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ENVIRONMENT

Subject:
Action Memorandum for the Time Critical Removal Action (TCRA) under CERCLA for the "Washrack" and "Farm Fuel" Sites and *Action Memorandum for the Non-Time Critical Removal Action under CERCLA for the "Wood Dump" Site*
Former United States Disciplinary Barracks, Lompoc, California.

Date:
30 June 2006

Contact:
Hoa Voscott

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Our ref:
RC000593.0020.00009

Dear Mr. Nelson:

Enclosed are the *Action Memorandum for the TCRA Under CERCLA for the "Washrack" and "Farm Fuel" Sites* and the *Action Memorandum for the Non-Time Critical Removal Action Under CERCLA for the "Wood Dump" Site* for the Former United States Army Disciplinary Barracks in Lompoc, California.

These have been prepared and circulated upon your request. They were prepared, as received, with the Atlanta Field Office signatures in place.

Please contact the undersigned if you have any questions.

Sincerely,

ARCADIS G&M, Inc.

Hoa T. Voscott, PE
Senior Project Engineer

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UNITED STATES DISIPLINARY BARRACKS (USDB),
LOMPOC, CALIFORNIA

"ACTION MEMORANDUM"
FOR THE
NON-TIME CRITICAL REMOVAL ACTION
UNDER CERCLA FOR THE
"WOOD DUMP" SITE

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Tables

Figures

Appendices

1 Acronyms and Abbreviations

ARARs	applicable or relevant and appropriate requirements
BCT	BRAC Cleanup Team
BOP	Bureau of Prisons
BRAC	Base Realignment and Closure
CAL-EPA	California Environmental Protection Agency
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIPP	cured-in-place pipe
CMP	corrugated metal pipe
EBS	Environmental Baseline Survey
EE/CA	engineering evaluation/cost analysis
EO	Executive Order
ESA	environmental site assessment
FCC	Federal Correctional Complex
FCI	Federal Correctional Institution
FID	flame ionization detector
FPC	Federal Prison Camp
ft msl	feet above mean sea level
GFPR	guaranteed fixed price remediation
ICC	Intensive Confinement Center
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
NCP	National Contingency Plan
NPL	National Priorities List
Non-TCRA	non-time critical removal action
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
PRGs	preliminary remediation goals
RCRA	Resource Conservation and Recovery Act
RWQCB	Central Coast Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SBCEHS	Santa Barbara County Environmental Health Services
SDWA	Safe Drinking Water Act
SMCL	secondary maximum contaminant level
SMP	Site Mitigation Plan
SVOCs	semi-volatile organic compounds

TBC	to-be-considered
TPH	total petroleum hydrocarbons
US	United States
USACE	United States Army Corps of Engineers
USDB	United States Disciplinary Barracks
USEPA	United States Environmental Protection Agency
USP	United States Penitentiary
VAFB	Vandenberg Air Force Base
VOCs	volatile organic compounds

1 Purpose

The purpose of this Action Memorandum is to document, for the Administrative Record, the United States (US) Army's decision to undertake non-time critical removal action (non-TCRA) at the Wood Dump site at the Former United States Disciplinary Barracks (USDB) in Lompoc, California (Figure 1). This Action Memorandum documents the evaluation of the site conditions, and proposes the voluntary action described herein that will mitigate or prevent damage to public health, welfare, or the environment at the Wood Dump site.

The work at the Wood Dump site is being performed as part of the US Army's Base Realignment and Closure (BRAC) Environmental Restoration Program. The environmental investigation, cleanup, and restoration of areas within the former USDB (including the Wood Dump site) are being conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), and Executive Order (EO) 12580. It should be noted that this site is not a National Priority List (NPL) site, nor is it a CERCLA site. The purpose of the voluntary non-TCRA at the Wood Dump site is to address solid waste-related concerns and complete site restoration in order to reduce environmental liability following transfer to the US Department of Justice.

Section 104(a) of the CERCLA authorizes the President "...to remove or arrange for the removal of" hazardous substances, or contaminants wherever there is a release or threat of release of such materials that may endanger human health or the environment. The President's authority under various CERCLA sections, including Section 104(a), is delegated to the Secretary of Defense by EO 12580. CERCLA Section 105 (a)(3) also requires that the NCP include, among other things "...methods and criteria for determining the appropriate extent of removal, remedy, and other measures..." The Department of Defense is required to conduct cleanups at active and closing installations consistent with CERCLA. The Department of Defense has the authority to undertake CERCLA response actions, including non-TCRA.

The US Army is the lead agency. The Central Coast Regional Water Quality Control Board (RWQCB) is the lead regulatory agency with respect to impacts to waters of the State for the work being performed at the Wood Dump site. The US Environmental Protection Agency (USEPA) provided technical assistance to the RWQCB through September 2005. The Santa Barbara County Department of Environmental Health Services (SBCEHS) also provides local lead agency oversight with respect to solid waste management and environmental health and safety issues. The work is coordinated by the BRAC Cleanup Team (BCT), which includes members of the regulatory agencies mentioned above as well as representatives from the US Army, the US Department of Justice, Bureau of Prisons (BOP), and ARCADIS.

Although there is no evidence of an unacceptable risk condition at the site and the CERCLA program is a risk-based one, the response process followed at the Wood Dump site follows the CERCLA program as mandated. In consultation with the regulatory agencies, the response process has included: site evaluation; preparation of a Site Mitigation Plan equivalent to an engineering evaluation/cost analysis (EE/CA), community relations activities, and documentation of the removal action decision in this Action Memorandum; implementation of the voluntary non-TCRA; and preparation of the completion report which documents how the action was conducted and verifies that the non-TCRA objectives were met.

Under the proposed voluntary non-TCRA, the Wood Dump site has been graded to allow adequate drainage and to prevent ponding on the surface of the site (Section 2.2.2). Drainage ditches have been installed

around the perimeter of the Wood Dump to collect surface run-on from surrounding areas. The waste has been covered by at least three feet of cover material. The soil cover material was obtained from a borrow area adjacent and west of the Wood Dump. The soil cover has been seeded to provide erosion control and to minimize infiltration. Protecting the Wood Dump from infiltration of rain and surface water will help protect against future impacts to groundwater and surface water. Additionally, the existing culvert beneath the Wood Dump has been rehabilitated to provide long-term protection of the site. Long-term groundwater monitoring will be performed to monitor for potential future impacts to groundwater. The above elements of the non-TCRA are further described in Section 5.1 of this document and detailed descriptions are included in the *Final Site Mitigation Plan, Wood Dump Site, Former United States Army Disciplinary Barracks, Lompoc, California* (SMP) (ARCADIS, 2006) and the *Final Post Site Mitigation Maintenance and Monitoring Plan, Wood Dump Site, Former United States Army Disciplinary Barracks, Lompoc, California* (ARCADIS, 2005).

2 Site Conditions and Background

2.1 Site Description and Location

The USDB is located within the city limits of Lompoc, approximately 2½ miles from the central business district (Figure 1), which is located approximately 50 miles northwest of Santa Barbara, California. Prior to its use for military purposes, the land was used for cattle grazing. In 1941, the War Department purchased 90,000 acres for establishment of Fort Cooke, and in 1946, the Lompoc Branch of the USDB was built as a military detention center. In July 1959, the USDB and the surrounding land were permitted to the BOP and renamed the Federal Correctional Institution (FCI). In July 1981, the FCI officially became a United States Penitentiary (USP). In August 2003, the property was transferred to the BOP. Currently, the BOP complex contains the USP, the Federal Prison Camp (FPC; a minimum-security prison), the FCI (a medium-security prison), the Sewage Treatment Plant, the Farm Area, UNICOR Federal Prison Industries, the dairy, and the Intensive Confinement Center (ICC), which are collectively called the Federal Correctional Complex (FCC).

The Wood Dump is located approximately one mile east of the USP and is located in a southwest trending valley that drains to the Santa Ynez River located approximately 2,000 feet southwest of the site (Figure 2). It is approximately 6 acres in size, measuring approximately 650 feet in length by approximately 400 feet in width and is surrounded by a 5-strand barbed-wire fence (Figure 3). The nearest facilities to the Wood Dump include: stockyards and hay storage facilities east and south, respectively; the dairy, located approximately 2,000 feet due west; and the Farm Fuel site and the FCI, both of which are located approximately 3,600 feet to the west (Figure 2).

2.1.1 Site Characteristics

The Wood Dump site was created by infilling an existing southwest-flowing 60 to 70 feet deep drainage with approximately 25 to 35 feet of waste/debris. Disposal at the Wood Dump probably occurred between 1967 and 1978 and included mainly inert wastes such as wood, bricks, and concrete; and some organic matter like grasses (USEPA, 2000).

Ground surface elevations across the Wood Dump site range from 65 feet above mean sea level (ft msl) in the valley floor to 135 ft msl above the Wood Dump. The Wood Dump spans the full width of the valley and has a 24-inch corrugated metal pipe (CMP) located beneath it to pass surface water flowing down the valley. Based on the CMP invert elevations, the valley floor elevation beneath the Wood Dump ranges from approximately 68 feet msl at the downstream end to approximately 79 feet msl at the upstream end. Groundwater elevations typically range from 46-48 feet msl. Therefore, the base of waste is approximately 20 or more feet above the groundwater table. Prior to site mitigation, the grades at the Wood Dump included gentle surface slopes to the northwest to northeast toward the upstream face with a slope of approximately 2:1 (horizontal to vertical), and gentle surface slopes to the west and southwest toward the downstream face with a slope of approximately 6:1. Generally the Wood Dump was covered with vegetated soil; waste material consisting of logs, metal, and surface debris was exposed locally. A silage pit associated with farm operations of the FCC and a log pile are both located off site to the northeast (Figure 3). Logs were also present along the downstream face of the Wood Dump.

2.1.2 Release

The data collected from groundwater and landfill gas monitoring show that the Wood Dump has not caused any significant impacts to groundwater and that landfill gases are not migrating from the site. Prior to mitigation, potential threats to the environment included: failure of the existing culvert, erosion of the unengineered cover and underlying waste, and future groundwater and surface water impacts. While these potential threats to the environment would be undesirable, there is no evidence that hazardous substances have been released causing unacceptable risks.

2.1.3 National Priorities List Status

The Wood Dump is not a NPL site, nor proposed for inclusion on the NPL. The Wood Dump site is not a CERCLA site.

2.2 Other Actions to Date

2.2.1 Previous Actions

Several investigations have been performed at the Wood Dump site since 1992. Presented below is a list and brief chronology of the past site-specific investigation reports as well as other relevant reports that include information on the Wood Dump. The details and findings of the investigations are presented in Section 3.0 of the SMP (ARCADIS, 2006).

- **Phase I Environmental Site Assessment (ESA), CKY, Inc., November 1993.** The Phase I ESA included examining historic aerial photographs, performing site reconnaissance, reviewing agency files, and conducting interviews. Some of the findings [i.e., apparent disposal history prior to 1969 and interviewees supporting disposal of waste by Vandenberg Air Force Base (VAFB)], were later disputed by Woodward-Clyde Federal Services (Woodward-Clyde, 1997), who concluded that, based on aerial photography, there was no evidence of waste disposal prior to 1969 and interviewees were likely mistakenly referring to the nearby Former Army Landfill in their recollection of VAFB use of the site.

- Archives Search Report for Ordnance and Explosives Chemical Warfare Materials, Findings, US Army Corps of Engineers (USACE), 1996a and Ordnance and Explosives Chemical Warfare Materials, Archive Search Report, Conclusions and Recommendations, USACE, 1996b.
  In 1996, the USACE conducted ordnance, explosives, and chemical warfare materials archives searches at the FCC. Although an earlier document pertaining to the facility speculated that various site locations (potentially including the Wood Dump) may have been used by the US Army to dispose of ammunition (Defense Environmental Restoration Program, Formerly Used Defense Sites, March 14, 1994), the USACE investigation found no credible evidence of disposal of ordnance or explosives at the Wood Dump, or any of the other investigated locations at the FCC (Woodward-Clyde, 1997).

- Geophysical and Soil Gas Investigation, Radian Corporation, June 28, 1996 and Site Investigation Report, Radian International, July 1998.
  Radian Corporation performed a preliminary site investigation on behalf of the USACE beginning in October 1995 (Radian Corporation, 1996). Their investigation initially included a geophysical survey and a soil gas survey of the Wood Dump, followed by installation of three groundwater monitoring

wells (WD-MW-01 through WD-MW-03) in August 1996 (Radian International, 1998). The objective of the geophysical survey was to locate buried objects and to determine the lateral and vertical boundaries of the site; the objectives of the soil gas survey were to estimate microbial activity and identify any potential explosive hazards and "hot spots" for further sampling; and the objective of the well installation and groundwater monitoring program was to evaluate the potential impact to groundwater at the site (Radian International, 1998). Radian International (1998) also presented a screening human health risk assessment.

- **U.S. Army Base Realignment and Closure 95 Program - Environmental Baseline Survey Report, Woodward-Clyde, June 11, 1997.**
  The purpose of the Environmental Baseline Survey (EBS) was to classify the discrete areas of the property associated with the Former USDB which included the Wood Dump. Results of the EBS identified the Wood Dump as Environmental Condition Category Number 7 which required additional investigations.

- **Aerial Photographic Analysis, USEPA, March 2000.**
  The aerial photographic analysis included the entire Former USDB. The aerial photo interpretation indicated that disposal at the Wood Dump probably occurred between 1967 and 1978.

- **Final Site Investigation Report, Weiss Associates, May 17, 2001.**
  Beginning in October 2000, Weiss Associates performed additional fieldwork to provide additional characterization data. This additional field work included 1) culvert evaluation, 2) soil flux and soil vapor sampling, 3) installation of two more groundwater monitoring wells (WD-MW-04 and WD-MW-05), and 4) groundwater monitoring. The results of the Weiss Associates field investigation were presented in conjunction with information on previous site investigations.

- **Groundwater Quality Summary Report, URS Corporation, August 2001.** URS Corporation sampled the five Wood Dump monitoring wells in August 2001 and analyzed the samples for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, total petroleum hydrocarbons (TPH), total metals including mercury, and dissolved metals including mercury, hexavalent chromium, chloride, sulfate, and nitrate. All constituents were detected below the regional background value, maximum contaminant levels (MCLs), or USEPA Region IX Preliminary Remediation Goals for tap water ($PRGs_{Tap}$), except for nitrate and chloride. The presence of nitrate at the concentrations detected was attributable to regional agricultural activities. It was concluded that concentrations of chloride were attributable to natural variation and not impact from the Wood Dump (URS Corporation, 2001).

Upon completion of the site investigation phase of the project, the US Army contracted with ARCADIS to perform site mitigation activities under a guaranteed fixed price remediation (GFPR) contract. As part of the development of the SMP, all prior site investigation work was reviewed and data gaps potentially affecting site mitigation strategies were identified. These data gaps, specifically addressed in the SMP, included:

- The cause of the geophysical anomalies,

- The extent of the waste,

- The depth and type of material of the existing cover,
- The condition and integrity of the CMP, and
- The direction of groundwater flow beneath the Wood Dump.

In January 2002, ARCADIS performed an internal video inspection of the CMP. This was followed in September 2002 by geologic mapping, excavation of test pits/trenches (to address previously identified geophysical anomalies), drilling of soil borings (to evaluate cover thickness/material type and the extent of waste), and installation of an additional groundwater monitoring well (WD-MW-02R). In addition, ARCADIS installed additional gas probes in areas where past monitoring had indicated relatively high levels of methane in the Wood Dump, and conducted sediment sampling at the upstream and downstream ends of the CMP to evaluate whether surface water flowing through the culvert was being impacted by the Wood Dump.

The results of the January and September 2002 ARCADIS field investigations are presented and evaluated in Section 3.0 of the SMP. Conclusions from the field investigations are summarized below:

- **Geophysical Anomalies** - Geophysical anomalies identified in the Radian Corporation survey (1996) are the result of the high metal content (typically sheet metal) in the Wood Dump fill and/or native material beneath the Wood Dump cover. The metal is found at depth and at, or near, the surface (ARCADIS, 2006).
- **Soil Gas** – Based on the soil gas survey, methane is found at low levels in the waste but not at ground surface. This indicates that the methane within the waste diffuses to the extent that it is not measurable at the surface of the site. Additionally, it is not moving laterally off site (ARCADIS, 2006).
- **Groundwater** - The data collected from 20 groundwater testing events since 1996 suggest that the Wood Dump has not caused any significant impacts to the underlying groundwater. For analytes that are frequently detected in site groundwater samples, nitrate has exceeded the MCL infrequently (six times in one well, once in another well). For analytes less frequently detected, antimony, nickel, and lead have exceeded the MCL on an infrequent basis (antimony twice or less in three wells, lead once, nickel twice in two wells). When detected, VOCs, pesticides, and other organic compounds have exceeded MCLs on a very infrequent basis (a single pesticide detection). However, the detections of VOCs, pesticides, and other organic compounds have not been reproducible and, therefore, the noted exceedance of a MCL with respect to these compounds is not interpreted as representative of actual groundwater conditions. Comparison of cross-gradient/upgradient and downgradient monitoring well data indicates that, while the concentrations and frequency of MCL exceedances for the analytes noted above may vary considerably between locations, the MCL exceedances have occurred at monitoring locations cross-gradient/upgradient and downgradient of the waste mass and, therefore, do not appear to be dependent on the presence of the Wood Dump. Based on these standards, untreated groundwater immediately upgradient, beneath, and immediately downgradient of the Wood Dump site would be unsuitable for human consumption. This is consistent with regional data that indicate that background concentrations for arsenic, lead, nitrate, antimony, and nickel (as well as other inorganics of interest) exceed $PRGs_{Tap}$ and/or MCLs in shallow groundwater. Regional groundwater impact from nitrate in the Santa Ynez River Basin is well documented and nitrate in excess of the MCL has been reported in groundwater in

the Lompoc area due to agricultural activities. The locations of the six wells (WD-MW-01 through WD-MW-05, and WD-MW-02R) at the Wood Dump are adequately positioned for continued monitoring for potential groundwater impacts; therefore, no additional wells are required at this time. The methane gas in the Wood Dump is confined to the Wood Dump fill and has not been detected in the groundwater beneath the site (ARCADIS, 2006).

- **Cover Thickness** - The cover thickness is not uniform across the site and ranges in thickness from 0.5 feet to 7.4 feet, with the average thickness at 1.7 feet. Waste is exposed at some locations. If the waste is not removed from the site, the exposed waste must be covered (ARCADIS, 2006).

- **Culvert** - The 24-inch CMP culvert beneath the Wood Dump is in relatively good condition with slight joint separation and deformation seen in a few places. Minor rusting is visible on the pipe invert. The only major defect seen is on the wall of the pipe located approximately 557 feet from the upstream end. At this location, the wall of the pipe protrudes inward approximately 4 to 6 inches. To assure the long-term integrity of the culvert it should be improved to prevent on-going corrosion (ARCADIS, 2006).

- **Groundwater Flow Direction** – Groundwater elevation data indicate that the groundwater flow direction beneath the Wood Dump site varies from southwest to west to northwest. Wells WD-MW-02 and WD-MW-05 are cross-gradient and upgradient, and wells WD-MW-01, WD-MW-03, and WD-MW-04 are downgradient of the disposal area (Figure 3). The locations of the wells are adequately positioned to continue monitoring for any changes in groundwater direction.

In October 2003, cultural and biological resource surveys were completed in support of a California Environmental Quality Act (CEQA) Initial Study for the proposed non-TCRA. It was later determined that CEQA did not apply to the proposed activity as it was not a regulatory closure. No important archaeological resources were identified during the record search and field survey conducted for the Wood Dump site (Archaeological Assessment and Management, 2003). The findings of the general biological and special status species (botanical and wildlife) surveys and literature search determined that the proposed grading activities would result in "no impacts" or "less-than-significant impacts" to biological resources at the Wood Dump site (SRS Technologies, 2003).

2.2.2 Current Actions

Following a BCT consensus agreement, the US Army has implemented the non-TCRA at the Wood Dump site as site mitigation and not as a regulatory closure. The purposes of the current action are summarized below:

- Improve the condition of the culvert, which exhibited signs of corrosion and a significant dent in one location,

- Improve the surface drainage of the top of the Wood Dump to eliminate the existing areas where surface water can pond, and to promote surface water runoff from the site,

- Improve the cover over the site to minimize the infiltration of surface water into the underlying waste and to cover existing exposed waste, and

- Improve surface water control at the site.

The culvert was rehabilitated in October 2003, and the grading activities which included the soil cover and drainage control construction were conducted June-July 2004. The grading activities were completed with the required coverage under the construction general permit ("State Water Resources Control Board Order No. 99-08–DWQ, National Pollutant Discharge Elimination System General Permit No. CAS000002 Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity"). In conformance with the construction general permit requirements, a storm water pollution prevention plan was prepared and best management practices were implemented. Further discussion of the voluntary non-TCRA is presented in Section 5.1, Proposed Action, of this document.

2.3 State and Local Authorities Roles

2.3.1 State and Local Actions to Date

The RWQCB has provided technical advice and regulatory oversight during the various phases of the remedial investigation at the Wood Dump site. The RWQCB is the lead regulatory agency with respect to impacts to waters of the State for the site mitigation being performed at the Wood Dump site. USEPA provided technical assistance to the RWQCB through September 2005. SBCEHS also provides local lead agency oversight with respect to solid waste management and environmental health and safety issues. The regulatory agencies have been given the opportunity to provide timely comments on the project design documents and work plans. Coordination efforts with the regulatory agencies have continued throughout the project. The RWQCB provided a concurrence letter (RWQCB, 2005) of the site mitigation following completion of the field activities.

2.3.2 Potential for Continued State and Local Responses

The RWQCB, USEPA (through September 2005), and SBCEHS are members of the BCT. Other members include representatives from the US Army, the US Department of Justice, BOP and ARCADIS. The regulators have provided, and will continue to provide, technical advice, oversight, and assistance with this mitigation action.

3 Threats to Public Health or Welfare or the Environment

In accordance with the NCP, the following threats must be considered in evaluating the appropriateness of a non-TCRA {40 Code of Federal Regulations (CFR) 300.415[b][2][iv]}:

- Potential exposure to nearby human populations, animals, or the food chain.
- Actual or potential contamination of drinking water supplies.
- Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release.
- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.
- Weather conditions that may cause hazardous substances to migrate or be released.
- Threat of fire or explosion.
- The availability of other appropriate federal or state response mechanisms to respond to the release.
- Other situations or factors that may pose threats to public health or welfare or the environment.

Based on the results of the previous and recent actions, the only applicable criterion for the Wood Dump site is the last criterion, "other situations or factors that may pose threats to public health or welfare or the environment." The purpose of the voluntary non-TCRA at the Wood Dump site is to address solid waste-related concerns and complete site restoration in order to reduce environmental liability following transfer to the US Department of Justice.

3.1 Threats to Public Health and Welfare

Prior to site mitigation, there was the potential for public contact with the locally exposed waste which typically included logs, metal (sheet, wire), and surface debris. According to available records, Resource Conservation and Recovery Act (RCRA) hazardous wastes and ordnance/explosives were not disposed at the site. Test pit investigations into the soil-covered fill indicated that the waste materials largely include wood, plastic and sheet metal, some construction debris, and miscellaneous debris (e.g., seat springs, glass, ceramic, garden hoses). The results of environmental monitoring to date suggest that landfill gases are not migrating from the site.

3.2 Threats to the Environment

The results of previous investigations and environmental monitoring to date suggest that the Wood Dump has not caused any significant impacts to groundwater and that landfill gases are not migrating from the site. VOCs, which are used extensively in landfill groundwater monitoring programs as the most reliable indicators of potential impact, have been detected only sporadically and at concentrations often below the practical quantitation limit. Other organic compounds commonly detected include monitored natural

attenuation parameters such as methane, ethane, and ethene at extremely low concentrations consistent with natural biological activity. Naturally-occurring inorganic parameters such as nitrate and metals are detected at concentrations comparable in upgradient and downgradient wells and/or typical of regional background levels. The low levels of methane when detected in the perimeter vapor monitoring points indicate that there is no significant off-site migration of methane. Prior to site mitigation, potential threats to the environment included: failure of the existing culvert, erosion of the unengineered soil cover and underlying waste, and future groundwater impacts. While these potential threats to the environment would be undesirable, there is no evidence that hazardous substances have been released causing unacceptable risks.

4 Determination of Endangerment

Results of the previous actions at the Wood Dump demonstrated that potential threats to the environment included: failure of the existing culvert, erosion of the unengineered soil cover and underlying waste, and future groundwater impacts. Threatened releases of pollutants and contaminants from this site, if not addressed by implementing the response action selected in this Action Memorandum, could pose an endangerment to public health or welfare, or to the environment. To minimize the possibility of endangerment, the US Army has determined that the appropriate voluntary non-TCRA would consist of rehabilitating the existing culvert, constructing an engineered soil cover, improving surface drainage on and around the site, and performing long-term groundwater monitoring.

5 Proposed Action and Estimated Costs

5.1 Proposed Action

The voluntary site mitigation being implemented by the US Army as a non-TCRA at the Wood Dump site consists of the following major activities:

- Rehabilitation of the existing culvert,
- Installation of an engineered soil cover,
- Installation of surface water controls, and
- Long-term groundwater monitoring at the site.

5.1.1 Proposed Action Description

The proposed action activities include the following elements:

- Public Involvement

  As an effort to solicit public comment on the site mitigation action, an information repository was established in 2003 and a public meeting was held on July 24, 2003 (see Section 7).

- Culvert Rehabilitation

  The existing culvert was rehabilitated in October 2003 to provide long-term protection of the site from surface water run-on. A cured-in-place pipe (CIPP) lining "trenchless" technique was selected for the CMP rehabilitation to assure structural competence with minimum maintenance and long-term durability.

- Engineered Soil Cover

  Protecting the Wood Dump from infiltration of rain and surface water will help protect against future impacts to groundwater and surface water. To minimize surface water infiltration into the underlying waste, an engineered vegetative cover system to promote run-off and encourage evapotranspiration was designed for the site using infiltration modeling. The cover profile over the waste includes at least 1 foot of foundation soil and at least 2 feet of soil cover. Installation of the soil cover included site grading to cover exposed waste and to provide surface grades at a minimum slope of 3 percent to promote surface water run-off, and a maximum slope inclination of 2:1 to ensure slope stability (evaluated under both static and seismic loading conditions). At the upstream face of the Wood Dump, a temporary pond or playa has formed where storm water runoff gathers before entering the culvert. Drainage analyses conducted for a worst case scenario with the culvert blocked during the 100-year, 24-hour storm indicated that run-off may impound to an elevation of 102.5 ft msl at the upstream face of the Wood Dump. This elevation was a minimum elevation criterion for the final grades at the upstream face. Soil materials for the cover construction were obtained by regrading the borrow area slope to the west of the

site to a more stable slope inclination of 2:1. All areas disturbed by the grading activity were revegetated by hydroseeding to control erosion and soil loss and to minimize infiltration. Figure 4 shows the final grading plan design elements/criteria.

- Surface Water Drainage Controls

  Protecting the Wood Dump from infiltration from surface water run-on will also help protect against future impacts to groundwater and surface water. At the culvert entrance, a reinforced concrete inlet structure with a steel trash grate was constructed to protect the culvert and minimize the potential for debris blockage. Drainage ditches designed to carry surface water flow from the 100-year storm have been installed around the perimeter of the Wood Dump to collect surface run-on. To minimize erosion, the ditches are lined with permanent erosion control mat along the gentler slopes or with concrete along the steeper slopes. Riprap has been installed at the ditch and culvert outlets to provide erosion control. As additional erosion control measures until the revegetation is established, straw wattles have been placed along the graded surfaces of the borrow area and the Wood Dump, and silt fences have been installed downstream of the culvert and perimeter ditch outlets.
- Site Security

  The 5-strand barbed-wire fence was replaced at the site perimeter following completion of the grading activities. The fencing includes locked gates at the well monitoring locations to limit access to authorized personnel.

- Long-term Groundwater Monitoring

  Long-term groundwater monitoring will be performed to monitor for potential future impacts to groundwater. Additional maintenance and monitoring activities will also be implemented to ensure the integrity of the completed mitigation measures. ARCADIS has developed a *Post Site Mitigation Maintenance and Monitoring Plan* which addresses the following: groundwater monitoring, gas monitoring, surface water monitoring and controls, vegetative cover, decommissioning of environmental controls (i.e., wells, gas vapor points), site security, and the first 5-year review to document and assess the post-mitigation site conditions. The plan includes procedures for monitoring and maintenance, and documentation and reporting requirements.

Details on the existing site conditions, mitigation alternatives, and final grading design and analyses are included in the SMP (ARCADIS, 2006). The *Post Site Mitigation Maintenance and Monitoring Plan* (ARCADIS, 2005) includes details on the long-term maintenance and monitoring aspects of the mitigation.

5.2 Description of Alternative Technologies

In addition to the proposed action, other alternatives were screened and they include (1) No Action and (2) Excavation. The full evaluation is provided in the appendices of the SMP (ARCADIS, 2006). A summary of the evaluation of the two alternatives is provided below.

5.2.1 No Action

Alternative 1 does not incorporate any on-site activities, response actions, or engineering measures, which would affect the prior conditions of the Wood Dump site. Conditions at the Wood Dump prior to site mitigation included exposed waste and ponding of surface water in areas of the site. This alternative was

eliminated from further consideration because it did not adequately address the potential environmental threats posed by the prior conditions at the site.

5.2.2 Excavation

Alternative 2 consists of the excavation and removal of the waste material from the Wood Dump. The excavated material would be transported to a permitted disposal facility and the site would be graded and seeded to match surrounding topography and vegetation. This alternative would provide long-term protection of human health and the environment through contaminant source removal. However, it is possible that short-term effectiveness could be affected by delays in obtaining all necessary permits to begin removal activities. It is likely that this alternative would receive both state and community acceptance, although the increased heavy truck traffic could have created additional problems with the community. The estimated net present value of this alternative is $7,000,000. This alternative was eliminated from further consideration due to its relatively high remediation cost given that monitoring data to date indicates minimal environmental impact to the underlying groundwater.

5.3 Applicable or Relevant and Appropriate Requirements

The Superfund Amendments and Reauthorization Act (SARA) of 1986 (U.S. Congress 1986) requires that clean-up alternatives consider and attain, when feasible, "legally applicable or relevant and appropriate requirements", which are promulgated under federal, state, or local law. These requirements pertain to contaminated materials as defined under Section 121(d)(2)(A) of the CERCLA of 1990 and the NCP (40 CFR 300). Applicable or relevant and appropriate requirements (ARARs) are used to develop remedial action objectives, numeric remedial goals, determine the appropriate extent of site cleanup, and govern the implementation and operation of the selected action. Although the Wood Dump is not a CERCLA site, and there is no evidence that hazardous substances have been released causing unacceptable risks, ARARs considered practicable for the voluntary non-TCRA were evaluated as required by the CERCLA non-TCRA process.

5.3.1 Terms and Definitions

To be selected as site-specific cleanup goals, ARARs should protect human health and the environment and be technically achievable when existing remedial technologies are applied to the specific site. "Applicable" or "relevant and appropriate" requirements are defined in the NCP as follows:

Applicable requirements are those clean-up standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a particular contaminated site.

Relevant and appropriate requirements are those clean-up standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a specific site, address problems or situations sufficiently similar to those encountered at a site that their use is well-suited to that site. The relevance and appropriateness of a requirement are judged by considering (1) the characteristics of the remedial action, (2)

the hazardous substance(s) in question, and (3) the physical characteristics of the site. Although the remediation must comply to the same degree with both "applicable" and "relevant and appropriate" requirements, more discretion is allowed in determining which part of a requirement is relevant and appropriate.

Requirements under federal or state law may be either applicable or relevant and appropriate to the cleanup actions, but not both. However, requirements must be both relevant and appropriate for compliance to be necessary. In the case where both a federal and state ARAR are available, or where two potential ARARs address the same issue, the more stringent regulation must be selected. The final NCP stipulates that a state standard must be legally enforceable and more stringent than a corresponding federal standard to be relevant and appropriate.

5.3.2 Identification of ARARs

This section describes the ARARs and the to-be-considered (TBC) guidance that may be applied to mitigation actions at the site. The final ARARs will ultimately be established by the reviewing regulatory agencies. ARARs are separated into three categories:

- Chemical-specific: Health- or risk-based numerical values for specific hazardous substances or contaminants. Examples include specific requirements for groundwater used for drinking water and for indoor air quality.

- Location-specific: Imposes restrictions on certain types of remedial activities or contaminant concentrations in certain environmentally sensitive areas, such as wetlands, flood plains, and historic sites.

- Action-specific: Technology-based requirements triggered by the type of remedial action under consideration. This category includes performance- and design-specific requirements for construction of a remedial system.

Many requirements can fall into more than one category. For example, many location-specific ARARs are also action-specific because they are triggered if remedial activities affect site features. Likewise, many chemical-specific ARARs are also location-specific.

The Occupational Safety and Health Administration (OSHA) has promulgated standards for protection of workers at hazardous-waste operations at RCRA or CERCLA sites [29 CFR Part 1910]. These regulations are designed to protect workers who could be exposed to hazardous waste materials. Construction activities involving no potential for hazardous-substance exposure are covered by OSHA standards found at 29 CFR Part 1926. The USEPA requires compliance with OSHA standards in the NCP (40 CFR 300.150), not through the ARAR process. Therefore, OSHA standards are not considered ARARs. Although the requirements, standards, and regulations of OSHA are not ARARs, they will be complied with during the mitigation activities.

Regulations for hazardous waste operations and emergency response (HAZWOPER) are set forth in 8 CCR §5192 et seq. Worker safety requirements are provided for cleanup operations or hazardous substance removal work required by a governmental body. California regulations have incorporated the OSHA

requirements (29 CFR §1910.120) and are considered as stringent as the federal hazardous waste worker safety requirements.

In the absence of federal- or state-promulgated regulations, there are many criteria, advisories, and guidances that are not legally binding, but may serve as useful guidelines for remedial actions. These are not potential ARARs, but are "to-be-considered" guidance.

Chemical-Specific ARARs

Chemical-specific requirements set health- or risk-based remediation goals for specific hazardous substances in various environmental media. These ARARs typically provide initial site cleanup levels for constituents of concern to be used as a basis for evaluating the effectiveness of potential remedial alternatives. Chemical-specific ARARs are also used to indicate an acceptable level of discharge and to determine treatment and disposal requirements for a particular remedial activity.

The chemical-specific ARARs and TBC guidance identified for the Wood Dump non-TCRA are presented in Table 1. Because the voluntary non-TCRA is site mitigation and not remedial action, remediation goals for soil/groundwater cleanup are not applicable. Numerical standards for groundwater quality will be considered during development of the long-term groundwater monitoring program.

Location-Specific ARARs

Location-specific ARARs are triggered by the presence of specific natural or manmade features or potentially affected resources at a disposal or cleanup site.

The location-specific ARARs identified for the Wood Dump non-TCRA are described in Table 2. Federal, state, and local statutes, regulations, and guidance documents were reviewed to identify possible requirement based solely on the location of the site. The results of the cultural and biological resource surveys indicated that those specific requirements were not applicable to the Wood Dump non-TCRA and site.

Action-Specific ARARs

Action-specific requirements set controls or restrictions on the design, implementation, and performance of response actions.

Although a cover system is proposed for the site, the action is not considered a regulatory closure. The action-specific ARARs identified for placement of a soil cover and construction of drainage improvements are presented in Table 3. Capping requirements under RCRA Subtitle C were not applicable because according to available records, RCRA-listed hazardous wastes were not disposed at the site. The requirements for construction of a final cover system and operation and maintenance of a sanitary landfill established under RCRA Subtitle D are not applicable because they apply to municipal solid waste landfills receiving waste after October 1991. Although not a regulatory closure, substantive requirements of Title 27 of the California Code of Regulations regarding closure and postclosure may be relevant and appropriate.

Identification of To-Be-Considered Criteria

The TBC criteria are typically comprised of non-promulgated advisories or guidance issued by federal or state governments that are not legally binding.

The TBC criteria for the non-TCRA are presented in Table 1. Numerical standards for groundwater quality that may be considered during development of the long-term groundwater monitoring program include the following:

- State Maximum Contaminant Level Goals (MCLGs) and Secondary Maximum Contaminant Levels (SMCLs); and
- USEPA Region IX PRGs for tap water.

The Safe Drinking Water Act is relevant and appropriate for a potential "public water system." The PRGs are non-promulgated health-based values developed by USEPA Region IX. The PRG corresponds to either an excess carcinogenic risk of 1×10^{-6} or a non-cancer hazard quotient of 1.0.

CERCLA Waiver Criteria for ARARs

CERCLA Section 121 provides that under certain circumstances, otherwise applicable or relevant and appropriate requirements may be waived. Provided that the response action protects human health and the environment, an ARAR may be waived if:

- The remedial action is an interim measure where the final remedy will attain the ARAR upon completion,
- Compliance will result in greater risk to human health and the environment than other options,
- Compliance is technically impracticable,
- An alternative remedial action will attain the equivalent of the ARAR,
- For state requirements, the state has not consistently applied the state requirement in similar circumstances.

For the voluntary non-TCRA at the Wood Dump site, the equivalent performance ARAR waiver is invoked for the relevant and appropriate substantive requirements of Title 27 regarding closure and postclosure maintenance. The non-TCRA elements which include the culvert rehabilitation, engineered soil cover and drainage controls installation, and long-term maintenance and monitoring, as designed and constructed attain a standard of performance equivalent to the Title 27 closure and postclosure maintenance requirements.

5.4 Estimated Costs

The estimated cost for the non-TCRA at the Wood Dump is $700,000. The estimated costs include direct and indirect capital costs and they are summarized below:

Estimated Costs – non-TCRA

Direct Capital Costs

Project Planning	*$50,000*
Site Preparation and Grading	*$100,000*
Cover Installation	*$150,000*
Surface Water Drainage Controls	*$150,000*
Post Site Mitigation Measures (Groundwater and Soil Gas Monitoring, Cover Maintenance, 5-year Review Report)	*$150,000*
Direct Capital Costs Total	*$600,000*
Indirect Capital Costs Total (includes Fact Sheet, Public Notice and Meeting, Site Mitigation Plan, Plans and Specifications, Data Management and Evaluation, BCT Meetings, Project Planning, etc.)	*$100,000*
Total Direct and Indirect Capital Costs	*$700,000*

6 Expected Change in Situation Should Action be Delayed or Not Taken

If the action was not taken, there would not be adequate long-term overall protection of human health and the environment given the prior exposed waste material and ponding of water on the site. In addition, there would be no plan for long-term monitoring of groundwater and soil gas, which would detect potential impacts to the surrounding areas.

7 Public Involvement

As an effort to solicit public comment on the voluntary non-TCRA, public notice was placed in the local newspaper and a Fact Sheet was prepared summarizing the action to be taken and indicating where the Draft Site Mitigation Plan, along with the draft Responses to Comments received from regulators, the Community Involvement Plan, and the rest of the Administrative Record file are available for review. A public meeting was held on July 24, 2003. No community members attended this meeting, and no oral or written comments were received during the 30-day public comment period.

This Action Memorandum is available for public inspection at the following location:

Lompoc Library
501 E. North Avenue
Lompoc, CA 93436

8 Outstanding Policy Issues

No outstanding policy issues exist for the proposed action.

9 Recommendation and Signature

This Action Memorandum was prepared in accordance with current USEPA guidance documents for non-TRCA. This decision document represents the selected action for the Wood Dump site located at the former USDB in Lompoc, California. The document was developed in accordance with CERCLA as amended by SARA, and not inconsistent with the NCP. This decision is based on the Administrative Record for the Wood Dump site.

Victor Bonilla, Environmental Engineer
Base Realignment and Closure Division
Atlanta Filed Office

3 MAY 06
Date

Glynn Ryan, Chief
Base Realignment and Closure Division
Atlanta Field Office

3 May 06
Date

10 References

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Table 1
Federal and State Chemical-Specific ARARs
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
Safe Drinking Water Act, National Primary Drinking Water Regulations	40 CFR Part 141	Not Applicable	The National Primary Drinking Water Regulations (NPDWR) establish Maximum Contaminant Levels (MCLs) and Maximum Contaminant Levels Goals (MCLGs) for several common organic and inorganic contaminants.	Under the SWDA, MCLs are only legally applicable "at the tap" for defined public water systems. However, the MCLs become relevant and appropriate as RCRA groundwater monitoring standards for solid waste disposal facilities. State MCLs will be considered during development of monitoring parameters for potential groundwater impacts.
California Porter-Cologne Water Quality Control Act (State Water Resources Control Board and Central Coast Regional Water Quality Control Board)	California Water Code Division 7 and Water Quality Control Plan for the Central Coast Basin (Water Codes 13000, 13100, 13200, and 13240 - 13241 and Resolutions No. 88-63, 68-16, and 92-49)	Applicable	Authorizes the State and Regional Water Boards to establish Water Quality Control Plans; establishes water quality objectives, including numerical standards for beneficial uses, issuance of permits for discharges to land or surface water or groundwater that could affect water quality. Prohibits degradation of waters of the state and requires maintenance of high-quality surface and groundwater. Establishes and describes policy for investigation and cleanup of contaminated sites. Requires the remediation of waste discharged directly into groundwater or surface water.	Specific applicable portions of the Basin Plan include beneficial uses of affected water bodies and water quality objectives to protect those uses. Any activity, including, but not limited to, the discharge of contaminated soils or waters or in-situ treatment or containment of contaminated soils or waters, must not result in actual water quality exceeding water quality objectives. Note that Resolution No 92-49 requires the cleanup of groundwater to background when feasible. Cleanup levels for soils should be equal to levels that would achieve background levels in groundwater unless such levels are technically or economically infeasible to achieve.

Table 1
Federal and State Chemical-Specific ARARs
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
Safe Drinking Water Act (California Health and Safety Code)	Title 22 CCR, Chapter 15, Sections 64431 - 64444	Applicable	Establishes state MCLs, Secondary Maximum Contaminant Levels (SMCLs) and MCLGs for drinking water. Note, all groundwater in state of California is considered drinking water.	The groundwater beneath the site is considered to be suitable or potentially suitable for municipal and domestic water supply, agricultural water supply, and industrial use. Groundwater objectives for each of these uses are established in the Basin Plan. The municipal and domestic supply objectives establish standards for both organic and inorganic constituents in groundwater.
United States Environmental Protection Agency (USEPA) Region IX Primary Remediation Goals (PRGs)	USEPA Region IX PRG Table	To be considered	Intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements of soil, water, and air quality.	PRGs are not enforceable, but only provide initial screening levels.

ARAR Applicable or relevant and appropriate requirements
CCR California Code of Regulations
CFR Code of Federal Regulations

Table 2
Federal and State Location-Specific ARARs
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
Floodplain Management Executive Order No. 11988	40 CFR Part 6, App. A	Applicable	Requires federal agencies to evaluate potential adverse effects associated with direct and indirect development of a floodplain. Alternatives that involve modification/construction within a floodplain may not be selected unless a determination is made that no practicable alternative exists. If no practicable alternative exists, potential harm must be minimized and action taken to restore and preserve the natural and beneficial values of the floodplain.	Mitigation activities were developed and evaluated to minimize adverse effects on floodplains to the extent practicable.
Archaeological Resources Protection Act of 1979	16 USC 470aa-mm	Relevant and Appropriate	Archaeological resources on public lands and Indian lands are an accessible and irreplaceable part of the Nation's heritage. No person may excavate, remove, damage, or otherwise alter archaeological resources on public lands, unless by permit or permit exemption. Must protect resources that are inadvertently discovered during excavation activities.	No archaeological resources were discovered during mitigation activities.

Table 2
Federal and State Location-Specific ARARs
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
Fish and Wildlife Coordination Act	16 USC 661 *et seq.*; 40 CFR Part 302	Not Applicable	Actions that effect species or habitat require consultation with U.S. Department of Interior, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and/or state agencies, as appropriate, to ensure that proposed actions do not jeopardize the continued existence of the species or adversely modify or destroy critical habitat. The effects of water-related projects on fish and wildlife resources must be considered. Action must be taken to prevent mitigate, or compensate for project-related damages or losses to fish and wildlife resources. Consultation with the responsible agency is also strongly recommended for on-site actions. Under 40 CFR Part 300.38, these requirements apply to all response activities under the National Contingency Plan	The biological resource analysis conducted prior to the mitigation activities had a finding of "no impact" to any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations or by the U.S. Fish and Wildlife Service.

Table 2
Federal and State Location-Specific ARARs
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
Endangered Species Act of 1973	16 USC, Sections 1536(a) and (c), 1538(a)(1); 50 CFR 402; 16 USC 661 *et seq.*	Not Applicable	Prohibits any activity likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the habitat of such a species. A biological assessment would be required if any identified endangered or threatened species is likely to be affected by such an action. Prohibits the taking (harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, collection, etc.) of any endangered or threatened species.	No federal or California endangered or threatened species were identified at the site during the biological resource analysis conducted prior to the mitigation activities.
California Fish & Game Code	Sections 700 *et seq.*, 1600, 1801-1802, 2014, 1385 *et seq.*, and 3450-3453	Not Applicable	Establishes jurisdiction of the Department of Fish and Game. Establishes policy for the protection of fish and wildlife resources and prohibits the willful or negligent destruction of fish and game. Provides basis for developing fish and wildlife management plans and programs on military facilities.	The biological resource analysis conducted prior to the mitigation activities had a finding of "no impact" to any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations or by the California Department of Fish & Game.

ARAR Applicable or relevant and appropriate requirements
CFR Code of Federal Regulations
USC United States Code
et seq. And following

Table 3
Federal and State Action-Specific ARARs for Placement of a Cover System
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
Clean Water Act of 1977	33 USC Section 1251 *et seq.* as amended in 1987	Not Applicable	Implements a system to impose effluent limitations on, or otherwise prevent, discharges of pollutants into any waters of the United States from any point source.	No direct discharges to streams, rivers, or lakes occur from the site.
National Pollutant Discharge Elimination System (NPDES)	40 CFR 122	Applicable	Regulates discharges of pollutants from any point source into waters of the U.S.	Grading mitigation activities were conducted under the state "General NPDES Permit for Discharges of Storm Water Associated with Construction Activity."
Clean Air Act	40 CFR 50, 60, and 61	Applicable	Engineering controls are required to reduce fugitive dust emissions while performing remedial activities, including continuous application of dust suppressants before, during, and after excavation.	Dust control and erosion control measures were implemented to minimize fugitive dust emissions while performing grading activities.
National Primary and Secondary Ambient Air Quality Standards (NAAQS)	40 CFR Part 150	Applicable	Establishes NAAQS for criteria pollutants: particulate matter (PM10), sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, and lead.	A maximum of six pieces of construction equipment operated during the month-long grading activities; the emissions from the equipment would not be considered significant to the region's air quality.
Resource Conservation and Recovery Act, Subtitle D	40 CFR Part 257-258	Not Applicable	Regulations apply to owners and operators of facilities that treat, store or dispose of municipal solid waste after October 9, 1991.	State has federal authorization to implement Subtitle D (reference Title 27, CCR).
California Integrated Waste Management Act	27 CCR 17701 *et seq.* Chapter 3, Subchapter 4	Not Applicable	Subchapter 4 addresses operating landfill criteria such as nuisance control, fire control, leachate control, etc.	The site is not an operating landfill.

Table 3
Federal and State Action-Specific ARARs for Placement of a Cover System
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
California Integrated Waste Management Act	27 CCR 21130 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Emergency Response Plan (ERP): Addresses potential emergency conditions that may exceed the design of the site and could endanger the public health or environment must be anticipated.	Although not a regulatory closure, substantive portions of this regulation may be relevant and appropriate for providing post-mitigation maintenance and monitoring.
California Integrated Waste Management Act	27 CCR 21135 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Site Security: All points of access to the site must be restricted, except permitted entry points. All monitoring, control, and recovery systems shall be protected from unauthorized access.	Although not a regulatory closure, substantive portions of this regulation may be relevant and appropriate for providing post-mitigation maintenance and monitoring.
California Integrated Waste Management Act	27 CCR 21140 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Final Cover: Performance requirements, including for alternative final cover designs, are to function with minimum maintenance, and provide waste containment to protect public health and safety by controlling at a minimum, vectors, fire, odor, litter and landfill gas migration.	Although not a regulatory closure, substantive portions of this regulation were considered in the design of the soil cover.
California Integrated Waste Management Act	27 CCR 20323 and20324 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Construction Quality Assurance (CQA): A CQA plan and program must be implemented for all final cover systems. It must provide evidence by testing and monitoring that the materials and procedures utilized and the completed final cover conform to the approved design specifications.	Although not a regulatory closure, substantive portions of this regulation were implemented during the mitigation construction activities.
California Integrated Waste Management Act	27 CCR 21142 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Final Grading: Must be designed and maintained to reduce impacts to health and safety, taking into consideration any postclosure land use, and must be appropriate to prevent ponding, erosion and run-on.	Although not a regulatory closure, substantive portions of this regulation were considered in the final grading design.

Table 3
Federal and State Action-Specific ARARs for Placement of a Cover System
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
California Integrated Waste Management Act	27 CCR 21145 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Slope Stability: Design must provide for the integrity of the final slopes under both static and dynamic conditions to protect public health and safety and prevent damage to postclosure land uses and adjacent features/structures.	Although not a regulatory closure, substantive portions of this regulation were considered in the final grading design.
California Integrated Waste Management Act	27 CCR 21150 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Drainage and Erosion Control: Design must prevent erosion and related damage of the final cover due to drainage produced by the 100-year, 24-hour storm event.	Although not a regulatory closure, substantive portions of this regulation were considered in the final grading design.
California Integrated Waste Management Act	27 CCR 21160 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Landfill Gas Control and Leachate Contact: Landfill gases must be monitored and controlled so that the concentration of methane gas migrating from the landfill does not exceed 5% by volume in air at the facility property boundary, and to prevent adverse acute and chronic exposure to toxic and/or carcinogenic compounds from trace gases. Leachate control must prevent public contact and control vectors, nuisance and odors.	Although not a regulatory closure, substantive portions of this regulation may be relevant and appropriate for providing post-mitigation maintenance and monitoring.
California Integrated Waste Management Act	27 CCR 21137 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Structure Removal: Site structures should be removed at the time of closure to protect public health and safety in accordance with the implemented schedule.	Although not a regulatory closure, substantive portions of this regulation were implemented during mitigation activities with removal of a small guard shack.

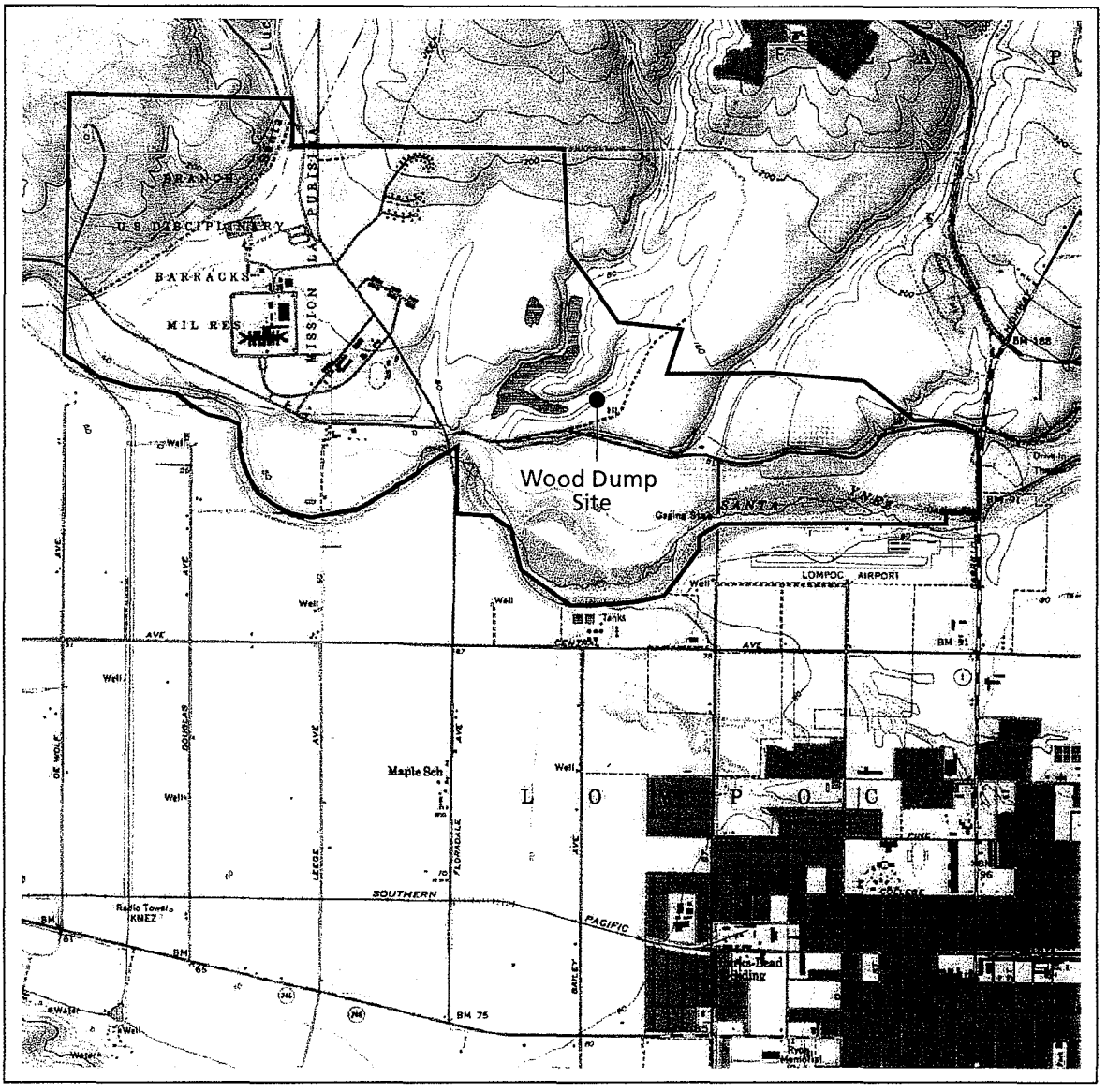
Table 3
Federal and State Action-Specific ARARs for Placement of a Cover System
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
California Integrated Waste Management Act	27 CCR 21170 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Recording: A detailed report must be filed describing the closed site, including a map, to the Recorder of the County, with the EA and the local agency that has been selected to maintain the county integrated waste management plan.	Although not a regulatory closure, substantive portions of this regulation may be relevant and appropriate for the construction documentation report to be submitted to the BCT.
California Integrated Waste Management Act	27 CCR 21180 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Postclosure Maintenance: The landfill shall be maintained and monitored for a period of not less than thirty (30) years after the completion of closure of the entire solid waste landfill.	Although not a regulatory closure, substantive portions of this regulation may be relevant and appropriate for providing post-mitigation maintenance and monitoring.
California Integrated Waste Management Act	27 CCR 21190 Chapter 3, Subchapter 5, Article 2 Disposal Site Closure and Postclosure Maintenance	Relevant and Appropriate	Postclosure Land Use: Must be designed and maintained to protect public health and safety and prevent damage to structures/features; prevent public contact with waste, landfill gas and leachate; and prevent landfill gas explosions.	Although not a regulatory closure, substantive portions of this regulation may be relevant and appropriate for providing post-mitigation maintenance and monitoring.

Table 3
Federal and State Action-Specific ARARs for Placement of a Cover System
Final Action Memorandum
Wood Dump Site
Former United States Disciplinary Barracks
Lompoc, California

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Requirement Synopsis	Comments
California Porter-Cologne Water Quality Control Act	27 CCR 20080(g) and Chapter 3, Subchapter 3, Article 1 (Section 20380 *et seq.*)	Relevant and Appropriate	Groundwater Monitoring: Units which were closed, abandoned, or inactive on or before November 27, 1984 may be required to develop and implement a detection monitoring program. If water quality impairment is found, development and implementation of a corrective action program may be required.	Monitoring program requirements will be considered during the development of the post-mitigation maintenance and monitoring program.

ARAR Applicable or relevant and appropriate requirements
CCR California Code of Regulations
CFR Code of Federal Regulations
USC United States Code
et seq. And following



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CONTOUR INTERVAL 40 FEET

CALIF

QUADRANGLE LOCATION

Approximate Facility Boundary

Approximate Site Location

MN 14°

MAGNETIC DECLINATION ON 02/07/02

Reference: U.S.G.S. 7.5-minute Quadrangle Surf, California, 1974 and Lompoc, California, 1978.

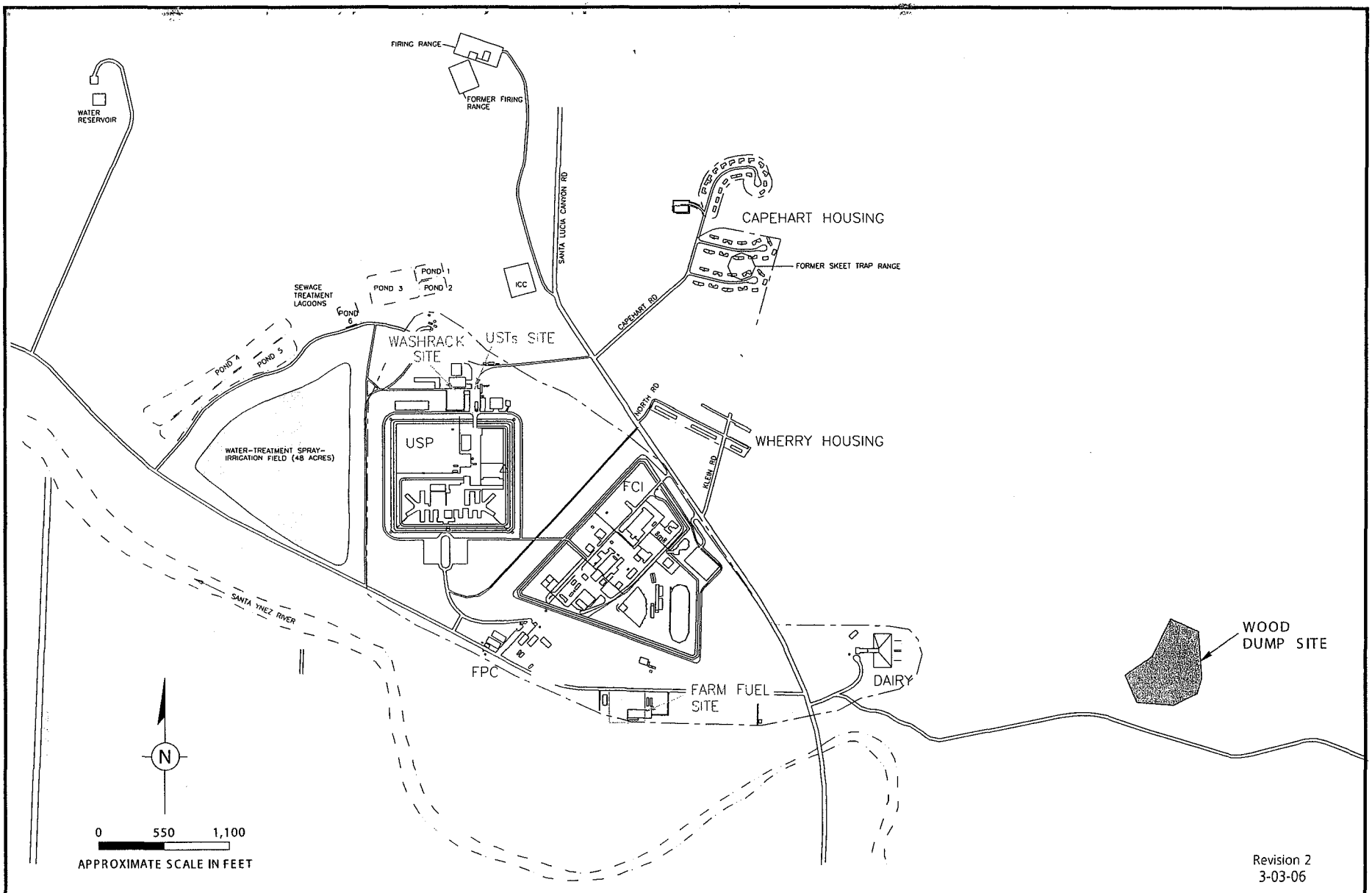
ARCADIS

FACILITY LOCATION MAP
FINAL ACTION MEMORANDUM, WOOD DUMP SITE
Former United States Disciplinary Barracks
Lompoc, California

RC000593.0020

FIGURE

1



ARCADIS

SITE LOCATION PLAN
FINAL ACTION MEMORANDUM, WOOD DUMP SITE
Former United States Disciplinary Barracks
Lompoc, California

RC000593.0020

FIGURE

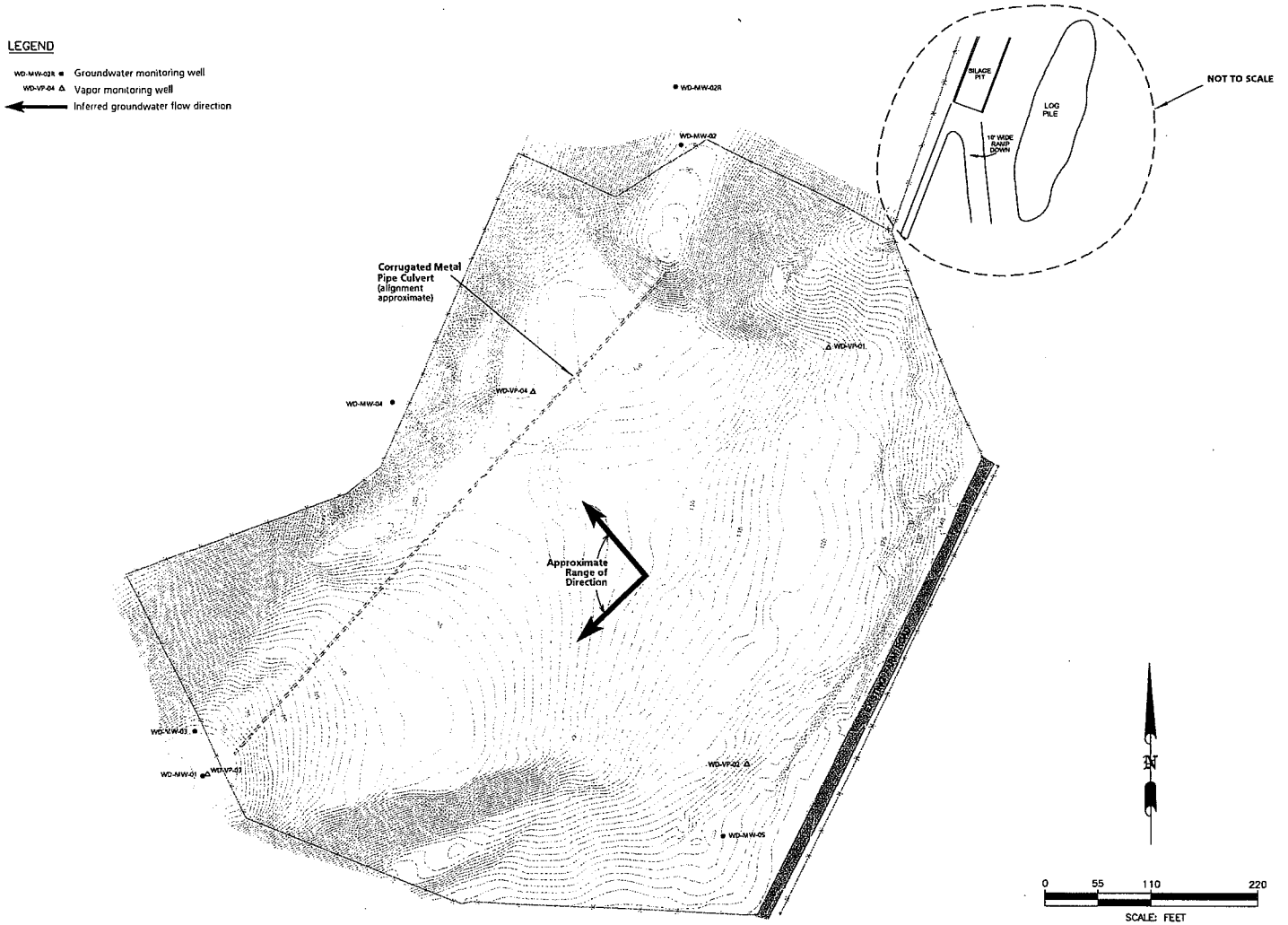
2

LEGEND

WD-MW-02R ● Groundwater monitoring well

WD-VP-04 △ Vapor monitoring well

Inferred groundwater flow direction



Revision 2
3-03-06

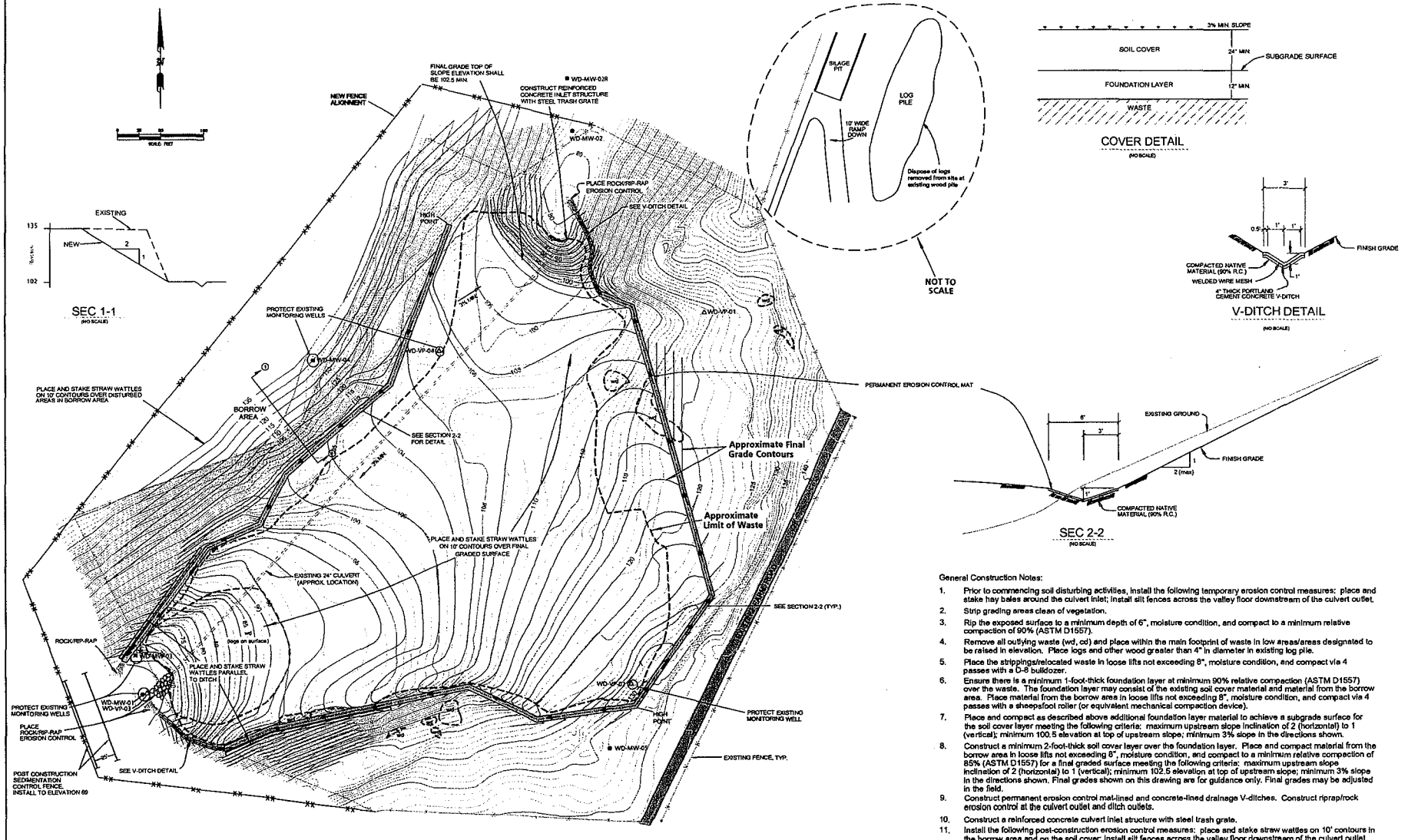
Note: Wells WD-MW-01 and WD-MW-02 were abandoned 9-13-05.

ARCADIS

PROJECT NO.: B0030661.0001	FILE NO.
DRAWING: Fig3	PLOT SIZE: 1=110
DRAFTED BY: CHU	DATE: 7-16-04
CHECKED BY: KSP/ADA	DATE: 7-16-04
APPROVED BY: MMCCOY	DATE: 7-16-04

SITE PLAN
FINAL ACTION MEMORANDUM, WOOD DUMP SITE
Former United States Disciplinary Barracks
Lompoc, California

FIGURE
3



General Construction Notes:

1. Prior to commencing soil disturbing activities, install the following temporary erosion control measures: place and stake hay bales around the culvert inlet; install silt fences across the valley floor downstream of the culvert outlet.
2. Strip grading areas clean of vegetation.
3. Rip the exposed surface to a minimum depth of 6", moisture condition, and compact to a minimum relative compaction of 90% (ASTM D1557).
4. Remove all outlying waste (wd, cd) and place within the main footprint of waste in low areas/areas designated to be raised in elevation. Place logs and other wood greater than 4" in diameter in existing log pile.
5. Place the strippings/relocated waste in loose lifts not exceeding 8", moisture condition, and compact via 4 passes with a D-8 bulldozer.
6. Ensure there is a minimum 1-foot-thick foundation layer at minimum 90% relative compaction (ASTM D1557) over the waste. The foundation layer may consist of the existing soil cover material and material from the borrow area. Place material from the borrow area in loose lifts not exceeding 8", moisture condition, and compact via 4 passes with a sheepsfoot roller (or equivalent mechanical compaction device).
7. Place and compact as described above additional foundation layer material to achieve a subgrade surface for the soil cover layer meeting the following criteria: maximum upstream slope inclination of 2 (horizontal) to 1 (vertical); minimum 100.5 elevation at top of upstream slope; minimum 3% slope in the directions shown.
8. Construct a minimum 2-foot-thick soil cover layer over the foundation layer. Place and compact material from the borrow area in loose lifts not exceeding 8", moisture condition, and compact to a minimum relative compaction of 85% (ASTM D1557) for a final graded surface meeting the following criteria: maximum upstream slope inclination of 2 (horizontal) to 1 (vertical); minimum 102.5 elevation at top of upstream slope; minimum 3% slope in the directions shown. Final grades shown on this drawing are for guidance only. Final grades may be adjusted in the field.
9. Construct permanent erosion control mat-lined and concrete-lined drainage V-ditches. Construct riprap/rock erosion control at the culvert outlet and ditch outlets.
10. Construct a reinforced concrete culvert inlet structure with steel trash grate.
11. Install the following post-construction erosion control measures: place and stake straw wattles on 10' contours in the borrow area and on the soil cover; install silt fences across the valley floor downstream of the culvert outlet.
12. Revegetate all disturbed areas by hydroseeding.

Note: Wells WD-MW-01 and WD-MW-02 were abandoned 9-13-05.

Revision 2
3-03-06

ARCADIS

PROJECT NO.: B0000563.0001	FILE NO.
FRAME: 4	PLOT SIZE: 1=80
DESIGNED BY: JOSEPH	DATE: 6-03-04
DRAFTED BY: CHU	DATE: 7-16-04
CHECKED BY: ESPINOSA	DATE: 7-16-04
APPROVED BY: WOODRUFF	DATE: 7-16-04

FINAL GRADING PLAN DESIGN
FINAL ACTION MEMORANDUM, WOOD DUMP SITE
Former United States Disciplinary Barracks
Lompoc, California

FIGURE
4

Appendix A

Comments and Response to Comments on Draft Action Memorandum and Final Draft Action Memorandum for the Wood Dump Site

Comments Sheets

Name: **Susan Knauf, Michael LeBrun, Anthony Nelson, Linda Stone, Lida Tan**
Organization: **BRAC Closure Team**
Date: **16 July 2004**
Document Title: ***Draft Action Memorandum for the Wood Dump Site*, dated 05 September 2003**

No.	Reference	Comment	Response to Comment
		GENERAL COMMENTS	
Michael LeBrun and Linda Stone Comments (Letter dated 11 February 2004)			
1		The Draft Action Memorandum should be revised to address all relevant comments on the Final Draft Site Mitigation Plan (Regional Board letter dated 14 January 2004). To aid in this effort, we have noted some areas that require revision in our specific comments. However, ARCADIS should review the subject documents to ensure consistency and confirm that comments are adequately addressed in both documents.	Comments on the *Final Draft SMP* relevant to the *Final Draft Action Memorandum* were comments regarding ARARs. See response to specific comment no. 10 below.
2		The Draft Action Memorandum contains many references to Draft Site Mitigation Plan, which has been/will be superceded by subsequent versions. Therefore, replace all references to documents that have not been accepted or approved with references to documents as "in progress" or similar notations.	All citations for the *Final SMP* are now indicated as "(ARCADIS, in progress)."
--	Final Draft	As indicated in the 8 December 2004 BCT final meeting minutes, Ms. Stone indicated that the RWQCB will not review the final draft Action Memoranda for the Washrack/Farm Fuel and Wood Dump sites. The RWQCB considers the Action Memoranda CERCLA and not within the purview of the RWQCB.	
Anthony Nelson Comments (E-mail dated 11 September 2003)			
1		Include language that explains that the property has been transferred to BOP.	See response to specific comment no. 4 below.
2		All decision documents should bear some Army logo or signature block. Place a signature block for Glynn D. Ryan, Chief, Atlanta Field Office, Department of the Army, Base Realignment and Closure on the title page. Also prepare a cover letter, presenting the document and transmitting it to BCT/Army stakeholders. The cover letter will also be signed by Mr. Ryan and will contain a DA-AFO logo/letterhead.	Agreed. A draft of the Army transmittal letter for the *Final Action Memorandum* will be submitted in the near future. The signature block will be included in the title page of the final document.

No.	Reference	Comment	Response to Comment
3		When using the phrases "hazardous substances" or "no impacts" to groundwater state that none exceed actionable levels, are significant or represent threats to health or environment. I'm not sure of the best language, but be careful not to accidentally represent that there are "hazardous substances" or that there are "no impacts" to groundwater.	The use of these phrases has been searched throughout the text and qualified or restated accordingly when referring specifically to the site.
4		Some clarification is needed on "lead agency" designations. RWQCB has been designated lead agency for impacts to waters of the State, and Santa Barbara County has the local lead agency role on the non-water issues at the Wood Dump.	Comment incorporated in the third paragraph in Section 1 based on the agency roles agreed upon at the 05 May 2004 BCT meeting.
5		This draft does not contain any of the information related to the recent topo survey and resultant influence to the drainage design. Revise and update the document where needed (see specific comments).	No action taken. Only a brief description of the site mitigation is included in the *Action Memorandum* (reference Lida Tan general comment no. 4). Detailed design information will be limited to the *SMP*.
6		I would recommend some upfront comments regarding the project relation to CEQA/NEPA matters and the Record of Environmental Consideration. Alternatively this could be included in the ARARs section.	No action taken. This comment will not be addressed based on the BCT decision from the 05 May 2004 meeting that CEQA is not necessary for the site mitigation.
7		In discussing the source of cover material from the Wood Dump west slope, consider using the word "borrow", and "grading", instead of "excavation." The term "excavation" gives the sense of digging a pit while in fact the project will grade the west embankment to a 2:1 slope to decrease instability and will generate sufficient material to use as cover.	Agreed. All such uses of the term "excavation" have been revised. See response to specific comment no. 11.
Lida Tan Comments (Letter dated 18 May 2004)			
1		Please update the site conditions in the final action memorandum subsequent to issuance of the draft action memorandum such as the culvert rehabilitation work completed in the fall of 2003, and recent groundwater monitoring data and its interpretation.	The text has been updated to reflect completed work/current conditions. No change in groundwater direction or analytical results has been observed; therefore, there is no change in the data interpretation and no action is taken on this portion of the comment.
2		The action memorandum should identify the chemicals of concern (COCs) in groundwater based on the available groundwater monitoring data. The COCs in the long-term groundwater monitoring program for the site should be used as indicators of the soil cover effectiveness.	The constituents detected to date are now identified in Section 2.2.1 in the groundwater bullet under conclusions from field investigations. We propose addressing the designation of COCs for long-term groundwater monitoring in the *Post-Site Mitigation Maintenance and Monitoring Plan.*
3		While Section 2.2.1 and Section 2.2.2 contain the summary results from previous investigations, please use these results to	See response to specific comment no.3.

No.	Reference	Comment	Response to Comment
		support discussions on any actual and/or potential risks to human health and the environment from the Wood Dump Site.	
4		The original intent to include some of the design elements in the action memorandum is no longer valid, given that the design document for the soil cover – the Site Mitigation Plan, will soon be finalized. EPA recommends that only a short summary of the soil cover be included in the final action memorandum.	Agreed. Section 5.1.1 has been revised to include only a listing of the design elements addressed. See specific comment no. 6.
5		The discussion on ARARs should be much more specific by citing the specific sections of the reference regulation. For example, while citing National Primary Drinking Water Regulations and the California State Water Quality Control Board Water Quality Standards as federal and state regulations listing the MCLs for specific chemicals in drinking water, the action memorandum needs to specify which set of MCLs is applicable to the Wood Dump Site groundwater monitoring. *The ARARs comments on the Final Draft SMP (letter dated 18 December 2003) were as follows:* *Comment No. 6:* *Table 9, Potential Federal and State Chemical Specific ARARs: The comments made under the Comment Column indicate that some of the ARARs will be considered during the development of remedial goals for soil and groundwater. It's EPA's understanding that soil remediation goals will not be established at Wood Dump site. Please clarify.* *Comment No. 7:* *Table 9 does not include any county and/or local ARARs. Please coordinate with the local county officials to ensure the proposed remediation will comply with the local ARARs and include the ARARs, if identified.*	Based on the 05 May 2004 BCT meeting decision, the ARARs discussion will be removed from the *SMP* and into the *Action Memorandum*. The *Final Draft Action Memorandum* now includes the ARARs tables (except for the table which addresses ARARs for the excavation alternative; this table will remain in the *SMP* and will be moved to the "Evaluation of Site Mitigation Alternatives" appendix) which identify specific sections of the regulations. The text would be onerous and difficult to read if it identified all of the pertinent sections of each regulation; therefore, the text provides a general discussion of regulations and provides reference to the tables, and no change to the text was made with the following exception-- the text now clarifies that the state SMCLs are considered applicable under the "to-be-considered criteria" discussion. Agreed. Reference to soil remediation goals has been deleted in Table 1 (previously Table 8 in the *SMP*). No action taken. No additional local requirements were identified (now Table 2 in the *Final Draft Action Memorandum*).

No.	Reference	Comment	Response to Comment
		SPECIFIC COMMENTS	
Susan Knauf Comments (E-mail dated 23 February 2004)			
1	Page 1-1, second paragraph	I believe the reference to EO 12580 should actually be to EO 13016 since I think the first one only delegated this to EPA, while the second delegated to other federal agencies.	Agreed. References to EO 12580 have been changed to EO 13016.
2	Page 1-2, second paragraph, second to last sentence	Change "...landfill will be improved..." to "...has been improved..."	Comment incorporated as "...has been rehabilitated..."
3	Page 1-2, second paragraph	Suggest adding a synopsis of the description that is referenced here.	The sentence has been clarified to indicate that the "descriptions" refer to the non-TCRAs mentioned above in the same paragraph.
4	Section 2.1.1	Note that the aerial photo study by the EPA is NOT part of the public record, as the prison cited security concerns.	Comment incorporated in "Section 10 – References."
5	Page 2-5, first bullet	Delete last sentence re the reference to the drums.	Comment incorporated.
6	Page 2-5, fourth bullet	Change "should" to "must."	Comment incorporated.
7	Page 2-5, last bullet	Change language to reflect improvements made to culvert.	No action taken. These bullets list conclusions from the field investigations.
8	Page 4-1, last sentence	Think the word "cover" is missing "an engineered landfill cover..."	Comment incorporated as "engineered soil cover."
9	Page 5-1, first paragraph	Cites at least 2 feet of fill, last paragraph cites 3.	Comment incorporated. The text in Section 5.1.1 has been clarified to indicate that the cover profile over the waste includes at least 1 foot of foundation soil and at least 2 feet of soil cover.
10	Page 5-1, first paragraph	Change "will be improved" to "has been improved."	Comment incorporated as "...has been rehabilitated..."
11	Page 5-2, third bullet, second sentence	Comment only – "general accordance with the requirements...", I am always concerned over this type of qualifier.	Comment noted. Detailed design information design will be limited to the *SMP*.
12	Page 5-3	I assume that the Post Site Mitigation Maintenance and Monitoring Plan is to be formalized later, or is this section meant to serve that purpose? Please confirm.	The *Post-Site Mitigation Maintenance and Monitoring Plan* will be formalized later. This section has been modified to include a summary of the items addressed in the *Plan* and refers to the *Plan* for additional detail.

No.	Reference	Comment	Response to Comment
Michael LeBrun and Linda Stone Comments (Letter dated 11 February 2004)			
1	Section 1, page 1-2	Based on our review of the Final Draft Site Mitigation Plan, it is not clear that the sediments from the slope on the west side of the site are appropriate for cover material. Please delete the relevant sentence or indicate that this area is being evaluated as a potential source for cover material.	Additional soil tests conducted during the cover placement activities indicated that the material is a lean clay, which is consistent with the earlier soil test results presented at the 05 May 2004 BCT meeting. In addition, the soil material from the slope was very uniform. No action taken.
2	Section 1, page 1-2, first complete paragraph, fifth sentence	Revise the text to include protection against future impacts to surface water.	Comment incorporated.
3	Section 2.1	The text states that the Santa Ynez is one mile south of the site. Based on Figure 2, surface runoff from the Wood Dump Site discharges to the river approximately 2,000 feet west of the site. Please revise the text to include a discussion of the site's location relative to drainages and the Santa Ynez River. Also, include a brief discussion of groundwater conditions, e.g., distance of base of waste to top of saturated zone.	The text has been revised to read "approximately 2,000 feet southwest of the Site." The same sentence states that the site "is located in a southwest trending valley that drains to the Santa Ynez River..." Additional clarification is required on the second portion of this comment. New text has been added in the second paragraph of Section 2.1.1 as follows: "Based on CMP invert elevations, the valley floor elevation beneath the Wood Dump ranges from approximately 68 feet msl at the downstream end to approximately 79 feet msl at the upstream end. Groundwater elevations typically range from 46-48 feet msl. Therefore, the base of waste is approximately 20 or more feet above the groundwater table."
4	Section 2.1.2	The list of future impacts should include groundwater and surface water.	Comment incorporated.
5	Section 2.2.1, page 2-4	Include soil gas hot spots and surface water impacts under the description of data gaps addressed by ARCADIS' effort.	Gas probe installation is included in the paragraph following the bulleted data gaps list. Text has been added to this same sentence regarding the sediment sampling/surface water impacts evaluation.
6	Section 2.2.1, page 2-5	Delete the last sentence under the bulleted item titled "Geophysical Anomalies" regarding buried drums.	Comment incorporated.
7	Section 2.2.2	Revise this section to reflect the restoration actions on the culvert, which were completed in 2003.	A sentence has been added in last paragraph of this section to indicate when these actions were completed.
8	Section 3	The Regional Board defers to the U.S. Environmental Protection Agency regarding the discussion in this section.	Comment noted.
9	Section 4	Include long-term monitoring in the proposed actions to eliminate endangerment.	Comment incorporated.

No.	Reference	Comment	Response to Comment
10	Section 5	This section should be revised to address all relevant comments on the Final Draft Site Mitigation Plan (Regional Board letter dated 14 January 2003) including comments on Applicable or Relevant and Appropriate Requirements.	
10	(comment continued)	*The ARARs comments on the Final Draft SMP (letter dated 14 January 2004) were as follows:* *General Comment 4: Applicable or Relevant and Appropriate Requirements (ARARs)* *The discussion of ARARS in the Final Draft document is much improved from the prior version. However, tables and text of the current document do not address the portion of the original comment that relates to other potential ARARs such as standards and requirements of regional agencies and aquatic criteria. Also, please note that the beneficial uses of the Santa Ynez River have been listed as impaired under the Clean Water Act Section 303(d). This designation also applies to all of the river's tributaries, included the drainage where the Wood Dump is located. Finally, the text does not fully incorporate the Regional Board' s ARARs, which were transmitted in a Regional Board letter dated March 7, 2002 (included here as Enclosure 3). Please ensure the compilation and discussion of ARARs are complete and they are considered in the alternative analysis.* *Specific Comment 50: Table 9, Potential Federal and State Chemical Specific ARARs* *The correct source for Title 22, Chapter 15 is the Safe Drinking Water Act (California Health and Safety Code Sections 4010 et seq.). Revise the table accordingly.*	No action taken. Standards and regional agency requirements were addressed in the *Final Draft SMP* ARARs tables which are now included in the *Action Memorandum*. The tables did incorporate the Regional Board ARARs considered applicable/relevant/appropriate to this project. Additional clarification is required regarding ARARs for aquatic and Section 303(d) criteria. Comment incorporated in Table 1 (previously Table 8 in the *SMP*).
11	Section 5.1.1	Is the "Project Plan" the same as the Site Mitigation Plan? Please clarify this reference.	This entire bullet has been replaced by a "Public Involvement" bullet and there is no longer any reference to a "Project Plan." See response to Anthony Nelson specific comment no. 12.
12	Figure 3	Show the range of groundwater flow directions on this figure.	Comment incorporated.
13	Figure 4	Delete this figure since it includes designs and specifications that have not been approved and may vary from the final design.	The figure has been modified to indicate the approved general final grading design elements.

No.	Reference	Comment	Response to Comment
Anthony Nelson Comments (E-mail dated 11 September 2003)			
1	Section 1, page 1-1	Include Santa Barbara County in the list of BCT participants. Also mention the County role as lead in those non-water relater matters.	The second sentence of this paragraph states that the BCT "...includes members of the agencies mentioned..." See response to general comment no. 4.
2	Section 1, page 1-2, last paragraph	Consider replacing the word "excavating" with the word "grading."	The sentence has been revised to read, "The soil cover material was obtained from a borrow area adjacent and west of the site."
3	Section 1, page 1-2, last paragraph	Include LTM as one of the non-TCRA actions.	Comment incorporated.
4	Section 2.1, page 2-1	Mention that the property has been transferred to BOP.	Comment incorporated with a new sentence before the last sentence of the first paragraph.
5	Section 2.1, page 2-1	Be careful not to get the Wood Dump and the Former Army Landfill confused by using them in the same paragraph. Explain that they are separate. Perhaps a short sentence or two indicating the FAL was investigated and issued an NFA would help. Why do you want to include the FAL at this point in the AC?	Both sentences which discuss the FAL have been deleted.
6	Section 2.1.1, page 2-1	Consider mentioning that unsubstantiated references to local domestic disposal and possible military disposal was contained in early research reports.	No action taken. We propose limiting detailed information such as this to the *SMP*.
7	Section 2.1.3, page 2-2	Consider referring to the RWQCB as "lead oversight agency."	Comment incorporated.
8	Section 2.2.1, page 2-3	In the Radian bullet, consider mentioning that the buried objects relate to unsubstantiated claims by an inmate that two drums of green liquid were buried at the Wood Dump. See page 2-5 where drums are mentioned.	No action taken. See response to Michael LeBrun/Linda Stone specific comment no. 6.
9	Section 2.2.1, page 2-5	Under groundwater, replace "no impacts" with "significant impacts." See the public meeting fact sheet. Also is this the appropriate place to indicate that groundwater monitoring will continue?	The text has been changed to "Wood Dump has not caused any significant impacts to the underlying groundwater" consistent with the wording in the public meeting fact sheet. Comment incorporated. This section addresses conclusions based on the field investigations, and continued monitoring was recommended in the *Final Draft SMP*.
10	Section 2.2.1, page 2-6	Regarding flow direction, have you conducted some additional interpretation of flow dynamics that can be included here? Again, mention that groundwater monitoring will continue.	Flow dynamics will be addressed in the *Post-Site Mitigation Maintenance and Monitoring Plan*. Comment incorporated regarding recommendation for continued monitoring.
11	Section 5.1, page 5-1	The words "excavation" and "borrow" area are both mentioned on this page. Again consider using the word "grading" as the method of obtaining the borrow.	This section has been rewritten. See Lida Tan specific comment no. 5. The descriptive sentence used in Section 5.1.1 reads, "Soil materials for the cover construction were obtained by regrading the borrow area slope to the west of the site to a more

No.	Reference	Comment	Response to Comment
			stable slope inclination of 2:1."
12	Section 5.1.1, page 5-1	In project planning, mention that we conducted a public meeting and established an information repository in the effort to solicit public comment.	Comment incorporated. This entire bullet has been replaced by a "Public Involvement" bullet.
13	Section 5.1.1, page 5-2	Under "Surface Water Drainage Control," modify this section to incorporate the new survey data, volume calculations and grading plans.	No action taken. Detailed design information design will be limited to the *SMP*. See response to general comment no. 5.
14	Section 5.1.1, page 5-4	Under "Surface Water Controls," define what a major storm is. Also mention somewhere that a brush/trash grate will be designed and installed at the culvert inlet.	No action taken. This section has been modified to include only a summary of the items addressed in the *Post-Site Mitigation Maintenance and Monitoring Plan*.
15	Section 5.3, page 5-6, third paragraph	Should the word "restoration" replace the word "remedial"?	No action taken. This is discussion regarding ARARs in general.
16	Section 5.3, page 5-6	Somewhere in Section 5.3 it would be appropriate to mention the project's relationship to CEQA and NEPA. Reference to the Record of Environmental Consideration may be useful.	See response to general comment no. 6.
17	Section 5.3.1, page 5-6	Impacts to groundwater should be indicated as "not significant" not "no impact."	Comment incorporated as "... not caused any significant impacts..." consistent with comment no. 9. The chemical-specific ARARs section is now a subsection of Section 5.3.2.
18	Section 5.3.4, page 5-8	What's the point of this CERCLA waiver section? Are you claiming any waivers for certain ARARs?	No action taken. This section (now a subsection of Section 5.3.2) is provided so that the discussion of ARARs and their use is complete and comprehensive. No waivers are being sought at the current time.
19	Figure 3	Note that the culvert location is approximate, and that the log pile/silage areas are not to scale, or scale approximate.	Comments incorporated.
20	Figure 4	Replace this figure with the revised grading plan. Also note that this figure does not show the few outliers of waste material on the northeast side of the Wood Dump.	Comments incorporated. The figure has been modified to indicate the approved general final grading design elements.

No.	Reference	Comment	Response to Comment
Lida Tan Comments (Letter dated 18 May 2004)			
1	Section 1, third paragraph	Please delete the last sentence as it is not necessary to mention how the BCT meets in the action memo.	Comment incorporated.
2	Section 2.3.1, first paragraph	Please revise the first sentence to read "The RWQCB is the lead regulatory agency overseeing the cleanup at the Wood Dump Site. USEPA and SBEHS are the supporting regulatory agencies."	No action taken on the first sentence as a description of actions to date. The agency roles agreed upon at the 05 May 2004 BCT meeting included in the third paragraph of Section 1 (see Anthony Nelson general comment No. 4) are repeated in this section.
3	Section 3.1 and Section 3.2	The sections should discuss whether there is any actual and/or potential risk to human health and the environment impacts due to the waste characteristics in soil, soil vapor and groundwater at the site (see general comment no. 3).	Comment incorporated. These sections include additional description to address risk potential.
4	Section 4	In order to clarify what the removal action consists of and address the potential threats identified in Section 3.2, please revise the last sentence in the paragraph to read: "To minimize the possibility of endangerment, the US Army has determined that the appropriate removal action would consist of rehabilitating the existing culvert, constructing an engineered soil cover, and perform long-term groundwater monitoring."	Comment incorporated. The sentence now reads, "To minimize the possibility of endangerment, the US Army has determined that the appropriate non-TCRA would consist of rehabilitating the existing culvert, constructing an engineered soil cover, improving surface drainage on and around the site, and performing long-term groundwater monitoring."
5	Section 5.1	Please identify the elements of the removal action in bullets for easier reference. The list should be consistent with Section 4.0 (see above comment) and should read as follows: • Rehabilitate the current culvert underneath the site; • Install an engineered soil cover with a minimum of 2 feet of soil; • Construct surface drainage ditches around the soil cover and the site; • Vegetate the soil cover; and • Conduct long-term groundwater monitoring	Comment incorporated.
6	Section 5.1.1	Please discuss the elements of the removal action consistent with Section 5.1 (see above comment).	Comment incorporated.
7	Section 5.2.1, last sentence	Please revise to read: "This alternative was eliminated from further consideration because it does not adequately address the potential environmental threats posed by the existing conditions at the site."	Comment incorporated.
8	Section 5.2.2, last sentence	Please revise to read: "This alternative was eliminated from further consideration due to its relatively high remediation cost given that monitoring data to date indicates minimal	Comment incorporated.

No.	Reference	Comment	Response to Comment
		environmental impact to the underlying groundwater."	
9	Section 5.3.3	Please identify any specific to-be-considered criteria applicable to this removal action.	No action taken. No TBC criteria were identified for the grading activities.
10	Section 5.3.4	Please identify any specific ARAR which may be waived for this removal action.	No ARARs waivers are being sought for this removal action. See response to Anthony Nelson specific comment no. 18.
11	Section 5.3.5	Please insert this action-specific ARARs section before Section 5.3.3 for a better flow of the ARAR discussion.	Comment accepted. The action-specific ARARs discussion now precedes the TBC criteria discussion in Section 5.3.2.

Comments and Response to Comments

Name: Anthony Nelson
Organization: U.S. Army BEC
Date: 24 August 2004
Document Title: Final Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (Revision 0, dated 7-16-04)

No.	Reference	Comment	Response to Comment
		GENERAL COMMENTS	
1	---	The text discusses actions proposed and implemented as a site mitigation. Recall that the Board/BCT selected and agreed not to issue formal approval of the Site Mitigation Plan. Instead the work would be conducted as a grading project, with a SWPPP and BMPs employed to manage runoff and erosion. Additionally a long term Monitoring and Maintenance Plan would be prepared to outline inspections, monitoring, sampling, repair and reporting protocols over the next five years (at a minimum). This understanding should be presented in the introduction sections and then mentioned throughout the text, where appropriate.	The following statement has been added throughout the document, "The US Army has implemented the non-TCRA at the Wood Dump site as site mitigation and not as a regulatory closure." See response to specific comment no.1.
2	---	Reference to 'removal and/or remedial action' needs to be used carefully and with adequate explanation. For instance. the non-TRCA removal action (remedial action) was voluntarily selected by the Army, per BRAC, because it mirrors the CERCLA process. However this is a non-NPL site, with eight years (over 20 separate sampling events) of monitoring that indicate no, or very little, impacts to environment. Even indicating there are no unacceptable risks is a bit overstated. Review the text for all uses of removal/remedial action language and check that it will not accidentally trigger future readers with the mistaken impression that this is a hazardous, or NPL, site.	The introduction has been rewritten to explain that "Although there is no evidence of an unacceptable risk condition at the site and the CERCLA program is a risk-based one, the response process followed at the Wood Dump site follows the CERCLA program as mandated." "Voluntary non-TCRA" is also used throughout the document.

Comments and Response to Comments

Name: Anthony Nelson
Organization: U.S. Army BEC
Date: 24 August 2004
Document Title: Final Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (Revision 0, dated 7-16-04)

No.	Reference	Comment	Response to Comment
3	---	Check the text for all uses of PRG/MCL and revise the text to reflect the actual concentration detected and reported in the project documentation. The statement "exceeds MCLs and/or PRGs" can be very misleading when the reader is not familiar with the data. For the most part the MCLs are only exceeded for a few metals and a couple VOCs over the last 8 years. For the most part the exceeded value is for the PRG. Isn't the tap water PRG what a treatment plant would be expected to meet before sending water to the kitchen faucet? Please review the data again and check that the statements in the text reflect, and explain, what is actually reported.	The groundwater discussion per the SMP in Section 2.2.1 has been revised to eliminate comparison to the PRG_{Tap} and quantify the number of MCL exceedances to provide a better understanding of the groundwater data.
4	---	The document needs a cover page displaying AFO letterhead and signature block. It should also include appropriate text transmitting the AM to the BCT and other stakeholders.	The signature block has been included in Section 9. A cover letter will be included with the submittal to the BCT.
		SPECIFIC COMMENTS	
1	Pg.1, Sec. 1	This is a good place to expand on the SMP vs. grading approach implemented on site.	This is now addressed in Section 2.2.2.
2	Pg. 1-2, Sec. 1.1	Add something like the following to the last paragraph: Although the work had been initiated as a Site Mitigation Plan it has been completed as a grading project, with attendant SWPPP submitted to the Regional Water Quality Control Board.	Reference has been included to Section 2.2.2.
3	Pg. 2-1, Sec. 2.1	It may be worth noting that stockyards, cattle operations and hay storage facilities are located to the south of the site.	Comment incorporated.
4	Pg. 2-1, Sec. 2.1.1	Modify the first line to reflect that the 60-70- deep canyon was in filled with only 25 to 30 feet of waste/debris.	Comment incorporated.

Comments and Response to Comments

Name: Anthony Nelson
Organization: U.S. Army BEC
Date: 24 August 2004
Document Title: Final Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (Revision 0, dated 7-16-04)

No.	Reference	Comment	Response to Comment
5	Pg. 2-2, Sec. 2.1.2	Add that over 20 sampling events have been conducted over the last 8 years.	Incorporated in the "groundwater" paragraph on page 2-5. The following has been added at the end of the paragraph, "While these potential threats to the environment would be undesirable, there is no evidence that hazardous substances have been released causing unacceptable risks." (see Michael Kelly comment no. 6)
6	Pg. 2-2, Sec. 2.1.3	Add that the Army is the lead agency.	Comment incorporated in Section 1.
7	Pg. 2-2, Sec. 2.2.1	Describe, very briefly, what CKY actually did.	Comment incorporated.
8	Pg. 2-4, Sec. 2.2.1	Add the EPA Aerial Photograph Analysis, March 2000, to the list of previous actions.	Comment incorporated.
9	Pg. 2-5, Sec. 2.2.1	Under "Groundwater", clarify the distinction between MCLs and PRGs.	Comment incorporated.
10	Pg. 2-6, Sec. 2.2.1	Add an entry to indicate Cultural and Biologic Resources Surveys were conducted and found no impact to these resources.	Comment incorporated and referenced on ARARs Table 2.
11	Pg. 2-7, Sec. 2.2.2	Indicate that the culvert rehabilitation has been completed.	This information is already included in the last paragraph.
12	Pg. 3-2, Sec. 3.2	Add again that MCLs exceedances in groundwater are very rare over the 8-year monitoring period. Two VOCs, not repeated, and a few metals that are comparable to background values at VAFB. The chemical threat to environment is virtually unsubstantiated after a long monitoring program.	The following has been added at the end of the paragraph, "While these potential threats to the environment would be undesirable, there is no evidence that hazardous substances have been released causing unacceptable risks."

Comments and Response to Comments

Name: Anthony Nelson
Organization: U.S. Army BEC
Date: 24 August 2004
Document Title: Final Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (Revision 0, dated 7-16-04)

No.	Reference	Comment	Response to Comment
13	Pg. 5-1, Sec. 5.1.1	It may be useful to indicate that the 3-foot cover thickness is the minimum thickness. Thickness in excess of seven feet is present at some locations.	The sentence indicates that the cover profile "...includes at least 1 foot of foundation soil and at least 2 feet of soil cover."
14	Pg. 5-2, Sec. 5.1.1	Add a section describing site security. Include the new fencing, gates for access to monitoring sites and locking chains to limit access to authorized personnel.	Comment incorporated.
15	Pg. 5-3, Sec. 5.2.2	Would there be some potential for increased risk associated with the physical excavation and removal of the existing waste?	Exposure to the waste materials during excavation would be expected to increase risk; however, further analysis of the alternatives is beyond the scope of this section/document.
16	Pg. 5-4, Sec. 5.3	This section uses frequent reference to 'remedial action', 'hazardous substances', and 'contaminated site'. It's unclear how to phrase this section to avoid future reader confusion. Again, keep in mind that the nature of the site and cumulative data do not indicate the presence of hazardous materials or significant, eminent threats to environment. Remedial or removal actions would not be indicated for this site under CERCLA. The actions proposed and taken at this site were completed because BRAC mandates the work will mirror CERCLA procedurally, not because site conditions warrant such action. Fundamentally there is little or no demonstrated risk to resources. In a real sense ARARs would not be required or completed. Reconsider how this section can be included such that it does not lead to misunderstanding.	The following has been added at the end of the paragraph: "Although the Wood Dump is not a CERCLA site, and there is no evidence that hazardous substances have been released causing unacceptable risks, ARARs considered practicable for the voluntary non-TCRA were evaluated as required by the CERCLA non-TCRA process."
17	Pg. 7-1, Sec. 7	The AM is not yet in the Library.	The final document will be included.

Comments and Response to Comments

Name: Michael Kelly [Note: These comments inadvertently were not addressed in the final draft version]
Organization: U.S. Army Environmental Center
Date: October 2003
Document Title: Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (dated 9-5-03)

No.	Reference	Comment	Response to Comment
		SPECIFIC COMMENTS	
1	Pg. 1-1, Sec. 1, first paragraph, first sentence	Suggest deleting the words "to perform improvement activities". Site improvement is not the objective of a removal action. Actions taken under CERCLA authority are limited to those necessary to protect human health and the environment. As outlined in 40 CFR 300.415(b)(2), removal actions are appropriate where there is a threat to human health, welfare, or the environment as a result of a release or threat of a release.	Comment incorporated.
2	Pg. 1-1, Sec. 1, second paragraph	This paragraph has information that goes beyond the scope of projects where removal actions are being implemented (e.g., references to CERCLA §120). Suggest deleting the text after the 1st sentence and replacing with the following: The environmental investigation and cleanup of the former USDB in Lompoc is being conducted pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the National Contingency Plan, and Executive Order 12580.	Comment incorporated.
3	Pg. 1-1, Sec. 1, third paragraph	The text in this paragraph should be moved to Section 2.3. In the first sentence, recommend replacing the word "for" with "overseeing" so the sentence reads "....the lead regulatory agency overseeing the work ..."	Comment no longer applicable - this paragraph was revised in the final draft version, and is now the fourth paragraph. The information in this paragraph is repeated in Section 2.3
4	Pg. 1-1, Sec. 1, fourth paragraph	After the second sentence, suggest adding the following sentence: The President's authority under various CERCLA sections, including §104(a), is delegated to the Secretary of Defense by Executive Order 12580.	Comment incorporated. This paragraph is now the third paragraph.

Comments and Response to Comments

Name: **Michael Kelly** [Note: These comments inadvertently were not addressed in the final draft version]
Organization: **U.S. Army Environmental Center**
Date: **October 2003**
Document Title: **Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (dated 9-5-03)**

No.	Reference	Comment	Response to Comment
5	Pg. 1-2, Sec. 1, fifth paragraph	Suggest adding a sentence noting that the Army in consultation with state and Federal regulatory agencies, prepared a Site Management Plan in lieu of the Engineering Evaluation/Cost Analysis.	Comment incorporated in a new fifth paragraph.
6	Pg. 2-2, Sec. 2.1.2	While the identified threats to the environment may be undesirable, there is no evidence that hazardous substances have been released causing unacceptable risks.	Comment incorporated.
7	Pg. 3-1, Sec. 3.2	Same comment as comment no. 6.	Comment incorporated.
8	Pg. 1-1, Sec. 4	Please expand on the first sentence to demonstrate how actual or threatened releases of hazardous substances from the Wood Dump Site, if not addressed by the selected removal action would present an imminent and substantial endangerment to public health, or welfare, or the environment.	The potential threats have been included in the first sentence. The second sentence has been revised to include the standard statement for actions involving only pollutants or contaminants.
9	Pg. 4-1, Sec. 4	In last sentence, suggest adding the word "cover" so the sentence reads "....constructing an engineered landfill cover and improving..."	This was revised in the final draft version.
10	Pg. 5-1, Sec. 5.1	In the last sentence, suggest deleting the word "sections" so the sentence reads "....proposed non-TCRA are provided below..."	This section was revised in the final draft version.

Comments and Response to Comments

Name: Larry Tannenbaum
Organization: U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM)
Date: 4 September 2004
Document Title: Final Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (Revision 0, dated 7-16-04)

No.	Reference	Comment	Response to Comment
		SPECIFIC COMMENTS	
1	Pg. 1-1, Sec. 1	The last sentence of the second paragraph could be rewritten for more clarity. A suggested replacement sentence is: "It should be noted that this site is not a National Priorities List (NPL) site."	Comment incorporated.
2	Sec. 1, Sec. 3	As the subject document makes clear (see for example, Sections 2.1.2, 3.2), there is no evidence whatsoever of any hazardous substance or contaminants in any of the subject site's environmental media (e.g., soil, ground water). Because of this situation, there is no unacceptable risk condition. The CERCLA program however is a risk-based one, and the subject document does not demonstrate a need, commensurate with CERCLA, to invoke a site mitigation as is planned. Regarding this point, Section 2.1.3 is not understood. Specifically, in what way does the US Army's cleanup process "mirror" the CERCLA process? Note that the subject document (page 1-2) specifically cites CERCLA Section 104(a), where actual releases or threats of releases of hazardous substances and/or contaminants are needed to justify removal and remedial actions, etc. Please have the next Action Memorandum revision 1) call attention to the fact that unacceptable risk is not at issue at the Wood Dump Site, and 2) better explain how CERCLA applies at the subject site, given the lack of "drivers" or "triggers" for action, as evidenced by the nature of the "purposes of the current action" (Section 2.2.2).	The introduction has been rewritten to explain that "Although there is no evidence of an unacceptable risk condition at the site and the CERCLA program is a risk-based one, the response process followed at the Wood Dump site follows the CERCLA program as mandated." This new paragraph explains how the process has been followed. Section 2.1.3 has been revised to address only NPL status. The final version makes it clear that the action is a voluntary one.

Comments and Response to Comments

Name: Susan Knauf
Organization: The Louis Berger Group (for Bureau of Prisons)
Date: 27 July 2004
Document Title: Final Draft Action Memorandum for the Wood Dump Site, Former United States Disciplinary Barracks, Lompoc, California (Revision 0, dated 7-16-04)

No.	Reference	Comment	Response to Comment
		SPECIFIC COMMENTS	
1	Cover Page	Figures cite rev 1, cover page 0.	All portions of the final document will indicate "revision 2".
2	Pg. i, Table of Contents	Suggest labeling as Table of Contents.	Comment incorporated.
3	Pg. i, Table of Contents	Please add Section 5.1.1 Proposed Action Description to be consistent throughout the document.	Comment incorporated.
4	Pg. 2-4, Sec. 2.2.1, third paragraph	After GFPR suggest adding "contract".	Comment incorporated.
5	Pg. 5-1, Sec. 5.1.1	Suggest rewriting first sentence to "As an effort to..."	Comment incorporated.
6	Pg. 5.4, Sec. 5.3, first paragraph	Please remove space after NCP.	Comment incorporated.
7	Pg. 5-7, Sec. 5.3.2, first paragraph, first sentence	Suggest rewording to "The numerical standards for groundwater that are considered.....". It seems like the second part of this sentence starting ", must not result....." is missing a noun.	This section has been rewritten.
8	Pg. 5-9, Sec. 5.3.2, first sentence	Please change "and ARAR" to "an ARAR".	Comment incorporated.
9	Pg. 6-1, Sec. 6, first sentence	Please change "change were not taken" to "was not taken".	Comment incorporated.