CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

MEETING OF SEPTEMBER 12 - 13, 2012
BARSTOW, CALIFORNIA

ITEM: **3**

SUBJECT: **RESOLUTION AUTHORIZING THE EXECUTIVE OFFICER TO SIGN THE RECORD OF DECISION FOR 25 INSTALLATION RESTORATION SITES, AIR FORCE PLANT 42, LOS ANGELES COUNTY**

CHRONOLOGY: This is a new item.

ISSUE: Should the Water Board concur with the remedial actions proposed by the Air Force and authorize the Executive Officer to sign the Record of Decision? The Board is asked whether it concurs that the proposed actions comply with State requirements.

DISCUSSION: Air Force Plant 42 has submitted a Draft Final Record of Decision (ROD) for proposed remedial actions at 25 Installation Restoration Sites. The sites historically received waste, including waste fuels, solvents, hydraulic fluids, paint, photo chemicals, wash water, nickel plating waste water, construction debris, and batteries. The sites are addressed in a single ROD because the Air Force has classified them as "soils only sites"

A groundwater investigation found that groundwater beneath one site contained trichloroethene (TCE) slightly above its reporting limit (the concentration detected was above background concentrations and below the maximum contaminant level), during one monitoring event. TCE was not detected above its reporting limit in four subsequent sampling events at the site.

The Air Force conducted risk assessments at the 25 sites and found three of the sites pose some level of risk to human health from soil or soil gas migration. Based on the investigations and feasibility studies at the 25 sites, the Air Force's preferred remedy is Institutional Controls to prevent human exposure to contaminated soil and soil gas for the three sites that pose some level of risk to human health, and "No Action" for the remaining 22 sites.

Water Board staff evaluated the information from the site investigation and concludes that the Air Force has adequately demonstrated that the sites do not pose a threat to groundwater. The proposed remedy is protective of human health and water quality; is technically and economically feasible; and complies with applicable or relevant and appropriate requirements.

RECOMMENDATION: Adoption of Resolution as proposed.

Enclosure	Item	Bates Number
1	Proposed Resolution	**3-5**
2	Cleanup Times versus Impacts for EIR Alternatives	**3-9**

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ENCLOSURE 1

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

RESOLUTION NO. R6V-2012-(PROPOSED)

AUTHORIZING THE EXECUTIVE OFFICER TO SIGN
THE RECORD OF DECISION
FOR 25 INSTALLATION RESTORATION PROGRAM SITES
AIR FORCE PLANT 42

_____ Los Angeles County _____

WHEREAS, the California Regional Water Quality Control Board, Lahontan Region, (Water Board) finds:

1. In April 2012, the United States Air Force submitted a Draft Final Record of Decision (ROD) for 25 Installation Restoration Program sites at Air Force Plant 42 located near Palmdale. The preferred remedies proposed by the Air Force consist of Institutional Controls at three sites and No Action at the remaining 22 sites.

2. The Air Force has demonstrated that the sites do not pose a threat to water quality.

3. The proposed remedies comply with State law, plans, and policies and are protective of water quality.

THEREFORE BE IT RESOLVED:

That the Lahontan Water Board authorizes the Executive Officer to:

1. Concur with proposed actions as documented in the Draft Final ROD for 25 Installation Restoration Program Sites ROD; and

2. Sign the Final ROD when it is submitted provided there are no significant changes to the remedies proposed in the ROD from that described in the September 2012 Water Board Staff Report.

I Patty Z. Kouyoumdjian, Executive Officer, do herby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Control Board, Lahontan Region, on September 12, 2012.

_____
PATTY Z. KOUYOUMDJIAN
EXECUTIVE OFFICER

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ENCLOSURE 2

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STAFF REPORT

RECORD OF DECISION

25 INSTALLATION RESTORATION PROGRAM SITES
AIR FORCE PLANT 42
PALMDALE, CALIFORNIA

September 2012

California Regional Water Quality Control Board, Lahontan Region
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STAFF REPORT
RECORD OF DECISION
AIR FORCE PLANT 42

1. Introduction

This report provides supporting information for staff's recommendation that the Lahontan Regional Water Quality Control Board (Water Board) concur with the remedial alternatives proposed for 25 Installation Restoration Program (IRP) sites at Air Force Plant 42 (Plant 42).

Plant 42 is located near the City of Palmdale in Los Angeles County. The Air Force proposed and supported the selection of the remedial alternations for the sites in a Draft Final Record of Decision (ROD), dated April 2012. The ROD recommends remedial alternatives to protect human health and the environment at 25 IRP sites. The ROD concluded that the sites have not caused impacts to groundwater quality and they do not pose a threat to groundwater. The following 25 IRP sites are addressed in the ROD:

Site 1 Fuel-Contaminated Ditch (SD001)
Site 2 Paint Waste Disposal Area (DP002)
Site 3 Engine Run-Up Area (SS003)
Site 4 Vehicle Washrack and UST (ST004)[1]
Site 6 Original Fire Training Circle (FT006)
Site 7 Engine Run-Up Area (SS007)
Site 8 Fuel Transfer Area (SS008)
Site 9 Paint Waste Disposal Area, West (DP009)
Site 10 Paint Waste Disposal Area, North (DP010)
Site 11 Disposal Area A (DP011)
Site 12 Engine Run-Up Area (SS012)
Site 13 Disposal Area B (DP013)
Site 14 Engine Build-Up Area (SS014)
Site 15 Triethyleneborane Disposal Area (SS015)
Site 16 Evaporation Ponds (DP016)
Site 17 New Fire Training Circle (FT017)
Site 18 Abandoned Disposal Area (DP018)
Site 19 Engine Run-Up Area (SS019)
Site 20 Noise Level Area (SS020)
Site 21 Fuel Disposal Area (DP021)[1]

[1] Former underground storage tanks (USTs) were located at Site ST004, DP-021, and ST026. The USTs are not part of this ROD because they are excluded from the CERCLA process. The USTs are being addressed through the Water Board's UST Program.

Site 22 Engine Run-Up Area (SS022)
Site 23 Building Ditch Discharge Area (SD023)
Site 24 Washrack at Fire Station 1 (SD024)
Site 25 Washrack at Fire Station 2 (SD025)
Site 26 Battery Shop UST (ST026) [1]

2. Background

Plant 42 is owned by the Air Force and leased to various military contractors for aircraft production and testing programs. The facility has been used as an airport and for aviation-related activities since 1940. A location map is included as Attachment 1 of this Staff Report.

Plant 42 is currently undergoing restoration activities, including investigation and remediation, in accordance to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act. The facility is not included on the National Priority List. The Air Force is the lead agency for the restoration efforts. Regulatory oversight of the restoration activities is provided by the Water Board for water quality issues and by Department of Toxic Substances Control (DTSC) for protection of human health and the environment.

3. Setting

Hydrogeology

The Antelope Valley Groundwater Basin (Department of Water Resource Groundwater Basin 6-44) is located in a structural basin between the Garlock and San Andreas faults. Alluvial and lacustrine deposits up to 5,000 feet thick form the water-bearing units that overlie consolidated bedrock. The alluvial materials consist of relatively unconsolidated clay, silt, and sand. In the Palmdale area of the Antelope Valley Groundwater Basin, the Principal Aquifer is the primary source of groundwater withdrawals.

The Principal Aquifer is relatively deep in the vicinity of Plant 42. Based on regional and site data, depth to groundwater ranges from approximately 300 to 350 feet below ground surface in the northern portion of Plant 42 to approximately 450 feet below ground surface in southern portion (CH2M Hill, April 2012). The greater depth to groundwater in the southern portion of Plant 42 is the result of a cone of depression caused by groundwater extraction at the Palmdale Water District well field just south of Plant 42. The nearest Palmdale Water District supply well is located adjacent to the Plant's southern boundary.

Historic data indicate groundwater levels at Plant 42 have been declining over the past 30 to 40 years (CH2M Hill, 2012; City of Los Angeles, 1991; USGS, 1998). At a production well in the northern portion of Plant 42, groundwater levels have declined by an average of approximately 2.5 feet per year from 1967 to 2000. The rate of groundwater decline was most rapid from 1967 to 1977 (average decline of approximately 5 feet per year) and has lessened since 1977 (to an average water-

level decline of approximately 1 foot per year). The decline in groundwater levels in the vicinity of Plant 42 is primarily the result of local municipal groundwater production that has exceeded recharge to the aquifer (USGS, 1998).

The regional groundwater gradient is generally to the northwest. However, groundwater flow directions appear to be strongly influenced by pumping of agricultural and municipal supply wells. From the 1960 to 1990, the dominant groundwater flow direction was generally to the northeast under the influence of agricultural wells located to the northeast (CH2M Hill, 2012). Since 1997, the dominant groundwater flow direction at Plant 42 has been to the south/southwest under the influence of the Palmdale Water District's well field located southwest of the Plant (CH2M Hill, 2012).

Within the facility, there are local variations in groundwater flow direction caused by on-site production and remedial extraction wells. The on-site production wells supply drinking water and industrial process water to portions of Plant 42. The remaining portions of Plant 42 obtain water from the Palmdale Water District. Three remedial extraction wells in the northern portion of the plant that are in operation to remediate a trichloroethene (TCE) plume associated with Site 29. Site 29 is being addressed separately from the 25 IRP Sites addressed in this ROD.

Surface Water Bodies

The only surface water in the operational area of Plant 42 is the storm water drainage system, which consists of storm drains and shallow ditches. The drainage system is typically dry except during rainfall events.

4. **Site Information**

The locations of the 25 IRP sites are shown on Attachment 2. The sites are addressed in a single ROD because the Air Force has classified them as "soils only sites," i.e., they have not impacted water quality and do not pose a threat to water quality." However, some of the sites do pose various levels of risk to human health, which are discussed in Section 8 of this Staff Report.

The sites historically received waste, including waste fuels and related compounds, solvents, hydraulic fluids, paint, photo chemicals, wash water, nickel plating waste water, construction debris, and batteries. Most of the disposal activities began in the 1950s, but some disposal occurred as recently as the 1990s. A summary of site histories is included in Attachment 3.

5. **Site Investigation**

Remedial investigation activities were conducted from 1997 to 2008. The Air Force conducted several investigative efforts prior to the remedial investigations, but in general, the pre-Remedial Investigation efforts did not provide definitive, quantitative data and were not used to support remedial decisions.

The Remedial Investigation effort included shallow and deep investigations of the vadose zone and an evaluation of the sites' threat to groundwater. Shallow soil samples were collected at all of the sites and deep soil borings (depths of 20 feet or more) were advanced to evaluate the vertical extent of contamination at 20 of the sites. Soil gas samples were collected to evaluate the nature and extent of volatile organic compounds (VOCs) at 23 of the sites. In summary, the constituents of concern (COCs) detected in the sites' soils include:

- *VOCs*, at least one VOC was detected in soil or soil gas at each of the 25 sites.
- *Semi-VOCs* (including polycyclic aromatic hydrocarbons and phenols), at least one semi-VOC was detected at 22 of the sites.
- *Petroleum hydrocarbons*, some form of petroleum hydrocarbon was detected at 11 sites.
- *Polychlorinated biphenyls and/or dioxins* were detected at three sites.
- *Pesticides* were detected at one site.
- *Metals* were detected above Plant 42 background values at 20 sites.

Based on the results of the investigative efforts, the Air Force evaluated the sites' threat to groundwater. This evaluation determined that 21 of the sites posed no threat to groundwater for the following primary reasons.

1. Soil contamination is restricted to relatively shallow depths.
2. There is significant separation between the contamination and the groundwater table (depths to groundwater range from 300 to 450 feet below ground surface).

Another factor that was considered in the threat to groundwater evaluation was the mobility of the COCs. For example, metals and semi-VOCs generally have relatively low mobility and are considered less of a threat to groundwater than volatile organic compounds, which are more mobile and can migrate to significant depths in the vadose zone.

The Air Force's threat to groundwater evaluation found that four of the sites warranted further investigation to establish whether the sites had impacted groundwater. Water Board staff concurred with this conclusion which was included in the Feasibility Study. These four sites and the investigative efforts are discussed in more detail below.

6. Groundwater Investigations

Site 2 Paint Waste Disposal Ditch.

This site consists of a 450-feet long, unlined drainage ditch that received waste water from aircraft stripping, cleaning and painting activities. In a deep soil boring, TCE was detected at low concentrations as deep as 225 feet, but not in deeper samples. Two temporary wells were used to collect groundwater samples to determine whether the site had impacted groundwater. The groundwater gradient is

relatively flat in the vicinity of Site 2 so the temporary wells were placed at the edges of the disposal ditch. The results are summarized in Table 1.

Table 1: Site 2 COCs Detected in Groundwater[1]

micrograms/liter (µg/L)

	B02-1A	B02-1B	Maximum Contaminant Level (MCL)
VOCs			
chloromethane	0.13	not detected	No MCL (USEPA Health Advisory = 400)
Semi-VOCs			
di(2-ethylhexyl)phthalate (DEHP)	3.07	**10.7**	4.0 (CA), 6.0 (federal)
di-n-butyl-phthalate (DPB)	not detected	2.95	No MCL (USEPA drinking water reference dose = 700)
phenol		3.72	No MCL (USEPA drinking water reference dose = 4,200)

1. COCs that were detected in a sample and its associated quality control blank sample are considered to be the result of sampling or laboratory contamination and not included in this table.

One VOC, chloromethane, was detected at a low concentration in one of the temporary well samples. There is no maximum contaminant level (MCL) for chloromethane and the detected concentration of chloromethane was several orders of magnitude below its USEPA Health Advisory. Since chloromethane was not detected in the soil or soil gas samples at the site it is unlikely that Site 2 was the source for chloromethane in groundwater. Additionally, chloromethane was only detected in one temporary well and has not been detected in an adjacent permanent groundwater monitoring well. Therefore, this low-concentration detection appears to be anomalous and not representative of groundwater quality beneath the site.

Three semi-VOCs were detected in the temporary well samples. One semi-VOC, di(2-ethylhexyl)phthalate (DEHP), was detected in samples from both temporary wells. One of the samples contained DEHP at a concentration above the California and federal MCLs. Two semi-VOCs, di-n-butyl-phthalate (DBP) and phenol, were detected in one of the groundwater samples. Both DBP and phenol were detected at concentrations that were several orders of magnitude below the USEPA drinking water reference dose levels. However, no semi-VOCs have been detected in an adjacent Plant 42 monitoring well.

Phthalates and phenol have relative low mobility in the vadose zone and groundwater. Phthalates are common compounds used in plasticizers, e.g., gloves, plastic containers, and poly vinyl chloride (PVC) tubing. Since no semi-VOCs were detected in the deep soil samples at the site or in a permanent monitoring well located adjacent to the site, it is possible the semi-VOCs present in these samples are the result temporary sampling procedures or construction. Because of the great depth to groundwater (approximately 350 feet), the fact that no semi-VOCs were detected in deep soil samples and no semi-VOCs were detected in the adjacent

monitoring well, it is unlikely that the site has contributed semi-VOCs to groundwater.

Site 18, Abandoned Disposal Area (DP018).

This site consists of an unpaved area that was used to store various materials including construction material and drums. The site is approximately one third of an acre. From 1968 to 1974, the site was also reportedly used as a fire training area. Site 18 is located adjacent to Site 2.

During the deep soil investigation, trichloroethylene (TCE) was detected as deep as 120 feet below ground surface. Because of the vertical extent of contamination, a monitoring well was installed adjacent to the site to assess possible impacts to groundwater. The groundwater gradient is relatively flat in vicinity of this site and the well was installed on the generally downgradient side of the disposal area.

The well was sampled eight times from March 2001 to October 2004. TCE was detected in groundwater at a concentration above reporting limits in one sample (September 2002) at a concentration of 1.8 µg/L, which is below its MCL of 5.0 µg/L. TCE was not detected in a confirmation sample collected in October 2002 and was not detected above its reporting limit in the three subsequent sampling events (see Table 2). The Air Force ceased groundwater monitoring after TCE had been undetected or below reporting limits for four consequently samples events. No semi-VOCs were detected in groundwater.

Table 2: Site 18 TCE Concentrations in Groundwater
micrograms/liter (µg/L)

	MW2-2	Laboratory Qualifier
Mar 2001	<0.13	U
Oct 2001	<0.09	U
Mar 2002	<0.14	U
Sept 2002	1.8	
Oct 2002	<0.43	U
Mar 2003	<0.18	U
Oct 2003	0.41	F
May 2004	0.21	F
MCL	5.0	

Laboratory qualifiers:
U = not detected
F = the analyte was positively detected, but the associated numerical value is below the reporting limit.

In 2002, total petroleum hydrocarbons (TPH) as diesel was detected below its reporting limit and its taste and odor threshold of 100 µg/L. TPH was not detected the two subsequent sampling events.

Based on the vertical separation of the deepest soil impacts and groundwater (approximately 230 feet) and because TCE was not detected above its reporting limit

in groundwater in last four consecutive sampling events, on-site soil does not appear to pose a threat to groundwater.

Site 19, Engine Run-up Area.

This site was used for aircraft engine testing from 1957 to 1961. The Air Force estimates that approximately 26,000 gallons of jet fuels were disposed at the site during this period.

TCE was detected at a trace concentration (below reporting limit) in soils as deep as 140 feet. A monitoring well was installed at the location of this boring to determine if the site had impacted groundwater. TCE was not detected above its reporting limit during the nine sampling events.

Based on the limited detections of TCE in soil, significant depth to groundwater (approximately 330 feet in the site well MW3-2), and because TCE was not detected above its reporting limit in groundwater, the site does not appear to pose a threat to groundwater.

Site 23, Building Ditch Discharge.

This site is a shallow, unlined ditch that received storm water runoff and wastewater from an adjacent building. The building was used to disassemble, clean, and test jet engines.

TCE was detected in soil and soil gas at low concentrations at, respectively, 220 and 240 feet below ground surface. The Air Force conducted a groundwater investigation by installing a permanent monitoring well immediately downgradient of the site. The well was sampled eight times from 2001 to 2004. TCE was not detected above its reporting limit during any of the sampling events.

TCE was not detected in soil or soil gas samples in samples below the depth of 240 feet. The depth to groundwater at this site is approximately 425 feet below ground surface (site well, MW8-1). Because of the separation of the deepest soil contamination and the depth to water and the results of groundwater monitoring, existing soil contamination does not appear to pose a threat to groundwater.

7. Conclusions Regarding Threat and Impacts to Water Quality

Based on the Air Force's evaluation of the threat to groundwater, the 25 IRP sites do not pose a threat to groundwater. Groundwater investigations at four of the sites with the deepest vadose contamination found no significant (consistent detect above reporting limits) groundwater impacts. There are no natural surface water bodies in the area where the 25 sites are located and the sites do not appear to pose a threat to the water quality of the storm drain system.

8. Risk Assessments

The Air Force conducted human health risk assessments (HHRA) at each of the 25 sites and ecological risk assessments at six sites that the Air Force determined could potentially provide viable ecological habitats. The risk assessments were conducted in accordance to USEPA and DTSC guidelines. DTSC reviewed and concurred with the risk assessments in the Final Remedial Investigation Report as revised in a March 2004 addendum.

The HHRAs evaluated the potential risks to workers and residents through exposure to shallow contaminated soil and VOC migration to indoor air. The Air Force concluded that current industrial land use was the most probable future use. HHRAs calculated the potential risk for the following industrial worker scenarios:

- current and potential occupational workers.
- current and potential future intermittent security/maintenance workers.
- future trench workers.

A residential scenario was used as a hypothetical future land use to support unrestricted land use determinations. The Air Force considers it very unlikely that the sites would be developed for residential use.

Additionally, one of the sites, Site 12, overlies a TCE groundwater plume from Site 29, which is being addressed separately from this ROD[2]. For the purposes of determining land use controls for Site 12, the risk assessment included an evaluation of risk associated with human consumption of groundwater beneath Site 12.

Air Force grouped the 25 IRP sites into six categories based on results of the HHRAs. The categorization of the sites are shown in Attachment 4.

The ecological risk assessments found that COCs at the six sites (1, 2, 10, 13, 17, and 18) did not exceed ecological risk levels and that no further action with respect to ecological risks was warranted at these sites.

9. Remedial Action Objective

The Air Force developed a single remedial action objective which was submitted to the Water Board in the Final Feasibility Study. The remedial action objective was developed based upon the requirements of CERCLA, results of the applicable or relevant and appropriate requirements (ARARs), risk assessment results, site

[2] The groundwater plume and the source area are undergoing active remediation under the separate investigation and remedial efforts for Site 29

characteristics, threat to groundwater evaluation, and groundwater investigations.

The remedial action objective for the 25 Soil Sites is:

> Prevent exposure through ingestion, inhalation, and direct contact with soil and groundwater that presents an unacceptable risk (including the unauthorized excavation of soils) while minimizing interference with operations at AF Plant 42.

10. **Description of Remedial Alternatives**

To meet the RAO, the Air Force identified and evaluated various remedial alternatives in the 2010 *Final Feasibility Study For 25 IRP Sites*. In accordance to CERCLA, the evaluation was based on the following criteria.

1. Overall protectiveness;
2. Compliance with state and federal requirements;
3. Long-term effectiveness and permanence;
4. Reduction of toxicity, mobility, or volume;
5. Short-term effectiveness;
6. Implementability;
7. Cost;
8. Regulatory agency acceptance; and
9. Community acceptance.

The Final Feasibility considered seven remedial alternatives and retained four for further analysis, which are the following.

- ***Alternative 1 – No Action***. Consideration of a No Action Alternative is required as a baseline against which the other remedial alternatives are compared. This alternative was evaluated for all of the 25 IRP Soil Sites. There is no cost to implement this Alternative
- ***Alternative 2 –*** **Institutional Controls**. Institutional Controls would be implemented to restrict land use for residential development. Additionally, institutional controls are intended to prevent unauthorized soil excavation and removal. This alternative was evaluated for 14 IRP sites (Attachment 4). The cost estimates for this alternative are relatively low, ranging from $85,000 to 233,000 per site.
- ***Alternative 3***- **Excavation and Offsite Disposal**. Impacted soils that present risks to human health would be excavated for offsite disposal. Ten sites were evaluated for this alternative (Attachment 4). The cost estimates for this alternative vary for each site range. The lowest cost estimate for any of the sites considered for this alternative was $211,300, the highest estimate for a site was over $1,000,000.

- ***Alternative 3a*** – **Excavation and Offsite Disposal with Soil Vapor Extraction.** This alternative is the same as Alternative 3 with the additional use of soil vapor extraction to mitigate exposure via indoor air migration. This alternative was only evaluated for one site (Attachment 4). The cost estimate for this alternative was $1,942,000.

11. Selected Remedial Alternative

In accordance to CERCLA, the proposed remedy must protect human health and the environment and comply with the identified ARARs. To achieve the RAO and comply with the identified ARARs, the ROD recommends Alternative 1 for 22 sites and Alternative 2 for three sites. The recommended alternatives and the rationales for the 25 sites are described in Attachment 4.

Compliance with Water Board Requirements

The following California state laws, policies and regulations apply to protection and restoration of water quality:

State Water Board Resolution 68-16 (*Statement of Policy with Respect to Maintaining High Quality of Waters in California*). This resolution states that high quality water shall be maintained to the maximum extent possible. The ROD is consistent with this policy since no significant (i.e., consistently detected above reporting limits) groundwater impacts are associated with the sites and the sites do not pose a threat to water quality.

California Water Code (*Porter-Cologne Water Quality Control Act*). Section 13304 states that the Water Board can order any person who discharged waste that caused or threatens to cause a waste to be discharged into waters of the State to cleanup and abate the discharge. The ROD and its supporting documents demonstrate that the sites have no significant (i.e., COCs consistently detected above reporting limits) groundwater impacts are associated with the sites and that the sites do not pose a threat to water quality. Therefore, the ROD is consistent with this regulation.

Basin Plan *(Water Quality Control Plan for the Lahontan Region*). The Basin Plan designates groundwater of Antelope Valley as having beneficial uses of Municipal, Agricultural, Industrial, and Freshwater Replenishment. The 25 IRP sites have not impacted the beneficial uses of the groundwater and do not pose a threat to the beneficial uses. The Basin Plan states that the Board may consider soil cleanup levels above background provided water quality is protected and health risk are acceptable. Therefore, the ROD is consistent with the Basin Plan.

State Water Board Resolution 92-49 (*Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under California Water Code Section 13304*). This resolution contains requirements for conducting investigation and cleanup actions that are subject to California Water Code, section 13304. Investigation and interim removal activities at the 25 IRP sites were conducted in accordance with this resolution.

The ROD and its supporting documents adequately demonstrate that 25 IRP sites have no significant (i.e., consistently detected above reporting limits) impacts to groundwater and that existing soil contamination does not pose a threat to groundwater. The proposed remedies are consistent with all Water Board requirements and policies.

12. **Proposed Remedial Action**

The Air Force developed the remedial action objective based on the current and likely future industrial use and the unlikely residential use. The proposed remedies of No Action and Institutional Controls will be used to prevent human exposure to contaminated soil and VOC-contaminated soil gas. Water Board Staff believes that the Air Force has adequately demonstrated that the sites do not pose a threat to groundwater. The proposed remedy meets state requirements, is technically feasible and cost effective, and complies with Water Board requirements and ARARs.

13. **Conclusions**

Water Board staff has reviewed the ROD and its supporting documents and concludes the proposed alternatives for the specified sites meet all applicable Water Board requirements and the sites will not impact groundwater quality in the foreseeable future.

Board Staff concur that implementation of the proposed remedial plan will adequately protect human health and the environment and will restore current or potential beneficial uses of the underlying groundwater. Given the depth of groundwater, the barely detectable concentration of contaminants, and current and future use of the underlying groundwater, the threat to human health and the environment is minimal. Natural attenuation processes will reduce the contaminant concentrations to levels protective of beneficial uses without initiating active remediation and the contamination is expected to meet water quality objectives in the near future.

14. **Recommendation**

The Air Force has prepared the final ROD with an acceptable cleanup proposal. The Water Board is asked to sign the ROD indicating it concurs with the actions proposed in the ROD. Staff recommends the Board adopt the enclosed resolution authorizing the Executive Officer to sign the ROD.

References

CH2M Hill, Draft Final Record of Decision for 25 Installation Restoration Program Sites, Air Force Plant 42, Palmdale, CA, April 2012.

City of Los Angeles, Department of Public Works, Antelope Valley Groundwater Recharge Study: Phase 2, March 1991.

US Geological Survey, Regional Water Table (1996) and Water-Table Changes in the Antelope Valley Ground-Water Basin, CA, Water-Resources Investigation Report 98-4022, 1998.

Attachments: 1, Location Map
2, 25 IRP Site Map
3, Summary of Site Information
4, Alternatives Evaluation

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Attachment 1 Location Map Air Force Plant 42

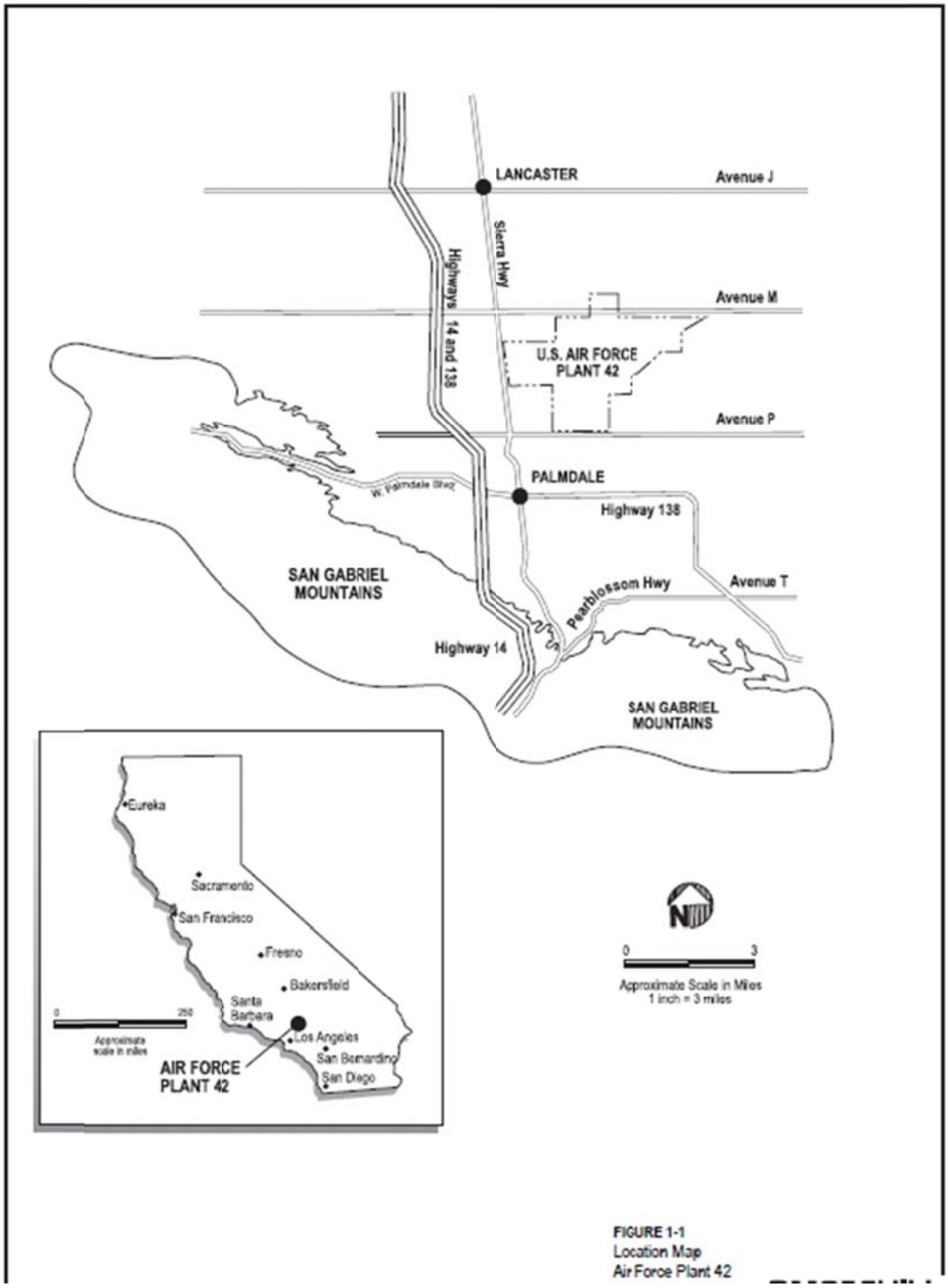
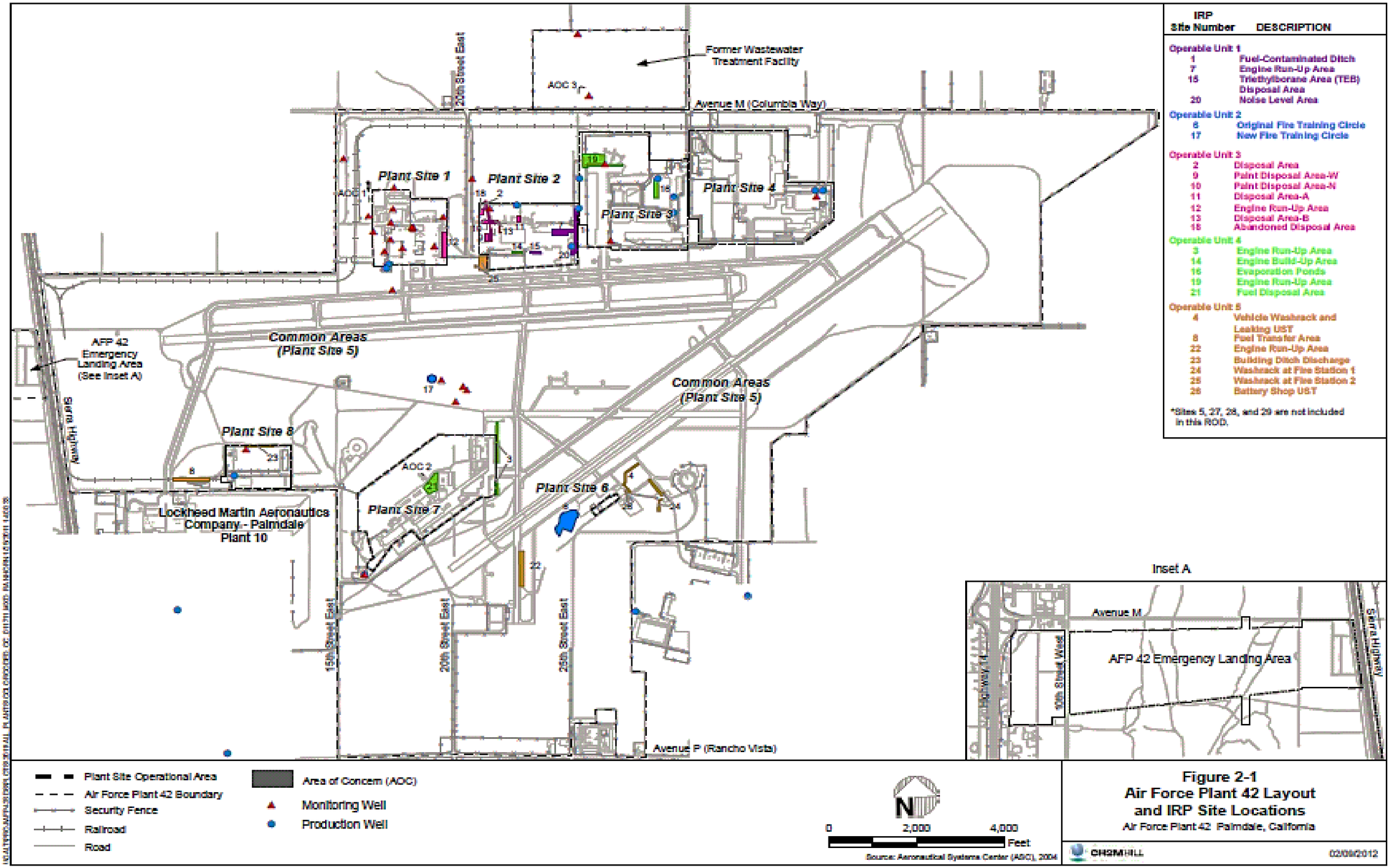


FIGURE 1-1
Location Map
Air Force Plant 42



IRP Site Number	DESCRIPTION
Operable Unit 1	
1	Fuel-Contaminated Ditch
7	Engine Run-Up Area
15	Triethylborane Area (TEB) Disposal Area
20	Noise Level Area
Operable Unit 2	
6	Original Fire Training Circle
17	New Fire Training Circle
Operable Unit 3	
2	Disposal Area
9	Paint Disposal Area-W
10	Paint Disposal Area-N
11	Disposal Area-A
12	Engine Run-Up Area
13	Disposal Area-B
18	Abandoned Disposal Area
Operable Unit 4	
3	Engine Run-Up Area
14	Engine Build-Up Area
16	Evaporation Ponds
19	Engine Run-Up Area
21	Fuel Disposal Area
Operable Unit 5	
4	Vehicle Washrack and Leaking UST
8	Fuel Transfer Area
22	Engine Run-Up Area
23	Building Ditch Discharge
24	Washrack at Fire Station 1
25	Washrack at Fire Station 2
26	Battery Shop UST

*Sites 5, 27, 28, and 29 are not included in this ROD.

Figure 2-1
Air Force Plant 42 Layout and IRP Site Locations
Air Force Plant 42 Palmdale, California

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Attachment 3 Site Summaries

Site	Release History	Summary of Investigations Results for VOCs 1986 - 2004
Site 1, Fuel- Contaminated Ditch	1955 -81: Jet fuel, oil, hydraulic fluid, and solvents.	Low concentrations of VOCs detected in shallow soil. No VOCs detected in soil or soil gas below 100 ft bgs.
Site 2, Paint Waste Disposal Ditch	1954 - 74: Paint wastes & washwater.	No VOCs were detected in shallow soil. TCE detected in soil gas at 15 ft bgs. No VOCs were detected above reporting limits in deep soils. See Section 6 of Staff Report for discussion of groundwater investigation.
Site 3, Engine Run-Up Area	1956 - 71: Waste jet fuel, engine oil, and hydraulic fluids.	Low concentrations of VOCs detected in shallow soil. No VOCs detected in shallow or deep soil gas. No VOCs were detected above reporting limits in deep soils.
Site 4, Vehicle Washrack and Leaking UST	1954: Wastewater from vehicle washrack.	No VOCs detected above reporting limits in shallow soils. Low concentrations of methylene chloride detected in shallow soil gas. No VOCs were detected in deep soil or soil gas samples.
Site 6, Original Fire Training Circle	1954 - 59: Fuel, oils, hydraulic fluids, and solvents for fire training.	No VOCs were detected in soil above reporting limits below 20 feet bgs. Low concentrations of VOCs detected in soil gas to depths of 140 feet.
Site 7, Engine Run-Up Area	1954 - 62: Waste fuel, oils, and hydraulic fluids.	16 VOCs were detected at low concentrations in shallow soils. 13 VOCs were detected in deep soil samples. 5 VOCs were detected in deep soil gas.
Site 8, Fuel Transfer Area	1959 - 84:Small fuel spills at railroad tracks. 1997: 32 cubic yards of soil were excavated after a jet fuel spill.	No VOCs were detected in shallow soil or soil gas samples. No VOCs were detected above their detection limits in deep soil gas. Methylene chloride and MTBE, were detected at concentrations above reporting limits in soil at 40 ft bgs.
Site 9, Paint Disposal Area - W	Waste paint residues and lacquer thinners.	Low concentrations of VOCs were detected in shallow soil. No VOCs were detected in deep soil gas or soil samples.
Site 10, Paint Disposal Area - N	1954 - 56: Lacquer thinners, MEK, toluene, and other paint waste.	No VOCs were detected in shallow soil gas samples. Methylene chloride, detected at low concentrations in shallow soil. No VOCs were detected in deep soil or soil gas samples.
Site 11, Disposal Area A	1954 - 81: Fuels, hydraulic fluids, oils, and solvents.	TCE and toluene were detected in shallow soil gas. TCE was detected in soil gas from 40 to 140 feet bgs at low concentrations.
Site 12, Engine Run-Up Area	Disposal of fuels, hydraulic fluids, and engine oils.	Toluene, ethylbenzene, xylenes, and 1,2,4-trimethylbenzene were detected at low concentrations in shallow soil. No VOCs were detected in deep soil samples at concentrations above reporting limits. Freon-11 was detected in shallow soil gas. Trichlorofluoromethane, toluene, and xylenes were detected at low concentrations in deep soil gas samples.
Site 13, Disposal Area B	1950s: Photochemical wastes. 1960s: Solvents from repair shop.	No VOCs were detected in shallow or deep soil or soil gas.
Site 14, Engine Build-Up Area	1954 - 57: Washdown water and hydraulic fluids from engine build-up operations.	Various VOCs detected at low concentrations in shallow soil. No VOCs were detected in deep soil or soil gas samples.
Site 15, Triethylborane Disposal Area	1964 - 86: Hydraulic fluid and triethylborane.	No VOCs detected above reporting limits in shallow or deep soil or soil gas.

Site 16, Evaporation Ponds	1961 - 67: Disposal of nickel-plating wastewater.	Low concentrations of VOCs were detected in shallow soil.
Site 17, New Fire Training Circle	1981 - 83: Jet fuel was used for fire training exercises.	No VOCs detected above reporting limits in shallow soil or deep soil or soil gas samples.
Site 18, Abandoned Disposal Area	Storage of construction debris.	TCE was detected in shallow soil gas samples. Trace concentrations of methylene chloride were detected in shallow soils. TCE and o-xylene were detected in deep soil gas. TCE was detected at low concentrations in deep soil samples but less than reporting limits at 140 feet bgs. See Section 6 of Staff Report for discussion of groundwater investigation.
Site 19, Engine Run-up Area	Jet fuel.	TCE detected in soil and soil gas samples at depths, respectively, of 20 and 140 feet. See Section 6 of Staff Report for discussion of groundwater investigation.
Site 20, Noise Level Area	1954 - 58: Fuels, oils, and hydraulic fluids.	No VOCs detected in soil gas. Benzene, toluene, and naphthalene detected in shallow soil. No VOCs detected above reporting limit in deep soil.
Site 21, Fuel Disposal Area	Late 1950s: Small quantities of fuel.	Low concentrations of VOCs detected in one shallow boring. No VOCs detected in shallow or deep soil gas samples. VOCs (fuels and solvents) detected above reporting limits in soil to depths of 120 feet. No VOCs were detected above reporting limits at 135 feet bgs.
Site 22, Engine Run-Up Area	1955 - 57: Jet fuel, oil, and hydraulic fluid.	No VOCs detected in shallow or deep soil or soil gas above reporting limits.
Site 23, Building Ditch Discharge	Wastewater.	TCE and methylene chloride were detected in shallow soil gas. Low concentrations of VOCs were detected in shallow soil. TCE and toluene were detected in deep soil gas samples. TCE was detected in deep soil gas. TCE not detected in deepest 4 soil gas samples (maximum depth of 320 feet). TCE was detected at low concentrations in soil samples 200 and 220 feet bgs. TCE was not detected above the reporting limit in the deepest 6 samples (maximum depth of 320 feet). See Section 6 of Staff Report for discussion of groundwater investigation.
Site 24, Washrack at Fire Station 1	1959: Wastewater from washrack operations.	Methylene chloride detected at low concentrations in shallow soil gas. Low concentrations of VOCs were detected in shallow soil.
Site 25, Washrack at Fire Station 2	1959: Wastewater from washrack operations.	Low concentrations of methylene chloride detected in shallow soil gas. Low concentrations of VOCs detected in shallow soil.
Site 26, Battery Shop and UST	1954 - 82: Waste battery acid.	Trace concentrations of VOCs detected in shallow soil.

Acronyms: ft bgs - feet below ground surface; VOCs - volatile organic compounds; UST - underground tank

Attachment 4
Summary of Recommended Remedial Action Alternatives
Air Force Plant 42

Sites	Recommendation	Rationale
Evaluated with Alternative 1 (No Action)		
Sites 3, 4, 8, 9, 15, 17, 21, 22, 24, 25, and 26	Alternative 1 is recommended.	Risk thresholds were not exceeded any for exposure scenarios. Therefore no action is warranted.
Evaluated with Alternatives 1 (No Action) and 2 (Institutional Controls)		
Sites 11 and 23	Alternative 1 is recommended.	The risk levels for the hypothetical residential scenario are at the low end of the risk management range. Based on the low detection frequencies and low concentrations of TCE in shallow soil gas at Sites 11 and 23, a low potential exists for actual future exposures at these sites. Therefore no action is warranted.
Site 12	Alternative 1 is recommended.	The risk thresholds for soil and soil gas were not exceeded for any exposure scenarios. A TCE groundwater plume caused by a release from a nearby site (Site 29) extends under Site 12. This contamination causes an exceedance of a risk threshold for drinking water. Groundwater at Site 29 is not part of this ROD and is being addressed through an interim remedial action; therefore, the applicaiton Alternative 1 for Site 12 is appropriate and protective.
Evaluated with Alternatives 1 (No Action), 2 (Institutional Controls), and 3 (Excavation and Offsite Disposal)		
Sites 1, 2, 6, 7, 10, 13, 14, and 18	Alternative 1 is recommended.	Some risk levels are at the low end of the risk management range. Based on the low concentrations of the risk drivers and low detection frequencies, a low potential exists for actual future exposures at these sites. Therefore no action is warranted.
Sites 16 and 20	Alternative 2 is recommended.	Some risk levels are in the middle to upper portion of the risk management range. Alternative 2 provides a relatively high level of protection while having significantly less cost than Alternative 3.
Evaluated with Alternatives 1 (No Action), 2 (Institutional Controls), and 3A (Excavationn and Offiste Disposal w/Soil Vapor Extraction)		
Site 19	Alternative 2 is recommended.	Some risks levels are in the middle portion of the risk management range. Alternative 2 provides a relatively high level of protection while having significantly less cost than Alternative 3A.