STATE OF COLORADO

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Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

February 6, 2008

Mr. David W. D'Amore
Headquarters Air Force Reserve Command
Real Property Office
255 Richard Ray Blvd.
Robins AFB, GA 31098

Re: Final Environmental Condition of Property Report
Buckley Annex
Former Lowry AFB, Denver, CO

Dear Mr. D'Amore

The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (the Division) has received and reviewed the above-mentioned document. As indicated in a number of conversations, written communications and as required by the 2005 RCRA Facility Assessment and RCRA Compliance Order Number 03-05-09-01 the Division has outstanding concerns with the Air Force's Final Environmental Condition of the Property report. Based on these concerns, and as discussed with you during the summer and fall of 2007, the Division expected to receive a revised Final Environmental Condition of the Property Report, including supplemental environmental baseline study work. The Division has not yet received that information. Accordingly, we are providing the following comments at this time in order to ensure that the Division's position regarding the environmental issues at Buckley Annex is clear.

1. The Division does not agree with the environmental condition determinations made in this report. The additional information requested below is necessary for accurate determinations to be made.

2. As indicated by the Department's letter dated October 3, 2000, the hydrocarbon groundwater plume has migrated beneath Building 444 and the Division did "not relieve the property owner of potential liability or need for further action should problems arise from contamination remaining on the property". Due to the proposed redevelopment of this property and demolition of Building 444, the soil and groundwater contamination beneath the building needs to be delineated and remediated.

3. In a letter dated April 20, 2000 (attached), the Department submitted comments to the March 2000 USAF document titled, "Draft Preliminary Assessment and Site Investigation Report for Cantonment Area 1 and Building 404 Oil/Water Separators". An Air Force response to the comments was included in the July 2000 Final document, however, the responses were inadequate and the comments need to be fully addressed at this time. Some of the site conditions have changed since these comments were drafted, for example, the removal of the Oil/Water Separator (OWS) at Building 409. Any and all additional sampling data collected since the submittal of the 2000 report should be included in your response.

4. This report states that an above ground storage tank (AST) is still located at Facility 446. Is this tank still in use? When will it be removed?

5. This report states, "several structures situated along the northern edge of the former runway apron have been removed". Due to the numerous historical discoveries of buried asbestos containing material within the boundaries of the former Lowry AFB, an investigation must be completed to determine whether construction debris has been buried on-site.

6. Prior to demolition of the existing buildings, a determination should be made as to whether the structures contain lead-based paint and if so, proper procedures must be taken during demolition to avoid the release of this material to the soil.

7. Was the sump at Building 445 ever sampled to determine if it was impacted by the diesel spill at Building 444? Water pumped from this sump was taken to the storm water detention area in the southwest corner of the property. Sampling may be required to determine if this area has been impacted.

8. Please submit a copy of the 2006 Earth Tech visual site inspection report.

9. It will not be possible to close out all of the potential environment issues at this site while the site is still in operation. An additional evaluation and site investigation will need to be completed once the site operations have ceased.

Please submit the information requested above, or a work plan to collect any information not already available, within forty-five (45) calendar days of receipt of this letter as required by Compliance Order Number 03-05-09-01.

If you have any questions, please call me at (303) 692-3332.

Sincerely,

Sheila Gaston
Remediation and Restoration Unit
Remediation Program
Hazardous Materials and Waste Management Division

cc: Robert Lopez, HQ AFCEE/BCW
Elizabeth Willingford, HQ Air Force Reserve Command
Thomas Markham, LRA
Monty Force, LRA
Pat Smith, EPA-Region 8
Alioune Sogue, Denver Department of Environmental Health
File – Lowry AFB, Buckley Annex 1.1

Lowry Air Force Base - Buckley Annex/LWYBA

2/6/2008

DNV

DSMOA - Administration - Correspondence - Final Environmental Condition of Property Report, Buckley Annex, Former Lowry AFB, Denver, Colorado

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Lowry AF D File

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Jane E. Norton, Executive Director

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Colorado Department
of Public Health
and Environment

April 20, 2000

Mr. Russell Perry
21st CES/CEV
580 Goodfellow Street
Peterson Air Force Base
Colorado Springs, CO 80914-2420

Re: Draft Preliminary Assessment and Site Investigation Report for Cantonment Area 1 and Building 404 Oil/Water Separators, Former Lowry Air Force Base, Colorado, March, 2000

Dear Mr. Perry:

The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (the Division), has reviewed the Draft Preliminary Assessment and Site Investigation Report for Cantonment Area 1 and Building 404 Oil/Water Separators, Former Lowry Air Force Base, Colorado, March, 2000. The report describes work that has been completed to assess contamination or potential contamination on Cantonment Area 1 and the Building 404 Oil/Water Separators at the Former Lowry Air Force Base in Denver.

The Division has several concerns related to the work that was completed and has prepared several comments and questions that must be addressed prior to granting formal concurrence with the document. These comments and questions are attached as Comments to the Preliminary Assessment and Site Investigation Report. If you have any questions regarding this correspondence or would like to arrange a meeting to discuss these comments and questions, please contact me at 692-3414.

Sincerely,

Doug Knappe

Doug Knappe
Hazardous Materials and
Waste Management Division

ATTACHMENTS: Comments to the Preliminary Assessment and Site Investigation Report
Fax Transmittal with Division comments to work plan 8/7/98
Correspondence Letter from CDPHE to Mr. Albert F. Lowas 3/28/2000

cc: Jeff Edson/CDPHE/DSMOA
Sheila Gaston, CDPHE
Julie Cotter, CDPHE
Monica Sheets, AGO

Comments to the Preliminary Assessment and Site Investigation Report

The Division has prepared the following comments and questions to the site investigation report. In addition please see attachment 2, a list of comments and questions that the Division prepared to the original work plan. These comments were faxed to you on August 7, 1998. It appears that these comments and questions may not have been addressed or incorporated into the final work plan. Please provide a written response to both sets of comments for the Division's consideration.

1. Section 1.1 describes the project objectives. The second objective listed in bullets on page 1-1 states to "Document no further action requirements for groundwater contamination originating from off-base sources." Section 5.1 presents the conclusions and recommendations for the PCE-contaminated groundwater on the western side of Parcel CA-1. Versar recommends no further investigation of the plume by the Air Force (AF) because the source of the contamination appears to be up gradient of the site. As discussed in a correspondence letter dated March 28, 2000 (Please see Attachment 3) to Mr. Albert F. Lowas of the Air Force Base Conversion Agency, the Division believes that the AF still has a responsibility to characterize and remediate the plumes on-site regardless of the fact the source of the plumes may lie outside the boundary of the former base. Please revise the text accordingly.

FF-2

2. Section 2.0, the Site Background states that Parcel CA-1 and Building 404 have been retained by the AFSPC. The last paragraph to Section 2.1.1 on page 2-4 states "The ROD (and Supplemental ROD [USAF, 1995]) indicates Parcels CA-1, F, FF, and S will be retained by the Air Force. Parcels CA-1, F, FF, and S, therefore, do not fall under environmental cleanup activities occurring for the BRAC portion of the base," and that "Building 404 is located in Parcel FF." During a meeting with representatives from AFSPC and Versar on April 7, 2000 the AFSPC stated that building 404 (i.e. Parcel FF) will be transferred to the LRA for future development. Please clarify the future use of Building 404 and or Parcel FF, and indicate who will own the property in the future.

3. Section 2.3.1 on page 2-11 describes historic and current environmental issues surrounding building 444. The section should indicate the current level of hydrocarbons present in the well(s), provide current analytical results, and clarify that all four tanks contained diesel fuel used for heating oil. This information must provide justification for the statements made in the third paragraph on page 2-12 which state that "Analytical results indicate weathered diesel fuel is present at low concentrations in wells in the immediate vicinity of former Tank 424; however, contamination has not migrated down gradient of the site. Please also see Comment 2, in CDPHE Comments, June 1998.

4. Section 2.3.2 describes the soil contamination at the Former Quebec Street Gate. Please provide CDPHE with a copy of the analytical results for the surface and subsurface soil sampling described in this section. In addition please include a map showing the sample locations.

5. Section 2.3.3 describes Building 446 as a hazardous waste storage facility and indicates that shallow surface drainage ditches to the west, south, and east of this building "were discolored, most likely from surface runoff from the parking lot to the north. No known releases have occurred at this site." Please indicate how it was determined that the drainage ditches were discolored from surface water run-off. Visual indications such as discolored soil usually indicate that soil sampling should be performed. Qualitative observations cannot be used to demonstrate that an area is free of contamination. Please submit a amendment to the work plan which details how this area will be systematically sampled. (See also CDPHE Comment 4 and 8, June, 1998)

6. Figure 2.4 shows the locations of former groundwater sampling wells and former structures. Please submit copies of the available analytical records for the groundwater sampling wells or specifically reference where the information can be found (i.e. which document, what page). This information should include the analytical records for the groundwater sampling wells described in Section 2.3.4, Paragraph 2 of the report. (See also CDPHE Comment 5, June, 1998).

7. Section 2.3.7 describes environmental concerns at Building 404. Please provide a copy of the MSDS sheet for the dry cleaning solvent, PD-680 referenced in this section. This product was more than likely used for maintenance activities in Building 404.

8. Paragraphs 2 and 3 to Section 2.3.7 refer to environmental work or assessments made for the former AST and storage yard at building 404. The Division understands that these areas were not in the scope of the PA/SI work performed for this project and were described for informational purposes only in the report. Based on the available information for these areas, the Division does not believe that the areas have been adequately characterized. A separate plan should be submitted to adequately characterize these area. The second paragraph indicates that four soil gas samples were collected near the former AST. The plan should include a detailed map showing the sample locations. Soil gas analysis is a qualitative screening test to identify areas of contamination. Confirmatory soil samples should be collected to demonstrate that the AST did not release hazardous constituents to the environment in light of the fact that Toluene was detected in the soil gas samples. Sampling of the storage yard located on the southern side of Building 404 should also be performed to demonstrate that no contamination is present in the yard. You may respond to this comment now or at a later date.

9. Sections 2.3.7 and 2.3.8 describe environmental concerns at Buildings 404 and 409 respectively. Please submit copies of the analytical results for the sludge contained in the OWSs for buildings 404 and 409. In addition please submit dated copies of the soil samples collected at the eastern end of building 404. Was the horizontal and vertical extent of the contamination along the eastern end of the building determined? The text indicates that building 404 is used for storage. Please describe the current use of building 404 and indicate how the OW Separators are utilized in this current use. If the findings of this work indicate no release to the environment at Parcel FF, and the Parcel is then subsequently transferred to LRA, what will be future disposition of the OW Separators?

10. Section 3.1 describes the installation of the temporary groundwater well at the Quebec Street Gate. Please describe in detail how the well was completed, and indicate the relative location of the 10-foot long polyvinyl chloride (PVC) factory-slotted screen in comparison to the water table (i.e. Provide a well development log).

    Section 5.2 of the report indicates that the "full aerial extent of diesel-contaminated soil has not been defined." Since the vertical and horizontal extent of this contamination has not been identified how can it be concluded that the well is located down gradient from the contamination? As indicated in Section 5.2, this site will require more extensive soil sampling to determine the vertical and horizontal extent of contamination. Once the extent of contamination has been determined, than the groundwater should be sampled if necessary at a location down gradient from all the contamination. The Division does not necessarily agree with the statement made in Section 5.2 which states that groundwater sampling confirmed contamination does not extend to the water table in the area, because the groundwater well may not have been installed downgradient from the worst contamination in this area. Please amend the draft report to indicate that the groundwater appears to be unimpacted based on the results of the groundwater sample. However the groundwater will be re-assessed, and if necessary re-sampled once the full vertical and horizontal extent of the contamination has been determined.

11. Section 3.2 describes the sampling activities on the runway apron and buildings north along 1st Avenue. How was it determined that 5 feet bgs was the appropriate depth to sample soil gas? Were soil samples collected from the same borehole locations as the soil-gas samples? If so how was the loss of volatiles from the soil samples minimized? What type of degreasers may have been used ? Was Stoddard Solvent or other products which may have contained semivolatile chemicals used for degreasing purposes?

12. Sections 3.4 and 3.5 describe the work completed at the Buildings 404 and 409 Oil/Water (OW) Separators. Please provide blue prints or other engineered drawings which clearly define the design and capacity of the OW separators, and which delineates how the OW separators are plumbed to the floor drains and hard sewer system. Was the integrity of the plumbing from the floor drains to the separators assessed? Please describe specifically how a sample was collected at each OW separator and determined to be down gradient and adjacent to the tank. The Division does not believe that one sample is adequate to determine if a separator has leaked or not. Typical tank removals under the OIS program would require at least three samples while tanks closed under the Colorado Hazardous Waste Regulations may require substantially more.

13. The Head Quarters TCE Groundwater Plume begins somewhere along the north side of Building 404. Although previous studies have suggested that the concrete sewer line adjacent to Building 404 may have been the source for the TCE contamination, the source area for the plume has not been confirmed. Comment 11 in CDPHE Comments June, 1998 stated that the Division believes the groundwater should be sampled for VOCs regardless of the soil sample analysis from the OW separators. Samples of the groundwater should be collected and analyzed for VOC's to determine whether historical operations at Building 404 have impacted the quality of the groundwater. Please see CDPHE Comment 11, June 1998.

14. Section 3.5 describes the work completed at the Building 409 OW Separators. The groundwater should be sampled downgradient of Building 409 and analyzed for VOC's and SVOCs. The results of the samples will be used to determine if historical operations at Building 409 have impacted the quality of the groundwater. Please see CDPHE Comment 12, June 1998.

15. Section 4.0 describes the field quality control and should explain the hits of Styrene in the soil gas samples.

CDPHE Comments on "Draft Final Site Investigation Work Plan for Cantonment Area 1 and Building 404 Oil/Water Separators, Former Lowry Air Force Base, Colorado" dated June 1998

1) Section 2.1.3, Page 2-4 - Where there any aircraft deicing activities conducted on the runway apron?

2) Section 2.3.1, Page 2-1 to Page 2-13 - This section concerns the petroleum contamination at Building 444.
A) Clarify if the Facility Assessment (FA) takes place of the Preliminary Assessment (PA).

B) Clarify that the fuel oil was used for heating purposes on site.

C) We do not have a copy of the HazWaste "Quarterly Monitoring Report, January - March 1997, Defense Finance and Accounting Service - Denver Center, Lowry Air Force Base Campus, Denver, Colorado" dated March 31, 1997. Please forward a copy of this report and any other monitoring reports prepared since March 31, 1997.

D) What data is presented in the monitoring reports to indicate that "significant biodegradation of petroleum hydrocarbons is occurring?" Have any soil samples from the bioventing area been collected for analysis to support this statement?

E) Quantify the statement "no significant free product has been observed." What amount of free product is not significant?

3) Section 2.3.2, Page 2-13 - Provide a map of sample locations and analytical results for the Quebec Street gate area. Include the location of the groundwater sample proposed in Section 3.2.2, page 3-2.

4) Section 2.3.3, Page 2-13 - Quantify the number of drums being stored within Building 446. Provide support for the statement "drainage ditches were notably discolored most likely from surface runoff from the parking lot."

5) Section 2.3.4, Page 2-14 - Provide a map of sample locations and analytical results for the groundwater samples collected near the runway apron.

6) Section 3.1, Page 3-1 - The "new" Storage Tank Facility Guidance Document dated July 1, 1995 prepared by the Colorado Department of Labor and Employment, Oil Inspection Section, should be referenced here and in Section 5.0, References.
The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (Division), has a draft document entitled "Proposed Soil Remediation Objectives policy Document." This should be considered for comparison of contaminant concentrations in soil.

7) Section 3.2.2, Page 3-2 - Metals should be included in the groundwater analytical suite since

Section 2.3.2, page 2-13, indicates "four metals were detected in surface soil samples."

8) Section 3.2.3, Page 3-2 - According to Section 2.3.3, page 2-13, hazardous waste is stored in Building 446 and discolored soils were noted in drainage ditches. We do not agree with the conclusion to not conduct any sampling and analysis around this site.

9) Section 3.2.4, Page 3-4 - Unless it can be clearly demonstrated that deicing fluids were not used at Lowry Air Force Base, the analytical suite should be expanded to include deicing fluids such as, but not limited to, ethylene glycol and urea (nitrate).

10) Section 3.2.6, Page 3-4 - Were any surveys made for the presence of unexploded ordnance prior to construction of Building 444?

11) Section 3.2.7, Page 3-5 - A TCE plume has been detected downgradient of Building 404. Groundwater samples should be collected for VOC analysis 5-feet downgradient of each oil/water separator as part of the investigation without waiting on soil results, particularly since soil data for VOCs are often inconclusive.
Additionally, groundwater samples should be collected upgradient of Building 404 and analyzed for VOCs to determine if there are other, possible sources.

12) Section 3.2.8, Page 3-5 - Since environmental concerns have been identified at Building 409 (Section 2.3.8), we do not agree with lack of approval for sampling at this site. This is particularly important since no groundwater samples have been collected and this building appears to be upgradient from a residential area.

13) Section 3.3.1, Page 3-6, #2 - Provide additional discussion on warming the headspace samples to 90°F, if weather conditions do not allow.

14) Section 3.3.2, Page 3-8, #9 - The Division has a "Groundwater VOC Sample Preservation Policy" dated June 22, 1998. If effervescence, vial heating, and/or air bubble formation is observed during groundwater-sample preservation by hydrochloric acid, then a non-acidified sample split should be collected for analysis.