

ENVIRONMENTAL RESTORATION PROGRAM

West/Annexes/Basewide Operable Unit
Travis Air Force Base

ANNUAL REPORT ON THE STATUS OF LAND USE CONTROLS ON RESTORATION SITES



60TH CIVIL ENGINEER SQUADRON
Travis Air Force Base, California

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**ANNUAL REPORT
ON THE STATUS OF

LAND USE CONTROLS
ON RESTORATION SITES

AT
TRAVIS AIR FORCE BASE, CALIFORNIA**

Submitted by:

**60th Air Mobility Wing
Travis Air Force Base, California**

Prepared by

**60 Civil Engineer Environmental Flight
411 Airmen Drive, Building 570
Travis AFB CA, 94535-2001**

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List of Acronyms and Abbreviations

AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
CAMU	Corrective Action Management Unit
COC	Chemical of Concern
COEC	Chemical of Ecological Concern
ECC	Environmental Chemical Corporation
EPA	U. S. Environmental Protection Agency
ERP	Environmental Restoration Program
GMU	Grazing Management Unit
GP	Travis Air Force Base General Plan
LUC	Land Use Control
NEWIOU	North/East/West Industrial Operable Unit
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PPE	personal protective equipment
RA	Remedial Action
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
WABOU	West/Annexes/Basewide Operable Unit

1.0 Introduction

The *Soil Record of Decision (ROD) for the West/Annexes/Basewide Operable Unit (WABOU)* (Travis AFB, 2002) is the legal document that describes the selected remedies for nine Environmental Restoration Program (ERP) sites on Travis Air Force Base (AFB) and the completion of cleanup requirements at a tenth ERP site. Alternative S2 (Land Use and Access Restrictions) is the selected remedial alternative for the nine sites. Alternative S2 includes the administrative and physical measures needed to restrict future land use and ensure the effectiveness of the remedy at all nine sites.

The remedial action objective of Alternative S2 for all nine sites is to restrict site access to prohibit residential use of the property, including use for day care, at sites where residential cleanup values are not attained. For sites where contaminated soil is not being excavated and backfilled with clean soil, an additional objective is to prevent surface-disturbing activities that could create a risk of human exposure inconsistent with the assumptions described in the ROD.

For four ERP sites (DP039, SD043, LF044, and SS046), Alternative S2 is the only selected remedy. For the remaining five sites (LF008, RW013, SS041, SD042, and SD045), the ROD selected an active remedy and Alternative S2. The reason for this is the active remedy is required to reduce contaminant concentrations to industrial cleanup levels so that the sites are safe for base workers. Alternative S2 serves to restrict activity at those sites to industrial uses only. Section 5.4 (Land Use Controls) of the ROD describes these requirements in more detail.

If the active remedy reduces contaminant concentrations to residential cleanup levels, then the site is available for unrestricted access, and there would be no need for Land Use Controls (LUCs). The ROD states that the requirements pursuant to Alternative S2 will be deleted for a site in the event that the soil excavation achieves the residential cleanup levels for all chemicals of concern at the site. In 2002 and 2003, Travis AFB conducted soil excavations at LF008, RW013, SS041, and SD042; and all four excavations achieved residential cleanup levels. As a result, the base has not placed LUCs at these four sites. The soil excavation at SD045 has been delayed until 2006, so land use controls are in place at this site.

One of the remedies (Alternative S6) consists of excavation and placement of contaminated soil in a Corrective Action Management Unit (CAMU). A CAMU is a designated on-base area that is designed to receive and consolidate contaminated soil. The location of the Travis AFB CAMU is within the boundaries of Site LF007, a closed municipal landfill within the North/East/West Industrial Operable Unit (NEWIOU).

On 3 December 2003, Mr. Glenn Anderson and Mr. Steve Stopher from the 60th Civil Engineer Environmental Flight conducted a formal inspection of the LUCs at six ERP sites on Travis AFB. The six sites are designated as DP039, SD043, LF044, SD045, SS046, and LF007. This report serves as the official record of the results of the 2003 inspection and provides a description of future efforts to improve LUC identification and maintenance.

The following list provides a brief summary of the organization and content of the 2003 LUC Status Report:

- Section 1.0 – Introduction. Provides descriptions of the purpose, regulatory background and content of this annual report.
- Section 2.0 – Performance Measures. Describes the performance measures for LUCs. Subsections describe how these measures have been or will be met.
- Section 3.0 – Building 755 (DP039). Describes the environmental conditions at Building 755 and the status of LUCs at that site.
- Section 4.0 – Building 916 (SD043). Describes the environmental conditions at Building 916 and the status of LUCs at that site.
- Section 5.0 – Landfill X (LF044). Describes the environmental conditions at Landfill X and the status of LUCs at that site.
- Section 6.0 – Former Small Arms Range (SD045). Describes the environmental conditions at the Former Small Arms Range and the status of LUCs at that site.
- Section 7.0 – Railhead Munitions Staging Area (SS046). Describes the environmental conditions at the Railhead Munitions Staging Area and the status of LUCs at that site.
- Section 8.0 – Landfill 2 (LF007). Describes the environmental conditions at the CAMU portion of this closed municipal landfill.
- Section 9.0 – Conclusion and Summary of Findings. Summarizes the first year of managing LUCs in the WABOU and discusses methods to improve upon LUC management.
- Section 10.0 – Works Cited. Lists the documents used in the development of this annual report.

Appendices

- Appendix A – Base General Plan Revisions. Provides a copy of the new Appendix E of the Base General Plan.
- Appendix B – Photographs. Shows photographs of sites with LUCs.

2.0 Performance Measures

Section 5.4 (Land Use Controls) of the WABOU Soil ROD addresses the Air Force requirements and responsibilities for implementing, monitoring, maintaining, and enforcing identified LUCs. To assist the Air Force in meeting these responsibilities, the ROD describes four performance measures for all LUC sites. The following subsections explain how these performance measures have been or will be met.

2.1 Base General Plan Revisions

The first performance measure pertains to the Base General Plan (GP). The GP is a long-range planning document that provides a framework for selecting the locations of future facilities needed to carry out the base mission. Section 5.4 of the ROD required Travis AFB to incorporate within its GP all specific LUCs at each site, the reasons for the controls, and site-specific details to adequately describe them to base personnel. Once a soil remedial action is complete, the base will update the GP to include the site-specific restrictions if needed.

The GP revisions were completed in November 2003 and consist of two parts. The first part updated the existing text to incorporate the LUC concept and how it impacts future property development. The following GP sections were revised:

- Section 2.3.2 (Future Use of ERP Sites) – definitions for the WABOU Soil ROD and LUCs and a description of the impact of LUCs on future development were added.
- Section 4.2.2.4 (RCRA, ERP, and Toxic Substances) – minor text updates were made.
- Table on Page 4-35 – this is a table of all ERP sites and the constraints that they impose. This table was updated to incorporate the selected remedies that are promulgated in the WABOU Soil ROD.
- Section 4.2.4.2 (Installation Opportunities) – minor text updates were made.

The second part consists of a new Appendix E (Land Use Controls) for the GP. Appendix E discusses LUCs in depth and provides a detailed description of the specific controls required at each site. It also lists the responsibilities of base personnel and organizations in maintaining LUCs. An individual attachment for each site contains the site-specific LUC maintenance instructions. Each attachment contains a site map and a recent photograph of the controlled area. The 60th Civil Engineer Environmental Flight will prepare an attachment for each site whenever a soil remedial action is completed and the need for LUCs is identified. Appendix A of this report contains the new Appendix E of the Travis AFB GP.

During the 2003 LUC inspection, the reviewers noted that Travis AFB had updated the GP during the period that the draft final WABOU Soil ROD was awaiting signature by all Federal Facility Agreement signatories. As a result, the specific sections of the GP that are listed in the second paragraph of section 5.4.1 of the WABOU Soil ROD had changed. However, the GP revisions that are described above meet the intent of the requirements of section 5.4.1 of the ROD.

2.2 Regulatory Agency Notification

The second performance measure involves the notification of the regulatory agencies of any base proposals for a major land use change at a site inconsistent with the use restrictions and assumptions described in the WABOU Soil ROD, any anticipated action that may disrupt the effectiveness of the LUCs, any action that might alter or negate the need for LUCs, or any anticipated transfer of the property subject to the LUCs.

For the six sites that are addressed in this report, there were no land use change proposals or activities in 2003 that were inconsistent with, disruptive of or negated the need for LUCs. Also, no property transfers took place in the vicinity of the six sites.

2.3 Existing Administrative Control Maintenance

The third performance measure requires the maintenance of existing administrative controls (e.g. through the review of excavation permits) while LUCs are in place. Overall, Travis AFB has not made any significant changes to the existing system of administrative procedures for tracking land use on-base.

The basic procedures to maintain administrative controls start with the AF Form 332 that must be approved before the start of any building project. The reviewers of this form compare the proposed building site with the constraints in the GP before approval. The base also uses an excavation permit for similar comparisons. However, beginning in January 2003, the Environmental Flight began to require the completion of an AF Form 813 (Request for Environmental Impact Analysis) for most AF Form 332s and prior to the submission of any excavation permit (60 AMW Form 55). These required procedures provide further assurance that projects are subjected to an appropriate level of environmental analysis. This procedural change was minor in nature, because base personnel were already required to submit an AF Form 813 to the Environmental Flight in the early stages of a construction project. However, by requiring the attachment of a copy of the completed AF Form 813 to the excavation permit during the review process, the Environmental Flight is able to verify that environmental issues pertaining to the proposed project are properly considered and addressed.

As discussed in section 4.0 of this report, reliance upon an old excavation permit that had not undergone an environmental review resulted in the construction of a concrete pad in the vicinity of the controlled area at SD043.

2.4 Periodic Monitoring

Periodic monitoring is the final performance measure in the WABOU Soil ROD. Officially, Travis AFB is required to conduct annual inspections of its controlled areas and to take prompt action to restore, repair, or correct any LUC deficiencies or failures identified. Also, the ROD provides the flexibility to select a different monitoring schedule as long as all parties agree with it and if the change reasonably reflects the risk presented by the site.

The 60th Civil Engineer Environmental Flight has an environmental field manager who checks on the status of various environmental and construction projects on a frequent basis. Also, the

Environmental Flight project managers conduct site visits routinely to support a variety of environmental activities. As a result, site visits take place on at least a quarterly and often more frequent basis. Any potential LUC deficiencies are investigated promptly. During this reporting period, there were no major occurrences of LUC deficiency restoration, repair or correction. However, Travis AFB has taken steps to ensure that potential LUC deficiencies are avoided through improved communication, as described in section 4.0.

2.5 Other Monitoring Requirements

In addition to the LUC requirements described above for all sites, the ROD requires the following measures at some sites:

2.5.1 Signs

Specific sites as mutually agreed among the Remedial Project Managers will have appropriate signs on display to warn site visitors of potential hazards associated with surface soil contamination.

In 2003, Travis AFB placed signs at all WABOU sites with LUCs. Appendix B (Photographs) presents photographs that show the signs at each LUC site.

2.5.2 Use of Clean Soil

At the five sites where the selected remedy involves soil excavation, Travis AFB is required to backfill the excavation voids with clean soil. This removes the potential for exposure to surface soil contaminants. If there is any residual contamination at depth, the digging permit process will be used to ensure that future industrial activities or construction projects either do not disturb the contaminated subsurface soil or that the base takes other appropriate safety measures.

In 2002 and 2003, Travis AFB conducted soil cleanup actions at four of the five ERP sites that are addressed in the ROD. They are LF008, RW013, SS041, and SD042. All four actions achieved residential cleanup levels, so there is no residual contamination at depth that requires the implementation of LUCs. The RW013 soil remedial action is described in detail in the *Remedial Action Report for Soil Remedial Actions at Site RW013* (Environmental Chemical Corporation [ECC], 2003). The SS041 soil remedial action is described in detail in the *Remedial Action Report for Soil Remedial Actions at Site SS041* (ECC, 2003). The remedial action reports for the LF008 and SD042 soil cleanup actions are currently undergoing Travis AFB and regulatory review.

2.5.3 Landfill X

At Landfill X, Travis AFB is required to install a fence around the Landfill X area and the adjacent equipment training area, build protective berms to prevent soil contamination from flowing during rain to nearby vernal pools, and comply with applicable OSHA regulations, including relevant worker notification, training, and protective measures.

In 2003, Travis AFB completed the installation of a fence and berm at Landfill X. The details of this soil action are found in the *Remedial Action Report for the Soil Remedial Actions at Site LF044* (ECC, 2003).

As of the writing of this report, Travis AFB has not yet begun the use of the Landfill X area for heavy equipment training and the temporary staging of construction debris. There are other safety and natural resource considerations to be resolved prior to the reestablishment of these activities. Before training and material staging takes place on this property, the base will verify that it is in compliance with all OSHA regulations.

2.5.4 Report Submittal

Travis AFB is required to submit in a timely manner to the U.S. EPA, California Department of Toxic Substances Control, and the San Francisco Regional Water Quality Control Board an annual monitoring report on the status of LUCs and/or other remedial actions, including the operation and maintenance, and monitoring thereof, and how any LUC deficiencies or inconsistent uses have been addressed.

By submitting this report prior to 31 January 2004, Travis AFB has met this requirement. A hard copy of this report has been placed in the Travis AFB Information Repository at the Vacaville Public Library, and an electronic copy of this report will be accessible through the Travis AFB Environmental Web Site. Although this report is not subject to approval and/or revision by EPA and the State of California, Travis AFB will voluntarily consider any suggestions from the regulatory agencies and the public to improve the format and/or content of future reports.

3.0 Building 755 (DP039)

Building 755 is the Travis AFB Battery and Electric Shop. The site consists of Building 755 and a former battery neutralization sump. Past operations have included the recharging and dismantling of lead-acid and nickel-cadmium batteries. Before 1978, lead acid solutions were discharged into a sink inside Building 755. The pipeline from the sink led to a rock-filled sump approximately 65 feet northwest of the building. This practice was discontinued in 1978 when the pipeline was dismantled and reconnected to the sanitary sewer system. The sump was removed in 1993.

3.1 Environmental Conditions

Surface soil around the edges of the former sump area contains lead residue. Since the lead-acid solution entered the former sump through a subsurface pipe, the presence of lead in the surface soil is attributed to the deposition of small amounts of lead-contaminated subsurface soil during the 1993 sump removal action. The Human Health and Ecological risk assessments for Building 755 concluded that the lead residue does not pose an unacceptable risk to local workers or ecological receptors. Sections 4.1.7 and 4.1.8 of the WABOU Remedial Investigation (RI) report present more detailed descriptions of the risk assessments for Building 755.

3.2 Status of DP039 Land Use Controls

Section 5.3.1 of the WABOU Soil ROD states that Alternative S2 (Land Use and Access Restrictions) is the selected remedial action for this site. The Air Force is to restrict the use of this small area to industrial activities only.

The Travis AFB General Plan has been revised to document the presence of lead in the surface soil and enforce the land use restriction, particularly on the use of the contaminated soil for playground or other play activities. The LUCs for DP039 are described in detail in Attachment 1 of Appendix E of the Base General Plan. Appendix A of this report contains a copy of this attachment. Appendix B of this report contains photographs of the controlled area at DP039.

The 2003 inspection of the LUCs at DP039 found that administrative controls are adequate to enforce the restriction, so physical barriers (i.e., fences) are not needed. There is no evidence that the lead-impacted soil has been disturbed. Photograph 1 in Appendix B shows the controlled area at DP039, and Photograph 2 shows a warning sign that has been placed in the vicinity of the LUC area to ensure that visitors and occupants of Building 755 are aware of the presence of LUCs. Identical signs have been placed in the other LUC areas in the WABOU.

4.0 Building 916 (SD043)

Building 916 is an emergency electrical power facility. The diesel-powered generators inside the building sit above a cellar, or sump area, that also houses sump pumps. Prior to 1991, spilled diesel fuel from the generators and wash water were pumped out of the building through one of four pipes. The pipes discharged onto small concrete spillways constructed for erosion control on the side slope of the trapezoidal drainage channel that lies east of the building. From the spillways, wastewater flowed down the side-slope and into the drainage channel. This method of sump water disposal was discontinued in 1991.

There had been a fenced and graveled electrical transformer area on the southwest corner of the building. This area contained three liquid-filled transformers on top of a concrete pad. In 1992, one of the transformers developed a leak onto the concrete pad and ground surface. The base removed the transformers and pad in 1993.

4.1 Environmental Conditions

Polychlorinated Biphenyl (PCB)-1254 was detected in soil at concentrations that do not pose an unacceptable risk to local workers or ecological receptors. Sections 4.3.7 and 4.3.8 of the WABOU RI report present detailed descriptions of the human health and ecological risk assessments for Building 916, respectively.

PCB-1254 was detected in a groundwater sample immediately below the transformer area, and there was a possibility that PCB-1254 in subsurface soil is a source of ongoing groundwater contamination. Additional groundwater sampling in June 1999 demonstrated that there is no PCB-contaminated groundwater migrating from the site. The *Reevaluation of Soil and Groundwater Contamination at Building 916 (SD043)* Technical Memorandum (CH2M HILL, 2000) presents a detailed discussion on the groundwater sampling effort.

4.2 Status of SD043 Land Use Controls

Section 5.3.3 of the WABOU Soil ROD states that Alternative S2 (Land Use and Access Restrictions) is the selected remedial action for this site. The Air Force is to restrict the use of this small area to industrial activities only. As long as administrative controls are adequate to enforce the restriction, physical barriers (i.e., fences) will not be needed.

The Travis AFB General Plan has been revised to document the presence of PCB-1254 in the soil and enforce the land use restriction. The LUCs for SD043 are described in detail in Attachment 2 of Appendix E of the Base General Plan. Appendix A of this report contains a copy of this attachment.

On 10 July 2003 a representative of the Environmental Flight inspected several ERP sites in the western portion of the base and noticed that construction had taken place within the controlled area at SD043. The construction consisted of the installation of a standby emergency generator that is mounted on a concrete pad. The purpose of the generator is to provide additional utility

support to the air freight terminal, located south of Ragsdale Avenue in Building 977. The previous LUC inspection had taken place on 21 May 2003. Photograph 3 in Appendix B of this report shows the generator and pad south of Building 916, and photograph 4 shows the generator and pad in relation to the controlled area at SD043.

The Environmental Flight contacted the section of the 60th Civil Engineer Squadron that oversaw this construction project and requested information concerning the construction details of the new generator. Construction took place between 21 May 2003 and 10 July 2003. It involved a small amount of excavation to establish the concrete pad and to install several grounding rod joints. The maximum depth of excavation was seven inches. According to the Air Force project manager, the soil “was used to fill the same area from which it was removed” and was not removed from the site.

Section 4.3.7 (Human Health Risk) of the WABOU Remedial Investigation report presented the results of the screening and quantitative human health risk assessments for Building 916. Based on the results of the screening assessment, the subsurface soil is not suitable for residential use. The quantitative assessment concluded that the cancer and non-cancer risk estimates for site workers were less than the respective risk criteria. Since site conditions are suitable for site workers, the installation of the generator did not pose an adverse risk to the workers assigned to this project. In addition, the contractor worked under the requirements of a safety plan to mitigate hazards, and no site worker was injured during this project.

Section 5.4.1 (Components of the Travis AFB General Plan and Existing Administrative Procedures) of the WABOU Soil ROD states that the base will rely on the existing administrative review procedures to maintain and enforce land use controls. It also lists the Base Civil Engineer Work Request (Air Force Form 332) and the Excavation Permit that are part of the administrative review process. As discussed in section 2.3, another component of the Travis AFB administrative review procedures is the Air Force Form 813 (Request for Environmental Impact Analysis). This form initiates the Environmental Impact Analysis Process (EIAP) and is submitted by the project manager during the design stage of a project. Although not specifically mentioned as one of the administrative procedures in the WABOU Soil ROD, 32 Code of Federal Regulations 989 requires the EIAP to be complete prior to the start of a proposed action and is now required for most AF Form 332s. Unfortunately, an AF Form 813 was not submitted for this construction project.

Other base coordination procedures that were not followed during the design of this construction project are described below:

- The Base Civil Engineer did not approve the project through a signed Air Force Form 332.
- The Base Community Planner was not formally involved with the selection of the construction site.
- The Environmental Flight did not receive the opportunity to review the project design and construction work plan prior to the awarding of the construction contract. Normally, construction designs and plans are signed by the Chief of the Environmental Flight.
- Construction proceeded under an expired excavation permit, dated November 2002.

After reviewing the information provided by the project manager, the Environmental Flight took the following corrective actions at SD043:

- The footprint of the controlled area has been enlarged to incorporate the concrete pad beneath the generator and all utilities. It has also been expanded to include the area 10 feet to the east, south and west of the concrete pad. Since no soil samples were collected and analyzed as part of the generator installation project; any future projects to expand, alter, or remove the infrastructure associated with the generator will need to verify through soil sample analysis that the soil impacted by the future project is clean. Decisions on the disposition of any excavated soil will be made based on the results of sample analysis.
- The next revision of the GP will add the expanded SD043 footprint to Appendix E. It will also describe in detail the sampling protocol described above.
- Two warning signs have been posted on Building 916 to notify site workers and visitors of the presence of land use controls at SD043.
- All future reports on the status of land use controls will evaluate these corrective actions at SD043.

Section 8 (Conclusion and Summary of Findings) discusses those actions that will strengthen the procedures used to maintain controls at all LUC sites.

5.0 Landfill X (LF044)

Landfill X is not a landfill at all. It received this name because the past activities at this site had not been completely identified at the start of the WABOU Remedial Investigation. It comprises approximately 25 acres of undeveloped land located within Grazing Management Unit (GMU)-2, a 126-acre parcel of land that had been used to graze horses. The site is located within a field that meets important worker safety training and construction needs on Travis AFB. The soil contaminants are attributed to the asphalt and other construction debris that are stockpiled onsite.

5.1 Environmental Conditions

Chemicals of Concern (COCs) detected in surface soils include benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene. These contaminants are also COECs together with to benzo(k)fluoranthene, fluoranthene, and pyrene. COCs detected in subsurface soils include benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene, benzo(k)fluoranthene. These contaminants are also subsurface COECs together with anthracene, acenaphthene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, bis(2-ethylhexyl)phthalate, cadmium, lead, and silver. Sections 4.8.7 and 4.8.8 of the WABOU RI report present a detailed description of the human health and ecological risk assessments for Landfill X, respectively.

5.2 Status of LF044 Land Use Controls

Section 5.3.6 of the WABOU Soil ROD states that Alternative S2 (Land Use and Access Restrictions) is the selected remedial action for this site. The selected remedy requires the installation of a fence around the contaminated area and the training and stockpile area and the construction of a protective berm within the fenced area. The purpose of the berm is to provide environmental protection by preventing soil contaminants from flowing during rain events into nearby vernal pools. The Air Force is to restrict the use of this small area to industrial activities only. The objective of this remedial action is to document the location of the contaminants and apply land use controls to prevent the site from being used for residential purposes.

The Travis AFB General Plan has been revised to document the presence of the soil contaminants and enforce the land use restriction. The LUCs for LF044 are described in detail in Attachment 3 of Appendix E of the Base General Plan. Appendix A of this report contains a copy of this attachment.

The *Remedial Action Report for Soil Remedial Actions at Site LF044* (ECC, 2003) provides a detailed description of the construction of the physical controls at LF044. This report is the source of some of the information provided in the following subsections.

5.2.1 Fence and Gate Installation

Environmental Chemical Corporation (ECC) and a fencing subcontractor installed the fence according to RD Specification #02831 of the *LF044 Soil Remedial Design Package* (URS,

2002). ECC accommodated a request by TAFB to install an additional gate on the southeastern side of LF044 site along with the northern gate that accesses Hangar Avenue. Warning signs were posted at the gates and every 200 feet along the fence as required.

The 2003 inspection of the LUCs at LF044 found the fence and signs to be in excellent physical condition. There is no evidence to suggest that the property is being used for other than industrial purposes. Both gates were locked, and the Environmental Flight keeps a copy of the keys. Photographs 5 and 6 of Appendix B show the south and north access gates to LF044, respectively. Warning signs at each gate are clearly visible.

5.2.2 Berm Construction

The berm was constructed with aggregate, type ABII. A total of 647.54 tons of ABII aggregate was imported for the berm construction. The material originated from a local quarry owned by Syar Industries. The material met the physical and chemical characteristics required by RD specification #02210 of the *LF044 Soil Remedial Design Package* (URS, 2002). The aggregate was dumped and spread along the surveyed and staked perimeter line. Following precision spreading, the berm was shaped and compressed using 6-inch maximum horizontal lifts. ABII aggregate has a good mixture of fines and course material, which made it easy to compact to the required 85% of laboratory maximum dry density.

In December 2002, exceptionally heavy rains caused a low section of the berm to erode and fail. Pooled water on the northwest side of the berm began to flow over the top of the compacted soil, creating a small breach. To prevent a similar event from occurring again, ECC fortified the low section of the berm with cement. In future winter months that receive a substantial amount of rainfall, the base expects pooled water to gently flow over the low sections of the berm, allowing sediment to settle within the controlled area.

The 2003 inspection of the LUCs at LF044 found the berm to be in excellent physical condition, although the base had yet to receive its first heavy rain of the winter season. Small amounts of grass have begun to grow over portions of the berm, which serves to increase its cohesiveness. There was no evidence of damage to the berm from base activities.

6.0 Former Small Arms Range (SD045)

The Former Small Arms Range comprises 2.8 acres of flat, grassy terrain in the southwest corner of the base. No traces of previous firing range activities are visible, and the presence of the site was identified from an inspection of historical photographs. The range was used for small arms training until the mid-1970's, when it was decommissioned to support the construction of an ammunition loading pad.

Currently, the former range is part of a Grazing Management Unit (GMU) which is leased to private cattle owners to graze their stock. The GMU is surrounded by animal fences, and access is controlled through a gate. Periodically the site is disked to create fire breaks.

6.1 Environmental Conditions

Lead is the main contaminant at this site, both in surface and subsurface soil. Other chemicals of ecological concern in surface soil are antimony and copper. Sections 4.10.7 and 4.10.8 of the WABOU RI report present a detailed description of the human health and ecological risk assessments for the Former Small Arms Range, respectively.

6.2 Status of SD045 Land Use Controls

Section 5.3.7 of the WABOU Soil ROD states that Alternative S6 (Excavation/On-base Consolidation) is the selected remedial action for this site. Alternative S5 (Excavation/Off-base Disposal) is the selected contingency remedy for soil that exceeds the CAMU acceptance criteria.

Alternative S2 (Land Use and Access Restrictions) is also a selected remedial action for the site. However, it will not be implemented if Alternative S6 achieves the residential cleanup values as presented in the ROD. The purpose of Alternative S2 is to restrict the use of the site to industrial activities only.

The soil cleanup of SD045 had been scheduled for the summer of 2003 along with several other remedial actions in the WABOU. However, the remedial action contractor for SD045 ran out of time to schedule the transport of all excavated soil from SD045 to the CAMU as well as funds to complete all tasks associated with this project. So, this soil action was not started in 2003 and has been rescheduled for 2006. This is the earliest construction season in which the CAMU will be open to accept contaminated soil from NEWIOU soil sites. This construction season is contingent upon the finalization of the NEWIOU Soil, Sediment, and Surface Water ROD in 2005.

During the period leading up to the next scheduled construction season for soil cleanup actions, Travis AFB will maintain the current level of controls at SD045, since the property is not currently available for residential or many industrial uses. Once the SD045 soil cleanup action is complete, Travis AFB will update its GP to document the presence of metals in the soil and

enforce restriction on residential land use, including day care center activities and for playground and other play activities, if needed.

The 2003 inspection of the LUCs at SD045 found that land use controls for pre-cleanup ERP sites are adequate to prevent unauthorized use of the property. There is no evidence that the metals-impacted soil has been disturbed. A sign at the entrance to the GMU notifies visitors and base workers of the presence of ecologically sensitive areas near SD045. Photograph 7 of Appendix B of this report shows the controlled area at SD045.

7.0 Railhead Munitions Staging Area (SS046)

The Railhead Munitions Staging Area site consists of a railroad track and concrete pad that formerly served as a railhead at the south terminus of a spur off the Northern Sacramento Railroad. This site served as a weapons-handling facility from 1953 to 1962.

7.1 Environmental Conditions

Chemicals of Concern (COCs) detected in surface soil include benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)anthracene, and benzo(k)fluoranthene. COCs detected in subsurface soil include cadmium, lead, benzo(a)pyrene, benzo(k)fluoranthene, fluoranthene, phenanthrene, pyrene, and pentachlorophenol. All of the COCs were detected in the vicinity of the railroad tracks. Section 4.12.7 of the WABOU RI report presents a detailed description of the human health risk assessment for this site.

Chemicals of Ecological Concern (COECs) were detected in isolated areas surrounding the concrete pad. The COECs include benzo(a)pyrene, benzo(k)fluoranthene, fluoranthene, pentachlorophenol, phenanthrene, pyrene, cadmium, and lead. Section 4.12.8 of the WABOU RI report presents a detailed description of the ecological risk assessment for this site.

7.2 Status of SS046 Land Use Controls

Section 5.3.8 of the WABOU Soil ROD states that Alternative S2 (Land Use and Access Restrictions) is the selected remedial action for this site. The objective of this remedial action is to document the location of the contaminants and apply land use controls to prevent the site from being used for residential purposes. The Air Force is to restrict the use of this small area to industrial activities only.

The Travis AFB General Plan has been revised to document the presence of contaminants in the surface soil and enforce the land use restriction, particularly on the use of the contaminated soil for playground or other play activities. The LUCs for SS046 are described in detail in Attachment 4 of Appendix E of the Base General Plan. Appendix A of this report contains a copy of this attachment. Appendix B of this report contains photographs of the controlled area at SS046.

The 2003 inspection of the LUCs at SS046 found that administrative controls are adequate to enforce the restriction, so additional physical barriers (i.e., fences not associated with the Grazing Management Unit) are not needed. There is no evidence that the contaminated soil has been disturbed. Photograph 8 of Appendix B shows the controlled area at SS046, and photograph 9 shows the warning sign that has been placed in the vicinity of the LUC area to notify visitors and base workers of the presence of LUCs.

8.0 CAMU at Landfill 2 (LF007)

LF007 is a closed municipal landfill that was active from the 1950s to 1974. LF007 is a restoration site within the North/East/West Industrial Operable Unit (NEWIOU) that was selected as a favorable location for the construction of the Corrective Action Management Unit (CAMU).

The CAMU is being built in phases. Phase 1 involved landfill maintenance and consisted of the placement of large quantities of clean soil into subsidence trenches that formed in the existing soil cap. The soil also serves as a foundation for the CAMU. Phase 2 involved the placement of contaminated soil from WABOU soil sites into the CAMU and the construction of an evapotranspiration cap over the consolidated soil. Travis AFB completed the field work for Phase 2 in November 2003. Phase 3 involves the placement of contaminated soil from NEWIOU sites into the CAMU and the completion of the CAMU cap. Based on the current schedule, field work for Phase 3 should begin in 2006.

8.1 Environmental Conditions

The *Remedial Investigation Report for the North Operable Unit* (Radian, 1995) contains a detailed description of the LF007 environmental conditions. The *Design Report and Post-Construction Maintenance Plan for the LF007 Soil Remedial Action* (CH2M HILL, 2002) contains a detailed description of the CAMU construction. The *CAMU Phase 1 Summary Report* (Shaw, 2003) contains the description of the field work that supports the closure of Landfill 2. A summary report for Phase 2 of the CAMU construction will be written and submitted for regulatory agency review in 2004.

8.2 Status of CAMU Land Use Controls

Section 4.2 of the WABOU Soil ROD describes the CAMU and its part of the selected remedies for WABOU Soil sites. To maintain the integrity of the CAMU, Travis AFB has applied land use controls to prevent the site from being used for residential purposes. The Air Force is to restrict the use of the CAMU to industrial activities only.

The Travis AFB General Plan has been revised to document the presence of the CAMU and enforce the land use restriction. Travis AFB has also limited the industrial activities at LF007 to ensure that the integrity and function of the CAMU remains intact. The LUCs for the CAMU are described in detail in Attachment 5 of Appendix E of the Base General Plan. Appendix A of this report contains a copy of this attachment.

The 2003 inspection of the LUCs at the CAMU found that the current administrative and physical controls are adequate to enforce the restriction. There is no evidence that the contaminated soil in the CAMU or the closed landfill has been disturbed. Photograph 10 in Appendix B shows the warning sign that has been placed at the entrance to the CAMU and the locking chain that controls access to LF007. Photograph 11 provides a view of the CAMU infrastructure, and photograph 12 shows the CAMU tank meters.

9.0 Conclusion and Summary of Findings

On 3 December 2003, representatives from the 60th Civil Engineer Environmental Flight conducted a formal inspection of the LUCs at six ERP sites on Travis AFB. The six sites are designated as DP039, SD043, LF044, SD045, SS046, and LF007. This inspection complies with section 5.4 (Land Use Controls) of the WABOU Soil ROD.

Generally, they found that the controls at five of the six sites were in place and were effective at restricting land use to industrial purposes only. At a sixth site (SD043), land use was also restricted to industrial use only. However, an industrial activity took place without taking into full consideration the environmental impacts of the activity, as is required by the existing administrative system on Travis AFB for managing base property. Section 4.2 (Status of SD043 Land Use Controls) describes in detail the impact of this activity on existing land use controls.

After reviewing the results of this inspection and previous visits to ERP sites across the base, the Environmental Flight has taken the following steps to improve upon the management of the LUCs at WABOU soil sites:

- As described in section 2.5.1, Travis AFB has placed warning signs at all WABOU sites with LUCs. Appendix B (Photographs) presents photographs that show the signs at each LUC site.
- The Environmental Flight is working with the Base Community Planner to provide base project managers with all environmental data on a particular parcel of property in a Geographical Information System-based format. This will improve the access to and understanding of LUC data and the ability to make more informed decisions as to the selection of a location for a particular construction project.
- The base will reemphasize the requirement to complete an AF Form 813 (Request for Environmental Impact Analysis) before an excavation permit is submitted for approval.
- The maps used by Environmental Flight personnel that attend excavation permit meetings have been checked to ensure that all LUC sites are clearly shown on them. Updates to these maps have been completed.

The LUC annual report for 2004 will include an assessment of the effectiveness of these steps on the maintenance of the established controls.

10.0 Works Cited

CH2M HILL, 1997. *Final Remedial Investigation Report* (Volumes 1-4). West/Annexes/ Basewide Operable Unit. 60th Air Mobility Wing, Travis Air Force Base, California. May.

CH2M HILL, 2000. *Final Reevaluation of Soil and Groundwater Contamination at Building 916 (SD043)* Technical Memorandum. Travis Air Force Base, California. February.

CH2M HILL, 2002. *Final Design Report and Post-Construction Maintenance Plan for the LF007 Soil Remedial Action*. Travis Air Force Base, California. August.

Environmental Chemical Corporation, 2003. *Final Remedial Action Report for Soil Remedial Actions at Site LF044*. Environmental Restoration Program. Travis Air Force Base, California. October.

Environmental Chemical Corporation, 2003. *Final Remedial Action Report for Soil Remedial Actions at Site RW013*. Environmental Restoration Program. Travis Air Force Base, California. August.

Environmental Chemical Corporation, 2003. *Final Remedial Action Report for Soil Remedial Actions at Site SS041*. Environmental Restoration Program. Travis Air Force Base, California. August.

Environmental Chemical Corporation, 2003. *Final Remedial Action Report for Soil Remedial Actions at Site LF044*. Environmental Restoration Program. Travis Air Force Base, California. October.

Radian, 1995. *Final Remedial Investigation Report for the North Operable Unit*. Installation Restoration Program. Travis Air Force Base, California. July.

Shaw Environmental and Infrastructure, 2003. *Final CAMU Phase I Summary Report*. Environmental Restoration Program. Travis Air Force Base, California.

Travis Air Force Base. 2002a. *Final Soil Record of Decision for the WABOU*. Installation Restoration Program. Travis Air Force Base, California. December.

Travis Air Force Base. 2002b. *Final Travis AFB General Plan*. Travis Air Force Base, California.

URS Corporation. 2002a. *Final Basewide Soil Remedial Design/Remedial Action Plan*. Installation Restoration Program. Travis Air Force Base, California. June.

URS Corporation. 2002b. *Final LF044 Soil Remedial Design Package*. Installation Restoration Program. Travis Air Force Base, California. July.

Appendix A

New Appendix E of the Base General Plan

Appendix E

Land Use Controls

1. Background

On 11 December 2002 the Air Force, the U.S Environmental Protection Agency, the California Department of Toxic Substances Control, and the San Francisco Bay Regional Water Quality Control Board signed a Record of Decision (ROD). This legal document establishes the selected remedial actions for ten soil sites on the portion of Travis Air Force Base known as the West/Annexes/Basewide Operable Unit (WABOU). The Air Force is responsible for implementing, maintaining and monitoring the remedial actions for the duration of the remedies selected in the ROD.

One of the selected remedies is the implementation of appropriate Land Use Controls (LUC). A LUC is a mechanism that is primarily used to limit human activities at or near a contaminated site. It permits limited use of a property while ensuring the effectiveness of a remedial action and the protection of human health and the environment over an extended period of time when contaminants remain at a site at concentrations above remediation standards that would allow unrestricted use.

2. Purpose

The purpose of this Appendix is to describe the specific controls required at each site, identify the contaminants and their concentrations that generate the need for the controls, list the current land users and uses of the site, delineate the geographic control boundaries, and describe the objectives of the controls. In general, the controls are designed to prevent the residential development, such as the construction of children play areas or day care centers, at a site. Often, this limits the development of the site to that of industrial purposes.

The WABOU Soil ROD assigned the land use control remedy to nine of the ten sites, because the active remedies need to clean up soil contamination only to industrial cleanup levels and allow residual contamination above residential cleanup levels to be left in place. If the active remedy achieves the residential cleanup levels, then the site can be closed without the need for land use restrictions. One site (Cypress Lakes Golf Course) had achieved residential cleanup levels through a previous removal action, so the ROD selected no further action for this site.

The following attachments contain the site-specific information and instructions needed to identify and implement the land use controls for each site. The initial group of attachments applies to those WABOU sites (DP039, SD043, LF044, and SS046) where the land use control remedy is the only selected remedy. For those sites that require an active cleanup action, the 60th Civil Engineer Squadron Environmental Flight will evaluate the residual concentrations of contaminants once the cleanup action at a site is

complete to determine the need for land use controls. The Environmental Flight will identify the specific controls needed to protect human health and the environment at the site and coordinate the review and acceptance of these controls with federal and state environmental regulatory agencies. As a result, this portion of the Travis AFB General Plan will be updated on a routine basis to incorporate new land use controls during the soil cleanup process. All soil cleanup actions are scheduled to be complete by 2009.

3. Corrective Action Management Unit (CAMU)

One additional site that requires land use controls is Landfill #2 (LF007). This landfill was used from the 1950s through the 1970s as a Base municipal landfill. The WABOU Soil ROD selected LF007 as a favorable location for a Corrective Action Management Unit (CAMU). A CAMU is a designated area within a facility that is designed to carry out a corrective action, such as the consolidation and management of contaminated soil. Section 4.2 (Corrective Action Management Unit) provides a more detailed description of the CAMU.

The construction of the CAMU will take place in four phases. After the completion of each phase, the base will review the land use controls assigned to LF007 to ensure that the CAMU is protective of human health and the environment.

4. Enforcement

The Air Force is responsible for implementing, monitoring, maintaining, and enforcing the identified controls. If the Air Force determines that it cannot meet specific Land Use Control requirements, the remedy may be reconsidered and additional measures may be required to ensure the protection of human health and the environment.

5. Inspections and Reporting

The Air Force will conduct periodic monitoring (at least annually) and will take prompt action to restore, repair, or correct any Land Use Control deficiencies or failures identified. A different monitoring schedule may be agreed upon according to the schedule provisions of the Travis AFB Federal Facility Agreement, if all parties agree and if the change reasonably reflects the risk presented by the sites.

To assure the regulatory agencies and the public that the Air Force will fully comply with and be accountable for the performance measures identified in the WABOU Soil ROD, Travis AFB will submit to EPA and the two California regulatory agencies an annual monitoring report on the status of land use controls and/or other remedial actions, including their operation and maintenance, monitoring results, and how any deficiencies in the controls or inconsistent uses have been addressed. Travis AFB will place copies of the report in the Administrative Record and the Information Repository. The report will not be subject to approval and/or revision by the regulatory agencies.

6. Responsibilities

The success of a LUC depends on its proper maintenance throughout the life of the LUC. This is achieved with regular inspections, monitoring of proposed projects, maintaining accurate and current information in the Base General Plan (BGP), and awareness training. The responsibilities of base personnel and organizations are discussed below.

6.1 Base Remedial Program Manager (RPM)

The RPM will ensure that all required inspections of the LUC site take place and that inspection records are maintained as part of the Travis AFB Administrative Record.

The RPM will review AF Forms 813 and Environmental Assessments (EAs) that may have an impact on a LUC site to ensure that all LUC requirements are met. The RPM should raise any questions about LUC compliance to the JA and the regulators, as appropriate. The RPM will ensure that project plans do not conflict with the LUC requirements. If there is a potential conflict, the RPM should identify and coordinate the regulatory approval of mitigation measures as a condition to undertaking the proposed action.

The RPM shall verify annually that the LUC information is properly recorded in the BGP and will brief the Base EPC and the RAB on the status of the LUC sites no less than annually.

The RPM will notify the Environmental Flight Chief and regulators of any breach or violation of a LUC.

The RPM will provide awareness training for all personnel authorized to approve work that may affect a LUC site (including all personnel authorized to approve base excavation permits and AF Forms 332 and 813). The training should emphasize the location of LUC sites, their limitations, and the importance of following Environmental Impact Analysis Process (EIAP) procedures for activities at or near those sites.

The RPM will help the public affairs office (PA) to prepare fact sheets, news releases, and presentations to heighten base awareness of LUC sites, their limitations, and the importance of using the excavation permit and Air Force Form 332 to secure CE clearance prior to starting work.

6.2 Base Community Planner

The Base Community Planner ensures that the Environmental Flight Chief updates information pertaining to the LUC at least annually in the BGP.

The Base Community Planner provides appropriate sections of the BGP to personnel who need to be aware of environmental limitations on the installation. The distribution should include personnel who approve excavation permits and AF Forms 332 and 813, BCE

design personnel, contracting personnel, the Facilities Utilization Board (FUB), the CE OPS Flight Chief, and any other organization that engages in construction projects.

The Base Community Planner briefs the FUB on the BGP annually and in those briefings notes Base LUC sites and their limitations.

The Base Community Planner coordinates the placement of LUC information on the Travis AFB LAN, where appropriate. It is crucial that all persons who might inadvertently jeopardize a LUC know of its existence. It is also critical that information about the LUC and its inclusion in the BGP be publicized throughout the base.

6.3 Environmental Flight Chief

The Environmental Flight Chief ensures that the applicable portions of the BGP that pertain to LUCs are kept current. They will be reviewed for currency at least annually (AFI 32-7062, paragraph 2.6). The Environmental Flight Chief will also ensure that any changes made to the BGP that affect a LUC site are coordinated with the base RPM.

Under the EIAP process, certain categories of activities may receive a categorical exclusion (CATEX) from further environmental review if it is determined that individually or cumulatively the actions within that category will not have an adverse environmental consequence. The Environmental Flight Chief will ensure that CATEXs under the EIAP are not used for projects that may potentially impact LUC sites. A site-specific review that compares the nature of the contemplated activity to the limitations placed on the site will be conducted. AF Form 813 and EAs are used to perform this type of analysis.

The Environmental Flight Chief will ensure that at least an AF Form 813 review is conducted for all proposals that may potentially impact LUC sites. When a LUC site is at issue, the review of AF Form 813 will be coordinated with the RPM.

The Environmental Flight Chief initiates a full EA if there is likelihood that a proposed action might interfere or jeopardize any limitation on a LUC site use. An EA provides a more in-depth environmental evaluation of the proposed activity and its possible impact on the site. The RPM and JA will coordinate on an EA that addresses a possible impact on a LUC site.

The Environmental Flight Chief assists the base RPM in briefings regarding LUCs and their limitations.

The Environmental Flight Chief notifies the BCE of any LUC violations so that corrective actions can be initiated and measures can be taken to prevent future violations.

The Environmental Flight Chief may include a land use controls checklist as part of the Environmental Compliance Assessment and Management Program (ECAMP).

6.4 Operations Flight Chief

The Operations Flight Chief coordinates those construction activities not subject to Facilities Utilization Board review with the Base Community Planner, Environmental Flight Chief, and Real Property Officer.

6.5 Base Civil Engineer

The BCE coordinates with the Base Environmental Planner, the Base Real Property Officer, and the Environmental Flight Chief to ensure that land use control information is accurately represented in the BGP and base real estate records.

The BCE periodically reviews and revises approval authorities for AF Form 332 and forwards an update to the environmental flight.

The BCE ensures that all base personnel authorized to approve AF Form 332 and excavation permits are informed by the Environmental Flight Chief of (1) the location of LUC sites, (2) the limitations of those sites, (3) where current information about those sites may be obtained, and (4) the importance of coordinating any work that may affect those sites with designated persons in the 60th Civil Engineer Squadron Environmental Flight.

The BCE requires the Base Community Planner to brief the FUB annually on the BGP and to specifically note LUC sites and their limitations.

The BCE ensures that personnel in CE operations, planning, design, and programming areas are aware of on-base LUC sites, their limitations, and where they can obtain current information about LUC sites.

The BCE ensures that base host-tenant agreements include provisions that require tenants to secure the BCE's approval prior to any on-base construction or digging activity by their personnel or their contractors; this is accomplished by using AF Form 332 and an excavation permit, respectively.

The BCE ensures that statements of work for contractor-conducted (SABER, privatized, or other) construction or maintenance work that may affect a LUC site include clauses to safeguard the LUC at a site.

The BCE ensures that appropriate budgeting documents reflect sufficient funds to maintain the LUC at a site.

The BCE will brief any person who may assume BCE duties at the installation on the existence and nature of LUC sites.

6.6 Judge Advocate

The JA provides support to address legal issues involving compliance with LUC requirements.

The JA also reviews CATEXs and EAs of proposed actions that may affect a LUC for legal sufficiency.

6.7 Base Real Property Officer

The Base Real Property Officer references appropriate LUC information and FUB minutes (containing references to LUC and other real estate issues) into the installation real estate records. This process is described in AFP 32-9005.

If there is a requirement for a deed recordation, the Base Real Property Officer will prepare a request that must be coordinated through HQ AMC/CEPE, and AMC/JAV.

6.8 Facilities Utilization Board

The FUB incorporates LUC considerations into its decision-making process.

6.9 Public Affairs

PA works with the RPM to revise the Community Involvement Plan to ensure that the discussion of the LUC site and its limitations is accurate.

PA assists the RPM and the Environmental Flight Chief in developing and executing a public information program about LUC sites and their limitations. These efforts will include stories and features for placement in the base newspaper, Commander's Calls, and similar presentations.

6.10 Environmental Protection Committee

The EPC is responsible for the basewide implementation of the instructions for LUC maintenance.

The EPC advises the BCE, RPM, and PA on steps necessary to ensure awareness among installation personnel of LUC sites and the importance of complying with site limitations.

Land Use Controls Maintenance Instructions for DP039

1. Background

Building 755 is the base battery and electric shop. The ERP site associated with this shop is DP039. The shop used a former acid neutralization sump to dispose of lead-acid solutions. This practice was discontinued in 1978, and the sump was removed in 1993. The WABOU Remedial Investigation identified the presence of lead in the surface soil around the edges of the former sump area and indicated that the lead does not present an unacceptable health risk to local workers or the environment. However, the lead concentrations in the surface soil exceed the residential lead Preliminary Remediation Goal (PRG) that is published by the U.S. EPA. Because of the nature of the contaminants associated with the site, its comparative low risk, and the small area in which the lead is found, the Air Force and the regulatory agencies have agreed upon a LUC-based site remedy. Section 5.3.1 (Building 755 [DP039]) of the WABOU Soil ROD presents the rationale for the remedial action selection at this site.

2. Site Description

The portion of DP039 that contains the residual lead is less than one acre in size. It is north of Ellis Drive and approximately 65 feet northwest of Building 755. The impacted surface soil is in a grassy field adjacent to a concrete pad. A Dual-Phase Extraction (DPE) system well for the cleanup of contaminated groundwater beneath the former sump area is located in the center of the lead-impacted area. A chain link fence surrounds the battery shop. The site is far removed from any current or planned family housing. Figure 1 shows the location of the lead-impacted soil at DP039. Figure 2 shows a photograph of the lead-impacted area.

3. Terms of Land Use Control Agreement

3.1 Restricted Activities

Residential development, such as the construction of daycare centers or playgrounds for children, of the lead-impacted area at DP039 is prohibited. No construction or digging activity may take place at DP039 without a completed and signed excavation permit that has been reviewed by the 60th Civil Engineer Squadron Environmental Flight.

Contractors and base workers must track excavated soil from DP039 to ensure that it does not end up in a residential area. Tracking activities may include the collection and analysis of soil samples to confirm the presence of lead residue at concentrations above the residential cleanup level. Site workers should refrain from conducting recreational activities in the vicinity of the DPE well for safety as well as potential exposure reasons. Questions concerning the area covered by this limitation should be directed to the base RPM.

3.2 Allowed Activities

The lead-impacted area at DP039 is available for all industrial uses.

3.3 Inspection

The RPM will inspect the site periodically (no less than annually) to assure compliance with this LUC. The base will take prompt action to restore, repair or correct any Land Use Control deficiencies or failures identified.

3.4 Reporting

3.4.1 The RPM will submit to EPA, DTSC, and RWQCB an annual monitoring report on the status of all Land Use Controls and/or other remedial actions, including the operation and maintenance, and monitoring thereof, and how any LUC deficiencies or inconsistent uses have been addressed. A copy of the report will be placed in the Information Repository.

3.4.2 The RPM will report to the three regulatory agencies of any proposed major land use change at DP039 that is inconsistent with the use restrictions and assumptions described in the General Plan, any anticipated action that may disrupt the effectiveness of the land use controls, any action that may alter or negate the need for the land use controls, or any anticipated transfer of the property subject to the land use controls.

3.5 Matters requiring coordination with EPA and state regulators:

- Any permanent construction on the site,
- Any occurrence of an activity restricted under Section 3.1, or
- Any major changes that affect the enforcement of land use controls.

Figure 1: Location of Lead-Impacted Soil at the Battery Shop

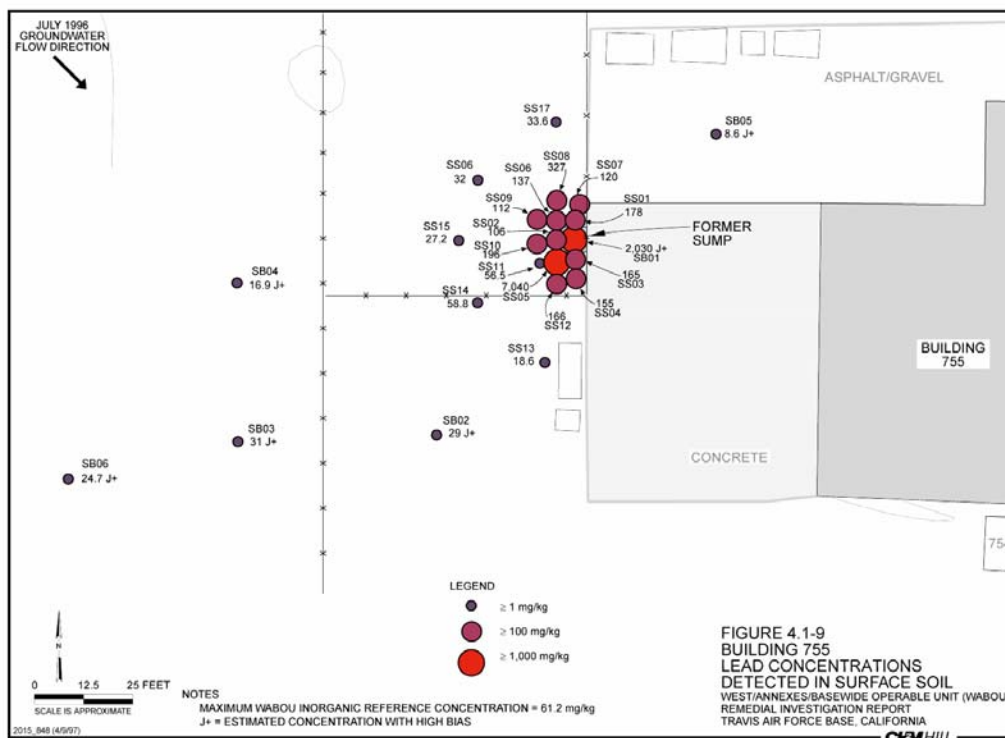


Figure 2: Lead-Impacted Soil at the Battery Shop



Note: the lead-impacted surface soil surrounds the monitoring well that is shown in the foreground. The well was placed within the former sump area. The contaminated area extends laterally approximately twelve feet from the well, except where there is concrete.

Land Use Controls Maintenance Instructions for SD043

1. Background

Building 916 is an emergency electric power facility. The ERP site associated with this shop is SD043. There had been a fenced and graveled electrical transformer area outside the southwest corner of the building. This area contained three liquid-filled transformers on top of a concrete pad. In 1992, one of the transformers developed a leak onto the concrete pad and ground surface. The base removed the transformers and pad in 1993. The WABOU Remedial Investigation identified the presence of Polychlorinated Biphenyl-1254 (PCB-1254) in the surface soil around the edges of the former pad and indicated that the PCB-1254 does not present an unacceptable health risk to local workers or the environment. However, the PCB-1254 concentrations in the soil exceed the residential PCB-1254 Preliminary Remediation Goal (PRG) that is published by the U.S. EPA. Because of the nature of the contaminants associated with the site, its comparative low risk, and the small area in which the PCB-1254 is found, the Air Force and the regulatory agencies have agreed upon a LUC-based site remedy. Sections 5.3.3 (Building 916 [SD043]) and 5.8 (Documentation of Significant Changes) of the WABOU Soil ROD presents the rationale for the remedial action selection at this site.

2. Site Description

The portion of SD043 that contains the residual PCB-1254 is less than one acre in size. It is immediately south of Building 916 and east of Building 905, the base entomology shop. The impacted soil is in a small gravel area adjacent to Building 916. An extraction well is removing contaminated groundwater from beneath the drainage channel to the east of the building. The site is far removed from any current or planned family housing. Figure 3 shows the location of SD043. Figure 4 shows a photograph of the PCB-impacted area.

3. Terms of Land Use Control Agreement

3.1 Restricted Activities

Residential development, such as the construction of daycare centers or playgrounds for children, of the PCB-impacted area at SD043 is prohibited. No construction or digging activity may take place at SD043 without a completed and signed excavation permit that has been reviewed by the 60th Civil Engineer Squadron Environmental Flight. Contractors and base workers must track excavated soil from SD043 to ensure that it does not end up in a residential area. Tracking activities may include the collection and analysis of soil samples to confirm the presence of PCB residue at concentrations above the residential cleanup level. Questions concerning the area covered by this limitation should be directed to the base RPM.

3.2 Allowed Activities

The PCB-impacted area at SD043 is available for all industrial uses.

3.3 Inspection

The RPM will inspect the site periodically (no less than annually) to assure compliance with this LUC. The base will take prompt action to restore, repair or correct any Land Use Control deficiencies or failures identified.

3.4 Reporting

3.4.1 The RPM will submit to EPA, DTSC, and RWQCB an annual monitoring report on the status of all LUCs and/or other remedial actions, including the operation and maintenance, and monitoring thereof, and how any LUC deficiencies or inconsistent uses have been addressed. A copy of the report will be placed in the Information Repository.

3.4.2 The RPM will report to the three regulatory agencies of any proposed major land use change at SD043 that is inconsistent with the use restrictions and assumptions described in the General Plan, any anticipated action that may disrupt the effectiveness of the land use controls, any action that may alter or negate the need for the land use controls, or any anticipated transfer of the property subject to the land use controls.

3.5 Matters requiring coordination with EPA and state regulators:

- Any permanent construction on the site,
- Any occurrence of an activity restricted under Section 3.1, or
- Any major changes that affect the enforcement of land use controls.

Figure 3: Location of PCB-Impacted Soil at Building 916

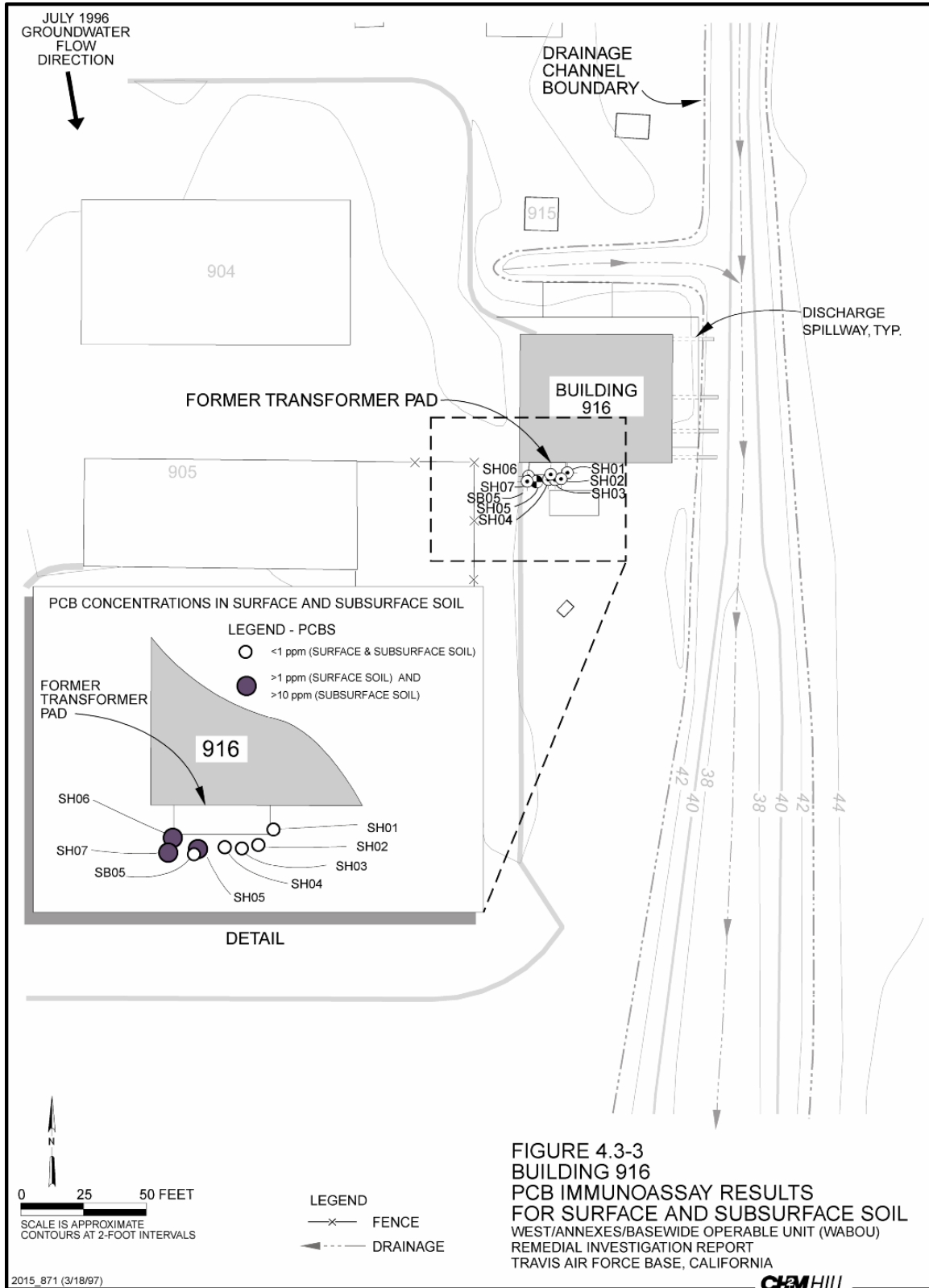


Figure 4: PCB-Impacted Soil at Building 916



Note: the PCB-impacted surface and subsurface soil extends laterally from the southwest corner of Building 916 to approximately ten feet in an eastern direction and five feet in a southern direction. In the above photograph, this area is covered by the shadow. It extends vertically to the water table.

Land Use Controls Maintenance Instructions for LF044

1. Background

Landfill X comprises approximately 25 acres of undeveloped land within Grazing Management Unit #2, a 126-acre parcel of land used to graze horses. The ERP site associated with this shop is LF044. Construction debris is mixed with soil in one portion of the site. The site is located within an actively used field that has been used for heavy equipment training and the stockpiling of construction debris (asphalt and concrete). The WABOU Remedial Investigation identified the presence of semi-volatile organic compounds and metals in the surface and subsurface soil around two excavated areas and indicated that these contaminants do not present an unacceptable health risk to local workers or the environment. However, the contaminant concentrations in the soil exceed the residential Preliminary Remediation Goals (PRG) for these contaminants that are published by the U.S. EPA. Because of the nature of the contaminants associated with the site, its comparative low risk, and the previous level of human activity at the site (which makes the site unattractive to the local wildlife), the Air Force and the regulatory agencies have agreed upon a LUC-based site remedy. Section 5.3.6 (Landfill X [LF044]) of the WABOU Soil ROD presents the rationale for the remedial action selection at this site.

2. Site Description

LF044 is south of Hanger Avenue and the David Grant Medical Center, east of a railhead spur, and north of Building 759 (Munitions Handling Facility). The impacted soil is in a gravelly field to the north and a grassy hill to the south. An animal control fence lies along the eastern side of the site. The site is far removed from any current or planned family housing. Figure 5 shows the location of LF044. Figure 6 shows a photograph of the training area and construction debris mounds.

3. Terms of Land Use Control Agreement

3.1 Physical Controls

3.1.1 The WABOU Soil ROD required the Air Force to build a fence around the contaminated area and the training and stockpile area. The purpose of the fence is to protect human health by restricting personnel access to the site but still allow the area to meet worker safety training and construction needs. The ROD also required the building of a berm within the fenced area to provide environmental protection by preventing soil contaminants from flowing during rain events into nearby vernal pools. Travis AFB completed the construction of the fence and berm in 2003.

3.1.2 Workers involved with safety training must use adequate noise and breathing protection equipment, when needed, in accordance with Occupational Safety and Health Administration (OSHA) regulations. Contact the Bioenvironmental Engineers at (707) 423-5490 for additional information on personnel protection.

3.2 Restricted Activities

Residential development, such as the construction of daycare centers or playgrounds for children, within the fence at LF044 is prohibited. No construction or digging activity may take place at LF044 without a completed and signed excavation permit that has been reviewed by the 60th Civil Engineer Squadron Environmental Flight. Contractors and base workers must track excavated soil from LF044 to ensure that it does not end up in a residential area. Tracking activities may include the collection and analysis of soil samples to confirm the presence of lead residue at concentrations above the residential cleanup level. Due to the presence of physical hazards as well as potential exposure reasons within the fenced area, LF044 is not available for recreational activities. Questions concerning the area covered by these limitations should be directed to the base RPM.

3.3 Allowed Activities

Heavy equipment safety training and the temporary stockpiling of asphalt and concrete associated with base construction projects can take place within LF044. Heavy equipment operators must make every effort to protect the soil berm along the northeast perimeter of the site. There is an explosive safety clear zone associated with Building 759 that covers most of LF044. Therefore, potential site users must clear their activities with Wing Safety prior to entering the fenced area. Site users who desire to stockpile construction debris (asphalt and concrete) within LF044 must coordinate the reuse or recycling of this material with the Pollution Prevention Branch of the Environmental Flight; the base recycling point of contact can be reached at (707) 424-3739. All users need to make every effort to maintain good housekeeping practices within LF044. Contact the 60th Civil Engineer Squadron Environmental Flight to obtain permission for site activities and site entry through either the north or south gate.

3.4 Inspection

The RPM will inspect the site periodically (no less than annually) to assure compliance with these controls. Each inspector will walk around the fence and berm and will look for evidence of damage or material failure. All warning signs will be inspected to verify that they are legible and securely fastened to the fence. The base will take prompt action to restore, repair or correct any Land Use Control deficiencies or failures identified.

3.5 Reporting

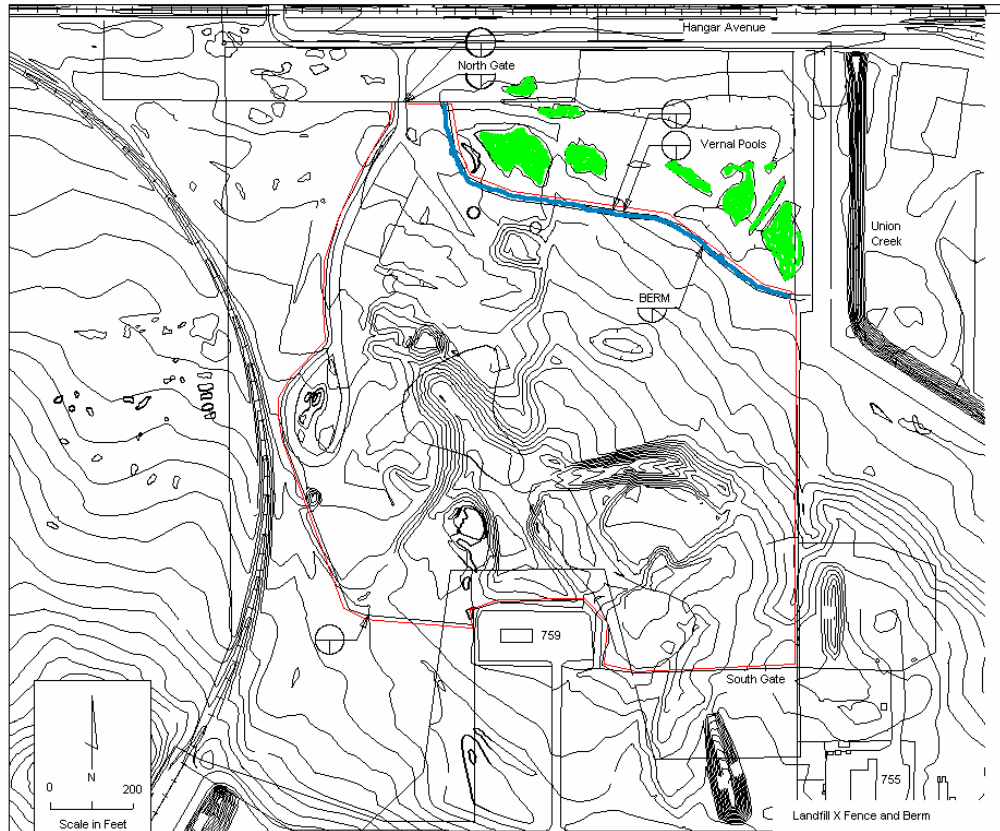
3.5.1 The RPM will submit to EPA, DTSC, and RWQCB an annual monitoring report on the status of all Land Use Controls and/or other remedial actions, including the operation and maintenance, and monitoring thereof, and how any LUC deficiencies or inconsistent uses have been addressed. A copy of the report will be placed in the Information Repository.

3.5.2 The RPM will report to the three regulatory agencies of any proposed major land use change at LF044 that is inconsistent with the use restrictions and assumptions described in the General Plan, any anticipated action that may disrupt the effectiveness of the land use controls, any action that may alter or negate the need for the land use controls, or any anticipated transfer of the property subject to the land use controls.

3.6 Matters requiring coordination with EPA and state regulators:

- Any permanent construction on the site,
- Any occurrence of an activity restricted under Section 3.1, or
- Any major changes that affect the enforcement of land use controls.

Figure 5: Location of Fence and Berm at Landfill X



Note: Figure 5 shows the fence (red), berm (blue) and vernal pools (green).

Figure 6: Northern View of Landfill X



Note: North and South Gates allow restricted access to the debris and training area.

Land Use Controls Maintenance Instructions for SS046

1. Background

The Railhead Munitions Staging Area consists of a railroad track and concrete pad that formerly served as a railhead at the south terminus of a spur off the Northern Sacramento Railroad. The ERP site associated with this site is SS046. The staging area served as a weapons-handling facility from 1953 to 1962. The WABOU Remedial Investigation identified the presence of semi-volatile organic compounds and metals in the surface soil around the edges of the concrete pad and beneath the railroad tracks and indicated that the contaminants do not present an unacceptable health risk to local workers or the environment. However, the contaminant concentrations in the surface soil exceed their residential Preliminary Remediation Goals (PRG) that are published by the U.S. EPA. Because of the nature of the contaminants associated with the site, its comparative low risk, and the small and restricted areas in which the contaminants are found, the Air Force and the regulatory agencies have agreed upon a LUC-based site remedy. Sections 5.3.8 (Railhead Munitions Staging Area [SS046]) and 5.8 (Documentation of Significant Changes) of the WABOU Soil ROD present the rationale for the remedial action selection at this site.

2. Site Description

The portion of SS046 that contains the residual contamination is less than one tenth of an acre in size. It is north and at the western end of Ellis Drive and west of Building 759. The impacted surface soil is in three small areas surrounding the concrete pad and beneath the railroad tracks. The site is far removed from any current or planned family housing. Figure 7 shows the location of SS046. Figure 8 shows a photograph of the contaminated areas.

3. Terms of Land Use Control Agreement

3.1 Restricted Activities

Residential development, such as the construction of daycare centers or playgrounds for children, of the contaminated areas at SS046 is prohibited. No construction, demolition, or digging activity may take place at SS046 without a completed and signed excavation permit that has been reviewed by the 60th Civil Engineer Squadron Environmental Flight. Contractors and base workers must track excavated soil from SS046 to ensure that it does not end up in a residential area. Tracking activities may include the collection and analysis of soil samples to confirm the presence of contaminants at concentrations above their residential cleanup levels. Questions concerning the area covered by this limitation should be directed to the base RPM.

3.2 Allowed Activities

The concrete pad at SS046 is available for most industrial uses. Contractor or base personnel that desire to use the pad as a temporary storage area for contaminated soil or groundwater must coordinate their activities with the base RPM.

3.3 Inspection

The RPM will inspect the site periodically (no less than annually) to assure compliance with this LUC. The base will take prompt action to restore, repair or correct any Land Use Control deficiencies or failures identified.

3.4 Reporting

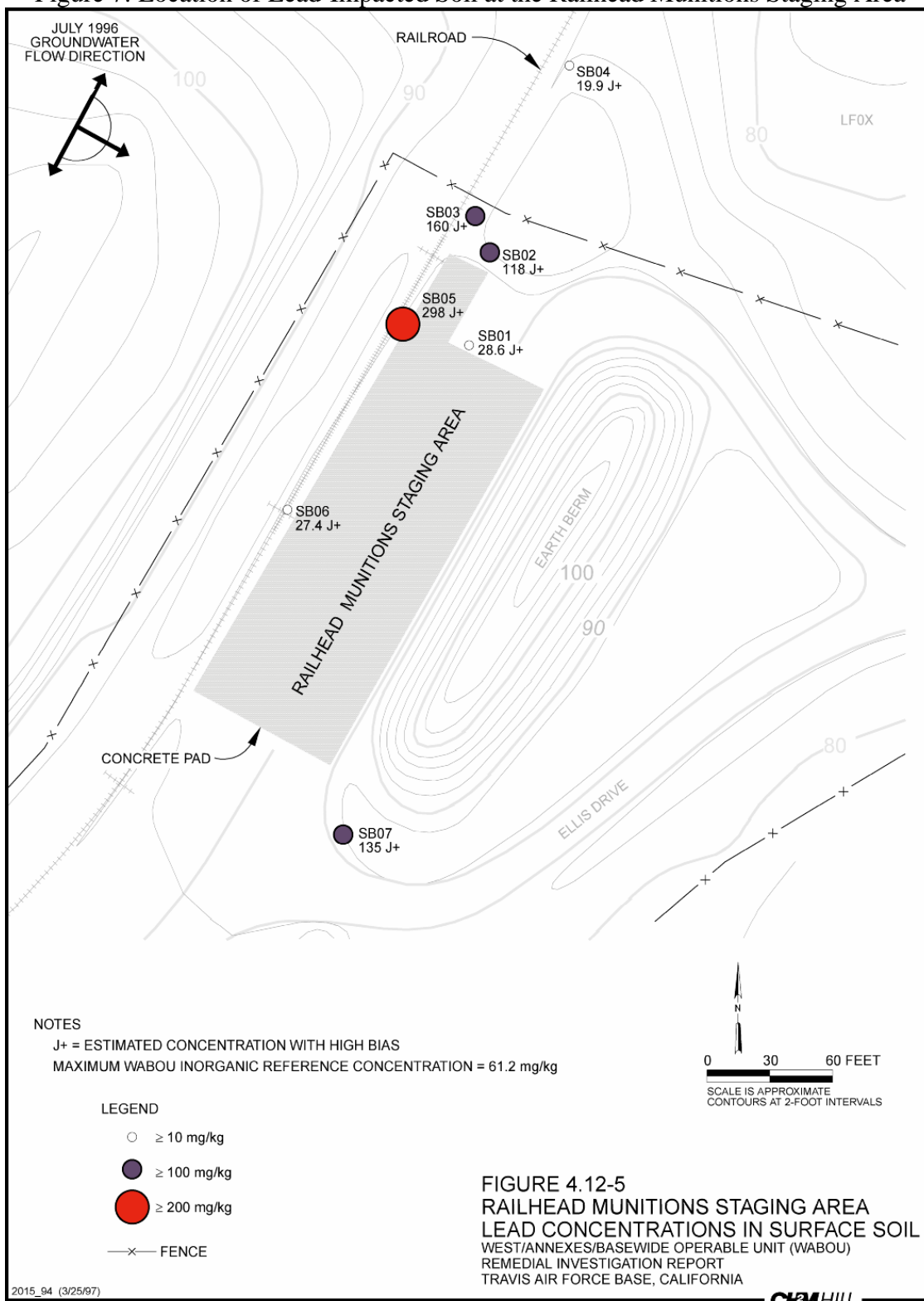
3.4.1 The RPM will submit to EPA, DTSC, and RWQCB an annual monitoring report on the status of all Land Use Controls and/or other remedial actions, including the operation and maintenance, and monitoring thereof, and how any LUC deficiencies or inconsistent uses have been addressed. A copy of the report will be placed in the Information Repository.

3.4.2 The RPM will report to the three regulatory agencies of any proposed major land use change at SS046 that is inconsistent with the use restrictions and assumptions described in the General Plan, any anticipated action that may disrupt the effectiveness of the land use controls, any action that may alter or negate the need for the land use controls, or any anticipated transfer of the property subject to the land use controls.

3.5 Matters requiring coordination with EPA and state regulators:

- Any permanent construction on the site,
- Any occurrence of an activity restricted under Section 3.1, or
- Any major changes that affect the enforcement of land use controls.

Figure 7: Location of Lead-Impacted Soil at the Railhead Munitions Staging Area



Note: There are other metals in the surface soil that contribute to the potential risks, but lead is the primary chemical of concern.

Figure 8: Metals-Impacted Soil at the Railhead Munitions Staging Area



Note: Most of the contaminants are found in the soil beneath the railroad tracks. Figure 7 shows the three small areas where metals concentrations are elevated. In this eastern view of the site, two of the three areas are located beyond the concrete pad in the background.

Land Use Controls Maintenance Instructions for LF007 and the Corrective Action Management Unit (CAMU)

1. Background

Landfill #2 is the former base municipal landfill that was active from the 1950s to the 1970s. The ERP site associated with this landfill is LF007. Municipal waste was placed into trenches and buried. The Remedial Investigation of the North Operable Unit identified the presence of soil and groundwater contamination beneath the site that are related to the previous landfill activities. The final closure of the landfill will be addressed in the upcoming North/East/West Industrial Operable Unit (NEWIOU) Soil, Sediment, and Surface Water Record of Decision.

The WABOU Soil ROD selected LF007 as a favorable site for the construction of a CAMU. A CAMU is a designated area within a facility that is designed to carry out a corrective action, such as the management of contaminated soil. At Travis AFB, the CAMU presents an important strategy for the on-base consolidation of contaminated soil from other ERP sites. The base will build the CAMU in four phases. The first phase of the CAMU filled in the depressions in the soil cover over the existing waste to provide a foundation for a cap. Phase 1 was completed in 2002. Phase 2 involves the placement of contaminated soil from WABOU soil sites into the CAMU and will be complete in 2003. The *LF007 Soil Remedial Action Design Report and Post-Closure Maintenance Plan* (CH2M HILL, 2002) describes the construction of the CAMU and the final closure of LF007.

Because the CAMU will be a permanent ERP site and will need to be maintained to ensure the protection of human health and the environment, the Air Force and the regulatory agencies have agreed that the CAMU will require a LUC-based site remedy. Section 4.2 (Corrective Action Management Unit) of the WABOU Soil ROD presents a more detailed description of the CAMU.

2. Site Description

LF007 is approximately 27 acres in size. It is north of Cannon Drive, east of Burgan Boulevard, and immediately south of the north base fence line. The municipal waste is buried to a depth of up to 20 feet below ground surface. A groundwater extraction system for the cleanup of contaminated groundwater beneath the landfill surrounds the southern boundary of the site; the base plans on building an extension to the extraction system to address the off-base portion of the plume. A chained gate controls the entry to the CAMU. The site is far removed from any current or planned family housing, but there are several military dorm facilities southwest. An active small arms range is located toward the southeast corner of LF007. The Clean Soil Holding Area is located in the southern portion of the site. The base hazardous waste management facility is located

toward the southwest side of LF007. Figure 9 shows the location of LF007. Figure 10 shows a photograph of the completed Phase 1 area.

3. Terms of Land Use Control Agreement

3.1 Restricted Activities

Residential development, such as the construction of daycare centers or playgrounds for children, of the CAMU or the landfill area at LF007 is prohibited. No construction or digging activity may be done at LF007 without a completed and signed excavation permit that has been reviewed by the 60th Civil Engineer Squadron Environmental Flight. Contractors and base workers will normally not be allowed to excavate soil from LF007 without permission from the RPM. Questions concerning the area covered by this limitation should be directed to the base RPM.

3.2 Allowed Activities

LF007 is available for limited industrial uses. Since LF007 will always be an ERP site, all contractors and base workers must coordinate all potential projects at LF007 with the base RPM.

3.3 Inspection

The RPM will inspect the site periodically (no less than annually) to assure compliance with this LUC. The base will take prompt action to restore, repair or correct any Land Use Control deficiencies or failures identified.

3.4 Reporting

3.4.1 The RPM will submit to EPA, DTSC, and RWQCB an annual monitoring report on the status of all Land Use Controls and/or other remedial actions, including the operation and maintenance, and monitoring thereof, and how any LUC deficiencies or inconsistent uses have been addressed. A copy of the report will be placed in the Information Repository.

3.4.2 The RPM will report to the three regulatory agencies of any proposed major land use change at LF007 that is inconsistent with the use restrictions and assumptions described in the General Plan, any anticipated action that may disrupt the effectiveness of the land use controls, any action that may alter or negate the need for the land use controls, or any anticipated transfer of the property subject to the land use controls.

3.5 Matters requiring coordination with EPA and state regulators:

- Any permanent construction on the site,
- Any occurrence of an activity restricted under Section 3.1, or
- Any major changes that affect the enforcement of land use controls.

Figure 9: Location of Landfill #2 and the CAMU foundation

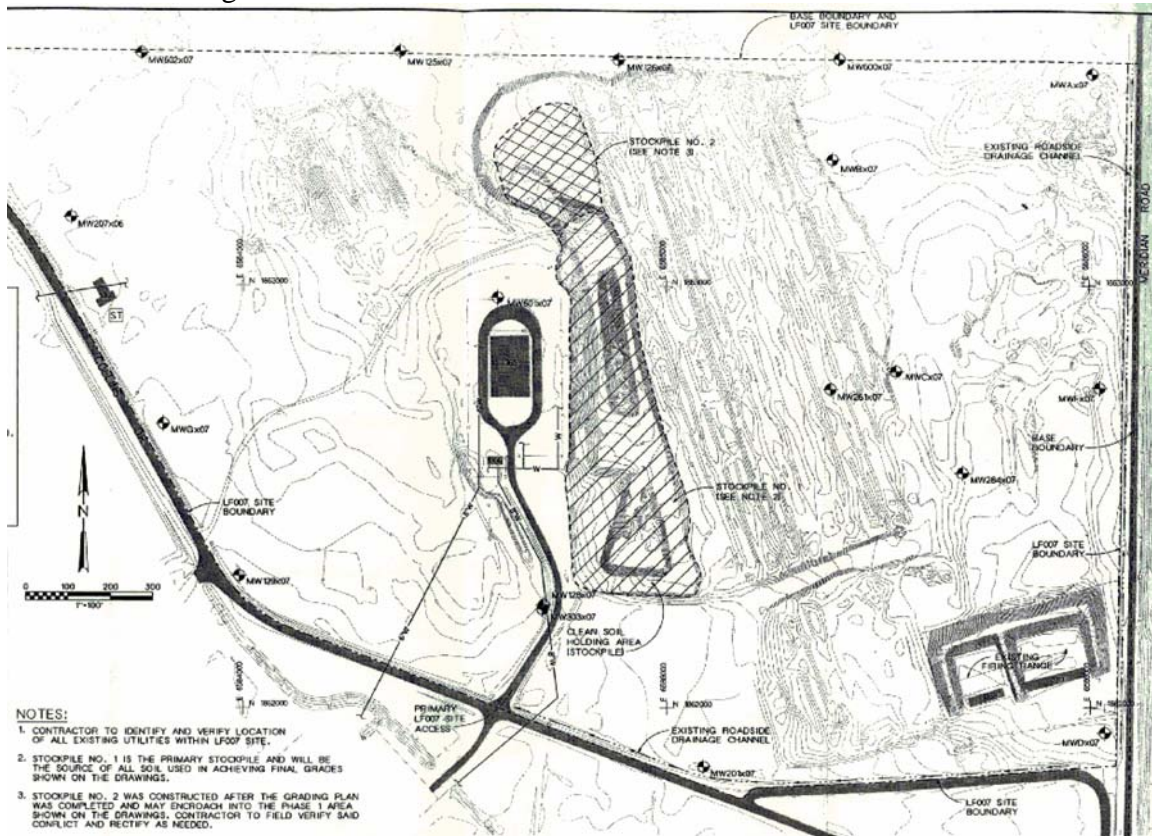


Figure 10: Landfill #2 after the Completion of CAMU Phase 1



Note: The CAMU will be built in four phases. Phases 1 and 2 are complete, and the remaining two phases will be built through 2008. The base small arms range is located southeast of the CAMU foundation.

Appendix B

Photographs



Photograph 1: Controlled Area at DP039.



Photograph 2: Warning Sign at DP039.



Photograph 3: Installed Generator at SD043.



Photograph 4: Generator Pad and Warning Sign at SD043. Stanchion of Former Pad with Leaking Transformers is visible in the foreground.



Photograph 5: South Access Gate to LF044. Warning Sign on Fence is Visible.



Photograph 6: North Access Gate to LF044. Warning Signs on Gate and at Entrance are Visible.



Photograph 7: SD045 in Background (Beyond Fence).



Photograph 8: SS046 in Foreground.



Photograph 9: Warning Sign at SS046.



Photograph 10: Entrance to Travis AFB CAMU.



Photograph 11: View of CAMU Infrastructure.



Photograph 12: Tank Meters at CAMU.