

**EPA Superfund
Explanation of Significant Differences:**

**PHOENIX-GOODYEAR AIRPORT AREA
EPA ID: AZD980695902
OU 01
GOODYEAR, AZ
03/26/1998**

PHOENIX-GOODYEAR AIRPORT AREA SUPERFUND SITE

EXPLANATION OF SIGNIFICANT DIFFERENCE #4 for the FINAL REMEDY RECORD OF DECISION

March 1998

I. PURPOSE

Under Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendment and Reauthorization Act of 1986, and pursuant to 40 C.F.R. Section 300.435(c)(2)(i) (55 Fed. Reg. 8666, 8852 (March 8, 1990)), the United States Environmental Protection Agency (EPA) is required to publish an Explanation of Significant Difference (ESD) when significant (but not fundamental) changes are being considered to a final remedial action plan as described in a Record of Decision (ROD). If the changes fundamentally alter the nature of the selected remedy, an amendment to the ROD would be required [40 C.F.R. Section 300.435(c)(2)(ii)]. In this instance, EPA has made a few important changes that modify the ROD requirements, but do not alter the fundamental hazardous substance management approach that EPA selected in the ROD.

This ESD modifies the remedy selected for the Phoenix-Goodyear Airport (PGA) site in Goodyear, Arizona by updating the current groundwater clean-up standards for both Subunit A and Subunit B/C implemented by the 1987 ROD, the 1989 ROD, the 1991 ESD, and the 1993 ESD to be consistent with the Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) adopted in October 1996, where available. EPA is issuing this fourth ESD to the 1989 ROD in order to take into account information received by EPA after issuance of the 1991, 1993, and 1995 ESDs. The specific eight (8) hazardous substances which have been updated to match their current MCLs include the following: toluene, barium, beryllium, cadmium, chromium, lead, nickel, and selenium.

This ESD and supporting documentation will become part of the PGA Administrative Record. Copies of the Administrative Record for the PGA site, including this ESD, have been placed at the following locations:

- (1) Avondale Public Library
328 West Western Avenue
Avondale, Arizona 85323
(602) 932-9415

and

- (2) EPA Region 9 Superfund Records Center
95 Hawthorne Street - 4th floor
San Francisco, Calif 94105
(415) 536-2000

EPA provided a fifteen (15) working day comment period for the State of Arizona in accordance with 40 C.F.R. Section 300.515(h)(3). Comments by the State of Arizona on this ESD are summarized in Section IV of this document and are also included in the PGA Administrative Record file. Pursuant to 40 C.F.R. Section 300.435(c)(2)(I), EPA will publish a notice summarizing this ESD in a major newspaper of general circulation. A formal public comment period is not required for an ESD.

II. BACKGROUND

The following provides a brief background of the regulatory enforcement taken at the PGA site and general site description information.

A. Regulatory Enforcement Background

On September 26, 1989, EPA signed a ROD for the final remedy at the PGA site in Goodyear, Arizona. The State of Arizona concurred with the remedy selected in the 1989

ROD. In January 1991, EPA issued ESD #1 which modified and clarified the 1989 ROD on five points. In May 1993, EPA modified the ROD a second time to explain the differences between the final remedy originally selected in the 1989 ROD and the final remedy which will be implemented at the site (ESD #2). In December 1995, EPA modified the ROD a third time to supplement an existing treatment technology with air sparging. The purpose for each of these changes is described in detail in Section III of this document.

B. Site Background and Description

The PGA site is located primarily in Goodyear, Arizona, approximately seventeen (17) miles west of Phoenix in the western part of the Salt River Valley. A groundwater flow divide splits the site along Yuma Road into northern and southern portions. The northern portion of the site consists of the Unidynamics property, located at 102 S. Litchfield Road and all areas with groundwater contamination in excess of site clean-up standards related to and emanating from the Unidynamics property. The southern portion of the site consists of the Loral Defense Systems property located at 1300 S. Litchfield Road, the PGA property located at 1658 S. Litchfield Road, and all areas with groundwater contamination in excess of site clean-up standards related to and emanating from the Loral and/or PGA properties. Attachment #1 provides a map indicating the approximate site boundaries of the PGA Superfund Site. The current land uses on and near the site are agricultural, industrial, and residential.

In 1981, the Arizona Department of Health Services (ADHS) discovered that groundwater in certain areas of the site was contaminated with solvents and chromium. EPA and ADHS conducted additional sampling of wells in 1982 and 1983 which revealed

eighteen (18) wells contaminated with trichloroethylene (TCE). As a result, EPA added the PGA site (originally listed as the “Litchfield Airport Area Superfund Site”) to the National Priorities List (NPL) on September 8, 1983 (see Federal Register, Vol. 48, No. 175, P. 40671). Other hazardous substances found at the PGA site include acetone, methyl ethyl ketone (MEK), 1,1,1-trichloroethane (TCA), 1,1-dichloroethylene (DCE), trichloroethylene (TCE), other volatile organic compounds (VOCs), and chromium.

Most of the groundwater and soil contamination in the southern portion of the site is located within the Loral and airport properties inside an area of the site designated as Section 16. Contaminated “shallow groundwater” (hereafter referred to as Subunit A groundwater) within Section 16 was addressed in the first phase of the remedy for the PGA Superfund site and is referred to as the Section 16 Operable Unit. A ROD for the Section 16 Operable Unit was signed on September 29, 1987. The designated remedy of a pump and treat system for Subunit A groundwater has been operating since December 1989. A primary objective of the Section 16 Operable Unit is to protect human health and the environment by preventing the migration of contaminated groundwater and further aquifer degradation.

Groundwater currently used for drinking water in the area of the site meets federal and state drinking water standards. However, because municipal water supplies in the area of the site are dependent on groundwater, future population growth in the area could require use of groundwater in contaminated areas and could result in potential exposure to hazardous substances absent remedial measures.

The clean-up work in the northern portion of the site is being carried out by Unidynamics, whereas the Goodyear Tire & Rubber Company is the lead party implementing

the work in the southern portion of the site. EPA, with the assistance of the Arizona Department of Environmental Quality (ADEQ), authorizes and oversees all clean-up activities at this Superfund site.

III. 1989 ROD AND SUBSEQUENT MODIFICATIONS

A. Remedy Selected in the 1989 ROD

The ROD for the final remedy at the PGA Site was signed by the EPA Regional Administrator on September 26, 1989. In addition to selecting the remedial actions described below, the final remedy also incorporates the Section 16 Operable Unit (OU). The groundwater clean-up levels for the PGA site, which includes those identified in Table 1 of the 1987 ROD for the Section 16 OU, are identified in Table 2-5 of the 1989 ROD¹. The following provides short summaries of the remedy selected in the original 1989 ROD and changes to the 1989 ROD established by the 1991, 1993, and 1995 ESDs. Additional background information can be found in the 1989 ROD, the 1991 ESD, the 1993 ESD, the 1995 ESD, and the PGA Administrative Record.

(1) 1989 ROD Remedy for Southern Portion of PGA Site

For the southern half of the site, the remedy consists of extraction and treatment of contaminated Subunit A groundwater and “deep groundwater” (hereafter referred to as Subunit B/C groundwater) and soil vapor extraction for contaminated soils. The Subunit A groundwater and Subunit B/C groundwater remedial actions

¹ **The groundwater clean-up levels in Table 2-5 of the 1989 ROD consist of: a) Federal and State of Arizona legally Applicable or Relevant and Appropriate Requirements (ARARs); and b) other criteria used to ensure the protectiveness of the remedy (known as To Be Considered (TBCs)).**

require a pump and treat system using air stripping to remove VOCs from the groundwater. The ROD states that groundwater remedial action shall consist of three (3) new Subunit B/C groundwater wells for extraction and treatment of Subunit B/C groundwater at a central treatment plant. In addition, the ROD required that treated water from the central treatment plant will be made available to the City of Goodyear for municipal use. The estimated total present worth cost of the extraction and treatment facilities for the groundwater remedy for the southern portion of the site is \$14,500,000.

With respect to VOC soil contamination at the southern portion of the PGA site, the ROD selected a soil vapor extraction (SVE) system with emission controls. The SVE system is being implemented in certain required areas within an area identified as Target Area 2 in Figure 5-2 of the ROD. The total present worth cost of the soil remedy for the southern portion of the site is estimated to be \$3,900,000 for a phased implementation.

(2) 1989 ROD Remedy for Northern Portion of the PGA Site

The remedial action selected for the northern portion of the site is similar to that chosen for the south and includes a Subunit A groundwater remedy, a Subunit B/C groundwater remedy, and a soil remedy. The Subunit A groundwater remedy consists of a pump and treat system using air stripping followed by liquid phase granular activated carbon (GAC). Vapor-phase GAC air emission controls are required for the Subunit A groundwater remedy. The ROD requires that the treated water from Subunit A groundwater remedy be reinjected, and the treated water from

the Subunit B/C groundwater remedy be incorporated into the community water supply. The estimated present worth cost of the groundwater remedy for the northern portion of the site is \$14,000,000.

The soil remedy consists of a SVE system with vapor-phase GAC air emission controls to be implemented in the target area. The ROD identifies the target area as that area where VOCs were detected in soil samples and the area where soil gas samples exhibited VOCs greater than 1 microgram per liter ($\mu\text{g/l}$). The ROD provides that this area may be expanded or reduced, as necessary, to include removal of 99 percent of the contaminants. In addition, the ROD states that excavation and treatment may be required to remove residual contamination should soil vapor extraction not be effective. The estimated present worth costs of the SVE system is \$3,100,000.

B. Modifications Made by ESD #1 in 1991

The ESD issued by EPA in January 1991 clarified and modified portions of EPA's September 1989 ROD. To the extent that the 1991 ESD differed from the ROD, the 1991 ESD supersedes the ROD. In summary, the 1991 ESD modified the ROD as follows:

- (1) The clean-up level for methyl ethyl ketone (MEK) in groundwater from 170 parts per billion $\mu\text{g/l}$ to 350 $\mu\text{g/l}$;
- (2) A clean-up level for acetone in groundwater was set at 700 $\mu\text{g/l}$;
- (3) The target area for the soil remedy in the northern portion of the site was defined to consist of target areas B and C defined by all four circles in Figures 5-7 of the 1989 ROD.

- (4) The role of soil excavation as a remedy option, should the selected soil remedy (SVE) at the northern portion of the site prove ineffective, was interpreted to mean that excavation and treatment of soil is one, but not the only, remedial alternative EPA will consider for the soil in the northern portion of the site if soil vapor extraction is ineffective; and
- (5) The selected remedy for an off-site agricultural well referred to as the “Phillips Well” was revised from wellhead treatment to routine water quality monitoring.

C. Modifications Made by ESD #2 in 1993

The ESD issued by EPA in April 1993 further modified portions of EPA’s September 1989 ROD. To the extent that the April 1993 ESD differed from the ROD, the 1993 ESD supersedes the ROD.

In summary, the 1993 ESD modified the selected remedy in the ROD for the northern portion of the site as follows:

- (1) changed the emission control technology for the SVE system from vapor-phase granular activated carbon (GAC) to treatment by thermal oxidation with wet scrubbing;
- (2) changed the designated end use for water treated by the Subunit B/C groundwater remedy from incorporation into the community potable water supply to reinjection back into the Subunit B/C section of the aquifer ²; and
- (3) suspended the remedial design and construction of the liquid-phase GAC

treatment requirement (or other similar effective technology) from the Subunit A groundwater remedy until treatment plant influent data quality indicates the presence of a lower volatile compound (e.g. ketones) at a concentration of 50% or more of its site groundwater clean-up standard.

In summary, the April 1993 ESD modified the remedy selected for the southern portion of the site as follows:

- (1) changed the requirement for a centralized air stripping system for the Subunit B/C groundwater remedy to a decentralized system (e.g. two or more independent liquid-phase GAC treatment systems);
- (2) changed the designated end use for water treated by the Subunit B/C groundwater remedy from municipal use to reinjection back into the Subunit B/C section of the aquifer².

In summary, the April 1993 ESD modified the selected remedy in the ROD for both portions of the site as follows:

- (1) added the requirement that should any private or municipal drinking water well in the vicinity of the PGA site, including but not limited to City of Goodyear wells number 1, 2, 3, 7, 10, 11, and the Parkshadows drinking water well, have an occurrence of a contaminant listed in Table 2-5 of the ROD in a concentration in excess of its groundwater clean-up standard and

² An explanation of when municipal end-use may still be considered is explained in Section III.E of the 1993 ESD.

such contamination is related to contamination in the Unidynamics, Loral, or airport areas, such drinking water well(s) shall be treated as soon as possible by wellhead liquid-phase GAC treatment or other similar technology as approved by EPA.

- (2) established four additional groundwater clean-up standards for Table 2-5 of the ROD as follows:

Benzene - 5 µg/l

Ethylbenzene - 700 µg/l

1,1,2,2-Tetrachloroethane - 0.18 µg/l

Tetrachloroethane - 5 µg/l

D. Modifications Made by ESD #3 in 1995

The ESD issued by EPA in December 1995 further modified portions of EPA's September 1989 ROD. To the extent that the December 1995 ESD differed from the ROD, the 1995 ESD supersedes the ROD.

In summary, the 1995 ESD modified the selected remedy in the ROD for both portions of the site as follows:

- (1) modified the groundwater remedy for Subunit A groundwater to allow air sparging of Subunit A groundwater under certain conditions; and
- (2) modified the groundwater remedy for Subunit A groundwater to include the use of a metal adsorption treatment system at certain Subunit A groundwater remedy extraction wells.

IV. MODIFICATIONS MADE TO 1989 ROD REMEDY BY ESD #4 IN 1998

Table 2-5 of the 1989 ROD (Attachment #2) contains the standards applicable to PGA based on the state and federal requirements and other criteria for groundwater in place at that time and is referenced in the Final Remedy Consent Decree for the groundwater at the PGA site. The purpose of this ESD is to update the current Subunit A and Subunit B/C groundwater clean-up levels such that all numerical standards are equal to the currently available drinking water standards (MCLs, revised October 1996). Hazardous substances identified in Attachment #2 were reviewed and those with new regulatory requirements were updated by ESD #4. Quantifiable cost savings will result from the updating of the chromium clean-up standard. Attachment #3 provides a comprehensive list of the legally applicable groundwater clean-up standards and the rationale for revising these standards from Table 2-5 in the 1989 ROD.

The 1995 ESD #3 for this site added a metal adsorption technology to the Subunit A groundwater remedy for certain Subunit A groundwater remedy extraction wells. In particular, Subunit A well E-17 exhibited elevated levels of chromium above the clean-up standards identified in the original ROD, but below what is now required to protect human health pursuant to the SDWA. The 1989 ROD, which established the original chromium clean-up standard for this site, was signed before a federal standard was established. At that time, there was a draft standard of 50 µg/l total chromium, and this was the value incorporated into the ROD as the PGA site chromium clean-up standard. The national SDWA MCL for chromium was subsequently set at 100 µg/l. By updating the requirements for chromium to be consistent with the current state of knowledge about health effects and legal requirements, remedial measures that proved to be inconsistently reliable used at the Subunit A compliance point, where chromium exceeded the levels identified in the ROD (50

µg/l) but do not exceed the current MCL (100 µg/l), could be dispensed with. This would maintain protection of human health and the environment, while resulting in a savings of \$30,000.

An analysis of the applicable or relevant and appropriate requirements (ARARs) was conducted for each of the individual chemicals. The standards imposed by ESD #4 are the most stringent requirements of the applicable or relevant and appropriate chemical-specific requirements currently in place. For hazardous substances where MCLs were not available, such as for lead, the EPA action level for concentrations of that hazardous substance in water was used as the clean-up standard. To the extent that ESD #4 differs from the ROD, the 1998 ESD #4 supersedes the ROD.

V. SUPPORT AGENCY COMMENTS

The Arizona Department of Environmental Quality (ADEQ) and the Arizona Department of Water Resources (ADWR) reviewed and concurred with this ESD. Both ADEQ and ADWR considered the ESD #4 to be an adequate document and submitted no comments.

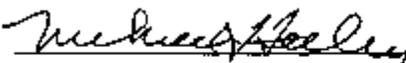
VI. STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes made to the selected remedy upon implementation of this ESD, EPA believes that the remedy for the PGA site will remain protective of human health and the environment, will continue to comply with federal and state requirements that are applicable or relevant and appropriate to this remedial action, and will continue to be cost-effective. In addition, the revised remedy uses permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. Some of the changes and clarifications contained in this ESD are significant, but none of the proposed changes

fundamentally change the remedy. EPA also believes these modifications to the remedy will be cost effective, accelerating the clean-up and restoration of the groundwater at PGA.

VII. PUBLIC PARTICIPATION ACTIVITIES

EPA has presented these changes to the remedy in the form of an ESD because the changes are of a significant but not fundamental nature. EPA provided the State of Arizona with a fifteen (15) working day comment period on this ESD. In accordance with Section 117(c) of CERCLA, 42 U.S.C. Section 9617, EPA will publish a notice in the *Arizona Republic* and the *West Valley View* newspapers which describes this ESD and its availability for review. In accordance with 40 C.F.R. Section 300.435(c)(2)(ii), this ESD and all documents that support the changes and clarification herein will be contained in the Administrative Record for the PGA site prior to commencement of the remedial actions affected by the final ESD.

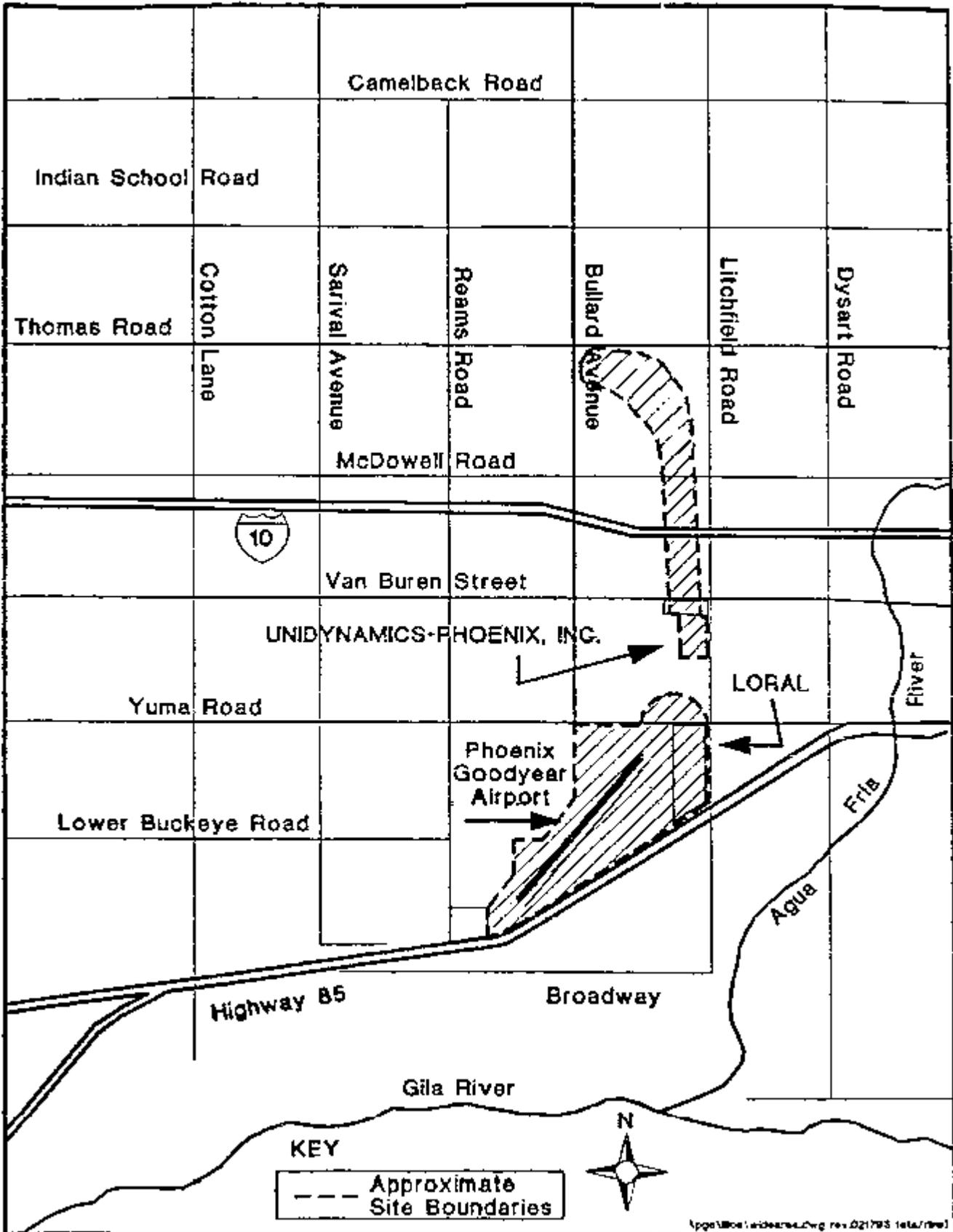


Keith Takata, Director
Superfund Division
U.S. EPA - Region IX

3/26/98

Date

Approximate Boundaries of Phoenix Goodyear Airport Area Superfund Site



**Original Legally Applicable State & Federal Requirements and Other Criteria for Groundwater
(Concentrations in µg/l)**

Source: Table 2-5 of the 1989 ROD for the PGA Federal Superfund Site

COMPOUND	Legally Applicable SDWA MCL	Other Criteria			CLEAN-UP LEVEL	
		AWQC--Drinking Water Only		ADEQ Action Level Water		Proposed MCL (1989)
		Toxicity	Cancer 10 ⁻⁶ Risk			
1,1-Dichloroethylene	7		0.033	1	7	
1,2-Dichloropropane				1	1	
Chloroform	100		0.19	3	100	
Toluene		15,000		340	340	
Trichloroethylene	5		2.8	5	5	
Trichlorofluoromethane				1	1	
Carbon Tetrachloride	5			5	5	
Methylene Chloride				1	1	
Methyl Ethyl Ketone			170	170	170	
Xylenes				440	440	
Antimony		1.46			1.46	
Arsenic	50		0.0025		50	
Barium	1,000			5,000	1,000	
Beryllium			0.0039	5,000	0.0039	
Cadmium	10	10		5	10	
Chromium	50	50		100	50	
Lead	50	50		5	50	
Mercury	2	10			2	
Nickel		15.4			15.4	
Selenium	10	10		50	10	
Silver	50	50			50	
Zinc		5,000			5,000	

Notes: (Source: U.S. EPA, 1987, IRIS Database.

ADEQ: Arizona Department of Environmental Quality

Proposed MCLs - Federal Register, May 22, 1989)

AWQC: Ambient Water Quality Criteria; adjusted for consumption of drinking water only; fish ingestion component removed (U.S. EPA, 1986).

MCL: Maximum Contaminant Level

MCLG: Maximum Contaminant Level Goal

AWQC (10⁻⁶):

SDWA:

The Ambient Water Quality Criteria resulting in a 10⁻⁶ excess lifetime cancer risk (U.S. EPA, 1986)

Safe Drinking Water Act, 40 CFR 141, November 15, 1985

ATTACHMENT 3

**New Legally Applicable Groundwater Clean-Up Standards for the Phoenix-Goodyear Airport (PGA)
Federal Superfund Site in Goodyear, Arizona**

Analyte	Clean Up Standard (µg/l)	Rational for change, if any
1,1-Dichloroethylene	7	no change from Table 2-5 of 1989 ROD
1,2-Dichloropropane	1	no change from Table 2-5 of 1989 ROD
Chloroform	100	no change from Table 2-5 of 1989 ROD
Toluene	1,000	previously at 340 based on ADEQ water action level; current MCL is 1,000
Trichloroethylene	5	no change from Table 2-5 of 1989 ROD
Trichlorofluoromethane	1	no change from Table 2-5 of 1989 ROD
Carbon Tetrachloride	5	no change from Table 2-5 of 1989 ROD
Methylene Chloride	1	no change from Table 2-5 of 1989 ROD
Methyl Ethyl Ketone	350	Revised groundwater clean-up level established in 1991 ESD
Xylenes	440	no change from Table 2-5 of 1989 ROD
Antimony	1.46	no change from Table 2-5 of 1989 ROD
Arsenic	50	no change from Table 2-5 of 1989 ROD
Barium	2,000	previously at 1000 based on previous MCL; current MCL is 2000
Beryllium	0.004	previously at 0.0039, risk based; current MCL is 0.004
Cadmium	5	previously at 10 based on previous MCL; current MCL is 5
Chromium	100	previously at 50 based on proposed MCL; current MCL is 100
Lead	15	previously at 50 based on MCL; current EPA action level is 15
Mercury	2	no change from Table 2-5 of 1989 ROD
Nickel	100	previously at 15.4 based on Ambient Water Quality Standard for drinking water because an MCL was not established; current MCL is 100
Selenium	50	previously at 10 based on previous MCL; current MCL is 50
Silver	50	no change from Table 2-5 of 1989 ROD
Zinc	5,000	no change from Table 2-5 of 1989 ROD
Acetone	700	New groundwater clean-up level established by the 1991 ESD #1
Benzene	5	New groundwater clean-up level established by the 1993 ESD #2
Ethylbenzene	700	New groundwater clean-up level established by the 1993 ESD #2
Tetrachloroethylene	5	New groundwater clean-up level established by the 1993 ESD #2
1,1,2,2-tetrachlorethane	0.18	New groundwater clean-up level established by the 1993 ESD #2