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# MEMORANDUM

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Date: May 30, 2014

To: The Honorable Chair and Members  
Pima County Board of Supervisors

From: C.H. Huckelberry  
County Administrator 

Re: **El Camino del Cerro Landfill Remediation**

The County has been engaged with the Arizona Department of Environmental Quality (ADEQ) through at least five administrations in the remediation efforts associated with the El Camino del Cerro Landfill,

ADEQ stated its intent to designate this landfill and the nearby area as a Water Quality Assurance Revolving Fund (WQARF) site almost 20 years ago and formally designated it a WQARF site in 1998. The county has invested more than \$7 million in various remedial actions, including engineering studies and analyses, soil vapor/landfill gas extractions and groundwater pump-and-treat operations. ADEQ has, through various project managers over time, agreed with the County's analysis and our approach. In fact, ADEQ previously agreed that the pollution related to the Shannon Road-Rillito Creek WQARF site, which lies to the east of Interstate 10, would be the state's responsibility due to evidence of other contributing sources of groundwater contamination. But in recent years the Department has taken a new direction, combining the two WQARF sites and concluding that the CDC landfill is the only confirmed source of groundwater pollution.

There were several additional industrial polluters in this area, primarily in the Shannon Road-Rillito Creek WQARF area, that have significantly contributed to groundwater contamination, and the most recent actions by ADEQ would essentially absolve them and the State (which would be legally responsible for the remediation cost shares of responsible parties that are defunct) of all financial liability for investigation and remediation and place it solely with Pima County. This is entirely unacceptable, and, if necessary, will give rise to legal action against the State, as the foundation for making the most recent assertions is flawed and simply an effort by the State to lay the blame on the party with biggest pocketbook.

Attached is a May 16, 2014 letter from Deputy County Attorney Michael McNulty to ADEQ refuting in great detail the State's allegations. We will continue to oppose any attempt to place the entire blame of any groundwater pollution on Pima County.

The Honorable Chair and Members, Pima County Board of Supervisors  
Re: **El Camino del Cerro Landfill Remediation**  
May 30, 2014  
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We are certain that the landfill was not the only major source of groundwater contamination. Historically, wrecking yards, solvent recyclers, and parts salvage operations using solvents were contributors that are being ignored by the State.

Due to the assertions by the State, the County continues to expend considerable public funds in fighting these false allegations. I have asked the County Attorney to take the necessary actions to recover, through litigation if necessary, from the State those funds expended by the County in defense of frivolous, unsubstantiated and undocumented allegations.

CHH/mjk

Attachment

c: Ellen Wheeler, Assistant County Administrator  
Michael McNulty, Deputy County Attorney  
Ursula Kramer, Director, Environmental Quality  
Dave Eaker, Deputy Director, Environmental Quality  
Jim Faas, Environmental Service Officer, Risk Management



OFFICE OF THE  
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**Barbara LaWall**  
PIMA COUNTY ATTORNEY

May 16, 2014

*Via Hand Delivery*

Mr. Scott Green  
Project Manager, Superfund Programs Unit  
Southern Regional Office, ADEQ  
400 W. Congress, Ste. 433  
Tucson AZ 85701

**RE: COMMENTS ON THE FINAL DRAFT REMEDIAL INVESTIGATION REPORT, AND REMEDIAL OBJECTIVES FOR SHANNON ROAD/EL CAMINO DEL CERRO WQARF SITE**

Dear Mr. Green:

Attached, you will find an analysis undertaken by Montgomery & Associates on behalf of Pima County. The report analyzes the Final Draft Remedial Investigation Report (Draft RI) issued by ADEQ on March 19, 2014 for the Shannon Road/El Camino Del Cerro (SR/ECDC) Water Quality Assurance Revolving Fund (WQARF) site (the CDC Site).

Additionally, Pima County herewith submits its separate comments. With a record in the hundreds of thousands of pages, including the exhaustive work that Pima County has itself put into various assessments of the former El Camino Del Cerro (CDC) landfill, and the sporadic measurements that ADEQ itself undertook over more than a decade, the scant amount of time that ADEQ has allowed the public to respond to the Final Draft RI is insufficient. Nevertheless, even with the limited time available to review the Draft RI, it is clear that the Draft RI cannot satisfy either the applicable statutory criteria or the federal guidance.

**PIMA COUNTY'S COMMENTS ON THE FINAL DRAFT RI REPORT**

**1. Standards for Remedial Investigations**

State law sets the standards for Remedial Investigations to ensure that the product results in a feasibility study, record of decision and, ultimately, a site clean-up that is protective of human health and the environment – all the while meeting the economic reasonableness and technical feasibility directives of the WQARF program. Due to the haphazard, intermittent and unfocused data collection upon which the RI is based, these goals are not achievable.

**ADEQ - SRO**  
**Received**

**MAY 16 2014**

ADEQ is charged by law with 1) adequately identifying and evaluating all potential sources of contamination, 2) characterizing the extent of the contamination, 3) identifying rational contaminant transport scenarios, and 4) developing a sufficiently coherent dataset such that the State can develop an economically reasonable feasibility study. It is Pima County's conclusion that the Draft RI:

- 1.1 Ignores or dismisses a number of potential sources that would be critical to an understanding of the overall situation,
- 1.2 Creates a multiplicity of inconsistent plume maps that can only be interpreted as saying that ADEQ does not have a clear idea what the extent of the contamination is,
- 1.3 Is based on the flawed and unlawful decision to merge the El Camino Del Cerro and the Shannon Road WQARF sites without objective data refuting the previous determination that there are two distinct areas of pollution,
- 1.4 Lacks demonstrated historical evidence critical to understanding the potential pollutants disposed of on the east and north of Interstate-10,
- 1.5 Fails to adequately define the contamination in the Shannon Road WQARF area such that defining a solution (through the Feasibility Investigation process) is not possible, and
- 1.6 Fails to provide sufficient information necessary for identification and comparison of remedial alternatives, and, consequently, is inconsistent with the National Contingency Plan<sup>1</sup>.

ADEQ<sup>2</sup> would have needed to conduct area-wide testing in a reasonable time frame and sequence to perform an adequately scoped RI and to form a cogent professional opinion. The Draft RI acknowledges that such testing has not been performed. *See* Draft RI at 63. The Draft RI also acknowledges the lack of adequate data east of Interstate-10 to assess the contributions to groundwater from potential contaminant sources in that area. *See e.g., id. at 60-61* The County agrees that these data gaps need to be filled in order to develop an NCP-compliant RI. Such testing also would have needed to include parameters that accounted for the constituents that reflect the significant water quality differential (as revealed by Stiff and Piper diagrams) between groundwater towards the west, and groundwater towards the east. Without such testing, no defensible conclusions on the extent and sources of groundwater contamination can be lawfully derived.

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<sup>1</sup> The National Contingency Plan (NCP) establishes standards for the assessment of cleanup actions: 40 C.F.R. § 300; also see, 42 U.S.C. §§ 9601-9675 (1988).

<sup>2</sup> URS prepared the Draft RI for ADEQ.

## **2. Reservation of Rights**

To the extent that ADEQ has withheld documents and/or information that would allow the public to assess the adequacy of the Draft RI, obviously, we are not able to comment. We note that there are a variety of instances in which documents are cited in the HGL letter report as being privileged or confidential or "attorney work-product." The propriety of such assertions cannot be evaluated. Moreover, the Department's Project Manager, Mr. Scott Green, recently advised a Citizens Advisory Board Member that "ADEQ's contractor, HGL, has done extensive research in investigating PRPs. This information is currently confidential until the PRAP is completed and apportionment takes place." In any event, Pima County reserves the right to comment upon and/or object to subsequent disclosures ADEQ may make in connection with this matter.

## **3. Unprecedented Floods of 1977 and 1983**

The Draft RI fails to explore the consequences of the historically unprecedented floods of 1977 and 1983. It very nearly fails to mention them. Even if ADEQ were to assert that Pima County could be a PRP under A.R.S. § 49-283(B), Pima County could not be found liable due to the Act of God defense available under both A.R.S. § 49-283(D)(1) and CERCLA (42 U.S.C. § 9607). The floods of 1977 and 1983 were "Acts of God" as defined by WQARF and by CERCLA.

- 3.1** In 1977 the "100 year flood" predicted by U.S. Army Corps of Engineers methodologies at 21,000 cfs was exceeded by more than 50%. A flood measured at 32,700 cfs inundated the landfill. [The County ceased operations at CDC in 1978]. That inundation resulted not from flooding from the riverside edge of the landfill, but from behind.
- 3.2** After the 1977 flood, Pima County made bank improvements incorporating a revised ACOE standard of 35,000 cfs as being the design one hundred year flood. In 1983, however, the Santa Cruz River experienced a flooding event of 52,700 cfs.
- 3.3** For some weeks, after each flood, ponding occurred on the CDC landfill which was the only mechanism by which wastes leached into the groundwater. Nevertheless, Pima County believes that most of the groundwater contamination resulting from such Acts of God has been mitigated, and that the subterranean movement of VOC's into the groundwater from pollution sources east and north of Interstate 10 are the only current sources of the plume identified by ADEQ.

Page 18 of the Draft RI records the fact that "In July 1994, Pima County Department of Transportation and Flood Control District extended soil cement bank protection from approximately 20 feet to 40 feet below the top of the river bank (Malcolm Pirnie, 1997b)." But

the document fails to mention that such bank protection was a reaction to increasing levels of wastewater discharge into the Santa Cruz River, and a desire to avoid potential erosion problems resulting therefrom.

#### **4. Pima County Should Not be a PRP**

ADEQ's consultant, HydroGeoLogic (HGL), purported to search for potentially responsible parties. However, no regard was given to A.R.S. § 49-283, which establishes the rationale for when a party may or may not be considered a "responsible party." Consequently, Pima County must supplement the record.

- 4.1 CDC was not operated as a business, but was offered as a public service. No fee was charged, and no profit was made. And the County certainly did not engage "in the business" of disposing of hazardous substances at CDC. ARS § 49-283(B)(1).
- 4.2 Pima County never *permitted* any person to use the facility for the disposal of a hazardous substance. ARS § 49-283(B)(2).
- 4.3 No evidence existed concerning hazardous substance disposal at CDC prior to the purchase and use of CDC by the County. Pima County did not know, nor reasonably should have known, of hazardous substance disposal practices at CDC prior to the County's acquisition of the site. ARS § 49-283(B)(3).
- 4.4 No evidence exists that the County took action which significantly contributed to the release after it knew or reasonably should have known of the existence of a hazardous substance at CDC. ARS § 49-283(B)(4).
- 4.5 Pima County is not responsible for the acts of unrelated third parties because Pima County exercised due care and took precautions against foreseeable acts or omissions. Among other things:
  - 4.5.1 Pima County designed the bank protection that withstood the flood.
  - 4.5.2 Pima County operated the landfill in compliance with all standards of the day and was, in fact, the model for development of the landfill operating regulations adopted by the Arizona Department of Health Services in 1976.
  - 4.5.3 Pima County never authorized the disposal of hazardous substances, nor did it charge for disposal.
  - 4.5.3 Pima County was required to provide solid waste disposal services by state law, and at all times operated in a manner consistent with those requirements.

## 5. Pima County Remediation Efforts

The Draft RI fails to adequately characterize the extensive efforts that Pima County has been engaged in over the last twenty years in remediating the CDC waste disposal site. Indeed, the County is presently taking additional measurements to determine its compliance status. All the while, ADEQ has taken a lackadaisical attitude with respect to orphan sites east and north of Interstate 10, even as the pollution from those sites has expanded the plume. We note that all reports associated with the County's multiple and amended RI/Feasibility Studies (RI/FS) are already part of the official record in connection with the instant Draft RI. To the extent that the Draft RI is inadequate in its discussion of those cleanup efforts (see RI at 22-23), that inadequacy would be inconsistent with the NCP and therefore should be acknowledged.

In connection with the voluminous previous investigations, and extensive earlier remedial actions at CDC, the Draft RI fails to note that the State of Arizona and Pima County formerly agreed to divide responsibility for remediation based upon the geographical division of Interstate 10. Page 1.1 of the August 25, 2008 Draft RI prepared by URS provides as follows:

"In 1999 Pima County and ADEQ established areas of responsibility for the ECDC WQARF site dividing the site into two response areas: the Pima County Response Area and the ADEQ Response Area. The line of demarcation agreed upon was the centerline of I-10 with Pima County being responsible for investigating and implementing remedial actions of the area south and west of I-10, and ADEQ responsible for all actions taken in the area north and east of I-10."

**Pima County's prior RI and feasibility studies were extensive and were accepted by ADEQ.** In reliance on that acceptance, Pima County has conducted extensive remediation work in the County Response Area (south and west of I-10) ever since. Pima County studies included:

- RI for ECDC WQARF site, 1997
- Landfill Operable Unit FS, 1997
- Groundwater Operable Unit FS, 1998
- 1999 Addendum to LOU FS and GOU FS, which included preferred remedies and monitoring plans, and which were submitted to ADEQ for comment.

In a letter dated July 20, 2000, ADEQ concurred with the information in the revised Feasibility Studies, Addenda and comment responses for the proposed remedial actions for the Groundwater and Landfill Operable Units for ECDC WQARF site. Extensive remediation work in accordance with those reports has been conducted.

An extensive history of State/County cooperative efforts can be found in the attached draft Consent Decree dated Sept. 30, 2003.

## 6. Inappropriate Consolidation

The El Camino Del Cerro WQARF site and the Shannon Road WQARF site were consolidated inappropriately to form the Shannon Rd/El Camino Del Cerro (SR/ECDC) Water Quality Assurance Revolving Fund (WQARF) site. Pima County objects to the two WQARF

sites being “consolidated,” and directs ADEQ to the holding in Mead Corp. v. Browner, 100 F.3d 152 (1996). In that case, the EPA tried to aggregate a low risk site with a high risk site. The court ruled to the contrary: “The idea that Congress implicitly allowed EPA broad discretion to lump low-risk sites together with high-risk sites, and thereby to transform the one into the other, is anything but reasonable. ... Permitting the inclusion of low-risk sites on the NPL would thwart rather than advance Congress’s purpose of creating a priority list based on evidence of high risk levels.”<sup>3</sup>

## 7. HGL February 6, 2014 Final Letter Report

The Draft RI incorporates the HGL Final Letter Report that contains several claims of privilege with regards to alleged operational and disposal activities within the WQARF site. Among others, the Department claims a privilege as to information concerning operations at the Lee’s Auto Parts facility, AMRI oil customers, and wastes allegedly disposed of in the CDC landfill that is included in the HGL report. Such information is critical to understanding the nature and extent of contamination at these sites.

Additionally, the following points illustrate some of the technical and historical mistakes made by HGL.

- 7.1 Page 4, Table 1 - This table presents a list of industries and chemicals used. Under aircraft repair including military and defense contractors, and missile maintenance, a footnote claims some Air Force technical orders mandate the use of PCE and TCE for aircraft and missile cleaning. The referenced Air Force technical order is T.O. 42C-1-20 dated 15 May **1983**, more than five years after the landfill closed. Clearly, this document does not cover the time period when the landfill was operational. Any technical information relied upon must have been in effect at the time when the landfill was in use, not years after closure.
- 7.2 Page 7, last paragraph professes to assert that HGL was unable to find information on the closing of the El Camino del Cerro Landfill. References cited previously in HGL’s report show it was closed in December 1977, and newspaper articles also announced the closure at 5:00 PM, December 21, 1977.
- 7.3 Page 7, footnote 11 states that no information was found to indicate Lee’s Auto Parts began operations at the site prior to 1964. Historic aerial photographs clearly show an automobile junk yard present at the site prior to 1960 regardless of who was operating at the site.

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<sup>3</sup> 43 ERC 1857, 321 U.S.App.D.C. 336, 65 USLW 2345, 27 Env’tl. L. Rep. 20,446

- 7.4 Page 8, 3<sup>rd</sup> paragraph states “Other sources of contamination were suspected but had not been confirmed.” Although the cited reference (ECDEQP 1373-1374) does indeed make that statement, the sections following that statement present findings that confirms contamination. For example, the soil gas concentration of vinyl chloride was found to be 82,320 ppb at the Drake property. With respect to other VOCs at the Drake property, the report states they were “higher than concentrations reported by previous investigators” (ECDEQP001382). The report goes further to discuss findings that VOC soil gas concentrations at the E.C. Winter site were comparable to sites around the CDC landfill (meaning the Drake property).
- 7.5 Page 9, 4<sup>th</sup> and 5<sup>th</sup> paragraphs contain discussions regarding agreements between the Sanitary District and AMRI for disposal of waste at a Sanitary District landfill site. The last agreement was to be on a trial basis for 60 days. The agreement could be terminated by the Sanitary District if they found the agreement to be unsatisfactory. HGL states that they did not locate any documents to indicate that this arrangement was unsatisfactory to either party (AMRI or the Sanitary District), but of course HGL also found nothing confirming that the agreement was satisfactory. Furthermore, HGL has cited no document or other evidence to show AMRI actually disposed of their industrial waste at any off-site location.
- 7.6 Page 10, 2<sup>nd</sup> paragraph states that HGL did not locate reports of spills, leaks or releases filed with federal, state or local agencies. During the time period when AMRI was in operation, *there were no such reporting requirements* to report spills, leaks or releases.
- 7.7 Page 10, 3<sup>rd</sup> paragraph claims Pima County provided no documentation to support claims that unusable oil was placed into unlined pits on the site. Historic aerial photographs clearly show oil in pits and trenches. Subsequent investigation found no evidence of liner use in trenches or pits.
- 7.8 Page 11, 2<sup>nd</sup> paragraph claims that soil and sludge samples collected from a trench at the former AMRI property did not contain VOCs. But HGL fails to note that Marvin Motes, the occupant of the property, collected those samples using unknown methods and unknown sample holding conditions. Furthermore, no laboratory report or other data is even referenced. Clearly these results cannot be relied upon. ADEQ should have sampled all delivery and disposal trenches and the results should be discussed in this report, as well as with in the RI.
- 7.9 Page 21, 2<sup>nd</sup> paragraph – A high soil vapor concentration of vinyl chloride (82,320 ppb) is listed as being found adjacent to the landfill. Later, the report clarifies that this sample was collected at the Lee’s Auto Parts property (Drake

property). The 82,320 ppb soil gas concentration was the highest concentration found during any of the studies conducted for this entire WQARF site. The presentation of this finding in the report is highly misleading. This sample result is introduced and described in the section relating to the regulatory involvement at the CDC landfill which begins on page 17. This soil gas result is not even discussed in the section for Lee's Auto Parts on page 22. HGL's efforts to minimize the obvious role of PRP's other than Pima County is emblematic of ADEQ's conflict of interests in conducting this investigation.

- 7.10 Page 23, 4<sup>th</sup> paragraph – discussion of the lead contaminated soil remediation is irrelevant to the WQARF site. The statement that there was no unacceptable risk associated with the soils at the property at the end of the paragraph is completely misleading because that finding is related to lead contamination in the soil.
- 7.11 Page 23, 6<sup>th</sup> paragraph continuing to page 24 concludes that the Western Stucco is not an active release site based upon a comparison with passive soil gas concentrations observed at properties with documented soil contamination. But the results of passive soil gas at this property show soil gas concentration significantly higher than concentrations found at the CDC landfill using the exact same method in 2002. (Refer to January 30, 2003 Soil Gas Survey of El Camino Del Cerro Landfill report prepared by EMCON) Using the same rationale, ADEQ would have to conclude that the CDC landfill is not an active release site.
- 7.12 On page 5-4 of Pima County's Remedial Investigation, Malcolm-Pirnie concluded that the Arizona Truck Service/D&D Garage site was likely a contributor to the groundwater contamination on the east side of I-10. Neither HGL nor ADEQ's Draft RI even mention that site.

**8. ADEQ has failed to analyze the extent to which polluters on the East side of Interstate 10 have contributed to the plume.**

**8.1 AMRI Oil**

The Draft RI and supporting documents claim that Pima County completed a soil gas sampling of the AMRI property.. In fact, Pima County and its contractor, Hydro Geo Chem, were barred from entry onto that parcel and prevented from collecting soil gas samples to aid determination of the success of ADEQ removal. Pima County sought assistance from ADEQ to gain access to the property. While ADEQ had the authority to grant Pima County access for that purpose, the Department refused to provide such access or provide any assistance with such access. Contrary to the summary of this action provided in the Draft RI, the soil gas survey was actually performed on the next parcel to the North, not on the AMRI site. The landowner

provided this access as Pima County was trying to protect the residents of the Western Trailer Park.

The AMRI site has never been adequately evaluated to determine extent of VOC contamination despite clear evidence of soil contamination. Well drilling logs for wells W-32 and W-33 at the edges of the former AMRI oil property showed high concentrations of VOCs from near surface to the bottom of the wells with concentrations generally increasing with depth. Inexplicably, VOC measurements were not collected during drilling of wells W-44 and W-45 which are located adjacent to the former processing building and oil trench respectively.

Passive soil gas surveys using Gore-Sorber passive gas modules were relied upon to evaluate the AMRI site. This same method was used to screen the CDC landfill in 2002, and the results showed lower contamination levels at the CDC landfill than were detected at the former AMRI property. Results of this sampling near the CDC landfill showed contaminants of concern were highest in the drainage channel east of the landfill. This drainage channel received drainage from areas east of I-10 near the former AMRI Oil property, E.C. Winter Oil property, and other industrial properties. Concentrations of Contaminants of Concern found during this study at the landfill site were significantly lower than those found at the former AMRI Oil property using the same method. The results of passive soil gas sampling at the landfill site show less contamination than was present at the former AMRI Oil property.

Numerous references in the Draft RI and/or documents referenced in by it claim that one well was found at the AMRI site. Various reports cited in the Draft RI claim there were anecdotal references to a possible second well. A second well was in fact present on the property. The well was abandoned prior to the sale of AMRI in 1968. A second well, pump and sump hole were located on the western 40 feet of the property outside of the chain link fence (see Jackson v. Harny Corporation, 16 Ariz. 467, 494 P.2d 72 (1972)). The second well is also contained in the inventory of assets recorded with the Pima County Recorder's Office (Book 2915 page 496) and such inventory was included in a reference cited in the RI (ECNAPR000045)

EPA studies have shown used oil in the re-refining industry to contain contaminants such as PCE at 1300 ppm, TCE at 1000 ppm and TCA at 3100 ppm. (*Preliminary Data Summary for the Used Oil Reclamation and Re-Refining Industry*, USEPA, September 1989). Using these reported concentrations along with reported volumes of oil processed at the AMRI site (180,000 gallons per year), the following quantities of contaminants would have been present at the AMRI site:

- TCE – 9,600 kg (600 kg per year)
- PCE – 12,800 kg (800 kg/year)
- TCA 29,600 kg (1,850 kg/year)

Another EPA study looked at the composition of over 1,000 used oil samples. PCE, TCE and TCA were detected in the vast majority of the oil samples tested for these constituents. Concentrations of these contaminants routinely exceeded 1000 ppm. Highest concentrations

found in this study were 21,000 ppm PCE, 40,000 ppm TCE and 300,000 ppm TCA. (*Composition and Management of Used Oil Generated in the United States, November 1985*).

## **8.2 Wildcat Dumps on/along/in the Rillito River**

ADEQ failed to provide any evidence that contaminants of concern were disposed of in the El Camino Del Cerro landfill. To the extent that the Department simply makes a presumption that contaminants were disposed of in the landfill, the *same* presumption would have to be made about wildcat dumping in and along the banks of the Rillito River. The Rillito River has been a historic wildcat dumping area. Evidence of oil disposal on the banks of the Rillito River was included in ADEQ documents.

ADEQ inspected an area north of the AMRI property along the Rillito River bank as detailed in ADEQ's February 23, 1994 scoping information report for the AMRI Oil property (Wrecksperts). Oily deposit was found on the south bank of the Rillito River. The report indicated that the deposit appeared to be washed away. The two water wells closest to this location were the Z-006 COT well and the Acacia Gardens well – **these were the first wells shut down due to VOC contamination.**

Samples collected during drilling of the two wells along the Rillito downstream from this oily deposit found elevated soil VOC concentrations. VOC concentrations found during drilling of well W48M ranged from 136.6 ppm at 24 feet bgs to 75.5 ppm at 104 feet bgs. VOC concentrations found during drilling of well W30 were as high as 18 ppm down to 207 feet bgs.

## **8.3 ADEQ Witness Testimony Not Included**

ADEQ deposed a former so-called solvent recycler, Ernest "Joe" Blankinship, in 2009. Review of Blankinship's testimony as well as interview summaries and exhibits introduced at Blankinship's deposition clearly show he claimed disposal of solvents in and along the Rillito River upstream from the site.

**8.3.1** Blankinship testified that he disposed of solvents in the Wetmore, Copeland and Crane landfills located on the Rillito River where the present day Tucson Mall is located.

**8.3.2** Blankinship's notes also recite the disposal of solvent wastes at the Cardi site, which operated a sand and gravel pit in the Rillito River west of Oracle Road.

**8.3.3** Blankinship's notes also evidence the sale of solvents to Young Block Company located upgradient of the CDC WQARF site.

**8.3.4** During the deposition of Blankinship in 2009, ADEQ specifically asked Blankinship about his dealings with I-10 Surplus which was located at 5300 N. Casa Grande Highway. Blankinship testified that he routinely collected 55 gallon drums of solvent from I-10 Surplus, and testified further that the owner of I-10

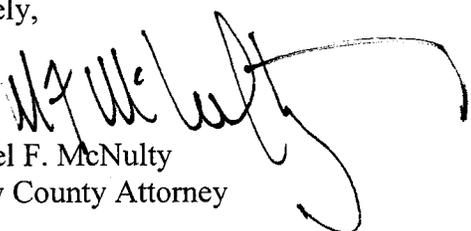
Surplus applied used drums of solvent to settle dust on his lot. While ADEQ has relied heavily on the testimony of Mr. Blankinship in its investigations of other WQARF sites, the Department has not so much as mentioned his testimony with respect to this site nor explained why it is not relevant.

#### 8.4 ADEQ's Inconsistent Application of Standards

Recently the Department published a similar draft Remedial Investigation for the Broadway/Pantano WQARF site in which it determined that the Broadway South Landfill was a source based upon some evidence that Contaminants of Concern could be found in soil gas and groundwater - without regard to concentrations. While the E.C. Winter site and the AMRI site each have volatile organic chemicals in soil gas and groundwater, the Department concludes that they are not contributing to groundwater contamination.

In conclusion, we appreciate this opportunity to comment on the Draft RI Report even as we reiterate our view that the public was not provided with adequate time to respond. And as a postscript, we note that ADEQ just recently issued its Proposed Remedial Objectives Report. We will reply separately to that proposal within the allotted time frame.

Sincerely,



Michael F. McNulty  
Deputy County Attorney

MFM:sl

**Enclosures:** Technical comments on Final Draft Remedial Investigation Report, Shannon Road/El Camino Del Cerro Water Quality Assurance Revolving Fund Site, prepared by Montgomery & Associates., March 15, 2014.

Consent Decree between the State of Arizona and Pima County, September 30, 2003.

cc: Ellen Wheeler – Asst. Pima County Administrator (without enclosures)  
Jim Faas – Pima County Risk Management (without enclosures)  
Dave Eaker – PDEQ (without enclosures)

## TECHNICAL MEMORANDUM

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**DATE:** May 15, 2014 **PROJECT:** 1415.01

**TO:** Michael McNulty, Pima County

**FROM:** Tim Leo, PG, Montgomery & Associates  
Leslie Katz, PG, Montgomery & Associates  
Tim Allen, PG, Montgomery & Associates

**cc:** Jim Faas, Pima County  
Dave Eaker, Pima County

**SUBJECT:** Technical comments on Final Draft Remedial Investigation Report,  
Shannon Road/El Camino Del Cerro Water Quality Assurance  
Revolving Fund Site

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At the request of Pima County, Montgomery & Associates (M&A) has prepared these comments on the March 2014 *Final Draft Remedial Investigation Report for the Shannon Road/El Camino Del Cerro Water Quality Assurance Revolving Fund Site* (Site). The Final Draft Remedial Investigation (RI) Report was prepared by URS on behalf of the Arizona Department of Environmental Quality (ADEQ). Formal oversight of the Site by ADEQ began in 1992. The Site includes two formerly separate Water Quality Assurance Revolving Fund (WQARF) sites: the Shannon Road (SR) WQARF Site and the El Camino Del Cerro (ECDC) WQARF Site. The sites were administratively combined into the SR/ECDC WQARF Site in 2004. The RI report presents findings of investigative activities for the Site from January 2001 through June 2013.

### BACKGROUND

The ECDC landfill was operated by Pima County from about 1973 through 1977. Groundwater contamination in the vicinity of the landfill was first identified in 1983 after Pima County initiated the Landfill Environmental Studies Program (LESP), which was developed to investigate potential environmental issues at closed county landfills. From 1983 to 1997, a broad range of source area and groundwater investigations<sup>1</sup> were conducted in the ECDC landfill study area. Much of this work was documented in a comprehensive RI report prepared by Malcolm Pirnie, Inc. (MPI) on behalf of

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<sup>1</sup> See Section 2.0 and the Site Chronology in Table 1 of ADEQ RI report for a list of major investigative activities.

Pima County Solid Waste Management<sup>2</sup> (Pima County RI). Pima County submitted the RI report to ADEQ in 1997 for review and approval.

For the Pima County RI, two operable units were designated: the landfill operable unit (LOU) and the groundwater operable unit (GOU). A substantial amount of hydrogeologic, soil quality, and groundwater quality data was collected in the ECDC study area during the Pima County RI. Detailed interpretations of these data were summarized in the MPI RI report. Based on the interpretation of data, a number of conclusions were reached by Pima County for the LOU and GOU<sup>3</sup> with respect to site hydrogeologic conditions, soil and groundwater quality, contaminant fate and transport in the vadose zone and groundwater, and risks associated with the observed vadose zone and groundwater contamination. Principal among these conclusions were that data indicated: (1) the ECDC landfill was a source of volatile organic compounds (VOCs) to groundwater, and (2) other source areas north of the landfill had previously or were continuing to contribute VOCs to the groundwater system.

## REVIEW PROCESS

Our review included the following activities:

- Detailed evaluation of the ADEQ RI report.
- Review of the 1997 Pima County RI report.
- Review of available documents referenced in the ADEQ RI report.
- Evaluation of water quality data obtained from ADEQ and Pima County.
- Evaluation of groundwater pumping data from the Arizona Department of Water Resources (ADWR) databases

A 60-day comment period was established by ADEQ for the Final Draft RI report<sup>4</sup>. In an April 10, 2014 letter to ADEQ, Pima County requested an extension to the review period to prepare comments on the RI report. This request was made because a preliminary review of the RI report indicated that it lacked a complete and organized presentation of data and, instead, it directed the reader to an extensive list of external reports and memorandum. As a result, additional time would be required to obtain and review reference material, to critically evaluate conclusions reached by ADEQ about contaminant source areas, and to prepare written comments. The request for an extension was denied by ADEQ in a letter to Pima County dated April 14, 2014.

The RI report relies extensively on reference material developed during over two decades of investigations by Pima County and ADEQ. Some of this reference material was available in Pima County files. Pima County requested missing reference material directly from ADEQ in the April 10, 2014 letter. The request for this reference material was denied by ADEQ in their April 14, 2014

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<sup>2</sup> Malcolm Pirnie, Inc., July 1997, Landfill Environmental Studies Program (Phase 3), El Camino Del Cerro Study Area, Remedial Investigation Report.

<sup>3</sup> See Section 8.0 of Pima County RI report.

<sup>4</sup> As stated in the March 19, 2014 ADEQ Notice of Public Comment for Site

response letter because, among other reasons, ADEQ asserted that the majority of data, and all of the relevant data, requested by Pima County were included in the appendices of the RI report. A review of the report appendices indicated that important data requested by Pima County were not included in the appendices. Because data and other reference material were readily unavailable in local repositories or in the report, Pima County and M&A representatives formally requested and traveled to Phoenix to review available files at the ADEQ Records Center on April 30, 2014. Some of the reference material was not available in the ADEQ Record Center files; however, M&A proceeded with the evaluation based on available documents and data<sup>5</sup>.

## RESULTS OF REVIEW

Conclusions reached by ADEQ in their RI report include:

1. PCE and TCE concentrations in groundwater do not appear to pose an immediate health risk to the public.
2. The contaminant plume in the shallow groundwater zone is relatively stable and the contaminant plume in the medium groundwater zone is migrating to the northeast and is likely captured by the South Shannon well.
3. Based on currently available data, the only confirmed sources of groundwater contamination are the ECDC Landfill and possibly the larger Drake property.
4. While not stated in Section 6.1, Conclusions, ADEQ concluded in earlier report sections, based on soil and soil gas quality data at the potential source areas along the I-10 Corridor and northeast of I-10, that the observed soil contamination did not impact groundwater.

M&A generally agrees with the conclusions that the tetrachloroethene (PCE) and trichlorethene (TCE) concentrations in groundwater do not appear to pose an immediate risk to public health. Although VOC concentrations are declining in some areas of the Site, the contaminant plume does appear to be relatively stable in the shallow groundwater zone, especially in the vicinity of and downgradient from the E.C. Winters and AMRI Oil properties. The contaminant plume in the medium groundwater zone is migrating to the northeast, presumably toward the South Shannon well. However, the RI report contains insufficient information to assess whether the South Shannon well is capturing the entire medium zone plume. Based on information summarized below, and detailed in the attached tables, M&A disagrees with the conclusion that, among the various areas investigated and found to have confirmed surface and subsurface contamination, the ECDC landfill (and possibly the Drake property) is the only confirmed source of groundwater contamination.

**Table 1** summarizes the results of our review and provides detailed comments on the RI report. The comments in **Table 1** should be addressed before the final RI report is issued. The following broad-based comments summarize the principal issues and concerns noted during our review:

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<sup>5</sup> Arizona Administrative Code R18-16-406F states “The draft remedial investigation report may consist of a summary of the data and information collected with references to the supporting documentation and the location of the public repository where those documents may be reviewed”.

## 1. The RI report is Incomplete, Deficient, and Inconclusive.

The presentation, interpretation, and analysis of data on hydrogeologic conditions, contaminant distribution, contaminant fate and transport in the vadose zone and groundwater, and contaminant source areas are incomplete, inadequate, and often confusing in the draft RI report. Numerous examples are cited in **Table 1** where critical information is missing from the report text, tables, figures, and appendices (for example, see Comments #8, #30, #32, and #33). Important explanatory information is often missing from figures, and the figures poorly depict the intended concepts. Throughout the report, concepts and terms are introduced but not explained or defined. The incomplete presentation of data suggests that many of the investigations conducted during the RI were incomplete and inadequate.

In lieu of providing a complete and clear presentation of data, the report includes references to numerous external documents and numerous incomplete and poorly organized appendices. Many of the reference documents are lengthy and would require substantial time to review. Some of reference documents were not available for review in ADEQ files. In most cases, the appendix material is merely an assemblage of previously-published figures or tables (sometimes with illegible information) provided without narrative context or explanation. The appendix materials are often internally inconsistent and incohesive, making it difficult for the reader to extract the necessary information. These deficiencies are fundamental and should be corrected before the final document is issued. The report should provide a clear and complete presentation of data to serve as a basis for interpretation and to support associated conclusions, enabling the reader to independently judge the reasonableness of the RI. These minimum standards are or should be a requirement of the WQARF program.

The deficient presentation of data in the report does not support interpretation of Site conditions. However, as cited in **Table 1**, the report includes a broad range of interpretations that, in most cases, are incomplete, unfounded, subjective, or inconsistent with data and information presented in the report. This is most evident and problematic in Section 4.0, Investigations and Remedial Actions, where flawed interpretation of incompletely summarized soil, soil gas, and groundwater quality data leads to critical, and largely unfounded, conclusions about contributions of contaminants to the groundwater from the source areas along the I-10 Corridor and northeast of I-10 (see Comments #34, #35, #43, and #45). After presentation of data in the report is expanded and clarified, complete, objective and thoughtful interpretation of these data should be provided in a revised final report. In addition, uncertainty and limitations in the interpretations and conclusions should be provided to appropriately qualify subsequent conclusions.

The RI report does not include analyses to support conclusions. The lack of analysis of abundant data compounds problems associated with incomplete presentation of data and flawed interpretation of data. For example, it is concluded in the report that soil contamination data collected at the E.C. Winter site did not indicate an impact to groundwater. Not only is the presentation of data incomplete, and the interpretation of data unsupported by the data that are presented, but the report

lacks an analysis that demonstrates with any reasonable degree of certainty that soil and soil vapor contamination at the E.C. Winter site is not currently or did not in the past impact groundwater. Vadose zone modeling<sup>6</sup> would have been appropriate for this site, and most of the other potential source sites. Similarly, the report proposes a conceptual model of groundwater flow and contaminant transport, again, without a supporting analysis. In this case, a groundwater flow and transport model<sup>7</sup>, calibrated to observed conditions, would be appropriate to assess a broad range of conceptual models and identify the conceptual model that best fits the hydrogeologic and groundwater quality data. This flow and transport model could also be used to evaluate the fundamental question of whether the contaminant plume has evolved only from sources southwest of I-10, as concluded by ADEQ, or whether it is more plausible that sources northeast of I-10 also contributed to the plume (as an overwhelming amount of site-specific data indicate – see below).

## 2. M&A disagrees with Report Conclusions.

M&A conducted a thorough review of the RI report and reviewed as much of the reference material as was possible in the 60-day comment period. In addition, M&A reviewed monitor well and water quality data from ADEQ and Pima County files, as well as pumping and water level data available in ADWR databases. Where possible, M&A conducted focused analyses of available data to supplement the information presented in the report. Based on our review and focused analyses, M&A believes that the investigations conducted at the potential source areas (other than the ECDC landfill) were incomplete or inadequate to sufficiently characterize the sites to a degree that supports the conclusions about source contributions to groundwater. Further, M&A does not agree with many of the conclusions stated in the RI report. Most importantly, M&A disagrees with the conclusion that the only confirmed sources of groundwater contamination in the SR/ECDC WQARF Site are the ECDC landfill and possibly the larger Drake property. In contrast, M&A believes the soil, soil vapor, and groundwater quality data developed during the RI indicate a high likelihood that sources of groundwater contamination exist today or existed in the past at some or all of the sites investigated during the RI, as well as other sites (such as wildcat dumping along Rillito Creek) which were not addressed in the RI.

The RI report and **Table 1** cite several examples where Site contaminants of concern (COCs) primarily PCE and TCE were used and/or present in waste materials disposed of at a facility, were detected throughout the vadose zone in soil and/or soil gas, and were also present in groundwater beneath the facility. **Table 2** compares the types and selected results of investigations conducted at the ECDC landfill and other potential source area sites. The table provides the highest concentrations of the major COCs (PCE, TCE, etc.) detected in various media at each of the sites. The media considered include shallow and deep soil, shallow and deep soil vapor (or gas), and groundwater. Information provided in **Table 2** shows that the distribution of COCs and the maximum detected COC concentrations in the various media are similar at the ECDC landfill, a confirmed source of

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<sup>6</sup> Using a program like VLEACH for example (<http://www.epa.gov/ada/download/vleach.pdf>)

<sup>7</sup> Using programs like MODFLOW (<http://water.usgs.gov/ogw/modflow/>) and MT3D (<http://hydro.geo.ua.edu/mt3d/>) for example

groundwater contamination, and the other sites which ADEQ concluded were unconfirmed sources of groundwater contamination.

Our interpretation of the Site data (obtained from the RI report as well as from available referenced and unreferenced documents and databases) indicates that one or more additional sites, including the AMRI Oil/Wrecksperts and E.C. Winter sites, are or were probable sources of VOC contamination to groundwater. M&A's conclusion is based on the following observations:

- Historically, the highest concentrations of PCE and TCE observed in groundwater samples collected during any time period are in wells located in the vicinity of the I-10 corridor, the AMRI Oil/Wrecksperts site, and the E.C. Winter site, and are not in wells located at or immediately north (downgradient) of the former ECDC landfill<sup>8</sup>.
- Relatively stable, high concentrations of COCs persist in groundwater at monitor wells W-24, W-32, W-38S, and W-45, which are located in the vicinity of the AMRI Oil site and downgradient of the E.C. Winter site. Concentration trends in wells located between the former ECDC landfill and the AMRI/Winters area are declining<sup>9</sup>.
- Concentrations of PCE and TCE were detected in deep soil gas from multiport soil vapor monitoring wells at all depths on the E.C. Winter site (well TR-101) and the Wrecksperts portion of the AMRI property (wells SVE1, SVE2 and SVE3). Soil vapor extraction conducted on the E.C. Winter site resulted in removal of 4 pounds of TCE and 0.85 pounds of PCE from the subsurface. The concentrations of deep soil vapor on the E.C. Winter site are very similar to concentrations detected at similar depths at the ECDC landfill, which is considered a confirmed source of contamination to groundwater.

The documented persistence of high concentrations of PCE and TCE in groundwater in the proximity of AMRI Oil/Wrecksperts and E.C. Winter sites, where PCE and TCE were also detected in soil vapor near the surface and throughout the vadose zone, suggests that sources of groundwater contamination exist or existed at these sites, or at a minimum, cannot be ruled out by the presently available data.

### **3. The Conceptual Site Model is Incomplete.**

The conceptual site model (CSM) for the SR/ECDC WQARF Site is inadequately described in the RI report and incompletely understood. As summarized in **Tables 1 and 2**, and earlier in this letter, the RI report not only fails to adequately present and interpret site data, it also lacks technical analysis of data to demonstrate that a valid and reasonable CSM has been developed. Such analysis is essential to support the critical conclusions on the nature of groundwater contamination sources and the fate and transport of these contaminants in the groundwater. A well- documented and reasonable CSM

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<sup>8</sup> Some monitor wells near the landfill are dry due to declining groundwater levels

<sup>9</sup> Declining concentrations may be due, in part, to the effects of past groundwater pump & treat operations at the landfill

supported by Site data, objective interpretation, and analysis is needed before the remedial objectives (ROs) can be developed.

As summarized in **Table 1**, the RI report fails to adequately present, interpret, and analyze data to support conclusions about groundwater source areas. In addition, M&A believes that the distribution, fate, and transport of contaminants in the groundwater are poorly understood and not convincingly articulated in the CSM. A complete understanding of contaminant distribution and transport in the groundwater is needed before ROs can be developed, and certainly before a feasibility study can be contemplated to evaluate remedial alternatives. Data gaps identified by ADEQ<sup>10</sup> should be addressed, including development of a comprehensive site-wide water level and water quality data set, to provide an improved basis for future decisions. Modeling should be strongly considered to provide an analytical framework for assessing the validity of the CSM.

The current CSM conceives that the VOC contaminant plume is “diving” from the shallow aquifer zone to the medium aquifer zone as it migrates to the north-northeast, partly as a result of pumping at the South Shannon well. While this may be true, the reasons for this observed migration are incompletely understood and poorly presented in the RI report, as illustrated by the following:

- The cross-section in Figure 3 of the report does not clearly and convincingly depict a geologic condition for this pathway to exist.
- Site water level data do not fully support this migration pathway. M&A examined April 2013 water level data from a number of nested well groups<sup>11</sup>. The data indicate that vertical gradients between the aquifer zones at these locations were generally small and upward, not downward as might be expected if pumping from the South Shannon well was controlling plume migration. Additional evaluation of water level data should be conducted by ADEQ to ensure that hydraulic gradients are consistent with the conceptualization that the South Shannon well is hydraulically controlling the contaminant plume.
- The groundwater level contour maps included in the report (Figure 4 and Appendix D) indicate the predominant direction of groundwater flow is to the north-northwest, which does not support the notion that the contaminated groundwater is moving north-northeast from source areas southwest of I-10 and high concentration areas south of Rillito Creek toward the South Shannon well. In fact, it more plausibly suggests that additional source areas may exist in the area south-southeast of the South Shannon well.

Additional Site investigation, data interpretation, and analysis are needed to better document and develop a more complete CSM. Fundamentally, the CSM must document and demonstrate a thorough understanding of the effect of all potential groundwater source areas, hydrogeologic conditions, and groundwater recharge and pumping on the fate and transport of contaminants within the study area. Only after a complete CSM is developed can ROs be developed.

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<sup>10</sup> Section 6.2 of ADEQ RI Report

<sup>11</sup> W-30S,M,D; W-31S,M,D; W-32S,M; W-33S,M; W-34S,M,D; W-35S,M; W-38S,M; W-39S,M,D; W-40S,M,D; and W-20, W-28D.

## SUMMARY

M&A has reviewed the Final Draft RI report for the SR/ECDC WQARF Site. Our review included a thorough evaluation of the RI report, a review of available reference documents, and an evaluation of available groundwater elevation and soil, soil vapor, and groundwater quality data. Based on our review, we conclude that the presentation, interpretation, and analysis of data included in the RI report do not support the conclusions reached regarding groundwater source areas. Specifically, we disagree with the overarching conclusion that the only confirmed sources of groundwater contamination are located southwest of I-10 (including primarily the ECDC landfill and possibly the Drake property) and that soil quality data available at potential source areas located along the I-10 Corridor and northeast of I-10 do not indicate that contamination found at these sites is impacting or has impacted groundwater. Finally, we believe additional Site investigations, data interpretation, and analyses are needed to substantially improve the CSM. We recommend that the RI report be substantially revised and expanded to address our detailed comments (**Table 1**) and to better document a reasonable CSM, before final conclusions are developed about groundwater source areas and before ROs are established.

**TABLE 1. DETAILED COMMENTS ON FINAL DRAFT REMEDIAL INVESTIGATION REPORT  
SHANNON ROAD/EL CAMINO DEL CERRO WATER QUALITY ASSURANCE REVOLVING FUND SITE**

COMMENT NUMBER	SECTION/PAGE NUMBER	RI REPORT TEXT CITATION	COMMENT
1	1.3/3	[The South Shannon well]... creates a significant cone of influence and provides hydraulic containment of the groundwater plume preventing it from migrating farther north.	How was this determined? See comment #11 below.
2	1.3/4	[Referring to E.C. Winters, AMRI, and the I-10 Corridor area]... impacts to the aquifer from [these] area[s] have not been observed based on available data.	How was this determined? What analyses were conducted to determine this? Since relatively high concentrations of volatile organic compounds (VOCs) (comparable to the El Camino Del Cerro [ECDC] landfill) have been detected in groundwater underlying all of these areas and high concentrations have persisted beneath the E.C. Winters and AMRI sites, how can it be stated with certainty that "impacts to groundwater have not been observed..."? Further, conclusions regarding source areas should not be stated in the introduction section. An executive summary should be added to the report if an overview of the results of the report content is needed.
3	2/5	This RI report presents activities for SR/ECDC conducted through 2013 including groundwater sampling and new well installations in April and May 2013.... However, the most recent data available to URS for the CDC Landfill area was through 2011.	Why were more recent data for the ECDC landfill unavailable to URS? It is our understanding that water level and water quality monitoring were conducted at the ECDC landfill site through at least 2012, and that no request was made to Pima County by Arizona Department of Environmental Quality (ADEQ) for access to the site to sample or measure water levels in these wells to ensure that a comprehensive, recent data set was available to support the Remedial Investigation (RI).  A comprehensive groundwater monitoring round in all accessible monitor wells should be conducted before the RI is finalized.
4	2/5	While the landfill area is the primary source of contamination within the WQARF site boundaries, other potential sources have been investigated.	This conclusion is not appropriate at this juncture in the report, nor is it supported based on information and analyses provided in subsequent report sections. What secondary sources exist?
5	3.3/8	The SR/ECDC area lies within the Tucson Active Management Area and encompasses approximately 110 ADWR registered wells.	A table and map of these wells should be provided in the report to show location, status, and construction information. Older, unused wells may act as conduits and should be identified and evaluated as a potential mechanism for vertical migration.
6	3.4.2/9	A generalized geologic cross section is shown on Figure 3.... The cross-section indicates a sloping interface from southwest to northeast between the generally coarser-grained sand and gravels at and near the CDC Landfill area adjacent to the Santa Cruz River, and the generally finer-grained silty and clayey gravels northeast of Rillito Creek. As discussed in detail in the Fate and Transport section this may be a contributing factor to the deepening plume phenomenon observed at SR/ECDC.	The correlation of hydrogeologic units on Figure 3 is difficult to discern; however, gravels appear to be widely distributed throughout the section and the relationships described in the text are not readily apparent. The logs were prepared by different geologists making correlation of units difficult. This cross-section is used here and in several locations throughout the report to indicate that geologic controls are a factor in causing the plume to "dive" as it moves downgradient (north, northwest) from the E.C. Winters and AMRI sites. This hypothesis is not supported by the cross-section, which seems to show a range of relatively permeable sediments interbedded with discontinuous finer-grained zones across the lateral and vertical plume area.
7	3.4.3/11	The regional water level in the Tucson Basin has declined in response to pumping. In the vicinity of the SR/ECDC site, the decline in water levels during the period from 1947 to 1985 is estimated to be approximately 50 to 75 feet (CH2M Hill et al., 1987).	Why are water level trends only described through 1985, when the ECDC landfill was in operation in the 1970s? The report should include water level hydrographs for water supply wells and monitor wells to document water level trends across the site since the 1970s, if possible.  Montgomery & Associates (M&A) reviewed the Groundwater Site Inventory (GWSI) database available through Arizona Department of Water Resources (ADWR) and found several wells in the Site area with long-term water level records extending from the 1980s through the present. It appears that overall water level decline has been relatively consistent at about 60 feet over the past approximately 30 years for several wells in the area. Short-term water level rise on the order of about 20 feet is observed in response to the major stream flow events in the early 1980s and 1990s. These trends should be discussed in relation to the conceptual model of groundwater flow, the impact of shallower groundwater historically on source potential, and potential mobilization of mass from the lower part of the vadose zone at the various potential source areas during periods of water level rise.
8	3.4.3/11	Groundwater level data from April 2013 indicate that the direction of groundwater flow is generally to the north (Figure 4)	Figure 4 indicates groundwater flow is to the north-northwest, which is inconsistent with the plume boundary shown on Figure 5. Figure 4 has several problems: (1) contours are for "medium zone" wells, a concept not introduced in report yet; (2) the contours extend too far beyond the network of wells with data; (3) groundwater flow arrows are not perpendicular to contour lines; (4) contours do not cover the entire site area and data are not provided for wells southwest of I-10, including those located at the CDC landfill (which in other locations of the report is identified as the source for the entire plume); and (5) contours do not appropriately interpret drawdown at the South Shannon Well but rather show a cone of depression around monitor well M31M.  Figure 4 should be revised to completely and accurately depict groundwater contours, gradients, and flow directions.  Why are some medium zone wells missing? Groundwater elevation contour maps for the shallow and deep aquifer zones should also be provided in the main report.
9	3.4.3/11	Hydraulic gradient varies from approximately 0.0009 along the western edge of the site to approximately 0.003 north of the Rillito Creek, near the South Shannon well (Kleinfelder, 2001b).	Why cite Kleinfelder, 2001 for the hydraulic gradients? Estimated gradients from the Figure 4 data set should be reported. Ranges in the historic magnitude and direction of hydraulic gradient should be discussed because they are critical for evaluation the transport of contaminants in groundwater. See comment #10.

**TABLE 1. DETAILED COMMENTS ON FINAL DRAFT REMEDIAL INVESTIGATION REPORT  
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10	3.4.3/11	Groundwater levels, direction of groundwater flow, and hydraulic gradient have been observed to vary considerably over time (Malcolm Pirnie, 1997a). Appendix D contains groundwater elevation maps from 1988 to 2012.	Numerous water level contour maps for different time periods and covering different portions of the site are included in Appendix D. Less than half of the maps include data for the entire plume area. There is no discussion of these maps in relation to URS' analysis of changes in groundwater flow direction over time that explains to the reader the evolution of the observed plume, concentration trends at key wells (including the South Shannon Road well), and potential contributions from the various source areas. In fact, review of the water level contour maps provided in Appendix D clearly indicates that the dominant direction of groundwater movement from the CDC Landfill site over time is to the north or north-northwest. This flow direction is inconsistent with the observed plume extent and with the conclusion reiterated in several places in the draft RI report that the plume is consistent with a source in the southwestern part of the site (CDC Landfill and possibly Drake property).  The RI report should be revised to include a much more detailed analysis of groundwater flow conditions and how they relate to contaminant source areas and transport in groundwater. This is a fundamental concept the needs to be thoroughly assessed in the RI report.
11	3.4.3/11-12	In addition to the impacts of groundwater recharge, groundwater flow directions have likely been affected by groundwater withdrawals in the SR/ECDC site area. Tucson Water has two inactive production wells (Z-004 and Z-006) in the vicinity (Figure 5). Metro Water has seven active production wells (South Shannon, DeConcini, Wildwood, Estes, Moore, Latamore-N and Latamore-S) north of Rillito Creek near South Shannon Road.  Patterns of groundwater flow in the vicinity of the SR/ECDC site are influenced by groundwater extraction from pumping Metro Water wells. The number and location of wells, the rates for individual wells, and the duration and schedule of pumping have changed over time. Historically, pumping regimens and recharge events have combined to influence the direction of groundwater flow and gradient.	Pumping data for the Tucson Water and Metro Water wells since the earliest reporting period (likely around 1984) should be provided and discussed to support the concept that groundwater withdrawal has affected flow directions, both laterally and vertically. Other water supply wells exist in the site vicinity according to ADWR records; these wells should also be included in the report. Pumping data from water supply wells and remedial action wells are not included in the report, but should be added. M&A reviewed pumping data reported to ADWR for Metro Water, Tucson Water, and Pima County wells in the area. These data indicate that pumping across the area has been highly variable over time and these variations are expected to be very relevant to plume development.  The influence of groundwater pumping on groundwater flow should be evaluated in more detail because this could be important for historic contaminant transport in groundwater. In fact, URS indicates in several places that pumping from "deeper zones" is a factor in causing the plume to "dive" as it moves north of the E.C. Winter's site. Review of water level data for April 2013 for paired shallow and medium zone wells does not support this assumption because the vertical gradient between these two zones appears to be relatively small.  Why does the report refer the reader to the plume boundary map to show the Tucson Water well locations? This is confusing.
12	3.4.3/12	At the SR/ECDC site, recharge from ephemeral flow may occur along Rillito Creek and the Santa Cruz River depending on the distribution of precipitation and streamflow. From 1904 to 1975, annual peak flow in Rillito Creek ranged from 297 to 70,660 acre-feet per year (ac-ft/yr) and the average annual peak flow was 11,660 ac-ft/yr. From 1906 to 1980, annual peak flow in the Santa Cruz River ranged from 976 to 58,840 ac-ft/yr and the average annual peak flow was 16,450 ac-ft/yr. In addition to storm water runoff, the Santa Cruz River receives discharge from the Roger Road Wastewater Reclamation Facility (Malcolm Pirnie, 1997b).	Additional evaluation of the effect of flow in Rillito Creek and Santa Cruz River should be provided because this could be important for historic contaminant transport in groundwater.
13	3.4.4/13	Aquifer Parameters	The discussion of aquifer parameters pertains to the geologic formations (i.e., Fort Lowell Formation and Tinaja Beds). It is unclear how these formations correlate to the zones where transport of contaminants occurs, or the zones shown on Figure 3. What hydrostratigraphic zone was tested at the South Shannon Well?
14	3.4.4/13	In February 2004, an aquifer test was performed on Metro Water's South Shannon well as documented in <i>Aquifer Testing South Shannon Well, 55-626757, June 2, 2005</i> prepared by URS.... Analysis of the aquifer tests indicated a transmissivity of 53,000 gallons per day per foot....	Based on review of a draft final version of the referenced report, there were actually two values of transmissivity reported for the South Shannon Well test. In addition to the 53,000 gallons per day per foot (gpd/ft) mentioned in the draft RI that was obtained using the Neuman method, a transmissivity value of 102,500 gpd/ft was computed using the Theis and Cooper-Jacob methods. This is relevant to the projected extent of capture, as indicated in comment #68 below.
15	3.5.1/14	Table 3 presents a summary of the United States Geological Survey (USGS) monthly mean discharge data between 1995 and 2012 from a gauging station just upstream of the SR/ECDC site at the intersection of La Cholla Boulevard and Rillito Creek.	A graph rather than a table should be provided for stream flow data so the reader can more easily identify the magnitude and timing of specific event. More importantly, the draft RI should include an analysis of the relationship between stream flow, groundwater elevations, direction of groundwater movement, and plume migration over time.
16	3.5.2/15	Table 3 presents a summary of the USGS monthly mean discharge data from a gauging station on the Santa Cruz River near Congress Street.	Same comment as above.
17	4.0/16+	<b>Investigations and Remedial Activities</b>  General comments	More information should be provided in the report about the historical properties search. In particular, the logic used to determine which properties warranted investigation and which did not should be discussed in more detail.  The lengthy discussion in the report about the lead (a contaminant of potential concern (COPC)) contamination at the various properties and related response actions is important due to the noted potential health impacts from this contamination. However, the information about lead contamination is not important for the identification and analysis of sources of groundwater compounds of concern (COCs), which appears to be the primary focus of the report. Information about lead contamination could be moved to an appendix to improve the report flow, maintain the focus on presenting relevant data, interpretation, and analyses of sources of COCs to groundwater, and to dedicate more of the report to incorporating the missing information identified in our comments.

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18	4.1/16/2	The majority of the investigations focused on specific properties and the following text describes those investigations accordingly. However, a geographically broader investigation was conducted in 2002. Specifically, an area-wide passive soil-gas survey was completed in two phases in Pima County Flood Control District properties along the south bank of Rillito Creek. The first phase included the installation of 62 soil-gas monitoring locations on March 14, 2002 and the second phase included installation of 80 locations on May 22, 2002. It was concluded the discontinuous spatial distribution of soil-gas results and the low concentrations of contamination were unlikely to reflect any potential contaminant sources for the area (Kleinfelder, 2002b).	Additional discussion of the soil gas investigation along the south bank of Rillito Creek, including the depth of sampling, compounds detected, range in concentrations, and the methods used to determine that these detections were unlikely to indicate contaminant sources is needed. In areas where compounds were found in shallow soil gas, were deeper samples collected to assess the extent of contamination?
19	4.2/17+	General Comment	Maps of contaminant concentrations in soil and soil gas for the ECDC landfill and I-10 Corridor areas should be provided to enable assessment of sources. At a minimum, concentration maps with a brief narrative summary should be provided in an appendix. Referencing previous reports, while necessary, does not allow the reader to assess the relative source potential for the landfill compared with other areas that were investigated.
20	4.2.1/18	It was determined that shallow alluvium at the CDC Landfill was relatively coarse-grained from the surface to a depth of approximately 40 feet bgs. Finer-grained sediments extended from approximately 40 feet bgs to an approximate depth of 175 feet bgs.	The geologic cross section in Figure 3 of the report does not support this description, which appears to be based solely on the log from monitor well W-11, located south of the landfill. Based on our review, the W-5 log appears to have predominantly coarse-grained sediments through most of the penetrated depth.
21	4.3/24	A summary of the activities for Wrecksperts from June 1995 to August 2007 are listed in Table .	The table reference should be provided. It should be Table 4.
22	4.3.1/25	A summary of the analytical results from June 1995 to August 2007 are presented in Table .	The table reference should be provided. It should be Table 4.
23	4.3.1/25-26	ADEQ prepared a scope of work to remove the contaminated soils and waste sludge, as well as plug and abandon an unused well on the property (ADEQ, 1995).  In 1996, ADEQ conducted an Expanded Site Inspection (ESI) which included the collection of samples from the north half of the Wrecksperts property as confirmation for the removal and to further characterize the extent of contamination. Soil samples were analyzed for total petroleum hydrocarbon (TPH), PCBs, and lead. Soil samples collected from beneath the trench did not contain detectable concentrations of VOCs.	According to Pima County, "A second well, sump and pump was present on the site. This second well was listed in the asset inventory that AMRI prepared when the business was sold in 1969. Court records show the second well was located in the west 40 feet of the property that AMRI occupied."  What analytical methods were used for the VOCs analyses? When discussing laboratory analytical results, the method should be provided, as well as information about the detection limits.
24	4.3.1/26-27/4	On May 22, 1996, Growth subcontractor, Saguaro Environmental, mobilized personnel and equipment to the Wrecksperts property to abandon a well in order to eliminate a potential conduit from contaminated surface water runoff. The well was first identified by ADEQ in 1987 and was first observed in 1995 during a site inspection. The well was reportedly drilled to 125 feet bgs; however, it was only open to 102 feet bgs.	Did this well have water in it when it was abandoned in 1996? Was it sampled? Based on interpolation of available water level data from wells at the ECDC landfill for this time period, depth to water in the Wrecksperts area should not have been deeper than the well depth of 125 feet. What is mean by the well only being "open" to 102 feet? Was there fill in the well or an obstruction? More information about this well should be provided in the report, particularly since it could have been a conduit for contaminant migration from the groundwater surface and vadose zone to groundwater. Based on long-term water level data from the GWSI database, water levels would have been significantly shallower during the time period of active operations and disposal at this site.
25	4.3.1/27	During March 2003, W-32 was installed on the Western Stucco property, and was completed as a nested groundwater monitor well. Soil and soil-vapor samples were collected from 30, 60, 90, and 120 feet bgs during the boring installation. The analytical results indicated that soil vapor concentrations exceeded target levels for benzene, PCE, and TCE. The highest detections are as follows: benzene was 110 ppbv at 90 feet bgs, PCE was 24 ppbv at 60 feet bgs and TCE was 50 ppbv from 60 feet bgs.	Detection of tetrachloroethene (PCE) and trichloroethene (TCE) in soil vapor at 60 feet indicates the potential that groundwater contamination sources exist or existed in the past on or near the Western Stucco/AMRI Oil/Wrecksperts properties. The source potential is further supported by the detection of PCE and TCE in shallow soil and soil vapor, and the presence of these compounds in groundwater beneath these properties. The persistence of relatively high VOC concentrations in groundwater in this area provides further support for concluding that these properties are likely sources to the VOC plume.
26	4.3.1/28	Six polycyclic aromatic hydrocarbon (PAH) compounds were detected, however, no concentrations exceeded the SRLs (URS, 2007c). The detections from the results are summarized in Table .	The table reference should be provided. It should be Table 4.
27	4.3.1/29	The results are summarized in Table _ and the boring locations are illustrated on Figure 14.	The table reference should be provided. It should be Table 4. Table 4 should report the depths at which contaminants were detected.
28	4.3.1/29	In January 1995, ten soil vapor samples were collected and PCE and benzene were detected above the method detection limits in two samples. PCE was detected in the soil vapor sample collected from the surface impoundment at a concentration of 2.5 ppbv. Benzene was detected in one sample collected from the trench at a concentration of 58 ppbv (ADEQ, 1995).	At what locations and depths were these soil vapor samples collected? Since the vapor had detectable concentrations of PCE, a key groundwater COC, more information and analysis of these data should be provided in the report.
29	4.3.1/29	In April 1996, Pima County subcontracted with Hydro Geo Chem to collect soil-gas samples at the Wrecksperts facility (formerly AMRI Oil). Hydro Geo Chem sampled eight locations along the northern and eastern property boundary. Out of 23 soil gas samples, PCE was detected in a single sample at a concentration of 4.2 µg/L (Hydro Geo Chem, 1996).	The depth at which the PCE detection was found should be reported because this is critical information for assessing the meaningfulness of this detection as an indicator of a groundwater contamination source at the Wrecksperts property.  Pima County notes that ADEQ refused access to the Wrecksperts property and that the soil gas survey was actually done on the Western Stucco property, north of Wrecksperts.

**TABLE 1. DETAILED COMMENTS ON FINAL DRAFT REMEDIAL INVESTIGATION REPORT  
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30	4.3.1/29-30	<p>During November 2001, ADEQ conducted a passive soil-gas survey at the Western Stucco/Western Trailer Park property.... Soil-gas sampling indicated that PCE was detected in 32 of the 124 samples. This includes 14 samples with detectable masses that were less than the method reporting limit. Two distinct areas were found to contain detectable levels of PCE: around the main office building on the Western Stucco parcel and along the eastern half of the Western Stucco parcel. The levels observed in the vicinity of the main building on the Western Stucco parcel were the highest. PCE was detected in most of the sample locations along the eastern portion of the Western Stucco parcel, but at lower levels than around the main building. See Figure 15 for sample locations and the Soil-Gas Survey Report, Western Stucco/Western Trailer Park Property 5348 North Highway Drive (URS, 2002b) for the analytical results. For analytical maps that illustrate the results see Appendix F.</p>	<p>The concentration range and depth at which the PCE detections were found should be reported in the text. The concentration values on the color ramp scale on the PCE map in Appendix F are illegible. In addition, the concentration data should be reported on the maps. Regarding Appendix F, it should include some narrative context to support the maps.</p> <p>This type of incomplete presentation of critical information occurs throughout the report and is an unacceptable deficiency that impedes the reader's ability to critically evaluate the results of the RI. The reader should not have to obtain and read the original report to fully understand the implications of the information being presented, especially when the information pertains to the sources, magnitude, and extent of a key groundwater COC that will factor into potential future remedial actions at the site.</p> <p>The report should be revised and expanded to include this information before it is finalized.</p> <p>Pima County questions the validity of passive soil gas survey methods, since the same type of passive soil gas survey conducted on the landfill property by EMCON in 2003 failed to detect any concentrations of PCE, TCE, cis1,2-DCE or vinyl chloride.</p>
31	4.3.1/30	<p>During 2006, additional passive soil-gas sampling occurred at 5280 North Highway Drive and isoconcentration maps illustrating PCE, TCE and PAHs are presented in Appendix G. The relative highest concentrations of PCE were near the center of the parcel. TCE and PAH concentrations were highest in the northwest portion of the site.</p>	<p>Similar to the previous comment, the concentration range and depths at which PCE and TCE were detected should be reported in the text and Appendix G. Appendix G is another example of incomplete presentation of critical information.</p>
32	4.3.1/30-31	<p>March 2003 samples were collected during the installation of the monitoring well W-32 at Western Stucco (URS, 2004a). The analytical results indicated that soil vapor concentrations exceeded target levels for benzene at 30, 60, 90, and 120 feet bgs and TCE at 30, 60 and 90 feet bgs. PCE concentrations only exceeded the 10<sup>-6</sup> risk level at 60 feet bgs. The detections at W-32 led to the recommendation to do more deep soil vapor sampling at Wrecksperts to further assess the elevated concentrations of COCs.</p>	<p>The presence of TCE at 30, 60, and 90 feet below ground surface (bgs) in soil vapor indicates a source of TCE to groundwater likely exists or existed on the Western Stucco or Wrecksperts property. The concentrations of TCE should be reported in the text. What is meant by "target levels"?</p> <p>With respect to PCE in soil vapor, what is meant by an exceedance of the 10<sup>-6</sup> risk level? Concentrations should be reported in the text and compared to a compliance standards rather than a risk level.</p> <p>M&amp;A reviewed the soil gas data from W-32 during a records search at ADEQ. Not reported in the RI was the fact that benzene was also detected at all four sampling depths, with the highest concentration (110 parts per billion per volume [ppbv]) recorded in the sample from 90 feet.</p> <p>Was additional deep soil vapor sampling conducted per the recommendation? If so, the results should be reported. If not, why?</p> <p>The report should be revised and expanded to include a more complete presentation of data and thorough interpretation and analysis of data so that conclusions made for this potential source area can be assessed.</p>

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33	4.3.2/31	<p>VOC contamination in soils at the AMRI facility appeared to be confined to shallow depths.... The relative masses observed at the site are typically indicative of residual contamination, as evidenced by low concentrations and somewhat abrupt changes in concentrations in comparison to surrounding samples. In addition, the detected soil-gas appeared to diffuse from the highest detected masses.</p> <p>..., the available data also do not indicate that soil contamination at the AMRI facility impacted groundwater.</p>	<p>It is unclear how it can be concluded that VOC contamination is confined to shallow depths at the AMRI facility when TCE was detected in soil vapor at depths of between 30 and 90 feet bgs and PCE was detected at 30, 60, and 120 feet bgs, particularly in light of the fact that water levels were significantly shallower when the facilities in this area were actively using and disposing of COCs. The first sentence in this paragraph should be revised to accurately characterize the data.</p> <p>Further, the notion of "relative masses" is qualitative and ambiguous. Further, it is confusing to switch between concentration and mass. It is also unclear what is meant by "residual contamination"? If it is meant to refer to low concentrations that remain in place and are a remnant of past contamination that was presumably more significant in magnitude, then a discussion of the potential for the AMRI facility to have been a historic source area should be provided. As indicated above, the water table was much shallower during the time when operations occurred on the property, increasing the chances for deep vadose zone mass to reach groundwater. Low concentration detections could also indicate there are higher concentrations nearby that were not characterized. In any case, it is unclear how "abrupt changes in concentrations" relate to the undefined concept of residual contamination or how either supports the case for no impact to groundwater?</p> <p>Finally, the concept and relevance of soil gas appearing to "diffuse from the highest detected masses" is unclear. Is this also meant to somehow relate to the conclusion that facility operations did not impact groundwater? If so, more explanation and support are needed.</p> <p>The conclusion that available data do not indicate that soil contamination at the AMRI facility impacted groundwater is unfounded for many reasons, including: (1) the extent of investigative activities appears too limited to fully characterize the source potential; (2) the presentation of data in the report is incomplete; (3) the interpretation of the data that are reported is minimal and incomplete, and (4) analyses to support the conclusion are not provided. For reasons 3 and 4, the concept of "time" should be considered. The AMRI facility operated from 1950 to 1969, a period when the water table was many tens of feet shallower than today. The potential for COCs to migrate to groundwater was higher in the past than today because the distance from the surface operations to the water table was smaller.</p> <p>The paragraphs cited in this comment exemplify a critical deficiency in the RI report. With regard to conclusions made about source areas, it is imperative that ADEQ demonstrate that the investigations were sufficient to characterize the source area, present a clear and complete summary of all relevant data, objectively interpret those data considering all reasonable source scenarios, and conduct appropriate analyses where needed to support conclusions. For example, modeling COC transport through the vadose zone should be conducted to assess source potential.</p> <p>The RI report should be substantially revised to improve the presentation, interpretation, and analysis of data at the potential source areas. As is, the content of the report is clearly insufficient to support conclusions about source areas, except the ECDC landfill, where a previous thorough RI was conducted that identified it as a source area.</p>
34	4.3.2/31	<p>Evaluation of 2001 soil-gas data for Western Trailer/Western Stucco indicated that the concentrations observed at the site were not indicative of an active source area. The relatively low concentrations of PCE observed on the property were likely the result of a historic release or possible minor cleaning operations.... Available data from Western Trailer/Western Stucco do not indicate any impacts to groundwater from the soil contamination.</p>	<p>How was it determined that soil gas concentration data do not indicate an active source area? Since the concentration and sample depth data were omitted from the report, it is impossible to judge the validity of this conclusion. As for other potential source areas investigated, the presentation of data for Western Trailer/Western Stucco in the draft RI is incomplete and missing critical data. The data presentation clearly does not support the conclusion that the source area is inactive, nor does it necessarily indicate that the PCE concentrations were the result of a release during possible minor cleaning operations. If additional information exists to support these claims, it should be provided in the report. Overall, the interpretation of data at this site is overly simplistic, unfounded based on the information presented in the report, and does not support the conclusion that no impact to groundwater is indicated.</p> <p>The report should be revised to include a complete summary of the available soil quality data, a thorough and objective interpretation of those data, and relevant analyses to support reasonable conclusions. Further, if uncertainty in the data, interpretation, and analyses exist, the effect of this uncertainty on the ability to conclude the possibility of a groundwater source should be clearly discussed. Key assumptions and limitations of the characterization and interpretation of data should also be discussed.</p>

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35	4.3.2/32	<p>The pattern of PCE in soil gas appears to be the result of minor historic releases. Two areas had detections of PCE: south of the smaller building on the west side of the Wrecksperts property and west of the center of the property. The highest concentrations were observed in the center of the Wrecksperts (AMRI et al) parcel in the vicinity of the former waste oil surface impoundments. This vicinity also correlates with the location of the former aboveground storage tanks (ASTs)....</p> <p>Twenty-eight VOCs were detected in the soil vapor analysis with each sample containing at least five compounds. PCE, TCE, and hexane were detected in every sample. Many of the detected compounds are associated with waste oil and are likely a result of recycling operations on the Wrecksperts (AMRI et al) property (URS, 2007b), and the available data do not indicate that the soil contamination found on these properties impacted groundwater.</p>	<p>Again, the presentation and interpretation of data for the Wrecksperts property do not support the statement that PCE in soil gas was the result of minor releases. The conclusion that data do not indicate that soil contamination impacted groundwater is unfounded and inconsistent with reported data. The fact that PCE and TCE were found in every soil vapor sample should indicate a high likelihood of a significant source, or should have prompted further investigation to determine the meaningfulness of the prevalence of these COCs in soil vapor. Further, the presence of TCE at 30, 60, and 90 feet bgs in soil vapor, along with relatively stable, high concentrations of PCE, TCE, cis 1,2-DCE and vinyl chloride repeatedly detected in groundwater in the W-32 well, indicates a source of VOCs to groundwater likely exists or existed on or near the Wrecksperts property. If other data exist, or other interpretation of data was conducted that support the conclusion of no groundwater impacts, they should be provided in the report rather than by reference. The reader should not have to obtain and review reference material to judge the reasonableness of such an important conclusion.</p> <p>During the ADEQ records search, M&amp;A found the results from deep soil vapor sampling conducted at multi-port vapor sampling wells SVE1, SVE2, and SVE3 on the Wrecksperts property from November 2006. Each well was screened to sample vapor from 33, 53, 73, and 93 feet bgs. All vapor samples from all depths in these wells had reported detections of PCE and TCE, along with a variety of other VOCs. PCE concentrations were between 11 and 220 parts per million by volume (ppmv), and TCE concentrations were between 2.3 and 53 ppmv. The draft RI states that "Twenty-eight VOCs were detected in the soil vapor analysis with each sample containing at least five compounds. PCE, TCE, and hexane were detected in every sample." At no point is it made clear in the RI report that these statements refer to vapor samples collected from depths of 33, 53, 73, and 93 feet bgs in SVE1, SVE2 and SVE3, rather than from shallow vapor samples. Information on the sample depths, specific VOCs detected, and concentrations should be provided in the RI report. This information relates very directly to the question of whether contamination at the AMRI property impacted groundwater, and should not have been omitted from the report.</p> <p>This section of the report should be substantially expanded and revised to completely summarize all available data, completely and objectively interpret those data, provide the results of analyses conducted, if any, that support the conclusion, and discuss assumptions and uncertainty in the assessment of potential sources on the Wrecksperts property.</p>
36	4.4.1/33	TCE in concentrations up to 54 ppm and hydrocarbons in concentrations up to 53,000 ppm were measured in soil samples collected at the [E.C. Winter] site.	The location and depth of these samples should be provided. TCE at 54 ppm is a significant concentration. Is this the same sample described two paragraphs later where "TCE exceeded the residential SRL"? The report should include concentrations rather than the concept of SRL exceedances so the reader can make the connection and put the magnitude of the contamination into context.
37	4.4.1/33	TCE exceeded the residential SRL in the sample collected at 10 feet bgs. Appendix I contains a figure illustrating the sample locations and summary of analytical results.	<p>More information should be provided in the text about the extent of TCE contamination in soil. TCE was detected at 2.3 milligrams per kilogram (mg/kg) at 25 feet bgs in soil boring 2. While TCE was not detected above lab reporting limits in a sample from 30 feet bgs, the detection at 25 feet should have prompted additional deep soil borings near boring 2 to more completely characterize the presence of TCE in deep soils. Detecting VOCs in soil (i.e., not soil gas) in Arizona, particularly at depth, is meaningful. As ADEQ is aware, soils are often found to be "clean" at sites with known vadose zone and groundwater contamination if organic carbon content is low.</p> <p>The information presented in Appendix I is difficult to understand and should include narrative text to aid the reader in interpreting the information. For example, the map indicates that a 12<sup>th</sup> sample was collected from boring 2, but the tables do not include a 12<sup>th</sup> sample.</p>
38	4.4.1/33	During a January 2001 site visit, a previously undocumented well on the property was observed. Because of concern that the well could be a conduit for the migration of contaminants, the well was abandoned in June 2001 in accordance with ADWR requirements. Based on video obtained during investigation of the well, the total depth was approximately 110 feet bgs. Water was not encountered during the abandonment process. However, because the well had remained open for an unknown period of time, the soil at the bottom of the well was analyzed for semi-volatile organic compounds and VOCs. The results were below method detection limits for all analytes tested (URS, 2001).	We agree that this well could have been a conduit for the migration of contaminants to groundwater. Are records available for the original drilled depth of the well or other relevant information? It is likely that the original well was drilled deeper than the 2001 tagged depth of 110 feet. However, even if 110 feet is the original well depth, groundwater was likely present in this well during and for some period after operations occurred at the E.C. Winter property. Was the soil sample obtained from the top of the soil fill in the well or was there an effort to drill into this material to collect a sample that was not exposed to the air? In any case, the lack of VOCs in the soil at the bottom of the well does not rule out the likelihood that this well was a conduit.
39	4.4.1/33	Five soil borings were drilled to further delineate the vertical and lateral extent of residual contamination beneath the former oil impoundment area. Boring B-1 was drilled to a depth of 375 feet bgs, while boring B-2 through B-5 were completed to approximately 130 feet bgs at locations depicted in Figure 8. Grab groundwater samples were collected from B-1, B-3, B-4 and B-5. No VOCs were reported above (URS, 2002f).	The specific compounds and concentration of VOCs detected should be reported in a table rather than simply stating that all concentrations were below Aquifer Water Quality Standards. Also, more information should be presented about the sampling method. Volatilization of the VOCs would likely occur during a grab sample, biasing the results low. This type of information should be discussed in the report.

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40	4.4.1/34	<p>In July 1995, as part of the Phase 3 LESP, Tracer Research Corporation performed a shallow soil-gas survey. Twenty-three locations in the vicinity of Curtis Road and Highway Drive including ten sampling points east of the site and adjacent to the former E.C. Winter Oil Service site were selected. Soil-gas samples were also collected from locations within a county easement near several businesses that may have used hazardous materials such as solvents. Sample depths ranged from 5.0 to 6.5 feet bgs. The highest concentrations of PCE, TCE, and 1,1,1-trichloroethane were 2,224 ppbv, 737 ppbv, and 560 ppbv, respectively. These concentrations were found in the northeast corner of the E.C. Winter property (Tracer Research, 1995)....</p> <p>A soil-gas monitor well screened at discrete intervals at 20, 40, 60, and 75 feet bgs was installed by Growth Resources, Inc., on the property 20 feet west of the northernmost manufactured home (Growth, 1997b). Three rounds of soil vapor sampling data were collected in 1997. The results showed elevated concentrations of PCE in the soil-gas.</p>	<p>The ubiquitous detection of PCE, TCE, and 1,1,1-TCA indicates that these compounds are widely distributed in the subsurface at and near the E.C. Winter site. This fact is significant and its implications should be discussed.</p> <p>The concentrations and depths of detection for PCE (and other compounds, if they were detected) in the soil vapor monitor well should be thoroughly discussed and analyzed. Detection of PCE and other VOCs in soil gas at or below 20 feet suggest a source to groundwater at the E.C. Winter site, especially since VOCs were widely detected in shallow soil vapor, which eliminates the possibility of volatilization from groundwater into the vadose zone.</p> <p>The name of the soil-gas monitor well with the highest concentrations should be specified in the text. Based on the map in Appendix J, we assume it was TR-101. Details regarding vapor sampling results for well TR-101 were found in a sampling report by Fluor Daniel GTI from 1998. This report was <u>not</u> referenced in the draft RI report; however, it contained useful information on vapor samples collected from vapor monitor well TR-101 during events conducted in June, July, and October 1997. Vapor samples collected at depths of 20, 40, 60, and 80 feet contained TCE ranging from 4,760 to 8,410 ppbv, PCE ranging from 189 to 412 ppbv, 1,1-DCA ranging from &lt;49 to 584 ppbv, 1,1-DCE ranging from &lt;30 to 113 ppbv, and 1,1,1-TCA ranging from &lt;30 to 91 ppbv. Rather than summarizing all of this information using the phrase "elevated concentrations of PCE" were detected, these data should be provided and discussed in greater depth in the report. In fact, TCE concentrations appear to be higher than PCE in the vadose zone below the E.C. Winter site, and in both cases there is a concern with respect to potential groundwater impacts.</p> <p>The lack of a complete presentation, interpretation, and analysis of data in the report overall, and particularly in this section on a critical potential source areas, is unacceptable. This section should be substantially expanded. The E.C. Winter site appears to have a significant history of VOCs being detected in both soil and soil gas in both the shallow and deeper portions of the vadose zone, which make it a likely source area for groundwater contamination.</p>
41	4.4.1/35	<p>In April 2002, an investigation of the deep, coarse-grained soils was performed to augment existing property information, and provide site-specific information necessary for design of a bioventing or SVE system. Four borings were advanced to approximately 130 feet bgs. As a part of the investigation, URS collected soil samples, soil gas samples and groundwater samples from borings within and surrounding the former oil impoundment area. VOCs were detected in soil-gas samples and groundwater samples at several locations and depths on the property. No VOCs were detected in sub-surface soil samples.</p>	<p>It is unclear whether the borings discussed in the paragraph are B-2 through B-5. This should be clarified. Much more information about these soil borings should be presented in the report, including at a minimum the location, sample depths, analytical results of sampling soil, soil vapor, and groundwater, lithologic logs, and information about groundwater (if any). Maps and data tables of the results should be provided. Simply indicating that VOCs were detected in soil-gas and groundwater samples at several locations is clearly insufficient when evaluating potential source areas.</p>
42	4.4.1/35	<p>The results for the samples collected from SVE wells B2 and B5 are as follows:</p> <ul style="list-style-type: none"> <li>• TCE concentrations were highest in the extracted gas sample collected from Well SVE B-5 at 2.4 parts per million volume.</li> <li>• PCE concentrations were highest in the extracted gas samples collected from Wells SVE B-2 and SVE B-5, both at 1.1 parts per million volume.</li> </ul>	<p>Units for these results are listed as "parts per million by volume" (ppmv), which are significant concentrations. In previous sections of the report, as well as in Appendix K and Table 7 (where these results originated), results are reported in units of ppbv. Reporting concentration results in the text in ppmv rather than ppbv is confusing and could make the concentrations appear lower to readers unaccustomed to working with soil gas data.</p>
43	4.4.2/36-37	<p>... These results indicated that the current levels of TCE in the soil vapor were below that expected in an equilibrium condition. Based on this it is possible that the VOCs in the soil vapor were a result of the groundwater volatilizing into the soil vapor, rather than a continuing source from within the soil.</p> <p>Based on review of the existing data and previous remedial actions, current onsite soil and soil-gas conditions do not appear to pose a threat to human health and the environment. In addition, the available data do not indicate that the soil contamination at the E.C. Winter property impacted groundwater.</p>	<p>The equilibrium TCE concentration between soil vapor and groundwater was estimated to postulate that TCE in soil vapor may be volatilizing from groundwater to vapor, and a continuing source of TCE to groundwater does not exist. More information about this analysis should be provided. Further, the potential that TCE migrated to groundwater from the E.C. Winter site in the past should be evaluated and is not minimized based on the equilibrium analysis. The body of soil quality data at the site indicates that there was likely a source of TCE (and possibly PCE) to groundwater at the E.C. Winter site.</p> <p>The conclusion that data from the E.C. Winter site do not indicate that the property impacted groundwater is unfounded and inconsistent with the data presented in the report. PCE and TCE were detected in shallow and deep soil vapor. TCE was detected in soil at a concentration above the SRL at a depth of 25 feet. Moreover, a soil vapor extraction (SVE) system was operated at the site and removed 0.85 and 4 pounds of PCE and TCE, respectively, from soil vapor. More PCE and TCE mass would likely have been removed if the system had continued to operate or was expanded. These results clearly suggest that a source of TCE and PCE to groundwater could exist today or could have existed historically at the E.C. Winter site.</p> <p>The lack of a complete and objective interpretation of the data and results of the equilibrium analysis is unacceptable. Furthermore, the conclusions made based on the data reported are completely unfounded. We strongly disagree with the conclusion that data do not indicate a source of PCE and TCE to groundwater at the E.C. Winter site. If other data or other analyses are available the support the "no source" conclusion, it should be thoroughly summarized and interpreted in the RI report.</p>

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44	4.5.1/40	During July, October, and November of 2001, URS conducted an investigation documented in Geophysical and Passive Soil Gas Surveys, Interstate 10 Frontage Road Corridor – El Camino del Cerro to Sunset Road, Tucson, Arizona, (URS, 2002d). Described in this report were increased concentrations of PCE, BTEX, and PAHs observed on the I-10 Surplus property. During this investigation, the highest PCE concentration was located on the north side of the I-10 Surplus site building. The 2002 report stated that the distribution pattern for PCE in soil gas was possibly the historic release of solvents used in the maintenance area.	More detail is needed on how the PCE concentrations in soil gas were interpreted? At what depths were PCE concentrations detected? Were follow up investigations at deeper intervals conducted? If not, why?  The information in Appendix L is insufficient to interpret the meaning of the maps. A narrative should be provided to make this information useful to the reader.
45	4.5.2/41	The 2002 soil-gas survey indicated elevated soil gas concentrations of PCE, BTEX and PAHs for two locations in the I-10 corridor and recommended further soil investigations in the vadose zone for the area of I-10 Surplus.  The elevated relative mass of PCE, BTEX, and PAHs observed on the I-10 Corridor properties are interpreted to be the result of vehicle maintenance activities, ASTs, and USTs causing isolated minor releases. The available data do not indicate that soil contamination at the properties along the I-10 Corridor impacted groundwater.	Insufficient information was provided in Section 4.5.1 to support the conclusion that available data do not indicate that soil contamination at the properties along the I-10 Corridor impacted groundwater. Was this conclusion reached in the original work and documented in the report? PCE was detected in over 40% of the soil gas samples, which indicates widespread contamination. The PCE concentrations were not reported; however, they were stated as having exceeded the 10 <sup>-4</sup> risk level (which suggests meaningful concentrations were detected). Because the depth and specific concentrations detected during the sampling event were not reported, the reader cannot assess the completeness of the investigative work and validity of the conclusion.  The reader should not be expected to obtain and evaluate the reference material to determine the reasonableness and validity of the site investigation methodology, sufficiency of data, objectivity of the interpretations, and results of any analyses conducted. This information should be provided in the RI report, at a minimum, in a clearly organized and complete appendix.
46	4.6.1/42	Analytical results for select analytes are summarized in Tables 5 through 9.	Tables 5 through 9 should include all water quality data collected during both the County RI and the ADEQ RI. Data for other constituents for the entire period of record are essential to evaluating source contributions and the evolution of the plume over time.
47	4.6.1/42	The conceptual model for the RI report proposed the VOC contamination in the GOU includes an initial release from the vicinity of the landfill followed by a slow northward movement in groundwater, eventually joining with an area affected by at least one different release of VOCs to the groundwater (Malcolm Pirnie, 1997b). However, this older conceptual model has been revised by the conclusions of this RI Report as presented in Section 5.4.	The report should provide a clear and complete explanation documenting why this conceptual model of a multiple source plume was discarded by ADEQ in favor of a conclusion that the ECDC landfill is the sole source for the entire plume. In fact, data collected at the various source areas after this conceptual model was proposed in the 1997 ECDC landfill RI report has only strengthened the case for suspecting historical and potentially on-going sources to the plume from other properties with the Site. Multiple source plumes are the norm rather than the exception in areas that were heavily industrialized prior to the advent of modern chemical handling and disposal protocols. The information provided in the draft RI does not support the conclusion of a single source plume.
48	4.6.1/42	Three shallow monitor wells (P-1, P-2, and P-3) and 19 regional aquifer monitor wells were installed between January 1988 and October 1995 as part of the Phase 3 LESP (Figure 10).	Figure 10 only shows P-1 through P-3 and does not show the other 19 monitor wells referred to in the text. Further, Figure 10 does not clearly distinguish between soil gas and groundwater monitor wells. Figure 2 as well as Figure 10 should be used as references for the well locations. Further, consistent monitor well names should be used throughout the report.
49	4.6.1/43-44	Groundwater Treatment	More information about the hydraulic capture attained during treatment system operation should be provided. References to and interpretation of specific water level contour maps (provided in Appendix D) for the period when extraction was occurring at the ECDC landfill should be provided in the report. The reader would also benefit from a description of results of capture zone modeling conducted by Pima County along with interpretation of the degree to which historical and planned future extraction at the ECDC landfill fits into the overall site remediation.  More information about the rebound of COC concentrations in groundwater should be provided to assess the long-term effectiveness of the brief treatment system operation. References to and interpretation of specific plume maps (provided in Appendix M) for the period when extraction was occurring at the ECDC landfill should be provided in the report.
50	4.6.2/44-45	Private Wells	Available information about the competency of surface well head completions and other well construction details should be provided, along with a reference to Table 2. Discussion of the potential for the private wells to be historical conduits for contaminant migration to groundwater is appropriate.
51	4.6.2/46	Medium zone wells have submerged screens typically in the upper part of regional aquifer, with screen intervals typically ranging from approximately 200 to 280 feet bgs.	Why is CDC-29M not considered a deep monitor well, since its screened interval extends from 345-348 ft bgs?

**TABLE 1. DETAILED COMMENTS ON FINAL DRAFT REMEDIAL INVESTIGATION REPORT  
SHANNON ROAD/EL CAMINO DEL CERRO WATER QUALITY ASSURANCE REVOLVING FUND SITE**

52	4.6.2/46	Monitor well construction diagrams and boring/cutting descriptions are included in Appendix N.	<p>What is ADEQ's interpretation of the VOC concentration data obtained using the photoionizing detector (PID) during drilling of Soil Boring #1? The VOC concentrations appear to increase with depth, with the highest concentrations detected below a depth of 300 feet bgs. What is meant by "too hot" with respect to the VOC concentration?</p> <p>These data could suggest a historic and potentially on-going source of groundwater contamination from the E.C. Winter site.</p> <p>More interpretation of these PID data should be provided in the report.</p> <p>Since the Soil Boring #1 log shows samples were collected, where are the sample results reported and what concentrations of VOCs were detected?</p>
53	4.6.2/47	See Appendix C for details on the 2013 site activities.	<p>The information in Appendix C indicates that monitor wells located southwest of I-10 were not included in the 2013 monitoring event. Why were these wells omitted from the monitoring event? We understand that ADEQ did not request access to these wells from Pima County for the monitoring event. Including these wells is particularly important because ADEQ has concluded in the RI report that the ECDC landfill is the primary and potentially the exclusive source of groundwater contamination.</p> <p>A complete groundwater monitoring event that includes all accessible wells in the Water Quality Assurance Revolving Fund (WQARF) site should be conducted before reaching conclusions about source contributions or other fate and transport concepts. This was a data gap identified by URS in the report. In this monitoring event, a comprehensive list of analytes should be used to thoroughly characterize groundwater quality. As previously noted, the potential for current or historical groundwater sources at the AMRI Oil, Wrecksperts, and E.C. Winters sites exists, despite the conclusions presented in the draft RI report. A comprehensive sampling event might indicate spatial variations in chemicals constituents in groundwater that would provide new and useful information for delineating sources and understanding the evolution of the plume.</p>
54	4.6.3/48	4.6.3 Distribution and Trends of Contamination in Groundwater	This section should include data from the CDC Landfill RI report and other historical data, rather than only data from 2001.
55	4.6.3/48	Summary tables for PCE, TCE, 1,1-DCE cis-1,2-DCE, and vinyl chloride are included as Table _ through Table _. Since February 2001, there have been 29 sampling events and sampling of wells at SR/ECDC has been conducted as listed in the schedule presented in Table _.	The table references should be provided.
56	4.6.3/49	As of 2013, the depth to regional groundwater was approximately 158 feet bgs, falling at a rate of approximately 1 foot per year.	The report should include groundwater elevation hydrographs to enable the reader to evaluate changes in groundwater elevations over time across the Site. Is 158 feet bgs an average depth to groundwater? Variability across the Site should be discussed. The implication of declining water levels, which would be evident on the hydrographs, should also be discussed with respect to source area contributions in the past when water levels were higher.
57	4.6.3/49	Groundwater flow direction is generally to the north-northwest as shown on Figure 4. Groundwater flow at the north end of the site is influenced by pumping of Metro Water's South Shannon well.	<p>Figure 4 has several problems: (1) the contours extend too far beyond the network of wells and data shown on the map; (2) groundwater flow arrows are not perpendicular to contour lines (unless information about anisotropy is available); and (3) contours do not cover entire site area no data or interpretation of patterns of groundwater movement are included for the ECDC landfill or other areas in the southwest part of the site.</p> <p>Why are some medium zone wells missing from Figure 4?</p> <p>Figure 4 does not show influence from the South Shannon Well on groundwater flow. In fact, contours suggest flow in the north part of the site that is centered on monitor well W-31M.</p> <p>Groundwater contours for the shallow and deep zones should also be provided in the RI to provide a complete understanding of the groundwater system.</p> <p>Figure 4 should be revised to completely display groundwater flow conditions in the Site so the reader can interpret them with respect to the extent of groundwater contamination.</p>
58	4.6.3/49	Concentrations of PCE and TCE in the shallow zone often exceed the AWQS of 5 µg/L. In 2013, monitor well SRC-W38S contained the highest concentrations of PCE and TCE at 122 and 63.2 µg/L, respectively. SRC-W38S is the only shallow zone well with concentrations of cis-1,2-DCE that exceed the AWQS of 70 µg/L.	<p>The highest PCE and TCE concentrations occur at well SRC-W38S, which is located immediately downgradient of the AMRI Oil/Wrecksperts site. These high concentrations in shallow groundwater suggest that the most likely source of PCE and TCE at this location came from the AMRI Oil/Wrecksperts site not, the ECDC landfill. This is further indicated by the persistence of high PCE and TCE concentrations at well SRC-38S since 2005, possibly indicating a continuing source. Other shallow wells with relative stable, high concentrations of PCE and TCE (see Appendix P) are W-24, W-32S and W-45S which are also in the vicinity of the AMRI/Wrecksperts site and downgradient of the E.C. Winter property. Additional analysis of the shallow groundwater water quality data, including implications for the various potential source areas, should be included in the report.</p> <p>Consistent monitor well names should be used in the RI report.</p>

**TABLE 1. DETAILED COMMENTS ON FINAL DRAFT REMEDIAL INVESTIGATION REPORT  
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59	4.6.3/50	Figure 16 through Figure 19 present contours for TCE and PCE in the shallow and medium zone, respectively, in the regional aquifer based on the April 2013 sampling results.	<p>In fact the maps appear to show data for February – May 2012. Why are 2013 water quality results for the shallow, medium, and deep zones not shown on maps in the report? Why are data from all the wells not included?</p> <p>Figures 16 through 19 should be arranged in the order of the text for clarity. Figures 18 and 19 should precede Figures 16 and 17 to coincide with the discussion of PCE data then TCE data.</p> <p>Figures 16 through 19 should be interpreted in the report. The report text that follows this section relies on the time series chemical graphs in Appendix P.</p>
60	4.6.3/50-53	<p>Tetrachloroethene</p> <p>Shallow Zone Medium Zone Deep Zone</p> <p>Trichloroethene</p> <p>Shallow Zone Medium Zone</p>	<p>The summary of PCE and TCE concentration data in this section clearly indicates that the highest concentrations in shallow groundwater are immediately downgradient of the AMRI Oil/Wrecksperts site. Given the concept that the contaminated groundwater is migrating to deeper zones as it migrates from south to north, the detection of the highest PCE and TCE concentration in shallow groundwater in the central portion of the plume strongly suggests a source in central portion of the plume.</p> <p>This concept should be discussed in the report.</p> <p>The table references in section should be added.</p> <p>The temporal variations in PCE and TCE concentration in the monitor wells should be analyzed to assess the rate of contaminant transport. This analysis should then be used to assess source areas. For example, do the estimated groundwater directions and velocities support the conclusion that the ECDC landfill is the primary source? This type of analysis could be done using a groundwater model.</p> <p>In order to conduct a thorough analysis of the temporal variations in PCE and TCE, all historic data VOC data for critical wells should be used. VOC data from W-5 starts in 1987, W-14 in 1989, W-16 in 1991, W-17 in 1994, and W-20 in 1994. These data should be included on the time series graphs in Appendix P for completeness.</p> <p>The PCE contours on Figure 19 should be dashed on the southeastern portion of the plume given that data do not exist in that area. As is, the figure does not appropriately reflect the uncertainty in the PCE distribution in the medium zone.</p> <p>The discussion of the observed temporal variations in PCE and TCE concentrations in the report is confusing. Interpretation of the temporal trends with respect to potential source areas and changes in groundwater flow direction (due to pumping and/or recharge events) is needed in order to understand the importance of these variations.</p>
61	4.6.3/53	<p>1,4-Dioxane</p> <p>During the 2013 sampling event, ADEQ requested that URS sample for 1,4-dioxane. 1,4-dioxane was found in shallow, medium, and deep zoned wells. The highest level of 1,4-dioxane was detected in well SRC-W48M at 3.0 ppb. Currently, there is no AWQS for 1,4-dioxane. As this was the first year ADEQ requested sampling for 1,4-dioxane, there are insufficient data for trend analyses. Appendix C illustrates the 1,4-dioxane detections and contains the 2013 analytical data.</p>	<p>1,4-dioxane is a known stabilizer for 1,1,1-TCA. Correlation between these compounds in the source area should be analyzed. The data suggest the 1,1,1-TCA was more prevalent in the source areas north of I-10 in the area where highest 1,4-dioxane concentrations are detected in groundwater.</p> <p>Wells W-38S, W-43, W-44S and W-45S, which all have 1,4-dioxane concentrations &gt; 1.0 ug/l, are located immediately downgradient of the E.C. Winters property, where 1,1,1-TCA, and 1,1-DCE were detected in deep soil vapor at concentrations of up to 240 ppbv and 113 ppbv, respectively. 1,1,1-TCA is relatively unstable and degrades directly to 1,1-DCE under aerobic conditions.</p>
62	4.6.3/53-54	<p>Summary of the Extent of Contamination</p> <p>Historically, the highest concentrations of the plume were in the vicinity of Kaylor Trailer from 1994 to 1996 but as discussed previously in Section 4.6.2, the plume extent had not been fully defined in deeper groundwater.</p>	<p>As noted, it is important to recognize that the plume was only partially delineated by 1996, and as discussed in the previous sections, the highest PCE and TCE concentrations in shallow groundwater were observed immediately downgradient of the AMRI Oil/Wrecksperts site. The steady PCE and TCE concentration near AMRI Oil/Wrecksperts suggests an ongoing source near these sites.</p> <p>The summary of extent of contamination should include more interpretation and analysis of data, especially to delineate source areas based on the spatial distribution and temporal variations in concentrations.</p>

**TABLE 1. DETAILED COMMENTS ON FINAL DRAFT REMEDIAL INVESTIGATION REPORT  
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63	5.4/57-59	<p>Contamination Variations in the Regional Groundwater</p> <p>PCE and TCE Distribution</p> <p>Generally, the groundwater contaminant plume extends from its source at the CDC landfill area north and east to slightly north of the Metro Water South Shannon well. As previously discussed the major components of the groundwater plume include TCE and PCE, with generally lesser concentrations of cis-1,2-DCE, vinyl chloride, and Freon 12 and 11. Much of this analysis is based on an evaluation of the PCE and TCE trends as these appear to be the primary components of the contaminant plume.</p> <p>Highest concentrations PCE/TCE ratio</p>	<p>The supposition that the only source of groundwater contaminants is the CDC landfill area is not supported by the data developed during the RI, and as reported in the RI report. Analysis of these data has not been provided in the report, but clearly should be to conclude that the only source is the ECDC landfill.</p> <p>Assessment of the highest concentrations is complicated by the phased installation of the wells over time. Where have the highest PCE and TCE concentrations been observed for all times when samples were collected?</p> <p>What is the significance of the PCE/TCE ratio? A map of ratios would support the discussion. If the Roger Road sludge pond provided a carbon source for biodegradation of PCE to TCE in the wells cited in the report, why is this effect not observed in all wells immediately downgradient of the pond? Do field sampling data exist to indicate depressed dissolved oxygen and oxidation-reduction potential (i.e., reducing conditions) in the wells with TCE concentration higher than PCE concentration?</p> <p>Variations in PCE/TCE ratio could indicate contributions from several source areas to the plume.</p> <p>Where is well W5S? Is this CDC-W5? The inconsistent naming convention for the wells is distracting and should be fixed.</p> <p>With regard to biodegradation, data are not provided that characterize conditions in the groundwater to assess the likelihood of biodegradation. A much more detailed analysis of biodegradation should be conducted to assess its importance in delineating sources. ADEQ asserts that cis-1,2-DCE and vinyl chloride are not accumulating; however, water quality data suggest they are.</p>
64	5.4/59	<p>The highest concentrations observed within the medium depth wells are located downgradient from the highest concentrations within the shallow depth, which supports the possibility that as the VOC plume moves downgradient from well 38S, it also is transported downward into a deeper portion of the aquifer (designated as the medium depth). The highest concentrations observed at medium depth wells occur at wells on either side of the Rillito Creek, which may indicate that recharge resulting from ephemeral flows in the creek may contribute to the observed downward movement of VOCs in this area. In addition, the hotspot locations in the medium and shallow depths are upgradient from the Metro Water South Shannon Well, which pumps a significant volume of water annually. This well appears to provide hydraulic containment of the VOC plume and prevents it from migrating farther north. It is also likely one of the contributing factors to the downward movement of the plume.</p>	<p>Why wouldn't recharge from Rillito Creek dilute the plume instead of causing high concentrations to migrate deeper?</p> <p>See comment below in relation to vertical gradients and an alternate hypothesis for observed higher concentrations at depth downgradient from the E.C. Winters site.</p> <p>The hotspots in the shallow and medium depths are centered southwest of the South Shannon Well. Groundwater contours on Figure 4 show the direction of groundwater flow is to the north-northwest. This indicates the hotspots are not directly upgradient of the South Shannon Well and suggests the possibility of an additional unknown source which is upgradient of the South Shannon Well.</p> <p>A summary of the analysis conducted to determine that pumping at the South Shannon Well contains the plume should be provided in the report. This is an important concept for the WQARF site, especially if the pump and treat system at the well will become part of the final remedy.</p>
65	5.4/60	<p>1,4-Dioxane is primarily used as a stabilizer for chlorinated solvents and is found in some groundwater plumes with other VOCs. Compared to PCE and TCE, 1,4-dioxane is a cyclic ether that mixes with water readily and can be transported in groundwater far in advance of associated solvents.</p>	<p>1,4-dioxane is typically believed to have been a stabilizer and corrosion inhibitor for 1,1,1-TCA, not PCE or TCE, which are chemically stable. Therefore, 1,4-dioxane would be expected to be related to the prevalence of 1,1,1-TCA. More analysis of the relationship between 1,1,1-TCA, its degradation daughter products, and 1,4-dioxane should be provided in the report.</p>
66	5.4/60	<p><b>Vertical VOC Distribution</b></p> <p>North of I-10, the VOC plume shows a clear pattern of transport downward within the aquifer as it moves north. The "diving" of the plume is likely the result of some combination of periodic hydraulic head resulting from recharge during flow events in Rillito Creek, the apparent downward trend of the interface between the higher permeability sands and gravels and the less permeable clayey and silty gravels as shown on the Geologic Cross section Figures 3 and 20, and pumping of groundwater from a deeper portion of the aquifer at the South Shannon Well.</p>	<p>An analysis of vertical hydraulic gradients, recharge events, and historical pumping from the South Shannon Well should be conducted to support the proposed mechanisms for vertical plume migration. Review of vertical hydraulic gradients for well pairs based on April 2013 water level data does not support the notion that the plume is diving in response to a head change caused by pumping. There is also no explanation for why this vertical movement only occurs in the area north of the E.C. Winters site. Another possible explanation for migration of the plume to deeper zones is the presence of conduit wells.</p>

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SHANNON ROAD/EL CAMINO DEL CERRO WATER QUALITY ASSURANCE REVOLVING FUND SITE**

67	5.4/60	Fate and Transport Conclusions	<p>The conclusions reported for fate and transport of contaminants in the groundwater are overly simplistic and not supported by information presented in the draft RI report. First, the presentation of data is incomplete in many ways, including: (1) omission of critical data from the early RI work conducted by Pima County at the CDC landfill, (2) omission of important basic information such as concentrations of contaminants and depths of sampling, and (3) information on maps in the appendices are largely illegible and not accompanied by any clarifying text. Second, interpretation of data is insufficient and subjective, largely because the data provided are incomplete and conclusions derived from the data are not supported by information presented in the draft report. Third, the report lacks analysis of data. While the report provides some information on the spatial and temporal variations in contaminant concentrations in groundwater, this information was not subjected to any analysis to determine how trends might indicate the location and status of source areas. Analysis of the spatial and temporal variation in VOCs in groundwater should have been done to correlate the rate and direction of groundwater flow and potential source areas. Impacts of pumping and recharge in relation to fate and transport should be fully evaluated. Typically, this analysis is done using models. In this case, VLEACH would have been appropriate to assess fate and transport of contaminants in soil and soil vapor, leading to an assessment of anticipated groundwater impacts. MODFLOW/MT3D (or RT3D to simulate reactive transport) would have been appropriate to evaluate fate and transport of contaminants in the groundwater system.</p> <p>The conceptual model of contaminant fate and transport presented in the report is incomplete and one of several equally likely conceptual models. All likely conceptual models should be fully explored and evaluated in terms of their relevance to observed conditions and the potential sources.</p> <p>Given the issues described above, the report content and deficiencies noted indicate that the RI report was prepared with the presupposed assumption that the ECDC landfill was the only source of VOCs to the groundwater. While the presentation, interpretation, and analysis of VOC data in the soil and soil vapor at potential source areas north-northeast of I-10 were incomplete and insufficient, what is presented clearly indicates a strong potential for contributions to the VOC plume from multiple sources.</p>
68	5.4/61	Specifically, it appears that the dissolved VOC plume is transported downward and northeast towards the high capacity South Shannon well where it is hydraulically captured and prevented from migrating further north.	<p>The statement that the assumed single source plume is “hydraulically captured and prevented from migrating further north” by pumping at the South Shannon Well is not substantiated, nor does it appear to be well founded.</p> <p>Based on our review of the draft final URS Aquifer Testing and Analytical Capture Zone Modeling Results Report, dated February 4, 2005, it appears that capture of the entire plume area, including the CDC Landfill area, is only projected for the modeling scenario that assumes the lower of the two transmissivity values and continuous pumping of the South Shannon Well. Based on Figure 7 in the 2005 URS report, it appears that continuous pumping of the South Shannon Well translates to an average pumping rate of about 750 gpm. Based on review of reported ADWR pumping data for this well through 2011, the maximum average annual pumping rate sustained at the South Shannon Well was about 425 gpm, with the average rate for the most recent available 5-year period being less than 400 gpm. Even if the lower transmissivity value is more representative of the aquifer materials penetrated by the South Shannon Road Well, recent pumping appears to have been insufficient to assume that the plume is being fully captured.</p>
69	6.0/61-62	Conclusions and Data Gaps	<p>As indicated in the above comments, the information presented in the RI report does not support the conclusion that sources of groundwater contamination only exist south-southwest of I-10. It also does not provide a convincing conceptual model to support the conclusion that the entire plume, extending northeast to the South Shannon Well, originated from the single assumed source area (the ECDC landfill and possibly the Drake Property area). Finally, containment of this plume at the South Shannon Well is not substantiated, as mentioned above.</p> <p>The data gaps, along with the broad range of deficiencies in the report, should be addressed before the RI report is finalized, and before the remedial objectives are established.</p>

**TABLE 2. SUMMARY OF INVESTIGATION RESULTS  
SHANNON ROAD / EL CAMINO DEL CERRO WATER QUALITY ASSURANCE REVOLVING FUND SITE**

SITE	El Camino Del Cerro	Drake/Lee's Auto	E.C.Winter	AMRI Oil-Wrecksperts Western Stucco-Western Trailer	I-10 Corridor	Area South of ECDC Landfill
<b>SITE USE</b>	Landfill	Auto salvage	Used oil processing	Used oil processing, auto salvage, truck storage	Various businesses	Vacant
<b>OPERATIONAL PERIOD</b>	1973-77	1964 - 1985	1960s through 1971	AMRI 1950-68, Wrecksperts 1985 -2001, others (auto repair etc.) 1967 - 1992	Various, since 1950s	NA
<b>SOIL SAMPLING</b>						
Shallow	yes	no	yes	yes	yes	no
Deep	yes	no	yes	yes	yes, to 25 ft	no
<b>SOIL VAPOR SAMPLING</b>						
Shallow soil vapor samples?, depth in ft bgs	yes, 5 to 13 ft	yes, 5 to 19 ft	yes, 5 to 6.5 ft	yes	yes 6 ft	yes
Gore absorber type shallow samples?	yes	no	no	yes	yes	no
Deep sampling?, depth in ft bgs	yes, to 75 ft	no	yes, to 75 ft	yes, to 93 ft	yes, to 75 ft	no
Number of single completion vapor sampling wells	10	none	none	none	none	none
Number of multiple completion vapor sampling wells	none	none	3 wells, monitor & SVE	3 wells @ 30, 50, 70, and 90 ft	3 wells	none
Soil Vapor Extraction (SVE) system?	no	no	yes	no	no	no
<b>GROUNDWATER SAMPLING</b>						
Groundwater sampling?	Yes	Yes	Yes	Yes	Yes	Yes
Groundwater monitoring wells	W-5, W-10, W-15D, W-19	W-18	W-20, W-29,W-41	W-24, W-32, W-38	Kaylor, Quality ,W-20	W-3, W-11
<b>CONTAMINANTS DETECTED <sup>1</sup></b>						
<b>PCE</b>						
Shallow soil	results not found	not sampled	0.62 mg/kg	77 mg/kg	results not found	not sampled
Deep soil	results not found	not sampled	<.050 mg/kg	3.5 mg/kg	results not found	not sampled
Shallow soil vapor	1,800 ppbv	1,034 ppbv	2,224 ppbv	4.2 ug/l (621 ppbv)	591 ppbv	946 ppbv
Deep soil vapor	7,100 ppbv	not sampled	1,800 ppbv	220 ppbv	140 ppbv	not sampled
Groundwater	480 ug/l	2.7 ug/l	160 ug/l	410 ug/l	450 ug/l	5 ug/l
<b>TCE</b>						
Shallow soil	results not found	not sampled	54 ppm (53 mg/kg)	0.32 mg/kg	results not found	not sampled
Deep soil	results not found	not sampled	0.23 mg/kg (20 ft)	0.37 mg/kg	results not found	not sampled
Shallow soil vapor	8 ug/l (1,488 ppbv)	746 ppbv	737 ppbv	results not found	37 ppbv	1,492 ppbv
Deep soil vapor	1,400 ppbv	not sampled	8,410 ppbv	53 ppbv	64 ppbv	not sampled
Groundwater	206 ug/l	2.9 ug/l	76 ug/l	206 ug/l	180 ug/l	10 ug/l
<b>TCA</b>						
Shallow soil vapor	110 ppbv	110 ppbv	560 ppbv	results not found	200 ppbv	367 ppbv
Deep soil vapor	Unknown	not sampled	240 ppbv	results not found	<7 ppbv	not sampled
Groundwater	2.3 ug/l	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
<b>VC</b>						
Shallow soil vapor	20,000 ppbv	82,320 ppbv	20 ppbv	results not found	results not found	results not found
Deep soil vapor	7,900 ppbv	not sampled	results not found	<0.50 ppbv	5.8 ppbv	not sampled
Groundwater	680 ug/l	6.8 ug/l	86 ug/l	36 ug/l	160 ug/l	25 ug/l
<b>cis 1,2-DCE</b>						
Deep soil vapor	5,600 ppbv	not sampled	2.4 ppbv	100 ppbv	11 ppbv	not sampled
Groundwater	420 ug/l	1.6 ug/l	190 ug/l	130 ug/l	190 ug/l	11.7 ug/l
<b>Freon 12</b>						
Shallow soil vapor	results not found	1,000 ppbv	results not found	results not found	results not found	results not found
Deep soil vapor	38,000 ppbv	not sampled	2.2 ppbv	7.1 ppbv	330 ppbv	not sampled
Groundwater	260 ug/l	<0.5 ug/l	44 ug/l	35 ug/l	29 ug/l	5 ug/l
<b>Methane</b>						
Shallow soil vapor	results not found	59%	results not found	results not found	results not found	14%
Deep soil vapor	80%	not sampled	results not found	results not found	results not found	not sampled
<b>Hydrocarbons</b>						
Shallow soil	results not found	results not found	54,000 mg/kg	410,000 mg/kg	55,000 mg/kg	not sampled
Deep soil vapor	254,000 ppbv	not sampled	<49,000 ppbv	results not found	results not found	not sampled
<b>RESPONSE ACTIONS</b>						
Contaminated soil removal	none	none	7,859 tons	61,000 tons, 1,378 tons, and 4,421 yds (separate removal actions)	none	none
Soil vapor extraction	none	none	0.85 lbs PCE, 4 lbs TCE	none	none	none
Groundwater pump & treat	37 lbs VOC removed	none	none	none	none	none
Abandon conduit wells	none	unknown	one	one, 102 ft deep	one	one

Notes:

<sup>1</sup> - Maximum reported concentrations  
PCE - tetrachloroethene  
TCE - trichloroethene  
TCA - 1,1,1-trichloroethane

VC - vinyl chloride  
DCE - dichloroethene  
ppbv - parts per billion by volume  
ft bgs - feet below ground surface  
ug/l - micrograms per liter

mg/kg - milligrams per kilogram  
ppm - parts per million  
yds - yards  
VOCs - volatile organic compounds  
lbs - pounds

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DRAFT 9/30/2003

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF ARIZONA

State of Arizona; State of Arizona ex rel. Stephen A. )  
Owens, Director, Arizona Department of )  
Environmental Quality. )

Plaintiffs, )

v. )

Pima County. )

Defendant. )  
\_\_\_\_\_)

No. CV \_\_\_\_\_

CONSENT DECREE BETWEEN THE  
STATE OF ARIZONA AND PIMA  
COUNTY

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**Appendix 1, Map of County Response Area**

**Appendix 2, Legal Description**

**Appendix 3, Scope of Work**

**Appendix 4, Pima County owned property described in Paragraph 43**

**Appendix 5, Wells owned by Pima County**

**Appendix 6, Hydrology Report (May 2003)**

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF ARIZONA

State Of Arizona; State Of Arizona ex rel. Stephen A.)  
Owens, Director, Arizona Department Of )  
Environmental Quality. )  
)  
Plaintiffs, )  
)  
v. )  
)  
Pima County. )  
)  
Defendant. )  
\_\_\_\_\_)  
)

No. CV \_\_\_\_\_

**CONSENT DECREE BETWEEN  
THE STATE OF ARIZONA AND  
PIMA COUNTY**

**I. RECITALS**

A. WHEREAS, the State of Arizona, on its own behalf and on behalf of the Director of the Arizona Department of Environmental Quality ("State"), has filed a Complaint in this matter pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 *et seq.*, as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499 ("CERCLA"), and pursuant to supplemental state law causes of action pursuant to the Water Quality Assurance Revolving Fund ("WQARF"), A.R.S. § 49-281, *et seq.*, seeking relief in the form, *inter alia*, of a declaratory judgment, to ensure performance of remedial actions for response to releases and threatened releases of hazardous substances from a facility known as the El Camino Del Cerro Landfill ("Landfill"); and

B. WHEREAS, the State alleges that releases of hazardous substances have occurred at the Landfill, which Pima County owns and operated as a sanitary landfill from about 1973 to 1978, that the Landfill is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9), and in WQARF, A.R.S. § 49-281(6), and that Pima County ("County") is a responsible party pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a) and pursuant to A.R.S. § 49-283 of WQARF; and

C. WHEREAS, the Landfill is subject to the jurisdiction of the Arizona Water Quality

Assurance Revolving Fund ("WQARF") as a WQARF Site with a potential impact on public health, or the environment by hazardous substances and pollutants, and the State has listed in the WQARF Site Registry an area known as the El Camino del Cerro WQARF Registry WQARF Site ("WQARF Site"), which includes an area of land impacted by groundwater and soil contamination that includes the Landfill and other property and potential sources in the vicinity of the Landfill; and

D. WHEREAS, the State and County have undertaken response activities to determine the nature and extent of the release and threat of release of hazardous substances at the Landfill ; and

E. WHEREAS, a remedial investigation study concerning the Landfill and other areas impacted by groundwater contamination within the WQARF Site was undertaken and completed in July 1997. Two feasibility studies for the Landfill were undertaken, specifically the El Camino del Cerro Groundwater Operable Unit Feasibility Study Report, completed in August, 1998, and the El Camino del Cerro Study Area Landfill Operable Unit Feasibility Study Report, completed in December, 1997. Additionally, The Pima County Addendum to the El Camino del Cerro Groundwater Operable Unit Feasibility Study for the El Camino Del Cerro Water Quality Assurance Revolving Fund Site and The Pima County Addendum to the El Camino del Cerro Landfill Operable Unit Feasibility Study for the El Camino del Cerro Water Quality Assurance Revolving Fund Site were completed in November, 1999. These four documents were submitted to ADEQ. ADEQ commented on the studies and, after reviewing the County's responses to those comments, sent a letter to the County on July 20, 2000 indicating that ADEQ concurred with the information included with the revised Feasibility Studies, Addenda and the comment responses for the proposed remedial actions for the Groundwater and Landfill Operable Units for the El Camino del Cerro WQARF Site. Subsequent to these actions, a Hydrology Report (May, 2003) was completed which further examined and identified storm flows to which the site would be subject; and

F. WHEREAS, the State and Pima County (the "Parties") are authorized to enter into this settlement regarding Covered Matters as defined in this Consent Decree; and

G. WHEREAS, by letter dated \_\_\_\_\_, the Governor of Arizona, pursuant to Section 107(f)(2)(B) of CERCLA, 42 U.S.C. § 9607(f)(2)(B), appointed Stephen A. Owens, Director of the Arizona Department of Environmental Quality ("ADEQ"), as the designated

Natural Resource Trustee for the State of Arizona, and Mr. Owens is authorized and empowered to enter into this Consent Decree ("Consent Decree") and to execute covenants not to sue on behalf of the State for injuries and damages to natural resources within the State of Arizona; and

H. WHEREAS, upon judicial approval of this Consent Decree, Pima County, as defined herein, will be entitled to contribution protection pursuant to Section 113(f) of CERCLA, 42 U.S.C. § 9613(f), and WQARF, A.R.S. § 49-292; and

I. WHEREAS, the Parties desire to establish certain rights and obligations as among themselves with respect to claims that have arisen, or might arise or be asserted in the future in connection with or relating to the WQARF Site, including those claims which were or could have been asserted in the action; and

J. WHEREAS, the Parties do not admit, and retain the right to controvert in any contemporaneous or subsequent proceedings (other than proceedings related to the validity, implementation, or enforcement of this Consent Decree), the validity of the recitations contained in this Consent Decree; and

K. WHEREAS, the Parties desire to fully and finally terminate this action as to Pima County and to settle claims by Plaintiffs against Pima County and claims of Pima County against Plaintiffs as set forth in this Consent Decree; and

L. WHEREAS, the Parties agree that settlement of this matter and entry of this Consent Decree are made in good faith in an effort to avoid further expenses of protracted litigation, without any admission of any liability by any party for any purpose; and

M. WHEREAS, Pima County denies all allegations in the Complaint not heretofore admitted; and

N. WHEREAS, the Parties agree that nothing herein nor any action taken hereunder, shall be taken or construed as an admission of liability on any claim or cause of action, nor shall it be taken or construed as a waiver of any defense relating to any of the claims and causes of action asserted in this action; and

O. WHEREAS, the Parties agree and the Court finds that entry of this Consent Decree is in the public interest, will minimize litigation, and will result in the expedited remediation of the Landfill; and

P. WHEREAS, the Parties, having consented to the issuance and entry of this Consent Decree, agree to be bound by the terms herein described ; and

Q. WHEREAS, each undersigned representative of the Parties to this Consent Decree certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such Party to this document.

NOW, THEREFORE, IT IS ORDERED BY THE COURT AND AGREED BY THE PARTIES AS FOLLOWS:

## **II. JURISDICTION**

1. This Court has jurisdiction over the subject matter of this action and supplemental matter jurisdiction over State law claims pursuant to 28 U.S.C. §§ 1331, 1345 and 1367 and 42 U.S.C. §§ 9607 and 9613(b). This Court also has personal jurisdiction over all Parties in this action. Solely for the purposes of this Consent Decree and the underlying complaint, Pima County waives all objections and defenses that it may have to jurisdiction of the Court or to venue in this District. The Parties shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree through the Court's continuing jurisdiction.

## **III. INCORPORATION OF RECITALS**

2. The recitals as set forth herein are hereby incorporated into the Consent Decree.

## **IV. BINDING EFFECT**

3. This Consent Decree shall apply to and be binding upon the Parties, their successors, agents and assigns. Any change in ownership by a Party including, but not limited to, any transfer of assets or real or personal property, shall in no way alter its responsibilities under this Consent Decree. The terms of this Consent Decree are mutually enforceable by the Parties to this Consent Decree. Pima County hereby agrees to provide notice of this Consent Decree and the obligations contained herein to any successors and assigns.

## **V. PURPOSE**

4. The purposes of this Consent Decree are as follows:

A. To provide for cooperation between Pima County and ADEQ and to define the County's responsibility in support of ADEQ's remediation effort at the El Camino del Cerro WQARF Site;

B. To protect the public health and the environment;

C. To resolve all claims between the State and Pima County regarding Covered Matters as defined herein;

D. To protect Pima County against claims by any Party or other person by providing a covenant not to sue and contribution protection to Pima County regarding Covered Matters as provided herein.

E. To allow Pima County to initiate Remedial Actions prior to the adoption of a final Remedial Action Plan.

5. The Parties agree that this settlement resolves Pima County's liability for claims or causes of action the State and any other person may have against Pima County, regarding Covered Matters as defined herein at the WQARF Site. The intent of the Parties is that, unless otherwise provided by this Consent Decree, Pima County will receive a covenant not to sue and contribution protection under CERCLA and WQARF to the full extent allowed by law.

6. Pima County recognizes that while this Consent Decree, if approved, will resolve its liability for Covered Matters, it does not resolve its liability for matters not covered by this Consent Decree, if such matters or liability exist.

7. It is the intent of the Parties hereto that Pima County's responsibilities hereunder are limited to the geographical area described in Paragraph 8, Item D, hereof, as shown on Appendix 1. Notwithstanding the provisions of this Paragraph 7, if it is necessary for Pima County to conduct Work or activities outside the geographical area described in Paragraph 8, Item D, hereof, to fulfill its duties and responsibilities set out herein in regards to the geographical area described in Paragraph 8, Item D, hereof, Pima County shall conduct any and all such Work or activities as provided in this Consent Decree.

## **VI. DEFINITIONS**

8. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA, the National Contingency Plan ("NCP"), 40 C.F.R. Part 300, WQARF and Arizona Administrative Code R18-7-101 *et seq.*, shall have the meaning assigned to them under such statute or regulation as of the date this Consent Decree is entered by the Court. Where a conflict in definition exists as between a term used in CERCLA and the NCP and WQARF, the Parties intend to use herein the state definition. The terms used in this Consent Decree are defined as follows:

- A. "ADEQ" shall mean the Arizona Department of Environmental Quality.
- B. "Additional Work" has the meaning set out at Paragraph 15 hereof.
- 3. "CERCLA" shall mean the Comprehensive Environmental Response,

Compensation, and Liability Act, as amended, and all regulations and guidelines promulgated pursuant to the same.

D. "County Response Area" means the Landfill for purposes of both soil and groundwater remediation. For purposes of groundwater remediation only, it is the area around the Landfill that is bounded on the West by the Santa Cruz River, on the South by El Camino del Cerro Road, on the East and Northeast by Interstate 10 and on the North by Curtis Road in Pima County, Arizona. Subject to the provisions of Paragraph 7, above, the County Response Area is the geographic area of the WQARF Site where Pima County has responsibility to provide Remedial Actions.

E. "Covered Matters" shall mean any civil liability Pima County may have under WQARF, CERCLA or the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6901 *et seq.*, to perform response actions or remedial actions at the WQARF Site or for costs incurred by Plaintiffs or any other person at the WQARF Site in response to a release or threatened release of hazardous substances at, in, into or from the El Camino Del Cerro Landfill. "Covered Matters" shall include claims by any person for (a) performance of any past or future CERCLA response actions, WQARF remedial actions, or RCRA corrective actions with respect to the WQARF Site; (b) reimbursement of past or future Remedial Action Costs, as defined herein, incurred by any person or entity; and (c) natural resource damages at or related to the WQARF Site to the extent set forth below. Covered Matters shall not include:

1. Claims based on a failure by Pima County to comply with its obligations under this Consent Decree;
2. Civil liability, if any, for matters not included within Covered Matters;
3. Civil liability, if any, arising out of the treatment, storage, transportation, or placement on or into the ground of hazardous substances, pollutants or contaminants at locations other than the El Camino Del Cerro Landfill;
4. Future civil liability, if any, arising out of conditions that are unknown to the State at the time this Consent Decree is lodged, provided that the Parties acknowledge that the Landfill conditions known at present include:

a. that the El Camino Del Cerro Landfill was operated as a sanitary landfill from approximately 1973 through 1978;

b. that during its operation, a variety of municipal solid waste were disposed at the El Camino del Cerro Landfill, which included substances that are now known to be hazardous substances, pollutants, and contaminants.

c. that hazardous substances, pollutants, or contaminants have been released into the environment, including the soil, vadose zone, and groundwater at the Landfill;

d. that some of such hazardous substances, pollutants, or contaminants have migrated beyond the boundaries of the El Camino Del Cerro Landfill. The boundary of the Landfill for purposes of this definition is the vertical plane extending from the perimeter of the area used for waste disposal through the underlying vadose zone to the aquifer; and

e. that these conditions are described in the documents in the possession of the State as of the effective date of this Consent Decree, including those conditions described in the Remedial Investigation Report for the El Camino Del Cerro Landfill, dated July, 1997 and the Groundwater Operable Unit Feasibility Study completed in August, 1998 and the Landfill Operable Unit Feasibility Study, completed in December, 1997, both prepared by Malcolm Pirnie Inc., for Pima County Solid Waste Management, as well as the addenda to the Feasibility Studies that were submitted to ADEQ with associated response comments and the Hydrology Report dated May, 2003 and prepared for Pima County Solid Waste by RS Engineering and attached as Appendix 6.

5. Civil liability, if any, for any future releases or threatened releases of hazardous substances, pollutants or contaminants resulting from placement on or into the ground by Pima County, or arrangement for disposal by Pima County, of hazardous substances, pollutants, or contaminants at the WQARF Site after the effective date of this Consent Decree;

6. Civil liability, if any, for exacerbation by Pima County of existing contamination at, beneath or down gradient from the Landfill during implementation, if any, of a Remedial Action by Pima County at the El Camino Del Cerro Landfill.

7. Civil liability, if any, for future violations of local, state or federal statutes or regulations;

8. Criminal liability, if any;

9. Civil liability, if any, for personal injuries or damage to property arising out of exposure or alleged exposure to hazardous substances, pollutants, or contaminants;

10. Natural resource damages at or related to the Landfill and the WQARF Site to the extent set forth below.

a. Any liability of Pima County for natural resource damages at or related to the WQARF Site shall be excluded from Covered Matters pending the completion of a natural resource damages assessment under CERCLA, as set out at 43 C.F.R. § 11.10 *et seq.* Pima County shall have the sole responsibility for performing the natural resource damages assessment. Pima County may submit to ADEQ any natural resource damages assessment Pima County deems sufficient to allow ADEQ to evaluate the extent of natural resource damages, if any, however, it shall remain within ADEQ's sole discretion whether any natural resource damages assessment submitted by Pima County is sufficient for ADEQ to evaluate the extent of natural resource damages.

b. If Pima County establishes to the satisfaction of ADEQ that it has satisfied the requirements of the natural resource damages assessment and that no natural resource damages have occurred, upon written request from Pima County ADEQ shall certify that the requirements of the natural resource damage assessment have been met, that no natural resource damages have occurred and Pima County shall have no liability for natural resource damages at or related to this

WQARF Site and any such liability of Pima County shall thereafter be fully included in Covered Matters.

F. "Day" shall mean a calendar day; however, should a deadline fall on a Saturday, Sunday or a State or Federal holiday, the deadline will be construed to continue to the next calendar day that is not a Saturday, Sunday, or State or Federal holiday.

G. "Deliverable" shall have the meaning set out at Paragraph 51 hereof.

8. "Early Response Action" shall have the meaning set out at R18-16-405.

I. "EPA" shall mean the United States Environmental Protection Agency.

J. "El Camino Del Cerro Landfill" shall mean that landfill, open from approximately 1973 through 1978, currently comprising approximately 20 acres of land located on the northwest side of Tucson, Arizona, north of El Camino del Cerro Road between the Santa Cruz River and I-10, as more fully described in Section 1.1 of the El Camino del Cerro Study Area Remedial Investigation Report, dated July, 1997 and prepared by the Pima County Solid Waste Management Department. Without limiting the foregoing general definition, El Camino Del Cerro Landfill is approximately located on the real property more particularly described in the legal description attached hereto as Appendix 2.

K. "Landfill" shall mean the El Camino Del Cerro Landfill, as defined herein:

L. "Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral or an uppercase letter.

M. "Parties" shall mean the State and Pima County, all as defined herein (each individually referred to as a "Party").

N. "Pima County" is a political subdivision of the State of Arizona.

15. "Plaintiffs" shall mean the State as defined herein.

P. "Property" shall mean the real property whose legal description is set out in Appendix 2.

Q. "RCRA" shall mean the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act and by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. §§ 6901 *et seq.*, and all regulations and guidelines

promulgated pursuant to the same.

R. "Record of Decision" shall have the same definition as is set out in A.R.S. § 49-287.04.

S. "Remedial Action" shall have the same definition as is set out in A.R.S. § 49-281.

T. "Remedial Action Costs" shall mean all costs incurred or to be incurred by any person in connection with the WQARF Site in responding to releases or threats of release of hazardous substances at or from the WQARF Site. Remedial Action Costs include such costs incurred or to be incurred by the Plaintiffs or any other person to complete the Remedial Investigation and Feasibility Study regarding the WQARF Site; costs incurred or to be incurred by any person to implement any WQARF or CERCLA remedial or response action or other cleanup measure at the WQARF Site; and costs incurred or to be incurred by the State in reviewing or developing plans, reports and other items regarding the WQARF Site, verifying the remedial or response action, or otherwise implementing, overseeing, or relating to WQARF Site investigation or cleanup and enforcing this Consent Decree. Remedial Action Costs also include, contractor costs, travel costs and laboratory costs.

U. "Remedial Action Plan" shall have the same definition as is set out in A.R.S. § 49-287.04.

5. "Remedy Rules" means the rules adopted as a part of the Arizona Administrative Code at Title 18, Chapter 16.

W. "Scope of Work" means the Deliverables and Work to be performed by Pima County and subject to approval by ADEQ as specifically described in Appendix 3.

X. "State" shall mean the State of Arizona, including its Department of Environmental Quality, and Stephen A. Owens, Director of the Arizona Department of Environmental Quality, Natural Resources Trustee for the State of Arizona.

Y. "Work" means all actions to be taken by Pima County pursuant to the Scope of Work or the Work Plan and any Additional Work ordered by the State.

Z. "Work Plan" means the plans submitted by Pima County to ADEQ from time to time pursuant to the provisions of the Scope of Work which describe the Work to be performed by Pima County pursuant to this Consent Decree.

AA. "WQARF" shall mean the Arizona Water Quality Assurance Revolving Fund, A.R.S. Title 49, Chapter 2, Article 5, as amended, and all regulations and guidelines promulgated pursuant to the same.

BB. "WQARF Site" shall mean the El Camino del Cerro WQARF Site as described and listed on the WQARF Site Registry List pursuant to A.R.S. 49-287.01 as of the date of this Consent Decree.

#### **VII. SPECIFIC OBLIGATIONS OF PIMA COUNTY**

9. Pima County, within the time frames established by the Scope of Work, shall submit to ADEQ for review and/or approval as specified in the Scope of Work (Appendix 3), the necessary Deliverables to implement the Pima County Work Plan. The Work outlined in the Deliverables shall become enforceable under this Consent Decree once reviewed and/or approved by ADEQ as provided in the Scope of Work.

#### **VIII. WORK TO BE PERFORMED**

10. Pima County shall implement the Remedial Actions set forth in this Consent Decree in accordance with the Scope of Work. Pima County shall submit to ADEQ a Work Plan for the County Response Area and all other documents required to be submitted to ADEQ under this Consent Decree. The Work Plan includes plans and schedules for the activities at the County Response Area that constitute the Remedial Action to be performed by the County at the WQARF Site. The Parties acknowledge the Work to be performed by Pima County pursuant to the Scope of Work will be an Early Response Action, as that term is defined in R18-16-405 of the Remedy Rules. The Work Plan and all other documents submitted to ADEQ shall be incorporated into and become enforceable under this Consent Decree once the documents are approved by ADEQ. In the event ADEQ approves a portion of a plan, report, or other document required to be submitted to ADEQ under this Consent Decree, the approved or modified portion shall be enforceable under this Consent Decree.

11. Pima County shall conduct the Work and submit Deliverables to the State as provided in the Scope of Work and this Section. All work undertaken pursuant to this Consent Decree shall be performed to the satisfaction of ADEQ and, at a minimum, shall be consistent with the Scope of Work, any ADEQ approved Work Plans and deliverables, the Arizona Environmental Quality Act, Title 49 and other applicable State and Federal laws and their implementing regulations, and applicable ADEQ and/or EPA guidance documents. If there are

differing standards, requirements or protocols, the more stringent standards apply. ADEQ shall determine which standards, requirements or protocols are more stringent.

A. Prior to beginning any Work at the County Response Area, Pima County shall submit to ADEQ a Work Plan and a Health and Safety Plan for field design activities which conforms to applicable Occupational Safety and Health Administration and ADEQ requirements. The Work Plan shall include plans and schedules for implementation of pre-design tasks and all remedial design identified in the Scope of Work, including, but not limited to, plans and schedules for the completion of:

1. Remedial Design/ Remedial Action Work Plan.
2. WQARF Site Management Plan.
3. Emergency Response Plan.
4. Sampling and Analysis Plan.
5. Quality Assurance Plan.
6. Design Basis Document.
7. Intermediate and Final Design Documents including a draft schedule for construction.
8. Construction Completion Report.
9. Operation and Maintenance Manual.
10. Remedial Action Monitoring and Reporting Plan.

B. Unless otherwise directed by ADEQ, Pima County shall not commence Work Plan activities at the County Response Area prior to approval of the submittals and Deliverables required by the Work Plan for each phase of the Work. Upon approval of the Work Plan by ADEQ, and submittal of the Health and Safety Plan for all field activities to ADEQ, for each phase of the Work, Pima County shall implement the Work Plan. Pima County shall submit to ADEQ all plans, submittals and other Deliverables required under the approved Work Plan in accordance with the approved schedule, and agreed upon delivery dates, for review and approval pursuant to Section XXII ("Review and Approval of Deliverables"). Pima County shall not undertake any Additional Work unless and until directed to do so by ADEQ.

12. The State and Pima County stipulate and the Court hereby finds that the Work to be performed under this Consent Decree is reasonable, necessary, cost-effective and technically feasible under WQARF, and is designed to be protective of public health and the environment. Pursuant to A.R.S. § 49-285, Remedial Action costs incurred by Pima County are deemed to be in substantial compliance with the rules and procedures adopted under WQARF.

13. In addition to any Deliverable required under this Consent Decree, for each quarter after the effective date of this Consent Decree, Pima County shall submit to ADEQ a Progress and Monitoring Report that (a) describes the actions which have been taken toward achieving compliance with this Consent Decree during the previous quarter including design, construction, permit applications filed and permits received or denied and any problems encountered or expected; (b) summarizes and analyzes the monitoring conducted by Pima County during the previous quarter; (c) summarizes groundwater pumping volumes, gradients maintained for containment, and total contaminant mass removed by the groundwater system and landfill gas extraction system; and (d) identifies all work plans and other deliverables required by this Consent Decree that were completed and submitted by Pima County or their agents during the previous quarter. All Progress and Monitoring Reports shall be submitted by Pima County to ADEQ no later than the last day of the calendar quarter following the quarter for which the report is submitted.

14. Any Remedial Action required by the State under this Consent Decree or as Additional Work as provided for under Paragraph 15, shall comply with the following:

A. The Remedial Action shall assure the protection of public health and the environment; to the extent practicable, provide for the control, management or cleanup of hazardous substances so as to allow the maximum beneficial use of the waters of the State; and be reasonable, necessary, cost-effective, and technically feasible.

B. To the extent authorized by law for remediation of soil, a Remedial Action shall be consistent with the soil remediation standards adopted pursuant to A.R.S. § 49-152 and any Remedy Rules adopted by the State.

C. For remediation of waters of the State, a Remedial Action shall address, at a minimum, any well that at the time of the State's 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. The specific measures to address any such well shall not reduce the supply of water available to the owner of the well.

D. In selecting a Remedial Action, the Director of ADEQ shall consider the following factors:

1. Amount, concentration, hazardous properties, environmental fate, such as the ability to bio-accumulate, persistence, and probability of reaching the waters of the State, and the form of the substance present.
2. Physical factors affecting human and environmental exposure such as hydrogeology, climate, and the extent of previous and expected migration.
3. The extent to which the amount of water available for beneficial use will be preserved by a particular type of remedial action.
4. The technical practicality and cost-effectiveness of alternative remedial actions applicable to the WQARF Site.

E. To the extent authorized by law, the Director of ADEQ 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 and A.R.S. § 49-282.06.

F. The ADEQ Director's approval of a Remedial Action does not affect the classification of an aquifer.

G. Nothing in this Consent Decree shall prevent the Director of the Arizona Department of Water Resources from waiving its applicable permits, approvals, or authorizations if the Director of Water Resources determines that the permit, approval, or other authorization unreasonably limits the completion of a Remedial Action and if the waiver does not conflict with the statutory intent of the permit, approval, or other authorization.

#### **IX. ADDITIONAL WORK**

15. It is the intent of the Parties that Pima County will undertake all Work necessary

to implement the Remedial Action Plan to be adopted by ADEQ following the Record of Decision for the entire WQARF Site, as the Remedial Action Plan applies to the County Response Area. The Parties acknowledge that the Scope of Work to be implemented pursuant to Section VIII contains a description of Work that is likely to be required of Pima County by the Remedial Action Plan and the Record of Decision, but which Pima County will implement as an Early Response Action. The Parties further acknowledge that it is possible Additional Work may be necessary to perform all Work required to implement the Record of Decision and the Remedial Action Plan as they apply to the County Response Area. The Parties acknowledge that it may be necessary for Pima County to perform Work outside the County Response Area to fully implement the Remedial Action Plan and the Record of Decision as they apply to the County Response Area. Any Work necessary to implement the Record of Decision and the Remedial Action Plan as they apply to the County Response Area, but which is not described in the Scope of Work shall be Additional Work to be performed Pima County. Any Work performed by the County outside the County Response Area to fully implement the Remedial Action Plan and the Record of Decision as they apply to the County Response Area shall be limited to an aggregate of \$1,000,000.00.

A. ADEQ shall determine if and when Additional Work to be performed by Pima County is necessary after the adoption of the Remedial Action Plan and the Record of Decision. In the event the State determines that Additional Work needs to be performed by Pima County, in order to fully implement the Remedial Action Plan and the Record of Decision for the County Response Area, the State shall provide in writing to the County any request for Additional Work. The written notification to Pima County shall provide an explanation of the necessity for such Additional Work under the Remedial Action Plan or the Record of Decision.

B. Upon receipt of such written request from the State, Pima County may invoke the dispute resolution provisions contained in Section XXVII ("Dispute Resolution") of this Consent Decree prior to the performance of such Additional Work to determine whether such Additional Work meets the requirements of this Section, is reasonable and necessary, and is consistent with the Remedial Action selection criteria in Paragraph 14 of Section VIII.

C. If it is reasonable to anticipate the Additional Work would require Pima

County to expend more than three hundred thousand dollars (\$300,000.00) within twelve months after the receipt of the written request and it is not within the then current budget of Pima County to perform such Additional Work, Pima County may notify the State in writing that such expenditure is outside the current funding available in its budget and delay implementation of the Additional Work until such funding is available. Any such delay shall not cause the beginning of the Additional Work to commence more than twelve (12) months after the date of the original request by ADEQ to Pima County for the Additional Work.

D. Pima County shall not be required to perform any Additional Work outside the geographical boundaries of the County Response Area unless such Additional Work is necessary to implement the Remedial Action Plan and the Record of Decision within the County Response Area.

16. Any Additional Work performed by Pima County under this Section shall be approved by the State and shall be deemed reasonable and necessary under WQARF and in substantial compliance with the rules and procedures adopted thereunder. Such Additional Work shall be completed by Pima County in accordance with the standards, specifications, and schedules approved by the State.

#### **X. ASSUMPTION OF THE WORK**

17. In the event the State determines Pima County has failed to implement or complete a portion of the Work described in this Consent Decree in accordance with the specifications and time schedules set forth in this Consent Decree, for reasons not deemed a Force Majeure under Section XXV, or has proceeded in a manner that is in violation of State or Federal statutes or rules, the State may assume the performance of any or all of the Work at the County Response Area as the State may deem necessary.

18. Except where necessary to address an emergency that endangers the public health or the environment, the State shall provide Pima County with thirty (30) Days advance notice of intent to perform a portion of or all of the Work. The State's notice of intent shall be in writing and shall set forth the State's reasons for assuming the portion of the Work in question. If Pima County objects to the State's assumption of the Work, such objection shall be in writing and provided to the State within ten (10) Days of receipt of the State's notice of intent to assume the Work. During the thirty (30) Day notice period, the State shall meet with Pima County and

attempt to resolve the issues of concern. If the State determines that its concerns will be resolved satisfactorily, the State shall withdraw, in writing, its notice of intent to perform a portion of or all of the Work.

19. If, at the end of the thirty (30) Day notice period, the State determines and provides written notice to Pima County setting forth the basis for its conclusions, that its concerns will not be resolved satisfactorily, the State may assume the performance of any portion of the Work.

20. Pima County shall be liable for the cost of the Work performed by ADEQ which is reasonable and necessary under WQARF. Additionally, Pima County shall be liable for an assumption of work penalty to be calculated as determined pursuant to Section XXVIII ("Stipulated Penalties"). The State shall make a determination of the costs that shall be reimbursed, and shall notify Pima County with a written notification of the determination.

21. Pima County may invoke the dispute resolution provisions contained in Section XXVII ("Dispute Resolution") of this Consent Decree within 30 Days after the State provides Pima County with the notice identified in Paragraph 18. However, invoking the dispute resolution proceedings shall not stay the State's right to perform the Work or to be compensated for Work performed. If the dispute resolution process determines that Pima County has not failed to implement or complete a portion of the Work required by this Consent Decree and assumed by the State or has not proceeded in a manner that is in violation of State or Federal statutes or rules, Pima County shall not be liable for the assumption of the work penalty and Pima County shall resume performance of the Work.

#### **XI. ENDANGERMENT AND EMERGENCY RESPONSE**

22. In the event performance of the Work causes or threatens to cause the release of hazardous substances which may present an emergency that endangers the public health or the environment at or from the County Response Area, Pima County shall comply with all applicable statutory reporting requirements relating to the release and take appropriate action in response to that release. Any required release report also shall be reported by Pima County and shall include all action taken in response to the release to the State Project Coordinator orally as soon as practicable but no later than two Working Days and in writing within ten Working Days after the required report is made.

23. If as a result of a release subject to this section ADEQ determines that an

imminent and substantial danger to public health or the environment exists and ADEQ determines that additional actions are required by Pima County to respond to that release, ADEQ may request in writing that Pima County undertake those actions. The request shall state the specific actions being requested and the reasons for those actions. If Pima County does not object to the request, it shall perform the requested actions. If the requested actions would result in Pima County incurring additional costs the provisions of Paragraph 15.C shall apply. If Pima County does not object to the request, but declines to immediately undertake the specific actions requested by ADEQ as a result of the provisions of Paragraph 15.C, ADEQ may elect to take such actions and the provisions of Paragraph 24 shall apply to any actions taken by ADEQ. If Pima County objects to the request, it shall state such objection in writing and provide it to the State within five (5) Days of receipt of the request. If the State determines that the objections are valid, then it shall withdraw its request. If the State denies the objections, it may take an appropriate Remedial Action.

24. Pima County shall reimburse ADEQ, upon demand, for the reasonable and necessary cost of any Remedial Action taken by ADEQ under this Section. In addition, Pima County shall be liable for an emergency response penalty to be calculated pursuant to Section XXVIII ("Stipulated Penalties"). The State shall make a determination of the costs that shall be reimbursed and shall notify Pima County with a written notification of the determination. Nothing contained herein shall in any way limit the State's ability to pursue further actions against Pima County in those instances where the release results in violation of an existing permit.

25. If ADEQ determines that the danger to the public health or the environment from the release or threatened release of a hazardous substance is such that it is impracticable to follow the procedures in Paragraph 23, ADEQ may take such actions as it determines are reasonable and necessary to prevent, abate or minimize such release or endangerment. If ADEQ takes action pursuant to this Section XI, Pima County shall reimburse ADEQ, upon demand, for the reasonable and necessary costs of the Remedial Action. In addition, Pima County shall be liable for an emergency response penalty to be calculated pursuant to Section XXVIII ("Stipulated Penalties").

26. Pima County may invoke the Dispute Resolution provisions contained in Section XXVII ("Dispute Resolution") of this Consent Decree within thirty (30) Days after the State

notifies Pima County of its cost determination. However, invoking the dispute resolution proceedings shall not stay the State's right to take action.

## **XII. EFFICACY OF THE WORK**

27. Notwithstanding any approvals which may be granted by the State or other governmental entities in connection with the Work performed under this Consent Decree, and in accordance with the Arizona Constitution and the provisions of A.R.S. § 12-820.02(5), no warranty of any kind is provided by the State as to the efficacy of the Work performed by Pima County under the terms of this Consent Decree.

## **XIII. RESPONSE AUTHORITY**

28. Nothing in this Consent Decree shall be deemed to limit the State's response or removal authority under CERCLA, 42 U.S.C. §§ 9601 *et seq.* or under A.R.S. Title 49, or other environmental laws or limit the authority of any State agency or governmental unit as authorized by law.

## **XIV. PERMITS**

29. The implementation of the Work required by this Consent Decree may require the issuance of governmental permits, authorizations or orders or environmental impact assessments or statements (hereinafter referred to as "Permit"), by State agencies, or other governmental bodies. This Consent Decree is based upon the expectation that the terms and conditions of any necessary Permits will be issued consistent with the Work required by this Consent Decree. This Consent Decree is not and shall not be construed to be a permit issued pursuant to any statute or regulation.

30. Pima County shall notify the State of all Permits which are needed to implement the Work required by this Consent Decree as soon as they become aware of the need for the Permit. Pima County is obligated to obtain all required Permits for the Work; however, the State may, as it deems appropriate in its sole discretion, assist Pima County in obtaining any Permit. Pima County shall provide the State with a copy of all such Permit applications at the time that the application is submitted to the governmental body issuing the Permit.

31. Pursuant to A.R.S. §49-290, the Director of ADEQ may waive, as a matter of enforcement discretion, any regulatory requirement adopted pursuant to A.R.S. Title 49 with respect to the WQARF Site or a portion of the WQARF Site if that requirement conflicts with the implementation of the Work or any Additional Work, provided that the waiver does not

result in adverse impacts to public health or the environment. No waiver may be granted under this Paragraph if it is prohibited by federal law or if the waiver would jeopardize the continued delegation to the State of authority to implement a federal environmental program.

32. If a Permit is required and denied, or is issued or is renewed in a manner which is materially inconsistent with the requirements of this Consent Decree, Pima County shall either request a waiver of the permit requirement pursuant to Paragraph 31 of this Section or notify the State of an intention to propose modifications to this Consent Decree. Notification by Pima County under this Paragraph shall be submitted within fifteen (15) Days of receipt by Pima County of notification that (1) a Permit will not be issued; (2) a Permit has been issued or reissued in a manner inconsistent with this Consent Decree; or (3) a final judicial determination with respect to issuance of a Permit has been entered. Within thirty (30) Days from the date Pima County submits the notice of intention to modify the Consent Decree, Pima County shall submit to the State the proposed modifications to this Consent Decree with an explanation of the reasons in support thereof.

33. The State shall review and approve or disapprove the request of Pima County for a waiver of the regulatory requirement or proposed modifications to this Consent Decree. If Pima County proposes modifications prior to a final judicial determination of any appeal taken on a Permit needed to implement this Consent Decree, the State may elect to delay review of the proposed modifications until after such final judicial determination is entered. If the State elects to delay review, Pima County shall continue implementation of this Consent Decree as provided in Paragraph 34 of this Section.

34. During any judicial review of any Permit needed to implement this Consent Decree or during review of any of the proposed modifications as provided in Paragraph 33 above, Pima County shall continue to implement those portions of this Consent Decree which are not subject to the judicial proceeding or review.

#### **XV. SAMPLING AND DATA AVAILABILITY**

35. Upon request by the State, Pima County shall submit to ADEQ copies of all original laboratory results and reports and all sampling and/or tests or other data obtained or generated by or on behalf of Pima County with respect to the County Response Area with respect to the Work performed under this Consent Decree and performed pursuant to the remedial investigation in its possession or control or that of its contractors or agents. In addition,

Pima County shall make available to the State for inspection and shall provide copies, within ten (10) Working Days of any written request, any other document relating to or associated with the implementation of the Work required under this Consent Decree. Notwithstanding any provision of this Consent Decree, the State hereby retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under any applicable statutes or regulations. In addition, Pima County shall provide quarterly ground water monitoring reports to ADEQ providing information obtained from regular monitoring of all wells in and around the County Response Area necessary to monitor the plume and Pima County's remedial actions, without the necessity of ADEQ making a written request for such information.

36. Upon request from the State, Pima County shall provide information in its possession or control relevant to a release or threatened release of a hazardous substance or pollutant at the WQARF Site, or the liability of any person at the WQARF Site. Pima County shall also allow reasonable access by ADEQ and its agents to those records relevant to a release or threatened release of a hazardous substance or pollutant at the WQARF Site, or the liability of any person at the WQARF Site.

37. Under the provisions of A.R.S. §§ 49-203(B) and 49-288, the State explicitly reserves the right to observe the Work as it is performed. Upon request by the State, Pima County shall allow split or replicate samples to be taken by the State and/or its authorized representatives of any samples collected by Pima County or anyone acting on its behalf in performance of the Work. Similarly, upon request by Pima County, the State shall allow split or replicate samples to be taken by Pima County, of any samples collected by the State or anyone acting on the State's behalf pursuant to the implementation of this Consent Decree. Disposal of the residuals and samples collected pursuant to the Work Plan and this Consent Decree are the responsibility of Pima County and the State, respectively, and disposal shall be in accordance with all applicable federal and state requirements. Each Party shall be responsible for its own costs of disposal of residuals and samples. The State shall make available to Pima County for inspection laboratory results and reports and/or other data pertaining to any such samples collected by the State.

38. Pima County may assert that certain documents, records and other information are privileged or are otherwise confidential under the attorney-client privilege, the attorney work

product doctrine or any other privilege recognized by any applicable State or Federal law or the common law. If Pima County asserts such a privilege in lieu of providing documents, Pima County shall provide the State with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record or information; (4) the name and title of each addressee and recipient; (5) a general description of the subject matter (except where attorney-client privilege is claimed) of the document, record, or information; and (6) the privilege asserted by Pima County.

If the State disputes the assertion of privilege, Pima County may invoke the "Dispute Resolution" process set forth in Section XXVII ("Dispute Resolution").

39. Should Pima County assert that a request for information from the State is improper in that it requests information that Pima County believes to be irrelevant or overly burdensome, it shall be Pima County's burden to demonstrate that the State's request is improper. In determining what constitutes an unreasonable burden, a Court shall consider whether the expense of complying with the proposed request for information outweighs the benefit, taking into account the needs of the State, the amount in controversy, the parties' resources, and the importance of the issues at stake. If the State disputes the assertion that requested information is irrelevant or overly burdensome, Pima County may invoke the "Dispute Resolution" process set forth in Section XXVII ("Dispute Resolution").

40. Pima County may assert business confidentiality claims covering the documents or information submitted to the State under this Consent Decree to the extent permitted by and in accordance with A.R.S. § 49-205. Documents or information determined to be confidential by the State will be afforded the protection specified. If no claim of confidentiality accompanies documents or information when they are submitted to the State or if the State has notified Pima County that the documents or information are not confidential under the standards of A.R.S. § 49-205, the public may be given access to such documents or information without further notice to Pima County. Should Pima County dispute the State's determination that the documents or information are not confidential, the public shall not be given access to such documents or information pending the "Dispute Resolution" process set forth in Section XXVII ("Dispute Resolution").

41. Under no circumstances shall a claim of privilege or confidentiality be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring,

hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the County Response Area which are generated or evaluated by the State or Pima County in the performance or oversight of the Work pursuant to this Consent Decree or any State approved work plan or sampling and analysis plan.

42. In no case shall any provision of this Consent Decree be determined to limit the rights of the State to request information pursuant to A.R.S. §49-288. Pima County further agrees to retain for a period of ten (10) years from the date of lodging of this Consent Decree any records within the possession or control or which come into the possession or control of Pima County and which relate to a release of hazardous substances at the WQARF Site or any Remedial Action related thereto. Pima County shall provide the State sixty (60) days advance written notice prior to destruction of such records. If requested, Pima County shall provide such records to the State in lieu of destruction.

**XVI. EASEMENT/NOTICE TO ADEQ AND SUCCESSORS IN INTEREST**

43. Upon request, Pima County shall grant ADEQ and its authorized representatives easements to provide access to the Property and to any property owned by Pima County or in which Pima County has an easement, license or other interest, in any portion of the WQARF Site, for purposes of ensuring compliance with this Consent Decree and for remedial measures authorized pursuant to A.R.S. Title 49, Chapter 2, Article 5 in connection with contamination at the WQARF Site. ADEQ agrees to provide reasonable notice to Pima County of the timing of remedial measures to be undertaken at the WQARF Site. Thereafter, each deed, title, or other instrument conveying Pima County's interest in the Property and to Pima County owned Parcels identified as tax parcel number 101-19-0020, 101-19-0030, 101-20-029B, 101-20-031G, 101-20-032F, 101-20-036E (all of which are located west of Interstate 10), as shown in Appendix 4, and to all Rights of Way and assignable easements in any portion of the WQARF Site, shall contain a notice stating that the property is subject to this Consent Decree. Pima County shall ensure that subsequent purchasers, assignees, successors in interest, lessees, and sublessees of any property referenced herein shall provide ADEQ with access to the portion of the property within their possession and control, for the purposes specified in Paragraph 43. Pima County shall ensure that a copy of the Consent Decree is provided to any current lessee or sub-lessee on any property referenced herein as of the effective date of this Consent Decree and shall ensure that any subsequent leases, subleases, assignments or transfers of any property referenced herein or an

interest in any Property referenced herein are consistent with this Section and Section IV ("Binding Effect") of this Consent Decree.

#### **XVII. TERMINATION OF EASEMENT**

44. If Pima County or successors in interest believe that the easements granted under Section XVI ("Easement/Notice to ADEQ and Successors in Interest") are no longer necessary to ensure compliance with this Agreement or A.R.S. Title 49, Pima County or its successors in interest, may request in writing that ADEQ agree to terminate the easements granted, provided, however, that the easements shall continue in force unless and until the party requesting such termination receives written agreement from ADEQ to terminate such provisions, which shall not be unreasonably withheld.

#### **XVIII. OWNERSHIP, ACCESS TO AND MAINTENANCE OF WELLS**

45. As of the date of this Consent Decree, Pima County owns the wells listed in Appendix 5. Each of the listed wells are within or bordering the El Camino del Cerro WQARF Registry WQARF Site, but some of the listed wells are outside the County Response Area. Pima County shall continue to own all of the wells listed at Appendix 5. However, Pima County hereby grants to the State access to each well listed in Appendix 5 for any purpose deemed necessary by the State to monitor the performance of Pima County pursuant to this Consent Decree, or to conduct any Remedial Actions which the State may determine are necessary for the entire WQARF Site. Pima County agrees to provide to the State any reasonable documentation evidencing the State's rights of access to the wells listed in Appendix 5 upon receipt of a written request by the State for such documentation.

46. The Parties acknowledge that it is important that the wells listed in Appendix 5 be maintained in good, serviceable condition until such time as the State and Pima County agree, in writing, that any specific well may be abandoned. No well listed in Appendix 5 may be abandoned by Pima County without the express written consent of the State, which such consent shall not be unreasonably withheld. If Pima County is granted permission to abandon a well, it shall do so in compliance with the provisions of A.R.S. § 45-594 and rules adopted pursuant thereto. If the Parties cannot agree on whether or not a well should be abandoned, Pima County may elect to utilize the Dispute Resolution provisions set out at Section XXVII ("Dispute Resolution") to resolve any such disagreement. Notwithstanding anything contained herein to the contrary, if ADEQ determines that a well is exacerbating the problems at the WQARF Site by

providing a potential vertical conduit for contamination to the groundwater, then the well shall be abandoned in compliance with the provisions of A.R.S. § 45-594. The Party primarily conducting sampling at a well shall be responsible for the cost of abandonment of the well. In the event the Party responsible for the cost of abandoning a well is not the owner of the well, the owner of the well shall cooperate in the execution and filing of any documents necessary to allow the abandonment of the well.

47. The Parties further agree that the Party primarily conducting sampling at a well shall be responsible for the maintenance of that well and all included hardware, including, but not by way of limitation, pumps and wellhead protection materials.

**XIX. QUALITY ASSURANCE, QUALITY CONTROL AND  
WORKER HEALTH AND SAFETY**

48. Pima County shall carry out the Work required by this Consent Decree in accordance with the quality assurance, quality control ("QA/QC") and WQARF Site health and safety plans and procedures set forth in the Work Plan.

**XX. COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS**

49. Except as provided in Section XIV ("Permits"), Pima County shall perform all activities under this Consent Decree in accordance with the requirements of all applicable federal and state laws and regulations. Activities conducted in compliance with this Consent Decree, feasibility study, and the other removal and Remedial Actions taken by Pima County with respect to the WQARF Site and costs incurred in the performance of such activities, shall be deemed reasonable and necessary under WQARF and, pursuant to A.R.S. § 49-285.B, shall be deemed in substantial compliance with the rules and procedures adopted thereunder.

**XXI. LIABILITY INSURANCE**

50. No Work shall be undertaken at the County Response Area, by a third party on behalf of Pima County, until Pima County has provided a certificate of insurance and a copy of the applicable comprehensive general liability insurance policies to the State showing the State

as an also insured.

## **XXII. REVIEW AND APPROVAL OF DELIVERABLES**

51. The procedure for review of any Deliverables, which are defined as any remedial action documents, design reports, work plans, construction documents, performance monitoring reports, or any other documents that are required to be submitted to and reviewed by the State pursuant to Section VIII ("Work To Be Performed") or Section IX ("Additional Work") shall be as follows:

A. Pima County may submit a draft of any Deliverable to ADEQ for review and comment prior to requesting approval of the Deliverable. Pima County shall notify ADEQ when a submittal is the Deliverable for approval by ADEQ. Except as otherwise provided by this Consent Decree, the State, after reasonable opportunity for review and comment, shall notify Pima County in writing of its (1) approval, or (2) disapproval and required modification of the Deliverable. The State acknowledges the importance of completing the Work in a timely manner and shall strive to review and approve or disapprove each Deliverable within sixty (60) Days of the State's receipt of the Deliverable. Pima County recognizes that ADEQ may not always be able to respond within sixty (60) days, particularly in those instances where ADEQ requests input from a Community Advisory Board or other interested parties. In the event the Deliverable is approved, it shall become an integral and enforceable part of this Consent Decree. In the event the Deliverable is disapproved, in whole or in part, the State shall explain to Pima County in writing, why the Deliverable is being disapproved. A thirty (30) Day resolution period shall be available from receipt of written notice of such disapproval for purposes of resolving any differences of opinion between Pima County and the State

concerning the Deliverable.

B. If a Deliverable has been disapproved, Pima County shall have sixty (60) Days after receipt of the State's written notice of disapproval to revise the Deliverable to make any modifications and to resubmit the Deliverable, or to invoke Dispute Resolution. In correcting the disapproved Deliverable, each modification shall be separately listed and addressed. During said revision period, appropriate personnel from the State will be available to Pima County to explain any specific modifications noted by the State. A revised Deliverable submitted in accordance with the time period in this Paragraph shall be deemed to be a timely submission of the original Deliverable.

C. The State, after reasonable opportunity for review and comment, shall notify Pima County in writing of its (1) approval, or (2) disapproval of the revised Deliverable. The State shall strive to review and approve or disapprove each revised Deliverable within thirty (30) Days of the State's receipt of the revised Deliverable. In the event that the revised Deliverable is disapproved, Pima County may initiate the Dispute Resolution process set forth in Section XXVII ("Dispute Resolution").

D. If Pima County is unable to perform any activity or submit any document or other Deliverable within the time required under this Consent Decree, Pima County may request, in writing, an extension of the time specified. In the event Pima County is unable to make a timely written request for extension in writing, Pima County is permitted by this Consent Decree to make a verbal request to the State. Written Confirmation of the verbal request shall be submitted by Pima County within two (2) Working Days. Any request or confirmation shall set forth a justification for the delay.

E. If the State allows an extension, it will specify a new schedule in writing.

Pima County shall comply with the new schedule. In the event the State does not grant the extension, Pima County may initiate Dispute Resolution as set forth in Section XXVII ("Dispute Resolution").

### **XXIII. PROJECT COORDINATORS**

52. The State and Pima County shall designate Project Coordinators for the purpose of overseeing the performance of the Work and coordinating communication between Pima County and the State with respect thereto. To the maximum extent possible, communications between Pima County and the State concerning the performance of the Work shall be directed through the Project Coordinators. The name and address of the State's Project Coordinator is as follows:

Michael Romero  
Arizona Department of Environmental Quality  
Southern Regional Office  
400 W. Congress Street, Suite 433  
Tucson, Arizona 85701

The name and address of Pima County's Project Coordinator is as follows:

Dave Eaker  
Technical Programs Manager  
5301 W. Ina Road  
Tucson, Arizona 85743

53. The State Project Coordinator shall have the authority to: (1) direct that the Work stop whenever the State Project Coordinator determines that activities at the County Response Area may create an imminent and substantial danger to public health or the environment, and (2) request or authorize field modifications in the techniques, procedures or designs utilized in performance of the Work if such field modifications are reasonable and necessary and consistent with the remedial selection criteria in Section IX ("Additional Work") of this Consent Decree.

Subject to the provisions of Section XI ("Endangerment and Emergency Response"), Pima County may invoke the Dispute Resolution provisions of Section XXVII ("Dispute Resolution") prior to the performance of any field modifications requested by the State Project Coordinator. Any field modifications requested by the State Project Coordinator and undertaken by Pima County shall be binding upon the State. Any field modifications may be approved orally by both the State Project Coordinator and Pima County's Project Coordinator. Any orally approved modification shall be memorialized in writing by Pima County's Project Coordinator and submitted to the State within three (3) Working Days after oral approval by the State Project Coordinator.

54. Upon the giving of reasonable notice, the State Project Coordinator, and/or an authorized representative, shall have the authority to review and/or copy files and documents relevant to this Consent Decree, except for those files and documents determined to be privileged pursuant to Paragraph 38.

55. The State or Pima County may designate new Project Coordinators upon providing notice to the parties as provided in Paragraph 106 ("Notice") of this Consent Decree.

#### **XXIV. MODIFICATION**

56. The State and Pima County recognize that information or data gathered or events which occur during the performance of the Work required by this Consent Decree, may indicate that: (1) different activities from those set forth in the approved Deliverables, not including the activities covered by Section XI ("Endangerment and Emergency Response") and Section XIII ("Response Authority"), or (2) changes to any approved sampling protocol or schedule, or (3) modification to Work schedules (collectively and individually called "Modifications"), are either appropriate or necessary to accomplish the purposes of this Consent Decree.

57. Except as provided in Paragraph 58 below, if a Modification to the Work provided for in this Consent Decree is either appropriate or necessary to accomplish the purposes of this Consent Decree, or in response to new information or changed circumstances, then either the State or Pima County, as appropriate, shall propose to the other Party or Parties, in writing a description of the proposed Modification. The request for a Modification shall be made reasonably in advance of the proposed implementation of the Modification. Such proposed Modification shall not be implemented prior to written approval from the State Project Coordinator. Such approval shall not be withheld unreasonably.

58. If a Modification is proposed as a result of unexpected conditions in the field or laboratory, and time is of the essence, the Modification may be orally proposed to and approved by the State Project Coordinator or his/her designee. Oral approval shall be required prior to implementation of the proposed Modification. Any such approved Modification shall be memorialized in writing by Pima County's Project Coordinator and transmitted to the State within three (3) Working Days after oral approval by the State Project Coordinator.

59. Any Modification pursuant to this Consent Decree shall be memorialized in writing and will constitute a Modification of this Consent Decree without the need for approval of the Court so long as the Modification falls within the scope of the Record of Decision. If additional time will be needed to complete an activity because of a Modification, the relevant time frames will be extended to reflect the time required to perform the activity required by the Modification.

60. The State Project Coordinator shall approve or disapprove all proposed Modifications. The State Project Coordinator's decision shall be made in writing and provided to Pima County. Pima County may invoke the Dispute Resolution process pursuant to Section

XXVII ("Dispute Resolution") in response to the decision.

#### **XXV. FORCE MAJEURE**

61. The performance of the requirements of this Consent Decree according to the time limits set out in the Consent Decree and referenced supporting documents shall be excused if it is prevented or delayed by events which constitute a Force Majeure or is excused by written agreement between the State and Pima County. The State's refusal to provide a written agreement is not subject to Dispute Resolution pursuant to Section XXVII ("Dispute Resolution").

62. For purposes of this Consent Decree, "Force Majeure" is defined as any event arising from causes beyond the reasonable control of Pima County or authorized representatives (including contractors, subcontractors or consultants) which delays or prevents the timely performance of any obligation under this Consent Decree, and which could not have been overcome or prevented by the reasonable diligence of Pima County or its representatives. For purposes of this Consent Decree, events which may constitute a Force Majeure include, without limitation, events such as acts of God; war; civil commotion; unusual severe weather; labor difficulties; shortages of labor, materials or equipment; government moratorium; judicial orders; delays in obtaining necessary Permits due to action or inaction by the State, federal government or third parties; unreasonable delays by ADEQ in reviewing Deliverables pursuant to Section XXII ("Review and Approval of Deliverables"), and earthquake, fire, flood, or other casualty. The requirement that Pima County or its representatives exercise "reasonable diligence" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any potential Force Majeure event (1) as it is occurring and (2) following the potential Force Majeure event, such that the delay is minimized to the extent practicable. While an

increase in costs may be associated with a Force Majeure, an increase in costs is not itself a Force Majeure.

63. A Force Majeure shall not include: (1) increased costs or expenses of any of the Work to be performed under the Consent Decree, unless such increased costs or expenses arise as a result of a Force Majeure event described in Paragraph 62 above, or (2) the failure of Pima County to make timely application for any required Permits or approvals, or to provide all required Permit information in a timely manner, unless such failure to make timely application or provide information arises as a result of a Force Majeure event described in Paragraph 62 above.

64. Pima County shall have the burden of proving by a preponderance of the evidence that any delay is or will be a Force Majeure event and that the duration of the requested delay is necessary to compensate for the event.

65. In the event of a Force Majeure, the time for performance of the activity delayed by the Force Majeure shall be extended for the minimum time necessary to allow completion of the delayed activity but in no event for a period longer than the period of the delay attributable to the Force Majeure or such additional time necessitated by the Force Majeure. The time for performance of any activity dependent on the delayed activity shall be similarly extended; however, an extension of the time for performance of the obligations affected by the Force Majeure event shall not, of itself, extend the time for performance of any other unrelated obligation.

66. In the event Pima County discovers an event which it believes is a Force Majeure, Pima County shall orally notify the State Project Coordinator as soon as reasonably possible, but in no event later than five (5) Working Days after Pima County becomes aware of the occurrence

of such event. Pima County also shall notify the State, in writing, no later than seven (7) Working Days after oral notification is due under this Subsection. Written notification shall include an explanation of the anticipated length and cause of the delay, why the event meets the requirements of a Force Majeure under this Section, which of the tasks, to the extent known at the time, are directly affected by the delay, the timetable by which Pima County intends to implement mitigation measures, and, as appropriate, all information supporting Pima County's position that the event constitutes a Force Majeure. Failure to comply with these notice requirements to the State, except for reasonable cause shown, shall constitute a waiver of any claim that an event constitutes a Force Majeure under this Consent Decree.

67. Within ten (10) Working Days following receipt of the written notice described in Paragraph 66, the State Project Coordinator shall advise Pima County in writing whether the State deems the event to constitute a Force Majeure, and if so, shall also advise Pima County of the appropriate modification to the schedule for the Work to be performed. Failure to comply with this notice requirement, except for reasonable cause shown, shall constitute a waiver by the State of any claim that an event does not constitute a Force Majeure under this Consent Decree. No deadline shall be extended beyond that period of time which is necessary to complete the activities.

68. If the State and Pima County do not agree as to whether an event constitutes a Force Majeure, what schedule modification is appropriate, or what constitutes reasonable cause for not giving a timely or complete notice of a Force Majeure event, the dispute shall be resolved by the Dispute Resolution procedures outlined in Section XXVII ("Dispute Resolution") of this Consent Decree. In any such proceeding, Pima County shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused

by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that reasonable best efforts were exercised to avoid and mitigate the effects of the delay, and that Pima County complied with the requirements of Paragraphs 62 and 66, above. If Pima County meets this burden, the delay at issue shall be deemed not to be a violation by Pima County of the affected obligations of this Consent Decree identified to the State or the Court. If an event for which Stipulated Penalties may be imposed is determined to not be a Force Majeure, delays in meeting deadlines for Work arising from such event may be subject to Stipulated Penalties.

#### **XXVI. INDEMNIFICATION**

69. Pima County shall defend and indemnify the State, its officials and agents, and hold the State harmless from any claims arising from any injuries or damages to personal or real property resulting from the acts or omissions of Pima County, including the acts or omissions of its officers, governing bodies (or any member thereof), its employees, agents, successors, assignees, contractors, subcontractors or any other person acting on their behalf in the performance of the Work. Further, Pima County agrees to pay the State all costs it incurs including, but not limited to, attorneys' fees and other expenses of litigation up to the time Pima County receives notice of the claim and assumes the defense and ultimate resolution of all such claims. Nothing in this Section requires the State to seek indemnity. In its sole discretion, the State may waive this Section and defend itself.

70. The State shall notify Pima County promptly after receipt of notice by the State of such a claim and shall allow Pima County to assume the defense of such claim. Any attorneys' fees and other expenses of litigation incurred by the State from and after the time Pima County assumes the defense of any such claim shall be borne solely by the State and shall not be subject

to this indemnification. Pima County agrees to indemnify, defend, and hold harmless the State from and against all claims, losses, liability, costs, or expenses (including reasonable attorney's fees) arising out of bodily injury of any person (including death) or property damage, but only to the extent that such claims which result in vicarious/derivative liability to the State are caused by the act, omission, negligence, misconduct, or other fault of Pima County, its officers, officials, agents, employees, or volunteers.

71. Nothing in this Consent Decree shall constitute a waiver of any right or rights of Pima County to proceed, to the extent allowed by law, against the State for claims arising from any injuries or damages to personal property resulting from the State's acts or omissions or the acts or omissions of the State's employees, agents, successors, assigns, contractors, subcontractors or any person acting on the State's behalf in connection with the Work.

72. Payments under this Section shall be due within thirty (30) Days of Pima County's receipt of a final judgment and appropriation by Pima County's Board of Supervisors.

## **XXVII. DISPUTE RESOLUTION**

73. General Provisions.

A. The dispute resolution procedures included in this Section shall be the exclusive mechanism to resolve disputes between Pima County and ADEQ arising under this Consent Decree.

B. In the event of a dispute, Pima County shall continue the undisputed activities required by this Consent Decree to the fullest extent possible pending resolution of the dispute.

C. In the event that the State and Pima County cannot resolve a disagreement arising under the Consent Decree, the interpretation advanced by the State shall be

considered binding unless Pima County invokes the dispute resolution provisions of this Section.

D. Pima County's decision to invoke dispute resolution shall not constitute a Force Majeure under Section XXV ("Force Majeure"). Also, Pima County's decision to invoke dispute resolution shall not stay the provisions of Section XXVIII ("Stipulated Penalties") except for performance requirements directly related to the disputed issues. Pima County shall not be obligated to pay stipulated penalties if it prevails under the Dispute Resolution procedures, except those penalties that accrued prior to initiation of the Informal Dispute Resolution Procedure contained in this Section.

74. Informal Dispute Resolution Procedure.

A. All disputes arising under this Consent Decree between the State and Pima County are subject to the Informal Dispute Resolution Procedure.

B. The State and Pima County shall first attempt to resolve any disputes concerning the Consent Decree expeditiously, using the Informal Dispute Resolution Procedure. To initiate the Informal Dispute Resolution Procedure, either Party shall first serve the other with a written notice of dispute. The notice shall briefly indicate the nature of the dispute.

C. The State shall maintain an administrative record of all disputes and it shall contain the written notification of such dispute, all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, the State may allow submission of supplemental documents and/or statements of position by

the parties to the dispute.

D. The informal negotiations period shall not exceed fifteen (15) Working Days from the day either Party receives written notice of the dispute, unless the State and Pima County agree in writing that there is a good faith anticipation that a resolution can be reached and agreed upon within a second fifteen (15) Working Day period. In any event, the total Informal Dispute Resolution period shall not exceed thirty (30) Working Days, unless the State and Pima County agree otherwise in writing.

E. Within five (5) Working Days after the expiration of the Informal Dispute Resolution period, the ADEQ Superfund Programs Section Manager ("Section Manager") shall issue a written final decision regarding the matter in dispute. If Pima County does not agree with the Section Manager's decision regarding the matter in dispute, Pima County may seek a review of the matter by the ADEQ Director of the Division of Waste Programs ("Division Director") as described in Paragraph 75 of this Section.

F. If a Petition requesting Formal Dispute Resolution is not filed pursuant to Paragraph 75 or if further Dispute Resolution is not available pursuant to Paragraph 75, the dispute shall be deemed resolved in accordance with the Section Manager's final decision, and Pima County may not obtain further administrative or judicial review of the dispute or the Section Manager's decision.

#### 75. Formal Dispute Resolution Procedure.

A. Pima County may invoke the Formal Dispute Resolution process only to resolve disputes arising under Sections IX ("Additional Work"), X ("Assumption of the Work"), XI ("Endangerment and Emergency Response"), XV ("Sampling and Data Availability"), XXII ("Review and Approval of Deliverables"), XXIV ("Modification"),

XXV ("Force Majeure"), XXVIII ("Stipulated Penalties") and XXIX ("Covenant Not to Sue").

B. In the event Pima County seeks Formal Dispute Resolution of the dispute, Pima County shall file, within fifteen (15) Days of receipt of the Section Manager's final decision described in Paragraph 74, subparagraph E, a written Petition for Formal Dispute Resolution with the Division Director which shall contain a Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by Pima County and a proposal for dispute resolution.

C. The Section Manager may respond to Pima County's Statement of Position, however, a Response is not required.

D. The Division Director shall issue a final decision resolving the dispute within thirty (30) Days of the date the Section Manager files a Statement of Position or within forty-five (45) Days of Pima County's Statement of Position whichever occurs first. The Division Director's decision shall be binding on Pima County unless the decision is one which may be appealed to court pursuant to Paragraph 76 of this Section and within ten (10) Days of receipt of the decision Pima County files with the Court and serves on the parties a Notice of Judicial Appeal.

#### 76. Judicial Appeal

A. Judicial review is available only after a decision has been issued by the Division Director and only in the following instances:

1. For a dispute that arises under the provisions of Sections XV

("Sampling and Data Availability") concerning claims of privilege and XXIX ("Covenant Not to Sue"); or

2. Where Pima County is required to pay stipulated penalties and/or where ADEQ has required Additional Work, Modifications to the Work Plan, or has assumed the work, and Pima County can demonstrate this combination of stipulated penalties and the cost of the Work will result in more than \$30,000 in additional cost to Pima County. It is the intent of this provision that ADEQ has sole authority to make all decisions involving the selection and implementation of the remedy selected for the WQARF Site and such authority is not subject to judicial review. However, in the event Pima County believes the Work ordered by ADEQ's is not reasonable and necessary, Pima County may initiate a judicial appeal, subject to the provisions of this subparagraph, to determine whether or not Pima County shall be required to pay the costs of any Work ordered by ADEQ. In making such a determination the court shall determine whether the Work ordered by ADEQ was reasonable and necessary. ADEQ shall reimburse Pima County for any Remedial Action Costs incurred by the County and determined by the court to not be reasonable and necessary.

B. Pima County may appeal those disputes listed in Paragraph 76, subparagraph A.1, by filing a Notice of Judicial Appeal setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The State may file a response to Pima County's Notice of Judicial Appeal.

C. Judicial review of any dispute arising under the provisions of this Consent Decree shall be based upon the administrative record of the dispute developed during the Informal and Formal Dispute Resolution Procedures supplemented by Pima County's Petition for Judicial Review and the State's Response. Pima County shall have the burden of proving by a preponderance of the evidence that the decision of the ADEQ Division Director was arbitrary, capricious and without a reasonable basis in law and fact.

### **XXVIII. STIPULATED PENALTIES**

77. Stipulated penalties shall apply to noncompliance with the requirements of this Consent Decree specified herein, unless the noncompliance is excused pursuant to the Force Majeure provisions of Section XXV, the Dispute Resolution provisions of Section XXVII, or is otherwise excused by ADEQ.

78. Stipulated penalties shall apply in the event the State determines Pima County has failed to implement or complete a portion of the Work described in this Consent Decree in accordance with the specifications and time schedules set forth in this Consent Decree, for reasons not deemed a Force Majeure under Section XXV, or has proceeded in a manner that is in violation of State or Federal statutes or rules.

79. In addition to Pima County paying for the cost of the Work performed by ADEQ and assumption of the County's responsibilities and work, a penalty to be calculated as ten percent (10 %) of the cost of the Work performed by ADEQ shall be paid by Pima County. The State shall make a determination of the costs that shall be reimbursed, the penalty amount, and shall notify Pima County with a written notification of the determination.

80. Pima County may invoke the dispute resolution provisions contained in Section

XXVII ("Dispute Resolution") of this Consent Decree within 30 Days after the State provides Pima County with the notice identified in Paragraph 18. However, invoking the dispute resolution proceedings shall not stay the State's right to perform the Work or to be compensated for Work performed. If the dispute resolution process determines that Pima County has not failed to implement or complete a portion of the Work required by this Consent Decree and assumed by the State or has not proceeded in a manner that is in violation of State or Federal statutes or rules, then Pima County shall not be liable for the assumption of the work penalty.

81. Stipulated penalties shall be paid by check payable to the Arizona Department of Environmental Quality - WQARF in the specified amount and addressed to:

Chief Financial Officer - Arizona Department of Environmental Quality  
Attn: Accounts Receivable  
1110 W. Washington Street  
Phoenix, AZ 85007

A copy of the check payable under this Section shall also be sent to the State Project Coordinator. The check shall identify this Consent Decree and the WQARF Site Code Number.

A. Stipulated penalties shall be paid within thirty (30) days of receipt of demand. The payment of stipulated penalties shall not alter in any way Pima County's obligation to complete the performance of the Work required under this Consent Decree.

B. If Pima County fails to pay stipulated penalties when due, the State may institute proceedings to collect the penalties, as well as interest at the rate specified in A.R.S. § 49-113(B). Interest on the unpaid balance shall accrue thirty (30) days after the date of demand.

C. Pima County shall be liable for attorneys' fees and costs incurred by the State to collect any penalties imposed pursuant to this Section.

82. In its sole discretion, ADEQ may provide Pima County with a cure period to

correct any deficiency in any submittal or Work. No stipulated penalty shall accrue during a cure period.

83. Pima County may dispute the State's right to stipulated penalties demanded pursuant to this Section in accordance with the dispute resolution procedures of Section XXVII ("Dispute Resolution")

**XXIX. COVENANT NOT TO SUE**

84. Subject to the limitations in A.R.S. § 49-292.B, upon the effective date of this Consent Decree the State covenants not to sue or take administrative action against Pima County for Covered Matters, conditioned upon fulfillment of Pima County's obligations under this Consent Decree. This covenant not to sue does not limit the State's right to pursue any other claims relating to or arising out of any other matters whatsoever against Pima County. Furthermore, nothing in this Consent Decree shall be construed as relieving any of Pima County's insurers of or from any obligations under policies issued to Pima County.

85. Nothing in this Consent Decree shall constitute or be construed as a covenant not to sue regarding any claim or cause of action against any person or other entity who is not a Party to this Consent Decree for any matter whatsoever. The State expressly reserves the right to bring any action against persons or entities whose liability, if any, is not resolved by this Consent Decree.

86. The State agrees that in reaching the terms of this Consent Decree it has relied on its own review of the merits of its claims against Pima County, and not on any representation or statement made by Pima County, or anyone representing or employed by Pima County. The State acknowledges that fulfillment by Pima County of all its obligations set out in this Consent Decree, in exchange for the benefits conferred upon Pima County under the provisions of this

Consent Decree, constitutes a fair and reasonable settlement of disputed claims under all the circumstances, and is in the public interest.

87. Upon the effective date of this Consent Decree, Pima County covenants not to sue the State for, and hereby releases the State from, each and every claim or item as to which Pima County may have regarding the WQARF Site.

### **XXX. CONTRIBUTION PROTECTION**

88. The entry of this Consent Decree shall constitute a judicially approved settlement which resolves Pima County's liability as to Covered Matters pursuant to A.R.S. § 49-292 and Section 113(f) of CERCLA, 42 U.S.C. § 9613(f). Pima County shall be entitled to contribution protection from contribution actions or claims from any other Party, person or entity making claims under WQARF (including A.R.S. § 49-287) or CERCLA (including Sections 107 and 113 thereof). The protection granted is to the maximum extent allowed by law. The protection conferred in this Section shall not be frustrated by use of non-CERCLA and non-WQARF theories seeking relief in the nature of cost recovery, contribution or indemnification.

89. Pima County's right to contribution protection under this Section shall apply to and be enforceable against all other persons and entities regardless of whether such persons and entities are Parties to this Consent Decree or parties in this action. The State is aware that potential third parties to this action exist and the State agrees, and the Court expressly finds, that this conferral of contribution protection on Pima County is in the public interest.

90. The State acknowledges that it has investigated potential claims against Pima County, and has sought and reviewed information from Pima County and other parties regarding the WQARF Site. The State expressly agrees, and the Court expressly finds, that this Consent Decree and settlement with Pima County was reached in good faith after arms-length

negotiations, is a fair settlement of the alleged liability of Pima County, and is in the public interest. Nothing in this Consent Decree is intended to constitute a determination of liability of any person under CERCLA or WQARF. Subject to all rights, releases, covenants and protections provided herein, nothing in this Consent Decree is intended to limit subsequent consideration of the liability or relative liability of any potentially responsible party in any administrative or judicial proceeding or to limit the exercise of any power of equitable apportionment by an allocator or a court under A.R.S. § 9-287.06 or A.R.S. § 49-285(F), or under 42 U.S.C. § 9613(f)(1).

### **XXXI. RESERVATION OF RIGHTS**

91. Notwithstanding compliance with the terms of this Consent Decree, including the successful completion of the Work to the State's satisfaction, Pima County is released from civil liability, if any, only for Covered Matters as defined in Section VI ("Definitions"). The State retains all authority and reserves all rights to take any and all response and/or enforcement actions authorized by law.

92. Notwithstanding any other provision in this Consent Decree, including the definition of "Covered Matters," the State expressly reserves the right to initiate legal action for matters not covered by this Consent Decree including, but not limited to, any matters excluded from the definition of "Covered Matters" in Section VI ("Definitions"); and for any activities subject to any requirements relating to water systems under the Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq., and Title 49, Chapter 2, Article 9. Subject to the provisions of Section VI, Paragraph E.10, the State expressly reserves any and all rights to initiate an action for damage to the State's natural resources, pursuant to Section 107 of CERCLA, 42 U.S. C. § 9607. The State expressly reserves the right to initiate legal action for criminal liability under any

local, state or federal statutes or regulations.

93. The State also expressly reserves the right to determine the Final Remedy for the WQARF Site according to the applicable criteria and the State expressly is not bound by virtue of this Consent Decree to select or approve a Final Remedial Action Plan that is the same as the Work approved or performed under this Consent Decree. In the event that the Final Remedial Action Plan is substantially different than the Work authorized by this Consent Decree, the additional or different tasks required by the Final Remedial Action Plan shall be treated as Additional Work and subject to the provisions of Section IX governing Additional Work.

94. The State recognizes that Pima County is entering into this Consent Decree as a compromise of disputed claims and Pima County hereby denies any and all legal or equitable liability under any Federal or State statute, regulation, ordinance or common law for any costs, penalties, or damages caused by or arising out of or relating to Covered Matters, or arising out of conditions at or arising from the County Response Area and nothing in this Consent Decree nor any action taken thereunder shall be construed as an adjudication of liability or an admission of fact or law.

95. Except as otherwise provided in this Consent Decree, Pima County hereby reserves all claims and rights and defenses, including, but not limited to, claims and rights of cost recovery, contribution, indemnification and all other claims against any and all persons or entities for costs incurred by Pima County in connection with the County Response Area for complying with the requirements of this Consent Decree, or for any liability arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, threatened release or disposal of any hazardous substance, pollutant or contaminant, or any hazardous or solid waste, found at, taken to or taken from the County Response Area. Nothing in

this Consent Decree shall be construed to benefit any person not a party to this Consent Decree, or operate to release them from their liability in connection with the County Response Area.

96. Except as otherwise provided, Pima County on behalf of themselves and the Other Covered Persons, reserve all rights and defenses to liabilities that they have under CERCLA, WQARF and common law.

97. Nothing in this Consent Decree is intended to waive, admit, reduce, preclude or otherwise affect any claims, rights, duties obligations, or defenses that Pima County may have, now or in the future, with respect to the County Response Area or Covered Matters.

98. The parties agree that should any party to this Consent Decree, after being given written notice and a reasonable opportunity to cure, fail to fulfill its duties and obligations under this Consent Decree to such an extent as to constitute a material breach of this Consent Decree, the breaching party shall be denied the benefits of this Consent Decree.

#### **XXXII. RETENTION OF JURISDICTION**

99. This court retains jurisdiction over both the subject matter of this Consent Decree and Pima County for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the parties to apply to the Court at any time for such further order, direction and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XXVII ("Dispute Resolution") hereof.

#### **XXXIII. SEVERABILITY**

100. If any provision of this Consent Decree, or application thereof, to any party or circumstance is declared by this Court or any other court to be invalid or unenforceable, the

Consent Decree is null and void. To this end, the provisions of this Consent Decree are not severable.

**XXXIV. EFFECTIVE DATE**

101. This Consent Decree and the obligations of the State and Pima County under it shall become effective upon the date that it is entered by the Court, unless it is stayed on appeal, in which case the effective date shall be the date upon which it is finally approved on appeal.

**XXXV. TERMINATION**

102. The obligation to perform the Work under the terms of this Consent Decree shall be deemed satisfied and terminated upon receipt by Pima County of written notice from the State that Pima County has demonstrated, to the satisfaction of the State, that all the requirements under this Consent Decree have been fulfilled.

**XXXVI. DISMISSAL OF CLAIMS**

103. Entry of this Consent Decree by the Court will constitute dismissal, on the merits, of all claims brought for Covered Matters or which could have been brought for Covered Matters against Pima County in this action by the State.

104. Entry of this Consent Decree by the Court will constitute dismissal, on the merits, of all claims brought for Covered Matters or which could have been brought for Covered Matters in this action by Pima County against the State.

105. Pima County agrees not to initiate any other claims relating to Covered Matters against allegedly liable parties, including any other defendants, persons, or entities, in this action or otherwise, either directly or by assignment, except in the event of failure of the contribution protection conferred on Pima County in this Consent Decree.

**XXXVII. NOTICE**

106. Unless otherwise provided herein, whenever, under the terms of this Consent Decree, any notification is to be forwarded by one Party to another, it shall be sent by regular mail or by facsimile or hand delivered to the Project Coordinator designated in Paragraph 52. The effective date of notification shall be five (5) days after the posted date if sent by regular mail, or on the date received if sent by facsimile or if hand delivered.

**XXXVIII. OTHER CLAIMS**

107. Nothing in this Consent Decree shall constitute or be construed as providing any release, covenant not to sue, contribution protection or dismissal of any claim to any person not a Party to this Consent Decree. Except as provided herein, the Parties expressly reserve the right to bring any action against persons and entities not Parties hereto.

**XXXIX. FULL AND COMPLETE AGREEMENT**

108. This Consent Decree shall constitute the complete settlement agreement between Plaintiffs and Pima County as to Covered Matters. Except as provided herein, no modification shall be made to this Consent Decree without written notification to and written approval of the Parties. The notification required by this Paragraph shall set forth the nature of and the reasons for the requested modification. Except as provided herein, no oral modification of this Consent Decree shall be effective. Nothing in this Paragraph shall be deemed to alter the Court's power to supervise or modify this Consent Decree.

109. This Consent Decree is in no way dependent on or contingent upon approval or enforcement of any other Consent Decrees.

**XL. RIGHTS IN EVENT OF FAILURE TO OBTAIN COURT APPROVAL**

110. If the State files a motion for entry of the Consent Decree after considering public comment pursuant to Paragraph 113 herein and the District Court approves this Consent Decree

in the exact form in which it is presented by the Parties, none of the Parties may appeal the District Court's decision. If the District Court will not approve this Consent Decree in the exact form in which it is presented by the Parties, or if a nonparty appeals or petitions and an appellate Court takes any action that has the effect of reversing the District Court's approval of this Consent Decree, the Consent Decree shall be null and void, and all Parties shall be relieved of all then outstanding obligations under this Consent Decree.

#### **XLII. SECTION HEADINGS**

111. The Section headings set forth in this Consent Decree are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Consent Decree.

#### **XLIII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT**

112. This Consent Decree shall be lodged with the Court to provide an opportunity for public review and comment before the Court enters the Consent Decree as a final judgment. Within fourteen (14) days of lodging, the County shall publish a "notice of availability for review and comment" two times in a statewide newspaper of general circulation, and provide notice to any other interested persons identified by the State prior to lodging of the Consent Decree. All comments shall be submitted to the Court and to all Parties. The public review and comment period shall run for thirty (30) days beginning on the date of the last publication of the notice of availability for review and comment. The State reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate or is not in the public interest.

113. The State shall either withdraw its consent or, together with Pima County jointly

move to enter this Consent Decree, within sixty (60) days from the first date the "notice of availability for review and comment" referred to in Paragraph 112 is published. Pima County consents to the entry of this Consent Decree without further notice if there is no modification of its terms.

**XLIII. BREACH OF AGREEMENT**

114. Should any Party fail to fulfill its obligations under this Consent Decree, any other Party may petition the Court for appropriate relief, which relief may but need not include declaring the Consent Decree to be null and void and thereby depriving the breaching party of some or all of the benefits conferred upon it by this Consent Decree.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 2003

THE STATE OF ARIZONA

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Stephen A. Owens, Director,  
Arizona Department of Environmental Quality  
and State Trustee for Natural Resources

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 2003

Pima County

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Chair, Pima County Board of Supervisors

IT IS SO ORDERED this \_\_\_\_\_ day of \_\_\_\_\_, 2003.

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Judge, United States District Court

Doc. No. 217966

## **Appendix Listing**

**Appendix 1 - Map of County Response Area**

**Appendix 2 - Legal Description**

**Appendix 3 - Scope of Work**

**Appendix 4 - Pima County Owned Property Described in Paragraph 43**

**Appendix 5 - Wells Owned by Pima County**

**Appendix 6 - Hydrology Report (May 2003)**

# APPENDIX 1

Insert Map

## **APPENDIX 2 LEGAL DESCRIPTION**

Parcel Number

101-20-031F

Property Address

3250 W. EL CAMINO DEL CERRO  
Tucson, Pima County, Arizona

Legal Description

PT OF W 520' OF SW4 SW4 & PT OF SE4 SW4 LYG E OF  
SANTA CRUZ RIVER 18.88 AC SEC 17-13-13

# APPENDIX 3

## EARLY RESPONSE ACTION

### SCOPE OF WORK

#### I. Background

- A. Pima County completed several early response actions prior to completing project RI/FS reports in 1999. Immediately after groundwater sampling data indicated that private wells along the I-10 Frontage Road Commercial Strip were impacted (1986), Pima County provided bottled drinking water to all the affected businesses. Further investigation compelled the County to construct an extension of public water service and provide hookups to all affected businesses. Subsequently (1989), the County purchased eight former water supply wells and took them out of service to ensure that no exposure existed. Later in 1989, the County imported several thousand yards of fill material and placed it over the CDC Landfill site to improve drainage of the landfill and prevent surface water from contacting the landfill materials.

In 1993, flooding in the Santa Cruz River began to undermine the existing bank protection along the western boundary of the CDC Landfill. The County designed and constructed a significant extension of the bank protection, twenty feet below the existing grade to protect the landfill from river flows. In 1994, the County collected a groundwater sample collected from the water supply well at the Acacia Gardens Mobile Home Park. The laboratory results indicated that select contaminants were present at concentrations below the drinking water standards. After ADEQ confirmed these results, the County designed and constructed a connection for the Park to the Tucson Water distribution system to prevent potential future exposures to contaminated drinking water.

In 1995, the County performed a pilot landfill gas mitigation test and constructed a portion of a landfill gas control system. After operating the system intermittently, it was determined that more landfill gas control wells within the waste mass were necessary. Nine gas wells were finally constructed and connected to the system by late 1998. The system was operated for nearly two years from mid 1999 through May, 2001. During the summer of 2001, the County conducted pressure tests to determine whether the landfill gas wells were influencing the vadose zone below the landfill. No discernable influence from these wells was found. Five deep soil vapor extraction (SVE) wells were constructed with screened intervals in the vadose zone beneath the waste mass in October, 2001. Piping from the existing blower system to the new deep SVE wells was completed in January, 2002 and deep soil vapor extraction was initiated in February, 2002.

- B. The scope of work for design and implementation of additional early response actions for the County Response Area, as identified in the feasibility studies for the groundwater and landfill operable units, shall be completed by Pima County. All required documentation shall be submitted to the Arizona Department of Environmental Quality (ADEQ) in accordance with Section VII of the Consent Decree. Any changes to the scope of work or the deliverables, described herein, shall be documented as follows:

- Minor Changes – Changes that have little or no effect on the remedial action objectives and should be recorded in a memorandum to ADEQ.
- Fundamental Changes – Fundamental changes occur when new information is gathered which indicates that a change in the remedial objectives are necessary.

## II. Early Response Action Objectives

The Early Response Actions to be performed by the County for the County Response Area shall be reasonable, necessary, cost effective, and technically feasible in accordance with ARS 49-282. Each action implemented shall be a component of the preferred alternatives identified in the feasibility studies, and associated addenda, for the Landfill and Groundwater Operable Units.

These alternatives were developed based on best available information at that time and include capping, drainage control, and gas control to meet the remedial objectives defined for the Landfill Operable Unit, and groundwater pumping and treatment to contain affected groundwater to meet the remedial objectives for the Groundwater Operable Unit as defined below:

The remedial action objectives as described in El Camino del Cerro Study Area Landfill Operable Unit Feasibility Study Report by Malcolm Pirnie (December 1997), Pima County Addendum to the El Camino Del Cerro Landfill Operable Unit Feasibility Study For the El Camino Del Cerro Water Quality Assurance Revolving Fund Site by Pima County Solid Waste Division (November 1999), Response Comments by Pima County Solid Waste Division to Review Comments provided by ADEQ for the Pima County Addendum to the El Camino Del Cerro Landfill Operable Unit Feasibility Study For the El Camino Del Cerro Water Quality Assurance Revolving Fund Site completed by Pima County Solid Waste Division (July 20, 2000) and Hydrology Report by RS Engineering (May 2003) are as follows:

- Inhibit infiltration of precipitation and/or surface water into the landfill materials,
- Reduce the mass of VOCs in the LFOU.
- Control the off-site migration and emissions of landfill gas in the subsurface and surface from the LFOU.

The remedial action objectives as described in the El Camino del Cerro Study Area Groundwater Operable Unit Feasibility Study Report by Malcolm Pirnie (August 1998), Pima County Addendum to the El Camino del Cerro Groundwater Operable Unit Feasibility Study for the El Camino del Cerro Water Quality Assurance Revolving Fund Site by Pima County Solid Waste Division (November 1999) and Response Comments by Pima County Solid Waste Division to Review Comments provided by ADEQ for the Pima County Addendum to the El Camino del Cerro Groundwater Operable Unit Feasibility Study completed by Pima County Solid Waste Division (July 20, 2000) are as follows:

- Prevent human exposure to groundwater containing VOCs in concentrations greater than chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs). For the VOCs of concern in the groundwater, the ARAR is the Safe Drinking Water Standards.

- Limit migration of VOC-contaminated groundwater.
- Reduce the mass and concentration of VOCs in the area of affected groundwater.
- Provide beneficial use of the treated water via non-potable consumptive uses and/or recharge of the local aquifer,
- Compliance with other ARARs associated with the remedial action.

### III. Early Response Action Implementation

After this agreement has been finalized, Pima County will begin the selection process to obtain the professional services necessary to implement early response actions necessary to meet the remedial action objectives stated in the feasibility studies, and their associated addenda, for the Landfill Operable Unit and the Groundwater Operable Unit.

#### *Landfill Operable Unit*

The remedial actions proposed for the Landfill Operable Unit consist of source and landfill gas control through operation of the existing vapor extraction system, and intermittent operation (if warranted) of the landfill gas system. Additionally, landfill cap and drainage improvements will be implemented. The schedule for the proposed work is illustrated in Figure 1. Any delays, in excess of the time allotted in Figure 1, caused by the Arizona Department of Environmental Quality (ADEQ), Arizona Department of Water Resources (ADWR), Citizens Advisory Board (CAB), or other regulatory agencies in the acquisition of approvals/permits which are beyond the control of Pima County shall result in an equal time extension to the project schedule.

The consultant selection process will be initiated immediately after the agreement has been finalized, requiring 180 days to complete. Subsequently, the technical workplan will be the first deliverable. The workplan will provide a much more detailed accounting of the work activities and schedules. The workplan may contain, as appropriate, the following:

- A. Site Management activities
- B. Emergency Response activities
- C. Sampling and Analysis activities
- D. Health and Safety Plan
- E. Quality Assurance Plan
- F. Listing of Design Documents
- G. Implementation Schedule

The technical workplan will be completed within 90 days after the procurement of professional services. The workplan will describe a two-phased approach addressing both the landfill capping and surface water drainage as well as landfill gas source control. The workplan will be submitted to ADEQ for review (60 Day Review).

Development of design and construction plans for capping and drainage control will begin after completion and approval of the workplan. An engineering and basis of design report will be completed in 135 days and submitted to ADEQ for review (60 Day Review). Following this review by ADEQ, a 75% design report will be prepared and submitted to ADEQ for review (60

Day Review). A timeframe of 60 days has been identified for completion of the 75% design report. Following receipt of comments from ADEQ, the U.S. Army Corps of Engineers 404 permit process will begin. Pima County will submit application for a 404 permit within 60 days.

However, no firm timeframe has been allotted for the completion of this task as it is controlled by an outside agency. After receipt of the necessary permits, a 100 % design report will be completed (60 days) and submitted to ADEQ for final review (60 Day Review). After receipt of comments from ADEQ along with Pima County's concurrence (60 Day Review) with the review comments and approval by ADEQ, construction plans and specifications will be prepared (90 Days). The County procurement process for system construction will require approximately 180 to complete. Construction of capping and drainage improvement is projected to be completed in 180 days. Within 90 days of completion of a remedial action for capping and drainage improvements, the County shall submit a completion report to ADEQ.

The second phase, landfill gas source control, will be in operation when the Consent Decree is finalized. Monitoring will occur on a quarterly basis and the landfill gas extraction system will be operated, as necessary, to ensure that perimeter methane concentrations does not exceed five percent. As mentioned earlier in this document, the landfill gas and deep SVE systems have been operational for several years. As a result, VOC concentrations have already diminished. After the technical workplan has been approved by ADEQ, the County will further evaluate source control through vapor extraction. The evaluation report will require 180 days to complete, at the end of which, a completion report will be prepared and submitted to ADEQ for review and approval.

#### *Groundwater Operable Unit*

The tasks and schedule for early response action implementation for the groundwater operable unit are presented in Figure 2. Any delays, in excess of the time allotted in Figure 2, caused by the Arizona Department of Environmental Quality (ADEQ), Arizona Department of Water Resources (ADWR), Citizens Advisory Board (CAB), or other regulatory agencies in the acquisition of approvals/permits which are beyond the control of Pima County shall result in an equal time extension to the project schedule.

The first task, after selecting the consultant, will be to prepare the technical workplan. The workplan will provide detail of the work activities and schedules for their completion. It is expected that the preparation of the workplan will be completed within 90 days after a contract has been obtained for said service (procurement process estimated to take 180 days). Upon completion of the prepared workplan, it shall be submitted to ADEQ for review. The workplan will contain, as appropriate, the following:

- A. Site Management activities
- B. Emergency Response activities
- C. Sampling and Analysis activities
- D. Health and Safety Plan
- E. Quality Assurance Plan
- F. Listing of Design Documents
- G. Implementation Schedule

Upon the completion of the workplan, two tasks will be performed concurrently, consisting of hydrologic evaluation and permitting. Hydrologic evaluation is necessary due to an approximate four year time period between the completion of the feasibility study and proposed implementation of the remedial actions. It is possible that groundwater conditions may have changed, requiring modification of the remedy proposed in the feasibility study. The hydrologic evaluation is anticipated to require 180 days to complete. As permitting activities are not exclusively dependant on the hydrologic evaluation, they will be initiated concurrently. The application for both a poor quality groundwater withdrawal permit and AZPDES permit will be completed within this 180 day period and submitted to the appropriate agency for review and issuance. Note that the timeframe required to receive either of these permits may require up to one year.

The design of the groundwater system will begin immediately after the hydrologic evaluation has been completed. A 75% design report will be prepared (90 days) and concurrently submitted to ADEQ and CAB for review (60 Day Review). Following receipt of comments from ADEQ and CAB, a 100% design report will be completed (60 Days) and submitted to ADEQ and the CAB for review. Upon completion of the reviews by ADEQ and the CAB (60 Days), along with Pima County concurrence with the review comments and approval by ADEQ, construction plans and specifications will be prepared. A 180 day timeframe has been identified for the development of said construction plans and specifications. The County procurement process for system construction will require approximately 180 to complete. System construction will begin immediately after bid selection, and is expected to be complete in 180 days. A construction report and an operation and maintenance plan will then be completed 90 days after completion of construction and will be submitted to ADEQ and CAB. System startup will begin after the Operations and Maintenance Plan is approved by ADEQ, CAB, and Pima County (90 days).

#### IV. Early Response Action Completion

At such time the Pima County believes that the actions have satisfied the remedial objectives for the County Response Area, as outlined herein, or the actions have achieved a steady state condition wherein further remedial activities would provide no significant benefit to human health or the environment, or the actions have met the WQARF objectives as defined in ARS 49-282, Pima County shall submit a Early Response Action Completion Report to ADEQ for review and consideration of a "no further action" determination in accordance with ARS 49-287.01.G.

**APPENDIX 4**  
Pima County Response Area

**APPENDIX 5  
WELLS OWNED BY PIMA COUNTY**

Pima County Installed/Owned Monitor Wells

CDC-W5  
CDC-W10  
CDC-W11  
CDC-W12  
CDC-W13  
CDC-W14  
CDC-W15D  
CDC-W16  
CDC-W17  
CDC-W18  
CDC-W19  
CDC-W20  
CDC-W21  
CDC-W22  
CDC-W23  
CDC-W24  
CDC-W25  
CDC-W26  
CDC-W27  
CDC-W28D

Purchased by the County and Converted to Monitor Wells

*(County Obtained Access Through Purchase Agreement)*

AZ Truck Service  
Jenks Café  
National Truck Stop  
Quality Truck Parts  
Sunset Plaza

**APPENDIX 6**  
**HYDROLOGY REPORT**  
*(May 2003)*