

May 1, 2001

Phillip Mazor  
Remedial Project Manager  
Waste Management, Inc.  
700 56<sup>th</sup> Avenue  
Zeeland, MI 49464

SUBJECT: REPORT OF MEETING HELD TO DISCUSS DECOMMISSIONING PLAN  
PREPARATION FOR THE SCA SERVICES (HARTLEY & HARTLEY LANDFILL)  
SITE, BAY COUNTY, MI

Dear Mr. Mazor:

On February 23, 2001, U.S. Nuclear Regulatory Commission staff met with representatives of the Waste Management, Inc. to discuss the key elements of the decommissioning plan to be developed for the SCA Services (Hartley & Hartley Landfill) Site Decommissioning Management Plan (SDMP) site in Bay County, MI. A report of this meeting is enclosed.

Please note that the checklist attached to the meeting report was developed for restricted release of the site. If you have any questions concerning this report, please contact me at (301) 415-6694.

Sincerely,

**/RA/**

M. (Sam) Nalluswami, Project Manager  
Facilities Decommissioning Section  
Decommissioning Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: Meeting Report

cc: w/o encl: T. Bertram, MDEQ  
D. Minnar, MDEQ  
D. Gruben, MDNR

Docket No.: 40-9022  
License No.: SUC-1565

## MEETING REPORT

DATE: February 23, 2001

TIME: 8:30 a.m. - 1:30 p.m.

PLACE: U. S. Nuclear Regulatory Commission (NRC)  
11545 Rockville Pike  
Rockville, MD 20852  
Room T-7A1

PURPOSE: To discuss key elements of the decommissioning plan (DP) to be developed for the SCA Services (Hartley & Hartley Landfill) Site Decommissioning Management Plan (SDMP) site, in Bay County, Michigan.

ATTENDEES: See Attachment A.

### BACKGROUND:

The SCA Services SDMP site, located in Bay County, Michigan, is part of the former Hartley & Hartley Landfill. Part of the 235 acre landfill site is contaminated with thorium that came from magnesium-thorium alloy production at a defunct former licensee. The contaminated soil is covered with a clay cap and encapsulated with slurry walls. The current NRC license (SUC-1565) is for possession only. In accordance with condition 11A of the license, the DP was due to be submitted to the Nuclear Regulatory Commission (NRC) no later than October 1, 2000.

### DISCUSSION

The NRC staff explained the acceptance and review processes related to the DP. The processes for both unrestricted release and restricted release were described by the NRC staff.

### Site Information

SCA Services site is surrounded by State of Michigan property. A consent decree regarding completion of remedial investigation and remedial action activities at the Hartley and Hartley site will be signed by the State of Michigan in about 30 days. NRC will contact the State of Michigan during Phase I review of the DP to obtain State input/comment on the Draft Environmental Impact Statement (DEIS). The licensee is proposing to submit the DP by October 1, 2001. The preparation of the DEIS will be started while the feasibility study is underway (i.e., both the DEIS and the feasibility study will be developed simultaneously). According to the licensee, it will take approximately 2 months to complete the remedial investigation (RI). The radioactive materials at the site include thorium-232, thorium-228, thorium-230 and low levels of uranium. Based on Oak Ridge Associated Universities' (ORAU) July 1985 revised draft report entitled **Radiological Survey of the SCA Chemical Services, Inc. Landfill Site, Bay City, Michigan, by L. L. Sowell**, the concentration of uranium-238 is 2.5 pCi/g, radium-226 is 0.6 pCi/g, thorium-232 is 18 pCi/g, and thorium-228 is 18 pCi/g. A

ENCLOSURE

preliminary dose modeling, conducted by the licensee, is based on the data presented in the ORAU's 1985 report.

### Dose Modeling

SCA Services staff stated that it plans to submit a DP for restricted release because the results of a preliminary dose evaluation using default parameters and scenarios do not support unrestricted release criteria. NRC staff stated that the latest version of RESRAD should be sufficient and cautioned the licensee about the use of default physical parameters taken from NUREG/CR-5512 (Residual Radioactive Contamination from Decommissioning). SCA Services was referred to Appendix C of the NMSS Decommissioning Standard Review Plan (SRP), (NUREG-1727), which provides the technical basis for dose modeling. NRC staff stated that a dose limit of 500 mrem/year is the cap for restricted release of the site. A preliminary dose evaluation conducted by the licensee indicates a dose rate of slightly over 100 mrem/year.

### License Amendment

A license amendment request for the installation and operation of a pump and treat system for the leachate needs to be considered if such system is to be installed at the site. According to the licensee, the schedule to submit the DP needs to be coordinated with the State of Michigan. The licensee was requested to send a letter outlining State's remedial investigation processes and concerns involved in preparing and submitting the DP by October 1, 2001. However, the current extension request to submit the DP by October 1, 2001, is still valid. (Note: This request was withdrawn in a letter to the NRC dated April 12, 2001.)

### Content of the DP

The meeting concluded with a detailed discussion of Appendix A (Acceptance Review Checklist) to NUREG-1727. An annotated checklist was developed. The checklist was prepared under the assumption of restricted release. A copy of the annotated checklist is included as Attachment B. This checklist will be used by the NRC staff to conduct the acceptance review of the submitted DP.

### ACTIONS

SCA will send a letter justifying additional time needed beyond October 1, 2001, to submit the DP. SCA was encouraged to submit the request as soon as possible. (Note: On April 12, 2001, SCA submitted this request.)

### ATTACHMENTS:

- A. Meeting Attendees
- B. Acceptance Review Checklist

## MEETING ATTENDEES

Topic: Decommissioning Plan Preparation for the SCA Services Site

Date: February 23, 2001

NAME	AFFILIATION	PHONE NUMBER
Bob Nelson	NRC/NMSS/DWM	301-415-7298
Mark Thaggard	NRC/NMSS/EPAB	301-415-6718
Edward Kulzer	NRC/RIII	630-829-9875
Phil Mazor	SCA Services/Waste Mgmt	616-688-5777
Jim Forney	SCA Services/Waste Mgmt	517-381-0177
Katie Moertl	Quarles & Brady/Waste Mgt	414-277-5577
Sam Nalluswami	NRC/NMSS/DWM	301-415-6694
Jean-Claude Dehmel	NRC/NMSS/DWM	301-415-6619
Matt Blevins	NRC/NMSS/DWM	301-415-7684
Robert Johnson	NRC/NMSS/DWM	301-415-7282
Brian Smith	NRC/NMSS/IMNS	301-415-5723
Dave Peterson	Duke Engineering/WMI	505-246-1600
Corey McDaniel	EOP Group/Dow Consultant	202-833-8940
Eric Pogue	NRC/DWM/DCB	301-415-6064

**Attachment A**

## **APPENDIX A**

### **ACCEPTANCE REVIEW CHECKLIST**

**Reference: NMSS Decommissioning Standard Review Plan, NUREG-1727**

***Attachment B***

**NOTE:**

**NA = Not Applicable**

**The changes and additional items are shown in *italics***

## ACCEPTANCE REVIEW CHECKLIST

**LICENSEE NAME:** SCA SERVICES (HARTLEY & HARTLEY LANDFILL) SITE

**LICENSE NUMBER:** SUC-1565 **DOCKET NUMBER:** 040-09022

**FACILITY:** KAWKAWLIN, BAY COUNTY, MICHIGAN

**DECOMMISSIONING PLAN DATED/VERSION:** Due October 1, 2001

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Staff will review the decommissioning plan without assessing the technical accuracy or completeness of the information contained therein. The adequacy of this information will be assessed during the detailed technical review.

In most cases, licensees will not be required to submit all of the information in this checklist. Rather, the staff should use this checklist as a basis for developing a site specific checklist for the individual facility. Staff should use the checklist first during the initial meetings with licensees to discuss the scope and content of the decommissioning plan for each site. The staff, in conjunction with the licensee, should determine what information should be submitted for the site, based on the uses of radioactive material at the site, the extent and types of radioactive material contamination, the manner in which the licensee intends to decommissioning the facility and other factors affecting the potential for increased risk to the public or workers from the decommissioning operations. This information should be documented by modifying the acceptance review checklist. Copies of the modified checklist should be provided to the licensee and maintained by the Project Manager. When the decommissioning plan is submitted the Project Manager should use the modified checklist to perform the acceptance review.

Staff will review the decommissioning plan table of contents and the individual decommissioning plan chapters or sections to ensure that the licensee or responsible party has included this information in the decommissioning plan. In addition, the staff may use the guidance regarding formatting and suggested length of individual as a guide in determining if the level of detail of the information appears to be adequate for the staff to perform a detailed technical review. Staff should recognize that failure to supply an item included in the checklist does not necessarily constitute grounds for rejecting the decommissioning plan. Rather, the staff should determine if the licensee can supply the information in a timely manner and if so communicate the additional information needs to the licensee in a deficiency letter. Only in those cases where a detailed technical review cannot begin without the required information should the DP be rejected. For example, if the licensee is requesting restricted release and has not obtained the appropriate input from community interests who could be affected by the decommissioning, the decommissioning plan should be rejected during the acceptance review. Questions regarding whether to reject a decommissioning plan based on the results of the acceptance review should be forwarded to the Decommissioning Branch, Division of Waste Management.

## **EXECUTIVE SUMMARY**

- \_\_\_ the name and address of the licensee or owner of the site;
- \_\_\_ the location and address of the site;
- \_\_\_ a brief description of the site and immediate environs;
- \_\_\_ a summary of the licensed activities that occurred at the site
- \_\_\_ the nature and extent of contamination at the site;
- \_\_\_ the decommissioning objective proposed by the licensee (i.e., restricted or unrestricted use);
- \_\_\_ the DCGLs for the site, the corresponding doses from these DCGLs and the method that was used to determine the DCGLs;
- \_\_\_ a summary of the ALARA evaluations performed to support the decommissioning;
- \_\_\_ if the licensee or responsible party requests license termination under restricted conditions, the restrictions the licensee intends to use to limit doses as required in 10 CFR Part 20.1403 or 20.1404 and a summary of institutional controls, financial assurance.
- \_\_\_ if the licensee requests license termination under restricted conditions or using alternate criteria a summary of the public participation activities undertaken by the licensee to comply with 10 CFR Part 20.1403(d) or 20.1404(a)(4);
- \_\_\_ the proposed initiation and completion dates of decommissioning;
- \_\_\_ any post-remediation activities (such as groundwater monitoring) that the licensee proposes to undertake prior to requesting license termination; and
- \_\_\_ a statement that the licensee is requesting that its license be amended to incorporate the decommissioning plan

## **FACILITY OPERATING HISTORY**

### **LICENSE NUMBER/STATUS/ AUTHORIZED ACTIVITIES**

- \_\_\_ the radionuclides and maximum activities of radionuclides authorized ~~and used~~ under the current *possession only* license;
- \_\_\_ the chemical forms of the radionuclides authorized ~~and used~~ under the current *possession only* license;
- \_\_\_ a detailed description of how the radionuclides are currently being ~~monitored~~ *used* at the site;
- \_\_\_ the location(s) of ~~disposal use and storage~~ of the various radionuclides authorized under current *possession only* licenses; and
- \_\_\_ a scale drawing or map of the building or site and environs showing ~~the current~~ *the* locations of radionuclide ~~use~~ at the site;
- \_\_\_ a list of amendments to the license ~~since the last license renewal~~.

### **LICENSE HISTORY**

- \_\_\_ the radionuclides and maximum activities of radionuclides authorized ~~and used~~ under all previous *and current* licenses *and activities conducted by prior site owners/operators*;
- \_\_\_ the chemical forms of the radionuclides authorized and used under all previous licenses;



- \_\_\_ a detailed description of how the radionuclides were used at the site;
- \_\_\_ the location(s) of use and storage of the various radionuclides authorized under all previous licenses
- \_\_\_ a scale drawing or map of the site, facilities and environs showing previous locations of radionuclide use at the site

## **PREVIOUS DECOMMISSIONING ACTIVITIES**

- \_\_\_ a list or summary of areas at the site that were remediated in the past *including slurry wall, etc. for containment*,
- \_\_\_ a summary of the types, forms, activities and concentrations of radionuclides that were present in previously remediated areas;
- \_\_\_ the activities that caused the areas to become contaminated;
- \_\_\_ the procedures used to remediate the areas and the disposition of radioactive material generated during the remediation;
- \_\_\_ a summary of the results of the final radiological evaluation of the previously remediated area
- \_\_\_ a scale drawing or map of the site, facilities and environs showing the locations of previous remedial activity

## **SPILLS**

- \_\_\_ a summary of areas at the site where spills (or uncontrolled releases) of radioactive material occurred in the past *and material located in areas other than disposal cells*;
- \_\_\_ the types, forms, activities and concentrations of radionuclides involved in the spill or uncontrolled release, and;
- \_\_\_ a scale drawing or map of the site, facilities and environs showing the locations of spills *and material located in areas other than disposal cells*.

## **PRIOR ON-SITE BURIALS**

- \_\_\_ a summary of areas at the site where radioactive material has been buried in the past;
- \_\_\_ the types, forms, activities and concentrations of waste and radionuclides in the former burial, and;
- \_\_\_ a scale drawing or map of the site, facilities and environs showing the locations of former burials.

## **FACILITY DESCRIPTION**

### **SITE LOCATION AND DESCRIPTION**

- \_\_\_ the size of the site in acres or square meters;
- \_\_\_ the State and county in which the site is located;
- \_\_\_ the names and distances to nearby communities, towns and cities;
- \_\_\_ a description of the contours and features of the site;
- \_\_\_ the elevation of the site;

- \_\_\_ a description of property surrounding the site; including the location of all off-site wells used by nearby communities or individuals (*about one mile radius*);
- \_\_\_ the location of the site relative to prominent features such as rivers and lakes.
- \_\_\_ a map that shows the detailed topography of the site using a contour interval
- \_\_\_ the location of the nearest residences and all significant facilities or activities near the site
- \_\_\_ a description of the facilities (buildings, parking lots, fixed equipment, etc.) at the site

## **POPULATION DISTRIBUTION**

- \_\_\_ a summary of the current population in and around the site, by compass vectors
- \_\_\_ a summary of the projected population in and around the site by compass vectors
- \_\_\_ a list of minority populations by compass vectors
- \_\_\_ demographic data by census block group to identify minority or low-income populations

## **CURRENT/FUTURE LAND USE**

- \_\_\_ a description of the current land uses in and around the site;
- \_\_\_ a summary of anticipated land uses.

## **METROLOGY AND CLIMATOLOGY**

- \_\_\_ a description of the general climate of the region
- \_\_\_ seasonal and annual frequencies of severe weather phenomena
- \_\_\_ weather-related radionuclide transmission parameters
- \_\_\_ routine weather-related site deterioration parameters
- \_\_\_ extreme weather-related site deterioration parameters
- \_\_\_ a description of the local (site) meteorology
- \_\_\_ the National Ambient Air Quality Standards Category of the area in which the facility is located and, if the facility is not in a Category 1 zone, the closest and first downwind Category 1 Zone.

## **GEOLOGY AND SEISMOLOGY**

- \_\_\_ a detailed description of the geologic characteristics of the site and the region around the site
- \_\_\_ a discussion of the tectonic history of the region, regional geomorphology, physiography, stratigraphy, and geochronology
- \_\_\_ a regional tectonic map showing the site location and its proximity to tectonic structures
- \_\_\_ a description of the structural geology of the region and its relationship to the site geologic structure
- \_\_\_ a description of any crustal tilting, subsidence, karst terrain, landsliding, and erosion.
- \_\_\_ a description of the surface and subsurface geologic characteristics of the site and its vicinity
- \_\_\_ a description of the geomorphology of the site

- \_\_\_ a description of the location, attitude, and geometry of all known or inferred faults in the site and vicinity
- \_\_\_ a discussion of the nature and rates of deformation
- \_\_\_ a description of any man-made geologic features such as mines or quarries.
- \_\_\_ a description of the seismicity of the site and region
- \_\_\_ a complete list of all historical earthquakes that have a magnitude of 3 or more or a modified Mercalli intensity of IV or more within 200 miles of the site.

## **SURFACE WATER HYDROLOGY**

- \_\_\_ a description of site drainage and surrounding watershed fluvial features
- \_\_\_ water resource data including maps, hydrographs, and stream records from other agencies (e.g., U.S. Geological Survey and U.S. Army Corps of Engineers).
- \_\_\_ topographic maps of the site that show natural drainages and man-made features
- \_\_\_ a description of the surface water bodies at the site and surrounding areas
- \_\_\_ a description of existing and proposed water control structures and diversions (both upstream and downstream that may influence the site).
- \_\_\_ flow-duration data that indicate minimum, maximum, and average historical observations for surface water bodies in the site areas
- \_\_\_ aerial photography and maps of the site and adjacent drainage areas identifying features such as drainage areas, surface gradients, and areas of flooding.
- \_\_\_ an inventory of all existing and planned surface water users, whose intakes could be adversely affected by migration of radionuclides from the site
- \_\_\_ topographic and/or aerial photographs that delineate the 100-year floodplain at the site
- \_\_\_ a description of any man-made changes to the surface water hydrologic system that may influence the potential for flooding at the site

## **GROUNDWATER HYDROLOGY**

- \_\_\_ a description of the saturated zone
- \_\_\_ descriptions of monitoring wells
- \_\_\_ physical parameters
- \_\_\_ a description of groundwater flow directions and velocities
- \_\_\_ a description of the unsaturated zone
- \_\_\_ information on all monitor stations including location and depth
- \_\_\_ a description of physical parameters
- \_\_\_ a description of the numerical analyses techniques used to characterize the unsaturated and saturated zones
- \_\_\_ the distribution coefficients of the radionuclides of interest at the site.
- \_\_\_ *typical geologic cross-sections showing groundwater elevations and flow direction(s)*

## **NATURAL RESOURCES**

- \_\_\_ a description of the natural resources occurring at or near the site
- \_\_\_ a description of potable, agricultural, or industrial ground or surface waters

- \_\_\_ a description of economic, marginally economic, or subeconomic known or identified natural resources as defined in U.S. Geological Survey Circular 831.
- \_\_\_ mineral, fuel, and hydrocarbon resources near and surrounding the site which, if exploited, would effect the licensee' or responsible party's dose estimates

## **ECOLOGY/ENDANGERED SPECIES**

- \_\_\_ a list of commercially or recreationally important invertebrate species known to occur within 5 km of the site
- \_\_\_ a list of all commercially important floral species known to occur within 5 km of the site
- \_\_\_ a list of commercially or recreationally important vertebrate animals known to occur within 5 km of the site.
- \_\_\_ estimates of the relative abundance of both commercially and recreationally important game and nongame vertebrates
- \_\_\_ a list of all endangered species at or within 5 km of the site

## **RADIOLOGICAL STATUS OF FACILITY**

### **CONTAMINATED STRUCTURES**

- \_\_\_ a list or description of all structures at the facility where licensed activities occurred that contain residual radioactive material in excess of site background levels;
- \_\_\_ a summary of the structures and locations at the facility that the licensee or responsible party has concluded to have not been *radiologically* impacted by licensed operations and the rationale for the conclusion;
- \_\_\_ a list or description of each room or work area within each of these structures;
- \_\_\_ a summary of the background levels used during scoping or characterization surveys;
- \_\_\_ a summary of the locations of contamination in each room or work area
- \_\_\_ a summary of the radionuclides present at each location, the maximum and average radionulide activities in dpm/100cm<sup>2</sup>, and, if multiple radionuclides are present, the radionuclide ratios;
- \_\_\_ the mode of contamination for each surface (i.e., whether the radioactive material is present only on the surface of the material or if it has penetrated the material);
- \_\_\_ the maximum and average radiation levels in mrem/hr in each room or work area; and
- \_\_\_ a scale drawing or map of the rooms or work areas showing the locations of radionuclide material contamination.

### **CONTAMINATED SYSTEMS AND EQUIPMENT**

- \_\_\_ a list or description and the location of all systems or equipment *including leachate system* at the facility that contain residual radioactive material in excess of site background levels;
- \_\_\_ a summary of the radionuclides present in each systems or on the equipment at each location, the maximum and average radionulide activities in dpm/100cm<sup>2</sup>, and, if multiple radionuclides are present, the radionuclide ratios;

- \_\_\_ the maximum and average radiation levels in mrem/hr at the surface of each piece of equipment;
- \_\_\_ a summary of the background levels used during scoping or characterization surveys; and,
- \_\_\_ a scale drawing or map of the rooms or work areas showing the locations of the contaminated systems or equipment;

## **SURFACE SOIL CONTAMINATION**

- \_\_\_ a list or description of all locations at the facility where surface soil contains residual radioactive material in excess of site background levels;
- \_\_\_ a summary of the background levels used during scoping or characterization surveys
- \_\_\_ a summary of the radionuclides present at each location, the maximum and average radionuclide activities in pCi/gm, and, if multiple radionuclides are present, the radionuclide ratios;
- \_\_\_ the maximum and average radiation levels in mrem/hr at each location; and
- \_\_\_ a scale drawing or map of the site showing the locations of radionuclide material contamination in surface soil;

## **SUBSURFACE SOIL CONTAMINATION**

- \_\_\_ a list or description of all locations at the facility where subsurface soil contains residual radioactive material in excess of site background levels;
- \_\_\_ a summary of the background levels used during scoping or characterization surveys
- \_\_\_ a summary of the radionuclides present at each location, the maximum and average radionuclide activities in pCi/gm, and, if multiple radionuclides are present, the radionuclide ratios;
- \_\_\_ the depth of the subsurface soil contamination at each location; and *in a cross-section*;
- \_\_\_ a scale drawing or map of the site showing the locations of subsurface soil contamination.

## **SURFACE WATER**

- \_\_\_ a list or description of all surface water bodies at the facility that contain residual radioactive material in excess of site background levels;
- \_\_\_ a summary of the background levels used during scoping or characterization surveys
- \_\_\_ a summary of the radionuclides present in each surface water body and the maximum and average radionuclide activities in pCi/l.

## **GROUNDWATER/LEACHATE**

- \_\_\_ a summary of the aquifer(s) at the facility that contain residual radioactive material in excess of site background levels;
- \_\_\_ a summary of the background levels used during scoping or characterization surveys

- \_\_\_ a summary of the radionuclides present in each aquifer and the maximum and average radionuclide activities in pCi/l
- \_\_\_ *a summary of radionuclides present in leachate in each disposal cell.*

## **DOSE MODELING**

### **UNRESTRICTED RELEASE USING SCREENING CRITERIA**

#### **Unrestricted release using screening criteria for building surface residual radioactivity**

- \_\_\_ the general conceptual model (for both the source term and the building environment) of the site; and,
- \_\_\_ a summary of the screening method (i.e., running DandD or using the look-up tables) used in the decommissioning plan.

#### **Unrestricted release using screening criteria for surface soil residual radioactivity**

- \_\_\_ justification on the appropriateness of using the screening approach (for both the source term and the environment) at the site; and,
- \_\_\_ a summary of the screening method (i.e., running DandD or using the look-up tables) used in the decommissioning plan.

### **UNRESTRICTED RELEASE USING SITE-SPECIFIC INFORMATION**

- \_\_\_ source term information including nuclides of interest, configuration of the source, areal variability of the source, etc.
- \_\_\_ description of the exposure scenario including a description of the critical group.
- \_\_\_ description of the conceptual model of the site including the source term, physical features important to modeling the transport pathways, and the critical group.
- \_\_\_ identification/description of the mathematical model used (e.g., hand calculations, DandD Screen v2.1.0, RESRAD v5.8+6.0, etc.).
- \_\_\_ description of the parameters used in the analysis.
- \_\_\_ discussion about the effect of uncertainty on the results.
- \_\_\_ input and output files or printouts, if a computer program was used.

### **RESTRICTED RELEASE USING SITE-SPECIFIC INFORMATION**

- \_\_\_ source term information including nuclides of interest, configuration of the source, areal variability of the source, and chemical forms;
- \_\_\_ a description of the exposure scenarios including a description of the critical group for each scenario;
- \_\_\_ a description of the conceptual model(s) of the site that includes the source term, physical features important to modeling the transport pathways, and the critical group for each scenario;

- \_\_\_ identification/description of the mathematical model(s) used (e.g., hand calculations, RESRAD v6.0, etc.);
- \_\_\_ a summary of parameters used in the analysis;
- \_\_\_ a discussion about the effect of uncertainty on the results; and
- \_\_\_ input and output files or printouts, if a computer program was used.

#### **RELEASE INVOLVING ALTERNATE CRITERIA**

- \_\_\_ source term information including nuclides of interest, configuration of the source, areal variability of the source, and chemical forms;
- \_\_\_ a description of the exposure scenarios including a description of the critical group for each scenario;
- \_\_\_ a description of the conceptual model(s) of the site that includes the source term, physical features important to modeling the transport pathways, and the critical group for each scenario;
- \_\_\_ identification/description of the mathematical model(s) used (e.g., hand calculations, RESRAD v6.0, etc.);
- \_\_\_ a summary of parameters used in the analysis;
- \_\_\_ a discussion about the effect of uncertainty on the results; and
- \_\_\_ input and output files or printouts, if a computer program was used.

#### **ALTERNATIVES CONSIDERED AND RATIONALE FOR CHOSEN ALTERNATIVE**

##### **ALTERNATIVES CONSIDERED**

- \_\_\_ a description of the facility if the alternative is employed;
- \_\_\_ a summary of the health effects to adjacent communities if the alternative is employed;
- \_\_\_ a summary of the impacts on community resources such as land use and property values;
- \_\_\_ a summary of the impacts on the geology, hydrology, air quality and ecology in and around the site;
- \_\_\_ a description of impacts to minority or low-income populations within a 0.6 mile radius of the center of the facility (urban location) or within a 4 mile radius of the center of the facility (rural location);
- NA \_\_\_ if appropriate, an assessment of the potential for criticality;
- \_\_\_ a summary of the irreversible and irretrievable commitment of resources.
- \_\_\_ an analysis of the proposed alternative and other alternatives as required by 10 CFR 51.45(c);
- \_\_\_ a list of the permits, licenses, approvals, and other entitlements and the discussion of the status of compliance with these requirements required in 10 CFR 51.45(d)

##### **RATIONALE FOR CHOSEN ALTERNATIVE**

- \_\_\_ a description of why the licensee selected the preferred alternative described in the decommissioning plan

- \_\_\_ if the licensee has not selected the environmentally preferable alternative, an explanation of why this alternative was not selected.

### **ALARA ANALYSIS**

- \_\_\_ a description of how the licensee or responsible party will achieve a decommissioning goal below the dose limit;
- \_\_\_ *a description of the impact of a pump and treat system including the management of related waste (e.g., sediment, leachate, air emissions, etc.)*
- \_\_\_ a quantitative cost benefit analysis;
- \_\_\_ a description of how costs were estimated; and,
- \_\_\_ a demonstration that the doses to the average member of the critical group are ALARA

### **PLANNED DECOMMISSIONING ACTIVITIES**

#### **CONTAMINATED STRUCTURES**

- \_\_\_ a summary of the remediation tasks planned for each room or area in the contaminated structure in the order in which they will occur;
- \_\_\_ a description of the remediation techniques that will be employed in each room or area of the contaminated structure;
- \_\_\_ a summary of the radiation protection methods and control procedures that will be employed in each room or area;
- \_\_\_ a summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- \_\_\_ a commitment to conduct decommissioning activities in accordance with written, approved procedures;
- \_\_\_ a summary of any unique safety or remediation issues associated with remediating the room or area; and,
- NA for Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

#### **CONTAMINATED SYSTEMS AND EQUIPMENT**

- \_\_\_ a summary of the remediation tasks planned for each system (*including leachate pump and treat equipment*) in the order in which they will occur including which activities will be conducted by licensee staff and which will be performed by a contractor;
- \_\_\_ a description of the techniques that will be employed to remediate each system in the facility or site;
- \_\_\_ a description of the radiation protection methods and control procedures that will be employed while remediating each system;
- \_\_\_ a summary of the equipment will be removed or decontaminated and how the decontamination will be accomplished;
- \_\_\_ a summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;



- \_\_\_ a commitment to conduct decommissioning activities in accordance with written, approved procedures;
- \_\_\_ a summary of any unique safety or remediation issues associated with remediating any system or piece of equipment; and,
- NA for Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

## SOIL

- \_\_\_ a summary of the removal/remediation tasks planned for surface and subsurface soil at the site in the order in which they will occur including which activities will be conducted by licensee staff and which will be performed by a contractor;
- \_\_\_ a description the techniques that will be employed to remove or remediate surface and subsurface soil at the site;
- \_\_\_ a description of the radiation protection methods and control procedures that will be employed during soil removal/remediation;
- \_\_\_ a summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- \_\_\_ a commitment to conduct decommissioning activities in accordance with written, approved procedures;
- \_\_\_ a summary of any unique safety or removal/remediation issues associated with remediating the soil; and,
- NA for Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

## SURFACE AND GROUNDWATER

- \_\_\_ a summary of the remediation tasks planned for ground and surface water in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- \_\_\_ a description the remediation techniques that will be employed to remediate the ground or surface water;
- \_\_\_ a description of the radiation protection methods and control procedures that will be employed during ground or surface water remediation
- \_\_\_ a summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan
- \_\_\_ a commitment to conduct decommissioning activities in accordance with written, approved procedures; and,
- \_\_\_ a summary of any unique safety or remediation issues associated with remediating the ground or surface water.

## **LEACHATE**

- \_\_\_ a summary of the remediation tasks planned for leachates in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- \_\_\_ a description the techniques that will be employed to pump and treat leachates;
- \_\_\_ a description of the radiation protection methods and control procedures that will be employed during pump and treat activities;
- \_\_\_ a commitment to conduct all pump and treat activities in accordance with written, approved procedures; and,
- \_\_\_ a summary of any unique safety or issues associated with the operation and maintenance of the pump and treat system.

## **SCHEDULES**

- \_\_\_ a Gantt or PERT chart detailing the proposed remediation tasks in the order in which they will occur
- \_\_\_ a statement acknowledging that the dates in the schedule are contingent on NRC approval of the decommissioning plan;
- \_\_\_ a statement acknowledging that circumstances can change during decommissioning, and, if the licensee determines that the decommissioning cannot be completed as outlined in the schedule, the licensee or responsible party will provide an updated schedule to NRC; and,
- \_\_\_ If the decommissioning is not expected to be completed within the timeframes outlined in NRC regulations, a request for alternative schedule for completing the decommissioning

## **PROJECT MANAGEMENT AND ORGANIZATION**

### **DECOMMISSIONING MANAGEMENT ORGANIZATION**

- \_\_\_ a description of the decommissioning organization *including specialty contractor identified by technical disciplines;*
- \_\_\_ a description of the responsibilities of each of these decommissioning project units;
- \_\_\_ description of the reporting hierarchy within the decommissioning project management organization, *including the radiation safety officer qualification and experience;*
- \_\_\_ a description of the responsibility and authority of each unit to ensure that decommissioning activities are conducted in a safe manner and in accordance with approved written procedures

### **DECOMMISSIONING TASK MANAGEMENT**

- \_\_\_ a description of the manner in which the decommissioning tasks are managed *including supervision of contractors;*
- \_\_\_ a description of how individual decommissioning tasks are evaluated and how the RWPs are developed for each task;

- \_\_\_ a description of how the RWPs are reviewed and approved by the decommissioning project management organization;
- \_\_\_ a description of how RWPs are managed throughout the decommissioning project
- \_\_\_ a description of how individuals performing the decommissioning tasks are informed of the procedures in the RWP

## **DECOMMISSIONING MANAGEMENT POSITIONS AND QUALIFICATIONS**

- \_\_\_ a description of the duties and responsibilities of each management position in the decommissioning organization and the reporting responsibility of the position;
- \_\_\_ a description of the duties and responsibilities of each chemical, radiological, physical and occupational safety-related position in the decommissioning organization and the reporting responsibility of the position;
- \_\_\_ a description of the duties and responsibilities of each engineering, quality assurance, and waste management position in the decommissioning organization and the reporting responsibility of the position
- \_\_\_ the minimum qualifications for each of the positions describe above, and the qualifications of the individuals currently occupying the positions
- \_\_\_ a description of all decommissioning and safety committees

### **Radiation Safety Officer**

- \_\_\_ a description of the health physics and radiation safety education and experience required for individuals acting as the licensee's or responsible party's RSO
- \_\_\_ a description of the responsibilities and duties of the RSO; and
- \_\_\_ a description of the specific authority of the RSO to implement and manage the licensee's or responsible party' radiation protection program

## **TRAINING**

- \_\_\_ a description of the radiation safety training that the licensee will provide to each employee
- \_\_\_ a description of any daily worker "jobsite" or "tailgate" training that will be provided at the beginning of each workday or job task to familiarize workers with job-specific procedures or safety requirements
- \_\_\_ a description of the documentation that will be maintained to demonstrate that training commitments are being met.

## **CONTRACTOR SUPPORT**

- \_\_\_ a summary of decommissioning tasks that will be performed by contractors
- \_\_\_ a description of the management interfaces that will be in place between the licensee or responsible party's management and on-site supervisors and contractor management and on-site supervisors;
- \_\_\_ a description of the oversight responsibilities and authority that the licensee or responsible party will exercise over contractor personnel;

- \_\_\_ a description of the training that will be provided to contractor personnel by the licensee or responsible party and the training that will be provided by the contractor
- \_\_\_ a commitment that the contractor will comply with all radiation safety and license requirements at the facility.

## **HEALTH AND SAFETY PROGRAM DURING DECOMMISSIONING**

### **RADIATION SAFETY CONTROLS AND MONITORING FOR WORKERS**

#### **Air Sampling Program**

- \_\_\_ a description which demonstrates that the air sampling program is representative of the workers breathing zones
- \_\_\_ a description of the criteria which demonstrates that air samplers with appropriate sensitivities will be used; and that samples will be collected at appropriate frequencies
- \_\_\_ a description of the conditions under which air monitors will be used
- \_\_\_ a description of the criteria used to determine the frequency of calibration of the flow meters on the air samplers
- \_\_\_ a description of the action levels for air sampling results
- \_\_\_ a description of how minimum detectable activities [MDA] for each specific radionuclide that may be collected in air samples are determined

#### **Respiratory Protection Program**

- \_\_\_ a description of the process controls, engineering controls or procedures to control concentrations of radioactive materials in air;
- \_\_\_ a description of the evaluation which will be performed when it is not practical to apply engineering controls or procedures
- \_\_\_ a description of the considerations used which demonstrates respiratory protection equipment is appropriate for a specific task based on the guidance on assigned protection factors;
- \_\_\_ a description of the medical screening and fit testing required before workers will use any respirator that is assigned a protection factor;
- \_\_\_ a description of the written procedures maintained to address all the elements of the respiratory protection program;
- \_\_\_ a description of the use, maintenance, and storage of respiratory protection devices
- \_\_\_ a description of the respiratory equipment users training program;
- \_\_\_ a description of the considerations made when selecting respiratory protection equipment

#### **Internal Exposure Determination**

- \_\_\_ a description of the monitoring to be performed to determine worker exposure
- \_\_\_ a description of how worker intakes are determined using measurements of quantities of radionuclides excreted from, or retained in the human body

- \_\_\_ a description of how worker intakes are determined by measurements of the concentrations of airborne radioactive materials in the workplace.
- \_\_\_ a description of how worker intakes, for an adult, a minor, and a declared pregnant woman are determined using any combination of the measurements above as may be necessary
- \_\_\_ a description of how worker intakes are converted into committed effective dose equivalent

### **External Exposure Determination**

- \_\_\_ a description of the individual-monitoring devices which will be provided to workers
- \_\_\_ a description of the type, range, sensitivity, and accuracy of each individual-monitoring device;
- \_\_\_ a description of the use of extremity and whole body monitors when the external radiation field is non-uniform
- \_\_\_ a description of when audible-alarm dosimeters and pocket dosimeters will be provided
- \_\_\_ a description of how external dose from airborne radioactive material is determined
- \_\_\_ a description of the procedure to insure that surveys necessary to supplement personnel monitoring are performed
- \_\_\_ a description of the action levels for worker's external exposure, and the technical bases and actions to be taken when they are exceeded.

### **Summation of Internal and External Exposures**

- \_\_\_ a description of how the internal and external monitoring results are used to calculate TODE and TEDE doses to occupational workers;
- \_\_\_ a description of how internal doses to the embryo/fetus, which is based on the intake of an occupationally-exposed, declared, pregnant woman will be determined;
- \_\_\_ a description of the monitoring of the intake of a declared, pregnant woman if determined to be necessary;
- \_\_\_ a description of the program for the preparation, retention and reporting of records for occupational radiation exposures;

### **Contamination Control Program**

- \_\_\_ a description of the written procedures to control access to, and stay time in, contaminated areas by workers if they are needed
- \_\_\_ a description of surveys to supplement personnel monitoring for workers during routine operations, maintenance, clean-up activities, and special operations;
- \_\_\_ a description of the surveys which will be performed to determine the baseline of background radiation levels and radioactivity from natural sources for areas where decommissioning activities will take place;
- \_\_\_ a description in matrix or tabular form which describes contamination action limits (that is, actions taken to either decontaminate a person, place or area, or restrict access, or modify the type or frequency of radiological monitoring)

- \_\_\_ a description (included in the matrix or table mentioned above) of proposed radiological contamination guidelines for specifying and modifying the frequency for each type of survey used to assess the reduction of total contamination
- \_\_\_ a description of the procedures used to test sealed sources, and to insure that sealed sources are leaked tested at appropriate intervals
- \_\_\_ *Description of procedures to release equipment and materials from the site.*

### **Instrumentation Program**

- \_\_\_ a description of the instruments to be used to support the health and safety program
- \_\_\_ a description of instrumentation storage, calibration and maintenance facilities for instruments used in field surveys
- \_\_\_ a description of the method used to estimate the MDC or MDA (at the 95% confidence level) for each type of radiation to be detected;
- \_\_\_ a description of the instrument calibration and quality assurance procedures;
- \_\_\_ a description of the methods used to estimate uncertainty bounds for each type of instrumental measurement;
- \_\_\_ a description of air sampling calibration procedures or a statement that the instruments will be calibrated by an accredited laboratory *as per Regulatory Guide 8.25 and NUREG-1400.*

### **Nuclear Criticality Safety**

- NA a description of how the NCS functions, including management responsibilities and technical qualifications of safety personnel, shall be maintained when needed throughout the decommissioning process;
- NA a description of how an awareness of procedures and other items relied on for safety shall be maintained throughout decommissioning among all personnel with access to systems that may contain fissionable material in sufficient amounts for criticality;
- NA a summary of the review of NCSA's or the ISA indicating either that the process needs no new safety procedures or requirements, or that new requirements or analysis have been performed; and
- NA a summary of any generic NCS requirements to be applied to general decommissioning, decontamination, or dismantlement operations, including those dealing with systems that may unexpectedly contain fissionable material.

### **Health Physics Audits, Inspections and Record-Keeping Program.**

- \_\_\_ a general description of the annual program review conducted by ~~executive~~ management
- \_\_\_ a description of the records to be maintained of the annual program review and ~~executive~~ audits
- \_\_\_ a description of the types and frequencies of surveys and audits to be performed by the RSO and RSO staff
- \_\_\_ a description of the process used in evaluating and dealing with violations of NRC requirements or license commitments identified during audits

- \_\_\_ a description of the records maintained of RSO audits

## **ENVIRONMENTAL MONITORING AND CONTROL PROGRAM**

### **ENVIRONMENTAL ALARA EVALUATION PROGRAM**

- \_\_\_ a description of ALARA goals for effluent control;
- \_\_\_ a description of the procedures, engineering controls, and process controls to maintain doses ALARA
- \_\_\_ a description of the ALARA reviews and reports to management.

### **EFFLUENT MONITORING PROGRAM**

- \_\_\_ a demonstration that background and baseline concentrations of radionuclides in environmental media (*air, soil, vegetation, sediments, ground and surface waters, leachates*) have been established through appropriate sampling and analysis;
- \_\_\_ a description of the known or expected concentrations of radionuclides in effluents;
- \_\_\_ a description of the physical and chemical characteristics of radionuclides in effluents;
- \_\_\_ a summary or diagram of all effluent discharge locations;
- \_\_\_ a demonstration that samples will be representative of actual releases;
- \_\_\_ a summary of the sample collection and analysis procedures
- \_\_\_ a summary of the sample collection frequencies;
- \_\_\_ a description of the environmental monitoring recording and reporting procedures; and
- \_\_\_ a description of the quality assurance program to be established and implemented for the effluent monitoring program

### **EFFLUENT CONTROL PROGRAM**

- \_\_\_ a description of the controls that will be used to minimize releases of radioactive material to the environment;
- \_\_\_ a summary of the action levels and description of the actions to be taken should a limit be exceeded;
- \_\_\_ a description of the leak detection systems for ponds, lagoons, and tanks;
- \_\_\_ a description of the procedures to ensure that releases to sewer systems are controlled and maintained to meet the requirements of 10 CFR 20.2003, and
- \_\_\_ a summary of the estimates of doses to the public from effluents and a description of the method used to estimate public dose *against limits of 10 CFR Parts 20.1301, 20.1302 and Appendix B to Part 20.*

## **RADIOACTIVE WASTE MANAGEMENT PROGRAM**

### **SOLID RADWASTE**

- \_\_\_ a summary of the types of solid radwaste that are expected to be generated during decommissioning operations

- \_\_\_ a summary of the estimated volume, in cubic feet, of each solid radwaste type summarized under bullet 1 above;
- \_\_\_ a summary of the radionuclides (including the estimated activity of each radionuclide) in each estimated solid radwaste type summarized under bullet 1 above;
- \_\_\_ a summary of the volumes of Class A, B, C and Greater-than-Class-C solid radwaste that will be generated by decommissioning operations;
- \_\_\_ a description of how and where each of the solid radwaste summarized under bullet 1 above, will be stored on-site prior to shipment for disposal;
- \_\_\_ a description of how the each of the solid radwastes summarized under bullet 1 above, will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- \_\_\_ if appropriate, how the licensee or responsible party intends to manage volumetrically contaminated material;
- \_\_\_ a description of how the licensee or responsible party will prevent contaminated soil, or other loose solid radwaste, from being re-disbursed after exhumation and collection; and
- \_\_\_ the name and location of the disposal facility that the licensee intends to use for each solid radwaste type summarized under bullet 1 above

## **LIQUID RADWASTE**

- \_\_\_ a summary of the types of liquid radwaste that are expected to be generated during decommissioning operations
- \_\_\_ a summary of the estimated volume, in liters, of each liquid radwaste type summarized under bullet 1 above;
- \_\_\_ a summary of the radionuclides (including the estimated activity of each radionuclide) in each liquid radwaste type summarized under bullet 1 above;
- \_\_\_ a summary of the estimated volumes of Class A, B, C and Greater-than-Class-C liquid radwaste that will be generated by decommissioning operations;
- \_\_\_ a description of how and where each of the liquid radwastes summarized under bullet 1 above, will be stored on-site prior to shipment for disposal;
- \_\_\_ a description of how the each of the liquid radwastes summarized under bullet 1 above, will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- \_\_\_ the name and location of the disposal facility that the licensee intends to use for each liquid radwaste type summarized under bullet 1 above

## **MIXED WASTE**

- \_\_\_ a summary of the types of solid and liquid mixed waste that are expected to be generated during decommissioning operations;
- \_\_\_ a summary of the estimated volumes, in cubic feet of each solid mixed waste type summarized under bullet 1 above and in liters for each liquid mixed waste;
- \_\_\_ a summary of the radionuclides (including the estimated activity of each radionuclide) in each type of mixed waste type summarized under bullet 1 above;
- \_\_\_ a summary of the estimated volumes of Class A, B, C and Greater-than-Class-C mixed waste that will be generated by decommissioning operations;



- \_\_\_ a description of how and where each of the mixed wastes summarized under bullet 1 above, will be stored on-site prior to shipment for disposal;
- \_\_\_ a description of how the each of the mixed wastes summarized under bullet 1 above, will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- \_\_\_ the name and location of the disposal facility that the licensee intends to use for each mixed waste type summarized under bullet 1 above;
- \_\_\_ a discussion of the requirements of all other regulatory agencies having jurisdiction over the mixed waste; and,
- \_\_\_ a demonstration the that the licensee possess the appropriate EPA or State permits to generate, store and/or treat the mixed wastes;

## **QUALITY ASSURANCE PROGRAM**

### **ORGANIZATION**

- \_\_\_ a description of the QA program management organization,
- \_\_\_ a description of the duties responsibilities of each unit within the organization and how delegation of responsibilities is managed within the decommissioning program
- \_\_\_ a description of how work performance is evaluated;
- \_\_\_ a description of the authority of each unit within the QA program
- \_\_\_ an organization chart of the QA program organization

### **QUALITY ASSURANCE PROGRAM**

- \_\_\_ a commitment that activities affecting the quality of site decommissioning will be subject to the applicable controls of the QA program and activities covered by the QA program are identified on program defining documents;
- \_\_\_ a brief summary of the company's ~~corporate~~ *site specific* QA policies;
- \_\_\_ a description of provisions to ensure that technical and quality assurance procedures required to implement the QA program are consistent with regulatory, licensing, and QA program requirements and are properly documented and controlled;
- \_\_\_ a description of the management reviews, including the documentation of concurrence in these quality-affecting procedures;
- \_\_\_ a description of the quality-affecting procedural controls *required* of the principal contractors
- \_\_\_ a description of how NRC will be notified of changes (a) for review and acceptance in the accepted description of the QA program as presented or referenced in the DP before implementation and (b) in organizational elements within 30 days after the announcement of the changes
- \_\_\_ a description is provided of how management regularly assesses the scope, status, adequacy, and compliance of the QA program;
- \_\_\_ a description of the instruction provided to personnel responsible for performing activities affecting quality

- \_\_\_ a description of the training and qualifications of personnel verifying activities
- \_\_\_ for formal training and qualification programs, documentation includes the objectives and content of the program, attendees, and date of attendance;
- \_\_\_ a description of the self-assessment program to confirm that activities affecting quality comply with the QA program;
- \_\_\_ a commitment that persons performing self-assessment activities (*e.g., auditing one's own department*) are not to have direct responsibilities in the area they are assessing;
- \_\_\_ a description of the organizational responsibilities for ensuring that activities affecting quality are (a) prescribed by documented instructions, procedures, and drawings; and, (b) accomplished through implementation of these documents; and,
- \_\_\_ a description of the procedures to ensure that instructions, procedures, and drawings include quantitative acceptance criteria and qualitative acceptance criteria for determining that important activities have been satisfactorily performed.

#### **DOCUMENT CONTROL**

- \_\_\_ a summary of the types of QA documents that are included in the program
- \_\_\_ a description of how the licensee or responsible party develops, issues, revises and retires QA documents;
- \_\_\_ *retention policy - until license is terminated.*

#### **CONTROL OF MEASURING AND TEST EQUIPMENT**

- \_\_\_ a summary of the test and measurement equipment used in the program
- \_\_\_ description of how and at what frequency the equipment will be calibrated;
- \_\_\_ a description of the daily calibration checks that will be performed on each piece of test or measurement equipment;
- \_\_\_ a description of the documentation that will be maintained to demonstrate that only properly calibrated and maintained equipment was used during the decommissioning

#### **CORRECTIVE ACTION**

- \_\_\_ a description of the corrective action procedures for the facility, including a description of how the corrective action is determined to be adequate;
- \_\_\_ a description of the documentation maintained for each corrective action and any followup activities by the QA organization after the corrective action is implemented;

#### **QUALITY ASSURANCE RECORDS**

- \_\_\_ a description of the manner in which the QA records will be managed
- \_\_\_ a description of the responsibilities of the QA organization
- \_\_\_ a description of the QA records storage facility.

## AUDITS AND SURVEILLANCES

- \_\_\_ a description of the audit program
- \_\_\_ a description of the records and documentation generated during the audits and the manner in which the documents are managed
- \_\_\_ a description of all followup activities associated with audits or surveillances
- \_\_\_ a description of the trending/tracking that will be performed on the results of audits and surveillances

## FACILITY RADIATION SURVEYS

### RELEASE CRITERIA

- \_\_\_ a summary table or list of the  $DCGL_W$  for each radionuclide and impacted media of concern;
- \_\_\_ if Class 1 survey units are present, a summary table or list of area factors that will be used for determining a  $DCGL_{EMC}$  for each radionuclide and media of concern;
- \_\_\_ if Class 1 survey units are present, the  $DCGL_{EMCs}$  for each radionuclide and medium of concern;
- \_\_\_ if multiple radionuclides are present, the appropriate  $DCGL_W$  for the survey method to be used.

### CHARACTERIZATION SURVEYS

- \_\_\_ a description and justification of the survey measurements for impacted media
- \_\_\_ description of the field instruments and methods that were used for measuring concentrations and the sensitivities of those instruments and methods;
- \_\_\_ a description of the laboratory instruments and methods that were used for measuring concentrations and the sensitivities of those instruments and methods;
- \_\_\_ the survey results including tables or charts of the concentrations of residual radioactivity measured;
- \_\_\_ maps or drawings of the site, area, or building showing areas classified as non-impacted or impacted
- \_\_\_ justification for considering areas to be non-impacted;
- \_\_\_ a discussion of why the licensee considers the characterization survey to be adequate to demonstrate that it is unlikely that significant quantities of residual radioactivity have gone undetected;
- \_\_\_ for areas and surfaces that are inaccessible or not readily accessible, a discussion of how they were surveyed or why they did not need to be surveyed;
- \_\_\_ for sites, areas, or buildings with multiple radionuclides, a discussion justifying the ratios of radionuclides that will be assumed in the final status survey or an indication that no fixed ratio exists and each radionuclide will be measured separately.

### REMEDIAL ACTION SUPPORT SURVEYS

- \_\_\_ a description of field screening methods and instrumentation;

- \_\_\_ a demonstration that field screening should be capable of detecting residual radioactivity at the DCGL;

## **FINAL STATUS SURVEY DESIGN**

- \_\_\_ a brief overview describing the final status survey design.
- \_\_\_ a description and map or drawing of impacted areas of the site, area, or building classified by residual radioactivity levels (Class 1, Class 2, or Class 3) and divided into survey units with an explanation of the basis for division into survey units.
- \_\_\_ a description of the background reference areas and materials, if they will be used, and a justification for their selection.
- \_\_\_ a summary of the statistical tests that will be used to evaluate the survey results,
- \_\_\_ a description of scanning instruments, methods, calibration, operational checks, coverage, and sensitivity for each media and radionuclide.
- \_\_\_ for in-situ sample measurements made by field instruments, a description of the instruments, calibration, operational checks, sensitivity, and sampling methods with a demonstration that the instruments and methods have adequate sensitivity.
- \_\_\_ a description of the analytical instruments for measuring samples in the laboratory, calibration, sensitivity, and methods with a demonstration that the instruments and methods have adequate sensitivity;
- \_\_\_ a description of how the samples to be analyzed in the laboratory will be collected, controlled, and handled;
- \_\_\_ a description of the final status survey investigation levels and how they were determined
- \_\_\_ a summary of any significant additional residual radioactivity that was not accounted for during site characterization;
- \_\_\_ a summary of direct measurement results and/or soil concentration levels in units that are comparable to the DCGL and if data is used to estimate or update the survey unit;
- \_\_\_ a summary of the direct measurements or sample data used to both evaluate the success of remediation and to estimate the survey unit variance.

## **FINAL STATUS SURVEY REPORT**

*(outline of plan elements)*

- \_\_\_ an overview of the results of the final status survey.
- \_\_\_ a discussion of any changes that were made in the final status survey from what was proposed in the Decommissioning Plan or other prior submittals.
- \_\_\_ a description of the method by which the number of samples was determined for each survey unit;
- \_\_\_ a summary of the values used to determine the numbers of sample and a justification for these values;
- \_\_\_ the survey results for each survey unit include:
  - \_\_\_ the number of samples taken for the survey unit;

- \_\_\_ a map or drawing of the survey unit showing the reference system and random start systematic sample locations for Class 1 and 2 survey units and random locations shown for Class 3 survey units and reference areas;
- \_\_\_ the measured sample concentrations;
- \_\_\_ the statistical evaluation of the measured concentrations;
- \_\_\_ judgmental and miscellaneous sample data sets reported separately from the those samples collected for performing the statistical evaluation;
- \_\_\_ a discussion of anomalous data including any areas of elevated direct radiation detected during scanning that exceeded the investigation level or measurement locations in excess of  $DCGL_w$ .
- \_\_\_ a statement that a given survey unit satisfied the  $DCGL_w$  and the elevated measurement comparison if any sample points exceeded the  $DCGL_w$ .
- \_\_\_ a description of any changes in initial survey unit assumptions relative to the extent of residual radioactivity
- \_\_\_ if a survey unit fails, a description of the investigation conducted to ascertain the reason for the failure and a discussion of the impact that the failure has on the conclusion that the facility is ready for final radiological surveys; and
- \_\_\_ if a survey unit fails, a discussion of the impact that the reason for the failure has on other survey unit information.

## **FINANCIAL ASSURANCE**

### **COST ESTIMATE**

- \_\_\_ a cost estimate that appears to be based on documented and reasonable assumptions;

### **CERTIFICATION STATEMENT**

- \_\_\_ the certification statement is based on the licensed possession limits and the applicable quantities specified in 10 CFR 30.35, 40.36, or 70.25
- \_\_\_ licensee is eligible to use a certification of financial assurance and, if eligible, that the certification amount is appropriate.

### **FINANCIAL MECHANISM**

- \_\_\_ the financial assurance mechanism supplied by the licensee or responsible party consists of one or more of the following instruments:
  - \_\_\_ trust fund;
  - \_\_\_ escrow account;
  - \_\_\_ government fund;
  - \_\_\_ certificate of deposit;
  - \_\_\_ deposit of government securities;
  - yes surety bond;
  - \_\_\_ letter of credit;

- \_\_\_ line of credit;
  - \_\_\_ insurance policy;
  - \_\_\_ parent company guarantee;
  - \_\_\_ self guarantee;
  - \_\_\_ external sinking fund;
  - \_\_\_ statement of intent; or
  - \_\_\_ by special arrangements with a government entity assuming custody or ownership of the site
- \_\_\_ the financial assurance mechanism is an originally signed duplicate.
- \_\_\_ the wording of the financial assurance mechanism is identical to the recommended wording provided in Appendix F,
- NA for a licensee regulated under 10 CFR Part 72, a means is identified in the decommissioning plan for adjusting the financial assurance funding level over any storage and surveillance period;
- \_\_\_ the amount of financial assurance coverage provided by the licensee for site control and maintenance is at least as great as that calculated using the formula provided in this SRP

## **RESTRICTED USE/ALTERNATE CRITERIA**

### **RESTRICTED USE**

#### **ELIGIBILITY DEMONSTRATION**

- \_\_\_ a demonstration that the benefits of dose reduction are less than the cost of doses, injuries and fatalities; or
- \_\_\_ a demonstration that the proposed residual radioactivity levels at the site are ALARA

#### **INSTITUTIONAL CONTROLS**

- \_\_\_ a description of the legally enforceable institutional control(s) and an explanation of how the institutional control is a legally enforceable mechanism;
- \_\_\_ a description of any detriments associated with the maintenance of the institutional control(s);
- \_\_\_ a description of the restrictions on present and future landowners;
- \_\_\_ a description of the entities enforcing, and their authority to enforce, the institutional control(s);
- \_\_\_ a discussion of the durability of the institutional control(s);
- \_\_\_ a description of the activities that the entity with the authority to enforce the institutional controls may undertake to enforce the institutional control(s)
- \_\_\_ the manner in which the entity with the authority to enforce the institutional control(s) will be replaced if that entity is no longer willing or able to enforce the institutional control(s) (this may not be needed for Federal or State entities);

- \_\_\_ a description of the duration of the institutional control(s), the basis for the duration, the conditions that will end the institutional control(s) and the activities that will be undertaken to end the institutional control(s);
- \_\_\_ a description of the plans for corrective actions that may be undertaken in the event the institutional control(s) fail; and
- \_\_\_ a description of the records pertaining to the institutional controls, how and where will they will be maintained, and how the public will have access to the records.

#### **SITE MAINTENANCE & FINANCIAL ASSURANCE**

- \_\_\_ a demonstration that an appropriately qualified entity has been provided to control and maintain the site;
- \_\_\_ a description of the site maintenance and control program and the basis for concluding that the program is adequate to control and maintain the site;
- \_\_\_ a description of the arrangement or contract with the entity charged with carrying out the actions necessary to maintain control at the site;
- \_\_\_ a demonstration that the contract or arrangement will remain in effect for as long as feasible, and include provisions for renewing or replacing the contract;
- \_\_\_ a description of the manner in which independent oversight of the entity charged with maintaining the site will be conducted and what entity will conduct the oversight;
- \_\_\_ a demonstration that the entity providing the oversight has the authority to replace the entity charged with maintaining the site;
- \_\_\_ a description of the authority granted to the third party to perform, or have performed, any necessary maintenance activities;
- \_\_\_ unless the entity is a government entity, a demonstration that the third party is not the entity holding the financial assurance mechanism;
- \_\_\_ a demonstration that sufficient records evidencing to official actions and financial payments made by the third party are open to public inspection;
- \_\_\_ a description of the periodic site inspections that will be performed by the third party, including the frequency of the inspections.
- \_\_\_ a copy of the financial assurance mechanism provided by the licensee or responsible party; and,
- \_\_\_ a demonstration that the amount of financial assurance provided is sufficient to allow an independent third party to carry out any necessary control and maintenance activities.

#### **OBTAINING PUBLIC ADVICE**

- \_\_\_ a description of how individuals and institutions that may be affected by the decommissioning were identified and informed of the opportunity to provide advice to the licensee or responsible party;
- \_\_\_ a description of the manner in which the licensee obtained advice from these individuals or institutions;
- \_\_\_ a description of how the licensee provided for participation by a broad cross-section of community interests in obtaining the advice;
- \_\_\_ a description of how the licensee provided for a comprehensive, collective discussion on the issues by the participants represented;

- \_\_\_ a copy of the publicly available summary of the results of discussions, including individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants;
- \_\_\_ a description of how this summary has been made available to the public;
- \_\_\_ a description of how the licensee evaluated the advice, and the rationale for incorporating, or not incorporating, the advice from affected members of the community into the decommissioning plan.

## **DOSE MODELING AND ALARA DEMONSTRATION**

- \_\_\_ a summary of the dose to the average member of the critical group when radionuclide levels are at the DCGL with institutional controls in place, as well as the estimated doses if they are no longer in place;
- \_\_\_ a summary of the evaluation performed pursuant to Section 7 of this SRP demonstrating that these doses are ALARA;
- \_\_\_ if the estimated dose to the average member of the critical group could exceed 100 mrem/yr (but would be less than 500 mrem/yr) when the radionuclide levels are at the DCGL, a demonstration that the criteria in 10 CFR 20.1403(e) have been met

## **ALTERNATE CRITERIA**

- \_\_\_ a summary of the dose in TEDE(s) to the average member of the critical group when the radionuclide levels are at the DCGL (considering all man-made sources other than medical);
- \_\_\_ a summary of the evaluation performed pursuant to Section 7 of this SRP demonstrating that these doses are ALARA;
- \_\_\_ an analysis of all possible sources of exposure to radiation at the site and a discussion of why it is unlikely that the doses from all man-made sources, other than medical, will be more than 1 mSv/yr (100 mrem/yr);
- \_\_\_ a description of the legally enforceable institutional control(s) and an explanation of how the institutional control is a legally enforceable mechanism;
- \_\_\_ a description of any detriments associated with the maintenance of the institutional control(s);
- \_\_\_ a description of the restrictions on present and future landowners;
- \_\_\_ a description of the entities enforcing and their authority to enforce the institutional control(s);
- \_\_\_ a discussion of the durability of the institutional control(s);
- \_\_\_ a description of the activities that the party with the authority to enforce the institutional controls will undertake to enforce the institutional control(s)
- \_\_\_ a description of the manner in which the entity with the authority to enforce the institutional control(s) will be replaced if that entity is no longer willing or able to enforce the institutional control(s)
- \_\_\_ a description of the duration of the institutional control(s), the basis for the duration, the conditions that will end the institutional control(s) and the activities that will be undertaken to end the institutional control(s);



- \_\_\_ a description of the corrective actions that will be undertaken in the event the institutional control(s) fail; and
- \_\_\_ a description of the records pertaining to the institutional controls, how and where they will be maintained, and how the public will have access to the records.
- \_\_\_ a description of how individuals and institutions that may be affected by the decommissioning were identified and informed of the opportunity to provide advice to the licensee or responsible party;
- \_\_\_ a description of the manner in which the licensee obtained advice from affected individuals or institutions;
- \_\_\_ a description of how the licensee provided for participation by a broad cross-section of community interests in obtaining the advice;
- \_\_\_ a description of how the licensee provided for a comprehensive, collective discussion on the issues by the participants represented;
- \_\_\_ a copy of the publicly available summary of the results of discussions, including individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants;
- \_\_\_ a description of how this summary has been made available to the public; and,
- \_\_\_ a description of how the licensee evaluated advice from individuals and institutions that could be affected by the decommissioning and the manner in which the advice was addressed.

May 1, 2001

Phillip Mazor  
Remedial Project Manager  
Waste Management, Inc.  
700 56<sup>th</sup> Avenue  
Zeeland, MI 49464

SUBJECT: REPORT OF MEETING HELD TO DISCUSS DECOMMISSIONING PLAN  
PREPARATION FOR THE SCA SERVICES (HARTLEY & HARTLEY LANDFILL)  
SITE, BAY COUNTY, MI

Dear Mr. Mazor:

On February 23, 2001, U.S. Nuclear Regulatory Commission staff met with representatives of the Waste Management, Inc. to discuss the key elements of the decommissioning plan to be developed for the SCA Services (Hartley & Hartley Landfill) Site Decommissioning Management Plan (SDMP) site in Bay County, MI. A report of this meeting is enclosed.

Please note that the checklist attached to the meeting report was developed for restricted release of the site. If you have any questions concerning this report, please contact me at (301) 415-6694.

Sincerely,

**/RA/**

M. (Sam) Nalluswami, Project Manager  
Facilities Decommissioning Section  
Decommissioning Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: Meeting Report

cc: w/o encl: T. Bertram, MDEQ  
D. Minnar, MDEQ  
D. Gruben, MDNR

Docket No.: 40-9022  
License No.: SUC-1565

**AN:**

**TEMPLATE: NMSS/RGN-001**

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