J.K

HSWA LANL 4/1049/NM

Los Alamos
NATIONAL LABORATORY

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Date: June 25, 1999
In Reply Refer To: ESH-18/WQ&H:99-0245
Mail Stop: K497
Telephone: (505) 665-1859

Ms. Phyllis Bustamante
Ground Water Protection Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

Mr. John Young
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

SUBJECT: NOTICE OF INTENT TO DISCHARGE WELL DEVELOPMENT WATER AND PURGE WATER FROM THE R-15 MONITORING WELL

Dear Ms. Bustamante and Mr. Young:

Los Alamos National Laboratory is in receipt of your letter dated November 25,1998, detailing the requirements for containment, sampling and analysis of the development and purge water from the R-15 Monitoring Well. The enclosed information is provided in order to supplement the information provided in our letter to NMED dated September 16, 1998 pursuant to Section 1201 of the New Mexico Water Quality Control Commission Regulations. The R-15 Well is part of the Laboratory's Monitoring Well Installation Project under the Hydrogeologic Workplan. The R-15 Well is to be located on the south flank of the Mortandad Canyon floodplain in Technical Area (TA)-5 (map enclosed). The depth for this Monitoring Well is planned to be 1460 ft, but the actual total depth may be adjusted as the investigation progresses to ensure that the characterization objectives are adequately addressed.

Discharge volumes for the containerized water from the R-15 Monitoring Well are expected to be approximately 25,000 gallons per day, for a total of 10 discharge days. The total amount of water to be collected during the construction phase of this project is estimated to be 250,000 gallons. The proposed method of discharge will be by use of a sprinkler system for land application or by use of a water truck for dust suppression on the access road to the well. These methods will allow the water to be evenly dispersed preventing any runoff or erosion.

The proposed land application area and the access road have been reviewed by Environmental Restoration Project staff familiar with the area and determined to have no Solid Waste Management Units (SWMU's) or Potential Release Sites (PRS's) that could be impacted by this operation. All land application or dust suppression activities will be performed in a manner that will eliminate any impact to a watercourse. Best Management Practices (BMPs) to control runoff will be utilized as required.

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Please call Harvey Decker (665-2014) or Steve Veenis (667-0013) of the Laboratory's Water Quality and Hydrology Group (ESH-18) if you need any additional information.

Sincerely,

Steven Rae, Group Leader
Water Quality and Hydrology Group

SR:HD/rj

Enclosures: a/s

Cy: B. Hoditschek, NMED/SWQB, w/enc., Santa Fe, New Mexico
J. Kieling, NMED/HRMB, w/o enc., Santa Fe, New Mexico
S. Yanicak, NMED DOE OB, w/enc., MS J993
J. Vozella, DOE/LAAO, w/o enc., MS A316
B. Enz, DOE/LAAO, w/o enc., MS A316
T. Gunderson, DLD-OPS, w/enc., MS A316
D. Broxton, EES-1, w/enc., MS D 462
R. Bohn, EM-ER, w/o enc., MS M992
P. Longmire, EES-5, w/o enc., MS J534
A. Pratt, ER/ FPL, w/o enc., MS J521
D. Erickson, ESH Division Director, w/o enc., MS K491
C. Nylander, ESH-18, w/o enc., MS K 497
S. Veenis, ESH-18, w/o enc., MS K497
M. Saladen, ESH-18, w/o enc., MS K497
H. Decker, ESH-18, w/o enc., MS K497
WQ&H File, w/enc., MS K497
CIC-10, w/enc., MS A150

METHOD OF LAND APPLICATION AND DUST SUPPRESSION USE OF WATER FROM MONITORING WELL R-15

1. Name and address of facility making the discharge.

Los Alamos National Laboratory
P.O. Box 1663
Los Alamos, New Mexico 87545

2. Location of the discharge.

The R-15 Monitoring Well is located at Technical Area (TA)-5 in Mortandad Canyon. This is generally a flat area with a less than 10% slope at the discharge area. A map and pictures of the location are enclosed with this plan. This Well is being drilled as part of the Laboratory's Hydrogeologic Workplan in order to better characterize the regional subsurface of the Pajarito Plateau. As stated in the cover letter all water developed and purged from the well will be containerized pending analytical results from collected samples before any land application or dust suppression activities take place.

3. The means of discharge. (to lagoon, flowing stream, water course, arroyo, septic tank, other).

The sprinkled discharge will be applied to the surface of approximately one acre of land within the canyon floodplain approximately 300 feet Northeast of the well site. An alternate method for application of the water is for dust suppression on the access road to the well. The method of land application and dust suppression is described below. This is the same land application methodology previously accepted and performed at the R-25 Well with the exception of the proposed dust suppression activities.

1. Aluminum piping with sprinkler heads will serve as the conduit for the discharge of the approximately 250,000 gallons of purge and development water to be generated from the R-15 Well.

2. There will be two separate aluminum piping runs, each 500 feet in length spaced approximately 200 feet apart with 6 sprinkler heads each. Spacing of the sprinkler heads is to be approximately 83 feet apart. Each sprinkler head will have a discharge radius of approximately 40 feet. This will allow an approximately 7 foot buffer area of no water impact between each sprinkler head on the 500 foot line.

3. Only one 500 foot piping run will be used at a time. This will allow for rotation of the discharge from area to area to prevent any ponding or run-off of the water. As prescribed in the "SOP 2.01 Surface Water Assessment" the discharge area has been located away from the streamcourse. Land application will be conducted for 8 to 10 hours a day. The discharge will be monitored periodically during each discharge day by on-site staff to ensure that no ponding or run-off is occurring, to inspect any BMP's and to determine when to rotate the land application area. **Ponding**, is defined as *a body of standing water, often artificially formed.* **Erosion**, is defined as *the process in which, by the actions of wind or water, soil particles are displaced and transported.*

4. Fog type sprinkler heads are to be used in order to maximize evaporation. Each sprinkler head has a discharge rate of approximately 16 gallons per minute. An estimated 25,000 gallons per day may be discharged resulting in approximately 10 discharge days, dependant on weather and equipment considerations..

5. The rate of application is expected to be approximately 100 gpm. The sprinkled discharge will be occasionally interrupted in order to transfer pumping equipment from one container to the next. These interruptions will allow previously applied water to disperse and will serve as an additional Best Management Practice (BMP) to help prevent ponding or run-off.

6. The land application site will be monitored during discharge hours. This will allow site staff, as necessary, to rotate the land application areas or stop application if a problem with the sprinkler system occurs. Additionally, if the discharge area shows signs of ponding or saturation, application operations will be immediately halted. The area will be evaluated for the need of any additional BMP's and the application will not start again until the area is suitable (i.e., no standing water or run-off visible).

7. Soil at the land application site will be sampled for radiological constituents and total metals prior to the initiation of the application. Post application soil samples will be collected after the final application of water. Soil sampling locations are delineated on the enclosed map of the application area. There will be a total of 4 soil samples collected from the application area. Two soil samples from each 500 foot length of discharge area. The soil samples will be collected from 0" to 6" inches in depth. All soil analytical data will be provided to the NMED.

8. The alternate method for application of the water is for dust suppression on the access road to the well. Water used for dust suppression would be applied by truck using a mounted dispersion device while driving along the road. Discharge amounts vary for this type of application but is estimated to be 1500 to 3000 gallons per day along approximately four miles of access road.

9. An SOP 2.01 Surface Water Assessment/Erosion Matrix for the land application location has been performed. An assessment of "minimal" surface/ground water impact for the land application area has been determined for the application described (Please see enclosed SOP 2.01 worksheets).

4. The estimated concentration of contaminants (if any) in the discharge.

The concentration of potential contaminants found in the development/purge water will be calculated as analytical data is generated.

5. The type of operation from which the discharge is derived

The R-15 Monitoring Well is part of the on-going study undertaken by Los Alamos National Laboratory in order to better understand the geologic and hydrologic characteristics of the regional aquifer, intermediate perched zones, and unsaturated zones at the Laboratory. The approximately 250,000 gallons of water to be discharged will be collected from the drilling, purging and sampling operations at this borehole.

6. The estimated flow to be discharged per day.

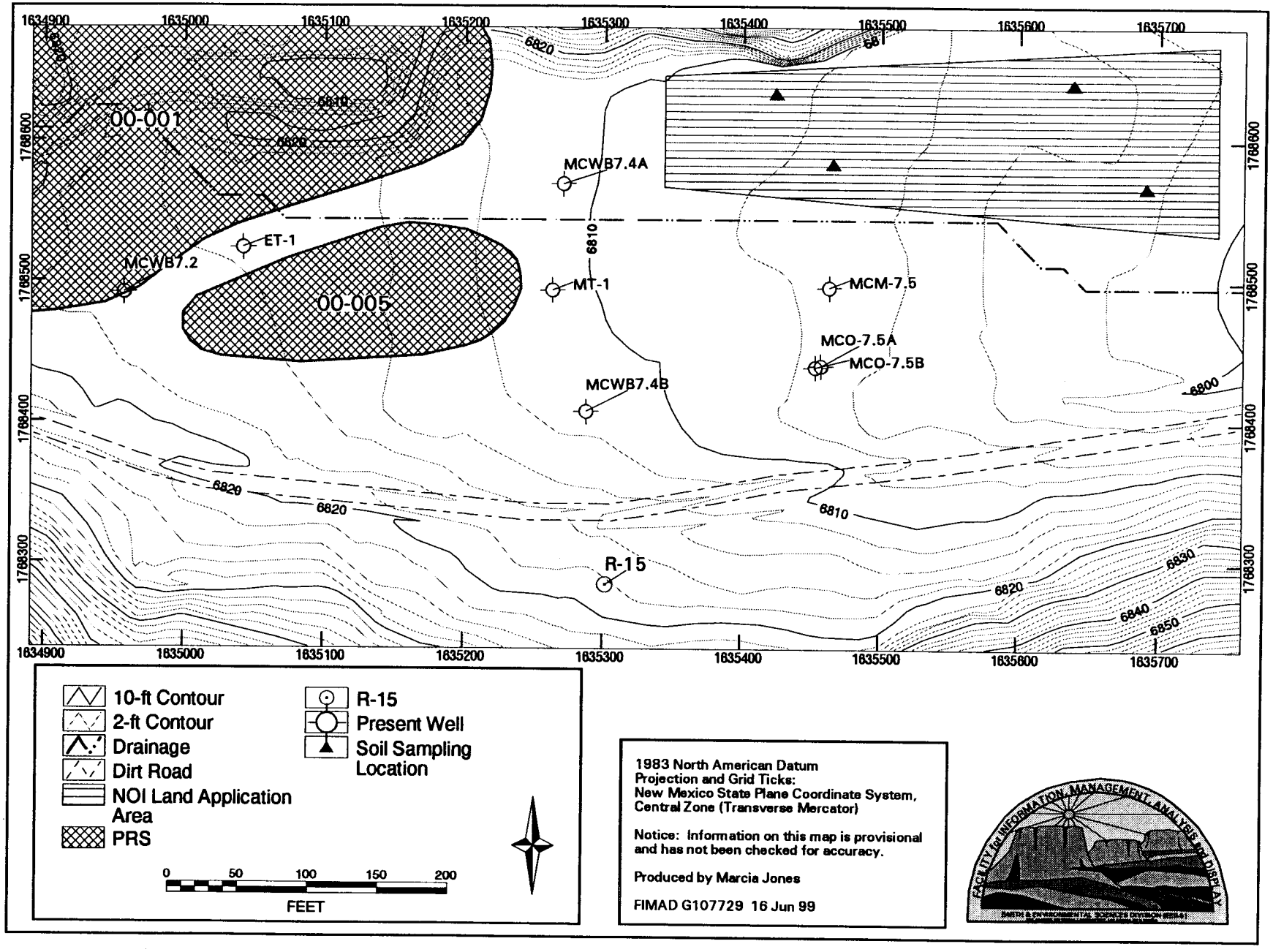
The land application amount from the initial development/purging and sampling is estimated to be approximately 25,000 gallons per day for approximately 10 discharge days. Additional sampling of the well is expected to occur at least four time a year. Each of the four sampling events is expected to generate an estimated 1500 gallons of purge water per sampling event.

7. The estimated depth to groundwater (if available)

Current information indicates that the regional aquifer is believed to exist at 600 feet below ground level at the drilling site.

Signed: _____ Date: June 25, 1999

Group Leader, ESH-18



Regional Characterization Well R-15 and Area of NOI Application

R-15 Land Application Area

Mortandad Canyon

Los Alamos National Laboratory

Environment, Safety & Health Division
ESH-18 Water Quality & Hydrology Group

Surface Water Assessment
Erosion Matrix for PRS R-15

CRITERIA EVALUATED	Value	Erosion/Sediment Transport Potential Low	Medium	High	Calculated Score
		0.1	0.5	1.0	
Site Setting (43)					
On mesa top	1	Defined based on topographic setting			
Within bench of canyon	4				
Within the canyon floodplain but not watercourse	13				13.0
Within bottom of canyon channel in watercourse	17				
Estimated % ground and canopy cover	13	>75%	25-75%	<25%	1.3
Slope	13	0-10%	10-30%	>30%	1.3
Surface Water Factors-Run-off (46)					
Visible evidence of runoff discharging? (Yes/No)	5	If no, score of 0 for runoff section.			0.0
		If yes, score 5 and proceed with section.			
Where does runoff terminate?	19	Other	Bench Setting	Drainage/Wetland	0.0
Has runoff caused visible erosion? (Yes/No)	22	Sheet	Rill	Gully	0.0
		If no, score as 0. If yes, calculate as appropriate.			
Surface Water Factors-Run-on (11)					
Structures adversely affecting run-on (Yes/No)	7*	If yes, score as 7. If no, score as 0.			0.0
Current operations adversely impacting (Yes/No)	4	If yes, score as 4. If no, score as 0.			0.0
Natural drainages onto site (Yes/No)	7*	If yes, score as 7. If no, score as 0.			0.0
**Select either structures or natural drainages.*					
MAX. POSSIBLE EROSION MATRIX SCORE:	100			**Total Score**	15.6**

** Indicates BMPs in place. Erosion potential without BMPs may be greater.

Report Printed 06/17/1999 11:10:08 AM.

Los Alamos National Laboratory
SURFACE WATER
SITE ASSESSMENT

SITE INFORMATION

1a) PRS Number: R-15 | 1b) Structure Number: | 1c) FMU Number: 80

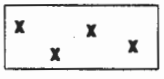
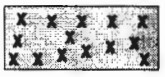
2. Date/Time (M/D/Y H:M am/pm): 06/17/1999

SITE SETTING (check all that apply)

3.
- ○ On mesa top (a).
- ○ Within a bench of a canyon (b).
- ◉ In the canyon floor, but not in an established channel (c).
- ○ Within established channel in the canyon floor (d).

Explanation: Well head located within Mortandad Canyon floodplain on southside of canyon. Sediment traps are located +/- .25 mile to the west.

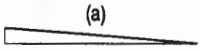
4. Estimated ground and/or canopy cover at site: (deciduous leaves, pine needles, rocks, vegetation, trees, structures, asphalt, etc.)

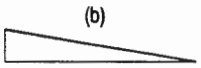
(illustration) (a)  (b)  (c) 

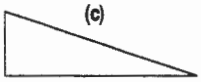
Estimated % of ground/canopy cover:
- ○ 0% to 25%
- ○ 25% to 75%
- ◉ 75% to 100%

Explanation: Heavy vegetative cover of mixed grasses.

5. Steepest slope at the area impacted:

(a)  ◉ Less than 10%

(b)  ○ 10% to 30%

(c)  ○ 30% and greater

Explanation: Mostly flat with gentle slope to the east.

RUNOFF FACTORS

Y / N

☐ ☑ **6. Is there visible evidence of runoff discharging from site? If yes, answer a) - c) below:**

☐ ☑ 6a) Is runoff channelized? If yes, describe: ○ Man-made channel. ○ Natural channel.

Explanation: Ground saturated from recent rainfall. No evidence of runoff due to infiltration.

RUNOFF FACTORS, CONT'D

6b) Where does evidence of runoff terminate?

- ○ **Drainage or wetland (name)** Mortandad Canyon
- ○ **Within bench of canyon setting (name)**
- ○ **Other (i.e., retention pond, meadow, mesa top)**

Explanation:

Y / N

☐ ☑ 6c) Has runoff caused visible erosion at the site? If yes, explain below: ○ Sheet ○ Rill ○ Gully

Explanation: None observed

RUN-ON FACTORS

Please rate the potential for storm water to run on to this site: (Check EITHER #7 or #9)

☐ ☑ **7.** Are structures (i.e., buildings, roof drains, parking lots, storm drains) creating run-on to the site?

Explanation: None

☐ ☑ **8.** Are current operations (i.e., fire hydrants, NPDES outfalls) adversely impacting run-on to the site?

Explanation: None

☐ ☑ **9.** Are natural drainage patterns directing stormwater onto site?

Explanation: None. Sediment traps to the west impede upstream run-on.

ASSESSMENT FINDING:

☐ ☑ **10. Based on the above criteria and the assessment of this site, does soil erosion potential exist? (REFER TO EROSION POTENTIAL MATRIX.)**

Veenis, Steve

11. Signature of Water Quality/Hydrology Representative

SW Initials of independent reviewer.

Check here when information is entered in database: ☑

This page is for ESH-18 notes, recommendations, and photos.

		Y / N	
12.	a)	○ ◉	Is there visible trash/debris on the site?
	b)	○ ◉	Is there visible trash/debris in a watercourse?

Description of existing BMPs:

BMPs provided at well head.

◉ ○ Are BMPs being properly maintained? If no, describe in "Other Internal Notes."

◉ ○ Are BMPs effectively keeping sediment in place and reducing erosion potential?

OTHER INTERNAL NOTES:

Site north of R-15 well head is proposed for land application of drill/purge water generated at drill site. If water is applied at appropriate rate and away from access road (south) and canyon channel (north) the impact to surface/ground water would be negligible.