

with EPA. There are limited processes in place to prevent the placement of new wells within the footprint of the contaminant plume. Though there are legal resolutions in place to prevent well installation within the water district, there is not a clear process to flag a proposed well location as potentially within the plume. Either Kern County or the State Dept. of Health may issue a permit, depending on the use of the well. Coordination with those agencies is sporadic.

VII. Technical Assessment

VII.A Question A: Is the remedy functioning as intended by the decision documents?

VII.A.1 Remedial Action Performance and Operations

For the most part the 1.2 acre RCRA cap, and asphalt cover over the remaining portion of the site are functioning as expected. The cap was designed primarily to seal the surface without adequate strength to function as a parking facility. Areas of the non-RCRA capped portion of the site have been subjected to cracking and ponding, and several locations have evidence of rodent tunnels around the perimeter of the cap which, may extend under the asphalt cap.

The shallow groundwater source treatment portion of the remedy was not installed. A-zone pump testing during the pilot testing phase did not yield an adequate volume of water to be an effective remediation solution. That portion of the remedy was eliminated from the remedial action and is scheduled to be addressed in OU-2.

In general, the monitoring system has shown the contaminant plume is stable with the exception of specific wells in both the A- and B-zones that displayed increasing concentration trends. These wells were generally located in the western portion of the study area and southwest of the main source areas. Other A-zone wells near or under the capped portion of the site also displayed increasing concentrations over the past five years.

VII.A.2 Opportunities for Optimization

As there are no active treatment processes on-going at the site, the primary optimization opportunity relates to the long-term monitoring program at the site. As discussed in section VI.B.2., routine sampling should resume at the site, but the number of wells and the frequency of sampling can be reduced from the program implemented in the July 2000 through January, 2004 timeframe. Annual sampling of most wells recommended for retention in the program would be adequate. This frequency would provide an adequate dataset for assessment of trends at the next five-year review and will support most site decisions. Quarterly sampling of the two sentinel wells near the municipal well CW-1 is appropriate given the likely timeframe available for initiating action to protect or replace that well once a significant impact to the sentinel wells is observed. Biennial or less frequent sampling would be appropriate for upgradient or background wells. A

reduction, relative to the sampling program conducted in 2003, of 30% in the number of A-zone wells and 16% in the number of B-zone wells to be sampled is possible. Additional discussion of the wells recommended for on-going sampling is provided in section VIII.C.1.

VII.A.3 Implementation of Institutional Controls

The OU-1 ROD identified the need for ICs that would limit exposure pathways to contaminated soil remaining on-site beneath the cap by maintaining the integrity of the cap. Specifically, Section VII of the ROD discusses elements common to all the action alternatives considered for the site and states, “to assure that the site remains safe after EPA completes the cleanup, deed restrictions or other ICs will be placed on the portion of the property having a RCRA cap to ensure that the cap remains safely intact and the soil under the cap remains undisturbed in the future.”

As of this FYR, site access control and site security, are in place. Site access is intermittent and there is security fencing around the perimeter of the site with locked gates. Signs are posted in English and Spanish stating that this is a hazardous area and entrance is prohibited. However, the formal deed restrictions required as a component of the selected remedy have not been implemented.

VII.A.4 Early Indicators of Potential Issues

Installed components of the OU-1 remedial action are functioning as proposed. There are some issues that require clarification to expedite site close out, or enhance the perceived protectiveness of the remedy. These items include:

- The perched A-zone aquifer remediation has not been implemented as identified in the ROD. An evaluation of the monitoring data indicate there are areas where COC concentrations are increasing (refer to section VI and Attachment D).
- Cracks are present in the non RCRA and RCRA portions of the cap. These cracks may indicate the subgrade and/or soils under the asphalt may be settling. The cracks may allow water to seep into the contaminated materials and continue to act as a source for continued COC contamination to the A-zone aquifer.
- Ponding is present at 3 locations over the northern portion of the site covered by the non-RCRA cap. Two of the locations allow ponding due to low areas, and the third is due to an obstruction at the point where runoff is to exit the cap. The obstruction is due to grading performed by an adjacent land owner.
- Fencing surrounding the site is damaged, primarily attached to the barbed wire outriggers. The fencing should be easily repaired so as not to give the impression the site has fallen into disrepair.

- Rodent holes are present at several locations around the perimeter of the asphalt caps. There is a potential threat that these holes extend under the cap and could provide an unobstructed path for water to enter the contaminated soils below the cap and potentially mobilize contaminants.
- Soil gas surveys were completed in late 2005 and mid 2006 to determine if vapor intrusion should be a concern for current residences. Results from the first survey were inconclusive, and the results of the second survey were not available at the time this report was written.
- A more systematic monitoring program should be reimplemented at the site to allow subsequent FYR to evaluate the COC nature, extent and the remediation progress.
- There are legal resolutions in place to prevent well installation within the water district, there is not a clear process to flag a proposed well location as potentially within the plume. Either Kern County or the State Dept. of Health may issue a permit, depending on the use of the well. Coordination with those agencies is sporadic.
- Steps to complete implementation of all ICs should be taken. A site-wide ICs monitoring plan should be developed.

VII.B Question B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of remedy selection still valid?

The review of ARARs and risk assumptions are provided in Attachments E, F, and G, respectively. Key information has been summarized below.

VII.B.1 Changes in Standards and To Be Considereds (TBCs)

There have been no changes in the ARARs that should affect the protectiveness of the remedy and there have been no changes in standards or TBCs for the current site. Refer to Attachment E for a more comprehensive ARAR discussion.

VII.B.2 Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

As part of the 1993 OU-1 RI/FS, a BHHRA was conducted. Dinoseb was selected as the only COC that may significantly contribute to the site risk and incidental ingestion of surface soil was selected as the dominant route of exposure. The exposure assumptions used to develop the BHHRA identified children and young adult trespassers and a construction worker as potential receptors. The A-zone groundwater is not legally classified as a potential drinking water source due to the extremely low production capacity of this water bearing unit, and therefore, was not characterized in the risk

assessment. These assumptions are considered to be conservative and reasonable in evaluating risk for this site since the land use is expected to remain industrial. There have been no changes in the toxicity factors for dinoseb that were used in the BHHRA that could affect the protectiveness of the remedy.

VII.B.3 Changes in Risk Assessment Methods

There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The vapor intrusion pathway was not evaluated in the BHHRA.

VII.B.4 Expected Progress Towards Meeting RAOs

No formal estimates were made of the time requirement for remedy objectives to be obtained. The assumption was made that remedy objectives would be obtained in not more than 30 years from the date of completing remedy construction. As a result, the remedy is progressing as expected and it is expected to be protective of human health and the environment upon completion. ICs, as identified in the OU-1 ROD for the selected remedy, need to be implemented to ensure that the response action remains protective of human health and the environment.

VII.C Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No ecological risks are associated with the site. Local earthquakes may be associated with cap cracking issues, and therefore, could affect the protectiveness of the remedy. Drainage issues and the possible infiltration of water may affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy with the exception of potential vapor intrusion impacts.

VII.D Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the OU-1 ROD. There have been no changes in the ARARs that should affect the protectiveness of the remedy and there have been no changes in standards or TBCs. There have been no changes in the toxicity factors for dinoseb that were used in the BHHRA and there has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy with the exception of potential vapor intrusion impacts, lack of ICs, and further deterioration to the cap.

VIII. Issues, Recommendations, and Follow-up Actions

Issues for the B&B Site are presented in Table 5. This table summarizes some of the concerns raised in the previous sections. Corresponding recommendations and follow-up

actions are discussed below. Recommendations are provided to increase system effectiveness and protectiveness, reduce costs, promote technical improvement, and to achieve site closeout.

Table 5: Issues

Issue ¹		Affects Current Protective-ness (Y/N)?	Affects Future Protective-ness (Y/N)?	Respon-sible Entity ²	Comple-tion Date
Protectiveness Issues					
1.	Improve drainage of cap and repair cap cracks and fill/seal animal burrows (Sec. VIII.A.1).	N	Y	EPA	5/31/08
2.	Repair barbed wire fencing (Sec. VIII.A.1).	N	Y	EPA	6/30/07
3.	Evaluate Vapor Intrusion Pathway (Sec. VIII.A.2).	N	Y	EPA	12/31/06
4.	Replace and seal municipal well CW-1 (Sec. VIII.A.3).	N	Y	EPA	9/30/08
5.	Institutional controls need to be fully implemented (VIII.A.5).	N	Y	EPA/DTSC	9/30/08
Cost Issues					
6.	Implement reduced monitoring program (Sec. VIII.B.1 and VIII.C.1).	N	N	EPA	3/31/07
Technical Improvement Issues					
7.	Reinstate routine sampling at the site, for a limited subset of wells, generally on an annual basis (Sec. VIII.C.1).	N	N	EPA	3/31/07
Issues Related to Achieving Site Closeout					
8.	Consider active A-zone source remediation (Sec. VIII.D.1).	N	Y	EPA/DTSC	9/30/08
9.	Remove CW-1 to ensure contamination in the B- and C-zones does not occur (VIII.D.2).	N	Y	EPA/DTSC	9/30/08
Other Issues					
10.	Transfer the shallow zone groundwater remediation to OU-2 (Sec. VIII.E.1).	N	Y	EPA	9/30/07
11.	Update the current document repository (Sec. VIII.E.2).	N	N	EPA	9/30/07

¹Reference to section where issue and recommendations are discussed.

²EPA = US Environmental Protection Agency, DTSC = Department of Toxic Substances Control

³Milestones for implementing recommendations to be determined by EPA Region 9

VIII.A Recommendations to Improve Protectiveness

VIII.A.1 Site Cap and Related Features

The most important recommendation for maintaining remedy effectiveness is to improve drainage of the capped areas to eliminate ponding on the surface. The current cracks in the cap should be repaired at least in accordance with the Operations and Maintenance manual for the cap (Morrison-Knudsen, 1999), in order to minimize infiltration through the cap. Animal burrows along the edge of the cap should be filled and sealed. The site fencing, notably the barbed wire topping the fence, should be repaired where broken.

VIII.A.2 Evaluation of Vapor Intrusion Pathway

Exposure via vapor intrusion is of emerging concern and is currently being investigated at OU-1 at the request of the State of California's Department of Toxic Substances Control (DTSC). If the pathway presents an unacceptable risk, an additional remedy may need to be designed. Such a remedy may include the selection of new ICs.

VIII.A.3 Replace Municipal Well CW-1

As a potential exposure point, the municipal well CW-1 should be replaced and the existing well properly abandoned.

VIII.A.4 Evaluate Potential for Additional Sources

Additional source material is not evident at the site.

VIII.A.5 Implement Institutional Controls

In order to ensure future protectiveness of the site, the formal implementation of ICs should be completed and an IC monitoring plan should be developed that identifies the type and frequency of monitoring necessary to ensure the continued effectiveness of the implemented ICs.

In addition, as the vapor intrusion pathway is evaluated, ICs related to vapor intrusion issues may be suggested.

VIII.B Recommendations to Reduce Time and/or Cost

There are no specific recommendations to reduce costs. The implementation of the recommendations for long-term monitoring optimization may reduce costs relative to reinstating the past sampling program, though such sampling has been held in abeyance since January of 2004. Refer to section VIII.C.1.

VIII.C Recommendations for Technical Improvement

VIII.C.1 Monitoring Approach

A routine monitoring program should be reinstated to provide information necessary to assess remedy performance. As discussed in detail in Attachment D, section 3, annual sampling would be adequate for most wells. Table 6 provides a list of wells recommended for retention in or elimination from the monitoring program as well as recommended sampling frequency. Rationale for the recommendations is provided in Attachment D.

Table 6: Recommendations for Sampling Network and Sampling Frequency

A-zone Wells	Recommendation for Network	Recommended Sampling Frequency	B-zone Wells	Recommendation for Network	Recommended Sampling Frequency
AMW-1P	Retain	Annual	AMW-3R	Retain	Biennial
AMW-2P	Retain	Annual	AMW-4R	Retain	Annual
AP-1	Eliminate		AR-1	Retain	Biennial
AP-2	Eliminate		PWB-1	Retain	Biennial
AP-4	Retain	Annual	PWB-2	Retain	Annual
EPAS-1	Retain	Annual	PWB-3	Retain	Annual
EPAS-2	Retain	Annual	PWB-4	Retain	Annual
EPAS-3	Retain	Annual	PWB-5	Retain	Quarterly
EPAS-4	Retain	Biennial – Triennial	PWB-6	Retain	Annual
PWA-1	Retain	Annual	PWB-7	Retain	Annual
PWA-2	Retain	Annual	PWB-8	Eliminate	
PWA-3	Eliminate		PWB-9	Eliminate	
PWA-5	Eliminate		PWB-10	Eliminate	
PWA-6	Retain	Annual	PWB-11	Retain	Annual
PWA-7	Retain	Annual	WB2-1	Retain	Annual
WA-1	Eliminate		WB2-2	Retain	Annual
WA-2	Retain	Annual	WB2-3	Retain	Annual
WA-3	Retain	Annual	WB2-4	Retain	Quarterly
WA-4	Retain	Annual			
WA-5	Eliminate				
WA-6	Retain	Annual			
WA-7	Eliminate				
WA-8	Retain	Annual			
WA-9	Retain	Annual			

VIII.D Recommendations to Achieve Site Closeout

VIII.D.1 OU-1

Under OU-1, though initially required by the 1993 ROD, no additional action have been undertaken to address mass in the soils and groundwater of the A-zone. The high concentrations in the A-zone source area wells are possibly indicative of residual non-aqueous-phase liquids that will likely represent a very long-term source of contamination downgradient of the site in the A-zone and, through vertical leakage, the B-zone. Without addressing mass in the A-zone, monitoring will be required essentially indefinitely, and potential future risk will remain. Active source treatment may significantly reduce the inventory of mass in the A-zone such that the limited vertical leakage of contamination to the B-zone will not result in concentrations in the B-zone representative of significant risk from future use of this potential water source. Though the A-zone groundwater is highly unlikely to achieve maximum contaminant levels or

other risk-based goals, it is not a viable water supply. As such, implementation of active source remediation in the A-zone should be reconsidered.

VIII.D.2 Regional Groundwater (OU-2)

As discussed in section VIII.A.3, replacement of the nearby municipal well should be pursued to eliminate this potential exposure route. No other recommendations regarding treatment of the B-zone to achieve site closeout are offered at this time.

VIII.E Other Issues

VIII.E.1 Transfer the Shallow Groundwater Remediation to OU-2

The shallow groundwater remedy is addressed in the OU-1 ROD. The pump and treat scenario met with limited success, and will be reevaluated and implemented within the remedial actions outlined in the OU-2 ROD. In order for the EPA to delete that portion of the remedy from the OU-1 ROD, an ESD must be prepared which will provide justification and approval for this change from one phase of the cleanup to another.

VIII.E.2 Update the Current Document Repository

The site visit revealed the current repository centrally located at the Beale Library in Bakersfield, CA is missing many of the current documents that detail and authenticate the progress and success of the current remediation strategy.

VIII.F Follow-Up Actions

The responsibility for follow-up actions is summarized in Table 5. Milestone dates are to be determined by the EPA.

IX. Protectiveness Statement

The remedy at OU-1 is considered protective in the short-term, and currently protects human health and the environment because the asphalt containment cap limits potentially complete exposure pathways to contaminated soil and groundwater. However, in order for the remedy to be protective in the long-term, the following actions need to be taken:

- performance standards specified in the ROD must be met;
- ICs, as identified in the OU-1 ROD for the selected remedy, need to be implemented; and
- on-going groundwater monitoring should be conducted.

X. Next Review

The next FYR for the B&B Site is required by August 2011, five years from the signature date of this review.