TA35

INTERIM STATUS CLOSURE PLAN

DRAFT

TA-35-TSL-85
SURFACE IMPOUNDMENT

Facility ID No.:	NM890010515
Facility Name:	Los Alamos National Laboratory
Legal Owner:	United States Department of Energy
Legal Operator:	University of California
Address:	Los Alamos Area Office
City, State:	Los Alamos, New Mexico 87545
Contact Person:	Mr. Harold Valencia, Area Manager
Phone:	(505) 667-5105
Dated:	August 1989

5050

1.0 INTRODUCTION

This Closure Plan is submitted in accordance with the requirements of NMHWMR-5, Part VI, Section 265.110 through 120, 265.228, and 265.382. This plan is a revision of the previous closure plan prepared for the TA-35-TSL 85 surface impoundment. Initial investigations of the surface impoundment resulted in findings and observations that warrant this revision. First, an inactive underground storage tank has been found to connect to the surface impoundment, and the Laboratory intends to address decontamination and removal of the tank as part of the surface impoundment closure. Second, the surface impoundment is located on the rim of Mortandad Canyon and, depending on the extent of any contamination associated with the unit(s), soil removal undertaken to attain "clean" closure potentially impacts the stability of the canyon wall. To minimize destabilization of the site, it is desirable to maintain the existing slope and allow as much native vegetation currently established to remain undisturbed. To this end, if contamination at the site is found to be areally extensive, the Laboratory intends to follow EPA-published guidance to establish "health-based" clean levels for any hazardous wastes or constituents that analytical results show to have been released from the units undergoing closure. The EPA states that closure to these levels is considered sufficient to meet the requirements of §265.228(a)(1) with regard to clean closure. The guidance that will be used in performing this risk assessment is included in Appendix C.

2.0 FACILITY DESCRIPTION

The Laboratory is located in Los Alamos County (Figure 2-1) in north central New Mexico. The Laboratory, which occupies an area of 43 square miles, and the associated residential areas of Los Alamos and White Rock are situated on Pajarito Plateau. The Plateau consists of a series of finger-like mesas separated by deep east-west trending canyons. The mesa tops range in elevation from approximately 7,800 feet at the flank of the Jemez Mountains (located to the west of Los Alamos) to about 6,200 feet at their eastern extent where they terminate above the Rio Grande Valley. Intermittent streams lie at the bottoms of the east-west trending canyons.

The facility is divided into 32 active Technical Areas (TAs) (Figure 2-2). TA-35 is north-centrally located and is flanked by Mortandad Canyon to the north and Ten Site Canyon to the south (Figure 2-3). TA-35 is underlain by volcanic bedrock; the main aquifer lies approximately 1,200 feet below the surface. Detailed descriptions of the geology and hydrology are included in the RCRA Part B Permit Application for Los Alamos National Laboratory and in the Hydrogeologic Assessment of Technical Area 54, Areas G and L.

Building 85 is centrally located on the northern edge of TA-35 (Figure 2-3). The surface impoundment, built in 1985 and brought into use by early 1986, is situated just northeast of the building, close to the rim of Mortandad Canyon (Figures 2-3, 2-4). Two six-inch schedule 40 PVC pipes are connected to the surface impoundment on its west side, five feet from the bottom (Figure 2-5). One pipe leads to a drain in a bermed storage pad located on the east side of Building 85. This storage pad contains a 15,000-gallon aboveground Marx tank. The other pipe is connected to an inactive underground tank located west of the surface impoundment. The original purpose of this tank is not known, and no inflow lines are currently connected to it. The period during which the tank was actively used also is not known, but its use is believed to have ceased prior to 1985. Activities conducted in Building 85 and the nature of any discharges to the surface impoundment associated with these activities are described in Section 3.0.

The surface impoundment is 34 feet in length by 24 feet in width, covering an area of 816 square feet. The impoundment sides are sloped at a ratio of one to one and are constructed of wire mesh sprayed with approximately four inches of gunite. The bottom of the impoundment is comprised of a four-inch thick wire-reinforced gunite slab, the surface of which is protected with a 15-mil waterproof coating. The surface impoundment is four feet deep and has a total volume of 18,750 gallons; with two feet of freeboard, the effective volume is 7,640 gallons. Engineering drawings for the impoundment are presented in Figure 2-5.

There is no permanent outfall from the surface impoundment; however, the impoundment is suspected of having overtopped during the rainy spring of 1988, releasing an unknown volume of liquids. Sandbags were subsequently installed

around the surface impoundment in an effort to prevent any additional overtopping.

3.0 PROCESS INFORMATION

Building 85 is used for developing electron guns and related laser assemblies/equipment for a Laser Technology Research Program at the Laboratory. Equipment utilized in the building requires the use of insulating oil. The storage pad, upon which the Marx tank is located outside Building 85, drains to the surface impoundment and may have discharged cleanup water containing accidental spills and de minimus losses of insulating oil to the surface impoundment. Other potential sources of releases which may have drained to the surface impoundment include the Marx tanks located inside Building 85 and washwater from equipment- and floor-cleaning activities. Some of these oils and liquids may have contained degreasing solvents.

The surface impoundment was operated in this manner: the liquids formed two phases in the impoundment, an upper oil phase underlain by a water phase. Following the discharge of insulating oil from tank losses and clean-up operations, the water and oil phases were pumped separately from the impoundment and transferred to the TA-54, Area L storage area. After sampling and reviewing analytical results, each was transported off site for recycling or, if necessary, treatment and disposal at a RCRA-permitted facility.

4.0 WASTE DESCRIPTION

Shell DIALA(R) OIL AX insulating oil is used and processed in Building 85. Use of this insulating oil brand has not varied with time. Material Safety Data Sheets for Shell DIALA(R) OIL AX are contained in Appendix A.

The surface impoundment came under RCRA-regulation upon the discovery that cleaning degreasers had been introduced into the waste oil/water stream. These solvent degreasers were most likely used in equipment maintenance activities undertaken in Building 85.

The solvents were found when a grab sample was collected from the surface impoundment on June 9, 1988, using a composite liquid waste sampler (COLIWASA) to obtain a vertical composite of two-phase liquid and sludge (see Figure 2-4 for sample location). The sample was stored in appropriate containers and preserved as specified in Section 5.5.1. The sample was analyzed for volatile organics, semivolatile organics, total metals, polychlorinated biphenyls (PCBs), and radionuclide activity. Radiological analyses of the sample detected 10.0 picocuries per liter (pCi/l), 5.6 pCi/l, and -600.0 pCi/l of alpha, beta, and gamma activity, respectively (Table 4-4; a negative value indicates the activity is below detection limits). Results of volatile organic analyses indicate a cleaning degreaser profile with parts per million (ppm) concentrations of 1,2,2-trifluoroethane and acetone, and parts per billion (ppb) of hexanone (Table 4-1). Surrogate spike recoveries for the volatile organic analyses are provided in Table 4-2. Semivolatile organic results were inconclusive due to the presence of the oil phase in the sample. No EP Toxic concentrations of metals were detected in the liquid sample; however, the sludge sample showed a total metals concentration for lead of 5.2 mg/kg (Table 4-3). Analytical results from this and previous grab samples indicate the absence of polychlorinated biphenyls (PCBs) (Table 4-5). Laboratory results for these analyses are provided in Appendix B.

5.0 CLOSURE PROCEDURES

This closure plan for the TA-35-TSL-85 surface impoundment and associated equipment is designed to meet the following performance standards:

- Protect human health and the environment;
- Prevent the escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or atmosphere; and
- Minimize future maintenance.

The Laboratory plans final closure for this area in the summer of 1989.

5.1 ESTIMATE OF MAXIMUM VOLUME OF LIQUID IN THE HAZARDOUS WASTE UNIT

The amount of waste oil/water stored in the surface impoundment has varied with time. Based on its dimensions, the maximum capacity of the surface

impoundment is 18,750 gallons. Allowing for two feet of freeboard, the maximum volume of liquid in the surface impoundment at any time would be 7,640 gallons. During the period of heavy rainfall in the spring of 1988, however, the maximum capacity of the unit may have been exceeded. Thus, the estimated maximum volume of liquid in the unit at any time is considered to be 18,750 gallons, its total capacity.

The inactive underground tank has a capacity of approximately 1,400 gallons of liquid, and this is considered its maximum inventory of wastes. The two six-inch schedule 40 PVC pipes which drain to the surface impoundment are designed such that liquid does not pond, but instead is drained immediately into the surface impoundment. Therefore, there has been no standing "waste inventory" in these pipes.

5.2 WASTE REMOVAL PROCEDURES

The waste liquids and residues contained within the surface impoundment and underground storage tank will be removed as part of the closure process. The procedures used to remove these wastes are described in this section.

5.2.1 Liquids Removal

The liquid contents of the tank will be discharged to the surface impoundment using a dedicated transfer pump. The associated piping will be flushed with water as part of decontamination procedures and collected in the surface impoundment.

After all liquids and rinseate have been collected in the surface impoundment, they will be containerized and a representative sample will be obtained and analyzed (Section 5.5) to determine subsequent handling requirements. If hazardous, they will be either treated at Laboratory facilities or shipped off site to a RCRA-permitted TSD facility. All state and federal regulatory requirements pertaining to the management of these wastes will be observed, including the 40 CFR Part 268 land disposal restrictions.

Any on-site storage of the waste liquids will occur at the TA-54, Area L storage area which currently is operating under interim status standards. Any containers used in the storage or transportation of the waste liquids will conform to DOT requirements.

5.2.2 Residue Removal

Nonliquid residues remaining in the surface impoundment will be pumped or excavated, as appropriate, and placed in DOT-approved containers. The removal method used will depend on the physical characteristics of the residue. Because previous analytical results show the residues to be hazardous (Section 4.0 and Appendix B), they will be collected in DOT-approved containers and stored at TA-54, Area L to await final disposition. Any additional sampling necessary to facilitate treatment or disposal of the waste residues will be performed, as necessary, at Area L. All waste residues will be considered hazardous and managed accordingly.

5.3 DECONTAMINATION AND REMOVAL OF THE LINER, UNDERGROUND STORAGE TANK, PIPING, AND SOILS

The following steps will be taken to decontaminate and remove the liner, underground storage tank, piping and soils so that clean closure criteria are met.

5.3.1 Decontamination and Removal of the Inactive Underground Storage Tank and Piping

Both the underground storage tank and the two six-inch schedule 40 PVC pipes leading to the surface impoundment will be decontaminated using a rinse containing a surfactant such as Liquinox or Alconox. As previously described, all rinseate will be collected in the surface impoundment and subsequently transferred to DOT-approved containers. A representative sample will be composited from the containers and analyzed for volatile and semivolatile organic compounds (Tables 5-4 and 5-5), EP toxic metals and PCBs. The decontamination washing, rinseate collection, sampling and analyses will be repeated until the results no longer show detectable or EP toxic concentrations of contaminants, as appropriate.

If it is necessary to remove the underground storage tank to facilitate decontamination, it will be placed either in the (empty) surface impoundment or in a temporary containment system constructed for this purpose and steam-cleaned using a high-pressure, hot-water washer. The water collected in the impoundment will be containerized, sampled, and analyzed in the manner described above.

The drain from the bermed storage pad will then be disconnected from the pipe, the drain will be capped, and the pipe will be removed. If it is not economical to completely remove all of the six-inch PVC piping, then it will be decontaminated in place. The remaining portions of decontaminated piping will be sealed and filled with cement. In no event will any piping be left in place if it has not been completely decontaminated. The decontaminated tank and excavated piping will be disposed of in a nonhazardous waste landfill. In the event that the tank or piping cannot be decontaminated, these materials will be cut into smaller sizes and placed in DOT-approved containers. These will then be either treated at Laboratory facilities or transported to an off-site RCRA-permitted TSD facility.

5.3.2 Removal of Liner and Sandbags

Removal of the liner will occur after the subsoils have been sampled and analyzed. ("Soil" samples will include samples of turf when encountered.) To obtain the soil samples, several one-foot square sampling ports will be cut through the gunite liner, and soils immediately below the gunite liner will be collected to a depth of six to eight inches for sample analyses (Figure 2-5). These soils will be analyzed for the volatile and semivolatile organic compounds identified in Tables 5-4 and 5-5. Soil samples will also be analyzed for total metals and PCBs. All of the sampling ports will be closed and sealed immediately after sampling using a gunite or concrete patch material compatible with the original liner material so that no future potential fluid seepage (e.g., rainwater) can penetrate these sampling ports before the liner is removed. Detailed soil sampling procedures are described in Section 5.3.3.

The methodology used to establish a clean level for any contaminates found in the subsoils is also given in Section 5.3.3. If the soil analyses demonstrate that contamination is present below the gunite liner, then the liner will be removed and managed as a hazardous waste. The gunite liner and all below-grade contaminated soils will be broken into sizes suitable for placement into DOT-approved steel drums. If necessary, these containers will be stored in the TA-54, Area L storage area until they can be treated at Laboratory facilities or disposed of off-site at a RCRA-permitted facility.

If these same soil samples demonstrate that no contamination is present below the gunite liner, then the liner surface will be decontaminated using the following procedures and managed as a nonhazardous waste. First, the liner will be washed using a high-pressure, hot-water washer to remove remaining residues. Then the liner will be scrubbed using a surfactant, such as Liquinox or Alconox, and rinsed with the high-pressure, hot-water washer. All rinseate will be collected and handled in the same manner as the waste liquids originally removed. The rinseate will be sampled, analyzed and managed in the same manner as the other liquids. When decontamination is completed, the liner will then be broken, removed and disposed of in a nonhazardous waste landfill.

It has been previously noted that sandbags were used to prevent overtopping of the surface impoundment in 1987. As part of the closure process, these sandbags will be drummed in DOT-approved containers and managed as hazardous waste in accordance with all applicable regulations.

5.3.3 Soil Sampling and Removal

Soils will be sampled and analyzed to determine whether fluids from the surface impoundment have contaminated the underlying and surrounding soil. The following sections present plans for determining the number and the location of samples to be collected and the procedures to be used for collection, storage, and preservation of samples.

Soil Sampling and Boring Plan

A surface soil sampling survey will be conducted around the surface impoundment in areas with visible contamination (i.e., soil discoloration) and will continue downgradient into Mortandad Canyon along possible spill path routes. Approximately 12 samples, 10-15 feet apart and six inches deep, will be obtained where sediments would have a tendency to accumulate. As dictated by the terrain, additional surface soil samples will be collected until the lateral extent of contamination is defined. Where contamination is detected on the surface, subsurface samples will be collected at one-foot depth intervals until the ultimate depth of contamination is determined.

Two background composite surface soil samples will be collected; one to the east and one to the west of the surface impoundment at a distance greater than 500 feet from the surface impoundment. The exact location and depths for background samples will be field selected based on topographic and geologic characteristics similar to the surface impoundment site.

After the surface impoundment liner has been removed (Section 5.3.2), samples will be collected from the area immediately underlying the surface impoundment by augering/ drilling four shallow test holes (Figure 5-1). A total of four samples will be collected in each test hole at intervals of 0 to 1 foot, 5 to 6 feet, 9 to 10 feet, and 19 to 20 feet (below the bottom of the surface impoundment). Sample intervals will be adjusted, if necessary, based on actual field conditions. These soil samples will be collected to determine if contaminants from the impoundment have migrated beneath the bottom of the gunite liner.

All samples will be collected, stored, and preserved in accordance with protocols described in Section 5.5. They will be analyzed for volatile and semivolatile organic compounds, total metals, and PCBs. Should statistical analysis of soil-chemistry data indicate the presence of contamination, the Laboratory will further investigate the horizontal and vertical extent of contamination. This will involve the collection and analysis of additional samples until the extent of contamination can be determined.

Removal of Contaminated Soils

Following EPA-published guidance (52 FR 8706, March 19, 1987), the Laboratory will document that no contamination will remain at the site as a result of releases from the units undergoing closure pursuant to this plan. "Contamination" is here defined as concentrations of naturally occurring contaminants that exceed background concentrations and, for non-naturally occurring contaminants, concentrations that pose a threat to human health and the environment.

Thus, the analytical results for total metals samples will be compared to results obtained for the background samples collected near the site. The first step in the removal of contaminated soils will be to excavate those

soils that exceed the upper 90 percent confidence interval established for background concentration levels for each of the metals found in the waste liquids and waste residues. The second step in the removal of soils will involve excavating all soils that contain volatile and semivolatile organic compounds in concentrations greater than 1.0 ppm. This concentration is arbitrarily established to facilitate the expeditious removal of soils, although for some contaminants it is possible that concentrations greater than 1.0 ppm may, in fact, be protective of human health and the environment. Remaining soils that contain volatile and semivolatile organic compounds in concentrations ranging from detection limits to 1.0 ppm will only be excavated and removed to the "clean level" concentration as established through a risk assessment; if this risk assessment demonstrates that there is no threat to human health or the environment, then these soils will be left in place.

The risk assessment will be conducted in accordance with EPA guidance (Appendix C) and will compare modeled exposure levels at the site to EPA-recommended limits or factors. These limits or factors have undergone peer review and include, at present, water-quality standards and criteria, health-based limits based on verified reference doses (RFDs), carcinogenic potency factors (CPFs), and site-specific EPA-approved public health advisories. The exposure limits recommended by EPA are considered protective of human health and the environment.

Because releases from the tank are not suspected to have occurred, the Laboratory intends to close this unit expeditiously. Thus, soil removal with regard to the tank will follow a somewhat different procedure. Following removal of the tank, the soil surrounding the excavation will be removed to a depth of approximately one foot and managed as hazardous waste. The remaining soils will be sampled and analyzed to determine that remaining contaminant concentrations do not exceed the upper 90 percent confidence interval for background concentrations, exposure limits, or detection limits, as appropriate.

It should be noted that, prior to performing the risk assessment, if the extent of contamination at the site is found to be minor and not extensive, then all soils within the contaminated area will be removed to the upper 90

percent confidence interval for background concentrations for total metals and to analytical detection limits for volatile and semivolatile organic compounds. This extremely conservative approach would negate the need to perform a risk assessment and would expedite the closure process by eliminating the risk assessment step. Again, the risk assessment will be performed only if the volume of soil subject to removal using detection limits as the clean level would significantly impact the stability of the existing slopes and/or remove established vegetation to the extent that erosion potential becomes problematic.

5.4 GROUND WATER INVESTIGATION PLAN

Because there is virtually no potential for the migration of hazardous waste or constituents to or from the uppermost aquifer (located approximately 1,200 feet below the land surface), a certified ground water monitoring waiver meeting the requirements of NMHWMR-5, Part VI, Section 265.90 is maintained at the facility. This waiver, which is available for inspection, would preclude the need for ground water monitoring in connection with closure of the TA-35-TSL 85 surface impoundment. However, in the unlikely event that ground water is encountered during installation of any test hole drilled in connection with this plan, the ground water monitoring plan outlined in Appendix D will be implemented.

5.5 SAMPLING AND ANALYSIS PROCEDURES

The following sections define procedures and methods for sampling, analysis, and documentation applicable to this closure plan. While the procedures and methods are specific, any applicable procedure or method defined in Test Methods for Evaluating Solid Wastes, EPA SW-846, most current edition (SW-846) may be used if conditions or experience shows the alternate method to be more appropriate.

Adequate preparation ensures that proper sampling is accomplished. A check-list of items required for field sampling is given in Table 5-1.

The sample collection personnel will be instructed to heed the following precautions:

- Do not smoke, eat, or handle any objects not necessary for sampling while performing sampling procedures.

- Do not sample downwind of any potential volatile organic compound sources such as car exhausts, open fuel tanks, etc. These could result in contamination of the sample. If any such sources are unavoidable, make a note of them in the field logbook.

- Leave caps on the sample containers until just before filling.

- Avoid handling the teflon bottle cap liners. Do not use any liner which falls out of the cap and onto the ground.

- Gloves should be worn when taking samples and when handling bottles, especially those with added preservative.

5.5.1 Waste Liquid and Rinseate Sampling Procedures

A COLIWASA sampler or similar device will be used to sample liquids in the surface impoundment and rinseate from the liner and equipment cleaning. The recommended model of the COLIWASA is shown in Figure 5-2. As an alternative to the COLIWASA, disposable COLIWASAs or glass tubes may be used to sample liquids. The primary advantage in utilizing a disposable COLIWASA is that the COLIWASA will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross-contamination.

Sampler Preparation

The COLIWASA sampler must be clean before each use. The sampler must be washed with a warm detergent solution (Liquinox or Alconox), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber-reinforced paper towels, the COLIWASA tube may be quickly cleaned. Clean COLIWASA samplers will be stored until use in polyethylene plastic tubes or bags in a clean and protected area.

Sampling Procedures

- Assemble the clean glass COLIWASA sampler or disposable COLIWASA.

- Wear necessary protective clothing and gear and observe required sampling precautions.

- Slowly lower the COLIWASA sampler into the liquid at a rate that permits the levels of the liquid inside and outside the sampler tube to remain the same.
- When the sampler hits the bottom of the liquid, slowly withdraw the sampler with one hand while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a glass container by slowly lifting the inner glass tube of the COLIWASA.
- Cap the glass container, attach a label and seal, record in the field logbook, and complete the sample analysis request sheet and chain-of-custody record (Section 5.5.3).

5.5.2 Soil Sampling Procedures

Surface soil samples will be collected with a trowel, scoop, or hand-held bucket auger. To sample below one-foot depths, samples will be collected using a drilling rig with continuous flight hollow stem augers and split-barrel dry core samplers and/or split-spoon samplers. Only clean sampling equipment will be used for soil sampling. All samples will be collected in EPA-approved containers and preserved in accordance with EPA methods (Table 5-2).

Trowel or Scoop Sampling Procedures

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Composite the samples in a glass container.
- Cap the container, attach a label and seal, record in field logbook, and complete the sample analysis request sheet and chain-of-custody record (Section 5.1.5.3).

Split-Barrel Sampler

- Assemble the clean split-barrel sampler to the drill rod.
- Continuous core (split-barrel sampler) to desired depth.
- Withdraw the drill rod from the auger string and retrieve the split-barrel sampler.
- Store the core sample in an appropriate sample container and packed in an insulated container with ice.

- Label the sample, affix the seals, record in the field logbook, complete sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis (Section 5.1.5.3).

Cleaning of Downhole Drilling Tools

All downhole drilling tools (augers, drill rods, etc.) will be steam-cleaned or high-pressure, hot-water washed after completion of each test hole. The split-barrel sampler will be cleaned after each location or depth interval is sampled. Drill cuttings and wash fluids will be separately collected in DOT-approved steel drums and containers, and analyzed to determine a proper disposal protocol.

Hazard Protection

Personnel involved with sampling, liquids removal, and residues removal from the surface impoundment and associated structures will use proper protective clothing and equipment. The Laboratory's Industrial Hygiene Group (HSE-5) will be responsible for assessing hazards and determining protective clothing requirements.

5.5.3 Sample Handling and Documentation

Sample containers will be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample label will be completed with a waterproof pen. The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. A chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample.

A separate closure sampling field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling)

b. Location of sampling (coordinates referenced to staked field points, if soil sample)

c. Name and address of person making log entry

d. Type of process producing waste

e. Number and volume of sample taken

f. Description of each sampling location, sampling methodology, equipment used, etc.

g. Date and time of sample collection

h. Sample destination and transporter's name (name of laboratory, UPS, etc.)

i. Map or photograph of the sampling site, if any

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.)

k. Field measurements, if any (pH, flammability, explosivity, specific conductance, etc.)

l. Collector's sample identification number(s)

m. Signature of person responsible for the log entry

n. Analytical parameters requested.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the logbook. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record will be accompanied by a sample analysis request sheet similar to Figure 5-3. The request sheet has two parts: field and laboratory. The field portion of this form will be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

5.5.4 Sample Analysis

All analyses, quality assurance, and quality control will follow methods defined in SW-846. The analytical methods expected to be employed for analysis of samples collected during closure activities are denoted in Table 5-3.

5.6 EQUIPMENT DECONTAMINATION

Prior to use, decontamination equipment will be rinsed with distilled water. A representative sample of the rinseate will be collected, preserved, and analyzed in accordance with the procedures described in Section 5.5. The rinseate will be analyzed for volatile and semivolatile organic compounds, EP toxic metals, and PCBs to determine if background concentrations of hazardous constituents are present in the equipment prior to use. After use, all equipment used in sampling and removal of liquids and residues that is not dedicated to handling hazardous wastes will be scraped and brushed to remove any residue and then washed, rinsed and steam-cleaned. Any nondedicated pumps will be decontaminated by pumping soap and water through the device. Any equipment that cannot be decontaminated will be disposed of as a hazardous waste. The residue collected will be placed in DOT-approved drums for treatment or disposal. Rinseate will be collected and handled in the same manner as rinseate generated from decontamination of the surface impoundment and tank. Representative samples of the final rinseate will be collected and analyzed as described above. Protective clothing will be collected and disposed of as hazardous waste and shipped off site to a RCRA-permitted facility.

After use, all equipment normally dedicated to handling hazardous wastes and used during the closure process will be scraped and brushed to remove residues and then returned to HSE-7 for routine decontamination and maintenance. The residues will be managed as described above.

5.7 DECONTAMINATION VERIFICATION

Upon completion of any required soil removal, additional sampling and analysis will verify that all targeted soils have been removed. Because removal of contaminated soil will leave an exposed surface, the disturbed surface will be resampled in the same locations. Analysis and the determination of contamina-

tion is as previously discussed, and an analysis will be conducted only for those constituents that caused the area to be contaminated.

5.8 CLOSURE SCHEDULE

If the preparation of documentation to establish alternative concentration limits is necessitated by areally extensive contamination, the closure will require more than 180 days to complete and an extension to the 180-day time limit is hereby requested. The following events will be completed on or before the time indicated below:

TIME (day)	ACTIVITY
0	Closure initiated
+15	Remove fluids and residue from surface impoundment, underground tank, and piping; decontaminate surface impoundment and ancillary structures
+75	Collection of soil samples and test hole drilling
+135	Removal of contaminated (>1 ppm or background) soil (if necessary)
+160	Completion of risk assessment to establish exposure limits, if necessary
+175	Removal of additional soils, as appropriate
+210	Backfill, regrade and establish vegetative cover
+220	Certification completed.

Should soil removal be necessary, the excavation will be filled with clean indigenous soils, and compacted and regraded to its original contour. Selection and application of soil additives, such as fertilizers, and seed mixtures will follow U.S. Forest Service recommendations. The site will be watered sufficiently to establish seedlings. If weather conditions at the time of final closure activities do not allow for planting, an extension to this closure schedule is hereby sought to allow completion of this step as soon as practicable after the last freeze of the season. If any other circumstances require an additional extension, a letter explaining the need for the extension and including a revised schedule will be provided to NMEID.

5.9 CLOSURE CERTIFICATION

An independent registered professional engineer and the owner/operator of the facility shall certify the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the U.S. Department of Energy (DOE) shall prepare a letter, or letters, certifying that the area has been closed in accordance with this plan. The letter(s) shall be dated and signed by each party and stamped by the registered engineer, and the original copy submitted by the DOE to the Director of the NMEID. One copy shall be maintained at the DOE offices and one copy maintained by the Laboratory Environmental Surveillance Group (HSE-8).

6.0 ADDITIONAL CLOSURE REQUIREMENTS

6.1 POST-CLOSURE PLAN

Because the Laboratory intends to perform a clean closure, a post-closure care plan is not required.

6.2 CONTINGENT CLOSURE PLAN

The existence of the tank as part of the system undergoing closure requires that additional closure regulations be addressed. Specifically, these regulations, set forth in NMHWMR-5, Part VI, Section 265.197, require that a contingent closure plan be provided for tanks without a secondary containment system. The contingent closure plan must describe closure activities that will be implemented in the event the tank has leaked and all contaminated soils cannot be removed. Under such circumstances, the tank and tank system will be considered a landfill and must meet all closure requirements applicable to landfills.

At this time, it is believed that the tank has never leaked. When the tank was first discovered, it was filled with a water-based fluid. Since the contents could not be immediately removed, they remained in place for several weeks. At the end of that time, the original fluid level had not changed.

If any potential contaminated soils associated with the tank cannot be removed to the clean levels established by the results of the risk assessment, the tank and associated equipment will be closed as a landfill. A cover will be

designed and constructed to minimize the migration of liquids through the unit; to function with minimum maintenance; to promote drainage and minimize erosion or abrasion of the cover; to accommodate settling and subsidence so that the cover's integrity is maintained; and to have a permeability less than or equal to the permeability of the natural subsoils present. A berm will be constructed to prevent run-on and run-off from eroding or otherwise damaging the final cover. The cover will be maintained and repaired as necessary to correct the effects of settling, subsidence, erosion, or other events.

Should closure as a landfill be necessary, a revised closure plan will be submitted to further specify the steps by which these objectives will be met. A revised closure schedule will also be submitted.

6.3 NOTIFICATION IN DEED TO PROPERTY

This section is not applicable because federal facilities are exempt from this section per 40 CFR 265.140(c) [NMHWMR-5, Part VI, Section 265.140(c)].

6.4 CLOSURE COST ESTIMATE

This section is not applicable because federal facilities are exempt from this section per 40 CFR 265.140(c) [NMHWMR-5, Part VI, Section 265.140(c)].

6.5 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE

This section is not applicable because federal facilities are exempt from this section per 40 CFR 265.140(c) [NMHWMR-5, Part VI, Section 265.140(c)].

6.6 POST-CLOSURE COST ESTIMATE

This section is not applicable because federal facilities are exempt from this requirement per 40 CFR 265.140(c) [NMHWMR-5, Part VI, Section 265.140(c)]. In addition, the Laboratory intends to perform a clean closure, precluding the need for post-closure care.

6.7 FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE CARE

This section is not applicable because federal facilities are exempt from this section per 40 CFR 265.140(c) [NMHWMR-5, Part VI, Section 265.140(c)].