

Kieling, John, NMENV

From: Joni Arends [jarends@nuclearactive.org]
Sent: Friday, September 04, 2009 5:11 PM
To: Kieling, John, NMENV; Sheri Kotowski; Rhgilkeson@aol.com; marian naranjo Marian Naranjo
Subject: Summary of our comments

Mr. Kieling,

We have emailed four sets of comments to the NMED July 6, 2009 revised draft permit for LANL. They are:

1. General comments - CCNS-EVEMG f comments 9-4-09.doc
2. Part 6 - EVEMG-CCNS f Part 6 9-4-09.doc
3. Parts 9, 10 and 11 - CCNS-EVEMG-Gilkeson Parts 9, 10, 11 9-4-09.doc
4. Forseeable future use - CCNS-EVEMG foreseeable future.doc

We will be sending more comments about Section 2.10 "Preparedness and Prevention" with an Attachment, and Attachment D "Contingency Plan." We will also be sending the Part 6 Attachments 1, 2 and 3 and a Parts 9, 10 and 11 Attachment after our technical difficulties are resolved.

Please confirm that you received these comments.

--

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Kieling, John, NMENV

From: Joni Arends [jarends@nuclearactive.org]
Sent: Friday, September 04, 2009 4:29 PM
To: Kieling, John, NMENV; Sheri Kotowski; Rhgilkeson@aol.com; marian naranjo Marian Naranjo
Subject: CCNS-EVEMG-Gilkeson Comments Parts 9, 10, 11

Attachments: CCNS-EVEMG-Gilkeson Parts 9, 10, 11 9-4-09.doc



CCNS-EVEMG-Gilkeson
on Parts 9, 1...

Mr. Kieling,

Please find attached the comments of CCNS-EVEMG-Gilkeson about Parts 9, 10 and 11 to the NMED July 6, 2009 revised draft permit for LANL.

Please confirm that you received these comments.

--

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Comments about Parts 9, 10 and 11: Closure, Post-Closure and Corrective Action

**Robert H. Gilkeson, Registered Geologist
Concerned Citizens for Nuclear Safety
Embudo Valley Environmental Monitoring Group**

We provide the following comments about Parts 9, 10 and 11 of the revised draft NMED Hazardous Waste Permit for LANL:

PART 9: CLOSURE

Why is closure of the regulated units G, H and L, which through the permit become permitted units, occur under the March 1, 2005 Consent Order when all the other permitted units, closure is done under the Permit?

In order to ensure groundwater protection, we want language in the permit that requires strict 40 CFR §§ 264.90 through 101 Subpart F groundwater monitoring (detection **program in § 264.98**, compliance **program in § 264.99** and corrective action **program in § 264.100**). The Permittees have been on notice since May 5, 2002 when the draft Consent Order was released for public comment - 7 ½ years, almost the term of the revised draft Hazardous Waste Act permit - and they have failed to comply.

Witness:

1. hexavalent chromium in the regional aquifer above drinking water standards below both Sandia and Mortandad Canyons,
2. high explosives (RDX) in the regional aquifer above the drinking water standards and the EPA Region 6 screening advisory (0.61 ppb) in the area of TA-16, e.g., **RDX concentrations above 20 ug/L are repeatedly measured in regional aquifer water samples from well R-25 above the EPA screening level. In addition, RDX has been detected repeatedly at well R-18 at a location 1 mile from the high explosives release zone at the TA-16 260 outfall. The detections at well R-18 range between 0.5 and 0.6 ppb and are close to the Region 6 screening advisory level.**
3. pentachlorophenol, benzo-a-pyrene and benzene above the drinking water standards in the area of TA-54. These RCRA hazardous waste constituents were detected in Well R-22 **at a location downgradient of RCRA regulated unit MDA G** and detected in well R-38 **at a location ¼ mile downgradient of RCRA regulated unit MDA L**. Wells R-22 and R-38 do not meet the requirements of the §264.99 compliance monitoring program. The alternate requirements in the Consent Order have not installed the networks of

monitoring wells that are required under §264.99 to characterize the nature and extent of groundwater contamination at the regulated units at TA-54.)

AND

we don't know the nature and extent of the contamination in order to create workplans to address the migration towards the Los Alamos County and Santa Fe drinking water supplies and spring discharges to the Rio Grande.

The Draft Permit does not acknowledge that the surface impoundment at the TA-16 260 outfall is a RCRA regulated unit because the RCRA listed wastes were disposed of into the impoundment after July 26, 1982. The quantity of liquid wastes disposed of into the impoundment from 1951 through 1996 was greater than 225 million gallons (LANL report LA-UR-06-5510 August 2006). The liquid wastes discharged to the 260 outfall have caused extensive groundwater contamination in both a thick perched zone of saturation and the regional aquifer. The alternative requirements in the Consent Order have not provided the necessary knowledge of the nature and extent of the groundwater contamination.

Under the WQCC regulations, there is a requirement to protect ALL groundwater for "reasonable foreseeable use" for a period of 200 years. The WQCC regulations require characterization and abatement of the serious high explosives contamination in the perched zone of saturation and in the regional aquifer at TA-16. The alternative requirements in the Consent Order allow contamination plumes at TA-16 to grow in size and extend miles away from sources. The Consent Order allowed LANL to do a statistical study to show that the substandard monitoring wells will identify the growth of the TA-16 contaminant plumes before the plumes reach Los Alamos County drinking water supply wells located four miles downgradient of TA-16. The large scale contamination of groundwater that is allowed by the Consent Order is unacceptable.

The Draft LANL Part B Permit does not acknowledge the NMED October 29, 2007 letter of approval for the groundwater monitoring plan in LANL report LA-UR-07-6436, October 2007. The LANL report requires compliance with the RCRA 264 Subpart F detection monitoring program (§264.98) and compliance monitoring program (§264.99) for the networks of monitoring wells at the regulated units at TA-54. The NMED approval on October 29, 2007 of the groundwater monitoring requirements at TA-54 as stated in LANL report LA-UR-07-6436 was *after* the signing of the Consent Order on March 1, 2005, and replaces the alternative requirements in the Consent Order.

Alternative requirements have not work under the Consent Order, a document with a four and ½ year history. The permit is for 10 years, which is approximately half the time. Alternative requirements have **not** provided groundwater protection and are a failure and should not continue.

Section 9.3 Closure Requirements for Regulated Units. By analogy, the four appropriateness factors in the Clean Water Act should apply.

Under RCRA, regulated units are units that received waste after July 26, 1982. The permit only describes MDA G, MDA H and MDA L as regulated units. But we are aware that there are other regulated units at LANL, including MDA P at TA-16 (disposal operations ceased in 1984), and the TA-16 260 Outfall.. More than 225 million gallons of HE contaminated waste water from Building 260 discharged to the 260 outfall from 1951 through 1996. There may be other regulated units at LANL that we are not aware of.

The permit should provide recognition of all regulated units and require Permittees to follow the groundwater monitoring requirements in the LANL report *Technical Area 54 Well Evaluation and Network Recommendations, Revision 1* (LA-UR-07-6436, October 2007. The NMED approval letter for LANL report LA-UR-07-6436 was issued after the March 1, 2005 effective date of the Consent Order.

PART 9: CLOSURE

2 9.1 INTRODUCTION

3 This Permit Part addresses the three categories of permitted units at the Facility. They are
4 identified as follows:

5 (1) regulated units (*i.e.*, material disposal areas G, H, L); **(This list is incomplete. The 260
6 outfall and MDA P are also regulated units. There may be other regulated units.)**

6 (2) indoor units (structures and related equipment); and

7 (3) outdoor units (asphalt or concrete pads and related structures and equipment):

8 a. co-located with a regulated unit;

9 b. not co-located with a regulated unit; and

10 c. associated with an open burn unit.

11 Attachment J (*List of Hazardous Waste Management Units*), Table J-1 (*Active Portion of
12 the Facility*), identifies the category of each permitted unit in the column titled *Type of
13 Unit*. This Permit does not address the closure of interim status units.

14 The Permittees shall adhere to the closure performance standards in Permit Section 9.2
15 for all the permitted units addressed in this Permit Section.

16 The Permittees shall close the permitted storage and treatment units in accordance with
17 the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and 264.197 (which
18 are incorporated herein by reference), this Permit Part (9), and the procedures described
19 in the permitted unit-specific closure plans in Attachment G (*Closure Plans*).

13 9.2 CLOSURE PERFORMANCE STANDARDS

14 The Permittees shall meet the following closure performance standards for permitted
15 units identified in Permit Sections **9.1.1**, 9.1.2 and 9.1.3.

19 9.2.2.2 Outdoor Units Co-located with Regulated Units

20 The Permittees may petition the Department for alternative closure requirements in
21 accordance with 40 CFR § 264.110(c) if the closure performance standards at Permit
22 Sections 9.2.1(1) and (2) are not attainable for an outdoor unit (including associated

23 indoor structures) co-located with a regulated unit (*see* Permit Section 9.1.3(1)).

24 The Permittees shall give notice by e-mail to persons on the e-mail notification list, in
25 accordance with Permit Section 1.13, of the petition to the Department provided under
26 this Permit Section 9.2.2.2. **Why is this not a permit modification request?**

9.4.3.1 Decontamination of Surfaces, Structures, and Related Equipment

10 The Permittees shall decontaminate by pressure-washing or steam-cleaning the floors,
11 walls (up to 11 feet from the floor **This provision is unacceptable. The entire room, walls,
ceilings and floors, light fixtures, everything must be sampled and cleaned before closure.
Experience at other DOE facilities have indicated that closure must cover all surfaces. We will
provide additional information about the workers who were exposed to beryllium at Lawrence
Livermore National Laboratory who were doing closure work,** or another height approved by the
Department), and

12 ceilings (lower than 11 feet high, or another height approved by the Department), of all
13 surfaces and structures at permitted indoor and outdoor units as well as all related
14 equipment (*e.g.*, railings, stairs, secondary containment pallets, piping). If such methods
15 are not practicable, the Permittees shall propose to the Department, for its approval, an
16 alternative decontamination method in their closure plan.

17 To achieve the performance standards for volatile organic compounds (VOCs), the
18 Permittees shall decontaminate all structures and related equipment at indoor and outdoor
19 permitted units at least twice. The Permittees shall identify and provide rationale in the
20 sampling and analysis plan for the permitted unit and the structures and related
21 equipment that do not undergo this type of decontamination.

22 The Permittees shall identify in each permitted unit's closure plan what surfaces,
23 structures, and related equipment from the permitted unit will be decontaminated and the
24 methods by which they will be decontaminated.

25 The Permittees are not required to decontaminate the outdoor permitted unit asphalt pads.

9.4.3.2 Removal of Structures, Related Equipment, and Pads

27 The Permittees shall ensure that structures and related equipment at permitted indoor and
28 outdoor units that cannot be decontaminated in accordance with Permit Section 9.4.3.1
29 are removed (or containerized) in accordance with 40 CFR § 264.114, which is
30 incorporated herein by reference, and managed in compliance with Permit Section 9.4.5.

31 The Permittees shall identify in the closure plans for each permitted unit the structures
32 and related equipment that will be removed from **or will remain with** the units.

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1 After the Permittees conduct the structural assessment (in accordance with Permit Section
2 9.4.6) of an outdoor permitted unit constructed of asphalt, the Permittees shall remove the
3 asphalt pad in its entirety. **What if it's protecting waste placed under the pad?**

4 If soils sampled under an outdoor permitted unit associated with an open burn pad have
5 detected contamination, the Permittees shall remove the concrete pad in its entirety and
6 dispose of the concrete in accordance with Permit Section 9.4.5.

9.4.4 Decontamination Verification and Soil Sampling

8 The Permittees shall verify that each indoor permitted unit has been decontaminated, that
9 soils beneath each outdoor and indoor (as applicable) permitted unit are free of
10 contamination, and that each indoor structure associated with an outdoor permitted unit

11 has been decontaminated. Except for the VOCs, the Permittees shall verify
12 decontamination of surfaces (*e.g.*, walls, equipment, benches, pipes, doors) and that
13 environmental media are free of contamination through sampling and analysis.
14 The Permittees may collect wipe samples for radionuclide analysis for use as indicators
15 of contaminant releases in units where radionuclides were stored. The Permittees shall
16 not, however, use these as surrogates for validation of attainment of a closure
17 performance standard at a permitted unit (*see* 40 CFR § 270.32(b)(2)).

18 **9.4.4.1 Decontamination Verification and Soil Sampling Activities**

19 Wipe sampling shall be used to verify the absence of contamination after
20 decontamination of surfaces, structures, and related equipment at indoor and outdoor
21 permitted units. Wipe samples shall be analyzed for metals, SVOCs, and
22 polychlorinated biphenyls (PCBs) **is there a list of these in the permit? Why not total metals, what is the difference between "metals" and "total metals"? Do the lists of "metals" and "total metals" include beryllium? The permit must provide complete lists of the specific constituents included in generic statements of metals total metals, VOCs, SVOCs, PCBs and explosive compounds.** Decontamination shall be considered verified and the
23 Clean Closure Performance Standards in Permit Section 9.2.1 achieved when wipe
24 samples have hazardous constituent concentrations that are less than the detection limits
25 for the analytical methods in the approved unit-specific closure plan.
26 Soils underlying pads at outdoor and indoor (as applicable) permitted units shall be
27 sampled for total metals, VOCs, SVOCs, PCBs, and explosive compounds, as applicable.
28 All sampling activities shall be conducted in accordance with the Department-approved
29 closure plans.

16 **9.4.6.1 Records Review**

17 The Permittees shall review the permitted unit's Facility Operating Record, including but
18 not limited to, inspection and contingency plan implementation records. The Permittees
19 shall as a result of the review, update the list of constituents (*see* Permit Section
20 9.4.7.1(3?), *List of Hazardous Constituents*) in the SAP, as necessary, to accurately reflect
21 at the time of closure the hazardous wastes managed at the unit.
22 The Permittees shall determine whether any spills or releases, defects, deterioration,
23 damage, or hazards (*e.g.*, damage to the flooring or other building materials) affecting
24 waste containment occurred or developed during the operational life of the unit during
25 which hazardous waste was managed. If the records indicate any such incidents, the
26 Permittees shall include the locations of the incidents, as well as applicable sampling
27 methods and procedures, in the updated SAP for purposes of the spill release assessment
28 (*see* 40 CFR § 270.32(b)(2)).

24 **9.4.7.1.i Decontamination Verification Wipe Sampling Grid for Indoor Units 25 or Structures**

26 The Permittees shall collect one verification sample every 250 square feet or less in
27 loading and unloading zones and one verification sample every 900 square feet or less on
28 floors, walls (up to 11 feet from the floor, or another height approved by the Department),
29 and ceilings (lower than 11 feet high **This is not acceptable; see LLNL Be materials,** or
another height approved by the Department). If
30 the permitted unit (*e.g.*, TA-54 Area G storage shed 8) or the structures related to the

31 permitted unit (e.g., modular unit 35 at TA-54 Area L) have walls with areas of less than
32 900 square feet, the Permittees shall collect at least one verification sample from each
33 wall, floor, and, if applicable, ceiling. The Permittees shall collect samples at all
34 additional locations identified in Permit Section 9.4.7.1.ii.a where applicable.

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5 9.4.7.1.ii.a Outdoor Storage Units

6 The Permittees shall collect soil samples at the following locations at the outdoor storage
7 units:

8 (1) One sample for every 250 square feet in loading and unloading zones;

9 (2) One sample for every 900 square feet under the pad **not consistent with OB requirements –
only 3 verification samples over an Olympic doubles play tennis court and only 5 verification
samples over an NCAA college basketball court.**

10 (3) One sample at each discharge point (stormwater run-off locations);

11 (4) One sample at the discharge point of any underground piping;

12 (5) One sample directly beneath all sumps and catch basins;

13 (6) One sample at all secondary containment areas;

14 (7) One sample at all joints and intersections of piping; and

15 (8) One sample every 30 feet beneath the axis of the lowest portions of any open
16 conveyance drainage system in any permitted unit that has sloped flooring.

17 (see 40 CFR § 270.32(b)).

10 9.4.9 Variance to Decontamination Verification Standards

11 The Permittees may seek approval of a variance from the decontamination verification
12 wipe standards in Permit Section 9.4.4.1 for surfaces and related equipment at indoor and
13 outdoor units by submitting to the Department a written request for a determination that
14 attainment of the standards are impracticable because of the inherent properties of the
15 materials subjected to wipe sampling. The request shall include, at a minimum, the
16 following:

17 (1) a statement of the proposed variance;

18 (2) a discussion of decontamination activities performed in accordance with the SAP;

19 (3) a discussion of the properties of the equipment or surface pertinent to the
20 requested variance;

21 (4) the analytical data demonstrating the effectiveness of decontamination, as well as
22 the analytical data demonstrating the chemical or physical properties of the
23 equipment or surface that inhibit attainment of the standards;

24 (5) a justification for why further decontamination beyond the requirements in the
25 SAP would not be effective;

26 (6) all other supporting documentation and analyses; and

27 (7) any other information requested by the Department.

Email notification is required.

28 9.5 CLOSURE CERTIFICATION REPORT TO THE DEPARTMENT

29 At the completion of closure of any permitted unit, the Permittees shall submit, by
30 registered mail, a closure report (Report) for Department review and approval. The

31 Report shall document that the permitted unit has been closed in compliance with the
32 specifications in this Permit Part and the approved closure plans. The Report shall
33 summarize all activities conducted during closure including, but not limited to, the
34 following:

35 (1) the results of all investigations;

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1 (2) remediation waste management;

2 (3) decontamination;

3 (4) decontamination verification and soil sampling activities; and

4 (5) results of all chemical analyses and other characterization activities.

5 The Permittees shall submit the Report to the Department no later than 60 days after
6 completion of closure of a permitted unit. The Department may require interim reports
7 that document the progress of closure. The certification must be signed by the Permittees
8 and by an independent professional engineer registered in the State of New Mexico (*see*
9 40 CFR § 264.115).

10 The report will document the permitted unit's closure and contain, at a minimum, the
11 following information:

12 (6) a copy of the certification pursuant to 40 CFR 264.115;

13 (7) any variance, and the reason for the variance, from the activities approved in this
14 closure plan;

15 (8) documentation of the structural assessment and records review conducted under
16 this Permit Part 9;

17 (9) a summary of all sampling results, showing:

18 a. sample identification;

19 b. sampling location;

20 c. data reported;

21 d. detection limit for each analyte;

22 e. a measure of analytical precision (e.g., uncertainty, range, variance);

23 f. identification of analytical procedure;

24 g. identification of analytical laboratory;

25 (10) a QA/QC statement on analytical data validation and decontamination
26 verification;

27 (11) the location of the file of supporting documentation, including:

28 (12) field logbooks;

29 (13) laboratory sample analysis reports;

30 (14) QA/QC documentation;

31 (15) chain-of-custody forms;

32 (16) storage or disposal location of hazardous waste resulting from closure activities;

33 (17) a copy of the Human Health and Ecological Risk Assessment Reports, if a site
34 specific risk assessment was conducted pursuant to Permit Sections 11.10.4 and

35 11.10.5 for the permitted unit; and

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- 1 (18) a certification statement of the accuracy of the Closure Report.
- 2 If the Permittees leave waste in place, they shall submit to the Department a survey plat
- 3 as required by 40 CFR § 264.116 in conjunction with the closure certification report.
- 4 Documentation supporting the independent registered professional engineer's
- 5 certification must be furnished to **and approved by** the Department before the Permittees are released from
- 6 the financial assurance requirements for closure under 40 CFR § 264.143.

PART 10: POST-CLOSURE CARE

The New Mexicans for Sustainable Energy and Effective Stewardship (NM SEES) groups work for consistent regulation of the Department of Energy (DOE) sites in New Mexico. For example, NMED Secretary Curry required a five-year review of the post-closure for the Mixed Waste Landfill at Sandia with public participation requirements. Therefore, this permit must include a five-year review of all post-closure plans with the appropriate with public participation requirements.

[http://www.nmenv.state.nm.us/hwb/SNL/MWL/Final_Decision/Final_Order_\(05-26-2005\).pdf](http://www.nmenv.state.nm.us/hwb/SNL/MWL/Final_Decision/Final_Order_(05-26-2005).pdf)

**STATE OF NEW MEXICO
BEFORE THE SECRETARY OF ENVIRONMENT
Final Order No, HWB 04-11 (M)
IN THE MATTER OF REQUEST FOR A CLASS
3 PERMIT MODIFICATION FOR CORRECTIVE
MEASURES FOR THE MIXED WASTE LANDFILL
SANDIA NATIONAL LABORATORIES
BERNALILLO COUNTY, NEW MEXICO
EPA 10 NO. NM589011 0518**

IT IS THEREFORE ORDERED:

5. Sandia shall prepare a report every 5 years, re-evaluating the feasibility of excavation and analyzing the continued effectiveness of the selected remedy. The report shall include a review of the documents, monitoring reports and any other pertinent data, and anything additional required by NMED. **In** each 5-year report, Sandia shall update the fate and transport model for the site with current data, and re-evaluate any likelihood of contaminants reaching groundwater. Additionally, the report shall detail all efforts to ensure any future releases or movement of contaminants are detected and addressed well before any effect on groundwater or increased risk to public health or the environment. Sandia shall make the report and supporting information readily available to the public, before it is approved by NMED. NMED shall provide a process whereby members of the public may comment on the report and its conclusions, and shall respond to those comments in its final approval of the report.

PART 10: POST-CLOSURE CARE

19 10.1.2 Amendment of the Post-Closure Care Plan

20 The Permittees shall submit a **Class 3** request for a permit modification in accordance with 40 §

21 CFR 264.118(d) to authorize a change in the approved post-closure care plan. **[It is not clear in the regulations what type of permit mod this would be; but we think it would be a major modification; therefore, let's be specific and indicate in the permit that such a modification would be a Class 3.]** The

22 written request must include a copy of the amended post-closure care plan for review and 23 approval by the Department.

24 The Permittees may submit a request to the Department to modify the permit to amend 25 the post-closure care plan at any time during the life of the unit or the post-closure care 26 period (*see* 40 CFR § 264.118(d)(1)).

27 The Permittees shall submit a request for a permit modification to authorize a change in 28 the approved post-closure care plan whenever:

29 (1) changes in the operating plans or facility design affect the approved post-closure 30 care plan;

31 (2) there is a change in the expected year of final closure;

32 (3) events which occur during the active life of the facility affect the approved post33 closure care plan; or

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1 (4) the Permittees request the Department to apply alternative requirements to a 2 regulated unit under 40 CFR § 264.110(c).

3 (*see* 40 CFR § 264.118(d)(2)(i-iv)).

PART 11: CORRECTIVE ACTION

The LANL report *Technical Area 54 Well Evaluation and Network Recommendations, Revision 1* (LA-UR-07-6436, September 2007) was written in response to the order by the New Mexico Environment Department (NMED) in a letter dated April 5, 2007 for LANL to evaluate the monitoring well network at Technical Area 54 (TA-54). The three LANL RCRA regulated units MDA G, MDA H and MDAL are located at TA-54. The NMED issued a letter of approval for the subject TA-54 well network report on October 29, 2007.

Excerpts from the TA-54 well network report that are important to the LANL Revised Draft Permit are pasted below:

This evaluation of the adequacy of the groundwater-monitoring network around TA-54 is being conducted to support ongoing investigations and pending corrective measures implemented under the Compliance Order on Consent and to support ongoing operations at TA-54 currently under Resource Conservation and Recovery Act (RCRA) interim status. The draft RCRA Part B operating permit is expected to be issued late in 2007, and the groundwater-monitoring well network will be a key aspect of Los Alamos National Laboratory's (LANL's, or the Laboratory's) demonstration of compliance with the anticipated permit requirements (p. 1).

3.0 MONITORING OBJECTIVES

The monitoring objectives for TA-54 are based on both the regulatory status described in Section 1.0 and the conceptual model described in Section 2.0. They are described below. The recommendations provided in Section 5.0 are made in the context of these objectives.

1. Evaluate whether the existing groundwater-monitoring well network provides an understanding of nature and extent of contamination sufficient to support remedy selection for SWMUs and anticipated permit requirements for TA-54. This objective is focused on an evaluation of the network from the perspective of whether there is some unknown aspect of nature and extent related to the physical, geochemical, or hydrologic status of wells that is sufficient to change or affect the remedy selection for MDAs H, L, and G. This objective is based in large part on the conceptual model and the nature of known releases from each of the MDAs.

2. Establish a groundwater-monitoring network that meets the requirements for [RCRA] “detection monitoring” and subsequent “compliance monitoring” at permitted units at TA-54. **The following requirements from 40 CFR 264.90-.99, Subpart F apply to permitted units or regulated units that received waste after July 26, 1982 [bold emphasis added].** The regulations apply throughout the active life of the units and the closure and post-closure period if the units are not “clean-closed” under RCRA. The groundwater - monitoring network and facility process must be able to detect, evaluate, and respond to releases of hazardous waste or hazardous waste constituents into the uppermost aquifer. Detection monitoring is required to establish that a release has occurred. It is assumed that because of the significant depth to groundwater beneath TA-54, vadose-zone monitoring will be a key component of the overall monitoring program in support of both CMEs and the RCRA Part B permit.

[**NOTE.** The RCRA “detection monitoring” is described in §264.98 and the RCRA “compliance monitoring” is described in §264.99. The existing and proposed monitoring well networks at TA-54 do not meet the requirements under RCRA.]

An integrated groundwater-monitoring system must consist of a sufficient number of near-field wells and downgradient monitoring wells installed at appropriate locations and depths to obtain representative groundwater samples from the uppermost aquifer. These samples must represent both the quality of background water not affected by the regulated unit and the quality of groundwater passing beneath the regulated unit to allow for detection of contamination in the uppermost aquifer.

[**NOTE.** The “near-field wells” are too far from the down-gradient boundaries of the RCRA regulated units to meet the requirements of §264.95. In addition, the TA-54 well monitoring network includes no background water quality wells that meet the requirements of §264.97.]

3. Evaluate the configuration of the monitoring network to confidently protect water-supply wells and detect contaminants that may migrate off-site. This objective integrates water-supply protection with the above objectives to ensure that contaminants, if present, can be detected before reaching water-supply wells or the Laboratory boundary. **The objective is met using sampling data and a groundwater-transport model that traces the path of hypothetical mobile contaminants from locations where contaminants might break through to the regional groundwater system [bold emphasis added].** The model is used to assess the ability of the current well network to detect at least 95% of potential contaminants from TA-54 that might migrate

toward a production well or pass beneath the Laboratory boundary. The current network configuration was found to be inadequate to detect for potential offsite releases. Therefore, this evaluation includes newly proposed well locations that are discussed below.

[NOTE. The use of a groundwater-transport model to assess the ability of the TA-54 monitoring well network to identify the migration of contaminants in the regional aquifer to the drinking water supply wells and to the Laboratory boundary is an **alternative requirement** and is unacceptable under RCRA. RCRA Subpart F requires installation of a network of monitoring wells that provide **early detection** of contamination from the three TA-54 regulated units to the regional aquifer. The pertinent excerpts from **§264.97 General ground-water monitoring requirements:**

The owner or operator must comply with the following requirements for any ground-water monitoring program developed to satisfy §264.98, §264.99, or §264.100.

- (2) Represent the quality of groundwater passing the point of compliance.
- (3) Allow for the detection of contamination **when [emphasis added]** hazardous waste or hazardous constituents have migrated from the waste management area to the uppermost aquifer.

[NOTE. The “waste management area” refers to the three regulated units at TA-54 (e.g., MDA G, MDA H and MDA L). LANL has not installed the networks of monitoring wells that are required under RCRA Subpart F that “Allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the waste management area [i.e., regulated units] to the uppermost aquifer.”

The plan in the TA-54 monitoring well report to allow large scale groundwater contamination from the regulated units and only protect the existing drinking water supply wells and to detect contamination at the LANL Facility boundary is another alternative requirement that is unacceptable by RCRA Subpart F and by the New Mexico Water Quality Control Commission (WQCC). The similar intent of LANL to allow large scale contamination of the regional aquifer at TA-16 drew the comment from NMED that is pasted below (the comment was in the NMED TA-16 NOD issued on August 15, 2007):

*A well-designed groundwater monitoring network should be capable of intercepting the centerline of a plume, (i.e., the zone likely to contain the highest concentration of contaminants), **as early as possible once contaminants reach the regional aquifer** [bold emphasis added].*

The groundwater monitoring network at TA-54 does not meet the requirement stated above in the NMED “**Notice of Disapproval of the Evaluation of the Suitability of Wells Near Technical Area 16 for Monitoring Contaminant Releases from Consolidated Unit 16-021(c)-99, Los Alamos National Laboratory EPA ID No: NM0890010515,**” Dated August 15, 2007. **The inconsistent practice of the NMED for groundwater monitoring at LANL is a serious issue.**

The NMED Ground Water Quality Bureau (GWQB) does not allow the contamination of groundwater resources that is allowed in the TA-54 monitoring well plan. The requirements for groundwater protection by GWQB are described in the excerpt pasted below from the testimony of GWQB Bureau Chief William Olson in the “State Issues Update” on Amendments to the New Mexico Water Quality Act. Chief Olson’s testimony is pasted below:

Mr. Olson testified that NMED’s practice for at least the last 21 years has been to ensure that all ground water underneath a discharge site meets groundwater quality

standards. NMED has not used the property boundary of the place of withdrawal (Section 83 on page I-22 in the “State Issues Update”).

NOTE. The three regulated units at TA-54 (i.e., MDA G, MDA H and MDA L) are examples of “discharge sites” in the above testimony of Mr. Olson. In addition, all of the 25 legacy waste MDAs at LANL are also potential discharge sites. The monitoring of the vadose zone below many of the MDAs has established the discharge of toxic pollutants from the inventory of hazardous wastes buried in unlined disposal cells in the MDAs. The NMED HWB has not required LANL to install the networks of monitoring wells at the MDAs to comply with “NMED’s practice for at least the last 21 years has been to ensure that all ground water underneath a discharge site meets groundwater quality standards.”

The LANL Well Screen Analysis Report – Revision 2 is another example of an alternative requirement approved by the NMED (approval letter of that is unacceptable under RCRA.

The TA-54 Well Evaluation Report and the LANL Revised Draft Permit use the LANL *Well Screen Analysis Report-Revision 2* (WSAR-2) to evaluate the ability of the LANL monitoring wells to meet the requirements of RCRA for the wells to produce reliable and representative water samples. The NMED has made a mistake to approve of

42 USC 6061 PERMITS MUST BE IN COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL LAW

TYRONE

From Page I-17

The regulations to protect ground water quality adopted by the Water Quality Control Commission in January 1977 established a ground water classification system having two classes:

- A. Protected under the regulations for present and potential future use as a domestic and agricultural water supply is *all* ground water having a concentration OF 10,000 mg/l or less total dissolved solids (TDS).
- B. Not protected under New Mexico regulations are any ground water with a TDS concentration exceeding 10,000 mg/l, except insofar as they may impact other water of better quality.

NMED Seven Criteria Pages I-33 and I-34

From page I-72

- 320. Mr. Olsen acknowledged that the contamination plume at WSTF [White Sands Test Facility] is being remediated under the hazardous waste permit issued by NMED’s Hazardous Waste Bureau to meet WQCC standards.
- 321. If the WSTF site is not remediated to WQCC standards by the Hazardous Waste Bureau, the site would no longer be exempt from WQCC abatement standards

and would have to be abated pursuant to Part 4 of WQCC regulations.

From page I-73

325. The Department proposes that the Commission define “foreseeable future” as a time period of not less than 200 years in the future.
- 326 By order dated May 10, 1988, the OCC adopted a time period of not less than 200 years into the future as the definition of reasonably foreseeable future use, and the OCD has subsequently applied this definition to discharge permits of oilfield facilities for the last 20 years

From Page I-75 to I-78

CONCLUSIONS OF LAW

1. Statute and Regulations

From Page I-76

5. Balancing the competing policies of protecting ground water and yet imposing reasonable requirements on industry, the Act allows for reasonable degradation of water quality resulting from beneficial use, including but not limited to domestic, commercial, industrial, agricultural, wildlife and recreational use’ provide that “such degradation shall not result in impairment of water quality to the extent that water quality standards are exceeded.”
6. Section 74-6-5(E)(3) of the Act provides that “(d)eterminations of the discharges’ effects on ground water shall be measured at any place of withdrawal of water for present or reasonably foreseeable future use.”
7. The purpose of the WQCC Regulations, 20.6.2.300 through 20.6.2.3114 NMAC, controlling discharges onto or below the surface of the ground, “is to protect all ground water of the State of New Mexico which has an existing concentration of 10,000 mg/l or less of total dissolved solids for present or potential future use as domestic and agricultural water supply, and to protect those segments of surface waters which are gaining because of ground water inflow, for uses designated in the New Mexico Water Quality Standards.”
8. Sections 20.6.2.300 through 20.6.2.3114 NMAC are written so that in general,
 - (1) if the existing concentrations of any water contaminant in ground water is in conformance with the standard of 20.6.2.3103 NMAC, degradation of the ground water up to the limit of the standard will be allowed, and
 - (2) if the existing concentration of any water contaminant in ground water exceeds the Standard of Section 20.6.2.3103NMAC, no degradation of the ground water beyond the existing concentration will be allowed.

From page I-80

C. “POINT OF COMPLIANCE”

26. Section 74-6-5(E)(3) of the Act provides that the determination of the discharges' effect on ground water shall be measured at any place of withdrawal of water for present or reasonably foreseeable future use.
27. Section 74-5-6(E)(3)[sic] does not establish any specific "points of compliance" for compliance with water quality standards.
28. Nothing in the Act or the Commission Regulations provide for a "point of compliance" hydraulically up-gradient of which ground water need not be protected.

Contaminant Travel Times

When the 1989 permit went into effect, LANL was stating that the travel times for contaminants in the regional aquifer would be tens of thousands of years. In July 2004, CCNS released a report written by George Rice, groundwater hydrologist, entitled *New Mexico's Right to Know: The Potential for Groundwater Contaminants from LANL to Reach the Rio Grande*. Rice conducted a review of DOE, LANL and NMED data and concluded that the travel times are decades - or less. As a result of the Rice report, LANL changed its travel times to decades. The existing permit is based on travel times of tens of thousands of years - not decades.

An entire issue of the *Vadose Zone Journal* was devoted to LANL groundwater issues, including computer modeling. In Keating, Elizabeth, B.A. Robinson, and V.V. Vesselinov, 2005, "Development and Application of Numerical Models to Estimate Fluxes through the Regional Aquifer beneath the Pajarito Plateau," *Vadose Zone Journal*, Volume 4, August, 2005.

"Simulations suggest that flow beneath the Rio Grande (west to east) has been induced by production at the Buckman well Field. Our calculations show that this flux may have increased from zero (pre1980) to approximately 45 kg s⁻¹ at present, or about 20% of the total annual production at Buckman" [page 658, Keating et al., 2005].

"Travel times through the regional aquifer are poorly understood because of the lack of tracer tests and *in situ* measurements of effective porosity" [page 658, Keating et al., 2005].

"Data concerning the spatial distribution of anthropogenic [LANL] contaminants in the regional aquifer has been inconclusive because of the exceptionally thick and complex vadose zone which makes it impossible to define the location and timing of contaminant entry to the regional aquifer" [page 658, Keating et al., 2005].

“As shown in Table 3, a significant proportion of **uncertainty** in fluxes downgradient of LANL results from **uncertainty** in the permeability of the basalts. Basalt units are very important for potential contaminant transport because of their expected low effective porosity. **Therefore, we can expect at least a factor of 3 uncertainty in the associated travel times resulting in uncertainty in the flow equation**” [Emphasis Added] [page 666, Keating et al., 2005].

“The current understanding of hydrostratigraphy, as implemented in the numerical models, is sufficient to explain general trends in heads (spatial and temporal) but is lacking in a few key areas such as in the vicinity of R-9, R-12, R-22, and R-16. Detailed transport calculations in the vicinity of these wells would benefit from a refinement of the hydrostratigraphic framework model” [page 667 to 668, Keating et al., 2005]

“The implication of this work for contaminant transport issues is that because of parameter **uncertainty**, predicted fluxes and velocities are quite **uncertain**. **Uncertainties** in permeability and porosity values lead to additional model **uncertainty**” [Emphasis Added] [page 668, Keating et al., 2005].

“These uncertainties can be reduced meaningfully with more data collection, including multi-well pumping and tracer tests” [Keating et al., 2005].

“Finally, local recharge does occur along canyons that cross the LANL property - this recharge has important water quality implication in locations where contaminant effluent discharges have been released” [page 668, Keating et al., 2005].

How has NMED addressed the **uncertainties** in the documents submitted by the Permittees which rely on computer modeling when the LANL scientists acknowledge an uncertainty of three orders of magnitude, or 20 to 20,000 years.

How has NMED addressed the reduced travel times in this permit in order to protect human health and the environment?

16 11.3 GENERAL CONDITIONS

17 11.3.1 Groundwater Monitoring

~~18 The Permittees shall conduct groundwater monitoring for all regulated units, as defined
19 in 40 CFR § 264.90(a)(2), at the Facility subject to the groundwater monitoring
20 requirements of 40 CFR Part 264, Subpart F and subject to corrective action under
21 Section 11.2 of this Permit.~~

Suggested language: The Permittees shall conduct groundwater monitoring for all regulated units as defined in LANL report LA-UR-07-6436, October 2007. The NMED issued a letter of approval for the subject LANL report on October 29, 2007.

22 The Permittees shall coordinate such monitoring with the monitoring conducted under the
23 Interim Facility Wide Groundwater Monitoring Plans, and any Department-approved
24 Long-term Groundwater Monitoring Plans for the Facility, as approved under the
25 Consent Order. So long as the Consent Order is in effect, fulfilling the groundwater
26 monitoring requirements of the Consent Order shall fulfill the groundwater monitoring
27 requirements of 40 CFR §§ 264.90 through 100.

Background: Because of the ground water issues raised by Gilkeson, beginning in June 2004, DOE called in an expert panel of the National Academy of Sciences (NAS) to conduct a study of groundwater practices at LANL. Gilkeson made a number of presentations about the problems with the drilling program at LANL. Due to his persistence and accurate knowledge, the authors of the NAS Report found major problems with the LANL ground water protection practices.

Three critical reports, - Interim Facility Wide GW Monitoring Plan, the Groundwater Background Investigation report and the Well Screen Analysis Report are all “alternative requirements” under the Consent Order, which is an enforceable document. It has been difficult to obtain copies of these reports from LANL in a timely manner.

Permit language: The Permittees are required to revise the Interim Facility Wide Groundwater Monitoring Plan because the Interim Plan does not comply with the RCRA groundwater monitoring requirements in 40 CFR 264 Subpart F and the Interim Plan is not based on good scientific practices. The 2007 National Academy of Sciences Report on the LANL Groundwater Protection Practices had the criticism of the LANL Interim Groundwater Monitoring Plan that is pasted below:

(t)here are areas where the Interim Plan does not appear to follow good scientific practice. The most important of these is the focus on a watershed approach, where the monitoring plan for each watershed within LANL is developed and laid out individually in the Interim Plan. This structure, which is specified in the Consent Order, works quite well for monitoring surface base flows and alluvial groundwater that are confined to the canyons. However, it does not work well for the intermediate aquifers and even less for the regional aquifer. (p. 43 in NAS report)

Two other serious problems in the Interim Plan is the use of the LANL Groundwater Background Investigation Report - Revision 3 (GBIR-3) and the LANL Well Screen Analysis Report - Revision 2 (WSAR-2) for assessment of the ability of the large number of LANL monitoring wells that are impacted by organic and/or bentonite clay drilling muds to produce reliable and representative water samples. Both of the LANL reports were reviewed by the EPA Kerr Research Laboratory and the Kerr Lab published a report on March 30, 2008 that described the overall failure of the two reports for any use in the

Interim Plan. Excerpts from the EPA Kerr Lab report are pasted below:

EPA Kerr Lab Criticism of the LANL GBIR-3 report:

The data used to characterize “background” conditions [in the GBIR-3] is sparse, derived mainly from sources representing mixtures of water that are significantly different from the samples obtained from the hydrogeologic characterization wells, and are representative of significantly different flow paths and residence times within the aquifer. Actual background values at the locations of the individual characterization well screens [i.e., the LANL monitoring wells] may be significantly different from the proposed values [in the GBIR-3] (emphasis added). (p. 3)

EPA Kerr Lab Criticism of the LANL WSAR-2 report:

In general, the criteria used to evaluate wells in the WSAR are complex and may ultimately prove to be unreliable. The most significant concerns noted in review of the current versions of the WSAR and GBIR are related to three areas:

- The results of the WSAR and related assessments have not been fully validated using site-specific data from laboratory and field studies.
- The criteria rely heavily on “background” data obtained from long-screened production wells and springs that do not necessarily represent water quality upgradient of the hydrogeologic characterization monitoring wells.
- The reliability of criteria used to evaluate the representativeness of groundwater samples from well screens following transformations of residual organic drilling additives and the return of groundwater samples to oxidized conditions is uncertain due to a lack of direct assessments of the site-specific mineralogical transformations and the reliance on groundwater sampling data. (p. 2)
- It is quite possible that constituent concentrations observed in unimpacted monitoring wells may be significantly different from the data provided in the GBIR. For example, it appears the well R-35B was recently installed near the top of the regional aquifer without the use of harmful drilling additives within the screened interval. Concentrations of zinc measured in filtered groundwater samples have varied from approximately 40 ug/l to 60 ug/l. This range is above the maximum value of approximately 32 ug/l reported in Table 4.2-3 of the GBIR and is at or above the maximum value reported in Table 4-3a of the WSAR. This example illustrates the uncertainty inherent in using “background” data obtained from sources that are not constructed to monitor the same flowpaths as the monitoring wells in question. (p.3)

The above statement is further supported by the analytical data from the many new monitoring wells that LANL has installed with dual rotary casing advance drilling methods that prevent the introduction of harmful drilling additives within the screened intervals. The WSAR-2 assumed that the background concentration of dissolved zinc was very low and not detected in much of the regional aquifer. However, the analytical data from the new wells show the general presence of dissolved zinc at background levels generally above 25 ug/L and ranging up to greater than 75 ug/L.

The 2007 Final Report of the NAS on the LANL Groundwater Protection Practices also presented a finding that the LANL Well Screen Analysis Reports were not based on good scientific practices and the assessments produced were not statistically valid. The pertinent excerpt from the NAS Final Report is pasted below"

During this study the committee was presented with information suggesting that many wells into the regional aquifer at LANL (R-wells) are flawed for the purpose of monitoring. The committee did not disagree, but rather found a lack of basic scientific understanding of the subsurface geochemistry that could help ensure future success. Evidence about the conditions prevalent around the sampling points (screens) in the compromised wells is indirect—relying [in the LANL WSAR reports] on plausible but unproven chemical interactions around the screens, general literature data, analyses of surrogates, and apparent trends in sampling data that may not be statistically valid. (p. 4)

28 The Permittees shall notify the Department, in writing, of any new detections of
29 hazardous waste and hazardous waste constituents in groundwater at any location that
30 was received during the previous month as described in Permit Section 11.3.1.1. For
31 purposes of this Section (11.3), "hazardous constituent" includes explosive compounds,
32 any toxic pollutant identified at 20.6.2.7.WW NMAC and any contaminant listed in
33 20.6.2.3103 NMAC. Such detections of hazardous waste or hazardous constituents shall
34 also be highlighted in the periodic groundwater monitoring report submitted to the
35 Department, in accordance with Permit Section 11.3.2, summarizing the groundwater
36 monitoring results for the appropriate monitoring period.

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1 11.3.1.1 Notification of Detections

2 By the fifteenth day of each month, the Permittees shall review the analytical data from
3 all groundwater monitoring conducted under this Permit that was received during the
4 previous month, and shall record the date of such review in the Operating Record. If the
5 fifteenth day of a month is a non-business day, then the review shall be conducted by the
6 next business day.

7 The Permittees shall notify the Department orally within one business day after review of
8 the analytical data if such data show detection of a contaminant in a well screen interval

9 or spring at a concentration that exceeds the groundwater cleanup levels established in
10 Permit Section 11.4.1 if that contaminant has not previously exceeded such water quality
11 standard or cleanup level in such well screen interval or spring.

12 The Permittees shall notify the Department in writing within fifteen days after review of
13 the analytical data if the data show any of the following:

14 (1) Detection of a hazardous constituent that is an organic compound in a spring or
15 screened interval of a well if that hazardous constituent has not previously been
16 detected in the spring or screened interval;

17 (2) Detection of a hazardous constituent that is a metal or other inorganic compound
18 at a concentration above the background level in a spring or screened interval of a
19 well if that hazardous constituent has not previously exceeded the background
20 level in the spring or screened interval;

21 (3) Detection of a hazardous constituent in a spring or screened interval of a well at a
22 concentration that exceeds one-half the cleanup level established in Permit
23 Section 11.4.1, if that hazardous constituent has not previously exceeded one-half
24 such standard or screening level in the spring or screened interval;

25 (4) Detection of perchlorate in a spring or screened interval of a well at a
26 concentration of 2 µg/L or greater if perchlorate at such concentration has not
27 previously been detected in the spring or screened interval;

28 (5) Detection of a hazardous constituent that is a metal or other inorganic compound
29 in a spring or screened interval of a well at a concentration that exceeds 2 times
30 the background level for the third consecutive sampling of the spring or screened
31 interval; and

32 (6) Detection of a hazardous constituent in a spring or screened interval of a well at a
33 concentration that exceeds one-half the cleanup level established in Permit
34 Section 11.4.1 and that has increased for the third consecutive sampling of that
35 spring or screened interval.

36 The written notification shall be submitted to the Department in a letter report in table
37 format that includes, but is not limited to, the date or dates of the sampling event, an
38 identification of the well or spring, the location of the well or spring, the depth of the
39 screened interval of the well or zone sampled, a list of the analytical data that triggered

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1 the reporting requirement, any known issues with sample quality, and the specific
2 category for which the data is reported under this Section (11.3.1.1).

3 Previous data to be evaluated under this Section (11.3.1.1) to determine whether specified
4 levels have been exceeded, or to determine trends in data for three consecutive samples
5 shall include only data acquired after September 30, 2009. For the purpose of the notice
6 requirements of this Section (11.3.1.1), the background level of a contaminant shall be
7 the most recent Department-approved 95 percent upper tolerance limit for the
8 background for that contaminant set forth in the *Groundwater Background Investigation*
9 *Report* approved by the Department, including any approved revisions, as it may be

10 revised or replaced with another document. **NOTE. The NMED is required to order the
retraction of the *Groundwater Background Investigation Report* GBIR) because the report
does not meet the following requirements stated in Permit Section**

11.10.6 Determination of Background. This permit sections states that "Background concentrations for groundwater shall be collected from upgradient wells." The GBIR does not present background concentrations from upgradient wells. Instead, the GBIR inappropriately uses data collected from drinking water wells located a great distance away from LANL regulated units, SWMUs and AOC. Another inappropriate source of data in the GBIR are springs along the Rio Grande that are downgradient of LANL. At the request of the Northern New Mexico Citizens' Advisory Board (CAB), the EPA Kerr Research Laboratory reviewed the most recent revision of the LANL GBIR. The conclusion In the EPA Kerr Lab that the GBIR-Revision 3 does not produce accurate background data is pasted below:

The data used to characterize “background” conditions [in the GBIR-3] is sparse, derived mainly from sources representing mixtures of water that are significantly different from the samples obtained from the hydrogeologic characterization wells, and are representative of significantly different flow paths and residence times within the aquifer. Actual background values at the locations of the individual characterization well screens [i.e., the LANL monitoring wells] may be significantly different from the proposed values [in the GBIR-3]. (Emphasis added.)

In fact, LANL now uses appropriate drilling methods for the installation of LANL monitoring wells and the accurate and reliable background groundwater chemistry data from the new wells are significantly different from the chemistry data from the inappropriate sources that were used in the GBIR-3. The analytical data from the new wells is proof that the NMED must order LANL to retract the GBIR-3 and that NMED must order LANL to install background monitoring wells at appropriate locations hydraulically upgradient of the LANL regulated units, SWMUs and AOCs that are recognized as potential sources for contamination of groundwater.

11 The Permittees shall give notice by e-mail to persons on the e-mail notification list of
12 groundwater analytical data reported under this Section (11.3.1.1) in accordance with
13 Permit Section 1.13.

1 11.3.2 Groundwater Monitoring Reporting

32 The Permittees shall submit to the Department periodic monitoring reports in accordance
33 with the schedule in the Interim Facility Wide Groundwater Monitoring Plan (IFGMP) or
34 the Department-approved Long-term Groundwater Monitoring Plans. The reports shall
35 be prepared in accordance with Permit Section 11.12. The Permittees shall submit to the
36 Department periodic groundwater monitoring reports for all groundwater monitoring data
37 generated pursuant to this Permit. The Permittees shall propose a schedule for such
38 reporting to the Department for approval. Such reporting shall be coordinated with, and
39 may be combined with, the reporting conducted under § IV.A.6 of the Consent Order.

The Interim Facility Wide Groundwater Monitoring Plan must be retracted because it is based on

the incorrect data in the Groundwater Background Investigation Report and the WSAR-3. LANL now uses appropriate drilling methods for the installation of LANL monitoring wells and the accurate and reliable background groundwater chemistry data from the new wells are significantly different from the chemistry data from the inappropriate sources that were used in the IFGMP. The analytical data from the new wells is proof that the NMED must order LANL to retract the IFGMP and that NMED must order LANL to install monitoring wells at appropriate locations hydraulically upgradient of the LANL regulated units, SWMUs and AOCs that are recognized as potential sources for contamination of groundwater.

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1 **11.3.3 Corrective Action Beyond the Facility Boundary**

2 The Permittees shall notify the Department, orally and in writing in accordance with
3 Permit Section 1.9.12, upon discovering that a release of hazardous waste or hazardous
4 constituents has migrated beyond the Facility boundary or has the potential to migrate
5 beyond the Facility boundary.

6 In the event that hazardous waste or hazardous constituents migrate beyond the Facility
7 boundary, the Permittees shall implement corrective action beyond the Facility boundary
8 as necessary to protect human health and the environment, unless the Permittees
9 demonstrate to the Department that, despite the Permittees' best efforts, the Permittees
10 are unable to obtain the necessary permission to undertake such actions. The Permittees
11 are not relieved of any responsibility to clean up a release that has migrated beyond the
12 Facility boundary where off-site access has been denied. On-site measures to address
13 such releases shall be taken, to be determined on a case-by-case basis (*see* 40 CFR §
14 264.101(c)).

This requirement applies to the plutonium found in the slough/channel/ox-bow at the Buckman Direct Diversion Project construction area. The sampling was for radionuclide. We don't know if hazardous constituents are present. More sampling must be done first.

13 **11.4 CLEANUP LEVELS**

14 The Department and the New Mexico Water Quality Control Commission (WQCC) have
15 separately specified certain cleanup goals and methods of calculating cleanup levels. The
16 Department has also specified certain reporting requirements for sites where corrective
17 action is required in response to releases to the environment. In general, the Department
18 has selected a human health target risk level of 10^{-5} for carcinogenic substances and a
19 Hazard Index (HI) of 1.0 for non-carcinogenic substances as cleanup goals for
20 establishing site-specific cleanup levels for one or more contaminants for which
21 toxicological data are published. The Permittees shall follow the cleanup and screening
22 levels described in this Permit Part in implementing the corrective action requirements of
23 this Permit. In addition, cleanup levels for the protection of the environment shall
24 address ecological risk consistent with the Department's guidance for assessing
25 ecological risk as specified in Permit Section 11.5.

We oppose the human health target risk level of 10^{-5} and urge NMED to adopt a human health

target risk level of 10⁻⁶. EPA Region 6 allows states to adopt a range between 10⁻⁴ and 10⁻⁶. We urge NMED to adopt the more protective 10⁻⁶ human health target risk level.

26 **11.4.1 Groundwater Cleanup Levels**

27 The cleanup levels for all contaminants in groundwater shall be the WQCC groundwater
28 quality standards, 20.6.2.3103 NMAC, the cleanup levels for toxic pollutants calculated
29 in accordance with 20.6.2.7.WW NMAC, and the drinking water maximum contaminant
30 levels (MCLs) adopted by EPA under the federal Safe Drinking Water Act (42 U.S.C. §§
31 300f to 300j-26) or the New Mexico Environmental Improvement Board (EIB), 20.7.10
32 NMAC. If both a WQCC water quality standard and an MCL have been established for
33 an individual substance, then the lower of the levels shall be the cleanup level for that
34 substance.

35 The most recent version of the EPA *Regional Screening Levels for Chemical*
36 *Contaminants at Superfund Sites* (RSLs) for tap water shall be used to establish the
37 cleanup level if either a WQCC standard or an MCL has not been established for a
38 specific substance. If no WQCC groundwater standard or MCL has been established for
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1 a contaminant for which toxicological information is published, the Permittees shall use a
target excess cancer risk level of 10⁻⁵

2 for carcinogenic substances and a HI of 1.0 for non³

carcinogenic substances as the basis for proposing a cleanup level for the contaminant. If
4 the background concentration of an inorganic constituent, as established in accordance
5 with Permit Section 11.10.6, exceeds the standard then the cleanup level is the
6 background concentration for that specific substance. Any cleanup level based on a risk
7 assessment must be submitted to the Department for its review and approval.

8 The Permittees shall give notice by e-mail to persons on the e-mail notification list in
9 accordance with Permit Section 1.13 of a submittal to the Department under this Permit
10 Section 11.4.1.

We oppose the human health target risk level of 10⁻⁵ and urge NMED to adopt a human health
target risk level of 10⁻⁶. EPA Region 6 allows states to adopt a range between 10⁻⁴ and 10⁻⁶.
We urge NMED to adopt the more protective 10⁻⁶ human health target risk level.

11 **11.4.1.1 Groundwater Cleanup Level for Perchlorate**

12 If, during the term of this Permit, the WQCC adopts a groundwater quality standard for
13 perchlorate, or EPA or the EIB adopts an MCL for perchlorate, such standard or MCL
14 shall be the cleanup level in accordance with Section 11.4.1 above. If perchlorate is
15 detected, the Permittees shall evaluate the nature and extent of the perchlorate
16 contamination. In the absence of a groundwater quality standard or MCL, if perchlorate
17 is detected at concentrations at or greater than 4 µg/L, then the cleanup level shall be
18 established using a HI of 1.0 in accordance with Permit Section 11.4.1 above.

New research indicates that the standard should be lower than 4 ug/L. Please see:
McCarroll et al 2009, "An Evaluation of the Mode of Action Framework for Mutagenic

Carcinogens Case Study II: Chromium (VI),” which is attached. The report is authored by a group within EPA and describes the mode-of-action analysis for chromium VI, possibly as an oral carcinogen with a mutagenic mode-of-action. EPA may be moving to a linear low dose extrapolation which would be used to generate a cancer potency estimate and the age dependent adjustment factors that should be applied to account for sensitive age groups, such as children. Please add this report to the public comment record for this permitting process.

19 **11.4.2 Soil and Sediment**

20 The cleanup levels for soil and sediments shall be the cleanup levels for soil set forth in
21 this Permit Section (11.4.2). Should the Permittees be unable to achieve the Soil Cleanup
22 Levels established under Permit Section 11.4.2, they shall conduct risk assessments in
23 accordance with Permit Sections 11.10.4 and 11.10.5. Any cleanup level based on a risk
24 assessment must be submitted to the Department for its review and approval.

25 **11.4.2.1 Soil Cleanup Levels**

26 The Department has specified soil-screening levels that are based on a target total excess
27 cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a
28 target HI of 1.0 for residential and industrial land use. The Department may determine
29 that a dilution attenuation factor of 1, as calculated using the Department-approved
30 methods, for contaminated soils is appropriate to achieve clean closure, at sites where
31 migration of contaminants through the soil column to groundwater has occurred or when
32 the Department determines that the potential exists for migration of contaminants through
33 the soil column to groundwater. Soil cleanup levels shall be the target soil screening
34 levels listed in the Department’s *Technical Background Document for Development of*
35 *Soil Screening Levels* (as updated). If a Department soil screening level has not been
36 established for a substance for which toxicological information is published, the soil
37 cleanup level shall be established using the most recent version of the EPA RSL for
38 residential and industrial soil for compounds designated as “n” (non-carcinogen effects),
39 “max” (maximum concentration), and “sat” (soil saturation concentration), or ten times

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1 the EPA Region VI HHMSSL for compounds designated “c” (carcinogen effects). The
2 cumulative risk shall not exceed a total excess cancer risk of 10^{-5} for carcinogenic
3 substances and, for non-carcinogenic substances, a target HI of 1.0 at sites where multiple
4 contaminants are present.

5 If the current and reasonably foreseeable future land use is one for which the Department
6 has not established soil screening levels, the Permittees may propose cleanup levels to the
7 Department based on a risk assessment and a target excess cancer risk level of 10^{-5} for
8 carcinogenic substances or an HI of 1.0, based on current and reasonably foreseeable
9 future land use (e.g., residential, recreational, industrial).

We oppose the human health target risk level of 10^{-5} and urge NMED to adopt a human health target risk level of 10^{-6} . EPA Region 6 allows states to adopt a range between 10^{-4} and 10^{-6} . We urge NMED to adopt the more protective 10^{-6} human health target risk level.

10 **11.4.2.2 Soil Polychlorinated Biphenyls Cleanup Levels**

11 The soil cleanup level for PCBs is either a default concentration of 1 milligram per
12 kilogram (mg/kg) or a risk-based PCB concentration level established through
13 performing a health risk assessment using a target excess cancer risk level of 10^{-5} for
14 carcinogenic substances or an HI of 1.0. (NMED *Risk-based Remediation of*
15 *Polychlorinated Biphenyls at RCRA Corrective Action Sites* (March 2000)).

We oppose the human health target risk level of 10^{-5} and urge NMED to adopt a human health target risk level of 10^{-6} . EPA Region 6 allows states to adopt a range between 10^{-4} and 10^{-6} . We urge NMED to take a precautionary approach and adopt the more protective 10^{-6} human health target risk level.

21 **11.5 ECOLOGICAL RISK EVALUATION**

22 Screening for ecological risk shall be conducted using the LANL Ecological Screening
23 Levels (ESLs), which are included in LANL's *Screening Level Ecological Risk*
24 *Assessment Methods*, (LA-UR-99-1405 and as updated and approved by the Department).
25 In the absence of ESLs, the Permittees may use U.S. EPA's ECO-SSLs with the
26 Department approval. If the LANL's ESL database does not contain a screening value
27 for the receptor or contaminant, the Permittees shall derive a screening level using the
28 methodology in the Department's *Guidance for Assessing Ecological Risks Posed by*
29 *Chemicals: Screening-Level Ecological Risk Assessment* (March 2008) or in LANL's
30 *Screening Level Ecological Risk Assessment Methods*, (LA-UR-99-1405). Ecological
31 risk at each site shall be evaluated in a manner consistent with the Department's
32 *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level*
33 *Ecological Risk Assessment* (March 2008) and *Assessing Ecological Risks Posed by*
34 *Radionuclides: Screening-Level Radioecological Risk Assessment* (April 2000).

We have had problems obtaining these documents from the Permittees. We request that anytime these documents are updated that an email notification is made by the Permittees. Suggested language: The Permittees shall give notice by e-mail to persons on the e-mail notification list of a request under this Permit Section 11.5, in accordance with Permit Section 1.13.

3 **11.7.1 Long-term Monitoring and Maintenance of SWMUs and AOCs**

4 The Permittees shall submit a Long-term Monitoring and Maintenance Plan as part of the
5 permit modification request, as described in Permit Section 11.7, to change the status of a
6 SWMU or AOC from corrective action required (*i.e.*, listed in Attachment K, Table K-1)
7 to corrective action complete with controls (*i.e.*, listed in Attachment K, Table K-2). The
8 Plan shall describe the combination of ongoing measures required to ensure protection of
9 human health and the environment, such as maintenance of physical or institutional
10 controls, monitoring of environmental media, or other measures. Upon approval, such
11 plans shall be included in Attachment O (*Long-term Monitoring and Maintenance Plans*).

We remain concerned about the lack of integration between the March 1, 2005 Order on Consent and this Permit. We are particularly concerned about whether sites under the Consent Order will transition smoothly to the Long-term Monitoring and Maintenance Plans.

23 **11.8.5.1.ii Investigation Work Plan Requirements**

24 Investigation Work Plans shall meet the requirements specified in Permit Section 11.12
25 (*Reporting Requirements*). Investigation Work Plans shall include schedules of
26 implementation and completion of specific actions necessary to determine the nature and
27 extent of contamination and the potential pathways of contaminant releases to the air,
28 soil, surface water, and ground water. The Permittees shall provide sufficient
29 justification and associated documentation that a release is not probable or has already
30 been characterized if a unit or a media/pathway associated with a unit (ground water,
31 surface water, soil, subsurface gas, or air) is not included in an Investigation Work Plan.
32 Such deletions of a unit, medium, or pathway from the work plan(s) are subject to the
33 approval of the Department. The Permittees shall provide sufficient written justification
34 for any omissions or deviations from the minimum requirements specified in Permit
35 Section 11.12 (*Reporting Requirements*). Such omissions or deviations are subject to the

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1 approval of the Department. In addition, Investigation Work Plans shall include all
2 investigations necessary to ensure compliance with 40 CFR **§ 264.101. § 264.91 through §**
264.100 and the requirements for facility-wide corrective action in § 264.101

21 **11.9 APPROVAL OF SUBMITTALS**

22 All documents shall be subject to the review and approval procedures described in Permit
23 Section 1.9.18. **There must be a mechanism for the public to be more actively engaged in**
review and approval procedures. The submittal letters, correspondence between the Regulator
and the Permittee and any approval or disapproval letters must be readily available to the public.

9 **11.10.2.4 Drilling and Soil, Rock, and Sediment Sampling**

10 **11.10.2.4.i Drilling**

11 Exploratory and monitoring well borings shall be drilled using the most effective, proven,
12 and practicable method for recovery of undisturbed samples and potential contaminants.

13 The Department shall approve the drilling methods selected for advancement of each
14 boring prior to the start of field activities. Based on the drilling conditions, the borings
15 shall be advanced using one of the following methods:

- 16 (1) hollow-stem auger;
- 17 (2) air rotary;
- 18 (3) mud rotary;
- 19 (4) percussion hammer;
- 20 (5) sonic;
- 21 (6) dual wall air rotary;
- 22 (7) direct Push Technology (DPT);
- 23 (8) cryogenic; and
- 24 (9) cable tool.

Please Add air/water rotary casing hammer and air/water dual rotary underreamer casing
advance to the drilling methods. The casing advance drilling methods provide for drilling in
zones of saturation using only air and water as drilling fluids. The importance to use air/water

casing advance drilling methods is illustrated by the comment in many LANL well completion reports. Successful examples are pasted below:

The R-35 wells were drilled using dual-rotary casing-advance air-drilling methods. The only drilling fluid additives used were potable water and foam. Foam-assisted drilling was used only in the vadose zone and was stopped well above the regional saturated zone; no drilling-fluid additives were used within the regional aquifer, except small amounts of potable water added to the air in a fluid-assist fashion. Additive free drilling provides minimal impacts to the groundwater and aquifer materials. Both boreholes were successfully completed to their planned depths while advancing casing. (Executive Summary in the Well R-35a/R-35b Completion Report).

The R-42 borehole was drilled using dual-rotary air-drilling methods. Drilling fluid additives used included potable water and foam. Foam-assisted drilling was used only in the vadose zone; no drilling-fluid additives other than small amounts of potable water added to the air below 790 ft depth, which is 128 ft above the top of regional saturation. Additive-free drilling provides minimal impacts to the groundwater and aquifer materials. The borehole was successfully completed to total depth using casing-advance drilling methods. (Executive Summary in the Well R-42 Completion Report).

25 Hollow-stem auger or DPT drilling methods are preferred if vapor-phase or VOC
26 contamination is known or suspected to be present. The type of drilling fluid used, if
27 necessary, shall be approved by the Department prior to the start of drilling activities or
28 prior to use at any site.

29 All drilling equipment shall be in good working condition and capable of performing the
30 assigned task. Drilling rigs and equipment shall be operated by properly trained,
31 experienced, and responsible crews. The Permittees are responsible for ensuring that
32 contaminants from another site or facility are not introduced into the site under
33 investigation due to malfunctioning equipment or poor site maintenance. The drilling
34 equipment shall be properly decontaminated before drilling each boring.

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1 Exploratory borings shall be advanced to unit- and location-specific depths specified or
2 approved by the Department. The Permittees shall propose drilling depths in the site
3 specific work plans submitted for each subject area. Unless otherwise specified by the
4 Department, the borings shall be advanced to the following minimum depths:

5 (1) in all borings, 25 ft below the deepest detected contamination based on field
6 screening, laboratory analyses, and/or previous investigations at the site;

7 (2) 20 ft below the base of disposal units if contamination is not detected;

8 (3) five ft below the base of shallow structures such as tanks, piping or building
9 sumps, or other building structures;

10 (4) 50 ft below the deepest known intermediate perched groundwater zone;

11 (5) 50 ft below the top of the regional aquifer; and
12 (6) depths specified by the Department based on regional or unit specific data needs.
13 The Permittees shall notify the Department as early as practicable if conditions arise or
14 are encountered that do not allow the advancement of borings to the depths specified by
15 the Department or proposed in an approved work plan so that alternative actions may be
16 discussed. Precautions shall be taken to prevent the migration of contaminants between
17 geologic, hydrologic, or other identifiable zones during drilling and well installation
18 activities. Contaminant zones shall be isolated from other zones encountered in the
19 borings.
20 The drilling and sampling shall be accomplished under the direction of a qualified
21 engineer or geologist who shall maintain a detailed log of the materials and conditions
22 encountered in each boring. Both sample information and visual observations of the
23 cuttings and core samples shall be recorded on the boring log. Known site features
24 and/or site survey grid markers shall be used as references to locate each boring prior to
25 surveying the location as described in Permit Section 11.10.2.6. The boring locations
26 shall be measured to the nearest foot, and locations shall be recorded on a scaled site map
27 upon completion of each boring.
28 Trenching and other exploratory excavation methods shall follow the applicable general
29 procedures outlined in this Permit Section. The particular methods proposed for use by
30 the Permittees for exploratory excavation and sampling at any specific unit shall be
31 included in the site-specific investigation work plan submitted to the Department. The
32 Department will include any changes or additional requirements for conducting
33 exploratory excavation and sampling activities at the subject unit in its response to the
34 Permittees after review of the investigation work plans.

20 **11.10.2.6 Subsurface Vapor-Phase Monitoring and Sampling**

21 Samples of subsurface vapors shall be collected from vapor monitoring points from both
22 discrete zones, selected based on investigation and field screening results, and as total
23 well subsurface vapor samples where required by the Department. Subsurface vapor
24 samples shall be collected using methods approved by the Department that will produce
25 reliable and representative results from the zones subject to investigation or monitoring.
26 During subsurface drilling explorations at sites where there is a potential for vapor-phase
27 contamination to be present, soil gas samples shall be obtained at the Department28
approved intervals for field screening and/or laboratory analyses. An inflatable packer
29 shall be dropped to isolate the bottom two to three feet of the borehole. The isolated
30 portion of the borehole shall be purged by slowly removing approximately five times the
31 volume of the annular space beneath the packer, followed by a VOC measurement using
32 a PID equipped with a 11.7 eV lamp, a combustible gas indicator or other instrument
33 approved by the Department. The data shall be logged and also used for determining the
34 samples to be sent to an analytical laboratory.
35 The Permittees shall, as directed by the Department, collect vapor samples for field
36 measurement of the following during subsurface vapor monitoring activities:

37 (1) percent oxygen;

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1 (2) organic vapors (using a photo-ionization detector with an 11.7 eV (electron volt)
2 lamp, a combustible vapor indicator or other method

(2) organic vapors (using a photo-ionization detector with an 11.7 eV (electron volt)
2 lamp, a combustible vapor indicator or other method approved by the
3 Department);
4 (3) percent carbon dioxide;
5 (4) static subsurface pressure; and
6 (5) other parameters (such as carbon monoxide and hydrogen sulfide) as required by
7 the Department.

8 The Permittees also shall collect vapor samples for laboratory analysis of the following
as

9 required:

10 (6) percent moisture;

11 (7) VOCs; and

12 (8) other analytes required by the Department.

13 Vapor samples analyzed by the laboratory for percent moisture and VOCs shall be
14 collected using SUMMA canisters or other sample collection method approved by
the

15 Department. The samples shall be analyzed for VOC concentrations by EPA Method
16 TO-15, as it may be updated or equivalent VOC analytical method.

17 Field vapor measurements, the date and time of each measurement, and the
instrument

18 used shall be recorded on a vapor monitoring data sheet. The instruments used for
field

19 measurements shall be calibrated daily in accordance with the manufacturer's
20 specifications and as described in Permit Section 11.10.4. The methods used to
obtain

21 vapor-phase field measurements and samples shall be approved by the Department
in

22 writing prior to the start of air monitoring at each Facility site where vapor-phase
23 monitoring is conducted.

Add the following to this section in order to eliminate dilution by atmospheric air: For
vapor monitoring wells installed at LANL, care shall be taken that the vapor sampling
lines that extend from the depth of the sampling ports to land surface are firmly attached
to the sampling ports and the lines will not leak. In addition, care shall be taken to seal
the top of the lines at the top of the monitoring wells to ensure that atmospheric air will
not enter into the sampling lines during the time periods between sampling events.

21 **11.10.4.1 Human Health Risk Assessment Methods**

22 A risk assessment may be required for human receptors that are potentially exposed
to

23 site-related chemicals in environmental media. The risk assessment shall contain a
24 conceptual site model (CSM), which shall aid in understanding and describing each
site.

25 The CSM shall address the following components:

- 26 (1) identification of suspected sources;
- 27 (2) identification of contaminants;
- 28 (3) identification of contaminant releases;
- 29 (4) identification of transport mechanisms;
- 30 (5) identification of affected media;
- 31 (6) identification of land use scenarios;
- 32 (7) identification of potential receptors under current land use scenario;
- 33 (8) identification of potential receptors under future land use scenario; and

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- 1 (9) identification of potential routes of exposure.
- 2 Potential human receptors under current and/or future land use scenarios may include
- 3 residential, industrial, construction, and recreational. Other special receptors may be
- 4 required on a site-specific basis.

We oppose use of the human health target risk level of 10-5 and urge NMED to adopt a human health target risk level of 10-6. EPA Region 6 allows states to adopt a range between 10-4 and 10-6. We urge NMED to take a precautionary approach and adopt the more protective 10-6 human health target risk level.

5 **11.10.4.1.i Exposure Pathways**

6 The identification of exposure pathways shall include of discussion of all potential
7 pathways and justify whether the pathways are complete. Pathways that shall be
8 considered include soil, groundwater, air, surface water, sediment, and biota **and how**
these are used in ceremony and in healing practices. An
9 evaluation of the potential for contaminants to migrate from soil to groundwater shall
10 also be provided. The risk assessment shall also address exposure mechanisms for
each
11 exposure pathway, including ingestion, inhalation, dermal, and inhalation of volatile
12 organic compounds volatilized from soil and/or groundwater.

9 **11.10.4.1.vii Uncertainties**

10 The Permittees shall provide an uncertainties section that discusses all assumptions,
11 professional judgments, and data which may result in uncertainties in the final
estimates
12 of risk and hazard. The uncertainties shall also discuss whether risks/hazards may
have
13 been under or overestimated due to the assumptions made in the assessment. **The**
uncertainties shall also include the latest in uncertainties calculations to determine if the
uncertainties outweigh the final result. In such a case, complete remove will be
required.

14 **11.10.5 Site-Specific Ecological Risk Assessment Methods**

15 If the screening level ecological risk assessment indicates unacceptable risk, then
the
16 Permittees shall conduct a site-specific ecological risk assessment. In addition, the
17 Permittees shall prepare a site-specific Ecological Risk Assessment Report in

support of

18 corrective action, and, if necessary, for closure in accordance with Permit Part 9. The
19 assessment shall be conducted using EPA and/or the Department approved
guidance and

20 methodologies. The ecological risk assessment shall follow the same methodologies
21 outlined above in the human health risk assessment for determining constituent of
22 potential ecological concern (COPEC) and data quality assurance. **The uncertainties
shall also include the latest in uncertainties calculations to determine if the uncertainties
outweigh the final result. In such a case, complete remove will be required.**

23 **11.10.6 Determination of Background**

24 The Permittees shall determine an appropriate background data set for inorganic
25 constituents at the site. The Permittees shall determine whether one or more
background

26 data sets are appropriate depending on soil types and geology at the site.

Background

27 concentrations for groundwater shall be collected from upgradient wells **drilled with
air rotary casing advance drilling methods.** The

28 background data set shall be representative of natural conditions unaffected by site
29 activities and shall be statistically defensible. A sufficient number of background
30 samples shall be collected for use in the risk assessment, including conducting site
31 attribution analyses and comparison of data sets.

32 The Permittees shall provide summary statistics for background metals
concentrations in

33 each medium of concern and include the following information:

34 (1) number of detects;

35 (2) total number of samples;

36 (3) frequency of detection;

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1 (4) minimum detected concentration;

2 (5) maximum detected concentration;

3 (6) minimum sample quantitation limit (SQL);

4 (7) maximum SQL;

5 (8) arithmetic mean;

6 (9) median;

7 (10) standard deviation; and

8 (11) coefficient of variation.

9 The Permittees shall determine the 95% upper tolerance limit (UTL) for each metal
using

10 a distribution-based statistical method.

28 **11.11.3.2.iii Bedrock Wells**

**What is the "bedrock" beneath LANL that is referred to in this section? Does the bedrock
include the Bandelier Tuff, the Cerro Toledo Formation, the Guaje Pumice Bed, the Cerros
del Rio basalt, the Miocene Basalt, the Puye Formation, the Tschicoma Dacite, the pumice**

rich volcanoclastic deposits, the Totavi Formation, and the strata in the Santa Fe Group. Clarify the meaning of bedrock in this section.

29 The installation of monitoring wells into bedrock can be accomplished in two ways. The
30 first method is to drill or bore a pilot borehole through the soil overburden into the
31 bedrock. An outer casing is installed into the borehole by setting it into the bedrock, and
32 grouting it into place. After the grout has set, the borehole can be advanced through the
33 grout seal into the bedrock. The preferred method of advancing the borehole into the
34 bedrock is rock coring. Rock coring makes a smooth, round hole through the seal and
35 into the bedrock without cracking or shattering the seal. Roller cone bits are used in soft
36 bedrock, but extreme caution should be taken when using a roller cone bit to advance
37 through the grout seal in the bottom of the borehole because excessive water and bit
38 pressure can cause cracking, eroding (washing), and/or shattering of the seal. Low
39 volume air hammers may be used to advance the borehole, but they have a tendency to
40 shatter the seal because of the hammering action. If the structural integrity of the grout
41 seal is in question, a pressure test can be utilized to check for leaks. If the seal leaks, the

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1 seal is not acceptable. When the drilling is complete, the finished well will consist of an
2 open borehole from the ground surface to the bottom of the well. The major limitation of
3 open borehole bedrock wells is that the entire bedrock interval serves as the monitoring
4 zone.

5 The second method is to install the outer surface casing and drill the borehole into
6 bedrock, and then install an inner casing and well screen with the filter pack, bentonite
7 seal, and annular grout. The well is completed with a surface protective casing and
8 concrete pad. This well installation method gives the flexibility of isolating the
9 monitoring zone(s) and minimizing inter-aquifer flow. In addition, it gives structural
10 integrity to the well, especially in unstable areas (*e.g.*, steeply dipping shales) where the
11 bedrock has a tendency to shift or move when disturbed.

33 11.11.6 Well Abandonment

34 All well abandonment must be conducted in accordance with 19.27.4 NMAC. Wells are
35 usually abandoned when they are no longer required in the monitoring network or when
36 they are damaged beyond repair. **Add the following statement adapted from the NMED
Sandia National Laboratories Consent Order:**

**In the event of a monitoring well failure, or if a monitoring well is any way no longer usable
for its intended purpose, it must be replaced with an equivalent monitoring well.**

The goal of well abandonment is to seal the borehole in
37 such a manner that the well cannot act as a conduit for migration of contaminants from
38 the ground surface to the aquifer or between aquifers. To properly abandon a well, the
39 preferred method is to completely remove the well casing and screen from the borehole,
40 clean out the borehole, and backfill with a cement or bentonite grout, neat cement, or

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1 concrete. The well abandonment procedure must also comply with current EPA well
2 abandonment guidance.

3 For wells with small diameter casing, abandonment shall be accomplished by overdrilling
4 the well with a large diameter hollow-stem auger. After the well has been overdrilled,
5 the well casing and grout can be lifted out of the ground with a drill rig, and the
6 remaining filter pack can be drilled out. The open borehole can then be pressure grouted
7 (via the tremie pipe method) from the bottom of the borehole to the ground surface.

8 After the grout has cured, the top two ft of the borehole shall be filled with concrete to
9 insure a secure surface seal.

10 Several other well abandonment procedures are available for wells with larger diameter
11 screens and casings. One method is to force a drill stem with a tapered wedge assembly
12 or a solid-stem auger into the well casing and pull the casing out of the ground.

13 However, if the casing breaks or the well cannot be pulled from the ground, the well will
14 have to be grouted in place. To abandon a well in place, a tremie pipe shall be placed at
15 the lowest point in the well (at the bottom of the screen or in the well sump). The entire
16 well is then pressure grouted from the bottom of the well upward. The pressurized grout
17 will be forced out through the well screen into the filter pack and up the inside of the well
18 casing sealing off all breaks and holes in the casing. Once the well is grouted, the casing
19 is cut off even with the ground surface and covered with concrete.

20 If a PVC well cannot be abandoned due to internal casing damage (*e.g.*, the tremie pipe
21 cannot be extended to the bottom of the screen), it may be necessary to drill out the
22 casing with a roller cone or drag bit using the wet rotary drilling method, or grind out the
23 casing using a solid-stem auger equipped with a carbide tooth bit. Once the casing is
24 removed, the open borehole can be cleaned out and pressure grouted from the bottom of
25 the borehole upward.

Kieling, John, NMENV

From: Joni Arends [jarends@nuclearactive.org]
Sent: Friday, September 04, 2009 4:47 PM
To: Kieling, John, NMENV; Sheri Kotowski; Rhgilkeson@aol.com; marian naranjo Marian Naranjo
Subject: CCNS-EVEMG Comments Parts 6

Attachments: EVEMG-CCNS f Part 6 9-4-09.doc



EVEMG-CCNS f Part
6 9-4-09.doc...

Mr. Kieling,

Please find attached the comments of CCNS and EVEMG about Part 6 to the NMED July 6, 2009 revised draft permit for LANL.

Please confirm that you received these comments. Thank you.

--

Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, New Mexico 87501
Tel (505) 986-1973
Fax (505) 986-0997
www.nuclearactive.org

This inbound email has been scanned by the MessageLabs Email Security System.

Comments about Part 6: Open Burning
Embudo Valley Environmental Monitoring Group and
Concerned Citizens for Nuclear Safety

EVEMG and CCNS oppose the treatment of hazardous waste in open burning units at LANL, at TA-16-388 (Flash Pad) and TA-16-399 (Burn Tray) as described in this permit. We have worked for the past several years to challenge open burning practices at LANL. In 2005 we appealed the NMED Air Quality Permit for open burn unit TA-16-388 and others to the New Mexico Environmental Improvement Board (EIB). In January 2006, the Department of Energy (DOE) and LANL (the Permittees) wrote to NMED stating that they no longer required the use TA-16-388 (Flash Pad) and withdrew their application. Please see Pt 6 **Attachment 1** (letter). We question: What has changed? And we ask: What have the Permittees been doing in the interim with equipment contaminated with high explosives (HE)?

We contend that NMED is knowledgeable about the public concerns about the release of LANL contaminants into the air. EVEMG, CCNS and our colleagues have collected over 1,000 petition signatures in support of confined burn facilities at LANL. Please see Pt 6 **Attachment 2** (petition) and Pt 6 **Attachment 3** (signed NMED receipt).

We find it to be not only inappropriate but also entirely unacceptable for the New Mexico Environment Department (NMED) to allow for the open air burning of hazardous waste in the 21st century. NMED is charged with protecting public health and the environment. NMED must clearly state publicly why it does not use its omnibus power at 40 CFR §270.32(b)(2) to protect public health and the environment and require a confined or noninvasive method for treatment purposes when there is modern technology that can accomplish this. The permit could provide an enforceable timetable for making the change. We suggest that such alternatives could be in operation two years following the effective date of the permit.

First, there are alternatives to such activities, such as confined burn facilities, which would reduce the emissions from 100% into the open air to, at a minimum, a 95% reduction in emissions. There are also other alternatives, as LANL has investigated, that can be applied very effectively to dispose of high explosives (HE) waste in a way that does not involve dispersion into the environment. We have spoken with a couple of consultants/experts who have claimed that they have been asked by LANL to talk with them about their alternative technologies. We understand and support that LANL may have to employ several alternative methods in order to accomplish HE disposal in the best interest of protecting public health and the environment.

Again, we oppose the open burning provision in this permit. Nevertheless, we provide the following comments in redline/strikeout on the revised draft permit language.

We have continued to talk with experts and do our own research with respect to sampling and analyses. New information has given rise once again for concern about the inadequate sampling and analysis plan at these facilities. The Permittees have not been using the most sensitive analytical methods even though it is an identical requirement in both the March 1, 2005 Order on Consent [Section IX.C.3.c Method Reporting Limits] and revised draft Hazardous Waste Permit

[Section 11.10.3.3.iii Method Reporting Limits].¹ An example is pentachlorophenol.

Further, we note that the June 26, 2009 DOE Memo regarding “Sampling and Sharing of Radionuclide Data with the State of New Mexico, and Ensuring No Treatment of Waste Containing Radionuclides by Open Burning,” applies only to the first sampling event. We quote the Robert M. Poole, Contracting Office, Los Alamos Site Office, Memo to Michael B. Mallory, Principal Associate Director, Operations and Business, Los Alamos National Security, MS-A102:

With this letter, I am directing LANS to perform the following activities:

1. In connection with the soil sampling and analysis program required by the permit to establish baseline soil contaminant levels for hazardous constituents released to soils during open burning treatment events; LANS shall, for the first sampling event, collect and submit to NMED, information on radionuclides, including uranium and depleted uranium. The radionuclide information will be submitted to NMED at the same time LANS submits the sampling and analysis report for the first sampling event.
2. Ensure that no radionuclides are treated at the open burning units at TA-16.

The DOE commitment does not meet the basic requirements to protect public health and the environment. The DOE must require LANL to sample, analyze and submit uranium and depleted uranium results to NMED for the entire period of the permit.

¹ 2005 Order on Consent, Section IX.C.3.c Method Reporting Limits and revised draft Hazardous Waste permit Section 11.10.3.3.iii Method Reporting Limits.¹
“Method reporting limits for sample analyses for each medium shall be established at the lowest level practicable for the method and analyte concentrations and shall not exceed soil, groundwater, surface water, or vapor emissions background levels, cleanup standards, and screening levels. The preferred method detection limits are a maximum of 20 percent of the background, screening, or cleanup levels. Detection limits that exceed established soil, groundwater, surface water, or air emissions cleanup standards, screening levels, or background levels and are reported as “not detected” shall be considered data quality exceptions and an explanation for the exceedance and its acceptability for use shall be provided.”

1 PART 6: TREATMENT BY OPEN BURNING

2 6.1 MANAGEMENT OF OPEN BURNING UNITS

3 The Permittees shall utilize the two permitted open burning (OB) units at TA-16 only for
4 the treatment of hazardous waste. The Permittees shall treat by open burning only those
5 hazardous wastes that would result in detonation or deflagration to remove the
6 characteristics of reactivity (D003) and ignitability (D001). The Permittees shall limit
7 open burning treatment activities to the high explosive (HE) waste categories identified in
8 Attachment C (*Waste Analysis Plan*).

9 The Permittees shall conduct open burning operations in accordance with this Permit
10 Part, Attachment A (*Technical Area (TA) Unit Descriptions*), 40 CFR Part 264, Subpart
11 X, 40 CFR §§ 268.7(b), and 40 CFR Part 270, which are incorporated by reference. The
12 Permittees shall ensure that open burning occurs only at the following two permitted
13 units:

14 (1) TA-16-388 (Flash Pad); and

15 (2) TA-16-399 (Burn Tray)

16 (*see* Figure 16 in Permit Attachment N (*Figures*)).

17 6.1.2 Maximum Quantity of Waste to be Treated

18 The Permittees shall treat no more than 12,500 pounds of waste per year cumulatively at
19 the two permitted units.

20 The Permittees shall not treat at the Flash Pad more than 200 lbs of dry or wet bulk HE
21 per event and no more than 1,000 lbs of HE-contaminated waste per event (*see* 40 CFR §
22 270.32(b)(2)).

23 The Permittees shall not treat at the Burn Tray more than 1,000 lbs of bulk HE per event
24 including 100 lbs of flake trinitrotoluene. No single piece or assembly at the Burn Tray
25 shall exceed 250 pounds (*see* 40 CFR § 270.32(b)(2)).

We contend that the permit language must specify the maximum quantity of liquids to be treated. *See* 6.1.3 (3) Is 25% by volume of HE 3:1 or 4:1? Were the emissions from the liquids [DMSO, water, bulk or used oils] modeled?

26 6.1.3 Specific Requirements for the TA-16-388 Flash Pad

27 The Permittees shall comply with the following requirements for treatment at the Flash
28 Pad: Section A.2.1 describes He contamination in small batches of water and oils stored in
small polyethylene jars. What happens to the polyethylene jars after the liquids are placed in the
small tray? If the polyethylene jars are burned, where are the emissions covered in the permit?
Were these emissions part of the computer modeling done by TechLaw under contract to
NMED?

29 (1) Only dry bulk HE, wet bulk HE, and HE-contaminated waste may be treated;

30 (2) HE-contaminated equipment containing asbestos, unless the asbestos

31 concentrations are in *de minimis* quantities, shall not be treated;

We contend that *de minimis* must be defined. We suggest the following: *de minimus* means asbestos used inside a piece of equipment that cannot be removed for flashing.

Are asbestos emissions part of the computer modeling?

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1 (3) Liquids (*e.g.*, water, **bulk or [See (7) below – be consistent]** used oils, DMSO) shall have a
2 minimum of 25% by volume

3 of HE (*see* 40 CFR § 270.32(b)(2)) **Is this 3:1 or 4:1? We contend that the permit must include**
4 **a limit on liquids in Section 6.1.2.**

5 (4) No fuel other than propane shall support open burning (*see* 40 CFR §
6 270.32(b)(2)). Only two propane burners located on each side of the Flash Pad
7 may be used, except that if HE-contaminated equipment is treated, the Permittees
8 may use the third propane burner. Use of the third burner shall be documented in
9 the Facility Operating Record; **Did the computer model cover the third burner?**

10 (5) A minimum temperature of 400 degrees Celsius shall be attained during open
11 burning to ensure complete thermal degradation of bulk HE and HE contaminated
12 wastes. **[For clarity, please make the following sentence into two or three sentences.]** The
13 Permittees shall measure and record in the Facility Operating Record

14 the temperature achieved for each treatment event, except that for Solid and Scrap
15 HE and HE Process Waste from Water Filtration Waste Categories (*see*
16 Attachment C (*Waste Analysis Plan*) Section C.1.3.2), the Permittees shall instead
17 document in the Facility Operating Record results of burn tests for these two
18 categories, demonstrating that burn temperatures of greater than 400 degrees
19 Celsius are attained during treatment.

20 (6) Wastes shall be placed on the Flash Pad only if treatment is planned within four
21 hours of such placement. However, if oversized equipment requires complex
22 staging, the Permittees may stage the equipment on the Flash Pad for 48 hours;
23 the Department will not consider this staging inappropriate storage. **[For clarity, we suggest**
24 **the following language:** The

25 equipment and the unit must be **protected from precipitation** during staging;

26 (7) All HE-contaminated debris and bulk HE shall be covered with a screen prior to
27 treatment. The Permittees shall place containers holding HE-contaminated liquids
28 (*i.e.*, water, **bulk or used? [See (3) above – be consistent]** oils, DMSO) in steel trays, or some
29 other form of secondary

30 containment (*e.g.*, additional **steel pan, steel tray**) for the duration of the treatment; and

31 (8) Equipment to be treated shall be disassembled to the extent practicable.

32 **6.1.4 Specific Requirements for the TA-16-399 Burn Tray**

33 The Permittees shall treat only dry bulk HE at the Burn Tray (*see* 40 CFR §
34 270.32(b)(2)).

35 The Permittees shall not treat any HE pieces that contain metal or other materials that
36 could produce shrapnel.

37 **6.2 WASTE PROHIBITIONS AT THE OB UNITS**

38 The Permittees shall not treat by open burning any of the following wastes or materials:

39 (1) the hazardous component of mixed wastes, (*see* 40 CFR § 270.32(b)(2));

(2) beryllium (*see* 40 CFR §35 270.32(b)(2));

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1 (3) chlorinated solvents and ammonium perchlorate (*see* 40 CFR § 270.32(b)(2));

2 (i) The Permittees shall provide to the Department certification that any listed

3 EPA Hazardous Wastes F003, F004, and F005 treated by open burning

4 contain no chlorinated solvents as defined in 40 CFR §261.31;

5 (4) polyvinyl chloride (PVC);

6 (5) small control boxes or electronic equipment;

7 (6) blasting caps, electric detonators, HE units containing electric detonators, or mild

8 detonating fuse arrays;

9 (7) solvents in bulk [We contend that the permit must define “bulk quantity”] quantity except
for dimethyl sulfoxide (DMSO) and waterThe

10 Permittees shall otherwise treat non-chlorinated solvents, including F003, F004,

11 and F005, only in *de minimis* quantities; If the Permittees are allowed to treat non-chlorinated
solvents, we contend that air, soil and water sampling should be required for F003, F004, and
F005 hazardous waste.

12 (8) soils contaminated with HE, except that the Permittees may treat filter sands

13 contaminated with HE from the TA-16 HE Waste Water Treatment Facility;

14 (9) wastes generated during demolition and decommissioning of structures or

15 structural components; and

16 (10) wastes capable of generating dioxins and furans. [How are the Permittees addressing the
plasticizers used in the HE?]

17 (i) The Permittees shall provide to the Department, prior to each treatment

18 event, a certification that wastes being treated are not capable of

19 generating dioxins and furans. We contend that email notification of the certification should
be provided for in the permit.

20 (ii) To remove this prohibition, the Permittees must submit to the Department

21 a Class 3 permit modification request that includes a demonstration that

22 the treatment of waste capable of generating dioxins or furans will be

23 conducted in a manner that will ensure protection of human health and the

24 environment.

25 The Permittees are authorized to treat only those wastes identified by EPA Hazardous

26 Waste Numbers (waste codes) listed in Attachment B (*Part A Application*) associated

27 with TA-16 and identified as utilizing waste process code X01. We contend that the list of
EPA Hazardous Waste Numbers (waste codes) listed in Attachment B (*Part A Application*) that
the Permittees are authorized to treat must be listed in the permit in either Part 6 (*Open Burning*)
or Attachment C (*Waste Analysis Plan*).

28 6.3 DESIGN, CONSTRUCTION, OPERATION, AND ROUTINE

29 MAINTENANCE REQUIREMENTS

30 The Permittees shall document in the Facility Operating Record all inspections and

31 activities [Does this include the certification in 6.2 (10)(i) above?] associated with open
burning treatment identified in the subsequent sections of

32 this Permit Part.

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1 **6.1.1 Restrictions on Operations**

2 **6.1.1.1 General**

3 The Permittees shall comply with the following general requirements and restrictions
4 concerning operations at the OB units:

5 (1) Vegetation within a 200 ft radius of the Flash Pad and the Burn Tray shall be
6 trimmed to less than or equal to six inches above the ground surface, before
7 treatment. *We offer the following language in an effort to preserve the beautiful Ponderosa
8 Pine trees in the area of the burn units: Permittees shall follow the protocol advised by NM State
9 Forestry to eliminate fire hazard. Such protocol is vertical, horizontal and incremental. Within
10 the first 50 ft. radius, vegetation should be kept trimmed to six inches or less above the ground.
11 In the next increment of a 150 ft. radius, the Permittees shall maintain a defensible space that
12 will comply with NM State Forestry to reduce spread of wild fire. Practices will include a clear
13 under story, adequate space between shrubs and trees horizontally and clearance of vertical
14 growth of large trees. See: *Living With Fire- A Guide for the Homeowner*
15 www.emnrd.state.us/forestry The Permittees shall document compliance with this provision in
16 the*

17 Operating Record;

18 (2) The barricade at TA-16-389 shall be closed for the duration of treatment and for
19 the ten-hour cool-down period after treatment to prevent the entry of unauthorized
20 personnel into the area, except as provided in Permit Section 6.3.3.2;

21 (3) A minimum of 2 people and no more than 5 people shall be present in the TA-16-
22 389 control building for the duration of a treatment event at 1 of the OB units.

23 (4) The Permittees shall observe in the control building, using a computer or video
24 display, each treatment event for the duration of treatment via the camera located
25 in between the OB units;

26 (5) A minimum of 24 hours shall elapse between open burning treatment events
27 before reuse of the Flash Pad or the Burn Tray to allow the surface to cool;

28 (6) The OB units' containment devices (*e.g.*, pans, trays, pads) shall be covered when
29 not in use to prevent precipitation collection and runoff; and

30 (7) Only non-sparking tools shall be utilized at the OB units when waste is present at
31 1 of the 2 permitted units.

32 **6.1.1.2 Hours of Operation**

33 The Permittees shall comply with the following requirements and restrictions concerning
34 the hours of operation at the OB units:

35 (1) Open burning treatments shall be conducted only during the time period
36 beginning 1 hour after sunrise and ending 1 hour before sunset; and

37 (2) Open burning treatments at the Flash Pad and the Burn Tray shall not be
38 conducted concurrently (*see* 40 CFR § 270.32(b)(2)).

1 **6.1.1.3 Weather Conditions**

2 The Permittees shall comply with the following requirements and restrictions with
3 respect to weather conditions:

4 (1) Open burning treatments shall not be conducted when an electrical storm(s) exists
5 within 3 miles of the OB units;

6 (2) Open burning treatments shall not be conducted during precipitation or inclement
7 weather, or if storms are forecasted to occur within 4 hours at the location of the
8 OB units;

9 (3) Open burning treatments shall not be conducted when wind speeds at the TA-16-
10 389 control building exceed 15 **We contend that 10 mph is appropriate.** mph; and

11 (4) Open burning treatments shall not be conducted during High, Very High, or
12 Extreme Fire Danger classes as designated by the National Oceanic and

13 Atmospheric Administration's National Weather Service (*see*

14 <http://www.wrh.noaa.gov/sew/fire/olm/nfdrs.htm>).

15 **6.1.2 Run-On and Run Off Controls**

16 The Permittees shall inspect weekly and on the day of treatment, and maintain as
17 necessary, the surface water run-on and runoff control features (*e.g.*, all associated rock
18 retention structures, retaining walls, covers, berms, ditches) associated with the Flash Pad
19 and the Burn Tray (*see* Figure 17 in Attachment N (*Figures*)) (*see* 40 CFR §§ 264.601(b)
20 and 270.32(b)(2), and the Permittees' TA-16 Storm Water Pollution Prevention Plan, as
21 updated).

22 **6.1.3 Routine Maintenance**

23 The Permittees shall conduct the following maintenance and inspection activities prior to
24 treatment events at the OB units:

25 **6.1.3.1 Pre-Burn Maintenance**

26 (1) Notify the Permittees' Emergency Management & Response organization and the
27 Los Alamos Fire Department of the start and end times of the scheduled treatment
28 the day before a scheduled treatment event;

29 (2) Inspect the Flash Pad and the Burn Tray, and its associated equipment, within 24
30 hours preceding a treatment event;

31 (3) Inspect the camera located in the TA-16-389 control building to ensure it is
32 functional before HE waste is staged for treatment;

(4) We contend that the burns must be video taped. We suggest the following language: Inspect the video camera located in the TA-16-389 control building to ensure it is functional before HE waste is staged for treatment. Permittees shall videotape all of the burns. Permittees shall place the videotapes in the Facility Operating Record.

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1 (4) Test the propane burners at the Flash Pad prior to staging waste. The Permittees
2 shall test the squib (*i.e.*, electric match) firing system prior to staging waste at the
3 Burn Tray. The Permittees shall cancel the planned open burn treatment if the
4 burners or squib firing test fails;
5 (5) Ensure at least 2 and no more than 4 people are present at the Flash Pad or Burn
6 Tray during waste staging operations, and at least one person is present in the TA-
7 16-389 control building to monitor the staging operations using a computer or
8 video display of images from the camera located between the OB units; and
9 (6) Patrol the area in the vicinity of the OB units the morning of the scheduled burn to
10 ensure that no large wildlife or unauthorized personnel are present in or around
11 the OB units.

12 **6.1.3.2 Post-Burn Maintenance**

13 The Permittees shall **inspect** the waste containment devices (*e.g.*, pans, trays, pads) and
14 **cover** the unit and all associated equipment within 10 hours of the last open burn
15 treatment.

16 **6.1.3.3 Treatment Residues**

17 The Permittees shall **thoroughly** clean the waste containment devices of any **and all** treatment
residues
18 within 24 hours of a treatment event. If the Permittees find any untreated HE remaining
19 in the residue during inspection of the unit after treatment, the Permittees shall re-treat
20 the waste on that day subject to the restrictions of this Permit Part. If lightning occurs
21 within 3 miles of the unit during residue collection, the Permittees shall cease collection,
22 and resume no more than 4 hours after the storm passes. The residues shall be managed
23 as a hazardous waste until determined otherwise based on waste characterization
24 conducted in accordance with Attachment C (*Waste Analysis Plan*) Section C.3.

25 **6.4 ALTERNATIVE ASSESSMENT**

26 **We suggest the following language for this section:** The Permittees shall **install an alternative**
treatment facility that captures all emissions no later than the 2nd anniversary of the effective date
of this permit. (40 CFR §270.32(b)(2))

The Permittees shall submit an open burn alternative treatment assessment report to the
27 **Department no later than the first anniversary of the effective date of this Permit (*see***
28 **Permit Attachment I (*Compliance Schedule – please make appropriate change*)).**

29 **6.5 MONITORING REQUIREMENTS**

General Comment: We contend that these monitoring requirements are not protective of human
health and the environment. Given the results of the Spring, 2009 soil sampling for
dioxins/furans, we find a factor of 287 difference between the highest and lowest result. *See:*
“Ecological Risk Screening Assessment,” received by email on June 29, 2009 from James Bearzi.
This indicates a highly uneven distribution of the contamination that exists now. More samples
are required in order to identify the hot spots with potentially higher concentrations.

Further, it appears that the toxic equivalents (TEQs) were not calculated applying half the detection limit to each compound as should have been done, in which case the TEQ numbers would be much higher. We also question why the values below the detection limit were set to zero in calculating the TEQs.

We find the “Ecological Risk Screening Assessment” to be incomplete. The map does not indicate where Sample No. 1 was taken. We question the number of assumptions and the use of mean numbers in calculations. For example, why were Avian receptors (American robin and American kestrel) eliminated from the analysis? Is there a substitute ecological screening level for 2,3,7,8-tetrachlorodibenzodioxin (TCDD) for these receptors?

What is the basis for the statement “Wild species are concomitantly exposed to a variety of chemical and environmental stressors, potentially rendering them more susceptible to chemical stressors, potentially rendering them more susceptible to chemical stress. On the other hand, wild populations are likely more genetically diverse than laboratory populations, making wild populations, as a whole, less sensitive to chemical exposure than laboratory populations.” Id., Section 3.3.

We question why “the chemical form of the dioxin/furan congeners were not determined as part of this investigation.” Id., Section 3.1.

These uncertainties raised here about data indicate the need to enhance the soil, water and air monitoring requirements.

30 **6.5.1 Soil Monitoring Requirements**

31 The Permittees shall conduct a soil sampling and analysis program to establish baseline
32 soil contaminant levels, to **conduct an annual monitoring program** for hazardous constituents
33 released to soils during
34 open burning treatment events, and to ensure that any releases do not have an adverse
35 effect on human health or the environment (*see* 40 CFR § 264.602). All sampling events
as described in this section shall commence no later than July 1 of the designated

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1 sampling year, beginning the first July 1 after the effective date of this Permit. The
2 Permittees shall provide oral and written notification to the Department of the scheduled
3 sampling activities at least 15 days prior to commencing sampling activity.
4 The Permittees shall analyze the soil samples collected during each monitoring event for
5 total metals, **including uranium**, explosive compounds [**Please clarify which explosive
compounds will be analyzed. We do not find a listing anywhere in the permit.**], volatile organic
6 organic compounds (VOCs), semi-volatile
7 organic compounds (SVOCs), **isotopic analysis of the full suite of radionuclides**, perchlorate,
8 and dioxins/furans **and PCBs using the most sensitive analytical methods. Permittees shall
9 sample at a minimum of 26 locations. We contend that the number of locations to be sampled**

should be increased because of the uneven distribution of contamination in the dioxin/furans data indicating hot spots. Therefore, the sampling sites on Attachment N (*Figures*) needs to be updated to represent additional sampling points.]

7 The first sampling event (herein referred to as “baseline of impacts”) shall include collection of soil

samples from intervals of 0 to 2 inches below ground surface (bgs), 2 to 4 inches bgs, and 4 to 6 inches bgs at the locations identified in Figure 19 in Attachment N (*Figures*). [We contend that several of the existing locations will not provide reliable and representative samples, e.g., locations on the incline and behind the sliding cover at TA-16-388.] Samples shall be taken at slope breaks, benches or depressed areas, not areas on an incline or from areas that would be concealed by the sliding cover during events. Samples shall also be taken at a 1 to 2 centimeter depth, in a one-meter by one-meter grid, over a majority of *Figure 19 in Attachment N*, with a focus on the drainages in order to determine loading rate. Core samples of a 24-inch depth should also be taken in drainages and in areas where water is allowed to accumulate. We contend that the results of the recent furan/dioxin sampling demand quarterly sampling take place at the open burn sites. Sampling events

12 conducted after the baseline of impacts shall include at a minimum the 1 to 2 cm and 0 to 2 inch depth intervals at

13 the same locations identified in Figure 19, Attachment N (*Figures*)[*as modified The contamination exists now and must be addressed.*]

15

17 The Permittees shall submit to the Department a sampling and analysis report for each
18 sampling event summarizing all sampling activities and the results of sample analyses by
19 October 1 **annually** (*see Attachment I (Compliance Schedule – modified as needed)*). The
20 Permittees shall identify in the report any sample analytical results that exceed either the
21 baseline of impacts sampling event, any soil cleanup levels established in Permit Section
11.4.2.1 [We contend that the target total excess cancer risk of 10-5 is not protective. We
contend that 10-6 is more protective and should be adopted as the NMED policy.],
22 and any ecological screening levels established at 11.5 [We contend that any changes or
revisions to the documents referenced in 11.5 should be required for email notification], as
applicable. The Permittees’

23 report shall include a temporal and spatial trend analysis on sample results, and an
24 evaluation of the appropriateness of the number and location of the sampling sites.

25 Permittees’ report shall also include a human health and ecological risk assessment
26 conducted in accordance with U.S. EPA and/or Department guidance or methodologies
27 that includes an evaluation of the cumulative risks for all measured constituents. The
28 Permittees shall include in the report a plan to address any exceedance(s). Upon review
29 of the Permittees’ report and plan, the Department will determine if further corrective
30 action is needed.

31 **6.5.2 Surface Water Monitoring Requirements**

We contend that the final NPDES storm water permit only requires sampling for RDX and TNT. A concerted effort needs to be made to expand the sampling requirements, either through this permit or the storm water permit.

32 The Permittees shall collect at least 2 storm water samples annually at the surface water
33 sampling location identified in Figure 19 in Attachment N (*Figures*). The samples shall

34 be collected annually between the months of May and October and shall not be collected
35 within 30 days of each other. The Permittees shall collect the stormwater samples by
36 taking a minimum of 1 grab sample from a discharge, collected within the first 30
37 minutes of a measurable storm event – [Is “measurable storm event” defined in the permit? If
it is not, for consistency NMED must adopt the NPDES Storm Water Permit definition]. If it is
not possible to collect the sample(s) within
38 the first 30 minutes of a measurable storm event, the sample(s) shall be collected as soon
39 as practicable after the first 30 minutes. The Permittees shall not substitute snow melt runoff
for stormwater
2 water samples.
3 The samples shall be analyzed for total metals, including uranium, explosive compounds [In
order to protect public health and the environment, we contend the need to coordinate this list
with that in the final NPDES storm water permit], volatile organic
4 compounds, semi-volatile organic compounds, isotopic analysis of the full suite of
radionuclides, perchlorate, and dioxins/furans and PCBs, using the most sensitive analytical
methods. If the
5 precipitation event produces insufficient sample volume to perform all analyses, then the
sample is not valid to meet the requirements of this section 6.5.2. The Permittees shall submit a
sampling and analysis report to the
9 Department within 90 days of each sampling event (*see Attachment I (Compliance*
10 *Schedule*)).

6.5.3 Air Monitoring Requirements

The Permittees shall conduct ambient air monitoring at the open burn units in order to establish a
baseline. The sampling results will be used to verify emission computer modeling data. The
analyses shall include modeled constituents, full suite of heavy metals, dioxin/ furans, PCBs,
perchlorate, beryllium and isotopic radionuclides for the duration of the permit.

6.5.4 No Excuses

The Permittees shall offer no excuses as to why they cannot fulfill all the sampling and
monitoring requirements. 40 CFR §270.32(b)(2).

Kieling, John, NMENV

From: Joni Arends [jarends@nuclearactive.org]
Sent: Friday, September 04, 2009 4:50 PM
To: Kieling, John, NMENV; Sheri Kotowski; Rhgilkeson@aol.com; marian naranjo Marian Naranjo
Subject: CCNS-EVEMG General Comments

Attachments: CCNS-EVEMG f comments 9-4-09.doc



CCNS-EVEMG f
omments 9-4-09.d..

Mr. Kieling,

Please find attached the general comments of CCNS and EVEMG to the NMED July 6, 2009 revised draft permit for LANL. We're surviving some technical difficulties today, and will send the three attachments to Part 6 soon.

Please confirm that you received these comments. Thank you.

--

Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, New Mexico 87501
Tel (505) 986-1973
Fax (505) 986-0997
www.nuclearactive.org

This inbound email has been scanned by the MessageLabs Email Security System.

September 4, 2009

By e-mail to: john.kieling@state.nm.us

John E. Kieling, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Re: Public Comments about July 6, 2009 revised draft Hazardous Waste Permit for
Facility: Los Alamos National Laboratory (LANL)
Facility Owner and Co-Operator: U.S. Department of Energy (DOE)
Facility Co-Operator: Los Alamos National Security, LLC (LANS)
EPA ID No.: NM0899910515
Request for Hearing

Dear Mr. Kieling:

Concerned Citizens for Nuclear Safety (CCNS) and the Embudo Valley Environmental Monitoring Group (EVEMG) make the following public comments about the July 6, 2009 revised draft Hazardous Waste Permit for Los Alamos National Laboratory (LANL).

CCNS is a non-governmental organization which formed in 1988 to voice citizen concerns about the transportation of nuclear waste from Los Alamos National Laboratory (LANL) to the then proposed Waste Isolation Pilot Plant (WIPP). For the past 21 years, CCNS has been devoted to its mission *to protect all living beings and the environment from the effects of radioactive and other hazardous materials now and in the future*. Since the Cerro Grande fire in May 2000, CCNS has addressed the water contamination problems at LANL and their impacts on regional drinking water supplies.

The Embudo Valley Environmental Monitoring Group (EVEMG) is a non-governmental organization that formed in 2003 to address community concerns about the risks generated by the Cerro Grande Fire. As downwind neighbors to Los Alamos National Laboratory (LANL), EVEMG focuses on air emissions generated by LANL activities and their relationship to public and environmental health and safety. EVEMG conducts independent citizen based air monitoring, and has worked collaboratively with NMED, LANL Oversight Bureau in soil, produce and surface water sampling throughout the Embudo watershed. In 2004 we worked with the Community Radiation Monitoring Group to bring an Emergency Preparedness Forum to Dixon, New Mexico that involved presentations on emergency preparedness by over 10 State, County, Local and Tribal agencies and was attended by over 100 people. This forum was instrumental in the laying the groundwork for the Department of Homeland Security, Area 3 Regional

Emergency Exercise. As traditional land-based communities, we view healthy air, land and water as critical in providing local stability and security.

CCNS and EVEMG make three requests:

1. In order to protect human health and the environment, NMED must deny the permit; and
2. If NMED does not deny the permit, then we request a public hearing.
3. Prior to any public hearing, we request negotiations to resolve the many issues raised in these comments, as well as by the Permittees and other Interested Parties.

Request for Public Hearing and Negotiations. For the reasons that follow, CCNS and EVEMG request a public hearing on the draft RCRA permit for LANL. Further, and prior to any notice of public hearing, pursuant to §20.4.1.901.A.4 NMAC, CCNS and EVEMG request that NMED, Permittees, CCNS, Gilkeson and other interested parties conduct negotiations to attempt to resolve issues related to the draft permit prior to a hearing. CCNS and EVEMG believe that the other Interested Parties, Permittees and NMED would agree with some of the concerns and objections raised in the following comments and that a revised draft permit could be developed prior to the public hearing.

Alternative Dispute Resolution (ADR). CCNS and EVEMG request that the negotiations are conducted under the purview of Governor Richardson's Alternative Dispute Resolution Executive Order. Executive Order 2005-047. We request that a representative from the NMED Office of Public Facilitation or ADR Council facilitate the negotiations.

CCNS and EVEMG request that NMED fully consider all the comments and issue a revised draft permit before proceeding to a public hearing.

CCNS and EVEMG wish to extend our gratitude to NMED, the Permittees and all the participating parties; Santa Clara Pueblo, Pueblo de San Ildefonso, Nuclear Watch New Mexico, Southwest Research and Information Center, National Resource Defense Council and Consultants, for their participation in this open, meaningful and respectful process of 40 days of negotiations. Sitting at the table together was a good practice at relationship building, cooperation and communication. Through this lengthy and sometimes extremely difficult process we accomplished much. We applaud NMED for the opportunity to continue the ongoing process to resolve the issues of concern in order to be more protective of human health and the environment.

1. We incorporate by reference our previous public comments submitted about the August 2007 draft NMED Hazardous Waste Permit for LANL. EVEMG submitted comments to NMED by email on January 11, 2008. The CCNS/Gilkeson comments were submitted by email on February 1, 2008.

2. As you know, CCNS and EVEMG participated in 40 days of negotiations about the August 2007 draft NMED permit for LANL between August 2008 and June 2009. CCNS and EVEMG made a good faith effort to work to resolve issues.

3. On June 25, 2009 the Department of Energy (DOE) Inspector General released the report, "Fire Protection Deficiencies at Los Alamos National Laboratory," which documents over 800 violations of fire protection requirements.

"The failure to correct fire deficiencies increased the risk of injury or loss of life. Further, there are increased risks associated with fire-related events, such as the release of hazardous or radiological material. If such an event were to occur, not only would the safety and health of employees and the public be impacted but the environment could be damaged as well."

The report was not specific as to what sites were involved, but we understand that the plutonium facility, located at TA-55 and a site to be regulated under the permit, were under the investigation. EVEMG and CCNS sent a letter to Inspector General Freidman requesting specific information as to whether the permitted units were involved.

4. Neither CCNS nor EVEMG could in good faith represent our communities and sign the stipulation on June **, 2009. The on-going violations of the basic requirements of site management in order to "manage" ¼ million pounds of hazardous waste annually precluded us from signing on to broader agreements with the draft permit.

5. Many of our issues remain unresolved and we make comments below. These comments address the:

a. Information Repository (1.)

At this time, internal meetings are taking place at Northern New Mexico College in Española , New Mexico. These meetings involve the Technical Capabilities Expert, Director of the Engineering Department, the Chair of Math and Sciences/Co-Director of the University Center and the President of Northern New Mexico College. These talks are taking place in order to pull together assets at the college to make the Physical/Virtual Information Repository a reality at the ideal location in an institute of higher learning in the setting of Northern New Mexico. The next steps are to set up a meeting with NMED and LANL and the College to discuss the details of the Repository.,

b. expanded email notification, See other comments.

c. Section 2.10: Prevention and Preparedness, Attachment D, the Contingency Plan.

We have worked for many days, weeks and months putting together comments and documentation on this part of the draft Permit. As you know, human health and environmental safety have lead our concerns throughout this process. Just before noon, on September 4, during a building lightning and thunderstorm, EVEMG's computer crashed taking our comments with it. At this point it has not been determined the extent of the damage. We respectfully request to be allowed to submit our comments after the 5 PM September 4, 2009 deadline.

d. Part 6: Open Burning. We have made a substantial number of comments for Part 6:

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c. There is no reliable groundwater-monitoring network as required by RCRA, DOE Orders and standard industry practice.

d. Major seismic issues are outstanding. The Defense Nuclear Facilities Safety Board (DNFSB) reported a 50% increase in the magnitude of a potential seismic event at LANL.

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g. There are long-standing patterns and practices which hinder compliance with applicable laws, regulations and standards at LANL.

There are too many uncertainties about the water and soil contamination at LANL to allow them to continue operations with hazardous materials. NMED must therefore deny the permit.

Thank you for your careful consideration of our comments.

Sincerely,

Joni Arends, Executive Director
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Sheri Kotowski, Lead Organizer
Embudo Valley Environmental Monitoring Group
P. O. Box 291
Dixon, NM 87527
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serit@cybermesa.com

Enclosures:

Attachment 1 Part 6: Open Burning

Kielling, John, NMENV

From: Joni Arends [jarends@nuclearactive.org]
Sent: Friday, September 04, 2009 4:50 PM
To: Kielling, John, NMENV; Sheri Kotowski; Rhgilkeson@aol.com; marian naranjo Marian Naranjo
Subject: CCNS-EVEMG General Comments

Attachments: CCNS-EVEMG f comments 9-4-09.doc



CCNS-EVEMG f
omments 9-4-09.d..

Mr. Kielling,

Please find attached the general comments of CCNS and EVEMG to the NMED July 6, 2009 revised draft permit for LANL. We're surviving some technical difficulties today, and will send the three attachments to Part 6 soon.

Please confirm that you received these comments. Thank you.

--

Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, New Mexico 87501
Tel (505) 986-1973
Fax (505) 986-0997
www.nuclearactive.org

This inbound email has been scanned by the MessageLabs Email Security System.

September 4, 2009

By e-mail to: john.kieling@state.nm.us

John E. Kieling, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Re: Public Comments about July 6, 2009 revised draft Hazardous Waste Permit for
Facility: Los Alamos National Laboratory (LANL)
Facility Owner and Co-Operator: U.S. Department of Energy (DOE)
Facility Co-Operator: Los Alamos National Security, LLC (LANS)
EPA ID No.: NM0899910515
Request for Hearing

Dear Mr. Kieling:

Concerned Citizens for Nuclear Safety (CCNS) and the Embudo Valley Environmental Monitoring Group (EVEMG) make the following public comments about the July 6, 2009 revised draft Hazardous Waste Permit for Los Alamos National Laboratory (LANL).

CCNS is a non-governmental organization which formed in 1988 to voice citizen concerns about the transportation of nuclear waste from Los Alamos National Laboratory (LANL) to the then proposed Waste Isolation Pilot Plant (WIPP). For the past 21 years, CCNS has been devoted to its mission *to protect all living beings and the environment from the effects of radioactive and other hazardous materials now and in the future*. Since the Cerro Grande fire in May 2000, CCNS has addressed the water contamination problems at LANL and their impacts on regional drinking water supplies.

The Embudo Valley Environmental Monitoring Group (EVEMG) is a non-governmental organization that formed in 2003 to address community concerns about the risks generated by the Cerro Grande Fire. As downwind neighbors to Los Alamos National Laboratory (LANL), EVEMG focuses on air emissions generated by LANL activities and their relationship to public and environmental health and safety. EVEMG conducts independent citizen based air monitoring, and has worked collaboratively with NMED, LANL Oversight Bureau in soil, produce and surface water sampling throughout the Embudo watershed. In 2004 we worked with the Community Radiation Monitoring Group to bring an Emergency Preparedness Forum to Dixon, New Mexico that involved presentations on emergency preparedness by over 10 State, County, Local and Tribal agencies and was attended by over 100 people. This forum was instrumental in the laying the groundwork for the Department of Homeland Security, Area 3 Regional

Emergency Exercise. As traditional land-based communities, we view healthy air, land and water as critical in providing local stability and security.

CCNS and EVEMG make three requests:

1. In order to protect human health and the environment, NMED must deny the permit; and
2. If NMED does not deny the permit, then we request a public hearing.
3. Prior to any public hearing, we request negotiations to resolve the many issues raised in these comments, as well as by the Permittees and other Interested Parties.

Request for Public Hearing and Negotiations. For the reasons that follow, CCNS and EVEMG request a public hearing on the draft RCRA permit for LANL. Further, and prior to any notice of public hearing, pursuant to §20.4.1.901.A.4 NMAC, CCNS and EVEMG request that NMED, Permittees, CCNS, Gilkeson and other interested parties conduct negotiations to attempt to resolve issues related to the draft permit prior to a hearing. CCNS and EVEMG believe that the other Interested Parties, Permittees and NMED would agree with some of the concerns and objections raised in the following comments and that a revised draft permit could be developed prior to the public hearing.

Alternative Dispute Resolution (ADR). CCNS and EVEMG request that the negotiations are conducted under the purview of Governor Richardson's Alternative Dispute Resolution Executive Order. Executive Order 2005-047. We request that a representative from the NMED Office of Public Facilitation or ADR Council facilitate the negotiations.

CCNS and EVEMG request that NMED fully consider all the comments and issue a revised draft permit before proceeding to a public hearing.

CCNS and EVEMG wish to extend our gratitude to NMED, the Permittees and all the participating parties; Santa Clara Pueblo, Pueblo de San Ildefonso, Nuclear Watch New Mexico, Southwest Research and Information Center, National Resource Defense Council and Consultants, for their participation in this open, meaningful and respectful process of 40 days of negotiations. Sitting at the table together was a good practice at relationship building, cooperation and communication. Through this lengthy and sometimes extremely difficult process we accomplished much. We applaud NMED for the opportunity to continue the ongoing process to resolve the issues of concern in order to be more protective of human health and the environment.

1. We incorporate by reference our previous public comments submitted about the August 2007 draft NMED Hazardous Waste Permit for LANL. EVEMG submitted comments to NMED by email on January 11, 2008. The CCNS/Gilkeson comments were submitted by email on February 1, 2008.

2. As you know, CCNS and EVEMG participated in 40 days of negotiations about the August 2007 draft NMED permit for LANL between August 2008 and June 2009. CCNS and EVEMG made a good faith effort to work to resolve issues.

3. On June 25, 2009 the Department of Energy (DOE) Inspector General released the report, "Fire Protection Deficiencies at Los Alamos National Laboratory," which documents over 800 violations of fire protection requirements.

"The failure to correct fire deficiencies increased the risk of injury or loss of life. Further, there are increased risks associated with fire-related events, such as the release of hazardous or radiological material. If such an event were to occur, not only would the safety and health of employees and the public be impacted but the environment could be damaged as well."

The report was not specific as to what sites were involved, but we understand that the plutonium facility, located at TA-55 and a site to be regulated under the permit, were under the investigation. EVEMG and CCNS sent a letter to Inspector General Freidman requesting specific information as to whether the permitted units were involved.

4. Neither CCNS nor EVEMG could in good faith represent our communities and sign the stipulation on June **, 2009. The on-going violations of the basic requirements of site management in order to "manage" ¼ million pounds of hazardous waste annually precluded us from signing on to broader agreements with the draft permit.

5. Many of our issues remain unresolved and we make comments below. These comments address the:

a. Information Repository (1.)

At this time, internal meetings are taking place at Northern New Mexico College in Española , New Mexico. These meetings involve the Technical Capabilities Expert, Director of the Engineering Department, the Chair of Math and Sciences/Co-Director of the University Center and the President of Northern New Mexico College. These talks are taking place in order to pull together assets at the college to make the Physical/Virtual Information Repository a reality at the ideal location in an institute of higher learning in the setting of Northern New Mexico. The next steps are to set up a meeting with NMED and LANL and the College to discuss the details of the Repository.,

b. expanded email notification, See other comments.

c. Section 2.10: Prevention and Preparedness, Attachment D, the Contingency Plan.

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Kieling, John, NMENV

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Sent: Friday, September 04, 2009 5:00 PM
To: Kieling, John, NMENV; Sheri Kotowski; marian naranjo Marian Naranjo; Rhgilkeson@aol.com
Subject: comments

Attachments: CCNS-EVEMG foreseeable future.doc



CCNS-EVEMG
foreseeable future...

--
Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety
107 Cienega Street
Santa Fe, New Mexico 87501
Tel (505) 986-1973
Fax (505) 986-0997
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“Determination of the discharge’s effect on ground water shall be measured at any place of withdrawal of water for present or reasonably foreseeable future use. Determination of the discharge’s effect on surface waters shall be measured at the point of discharge.”

New Mexico Water Quality Control Act, 74-6-5 (E)(3).

Comments to the NMED July 6, 2009 revised draft hazardous waste permit for LANL
Concerned Citizens for Nuclear Safety
Robert H. Gilkeson

New Mexico's water quality laws and regulations state, in pertinent part that “Determination of the discharge’s effect on ground water shall be measured at any place of withdrawal of water for present or reasonably foreseeable future use. Determination of the discharge’s effect on surface waters shall be measured at the point of discharge.” New Mexico Water Quality Control Act, NMSA 1978, § 74-6-5 (E)(3).

We contend that the permit as drafted is not protective of the “present or reasonably foreseeable future use” of water withdrawn from the regional aquifer located below the Pajarito Plateau. NM 74-6-5 (E)(3).

To remedy this situation NMED should require that determination of the effect of all discharges to ground water must be measured at *any* place of withdrawal of water for present or reasonably foreseeable future use. See NMSA 1978, § 74-6-5(E)(3) (emphasis added). The Water Quality Control Commission has recently found that "a place, of withdrawal of water is not limited to a place on the ground, but extends into the aquifer underlying an area on the ground surface; it need not be a well." *In the Matter of Appeal of Supplemental Discharge Permit for Closure (DP-1341) For Phelps Dodge Tyrone, Inc.*, Conclusions of Law, para. 32 (February 4, 2009) ["Tyrone"].

Given that the EPA has designed the Espanola Basin a sole source aquifer, NMED must take extra steps to protect our drinking water.

Radioactive (tritium) and hazardous (hexavalent chromium, nitrates, perchlorate) pollutants have been found in the complex ground water system below Mortandad Canyon. Los Alamos County residents draw 100% of their drinking water from the regional aquifer. A majority of the Los Alamos County drinking water wells, Pajarito Mesa (PM) 2, 4 and 5, are located around this discharge pipe and Mortandad Canyon. See maps below.

An example of our concern is the following. Since the mid 1990's NMED has worked to regulate the nitrate and fluoride discharges from the Radioactive Liquid Waste Treatment Facility (RLWTF) at Technical Area 50 (TA-50), but the permit has yet to be finalized. The July 6, 2009 revised draft hazardous waste permit covers the storage of hazardous waste at TA-50. Draft Permit 4.6 at 78. Protection of ground water occurs in Part 11: Corrective Action of the revised draft permit.

The New Mexico Water Quality Control Act protects surface and ground water. Permit applications may be denied by NMED when the "discharge would cause or contribute to contaminant levels in excess of any state or federal standard." 74-6-5 (E)(3).

"[A] proposed discharge plan must include any additional information that may be necessary to demonstrate that approval of the discharge plan will not result in concentrations in excess of the standards of section 3103 or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use. Detailed information on site geologic and hydrologic conditions may be required for a technical evaluation of the applicant's proposed discharge plan." Tyrone, Conclusions of Law, para. 10, citing §20.6.2.3106.C. NMAC.

"[E]xcept under limited circumstances, NMED can approve a discharge plan only if the applicant demonstrates that the discharge will not result in either concentrations in excess of the standards in section 3103 or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use." Id., para. 11, citing § 20.6.2.3109.C. NMAC (emphasis added).

TA-50 began operations in 1963. The discharge pipe is located in upper reaches of Mortandad Canyon. The radioactive portion of the discharge is covered under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Industrial Discharge Permit. There has been an effort by NMED since 1996 to regulate the discharge of nitrates and fluorides. CCNS requested a public hearing on the permit in December 1996, but no hearing has been scheduled..

The data available to NMED plainly demonstrate that TA-50 is causing continuing and increasing pollution of the aquifer that services Los Alamos County. There is also evidence that the pollution could be migrating toward the water supply for Santa Fe. See data below and "New Mexico's Right to Know: The Potential for Groundwater Contaminants from LANL to Reach the Rio Grande," by groundwater hydrologist George Rice.

TA50 Permitting Timeline

| | |
|-------------|---|
| April 1996 | NMED requested a discharge plan for TA-50 |
| August 1996 | LANL submitted a discharge plan |

| | |
|------------------------------|--|
| November 1996 | Public notice was issued for Discharge Permit 1132 |
| December 1996 | CCNS requests a public hearing |
| April 1997 to September 1998 | Requests/Replies for Additional Information |
| September 1998 | NMED Letter of Non-Compliance |
| February 1999 | Request/Reply for Additional Information |
| March 1999 | Nitrate Moratorium Implemented - New Equipment Installed |
| March 21, 1999 | Effluent Meets WQCC Standards |
| May 1999 | Voluntary Quarterly Reporting by LANL |
| January 2000 | Phase II Treatment Begins |
| October 2000 | Tritium Reductions in Effluent |
| January 2002 | Request/Reply for Additional Information |
| March 2002 | IX Treatment for Perchlorate (ClO ₄) Removal |
| August 2003 | NMED Reissues Public Notice |
| December 2005 | Request/Reply for Additional Information |

Figure 1. Map showing the locations for regional aquifer wells R-42, R-28 and R-15 in Mortandad Canyon.

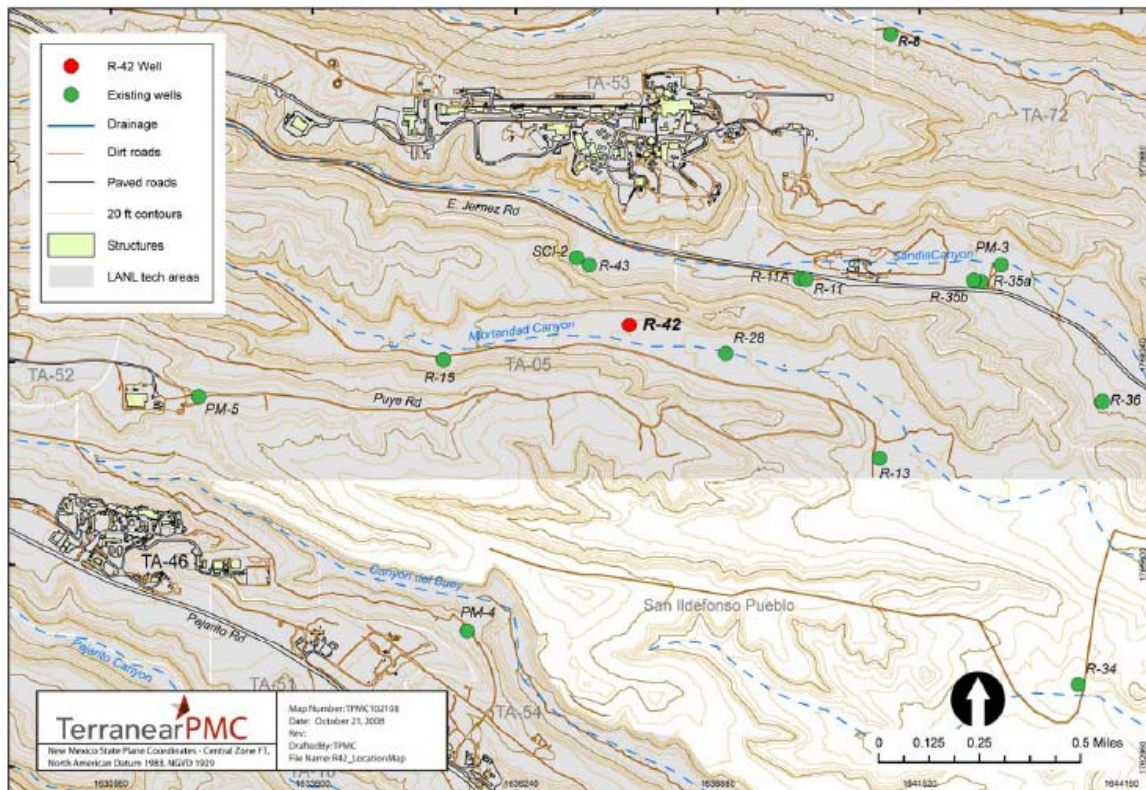
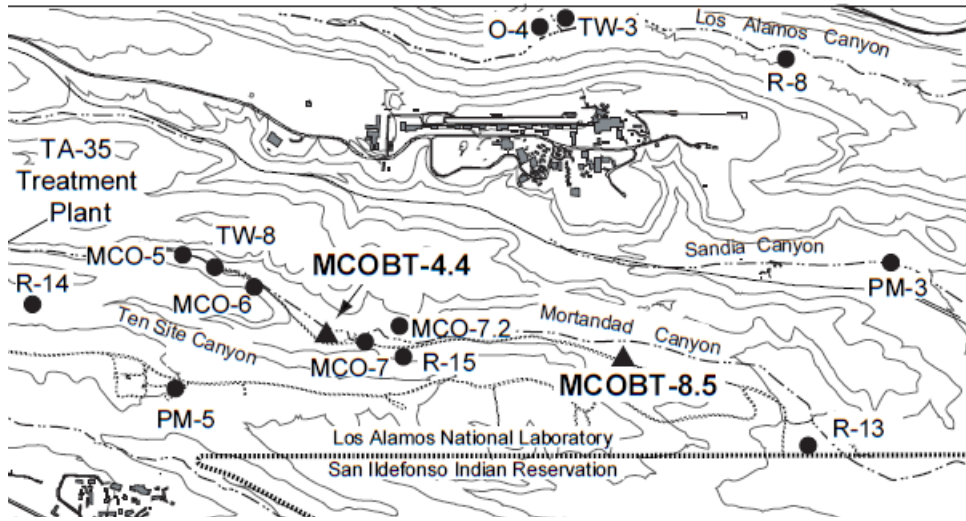


Figure 2. Map showing the location for perched aquifer well MCOBT-4.4 in Mortandad Canyon. Well MCOBT-4.4 is located approximately

1300 feet west of regional aquifer monitoring well R-15.



A contaminant plume of hexavalent chromium at levels far above the EPA and NMED water quality standards is present in the regional aquifer over an unknown region below Mortandad Canyon and the adjacent Mesas. The highest known hexavalent contamination is measured in groundwater samples collected from regional aquifer monitoring wells R-28 and R-42. The locations of the two wells are displayed on Figure 1.

Water Quality Data for LANL Regional Aquifer Monitoring Well R-28

| | | | | |
|---------------|------------|------------|------------|------------|
| - | 01-12-04 | 5-20-005 | 09-01-05 | 11- 10-05 |
| | FILT / UNF | FILT / UNF | FILT / UNF | FILT / UNF |
| - Cr (ug/L) | 270 / NM | 375 / 389 | 397 / 404 | 404 / 416 |
| - H-3 (pCi/L) | / 114.3 | / 152 | / 178 | / 181 |
| - | 01-26-06 | 04-19-06 | 07-05-06 | 10-26-06 |
| | FILT / UNF | FILT / UNF | FILT / UNF | FILT / UNF |
| - Cr (ug/L) | 428 / 421 | 413 / 405 | 344 / 428 | 310 / 323 |
| - H-3 (pCi/L) | / 180.7 | / NL | / 174.3 | / 185.2 |
| - | 03-06-07 | 06-13-07 | 8-17-07 | 11-14-07 |
| | FILT / UNF | FILT / UNF | FILT / UNF | FILT / UNF |
| - Cr (ug/L) | 446 / 430 | 436 / 444 | 392 / 401 | 395 / 365 |
| - H-3 (pCi/L) | / 191.9 | / 187.1 | / 188.1 | / |
| - | 11-30-07 | 02-15-08 | 05-14-08 | 08-15-08 |
| | FILT / UNF | FILT / UNF | FILT / UNF | FILT / UNF |
| - Cr (ug/L) | 381 / 369 | 419 / 391 | 438 / 412 | 373 / 322 |
| - H-3 (pCi/L) | / 194.8 | / 205 | / 186.2 | / 200.3 |

| | 11-10-08 | 02-10-09 | 05-01-09 |
|---------------|------------|------------|------------|
| | FILT / UNF | FILT / UNF | FILT / UNF |
| - Cr (ug/L) | 468 / 490 | 380 / 372 | 388 / 427 |
| - H-3 (pCi/L) | / 194.6 | / 197 | / NL |

- FILT = ANALYSIS ON FILTERED WATER SAMPLE
- UNFILT = ANALYSIS ON UNFILTERED WATER SAMPLE
- Cr = HEXAVALENT CHROMIUM, H-3 = TRITIUM
- ug/L = micrograms per liter or parts per billion
- H-3 = tritium
- pCi/L = picocuries per liter

- The NMED drinking water standard for hexavalent chromium = 50 ug/L
- The IEER recommended drinking water standard for tritium = 400 pC/L
- Water quality data from RACER

Water Quality Data for LANL Regional Aquifer Monitoring Well R-42

| | 10-09-08 | 11-20-08 |
|-------------------|-----------------------|-----------------------|
| | filtered / unfiltered | filtered / unfiltered |
| - Chromium (ug/L) | 848 / 808 | 763 / 782 |
| - Tritium (pCi/L) | / 96.5 | / 205.3 |
| | 02-20-09 | 05-11-09 |
| | filtered / unfiltered | filtered / unfiltered |
| - Chromium (ug/L) | 848 / 856 | 886 / 910 |
| - Tritium (pCi/L) | / 181.4 | / 197.3 |

- ug/L = micrograms per liter or parts per billion
- pCi/L = picocuries per liter
- The NMED drinking water standard for hexavalent chromium = 50 ug/L
- The IEER recommended drinking water standard for tritium = 400 pC/L
- Water quality data from RACER

High levels of perchlorate and nitrate are measured in a perched zone of saturation in Mortandad Canyon for water samples collected from LANL monitoring well MCOBT-4.4. A mistake in well installation allowed the contaminated water in the perched zone of saturation to leak downward toward the regional aquifer. Well MCOBT-4.4 is still a pathway for leakage. NMED issued a penalty of \$1.87 million but the well still has not been plugged and abandoned. The location of well MCOBT-4.4 is displayed on Figure 2. (check on action to P&A this well)

Water Quality Data for leaky perched aquifer Monitoring Well MCOBT-4.4

| | 04-22-02 | 01-28-03 | 05-21-03 | 06-08-05 |
|-------------------|----------|----------|----------|----------|
| - tritium (pCi/L) | 12,832 | 14,900 | 14,900 | 23,500 |

| | | | | |
|----------------------|------|------|------|----------------------|
| - perchlorate (ug/L) | 142 | 170 | 178 | 220, 256 (duplicate) |
| - nitrate (mg/L) | 13.2 | 14.8 | 15.8 | 16.2 |
| - chromium (ug/L) | 53.5 | 41.7 | 37.4 | NL |

- pCi/L = picocuries per liter
- ug/L = micrograms per liter or parts per billion
- mg/L = milligrams per liter or parts per million
- The California drinking water standard MCL for perchlorate is 6 ug/L
- The EPA drinking water standard MCL for nitrate is 10 mg/L
- The NMED drinking water standard for hexavalent chromium = 50 ug/L
- The IEER recommended drinking water standard for tritium = 400 pC/L
- Water quality data from RACER

NMED must do more to protect surface and ground water, either through the Hazardous Waste Bureau or the Ground Water Quality Bureau. See WQCC Tyrone decision and Bill Olsen's testimony.