

APPENDIX C

REMEDIAL OBJECTIVES REPORT AND RESPONSIVENESS SUMMARY

# REMEDIAL OBJECTIVES REPORT

**Shannon Road/El Camino del Cerro  
WQARF Site  
Tucson, Arizona**



**March 2015**

**Prepared by  
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## ACRONYMS

A.A.C.	Arizona Administrative Code
A.R.S.	Arizona Revised Statutes
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AWQS	Arizona Aquifer Water Quality Standard
bgs	below ground surface
CAB	Community Advisory Board
COCs	Contaminant of Concern
DEUR	Declaration of Environmental Use Restriction
LWUS	Land and Water Use Study
MCL	Maximum Contaminant Level
MDWID	Metropolitan Domestic Water Improvement District
mg/kg	milligrams per kilogram
PCE	tetrachloroethene, tetrachloroethylene, Perc
RI	Remedial Investigation
RO	Remedial Objective
SRL	Soil Remediation Level
SR/ECDC	Shannon Road/El Camino del Cerro
TCE	trichloroethene, trichloroethylene
WQARF	Water Quality Assurance Revolving Fund

## 1.0 INTRODUCTION

The Arizona Department of Environmental Quality (ADEQ) has prepared this Remedial Objectives (ROs) Report for the Shannon Road/El Camino Del Cerro (SR/ECDC) Water Quality Assurance Revolving Fund (WQARF) site (Site) in Tucson, Arizona.

The ROs for the Site were developed as required by Arizona Administrative Code (A.A.C.) R18-16-406(I). These rules require that ROs be established for the current and reasonably foreseeable uses of land and waters of the state that have been or are threatened to be affected by the release of a hazardous substance above a regulatory or risk-based standard. The rule specifies that the reasonably foreseeable uses of land are those likely to occur at the Site. The reasonably foreseeable uses of water are those likely to occur within 100 years, unless a longer time period is appropriate [A.A.C. R18-16-406(D)]. Reasonably foreseeable uses are those likely to occur, based on information provided by water providers, well owners, land owners, government agencies, and others.

The ROs for the Site are based on the Land and Water Use Study (LWUS) (see Appendix A of Draft RI Report). Not every use identified in the LWUS will have a corresponding RO. Uses identified in the LWUS may or may not be addressed based on information gathered during the public involvement process, the WQARF statutory authority, and whether the use is reasonably foreseeable.

The Comment period on the Proposed RO Report was open for a period of 30 days from ---- to ---, 2014. This final RO report includes a responsiveness summary to written comments received from the public during the comment period.

The ROs must be stated in the following terms: (1) protecting against the loss or impairment of each use; (2) restoring, replacing, or otherwise providing for each use; (3) when action is needed to protect or provide for the use; and (4) how long action is needed to protect or provide for the use [A.A.C R18-16-406(I)(4)]. The next step in the WQARF process, following issuance of the Final RI Report will be conducting the Feasibility Study. The Feasibility Study will evaluate specific remedial measures and strategies to achieve the ROs and propose a reference remedy and at least two alternative remedies which are capable of meeting the ROs.

## Definitions

**Remedial Strategy:** One or a combination of the six general strategies identified in Paragraph B.4 of A.R.S. §49-282.06 and further defined in rules promulgated in accordance with this statute. In general, these strategies are as follows: *plume remediation, physical containment, controlled migration, source control, monitoring, and no action.*

**Remedial Measure:** A specific action taken in conjunction with remedial strategies as part of the remedy to achieve one or more of the remedial objectives. For example, remedial measures may include well replacement, well modification, water treatment, provision of replacement water supplies, and engineering controls.

**Reference Remedy:** A combination of remedial strategies and remedial measures which, as a whole, is capable of achieving remedial objectives. The reference remedy is compared with the alternative remedies for purposes of selecting a proposed remedy at the conclusion of the feasibility study.

**Alternative Remedy:** A combination of remedial strategies and remedial measures different from the reference remedy that is capable of achieving remedial objectives. The alternative remedies are compared with the reference remedy for purposes of selecting a proposed remedy at the conclusion of the feasibility study.

## 2.0 SUMMARY OF CURRENT AND REASONABLY FORESEEABLE USES OF LAND

The Site currently consists largely of residential, commercial and light industrial areas. The Site lies across the boundaries of both the City of Tucson and Pima County. The area is largely “built-out” and currently neither the City of Tucson nor Pima County have any specific plans to re-develop the area for significantly different land uses. Based on information provided, land uses for the foreseeable future in the Site area are expected to remain similar to the current land uses.

Groundwater contamination in the ECDC Landfill area was first identified in 1983 after Pima County started their Landfill Environmental Studies Program (LESP) to investigate closed landfills. Pima County, ADEQ, and others have performed numerous assessments and investigations at the ECDC Landfill and throughout the Site. Formal ADEQ oversight began in July 1992. The SR/ECDC Site was originally identified as two separate sites; the ECDC and Shannon Road Rillito Creek (SRRC). The ECDC Site was placed on ADEQ’s WQARF Priority List in May 1995. SRRC was added in 1999. In January 2005, ECDC and SRRC sites were administratively combined into the SR/ECDC WQARF Site. Contaminants of Concern (COCs) include tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE and vinyl chloride (VC).

Around 1990, ADEQ conducted a historical search of properties and activities that may have contributed to contamination detected in area groundwater. The search encompassed an area roughly bounded by Roger Road/Sweetwater Drive on the south and Sunset Road on the north. The properties were assessed for the use of solvents and other VOCs, such as petroleum hydrocarbons. The results of the historical research indicated that 13 of the 22 properties within the study area south and north of I-10 may have used solvents or reportedly had VOC detections in soil samples.

Sites identified with potential to impact groundwater quality according to operational history and available analytical data included the ECDC landfill area, former AMRI Oil (Wrecksperts/Western Stucco/Western Trailer), former E.C Winter, and the I-10 corridor area. Further characterization of these areas during the performance of the Remedial Investigation(s), indicated that impacts to the groundwater from site COCs has not been observed from the sites north of I-10 based on available data. Furthermore, several ERAs were conducted to address soil contamination north of I-10, and resulted in removing minor concentrations of COCs originally detected in area soils. The ECDC Landfill area, south of I-10, has been investigated extensively

since the landfill closure in approximately 1978. The area includes known elevated concentrations of the COCs in soil, soil-gas, and groundwater. The landfill was used as a wildcat dumping area and landfill until 1977. Concentrations of COCs in the area of the landfill are likely a result of landfill leachate, and surface spills/disposals that migrated through the vadose zone to the regional aquifer.

## 2.1 REMEDIAL OBJECTIVES FOR SOIL

Typically, ROs for land use are established for those properties known to be contaminated with hazardous substances above a Soil Remediation Level (SRL) or a risk-based level. At the Site, the former ECDC Landfill property is contaminated with concentrations of VOCs in subsurface soil above SRLs. The ECDC Landfill was operated by Pima County for disposal of municipal solid waste between 1973 and 1977.

The former ECDC Landfill is currently zoned I2 for Heavy Industrial Operations. The locations at the landfill where the subsurface VOCs were found at depth above the non-residential SRL are currently capped. Also, the owners of the property have indicated that they plan to continue current use of the area, and there is no indication that the current zoning is likely to change. However, non-residential use of the property does not preclude potential excavation activities that could disturb surface and subsurface VOC contaminated soils. Therefore, the RO for existing and future non-residential use of the Landfill Area properties (or portions of properties) is:

**To protect current and future non-residential land uses against possible exposure to hazardous substances within or on the Landfill Area properties. This action is needed at the present time and for as long as the landfilled waste remains at the property.**

Soil sampling has also been performed by ADEQ at facilities within the Site, in addition to the former ECDC Landfill, in order to evaluate other potential sources; however, the concentrations of contaminants detected at those facilities during the RI have been below the residential/non-residential SRLs, or focused early response actions have been completed to reduce soil concentrations to below applicable SRLs. Therefore, based on these data, no ROs for soils are needed for the land uses at those other facilities.

### **3.0 SUMMARY OF CURRENT AND REASONABLY FORESEEABLE USES OF WATER**

Groundwater beneath the Site, is present in the regional aquifer which begins at approximately 150 feet bgs. TCE and PCE contaminant plumes are present above Arizona Aquifer Water Quality Standards (AWQSs) (which are the same as their respective Maximum Contaminant Levels) Results of soil samples and soil gas samples in the area of the ECDC Landfill indicate concentrations in these media persist at concentrations that could provide a continuing source to the regional aquifer.

The historical plume boundary of the Site encompasses the approximate area of groundwater associated with the Site in which a contaminant of concern has been detected, at any point in time, at a concentration greater than a regulatory standard. The Study Area depicts the larger approximate area of focus during the remedial investigation.

Because of decreasing water tables, wells taken out of service, and installation of new wells, or wells brought back into service, the number of viable wells within the Study Area as well as the historical plume boundary may change over time. In 2012 the historical plume boundary encompasses 50 ADWR-registered wells: Pima County owns 4 wells, Pima County Regional Wastewater owns 9 wells, Pima County Soil Waste Management owns 7 wells, Metro Water owns 1 well, ADEQ owns 19 wells, ADOT owns 2 wells, the City of Tucson owns 1 well, and 3 wells are privately owned. Four wells have been abandoned. The area does not encompass any appreciable perennial surface water.

#### **3.1 REMEDIAL OBJECTIVES FOR GROUNDWATER**

##### *Municipal and Local Government Potable Supply*

Metro Water owns and operates one production well within the SR/ECDC historical plume boundary and five production wells outside the boundary that supply water to local residents. All of the well sites will remain active over the next 100 years. Production could increase at all of the well sites depending upon which wells are replaced but MDWID currently has no plans to drill new wells or modify any existing wells.

The City of Tucson formally adopted a *Water Service Area Policy* in August 2010. The Water Service Area Policy establishes a boundary for Tucson Water based on economic, social and environmental considerations. Tucson Water owns three inactive production wells within the

study area. Only one of which is in the historical plume boundary (Z-006). It is possible that Tucson Water may want to bring these wells back online in the foreseeable future based on conversations with field technicians servicing wells in the area. Production well Z-006 is included in annual groundwater sampling for the site.

Based on the information provided, MDWID or City of Tucson does not expect to change the number of wells or the amounts of water removed from the aquifer in the near future. However, MDWID does plan to maintain its current wells, and replace these wells as needed should they become un-usable, and City of Tucson may bring their wells back into use. Based on information provided by MDWID and City of Tucson, the timeframe and water use are reasonable. The RO for MDWID and City of Tucson use of groundwater is:

**To provide for the current and future municipal use of the regional aquifer threatened or impacted by COC contamination emanating from the Site. This action is needed for as long as the level of contamination in the groundwater resource threatens or prohibits its use as a potable water supply.**

#### *Pima County*

Pima County currently owns and operates 4 wells within the SR/ECDC Site, Pima County Regional Wastewater Reclamation Department owns and operates 8 wells, and Pima County Soil Waste Management owns 7 wells. The uses for these wells vary from monitoring groundwater quality to irrigation/industrial water on a standby basis. Based on information provided by Pima County, the timeframe and water use are reasonable. The RO for Pima County use of groundwater is:

**To provide for the current and future non-potable irrigation/industrial use of the regional aquifer threatened by the COC contamination emanating from the Site. This action is needed for as long as the level of contamination in the groundwater resource threatens its use as a non-potable water supply.**

#### *Private Domestic Use*

There were approximately 30 private well owners identified in the study area as part of the Land and Water Use Study. The water uses for these wells varies from non-potable maintenance equipment, to irrigation, to drinking water.

There are no changes anticipated for the use of the private domestic wells for the foreseeable future. Based on information provided by the private domestic well owners, the timeframes and water usage are reasonable. The RO for private domestic use of the groundwater is:

**To provide for the current and future private domestic use of the regional aquifer threatened or impacted by COC contamination emanating from the Site. This action is needed for as long as the level of contamination in the groundwater resource threatens or prohibits its use as a potable water supply.**

APPENDIX C-1

REMEDIAL OBJECTIVES REPORT RESPONSIVENESS SUMMARY



**REMEDIAL OBJECTIVES REPORT**

**RESPONSIVENESS SUMMARY**

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

**TUCSON, ARIZONA**

**March 2015**

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## **INTRODUCTION**

Pursuant to the requirements of the Arizona Administrative Code (A.A.C.) R18-16-406(H), the Arizona Department of Environmental Quality (ADEQ) has prepared this comprehensive responsiveness summary for public comment regarding the Shannon Road/El Camino del Cerro Water Quality Assurance Revolving Fund (WQARF) Registry Site Proposed Remedial Objectives (ROs) Report. Public comment on the Proposed RO Report was accepted from May 12, 2014 through June 11, 2014. ADEQ received written comments from the following: (1) Metropolitan Domestic Water Improvement District, (2) Clear Creek Associates on behalf of Metropolitan Domestic Water Improvement District; (3) The Office of the Pima County Attorney. ADEQ has prepared this responsiveness summary for all comments received regarding the Proposed RO Report. No other comments were received in the period allotted.

## **PUBLIC COMMENTS RECEIVED REGARDING ADEQ'S PROPOSED RO REPORT**

The following sections include the text of comments pertaining to ROs in boldface italics, along with an ADEQ response to address each comment.

### **Comments from Metropolitan Domestic Water Improvement District (MDWID)**

#### **Comment 1:**

*The District's concern is that the proposed remedial objective for potable water and non-potable is to[sic] general by ADEQ as a policy statement to effectively maintain or improve ongoing water quality treatment levels currently employed for direct potable use at this WQARF site and potentially the District's non-potable use (irrigation deliveries to Pima County Parks & Recreation Department).*

#### **Response 1:**

Comment noted. Arizona Administrative Code (A.A.C.) title 18, Chapter 16, Rule 406, Paragraph I [A.A.C. R-18-16-406 (I)] provides the framework for establishing Remedial Objectives. ADEQ believes the ROs presented are appropriate to the site. However edits have been made for clarity and are included in the Final RO report in the Appendix to the Final Remedial Investigation Report for the site.

#### **Comment 2:**

*The District has attached a comment letter from our consultant that addresses these above concerns for inclusion into the draft potable and non-potable remedial objectives. The District also recommends that the below objectives be added to potable water RO:*

- 1) provide the most cost effective, flexible and operationally efficient treatment system for removing current and future PCE, TCE and vinyl chloride concentrations,*
- 2) eliminate regulated VOC detections at or above 0.5 ppb from occurring in the potable water supply after any wellhead treatment process,*
- 3) restore well production volumes to help with plume management and to meet existing and future potable water demands,*
- 4) minimize O&M costs to ADEQ and the water provider, and*
- 5) provide the water provider's customers with a treatment level of non-detection.*

#### **Response 2:**

See Response 1

**Comments from Clear Creek Associates (on behalf of Metropolitan Domestic Water Improvement District (MDWID))**

**Comment 1.1:**

*The required contents of Remedial Objectives reports are specified in R18-16-406.I.4 of the Arizona Administrative Code, which includes the following language:*

*"The report shall state the remedial objectives for each listed use in the following terms:*

- a. Protecting against the loss or impairment of each listed use that is threatened to be lost or impaired as a result of a release of a hazardous substance;*
- b. Restoring, replacing or otherwise providing for each listed use to the extent that it has been or will be lost or impaired as a result of a release of a hazardous substance;*
- c. Time-frames when action is needed to protect against or provide for the impairment or loss of the use; and d. The projected duration of the action needed to protect or provide for the use"*

*The Remedial Objective (RO) for MDWID's use of water, as stated in the draft RO report, is as follows:*

*To provide for the current and future municipal use of the regional aquifer threatened or impacted by COC contamination emanating from the Site. This action is needed for as long as the level of contamination in the groundwater resource threatens or prohibits its use as a potable water supply.*

*The above draft RO does not appear to be consistent with the requirements in R18-16-406.I.4 for the following reasons:*

- Protection against the loss or impairment of MDWID's use of the aquifer is not included in the proposed RO. This objective is required by rule and it should be one of ADEQ's primary goals for this site. Specifically, ADEQ should make it a priority to ensure that no additional MDWID wells are impacted by any contaminants of concern (COCs) or potential contaminants of concern (PCOCs) including 1,4-Dioxane.*

**Response 1.1:**

Comment noted. The statement "provide for the current and future municipal use of the regional aquifer threatened or impacted..." embodies the "protection against loss or impairment" of the resource, in addition to restoring or replacing the resource, based on use, which is the intent of the Rule. No further clarification is necessary.

**Comment 1.2:**

*Accordingly, as stated in Clear Creek Associates' comments on the draft Remedial Investigation report, a numerical model should be developed for this site. A model would be a valuable tool for evaluating future plume migration under various remedial alternatives and ensuring that the selected alternative protect MDWID against the loss or impairment of any additional MD WID wells.*

**Response 1.2:**

Comment noted.

**Comment 1.3:**

- *Restoring or replacing lost or impaired MDWID wells is not included in the proposed RO. Again, this is required by rule, and it should be one of ADEQ's primary goals for this site. The term "provide for" is exceedingly vague, and the adoption of such a vague goal is not useful for selecting an appropriate remedy.*

**Response 1.3:**

See Response 1.1

**Comment 1.4:**

- *The language in the draft RO is obscure regarding conformance with the requirements that the RO specify the time frame of the action and the duration of the action. The actual time frame in which the action will be initiated and the duration of this action should be specified. A numerical model would be useful for evaluating the duration of the action.*

**Response 1.4:**

The Rules give ADEQ flexibility in specifying time frames when time frames are not specifically known in the RI (they are typically estimated during the FS when remedies are evaluated). It is assumed that MDWID will require use of this resource currently as a municipal supply and for the foreseeable future. Therefore no attempt has been made to limit the time frame. Arizona Administrative Code (A.A.C.) title 18, Chapter 16, Rule 406, Paragraph D allows for those uses likely to occur within 100 years. It is unlikely MDWID will cease to utilize the resource as a municipal supply before that time.

**Comment 2:**

*Therefore, in addition to the RO's listed in the draft report, Clear Creek Associates recommends that the following RO's be included for this site, in order to make the RO report consistent with the requirements of R18-16-406.1.4:*

- (1) restoring or replacing any potable supply wells that have been impacted by COCs or PCOCs; and*
- (2) protecting any additional potable supply wells from being impacted by COCs or PCOCs.*

**Response 2:**

See Response 1.1

**Comment 3.1:**

*Clear Creek also recommends the following:*

- *The draft RO report should identify the time frame in which the remedial action will be implemented, and the duration of the remedial action should be estimated.*

**Response 3.1:**

See Response 1.4

**Comment 3.2:**

- *The duration of the remedial action should be the time required for the concentrations of all COCs and PCOCs, including 1,4 Dioxane, to be reduced to levels that are below detection limits.*

**Response 3.2:**

See Response 1.4

**Comment 3.3:**

- *A numerical model should be developed to estimate the duration of the remedial action.*

**Response 3.3:**

The duration will be estimated during the Feasibility Study (FS) phase as it is a required component of a statutorily complete FS Report and required for establishing a remedy cost for the Proposed Remedial Action Plan. This may or may not be accomplished with a numerical model.

## Comments from Office of the Pima County Attorney

### **Comment 1:**

**2.1 Remedial Objectives for Soil, Paragraph 1** [states]: "At the Site, the former ECDC Landfill property is contaminated with concentrations of VOCs in subsurface soil above SRLs."

*The Draft RI failed to identify any instance of VOC soil contamination above SRLs at the former ECDC landfill. The only reported soil concentrations of VOCs at the former landfill in the Draft RI were from 1994; and even then, the reported VOCs found in soil are not even COCs or potential COCs listed in the Draft RI or RO reports. Regardless, the VOCs that were present were far below residential and non-residential SRLs. The RO for soil at the landfill is not appropriate given the lack of data to support such RO. Pima County has never detected contaminants in the landfill soils exceeding SRLS and is not aware of any evidence to the contrary.*

### **Response 1:**

Limited soil sampling has been conducted at the ECDC Landfill. As noted in the comment, no Site COC has been detected above an SRL during these sampling events. The referenced paragraph has been revised accordingly. However, section 2.2 of the final RI report summarizes the multiple lines of evidence that indicate materials containing hazardous substances have been present in the landfill. Comprehensive soil sampling of a large landfill that has been shown to contain hazardous waste would not be cost-effective at this time given the property's current use. The soil Remedial Objectives are necessary to protect human health and the environment should the landfill property be considered for redevelopment.

### **Comment 2:**

**Paragraph 2 -Remedial Objective** [states]: "Remedial Objective: To protect current and future non-residential uses against possible exposure to hazardous substances within or on the Landfill Area properties. This action is needed at the present time and for as long as the landfill waste remains at the property."

*The RO makes reference to "This action" without identifying the action to be taken.*

### **Response 2:**

The "action" is to protect against exposure. How this is specifically accomplished will be described and/or recommended in the Feasibility Study Report.

### **Comment 3:**

**Paragraph 3: Makes this assertion:** "Soil sampling has also been performed by ADEQ at facilities within the Site, in addition to the former ECDC Landfill, in order to evaluate other potential sources; however, the concentrations of contaminants detected at those facilities during the RI have been below the residential/non-residential SRLs, or focused early response actions have been completed to reduce soil concentrations to below applicable SRLs."

*Soil sampling at these non-landfill facilities has been limited and in many cases was focused on heavy metals contamination. Limited screening for VOCs was conducted during installation of several wells throughout the WQARF site. Screening conducted with a photo*

*ionization detector showed the presence of VOCs near the surface at several locations indicating potential soil contamination. Soil samples were not collected from many of these areas leaving a significant data gap. Although some soil samples were collected during well installation (refer to drilling logs in Appendix N in the Draft RI), none of the sample results are included or referenced in the Draft RI. Determining that a RO is not needed for soils in these locations is insupportable based on existing data.*

**Response 3:**

The draft RI report has been revised to provide additional details of the numerous investigations conducted at the Site and to further clarify the report conclusions. A detailed discussion of the investigations undertaken and data collected at non-landfill properties is presented in sections 4.2-4.5 of the final RI report. ADEQ's interpretation of the data is presented in section 2.2 and sections 4.0 through 6.0 of the final RI report.

**Comment 4:**

**3.0 Summary of Current and Reasonably Foreseeable Uses of Water, Remedial Objective 1** [states]: *“To provide for the current and future municipal use of the regional aquifer threatened or impacted by COC contamination emanating from the Site.”*

*Results of soil samples and current soil gas samples in the vicinity of ECDC Landfill were not presented in the Draft Remedial Investigation. Therefore, concentrations in that area cannot defensibly contribute to any conclusion that it is a continuing source to the regional aquifer.*

**Response 4:**

Regional groundwater in the Site vicinity is impacted by contaminated groundwater emanating from, and downgradient of, the ECDC Landfill area. Current monitoring results confirm that COC contamination remains in the groundwater at the Site and continues to threaten downgradient uses of this water.

# **ATTACHMENT A:**

**Copies of Shannon Road/El Camino Del Cerro  
Proposed RO Public Comment Letters Received**

June 11, 2004



ADEQ - SRO  
Received  
JUN 13 2014

Mr. Scott Green, R.G.  
WQARF Project Manager  
Southern Regional Office  
Arizona Department of Environmental Quality  
400 West Congress, Suite 433  
Tucson, Arizona 85701

**Re: Comments on Proposed Groundwater Remedial Objectives Report for the Shannon Road/El Camino del Cerro Water Quality Assurance Revolving Fund Site, Tucson, Arizona**

Dear Mr. Green:

The Metropolitan Domestic Water Improvement District (District) has comments on the above draft report for the Arizona Department of Environmental Quality (ADEQ). As you know the District serves potable and non-potable water within the WQARF site and thus is affected by believes the Remedial Objectives (ROs) developed by ADEQ for this site.

The District's concern is that the proposed remedial objective for potable water and non-potable is to general by ADEQ as a policy statement to effectively maintain or improve on-going water quality treatment levels currently employed for direct potable use at this WQARF site and potentially the District's non-potable use (irrigation deliveries to Pima County Parks & Recreation Department).

The District has attached a comment letter from our consultant that addresses these above concerns for inclusion into the draft potable and non-potable remedial objectives.

The District also recommends that the below objectives be added to potable water RO:

- 1) provide the most cost effective, flexible and operationally efficient treatment system for removing current and future PCE, TCE and vinyl chloride concentrations,
- 2) eliminate regulated VOC detections at or above 0.5 ppb from occurring in the potable water supply after any wellhead treatment process,
- 3) restore well production volumes to help with plume management and to meet existing and future potable water demands,
- 4) minimize O&M costs to ADEQ and the water provider, and
- 5) provide the water provider's customers with a treatment level of non-detection.

Please call me at (520) 575-8100 if you need any other information or have questions on these comments. Again, thank you for this opportunity to provide comments.

Sincerely,

A handwritten signature in black ink that reads "Michael Block". The signature is fluid and cursive.

Michael W. Block  
Water Resources Manager

MWB/mwb

c: Joseph Olsen, General Manager  
Metropolitan Domestic Water Improvement District  
P.O. Box 36870 Tucson, Arizona 85740 (520) 575-8100 (520) 575-8454 FAX [www.metrowater.com](http://www.metrowater.com)



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June 10, 2014

Mr. Michael Block  
Water Resources Manager  
Metropolitan Domestic Water Improvement District  
6265 N. La Canada Blvd.  
Tucson, Arizona 85740

**Re: Peer Review of: *Proposed Remedial Objectives Report – Shannon Road / El Camino Del Cerro WQARF Site Tucson, Arizona***

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Dear Mike:

Pursuant to the Metropolitan Domestic Water Improvement District (MDWID) Notice to Proceed dated February 26, 2014, this letter presents Clear Creek Associates' evaluation of the report titled *Proposed Remedial Objectives Report – Shannon Road / El Camino Del Cerro WQARF Site, Tucson, Arizona*, dated May 2014, and referred to herein as the "draft RO report".

Clear Creek Associates' comments on the draft RO report are as follows:

The required contents of Remedial Objectives reports are specified in R18-16-406.I.4 of the Arizona Administrative Code, which includes the following language:

*"The report shall state the remedial objectives for each listed use in the following terms:*

- a. Protecting against the loss or impairment of each listed use that is threatened to be lost or impaired as a result of a release of a hazardous substance;*
- b. Restoring, replacing or otherwise providing for each listed use to the extent that it has been or will be lost or impaired as a result of a release of a hazardous substance;*
- c. Time-frames when action is needed to protect against or provide for the impairment or loss of the use; and*
- d. The projected duration of the action needed to protect or provide for the use"*

The Remedial Objective (RO) for MDWID's use of water, as stated in the draft RO report, is as follows:

*To provide for the current and future municipal use of the regional aquifer threatened or impacted by COC contamination emanating from the Site. This action is needed for as long as the level of contamination in the groundwater resource threatens or prohibits its use as a potable water supply.*

The above draft RO does not appear to be consistent with the requirements in R18-16-406.I.4 for the following reasons:

- Protection against the loss or impairment of MDWID's use of the aquifer is not included in the proposed RO. This objective is required by rule and it should be one of ADEQ's primary goals for this site. Specifically, ADEQ should make it a priority to ensure that no additional MDWID wells are impacted by any contaminants of concern (COCs) or potential contaminants of concern (PCOCs) including 1,4-Dioxane.

Accordingly, as stated in Clear Creek Associates' comments on the draft Remedial Investigation report, a numerical model should be developed for this site. A model would be a valuable tool for evaluating future plume migration under various remedial alternatives and ensuring that the selected alternative protect MDWID against the loss or impairment of any additional MDWID wells.

- Restoring or replacing lost or impaired MDWID wells is not included in the proposed RO. Again, this is required by rule, and it should be one of ADEQ's primary goals for this site. The term "provide for" is exceedingly vague, and the adoption of such a vague goal is not useful for selecting an appropriate remedy.
- The language in the draft RO is obscure regarding conformance with the requirements that the RO specify the time frame of the action and the duration of the action. The actual time frame in which the action will be initiated and the duration of this action should be specified. A numerical model would be useful for evaluating the duration of the action.

Therefore, in addition to the RO's listed in the draft report, Clear Creek Associates recommends that the following RO's be included for this site, in order to make the RO report consistent with the requirements of R18-16-406.I.4:

- (1) restoring or replacing any potable supply wells that have been impacted by COCs or PCOCs; and

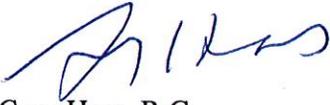
(2) protecting any additional potable supply wells from being impacted by COCs or PCOCs.

Clear Creek also recommends the following:

- The draft RO report should identify the time frame in which the remedial action will be implemented, and the duration of the remedial action should be estimated.
- The duration of the remedial action should be the time required for the concentrations of all COCs and PCOCs, including 1,4 Dioxane, to be reduced to levels that are below detection limits.
- A numerical model should be developed to estimate the duration of the remedial action.

Clear Creek appreciates the opportunity to provide this review to the District. If you have any questions or comments, please call me at (520) 622-3222.

Sincerely,  
**CLEAR CREEK ASSOCIATES, PLC.**

  
Greg Hess, R.G.  
Senior Hydrogeologist



Expires 6/30/16



Practical Solutions  
in Groundwater Science

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June 10, 2014

Mr. Michael Block  
Water Resources Manager  
Metropolitan Domestic Water Improvement District  
6265 N. La Canada Blvd.  
Tucson, Arizona 85740

**Re: Peer Review of: *Proposed Remedial Objectives Report – Shannon Road / El Camino Del Cerro WQARF Site Tucson, Arizona***

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Dear Mike:

Pursuant to the Metropolitan Domestic Water Improvement District (MDWID) Notice to Proceed dated February 26, 2014, this letter presents Clear Creek Associates' evaluation of the report titled *Proposed Remedial Objectives Report – Shannon Road / El Camino Del Cerro WQARF Site, Tucson, Arizona*, dated May 2014, and referred to herein as the "draft RO report".

Clear Creek Associates' comments on the draft RO report are as follows:

The required contents of Remedial Objectives reports are specified in R18-16-406.I.4 of the Arizona Administrative Code, which includes the following language:

*"The report shall state the remedial objectives for each listed use in the following terms:*

- a. Protecting against the loss or impairment of each listed use that is threatened to be lost or impaired as a result of a release of a hazardous substance;*
- b. Restoring, replacing or otherwise providing for each listed use to the extent that it has been or will be lost or impaired as a result of a release of a hazardous substance;*
- c. Time-frames when action is needed to protect against or provide for the impairment or loss of the use; and*
- d. The projected duration of the action needed to protect or provide for the use"*

The Remedial Objective (RO) for MDWID's use of water, as stated in the draft RO report, is as follows:

*To provide for the current and future municipal use of the regional aquifer threatened or impacted by COC contamination emanating from the Site. This action is needed for as long as the level of contamination in the groundwater resource threatens or prohibits its use as a potable water supply.*

The above draft RO does not appear to be consistent with the requirements in R18-16-406.I.4 for the following reasons:

- Protection against the loss or impairment of MDWID's use of the aquifer is not included in the proposed RO. This objective is required by rule and it should be one of ADEQ's primary goals for this site. Specifically, ADEQ should make it a priority to ensure that no additional MDWID wells are impacted by any contaminants of concern (COCs) or potential contaminants of concern (PCOCs) including 1,4-Dioxane.

Accordingly, as stated in Clear Creek Associates' comments on the draft Remedial Investigation report, a numerical model should be developed for this site. A model would be a valuable tool for evaluating future plume migration under various remedial alternatives and ensuring that the selected alternative protect MDWID against the loss or impairment of any additional MDWID wells.

- Restoring or replacing lost or impaired MDWID wells is not included in the proposed RO. Again, this is required by rule, and it should be one of ADEQ's primary goals for this site. The term "provide for" is exceedingly vague, and the adoption of such a vague goal is not useful for selecting an appropriate remedy.
- The language in the draft RO is obscure regarding conformance with the requirements that the RO specify the time frame of the action and the duration of the action. The actual time frame in which the action will be initiated and the duration of this action should be specified. A numerical model would be useful for evaluating the duration of the action.

Therefore, in addition to the RO's listed in the draft report, Clear Creek Associates recommends that the following RO's be included for this site, in order to make the RO report consistent with the requirements of R18-16-406.I.4:

- (1) restoring or replacing any potable supply wells that have been impacted by COCs or PCOCs; and

(2) protecting any additional potable supply wells from being impacted by COCs or PCOCs.

Clear Creek also recommends the following:

- The draft RO report should identify the time frame in which the remedial action will be implemented, and the duration of the remedial action should be estimated.
- The duration of the remedial action should be the time required for the concentrations of all COCs and PCOCs, including 1,4 Dioxane, to be reduced to levels that are below detection limits.
- A numerical model should be developed to estimate the duration of the remedial action.

Clear Creek appreciates the opportunity to provide this review to the District. If you have any questions or comments, please call me at (520) 622-3222.

Sincerely,  
**CLEAR CREEK ASSOCIATES, PLC.**



Greg Hess, R.G.  
Senior Hydrogeologist



Expires 6 | 30 | 14



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**Barbara LaWall**  
PIMA COUNTY ATTORNEY

June 6, 2014

*Via Hand Delivery*

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

**RE: PIMA COUNTY COMMENTS ON THE PROPOSED REMEDIAL OBJECTIVES  
REPORT FOR SHANNON ROAD/EL CAMINO DEL CERRO WQARF SITE**

Dear Mr. Green:

Pima County herewith provides its comments upon the Proposed Remedial Objectives (RO) Report for the Shannon Road/El Camino Del Cerro (SR/ECDC) Water Quality Assurance Revolving Fund (WQARF) site dated May 2014 to the Arizona Department of Environmental Quality (ADEQ).

**2.1 REMEDIAL OBJECTIVES FOR SOIL**

Paragraph 1: "At the Site, the former ECDC Landfill property is contaminated with concentrations of VOCs in subsurface soil above SRLs."

**Response:** The Draft RI failed to identify any instance of VOC soil contamination above SRLs at the former ECDC landfill. The only reported soil concentrations of VOCs at the former landfill in the Draft RI were from 1994; and even then, the reported VOCs found in soil are not even COCs or potential COCs listed in the Draft RI or RO reports. Regardless, the VOCs that were present were far below residential and non-residential SRLs. The RO for soil at the landfill is not appropriate given the lack of data to support such RO. Pima County has never detected contaminants in the landfill soils exceeding SRLS and is not aware of any evidence to the contrary.

Paragraph 2 – Remedial Objective: To protect current and future non-residential uses against possible exposure to hazardous substances within or on the Landfill Area properties. This action is needed at the present time and for as long as the landfill waste remains at the property.

**Response:** The RO makes reference to “This action” without identifying the action to be taken.

Paragraph 3: Makes this assertion: ”Soil sampling has also been performed by ADEQ at facilities within the Site, in addition to the former ECDC Landfill, in order to evaluate other potential sources; however, the concentrations of contaminants detected at those facilities during the RI have been below the residential/non-residential SRLs, or focused early response actions have been completed to reduce soil concentrations to below applicable SRLs.”

**Response:** Soil sampling at these non-landfill facilities has been limited and in many cases was focused on heavy metals contamination. Limited screening for VOCs was conducted during installation of several wells throughout the WQARF site. Screening conducted with a photo ionization detector showed the presence of VOCs near the surface at several locations indicating potential soil contamination. Soil samples were not collected from many of these areas leaving a significant data gap. Although some soil samples were collected during well installation (refer to drilling logs in Appendix N in the Draft RI), none of the sample results are included or referenced in the Draft RI. Determining that a RO is not needed for soils in these locations is insupportable based on existing data.

### **3.0 SUMMARY OF CURRENT AND REASONABLY FORESEEABLE USES OF WATER**

Paragraph 1: Includes this statement: “Results of soil samples and soil gas samples in the area of the ECDC Landfill indicate concentrations in these media persist at concentrations that could provide a continuing source to the regional aquifer.”

**Response:** ADEQ has not made public data upon which one could reach this conclusion. The public needs to see what concentrations of VOC’s in soils and soil vapor the Department believes indicate a

continuing source of contamination to groundwater at the landfill. The concentrations of VOC's detected in soil vapor at the landfill, and the concentrations of VOC's detected in soils and soil vapor subjacent to the Winters and AMRI sources are nearly identical. Indeed, no test of any kind at the former CDC landfill ever detected levels above an SRL, as opposed to the results at those two sites. Consequently, it is not plausible to identify the CDC site as a source without also designating Winters and AMRI sources.

### 3.1 REMEDIAL OBJECTIVES FOR GROUNDWATER

Remedial Objective 1: To provide for the current and future municipal use of the regional aquifer threatened or impacted by COC contamination emanating from the Site.

**Response:** Results of soil samples and current soil gas samples in the vicinity of ECDC Landfill were not presented in the Draft Remedial Investigation. Therefore, concentrations in that area cannot defensibly contribute to any conclusion that it is a continuing source to the regional aquifer.

We appreciate this opportunity to respond to the Proposed Remedial Objectives.

Sincerely,

Michael F. McNulty  
Deputy County Attorney

MFM:sl

cc: Ellen Wheeler, Assistant County Administrator  
Jim Faas, Pima County Risk Management  
Dave Eaker, Pima County Department of Environmental Quality  
Michael LeBlanc, Deputy County Attorney