

**ARIZONA DEPARTMENT OF ENVIRONMENTAL
Tank Programs**
Underground Storage Tank (UST) Program

ADEQ use only

DOCUMENT SUBMITTAL FORM

[use as COVER SHEET when submitting the documents listed below]

UST FACILITY INFORMATION:

Thomas O. Price Service Center

Facility Name

4004 South Park Avenue

Street Address

Tucson

City

85714

Zip Code

0-005160

Facility ID

0767.01-05

LUST Number(s)

Pima

County

PERSON RESPONSIBLE FOR SUBMITTING DOCUMENT:

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Telephone (daytime)

PERSON CATEGORY

ADEQ ID

UST owner

UST operator

UST volunteer

Property owner

LUST, RELEASE OR CORRECTIVE ACTION DOCUMENT: (check all that apply; * indicates document requires signed certification statement)

- | | | |
|---|---|---|
| <input type="checkbox"/> * 14 day report (suspected release) | <input type="checkbox"/> * Free Product Report | <input type="checkbox"/> * Addendum (check related document type) |
| <input type="checkbox"/> * 90 day report (suspected release) | <input type="checkbox"/> * Tier 2 risk evaluation | <input checked="" type="checkbox"/> Other: Annual Report |
| <input type="checkbox"/> * 14 day report (confirmed release) | <input type="checkbox"/> * Tier 3 risk evaluation | |
| <input type="checkbox"/> * 90 day report (confirmed release) | <input type="checkbox"/> * Corrective action plan (CAP) | |
| <input type="checkbox"/> * LUST site classification form | <input type="checkbox"/> * Periodic site status report | |
| <input type="checkbox"/> * Site characterization report (SCR) | <input type="checkbox"/> * LUST case closure request | |
| | (includes groundwater monitoring reports) | |
| | w/corrective action completion report | |

UST DOCUMENT:

SAF DOCUMENT: Application #: _____

INFORMAL APPEAL:

- LUST
 SAF
 UST

CERTIFICATION STATEMENT OF UST OWNER, OPERATOR OR VOLUNTEER: (for only documents designated above by *)

"I hereby certify, under penalty of law, which this submittal and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations."

Signature of UST owner, operator or volunteer

Date

Jeffrey Drumm

Name of UST owner, operator or volunteer (printed)

Environmental Manager

Title



CITY OF
TUCSON

ENVIRONMENTAL
SERVICES

June 28, 2013

VIA FEDERAL EXPRESS

Mr. Mike Harren, Case Manager
Arizona Department of Environmental Quality
UST Technical Review Unit of the UST Corrective Action Section
1110 West Washington Street
Phoenix, AZ 85007



**Subject: Thomas O. Price Service Center (LUST File No. 0767.01-0767.05,
ADEQ Facility No. 0-005160) Annual Status and Groundwater
Monitoring Report (January 2012 through December 2012)**

Dear Mr. Harren:

Enclosed please find a copy of the Annual Status and Groundwater Monitoring Report for the above referenced facility. The monitoring and remediation were conducted in accordance with the Arizona Department of Environmental Quality (ADEQ) approved Corrective Action Plan (CAP) Addendum (IT Corporation, 2001) and the CAP Modification (SCS Engineers, 2002). This report describes the monitoring and remedial activities conducted during the time period of January 2011 through December 2012, including groundwater sampling, liquid phase hydrocarbon measurement and recovery, and soil vapor extraction. In addition to one full hardcopy, a CD of the report is enclosed in the back cover.

Please contact Richard Byrd, the Environmental Management Program Coordinator for this project, at (520) 837-3710 if you have any questions regarding this annual report.

Sincerely,

Nancy Petersen
Deputy Director

NP/LE/nr

Enclosures

ADEQ LUST Document Submittal Form
Annual Status and Groundwater Monitoring Report 2012

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File – Price Service Center (bound full hardcopy)



**2012 ANNUAL REMEDIATION STATUS
AND GROUNDWATER MONITORING REPORT**

June 28, 2013

**THOMAS O. PRICE SERVICE CENTER
TUCSON, AZ
LUST File No. 0767.01 - 0767.05
ADEQ Facility ID No. 0-005160**

**Prepared by:
City of Tucson
Environmental Services
P.O. Box 27210
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List of Acronyms

2-Butanone	(MEK)
Arizona Department of Environmental Quality	(ADEQ)
Arizona Department of Health Services	(ADHS)
Arizona Aquifer Water Quality Standards	(AWQS)
Below Land Surface	(BLS)
Benzene, Toluene, Ethyl-benzene, Xylene	(BTEX)
City of Tucson Environmental Services	(COT-ES)
City of Tucson Fire Station Number 10	(TFS-10)
Corrective Action Plan	(CAP)
Cubic Feet Per Minute	(CFM)
Dissolved oxygen	(DO)
Gas Chromatography/Mass Spectrometer	(GC/MS)
Leaking Underground Storage Tank	(LUST)
Light Non-Aqueous Phase Liquid	(LNAPL)
Liquid Petroleum Hydrocarbon	(LPH)
Methyl Tert-butyl Ether	(MTBE)
Monitored Natural Attenuation	(MNA)
Oxidation-Reduction Potential	(ORP)
Parts per Million by Volume	(ppmv)
Quality Control/Quality Assurance	(QA/QC)
Soil Vapor Extraction	(SVE)
Specific Conductance	(SpC)
Thomas O. Price Service Center	(PSC)
Total Petroleum Hydrocarbon	(TPH)
Total Volatile Fuel Hydrocarbons	(TVFH)
Underground Storage Tanks	(USTs)
Vacuum Enhanced Liquid Phase Hydrocarbon Remediation	(VELPHR)
Volatile Organic Analysis	(VOA)
Volatile Organic Compounds	(VOCs)

EXECUTIVE SUMMARY

This report presents the results of monitoring and remediation activities conducted by the City of Tucson Environmental Services Department (COT-ES) for the period January 1, 2012 through December 31, 2012 at the Thomas O. Price Service Center (PSC) LUST site in Tucson, Arizona. Investigation and remediation activities began at the site when evidence of petroleum releases was reported to the Arizona Department of Environmental Quality (ADEQ) on June 14, 1989. Since the initial discovery, the site has been investigated and remediated under ADEQ's LUST program. The PSC appears to be the source of Liquid-Phase Hydrocarbon (LPH, also referred to as free product) and dissolved petroleum hydrocarbons in the shallow groundwater zone extending northward from the PSC to the City of Tucson Fire Station Number 10 (TFS-10), located north of Ajo Way.

COT-ES hired Cardno ERI, a consultant firm, in late 2011 (November – December) to measure the free-product monthly, and to enhance remediation efforts at the TFS-10 area. During the routine annual groundwater monitoring event that was conducted in March 2012, COT-ES measured depth to water and/or free phase product levels in 63 shallow screened and 13 deep screened wells, and collected groundwater samples from 34 shallow and 11 deep monitoring wells. Free product and dissolved benzene in excess of the aquifer water quality standards continue to be present beneath and downgradient of the former source area at PSC in the shallow-groundwater perched aquifer zone, approximately 95 to 115 feet below land surface.

The groundwater flow direction in the shallow zone continues to be north-northeast as in previous reports. Dissolved benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations in the shallow aquifer declined in 2012, except for two wells (PCM-512A and R-020A) at the PSC area. Only benzene exceeded its AWQS at multiple wells, but the area of the dissolved benzene on the groundwater surface is continuing to decline in comparison to previous years. Concentrations of ethylbenzene exceeded AWQS in one well at PCM-512A. No other compounds exceeded the 1994 Corrective Action Plan (AWQS) limits except for 1,2 dibromoethane (EDB). The exact EDB concentrations in wells are unknown due to high

reporting limits. COT-ES will correct this issue with the laboratory to achieve lower reporting limits for the 2013 annual event data. Methyl tert butyl ether (MTBE) exceeded the ADEQ Tier 1 Cleanup Standard of 11 µg/L in sixteen shallow groundwater wells. Compounds 1,2,4-trimethylbenzene and naphthalene exceeded their respective ADEQ Tier 1 Cleanup Standards in one well, WR-219A.

The groundwater flow direction in the deep groundwater zone continues to be towards the northwest. BTEX concentrations were not detected in any of the 11 deep monitoring wells. MTBE exceeded the ADEQ Tier 1 Cleanup Standard of 11 µg/L in one deep groundwater well, WR-227A at 37.6 µg/L.

COT-ES current remedial objectives at this site are to remove free product that is floating on the groundwater table and to remove residual hydrocarbons in the vadose zone through soil vapor extraction (SVE). These objectives are being achieved through free product recovery and SVE at TFS-10 and PSC. Air sweep/sparge technology was installed in ten TFS-10 remediation wells during 2012.

At TFS-10, approximately 1,690 gallons of free product were removed from the groundwater surface by pumping and bailing. Additionally, approximately 7,469 gallons of liquid phase hydrocarbon equivalent were removed and destroyed in the vapor phase through SVE, which operated for 92% of the monitoring period. The average SVE inlet total petroleum hydrocarbons as gasoline (TPH) concentration at TFS-10 during the 12 month reporting was 3,240 mg/m³ or about 756 ppmv, up from the previous reporting period average of 587 ppmv.

South of Ajo Way at PSC, free product occurrences are sporadic and in small quantities compared to those at TFS-10. The SVE was turned off at PSC between September 2010 and April 2012 due to low inlet VOC concentrations. COT-ES restarted the system in April 2012 as VOC vapor inlet concentrations had rebounded to 605 ppmv, and in addition free product levels and benzene concentrations had rebounded in the shallow zone groundwater wells in the immediate vicinity. The system operated 59% of the monitoring period and removed an approximate equivalent of 745 gallons of free product. By the end of the reporting period, the

system inlet concentrations decreased to 144 ppmv, below the site threshold value. COT-ES is working with Cardno ERI to enhance the PSC SVE with air-sparging within the calendar year 2013.

Since free product recovery began in 1997, there has been a total of approximately 16,024 gallons of free product removed from the PSC and TFS-10 sites, including 1,690 gallons in 2012. This total is based on waste manifests shipped out for waste disposal and does not include vapor phase petroleum removed by soil vapor extraction. Equivalent totals of gallons of gasoline destroyed by SVE for 2012 are 7,469 gallons at TFS-10 and 745 gallons at PSC. Remedial activities in the 2013 monitoring period will continue to focus on hydrocarbon removal through both SVE and pumping of free product at TFS-10, SVE and eventually air sparging at PSC, and manual removal at select wells.

1.0 INTRODUCTION

This report summarizes monitoring and remediation activities at the Thomas O. Price Service Center (PSC) and City of Tucson Fire Station Number 10 (TFS-10), Arizona Department of Environmental Quality (ADEQ) Facility ID No. 0-005160 and Leaking Underground Storage Tank (LUST) File No. 0767.01 through .05 from January 1, 2012 through December 31, 2012. Monitoring periods are based on calendar years (January – December), and reported to ADEQ by the following April/May.

The PSC is the primary Operations and Communications Center for the City of Tucson, located at 4004 South Park Avenue, Tucson, Arizona, near the southwest corner of Park Avenue and Ajo Way (Figures 1 and 2). The PSC formerly contained 23 underground storage tanks (USTs) and associated equipment that were the sources of multiple petroleum releases. In June 1989, diesel fuel was observed seeping from concrete joints at the north end of the dispenser islands. The release was reported to ADEQ. All of the USTs were taken out of service by November 1992. Since the initial discovery, the site has been investigated and remediated under ADEQ's LUST program. The PSC appears to be the source of Liquid-Phase Hydrocarbon (LPH, also referred to as free product) and dissolved petroleum hydrocarbons in the shallow groundwater zone extending northward from the PSC to the TFS-10, located north of Ajo Way (Figure 2).

Monitor and remediation wells at the site are either screened across the shallow or deep zone perched aquifers. The shallow zone was defined in the original CAP (HydroGeoChem, 1994) as the upper most groundwater beneath the site with depth to water approximately 90 to 115 feet below ground surface (ft bgs). The deep zone was defined as the second groundwater bearing zone encountered beneath the site with depths to water approximately 114 to 145 ft bgs.

Remedial site goals are to remove free product that is floating on the groundwater table and to remove residual hydrocarbons in the vadose zone. Currently, the free product plume is primarily beneath the TFS-10. Remedial activities include direct product recovery by skimmer pumps, hand bailing, air sparging, and SVE. Figure 2 presents the site layout showing the locations of the PSC and TFS-10 and the location of monitoring and recovery wells located in and around the project site. Detailed views of the PSC and TFS-10 layouts are shown in Figures 3 and 4, respectively.

1.1 Annual Monitoring and Remediation Activities Requirements

The monitoring and remedial requirements for the PSC and TFS-10 are outlined in the Corrective Action Plan (CAP) Addendum (IT Corporation, 2001), the CAP Modification (SCS Engineers, 2002), and the February 22, 2006, February 10, 2010, and May 12, 2011 letters from COT-ES to ADEQ requesting modifications to the Annual Groundwater Monitoring Analysis Matrix. Monitoring and remediation activities conducted during the annual 2012 reporting period were performed in accordance with these documents. The ADEQ approved site corrective action goals identified in the original CAP (HGC, 1994) are as follows:

Soil: Target cleanup levels in the vadose beneath the former underground fuel storage system are the ADEQ UST soil clean-up standards established in 1992 and are provided in the below table. However, if after extended SVE operation time these clean-up levels prove to not be realistically obtainable, the City of Tucson reserved the option to calculate risk-based, site-specific, soil remediation levels (IT Corporation, 2001).

Compound	ADEQ UST Soil Clean-up Levels (1992) (mg/kg)
TPH	100
Benzene	0.13
Toluene	200
Ethylbenzene	68
Xylenes	44

Groundwater: Target cleanup levels for groundwater are Aquifer Water Quality Standards (AWQS). The City of Tucson reserved the option to calculate risk-based, site-specific, groundwater remediation levels (IT Corporation, 2001). The table presented below indicates the site specific chemicals of concern.

Compound	AWQS (ug/L)
Benzene	5
Toluene	1,000
Ethylbenzene	700
Xylene	10,000
Naphthalene (no longer listed)	280
Ethylene dibromide (EDB)	0.05
1,2 dichloroethane	5

In addition to the above AWQS standards, all detected compounds were compared to the ADEQ UST Program Tier 1 Cleanup Standards for Petroleum Products provided by ADEQ Project Manager Mike Harren on June 24, 2013. The standards are included in Appendix I.

2.0 ANNUAL GROUNDWATER MONITORING EVENT

The annual groundwater monitoring event was conducted in March 2012. The following tasks were completed during the monitoring period:

- Prior to collection of groundwater samples, depths to groundwater and free product (if present) were measured in 63 shallow-zone wells and 13 deep-zone wells on March 19, 2012. The groundwater levels were measured after the soil vapor extraction and product recovery system at TFS-10 was turned off for a minimum of 7 days (on 3/12/2012) in order to establish static conditions (Table 1). PSC SVE system was cycled off from September 2010 to April 2012.
- An additional depths to groundwater and free product (if present) measurement event was conducted site-wide between September 13 – 14, 2012 due to the rebounding of free-product observed during the March 2012 event. Both remediation systems were turned off for a minimum of 7 days (on 9/5/2012) in order to achieve static conditions (Table 2).
- Specific conductance (SpC), dissolved oxygen (DO), pH and oxidation-reduction potential (ORP), were measured in 43 shallow monitoring and multipurpose wells, and 11 deep-zone monitoring wells (Table 3) after to sample collection.
- Between March 21, 2012 and April 2, 2012, initial groundwater samples were collected from a total of 34 shallow-zone monitoring wells and 11 deep-zone monitoring wells. Groundwater samples were not collected from wells with free product. Well R-021A was resampled in December 2012 due to high laboratory reporting limits in March 2012. Samples were analyzed for BTEX and MTBE by EPA Method 8260B. The samples from WR-219A, WR-220A, WR-222A, WR-223A, WR-224A, WR-217A, WR-227A, and WR-233A were analyzed for the full list of Method 8260B analytes. (Tables 4 and 5). Due to free product being present, monitor well WR-215A could not be monitored for the full list of VOCs.
- Consulting firm Cardno ERI was hired in the last quarter of 2011 to assist in the monthly gagings, and to evaluate and improve remediation efforts at the TFS-10.

2.1 Water Level Monitoring

Groundwater level measurements were used to construct potentiometric groundwater elevation contour maps that depict the following conditions:

- Shallow aquifer groundwater levels and flow direction in March 2012 after remediation systems were turned off for 7 days, (Figure 5),
- Deep aquifer groundwater levels and flow direction in March 2012 (Figure 6).

The groundwater flow direction in the shallow zone system is to the north-northeast with a calculated hydraulic gradient of approximately 0.0078 ft/ft across the study area in March 2012 (Figure 5).

The groundwater flow direction and gradients are to the northwest in the deep groundwater zone (Figure 6). The flow directions and gradients in both groundwater zones are generally consistent with those of previous reporting periods.

2.2 Apparent Free Product Thickness

Free product is present at most of the TFS-10 property, and it extends eastward along the Ajo Way east of Park Ave. Free product is also present south across Ajo Way on the Price Service Center property (Figure 7). The TFS-10 remediation system was turned off 7 days (on March 12, 2012) prior to the March 19, 2012 free product thicknesses measurements (Table 1 and Figure 7). The PSC SVE system had been off since September 2010 as part of an extended rebound test.

Table 1 and Figure 7 present the March 2012 depths to free product, free product thicknesses, and depths to groundwater. Measurable free product was recorded in 25 shallow groundwater zone wells, and shallow groundwater well R-013A initially did not have product on March 19, was noted to have 0.02 ft of product when field staff attempted to collect a groundwater sample on April 2, 2013.

The thickest LPH accumulations in March 2012 were measured in the TFS-10 vicinity in wells R-036A (9.67 feet) and R-098A (2.91 feet). The LPH thickness boundaries were contoured at intervals of 0.00, 0.10, 0.50, and >1 in feet and included as Figure 7. The March 2012 contours were compared to previous free product contours years 2011 thru 2009 on Figure 9. Figure 9 shows changes of free product at the site over a four year period with consistent scales (1:4,800

absolute), intervals (0.00, 0.10, 0.50, and >1 ft), and color scheme. The previous year contours were initially provided in their respective annual monitoring reports.

Free product thicknesses measured in March 2012 indicate that the volume of free product floating on the groundwater surface increased from the 2011 gaging. Due to the observed increasing trend, the City of Tucson performed another gauging event with resting the systems for a week in September 2012 (Table 2 and Figures 8 and 9). All boundaries (0.0, 0.1, 0.5, and >1) decreased in volume in September.

No deep-zone wells contained free product during the monitoring period, nor has LPH been detected in the deep-zone aquifer at any time since monitoring began at this site.

2.3 Groundwater Sampling and Field Parameter Measurements

Between March 21, 2012 thru April 2, 2012, groundwater samples were collected from a total of 34 shallow-zone monitor wells and 11 deep-zone monitor wells. Groundwater samples were not collected from wells with free product as indicated during the March site-wide gauging event (Table 1) or if product was present at time of sample collection (such as for well R-013A). Following the annual monitoring event, monitor well R-021A was resampled in December 2012 to achieve lower laboratory detection limits. The results are presented in Tables 3, 4, and 5.

Groundwater sampling was conducted in general compliance with the State of Arizona Department of Environmental Quality Underground Storage Tank Program *Release Reporting and Corrective Action Guidance, Appendix H. Groundwater Sampling*, dated August 20, 2002. Groundwater samples were collected by a disposable single check valve bailer, as a grab method, with no well purging. Field parameters, including temperature, pH, SpC, temp, DO, ORP, and turbidity were measured and recorded on the field sheets after sample vials were filled. The field parameter measurements are presented in Table 2. The field sheets are included in Appendix F. All samples were collected by a single grab, no purge method, but due to the software auto fill function on the field laptop, well purge volumes are present on the field sampling forms.

Samples were collected in laboratory-supplied 40-ml glass volatile organic analysis (VOA) vials (for VOCs). Each container was capped and labeled with the sample location, date and time of sampling, analytical method to be used, and bottle preservative type. Sample containers were placed on ice in coolers for transportation to state-certified analytical laboratories, Xenco Laboratories and Test America under chain of custody documentation.

Field QA protocol during the sampling event consisted of:

- One trip blank was collected one a day or per each cooler.
- Collection of one duplicate sample for every ten samples.

Each well sample was analyzed in accordance with the groundwater monitoring analysis matrix detailed in a May 12, 2011 letter from COT-ES to ADEQ. A copy of the currently approved groundwater monitoring analysis matrix is provided in Appendix A. Appendices F and G contains the field sampling sheets and laboratory reports, respectively.

2.3.1 Shallow-Zone Analytical Results

The shallow zone was defined in the original CAP (HydroGeoChem, 1994) as the upper most groundwater beneath the site with depth to water approximately 90 to 115 feet below ground surface (ft bgs). The zone appears to be fairly thin (15 to 20 feet) and has a low hydraulic conductivity (HydroGeoChem, 1994).

Analytical results for shallow-zone groundwater samples are listed in Tables 4 and 5. A shallow zone benzene isoconcentration map is presented in Figure 10. Historical analytical results from previous sampling events are provided in Appendix C. Charts showing benzene concentration trends are provided in Appendix D. These tables and charts show a general downward trend in the concentrations. This trend continued into 2012 for most wells.

Dissolved BTEX and MTBE concentrations in the shallow aquifer declined in 2012, except for two wells at the PSC area. Wells R-020A, and PCM-512A increased in concentrations of BTEX and MTBE. These concentrations and free product arriving in wells R-013A, R-017A, and R-018A (no product was present in March 2011) are likely attributed to rebounding affects of the remediation system at the PSC being off from September 2010 to April 2012 for an extended rebound test. Monitor well R-021A was also monitored in December 2012 to obtain lower laboratory detection limits. The March 2012 BTEX detection limits were elevated due to the high concentrations of MTBE present in the well. Re-analysis showed lower MTBE concentrations (see Table 4) with minor concentrations of benzene at 3.6 µg/L.

During URS's compilation of monitor and boring log information (completed for the hydrogeological evaluation presented in previous 2011 annual report), three wells with dual screened intervals completions in the shallow groundwater zone existed at the site. The

shallowest well casings had not been previously monitored since installation. Wells PCM-509A & B, and PCM-510A & B are located near the former release area at PSC, while PCM-508A & B is located on the north side of Ajo Way next to the Julian Wash. Both intervals were monitored in March 2012 and the results are presented below and in Table 4:

Table: Observed Concentrations in Dual Screened Wells

Well	Screen Interval (feet ground below surface)	Benzene (µg/L)
PCM-508A	117-120	1.55
PCM-508B	80-110	71
PCM-509A	117-120	ND
PCM-509B	95-108	5.6
PCM-510A	117-120	1.6
PCM-510B	95-108	1.15 ft of FP

ND = non-detect. FP = free product.

Table 4 presents BTEX and MTBE results. Benzene was detected above the AWQS of 5 micrograms per liter (µg/L) in 7 of the 34 shallow-zone wells initial results (not including re-samples). Concentrations of ethylbenzene exceeded AWQSs in one well at PCM-512A at 734 µg/L. Methyl tert butyl ether (MTBE) exceeded the ADEQ Tier 1 Cleanup Standard of 11 µg/L in sixteen shallow groundwater wells.

The extent of dissolved benzene above the AWQS is fully delineated except for the southeast (upgradient section) of the plume (Figure 10). Since 2009, the city has been observing unusual benzene concentration trends in downgradient monitor well WR-220A reaching above the 5 µg/L AWQS to 48 µg/L. However, in 2011 and 2012 concentrations decreased and were 0.64 µg/L in March 2012.

The 2012 benzene contours were compared to previous years thru to 2009 and are provided on Figure 11. Figure 11 shows changes of benzene at the site over a four year period with consistent scales (1:7,200 absolute), contour intervals (5, 50, 500 µg/L), and color scheme. The 2011, 2010 and 2009 year contours have also been provided in the previous annual monitoring reports.

Table 5 presents selected VOCs which were detected from the analysis of Method 8260B full list in 2012. The compounds detected are compared to their respective AWQS or ADEQ UST

Program Tier 1 Cleanup Standard. VOCs including 1,2,4 trimethylbenzene, 1,2 dichloroethane, 1,3,5 trimethylbenzene, 4-methyl-2-pentanone, carbon disulfide, naphthalene, n-butylbenzene, n-propylbenzene, and sec butylbenzene were detected in several shallow-zone monitoring wells. Of these, only 1,2,4-trimethylbenzene and naphthalene exceeded their respective Tier 1 Cleanup Standards in well WR-219A. The closest downgradient well WR-220A is also analyzed for full VOC list, and that well is non-detect for 1,2,4-trimethylbenzene and naphthalene. There were no detections of 1,2 dibromoethane (EDB), but the laboratory reporting limits (RLs) (0.5 µg/L) are higher than the CAP standard (0.05 µg/L). COT-ES will correct this issue with the laboratory to achieve lower RLs for the next annual event.

2.3.2 Deep Zone Analytical Results

The deep zone was defined in the original CAP (HydroGeoChem, 1994) as the second groundwater bearing zone encountered beneath the site with depths to water approximately 114 to 145 ft bls. It appears to be separated from the overlying shallow zone by 20 to 40 feet of low permeability silts and clays, however towards the eastern portion of the site, the deep and shallow zones are combined. The deep zone is expected to be fairly well isolated from the regional aquifer which is 40 to 50 feet below the deep zone.

In the 11 deep zone monitor wells, most analytical results were below laboratory detection levels (Tables 3 and 4). There were no AWQS exceedences in any of the deep zone monitor wells. No BTEX compounds were detected in any of the deep zone monitor wells. MTBE was detected in one deep zone monitor well, WR-227A (37.6 µg/L), above the Tier 1 Cleanup Standard of 11 µg/L. Concentrations of MTBE for WR-227A are on a decreasing trend; previous year concentration was 69.2 µg/L.

2.4 QA/QC Results

Quality assurance/quality control (QA/QC) analyses for the 2012 sampling events included 5 duplicate sample analyses, and 7 trip blanks. Analytical results for QA/QC samples are presented in the laboratory reports in Appendix G, and summarized in tables in Appendix E.

No analytes were detected in any of the trip blanks.

The laboratory recovery percentages were within laboratory quality assurance objectives for accuracy, except for the data qualifiers listed in the case narratives presented in Appendix H. All were within acceptable quality and would not affect data results, except for the batch of sample

analysis for March 26, 2012. Compound iodomethane (also known as methyl iodide) was falsely detected due to instrument “noise” in the Trip Bank (sample #9) and WR-217A (sample #3). The detections were removed and the lab reports were amended and re-issued. This compound is not a constituent of concern at this site (see previous Section 1.1 of this report), and no further action was necessary.

The four sample duplicate analyses were compared with the original sample analyses to evaluate the degree of laboratory precision. The relative percent differences (RPD) between the sample and its duplicate for all detected analytes were less than 9%. COT-ES believes there are no quality control issues with this data set, and can be used for its intended purpose.

3.0 REMEDIATION ACTIVITIES

Remedial activities during the monitoring period included direct recovery by pumping and hand bailing, air-sweeping/sparging, and vapor phase recovery by SVE. In 2012, Cardno initiated air sparging at wells R-027A, R-030A, R-031A, R-032A, R-034A, R-036A, R-047A, R-051A, and R-098A, and air sweeping at well WR-215A (Figure 4). Air sparging and sweeping consists of pushing air into the free-product (sparging) or over the top of the free-product (sweeping). All remedial efforts are halted or turned-off a full week prior to the annual free-product measurement event (March) to allow the environment to stabilize and provide a check on site conditions; all other measurements are with the systems operating.

3.1 TFS-10 Remediation Activities

Free product recovery activities at TFS-10 included the operation of 12 skimmer pumps in selected wells, and a VELPHR remedial system (SVE wells) (Figures 4). The system has seven zones (1-7) which represents remediation wells on the same trunk lines; the list of wells per zone is listed on Figure 4. As shown on Table 6, 16,024 gallons of free product have been removed since September 1997, when product recovery was initiated. Approximately 1,690 gallons of free product were recovered during this monitoring period. Appendix B contains apparent free product thickness charts per each TFS-10 remedial zone. These charts are based on the monthly free product measurements.

The VELPHR remedial system has been in operation at the TFS-10 since October 2004. The SVE unit of the VELPHR remedial system consists of a Soleco TCAT 500 thermal/catalytic oxidizer with a nominal flow rate of 500 cubic feet per minute (cfm) and up to 12-inches of mercury vacuum. During the period January – August 2012, Zones 2, and 4 through 7 operated; and during September – December 2012, only Zones 5 through 7 operated. Monthly free-product measurements determine which Zones should be active. Zones 1 & 3 have remained off since October 2007 and May 2007, respectively. The system operated 92% percent of the time; this is a calculated value based on hours of operation divided by the length of the reporting period. During this reporting period the system removed the equivalent of approximately 7,469 gallons of gasoline in the vapor phase. The inlet concentration averaged 3,240 mg/m³ or 756 ppmv, based on four SVE influent analyses by EPA Method TO-3 for Total Petroleum Hydrocarbons as gasoline, and EPA Method TO-15 Modified for Total Petroleum Hydrocarbons C6 – C10 GRO (Table 7). Air sweeping/sparging technology was installed in the following wells: (2nd Quarter) R-031A, R-032A, R-036A, R-047A, R-098A; (3rd Quarter) R-027A, R-030A, R-034A, R-051A;

(4th Quarter – south side of Ajo Way) WR-215A. Where necessary, skimmer pumps were removed to allow the installation of the air sweep/sparging equipment.

3.2 Price Service Center Remediation Activities

Remediation at Price Service Center consists of SVE and hand bailing. The system has three zones (A-C) which represents remediation wells on the same trunk lines; the list of wells per zone is listed on Figure 3. The Zones A-C were previously known as Legs 1-3; the numbers were converted to alphas to be specific to the PSC remedial system with TFS-10 remedial system zones being numeric. When in operation, only Zone A is open due to lack of significant presence of free-product in Zones B and C. Zone C has been off since June 2006. Zone B has been off since prior April 2004.

The PSC SVE system was off from September 2010 through April 2012 due to low inlet VOC concentrations. Free product occurrences are sporadic and in small quantities. The March 2011 SVE VOC vapor concentrations had not significantly rebounded and were below COT-ES' threshold of 200 ppmv gasoline range organics (established in a previous monitoring report Clear Creek Associates, 2011), and the system remained off until vapor concentrations rebounded in March 2012 at 605 ppmv. The system was turned on in April 2012, but vapor inlet concentrations decreased to below the 200 ppmv threshold before the end of the year (November 2012 sample at 144 ppmv). The system operated 59% percent of the time; this is a calculated value based on hours of operation divided by the length of the reporting period. During this reporting period the system removed approximately 745 gallons of gasoline in the vapor phase. The inlet concentration averaged 1,521 mg/m³ or 354 ppmv, based on four SVE influent analyses by EPA Method TO-3 for Total Petroleum Hydrocarbons as gasoline, and EPA Method TO-15 Modified for Total Petroleum Hydrocarbons C6 – C10 GRO (Table 8). These vapor inlet concentrations are about one-half the concentrations observed at the TFS-10. COT-ES is working with Cardno ERI to enhance the SVE with air-sparging in calendar year 2013.

3.3 Free Product Recovery and Hand Bailing

Wells with free-product are measured monthly at the site. Appendix B contains apparent free product thickness charts per each remedial zone for each system and for wells not connect to a system. Between March 2011 and March 2012, non-pumping wells have shown increases in the following PSC vicinity wells: R-019A (0.02' – 0.51'), PCM-511A (0' – 0.19'), PCM-516A (0.72' – 1.13'), and WR-215A (0' – 0.71') (see Appendix C: Chart for Remaining Wells with

Product). Between March 2011 and March 2012, free product increased in the following TFS-10 remedial system wells: Zone 2 wells R-099A and R-050A; Zone 4 wells R-035A and R-037A; Zone 5 wells R-036A, R-047A, R-051A, and R-098A; Zone 6 wells R-027A, R-030A. Recent modification to this remediation systems have increased it's removal rate of free phase gasoline and decreased the amount of free-product volume remaining in the shallow groundwater zone in most of these wells by September 2012. COT-ES will continue to operate remediation systems, air sweep/sparge, skimmer pumps, and hand bailing efforts to lower free product levels in the above listed wells.

3.4 Total Site Free Product Removal in Vapor Phase

A total of 16,024 gallons of free product was removed from the site, including 1,690 gallons in the monitoring period ending in 2012, since free product recovery began in 1997. SVE system at TFS-10 ran for 92% of the monitoring period and removed an equivalent of 7,469 gallons of liquid petroleum from the TFS-10 site. SVE system at PSC ran for 59% of the monitoring period and removed an equivalent of 745 gallons. Air sparging will be introduced at the PSC system in 2013.

4.0 REFERENCES

Arizona Department of Environmental Quality, 2002, “Release Reporting and Corrective Action Guidance—Appendix H”

HydroGeoChem (HGC), 1994, “Corrective Action Plan”

IT Corporation, 2001. “Corrective Action Plan Addendum”

SCS Engineers, 2002. “Corrective Action Plan Modifications”, February 11, 2002

Clear Creek Associates, 2004. “Remedial Action Effectiveness Evaluation, Thomas O. Price Service Center, Tucson, Arizona” dated January 8, 2004.

Clear Creek Associates, 2004. “Oxygen Release Compound (ORC) Installation Program, Thomas O. Price Service Center, Tucson, Arizona” dated July 30, 2004

Clear Creek Associates, 2006. “Annual Remediation Status and Groundwater Monitoring Report—September 2005 through August 2006” dated October 6, 2006.

Clear Creek Associates, 2011. “Annual Remediation Status and Groundwater Monitoring Report—September 2009 through August 2011” dated May 12, 2011.

TABLES

Table 1
LPH Thicknesses and Depths to Groundwater - March 2012
Thomas Price Service Center, City of Tucson

	Well ID	Measurement Date	GW Depth (feet below TOC) or Depth to GW/LPH Interface	Reference Point Correction Factor (ft)	Depth to Water¹ (ft bls)	Depth to LPH (feet below TOC)	LPH Thickness (feet)	Corrected Depth to Water² (feet below TOC)	Benchmark Elevation (ft amsl)	GW Elevation (ft amsl)
Shallow Zone Monitoring wells	PCM-506A	3/19/2012	101.82	0.94	102.76	NONE	0.00	102.76	2466.93	2364.17
	PCM-507A	3/19/2012	113.61	0.48	114.09	111.67	1.94	112.69	2477.24	2364.55
	PCM-508A	3/19/2012	105.98	0.41	106.39	NONE	0.00	106.39	2474.31	2367.92
	PCM-508B	3/19/2012	100.28	0.49	100.77	NONE	0.00	100.77	2474.31	2373.54
	PCM-509A	3/19/2012	102.15	0.60	102.75	NONE	0.00	102.75	2481.30	2378.55
	PCM-509B	3/19/2012	102.04	0.47	102.51	NONE	0.00	102.51	2481.30	2378.79
	PCM-510A	3/19/2012	102.07	0.45	102.52	NONE	0.00	102.52	2481.26	2378.74
	PCM-510B	3/19/2012	102.85	0.45	103.30	101.70	1.15	102.47	2481.26	2378.78
	PCM-511A	3/19/2012	102.51	0.43	102.94	102.32	0.19	102.80	2479.97	2377.17
	PCM-512A	3/19/2012	102.41	0.33	102.74	NONE	0.00	102.74	2480.48	2377.74
	PCM-516A	3/19/2012	115.35	0.55	115.90	114.22	1.13	115.09	2480.93	2365.84
	PCM-517A	3/19/2012	110.52	0.57	111.09	NONE	0.00	111.09	2479.29	2368.20
	PCM-534A	3/19/2012	113.72	0.60	114.32	111.47	2.25	112.70	2476.87	2364.17
	PCM-535A	3/19/2012	101.64	0.35	101.99	NONE	0.00	101.99	2475.38	2373.39
	R-012A	3/19/2012	101.75	0.79	102.54	NONE	0.00	102.54	2481.94	2379.40
	R-013A	3/19/2012	102.22	0.73	102.95	NONE	0.00	102.95	2482.34	2379.39
	R-016A	3/19/2012	101.57	0.53	102.10	NONE	0.00	102.10	2481.64	2379.54
	R-017A	3/19/2012	102.98	0.75	103.73	102.01	0.97	103.03	2482.32	2379.29
	R-018A	3/19/2012	102.67	0.69	103.36	101.70	0.97	102.66	2481.42	2378.76
	R-019A	3/19/2012	102.11	0.93	103.04	101.60	0.51	102.67	2481.38	2378.71
	R-020A	3/19/2012	101.37	0.71	102.08	NONE	0.00	102.08	2480.27	2378.19
	R-021A	3/19/2012	101.92	0.72	102.64	NONE	0.00	102.64	2482.56	2379.92
	R-022A	3/19/2012	101.51	0.93	102.44	NONE	0.00	102.44	2482.54	2380.10
	R-027A	3/19/2012	100.55	0.21	100.76	99.24	1.31	99.82	2475.00	2375.18
	R-028A	3/19/2012	98.41	0.35	98.76	98.09	0.32	98.53	2472.76	2374.23
	R-029A	3/19/2012	98.26	0.46	98.72	NONE	0.00	98.72	2472.55	2373.83
	R-030A	3/19/2012	100.03	0.41	100.44	98.65	1.38	99.45	2474.91	2375.46
	R-031A	3/19/2012	100.50	0.46	100.96	99.34	1.16	100.12	2475.16	2375.03
	R-032A	3/19/2012	100.72	0.78	101.50	98.94	1.78	100.22	2474.63	2374.42
	R-033A	3/19/2012	98.23	0.55	98.78	98.21	0.02	98.77	2472.73	2373.96

Table 1
LPH Thicknesses and Depths to Groundwater - March 2012
Thomas Price Service Center, City of Tucson

	Well ID	Measurement Date	GW Depth (feet below TOC) or Depth to GW/LPH Interface	Reference Point Correction Factor (ft)	Depth to Water¹ (ft bls)	Depth to LPH (feet below TOC)	LPH Thickness (feet)	Corrected Depth to Water² (feet below TOC)	Benchmark Elevation (ft amsl)	GW Elevation (ft amsl)
Shallow Zone Monitoring wells	R-034A	3/19/2012	108.23	0.58	108.81	107.68	0.55	108.41	2472.53	2364.12
	R-035A	3/19/2012	99.56	0.43	99.99	98.92	0.64	99.53	2473.83	2374.30
	R-036A	3/19/2012	109.67	0.74	110.41	100.00	9.67	103.45	2474.31	2370.86
	R-037A	3/19/2012	99.15	0.91	100.06	98.46	0.69	99.56	2473.82	2374.26
	R-044A	3/19/2012	102.83	0.07	102.90	NONE	0.00	102.90	2470.75	2367.85
	R-045A	3/19/2012	97.96	0.21	98.17	NONE	0.00	98.17	2471.98	2373.81
	R-046A	3/19/2012	104.05	-0.78	103.27	103.80	0.25	103.09	2479.55	2376.46
	R-047A	3/19/2012	100.63	0.69	101.32	99.51	1.12	100.51	2474.69	2374.18
	R-048A	3/19/2012	98.47	0.44	98.91	NONE	0.00	98.91	2474.83	2375.92
	R-049A	3/19/2012	98.26	0.37	98.63	NONE	0.00	98.63	2473.56	2374.93
	R-050A	3/19/2012	98.95	0.41	99.36	98.43	0.52	98.99	2473.70	2374.72
	R-051A	3/19/2012	111.46	0.49	111.95	110.77	0.69	111.45	2476.22	2364.77
	R-098A	3/19/2012	107.71	0.29	108.00	104.80	2.91	105.90	2474.70	2368.79
	R-099A	3/19/2012	99.24	0.52	99.76	97.96	1.28	98.84	2474.14	2375.30
	WR-208A	3/19/2012	99.69	-0.32	99.37	NONE	0.00	99.37	2482.04	2382.67
	WR-209A	3/19/2012	103.32	-0.29	103.03	NONE	0.00	103.03	2482.29	2379.26
	WR-210A	3/19/2012	104.45	-0.75	103.70	NONE	0.00	103.70	2483.22	2379.52
	WR-211A	3/19/2012	102.91	-0.38	102.53	NONE	0.00	102.53	2481.53	2379.00
	WR-212A	3/19/2012	99.04	0.25	99.29	NONE	0.00	99.29	2473.60	2374.31
	WR-213A	3/19/2012	99.84	-0.12	99.72	NONE	0.00	99.72	2478.34	2378.62
	WR-214A	3/19/2012	108.57	-0.57	108.00	NONE	0.00	108.00	2483.28	2375.28
	WR-215A	3/19/2012	105.12	-0.87	104.25	104.41	0.71	103.74	2479.90	2376.16
	WR-219A	3/19/2012	101.82	0.67	102.49	NONE	0.00	102.49	2469.56	2367.07
	WR-220A	3/19/2012	110.29	0.60	110.89	NONE	0.00	110.89	2476.92	2366.03
	WR-221A	3/19/2012	115.12	0.41	115.53	NONE	0.00	115.53	2482.73	2367.20
	WR-222A	3/19/2012	94.59	0.38	94.97	NONE	0.00	94.97	2472.41	2377.44
	WR-223A	3/19/2012	106.99	0.46	107.45	NONE	0.00	107.45	2475.25	2367.80
	WR-224A	3/19/2012	99.17	0.21	99.38	NONE	0.00	99.38	2472.03	2372.65
WR-225A	3/19/2012	122.06	1.09	123.15	NONE	0.00	123.15	2489.86	2366.71	
WR-295A	3/19/2012	102.61	0.66	103.27	NONE	0.00	103.27	2479.52	2376.25	
WR-296A	3/19/2012	101.99	1.05	103.04	NONE	0.00	103.04	2479.04	2376.00	
WR-297A	3/19/2012	102.55	0.46	103.01	NONE	0.00	103.01	2479.04	2376.03	
WR-298A	3/19/2012	102.45	0.42	102.87	NONE	0.00	102.87	2479.54	2376.67	

Table 1
LPH Thicknesses and Depths to Groundwater - March 2012
Thomas Price Service Center, City of Tucson

	Well ID	Measurement Date	GW Depth (feet below TOC) or Depth to GW/LPH Interface	Reference Point Correction Factor (ft)	Depth to Water¹ (ft bls)	Depth to LPH (feet below TOC)	LPH Thickness (feet)	Corrected Depth to Water² (feet below TOC)	Benchmark Elevation (ft amsl)	GW Elevation (ft amsl)
Deep Zone Monitoring Wells	WR-216A	3/19/2012	119.21	-0.63	118.58	NONE	0.00	118.58	2481.60	2363.02
	WR-217A	3/19/2012	118.16	-0.47	117.69	NONE	0.00	117.69	2479.94	2362.25
	WR-218A	3/19/2012	119.84	-0.41	119.43	NONE	0.00	119.43	2478.04	2358.61
	WR-227A	3/19/2012	162.94	0.66	163.60	NONE	0.00	163.60	2471.00	2307.40
	WR-228A	3/19/2012	118.41	-0.49	117.92	NONE	0.00	117.92	2482.77	2364.85
	WR-229A	3/19/2012	119.80	0.00	119.80	NONE	0.00	119.80	2472.66	2352.86
	WR-230A	3/19/2012	121.19	0.80	121.99	NONE	0.00	121.99	2489.72	2367.73
	WR-231A	3/19/2012	129.37	0.90	130.27	NONE	0.00	130.27	2476.64	2346.37
	WR-232A	3/19/2012	123.61	-0.59	123.02	NONE	0.00	123.02	2480.00	2356.98
	WR-233A	3/19/2012	154.93	0.61	155.54	NONE	0.00	155.54	2457.70	2302.16
	WR-235A	3/19/2012	157.72	0.89	158.61	NONE	0.00	158.61	2468.64	2310.03
	WR-295B	3/19/2012	116.92	0.41	117.33	NONE	0.00	117.33	2485.04	2367.71
	WR-296B	3/19/2012	116.04	0.79	116.83	NONE	0.00	116.83	2479.04	2362.21

¹ Depth to water corrected to account for reference elevation offset

² Water level corrected to account for specific gravity of gasoline (sg=0.72).

NM = not measured, ND = not detected, NS = Not sampled

LPH = liquid petroleum hydrocarbon, GW - Groundwater elevation, TOC = top of casing

NA = Not available. Well elevation has not been surveyed yet.

Table 2
LPH Thicknesses and Depths to Groundwater - September 2012
Thomas Price Service Center, City of Tucson

	Well ID	Measurement Date	GW Depth (feet below TOC) or Depth to GW/LPH Interface	Reference Point Correction Factor (ft)	Depth to Water ¹ (ft bls)	Depth to LPH (feet below TOC)	LPH Thickness (feet)	Corrected Depth to Water ² (feet below TOC)	Benchmark Elevation (ft amsl)	GW Elevation (ft amsl)
Shallow Zone Monitoring wells	PCM-506A	9/13/2012	102.25	0.94	103.19	NONE	0.00	103.19	2466.93	2363.74
	PCM-507A	9/14/2012	113.94	0.48	114.42	112.03	1.91	113.04	2477.24	2364.20
	PCM-508B	9/14/2012	100.55	0.49	101.04	NONE	0.00	101.04	2474.31	2373.27
	PCM-509A	9/13/2012	102.25	0.60	102.85	NONE	0.00	102.85	2481.30	2378.45
	PCM-509B	9/13/2012	102.11	0.47	102.58	NONE	0.00	102.58	2481.30	2378.72
	PCM-510A	9/13/2012	102.14	0.45	102.59	NONE	0.00	102.59	2481.26	2378.67
	PCM-510B	9/13/2012	102.44	0.45	102.89	101.91	0.53	102.51	2481.26	2378.75
	PCM-511A	9/14/2012	102.51	0.43	102.94	102.42	0.09	102.88	2479.97	2377.10
	PCM-512A	9/13/2012	102.74	0.33	103.07	NONE	0.00	103.07	2480.48	2377.41
	PCM-516A	9/14/2012	115.93	0.55	116.48	114.49	1.44	115.44	2480.93	2365.49
	PCM-534A	9/14/2012	114.19	0.60	114.79	111.93	2.26	113.16	2476.87	2363.70
	PCM-535A	9/14/2012	101.74	0.35	102.09	NONE	0.00	102.09	2475.38	2373.29
	R-012A	9/13/2012	101.92	0.79	102.71	NONE	0.00	102.71	2481.94	2379.23
	R-013A	9/13/2012	102.35	0.73	103.08	NONE	0.00	103.08	2482.34	2379.26
	R-016A	9/13/2012	101.69	0.53	102.22	NONE	0.00	102.22	2481.64	2379.42
	R-017A	9/14/2012	102.31	0.75	103.06	102.25	0.06	103.02	2482.32	2379.30
	R-018A	9/14/2012	101.85	0.69	102.54	101.84	0.01	102.53	2481.42	2378.88
	R-019A	9/14/2012	101.77	0.93	102.70	NONE	0.00	102.70	2481.38	2378.68
	R-020A	9/14/2012	101.45	0.71	102.16	NONE	0.00	102.16	2480.27	2378.11
	R-021A	9/13/2012	102.15	0.72	102.87	NONE	0.00	102.87	2482.56	2379.69
	R-022A	9/13/2012	101.69	0.93	102.62	NONE	0.00	102.62	2482.54	2379.92
	R-027A	9/14/2012	100.42	0.21	100.63	99.53	0.89	99.99	2475.00	2375.01
	R-028A	9/14/2012	98.37	0.35	98.72	NONE	0.00	98.72	2472.76	2374.04
	R-029A	9/14/2012	98.11	0.46	98.57	NONE	0.00	98.57	2472.55	2373.98
	R-030A	9/14/2012	101.97	0.41	102.38	100.65	1.32	101.43	2474.91	2373.48
	R-031A	9/14/2012	100.88	0.46	101.34	99.59	1.29	100.41	2475.16	2374.75
	R-032A	9/14/2012	100.43	0.78	101.21	99.19	1.24	100.32	2474.63	2374.32
	R-033A	9/14/2012	98.54	0.55	99.09	98.35	0.19	98.95	2472.73	2373.77
	R-034A	9/14/2012	108.10	0.58	108.68	108.03	0.07	108.63	2472.53	2363.90
	R-035A	9/14/2012	99.40	0.43	99.83	99.24	0.16	99.71	2473.83	2374.12
	R-036A	9/14/2012	111.30	0.74	112.04	100.81	10.49	104.49	2474.31	2369.82
	R-037A	9/14/2012	99.34	0.91	100.25	98.69	0.65	99.78	2473.82	2374.04
R-046A	9/14/2012	104.02	-0.78	103.24	103.97	0.05	103.20	2479.55	2376.34	

Table 2
LPH Thicknesses and Depths to Groundwater - September 2012
Thomas Price Service Center, City of Tucson

	Well ID	Measurement Date	GW Depth (feet below TOC) or Depth to GW/LPH Interface	Reference Point Correction Factor (ft)	Depth to Water¹ (ft bls)	Depth to LPH (feet below TOC)	LPH Thickness (feet)	Corrected Depth to Water² (feet below TOC)	Benchmark Elevation (ft amsl)	GW Elevation (ft amsl)
Shallow Zone Monitoring wells	R-047A	9/14/2012	101.04	0.69	101.73	99.82	1.22	100.85	2474.69	2373.84
	R-048A	9/14/2012	98.70	0.44	99.14	NONE	0.00	99.14	2474.83	2375.69
	R-049A	9/14/2012	98.48	0.37	98.85	NONE	0.00	98.85	2473.56	2374.71
	R-050A	9/14/2012	98.83	0.41	99.24	98.75	0.08	99.18	2473.70	2374.52
	R-051A	9/14/2012	110.99	0.49	111.48	NONE	0.00	111.48	2476.22	2364.74
	R-098A	9/14/2012	105.19	0.29	105.48	104.43	0.76	104.93	2474.70	2369.77
	R-099A	9/14/2012	98.42	0.52	98.94	NONE	0.00	98.94	2474.14	2375.20
	WR-208A	9/13/2012	99.96	-0.32	99.64	NONE	0.00	99.64	2482.04	2382.40
	WR-209A	9/13/2012	103.51	-0.29	103.22	NONE	0.00	103.22	2482.29	2379.07
	WR-210A	9/13/2012	104.54	-0.75	103.79	NONE	0.00	103.79	2483.22	2379.43
	WR-211A	9/13/2012	103.04	-0.38	102.66	NONE	0.00	102.66	2481.53	2378.87
	WR-212A	9/14/2012	99.28	0.25	99.53	NONE	0.00	99.53	2473.60	2374.07
	WR-213A	9/13/2012	100.18	-0.12	100.06	NONE	0.00	100.06	2478.34	2378.28
	WR-214A	9/13/2012	108.78	-0.57	108.21	NONE	0.00	108.21	2483.28	2375.07
	WR-215A	9/14/2012	105.03	-0.87	104.16	104.62	0.41	103.86	2479.90	2376.03
	WR-219A	9/13/2012	102.28	0.67	102.95	NONE	0.00	102.95	2469.56	2366.61
	WR-220A	9/13/2012	110.42	0.60	111.02	NONE	0.00	111.02	2476.92	2365.90
	WR-221A	9/13/2012	115.44	0.41	115.85	NONE	0.00	115.85	2482.73	2366.88
	WR-222A	9/13/2012	94.88	0.38	95.26	NONE	0.00	95.26	2472.41	2377.15
	WR-223A	9/13/2012	107.30	0.46	107.76	NONE	0.00	107.76	2475.25	2367.49
	WR-224A	9/14/2012	99.38	0.21	99.59	NONE	0.00	99.59	2472.03	2372.44
	WR-225A	9/13/2012	121.42	1.09	122.51	NONE	0.00	122.51	2489.86	2367.35
	WR-295A	9/13/2012	102.80	0.66	103.46	NONE	0.00	103.46	2479.52	2376.06
WR-296A	9/13/2012	102.16	1.05	103.21	NONE	0.00	103.21	2479.04	2375.83	
WR-297A	9/13/2012	102.73	0.46	103.19	NONE	0.00	103.19	2479.04	2375.85	
WR-298A	9/13/2012	102.62	0.42	103.04	NONE	0.00	103.04	2479.54	2376.50	

Table 2
LPH Thicknesses and Depths to Groundwater - September 2012
Thomas Price Service Center, City of Tucson

	Well ID	Measurement Date	GW Depth (feet below TOC) or Depth to GW/LPH Interface	Reference Point Correction Factor (ft)	Depth to Water¹ (ft bls)	Depth to LPH (feet below TOC)	LPH Thickness (feet)	Corrected Depth to Water² (feet below TOC)	Benchmark Elevation (ft amsl)	GW Elevation (ft amsl)
Deep Zone Monitoring Wells	WR-216A	9/13/2012	119.52	-0.63	118.89	NONE	0.00	118.89	2481.60	2362.71
	WR-217A	9/13/2012	118.55	-0.47	118.08	NONE	0.00	118.08	2479.94	2361.86
	WR-218A	9/13/2012	120.24	-0.41	119.83	NONE	0.00	119.83	2478.04	2358.21
	WR-227A	9/13/2012	162.67	0.66	163.33	NONE	0.00	163.33	2471.00	2307.67
	WR-228A	9/13/2012	118.79	-0.49	118.30	NONE	0.00	118.30	2482.77	2364.47
	WR-230A	9/13/2012	121.56	0.80	122.36	NONE	0.00	122.36	2489.72	2367.36
	WR-231A	9/13/2012	129.53	0.90	130.43	NONE	0.00	130.43	2476.64	2346.21
	WR-232A	9/13/2012	123.91	-0.59	123.32	NONE	0.00	123.32	2480.00	2356.68
	WR-233A	9/13/2012	154.79	0.61	155.40	NONE	0.00	155.40	2457.70	2302.30
	WR-235A	9/13/2012	157.48	0.89	158.37	NONE	0.00	158.37	2468.64	2310.27
	WR-295B	9/13/2012	117.29	0.41	117.70	NONE	0.00	117.70	2485.04	2367.34
	WR-296B	9/13/2012	116.38	0.79	117.17	NONE	0.00	117.17	2479.04	2361.87

¹ Depth to water corrected to account for reference elevation offset

² Water level corrected to account for specific gravity of gasoline (sg=0.72).

NM = not measured, ND = not detected, NS = Not sampled

LPH = liquid petroleum hydrocarbon, GW - Groundwater elevation, TOC = top of casing

NA = Not available. Well elevation has not been surveyed yet.

Table 3
PSC and TFS #10 Summary of Field Parameters - 2012
Thomas Price Service Center, City of Tucson

Well ID	Groundwater Zone	Date Sampled	DO (mg/L)	ORP (mV)	pH	SpC (mhos/cm)	Temp (C)
WR-216A	Deep	3/22/2012	7.10	144.6	7.41	771	25.30
WR-217A	Deep	3/26/2012	6.36	226.7	7.25	810	23.02
WR-218A	Deep	3/26/2012	2.73	184.2	7.93	795	24.27
WR-227A	Deep	3/27/2012	4.48	-106.3	7.45	923	22.24
WR-228A	Deep	3/26/2012	4.24	217.5	5.14	439	23.95
WR-229A	Deep	4/2/2012	2.97	-187.3	9.77	167	24.07
WR-230A	Deep	3/26/2012	2.97	199.5	4.43	521	27.85
WR-231A	Deep	3/26/2012	3.38	32.5	5.49	510	24.40
WR-232A	Deep	3/22/2012	3.57	3.1	7.65	392	26.55
WR-233A	Deep	3/27/2012	4.04	68.4	7.52	342	23.11
WR-235A	Deep	3/29/2012	5.78	46.6	7.91	438	31.29
PCM-506A	Shallow	3/28/2012	6.09	-92.6	8.01	701	25.71
PCM-508A	Shallow	3/28/2012	3.34	-4.2	8.15	595	25.67
PCM-508B	Shallow	3/28/2012	2.94	-124.8	7.86	537	25.90
PCM-509A	Shallow	3/21/2012	3.80	112.1	7.08	884	24.60
PCM-509B	Shallow	3/21/2012	4.53	-9.8	7.44	891	24.95
PCM-510A	Shallow	3/21/2012	2.78	145.7	7.98	705	24.26
PCM-511A	Shallow	FP	NM	NM	NM	NM	NM
PCM-512A	Shallow	3/27/2012	3.07	-87.6	7.56	807	22.79
PCM-517A	Shallow	3/29/2012	3.79	-104.6	9.43	507	23.06
PCM-535A	Shallow	4/2/2012	2.89	-94.5	8.31	732	24.77
R-012A	Shallow	3/21/2012	3.02	79.8	7.88	688	22.80
R-013A	Shallow	FP	NM	NM	NM	NM	NM
R-016A	Shallow	3/22/2012	3.74	-5.8	7.57	731	24.12
R-017A	Shallow	FP	NM	NM	NM	NM	NM
R-018A	Shallow	FP	NM	NM	NM	NM	NM
R-020A	Shallow	3/21/2012	4.28	-73.2	7.15	1024	22.00
R-021A	Shallow	3/22/2012	2.68	-88.7	7.50	920	23.23
R-021A	Shallow	12/17/2012	3.02	-7.8	7.41	567	22.72
R-022A	Shallow	3/21/2012	5.02	114.4	7.38	1059	23.92
R-028A	Shallow	FP	NM	NM	NM	NM	NM
R-029A	Shallow	3/29/2012	3.84	-95.9	7.75	752	25.80
R-035A	Shallow	FP	NM	NM	NM	NM	NM
R-037A	Shallow	FP	NM	NM	NM	NM	NM
R-044A	Shallow	3/28/2012	5.95	-37.3	7.61	840	27.05
R-045A	Shallow	3/28/2012	3.14	-31.7	7.72	799	27.71

Table 3
PSC and TFS #10 Summary of Field Parameters - 2012
Thomas Price Service Center, City of Tucson

R-048A	Shallow	3/29/2012	3.53	-57.1	7.38	787	27.90
R-049A	Shallow	3/29/2012	4.26	-84.2	7.66	1307	26.07
WR-208A	Shallow	3/22/2012	5.28	125.6	7.55	965	25.07
WR-209A	Shallow	3/22/2012	5.30	74.8	7.61	912	21.96
WR-210A	Shallow	3/21/2012	3.55	-177.3	7.13	969	25.44
WR-211A	Shallow	3/22/2012	5.37	124.0	7.59	564	24.06
WR-212A	Shallow	3/29/2012	3.62	-92.8	7.78	718	25.39
WR-213A	Shallow	3/26/2012	4.88	158.2	7.74	875	2.69*
WR-214A	Shallow	3/26/2012	3.38	194.4	7.09	792	24.24
WR-215A	Shallow	FP	NM	NM	NM	NM	NM
WR-219A	Shallow	3/28/2012	2.03	-252.1	7.45	1006	26.82
WR-220A	Shallow	3/27/2012	4.63	69.3	7.41	936	26.44
WR-221A	Shallow	3/27/2012	4.49	106.6	7.43	664	26.44
WR-222A	Shallow	3/27/2012	4.57	99.6	7.46	928	22.23
WR-223A	Shallow	3/28/2012	3.07	41.6	7.67	698	25.32
WR-224A	Shallow	4/2/2012	3.36	-220.2	7.88	587	24.22
WR-225A	Shallow	3/27/2012	5.16	106.3	7.22	948	26.95
WR-297A	Shallow	3/29/2012	49.4*	100.3	7.61	730	28.00

NM = Not Monitored.

FP = free product present, not sampled.

* Data presented as on fieldsheet. Measurement appears to be incorrect.

Table 4
Water Quality Analyses - BTEX Summary for 2012
Thomas O. Price Service Center, City of Tucson

Sample ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
AWQS		5	1,000	700	10,000	11 (Tier 1)*
Shallow-Zone Monitoring Wells						
PCM-506A	3/28/2012	<0.5	<2	<2	<1	<2
PCM-508A	3/28/2012	1.55	<2	<2	<1	7630
PCM-508B	3/28/2012	71	<20	91.7	439	5660
PCM-508B DUP	3/28/2012	76	<20	90.4	478	5520
PCM-509A	3/21/2012	<0.5	<2	<2	<1	<2
PCM-509B	3/21/2012	5.6	<2	<2	<1	2280
PCM-510A	3/21/2012	1.6	7.56	2.84	29.1	695
PCM-512A	3/27/2012	1150	457	734	2220	13700
PCM-517A	3/29/2012	10500	<200	276	<100	489
PCM-535A	4/2/2012	0.63	2	4.34	143	51.4
R-012A	3/21/2012	<0.5	<2	<2	<1	12200
R-012A DUP	3/21/2012	<0.5	<2	<2	<1	11800
R-016A	3/22/2012	<0.5	<2	<2	<1	5770
R-020A	3/21/2012	1940	<100	529	736	10000
R-021A	3/22/2012	<50	<200	<200	<100	10200
R-021A	12/17/2012	3.6	<2	<2	<3	7400
R-022A	3/21/2012	<0.5	<2	<2	<1	<2
R-029A	3/29/2012	<0.5	<2	<2	<1	<2
R-044A	3/28/2012	<0.5	<2	<2	<1	<2
R-045A	3/28/2012	<0.5	<2	<2	<1	4.11
R-048A	3/29/2012	0.56	<2	<2	<1	4.14
R-049A	3/29/2012	1.36	<2	<2	<1	<2
WR-208A	3/22/2012	<0.5	<2	<2	<1	<2
WR-209A	3/22/2012	<0.5	<2	<2	<1	178
WR-209A DUP	3/22/2012	<0.5	<2	<2	<1	182
WR-210A	3/21/2012	104	4.16	108	29.6	286
WR-211A	3/22/2012	<0.5	<2	<2	<1	<2
WR-212A	3/29/2012	5.0	<20	87.7	5800	77.6
WR-213A	3/26/2012	<0.5	<2	<2	<1	<2
WR-214A	3/26/2012	<0.5	<2	<2	<1	<2
WR-219A	3/28/2012	0.51	5.68	129	49	<2
WR-220A	3/27/2012	0.64	<2	<2	<1	<2
WR-221A	3/27/2012	<0.5	<2	<2	<1	<2
WR-222A	3/27/2012	<0.5	<2	<2	<1	<2
WR-223A	3/28/2012	<0.5	<2	<2	<1	<2
WR-224A	4/2/2012	<0.5	<2	34.5	8.06	<2
WR-225A	3/27/2012	<0.5	<2	<2	<1	<2
WR-297A	3/29/2012	<0.5	<2	<2	<1	7860

Table 4
Water Quality Analyses - BTEX Summary for 2012
Thomas O. Price Service Center, City of Tucson

Sample ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
AWQS		5	1,000	700	10,000	11 (Tier 1)*
Deep-Zone Monitoring Wells						
WR-216A	3/22/2012	<0.5	<2	<2	<1	<2
WR-217A	3/26/2012	<0.5	<2	<2	<1	<2
WR-218A	3/26/2012	<0.5	<2	<2	<1	<2
WR-227A	3/27/2012	<0.5	<2	<2	<1	37.6
WR-228A	3/26/2012	<0.5	<2	<2	<1	<2
WR-229A	4/2/2012	<0.5	<2	<2	<1	<2
WR-230A	3/26/2012	<0.5	<2	<2	<1	<2
WR-231A	3/26/2012	<0.5	<2	<2	<1	<2
WR-231A DUP	3/26/2012	<0.5	<2	<2	<1	<2
WR-232A	3/22/2012	<0.5	<2	<2	<1	<2
WR-233A	3/27/2012	<0.5	<2	<2	<1	<2
WR-235A	3/29/2012	<0.5	<2	<2	<1	<2
WR-235A DUP	3/29/2012	<0.5	<2	<2	<1	<2

Notes:

µg/L = micrograms per liter, mg/L = milligrams per liter, NA = not analyzed, <0.5 = not detected above MDL, DUP = field duplicate,

AWQS = Arizona Aquifer Water Quality Standard

Results in **bold** equal or exceed AWQS

*ADEQ UST Program Tier 1 Cleanup Standards - Petroleum Products Table provided by Mike Harren on 6/24/2013.

Table 5
Summary of Select VOCs Analytical Results for 2012
Thomas Price Service Center, City of Tucson

Sample ID	Sample Date	1,2,4-Trimethylbenzene	1,2-Dibromoethane (EDB)	1,2-Dichloroethane	1,3,5-Trimethylbenzene	4-Methyl-2-pentanone (methyl Isobutyl ketone MIBK)	Carbon Disulfide	Isopropylbenzene (cumene)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec butylbenzene
AWQS		NA	0.05	5	NA	NA	NA	NA	NA	NA	NA	NA
Tier 1 Clean-up*		12	NA	NA	12	560	700	660	6	240	240	240
Shallow-Zone Monitoring Wells												
WR-219A	3/28/2012	18.5	<0.5	<0.5	5.7	9.0	1.0	25.8	185	6.3	40.9	10.3
WR-220A	3/27/2012	<2	<0.5	<0.5	<1.5	<5	<0.5	3.2	<5	<2.5	<2	<1.5
WR-222A	3/27/2012	<2	<0.5	<0.5	<1.5	<5	<0.5	<2.5	<5	<2.5	<2	<1.5
WR-223A	3/28/2012	<2	<0.5	<0.5	<1.5	<5	<0.5	<2.5	<5	<2.5	<2	<1.5
WR-224A	4/2/2012	6.22	<0.5	2.2	3.4	<5	<0.5	8.8	<5	6.83	22.7	15.2
Deep Zone Monitoring Wells												
WR-217A	3/26/2012	<2	<0.5	<0.5	<1.5	<5	<0.5	<2.5	<5	<2.5	<2	<1.5
WR-227A	3/27/2012	<2	<0.5	<0.5	<1.5	<5	<0.5	<2.5	<5	<2.5	<2	<1.5
WR-233A	3/27/2012	<2	<0.5	<0.5	<1.5	<5	<0.5	<2.5	<5	<2.5	<2	<1.5

NOTES:

All standards and results are in micrograms per liter

All analyses conducted according to EPA Method 8260B

NA = Not applicable NP - Not Provided.

<0.5 = not detected above the method detection limit (MDL)

AWQS = Arizona Aquifer Water Quality Standard

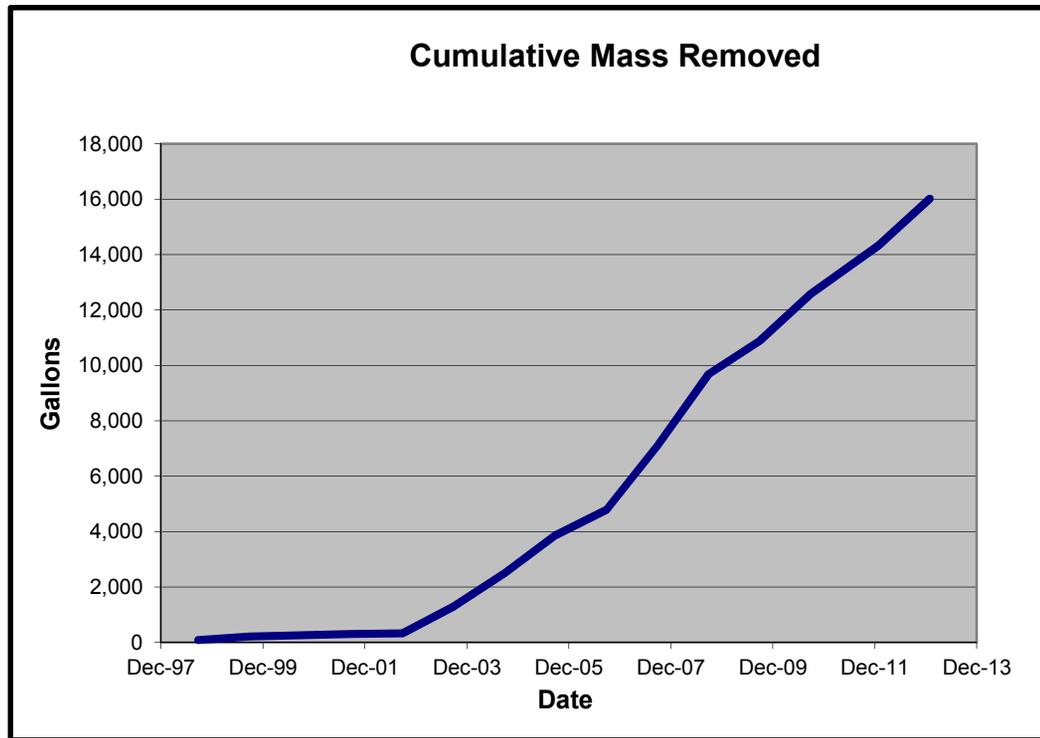
Results in bold equal or exceed AWQS

*ADEQ UST Program Tier 1 Cleanup Standards - Petroleum Products Table provided by Mike Harren on 6/24/2013.

TABLE 6
SUMMARY OF FREE PRODUCT REMOVED THROUGH DECEMBER 2012
CITY OF TUCSON FIRE STATION #10

Time Period	Bailed/ Pumped
9/1/97-8/31/98*	86
9/1/98-8/31/99*	131
9/1/99-8/31/00*	45
9/1/00-8/31/01*	45
9/1/01-8/31/02	28
9/1/02-8/31/03	956
9/1/03-8/31/04	1,210
9/1/04-8/31/05	1,365
9/1/05-8/31/06	923
9/1/06-8/31/07	2,315
9/1/07-8/31/08	2,577
9/1/08-8/31/09	1,200
9/1/09-8/31/10	1,703
9/1/10-12/31/11	1,750
1/1/2012-12/31/2012	1,690
Total	16,024

* Estimated Quantities



**TABLE 7
 CALCULATION OF MASS REMOVED IN VAPOR PHASE (THERMAL OXIDATION)
 JANUARY 1, 2012 THROUGH DECEMBER 26, 2012
 CITY OF TUCSON FIRE STATION #10 SVE SYSTEM**

Given Values:

Start of Reporting Period:	01/01/12
End of Reporting Period:	12/31/12
Length of Reporting Period:	365 days
SVE Operational Rate:	92%
Average SVE Flow Rate:	471 cfm
Average SVE Flow Rate:	19,206 m ³ /day
Average Inlet Concentration:	3,240 mg/m ³
Density of Gasoline:	6.15 lb/gal

Calculated Values:

Equivalent Days of Operation:	334.8 days
Mass Removal Rate:	62.23 kg/day
Mass Removal Rate:	137.2 lb/day
Mass for Reporting Period:	45,937 lb
Total Equivalent Gallons:	7,469 gal

SVE Inlet Sampling Results:

	Sample Date				Avg.
	11/29/12	09/19/12	05/25/12	3/23/2012	
Laboratory	Airtech	Airtech	Xenco	Xenco	
Concentration (mg/m ³)	1,700	2,840	4,620	3800	3,240
Concentration (ppmv)	396	661	1,080	885	756

SVE Inlet concentrations were analyzed by EPA Method TO-15 Modified for Total Petroleum Hydrocarbons C6-C10 GRO

FIGURES

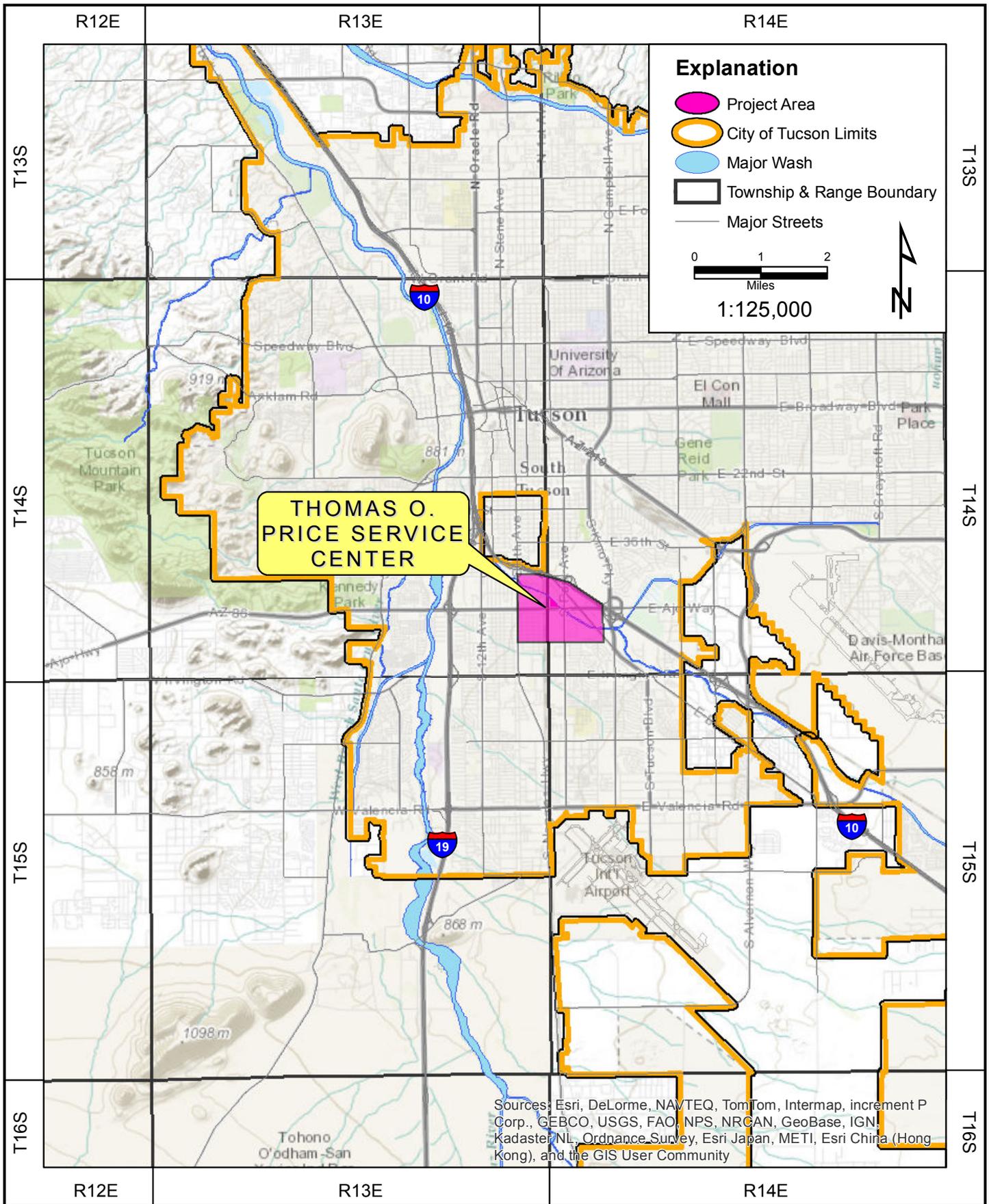
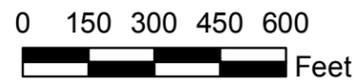


Figure 1
Location Map
Thomas O. Price Service Center

Drawn By:	LE
Checked:	JD
Approved:	JD
Date:	2/7/2012
File:	See Below
J:\GIS\PRICE\2012\LocationMap.mxd	

Explanation

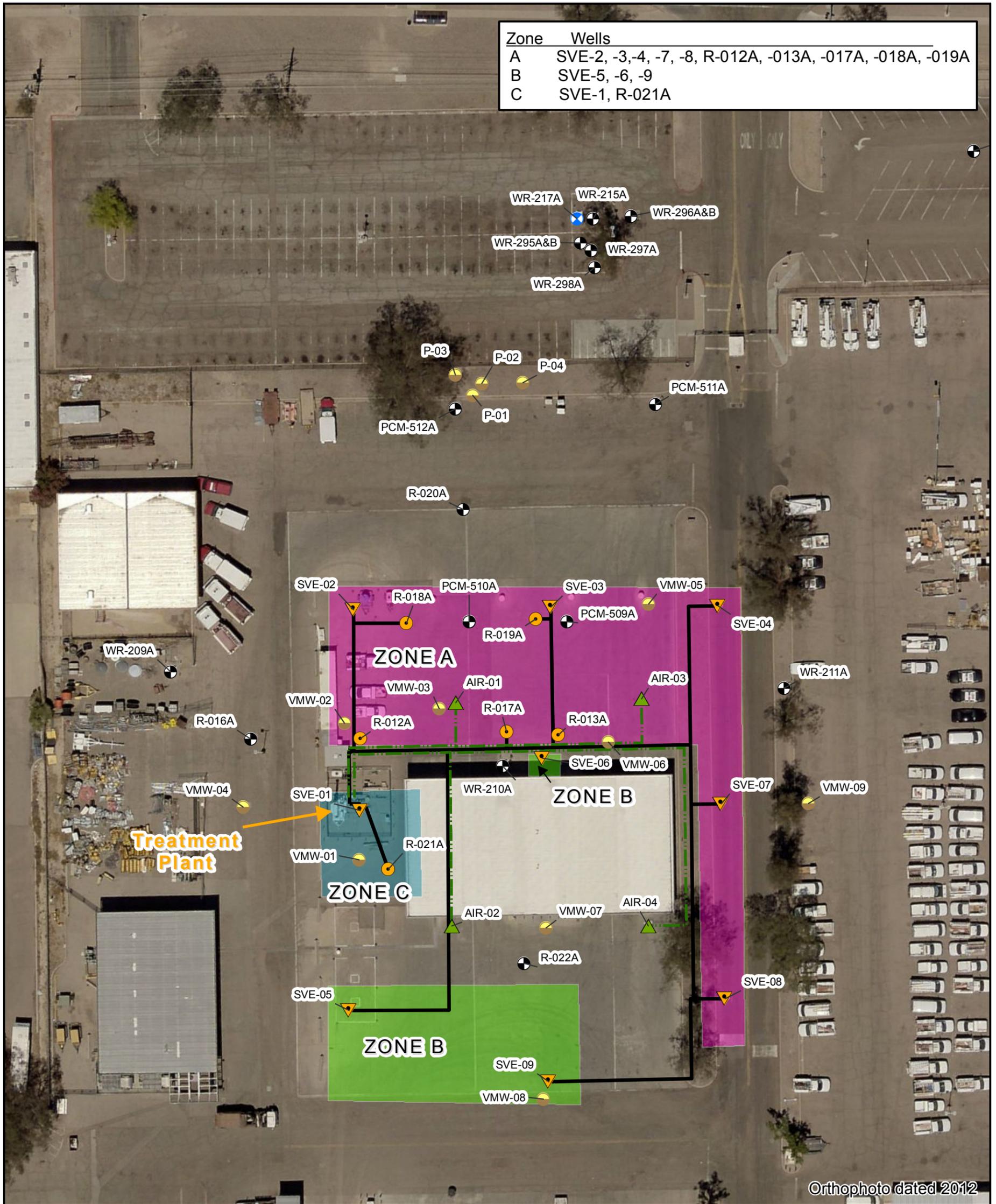
- ◆ SVE & Free Product Recovery Well
- SVE and Groundwater Monitoring Well
- ▼ Soil Vapor Extraction Only
- ▲ Inactive Air Injection Well
- Soil Vapor Monitor Well
- ⊕ Deep Groundwater Monitor Well
- ⊙ Shallow Groundwater Monitor Well
- ▭ Tucson Fire Station No 10 Area
- ▭ Price Service Center Area



**FIGURE 2
SITE MAP
PRICE SERVICE CENTER, TUCSON, AZ**

Drawn By:	LE
Checked:	JD
Approved:	NP
Date:	2/10/2012
File:	See Below

J:\GIS\PRICE\2012SITE\MAP.MXD



Orthophoto dated 2012

Explanation

- ◆ SVE & Free Product Recovery Well
- SVE and Groundwater Monitoring Well
- ▼ Soil Vapor Extraction Only
- ▲ Inactive Air Injection Well
- Soil Vapor Monitor Well
- ⊗ Deep Groundwater Monitor Well
- ⊙ Shallow Groundwater Monitor Well

SYSTEM PIPING

- Inactive Air Injection Line
- SVE Piping

SYSTEM ZONES

- ZONE A
- ZONE B
- ZONE C



Notes: Zone areas do not reflect area of influence of the system, but rather remediation wells on the same trunk lines.
System piping represents the general location of lines, and although represented as a single line, several pipes can be co-located in the field.

Figure 3
Thomas O. Price Service Center Facility Detail
Thomas O. Price Service Center, Tucson, AZ

Drawn By:	LE
Checked:	JD
Approved:	NP
Date:	2/10/2012
File:	See Below

J:\GIS\PRICE\2012\PCSY\PCSY.mxd

Well	Air Sweep/Sparging Installed...
R-027A	3rd Quarter 2012
R-030A	3rd Quarter 2012
R-031A	2nd Quarter 2012
R-032A	2nd Quarter 2012
R-034A	3rd Quarter 2012
R-036A	2nd Quarter 2012
R-047A	2nd Quarter 2012
R-051A	3rd Quarter 2012
R-098A	2nd Quarter 2012
WR-215A	4th Quarter 2012

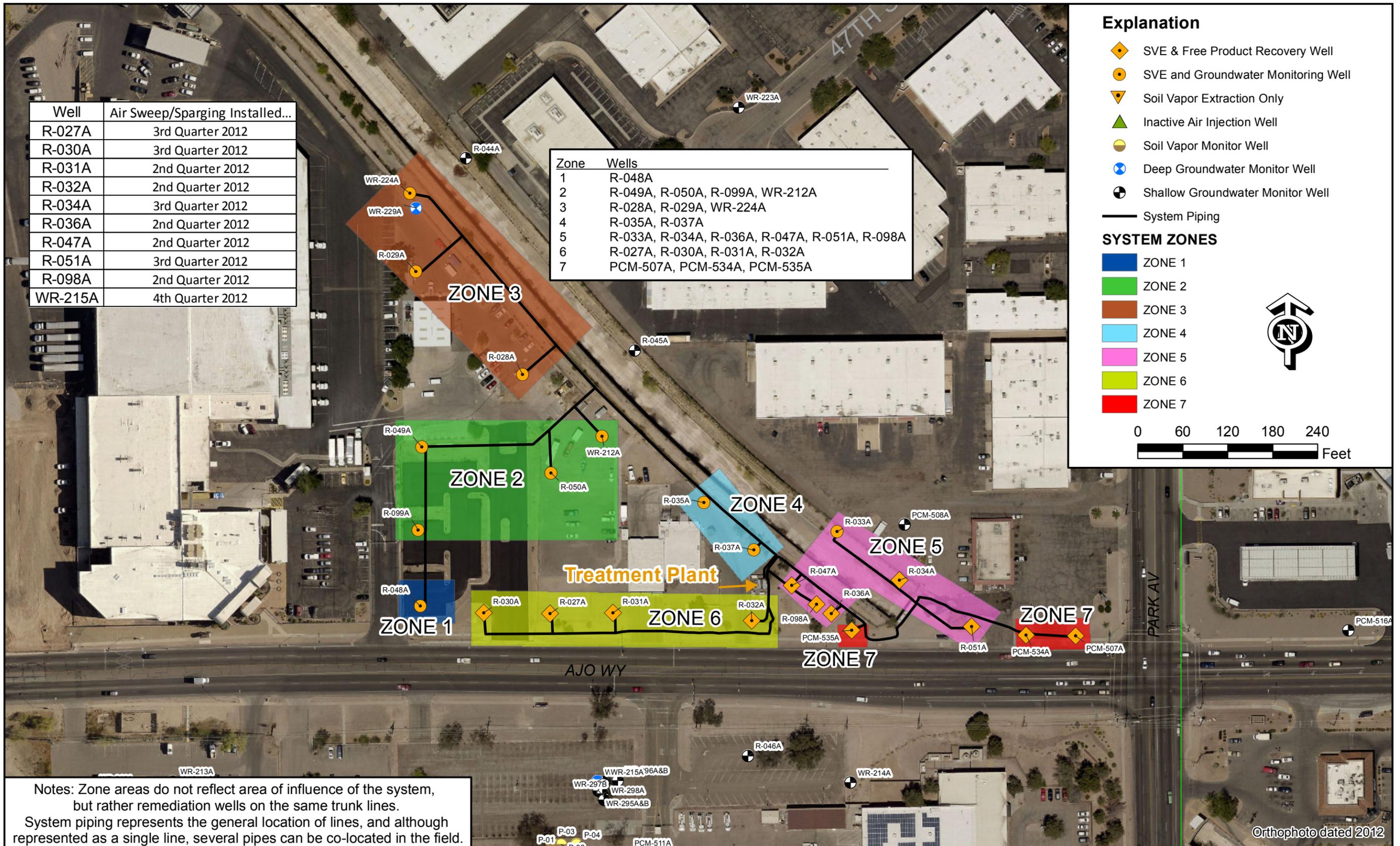
Zone	Wells
1	R-048A
2	R-049A, R-050A, R-099A, WR-212A
3	R-028A, R-029A, WR-224A
4	R-035A, R-037A
5	R-033A, R-034A, R-036A, R-047A, R-051A, R-098A
6	R-027A, R-030A, R-031A, R-032A
7	PCM-507A, PCM-534A, PCM-535A

Explanation

- SVE & Free Product Recovery Well
- SVE and Groundwater Monitoring Well
- Soil Vapor Extraction Only
- Inactive Air Injection Well
- Soil Vapor Monitor Well
- Deep Groundwater Monitor Well
- Shallow Groundwater Monitor Well
- System Piping

SYSTEM ZONES

- ZONE 1
- ZONE 2
- ZONE 3
- ZONE 4
- ZONE 5
- ZONE 6
- ZONE 7



Notes: Zone areas do not reflect area of influence of the system, but rather remediation wells on the same trunk lines.
 System piping represents the general location of lines, and although represented as a single line, several pipes can be co-located in the field.

Orthophoto dated 2012



Figure 4
 TFS #10 Site Layout and Well Location Map
 Thomas O. Price Service Center, Tucson, AZ

Drawn By:	LE
Checked:	JD
Approved:	NP
Date:	2/9/2012
File:	See Below
J:\GIS\PRICE\2012\TFSYS.mxd	

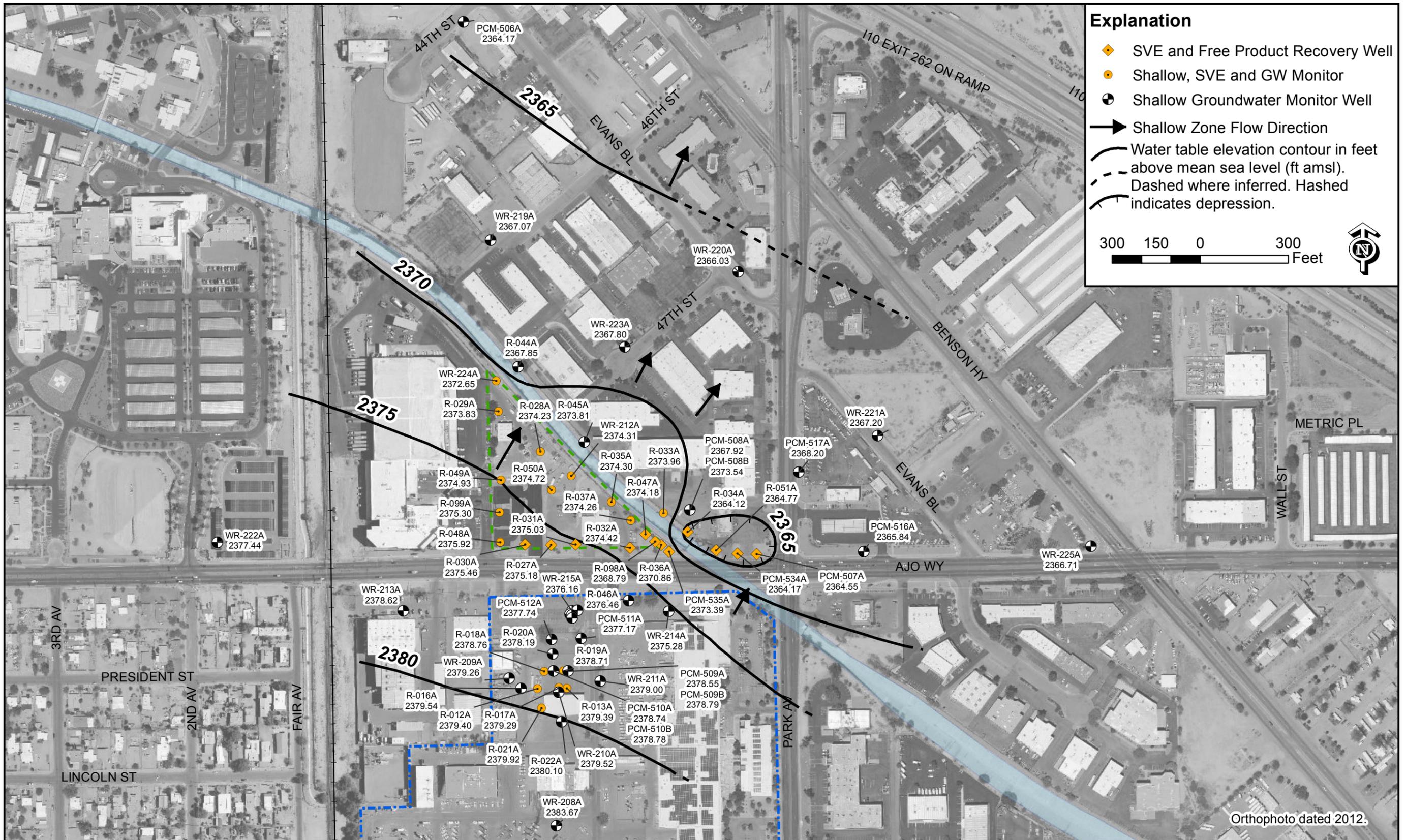
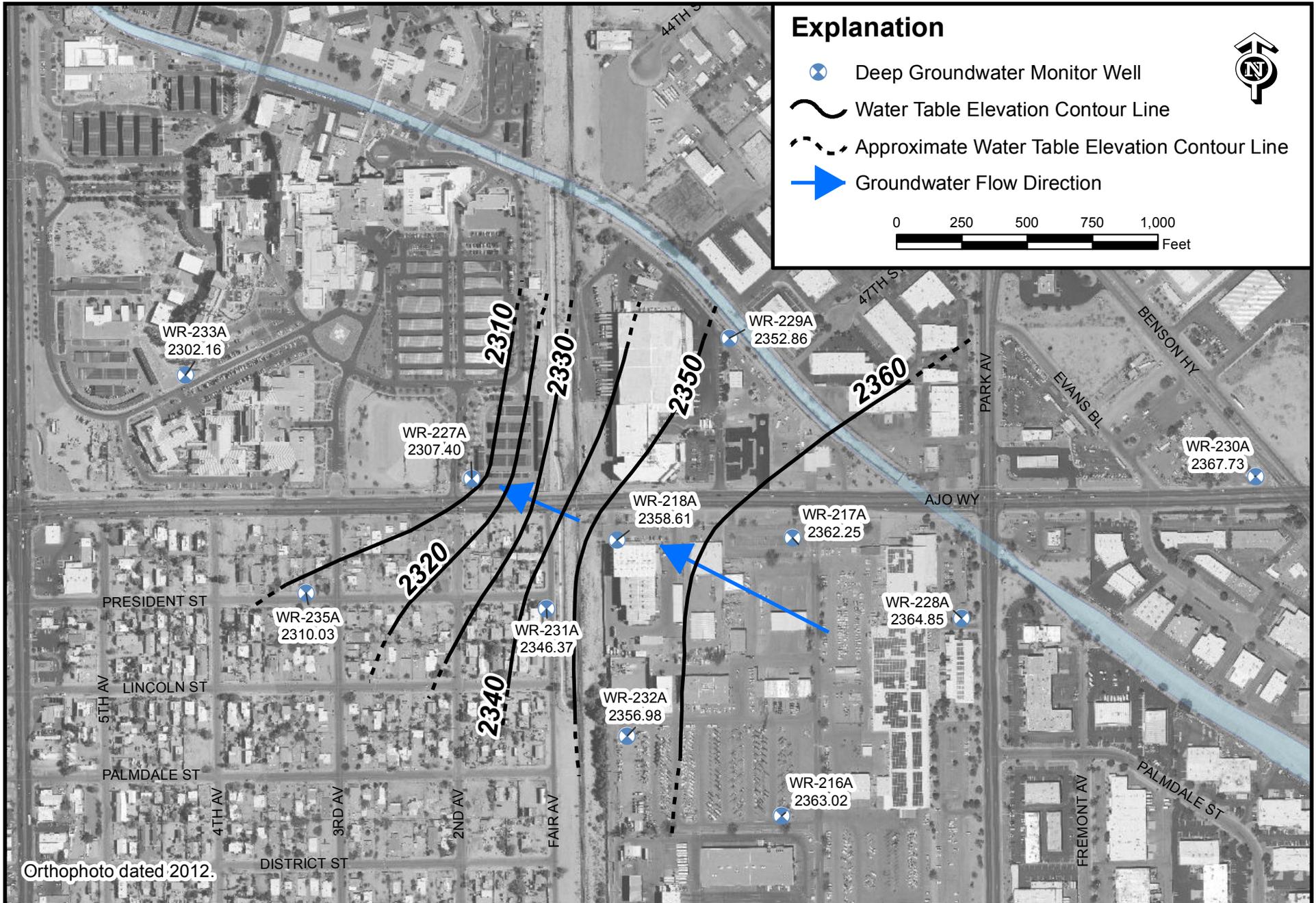


Figure 5
 Shallow Zone Groundwater Elevation Contour Map - March 2012
 Thomas O. Price Service Center, Tucson, AZ



Explanation

- Deep Groundwater Monitor Well
- Water Table Elevation Contour Line
- Approximate Water Table Elevation Contour Line
- Groundwater Flow Direction



Orthophoto dated 2012.



Figure 6
 Deep Zone Groundwater Elevation Contour Map - March 2012
 Thomas O. Price Service Center, Tucson, AZ

Drawn By:	LE
Checked:	MC
Approved:	RB
Date:	4/26/2013
File:	See Below
<small>J:\GIS\Price\2013\DeepGWE2012.mxd</small>	

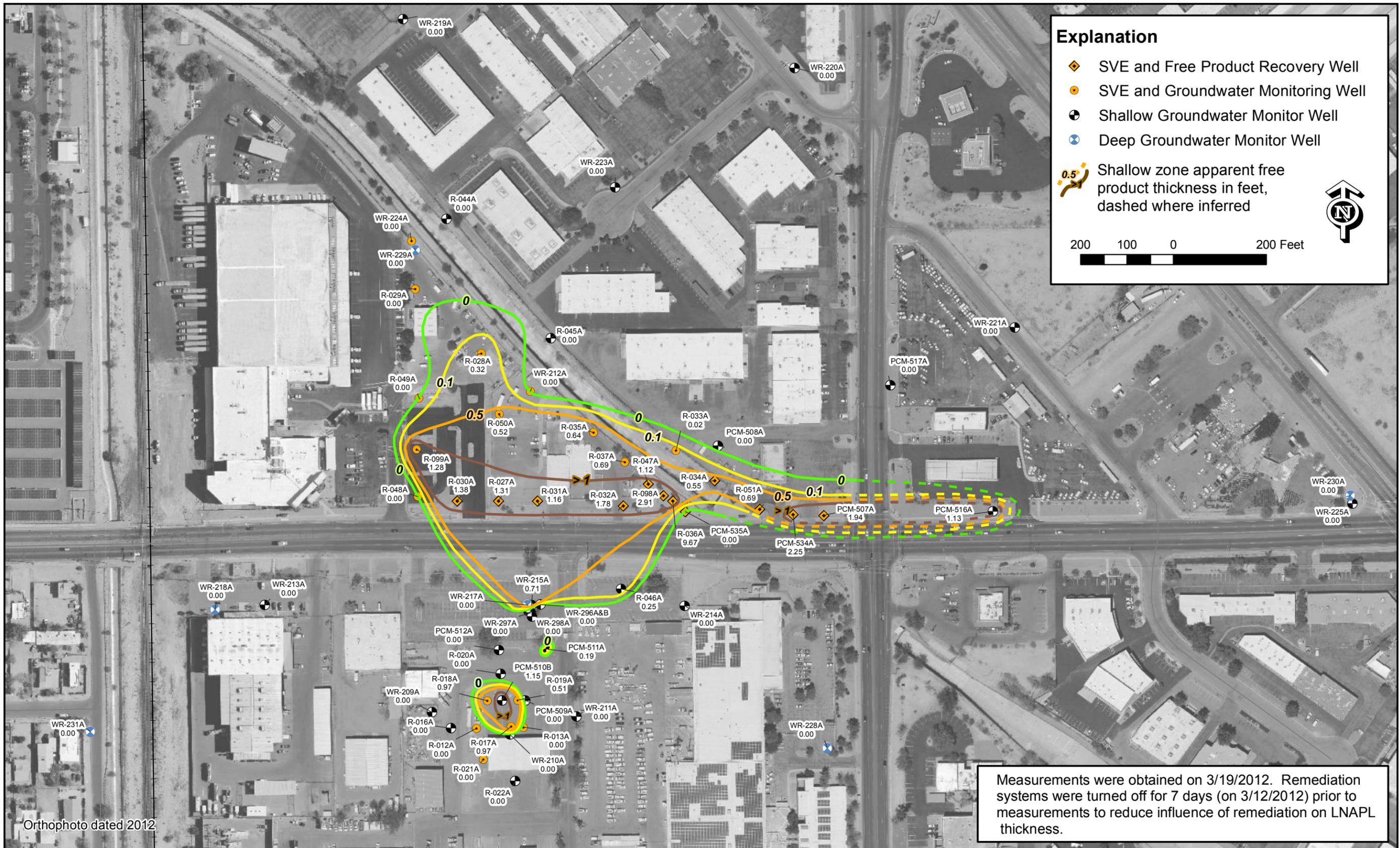


Figure 7
 Shallow Zone Apparent LPH Thickness Map, March 2012
 Thomas O. Price Service Center, Tucson, AZ

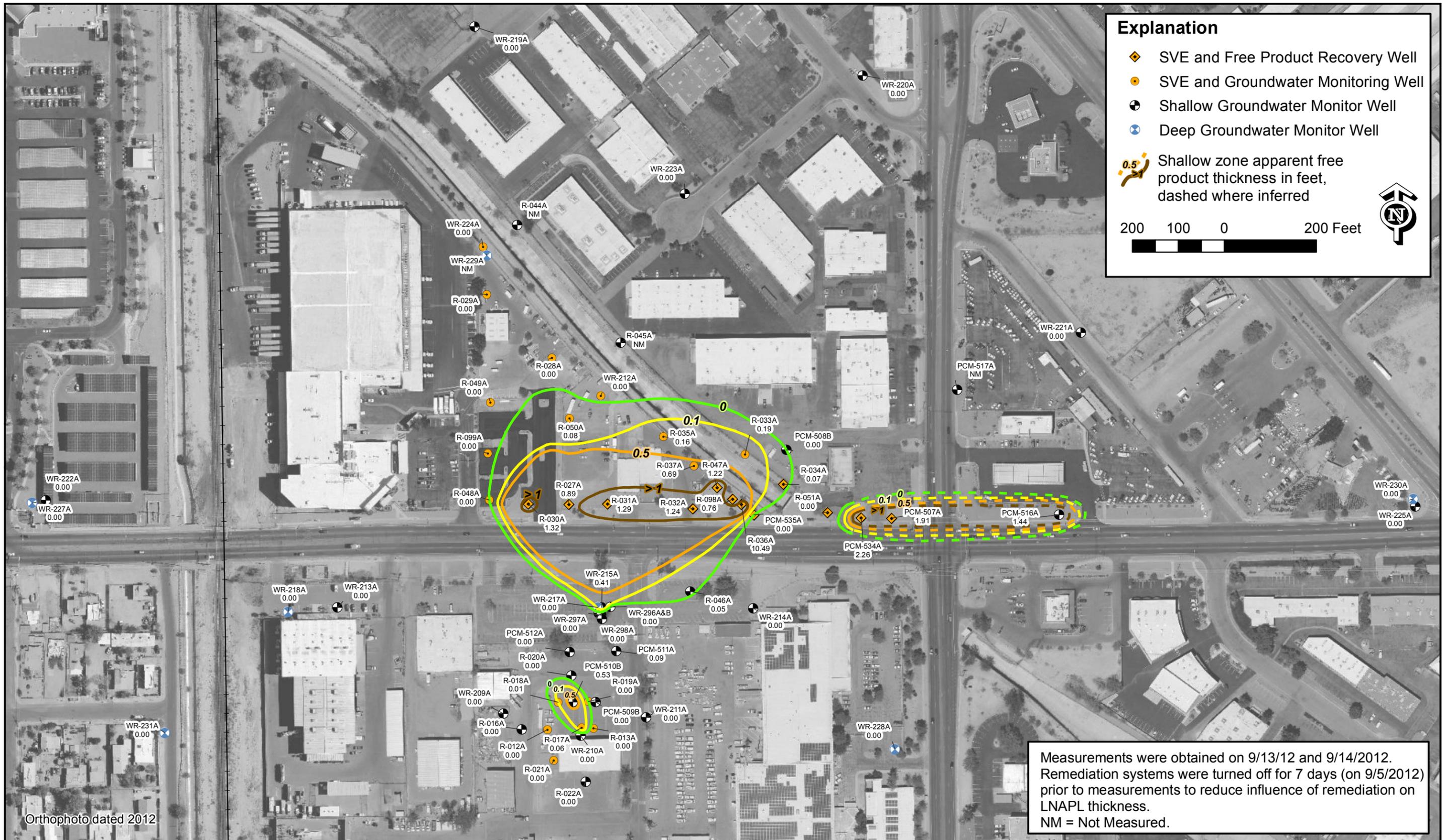


Figure 8
 Shallow Zone Apparent LPH Thickness Map, September 2012
 Thomas O. Price Service Center, Tucson AZ

MARCH 2012

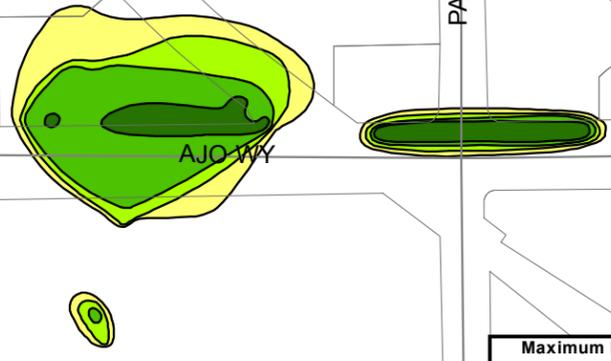
Plume Boundary (ft)	Total Acres	Acres Percentage
0	8.3	39.5%
0.1	6.4	30.8%
0.5	4.7	22.3%
>1	1.5	7.4%
Total Acres:		20.9



Maximum Free Product Depth (feet):	9.67
Well ID:	R-036A

SEPT-2012

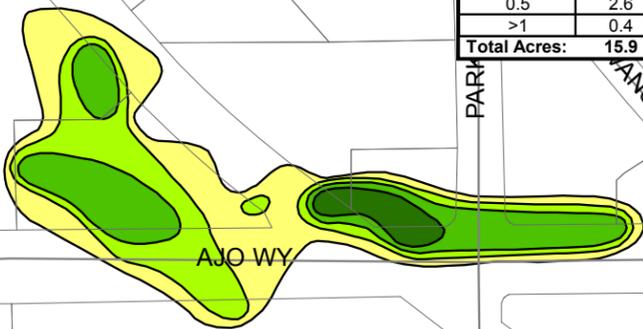
Plume Boundary (ft)	Total Acres	Acres Percentage
0	6.5	42.3%
0.1	4.6	30.0%
0.5	3.3	21.5%
>1	1.0	6.2%
Total Acres:		15.3



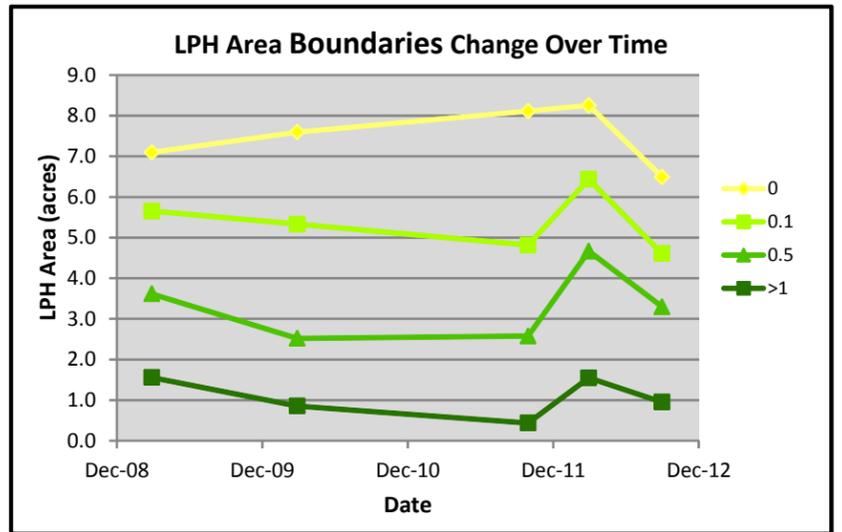
Maximum Free Product Depth (feet):	10.49
Well ID:	R-036A

2011

Plume Boundary (ft)	Total Acres	Acres Percentage
0	8.1	50.9%
0.1	4.8	30.2%
0.5	2.6	16.2%
>1	0.4	2.7%
Total Acres:		15.9



Maximum Free Product Depth (feet):	6.47
Well ID:	R-034A



2010

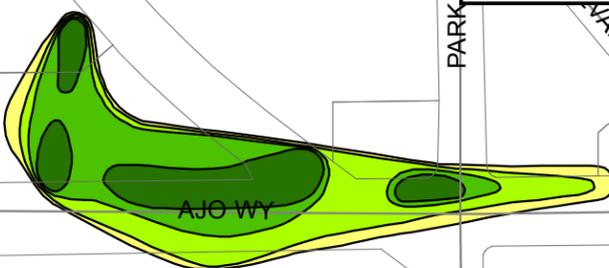
Plume Boundary (ft)	Total Acres	Acres Percentage
0	7.6	46.6%
0.1	5.3	32.7%
0.5	2.5	15.5%
>1	0.9	5.2%
Total Acres:		16.3



Maximum Free Product Depth (feet):	1.87
Well ID:	PCM-507A

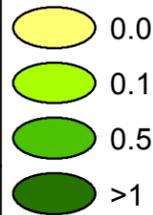
2009

Plume Boundary (ft)	Total Acres	Acres Percentage
0	7.1	39.6%
0.1	5.7	31.5%
0.5	3.6	20.2%
>1	1.6	8.7%
Total Acres:		17.9



Maximum Free Product Depth (feet):	18.9
Well ID:	R-036A

LPH Thickness Boundaries (ft)



Groundwater Wells

Deep
Shallow



1 inch = 400 feet

All maps contain the free product thickness boundaries for 0.0, 0.1, 0.5, and >1 in feet. All map frames are shown at the same scale: 1:4,800 absolute; 1" = 400'

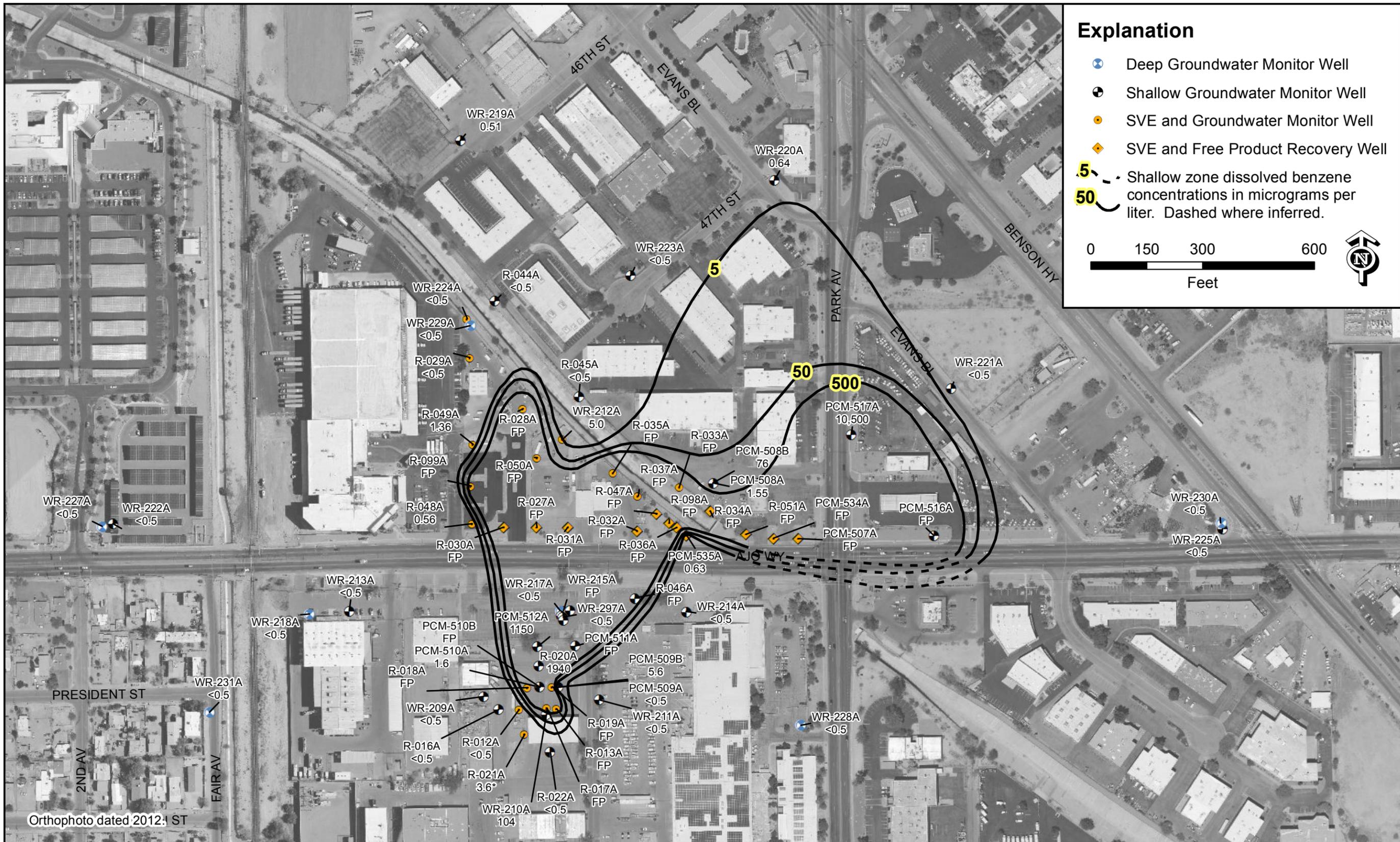
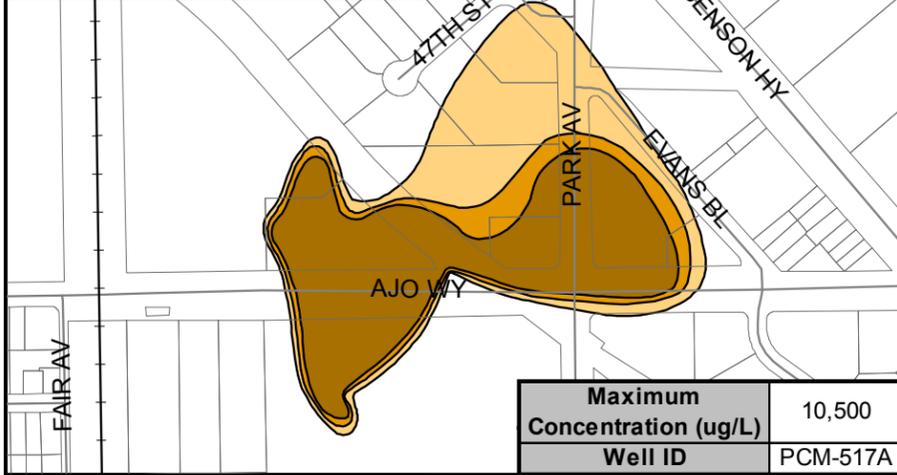


Figure 10
 Shallow Groundwater Zone Dissolved Benzene Concentrations - March 2012
 Thomas O. Price Service Center, Tucson AZ

Plume Boundary (ug/L)	Total Acres	Acres Percentage
5	22.7	46.6%
50	14.5	29.7%
500	11.6	23.7%
Total Acres:	48.8	

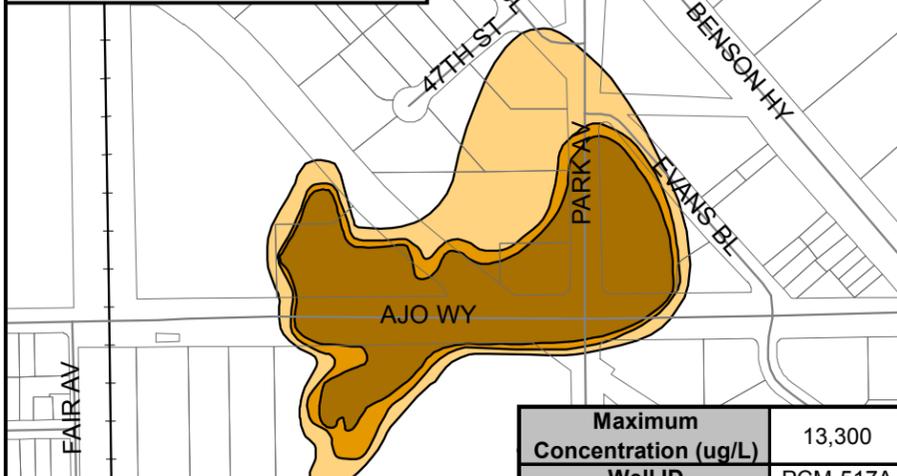
2012



Maximum Concentration (ug/L)	10,500
Well ID	PCM-517A

Plume Boundary (ug/L)	Total Acres	Acres Percentage
5	24.5	46.9%
50	15.3	29.4%
500	12.4	23.7%
Total Acres:	52.2	

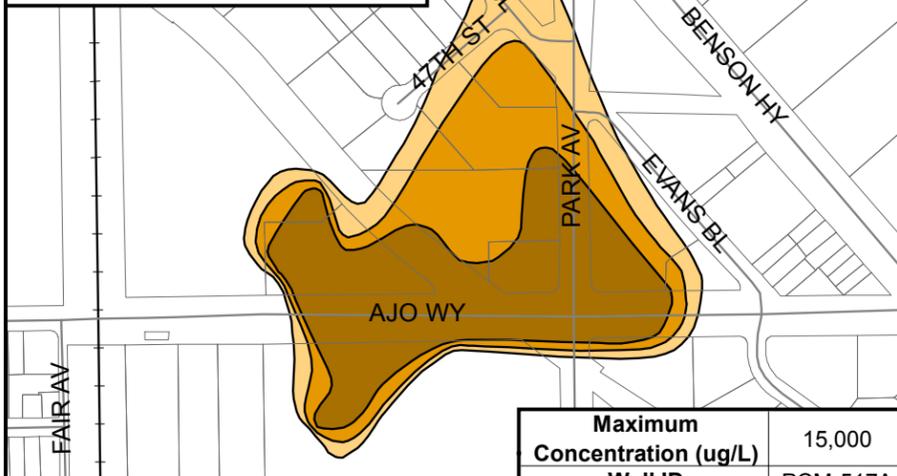
2011



Maximum Concentration (ug/L)	13,300
Well ID	PCM-517A

Plume Boundary (ug/L)	Total Acres	Acres Percentage
5	28.2	45.7%
50	21.1	34.2%
500	12.5	20.2%
Total Acres:	61.8	

2010



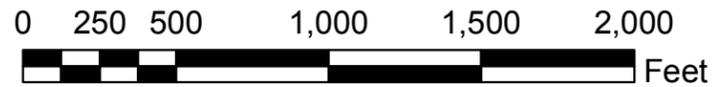
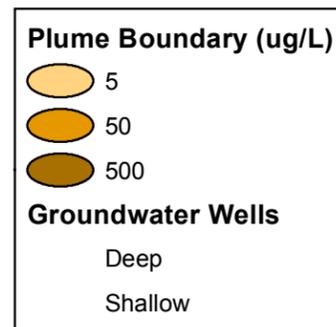
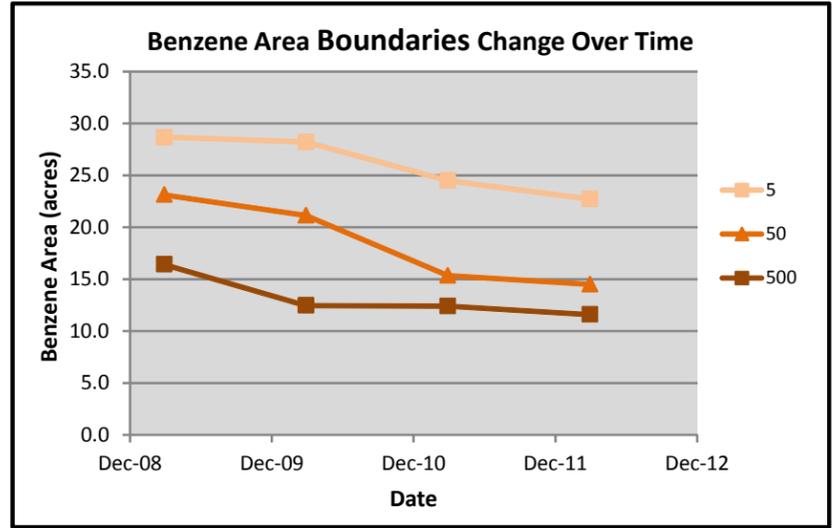
Maximum Concentration (ug/L)	15,000
Well ID	PCM-517A

Plume Boundary (ug/L)	Total Acres	Acres Percentage
5	28.7	42.1%
50	23.1	33.9%
500	16.4	24.1%
Total Acres:	68.2	

2009



Maximum Concentration (ug/L)	21,000
Well ID	PCM-517A



1 inch = 600 feet



All maps contain the benzene plume boundaries for concentrations of 5, 50, and 500 ug/L. Years 2010 and 2009 boundaries were also provided in previous monitoring reports. All map frames are shown at the same scale: 1:7,200 absolute or 1 inch = 600 feet.