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OFFUTT AFB
NEBRASKA

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 596

17C-7-2-1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

AR 596

JUL 11 1995

Mr. David R. Homan
Deputy Base Civil Engineer
55 CES/CD
106 Peacekeeper Drive
Suite 2N3
Offutt Air Force Base, Nebraska 68113-4019

Dear Mr. Homan:

This letter is to notify you that the U.S. Environmental Protection Agency (EPA) will issue a public notice for a proposed modification of the Resource Conservation and Recovery Act (RCRA) permit issued to Offutt Air Force Base. The purpose of the permit modification is to require implementation of a corrective action remedy for Landfill 5, a former solid waste landfill on the base. Enclosed for your information are copies of the public notice, the proposed permit modification, and the statement of basis for the proposed action.

You may submit written comments during the public notice period, which begins on July 17, 1995, and runs through September 1, 1995. The public notice is to be published in the Omaha World Herald and broadcast over radio stations KFAB (AM) and KGOR (FM) on July 17, 1995.

At the close of the public comment period, the EPA will consider all comments received and will prepare a response to all written comments. The EPA will then make a final decision on the proposed permit modification and the corrective action remedy for Landfill 5. Notice of the final decision and a copy of the response to comments will be sent to each person who submitted comments or requested notice of the final decision.

If you have any questions, please call Wes Bartley at (913) 551-7632.

Sincerely,

Lyndell L. Harrington

Lyndell L. Harrington, P.E.
Chief, RCRA Permits Section
Air, RCRA, and Toxics Division

Enclosures (3)

cc: Bill Imig, NDEQ

INDEX TO ADMINISTRATIVE RECORD

CORRECTIVE ACTION PERMIT MODIFICATION

JULY 17, 1995

OFFUTT AIR FORCE BASE, NEBRASKA

NE8571924648

Installation Restoration Program Phase I Report (Records Search)	August 1985
Corrective Action Permit	June 15, 1987
Site Inspection Report Volume 1 of 5	April 1990
Remedial Investigation Report Landfill 5	June 1992
Feasibility Study Landfill 5	July 1993
Remedial Design Landfill 5 (design analysis, 60%)	February 1995
EPA Comments on 60% Remedial Design	April 25, 1995
Response to EPA Comments on 60% Remedial Design	May 23, 1995
Post-Closure Plan Landfill 5	July 1995

PUBLIC NOTICE OF INTENT TO MODIFY THE
HAZARDOUS WASTE CORRECTIVE ACTION PERMIT
RE: LANDFILL 5
OFFUTT AIR FORCE BASE, NEBRASKA

REGION 7 OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) IS TODAY PROVIDING PUBLIC NOTICE OF ITS INTENT TO MODIFY THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CORRECTIVE ACTION PERMIT ISSUED TO OFFUTT AIR FORCE BASE (OFFUTT). THE PROPOSED MODIFICATION WILL REQUIRE OFFUTT TO IMPLEMENT CORRECTIVE MEASURES AT LANDFILL 5, A FORMER SOLID WASTE LANDFILL LOCATED NEAR OFFUTT'S NORTHERN BASE BOUNDARY. THE PUBLIC COMMENT PERIOD FOR THIS MODIFICATION STARTS ON JULY 17, 1995, AND ENDS ON SEPTEMBER 1, 1995.

A copy of the proposed permit modification, the statement of basis for the proposed corrective action remedy, and the supporting administrative record are available for public review during the comment period at the following locations:

Bellevue Public Library
1003 Lincoln Road
Bellevue, Nebraska 68005
(402) 293-3157
Mon - Thu: 9 a.m. - 9 p.m.
Fri - Sat: 9 a.m. - 5 p.m.
Sun: 1 p.m. - 5 p.m.

Nebraska Department of Environmental Quality
Suite 400, The Atrium, 1200 "N" Street
Lincoln, Nebraska 68509-8922
(402) 471-2186
Mon - Fri: 8 a.m. - 5 p.m.

U.S. Environmental Protection Agency
Docket Area, Regional Information Resources Center
726 Minnesota Avenue
Kansas City, Kansas 66101
(913) 551-7241
Mon - Fri: 10 a.m. - 3 p.m. (or by appointment)

All persons wishing to comment on the proposed permit modification or the proposed corrective action remedy may submit written comments to EPA by September 1, 1995, or may submit oral and written comments at a public hearing to be held at the Bellevue Public Library at 7:30 p.m. on August 16, 1995. Written comments should be directed to the Environmental Protection Agency, 726 Minnesota Avenue, Kansas City, Kansas 66101, ATTN: Wes Bartley. EPA will prepare a formal response to all written comments as part of the final remedy selection for Landfill 5. Requests for additional information may be directed to Mr. Bartley at (913) 551-7632 or (toll free) (800) 223-0425.

PROPOSED MODIFICATION OF CORRECTIVE ACTION PERMIT
OFFUTT AIR FORCE BASE, NEBRASKA
NE8571924648

A Resource Conservation and Recovery Act (RCRA) hazardous waste storage permit was issued to Offutt Air Force Base (Offutt) by the Nebraska Department of Environmental Quality (NDEQ) on June 15, 1987, and was reissued on June 15, 1992. This permit also included a corrective action permit issued by the U.S. Environmental Protection Agency (EPA) under the Hazardous and Solid Waste Amendments (HSWA) to RCRA. The corrective action permit required Offutt to conduct a variety of environmental investigations regarding solid waste management units (SWMUs) at the base and any releases of contaminants from those SWMUs. The purpose of the investigations was to determine whether any SWMUs required corrective action to address threats to human health or the environment. If corrective action was needed, Offutt would be required to identify corrective action alternatives and to propose a remedy. The permit specified that EPA would issue a public notice and provide the opportunity for a public hearing prior to the approval of the proposed remedy, and would modify the permit to incorporate the approved corrective action plan.

Landfill 5 is one of several SWMUs investigated by Offutt under its corrective action permit. Interim corrective measures have already been implemented at some other SWMUs (e.g., Landfill 4 and the Old Jet Engine Test Stand) to correct more pressing environmental problems, but Landfill 5 is the first SWMU to reach the remedy selection point through the conventional process for remedy development.

The statement of basis (available from EPA upon request) describes the nature of the environmental threat posed by Landfill 5, the process by which Offutt selected its proposed remedy, and some details of the proposed remedy. EPA will accept comments on the proposed remedy during the public comment period starting on July 17, 1995, and ending on September 1, 1995. EPA will summarize and address all written comments received during the comment period and will prepare a response to comments. After considering all comments, EPA will approve or modify Offutt's proposed remedy and will require the remedy to be implemented in accordance with the following proposed permit modification. Comments on this proposed permit modification will also be accepted during the above comment period.

EPA proposes to modify Offutt's corrective action permit by adding a new Section I. IMPLEMENTATION OF INTERIM AND FINAL CORRECTIVE MEASURES as follows:

I. IMPLEMENTATION OF INTERIM AND FINAL CORRECTIVE MEASURES

1. Final corrective measures.

a. Landfill 5. The Permittee shall implement the remedy selected or approved in writing by the Regional Administrator's authorized representative (the Director of the Air, RCRA, and Toxics Division ("the Director")) in accordance with the following schedule, subject to documented funding limitations discussed in Condition B.4. of this permit:

i. Submit a design for the selected remedy, an analysis of the time required to construct the selected remedy, and a demonstration of a request for any additional funds needed to implement the selected remedy within 180 days after the Permittee receives notification by the Director of the selected remedy. A schedule for completion of the construction will be approved by the Director after review of the above information. (This condition applies only if changes resulting from public comments require a completely different remedy or a significant increase to the scope of the proposed remedy such that the project must be redesigned or that the project cannot proceed without additional funds.)

ii. Award the construction contract for the approved or designated remedy by September 30, 1995.

iii. Issue the contractor's notice to proceed by December 31, 1995.

iv. Report construction progress in quarterly progress reports covering the calendar quarters. These progress reports must be submitted to the Director within thirty (30) days following the end of each quarter.

v. Complete construction of the remedy by October 31, 1996, and submit a certification of completion of construction by December 31, 1996. This certification shall state that the remedy has been completed in accordance with the approved design and shall include the following: photographs of work-in-progress and the completed project; documentation of the disposition of all equipment and debris historically associated with Landfill 5 but not to be placed beneath the final soil cover; documentation of compliance with the construction quality assurance program; documentation of the deed restrictions imposed on this site; and other documents (if any) associated with the completed remedy. The certification must be signed by the Permittee and by a qualified professional with the Omaha District Office of the U.S. Army Corps of Engineers. The Permittee shall place a copy of the certification and all associated documents in a local repository (such as the Bellevue Public Library) and shall issue a public notice of the availability of these documents. The Permittee shall maintain a copy of the as-built drawings of the completed remedy.

vi. The Permittee shall implement the post-closure plan approved in conjunction with the selected remedy.

vii. The Permittee shall monitor groundwater quality at the Landfill 5 monitoring wells at least annually for pH, specific conductance, total organic carbon, total organic halogen, and volatile organic compounds (EPA Method 8240). The duration, frequency, chemical or physical parameters, and other details of the groundwater monitoring scheme for Landfill 5 may be further modified in conjunction with a planned base-wide groundwater monitoring plan.

b. (Reserved)

2. Interim measures.

a. Landfill 4. The Permittee shall continue the interim measures program previously initiated and shall take additional measures as needed (e.g., install additional groundwater recovery wells) to halt the spread of contaminated groundwater off-base to the south and southeast of Landfill 4. The Permittee shall report progress on these activities via the quarterly progress reports noted above.

b. Old Jet Engine Test Stand (OJETS). The Permittee shall continue to supply bottled water or well-head treatment as long as necessary to any off-base users affected by the vinyl chloride plume released from the vicinity of the OJETS site. By September 30, 1995, the Permittee shall demonstrate that it has taken all possible steps to award a contract to the local water authority (Metropolitan Utility District) to construct a permanent water line to any affected users. The capacity of the water line shall be adequate to supply the projected needs of the affected groundwater users, but nothing in this permit condition shall be construed to require the provision of water line capacity which would encourage further development in this portion of the Missouri River floodplain. The Permittee shall install additional groundwater monitoring wells as needed to define the vertical and horizontal extent of contaminants released from the OJETS area and shall evaluate corrective measure alternatives to remediate this contamination. Progress on these tasks shall be reported in the quarterly reports noted above.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

STATEMENT OF BASIS
Landfill 5
Offutt Air Force Base, Nebraska

INTRODUCTION

This statement of basis for Landfill 5 at Offutt Air Force Base (Offutt) explains the proposed corrective action remedy for this solid waste management unit. (A solid waste management unit is any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste.) The statement of basis also summarizes other alternatives studied in the corrective action process at Landfill 5. The U.S. Environmental Protection Agency (EPA) will select a final remedy for Landfill 5 only after the public comment period has ended and any information submitted during this time has been considered. The EPA may modify the proposed remedy or select another remedy based on information received during the public comment period. Therefore, the public is encouraged to review and comment on any of the material presented here. The public can be involved in the remedy selection process by reviewing the documents contained in the administrative record and attending the public hearing scheduled for August 16, 1995. When approved, the accompanying corrective action permit modification will require implementation of the selected remedy.

The EPA is issuing this statement of basis as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA), the Hazardous and Solid Waste Amendments (HSWA) to RCRA, and the terms of the HSWA corrective action permit issued to Offutt in June 1987.

This document summarizes information that can be found in greater detail in other documents contained in the administrative record for this proposed action. EPA and the Nebraska Department of Environmental Quality (NDEQ) encourage the public to review these documents to gain a better understanding of the facility and the activities that have been conducted there.

PROPOSED REMEDY

Offutt proposes the following remedy, with which EPA preliminarily concurs, to address conditions at Landfill 5:

- Remove existing construction debris and old equipment from the surface of Landfill 5.

- Mix the large pile of creosote-coated wood blocks resting on Landfill 5 with soil and spread the blocks over the low-lying portions of the landfill.

- Incorporate the contents of approximately three hundred (300) 55-gallon drums of nonhazardous investigation-derived waste soil into the landfill beneath the final cover.

- Cover the entire landfill with a minimum of 24 inches of clean soil (including six inches of topsoil to support a vegetative cover) at a minimum slope of two percent.

- Construct a surface water drainage system to control surface runoff.

- Place additional fencing around the landfill to provide additional security and to prevent unauthorized disturbance of the soil cover.

- Implement a post-closure plan to address the long-term inspection, monitoring, and maintenance needs of the closed landfill. Long-term care will include groundwater monitoring to assess the adequacy of the remedy and to alert the regulatory agencies to any need for additional control measures at this landfill.

A more detailed discussion of the proposed remedy is included below.

FACILITY BACKGROUND

Offutt Air Force Base is in eastern Sarpy County, Nebraska, south of Omaha and Bellevue. From 1894 to 1948, this facility was known as Fort Crook Army Post. It was renamed Offutt Air Force Base with the birth of the U.S. Air Force in 1948 and was well known until 1992 as the headquarters of the Strategic Air Command.

Landfill 5 is an area of about 17 acres on the eastern part of the base at the northern base boundary, between the main runway and the Explosive Ordnance Disposal Facility. Active landfill operations took place there from about 1962 to 1975. During this time, an estimated 350,000 cubic yards of domestic refuse and shop wastes (wastes from various Air Force activities such as aircraft maintenance and repair, the base hospital, the global weather center, the print shop, and the base exchange) were disposed of using trench and fill methods and occasional burning. It was reported that waste solvents, waste oil, and sewage sludge may also have been disposed of at Landfill 5, but no records could be found describing the amounts or types of materials. The most prominent feature of Landfill 5 is the 1,800-cubic-yard pile of creosote-coated wood blocks (formerly the flooring of a large aircraft assembly building on the base) placed there around 1970.

Although the landfill ceased to receive conventional waste in 1975, Offutt continued to store or dispose of other materials at this remote location, including pieces of mowing equipment, wooden aircraft support frames, and manure from the base stables. The contents of the original landfill were covered with some soil, but the coverage was not uniform and the cover was not designed and constructed to promote proper drainage from the site. Localized depressions in the landfill cap allowed water to pond and percolate through the landfill's contents, increasing the likelihood of leaching landfill contaminants into the groundwater.

The groundwater at Landfill 5 is seasonably only a few feet below ground level, with the result that a portion of the landfilled material is sometimes below the water table. Although groundwater monitoring to date around Landfill 5 has shown little, if any, contamination, the site has a significant potential for environmental contamination because it is underlain by silt, silty sand, sandy silt, and silty clay soils of moderate permeability. The pile of wood blocks is both an eyesore and a potential source of soil and groundwater contamination from leaching chemicals.

Offutt began its corrective action investigation of Landfill 5 in 1985 as part of a base-wide Installation Restoration Program (IRP) required by the Department of Defense. The HSWA corrective action permit issued in 1987 brought the IRP under the regulatory control of the EPA. However, EPA agreed to retain the basic procedures and terminology of the IRP since they paralleled EPA's corrective action process. Between 1985 and 1992, Offutt conducted a records search, a site inspection, a remedial investigation, and a feasibility study pertaining to Landfill 5. These correspond to the sequence of facility assessment, facility investigation, and corrective measures study under the RCRA (HSWA) program. The results of these studies showed the following:

A soil vapor survey was conducted at this site in 1988 to screen for the possibility of contaminated groundwater moving away from the landfill. The survey indicated the presence of some volatile organic compounds (primarily xylenes and chlorobenzene, with lower levels of benzene and toluene also detected) in the parts per billion range in the soil up to 100 feet east of Landfill 5. Groundwater monitoring revealed single detections of vinyl chloride and chloroform at 3J and 1.7J micrograms per liter (parts per billion), respectively, in two of the wells around Landfill 5. (The J code signifies an estimated value based on sample analyses failing to meet all quality assurance/quality control criteria.) However, subsequent groundwater sampling failed to detect any volatile or semivolatile organics, organochlorine pesticides, polychlorinated biphenyls (PCBs), chlorinated herbicides, cyanide, or total petroleum hydrocarbons in any of the wells around Landfill 5.

The source of the low level soil vapor detections is uncertain, but could be attributable to the deposition of jet fuel components from aircraft using the nearby runway.

Samples of the wood blocks tested using the Toxicity Characteristic Leaching Procedure revealed the presence of a few hazardous constituents at levels well below their regulatory level. Samples of surface and subsurface soils and sediment at or near Landfill 5 were found to contain low levels of some volatile organic compounds, but also contained significantly higher levels of polycyclic aromatic hydrocarbons (PAHs). The level of total PAHs ranged from nondetect in the deeper subsurface samples to 1,315.2J milligrams per kilogram (mg/kg) (or parts per million) in surface soils near the wood blocks. An area of about one acre beneath and surrounding the pile of wood blocks was found to have concentrations of chemicals at the surface corresponding to total excess cancer risk levels in the 1.6E-03 to 1.0E-05 range (roughly between one extra cancer case per 1,000 and one per 100,000 people exposed to the contaminated soil) based on chronic exposure in an occupational scenario. Dermal (skin) contact with PAHs in the soil was the chief contributor to this total risk estimate. The PAH concentrations decreased by at least an order of magnitude at depths of two feet or more below ground surface. Total petroleum hydrocarbons were also detected in the Landfill 5 samples at levels ranging from nondetect to 3,410 mg/kg in the subsurface soils.

The soil investigations also found low levels of some chemicals, including PAHs, in the drainage channel to the north of Landfill 5 and in a smaller drainage swale to the southeast of the landfill. These chemicals could have come from the landfill or from other nearby sources. A non-landfill source may be likely for the contaminants found in the northerly drainage channel, since the highest concentration of chemicals was found upgradient of Landfill 5. As with the chemicals found during the soil vapor survey, the chemicals in the southeast drainage channel would be consistent with jet fuel contamination from flight operations at the nearby main runway.

Groundwater samples taken from the five monitoring wells surrounding Landfill 5, as noted above, revealed little in the way of organic contaminants. Sampling results from two of the wells showed dissolved solids above background levels. Arsenic, selenium, barium, chromium, and lead were also detected in several wells at levels exceeding the maximum contaminant levels allowed for drinking water, but the levels fall within the naturally occurring ranges established for the area in the vicinity of Offutt.

SUMMARY OF FACILITY RISKS

The study of Landfill 5 included an evaluation of the risks to potential human receptors who may be exposed to chemicals found at or released by this landfill. The exposure pathways evaluated included ingestion, dermal contact, and inhalation of

volatile emissions from soil and sediments by hypothetical on-site workers and future construction workers. The groundwater pathway was not evaluated because there is no current or planned future use of groundwater on Offutt Air Force Base and because fate and transport modeling of the contaminants of potential concern (PAHs, 1,2-dichloroethane, and vinyl chloride) indicated that they would not be transported to the base boundary.

A summary of the health risks at Landfill 5 can be found in the attached table, which shows highly conservative excess cancer risk estimates of about 1.0E-05 (one per 100,000) for average exposure and 1.6E-03 (1.6 per 1,000) for reasonable maximum exposure to the chemicals found at the surface of the landfill. These estimates are based primarily on long-term occupational exposure to PAH-contaminated soils (without the protective cover proposed by this statement of basis) at Landfill 5. The assumed worker exposures overstate actual exposure by at least one order of magnitude (because there is no routine work performed at or around Landfill 5), but the risks indicate that some risk reduction measures are required for this landfill. No adverse noncarcinogenic health effects are expected from chronic or subchronic exposure to soils at Landfill 5.

In addition to the major risk factors (dermal contact and ingestion of PAH-contaminated soil), some other contributions to the overall risk at this site are:

LEAD - The highest lead concentrations were in surface soils, ranging from 161 to 400 mg/kg, with a mean value of 210 mg/kg. Concentrations in deeper soil samples (two feet or more below ground level) ranged from 13 to 34 mg/kg, except for one extreme value of 104 mg/kg. These values are all within the allowable level for long-term residential exposure, and are not considered to pose any unreasonable risk either to occupational or to residential receptors.

TOTAL PETROLEUM HYDROCARBONS (TPH) - TPH was detected in surface and subsurface soils (only one sample showed TPH at a depth greater than two feet) at Landfill 5 at levels ranging from nondetect up to 3,410 mg/kg. TPH was also detected at concentrations from 159 to 979 mg/kg in sediments in the drainage channel next to Landfill 5. It is likely that sources other than Landfill 5 are contributing TPH to the sediments, because the highest concentration was found in the upgradient sediment sample. TPH values at Landfill 5 exceed the widely used clean-up level of 100 mg/kg, but toxic constituents of petroleum products have not been detected in groundwater samples and have been shown to pose no health risks at this site through soil exposure pathways.

Evidence of extreme risk to human health and the environment based on current exposures and practices at Landfill 5 was not found. However, the risk analysis indicates the need for the proposed (or some other) remedy to reduce the potential for human and environmental exposure to contaminated soils at Landfill 5.

The proposed remedy is also necessary to reduce the potential for landfill contaminants to leach into the groundwater system.

SCOPE OF CORRECTIVE ACTION

The proposed remedy for Landfill 5 is not complex and does not require phasing. The proposed remedy is based on preventing direct exposure to the contaminated soils, preventing surface migration of contaminants via air or water pathways, and reducing the potential for contaminants to leach from the soil to groundwater. This would be accomplished by the following measures: covering the landfill with a minimum of 24 inches of clean soil, including a six-inch layer of topsoil to support vegetative cover; sloping and contouring the surface to promote proper drainage and to protect it as much as possible from the effects of rainfall and flooding; further restricting access to the landfill; and instituting a formal program of post-closure care for the landfill. A contract for the proposed remedy could be awarded by the end of September 1995, with actual construction taking place shortly thereafter. The final grass seeding would be delayed until 1996 due to weather considerations.

SUMMARY OF ALTERNATIVES

Several remedial technologies and numerous process alternatives were available for consideration at Landfill 5, including various methods of handling the landfill itself (no action, institutional controls, or containment) and the specific options for handling the wood blocks (removal, treatment, or disposal). Detailed alternatives evaluated for the landfill contents were:

- A1 - No Action
- A2 - Institutional Controls (deed restrictions, groundwater monitoring, access control, maintenance of existing fence and warning systems)
- A3 - Grade to One Percent and Revegetate (use only existing surface soils to fill depressions, provide positive drainage, and establish a minimum cover depth of 18 inches, including a six-inch layer of topsoil to be imported to establish new vegetation)
- A4 - Grade to Two Percent and Revegetate (use existing soils and some imported fill material to fill depressions, provide positive drainage, and establish a minimum cover depth of 24 inches, including a six-inch layer of topsoil for revegetation)
- A5 - Soil Cover (regrade and recompact the existing surface to a minimum grade of two percent while providing a minimum cover depth of 36 inches, including a six-inch vegetation layer)

Alternatives evaluated for the wood blocks were:

- B1 - No Action
- B2 - Institutional Controls (same as A2)

- B3 - Grade Pile and Cover (spread the blocks over the landfill, using depressions and low-lying areas, and cover with soil)
- B4 - Solvent Extraction/Composting (transport off-site for treatment in Louisiana)
- B5 - Solidification (encapsulation or chemical fixation of the wood blocks with Portland cement, silicates, or organic polymers, followed by on-site disposal)
- B6 - Composting (shred the blocks to a small particle size, followed by biodegradation in an aerated compost system, followed by ultimate disposal of the compost back into Landfill 5)
- B7 - Off-site Disposal (transport and dispose of the blocks in the Douglas County Landfill, about 40 miles from Offutt)

Combining the five landfill alternatives and the seven wood block alternatives resulted in the following eight overall project alternatives for which costs were estimated (costs shown in 1993 dollars) and EPA's evaluation criteria were considered:

Alt.	Capital Cost ($)	Annual Operation & Maintenance Costs ($)	Present Worth ($)	Months to Complete
1	0	0	0	0
2	0	$157,000	$157,000	12
3	$384,000	$209,000	$592,000	12-24
4	$545,000	$209,000	$755,000	24-36
5	$446,000	$209,000	$655,000	12-24
6	$743,000	$217,000	$960,000	12-24
7	$919,000	$217,000	$1,136,000	24-36
8	$819,000	$217,000	$1,036,000	12-24

Alternative 1: NO ACTION

No action would be taken on either the landfill or the wood blocks. Under the IRP process, this alternative is required to be retained for consideration and comparison with other alternatives.

Alternative 2: DEED RESTRICTIONS/GROUNDWATER MONITORING

No action would be taken on either the landfill or the wood blocks other than deed restrictions, continued access control, and groundwater monitoring.

Alternative 3: GRADE AND REVEGETATE/GRADE AND COVER BLOCKS

Spread the 1,800 cubic yards of wood blocks over the low-lying portions of the landfill, cover with a minimum of 18 inches of soil, including six inches of topsoil for a vegetative layer, and grade the surface to a minimum grade of one percent. About 14,000 cubic yards of topsoil must be imported to achieve the six-inch vegetative layer.

Alternative 4: GRADE AND REVEGETATE/COMPOST THE WOOD BLOCKS

Regrade about two-thirds of the landfill to a minimum one percent grade and cover with 18 inches of soil while composting the wood blocks. When composting is complete, spread the residue over the remaining portion of the landfill and regrade and cover as the initial portion.

Alternative 5: GRADE AND REVEGETATE/REMOVE AND DISPOSE OF BLOCKS

Dispose of the wood blocks at the Douglas County Landfill and regrade the landfill to a minimum one percent grade with 18 inches of cover as in Alternative 3.

Alternative 6: SOIL COVER/GRADE AND COVER BLOCKS

Grade the wood blocks into depressions and low-lying portions of the landfill and construct a 36-inch soil cover at a minimum grade of two percent over the landfill to meet RCRA Subtitle D and NDEQ Title 132 regulations.

Alternative 7: SOIL COVER/COMPOST THE WOOD BLOCKS

The same criteria as Alternative 4, except that the cover will meet RCRA Subtitle D and NDEQ Title 132 standards.

Alternative 8: SOIL COVER/REMOVE AND DISPOSE OF WOOD BLOCKS

The same criteria as Alternative 5, except that the cover will meet RCRA Subtitle D and NDEQ Title 132 standards.

EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES

The proposed remedy for Landfill 5 is similar to overall project Alternative 3 above, except that the design criteria of the landfill were modified at the request of the U.S. Army Corps of Engineers to provide a greater level of protection (two percent grade and 24 inches of cover). This section evaluates the proposed remedy against EPA's remedy selection criteria, noting how it compares to the other options under consideration.

1. Overall Protection. Except for the "no action" and "deed restrictions" alternatives (which provide inadequate protection and will not be approved by either EPA or NDEQ), all of the alternatives would provide adequate protection of human health and the environment by reducing risk through a combination of engineering controls and institutional controls. The proposed remedy, as well as the other alternatives considered, would reduce the risk of direct contact by covering the landfill. The possibility of groundwater contamination would be reduced by the improved drainage and reduced infiltration aspects of any of the engineered covers. The cover and drainage improvements would reduce or eliminate the chemical exposure pathways from the wood blocks and other contaminated soil in the landfill.

2. Attainment of Media Clean-up Standards. The two composting alternatives were the only remedies involving treatment. Although composting was considered to be potentially capable of reducing the toxicity of the wood blocks, this treatment was not needed to provide adequate protection at the site.

3. Controlling the Sources of Releases. All of the alternatives (with the exception of the "no action" and "deed restrictions" alternatives) involved treating, disposing of, or covering the wood blocks and contaminated soil at Landfill 5. In conjunction with the institutional controls available to a secure military facility, all of the remaining alternatives would provide adequate control of the sources of releases.

4. Compliance with Waste Management Standards. Although the wood blocks and surrounding soils were shown to be contaminated solid waste and media, they do not qualify as hazardous waste. Except for the "no action" and "deed restrictions" alternatives, all of the alternatives considered would handle the solid waste in an appropriate manner. The composting options, which involve removal, treatment, and redisposal of the wood blocks, would be viewed as new disposal by NDEQ, requiring additional controls and permitting under the Integrated Solid Waste Management Regulations. The "no action" and "deed restrictions" alternatives were unacceptable to NDEQ.

5. Long-term Reliability and Effectiveness. All of the alternatives (except "no action" and "deed restrictions") would reduce the environmental risks posed by the wood blocks and contaminated soil at Landfill 5 by providing removal, treatment, or physical separation of the contaminants from any potential receptors. For the proposed remedy, the wood blocks and soil would remain contaminated, but the risk of exposure would be reduced by the addition of 24 inches of clean soil cover. This would eliminate any surface migration of contamination, and the added cover, along with the improved drainage provisions of this remedy, would also reduce infiltration to groundwater.

Both "composting" alternatives would further reduce risk by treating the wood blocks prior to incorporation into the landfill. Both "remove and dispose" alternatives would provide even further protection by removing the wood blocks completely before covering the landfill. The composting and disposal alternatives would apply only to the wood blocks. The existing contaminated soil would remain in the landfill under all of the alternatives studied. The alternatives using the Subtitle D/NDEQ Title 132 soil covers would provide greater protection from surface exposure as well as greater reduction in the potential for migration of contaminants to groundwater.

6. Reduction of Toxicity, Mobility, or Volume of Wastes. The two composting alternatives would provide a reduction in toxicity and volume of the wood blocks. The two disposal alternatives would, of course, reduce the volume of blocks to be incorporated into Landfill 5. The two capping alternatives would not reduce

the toxicity or volume of the wood blocks and contaminated soils, but the soil cover and the improvement in surface drainage would reduce the chance of exposure to the contaminants and the possibility of migration of the contaminants to other receptors and to groundwater.

7. Short-term Effectiveness. The two composting alternatives would take the longest time to implement because of the time required for the composting process. The two "grade and cover" alternatives and the two "remove and dispose" alternatives would require about the same amount of time to complete.

8. Implementability. Both of the composting alternatives are subject to implementation difficulties due to the requirement to remove, treat, and then redispose of the wood blocks. Another permit would be required because the new disposal of the composted wood blocks would trigger the full set of NDEQ Title 132 requirements. In addition, the depth of the soil cover would end up being the same for both of these alternatives. The two "remove and dispose" alternatives would also pose some implementation difficulties due to the uncertainty regarding Offutt's future liability for possible releases from the Douglas County Landfill. To dispose of the wood blocks at the Douglas County Landfill may entail not only a higher initial cost, but also some future financial liability for a clean-up at the Douglas County Landfill. The two "grade and cover" alternatives are equally implementable. They eliminate the additional burden of permitting under Title 132 (although the Landfill 5 post-closure plan will be based on Title 132 criteria) and they allow Offutt to retain control over its waste and any associated liability issues.

9. Cost. Except for the "no action" and the "deed restrictions" alternatives, the "grade and cover the wood blocks with a minimum 18-inch soil cover" alternative had the lowest present worth cost of $592,000. The present worth costs of the other alternatives ranged from $655,000 to $1,136,000.

Subsequent to the feasibility study, the U.S. Army Corps of Engineers asked Offutt's engineering consultant to upgrade the design criteria for the landfill cover from 18 inches of soil at a one percent slope to 24 inches of soil at a two percent slope. Offutt proceeded with the design of their proposed remedy on this basis, expecting to award a construction contract by the end of September 1995 and to use environmental restoration funds that might not be available after that date. EPA concurred with this approach because neither Landfill 5 nor the proposed remedy seems to have any apparent impact beyond Offutt's base boundary. Offutt is prepared to implement the proposed remedy as soon as possible and can accommodate moderate changes in the proposed remedy. Any action leading to a complete redesign of the project will result in a significant delay in implementation.

In summary, the proposed remedy would achieve substantial risk reduction through physical separation of the contaminated materials in Landfill 5 from possible human exposure and through the reduced potential for migration of contaminants to groundwater. The proposed remedy can be implemented faster or at less cost than the other alternatives considered and allows Offutt to retain control over its wastes from a liability standpoint. EPA and NDEQ believe that the proposed remedy will protect human health and the environment by reducing the possibility of direct exposure to contamination at Landfill 5. The post-closure plan and the associated groundwater monitoring program will ensure that the protection provided by this project remains effective and that any future releases of contaminants to groundwater can be dealt with before the contamination reaches the base boundary.

PUBLIC PARTICIPATION

EPA encourages comments from any interested parties concerning the proposed remedy and the other alternatives, including alternatives not considered above. To facilitate public participation, EPA is providing a public comment period from July 17 to September 1, 1995, including a public hearing at which EPA will present the proposed remedy and the basis for selecting the proposed remedy, present the draft permit modification that will require implementation of the selected remedy, answer questions about the proposed project and the corrective action process, and accept oral and written comments on the proposed remedy.

Through its Restoration Advisory Board (RAB) program, Offutt has already presented the proposed remedy in a public forum and has provided some opportunity for comment. The RAB process supplements, but does not replace, EPA's public participation process. Offutt has agreed to keep a record of questions asked, comments made, and any answers given during its RAB process and will provide this information to EPA. EPA will consider and address these questions and comments in its response to comments as part of its own public participation process.

The public hearing is scheduled for 7:30 p.m. on August 16, 1995, at the Bellevue Public Library, 1003 Lincoln Road, Bellevue, Nebraska. The administrative record is available for review at the following locations:

Bellevue Public Library
1003 Lincoln Road
Bellevue, Nebraska 68005
(402) 293-3157
Mon - Thu: 9 a.m. - 9 p.m.
Fri - Sat: 9 a.m. - 5 p.m.
Sun: 1 p.m. - 5 p.m.

Nebraska Department of Environmental Quality
Suite 400, The Atrium, 1200 "N" Street
Lincoln, Nebraska 68509-8922
(402) 471-2186
Mon - Fri: 8 a.m. - 5 p.m.

U.S. Environmental Protection Agency
Docket Area, Regional Information Resources Center
726 Minnesota Avenue
Kansas City, Kansas 66101
(913) 551-7241
Mon - Fri: 10 a.m. - 3 p.m. (or by appointment)

All written comments will be summarized and responses will be provided in the response to comments, which will be drafted at the conclusion of the public comment period and incorporated into the administrative record. To send written comments or obtain more information, please contact:

Wes Bartley
U.S. Environmental Protection Agency
726 Minnesota Avenue
Kansas City, Kansas 66101
(913) 551-7632 or Toll Free (800) 223-0425

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SUMMARY OF HEALTH RISKS AT LF5

Receptor/Pathway	Average Exposure			Reasonable Maximum Exposure		
	Cancer Risk	SubCr. H.I.	Chronic H.I.	Cancer Risk	SubCr. H.I.	Chronic H.I.
Occupational						
-- Soil Ingestion	1.83E-06		5.73E-04	1.30E-04		1.44E.02
-- Dermal Contact with Soil	8.50E-06		8.74E-04	1.51E-03		5.45E-02
-- Particulate Inhalation	9.06E-09		1.54E-02	2.04E-07		9.46E-02
-- VOC Inhalation	9.64E-09		1.14E-05	1.30E-07		4.93E-05
	1.03E-05		1.68E-02	1.64E-03		1.64E-01
Construction						
-- Ingestion of Soil	8.12E-08	1.63E-04		2.91E-06	5.74E-03	
-- Dermal Contact with Soil	1.57E-07	1.92E-05		1.27E-05	1.36E-03	
-- Particulate Inhalation	2.66E-09	4.06E-03		1.99E-08	2.31E-02	
-- VOC Inhalation	2.45E-10	1.39E-06		1.09E-09	5.01E-06	
	2.42E-07	4.24E-03		1.57E-05	3.02E-02	

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