



**Department of Energy**

Field Office, Albuquerque  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

2101  
TA-18

APR 6 1994

Mr. William Honker, Chief  
RCRA Permits Branch  
U. S. Environmental Protection Agency  
Region 6  
1445 Ross Avenue  
Dallas, Texas 75203-2733

Dear Mr. Honker:

A Notice of Deficiency (NOD) for the Operable Unit (OU) 1093 RCRA Field Investigation Work Plan was received by the Department of Energy Los Alamos Area Office (DOE-LAAO) on March 7, 1994. The enclosed Los Alamos National Laboratory NOD response satisfies the required thirty day response period. Certification of the NOD response by DOE-LAAO and the University of California is also enclosed. In the NOD response, deletions to original text are indicated by strike-throughs and additions are indicated in bold. If you have any questions regarding the NOD response, please contact Paul Treat of my staff at (505) 667-5808.

Joseph Vozella  
Chief, Environment,  
Safety and Health Branch  
Los Alamos Area Office  
Department of Energy

Enclosure

cc w/Enclosure:  
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Mr. Honker, pg. 2.

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## CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title:

**"Response to Notice of Deficiency Concerning  
Operable Unit 1093 Field Investigation Work Plan"**

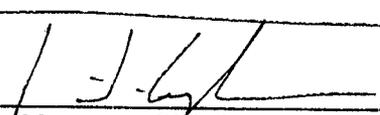
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4/5/94

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LIST OF DEFICIENCIES, DISCUSSION, AND  
PROPOSED TEXT CHANGES  
RFI WORK PLAN FOR OPERABLE UNIT 1093

**GENERAL COMMENTS**

1. *The format used in this work plan would be improved if the SWMU description and history were followed by the sampling plan.*

**DISCUSSION:**

The collection of PRSs into aggregates allowed a one-time presentation of information that applies to all PRSs in each aggregate (e.g., voluntary corrective actions, deferred actions, data needs, and data quality objectives). This material necessarily must precede a presentation of the sampling plans for each PRS in the aggregate. Placement of the sampling plans for each PRS directly following the PRS description would result in significant text repetition, which we believe would detract from the clarity of the text as much as the format now being used. A guide to the location of the description and sampling plan for each PRS is presented in Table 1-3. However, we concur that trying to use this table while reading Chapter 5 is cumbersome. Within the context of these responses, no straightforward fix is possible.

**PROPOSED TEXT CHANGES:**

None.

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2. *In Table 4-5 on page 4-29 the proposed radiological screening action levels for soils are all comparable to or substantially less than the detection limits for the mobile laboratory. From the information presented, it appears that at this time the mobile laboratories cannot be used for soil or water screening for radioactive constituents, and that a determination of NFA for radioactive materials could not be based on mobile laboratory data.*

**DISCUSSION:**

We agree with the comment. The first paragraph in Section 4.6.2, p. 4-28 states that "... proposed screening action levels for soils are all comparable to or substantially less than detection limits for the mobile [radiological] laboratory." In the last paragraph, we stipulate that screening results for such constituents will be used only for selecting preferred sampling locations. We have not proposed to use results from either the mobile radiological or nonradiological laboratory for NFA proposals. That stipulation was not made in Section 4.6.2, but has been added to the text as shown below.

**PROPOSED TEXT CHANGES:**

The revised Table 4-5 is attached. This revision resulted from a revision in the SALs as presented in the 1993 IWP and from errors in the original table in the OU 1093 work plan.

Section 6.2, last paragraph is revised as shown below:

For constituents where detection levels are at or below screening action levels, the mobile laboratory provides a valuable screening process to select preferred sampling locations. Thus, for PRSs that may contain such constituents, samples will be selected at numerous locations within the area to be sampled and analyzed in the mobile laboratory for metals, VOCs, and SVOCs. Samples will then be selected from locations showing the highest concentrations for submission to the analytical laboratory. **Only data from analytical laboratories will be used for proposals regarding NFA or corrective actions; data from the mobile laboratories will not be used for that purpose.** The specific details on how this duplicate or

split sampling will occur will vary among PRSs and as a function of the constituent. These details are presented in the respective sections of Chapter 5.

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*3. All risk assessment land use scenarios should be consistent with those agreed upon by EPA and NMED until appropriate input has been received from the public.*

**DISCUSSION:**

Agree.

**PROPOSED TEXT CHANGES:**

**4.3.3.2 Potential Human Exposure**

All of the sampling plans considered for OU 1093 compare soil or water samples to screening action levels to identify the presence of potential contaminants of concern. As mentioned in Section 4.2.2, screening action levels are based on a conservative, residential exposure scenario. If soil or water is found to be contaminated (concentrations of potential contaminants of concern are above screening action levels) in Phase I or Phase II, the human exposure to these contaminants will be quantified in a baseline risk assessment. Human exposure is estimated through a model of the reasonably maximum exposed individual, which is defined through assumptions of current and future land use (EPA 1989, 0305). **The Laboratory anticipates that none of the lands within OU 1093 would be made available for residential use. However, that assumption will need to be validated by public input to the risk assessment process and with concurrence by EPA and NMED. A discussion of the residential use scenario is presented in the IWP (LANL 1993, 1017). Discussion of the two additional scenarios, two exposure scenarios will be evaluated in baseline risk assessments for OU 1093: continued Laboratory operations (current and future) and recreational use (future only), are presented in Sections 4.3.3.2.1 and 4.3.3.2.2. The residential exposure scenario is not applicable for baseline risk assessments at OU 1093 because, after decommissioning, the land at OU 1093 is not expected to be used for residential purposes.**

The following reference will be added to Chapter 4: LANL 1993, 1017.

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*4. An examination of groundwater monitoring issues at LANL, including the presence or absence of a perched-intermediate zone beneath Pajarito Canyon, will be examined by EPA and the New Mexico Environment Department, and a document noting deficiencies and requirements will be issued separately.*

**DISCUSSION:**

No response is required and no text changes were suggested by the comment.

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## SPECIFIC COMMENTS

1. LANL shall provide a sampling and report schedule for this work plan.

### DISCUSSION:

Los Alamos National Laboratory (LANL) is providing a detailed schedule of field work and reporting dates for this operable unit and other operable units with field activities as part of the Department of Energy's (DOE) baseline process. LANL and DOE personnel have discussed this process previously with the Environmental Protection Agency's (EPA) Region 6 personnel. A baseline with major revisions has been developed, incorporating both DOE's current funding limits and the site prioritization rankings that were developed with the cooperation of Region 6. This revised baseline was delivered to DOE on March 1. After DOE approves the LANL baseline, the field work and reporting schedules will be transmitted to Region 6 for all operable units. A formal permit modification request will be submitted if previously approved schedules are adversely impacted by fiscal constraints.

### PROPOSED TEXT CHANGES:

None.

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## 2. 4.2.3 Voluntary Corrective Actions

*Voluntary corrective actions (VCAs) which are conducted at solid waste management units (SWMUs) which are required to be investigated under the HSWA portion of the permit will require EPA review and approval. If the VCA is the final remedy, then it is the EPA's responsibility to select the cleanup level and approve the final remedy after public comment. LANL shall make the appropriate changes to their text for this section of the work plan following EPA guidance.*

### DISCUSSION:

The work will follow proposed Subpart S regulations.

### PROPOSED TEXT CHANGES:

#### 4.2.3 Voluntary Corrective Actions

VCAs may be proposed at any stage of the RFI as an expeditious alternative to the complete RCRA program with a formal CMS phase. A VCA may be proposed for a PRS if contaminants of concern have been identified, and if an obvious and effective remedy is available that meets treatment and disposal restrictions and other limiting criteria. **For a proposed VCA, the Laboratory expects to submit a VCA plan to EPA, through DOE, for review and comment. An informal public notice of the plan will also be released. The VCA plan will then be revised to incorporate any EPA or public concerns. After completion of the VCA, a Class III permit modification will be requested of EPA to remove the SWMU from the permit.** Implementing a VCA requires submission of a change control for DOE approval. ~~VCAs on sites that contain mixed or land disposal restricted wastes may not proceed without a plan for storage and/or disposal that has been approved by DOE and the appropriate regulatory agencies. VCAs will be described in technical quarterly reports to EPA, and the public will be informed of VCAs in quarterly meetings, but the ER Program will not formally solicit EPA approval for VCAs until it requests final approval of the cleanup.~~

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### 3. 4.2.4 Active PRSs

*Final investigation of active sites will not be deferred without EPA approval. Following the initial investigation detailed in this work plan, EPA will make a determination what if any additional work should be implemented regarding active sites. LANL shall note this in their work plan.*

#### DISCUSSION:

It is LANL's intent, as stated in Section 4.2.4, to only defer investigation of active PRSs if current risks are deemed acceptable. It is our understanding that EPA would make that determination, as appropriate.

#### PROPOSED TEXT CHANGES:

### 4.2.4 Active PRSs

Many PRSs in OU 1093 are part of active systems. These include septic tanks and associated drain fields (SWMUs-18-003[a-h]), storm sewer outfalls (AOCs 18-010[a-f]), and sumps with associated drain lines and outfalls (PRSs 18-012[a-d]). Because of changes in operations at TA-18, many of the contaminant sources for these PRSs no longer exist; thus, contamination could be present only because of past practices. Active operations could change site conditions; therefore, it is not appropriate to fully characterize these areas or to evaluate corrective actions at this time. **Rather, limited sampling is proposed to determine if a release has occurred and if it has, to determine the extent of contamination.** Final investigations and permanent corrective actions (if required) for active PRSs will be addressed at after the time they become inactive.

~~These proposals for deferred investigation, however, must be accompanied by a determination that the PRSs pose no unacceptable current risk to human health or the environment. Therefore, the RFI will ascertain if migration of contaminants from active PRSs in OU 1093 present a health, safety, or environmental hazard under current land use. If a hazard exists from migration of potential contaminants, either a Phase II survey will be conducted or a VCA will be implemented. However, if the Phase I investigations demonstrate that the active PRSs pose no unacceptable current risk to human health or the environment, a proposal for deferred investigation will be made to EPA.~~

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### 4. 4.4.1 Criteria for No Further Action

*Criterion 3 should be changed to read "The risk, as determined by a baseline risk assessment, is less than 10<sup>-6</sup> for carcinogens. . ."*

#### DISCUSSION:

Agree.

#### PROPOSED TEXT CHANGES:

**Criterion 3.** The risk, as determined by a baseline risk assessment, is less than ~~10<sup>-4</sup>~~ **to 10<sup>-6</sup>** for carcinogens, and the hazard index is less than one for noncarcinogens. These NFA recommendations will also consider ALARA criteria for radioactive contaminants.

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### 5. 4.5.1.3. Statistical Basis for Sampling Strategy

*What is the basis that LANL will use in making the assumption as to what fraction of the areas is potentially contaminated, and how will LANL ensure that the assumptions made in relation to "f" are consistent?*

#### DISCUSSION:

Section 4.5.1.3 indicates that for some sites the presence of contamination is equally likely at any location within an area potentially affected by releases from a PRS and cites drain fields, stream channels, and soils below tanks as examples. For such (relatively homogeneous) possible contamination, use of a relatively high "f" value is appropriate. As addressed in the 1993 IWP, the selection of the "f" value is admittedly judgmental and subject to stakeholder review. Consistency in the application of this concept is achieved through considerations such as those presented in the IWP and continued discussions between LANL and stakeholders.

#### PROPOSED TEXT CHANGES:

*Section 4.5.1.3, last paragraph.*

(Field duplicates should not be counted in applying Equation 4-1, which assumes N independent observations.) Thus, five sampling locations can provide at least a 95% probability of detecting contamination that affects at least half of the area, but a lower probability (75%) of detecting contamination that affects only 30% of the area. **A more detailed discussion of this approach is presented in the IWP (LANL 1993, 1017).** This formula provides insight into the representativeness of sampling, but does not, in any way, a priori presume that a particular fraction of the site is contaminated. **The selection of the "f" value is made on a case-by-case basis.** Phase I investigations will propose four or fewer samples for situations where it is reasonable to assume that contamination, if present, is present in substantially more than half the area. Five or more samples will be collected in areas where the spatial distribution is uncertain or unknown.

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### 6. 4.5.1.4 Sampling Strategy for Septic Systems

*Text indicates that Phase I investigations of active septic systems will be designed to estimate the current risk associated with the systems by comparing measured surface soil concentrations of potential contaminants of concern against screening action levels, or by conducting a baseline risk assessment. For any septic system the primary contaminants of concern should be in the subsurface and not at the surface; therefore, a baseline risk assessment of surface soils will not be adequate for a determination of NFA. The extent of contamination would need to be addressed. In addition, the history and potential for contamination of any septic system, not whether the site is active or not, will be considered when EPA determines if additional sampling will be required.*

#### DISCUSSION:

Section 4.5.1.4.1 indicates that, for active septic systems, current risks will be evaluated, using the approach addressed in Section 4.3.3.2. However, Section 4.5.1.4 also indicates that evaluation of current risk will consider surface soils, sediments, and groundwater that might be affected by the septic systems. That statement is not entirely consistent with the text in Section 4.3.3.2, which indicates that only surface soils would be evaluated to assess current risk. The text has been modified to clarify that inconsistency.

In addition, to comply with EPA's concern, LANL will add additional sampling and analysis to the proposed investigation for active septic systems. This will consist of the collection of soil samples from

the top 10 feet of the borings used to sample groundwater and placement of soil borings at the outflow from each septic tank to the drain field. The results of the soil, sediment, and groundwater sampling will be compared with screening action levels, and if those are exceeded, a baseline risk assessment may be conducted to evaluate current risk. On the basis of that assessment, a proposal would be made to EPA for deferred action or additional sampling, as appropriate. Additional sampling would be deferred until all sources of nonsanitary waste discharge to the active systems are eliminated or until the septic systems are deactivated. Whether or not contamination is detected in the initial sampling, additional sampling will be conducted to determine the nature of any required corrective action or for proposal of NFA, as appropriate. Additional sampling would be deferred until all sources of nonsanitary waste discharge to the active systems are eliminated or until the septic systems are deactivated. Whether or not contamination was detected in the initial sampling, additional sampling would be conducted to determine the nature of any required corrective action or for proposal of NFA, as appropriate.

#### PROPOSED TEXT CHANGES:

##### 4.5.1.4 Sampling Strategy for Septic Systems

The decision process that was applied to developing Phase I sampling plans for septic systems is presented in Figure 4-1. For all septic systems in OU 1093, no data are available to indicate that contaminants are present in the septic tanks and associated drain fields. (Recall that a contaminant is defined as a constituent present at concentrations above screening action levels.) For some of the septic systems, occasional releases of radioactive or hazardous constituents to the drain field may have occurred, and regular discharges of 2 contaminants may have occurred for one or more of the septic systems. (These instances are addressed in Chapter 5.) However, it is anticipated that most or all of the septic tanks and associated drain fields will not contain concentrations of radioactive or hazardous constituents above media-specific screening action levels. Therefore, Phase I investigations of all inactive septic systems will be screening assessments to establish the presence or absence of hazardous and radioactive contaminants. Phase I investigations of active septic systems will be designed to estimate the current risk associated with the systems. Current risk can be evaluated, through limited characterization, by comparing measured surface and subsurface soil, as well as groundwater concentrations of potential contaminants of concern against screening action levels or by conducting a baseline risk assessment (Section 4.3.3.2). Full characterization will be deferred until the systems are deactivated, unless current health risks mandate some corrective action as determined by DOE and/or EPA. Using the results of When the Phase I investigation is completed, a decision will be made as to whether a recommendation proposal can be made to EPA for NFA, CMS, VCA, or a deferred action. The decision logic for this process is illustrated in Figure 4-2.

##### 4.5.1.4.1 Active Septic Systems

Three septic systems in OU 1093 are active, and no schedule has been established for their deactivation. For these active systems, sampling will be **focused on restricted to determining the current health risks associated with the tanks and drain fields as well as obtaining information on the nature and extent of potential contamination. If current risks are judged acceptable, a proposal will be submitted to EPA to defer Full** full characterization of the septic system will be deferred until it is deactivated providing that current risks are acceptable. The basis for establishing current risks is presented in Section 4.3.3.2.

Sampling will have the objective of determining concentrations of potential contaminants in the surface soils, in sediments associated with any outfall from the drain field, **in subsurface soils near the septic tank outflow and in the drain field, and in the shallow groundwater in the immediate vicinity of the active systems.** To augment this information, the contents of the tank will also be sampled. Surface Ssoils and sediments provide a pathway for exposure of present site personnel. Contaminant concentrations in subsurface soils and Sshallow groundwater provides a potential pathway for offsite migration of contaminants. If Phase I sampling should indicate that current risks are unacceptable, consideration will be given to conducting a VCA as part of a Phase II investigation.

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**7. 4.5.2. Sampling Methods, p. 47**

*LANL shall explain the rationale and necessity for increasing the quality control samples from 1 in 20, as recommended in the QAPjP, to 1 in 10. Unless this increase in the number of quality control samples is consistent with standard practices it does not seem necessary in view of budgetary constraints. In addition, if the number of quality control samples as outlined in the QAPjP is not adequate than possibly the QAPjP should be revised. The purpose of LANL having a general QAPjP is for maintaining consistency in sampling and analysis.*

**DISCUSSION:**

Agree.

**PROPOSED TEXT CHANGES:**

Section 4.5.2, last paragraph

The type and minimum number of quality control samples are specified in the generic Quality Assurance Project Plan (QAPjP), as incorporated in Annex II. ~~To enhance the understanding of variability among samples, and for further understanding of variability in the analytical process, a decision has been made to increase the number of quality control samples from 1 in 20, as recommended in the QAPjP, to 1 in 10.~~ The proposed numbers of quality control samples for field sampling are presented in Table 4-4. The ...

**TABLE 4-4**

**RECOMMENDED LEVEL OF QUALITY CONTROL SAMPLES FOR FIELD SAMPLING**

| Sample Type     | Applicable Matrix | Sample Frequency                               |
|-----------------|-------------------|--|
| Field blank     | Water             | 1 per 20 samples                               |
| Field duplicate | Soil and water    | 1 per 20 samples                               |
| Rinsate blank   | Soil and water    | 1 per 20 samples                               |
| Reagent Blank   | Soil and water    | 1 per 20 samples                               |
| Trip blank      | Water             | 1 per shipping container for VOC analysis only |

**8. 4.6.1 Field Surveys, p. 4-27**

*The list of SOPs which have not been formally adopted by the Environmental Restoration Program should be replaced by those SOPs as they become available. LANL shall expedite all SOPs related to field sampling and surveys.*

**DISCUSSION:**

Agree.

**PROPOSED TEXT CHANGES:**

**4.6.1 Field Surveys**

The following SOPs will be used in field survey work. ~~They have not been formally adopted by the ER Program and are, therefore, included as part of this document in Appendix C. These procedures, or the equivalent, will be formally adopted before field investigations begin.~~

- ~~C-1~~ — ~~Collection and Radiological Screening of Wipe Samples from Surfaces~~
- ~~C-2~~ — ~~Near Surface and Soil Sample Screening for Low-Energy Gamma Radiation Using the FIDLER~~
- ~~C-3~~ — ~~Beta-Gamma Radiation Measurements Using a Geiger-Mueller Detector~~
- ~~C-4~~ — ~~Screening Soil Samples for Alpha Emitters~~
- ~~C-5~~ — ~~Monitoring of Organic Vapors with a Photo Ionization Detector~~
- ~~C-8~~ — ~~In Situ Groundwater Sampling by Hydropunch~~
- ~~C-9~~ — ~~Groundwater and Surface Water Sampling~~
- ~~C-10~~ — ~~Field Measurement of Total Petroleum Hydrocarbons Using the Hanby Method~~

All of these SOPs have been formally approved by the ER Program.

|                   |  |
|-------------------|--|
| Weston STP 1.7    | Sampling for Removable Alpha Contamination.  |
| Weston STP 06.07  | Near Surface and Soil Sample Screening for Low-Energy Gamma Radiation Using the FIDLER |
| Weston STP 6.11   | Beta-Gamma Radiation Measurements Using a Geiger-Mueller Detector                      |
| Weston STP 1.7    | Total Alpha Surface Contamination Measurements   |
| Weston STP 6.3    | Monitoring of Organic Vapors Using a FID   |
| LANL ER-SOP 10.05 | Field Measurement of Total Petroleum Hydrocarbons Using the Hanby Method               |

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**9. 4.6.3 Analytical Laboratory Methods, p. 4-32**

*LANL indicates that Table 4-5 includes all of the potential contaminants (metals and radionuclides) and most of the VOCs and SVOCs potentially found at TA-18 and TA-27. LANL shall provide a list of the VOCs and SVOCs whose potential presence can be inferred from the reported use of solvent at the site but were not included in Table 4-5.*

**DISCUSSION:**

The text is in error in two regards. First, the referenced table, Table 4-5, lists detection limits for the mobile laboratories being used for ER investigations. The text should have referred to Table 4-6, Comparison of Screening Action Levels with Practical Quantitation Limits for Available Analytical Methods. Second, the text regarding potential contaminants was incorrectly written. The author of the text is unaware of any potential contaminants not identified in Table 4-6.

**PROPOSED TEXT CHANGES:**

**4.6.3 Analytical Laboratory Methods**

Potential contaminants of concern at OU 1093 are listed in Table 4-5 4-6. This list includes all potential contaminants specifically identified in the various sections of Chapter 5 (such as ~~nearly all the~~ metals and radionuclides), as well as potential contaminants that could be present based on activities at TA-18 and the former TA-27. This latter category includes ~~most of~~ the VOCs and SVOCs whose potential presence can be inferred from the reported use of solvents at the site, and high explosive constituents, their degradation products, and metals commonly associated with firing site activities (Section 4.3.1.1). As discussed in the respective sections of Chapter 5, there are no data indicating the actual presence of these potential contaminants in the environment above screening action levels at any locations in OU 1093.

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**10. 5.1.5.1.1 Phase I Sampling, p. 5-29**

*The number of manholes to be sampled (12) shown in Figure 5-8 does not match the number of samples to be collected in Table 5-4 (11) LANL shall clarify how many manholes are to be sampled.*

**DISCUSSION:**

Figure 5-8 incorrectly indicates that Manhole No. 159 will be sampled. Only manholes in the inactive portion of the line were scheduled for sampling.

**PROPOSED TEXT CHANGES:**

See revised Figure 5-8.

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**11. 5.1.5.2.1 Active Septic Systems, p. 5-35**

*Soil Samples collected for the drain field investigations should be taken at least as deep as the outfall pipe, if the outfall pipe is deeper than 0-6 inches.*

**DISCUSSION:**

For each of the active septic systems (18-003 a, b, c, and d), the sampling plan has been revised to include sampling below the depth of the outflow pipe near the septic tank, and sampling of the upper 10 ft of material at the location of each groundwater sampling point.

**PROPOSED TEXT CHANGES:**

A revised Table 5-5 is attached.

**5.1.5.2.1 Active Septic Systems**

SWMUs 18-003(a), (b), (c), (d), (g), and (h) are active systems. The latter two discharge to the centralized sanitary sewer line, whereas the first four discharge to drain fields. Sampling of these active systems will consist of sampling the contents of the tanks, sampling of surface soils overlying the tanks and drain fields, sampling of surface outfalls from the drain fields, **subsurface sampling of soils adjacent to the outflow from the septic tank to the drain field, sampling of subsurface soils in the**

drain field, and groundwater sampling. ~~to determine if the SWMUs are presently releasing contamination to the shallow groundwater at the site~~ This sampling is designed to determine current health risk to workers at each site, to assess the potential for groundwater transport of contaminants from each site, and to develop limited data on possible contaminant release and, if so, on the extent of contamination within the drain fields. This sampling is designed to assess the nature of any current health risks at the site, either through potential offsite transport of contaminants, or by exposure of present workers at the site.

INSERT FOLLOWING SECTION TITLED "Sampling of Outfalls"

#### Sampling Adjacent to Septic Tank Outflow Pipes

Two soil borings will be located adjacent to the outflow pipe from each septic tank and advanced to approximately 2 ft below the outflow pipe from the tank. Core will be collected from the bottom 3 ft of each boring. The core will be photographed and visually inspected for evidence of staining or weathering that would suggest that the sampled soil had been affected by discharges from the septic tank. If any staining is observed, these locations will be selected for sampling. If staining is not present, two axial slices of each 3-ft core will be removed from the full length of the core. These slices will comprise the samples from the core.

#### Subsurface Soil and Groundwater Sampling

Two borings will be located near the downgradient side of each drain field. Core will be collected from the top 10 ft of each boring and sampled in 5-ft increments in the same fashion as described for the 3-ft core adjacent to the outflow pipe from each septic tank. The boring will be advanced to the water table and Ssamples of groundwater will be collected at two locations from approximately 2 ft below the water table beneath each of the three active drain fields using a hollow-stem auger and a hypopunch (Procedure C-8, Appendix C draft procedure in review). Field measurement of water quality parameters will be performed using SOP-06.02. Soil borings will also be advanced to 10 ft adjacent to SWMUs 18-003(g) and (h), and samples collected as previously described. An attempt will also be made to collect samples from shallow groundwater adjacent to SWMUs 18-003(g) and (h). There is no information on whether . . .

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#### 12. 5.1.5.4.2 SWMUs 18-012(a) and (c) -Outfalls, p. 5-45

*Do these active outfalls have NPDES permits?*

#### DISCUSSION:

Neither outfall is permitted. These outfalls have been evaluated as part of the LANL's Waste Stream Characterization Program. Discharges through PRS 18-012(a) will be eliminated by rerouting drainage sources inside the building served by the outfall. The drain that formerly discharged though the outfall at PRS 18-012(c) has been sealed.

#### PROPOSED TEXT CHANGES:

#### 5.1.5.4.2 SWMUs 18-012(a) and (c) - Outfalls

Details of proposed sampling at these SWMUs are presented in Table 5-6, and sampling locations are shown in Figures 5-12 and 5-13 for SWMUs 18-012(a) and AOC 18-012(c), respectively. SWMU 18-012(a) and the easternmost outfall at AOC 18-012(c) will be sampled using the same approach for outfalls as that for the active septic systems (Section 5.1.5.2.1). These outfalls formerly discharged to surface drainages. The outfall at 18-012(c) has been plugged and the one at outfall 18-012(a) is scheduled for plugging. One of the outfalls at AOC 18-012(c) discharges to a dry well sump. Samples

will be collected at two locations from the top 12 in. of fill in the sump using a hand-operated, thin-wall sampler (SOP-6.10).

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**13. 5.2 PRS Aggregate B - AOC 18-008 - Underground Storage Tank, p 5-46**

*This unit is not required to be sampled under the HSWA permit. Sampling should be a low priority based on funding, or should be funded with money specified for UST work.*

**DISCUSSION:**

As will be indicated in the DOE approved baseline schedule for FY 94 and beyond, sampling and removal of the referenced UST is nearly last on the FY 94 field activities schedule. LANL/DOE has determined that removal of all USTs will be funded by the ER Program. All USTs must meet the performance standards established by New Mexico UST regulations by upgrading or removal by December 22, 1998.

**PROPOSED TEXT CHANGES:**

No text changes were requested by the comment.

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**14. 5.3.5.1.2 Sampling in Area Surrounding Firing Points, p. 5-60**

*LANL shall revise the proposed sampling locations so that the overlapping areas outside the actual firing points will be preferentially sampled.*

**DISCUSSION:**

Agree. Figures 5-15 and 5-16 have been revised to show suggested changes in sample locations.

**PROPOSED TEXT CHANGES:**

See attached revised Figures 5-15 and 5-16.

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**15. 5.3.5.2 AOCs 18-005(a) Magazine and 18-011 Generator Building, p. 5-63**

*AOC 18-011 is the site of a possible one-time spill which was previously addressed. any sampling for this area should be conducted after all SWMUs in the permit have been addressed.*

**DISCUSSION:**

Agree. The baseline schedule for FY 94 and beyond will indicate that PRS 18-011 is last on the sampling schedule for FY 94 field activities. All SWMUs will have been investigated before it is sampled.

**PROPOSED TEXT CHANGES:**

No text changes were requested by the comment.

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**16. 5.4 PRS Aggregate D for TA-18 - Storm Sewer Outfalls, p. 5-63**

*These storm sewer outfalls do not meet the definition of a SWMU, and as such should not be sampled under the HSWA portion of the RCRA permit.*

**DISCUSSION:**

Agree. Table 1-3 indicates that these PRSs were not included in the HSWA portion of the RCRA permit, nor have they been proposed for inclusion. The text incorrectly referred to one of them as a SWMU.

**PROPOSED TEXT CHANGES:**

**5.4 PRS Aggregate "D" for TA-18 - Storm Sewer Outfalls**

The PRSs in this aggregate are all discharge points for storm sewers that drain roofs and paved areas in TA-18 (Figures 2-4, 2-5, 2-7, and 2-8). One of these, SWMU PRS 18-010(f), also provides a discharge point for floor drains in Kiva 2.

\*\*\*\*\*

*17. SWMUs 27-001 and SWMU 18-007 should be low priority for investigation, as the potential for a release from those units is unlikely. There is not evidence that there is any hazardous waste associated with the military tank (SWMU 18-007). This site is not considered a SWMU, and LANL should request a Class III Permit modification for removal of this unit from the permit.*

**DISCUSSION:**

Agree. In addition, geophysical surveys conducted in the fall of 1993 were unable to detect the presence of buried metallic items at any of the possible locations of these two SWMUs. Based on those surveys and on EPA comments in the NOD, LANL will be proposing NFA for the two SWMUs and, if approved, will request a Class III permit modification to remove these units from the permit.

**PROPOSED TEXT CHANGES:**

None.

\*\*\*\*\*

**18. 5.7.2 Sampling Plan, p. 5-87**

*LANL shall modify the sampling of the wetland sediments so that 4 of the 32 samples collected are collected from a depth of 1-6 inches.*

**DISCUSSION:**

Agree.

**PROPOSED TEXT CHANGES:**

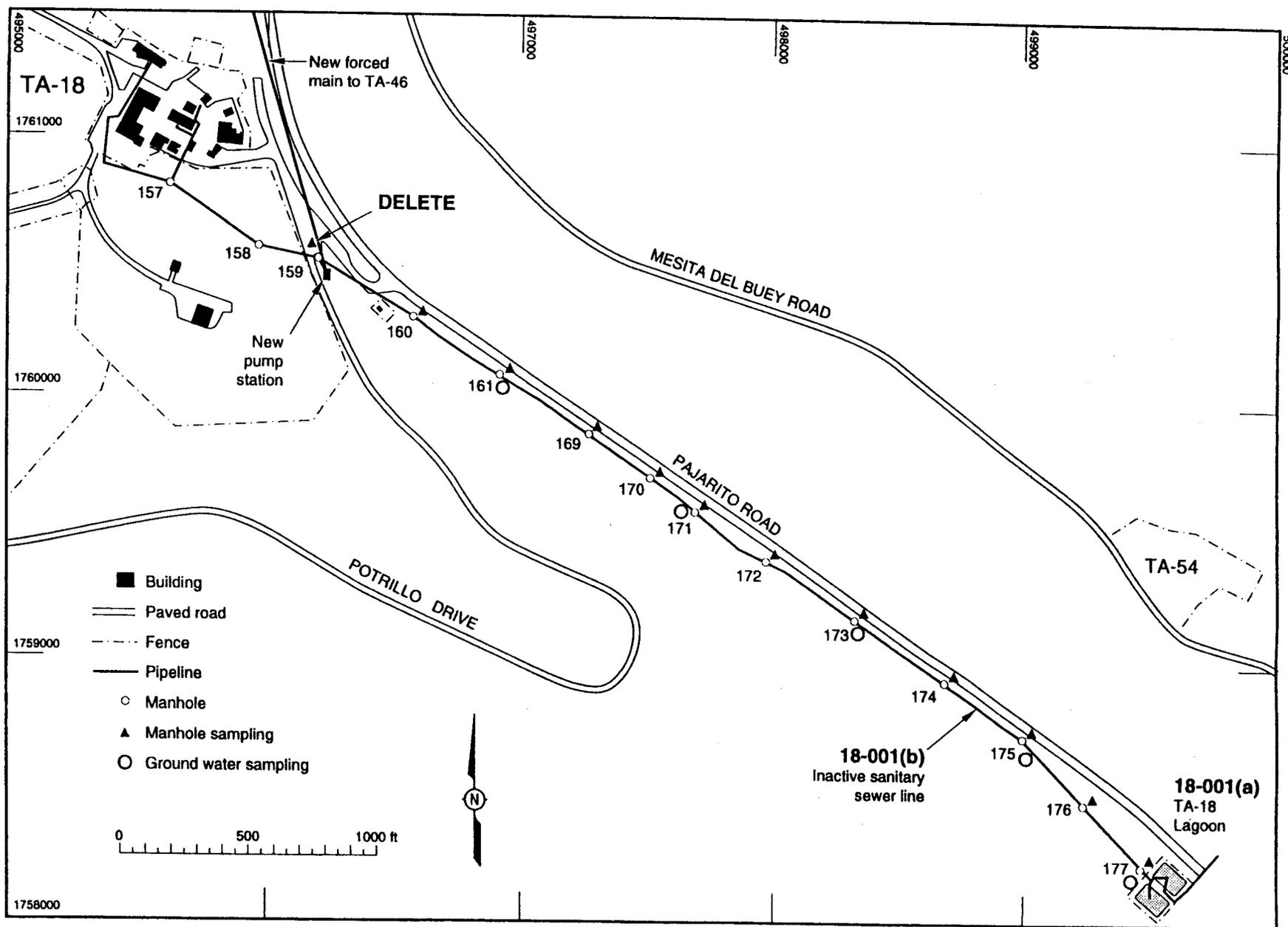
Section 5.7.2, second paragraph:

At each locale, two water samples will be collected using the Surface Water Sampling Procedure (SOP-06.13). Field measurement of water quality parameters will be performed using SOP-06.02. Concentrations of potential contaminants of concern should be relatively uniform within a given small

body of water, and two samples will provide an initial estimate of that uniformity. Concentrations of potential contaminants of concern in sediments may vary considerably, depending on the deposition process. Therefore, four locations at each locale will be selected. The bottom area of the locale will be divided into quarters, and one sample from the 6- to 18-in. depth interval of bottom sediments will be collected from the center of each using a hand corer (Procedure C-7, Appendix C). Sampling of older (deeper) sediments will provide a better measure of the effects of past operations, whereas samples from the surface layer of sediments would more likely represent the effects of present operations. Any discharges of potential contaminants of concern would probably have resulted from former operations because changes in operations at TA-18 and alterations in Laboratory practice make such discharges from present operations less likely. **To assess the effects of recent possible releases to the stream, samples will be collected within the wetland areas in the 0-6 in. depth at the same sites sampled from 6-18 in.**

**TABLE 4-5**  
**COMPARISON OF SCREENING ACTIONS LEVELS**  
**WITH MOBILE LABORATORY DETECTION LIMITS**

| Potential Contaminant   | Mobile Laboratory Detection Limits (soils) |                        | Screening Action Levels (soils) |
|---|--|------------------------|---------------------------------|
| <b>Metals</b>   | XRF <sup>a</sup> (ppm)                     |                        | (ppm)                           |
| Barium  | 10   |                        | 5,600                           |
| Beryllium   | ND <sup>b</sup>                            |                        | 0.16                            |
| Cadmium   | 2  |                        | <del>0.4</del> 80               |
| Chromium  | 8  |                        | 400                             |
| Mercury   | 30   |                        | 24                              |
| Silver  | 1  |                        | 400                             |
| Uranium   | 10   |                        | 240                             |
| <b>Volatile Organics</b>  | GC/HALL/PID <sup>c</sup> (ppb)             |                        | (ppb)                           |
| Acetone   | 50   |                        | 8,000,000                       |
| Benzene   | 10   |                        | <del>670</del> 0.67             |
| Carbon tetrachloride  | 10   |                        | <del>210</del> 0.21             |
| Tetrachloroethane   | 10   |                        | <del>590</del> 3.9              |
| Toluene   | 10   |                        | <del>890,000</del> 890          |
| Trichloroethene   | 10   |                        | <del>3,200</del> 3.2            |
| Vinyl chloride  | 10   |                        | 13 0.013                        |
| Xylenes   | 10   |                        | <del>160,000,000</del> 160,000  |
| <b>Radionuclides</b>  | Gross $\alpha/\beta$ (pCi/g)               | Gross $\gamma$ (pCi/g) | (pCi/g)                         |
| Cobalt-60   |  | 4                      | 0.9                             |
| Cesium-137  |  | 4                      | 4                               |
| Plutonium-238   | 55   |                        | 27                              |
| Plutonium-239   | 55   |                        | 24                              |
| Strontium-90  | 55   |                        | 8.9                             |
| Thorium-232   | 55   |                        | 0.9                             |
| Uranium-233   | 55   |                        | 86                              |
| Uranium-235   | 55   |                        | 18                              |
| Uranium-238   | 55   |                        | 59                              |
| a. X-ray fluorescence (XRF).<br>b. No detection limits established.<br>c. Gas chromatography. |  |                        |                                 |



May 1993

5-24

RFI Work Plan for OU 1093

Figure 5-8. Proposed sampling locations along sanitary sewer line from TA-18.

TABLE 5-5

SAMPLING PLAN FOR SEPTIC SYSTEMS,  
SWMUs 18-003(a-h)

May 1993

5-30

RFI Work Plan for OU 1093

| PRS Number | PRS Description | Sample Description  | Field Survey    |                    |                         |               | Mobile Lab.               |        |      | Analytical Laboratory |                           |                                    |                   |                 |                  |                            |                                |                          |                         |                                     |  |  |  |                 |  |   |   |
|------------|-----------------|---------------------|-----------------|--------------------|-------------------------|---------------|---------------------------|--------|------|-----------------------|---------------------------|------------------------------------|-------------------|-----------------|------------------|----------------------------|--------------------------------|--------------------------|-------------------------|-------------------------------------|--|--|--|-----------------|--|---|---|
|            |                 |                     | Location survey | Geophysical survey | Rad screening (α, β, γ) | VOC screening | No. of sampling locations | Metals | VOCs | SVOCs                 | No. of sampling locations | Mob. lab. rad. screening (α, β, γ) | Metals (EPA 6010) | VOCs (EPA 8240) | SVOCs (EPA 8270) | HE (USATHMA <sup>a</sup> ) | General mineral (std. methods) | Chloride—soils (EPA 300) | Nitrate—soils (EPA 300) | Uranium (total) (DOE <sup>d</sup> ) | Plutonium (isotopic) (DOE <sup>d</sup> ) | Thorium (isotopic) (DOE <sup>d</sup> ) | Gamma spectroscopy (DOE <sup>d</sup> ) | BTEX (EPA 8020) |  |   |   |
| 18-003(a)  | Settling pit    |                     |                 |                    | X                       | X             |                           |        |      |                       |                           |                                    |                   |                 |                  |                            |                                |                          |                         |                                     |  |  |  |                 |  |   |   |
|            | TA-18-105       | Liquid (if present) |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            | (active)        | Sludge (if present) |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Wipes (if dry)      |                 |                    |                         |               |                           |        |      | 2                     | X                         |                                    |                   |                 |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Soils—surface       |                 |                    | X                       |               | 6                         | X      | X    | X                     | 3                         | X                                  | X                 |                 |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Soils—subsurface    |                 |                    | X                       |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
| 18-003(b)  | Septic tank     |                     |                 |                    | X                       |               |                           |        |      |                       |                           |                                    |                   |                 |                  |                            |                                |                          |                         |                                     |  |  |  |                 |  |   |   |
|            | TA-18-39        | Liquid              |                 |                    |                         | X             |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            | (active)        | Sludge              |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Groundwater         |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               | X                |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Soils—surface       | X               | X <sup>c</sup>     | X                       |               | 16                        | X      | X    | X                     | 8                         | X                                  | X                 |                 | X                |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Soils—subsurface    | X               | X <sup>d</sup>     | X                       |               |                           |        |      | 4                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
| 18-003(c)  | Septic tank     |                     |                 |                    | X                       | X             |                           |        |      |                       |                           |                                    |                   |                 |                  |                            |                                |                          |                         |                                     |  |  |  |                 |  |   |   |
|            | TA-18-42        | Liquid              |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            | (active)        | Sludge              |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Ground water        |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               | X                |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | soils—surface       | X               | X <sup>c</sup>     | X                       |               | 16                        | X      | X    | X                     | 8                         | X                                  | X                 |                 | X                |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Soils—subsurface    | X               | X <sup>c</sup>     | X                       |               |                           |        |      | 4                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
| 18-003(d)  | Septic tank     |                     |                 |                    | X                       | X             |                           |        |      |                       |                           |                                    |                   |                 |                  |                            |                                |                          |                         |                                     |  |  |  |                 |  |   |   |
|            | TA-18-120       | Liquid              |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e | X |
|            | (active)        | Sludge              |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e | X |
|            |                 | Groundwater         |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X                 | X               | X                |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e | X |
|            |                 | Soils—surface       | X               | X <sup>c</sup>     | X                       |               | 16                        | X      | X    | X                     | 8                         | X                                  | X                 |                 | X                |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |
|            |                 | Soils—subsurface    | X               | X <sup>c</sup>     | X                       |               |                           |        |      | 4                     | X                         | X                                  | X                 | X               |                  |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |  | e |   |

a. US Army Toxic and Hazardous Materials Agency, no date, 0522.

b. Maximum number, assuming all sampled locations show contamination.

c. Geophysical surveys may be used to locate drain fields if technology is proven by ongoing RFIs.

d. HASL-300 (DOE 1983, 0516).

e. Only when gross-gamma is above background.



**TABLE 5-5 (concluded)**  
**SAMPLING PLAN FOR SEPTIC SYSTEMS,**  
**SWMUs 18-003(a-h)**

| PRS Number | PRS Description | Sample Description     | Field Survey    |                    |                         |               | Mobile Lab.               |        |      | Analytical Laboratory |                           |                                    |                 |                  |                   |                            |                                |                          |                         |                                     |  |  |  |                 |   |
|------------|-----------------|------------------------|-----------------|--------------------|-------------------------|---------------|---------------------------|--------|------|-----------------------|---------------------------|------------------------------------|-----------------|------------------|-------------------|----------------------------|--------------------------------|--------------------------|-------------------------|-------------------------------------|--|--|--|-----------------|---|
|            |                 |                        | Location survey | Geophysical survey | Rad screening (α, β, γ) | VOC screening | No. of sampling locations | Metals | VOCs | SVOCs                 | No. of sampling locations | Mob. lab. rad. screening (α, β, γ) | VOCs (EPA 8240) | SVOCs (EPA 8270) | Metals (EPA 6010) | HE (USATHMA <sup>a</sup> ) | General mineral (std. methods) | Chloride—soils (EPA 300) | Nitrate—soils (EPA 300) | Uranium (total) (DOE <sup>d</sup> ) | Plutonium (isotopic) (DOE <sup>d</sup> ) | Thorium (isotopic) (DOE <sup>d</sup> ) | Gamma spectroscopy (DOE <sup>d</sup> ) | BTEX (EPA 8020) |   |
| 18-003(f)  | Septic tank     |                        |                 |                    | X                       | X             |                           |        |      |                       |                           |                                    |                 |                  |                   |                            |                                |                          |                         |                                     |  |  |  |                 |   |
|            | TA-18-41        | Liquid                 |                 |                    |                         |               |                           |        |      |                       |                           |                                    |                 |                  |                   |                            |                                |                          |                         |                                     |  |  |  |                 |   |
|            | (inactive)      | Sludge                 |                 |                    |                         |               |                           |        |      | 2                     | X                         |                                    |                 | X                |                   |                            |                                |                          |                         |                                     |  |  |  |                 | e |
|            |                 | Soils—Subsurface       | X               | X <sup>c</sup>     | X                       | X             |                           |        |      | 2                     | X                         |                                    |                 | X                |                   |                            |                                |                          |                         |                                     |  |  |  |                 | e |
|            |                 | Groundwater            | X               | X <sup>c</sup>     |                         |               |                           |        |      | 8                     | X                         |                                    |                 | X                |                   | X                          | X                              |                          |                         |                                     |  |  |  |                 | e |
|            |                 | Sediments              |                 |                    | X                       |               | 4                         | X      | X    | 2                     | X                         |                                    |                 | X                |                   |                            |                                |                          |                         |                                     |  |  |  |                 | e |
| 18-003(f)  | Manhole         |                        |                 | X                  |                         |               |                           |        |      |                       |                           |                                    |                 |                  |                   |                            |                                |                          |                         |                                     |  |  |  |                 |   |
|            | TA-18-93        | Sand backfill          |                 |                    | X                       | X             |                           |        |      | 1                     | X                         |                                    |                 | X                |                   |                            |                                |                          |                         |                                     |  |  |  |                 | e |
|            | (inactive)      | Soil—subsurface        |                 |                    | X                       | X             |                           |        |      | 2                     | X                         |                                    |                 | X                |                   |                            |                                |                          |                         |                                     |  |  |  |                 | e |
| QC samples |                 |                        |                 |                    |                         |               |                           |        |      |                       |                           |                                    |                 |                  |                   |                            |                                |                          |                         |                                     |  |  |  |                 |   |
|            |                 | Liquid—duplicates      |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X               | X                |                   |                            |                                |                          |                         |                                     | X  | X                                      |  |                 | e |
|            |                 | Sludge—duplicates      |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X               | X                |                   |                            |                                |                          |                         |                                     | X  | X                                      |  |                 | e |
|            |                 | Groundwater—duplicates |                 |                    |                         |               |                           |        |      | 2                     | X                         | X                                  | X               | X                |                   |                            |                                |                          |                         |                                     | X  | X                                      |  |                 | e |
|            |                 | Soils—duplicates       |                 |                    |                         |               |                           |        |      | 5                     | X                         | X                                  | X               | X                |                   |                            |                                |                          |                         |                                     | X  | X                                      |  |                 | e |
|            |                 | Field blank            |                 |                    |                         |               |                           |        |      | 1                     | X                         | X                                  | X               | X                |                   |                            |                                |                          |                         |                                     | X  | X                                      |  |                 | e |
|            |                 | Rinsate blanks         |                 |                    |                         |               |                           |        |      | 1                     | X                         | X                                  | X               | X                |                   |                            |                                |                          |                         |                                     | X  | X                                      |  |                 |   |

a. US Army Toxic and Hazardous Materials Agency, no date, 0522.

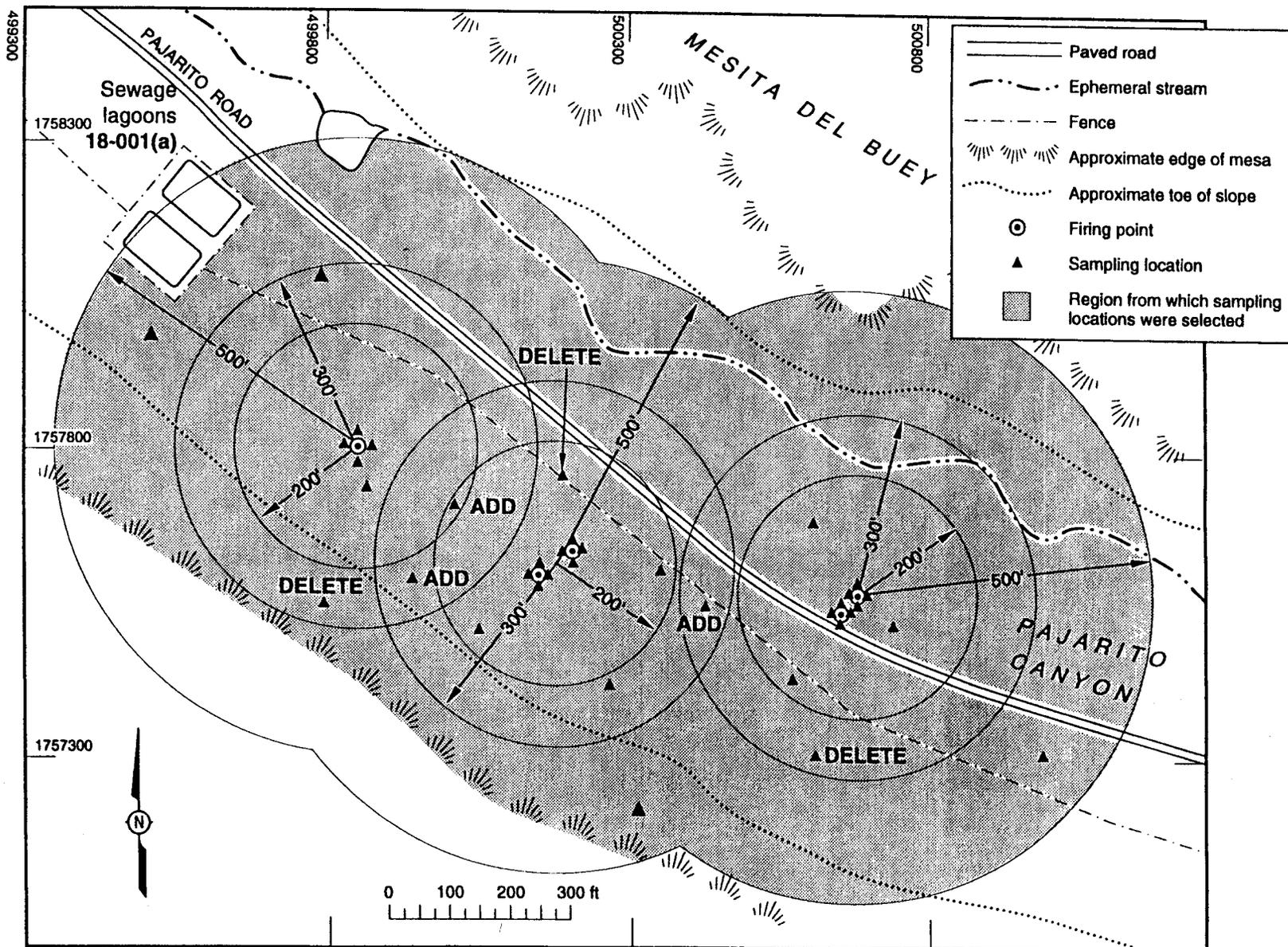
b. Maximum number, assuming all sampled locations show contamination.

c. Geophysical surveys may be used to locate drain fields if technology is proven by ongoing RFIs.

d. HASL-300 (DOE 1983, 0516).

e. Only when gross-gamma is above background.





RFI Work Plan for OU 1093

5-59

May 1993

Figure 5-16. Proposed sampling locations near firing sites in former TA-27.