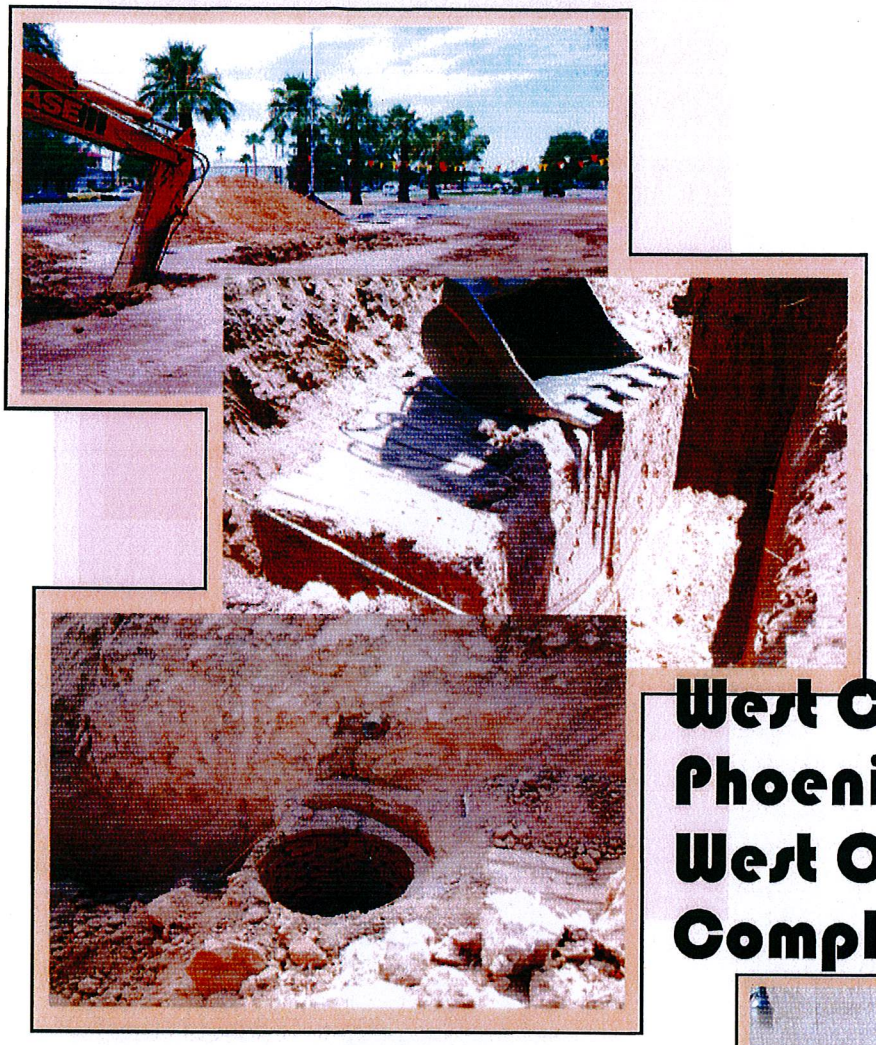
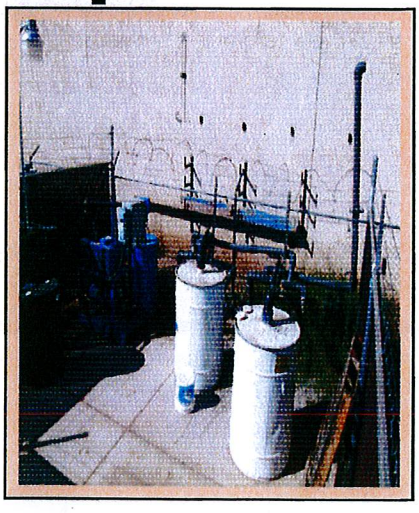
Remedial Objectives Report



West Central Phoenix - West Osborn Complex Site



Phoenix, Arizona
May 2005

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
CAP	Central Arizona Project
COP	City of Phoenix
FS	feasibility study
GPL	groundwater protection level
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
PCE	tetrachloroethylene, tetrachloroethene, Perc
RI	remedial investigation
RO	remedial objective
SRL	soil remediation level
SRP	Salt River Project
SVE	soil vapor extraction
TCE	trichloroethylene, trichloroethene
WCP	West Central Phoenix
WOC	West Osborn Complex
WQARF	Water Quality Assurance Revolving Fund

1.0 INTRODUCTION

The Arizona Department of Environmental Quality (ADEQ) has prepared this Remedial Objectives (RO) report for the West Central Phoenix (WCP) West Osborn Complex (WOC) Water Quality Assurance Revolving Fund (WQARF) Registry site to meet the requirements established under Arizona Administrative Code (A.A.C.) R18-16-406. This report relies upon the Land and Water Use Report (Use Report) prepared by ADEQ for the site dated July 2004 and the comments received on the Proposed RO report dated March 2005.

Remedial Objectives (ROs) are 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 a release of a hazardous substance. The rule specifies that the reasonably foreseeable uses of land are those likely to occur at the site, and the reasonably foreseeable uses of water are those likely to occur within one hundred years unless site-specific information suggests a longer time period is more appropriate [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. Not every use identified in the Use Report will have a corresponding RO. Uses identified in the Use Report may or may not be addressed based on information gathered during the public involvement process, limitations of WQARF, and whether the use is reasonably foreseeable.

The ROs chosen for the site will be evaluated in the feasibility study (FS). The FS will evaluate specific remedial measures and strategies required to meet the ROs and propose a reference remedy and at least two alternative remedies, all capable of meeting the ROs. The proposed remedies will also be generally compatible with the future land use specified by the land owner. Because the future land and water uses at the site are generally not specific, the mechanism to achieve the ROs may be an insurance policy or environmental protection fund that could be drawn on in the future. Possible mechanisms to achieve the ROs will be evaluated in the FS and presented in the FS report.

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.

This report has been prepared with stakeholder input gathered during the November 8, 2004 WCP community advisory board meeting and public meeting, as well as written comments received on the Proposed RO report 30-day public comment period. This final report includes a responsiveness summary to written comments received from the public during the comment period. Upon completion of the final RO Report, the final remedial investigation (RI) report will be available to the public.

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 against or provide for the use; and 4) how long action is needed to protect or provide for the use.

2.0 REMEDIAL OBJECTIVES FOR LAND USE

The zoning pattern in the area has been long established and there are no foreseeable changes for the future. Land uses for the WOC facility property and within the WCP WOC site area are expected to remain predominantly industrial (A-2) or light industrial (A-1).

Soil remediation conducted at the WOC facility through the use of a soil vapor extraction (SVE) system meets soil remediation standards established in Arizona Revised Statutes (A.R.S.) §49-152 and A.A.C. R18-7-2. The soil analytical results presented in a letter report dated January 23, 2004 indicate no detections of trichloroethylene (TCE). The residential soil remediation level (SRL) of TCE is 27 milligrams per kilogram (mg/kg). The minimum groundwater protection level (GPL) of TCE is 0.61 mg/kg. Based on this information, ADEQ granted a permanent shutdown of the SVE system at the WOC facility on March 1, 2004.

Based on the above information, no remedial objectives are needed for this use.

3.0 REMEDIAL OBJECTIVES FOR GROUNDWATER USE

Four current and/or potential groundwater uses were identified within the WCP WOC site: 1) the current and future use of groundwater in the WCP WOC site for drinking water purposes by the City of Phoenix (COP); and 2) the current and future use of SRP irrigation wells. The chemicals of concern in the groundwater at the WCP WOC site are tetrachloroethylene (PCE) and TCE.

City of Phoenix Municipal Use

The COP is not currently operating any wells within a one-mile radius of the WCP WOC site boundary. Two municipal wells (COP wells 70 and 71) were removed from service in 1982 due to TCE groundwater contamination at the WCP WOC site. According to COP, loss of these wells has reduced Phoenix's overall well system capacity and ability to meet service area water demands, especially during droughts or temporary water system outages. COP-68 is located downgradient and approximately 600 feet south from the edge of the shallow TCE plume. This well has been inactive (but not capped) since 1986 due to high TDS and nitrates. COP-157 is located downgradient and approximately one mile southwest from the edge of the WCP WOC deep TCE plume. This well has been inactive (but not capped) since 1989 due to high nitrates.

In August 2000, COP requested funding for an interim remedial action (IRA) pursuant to A.R.S. §49-282.03 for four municipal supply wells affected by the release of hazardous substances in the WCP area. Two of the wells, COP wells 70 and 71, are located in the WCP WOC site. The other two wells, COP wells 151 and 152, are located near the WCP North Plume site. The IRA is requesting funding to recover the 1,500 gallons per minute well capacity lost due to the TCE contamination associated with the WCP WOC site.

The RO for the COP current municipal use is:

> **To restore, replace, or otherwise provide for the COP groundwater supply that has currently been lost due to PCE and/or TCE contamination associated with the WCP WOC site. This action is needed as soon as possible. This action is needed for as**

long as the need for the water exists, the resource remains available, and PCE and/or TCE concentrations in the water prohibits or limits its use.

COP's continued interest in future well development in the Central Phoenix wellfields led COP to the development of computerized tools that would assist the City in evaluating the suitability of groundwater resources in the Central Phoenix area. The primary goal of the project was to aid the City in evaluating the general location and timing of future groundwater resources development for the COP public water supply. As part of the project, COP evaluated the entire water service area for future well development and assigned numerical scores, based on established criteria. Based strictly on the statistical evaluation of the scores, COP indicates that areas with scores in at least the 75th percentile (scores • 81) may warrant consideration for future well development. The area where the WCP WOC site shallow contamination is located scores 80-85, therefore, it may be considered for future well development for drought protection. The area immediately downgradient of the WCP WOC site deep contamination is located scores 78-80, therefore, it is currently not considered for future well development (after year 2010). However, in a letter received from COP dated May 12, 2005, COP indicates that site-specific considerations and operational/service needs may require the location of wells in lower scoring areas. COP's current analysis is that scores in the 78-80 range, or perhaps lower in certain circumstances, may indicate generally favorable well development conditions.

The RO for the COP future municipal supply use is:

To protect for the use of the COP municipal groundwater supply threatened by the PCE and/or TCE contamination emanating from WCP WOC site. According to the COP, this use may be needed by the year 2010. This action would be needed for as long as the level of contamination in the identified groundwater resource threatens or prohibits its use.

SRP Municipal and Irrigation Use

SRP owns several irrigation wells in the area and will continue to need operational wells to supplement surface water supplies. SRP wells 9.5E-7.7N and 8.5E-7.5N are located crossgradient and upgradient, respectively, from the contamination in the WCP WOC site.

However, pumping of SRP well 9.5E-7.7N causes the lower sand and gravel system (LSGS) groundwater contamination at the base of the Lower Alluvial Unit to migrate to the northwest, towards a hydrologic cone of depression caused by the well. Due to this problem, the wells are currently not being pumped in accordance with an agreement between ADEQ and SRP. The agreement may remain in place until a remedy selection has been made.

A water treatment plant may be built on the Grand Canal sometime in the future, which would change the use of the groundwater from irrigation to drinking water.

The RO for the SRP current and future municipal and irrigation use of the wells is:

> **To protect for the use of the SRP groundwater supply threatened by the PCE and/or TCE contamination emanating from WCP WOC site. According to SRP, this use may be needed as soon as is technically feasible. This action would be needed for as long as the level of contamination in the identified groundwater resource threatens or prohibits its use.**

APPENDIX A

PROPOSED RO REPORT COMMENTS

Response to City of Phoenix (COP) Comments:

ADEQ has included the following statement in the final RO report addressing COP's comment and clarification regarding the statistical evaluation scores presented in the Carollo Report:

"However, in a letter received from COP dated May 12, 2005, COP indicates that site-specific considerations and operational/service needs may require the location of wells in lower scoring areas. COP's current analysis is that scores in the 78-80 range, or perhaps lower in certain circumstances, may indicate generally favorable well development conditions."