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Earth and Environmental Technologies

Final Draft

Copy No. 3

*RCRA Interim Status Assessment
Part A Facilities
Non-Radioactive Dangerous Waste Landfill*

J-1866-33.06

Cross Ref with: 0003608

Add Milestone: M-020-00



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Part A Facilities
Non-Radioactive Dangerous Waste Landfill*

*Prepared for
Westinghouse Hanford Company*

*October 20, 1988
J-1866-33.06*





HARTCROWSER

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Earth and Environmental Technologies

J-1866-33.06

October 19, 1988

Westinghouse Hanford Company
Post Office Box 1970
Richland, Washington 99352

Attn: Mr. David Hutchison

Re: RCRA Interim Status Assessment
Part A TSD Facilities
Non-Radioactive Dangerous Waste Landfill Facility

Our report on the RCRA Part A TSD Facility Assessment for the Non-Radioactive Dangerous Waste Landfill Facility (NRDWL) is enclosed. The report presents our understanding of the current compliance status of the facility, as well as recommendations for improving compliance with the applicable federal and state dangerous waste treatment, storage, and disposal (TSD) regulations. The report also presents regulatory guidance for each of the specific sections of dangerous waste regulations that the facility was assessed against.

The assessment was limited to the facility and practices directly associated with the TSD units identified in the NRDWL RCRA Part A permit application. The facility and practices were assessed relative to the interim status TSD requirements noted specifically in the report. The facility and practices were not assessed relative to dangerous waste generator or generator accumulation requirements. Regulatory analysis of the facility was not performed.

The conclusions and recommendations in this report are based on information provided to the authors from several sources. Since it was beyond the scope of this project to independently confirm all information provided, there exists the possibility that portions of the information are incorrect, incomplete, or out of date. For example, although a facility operating manual may state that a certain practice is accomplished, we did not actually observe the facility operations to confirm that the specific practice is performed.



Westinghouse Hanford Company
October 19, 1988

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Our conclusions and recommendations are based on our understanding and experience with the federal and state dangerous waste regulations. The conclusions and recommendations should not be construed as legal opinions. Consult legal council for more definitive compliance conclusions.

Sincerely,

HART CROWSER, Inc.

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J-1866-33.06

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**GENERAL REQUIREMENTS FOR DANGEROUS WASTE
MANAGEMENT FACILITIES
WAC 173-303-280**

REGULATIONS AND REQUIREMENTS

General Requirements

The general requirements for dangerous waste TSD facilities note two specific requirements.

- o The facility must be operated in a manner which does not present an imminent or substantial hazard to the public health or the environment.

- o The facility is required to apply for an EPA/state identification number from the regulatory agency.

The requirement to operate the facility in a manner which does not threaten human health or the environment is purposely general so that the agencies can use the requirement as a broad, enforcement tool. If other, more specific regulations can not be applied to a situation where the agency feels a threat exists, this general facility requirement can be used. This requirement is satisfied primarily by preventing or minimizing activities on the site which have a potential to expose the public or the environment to dangerous wastes.

Identification Number

The TSD facility EPA/state identification number is obtained by completing a Washington State notification of dangerous waste activities form, Form No. 2, and submitting the form to the Washington State Department of Ecology. The information requested on the form includes:

- o Name and address of the party handling the dangerous waste;
- o The type of dangerous waste activities;
- o Facility contact persons at the facility;
- o Identification of the dangerous wastes handled at the facility; and
- o The estimated quantity of dangerous wastes handled.

The identification number is used on the annual reports that a TSD facility must submit each year and on manifests which a facility may use to transfer wastes off-site.

APPLICABILITY

NRDWL has been identified as a dangerous waste land disposal facility in the Part A and Part B permit applications. Thus, NRDWL must satisfy the general requirements for dangerous waste management facilities.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the general requirements for dangerous waste management facilities was determined by reviewing the November 1985 Part B permit application and other records provided by WHC, interviewing a former operator of the site, and touring the NRDWL facility.

A single EPA/state identification number has been obtained for the Hanford Site, which is considered a single site, and applies to the NRDWL facility.

NRDWL is located in the 600-Area of the Hanford Site, at the north end of the Central Landfill. Based on records provided to us, NRDWL was used for land disposal of dangerous wastes as follows:

- o Trench 34 - January 1975 to November 1980.
- o Trench 33 - November 1980 to September 1982.
- o Trench 31 - September 1982 to April 1984.
- o Trench 28 - February 1984 to January 1985. This trench was intended to receive only corrosive type wastes.
- o Trench 19N - March 1984 to May 1985. This trench was intended to receive only oxidizer type wastes. This trench has also been numbered as Trench 36 on various reports.
- o Trench 26 - January 1985 to present. Although this trench was reportedly opened, it has never received dangerous wastes.

Currently, NRDWL can be best characterized as an inactive, unclosed interim status landfill. Although no new dangerous wastes have been disposed of in any of the trenches since May 1985, there is evidence that non-dangerous solid wastes were disposed of in a NRDWL trench as late as June 1985.

In November 1985, Trench 19N (Oxidizer trench) was excavated and several of the previously disposed dangerous wastes were removed for disposal elsewhere. At this time, it is believed that Trench 19N only contains approximately 10 to 20 drums of calcium nitrate and sodium nitrate (D001). No other trenches have reportedly been reexcavated.

The only activities currently conducted at NRDWL are weekly inspections of the facility site and quarterly groundwater monitoring of wells around the Central Landfill. A closure and post-closure plan was submitted to Ecology

in the Part B permit application, and WHC is in the process of preparing to update the closure plan.

CONCLUSIONS AND RECOMMENDATIONS

NRDWL was found to be in compliance with the general requirements for dangerous waste management facilities. No imminent or substantial endangerment to public health or the environment was identified.

REQUIRED NOTICES
WAC 173-303-290

REGULATIONS AND REQUIREMENTS

There are three specific types of notices required of TSD dangerous waste facilities.

- o The Washington State Department of Ecology must be notified at least four weeks prior to the TSD facility receiving dangerous waste from a source outside of the United States.
- o The owner/operator of the TSD facility is required to notify any new owner/operator of the dangerous waste regulations, chapter 173-303 WAC.
- o The TSD facility owner/operator must inform any generator of dangerous waste who ships its waste to the TSD facility that the facility has the appropriate permits to receive the wastes.

Since most of the Hanford Site does not receive wastes from off-site, the required notices requirements generally do not apply to the Hanford facilities. NRDWL may have received dangerous wastes from off site and, thus, could have been subject to the notification requirements, however, the generator sending wastes to NRDWL and the owner of NRDWL are the same entity (USDOE). The facility would also be required to notify any new operator of NRDWL if, in the future, the site operations are assumed by someone other than the current operator.

APPLICABILITY

NRDWL may have received dangerous waste from off-site in the past, but is currently not receiving any dangerous waste shipments. NRDWL did not

receive shipments from outside the United States. Operational control of NRDWL was transferred to WHC in 1987, so proper identification and notification of the new operator should have been accomplished at that time.

INFORMATION REVIEWED AND CURRENT STATUS

The status of NRDWL relative to compliance with the required notices regulations was determined by reviewing the November 1985 Part B permit application and other materials provided by WHC, and through discussions with WHC staff.

At this time, the operational control and responsibility for NRDWL is uncertain. The site is currently monitored and maintained by several different groups, none of which is willing to accept responsibility as the designated facility operator.

CONCLUSIONS AND RECOMMENDATIONS

- o (New Operator Notice) Ensure that the notices required during transfer of operational control have been accomplished.

GENERAL WASTE ANALYSIS

WAC 173-303-300

REGULATIONS AND REQUIREMENTS

Waste Analyses Requirements

The waste analysis requirements assures that the TSD facility has sufficient understanding of the dangerous wastes to properly treat, store, or dispose of them. The waste analysis requirements include the following:

- o The owner/operator must obtain a detailed chemical, physical, and/or biological analysis of wastes prior to their management. The analysis must provide the parameters necessary to assure that the material is properly handled. An understanding of the facility processes may be used as an alternative to testing if such knowledge is sufficient to meet the intent of the waste analyses requirements.
- o The wastes must be reexamined if the wastes or the processes generating the wastes change.
- o A written waste analysis plan is required which presents the specific parameters that the waste will be analyzed for, the rationale for selecting the parameters, sampling and test methods, and the frequency with which the initial waste analysis will be reviewed or repeated. The plan must be maintained in the facility operating record.
- o If wastes are received from off-site, procedures are required to ensure that the wastes received are as anticipated. (Since most of the Hanford Site does not receive wastes from off-site, this requirement is not applicable for most Hanford facilities.)

The waste analysis requirement is an important step toward effective and safe waste handling procedures. The waste analysis requirements are not simply a recordkeeping system for analytical data. The facility operator must carefully examine the precise function and nature of the TSD operations to formulate a suitable wastes analysis program.

Waste analysis is necessary for a proper closure plan. An understanding of the wastes is necessary to determine effective methods to remove, treat, and/or dispose of the dangerous wastes and to decontaminate the facility. Similar requirements exist for post-closure and groundwater monitoring activities.

Content of the Waste Analysis Plan

Process Control and Monitoring The waste analysis plan must consider the wastes at all stages of the TSD processes where the wastes may differ from one stage to another. For example, a dangerous waste being disposed of should be evaluated to ensure that the wastes identified by the generator on the manifest are in fact what the facility is receiving. Labpacks should also be periodically assessed to ensure that wastes are not incorrectly placed in the wrong labpack.

The waste analysis plan must also identify tolerances that the wastes must meet in terms of specific parameters (i.e., measurable chemical or physical properties). The plan must show how the wastes are monitored to ensure that the specific tolerances are met. For example, wastes designated for disposal should be analyzed in a manner sufficient to ensure that free liquids are not present or that sufficient absorbent is present in labpacks to absorb leaks from broken containers.

Material Compatibility The waste analysis must show the compatibility between the wastes and all materials that could come in contact with the wastes. For example, the compatibility between the wastes and any container materials, synthetic liner materials, secondary containment

materials, etc. must be documented as a result of the waste analysis program. The compatibility of wastes with other wastes should also be verified under the waste analysis plan, so that incompatible wastes (e.g., oxidizers and acids) are not disposed of in proximity to each other.

Representative Sampling The waste analysis plan must note specifically how representative samples of the wastes will be obtained. Information that must be provided includes:

- o Methods to ensure that the samples properly represent the range of the characteristics of the wastes;
- o Sampling techniques; and
- o Sampling equipment.

Quality Assurance and Quality Control The waste analysis plan must detail the quality assurance/quality control program that ensures that all of the waste analysis information is technically defensible and properly documented. The QA/QC program should address:

- o The number of samples and sample blanks required for statistical completeness;
- o Preparation, maintenance, and cleaning of containers and equipment;
- o Certification of any laboratories used;
- o Chain-of-custody procedures and proper sample handling;
- o Laboratory testing methods approved by the EPA or state regulatory agency and justifications if non-approved methods are used;
- o Health and safety protocols; and

- o Proper methods of data compilation, review, and presentation.

APPLICABILITY

NRDWL has been identified as a dangerous waste landfill in the Part A and Part B permit applications. Thus, NRDWL is subject to the general waste analysis requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the general waste analysis requirements was determined by reviewing the November 1985 Part B permit application and through discussions with WHC personnel.

NRDWL does not currently receive dangerous waste, nor are active disposal operations ongoing at the site. In the past, little if any waste analyses were performed to verify waste shipments, confirm compatibility information, identify chemical or physical parameters, or otherwise ensure safe waste management. Information supplied by the generators using the facility was the principal source of waste characterization data and these data were the basis for decisions on waste acceptability and management methods. The only waste analysis at this time is associated with sampling and monitoring of the groundwater.

CONCLUSIONS AND RECOMMENDATIONS

- o (Waste Analysis Plan) Develop a written waste analysis plan which addresses the remaining waste analysis parameters applicable under closure and post-closure.

Include, at a minimum:

- Applicable groundwater sampling and analysis procedures. (See additional discussion under the GROUNDWATER MONITORING section of this report.)
- Sampling and analysis of soils near and around the closed trenches to show that dangerous wastes have not escaped or migrated during past operations. This will be needed to demonstrate to Ecology and EPA that the trenches are the only areas subject to closure and post-closure care (e.g., road surfaces and areas between trenches are not contaminated and do not require closure).
- Sampling and analysis of equipment used to operate NRDWL to demonstrate that the equipment has been adequately decontaminated.
- Waste analysis procedures (if any) that may be associated with post-closure care of NRDWL.

SECURITY

WAC 173-303-310

REGULATIONS AND REQUIREMENTS

The Active Portion Must Be Secured

All TSD facilities must have sufficient security to prevent unknowing entry and to minimize unauthorized entry of people and/or animals to the active portions of the facility. The active portion of a facility is considered the dangerous waste management unit such as a specific tank, container area, or landfill unit within the facility. Transfer areas such as loading and unloading docks are also considered an active portion of the facility. The specific features required of the security system include:

- o Signs around the active portions of the facility; and either
- o A 24-hour surveillance system; or
- o Artificial or natural barriers with controlled access.

Signs

The signs around the active portions of the facility are required to satisfy the following:

- o The sign must clearly note the danger associated with the TSD unit and that unauthorized people are not allowed. At a minimum, the sign must read "Danger-Unauthorized Personnel Keep Out".
- o The sign must be legible from a distance of at least 25 feet.

- o A sufficient number of signs must be placed around the active portion of the facility so that a sign is visible from any approach.
- o The sign must be in English as well as any other language predominant in the area around the TSD facility.

24-Hour Surveillance

A 24-hour surveillance system should immediately identify any attempted or inadvertent entry into the active portion of the facility. Continuously monitored closed circuit TV systems and 24-hour guard service are typical types of 24-hour surveillance systems.

Artificial or Natural Barriers

Artificial or natural barriers with controlled access points can also be used to provide security. Artificial barriers are considered to be items such as 6-foot or higher lockable fences with gates and building enclosures. Natural barriers are such items as rivers, lakes, and steep hillsides. Controlled access points are points where entry and exit to the facility is closely controlled such as lockable or continuously patrolled gates or doors.

APPLICABILITY

NRDWL has been identified in the Part A and Part B permit applications as a dangerous waste landfill. Thus, NRDWL is subject to the security requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The status of NRDWL relative to compliance with the security requirements was determined by reviewing the November 1985 Part B permit application, interviewing former NRDWL operating personnel, and touring the site.

NRDWL is located at the north end of the Central Landfill. A fence with locked access gates at various locations surrounds the entire Central Landfill. The Central Landfill's current solid waste and sanitary disposal activities are divided from the NRDWL portion by a separate fence with gate. Gates are generally kept locked except at the main entrance to the Central Landfill, where an operations trailer is parked. It was not clear that a guard or other person is present at that trailer at all times to prevent unauthorized access. The gate between the Central Landfill area and NRDWL was not locked at the time we toured the site. There were no warning or dangerous waste signs located along the fences that form the perimeter boundary for NRDWL except for the entrance gate located along the eastern boundary.

CONCLUSIONS AND RECOMMENDATIONS

- o (Signs) Install signs around the perimeter of the NRDWL fence that comply with the security requirements.

- o (Barriers) Ensure that access from the Central Landfill area to NRDWL is controlled by either: keeping the gate in the fence between the two areas locked; or having a guard or other person responsible for controlling access through the gate to NRDWL.

GENERAL INSPECTION

WAC 173-303-320

REGULATIONS AND REQUIREMENTS

Inspection Program

Facilities which treat, store, or dispose of dangerous wastes must develop and implement a detailed inspection program. A written inspection plan must be developed and maintained in the facility operating records and must address both general and unit-specific inspection requirements. The general inspection requirements refer to inspection of the portions of the TSD facility other than the actual TSD container, tank, landfill, etc., units. Unit-specific inspection requirements are presented as part of the individual container, tank, landfill, etc., requirements.

The general facility inspection program must consider these items:

- o Safety equipment such as emergency eye wash stations, protective shields, first aid equipment, and respirators;
- o Emergency equipment such as spill control supplies, fire extinguishers, emergency lights, generators, and fire alarms;
- o Monitoring equipment such as thermostats, fire detection equipment, level, pressure, and flow transducers;
- o Security equipment such as fences, signs, lights, and locks;
- o Communication equipment such as radios, intercoms, closed circuit TV systems, and public address systems;

- o Other general facility items such as building floors, walls, roofs, elevators, ramps, and vehicles.

Detailed Inspection Plan

The inspection plan should note in great detail what specific items are to be inspected, when they are to be inspected, and what is to be checked for on each item. The level of detail required in an inspection plan is typically underestimated. It is not sufficient to simply "check the two-way hand-held radios," as an example. Rather, each of the radios should be checked for operability, reception, and battery charge. The inspection should reflect all elements which are necessary for the proper functioning of the item.

Inspection Records of the inspections must be maintained. At a minimum, the logs must note:

- o The date and time of the inspection;
- o The printed name and signature of the inspector;
- o Notations of the observations made; and
- o The date and nature of any action required as a result of the inspection.

The inspection logs must be maintained in the facility operating records for at least three years.

Checklists Typically, checklists guide the inspection of particular items. The checklists should reflect the level of detail required of the inspections. The checklists should give specific guidance on what to check on each item, how to inspect it, and how to note any deficiencies.

Commonly, the inspection checklists serve as the inspection log and include space to note any responses to problems observed during the inspection.

Frequency of Inspections The frequency of the inspections depends on the specific nature and function of the item being inspected. Equipment which continuously prevents dangerous wastes from spilling or leaking should be inspected daily. Equipment which is used only in the case of an emergency, likely needs to be inspected monthly. In general, the more a failure of a piece of equipment poses a threat to the environment or human health, and the more frequently the item is required to perform its function, the more often it should be inspected. Equipment which is inspected less often should be subjected to a more rigorous inspection.

Unit-Specific Inspections Unit-specific inspection requirements are presented in the respective sections addressing landfills, tanks, and container requirements. Additional inspection requirements for facilities that handle ignitable or reactive dangerous wastes are discussed in the Other General Requirements section.

APPLICABILITY

NRDWL has been identified in the Part A and Part B permit applications as a dangerous waste landfill. Thus, the general inspection requirements apply to NRDWL.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the general inspection requirements was determined by reviewing the November 1985 Part B permit application and inspection log records, and by interviewing former NRDWL operating personnel.

NRDWL is currently inspected approximately once a week. The inspection is oriented to identifying problems with the fence, subsidence of the trenches, and problems from wind dispersal of the trench cover materials. An inspection checklist is completed, problems noted (if any), and corrective measures described (when necessary). Inspections are conducted as an adjunct to the normal inspection of the Central Landfill. NRDWL inspections were described as not the responsibility of the Central Landfill operator, but done anyway as an additional effort. A written inspection plan and schedule are presented in the November 1985 Part B permit application. The person(s) inspecting NRDWL stated they were not familiar with this inspection plan and schedule. Copies of the inspection records are kept by the inspector and at Central Landfill.

CONCLUSIONS AND RECOMMENDATIONS

- o (Inspection Plan) Prepare a written inspection plan specific to NRDWL for the current site status. Specify the items to be inspected, problems to be looked for, and frequency of inspection. The inspection plan presented in the November 1985 Part B permit application could be used as a basis for developing this plan. Items to include, at a minimum, would be:
 - Fences, gates, locks, and signs.
 - Trenches for signs of subsidence, erosion, run-on and runoff problems, burrowing animals, and vegetation that could disturb the integrity of the trenches.
 - Well heads to identify potential problems with or damage to the groundwater monitoring wells.
 - Emergency communication devices, such as hand-held radios, or other devices that would be used for communication in the event of an emergency.

- Emergency response equipment that would be used to respond to a fire, explosion, or release at the facility.

- o (Inspections) Identify the responsible individual(s) for conducting inspections and ensure that they are familiar with and are properly implementing the inspection plan. This would include monitoring of the inspection activities to see that problems were corrected when identified, and that corrections are properly documented in the operating record.

- o (Inspection Records) Establish a definite location for the inspection logs and records to be maintained. This location must be the same as the location for the other facility operating records.

PERSONNEL TRAINING

WAC 173-303-330

REGULATIONS AND REQUIREMENTS

Training Program

All employees at a TSD facility who are directly associated with the management of dangerous waste must successfully complete a training program which ensures the facility's compliance with the dangerous waste regulations. The regulations define "facility personnel" as

"All persons who work at, or oversee the operations of a hazardous waste facility, and whose actions or failure to act may result in noncompliance with the requirements (of the regulations)."

The training elements include:

- o The proper methods of handling dangerous wastes in the facility;
- o The proper response to emergencies and implementation of the contingency plan; and
- o Instructors knowledgeable in proper dangerous waste management procedures relative to the specific facility.

New employees should undergo training within 6 months of employment and must be supervised by a trained person until training has been successfully completed. Annually, each employee must review the training program. The facility operating file must include a written training plan and records of each employee's completion of the training.

Training Alternatives The regulations offer alternatives for specifically how the training requirements can be met. The training can be accomplished through a formal course presented either in the facility or by instructors from outside the facility. Alternatively, the training can be accomplished by on-the-job training (OJT) instruction from facility supervisors. It is common for the facility supervisors to attend a course taught by instructors from outside the facility and then to return to the facility to instruct the remaining facility personnel.

The specific elements in the training course should be directed toward the specific wastes, units, and activities at the TSD facility. The training program should address how the types of wastes, units, and management activities relate to the following:

- o The chemical characteristics and associated hazards of the dangerous wastes handled at the facility;
- o Maintenance, inspection, and use of the facility emergency response and monitoring equipment;
- o Proper implementation of the contingency plan including response to a leak, spill, fire, explosion, or groundwater contamination incident;
- o Proper operation, inspection, and maintenance of waste feed cutoff systems;
- o Proper operation, inspection, and maintenance of the facility communication equipment; and
- o Shut down of operations.

For example, the training program should include instruction in how to operate emergency signaling devices (e.g., hand-held two-way radio) and who to notify in the event of an emergency at the facility.

Instructors The training instructor must have thorough knowledge of the dangerous waste regulations and how they relate to the specific nature of the facility and dangerous wastes handled at the facility. Given the ultimate responsibility of the training instructor, it is desirable if the instructor is specifically trained in the field of dangerous waste management. On-the-job training (OJT) is best taught by the facility supervisor since that person is generally in the best position to judge whether an individual has displayed sufficient skills and knowledge to perform required tasks.

New Employees Each employee required to receive the training must do so within the first 6 months of employment at the facility. Until the training is received, the employee must work under the direct supervision of an individual that has received the training. Thereafter, each employee must complete an annual review of the training, at a minimum. If the facility or facility operations change or if the nature of the wastes handled at the facility change, the employees must be retrained.

Training Plan

A training plan documenting the training program must be prepared and included in the facility operating record. The plan should show in detail the specific training procedures and how the training requirements are met at the particular TSD facility. Specifically, the plan must include the following for each position related to the management of dangerous wastes at the TSD facility:

- o Job title and description;
- o Name of employee filling the position;
- o Requisite skills, education, and experience;

- o Detailed, written description of the type and amount of training required for the position including course outlines, handouts, exams, etc.; and
- o Documentation showing that the required training, both initial training and annual reviews, has been received within the required time period.

Training Records

Records showing that the training requirements are being satisfied must be maintained in the facility operating records. The training plan should be maintained permanently in the files. Documentation regarding individual employee's completion of the required training must be maintained for at least three years after the employee's last day at the facility. The records should be detailed and complete and include the dates of each employee's training and the courses attended. They should allow an inspector to quickly determine that the facility is meeting the training requirements.

APPLICABILITY

NRDWL has been identified as a dangerous waste landfill in the Part A and Part B permit applications. Thus, the personnel training requirements apply to NRDWL.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the personnel training requirements was determined by reviewing the November 1985 Part B permit application, by interviewing former NRDWL operating personnel, and from discussions with knowledgeable WHC staff.

A personnel training plan is presented in the November 1985 Part B permit application, and this plan is intended to be applicable to NRDWL. At the time of our assessment, much of the plan was not being implemented either because it was no longer germane or because no one had taken responsibility for implementing the plan at the NRDWL facility. Current training records for NRDWL personnel were not available, principally because personnel responsible for operating NRDWL are not clearly identified.

CONCLUSIONS AND RECOMMENDATIONS

- o (Training Plan) Develop a written personnel training plan specific to NRDWL. The personnel training plan presented in the November 1985 Part B permit application could be used as a basis for developing this plan. The plan must reflect the current status of activities at the site including:
 - Familiarization with the types of wastes that have been disposed of at NRDWL and the potential risks they could pose, and with the site layout and design.
 - Procedures for responding to emergencies, including familiarity with the contingency plan and operation of emergency signaling devices.
 - Procedures to be followed for conducting inspections, correcting problems found during inspections, and properly documenting inspections and corrections.
 - Training necessary for emergency responders. In particular, include the training necessary for the emergency coordinator(s) and the alternate(s).
 - Training necessary for personnel who implement the groundwater monitoring program at NRDWL.

- o (Training) Identify the persons (by name), responsibilities, job description, and needed training for each position associated with the operations at NRDWL. Include this information, along with records showing completion of necessary training, in the training plan.

PREPAREDNESS AND PREVENTION

WAC 173-303-340

REGULATIONS AND REQUIREMENTS

Preparedness and Prevention Requirements

Dangerous waste TSD facilities must be designed, constructed, maintained, and operated to minimize the possibility of a release of dangerous waste to the environment. Regulations directed toward satisfying this general requirement are presented in terms of four general requirements:

- o Required equipment;
- o Access to communication equipment and alarms;
- o Aisle space; and
- o Arrangements with local authorities.

Required Equipment

- o An internal communication system;
- o An external communication system, such as a telephone, capable of summoning emergency aid;
- o Portable fire control equipment, fire extinguishers, spill control equipment, and decontamination equipment; and
- o Water at sufficient pressure and volume to supply the water hoses, sprinkler systems, foaming equipment, etc.

Internal Communication The internal communication system must allow immediate notification to all employees of any emergency and to inform them of the proper evacuation. The system should also immediately notify emergency response personnel within the facility as to the location and nature of the emergency. Typical internal communication systems include alarms with varying tones, intercom systems, and public address systems. This equipment must be located so that personnel have immediate access, either directly or by visual contact with someone with immediate access, wherever dangerous wastes are being handled.

External Communication External communication systems are required to be able to immediately notify emergency response personnel from outside the facility. In particular, the system should notify the local police and fire departments or local or state response teams as to the location, nature, and extent of the emergency situation. Typically, external communication systems consist of a telephone which is able to call the emergency response personnel. The telephone should be available at the control room or a main office. If only one person is in the facility when it is operating, that person must have immediate access to the external communication system (i.e., a hand-held radio phone if the individual is not stationed near a phone).

Fire and Spill Control Equipment The facility's fire control equipment should be based on the specific nature of the TSD activities occurring at the site and the associated potential fire hazards. If the wastes handled require a particular method of fire control (special foams, inert gas, dry chemicals, etc.), that type of equipment should be maintained at the facility. Similarly, the type of spill control equipment (e.g., pumps, vacuums, absorbants, etc.) at the facility should reflect the particular nature of the materials that could potentially spill. The equipment should be stored at the facility near the location where its use would be anticipated.

Water System The water system at the facility must provide adequate water pressure and volume to meet any emergency. The facility sprinkler system,

if present, should be designed for the anticipated water pressure and volumes.

Aisle Space

The TSD facility must maintain adequate aisle space within the facility to allow the movement of emergency equipment and personnel within the facility. Adequate space should be provided to inspect the units within the facility, move maintenance and emergency equipment to areas where it could be necessary, and allow evacuation of the facility.

Consultation with Emergency Aid Agencies

Local agencies that may respond to an emergency at the TSD facility should be consulted to exchange information and make arrangements between the TSD facility and the agencies. Such relationships should particularly be developed with the local police and fire departments, local hospitals, and state emergency response teams. Specific information that should be provided to the local police and fire departments and emergency response personnel include:

- o Layout of the facility;
- o The types, nature, amount, location, and hazards associated with the dangerous wastes handled at the facility;
- o Areas in the facility where personnel are typically working;
- o Entrances into the facility; and
- o Evacuation routes.

Information for local hospitals include the types of dangerous wastes handled at the facility and the associated health dangers associated with the wastes. The health dangers should include burns and the effects of inhalation, skin contact, ingestion, etc.

Where outside agencies decline to enter into such agreements with the TSD facility, their refusal should be documented and noted in the facility operating record.

APPLICABILITY

NRDWL has been identified in the Part A and Part B permit applications as a dangerous waste landfill. Thus, the preparedness and prevention requirements apply to NRDWL.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the preparedness and prevention requirements was determined by reviewing the November 1985 Part B permit application and other documents provided by WHC, and through discussions with WHC personnel.

NRDWL is an inactive, unclosed landfill that no longer receives dangerous waste for disposal. The major potential threats to public health and the environment are associated with the possibility of a fire or explosion from wastes in the landfill trenches, releases of toxic air emissions, or releases of dangerous waste constituents to the soil and groundwater due to leaks or wind erosion.

The potential for leaks or losses associated with the handling of dangerous wastes does not currently exist. The requirement for adequate aisle space is not germane to NRDWL. Internal communication and external communication are provided by hand-held two-way radios. Dangerous wastes are not

currently being poured, mixed, spread, or otherwise handled at NRDWL, and the only persons typically near the disposal trenches are persons inspecting the facility, persons sampling groundwater, and persons conducting routine maintenance activities. There are currently no devices present for evacuation signaling (e.g., public address system or sirens).

Emergency response, if needed, would be provided by the Hanford fire department and hazardous materials team. Fire suppression and other emergency response equipment are not located at the NRDWL site. The November 1985 Part B permit application described preparedness and prevention procedures from the standpoint of an active landfill, and included copies of the then current arrangements with local and state emergency responders.

CONCLUSIONS AND RECOMMENDATIONS

- o Although not required by the regulations, update and consolidate in a single document a description of the preparedness and prevention measures specific to the current situation at NRDWL. The materials and information present in the November 1985 Part B permit application could be extracted and used as a basis for developing this preparedness and prevention document. A preparedness and prevention document is not required by the regulations, however, the preparedness and prevention requirements do specify various equipment and precautions that must be in place. A written document is an excellent tool to ensure that these requirements are met. The document should address all applicable equipment usage and precautionary measures (e.g., eyewash and spill cleanup equipment for persons conducting groundwater sampling).

CONTINGENCY PLAN

WAC 173-303-350

REGULATIONS AND REQUIREMENTS

Contingency Plan Requirements

Dangerous waste TSD facilities must develop procedures to effectively address emergencies. The procedures should lessen the impact on human health and the environment if fires, explosions, or releases of dangerous wastes to the environment occur. The emergency procedures to be followed in the TSD facility must be presented in a contingency plan. The contingency plan must include the following:

- o A detailed description of the specific actions to be taken if specific emergencies occur;
- o A description of the arrangements made with local agencies which might be required to respond in the event of an emergency;
- o A current list of the emergency coordinator(s) including work and home phone numbers and address;
- o A list of all emergency equipment and its location at the facility;
and
- o An evacuation plan for the facility personnel.

Content of the Contingency Plan

Detailed Responses to Emergencies The contingency plan must present detailed instructions to facility personnel on what specific actions to

take in the event of specific emergencies. The nature of the TSD facility, its dangerous wastes management units, and the specific activities which occur in each of the units as well as other portions of the facility need to be considered in postulating what potential emergencies could occur.

Once the potential emergencies are identified, detailed and specific responses to those emergencies must be developed and presented. The contingency plan should be written as instructions to the facility personnel for their use during an emergency. The plan should not be a generic, standard discussion of what to do in the case of an emergency. Simply stating that "If you observe collected runoff pooled on a trench, clean it up" does not satisfy the requirements of a contingency plan. Examples of the level of unit/event specific instructions required are as follows:

If you observe a fire, smoke, or gases emanating from Trenches 19N, 28, 31 or 33, take the following steps:

- Initiate the fire alarm and notify the emergency coordinator.
- Identify the source of the fire and note which trench (or trenches) are involved. Tell the emergency personnel when they arrive which trench or trenches are involved.
- If Trench 28 is involved in a fire do not apply water unless absolutely necessary. Use dry fire extinguishing chemicals or carbon dioxide foam to minimize water usage.
- If Trench 19N is involved in a fire do not apply water unless absolutely necessary. Allow the fire to burn itself out, taking care to prevent the fire from spreading to nearby trenches. Use portable fire extinguishers to put out (or prevent) small spot fires that start outside Trench 19N (e.g., vegetation that might catch on fire).

Authority during Emergencies The plan must also include detailed discussions of who has what authority at what time. For example, the facility emergency coordinator could have the authority over a fire until the fire fighting crews arrive. Then the fire chief assumes prime responsibility.

Agreements with Local Authorities The contingency plan should document all of the arrangements and agreements that have been made with local agencies. These agreements would be those required by the preparedness and prevention requirements (WAC 173-303-340) and include local fire departments, police departments, and local emergency response teams. The nature of the agreements should be provided so that roles and responsibilities in the event of specific types of emergencies can be determined. Copies of the contingency plans are required to be provided to the local agencies with which the facility has agreements.

List of Emergency Coordinators The list of emergency coordinators in the contingency plan must be complete and current. Since the plan will be used as an instruction manual in the event of an emergency, it must be clear from the plan who the emergency coordinator is and how to contact that person.

List of Emergency Equipment The contingency plan must include a list of all of the emergency equipment at the facility. This equipment is noted in the preparedness and prevention requirements (i.e., fire extinguishers, spill control equipment, communication systems, etc.). The plan should list all of the equipment available, its location within the facility, and a physical description of each item. The use(s) and capabilities of the equipment should also be provided. A plot plan is an excellent way to show the location of the emergency equipment. Again, the information should be presented in a manner which helps the facility and emergency personnel effectively respond to specific emergencies in the facility.

Evacuation Routes Emergency evacuation routes and procedures must be presented in detail in the contingency plan. Methods to communicate the

proper routes under specific emergency situations should also be documented. For example, different types of alarms could signify which specific evacuation route is appropriate in particular emergencies.

Filing and Modifying the Contingency Plan

A copy of the contingency plan must be maintained in the facility operating record. It should be easily available to inspectors so that they can quickly determine if the facility plan satisfies the contingency plan requirements.

The contingency plan must be amended if it fails during an emergency, if applicable regulations change, if the facility or facility operations change, if the emergency coordinators change, or if the list of emergency equipment changes.

APPLICABILITY

NRDWL has been identified in the Part A and Part B permit applications as a dangerous waste landfill. Thus, NRDWL is subject to the contingency plan requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the contingency plan requirements was determined by reviewing the November 1985 Part B permit application and other documents provided by WHC, and from discussions with WHC staff.

Two major types of emergencies could possibly occur at NRDWL: a fire/explosion associated with the wastes in the trenches (numerous ignitable, reactive, and incompatible wastes were disposed of in the past);

or a release of dangerous waste constituents to the environment near the site. The 1985 Part B contingency plan and the 1988 draft emergency plans describe procedures for notifying emergency response personnel and for evacuating the area in the event of a fire/explosion or a spill of dangerous wastes. NRDWL is not presently handling dangerous wastes, so spills of dangerous wastes due to handling activities are not a likely emergency scenario at this time.

The 1985 Part B contingency plan and 1988 draft emergency plans do not explicitly describe the actions to be taken by the fire department or hazardous materials team in response to a fire or explosion at NRDWL. Emergency responses described in the documents do not address actions to be taken in the event that a release from NRDWL is detected (e.g., to the air, soil, or groundwater). Releases to groundwater at the NRDWL site likely would not constitute an imminent emergency situation and could be adequately addressed under the groundwater monitoring plan. If this is done, refer to the Groundwater Monitoring Plan in the Contingency Plan. However, releases to air (e.g., cyanide or sulfide gases generated as a result of decomposition or reaction of wastes in the trenches) are not discussed in the documentation provided to us.

CONCLUSIONS AND RECOMMENDATIONS

- o (Contingency Plan) Develop a contingency plan that is specific to NRDWL and addresses the potential emergencies that could be anticipated for the existing level of operation at the site. The contingency plan presented in the November 1985 Part B permit application would provide a good basis for developing an updated contingency plan.

- o (Contingency Plan Content) Include the following items in the updated contingency plan:

- Provide the names, telephone numbers, and addresses (both work and home) of the emergency coordinator(s) and the alternate(s).
 - Provide a list of the emergency response equipment currently available at NRDWL and the Central Landfill. Update the list of emergency supplies that emergency responders would bring with them. This list need not be a full inventory of every item available to the fire department and hazardous materials team; it could be focused on equipment that is likely to be used or called upon in the event of an emergency at NRDWL.
 - Clearly specify the responsibilities and actions that will be taken in the event of an emergency. In particular, provide more detail on what the fire department's and hazardous materials team's duties and responses will be in the event of fire, explosion, or toxic release.
 - Ensure that evacuation procedures include all personnel who could potentially be impacted by an emergency at NRDWL (i.e., persons operating the Central Landfill). Specify how evacuation would be initiated, how all personnel would be notified of the need to evacuate, and where evacuating personnel are supposed to go.
- o (Contingency Plan) Maintain a copy of the updated contingency plan at the facility (e.g., the trailer at the entrance to the Central Landfill) and provide copies of the updated contingency plan to the various parties that may be expected to respond to an emergency at NRDWL.
 - o (Agreements) Review the agreements with local authorities that were provided in the November 1985 Part B permit application, and, if necessary, identify needed changes and prepare updated agreements. Maintain the agreements, along with any updates, with the contingency plan.

EMERGENCIES
WAC 173-303-360

REGULATIONS AND REQUIREMENTS

Emergency Requirements

Dangerous waste TSD facilities must satisfy specific requirements in an emergency at the facility. These requirements are directed toward minimizing any hazards to human health or the environment resulting from the emergency. Although the contingency plan is to provide facility-specific instructions in the event of specific types of emergencies, the general emergency requirements present particular responses that are required of all facilities during all emergencies.

The Emergency Coordinator

The emergency coordinator identified in the contingency plan must have the authority to commit the necessary resources to respond to an emergency. Thus, the coordinator is typically one of the senior individuals within the facility. The emergency coordinator should be familiar with the dangerous waste management activities at the facility including the following:

- o The facility contingency plan;
- o The location and properties of all dangerous wastes handled at the facility;
- o The location of all records within the facility; and
- o The layout of the facility.

Either the emergency coordinator, or an alternate coordinator who meets the above requirements and who reports to the emergency coordinator, must be on-site or available on call at all times. Specific procedures should be documented regarding how an alternate coordinator remains in contact with the primary coordinator when the primary coordinator is off-site.

The regulations note specific requirements that the emergency coordinator and owner/operator must satisfy in the event of an emergency. The emergency coordinator, in addition to any other activity required by the facility contingency plan, must immediately:

- o Activate alarms and communication systems and notify state and local response teams if their help is necessary;
- o Identify the nature and extent of any release, fire, or explosion;
- o Assess any potential hazards to human health or the environment resulting from the emergency;
- o Report any potential threat to the area outside the facility to the appropriate local authorities and help determine if the area needs to be evacuated;
- o Take all reasonable measures to stop any releases, fires, or explosions, and ensure that they do not re-occur or spread;
- o Properly treat, store, or dispose of any wastes recovered from spills or releases generated during the emergency; and
- o Clean, repair, or replace any emergency equipment used or damaged by the emergency and ensure that it is in good working order before resuming operations.

Notification and Reports

The owner/operator must notify the regulatory agencies that the facility equipment has been properly cleaned, repaired, or replaced before resuming operations. The owner/operator must also prepare a written report which includes the following:

- o Name, address, and phone number of the facility and the owner/operator;
- o Date, time, and type of emergency;
- o The types and quantities of materials involved in the emergency;
- o The extent of any injuries;
- o An assessment of any hazards to human health or the environment due to the emergency;
- o The amount and disposition of any material recovered from releases during the emergency; and
- o Cause of the emergency and corrective actions taken to prevent reoccurrence of a similar incident.

The report must be submitted within 15 days of the emergency.

APPLICABILITY

NRDWL has been identified as a dangerous waste landfill in the Part A and Part B permit applications. Thus, NRDWL must satisfy the emergency requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The status of NRDWL relative to compliance with the emergency requirements was determined by reviewing the November 1985 Part B permit application and other documents provided by WHC, and through discussions with WHC staff.

CONCLUSIONS AND RECOMMENDATIONS

- o (Emergency Procedures) Update the discussion of emergency procedures to address actions specific to NRDWL for the existing site conditions. These procedures must be included in the contingency plan as part of the description of actions to be taken in the event of an emergency.

- o (Emergency Coordinator) Identify the emergency coordinator(s) and alternate(s). These persons must have the ability to coordinate responses during an emergency and have the authority to commit the necessary resources for emergency response.

- o (Emergency Coordinator) Although not specifically required by the regulations, develop a written description of the emergency coordinator's (and alternate's) ability to effectively coordinate responses and their authority to commit the necessary resources during an emergency response at NRDWL.

MANIFEST SYSTEM

WAC 173-303-370

REGULATIONS AND REQUIREMENTS

Dangerous waste facilities that receive waste from off-site are required to adhere to specific manifest practices. These manifest practices include signing procedures, recordkeeping, methods to handle discrepancies, and reasons and methods to refuse a shipment.

The Hanford Site rarely receives shipments of dangerous wastes from off-site. Thus, the manifest requirements are not typically applicable to the assessment of Hanford Site facilities. If, however, shipments of dangerous wastes are received from off-site for treatment or disposal, manifest requirements would apply and the facility personnel must:

- o Sign and date each copy of the manifest;
- o Note any discrepancy within the manifest information or between the manifest information and the shipment;
- o Provide the transporter a signed copy of the manifest;
- o Return a signed copy of the manifest to the generator; and
- o Retain a signed copy of the manifest in the facility operating file.

If a discrepancy is noted in the manifest, it must be immediately reconciled and clarified with the generator and/or transporter. A written report to the regulatory agency explaining the discrepancy is required if the conflict is not resolved within 15 days.

APPLICABILITY

NRDWL has been identified in the Part A and Part B permit applications as a dangerous waste landfill. In general, NRDWL only received wastes generated on the Hanford site. However, some of these wastes may have been shipped on right-of-ways to which the public had access (i.e., transport was not entirely "on-site"). Thus, in the past, NRDWL may have been subject to the requirements to comply with the manifest system requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the manifest system requirements was determined by reviewing the November 1985 Part B permit application, other documents provided by WHC, and request for disposal and manifest forms completed from 1975 through 1985, and through discussions with WHC personnel.

Records were maintained of requests for disposal and, later, dangerous waste manifests for shipments of dangerous and solid wastes to NRDWL. There is no way to confirm that every waste ever disposed of at NRDWL is represented by a disposal request and/or manifest form, but it is apparent that some system was in place to track waste shipments to NRDWL.

During our review, we found that some shipments may have originated at the 3000-Area and 300-Area. Since these shipments would not have been transported entirely "on-site", they were probably subject to the manifest requirements. If such shipments were received without manifests, then unmanifested waste reports should have been submitted to the regulatory agencies. At this time, it is not possible to reconstruct whether or not such unmanifested shipments may have been received at NRDWL. Currently, NRDWL does not accept dangerous waste for disposal. Therefore, no manifest requirements apply to NRDWL at this time.

CONCLUSIONS AND RECOMMENDATIONS

- o NRDWL is currently in compliance with applicable manifest system requirements.

FACILITY RECORDKEEPING

WAC 173-303-380

REGULATIONS AND REQUIREMENTS

Facility Recordkeeping Requirements

Dangerous waste TSD facilities must maintain complete and accurate records of all dangerous waste management activities that have occurred at the site. The record system should document all dangerous waste activities and allow easy reconstruction of past dangerous waste management practices. Particularly, the records should be such that an inspector from a regulatory agency can quickly determine whether the facility is operating in compliance with the dangerous waste regulations.

Required Records

Specific items that should be included in the facility records as a minimum are:

- o Records of the amount and nature of dangerous wastes treated, stored, or disposed at the facility including dates, source, final disposition, methods, etc.;
- o Records of where (what units within the facility) specific wastes have been, or are, treated, stored, or disposed;
- o Waste analysis results including laboratory test results, waste designation narratives, and any petitions regarding waste designation that have been submitted;

- o Contingency plan, emergency reports, and records associated with past emergency situations at the facility;
- o Inspection logs and records of follow up actions as well as results from inspections by outside inspectors;
- o Groundwater monitoring data and testing results; and
- o Closure and post-closure plans and cost estimates.

Waste Identification

Records which document the nature of the wastes and their management must describe the waste by its common name and by its dangerous waste number. The TSD management method codes must also be provided. For example, a waste corrosive liquid stored in a tank would be referred to as S02 (management code for storage in a tank) of a D002 (corrosive) waste.

Records Location and Access

The facility dangerous waste records should be maintained in a single location separate from the general facility records so that they can be easily found and reviewed. Although it is not required by the regulations, it is recommended that a duplicate of the dangerous waste records be maintained in a separate location in case the originals are destroyed. The records must be retained at least until closure of the facility.

The records should be maintained under the control of a select few individuals within the facility. Unauthorized personnel should not be allowed access to the dangerous waste records. The records must be available for inspection upon request by the regulatory agencies.

APPLICABILITY

NRDWL has been identified as a dangerous waste landfill on the Part A and Part B permit applications. Thus, the facility recordkeeping requirements apply to NRDWL.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the facility recordkeeping requirements was determined by reviewing the November 1985 Part B permit application, other documents supplied by WHC, inspection records kept by a former operation of NRDWL, and copies of request for disposal and manifest forms, and through discussions with WHC personnel.

Records for the operation of NRDWL are scattered at several locations, and are incomplete. There appears to be no document which constitutes the facility operating record or log. Procedures to be followed for recordkeeping were described in the November 1985 Part B permit application for NRDWL.

CONCLUSIONS AND RECOMMENDATIONS

- o (Operating Record) Develop an operating record for NRDWL, as much as existing records and data allow. To the extent possible, include all information that is required by regulation to be maintained in the facility operating record. In particular, address the following elements:
 - Records of the types and quantities of dangerous wastes disposed of at NRDWL. Include all information that was provided by the waste generators and any other information that might be available and could have been used to characterize the wastes received.

- The origin of these wastes, and the final disposition within the trenches. Develop maps or diagrams of the trenches, showing the location of specific waste shipments within each trench.
- Past inspection records, and any reports prepared on correcting deficiencies identified at NRDWL. Include a written report on the actions that were taken to remove wastes from Trench 19N during November 1985.
- Groundwater monitoring and analytical data, including supporting and background information used to develop the groundwater monitoring program.
- o (Record Location and Access) Maintain the operating record at one central location. Develop and implement procedures to ensure that all subsequent records will be channeled to and incorporated into the operating record (e.g., inspection reports, groundwater monitoring data). Although not specifically required by the regulations, maintain a duplicate copy of the facility operating record in case the original is destroyed or lost.

FACILITY REPORTING

WAC 173-303-390

REGULATIONS AND REQUIREMENTS

Reporting Requirements

The owner/operator of a dangerous waste management facility must submit reports on various activities at the facility. In particular the following reports are required:

- o Reports documenting unmanifested dangerous waste shipments;
- o Annual reports; and
- o Other additional reports.

Unmanifested Shipments

Facilities must report dangerous waste shipments received from off-site without an accompanying manifest. Since the Hanford Site rarely receives dangerous waste from off-site, the Hanford Site facilities do not typically have cause to submit this type of report.

Annual Reports

By March 1 of each year, dangerous waste TSD facilities must submit annual reports which document the dangerous waste activities at the facility for the previous calendar year. A particular form, Form 5, available from the regulatory agency, is to be used to develop the annual report. Specific

information relevant to the Hanford Site facilities that is required on the form includes:

- o The EPA/state identification number, name, and address of the facility;
- o The amount and nature of all dangerous wastes treated, stored, or disposed at the facility using the dangerous waste numbers;
- o The methods of treatment, storage, or disposal used at the facility using the dangerous waste handling codes; and
- o The most recent closure and post-closure cost estimates.

The Hanford Site submits a single annual report for the entire site. The report includes the TSD activities at each of the individual facilities. The individual facilities submit their annual information to the preparers of the overall Hanford Site annual report.

Other Reports

Other reports which may be required of the TSD facilities include reports documenting emergency situations as required in the emergency regulations and any other report that the regulatory agencies require on a case-by-case basis.

APPLICABILITY

NRDWL has been identified as a dangerous waste landfill on the Part A and Part B permit applications. Thus, the facility reporting requirements apply to NRDWL.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to the facility reporting requirements was determined by reviewing the November 1985 Part B permit application, the consolidated calendar year 1987 TSD annual report for the Hanford Site, and other documents provided by WHC, and through discussions with WHC staff.

Based on review of past manifests and waste disposal request forms, it is very likely that NRDWL received shipments of dangerous waste that were not transported entirely "on-site" (e.g., from the 300-Area and 3000-Area). If any of these shipments were not accompanied by a manifest, then an unmanifested waste report should have been prepared. We found no such reports in the documents we reviewed.

Annual reports are submitted on the consolidated Hanford Site report to Ecology. Although NRDWL is no longer receiving dangerous wastes for disposal, an annual report is still required. A report was included in the calendar year 1987 consolidated TSD annual report for the Hanford Site. NRDWL is required to submit quarterly groundwater monitoring reports, and documents provided for review indicate that this reporting is being performed as required.

CONCLUSIONS AND RECOMMENDATIONS

- o NRDWL is currently in compliance with the facility reporting requirements.

OTHER GENERAL REQUIREMENTS

WAC 173-303-395

REGULATIONS AND REQUIREMENTS

General requirements that apply to dangerous waste TSD facilities include:

- o Precautions for ignitable, reactive, or incompatible wastes;
- o Labeling for tanks and containers;
- o Relationships with other environmental laws and regulations;
- o Loading and unloading areas; and
- o Storage time limits for impoundments and piles.

Ignitable and Reactive Wastes

The special requirements that pertain to ignitable or reactive wastes apply to wastes which are designated as such by the dangerous waste designation procedures. Specifically, any wastes meeting the characteristics described in WAC 173-303-090(5) or -090(7) are subject to these requirements. The special requirements applicable to ignitable or reactive wastes are:

- o Ignitable or reactive wastes must be separated from sources of ignition such as open flames, sparks, heat, etc.;
- o "No Smoking" signs must be placed wherever ignitable or reactive wastes are being handled; and

- o A facility at which ignitable or reactive wastes are stored must be inspected annually by a person knowledgeable in the Uniform Fire Code.

In general ignitable, reactive, or incompatible wastes and materials must be handled in a manner that does not:

- o Generate extreme heat, pressure, fire, explosion, or violent reactions;
- o Produce uncontrolled gases or dusts that are toxic, flammable, explosive, or otherwise threaten human health or the environment; or
- o Damage the structural integrity of the facility or unit containing dangerous waste.

Satisfying the ignitable, reactive, or incompatible waste general requirements typically includes the facility accomplishing the following:

- o Identification of any ignitable, reactive, or incompatible wastes handled within the facility;
- o Identification of potential scenarios and methods that may result in incompatible wastes being combined;
- o Identification of sources of ignition or reaction within the facility;
- o An analysis of handling methods and units storing ignitable, reactive, or incompatible wastes relative to the above items; and
- o An analysis of treatment methods and units used to render the waste nonignitable, unreactive, or compatible.

Identification of Ignitable, Reactive, or Incompatible Wastes The identification of any ignitable, reactive, or incompatible wastes should be made an integral part of the waste analysis plan. The plan should consider the nature of the wastes at intermediary steps in any treatment processes to determine the ignitability, reactivity, or incompatibility. All materials which come into contact with the wastes should be considered to determine any potential for incompatibility between the wastes and the materials.

The dangerous waste activities and processes should be reviewed to identify ways that incompatible wastes may inadvertently be allowed to mix. These include containers that are supposedly empty but contain incompatible residue, and improperly decontaminating tools and equipment that may be or may have been contaminated with incompatible materials or wastes.

Sources of Ignition Sources of ignition may consist of other than open flames and heat. Equipment and tools used around ignitable or reactive wastes should be constructed of non-sparking materials. Ignitable wastes should be segregated from wastes which generate significant amounts of heat when exposed to common materials such as water or air. Sources of static electricity should be avoided, and tanks and containers should be grounded.

Annual Fire Inspection The purpose of the annual fire inspection (storage facilities only) is to confirm that the facility is designed and operated in conformance with the Uniform Fire Code. The regulations require that facilities that handle ignitable wastes be designed, constructed, and operated in general accordance with the Uniform Fire Code. The annual inspection must be performed by a professional person who is knowledgeable of the code. The local fire marshall or a facility engineer with a background in fire codes typically satisfy this criteria. The inspection should also include checking for practices which present potential for causing fires or explosions.

Tank and Container Labels

Tanks and containers must be marked with a label which notes the contents and the major risks associated with the wastes. Specific requirements are provided in the technological standards for each of the specific types of units.

Other Requirements

Other general requirements note how the dangerous waste regulations relate to other environmental laws. Other laws include those pertaining to the Clean Water Act, Toxic Substances Control Act, and Clean Air Act. Particular requirements for loading and unloading areas, and storage time limits for impoundments and piles are also presented. Finally, asbestos handling practices are also specifically described. Pursuant to 40 CFR Part 61 Subpart M, the procedures need to require either: signs indicating the presence of asbestos, and efforts at ensuring no visible emissions; or, daily cover of the asbestos.

APPLICABILITY

NRDWL has been identified on the Part A and Part B permit applications as a dangerous waste landfill. Thus, the other general requirements apply to NRDWL.

INFORMATION REVIEWED AND CURRENT STATUS

The status of NRDWL relative to compliance with the other general requirements was determined by reviewing the November 1985 Part B permit application and other documents provided by WHC staff, touring the NRDWL site, and through discussions with WHC personnel.

During its active operation, NRDWL received numerous ignitable, reactive, and potentially incompatible wastes. Until 1982, all wastes regardless of compatibility were disposed of in the same trench. Based on the information provided to us, no efforts were made to render wastes non-ignitable, or non-reactive prior to disposal. Efforts to segregate incompatible wastes, to the extent practiced, were based primarily on separating such wastes with soils within the trenches.

At this time, the principal risk of fires or reactions is associated with the possibility that wastes leaking from damaged or deteriorating containers within the trenches could intermingle or separately react to generate a fire, explosion, release of toxic gases, or other effect.

Existing draft asbestos waste disposal procedures, if followed, would not ensure compliance with WAC 173-303-395(3) (and subsequent exemption of the asbestos waste as dangerous wastes under WAC 173-303-071(3)(m)).

There are no containers (other than those disposed in the trenches) or tanks at NRDWL, so the labeling requirements do not apply. Since NRDWL does not receive or ship dangerous waste, there is no need for loading or unloading areas. NRDWL is not a waste pile or surface impoundment, so the storage time limits do not apply.

CONCLUSIONS AND RECOMMENDATIONS

- o (Asbestos Disposal) Ensure that asbestos disposal practices are in accordance with 40 CFR Part 61 Subpart M.

SITING STANDARDS

WAC 173-303-420

REGULATIONS AND REQUIREMENTS

Dangerous waste TSD facilities must meet specific standards regarding the physical location of the facility. The siting standards generally address minimum distances that TSD facilities must be from surface waters, public facilities, drinking water supplies, and other sensitive features. Facilities may not be located in earthquake sensitive areas or a floodplain.

The specific siting standards are currently being significantly revised and rewritten. The final form of the siting standards can not, at this time, be anticipated. Thus, it is not possible to assess facilities relative to the dangerous waste facility siting criteria.

APPLICABILITY

NRDWL has been identified in the Part A and Part B permit applications as a dangerous waste landfill. Thus, NRDWL may be subject to the future facility siting requirements.

PERFORMANCE STANDARDS

WAC 173-303-430

REGULATIONS AND REQUIREMENTS

The general performance standards allow the regulatory agencies to apply, on a case-by-case basis, standards that are more stringent than those specifically presented in the regulations. The general performance standards require that dangerous waste TSD facilities must be designed, constructed, and maintained in a manner that prevents degradation of human health or the environment. Specific areas of environmental damage noted in the regulations include:

- o Groundwater and surface water quality;
- o Air quality;
- o Slope and soil instability;
- o Flora and fauna;
- o Aesthetics of public or adjoining lands; and
- o Excessive noise.

The general performance standards also require that the facility treat or recycle waste material as much as economically feasible.

In essence, the general performance standards allow the regulatory agency to control the operations at a TSD facility even if no specific regulation (other than the general performance standards) is being violated. By citing the general performance standards and identifying a "threat to human health or the environment," the agency can undertake enforcement action to correct the source of the threat. Thus, the general performance standards

require, above all else, the owner/operator to identify facility-specific practices that, although not failing any specific TSD requirement, could present a threat to human health or the environment.

APPLICABILITY

NRDWL has been identified as a dangerous waste landfill in the Part A permit application. Thus, the general performance standards apply to NRDWL.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of NRDWL relative to compliance with the general performance standards was determined by reviewing the November 1985 Part B permit application and other documents provided by WHC, touring the NRDWL facility site, and through discussions with WHC personnel and former NRDWL operating staff.

NRDWL is currently inactive, although not formally closed, and is no longer actively receiving dangerous wastes. Most of the general performance standards are either no longer applicable, or are being adequately met. However, the general performance standard also apply to maintenance of existing TSD units even if they are no longer operating.

During this assessment we were unable to identify an individual that is directly responsible for the continued management and maintenance of the NRDWL facility. This has resulted in a lack of adequate surveillance at the facility. The regulatory agencies are likely to consider this a violation of the general performance standards.

During the facility tour we observed the exposed remnants of a fiber container in the sandy berm material adjacent to Trench 19N. We understand that the container was unearthed from trench 19N while trying to locate and remove EHW containers that had been buried in the trench. The fiber

container had been covered with soil but was apparently uncovered due to wind erosion. Exposed hazardous constituents could be carried outside the active unit by the wind. This could also occur in the two trenches that remain partially filled with soil (i.e., oxidizer and corrosive trenches).

CONCLUSIONS AND RECOMMENDATIONS

- o (Regulations and Requirements) Identify an individual that is responsible for the management and maintenance of the NRIWL to ensure that a situation does not arise that would cause degradation of human health or the environment.

- o (Regulations and Requirements) Ensure that adequate cover is maintained at all times to prevent wastes from being uncovered and to prevent wind from spreading wastes off-site.

BUFFER MONITORING ZONES

WAC 173-303-440

REGULATIONS AND REQUIREMENTS

Ignitable or Reactive Wastes

Dangerous waste TSD facilities that handle ignitable or reactive wastes are required to maintain specific minimum distances between the TSD units and public ways, streets, and property lines. In particular, facilities treating or storing ignitable wastes in tanks must meet buffer zones specified by the National Fire Protection Association Code. The specific reference for the NFPA requirements is discussed in the guidance for tanks.

Explosive Wastes

The regulations also present buffer zone requirements for dangerous wastes that are explosive. Treatment or storage of these wastes must be provided buffer zones equivalent to the Uniform Fire Code's American Table of Distances for Storage of Explosives, Table 77-201, 1979 edition.

New Land Based Facilities

The buffer zone requirements also present minimum distances that new land based TSD units should meet. The suggested minimum distance is based on the travel time of the wastes from the active portion of the facility to the nearest down gradient well or surface water used for drinking water. The travel times must be longer than 3 years for DW wastes and 10 years for EHW wastes. These buffer zone requirements will likely be changed by the new siting standards currently being developed.

APPLICABILITY

The NRDWL facility has been identified as a TSD landfill in the Part A permit application and has received ignitable and reactive wastes. Thus, the NRDWL facility must satisfy the buffer monitoring zone requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the NRDWL buffer zones was determined through observation of the facility.

The NRDWL facility is part of the Central Landfill located in the 600-Area of the Hanford Site. It is situated approximately 10 miles west of the Columbia River, the closest eastern boundary of the Hanford Site, and eight miles north of the Yakima River, the closest southern boundary of the Hanford Site. The next closest boundary of the Hanford Site is over 10 miles away.

CONCLUSIONS AND RECOMMENDATIONS

- o Based on information reviewed, the NRDWL is in compliance with the buffer zone requirements.

GROUNDWATER MONITORING
40 CFR PART 265 SUBPART F

REGULATIONS AND REQUIREMENTS

Dangerous waste TSD facilities with land based units must monitor the ground water in the area of the facility. The following are considered land based units:

- o Landfills;
- o Surface impoundments;
- o Waste piles; and
- o Land treatment units.

Furthermore, tanks or container storage areas which are unable to be "clean closed" (no contamination remaining after closure) must be closed as a landfill and also require a groundwater monitoring program.

The responsibility for the groundwater monitoring program at the Hanford Site is currently outside the authority of the operators of the individual facilities. Furthermore, the groundwater monitoring programs currently existing at the Hanford Site are not necessarily accomplished on an individual facility basis. Since this assessment project is directed toward the individual facilities and individual facility operators, an assessment of the facilities relative to the groundwater monitoring requirements is considered outside the scope of this project.

Elements of a Groundwater Monitoring Program

The groundwater monitoring program should include the following components:

- o Hydrological characterization of the area surrounding the facility;
- o Designing a ground water monitoring network;
- o Developing and documenting proper monitoring well installation and construction methods;
- o Accomplishing a field inspection program to ensure quality assurance and quality control; and
- o Developing methods to properly sample, test, and report the results of ground water quality monitoring.

APPLICABILITY

The NRDWL is a landfill that has received state and federal regulated hazardous wastes in the past. Thus, the groundwater monitoring requirements in 40 CFR Part 265 Subpart F apply to the facility.

CONCLUSIONS AND RECOMMENDATIONS

- o (Groundwater Monitoring) Although not specifically required by the regulations, gather all groundwater monitoring procedures, information, and data into a single document.

**CLOSURE AND POST-CLOSURE
40 CFR PART 265 SUBPART G**

REGULATIONS AND REQUIREMENTS

Closure Requirements

When dangerous waste TSD facilities are shut down or taken out of service, they must be properly "closed". Closures of TSD facilities are usually aimed at cleaning up all hazardous wastes at the facility and restoring the facility to an uncontaminated condition. When it is not possible to remove all dangerous wastes (referred to as "clean closure"), the owner/operator must undertake post-closure care of the facility site.

Performance Standard The regulations set forth a closure performance standard that applies to all facilities. This performance standard requires the owner/operator to close the facility in a manner that:

- o Minimizes the need for further maintenance;
- o Controls, minimizes, or eliminates releases of dangerous wastes after closure to protect public health and the environment; and
- o Complies with the specific closure requirements for individual waste management units (e.g., containers, tanks) set forth elsewhere in the regulations.

For listed and characteristic dangerous waste, clean closure must be to background environmental levels. For other types of dangerous wastes, the contamination must be removed to a certain level depending on the contamination and other factors.

The general intent behind the performance standard is to ensure, to the maximum extent possible when a facility is closed, that it will pose no or minimal risk to people and the environment after closure. Clean closure is considered by the regulatory agencies to be the best way to achieve this standard. Even when clean closure is not possible, the same general principle of no or minimal risk will usually guide the agencies' reviews and comments on a facility's closure activities. The focus in these cases will be on minimizing risk to people and the environment, and on setting up the post-closure care program such that the facility will continue to pose no or minimal risk during and after the post-closure care period.

Notifications The owner/operator must notify Ecology and EPA in writing at least 60 days before the date closure of a land disposal unit (surface impoundment, waste pile, land treatment, or landfill unit) is expected to begin. Forty-five days notice is required for all other closures.

Once a unit or facility has managed the last volume of dangerous waste, the owner/operator will have 90 days to treat, remove, or dispose on-site all dangerous wastes in accordance with the closure plan, and 180 days to complete the remaining closure activities specified in the closure plan. Longer time periods for disposition of dangerous wastes and completion of all other closure activities can be allowed if Ecology and EPA approve them. Within 60 days after closure is completed for a land disposal unit or for an entire facility, the owner/operator must submit a written Certification of Closure to Ecology and EPA.

Closure Plan Requirements

The device for accomplishing the closure requirements and performance standard is the closure plan. The owner/operator must prepare a written closure plan, keep the plan at the facility, and make the plan available to the regulatory agency for review upon request.

Closure plans are typically very detailed. A plan must address partial closure of units at the facility during its active life (e.g., completion and closure of one cell at a landfill) as well as final closure efforts for the entire facility. The closure plan must take into account all of the different types of waste management units and activities associated with those units when discussing the efforts that will be conducted to close. In addition, certain units (e.g., surface impoundments and tanks without secondary containment) must have contingency post closure plans in the event that intended clean closure cannot be performed.

The closure plan must describe, in detail, the steps necessary to achieve full closure at any point during the facility's active life. This will usually result in the closure plan assuming a worst case scenario, where full closure might have to be conducted with the maximum amount of dangerous waste present on-site, and when the greatest level of waste management activities is occurring.

The closure plan must include at least the following information:

- o A description of how each management unit at the facility will be closed to achieve the closure performance standard;
- o A description of how final closure of the facility will be conducted to achieve the closure performance standard;
- o An identification of the maximum extent of operations that will be ongoing at any given time during the facility's active life (worst case closure scenario);
- o An estimate of the maximum inventory (both types and volumes) of dangerous waste that will ever be on-site during the facility's active life (worst case closure scenario);
- o Descriptions of the methods for remediating the facility during partial and final closure, including at least:

- Removal, transport, storage (temporary and/or permanent), treatment, and disposal (off-site and on-site, where applicable) of dangerous wastes;
 - Identification of the type(s) of off-site waste receiving facilities, where applicable;
 - Steps needed to remove or decontaminate hazardous materials (wastes, constituents and residues) such as containment systems, equipment, structures and soil that may be contaminated;
 - Sampling and analysis that will be used to determine the extent of decontamination needed to meet the closure performance standard; and
 - Other activities that may be needed to satisfy the closure performance standard, such as groundwater monitoring, leachate collection and run-on/run-off control; and
- o A schedule for closure of each management unit (partial closure) and for final closure, including at least the total time needed to close each unit and for intervening activities so that closure progress can be tracked.

When preparing the closure plan contents described above, the owner/operator must account for, in detail, the activities that will actually need to be conducted to close the facility. Closure can be broken down into the following general activities:

Material Removal

- Sampling
- Analysis
- Remediation
- Facility Reclamation

Materials Staging and Disposition

- Containment
- Preparation for Disposal
- Transport
- Ensuring TSD Receipt

Closure Certification

- Records
- Reports

Specific discussions and guidance for each of these areas are provided in the following paragraphs.

Material Removal are all efforts oriented specifically to removing all dangerous wastes, waste constituents, and residues from the facility which are not intended to be left behind after closure. This must include decontamination measures, efforts to demonstrate clean closure, (except for landfill portions of the facility) and final condition of the facility upon closure.

Sampling activities must be directed to proving to Ecology and EPA that no hazardous materials (wastes, constituents, and residues) will remain after closure except those that are intended to be left in place.

Analysis represents all of the different tests that will be performed to demonstrate that hazardous materials are not left after closure, or to show that only those materials intended to remain in place are actually present after closure. It must also include chain of custody and QA/QC procedures.

Remediation provides a description of the efforts that will be undertaken to actually remove hazardous materials from the facility and remediate those areas where hazardous materials are not intended to remain. It will specify where and when analysis to verify clean closure will be performed.

It will also specify worker, equipment, and other decontamination procedures that will be followed.

Facility Reclamation should address all of the efforts that will be undertaken to return the facility to the appearance and uses of surrounding areas. For landfills, this will particularly address areas such as final covers and revegetation.

Materials Staging and Disposition should address all activities associated with containing and preparing, for final disposition, the wastes generated during closure. The methods of transport, likely disposal practices, estimated volumes of hazardous materials to be disposed of, and disposal verification should be addressed.

Containment should describe how the various forms of containment (e.g., container, tank) will be provided for different types of hazardous materials (including contaminated equipment) while closure is conducted. Dangerous waste containment procedures will likely need to be followed unless the wastes are shown to not be dangerous.

Preparation for Disposal will likely involve arranging for a disposal facility to receive the hazardous materials generated during closure. On-site disposal may be an option for landfills. If this is to be done, then the disposal methods should be accounted for.

Transport should provide a discussion of how off-site transport and disposal will actually be accomplished for materials that will be shipped off-site.

Ensuring TSD Receipt is primarily a matter of checking the dangerous waste manifests (or other documents if only on-site transport is involved) to confirm that the receiving TSD facility has accepted the hazardous materials.

Closure Certification will address those final activities necessary to document and demonstrate that the closure plan was followed and that the closure performance standard has been satisfied.

Records should be sufficient to technically support the certification of closure that must be submitted to the regulatory agencies.

Reports will essentially be all written communication with Ecology and EPA necessary to certify that closure has been performed in accordance with the approved closure plan and that the closure performance standard has been met.

The owner/operator must maintain the closure plan to ensure that it is current and accounts for the anticipated closure activities. The owner/operator must amend the closure plan when the facility operations change in a manner that affects the closure procedures, or when the closure schedule changes.

Post-Closure Requirements

A dangerous waste TSD facility generally must comply with the post-closure requirements if dangerous waste remain at that facility after closure at levels in excess of the clean closure criteria. Post-closure is essentially a period of time (typically 30 years) after closure during which certain caretaking activities must occur. The regulations are directed primarily toward land disposal units such as landfills where the dangerous wastes are anticipated to remain after the facility is shut down. However, certain surface impoundments, tanks, and waste piles also need to have contingent post-closure care even though it may be the intent to remove all wastes at closure.

Intent of Post-Closure The general intent of the post-closure care period is to allow for the detection of failures in the waste containment system after the facility has been closed. Such failures could be indicated by,

for example, excessive cap settling, groundwater contamination, or increasing leachate in the collection system. During the post-closure care period, the owner/operator must ensure that the facility's post-closure monitoring and maintenance activities are performed in a manner that will allow for detection of failures (and incipient failures) in the land disposal unit(s). Post-closure use of the property must not disturb the integrity of the waste containment system (e.g., liners, caps) or the monitoring systems.

Notification Requirements When a land disposal unit or facility is closed, two notices must be given. The first required notice is a notice, including a survey plat, to the local land authority, and to Ecology and EPA. The second required notice is a notice in the deed to the property. The basic purpose of these notices is to ensure that the presence of dangerous wastes at the site is identified to future users and purchasers of the property, and to prevent potential disturbance of the disposal units by future activities at the site.

Post-Closure Plan Requirements

The primary device for ensuring that the closed land disposal units are not disturbed, that monitoring is continued, and that maintenance of the closed unit(s) is timely and appropriate is the post-closure plan. The post-closure plan must be kept at the facility and be available for inspection by the regulatory agency. The plan must describe in detail the activities that will be conducted during the post-closure care period, and must address the specific post-closure requirements for each type of unit (e.g., waste pile, landfill).

For each disposal unit at a facility, the post-closure plan must identify the activities (and frequency of those activities) that will be conducted after closure of the unit. The plan's contents must include at least:

- o Descriptions of the planned groundwater monitoring activities and frequencies;
- o Descriptions of the planned maintenance activities and frequencies to ensure:
 - Integrity of the containment structures (e.g., cap);
 - Function of the facility monitoring equipment; and
- o The name, address, and phone number of the person or office to contact regarding the unit or facility during the post-closure care period.

The post-closure plan must be followed until the end of the post-closure care period. At the end of post-closure care for each disposal unit, the owner/operator must submit to Ecology and EPA a certification that post-closure care was performed in accordance with the post-closure plan.

When preparing the post-closure plan for a unit or facility, the owner/operator should consider all of the activities that are likely to be necessary to actually provide post-closure care for the unit or facility. The following activities should be considered and, as appropriate, addressed in the plan.

Monitoring and Inspection

- Leachate
- Groundwater
- Containment System Integrity

Maintenance and Corrective Measures

- Containment Systems
- Monitoring Systems

The following paragraphs provide brief discussions of the types of considerations to include when addressing these activities in the post-closure plan.

Monitoring and Inspection should identify all activities necessary to detect escape of dangerous wastes, constituents, or residues into the environment, and to detect any breakdown in the integrity of the security system (e.g., fences, signs), the containment systems, or the monitoring systems. Containment systems include liners, caps, covers, and in the case of land treatment units, the treatment zone itself.

Leachate may be generated during the post-closure care period. The leachate collection system (if one is present) should be inspected for excessive leachate generation, failure of the leachate removal system, or other related problems that could indicate loss of hazardous materials (wastes, constituents, or residues) to the environment.

Groundwater monitoring must be conducted during post-closure. The post-closure plan should be in compliance with the state and federal groundwater monitoring regulations. Inspection of the monitoring wells and locations should be conducted to ensure that they are maintained in good condition.

Containment System Integrity should be monitored and inspected to detect failures when they occur, and to identify signs of incipient failure so that preventive efforts can be undertaken prior to failure. Signs of potential failure to look for include: excessive settling of the cap; excessive erosion or loss of vegetation; damage to the cap from burrowing animals or plants; and, for land treatment, unexpected changes in the treatment zone.

Maintenance and Corrective Measures should specify the actions that will be taken in the event that the security systems are deteriorating, that the containment systems fail or may be failing, that the monitoring systems are

not operating correctly, or that monitoring indicates potential escape of hazardous materials to the environment.

Containment Systems should be corrected if signs of failure or incipient failure occur, and should be maintained to prevent failure from becoming a potential problem. For example, maintenance and corrective measure for the containment systems might include: maintaining the vegetative cover; maintaining any security systems in place; replacing soils lost through erosion; and even digging up an entire cell to replace a liner system that has failed.

Monitoring Systems should be corrected if problems occur that compromise their operation, and maintenance and corrective measures should be planned for in the event that the monitoring systems indicate release of hazardous materials to the environment. For example, consideration should be given to what actions will be taken if the leachate detection system fails, or the groundwater monitoring system detects dangerous constituents.

APPLICABILITY

The NRDWL facility has been identified as a dangerous waste landfill in the Part A permit application and DOE-RL intends to leave wastes in place at closure. Thus, the NRDWL facility must comply with the closure and post-closure requirements identified in 40 CFR Part 265 Subpart G.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the NRDWL with respect to closure and post-closure was determined through interviews with facility personnel and reviews of the closure and post-closure section (Section I) in the November 1985 Part B permit application, and the October 1986 Consent Agreement and Compliance Order.

The Consent Agreement acknowledges that the closure and post-closure plans contained in the 1985 Part B submittal are the plans that are currently in effect at the NRDWL facility. DOE-RL has agreed to respond to agency comments on these plans within 60 days of their receipt. Recent conversations with WHC personnel indicate that neither Ecology nor EPA have issued comments on the adequacy of these plans.

Site-specific closure and post-closure plans have been developed for the NRDWL facility and are contained in the 1985 Part B permit application. However, these plans do not contain the level of detail expected by the regulatory agencies. This is especially true with respect to how closure and post-closure will minimize the need for further maintenance and how releases to the environment will be controlled, minimized, or eliminated. In addition, the current closure and post-closure plans were developed with continued operation in mind. In that the NRDWL facility has ceased operation and is closing, the closure plan needs updating to reflect the current situation.

Due to past operational procedures at the facility it will be difficult to document that the closure performance standard will be met. Potential problem areas include:

- o Lack of adequate recordkeeping;
- o Commingling of incompatible wastes within the same trench;
- o Disposal of ignitable, reactive, and potentially explosive wastes in the trenches;
- o Disposal of unknown wastes in the trenches;
- o Disposal of liquids in the landfill (both containerized and uncontainerized);
- o Inadequate partial closure of full trenches;

- o Lack of liners, leachate collection, and leak detection; and
- o Disposal of EHW in some of the trenches.

Examples of required detail that is lacking from the existing closure and post-closure plan include:

- o Methods to stabilize the wastes to insure they will support the final cover including the methods of determining required bearing strength and a demonstration of the waste bearing strength;
- o Volumes/quantities/sizes of cover materials;
- o Specifications of the synthetic cover material including manufacturers specifications, chemical properties and resistance (physical and chemical), permeability, and the strength of the material. A justification for using the selected synthetic liner material is not provided based on these specifications and site-specific conditions;
- o A demonstration, using data, that the final cover slopes will not cause significant cover erosion;
- o The potential for settlement and subsidence, including immediate and long-term settlement, subsidence, or consolidation;
- o The post-closure plan mentions that three feet of subsidence is acceptable but does not demonstrate that this will not result in failure of the protective cover;
- o Detailed procedures for evaluating subsidence, vegetative cover, bench marks, burrowing animal intrusion, and erosion are not included in the post-closure plan;

- o Detailed procedures for ensuring that loading/unloading areas, staging areas, surrounding soils, and off-site soils have not been contaminated. This is to include procedures for remediating any contamination detected;
- o Methods and a schedule for implementing corrective action during the post-closure period are not adequately addressed (e.g., how will subsidences be grouted and how long will it take?);
- o Freeze/thaw effects are not adequately addressed using data; and
- o An estimate of the potential for clogging of the drainage layer, using data, needs to be included.

The post-closure groundwater monitoring plan was not included in the Part B submittal because of the pending waiver request. The waiver denial by Ecology requires that this section be addressed.

CONCLUSIONS AND RECOMMENDATIONS

- o (Performance Standard) Include detailed descriptions and methods for ensuring that closure activities will meet the performance standards.
- o (Closure Plan Requirements) Update the closure plan to reflect the current situation (i.e., closure versus continued operation).
- o (Closure Plan Requirements) Provide detailed procedures and a schedule regarding how and when specific closure activities will be accomplished, once the closure plan is formally approved by Ecology.
- o (Post-Closure Plan Requirements) Provide detailed procedures and a schedule regarding how and when post-closure care activities will occur.

- o (Post-Closure Plan Requirements) Provide a section on monitoring systems, including post-closure groundwater monitoring, detailing how and when each system will be used, corrective actions if they fail, and corrective actions if releases into the environment are detected.

FINANCIAL REQUIREMENTS
40 CFR PART 265 SUBPART H

REGULATIONS AND REQUIREMENTS

Dangerous waste TSD facility owners/operators must demonstrate that they have sufficient financial assets to ensure that the facility can be properly closed and, if necessary, and properly maintained during post-closure. The documentation required can include certificates of insurance, proof of self insurance, or sufficient liquid financial assets. In addition, owners/operators must have insurance for their facilities to cover accidents, releases, and other incidents.

The regulations specifically exclude federally owned facilities from the financial requirements. It has been assumed that governmental agencies have sufficient financial ability to properly close their TSD facilities, pay for post-closure care where necessary, and cover costs arising from unexpected incidents. Since the Hanford Site is a federally owned facility, it is exempt from the TSD financial requirements.

CONCLUSIONS AND RECOMMENDATIONS

- o Although not a requirement of the regulations, we recommend that a closure and post-closure cost estimate be calculated for NRDWL to facilitate federal budget planning and fund acquisition. In addition, current state regulations require operators under contract to the federal government to comply with the financial requirements under final status.

LANDFILLS
40 CFR PART 265 SUBPART N

REGULATIONS AND REQUIREMENTS

Owners/operators of interim status facilities at which dangerous wastes are disposed of in landfills must comply with state and federal landfill requirements. Landfills include not only the typical burial trench or crib, but also include surface impoundments, waste piles, and tanks if they are closed with dangerous wastes left in place.

Landfills must be managed in compliance with numerous requirements, including:

- o Design standards;
- o Operational controls;
- o Ground water monitoring;
- o Surveying standards;
- o Closure and post-closure care; and
- o Certain restrictions on the types of wastes that can be landfilled.

Design Standards

Landfills that receive wastes after May 8, 1985, and add new units, or replace or expand existing units must install certain design features in those units. These design features are:

- o At least two liners in those units; and

- o Leachate collection systems above and between the liners.

The Hanford site does not currently qualify for any exceptions to these standards.

Operational Controls

Owners/operators of landfills must protect the facility against run-on, contain run-off from the facility, and prevent wind dispersal of hazardous wastes from the landfill.

Run-on Systems Run-on systems must be designed, constructed, operated, and maintained to prevent flow of run-on onto the active portion of the landfill during peak discharge from at least a 25-year storm. Typically, this will involve the use of diversion berms, drainage ditches and other devices to ensure that precipitation does not run onto the landfill active portion and cause excess water in the disposal area or damage to the unit.

Runoff Systems Runoff systems must be designed, constructed, operated, and maintained to collect and control the volume of water resulting from a 24-hour, 25-year storm event. State regulations require that such runoff be considered a dangerous waste unless it did not contact wastes, or the runoff is being managed through some permitted wastewater treatment system (e.g., NPDES treatment plant).

Systems and devices used to collect and hold run-on and runoff must be managed as soon as possible after storms to ensure that their design capacities are maintained. Sumps, tanks, basins or other devices in which run-on or runoff have been collected must not be emptied until it has been determined if the liquids are dangerous waste or not. If they are dangerous, then they must be managed appropriately. Valves for draining these systems should be kept closed until such time as a determination is made on proper management.

Wind Dispersion Control If the landfill contains dangerous waste that could be dispersed by the wind, then the owner/operator must control such dispersal. Control measures may include the use of daily cover materials, such as riprap or clean fill, or the use of dust suppressive materials, such as chemical binders. Regular inspection of the landfill should be performed to ensure that proper measures are being followed to prevent wind dispersal.

Groundwater Monitoring

Owners/operators of landfills are required to install and operate a groundwater monitoring system. The system must be designed, installed, and maintained in a manner that will allow detection of hazardous constituents migrating from the landfill into the groundwater. These requirements are covered in more detail in a separate section of this report.

Surveying Standards

The owner/operator must periodically survey the landfill and maintain in the facility operating record:

- o The exact location and dimensions, including depth, of each cell in the landfill relative to permanently surveyed benchmarks. This information must be recorded on a map.

- o The contents of each cell in the landfill and the approximate location of the dangerous wastes in each cell.

Closure and Post-closure Care. Whenever a landfill or cell is closed, the owner/operator must design, construct and install a final landfill (or cell) cover that:

- o Has lower permeability than underlying liners or natural subsoils;

- o Minimizes migration of liquids through the unit;
- o Drains well and requires minimum maintenance; and
- o Is not adversely affected by settling, subsidence, erosion, or abrasion.

Post-closure care of the landfill must be provided and must include certain maintenance and monitoring, including:

- o Maintenance of the final cover. Inspection and repairs to ensure the cover's integrity should be conducted on a regular basis. Items to watch for include erosion damage, burrowing animals, deep rooting plants, run-on/runoff controls, settling, and subsidence.
- o Monitoring groundwater and maintenance of the groundwater monitoring system.
- o Protection and maintenance of surveyed benchmarks.

Special Dangerous Waste Requirements

Restrictions apply to the landfilling of certain dangerous wastes. Some wastes are prohibited from landfills while the landfilling of others must be conducted according to special procedures.

Ignitable, reactive, and incompatible wastes cannot be placed in landfills unless they have been treated, rendered or mixed so that the resulting waste is no longer ignitable, reactive, or incompatible. Such treatment or mixing must be conducted in a manner that complies with the special requirements of WAC 173-303-395.

As of May 8, 1985, bulk or non-containerized liquid wastes and wastes containing free liquids cannot be placed in a landfill. These wastes must

be chemically stabilized or solidified prior to disposal. Use of absorbents to absorb the liquids is not an acceptable alternative to chemical stabilization/solidification. As of November 8, 1985, placement of non-hazardous liquids in a landfill is prohibited except under very narrow circumstances.

Containers holding free liquids may only be landfilled if:

- o All free liquids have been eliminated (e.g., decanted, chemically stabilized, or absorbed).
- o The container is small (e.g., an ampule) or is designed to hold free liquids for reasons other than storage (e.g., a battery).
- o The container is a labpack that meets certain conditions.

Finally, state and federal regulations prohibit landfilling of certain dangerous wastes, such as solvent, dioxin, organic, and leachable inorganic wastes.

APPLICABILITY

The NRDWL facility was identified as a landfill in the Part A permit application. Thus, the NRDWL facility must comply with applicable landfill requirements presented in 40 CFR Part 265 Subpart N.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the NRDWL facility with respect to the landfill requirements was determined through interviews with former facility operating personnel and WHC staff, a site tour, and review of the facility file.

While active, the NRDWL facility was not operated in accordance with the RCRA and state landfill requirements. Examples of these operational non-compliance items are noted throughout this document. However, we are not tasked with documenting past operational practices nor is it constructive to dwell on them. The NRDWL facility has not actively received waste since May 1985. The intent of this section is to assess the NRDWL facility against the landfill requirements applicable to an inactive facility that has not completed closure in accordance with an approved closure plan.

Current activities at the NRDWL facility include weekly inspections and quarterly groundwater monitoring. All other activities at the site are on hold pending agency review of the closure plan.

We were unable to identify an operator that is responsible for the inactive "operation", care, and maintenance of the NRDWL facility. Inspections are done by Central Landfill personnel but they make it clear that it is not their responsibility.

During the site tour it was evident that dispersal of the sandy soil cover by the wind is a problem. One exposed fiber container with unknown contents was observed in the backfill material next to Trench 19N. Facility personnel indicated that the container was covered with soil at one time but that the wind had uncovered it.

Cells that were closed in the past were not closed with a RCRA cover in accordance with an approved partial closure plan. The filled trenches were backfilled with sandy soils and some vegetation may have been applied to the cover, but we were unable to verify this activity.

Available documentation does not provide the approximate location of specific wastes within each cell. Due to inadequate recordkeeping practices in the past this level of documentation may be difficult to produce.

CONCLUSIONS AND RECOMMENDATIONS

- o (Regulations and Requirements) Designate a qualified individual(s) to be responsible for the operation and maintenance of the NRDWL facility.
- o (Operational Controls) Maintain cover on all dangerous waste and provide a mechanism (e.g., vegetation or chemical binders) to prevent exposure of dangerous wastes due to wind erosion.
- o (Surveying Standards) To the extent possible develop a map or other device that gives the approximate location of dangerous wastes in each cell.



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