Los Alamos
NATIONAL LABORATORY

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Date: May 29, 1997
In Reply Refer To: ESH-18/WQ&H:97-0159
Mail Stop: K497
Telephone: (505) 665-1859

Mr. Sam Coleman, P.E. Director
Compliance Assurance and Enforcement Division (6-EN)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

NPDES

SUBJECT: NOTICE OF CHANGED CONDITIONS AT NPDES OUTFALL 05A055

Dear Mr. Coleman:

In accordance with Section III.D.1.a of the National Pollutant Discharge Elimination System (NPDES) Permit issued to the Los Alamos National Laboratory (Laboratory) on August 1, 1994, I am providing this notification of change in the waste streams contributing effluent discharged at outfalls authorized under NPDES Permit No. NM0028355.

The Laboratory's Environmental Restoration (ER) Project will be drilling monitoring wells and collecting soil and tuff samples behind Technical Area 16, Building 260, and in Canyon de Valle starting in late May or early June 1997. These monitoring wells are located within Potential Release Site (PRS) 16-021(c) covered under Module 8 of the Laboratory's Hazardous Waste Facility Permit. Drilling fluid will be produced as a result of these drilling operations. An estimated volume of drilling fluids produced is 3000 gallons per week. The maximum volume generated is 7500 gallons per week. The drilling fluids will be containerized, solids allowed to settle or pre-filtered (in lieu of sand filters), and then transported to the TA-16 High Explosives Wastewater Treatment Plant (HEWTP) for additional treatment and discharged through NPDES Outfall 05A055. The HEWTP can treat approximately 1000 gallons per day.

Based on soil sampling data, the most likely potential contaminants of concern include high explosives and high explosives degradation products such as nitrates, DCE, and chloromethane. Low levels of metal contaminants may also be present (See attached letter dated 3/12/97). It is expected that all of these contaminants will be present at less than one part per million based on the short residence time and the small surface area contact for drilling fluid during the drilling operations. Most of the drilling will be through noncontaminated tuff. Representative samples will be taken from the drilling fluids and a Waste Profile Form will be completed prior to discharge to the HEWTP. The carbon filters at the HEWTP are designed to treat the hydrocarbons and wastewater will be recirculated through the system until it meets NPDES Permit limits. Wastewater will be discharged into the facility at a controlled rate and it is not expected that this waste stream will significantly change the nature or increase the quantity of pollutants discharged at Outfall 05A055. However, the HEWTP does not treat for barium. Therefore, if operational sampling shows that barium is present above the Laboratory's background range, the wastewater will be pre-treated using the Standard Operating Procedure for "In-Sump Treatment of Waste Water Containing Soluble Barium."

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On May 21 and May 28, 1997, Mike Saladen of the Laboratory's Water Quality and Hydrology Group (ESH-18) discussed this information with Everett Spencer and Fred Humke, of your staff. Mr. Saladen was advised to submit this notification of changed condition since this type of operation was not specified in the Laboratory's NPDES Permit Re-Application, dated August 31, 1990.

I appreciate your attention in this matter. Please contact Mike Saladen at (505) 665-6085 or me at (505) 665-1859 if you have any questions or need additional information.

Sincerely,

Steven R. Rae, Group Leader
Water Quality and Hydrology Group

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Date: March 12, 1997
Refer to: EM/ER:97-060

Mr. Benito Garcia
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87505

SUBJECT: INFORMATION ON PRS 16-021(c)

Dear Mr. Garcia:

Per your Bureau's verbal guidance on February 26, 1997, the Department of Energy (DOE) and the University of California Los Alamos National Laboratory are providing information on contamination at Potential Release Site (PRS) 16-021(c). Additionally, we are providing data on surface contamination at PRS 16-021(c). Initial contamination information was provided by Pat Shanley and Dave McInroy, Laboratory personnel, on February 26, 1997, to Teri Davis, John Kieling, and Michael Chacon of the NMED, and Kim Hill of the Environmental Protection Agency (EPA), following receipt of all analytical data and completing data validation.

Additional information on the contamination at PRS 16-021(c) was obtained on November 23, 1996, at 3:38 p.m. at Technical Area 16 (TA-16) during a Resource Conservation and Recovery Act facility investigation (RFI) Phase II investigation. The field team drilled borehole 16-2700 from a depth of 15 ft to a total depth of 17.5 ft. At a depth of 15.5 ft, a differing lithology - a volcanic surge bed - was intersected and saturated material flowed up the drill string. When this occurred, the field team ceased drilling. The water/surge bed mixture level stabilized at a depth of 6 ft below the ground surface. A high explosives (HE) spot test was performed on the saturated geologic material. This test indicated elevated levels of HE contamination. The field team attempted to collect a water sample, but there was too much formation in the hole following the initial inflow of surge bed material. The sample (0316-96-0252) of saturated surge bed material was sent for laboratory analysis as "saturated soil." On November 30, 1996, a monitoring well was installed within the saturated interval, but to this date it has not produced water.

PRS 16-021(c) is a drainage channel from an outfall that discharged wash water from Building TA-16-260, an HE machining facility that processes large quantities of explosives. The outfall was deactivated on November 22, 1996, but is still permitted under NPDES (Permit Number NM0028355) as EPA 05A056. Borehole 16-2700 is

located in a ponding area within the outfall that has consistently shown high levels of total HE - up to 34.1 wt.% were reported in the RFI Work Plan for Operable Unit 1082 (LANL 1993, LA-UR-93-1196). Several best management practices have been installed in and around this PRS to minimize runon and runoff to the contaminated areas. NMED has also directed the Laboratory to proceed with the corrective measures study for this site.

During the RFI Phase I investigation conducted during the Summer of 1995, surface soil samples were collected in the ponding area. Analytical laboratory analyses show that HE and barium concentrations in the ponding area were consistently high. These data are reported in the TA-16 RFI Report that was submitted to NMED on September 30, 1996. The highest HE concentrations were found in sample 0316-95-0045, which was collected 60 ft down drainage from the outfall, near the location of borehole 16-2700. This was a soil sample collected at a depth of 1.5-2 ft. Data above estimated quantitation limits (EQLs) for organic constituents and background upper tolerance limits (UTLs) for inorganic constituents for this sample are provided in Table 1.

Table 1
Constituents above UTLs/EQLs in Sample 0316-95-0045

Constituent	Media	Concentration (ppm)	SAL (ppm)
HMX	Soil	**24 600**	3 300
RDX	Soil	**118 000**	4
2,4,6-Trinitrotoluene	Soil	**102 000**	15
1,3,5-Trinitrobenzene	Soil	**3.99**	3.3
1, 3 Dinitrobenzene	Soil	2.04	6.5
2,4 Dinitrotoluene	Soil	**46.1**	0.65
Barium	Soil	**7 670**	5 300
Lead	Soil	46.5	400
Uranium	Soil	2.53	29
Zinc	Soil	53.7 P	23 000
Anthracene	Soil	260	18 000
Acetone	Soil	0.016 J	2100
p-isopropyltoluene	Soil	0.051 J	Not calculated
1,2,4-trimethylbenzene	Soil	0.052 J	8

J = The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
P = Professional judgment should be applied to using the data in decision making.

During the RFI Phase II investigation conducted in November 1996, samples were taken at a depth of 7-8 ft (0316-96-0250) and 15.5-16.5 ft (0316-96-0254) in borehole 16-2700. Constituents above UTLs/EQLs for these samples are shown in Table 2.

Table 2
Constituents above UTLs/EQLs in Samples 0316-96-0250 and 0316-96-0254

Constituent	Sample number	Depth (ft)	Media	Concentration (ppm)	SAL (ppm)
RDX	0316-96-0250	7-8	Welded tuff	**4.83**	4
HMX	0316-96-0250	7-8	Welded tuff	1.15	3 300
2,4,6-Trinitrotoluene	0316-96-0250	7-8	Welded tuff	1.24	15
Butylbenzylphthalate	0316-96-0250	7-8	Welded tuff	0.052 J	13 000
RDX	0316-96-0254	15.5-16.5	Surge bed	**908 D**	4
HMX	0316-96-0254	15.5-16.5	Surge bed	315 D	3 300
2,4,6-Trinitrotoluene	0316-96-0254	15.5-16.5	Surge bed	**424 D**	15
1,3,5-Trinitrobenzene	0316-96-0254	15.5-16.5	Surge bed	0.269	3.3
2,4-Dinitrotoluene	0316-96-0254	15.5-16.5	Surge bed	0.149	0.65
2-Amino-4,6-dinitrotoluene	0316-96-0254	15.5-16.5	Surge bed	1.04	Not calculated
Barium	0316-96-0254	15.5-16.5	Surge bed	335	5 300
Copper	0316-96-0254	15.5-16.5	Surge bed	2.9	2 800
Nickel	0316-96-0254	15.5-16.5	Surge bed	2.6	1 500
Anthracene	0316-96-0254	15.5-16.5	Surge bed	1.6	18 000
Trichlorofluoromethane	0316-96-0254	15.5-16.5	Surge bed	0.010	380

D = Dilution required for anlaysis.

The concentrations of the contaminants in sample 0316-96-0252, the saturated surge bed material that flowed into the borehole, are provided in Table 3. These contaminant levels are significantly higher than levels reported within welded tuff, but significantly lower than levels within the ponded area.

Table 3
Constituents above UTLs/EQLs in Sample 0316-95-0252

Constituent	Media	Concentration (ppm)	SAL (ppm)
HMX	Saturated surge bed	1 700 D	3 300
RDX	Saturated surge bed	**4 500 D**	4
2,4,6-Trinitrotoluene	Saturated surge bed	**3 500 D**	15
1,3,5-Trinitrobenzene	Saturated surge bed	0.7	3.3
Barium	Saturated surge bed	560	5 300
Chromium	Saturated surge bed	5.7	210
Lead	Saturated surge bed	6.6	400
Nickel	Saturated surge bed	15.4	1 500
Anthracene	Saturated surge bed	4.3	18 000
Benzo(b)fluoranthene	Saturated surge bed	0.064 J	0.61
Benzo(k)fluoranthene	Saturated surge bed	0.072 J	6.1
Benzo(a)pyrene	Saturated surge bed	**0.075 J**	0.061
Benzo(g,h,i)perylene	Saturated surge bed	0.061 J	Not calculated
Dibenzo(a,h)anthracene	Saturated surge bed	**0.079 J**	0.061
Indeno(1,2,3-cd)pyrene	Saturated surge bed	**0.080 J**	0.61
bis(2-Ethylhexyl)phthalate	Saturated surge bed	1.2	32
2,4-Dinitrotoluene	Saturated surge bed	0.290 J	0.65
2,6-Dinitrotoluene	Saturated surge bed	0.071 J	0.65
Chloromethane	Saturated surge bed	0.02 J	1.2
1,2-Dichloroethane	Saturated surge bed	0.004 J	0.25
Toluene	Saturated surge bed	0.003 J	790
1,3,5-Trimethylbenzene	Saturated surge bed	0.003 J	6.4

These data are somewhat unexpected because of the significant increase in concentration of contaminants at a depth of 15.5-17 ft beneath a low-contamination sample in welded tuff. These results validate a conceptual model in which transport of contaminants is dominated by flow of HE-contaminated water from the pond along fast pathways - high-permeability surge beds and possible fractures - within PRS 16-021(c).

The ER Project did not report the type of data identified above as a "newly discovered release" to EPA. Conversations between EPA and the ER Project resulted in the understanding that results obtained during RFI activities at sites where contamination was known to exist did not constitute a newly-discovered release. Data collected during RFI field work would either be reported in a final RFI Report or some other deliverable and not under a strict 24-hour verbal, 15-day written requirement. Please note that the notification requirement in Section H of the Laboratory's Module VIII is not required in the "Model" (Hazardous and Solid Waste Amendments (HSWA) Module or in Sandia's HSWA Module.

The ER Project has viewed the release notification as being triggered when hazardous waste or constituents are released at a solid waste management unit (SWMU), not when they are confirmed at a site. This view was agreed to by EPA and seems to be supported in proposed Subpart S. The notification requirements in the proposed Subpart S are for: ground water contamination beyond the facility boundary, air contamination and, subsurface residual contamination left in place (55 FR 30845). Additional requirements for reporting state " Proposed 270.30(l)(12)(i)(c) would require the permittee to identify newly discovered releases from newly discovered SWMUs or from SWMUs where no release has occurred at the time of the permit issuance" (55 FR 30849). The ER Project interprets EPA's comment as requiring a permittee to notify EPA when contaminants at previously unidentified locations are found.

We are concerned that a release notification would be precedent setting and not the intent of the permit. We foresee a significant number of telephone calls for verbal notification as well as many 15-day written reports to NMED on contamination found during RFI field work if release notifications are required by your office. We wish to address this issue with you at our next monthly meeting. In addition, we are prepared to develop a Module VIII permit modification request to clarify this matter.

We would appreciate a response on this matter. Should you have any further questions. please contact Roy Michelotti (505) 665-7444 or Joe Mose (505) 667-5808.

Sincerely,

for Jorg Jansen, Program Manager
LANL/ER Project

Sincerely,

for Theodore J. Taylor, Program Manager
DOE/LAAO

JJ/TT/rfr

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