Department of Energy
Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

JUN 23 1997

HSWA LANL 5/1147/50
RCRA LANL TA-50/97

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Dale Doremus
Program Manager
Ground Water Pollution Prevention Section
New Mexico Environment Department
1190 St. Francis Drive
P. O. Box 26110
Santa Fe, NM 87502

Dear Ms. Doremus:

Subject: NMED's Request for Additional Information, Los Alamos National Laboratory's Ground Water Discharge Plan Application, Radioactive Liquid Waste Treatment Facility (TA-50), DP-1132

Enclosed is Los Alamos National Laboratory's response to your April 21, 1997 letter requesting clarification and/or additional information on the Radioactive Liquid Waste Treatment Facility's (TA-50) Ground Water Discharge Plan Application, DP-1132.

If you desire any additional information concerning this response, please call Bonnie Koch of the Los Alamos Area Office at (505) 665-7202, or Bob Beers of the Laboratory's Water Quality and Hydrology Group (ESH-18) at (505) 667-7969.

Sincerely,

G. Thomas Todd
Area Manager

LAAMEP:9BK-022

Enclosure

cc:
See page 2

8847

cc w/enclosure:
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D. Woitte, LC/GL, LANL, MS-A187
K. Hargis, EM/WM, LANL, MS-J591
S. Hanson, EM/WM, LANL, MS-E518
A. Bond, EM/WM, LANL, MS-E518

cc w/o enclosure:
J. Vozella, AAMEP, LAAO
S. Rae, ESH-18, LANL, MS-K497

1) **NMED Comment.** *Prior to implementing a final treatment process for Phase II upgrades, LANL must receive approval from NMED. Please commit to submitting a report to the GWQB after completion of pilot tests which includes the following:*

a. RLWTF's preferred method of nitrate removal and an explanation supporting the preference;

b. influent nitrate, fluoride, and TDS concentrations to each pilot process; and

c. effluent nitrate, fluoride, and TDS concentrations to each pilot process.

Laboratory Response. The Laboratory is evaluating three technologies for nitrate removal/destruction at the RLWTF: biological nitrate destruction, selective ion exchange, and evaporation. As soon as this evaluation is completed the Laboratory will present its findings and conclusions to the NMED GWQB. Representatives from the Laboratory's Waste Management Program Office, the RLWTF, and the Environment, Safety, and Health Division will participate in this presentation.

2) **NMED Comment**. *The Discharge Plan is unclear about the effluent quality that will be achieved by Phase II upgrades. Please clarify, whether treated effluent exceeding WQCC Regulation 3103. ground water standards will be discharged to effluent canyon, tributary to Mortandad Canyon, after implementation of Phase II upgrades.*

Laboratory Response. After implementation of Phase II upgrades all effluent discharged by the RLWTF to Mortandad Canyon will be compliant with WQCC Regulation 3103. ground water standards. Compliance can be assured due to the RLWTF's batch treat/batch discharge method of operation. Non-complying effluent will be routed back to the RLWTF's influent storage tanks for re-treatment.

3) **NMED Comment.** *The GWQB does not agree that the data presented in the discharge plan application is sufficient to adequately demonstrate that nitrate and fluoride concentrations in ground water are consistently decreasing. Additional ground water monitoring will be required to determine any long term trends.*

Laboratory Response. The Laboratory will conduct the additional monitoring necessary to determine long term trends in the quality of Mortandad Canyon's alluvial ground water. The Laboratory's Environmental Restoration (ER) Project is currently developing a Sampling and Analysis Plan (SAP) to further characterize the quality of Mortandad Canyon's alluvial ground water. The SAP is scheduled for completion in September of 1997. The NMED GWQB will be copied on all ER Project plans and reports which address the investigation of ground water in Mortandad Canyon.

4) **NMED Comment.** *The GWQB does not believe that the proposed frequencies constitute adequate monitoring of the quality of Mortandad Canyon's alluvial ground water. Please commit to quarterly monitoring of all monitor wells listed in Table 3.0 and analyzing the ground water samples for nitrate as nitrogen, fluoride, and TDS and any other constituent currently exceeding WQCC numerical standards.*

Laboratory Response. The Laboratory proposes quarterly monitoring at three monitor wells, MCO-4B, 6, and 7, to provide representative samples of Mortandad Canyon's alluvial ground water. Quarterly monitoring parameters will be: nitrate as nitrogen, fluoride, and TDS. It should be noted that weather conditions in Mortandad Canyon may prohibit safe access to the wells during the winter quarter. A revised Table 3.0, Proposed Monitoring Plan, has been provided as Attachment 1.

5) **NMED Comment.** *The system of monitor wells in Mortandad Canyon is not adequate to monitor ground water quality as required by the WQCC Regulations.*

a. Please commit to repairing MCO-3.

b. Please commit to repairing MCO-4.

c. Please commit to quarterly sampling and analysis of a ground water sample from a monitor well completed in the main aquifer. Please propose, for GWQB approval, a monitor well for routine monitoring of the main aquifer.

d. The table does not provide information on the screened section for each of the proposed monitor wells.

Laboratory Response.

a. MCO-3 will be replaced. Due to the remote nature of the site the replacement well will be constructed by hand. The Laboratory will submit to the NMED GWQB the geologic log and well construction data for the MCO-3 replacement well when it becomes available.

b. MCO-4 will not be repaired. MCO-4B will replace MCO-4 as a monitoring well for the Ground Water Discharge Plan Application. Geologic log and well construction data for MCO-4B have been provided in Attachment 2.

c. The Laboratory will add TW-8 to the Ground Water Discharge Plan Application (See Attachment 1) for monitoring of the main aquifer. TW-8 will be sampled quarterly for nitrate as nitrogen, fluoride, and TDS as long as weather conditions permit safe access. Geologic log and well construction data for TW-8 have been provided in Attachment 2.

d. Well construction information for each of the Discharge Plan monitor wells has been provided in Attachment 2.

6) **NMED Comment**. *The contingency submitted in the discharge plan application does not adequately describe the actions to be taken for the protection of ground water in the event of a contaminant spill or failure of the treatment process.*

a. Please submit a contingency plan describing the actions to be taken in the event of a contaminant spill or failure of the treatment process. The actions should be directed at the containment of the contaminant discharged and disposal of the affected substrate. Please include the actions to be taken in the event of WQCC Regulation 3103 exceedances in ground water.

b. The contingency plan and corrective actions submitted as part of the discharge plan application does not provide enough information to determine if the proposed corrective actions will be adequate to restore ground water in Mortandad Canyon to below WQCC ground water standards, and may not be an approvable contingency plan for the discharge permit. Prior to approving the corrective action as part of the discharge permit, NMED must receive the following:

1. an accurate definition (vertical and horizontal extent) of the contamination in the alluvial aquifer of Mortandad Canyon with concentrations of all WQCC constituents currently exceeding standards from all sampling points used to define the plume.

2. well logs and well construction details of all wells ;used to define the plume.

3. a ground water level surface map.

4. information demonstrating whether or not an intermediate aquifer exists in Mortandad Canyon.

5. water quality analysis for samples taken from the regional aquifer.

6. water quality data from water above the TA-50 outfall, and

7. a time frame in which additional corrective actions will be proposed if concentrations do not drop below WQCC Regulation 3103. numerical standards.

Laboratory Response.

a. The Laboratory's Incident Reporting Process (LIR 201-00-04.0) requires that upon discovery all Laboratory personnel report emergencies to the Emergency Management and Response (EM&R) Office. The EM&R Office has overall responsibility for coordinating a response for all emergency situations which arise at the Laboratory. In the event of a spill at the RLWTF, EM&R's response would include prompt notification of the Laboratory's Water Quality and Hydrology Group (ESH-18). Attachment 3, a Type 4 Chemical Spill or Release check list, is used by the EM&R Office to direct the appropriate notifications. Any spill reported to ESH-18 is investigated and the following actions are taken in accordance with Section 1203. of the New Mexico Water Quality Control Commission Regulations: (1) Within twenty-four (24) hours the NMED is verbally notified of the spill; (2) Within seven (7) days the NMED is provided a written report on the spill; and (3) Within fifteen (15) days the NMED is provided a Corrective Action Plan for the spill.

a. As a contingency against treatment process failure the RLWTF has the capability of holding approximately ten (10) days of influent in storage while the treatment system is being returned to service. The RLWTF's hold-up capacity is based upon a current influent storage capacity of 200,000 gallons and an influent design flow of 20,000 gallons per day. Additionally, in the event of treatment process failure, the Laboratory would implement waste minimization measures which would reduce influent flows and further extend the RLWTF's hold-up capacity.

b. 1. Using available data, the Laboratory will submit to the NMED GWQB a draft definition of contaminant plumes in Mortandad Canyon by December 31, 1997.

2. Well logs and well construction details for all wells used in defining the plume will accompany the above submittal.

3. A ground water level surface map of the alluvial aquifer in Mortandad Canyon will be included in the final RFI Work Plan for Mortandad Canyon. A copy of this plan will be submitted to the NMED GWQB when it is finalized in September, 1997.

4. Current well information has shown no evidence for the presence of intermediate water beneath Mortandad Canyon. As indicated on Page 19 of the Ground Water Discharge Plan Application, the Laboratory's Environmental Restoration (ER) Project is currently developing a RCRA Facility Investigation (RFI) Work Plan for Mortandad Canyon. One of the objectives of the Mortandad Canyon work plan will be to further assess the potential for interconnections between ground water in alluvium, possible perched intermediate zones, and the regional aquifer.

5. Extensive water quality data from the regional aquifer is provided to the NMED annually in the Laboratory's Environmental Surveillance Report. Water supply well PM-5 and main aquifer test well TW-8 are two wells within the vicinity of Mortandad Canyon. Recent water quality data for these two wells show no exceedances of WQCC standards.

6. No recent water quality data are available for water from above the TA-50 outfall.

7. If contaminant concentrations do not drop below WQCC Regulation 3103. numerical standards by the end of the Discharge Plan term (5 years from the date of approval) then additional corrective actions will be proposed in the Ground Water Discharge Plan Renewal Application.

7. **NMED Comment.** *The closure plan submitted in the discharge plan application does not provide sufficient detail. The GWQD recognizes that LANL has no intentions of discontinuing use of the RLWTF during the term of the discharge permit, however, prior to discharge plan approval, the GWQB will need additional information for the closure plan.*

   a. Please commit to monitoring ground water at the same frequency and locations at the time of closure for at least two years after closure.

   b. Please commit to disconnecting and/or plugging all pipes and wastewater works that could allow a liquid waste discharge after cessation of operations of the RLWTF.

   c. Please commit to plugging and abandoning all monitor wells once it has been determined by the NMED that ground water monitoring will no longer be required.

   d. Please commit to taking corrective actions to remediate any contaminated ground water existing at the time of closure.

Laboratory Response.

a. The Laboratory will monitor alluvial ground water in Mortandad Canyon at the same frequency and locations at the time of closure for at least two years after closure.

b. If operations at the RLWTF should cease and the facility is decommissioned or converted for use by other Laboratory programs then the Laboratory will submit a closure plan to the NMED.

c. The Laboratory cannot commit to plugging and abandoning all monitor wells after closure since their use may be required by other programs within the Institution. As monitoring wells are retired from service they will be plugged and abandoned in accordance with all applicable state and federal regulations.

d. The HSWA Module VIII of the Laboratory's RCRA Permit (NM0890010515) establishes the requirement for the ER Project to investigate the nature and extent of contamination in soil and water media present in Mortandad Canyon. If the results of the investigations show levels of contamination in ground water which present a risk to human health and the environment then the ER Project will be required to remediate the ground water. As indicated previously, the Mortandad Canyon Sampling and Analysis Plan (SAP), which is due to NMED HRMB in September of 1997, will specify sampling methods and locations for the investigation of ground water present in the Bandelier Tuff. If this investigation shows that contamination has migrated into ground water present in rock units deeper than tuff then further investigation will be performed to determine if remediation is required. The GWQB will be copied on all ER Project plans and reports which address the investigation and remediation of ground water in Mortandad Canyon.

ATTACHMENT 1

Revised Table 3.0: Proposed Monitoring Plan
for the
RLWTF Ground Water Discharge Plan Application

Table 3.0. **[REVISED: JUNE, 1997]** Proposed Monitoring Plan for the RLWTF Ground Water Discharge Plan Application

LOCATION	PARAMETER	NOTE	MONITORING FREQUENCY*
Discharge Point	Batch Volume, in gallons		Per batch
NPDES Sampling Tap	pH		Per batch
NPDES Sampling Tap	Nitrate Screening		Per batch
NPDES Sampling Tap	Total Nitrogen	1	1/week
NPDES Sampling Tap	Health Standards	3	1/month
NPDES Sampling Tap	Total Toxic Organics	7	1/month
NPDES Sampling Tap	Radium-226 & Radium-228		1/month
NPDES Sampling Tap	Secondary & Irrigation Stds	4,5	1/month
Wells MCO-4B, 6, 7	Nitrates(NO3-N), F, TDS		Quarterly
Wells TW-8	Nitrates(NO3-N), F, TDS		Quarterly
Wells MCO-6	Health Stds	3	Quarterly
Wells MCO-6	Secondary Stds	4	Quarterly
Wells MCO-6	Irrigation Stds	5	Quarterly
Wells MCO-3,4B,5,6,7,7.5	Radiochemistry	2	Annual
Wells MCO-3,4B,5,7,7.5	Health Stds	3	Annual
Wells MCO-3,4B,5,7,7.5	Secondary Stds	4	Annual
Wells MCO-3,4B,5,7,7.5	Irrigation Stds	5	Annual
Wells MCO-3,4B,5,6,7,7.5	Organics	6	1 per 3 Years
Mortandad Canyon Gaging Station	Surface Flows		Continuous

Notes

1. Total Nitrogen: TKN, Ammonia, NO2, NO3.
2. Radiochemistry: Uranium, Combined Ra-226 & Ra-228.
3. Health Standards (3103 A.): Ag, As, Ba, Cd, CN, Cr, F, Hg, NO3, Pb, Se.
4. Secondary Standards (3103 B.): Cl, Cu, Fe, Mn, SO4, Zn, TDS, and pH.
5. Irrigation Standards (3103 C.): Al, B, Co, Mo, Ni.
6. Volatile and Semivolatile Compounds, EPA SW 846 and Methods 8240 and 8270.
7. Total Toxic Organics (TTOs): See Appendix B for a listing of analytes in this method.

* Monitoring Plan data will be reported to the NMED annually.

ATTACHMENT 2

Geologic Logs & Construction Data
for
Observation Wells in Mortandad Canyon

Excerpted From:

Geologic and Hydrologic Records of Observation Wells, Test Holes, Test Wells, Springs, and Surface Water Stations in the Los Alamos Area.

W.D. Purtymun, 1995.

LA-12883-MS.

TABLE VI-A. Hydrologic Data for Observation Wells in Mortandad Canyon

Observation Wells	Date Completed	Depth Drilled (ft)	Depth Completed (ft)	Depth 1991	Water Levels At Completion (ft)	Water Levels At Present Date	Water Levels (ft)	Elevation Land-Surface Datum (LSD) (ft)	Top of Casing (Measuring Point) to Land Surface Datum	Remarks
MCO-1	11/60	8	8	—	2.8	—	—	7153	—	Unable to locate in 1991
MCO-2	11/60	10	9	7.5	0.3	4/91	5.06	7133	2.00	
MCO-3	3/67	18	12	10.1	4.4	4/91	3.36	7052.72	1.54	Originally drilled 11/60; redrilled and cased 3/67
MCO-4	10/63	24	19	16.3	3.3	4/91	7.19	6900.36	1.02	
MCO-4.9	7/73	42	30	23.4	—	4/91	22.10	6879.31	1.25	
MCO-5	10/60	47	46	44.9	24.6	2/91	20.75	6875.80	1.95	
MCO-6	10/60	82	71	—	38.1	—	—	6849	—	Plugged and abandoned (relocated)
MCO-6	3/74	47	47	41.5	28.9	2/91	33.75	6848.96	2.34	
MCO-6.5A	11/61	47	45	33.3	41.0	2/91	Dry	6840	2.15	
MCO-6.5B	11/61	42	42	36.0	36.3	2/91	Dry	6839	0.70	
MCO-7	10/60	77	69	54.7	39.7	2/91	37.47	6827.40	1.24	
MCO-7.5A	11/61	63	60	—	41.2	—	—	6809	—	Well damaged (relocated)
MCO-7.5B	4/74	62	60	56.0	42.1	2/91	43.71	6808.80	1.28	
MCO-8	10/60	92	84	22.7	61.6		—	6796.70	0.25	Obstruction in well
MCO-8A	11/61	52	50	48.5	Dry	2/91	Dry	6800	0.61	
MCO-8.2	11/61	72	70	60.3	59.2	2/91	Dry	6782	2.00	
MCO-9	11/60	57	55	54.6	Dry	2/91	Dry	6747.77	1.44	
MCO-9.5	11/61	57	46	40.3	Dry	2/91	Dry	6740	2.00	
MCO-11	11/61	23	20	—	Dry	—	—	6720	—	Unable to locate in 1991
MCO-12	11/61	64	60	—	Dry	—	—	6700	—	Casing pulled; hole plugged (relocated)
MCO-12	6/71	112	108	96.2	Dry	2/91	Dry	6702	0.62	
MCO-13	7/70	112	107	106.2	Dry	2/91	Dry	6674	0.67	
TSCO-1	11/61	37	35	23.1	Dry	2/91	8.93	6857	0.97	

Sources: Baltz et al. 1963; Purtymun 1964, 1971, and 1974.

TABLE VI-B. Geologic Logs and Construction Data for Observation Wells in Mortandad Canyon (20 Obs. Wells)

1. Observation Well MCO-1

Geologic Log	Thickness (ft)	Depth (ft)
Tuff, unweathered, overlain by about 1 ft of silt and sand	8	8

Note: Well abandoned, in stream channel.

2. Observation Well MCO-2

Geologic Log	Thickness (ft)	Depth (ft)
Tuff, unweathered, overlain by about 1 ft of silt and sand	10	10

Note: Well abandoned: in stream channel.

3. Observation Well MCO-3

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay	7	7
Tuff (weathered in place)		
Silt and clay with some lenses of sand and gravel	11	18

Construction
12 ft of 3-in.-diam plastic pipe, lower 10 ft perforated.

4. Observation Well MCO-4

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay	18	18
Tuff (weathered in place)		
Silt and clay with lenses of sand	6	24

Construction
19 ft of 3-in.-diam plastic pipe, lower 15 ft perforated.

5. Observation Well MCO-4.9

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay	27	27
Tuff (weathered in place) silt and clay with gravel	16	43

Construction
30 ft of 3-in.-diam plastic pipe, lower 20 ft perforated.

TABLE VI-B. Geologic Logs and Construction Data for Observation Wells in Mortandad Canyon (20 Obs. Wells)(Continued)

6. Observation Well MCO-5

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel with lenses of silt and clay	35	35
Tuff (weathered in place)		
Silt and clay with some lenses of sand and gravel	12	47

Construction
46 ft of 3-in.-diam plastic pipe, lower 25 ft perforated.

7. Observation Well MCO-6

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand, gravel, and occasional cobbles in a matrix of silt and clay	36	36
Tuff (weathered in place)		
Silt and clay with minor amounts of sand and gravel	46	82

Construction
71 ft of 3-in.-diam plastic pipe, lower 35 ft perforated, well drilled October 1960. Well destroyed by flood, summer 1973; redrilled and constructed as a new well about 10 ft to the northeast (March 1974): 47 ft of 4-in.-diam plastic pipe, lower 20 ft perforated.

8. Observation Well MCO-6.5A

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay	47	47

Construction
45 ft of 2-in.-diam plastic pipe, lower 20 ft perforated.

9. Observation Well MCO-6.5B

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay	42	42

Construction
42 ft of casing, upper 22 ft of 4-in.-diam steel pipe; lower 20 ft of 4-in.-diam plastic pipe, perforated.

TABLE VI-B. Geologic Logs and Construction Data for Observation Wells in Mortandad Canyon (20 Obs. Wells)(Continued)

10. Observation Well MCO-7

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a silt and clay matrix	55	55
Tuff (weathered in place)		
Silt and clay with lenses of sand and gravel	22	77

Construction
69 ft of 3-in.-diam plastic pipe, lower 30 ft perforated.

11. Observation Well MCO-7.5A/7.5B

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay; silt and clay increase with depth	60	60
Tuff (weathered in place) silt and clay	3	63

Construction
November 1961, 60 ft of 3-in.-diam plastic pipe, lower 20 ft perforated; well destroyed by falling tree, replaced April 1974 about 6 ft to the west: 60 ft of 4-in.-diam plastic pipe, lower 25 ft perforated.

12. Observation Well MCO-8

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay; silt and clay increase with depth	61	61
Tuff (weathered in place)		
Silt and clay with lenses of fine to coarse sand	31	92

Construction
84 ft of 3-in.-diam plastic pipe, lower 20 ft perforated; well damaged, bailer stuck at about 23 ft.

13. Observation Well MCO-8A

Geologic Log	Thickness (ft)	Depth (ft)
Alluvium		
Sand and gravel in a matrix of silt and clay; silt and clay increase with depth	52	52

Construction
50 ft of 2-in.-diam plastic pipe, lower 10 ft perforated.

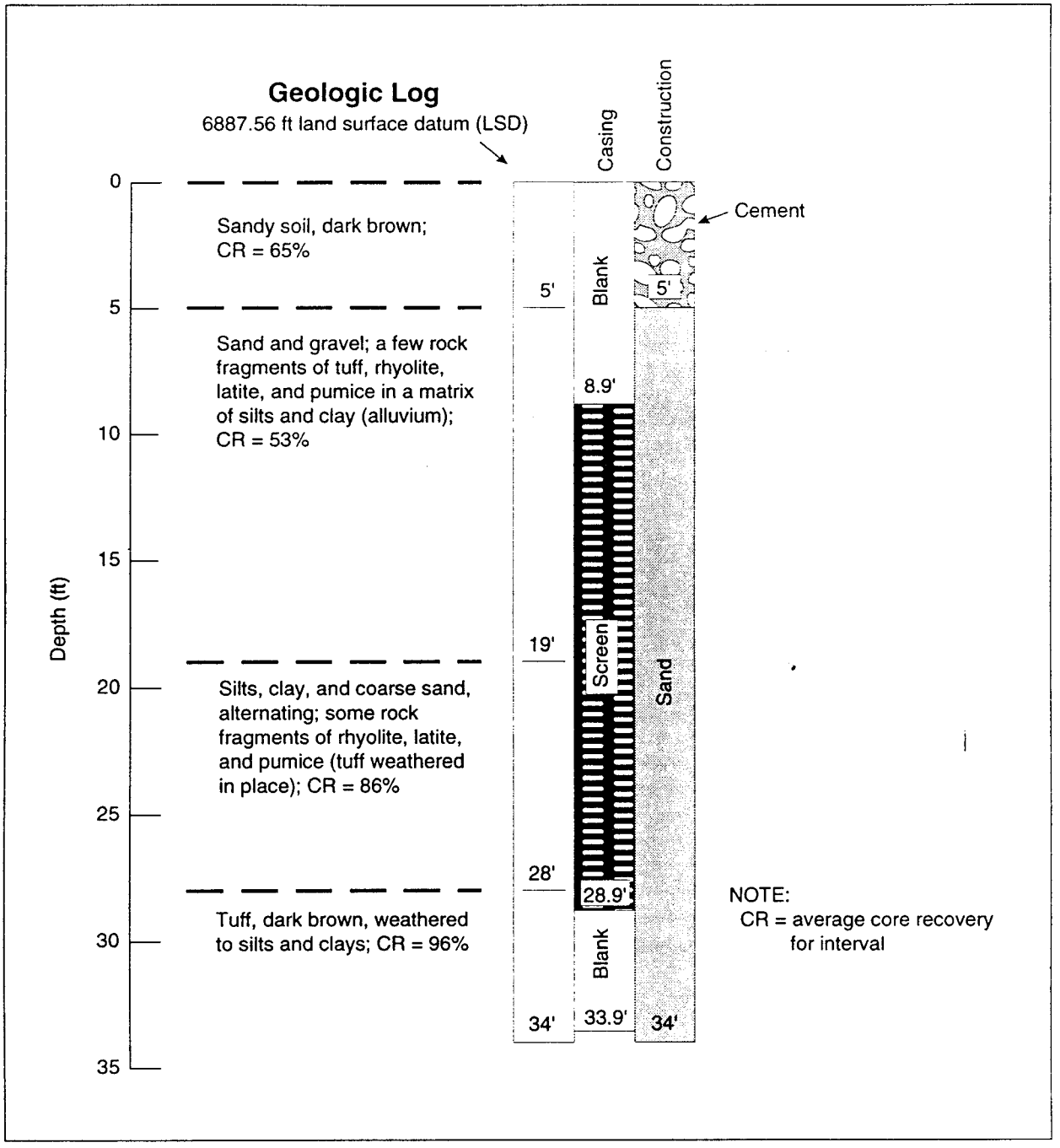

Fig. VIII-L. Mortandad Canyon observation well MCO-4B, completed August 1990, water level 21.7 ft (Purtymun and Stoker 1990).

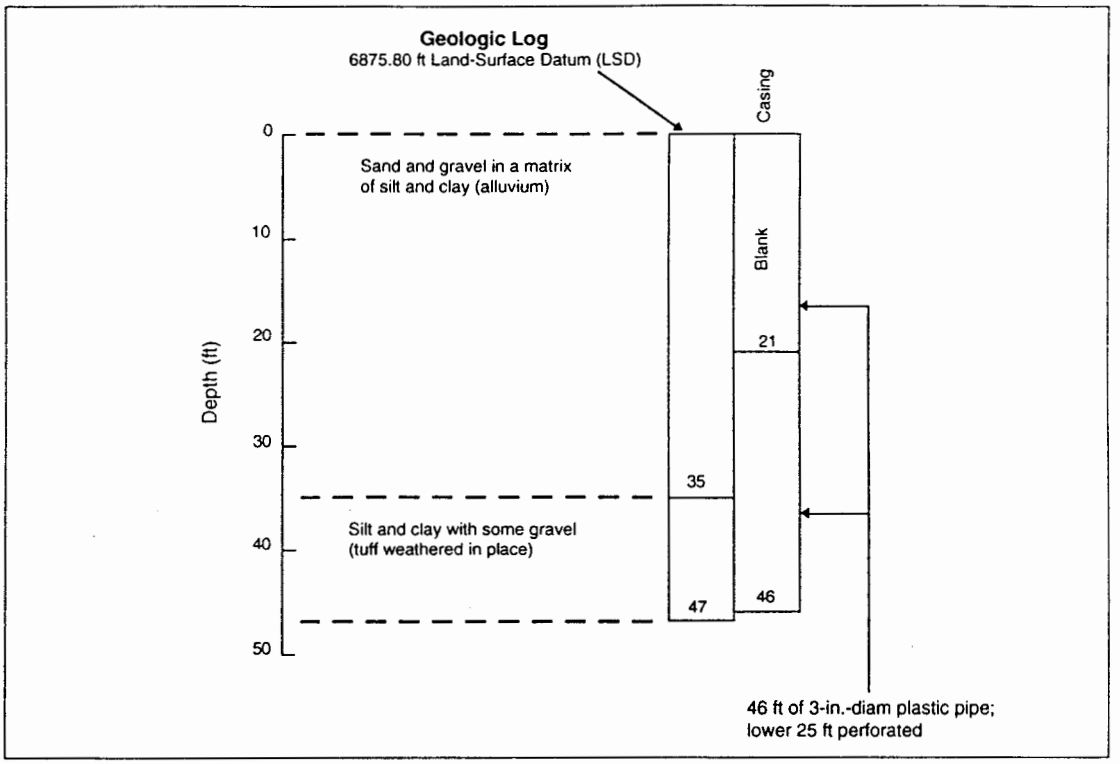

Fig. VI-G. Mortandad Canyon observation well MCO-5, completed October 1960, water level 24.6 ft (Baltz et al. 1963).

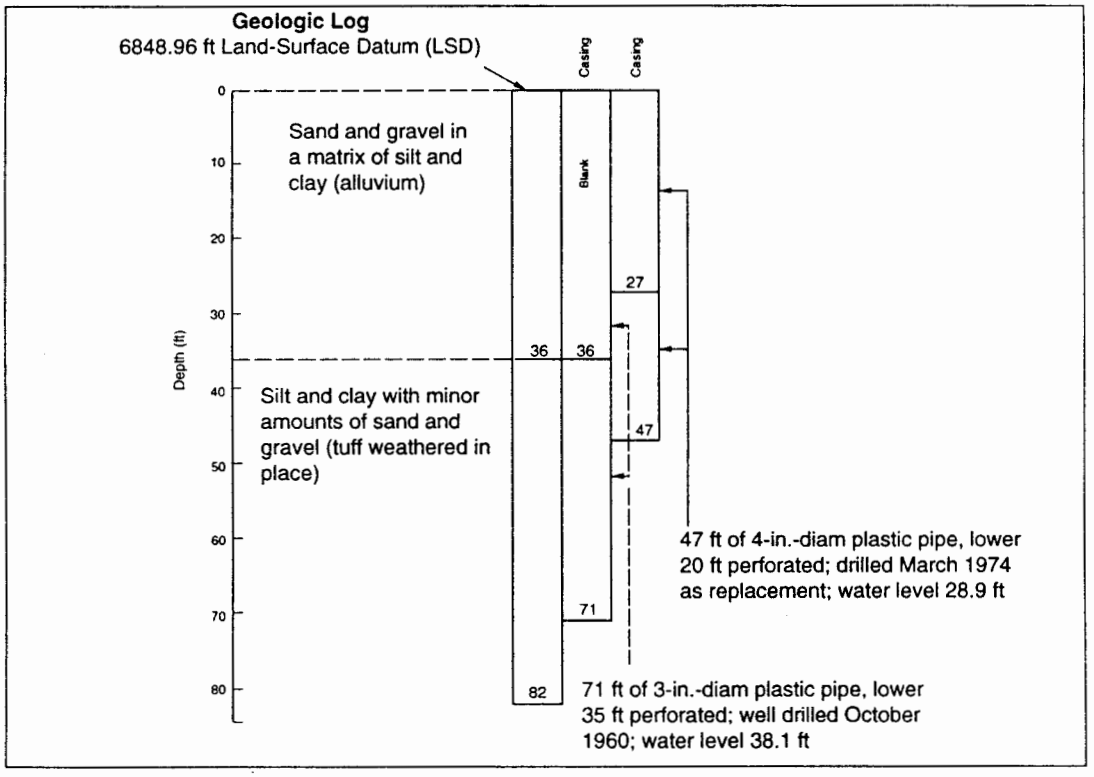

Fig. VI-H. Mortandad Canyon observation well MCO-6, completed October 1960, replaced March 1974 (Baltz et al. 1963, Purtymun 1974).

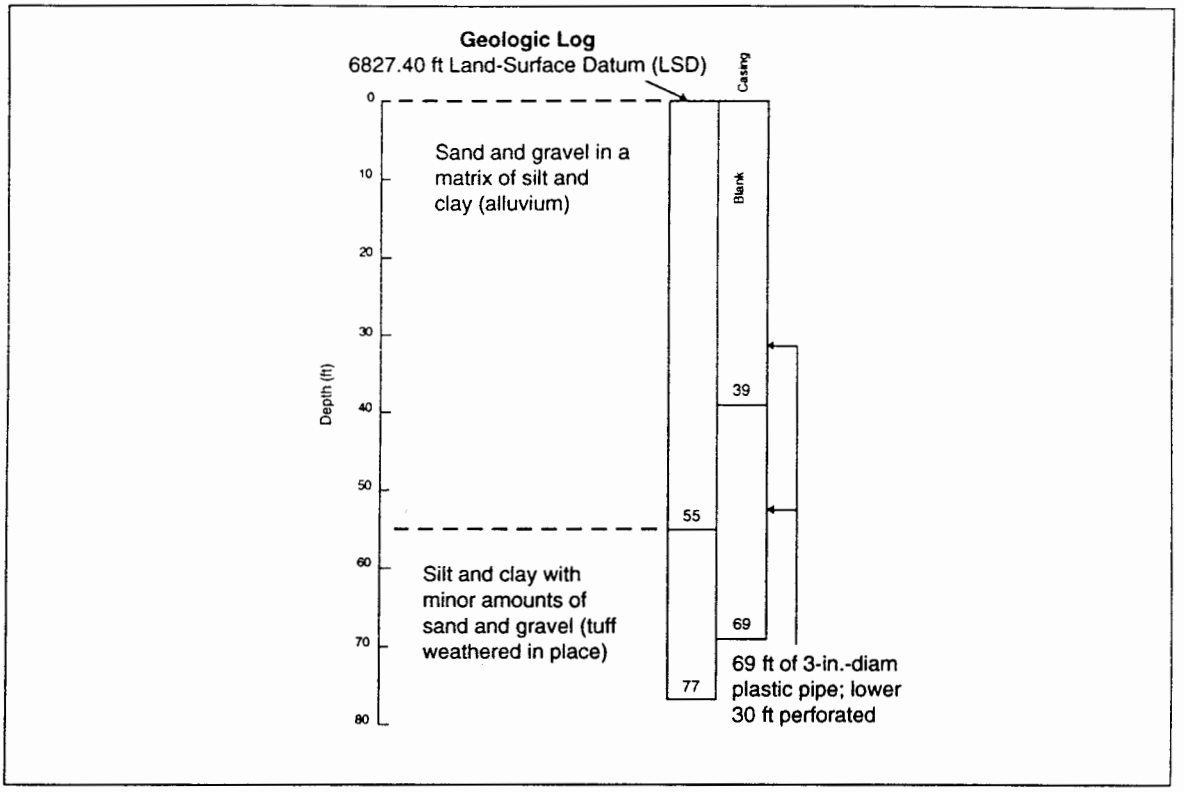

Fig. VI-K. Mortandad Canyon observation well MCO-7, completed October 1960, water level 39.7 ft (Baltz et al. 1963).

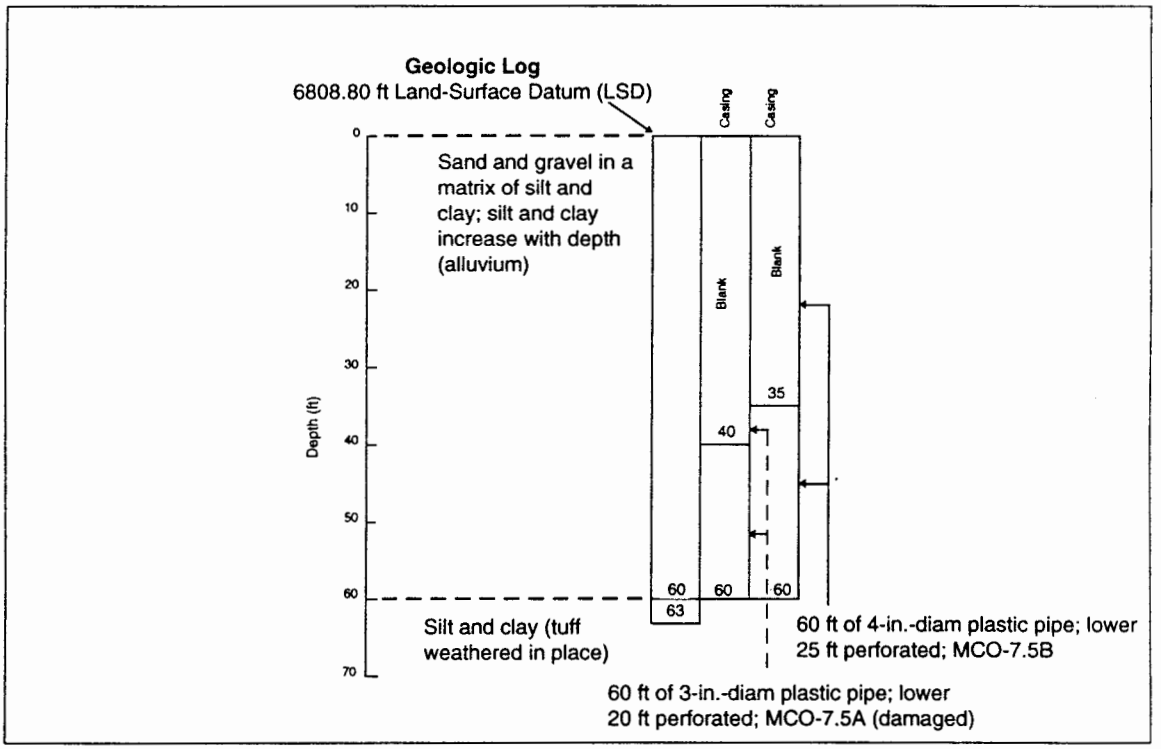

Fig. VI-L. Mortandad Canyon observation well MCO-7.5A (damaged), completed November 1961, water level 41.2 ft; and adjacent well MCO-7.5B, completed April 1974, water level 42.1 ft (Purtymun 1964, 1974).

TABLE XVII-A. Construction and Hydrologic Data for Test Wells and Test Holes on the Pajarito Plateau

Test Wells or Test Holes	Month Completed	Depth Drilled (ft)	Depth Completed (ft)	Elevation (LSD) (ft)	Water Level at Completion (ft)	Remarks
Test Well TW-1	1/50	642	642	6369.19	585	
Test Well TW-1A	1/50	225	225	6369.28	188	
Test Well TW-2	11/49	789	789	6648.1	759	
Test Well TW-2[a]	1/91	834	834	6648.06	791	
Test Well TW-2A	11/49	133	133	6650.40	121	
Test Hole TH-2B	11/49	233	—	6647	Dry	
Test Well TW-3	11/49	815	815	6595.31	743	
Test Well TW-4	3/50	1205	1205	7244.6	1171	
Test Hole TH-5	3/50	263	—	6591.6	Dry	
Test Hole TH-6	3/50	300	—	6642.1	Dry	
Test Hole TH-7	4/50	55	—	6224	Dry	plugged and abandoned
Test Well TW-8	12/60	1065	1065	6877.62	968	
Test Hole H-19	9/49	2000	—	7178	950	plugged and abandoned
Test Hole Sigma Mesa	12/79	2292	1425	7215	1330	
Layne Western	3/50	157	147	5971	100	yielded water to drill Guaje wells
Ski Basin Well	6/85	400	392	9310	245	

[a] Well completed to 789 ft in 1949, drilled and cased to 834 ft in 1991.

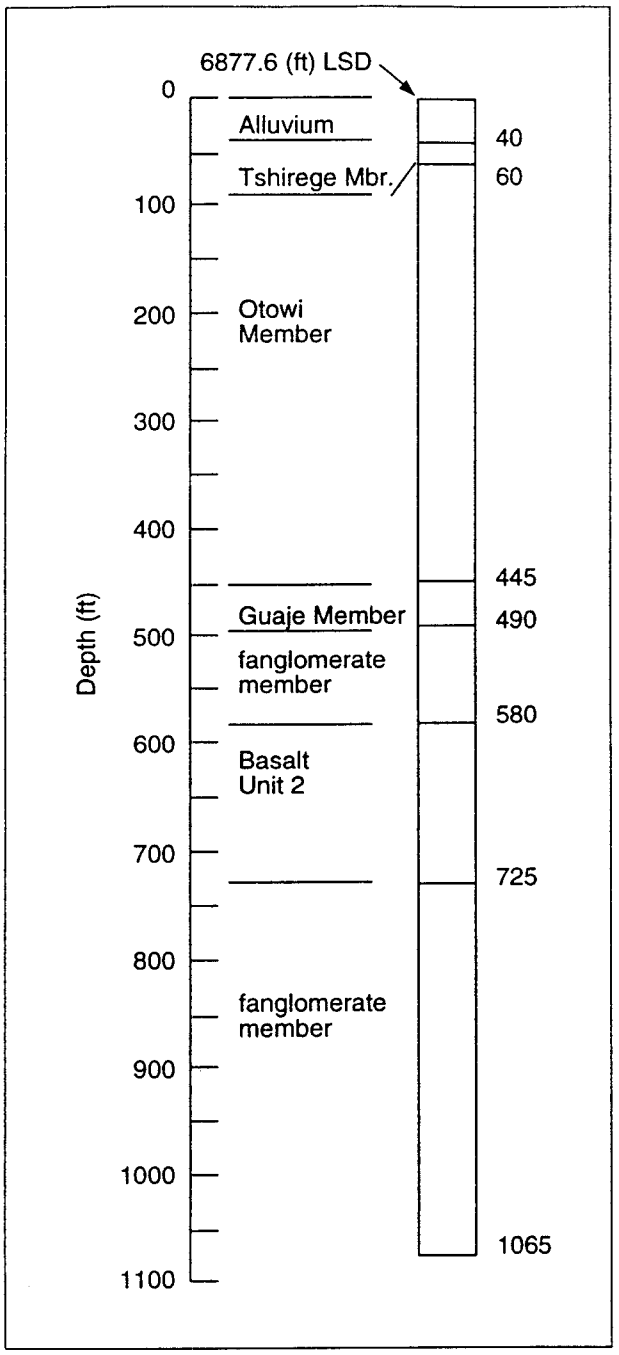

Fig. XVII-I. Geologic log of test well TW-8, completed December 1960, water level 968 ft (Baltz et al. 1963).

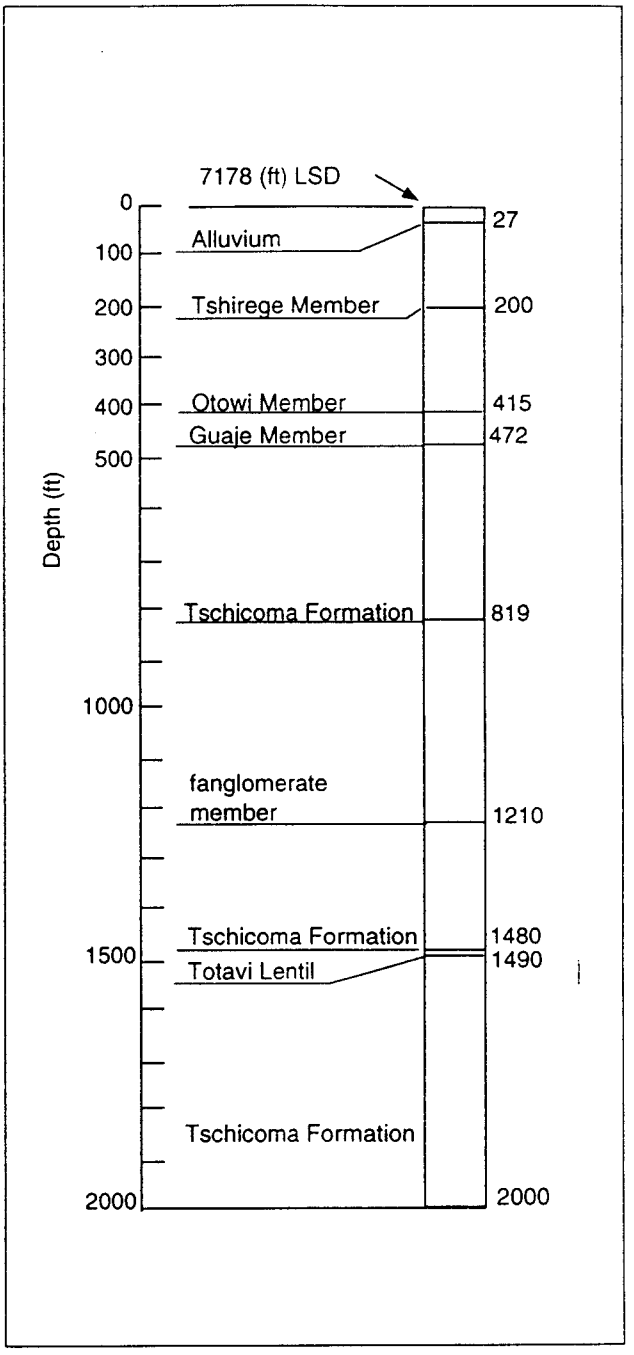

Fig. XVII-J. Geologic log of test hole H-19, completed September 1949, water level 950 ft (Griggs 1955).

ATTACHMENT 3

Emergency Management and Response (EM&R) Office
Notification Checklist for Type 4 Chemical Spills or Releases

CHEMICAL SPILL OR RELEASE
TYPE 4

- ☐ Occurs on property under control of a Facility Manager
  - ☐ Facility Manager
- ☐ Any Potential Release to or Contamination of Air, Land, or Water
  - ☐ ESH-17,18,19
- ☐ Small Spill, Post-Mitigation Clean-Up, Vehicle Fluids, PCB-Contaminated Oil
  - ☐ JCI Environmental: Duty Hrs: 7-0104
    After Hours: JCI UCC
  - ▩ *Consider* ESH-5 IH Field Support, 5-4427
- ☐ Hazmat Team Resources Required
  - ☐ EM&R Group Office
  - ☐ DOE-LAAO Duty Officer
  - ☐ PTLA Central Alarm Station
  - ▩ *Consider* Public Affairs
  - ▩ *Consider* ESH-5 Safety
  - ▩ *Consider* LAFD Battalion Chief
  - ☐ Chlorine or Chlorine Alarm
    - ☐ JCI UCC
- ☐ Biohazards
  - ☐ Blood, Urine, Body Secretions or Excretions
    - ☐ JCI Custodial or Zone Coordinator
  - ☐ Animal Droppings, Possible Hanta Virus Environment
    - ☐ JCI Roads and Grounds
- ☐ Stack Release Above Regulatory Limits
  - ☐ EM&R Group Office
  - ☐ DOE-LAAO Duty Officer
  - ☐ PTLA Central Alarm Station (to keep workers out of area)
  - ☐ ESH-17,18,19
  - ☐ Facility Manager
  - ☐ JCI UCC (to keep workers out of area)
- ☐ External Carrier or Offsite
  - ☐ NM State Police
  - ☐ Shipper