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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

July 6, 1994

Colonel Thomas A. Norris, Director
Environmental Management Division
337th ABW/EM
2000 Wyoming Blvd, SE
Kirtland AFB, NM 87117-5659

Dear Colonel Norris:

RE: Kirtland Air Force Base Sewage Lagoons and Golf Course Main Pond Post-closure Plan Approval
EPA I.D. No. NM9570024423

The New Mexico Environment Department (**NMED**) hereby approves the post-closure care plan for Kirtland Air Force Base's Sewage Lagoons and Golf Course Main Pond. The approved post-closure plan includes the document entitled "Post-closure Plan, Sewage Lagoons and Golf Course Main Pond", dated April 1, 1994, and the enclosed modified schedule for post-closure activities. The effective date of the post-closure plan approval is your date of receipt of this letter.

The Hazardous and Radioactive Materials Bureau (**HRMB**) released the proposed post-closure plan and associated documents for a thirty (30) day public comment period which ran from May 12, 1994 through June 13, 1994. HRMB received two written comments during the public comment period, one from the US Department of Interior Fish and Wildlife Service and one from a private citizen. These comments and HRMB's responses are enclosed.

An administrative change was made in the schedule for post-closure activities to reflect the approval date of the plan. The modified pages are included at the end of the comments. No other changes were made to the proposed post-closure plan in finalizing our approval of the KAFB post-closure plan.

If you have any questions, please contact Steve Zappe of my staff at (505) 827-4308.

Sincerely,

David Cobb

for Kathleen M. Sisneros
Director, Water and Waste Management Division

Enclosures

cc: David Neleigh, EPA Region 6
Benito Garcia, HRMB
Barbara Hoditschek, HRMB
Steve Zappe, HRMB
File-Red

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RESPONSE TO COMMENTS

POST-CLOSURE CARE PLAN
for
SEWAGE LAGOONS AND GOLF COURSE MAIN POND
KIRTLAND AIR FORCE BASE, ALBUQUERQUE, NEW MEXICO
EPA ID # NM9570024423

July 1994

A legal notice publicizing this post-closure care plan was published in the **Albuquerque Journal** on May 12, 1994. The post-closure care plan and an accompanying fact sheet were made available for public inspection both at the New Mexico Environment Department in Santa Fe and at the Albuquerque Main Public Library in Albuquerque. The fact sheet was also mailed to 314 individuals and organizations. In addition, an informational public meeting was held in Albuquerque on May 19, 1994.

The New Mexico Environment Department (**NMED**) has received comments from two (2) interested parties. These comments and NMED's responses are presented below. For each commenter, comments appear as portions of the letter submitted. Each comment is followed by NMED's response.

NMED approved the post-closure plan on July 6, 1994, with one administrative modification. Dates on Table 11, Schedule for Post-Closure Activities (page 46), and dates referenced on page 44 were adjusted to reflect the date of approval of this plan by NMED. Draft and final copies of the affected pages are included at the end of the comments.

Comments submitted by the US Department of Interior, Fish and Wildlife Service

"We have reviewed the fact sheet regarding a post-closure plan for sewage lagoons and golf course main pond that the New Mexico Environment Department has proposed to issue to Kirtland Air Force Base (**KAFB**) in Albuquerque, New Mexico. We understand that a decision on what final remediation/closure action(s) will be required for these sites will depend upon the results of chromium assays in samples of groundwater and desiccated sludge.

"We urge you to consider the ecological as well as human-health implications related to closure of these sites. From the standpoint of protecting wildlife from potentially toxic metals and

other contaminants that may be associated with the desiccated sludge, the Fish and Wildlife Service recommends either removing the sludge and transporting it to an approved hazardous waste disposal facility, or covering the sludge with clean fill material, grading the berms surrounding the lagoons to blend with the surrounding topographical contours, capping the fill with topsoil and reseeding it with a mixture of native vegetation of high wildlife habitat value.

"The golf course main pond in particular, might be appropriate for development as a wildlife habitat display, or nature study area in conjunction with the closure activities recommended above. The Fish and Wildlife Service would be happy to provide technical assistance to the staff of KAFB in order to help them design an educational wildlife habitat project suitable for incorporation into closure activities connected with the sewage lagoons and golf course main pond.

"Please telephone Mark Wilson at (505) 883-7877 if you have any questions regarding the comments contained in this letter. Thank you for the opportunity to review and comment on this draft permit."

NMED Response:

The issues raised by these comments relate to Phase II of the post-closure plan. Until sampling and analysis results from Phase I are complete, Phase II activities remain tentative. The Hazardous and Radioactive Materials Bureau (**HRMB**) will ensure Fish and Wildlife Service's comments are considered when KAFB develops work plans for Phase II.

To correct the final sentence in this comment, NMED is not issuing a permit for post-closure care. Permitted facilities unable to meet clean closure requirements require post-closure care permits. The KAFB sewage lagoons and golf course main pond closed under interim status, HWMR-7 Part VI, 40 CFR §265.113. Regulations concerning post-closure care of interim status units (HWMR-7 Part VI, 40 CFR §265.118) require the owner/operator to have a written post-closure plan approved by the Secretary or designee.

Comments submitted by Mike Silva

Comment #1

"I would like to make a few comments related to the referenced post closure plan. Although I have not reviewed the post closure plan, I am intimately familiar with the series of sucessive *(sic)* closure plans prepared earlier since I wrote these closure plans on behalf on *(sic)* AFB as a contractor to KAFB through Geoscience Consultants Limited (GCL). I have recently relocated to Utah but I am very much intereseted *(sic)* in the activity associated with these units. I am not requesting a public hearing but I would like to stay abreast of final closure actions and be placed on the mailing list. The following comments are mainly concerned with the Chromium Issue:

"If my memory serves me correctly, Chromium was one of the contaminants of concern in the original compliance action, how do the values and type of Chromium compare to the levels in the pond and lagoon liquids and sludge? Has the valence been documented? Is it Chromium 3 or Chromium 6?"

NMED Response to Comment #1:

The Sewage Lagoons (**SLs**) and Golf Course Main Pond (**GCMP**) at KAFB are no longer in use, and the liquids have been removed. Sampling and analysis have been conducted previously on sludges, sediments, and groundwater at the SLs and GCMP. Total chromium (**Cr**) in dry sludges from the SLs occurs in concentrations up to 2,225 mg/kg; all of the sludge data, however, are suspect because the matrix spike and/or matrix spike duplicate (**MS/MSD**) data, as part of KAFB's laboratory Quality Control (**QC**) program, were out of limits. Soils located directly beneath the SLs had total Cr concentrations up to 27.4 mg/kg. Soils, from four (4) borings augered to a depth of one hundred (100) feet at the SLs, tend to have total Cr concentrations which decrease with depth. Total Cr concentrations in some groundwater samples from four (4) monitoring wells at the SLs have previously exceeded the New Mexico Water Quality Control Commission (**NMWQCC**) Maximum Contaminant Level (**MCL**) for Cr (0.050 mg/L); Cr VI has been detected in the groundwater at the SLs.

Total Cr in dry pond sediments at the GCMP occurs in concentrations up to 103 mg/kg; all of the soil data, however, are suspect because the MS/MSD data were out of limits. Total Cr concentrations in some groundwater samples from four (4) monitoring wells at the GCMP have also previously exceeded the NMWQCC MCL for Cr; Cr VI has been detected in the groundwater at the GCMP.

The valence state(s) of the Cr has not been adequately documented. Cr VI has been detected previously in the groundwater at both the SLs and GCMP. As part of the currently proposed post-closure plan for the SLs and GCMP, KAFB will analyze sludge samples for total Cr, Cr VI, and Toxicity Characteristic Leaching Procedure (**TCLP**) Cr. Groundwater samples will be analyzed for Total Cr, Cr VI, and turbidity.

Comment #2

"Apparently NMED believes that the source of the Chromium is from the lagoons and pond. Has anyone considered that it may be naturally occurring? or is from some other source? I submit that the Chromium values being seen are naturally occurring in this area with the origin being the historical upgradient water sources located in the Rio Grande basin and sediment containing Chromium being transported and dissolved in the Tijeras Arroyo drainages. I suggest that NMED use their resources and existing database of information to investigate the Chromium as part of a larger regional issue. Has anyone focused on data trends (increase or decrease over time) of Chromium as related to these sites? If the trend is increasing and the lagoons have been shut down since 1987 perhaps the chromium is being supplied by some other source. It seems foolish to focus on such a small issue of a single contaminant at a closure site when low levels may naturally exist in the area."

NMED Response to Comment #2:

HRMB understands that Cr may be related to one or more sources, including naturally occurring minerals, corrosion of stainless steel well or pump components, and/or as contamination from the SLs and GCMP. KAFB has not provided a background study of Cr in groundwater to HRMB to address the question of whether the Cr might be naturally occurring. KAFB is currently using Cr-bearing stainless steel well components in their groundwater monitoring wells at the SLs and GCMP; monitoring wells constructed of materials containing no Cr would be recommended by HRMB and required to determine if Cr might be derived from monitoring well components. Unless KAFB can adequately verify the source(s) of Cr in the groundwater at the SLs and GCMP, HRMB must assume that the Cr is contamination from these RCRA-regulated units because that rationale is more protective of human health and the environment.

The groundwater data from both the SLs and GCMP do not show any apparent trend over time. The currently proposed post-closure plan requires a Phase I investigation, which includes quarterly

groundwater sampling for one (1) year from all monitoring wells at the SLs and GCMP. All samples will be analyzed to see if any exceed the NMWQCC MCL for Cr and to discern any temporal trends in Cr concentrations.

Comment #3

"Wasn't the original closure initiated for organic contamination? It seems that in this case the focus has now shifted to Chromium contaminates *(sic)* that were able to migrate 480 feet through a vadose zone and then significantly contaminate ground water in the same spot that organic contamination was not able to do the same! Has anyone evaluated the drill logs from the perimeter wells at both sites to determine if the vadose zone conditions are sufficient to allow Chromium transport to the water table without first being attenuated by 480 feet of unsaturated zone? Entertaining the notion for this to occur to me seems pretty far fetched at best. Has anyone conceived of the magnitude, feasability *(sic)* and cost of cleaning up chromium on a regional water scale?"

NMED Response to Comment #3:

Available records indicate that an organic contaminant, 1,1,1-trichloroethane (TCA), had been discharged into the SLs during their active life. The GCMP obtained part of its water as wastewater from the SLs and therefore may have received some of the same organic contaminant. Thus, an organic contaminant was the initial contaminant of concern. However, subsequent analysis referencing both health-based action levels (soils) calculated within Subpart S (Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities; Proposed Rule, July 27, 1990) and NMWQCC MCLs found that only Cr occurred at concentrations considered significant. HRMB therefore concluded that Cr was the sole contaminant of concern requiring further evaluation in the post-closure plan.

HRMB is not aware currently whether KAFB has evaluated the vadose zone drilling data to determine if Cr might have migrated to the groundwater from one of the surface impoundments. HRMB, however, which is tasked to protect human health and the environment, must rely upon actual groundwater data, when available, in lieu of hypothetical modeling of contaminant fate and transport in the vadose zone.

As addressed previously in the response to Comment #2, KAFB has not provided HRMB with a study of background concentrations of Cr in

the uppermost aquifer at the facility. Upon completion of the Phase I groundwater monitoring program for the proposed post-closure plan, HRMB, in coordination with KAFB, will evaluate all the newly-acquired data to determine if any corrective action is required at either of the two RCRA-regulated units.

Comment #4:

"Using sanitary effluent for golf course and grass watering has been an effective waste water management tool nationwide for quite a few years. Waste water management of this type is also an effective way of both conserving ground water resources and extending local sewage treatment plant design life. The nutrients in this water also allow less fertilizer to be used. This system was one that worked effectively as indicated by the lack of contaminants found at the golf course. The way NMED has pursued the closure of this viable system is entirely contrary to the bigger perspective of regional water conservation in the Albuquerque basin. My understanding is that the groundwater levels are decreasing at about a foot per year. Certainly watering golf courses with fresh groundwater pumped from wells is not helping control this decline."

NMED Response to Comment #4:

NMED does not dispute the effectiveness of using effluent to conserve groundwater resources. However, the KAFB lagoons received sewage from flight-line units, aircraft maintenance shops, and Sandia National Laboratories, all potential sources for significant input of hazardous wastes. The detection of elevated levels of hazardous constituents in the soils and groundwater associated with the SLs and GCMP triggered HRMB's response to protect human health and the environment from further contamination. In this instance, water quality is a higher priority than water quantity.

Comment #5:

"The entire basis of how these units first became a compliance issue is a farce resulting from inappropriate calculations and broad generalizations based on a one time, one spot grab sampling event. The type of sampling protocol originally used to support this whole compliance action would not stand up to the industry standard SW 846 quality assurance scrutiny and representative sampling protocol that had to subsequently be used throughout the remaining history of these sites. It is too bad that the then NMEID did not stand down on their position in front of EPA and defend KAFB on this compliance action when they first learned of

this significant calculation error and admit a mistake had been made."

NMED Response to Comment #5:

NMED supports sampling and analytical techniques which yield defensible data. Additionally, HRMB encourages facilities to use the QC guidance presented within the U.S. Environmental Protection Agency's publication SW-846 (Test Methods for Evaluating Solid Waste). Nevertheless, if inadequate sampling protocol was used to "support this whole compliance action", KAFB would have needed to revise their sampling protocol to attain adequacy. Subsequent groundwater monitoring by KAFB, as required by the New Mexico Hazardous Waste Management Regulations (**HWMR**) and using an approved sampling protocol, provided reliable data which indicated the potential problem with Cr in the groundwater at the SLs and GCMP.

Comment #6:

"Since the final closure of these units is so close to completion, NMED should evaluate their position and not be afraid to move to the decision to allow clean closure with the limited post closure monitoring and be done with it as soon as possible.

"From a taxpayers perspective, I feel that sufficient resources have been wasted on this compliance issue and to use a phrase: this dead horse has been beaten long enough. NMED needs to check this one off and focus on solutions to other, bigger problems facing the citizens of New Mexico."

NMED Response to Comment #6:

NMED cannot allow clean closure until post-closure monitoring indicates the units meet clean closure standards. HWMR-7 Part VI, 40 CFR §265.117 (a)(2)(i), allows the Secretary to shorten the post-closure care period to less than 30 years if that action protects human health and the environment. If KAFB can prove clean closure standards have been met, NMED will grant clean closure and require no further post-closure activities for these units.