October 21, 2013 letter, the ADWR Director personally revoked that letter on March 31, 2015 in response to a February 18, 2014 letter from the PRP to Mr. Craddock.

** The former ADWR Director was requested by the outgoing Governor's Chief of Staff in 2014 to revoke the October 21, 2013 letter in front of Henry Darwin, then the ADEQ Director. The former ADWR Director and Henry Darwin were targeted during the change in administrations for their actions relating to the RID remedial actions.

FUTURE OPTIMIZATION, IF APPROPRIATE

- Potential for additional cost savings and accelerating full implementation;
- Enhance plume containment of the leading, downgradient extent of the plume;
- Enhance mass removal and aquifer restoration by focused extraction from the most highly contaminated central core of the contaminant plume; and
- Address additional contaminants not presently identified as WVBA COCs

Attachment C

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janice K. Brewer
Governor

Henry R. Darwin
Director

August 7, 2013

RECEIVED
AUG - 9 2013
ADEQ

Mr. Donovan Neese
Roosevelt Irrigation District
103 West Baseline Road
Buckeye, Arizona 85326

Re: Request for Reimbursement

Dear Mr. Neese:

In accordance with A.R.S. §49-282.E.11, Roosevelt Irrigation District (RID) requested reimbursement from the Water Quality Assurance Revolving Fund (WQARF) for remedial actions undertaken in response to a release or a threat of a release of hazardous substances or pollutants that presents an imminent and substantial endangerment to the public health or the environment. A.R.S. §49-282.E.11 allows the Arizona Department of Environmental Quality (ADEQ) to reimburse up to $250,000 in any given year.

RID provided ADEQ with substantial documentation to support their claim. RID's documentation totaled incurred costs of $359,895.00. ADEQ has reviewed the information provided and has determined that the documentation supports the work performed at the site in response to contamination that has impacted RID's well field.

In accordance with §49-282.E.11, ADEQ has determined the following:

- RID is a political subdivision
- Remedial costs were reasonable, necessary and cost-effective.
- Actions were taken in response to a release or threat of a release of a hazardous substance or pollutant and that release or threat of a release presents an imminent and substantial endangerment to the public health or environment
- RID has taken all reasonable efforts to obtain reimbursement from responsible parties and the federal government

Therefore, ADEQ has included a reimbursement check in the amount of $250,000. As a condition of reimbursement, ADEQ is requesting that should RID recover monies in excess of $250,000 from responsible parties via litigation, for incurred costs that were the basis of ADEQ's reimbursement, that RID will in turn reimburse WQARF the full $250,000. By co-signing this letter, RID is agreeing to this provision.

Sincerely,

Laura L. Malone, Director
Waste Programs Division

Donovan L. Neese, Superintendent
Roosevelt Irrigation District

Enc.: Reimbursement Check

ADEQ
Arizona Department of Environmental Quality

WATER QUALITY ASSURANCE REVOLVING FUND (WQARF) POLITICAL SUBDIVISION REIMBURSEMENT CHECKLIST	APPLICANT:	ROOSEVELT IRRIGATION DISTRICT
	SUBMITTAL DATE:	5/30/2014
	REVIEW DATE:	6/18- 7/11/2014
	REVIEWED BY:	T. LE PAGE

BASED UPON INFORMATION PROVIDED BY APPLICANT, HAS THE FOLLOWING CRITERA BEEN MET?

Is applicant a political subdivision?	■ YES	☐ NO
Has applicant taken all reasonable efforts to obtain reimbursement from the responsible party?	■ YES	☐ NO
Has applicant taken all reasonable efforts to obtain reimbursement from the federal government?	■ YES	☐ NO
Are the remedial actions reasonable, necessary and cost effective [A.R.S. 282.06(A)(3)]?	■ YES	☐ NO
Does the release or threatened release of the hazardous substance or pollutant present an immediate and substantial endangerment to the public health or the environment?	■ YES	☐ NO
Were claimed remedial actions cost incurred within current fiscal year?	■ YES	☐ NO
IF ANY OF THE ABOVE QUESTIONS HAVE BEEN ANSWERED WITH "NO" – NECESSARY CRITERIA FOR REIMBURSEMENT HAS NOT BEEN MET – STOP REVIEW OF PACKET		

REIMBURSEMENT APPLICATION:

yes	Completed Application (Signed and Notarized)
yes	Costs Incurred Invoices Attached
yes	Adequate Invoice Backup Attached
yes	Reimbursement of Remedial Action Costs Spreadsheet Completed (attached)
yes	Additional Information Needed to Complete Submittal (see attached email) – only able to reimburse documented labor from email dated 6/23/2014 for T. Blood. Warranty costs not reimbursed (see Remedial Action Costs Spreadsheet).

YES	Applicant Notified of Submittal Deficiencies?	Date:6/18/2014

REIMBURSEMENT AMOUNT:

Total Amount Submitted for Reimbursement:	Amount Approved for Reimbursement:
$288,814.57	**$232,535.49**

Pay amount Remaining on Purchase Order = $178,635.77 ✓

T. LePage 7/11/14

Attachment D

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janice K. Brewer
Governor

Benjamin H. Grumbles
Director

June 24, 2010

Mr. Stanley H. Ashby
Superintendent
Roosevelt Irrigation District
103 W. Baseline Road
Buckeye, AZ 85326

Re: Conditional Approval of a Water Quality Assurance Revolving Fund (WQARF) Early Response Action (ERA) Work Plan for the West Van Buren Registry Site

Dear Mr. Ashby:

The Arizona Department of Environmental Quality (ADEQ) has reviewed the Roosevelt Irrigation District (RID) ERA Work Plan for the West Van Buren WQARF Registry Site (the Site) dated February 3, 2010. The Work Plan summarizes technical information regarding the Site, provides justification for an ERA, and describes an ERA remedy designed to remediate contaminated groundwater within the Site. In addition to the ERA Work Plan, ADEQ has also carefully analyzed technical and legal documents and correspondence contained in the Site file, including submittals by RID and other interested parties since September 2009, and comments received through the public participation process.

Based on our analysis of all available information, ADEQ conditionally approves, the February 3, 2010 ERA Work Plan. The attached matrix identifies specific conditions, tasks and outcomes that must be achieved to maintain the conditional approval. RID has a unique opportunity to increase the removal of contamination from the aquifer via its wells by analyzing and potentially modifying existing well screen intervals and pumping rates. Without treatment, these contaminants will continue to degrade the quality of the aquifer within the Site. The conditions ADEQ is placing on this approval will ensure that the ERA maximizes the benefit of pumping and treating contaminated groundwater within the Site, which is intended to result in aquifer restoration and reduce the cost of the final remedy.

ADEQ reserves the right to identify additional conditions as new information becomes available throughout ERA implementation. In addition, RID shall submit all information and take all action required by A.A.C. R18-16-405(H), 404, 411, 412, 413 and A.R.S. § 49-282.06(A). The information and actions required by these provisions include, but are not limited to, community involvement, the submittal of design and engineering plans for the ERA, and addressing unknown or changed conditions during implementation of the ERA.

ADEQ analyzed the ERA Work Plan to determine compliance with applicable State statutes and rules. ADEQ has not reviewed whether the ERA Work Plan is consistent with any federal laws or regulations. In addition, ADEQ's review and conditional approval of the ERA is limited only to those activities expressly described within the ERA related to the extraction and treatment of contaminated groundwater within the Site. ADEQ's conditional approval does not include an analysis or approval of the transport or final disposition and use of the treated water.

Until information about a final remedy is developed, ADEQ cannot estimate the cost of the final remedy and each responsible party's proportionate share of liability. As a result, ADEQ will not provide any covenants not to sue or contribution protection for WQARF liability in a settlement, until we have enough information about the final remedy to determine the impact of the settlement on funding of the final remedy.

We look forward to working with you and other interested parties as you begin to implement the ERA. Please contact Amanda Stone, Director of the Waste Programs Division at (602) 771-4567 if you wish to discuss the technical aspects of this conditional approval.

Sincerely,

Benjamin H. Grumbles
Director

Attachment (1)

cc: Herb Guenther, Arizona Department of Water Resources

Approval of the proposed RID ERA is made with the following conditions that must be met within the time periods identified below, or within another time period approved by ADEQ. All work plans required by this conditional approval must be submitted to ADEQ for approval prior to implementation, and must include a schedule for performing all tasks identified in the work plan. Once a work plan is approved by ADEQ, all tasks within the work plan must be completed in accordance with the schedule in the approved work plan, unless a deviation is agreed upon by ADEQ in writing. RID shall begin implementation of task 1 and 2 concurrently, and 2, 3 and 4 sequentially. Conditional approval is based on the assumption that each of these areas of concern will be investigated appropriately and the results of the investigations will demonstrate that the ERA continues to meet minimum applicable statutory and rule requirements. Days are calendar days, unless specifically noted otherwise.

Task No.	Description	Completion/Submittal Date
1. Public Health Threat	The RID work plan states there is a current risk to the public health from exposure to VOCs (from both air and water) within the West Van Buren Area (WVBA), however, specific documentation about the risks and how the risks will be mitigated during the ERA implementation has not yet been provided.	Within 30 days of ERA approval, RID shall submit a risk analysis work plan to ADEQ documenting the risks and demonstrating to ADEQ how and when the ERA will mitigate the risks.
2. RID Wells Investigation	Due to the proposed increased pumping rate at RID wells to be used for remediation, RID must conduct well testing and modeling to insure that changes in pumping will not adversely affect groundwater quality and levels within the WVBA beyond what would be expected with the current pumping conditions. Water levels must be maintained at or near current levels taking into account natural variations. The investigation must determine how ERA workplan implementation will affect both the aquifer and wells in the area of the plume.	Within 45 days of ERA approval, RID shall submit a well investigation work plan for the investigation of RID wells within the plume boundary. This investigation shall include at a minimum, water levels, screen intervals, spinner log testing, depth specific analytical testing, and video logging. Within 60 days of completion of the work required by the well investigation work plan, RID shall submit a well investigation report to ADEQ.

Task No.	Description	Completion/Submittal Date
3. Groundwater Modeling	A groundwater model must be constructed to estimate the effects of the changed RID well pumping rates. RID has indicated that the overall pumping rate will stay the same; however, the wells that will be pumped will change. This change must be modeled. The groundwater model must also evaluate how the diverted pumpage of RID wells will affect other contaminant groundwater plumes, such as those created at Leaking Underground Storage Tank (LUST) sites and neighboring WQARF and Superfund sites. The model must also consider differing pumping rates and locations. One of the goals of the ERA is to remediate groundwater. RID must maximize, to the extent practical, the removal of contaminants from the subsurface when the ERA is implemented. Currently the RID treatment system plan is based on treating the entire volume of groundwater that the RID wells are capable of pumping. However, this may be excessive if the wells can be pumped at a lower rate from the contaminant zone and still maintain the desired effects of groundwater recovery. Therefore, the model shall also consider impacts of other pumping rates on drawdown and capture zones.	Within 60 days of ADEQ's written approval of the well investigation report, RID shall submit a groundwater model work plan. At a minimum, the groundwater model shall estimate the effects of changed pumping rates and locations on the aquifer, including but not limited to water levels and all contaminant plumes within the WVBA and neighboring WQARF and CERCLA sites. Within 60 days of completion of the work required by the groundwater model work plan, RID shall submit a groundwater model report to ADEQ for approval.

Task No.	Description	Completion/Submittal Date
4. Pump and Treat System	RID must complete an engineering design study which describes all technical requirements for a pump and treat remediation system, including a description of the influent and effluent contaminant levels. All applicable permits must be in place, prior to construction and/or operation of the pump and treat system, as required under the relevant statutes and rules. RID must also submit a construction, operation and maintenance work plan for the pump and treat system. The work plan must contain a plan for monitoring groundwater quality and groundwater elevations, including what wells will be sampled and monitored, the frequency that they will be sampled and monitored, and the parameters that will be analyzed. As part of the work plan, RID must also submit proposed sampling frequency, locations, and analytical methods, at the pump and treat system.	Within 60 days of ADEQ's written approval of the groundwater model report, RID shall submit an engineering design study for the pump and treat remediation system sealed by an Arizona Registered Professional Engineer. At a minimum the engineering design study shall include all of the technical design requirements of the pump and treat remediation system, including a description of the influent and effluent contamination levels. In addition, the engineering design study must include a list of all permits that must be obtained prior to construction and operation. Within 60 days of ADEQ's written approval of the engineering design study, RID shall submit a remediation system construction, operation, and maintenance work plan. At a minimum the work plan shall include, an Operation and Maintenance (O&M) plan for the remediation system, a description of the sampling of RID canals and wells (both for groundwater elevation and quality) during operation of the remediation system, and a description of sampling of remediation system influent and effluent water.

Attachment E

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Douglas A. Ducey
Governor

Henry R. Darwin
Director

April 13, 2015

Via email and regular mail

Mr. Donovan Neese
Roosevelt Irrigation District
103 West Baseline Road
Buckeye, Arizona 85326

Re: Draft Feasibility Study - Roosevelt Irrigation District

Dear Mr. Neese:

The Arizona Department of Environmental Quality (ADEQ) has completed its review of the *Revised Draft Feasibility Study Report* (FS Report), submitted November 26, 2014. The FS Report was prepared by Synergy Environmental, LLC on behalf of Roosevelt Irrigation District (RID) for the West Van Buren (WVB) Water Quality Assurance Revolving Fund (WQARF) site. ADEQ has reviewed the FS Report under an executed working agreement dated October 8, 2009 between RID and ADEQ.

ADEQ had previously completed the "administrative completeness" review and provided comments to RID. It should be noted that the checklist used for this portion of the review was more administrative than substantive. During this review, it was determined that ADEQ should have answered Item #7 as "No" versus "Not Applicable". ADEQ agreed to correct that error when providing feedback on the FS Report. By way of this letter, ADEQ is correcting that error.

ADEQ has determined that the FS Report meets the requirements of Arizona Revised Statutes 49-287.03 and Arizona Administrative Code R18-16-407 and therefore ADEQ is approving RID's FS Report.

Please be aware, though, that because competing State-wide budget priorities have resulted in the continued underfunding of WQARF, ADEQ will be discontinuing all discretionary work on the WVB WQARF site at this time. Should funding levels change, ADEQ will of course re-evaluate this decision.

Feel free to contact me should you have any questions.

Sincerely,

Laura L. Malone

Laura L. Malone, Director
Waste Programs Division

Cc: Tina LePage ADEQ
Danielle Taber, ADEQ
Anthony Young, AGO
Dennis Shirley, Synergy Environmental, LLC.
Julie Carver, Matrix Design Group, Inc.

Attachment F

G|K
Gallagher&Kennedy

David P. Kimball
Attorney
Direct: (602) 530-8221
Email: dpk@gknet.com

January 6, 2017

VIA ELECTRONIC MAIL ONLY

Mr. Thomas Buschatzke
Director
ARIZONA DEPARTMENT OF WATER RESOURCES
1110 W. Washington Street
Phoenix, AZ 85007

Re: ***Proposed Application for Poor Quality Groundwater Withdrawal Permit for the WVBA WQARF Site***

Director Buschatzke:

This letter responds to your December 30, 2016 letter. In responding, I feel it necessary for the record to first accurately characterize our communications with ADWR's staff over the past several months. These communications were pursued to "facilitate the prompt conduct" of the ADEQ-approved groundwater remedial action for the West Van Buren Area (WVBA) Water Quality Assurance Revolving Fund Registry Site (WQARF Site) in order to address the numerous hazardous substances, including the known human carcinogen TCE, that have contaminated the local groundwater, are being exposed to the local minority community, and have impacted the wells and water supply of the Roosevelt Irrigation District (RID), all in violation of applicable Arizona water quality and public health standards and established EPA thresholds.

RECENT ADWR DISCUSSIONS

In my August 31, 2016 email response to your August 29, 2016 inquiry regarding my August 26, 2016 letter, I did not say that I was "not seeking ADWR's written interpretation" simply in preference of another meeting as stated in your December 30, 2016 letter. I clearly stated that "we do not believe that the delay, costs and formality of pursuing a formal interpretation under ARS § 41-10001.02 is necessary or justified" because "our review of ADWR's records confirmed that, over the last 30 years, ADWR has consistently and without exception issued PQGWPs to all ADEQ and EPA-approved groundwater remedial actions … [and that] such consistent action over the past 30 years by ADWR clearly indicates an established interpretation of general applicability, such that ADWR can and should promptly issue a PQGWP for the WVBA WQARF Site." My August 31, 2016 email continued to note

that any "undue delay by ADWR in issuing a PQGWP to implement the ADEQ-approved RID groundwater remedial action for the WVBA WQARF Site would not only violate ADWR's statutory responsibility under ARS § 49-290.01.A to '*expedite* the processing *and issuance* of [PQGWPs]. . . to facilitate the *prompt conduct* of approved remedial actions' (emphasis added), it would prohibit implementation of the specific groundwater remedial action approved by ADEQ for the WVBA WQARF Site, result in continued violations of the enforceable aquifer water quality standards, and continue the uncontrolled releases of hazardous volatile organic compounds into the predominantly minority local community. For these reasons, time is of the essence in the issuance of the PQGWP for the WVBA WQARF Site." As a result, I concluded my August 31, 2016 email with: "To avoid any undue delay, we are prepared to meet at your earliest convenience to walk through the details of the PQGWP application for the WVBA WQARF Site."

Given your September 1, 2016 response that "DWR is happy to meet ... to walk through the details of the PQGWP application for the WVBA WQARF Site … [and] [t]o meet ... [our] request to move this forward," I was under the impression that ADWR, after reviewing my August 26, 2016 letter, was finally acknowledging its Title 49 obligations and 30-year history of routinely issuing PQGWPs to "facilitate the prompt conduct of [government] approved remedial actions." Sadly, the subsequent meetings with ADWR's staff were focused solely on certain Title 45 provisions and a refusal to act consistent with ADWR's 30-year history of routinely issuing PQGWPs to implement government-approved remedial actions as required by Title 49. For example, ADWR's September 26, 2016 email clarified that ADWR would not comply with ADWR's Title 49 obligations to "*expedite the processing and issuance* of permits … to facilitate the prompt conduct of approved remedial actions," but instead would only act "consistent with ADWR's efforts to process and review all applications that the agency receives as quickly as possible" and that "ADWR has made no decision on whether or not it will grant a permit." ADWR's September 26, 2016 email also criticized any reference to and any reliance on the numerous and consistent ADWR statements contained in historical PQGWP applications approved by ADWR to implement government-approved remedial actions as required by Title 49. Instead, ADWR claimed "each application is unique, and ADWR's determinations on those applications are made on a case-by-case basis after considering not only the information provided in the application, but supporting documentation as well."

After our September 27, 2016 meeting where ADWR's staff continued to ignore and disregard ADWR's Title 49 obligations and raised a number of new application standards, we responded in an email, dated September 29, 2016, that "in an effort to meet the unexpected new application standards established at our meeting, we have provided specific responses … [rather] than the minimal responses previously approved by ADWR for other PWGWP applications to implement approved groundwater remedial actions. Despite the new and more comprehensive requests for information that prior applicants have not been subject to, we are willing to comply, where possible and reasonable, in order to assist the agency *to expedite the administrative and substantive reviews* once the PQGWP application is formally submitted." In response to our September 29, 2016 email, ADWR in an email, dated October 3, 2016, requested two more

GK

pieces of information and stated that "so long as the above-described information is provided at the time of the filing of your application, we believe that your proposed responses, along with the supporting documentation that you have provided to date, … would be sufficient to satisfy the requirements for *administrative completeness* [only] under A.R.S. § 45-523(A)." ADWR's October 3, 2016 email goes on to state that because "this email adequately identifies the information ADWR needs for its *administrative completeness* review … we do not believe that another pre-application meeting will be necessary [and] [w]e are available to answer any additional questions that you may have through written correspondence."

In short, your December 30, 2016 letter inaccurately characterizes the reasons and scope of our request for another meeting. In our October 6, 2016 response, our request for another meeting was "to address the *substantive [not the administrative completeness]* requirements that we previously have discussed in correspondence with the agency [since] [w]e believe that expediting the PQGWP *administrative and substantive* reviews will ensure that we can expedite the permitting process to move fast toward the public notice and comment period … [because] [a]s we have discussed with the agency, time is of the essence since a party has agreed to fund the completion of the ADEQ-approved RID groundwater remedial action for the WVBA WQARF Site upon issuance of the PQGWP."

Our October 6, 2016 email also questioned ADWR's need for the additional information requested in ADWR's October 3, 2016 email as conditions to satisfy even "the requirements for administrative completeness." Specifically, we assumed that such a request was a misunderstanding since it would violate the provisions of ARS §§ 41-1030 and 1079 and would be inconsistent with the PQGWP application and ADWR's historical requirements "of other PQGWP applicants for the agency's administrative or substantive reviews." Additionally, we questioned that the requested information "appears to be irrelevant to a PQGWP, which grants only an administrative right to *withdraw* poor quality groundwater" especially "for a PQGWP that is to be issued to facilitate the implementation of an ADEQ-approved groundwater remedial action that already addresses and describes the transportation of water for its proposed beneficial use." We questioned some of ADWR's concerns raised with the ADEQ-approved groundwater remedial action because approving remedial actions under Title 49 is outside ADWR's statutory authority and because "ADWR-issued PQGWPs include the condition that 'the issuance of this permit does not constitute endorsement [by ADWR] of the assertions or findings of investigations and studies submitted by the Permittee as part of its applications.'" Once again, in my October 14, 2016 email to the Directors of ADEQ and ADWR, we raised similar legal concerns after the October 13, 2016 meeting with ADWR because "ADWR's staff raised a number of troubling issues that directly conflict and/or are inconsistent with ADEQ's WQARF remedial action program and the permit requirements and conditions that ADWR has required in previously approved PQGWPs to implement any government-approved remedial actions."

Your December 30, 2016 letter, yet again, raises an issue that not only has never been applied to other applicants that obtained a PQGWP to implement government-approved remedial actions, but directly violates ADWR's Title 49 obligations and the mandatory statewide remedial action standards in ARS § 49-282.06.B.4.b. ADWR's staff first raised this potential issue as to "whether the issuance of a PQGWP is prohibited in this case by virtue of A.R.S. § 45-491" after my August 26, 2016 letter demonstrated that ADWR's initial opposition to a PQGWP in this case was inconsistent with ADWR's Title 49 obligations and ADWR's 30-year history of routinely issuing PQGWPs to implement government-approved remedial actions. Pursuant to ARS § 45-491, "in an active management area, a city, town, private water company or irrigation district may withdraw groundwater only pursuant to this article, except as provided by a grandfathered right and except as otherwise provided in this section." ARS § 45-491(C) states that a "city, town or private water company may withdraw groundwater pursuant to a poor quality groundwater withdrawal permit issued under section 45-516" and does not include an "irrigation district."[1] Of course an "irrigation district" is unable to withdraw groundwater pursuant to a poor quality groundwater withdrawal permit under ARS § 45-516 since ARS § 45-516 specifically limits ADWR's authority to "issue a permit to a non-irrigation user." Notwithstanding the referenced language in ARS §§ 45-491 and 45-516, both enacted into law in 1980, ADWR has routinely issued PQGWPs to "irrigation users," including an irrigation district defined under ARS § 45-402, in order to comply with ADWR's 1986 statutory obligation "to facilitate the processing and issuance of [PQGWPs] … to expedite the prompt conduct of [government] approved remedial actions."

Despite ADWR's 30-year historical practice of issuing PQGWPs to all government-approved remedial actions, regardless of the language in ARS §§ 45-491 and 516, and the fact that the potential applicant for a PQGWP to conduct the ADEQ-approved groundwater remedial action for the WVBA WQARF Site is not an "irrigation district," ADWR continues to inexplicably oppose the PQGWP on this basis. When pressed for clarification on the phone and in meetings, ADWR has stated that any party remediating groundwater contamination in a well owned by an irrigation district would be the agent of the irrigation district and, therefore, would trigger the alleged prohibition in ARS § 45-491. As noted in my October 14, 2016 email to the ADEQ and ADWR Directors, such an interpretation directly violates the mandatory statewide remedial action standards in ARS § 49-2825.06.B.4.b. requiring that "*the selected remedial action shall address, at a minimum, any well* [whether owned by an irrigation district or not] *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.*"

[1] As defined by ARS § 45-402, an "irrigation district" is established "to provide for the improvement of such lands … susceptible of irrigation" (ARS § 48-2303) or "to provide for the irrigation of lands in the area." ARS § 48-2602.

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Yet again in your December 30, 2016 letter, ADWR continues to unlawfully focus on the 1980 Title 45 provisions that were enacted before the creation in 1986 of ADEQ, the WQARF program, the enforceable aquifer water quality and public health standards and ADWR's Title 49 obligations. The Arizona legislature recognized the conflict that might arise under ADWR's 1980 Title 45 water quality management statutes to implement the new 1986 Title 49 groundwater quality remedial action statutes, which is why the Arizona legislature in 1986 mandated that ADEQ and ADWR enter into a Memorandum of Understanding and authorized ADWR to waive any Title 45 requirement that would delay or prohibit the implementation of an ADEQ-approved remedial action under Title 49.

WAIVER AND MOU

As noted in my December 22, 2016 letter, we have not heard a response from ADWR about participating in the discussions with ADEQ on a potential waiver of the new and/or irrelevant issues raised by ADWR that have delayed the "the prompt conduct" of the ADEQ-approved remedial action for the WVBA WQARF Site. It has been over two and a half months since my October 14, 2017 request for a meeting with yourself and the Director of ADEQ in order to "expedite the processing and issuance" of the PQGWP "to facilitate the prompt conduct of [the] approved remedial actions" for the WVBA WQARF Site as required by Arizona law. Such a meeting would be required if ADWR decided to waive any Title 45 requirement instead of pursuing a formal Memorandum of Understanding (MOU) on the issuance of permits to implement government-approved remedial actions as required by ARS § 49-290.01(B).

Given the initial reasons for ADWR's opposition to a PQGWP to implement the ADEQ-approved groundwater remedial action for the WVBA WQARF Site, we performed a public records search of ADWR's historical review and issuance of PQGWPs to implement government-approved remedial actions. During our review of ADWR's historical practice of routinely issuing PQGWPs to implement government-approved remedial actions, we found that ADWR never raised the issues or prohibited a PQGWP based on the reasons that were presented to us. The public records search also revealed that ADWR has never formally waived a Title 45 requirement when issuing PQGWPs to implement government-approved remedial actions, even though many of the historical and existing PQGWPs fail to comply with the plain terms of ARS § 45-516 and other Title 45 requirements. Therefore, we had assumed that the plain terms of ARS § 45-516 and the other Title 45 provisions had been superseded by a MOU between ADEQ and ADWR as required by ARS § 49-290.01(B) since the violation of the applicable aquifer water quality standards is prohibited by ARS §§ 49-262 and 263 and constitutes an "immediate and substantial endangerment to the public health or the environment." Unfortunately, despite ADWR's previous statement to the contrary, a MOU has not been formalized even though ADWR has established an informal MOU process in its own Management Plans for Arizona's Active Management Areas and substantive policy statements.

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As noted in my October 7, 2016 letter to ADEQ and ADWR, the informal MOU process used by ADEQ and ADWR for decades should simply be formalized to protect all prior PQGWPs that did not obtain a waiver of any Title 45 provisions and allow ADWR's expedited review and issuance of all future PQGWPs to implement government-approved remedial actions as required by Title 49. A formal MOU would provide the certainty that a PQGWP will be expeditiously processed and issued and the consistency that all government-issued PQGWP applications will be treated the same. Formalizing the process already outlined in statute and ADWR's Management Plans and substantive policy statements could be achieved within days, compared to the over two and a half months that we have been requesting a meeting between ADWR and ADEQ. Sadly, ADWR continues to disregard the statutory obligation to execute a formal MOU, as demonstrated by the absence of any discussion of the MOU in your December 30, 2016 letter, and continues to manufacture excuses to unlawfully delay implementation of the ADEQ-approved remedial actions at the WVBA WQARF Site.

NEED FOR REMEDIAL ACTION AT WVBA WQARF SITE

Consistent with ADEQ's prior approvals, a groundwater remedial action is necessary to protect public health, welfare and the environment at the WVBA WQARF Site. The ADEQ-approved groundwater remedial action being undertaken at the WVBA WQARF Site has been determined by ADEQ to comply with the following mandatory remedial action criteria in ARS § 49-282.06: (i) assure the protection of public health and welfare and the environment; (ii) 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; (iii) be reasonable, necessary, cost-effective and technically feasible; (iv) address, at a minimum, any well that at the time of selection of the remedial action … 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; and (v) be consistent with the requirements of title 45, chapter 2. Additionally, many of the costs incurred to implement the ADEQ-approved groundwater remedial action have been determined by ADEQ to be "reasonable, necessary and cost-effective remedial action costs incurred in response to a release or threat of a release of a hazardous substance or pollutants that presents an immediate[2] and substantial endangerment to the public health or the environment."[3]

The groundwater within the WVBA WQARF Site is contaminated by numerous hazardous substances, including TCE, above applicable Arizona water quality and public health standards, which creates an immediate and substantial endangerment to public health, welfare and the environment. As you may be aware, TCE was recently upgraded by the United States

[2] As noted in *Lincoln Properties, Ltd. V. Higgins*, 1993 WL 217429, 13 (E.D.Cal 1993) and other courts, "a finding of 'imminence' does not require a showing that actual harm will occur immediately" since "an endangerment need not be immediate to be 'imminent.'" However, despite this legal distinction, the terms "imminent" and "immediate" are routinely identified as synonyms. *See* http://www.thesaurus.com/browse/Imminent and http://www.merriam-webster.com/thesaurus/imminent.
[3] ARS § 49-282.E.11.

Department of Health and Human Services' National Toxicology Program to a "known human carcinogen." This recent federal action is consistent with EPA's 2011 toxicological review and determination that TCE is carcinogenic to humans by all routes of exposure and poses a potential human health hazard for noncancer toxicity to the central nervous system, kidney, liver, immune system, male reproductive system and the developing embryo/fetus.

EPA has recently recommended a not-to-be exceeded, average TCE air exposure level of 2 micrograms per cubic meter ($\mu g/m^3$) for women of reproductive age due to a heightened potential risk of fetal heart defects. Pursuant to the ADEQ-approved RID Early Response Action for the WVBA WQARF Site, TCE and other hazardous volatile organic compounds (VOCs) in air were sampled in the Public Health Exposure Assessment for the WVBA WQARF Site. The sampling identified the presence of TCE and other VOCs in all air samples obtained in proximity to the RID wells and water conveyance systems in concentrations ranging from 1.88 to 29 $\mu g/m^3$ in the breathing zone where the public may be exposed near RID wells and diversion structures. In contrast, these same VOCs were not detected in background samples at locations away from the sources of air emissions associated with the RID water system. The observed TCE concentrations in ambient air generally exceed the threshold EPA now considers protective for short-term exposure to sensitive populations in a residential setting.

As outlined in the ADEQ-approved RID Feasibility Study Report and recent ADEQ groundwater samples, the groundwater within the WVBA WQARF Site exceeds the applicable Arizona aquifer water quality standards (AWQSs). ADWR has noted that the AWQSs "are the cornerstone of the state's groundwater protection program" and "because all aquifers in Arizona are classified and protected for drinking water use, Arizona's [numeric and narrative] AWQSs are enforceable standards for water quality in all of Arizona's aquifers."[4] ADWR has acknowledged that "Arizona has adopted the federal primary MCLs, established under [the Safe Drinking Water Act], as numeric AWQSs" and that "Arizona's narrative AWQS include the following: (1) a discharge *shall not cause a pollutant to be present in an aquifer classified for a drinking water protected use in a concentration which endangers human health* … and (3) a discharge *shall not cause a pollutant to be present in an aquifer which impairs existing or reasonably foreseeable uses of water in an aquifer*."[5] Based on the recent EPA determination that TCE is more toxic than previously known when the current federal MCL (5.0 µg/L) was promulgated, the TCE concentrations in the WVBA WQARF Site, based on recent water quality sampling by ADEQ, significantly exceed the current 5.0 µg/L numeric AWQS[6] and the narrative AWQS (likely around 1.0-2.0 µg/L).[7]

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[4] Phoenix AMA Third Management Plan, 7-7, citing ARS § 49-224(B).

[5] *Id.*

[6] In the latest ADEQ water quality sampling conducted first quarter of 2015, TCE concentrations as high as 67.9 µg/L, 189.0 µg/L and 23.1 µg/L were detected in the upper alluvial unit 1, the upper alluvial unit 2, and the middle alluvial unit of the aquifer, respectively.

[7] Recent discussions throughout the country suggest that a new MCL may be set in the near future closer to 1.0-2.0 µg/L in order to account for the new EPA toxicity data. In fact, the current EPA Region 9 Regional Screening Level for TCE in residential tap water (drinking water) is 0.49 µg/L.

CONCLUSION

As we have noted in numerous writings and meetings with ADWR for months now, ADWR's failure to comply with its Title 49 obligations and its 30-year historical practice of routinely issuing PQGWPs to implement government-approved remedial actions is prohibiting implementation of the specific groundwater remedial action approved by ADEQ for the WVBA WQARF Site, resulting in continued violations of the enforceable aquifer water quality and public health standards and the uncontrolled release and exposure of the local minority community to hazardous VOCs at levels exceeding established EPA thresholds.

Unless ADWR provides appropriate assurances by January 31, 2017 that it will "expedite the processing and issuance" of a PQGWP "to facilitate the prompt conduct of [the ADEQ] approved remedial action" for the WVBA WQARF Site as required by state law, we have no other option but to take any and all actions necessary to protect public health, welfare, the environment and RID's legal rights in its wells and water supply.

Very truly yours,

GALALGHER & KENNEDY, P.A.

By: David P. Kimball, III

cc: Hunter Moore, *Governor's Office*
Henry Darwin, *Governor's Office*
Michael Liburdi, *Governor's Office*
Danny Seiden, *Governor' Office*
Misael Cabrera, *ADEQ*

Attachment G

JANICE K. BREWER
Governor

SANDY FABRITZ-WHITNEY
Director

ARIZONA DEPARTMENT of WATER RESOURCES
3550 North Central Avenue, Second Floor
Phoenix, Arizona 85012-2105
602.771.8500

azwater.gov

October 21, 2013

Mr. Donovan Neese
Roosevelt Irrigation District
103 West Baseline Road
Buckeye, Arizona 85326

Dear Mr. Neese,

On May 7, 2010, the Department issued a letter (May 7, 2010 letter) to Mr. Stan Ashby of the Roosevelt Irrigation District (RID). Among other things, the May 7, 2010 letter suggested that "a difference of opinion regarding the duration of the contract" between RID and the Salt River Valley Water Users' Association (SRVWUA) could negatively affect the legal availability of groundwater pumped by RID for use within its boundaries, for purposes of Assured Water Supply determinations.

Pursuant to your request, the Department has reviewed the following agreements provided by counsel for RID:

1. Water Contract, dated August 25, 1921, between the Carrick & Mangham Agua Fria Lands & Irrigation Company and SRVWUA.
2. Assignment, dated July 11, 1923, between the Carrick & Mangham Agua Fria Lands & Irrigation Company and RID.
3. Supplement Agreement, dated February 3, 1927, between RID and SRVWUA.
4. Supplement Agreement, dated May 31, 1950, between RID and SRVWUA.

After review, the Department has 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. If I may be of further assistance, please contact me at (602) 771-8615.

Sincerely,

Andrew J. Craddock, Manager
Recharge, Assured & Adequate Water Supply Program

Attachment H

Kenneth C. Slowinski

From: Kenneth C. Slowinski
Sent: Wednesday, May 20, 2015 4:19 PM
To: 'dpk@gknet.com'; 'John Weldon'
Subject: Draft letter from Tom Buschatzke to David Kimball
Attachments: Draft Letter to David Kimball 5-20-15.docx

David and John,

I'm attaching the draft letter from Tom Buschatzke to David Kimball that I spoke to both of you about this afternoon. If you have any comments on the draft letter, please submit them to me by the end of the day on Friday, May 29. Thank you.

DRAFT
5-20-15

David P. Kimball, III
GALLAGHER & KENNEDY
2575 East Camelback Road
Phoenix, Arizona 85016-9225

Re: ADWR's letters dated October 21, 2013 and March 31, 2015

Dear Mr. Kimball:

I am writing to provide further clarification of the letter from Andrew Craddock of the Arizona Department of Water Resources ("ADWR") to Donovan Neese of the Roosevelt Irrigation District ("RID") dated October 21, 2013 ("2013 Letter"). I am also providing further clarification of my letter to RID and Salt River Project ("SRP") dated March 31, 2015 ("2015 Letter").

The 2013 Letter was sent to RID after you requested ADWR to review four agreements between RID's predecessor, RID and the Salt River Valley Water Users' Association ("SRVWUA") and provide RID with a letter stating whether the duration of those agreements would affect the legal availability of groundwater pumped by RID from wells within SRVWUA's boundaries for use within RID's boundaries for purposes of future Assured Water Supply ("AWS") determinations. As stated in the 2013 Letter, ADWR reviewed the four agreements and determined that the duration of the agreements would not affect the legal availability of the groundwater for purposes of AWS determinations. This statement was based on ADWR's reading of the face of the agreements, and the fact ADWR did not see an expiration date in the most recent agreement.

The 2013 Letter was based solely on ADWR's review of the four agreements provided to us, and did not address any other factors that might come before ADWR if an AWS application that includes such groundwater as a source of supply were filed with ADWR at a later date. Accordingly, the 2013 Letter was not intended to be a decision by ADWR regarding the duration of the agreements or whether groundwater pumped by RID within SRVWUA's boundaries would be legally available for future AWS determinations. At the time ADWR sent the 2013 Letter, it recognized that facts or legal issues outside of the face of the agreements could affect the duration of the agreements and RID's long-term ability to pump groundwater within SRVWUA's boundaries, which in turn could affect the legal availability of the groundwater for AWS purposes. ADWR also recognized that facts and legal issues unrelated to the duration of the agreements could affect the legal availability of the groundwater for AWS purposes. ADWR's attorney explained this to you before ADWR sent the 2013 Letter.

After ADWR sent the 2013 letter to RID, SRP requested clarification from ADWR regarding the 2013 Letter. Specifically, SRP requested that ADWR clarify that the 2013 Letter was not a

formal and binding opinion by ADWR with respect to any future AWS applications and that other legal and factual issues potentially could affect RID's long-term ability to pump groundwater within SRVWUA's boundaries. Because the 2013 Letter was limited as explained above, I felt it was appropriate for me to send the 2015 Letter and make the clarification contained in that letter. The 2015 letter clarifies that that ADWR has not made a formal decision on whether the groundwater RID intends to pump within SRVWUA's boundaries may be included as a legally available water supply in a specific AWS determination, and that any decision by ADWR on that issue would be made if and when it receives an application that includes such water as a proposed source of supply and would be based on all facts available to ADWR at that time.

The 2015 Letter did not withdraw any statement made in the 2013 Letter. However, it clarifies that if ADWR receives an application for an AWS determination that includes groundwater to be pumped by RID within SRVWUA's boundaries, ADWR will consider any relevant facts and legal issues not considered by it when it sent the 2013 Letter in determining whether the groundwater is a legally available water supply for the applicant.

Sincerely,

Thomas Buschatzke

cc: David C. Roberts, SRP

Attachment I

BAK601

AMENDED STATEMENT OF CLAIMANT FORM

File No. 39-50055
Date Revised:
WFN _____

FOR
OTHER USES[1]
VERDE RIVER WATERSHED
SUPERIOR COURT OF MARICOPA COUNTY

JUN 2 6 2007

1. **Claimant Name: (See Attachment 1)** _____
Claimant Address _____ City _____
State _____ Zip Code _____ Telephone _____

2. **Basis of Claim:**
   - A. ■ Appropriation Right acquired prior to June 12, 1919. 1974 Water Rights Registration Act Registry No. **36-64086 (as amended)**
   - B. ■ Appropriation Right acquired after June 12, 1919. Application No. **(See Attachment 2)** Permit No. _____, or Certificate of Water Right No. _____
   - C. ■ Decreed water right. Principal litigants, court, date and case no. **(See Attachment 3)**
   - D. ☐ Right to withdraw groundwater. Grandfathered Right No. _____
   - E. ■ Other, describe: **(See Attachment 3)**

3. **Claimed Priority Date:** ____/____/____(month/day/year) **(See Attachment 4)**

4. **Use:**
   - A. ■ Municipal
   - B. ■ Commercial or Industrial
   - C. ■ Mining
   - D. ■ Stockwatering other than from a stockpond
   - E. ■ Recreation, Fish & Wildlife
   - F. ■ Other, describe: **Irrigation, Domestic, Power**

5. **Source of Water: (See Attachment 5)**
   - A. ■ Stream: name **Verde River**, tributary to **Salt River**
   - B. ☐ Spring: name _____, tributary to _____
   - C. ■ Lake or Reservoir: name _____, tributary to _____
   - D. ☐ Groundwater.

6. **Legal description of the Point of Diversion: (See Attachments 6-1 through 6-3)**
_____ ¼, _____ ¼, _____ ¼, Section _____, Township ___ N/S, Range ___E/W

7. **If there are Irrigation, Domestic or Stockpond Uses also supplied from the Point of Diversion, describe: (See No. 4 above)**

8. **Means of Diversion: (See Attachments 3 and 7)**
   - A. ☐ Instream pump.
   - B. ■ Gravity flow into a ditch, canal or pipeline.
   - C. ■ Well: Arizona Department of Water Resources Well Registration No. 55- _____
   - D. ■ Other, describe: _____

[1] See Instructions for explanation of uses in this category

9. **Means of Conveyance:** **(See Attachments 8-1 and 8-2)**

A. ■ Ditch, canal or pipeline. If the means of conveyance is owned and/or operated by some other entity, please give name and address: _____

B. ■ Other, describe: _____

10. **Place of Use, if other than point of diversion:** **(See Attachments 9-1 and 9-2)**

County Maricopa

Legal Subdivision	**Section**	**Township**	**Range**

11. **Claimed Right:** **(See Attachment 10)**

A. Maximum Flow Rate: _____ ☐ cubic-feet per second ☐ gallons per minute ☐ Arizona miner's inches

B. Annual Volume of Water Use: _____ acre-feet

C. Storage Right: _____ acre-feet

12. **Attach** photographs, maps or sketches necessary to show the point of diversion, storage reservoir(s) place(s) of use and means of conveyance. **(See Attachments 6-1, 6-2, 6-3 and 9-2)**

13. **It may** be necessary for a representative from the Department of Water Resources to inspect the diversion, conveyance and place of use. Your signature following will grant permission to enter your property for the purpose of inspection: Signature of Claimant William P. Schrader

14. **Should** it be necessary for a representative of the Department to contact you as the claimant or your representative, are there any special instructions regarding time of day or address to aid in locating the specified person? **Mr. David C. Roberts (602) 236-2343**

15. **Attach Filing Fee to Form.** Mail form(s) and filing fee(s) to: Department of Water Resources Adjudications Division, 15 South 15th Avenue, Phoenix, Arizona 85007.

16. **Additional comments:** **This Statement of Claimant relates to the SRP reservoirs in the Verde River watershed and water uses in the Verde River and Lower Gila River watersheds. As discussed in Attachment 11, SRP has filed related Statements of Claimant for its reservoirs and water uses in the Salt River watershed and for its water uses in the Lower Gila River watershed.**
(attach additional sheet if required)

17. **Notarized Statement:**

I(We), **William P. Schrader, President** the claimant(s) named in this claim, do hereby certify under penalty of perjury, that the information contained and statements made herein are to the best of my(our) knowledge and belief true, correct and complete.

(seal)

April 28, 2003
My Commission Expires

OFFICIAL SEAL
TERRILL A. LONON
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My Comm. Expires Apr. 28, 2003

William P. Schrader

Terrill A. Lonon
Notary Public

or, _____
Authorized Personnel of the Department of Water Resources

LIST OF ATTACHMENTS

Attachment 1:	Claimant Name
Attachment 2:	Applications to Appropriate Water
Attachment 3:	Basis of Right – Verde River
Attachment 4:	Claimed Priority Dates
Attachment 5:	Source and Storage of Water
Attachment 6-1:	Horseshoe Dam and Reservoir Map
Attachment 6-2:	Bartlett Dam and Reservoir Map
Attachment 6-3:	Phoenix Verde Pipeline and Verde Treatment Plant Map
Attachment 7:	Means of Diversion
Attachment 8-1:	Means of Conveyance
Attachment 8-2:	Means of Conveyance Map
Attachment 9-1:	Place of Use Description
Attachment 9-2:	Place of Use Map
Attachment 10:	Claimed Right
Attachment 11:	Related Statements of Claimant

ATTACHMENT 1
CLAIMANT NAME

This claim is made by the Salt River Valley Water Users' Association (Association or SRVWUA) and the Salt River Project Agricultural Improvement and Power District (SRPAI&PD), collectively referred to as SRP, for themselves and on behalf of SRVWUA shareholders. In addition, this claim includes water necessary to fulfill SRP's obligation to deliver water to the following entities in satisfaction of their independent water rights, pursuant to the following decrees, settlements, and agreements, and all supplements and amendments thereto:

Arlington Canal Company – Stipulation Between Arlington Canal Company and Salt River Valley Water Users' Association, Roosevelt Irrigation District, and Maricopa County Water Conservation District No. 1, 1944

Bogle Farms, Inc. et al. – Agreement between the Salt River Valley Water Users' Association and Bogle Farms, Inc. et al., 1965

Buckeye Irrigation Company – Basis of Settlement of Litigation Between Buckeye Irrigation Company and the Salt River Valley Water Users' Association, 1943

City of Phoenix – Agreement between Salt River Valley Water Users' Association and the City of Phoenix, A Municipal Corporation, 1946

Fort McDowell Indian Community – Fort McDowell Indian Community Water Rights Settlement Agreement, 1993

Lakin Cattle Company – Agreement Between Loring C. Lennox and the Salt River Valley Water Users' Association, 1921

Maricopa Garden Farms – Agreement between the Fidelity Savings & Loan Association and the Salt River Valley Water Users' Association, 1924

Maricopa Indians – Contract for Pumping Water for Maricopa Indians on Gila River Indian Reservation, 1936

New State Irrigation and Drainage District – Agreement between New State Canal Company, Landowners, and the Salt River Valley Water Users' Association, 1924

Peninsula-Horowitz – Agreement Between the Salt River Valley Water User's Association, Roosevelt Irrigation District, and Valley Bank and Trust Company, N. P. McCallum, George Taylor, T. W. Barker, C. W. and Bertha Boggs, A. B. Vauk, W. A Thompson, and Maude M. Tanton Grimshaw, 1930

Phelps Dodge Corporation – Agreement between Salt River Valley Water Users' Association, Phelps Dodge Corporation, and Defense Plant Corporation, 1944

Roosevelt Irrigation District – Agreement between A. A. Carrick and Frank J. Mangham and the Salt River Valley Water Users' Association, 1920

Roosevelt Water Conservation District – Agreement between the Salt River Valley Water Users' Association and Auxiliary Eastern Canal Landowners' Association, 1920

Salt River Pima-Maricopa Indian Community – Agreement between the United States and the Salt River Valley Water Users' Association Verde River Storage Works, 1935

Salt River Pima-Maricopa Indian Community – Salt River Pima-Maricopa Indian Community Water Rights Settlement Agreement, 1988

St. John's Irrigation District – Agreement between St. John's Irrigation District and the Salt River Valley Water Users' Association, 1924

Attachment J

TABLE 10. GROUNDWATER REMEDIAL ACTIONS - COMPARATIVE ANALYSIS

West Van Buren Area WQARF Site

Site	Treatment Technology	Required Treatment Levels[1]	End Use of Remediated Water	Remedy Capital Cost (in years completed)	Remedy Capital Cost (2014 dollars)[2]	Design Treatment Capacity	Normalized[3] Capital Costs/ Treatment Capacity ($/gpm)	Amount of Groundwater Extracted Through 2013	Amount of VOC Mass Removed Through 2013	Average Annual Groundwater Pump & Treat Rate	Annual VOC Mass Removal Rate	Annual Remedy O&M Costs	Routine O&M Cost ($/lb$_{VOC}$)	Routine O&M Cost ($/Kgal)
M52 CERCLA Site Operable Unit 1	Air Stripping with VGAC	Primary Drinking Water Standards	Industrial Sanitary Sewer Irrigation	$3.1 MM[b] (1992)	$5.3 MM	810 gpm[g]	$6,490	3.6 billion gallons[j]	23,635 pounds[j]	230 gpm[j] (2010-2013) 215 gpm[j]	813 pounds/year[j] (2010-2013) 899 pounds[j]	$1.3 MM/year[p] (2006-2010)	$1,210[p] $1,446	$6.37[p] (2006-2010) $11.50
M52 CERCLA Site Operable Unit 2	LGAC (lead/lag)	Primary Drinking Water Standards	Irrigation	$12.0 MM[c] (2001)	$16.2 MM	5,300 gpm[g]	$3,057	13.3 billion gallons[k]	14,116 pounds[k]	2.108 gpm[k] (2010-2013) 1,919 gpm[k]	612 pounds/year[k] (2010-2013); 401 pounds[k]	$1.1 MM/year[p] (2006-2010)	$794[p] $2,743	$0.84[p] (2006-2010) $1.09
NIBW CERCLA Site Central Groundwater Treatment Facility	Air Stripping with VGAC	Primary Drinking Water Standards	Drinking Water	$10.4 MM[d] (1993-2000)	$16.2 MM	9,400 gpm[d]	$1,723	56.8 billion gallons[l]	51,129 pounds[l] (TCE only)	4,343 gpm[l] (2010-2013) 3,624 gpm[l]	TCE only 1,065 pounds/year[l] (2010-2013) 1,004 pounds[l]	$0.86 MM/year[q] (2005-2009)	$807 (2010-2013) $856	$0.37 (2010-2013) $0.45
NIBW CERCLA Site Miller Road Treatment Facility	Air Stripping with VGAC	Primary Drinking Water Standards	Drinking Water	$10.3 MM[d] (1995-97)	$15.3 MM	6,300 gpm[d]	$2,429	32.4 billion gallons[l]	7,937 pounds[l] (TCE only)	4,891 gpm[l] (2010-2013) 4,003 gpm[l]	TCE only 574 pounds/year[l] (2010-2013) 401 pounds[l]	$0.54 MM/year[q] (2005-2007) ~ $2.3 MM/year (2008)	$932 - 4,064 (2010-2013) $1,334 - 5,818	$0.21 - 0.91 (2010-2013) $0.25 - 1.11
TIAA CERCLA Site Tucson Airport Remediation Project	Air Stripping with VGAC	Primary Drinking Water Standards	Drinking Water	$8.7 MM[e] (1994)	$13.9 MM	6,200 gpm[h]	$2,242	38.1 billion gallons[m]	4,570 pounds[m] (TCE only through 2012)	3,274 gpm[m] (2010-2013) 2,511 gpm[m]	TCE only 161 pounds/year[m] (2010-2013) 107 pounds[m]	$0.85 MM/year[h] (before 1,4-dioxane treatment began)	$5,280 (2010-2013) $7,944	$0.49 (2010-2013) $0.64
WVBA Site Proposed Less Aggressive Alternative Remedy	LGAC (lead/lag)	Primary Drinking Water Standards	Irrigation Drinking Water[a]	~ $9.4 MM[f]	~ $9.4 MM	~13,300 gpm[f,i]	~ $707	----	----	~ 11,758 gpm[n]	~ 2,503 pounds/year[o]	~ $1.7 MM/year[f,r]	~ $670	~ $0.27
WVBA Site Proposed Reference Remedy	LGAC (lead/lag)	Primary Drinking Water Standards	Irrigation Drinking Water[a]	~ $13.6 MM[f]	~ $13.6 MM	~19,500 gpm[f,i]	~ $697	----	----	~ 16,071 gpm[n]	~ 2,820 pounds/year[o]	~ $2.5 MM/year[f,r]	~ $883	~ $0.29
WVBA Site Proposed More Aggressive Alternative Remedy	LGAC (lead/lag)	Primary Drinking Water Standards	Irrigation Drinking Water[a]	~ $14.6 MM[f]	~ $14.6 MM	~13,300 gpm[f,i]	~ $1,098	----	----	~ 12,142 gpm[n]	~ 2,569 pounds/year[o]	~ $1.8 MM/year[f,r]	~ $708	~ $0.28
WVBA Site Proposed Most Aggressive Alternative Remedy	LGAC (lead/lag)	Primary Drinking Water Standards	Irrigation Drinking Water[a]	~ $19.5 MM[f]	~ $19.5 MM	~29,100 gpm[f,i]	~ $670	----	----	~ 23,047 gpm[n]	~ 3,164 pounds/year[o]	~ $3.5 MM/year[f,r]	~ $1,120	~ $0.29

SYNERGY ENVIRONMENTAL, LLC

TABLE 10. GROUNDWATER REMEDIAL ACTIONS - COMPARATIVE ANALYSIS

West Van Buren Area WQARF Site

Notes:

1) Treatment Levels applicable to site Contaminants of Concern
2) Based on percentage increase in Consumer Price Index (CPI) from dates of construction completion through May 2014.
3) Capital Cost in 2014 dollars relative to design treatment capacity in gpm.

* Values in red denote 2013 reported values/metrics

Abbreviations:

M52 = Motorola 52nd Street Superfund Site
NIBW = North Indian Bend Wash
TIAA = Tucson International Airport Area
WVBA = West Van Buren Area
VGAC = vapor-phase GAC
LGAC = liquid-phase GAC
lb = pound
Kgal = thousand gallons
MM = million
gpm = gallons per minute
O&M = operation and maintenance
VOC = volatile organic compound
TCE = trichloroethene
~ = values are estimates
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

Explanation:

a) A major portion of remediated water is planned for municipal use pending RID construction of a separate conveyance pipeline from the WVBA Site to District land.
b) *Letter of Determination for Motorola 52nd Street Facility* , Phoenix, dated September 30, 1988.
c) *Final Remedial Action Report for Motorola 52nd Street Superfund Site, Operable Unit 2 Area* , Phoenix, Arizona, prepared by Black & Veatch Corporation, dated September 12, 2003.
d) *Final Feasibility Study Addendum* , North Indian Bend Wash Superfund Site, Scottsdale, Arizona, prepared by the NIBW Participating Companies, dated November 15, 2000 (*See* Table M5 in Appendix M, Volume 5).
e) Verbal communication: Mr. Jeff Biggs, Project Coordinator, Tucson Airport Remediation Project, Tucson Water.
f) *Draft Feasibility Study Report* , West Van Buren Area WQARF Site, Phoenix, Arizona, prepared by Synergy Environmental (*See* Table 5 for design treatment capacity and Table 7 for capital and O&M costs).
g) *2011 Sitewide Five-Year Review Report, Motorola 52nd Street Superfund Site* , Phoenix, Arizona, prepared by URS Corporation, September 2011 (See Sections 4.1 and 4.2; Tables 4-1 and 4-2).
h) *First Five-Year Report for Tucson International Airport Area Superfund Site* , Pima County, Arizona, prepared by U.S. Environmental Protection Agency, September 2013 (*See* Section 4.2.1 for pounds of VOCs removed and volume of groundwater extraction over 216 month period, and Section 4.3.1 for O&M costs [2001]).
i) The proposed remedy provides remediation of up to 26,800 gpm water supply when including blending of other contaminated supply wells that would operate according to an approved remedial action plan.
j) Information pertaining to amount of groundwater treated and mass removed is from annual Operable Unit No. 1 Effectiveness Reports prepared by Clear Creek Associates.
k) Information pertaining to amount of groundwater treated and mass removed is from annual Effectiveness Reports for 20th Street Groundwater Treatment Facility, Operable Unit 2 Area prepared by Connestoga-Rovers & Associates.
l) Information pertaining toamount of groundwater treated and mass removed is from annual Site Monitoring Reports, NIBW Superfund Site prepared by the NIBW Participating Companies.
m) Information pertaining to amount of groundwater treated and mass removed is from annual Water Quality Reports prepared by Tucson Water.
n) Estimated pumping rate is based on assigned pumping of remedy wells developed for the FS Model (see Appendix F).
o) Based on reported 2013 concentrations of PCE, TCE, and 1,1-DCE and projected pumping in groundwater modeling scenarios (see Appendix F).
p) *Motorola 52nd St. Superfund Site, Five-Year Review Completed Fact Sheet* , prepared by Environmental Protection Agency and Arizona Department of Environmental Quality (*See* page 2 for average VOC mass removed and average volume of groundwater extracted for 2006-2010).
q) *First Five-Year Review, Indian Bend Wash Superfund Site* , Scottsdale and Tempe, Maricopa County, Arizona, prepared by U.S. Environmental Protection Agency, September 2011 (*See* Table 4-8; periodic rehabilitation costs not included in O&M Costs Summary).
r) Excluding line item costs for area-wide groundwater monitoring and capital equipment costs from Table 7 *Draft Feasibility Study Report* , West Van Buren Area WQARF Site, Phoenix, Arizona, prepared by Synergy Environmental.