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Waste Acceptance Criteria for the Grand Junction, Colorado, Disposal Site

June 2020

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Waste Acceptance Criteria for the Grand Junction, Colorado, Disposal Site Document History

Version No./ Revision No.	Revised	Description of Change
1.0	June 2020	1. Definitions Section Added definitions for “UMTRCA” (Uranium Mill Tailings Radiation Control Act), the “UMTRA Project” (Uranium Mill Tailings Remedial Action Project), “byproduct material” (as defined in Section 11e[2] of the Atomic Energy Act), and “co-constituents.” 2. Section 1.0 • Simplified the explanation about the sources used to specify the types of radioactive material that are acceptable for disposal in the Grand Junction Disposal Site (GJDS) cell. Fewer sources are relevant because fewer types of radioactive material are now acceptable. • Reorganized the scope to better align with Sections 3.1 and 3.2. • Added more history about the GJDS cell. 3. Section 2.0 • Added more details and clarification about responsibilities. • Replaced Figures 1 and 2 with more updated figures. 4. Section 3.0 • Reorganized Section 3.1 by describing the types of radioactive material that are acceptable for disposal in the GJDS cell in terms of their radiological, chemical, and physical properties. Also simplified Section 3.1, because fewer types of radioactive material are now acceptable for disposal in the GJDS cell. In addition, designated liquid radioactive material, which was previously prohibited from disposal in the GJDS cell, as acceptable under certain conditions. • Simplified Section 3.2 by describing the types of radioactive material that are prohibited from disposal in the GJDS cell by more frequently referring to text in pertinent parts of Section 3.1. • Added a stand-alone Section 3.3 to describe the process for making exceptions to the GJDS waste acceptance criteria. • Used a broader description of “process knowledge.” • Added more details about using the *Grand Junction Disposal Site Waste Profile and Disposal Approval* worksheet (LMS 8002GJO). 5. Section 4.0 • Added more details to the section about acceptable vehicles and waste containers that are required to ship radioactive material to the GJDS. • Added requirements for vehicles and waste containers that previously were used to ship radioactive material to or from sites other than the GJDS. • Clarified the training requirements for transporter drivers entering the GJDS cell. • Revised the time required to complete a shipment of radioactive material to the GJDS to be more general instead of estimating the number of trucks that can be processed each day. • Revised the work schedule for shipping radioactive material to the GJDS to be more general instead of designating specific hours. 6. Added Appendix A. It contains an example of the *Grand Junction Disposal Site Waste Profile and Disposal Approval* worksheet, which is part of the paperwork required to dispose radioactive material in the GJDS cell. Also revised the worksheet. 7. Added Office of Legacy Management (LM) procedure number to the document (following direction from LM staff). 8. Added document approval signatures for David Shafer and Edward Roemer.

Waste Acceptance Criteria for the Grand Junction, Colorado, Disposal Site
Document History (continued)

Version No./ Revision No.	Revised	Description of Change
0.1	April 2014	Added radiologically contaminated asbestos-containing materials to Section 3.2, Prohibited Waste.
0.0	April 2014	Initial issue.

Approved:

David S. Shafer

Digitally signed by David S. Shafer
Date: 2020.06.10 09:26:50 -06'00'

David Shafer
LM-20 Director
U.S. Department of Energy

Date

EDWARD ROEMER (Affiliate)

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Date: 2020.06.08 14:42:15 -06'00'

Edward Roemer
Grand Junction Disposal Site Lead
Navarro Research and Engineering, Inc.

Date

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Abbreviations

CCR	*Code of Colorado Regulations*
CDPHE	Colorado Department of Public Health and Environment
CFR	*Code of Federal Regulations*
CSS	construction site supervisor
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EC	Environmental Compliance
EPA	U.S. Environmental Protection Agency
GJDS	Grand Junction Disposal Site
LM	Office of Legacy Management
LMS	Legacy Management Support
MMTS	Monticello Mill Tailings Site
PCB	polychlorinated biphenyl
RBA	radiological buffer area
RCT	radiological control technician
RRM	residual radioactive material
S&H	Safety and Health
UMTRA	Uranium Mill Tailings Remedial Action
UMTRCA	Uranium Mill Tailings Radiation Control Act
USC	*United States Code*
WAC	waste acceptance criteria

Forms Referenced in This Manual

LMS forms or worksheets are accessible at the Document Management SharePoint page > **Libraries** > **LMS Forms and Worksheets**

Grand Junction Disposal Site Waste Profile and Disposal Approval	LMS 8002 GJO
Pre-Haul Driver Orientation	LMS 1071

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Definitions

byproduct material: The byproduct material referred to in this document, *Waste Acceptance Criteria for the Grand Junction, Colorado, Disposal Site*, pertains to byproduct material as defined in the Atomic Energy Act, as amended, Section 11e(2). It consists of the "tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." It is commonly referred to as "11e(2) byproduct material."

co-constituents: Substances inherent in uranium-bearing ores that were milled at uranium mill sites described in this document or substances that were present in or produced by materials or chemicals used in the uranium milling process. Co-constituents may include ammonium, arsenic, barium, chloride, chromium, manganese, molybdenum, nitrate, radium, selenium, strontium, sulfate, uranium, and vanadium. Radioactive materials such as uranium mill tailings, groundwater, or surface water at uranium processing or disposal sites described in this document may contain co-constituents.

hazardous material: A substance or material that the U.S. Secretary of Transportation has deemed capable of posing an unreasonable risk to health, safety, and property when transported in commerce and has designated as hazardous under Title 49 *United States Code* Section 5103 (49 USC 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the "Hazardous Materials Table" at Title 49 *Code of Federal Regulations* Part 172.101 (49 CFR 172.101), and materials that satisfy the defining criteria for hazard classes and divisions in 49 CFR 173.

hazardous waste: All waste described as hazardous in the Resource Conservation and Recovery Act and defined as such in 40 CFR 261 or in corresponding State of Colorado hazardous waste regulations (Volume 6 *Code of Colorado Regulations* 1007-3, Part 261 [6 CCR 1007-3 Part 261]).

process knowledge: Knowledge about a waste that can help determine its properties. This includes knowledge about historical analytical data, the activity that produced the waste, other materials associated with the waste, conditions where the waste was found, or historical activities at the property where the waste was found.

process related: For the purposes of this document, "process related" primarily refers to the uranium milling process.

residual radioactive material: As defined in the Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I, as amended, Section 101(7), residual radioactive material is "(A) waste (which the Secretary determines to be radioactive) in the form of tailings resulting from the processing of ores for the extraction of uranium and other valuable constituents of the ores; and (B) other waste (which the Secretary determines to be radioactive) at a processing site which relate to such processing, including any residual stock of unprocessed ores or low-grade materials."

UMTRA Project: The Uranium Mill Tailings Remedial Action (UMTRA) Project, which facilitated the cleanup of uranium mill tailings and related radioactive wastes at uranium processing[1] sites designated in UMTRCA Title I Section 102.

UMTRCA: UMTRCA, as amended, is the federal statute that authorized the regulation of uranium mill tailings associated with inactive (Title I) and active licensed (Title II) uranium processing sites. This document, *Waste Acceptance Criteria for the Grand Junction, Colorado, Disposal Site*, is primarily concerned with the UMTRCA Title I Remedial Action Program, which pertains to sites that were inactive (i.e., without an active license to process uranium ore at the time UMTRCA was enacted).

vicinity property: This term is most often used to refer to properties in the vicinity of uranium processing sites designated in UMTRCA Title I Section 102 that have been contaminated with residual radioactive material from those processing sites. This document also uses the term to refer to properties in the vicinity of the former uranium processing site in Monticello, Utah, that have been contaminated with 11e(2) byproduct material from that processing site.

[1] For the purposes of this document, uranium processing refers to the milling of ores to extract uranium, and not to uranium processing that takes place after the milling process, such as the enrichment phase of uranium processing.

1.0 Introduction

The U.S. Department of Energy (DOE) Office of Legacy Management (LM), through its Legacy Management Support (LMS) contractor (hereafter referred to as the contractor), operates the Grand Junction, Colorado, Disposal Site (GJDS), previously known as the Cheney Disposal Cell, near Grand Junction, Colorado. The GJDS has an open, engineered disposal cell that is used for the permanent disposal of radioactive materials, as authorized by the Uranium Mill Tailings Radiation Control Act (UMTRCA), as amended.

The following sources were used to determine the waste acceptance criteria (WAC) for radioactive material disposal in the GJDS cell: Atomic Energy Act, as amended, Section 11e(2); UMTRCA Title I, as amended, Sections 101 and 102; Public Law 104-259, "An Act to Extend the Authorization of the Uranium Mill Tailings Radiation Control Act of 1978, and for Other Purposes"; and 42 USC 7922, as amended.

The LMS contractor represents the interests of LM in implementing and enforcing the GJDS WAC and other requirements specified in this document. Unless otherwise indicated in this document, any reference to contractor requirements, rights, or authority also refers to those of LM.

1.1 Purpose

This document formalizes the specific types of radioactive material that are acceptable for or prohibited from disposal as waste[2] in the GJDS cell. It also formalizes requirements for transporting and receiving radioactive materials for disposal in the GJDS cell.

1.2 Scope

This document describes the WAC for radioactive materials intended for disposal as waste in the GJDS cell. It does not address the disposal of other types of waste generated during site activities, such as nonhazardous, nonradioactive solid waste (trash) that is disposed in an offsite municipal landfill.

The WAC presented in this document specify:

- Radioactive materials that are acceptable for or prohibited from disposal based on how and where the radioactive material is generated, the radionuclides present in the radioactive material, the presence of other hazardous constituents in the radioactive material, and the physical properties of the radioactive material.
- Exceptions to the WAC.
- Requirements for characterizing radioactive materials that are intended for disposal.
- Documentation required to describe and approve radioactive materials intended for disposal.
- Requirements for transporting and receiving radioactive materials, including acceptable and prohibited transport vehicles and waste containers.

[2] For the purposes of this document, the terms "radioactive material" and "radioactive waste" may be used interchangeably. Any radioactive material disposed in the GJDS cell is understood to be waste by reason of its disposal.

1.3 Site Description

The GJDS cell was constructed primarily for the disposal of uranium mill tailings and related radioactive wastes that were remediated during the 1980s and 1990s from the UMTRCA Title I mill site[3] in Grand Junction, Colorado, as part of the UMTRA Project[4] and from properties in the vicinity of that mill site. In 1996, Congress authorized the GJDS cell, which was not totally filled, to remain open to receive additional radioactive materials after the UMTRA Project for surface remediation was terminated in Grand Junction in 1998.

The GJDS is 18 miles southeast of Grand Junction near mile marker 48 on U.S. Highway 50 (Figure 1). The GJDS activities area and disposal cell are accessed through two security gates: one gate on the east side of U.S. Highway 50 and the other at the end of a connecting 1.5-mile-long asphalt access road.

The GJDS is a 360-acre site surrounded by a security fence. The disposal cell, which is managed as a radioactively contaminated area, occupies approximately 94 acres within the overall site boundary. The GJDS activities area includes several buildings, equipment decontamination facilities, and entrance and exit points for the disposal cell. Figure 2 provides a diagram of GJDS features.

The GJDS cell is scheduled to remain open until it is filled or until September 30, 2023, whichever comes first. Congress has proposed legislation that would keep the GJDS cell open until it is totally filled or until 2031, whichever comes first. As of January 2020, more than 4.5 million cubic yards of radioactive material had been disposed in the GJDS cell, with approximately 223,000 cubic yards of open space remaining.

2.0 Responsibilities

Described below are the responsibilities for various entities in relation to establishing and complying with the GJDS WAC and associated requirements presented in this document.

2.1 Office of Legacy Management

LM, in cooperation with the LMS contractor, is responsible for authorizing, directing, and overseeing the contractor's implementation of the GJDS WAC and associated requirements. LM, in coordination with the LMS contractor, is also responsible for considering and approving exceptions to the GJDS WAC.

[3] For the purposes of this document, the terms "mill site" and "processing site" are interchangeable.
[4] See "UMTRA Project" in the "Definitions" section in this document.

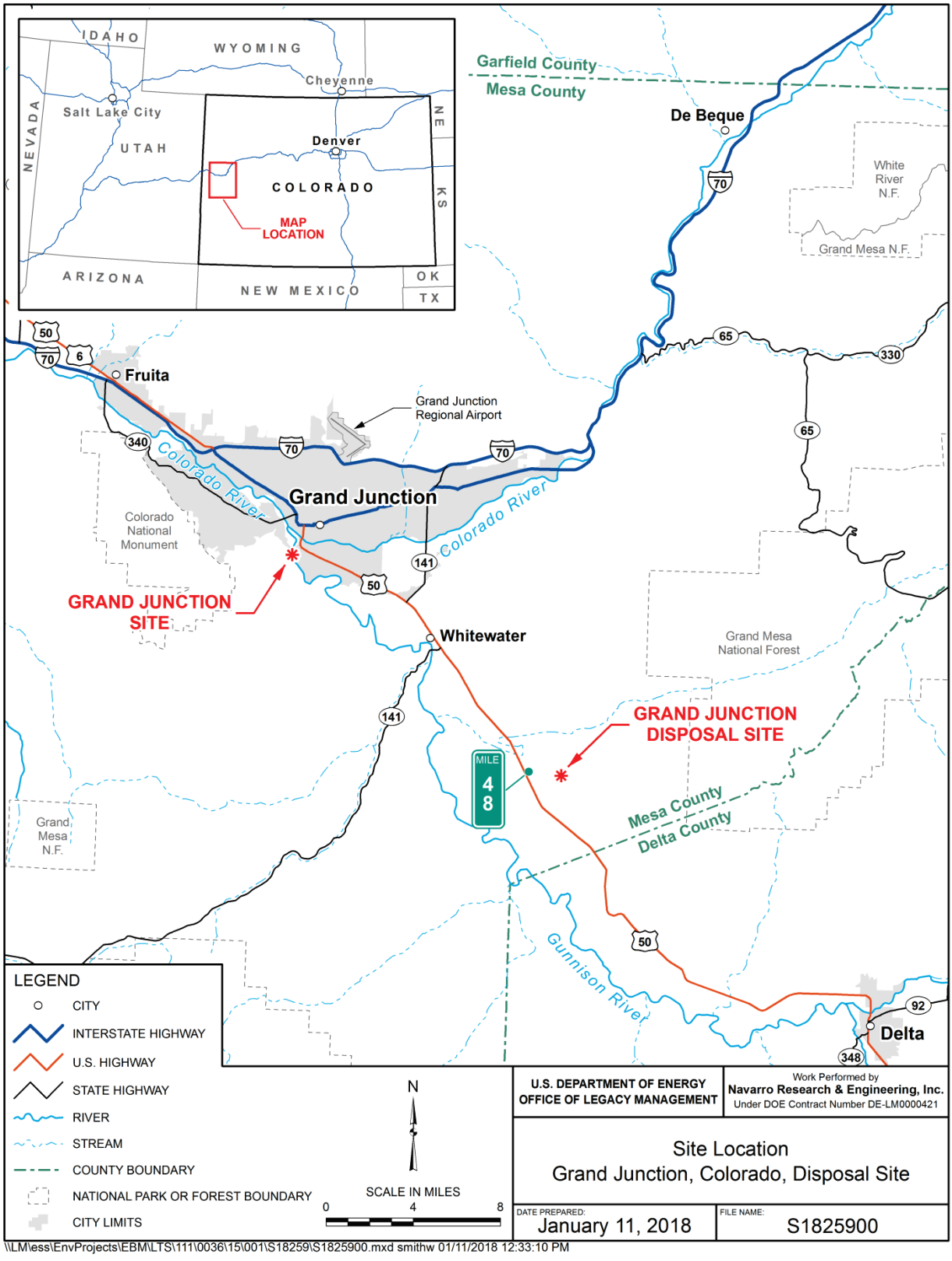

Figure 1. Site Location, Grand Junction, Colorado, Disposal Site

2.2 Legacy Management Support Contractor

The LMS contractor, with LM oversight, is responsible for implementing the GJDS WAC and associated requirements. The contractor is responsible for evaluating and approving radioactive material for disposal in the GJDS cell. The contractor also must adequately communicate the WAC and associated requirements to waste generators and waste transporters and must oversee certain activities to maintain their compliance with the WAC. The contractor, in coordination with LM, is also responsible for considering exceptions to the GJDS WAC.

2.2.1 GJDS Staff

The LMS contractor's GJDS staff are responsible for implementing GJDS procedures for receiving radioactive material for disposal (see Section 4.2). GJDS staff must also oversee a waste transporter's actions upon arrival at the GJDS to maintain compliance with the WAC and site procedures. GJDS staff may also inspect radioactive material shipments when they arrive at the GJDS to ensure that the material is acceptable for disposal in the GJDS cell.

2.2.2 Safety and Health Staff

The LMS contractor's Safety and Health (S&H) staff are responsible for implementing GJDS procedures and additional safety and health procedures for the protection of site workers and waste transporters during the receipt of radioactive material shipments. S&H staff are also responsible for performing radiological surveys and inspections on the waste transporter's vehicles, waste containers, and equipment upon their arrival at the GJDS, as needed; approving the entry of radioactive material into the GJDS cell area; and overseeing the decontamination and release of any vehicles, containers, equipment, or personnel exiting the GJDS cell area. S&H staff may also inspect and perform radiological surveys on the waste transporter's vehicles and waste containers before radioactive materials are shipped to the GJDS to ensure those items satisfy GJDS WAC for transportation and receiving.

2.2.3 Environmental Compliance Staff

The LMS contractor's Environmental Compliance (EC) staff are responsible for evaluating radioactive material before it is transported to the GJDS to determine whether the material complies with the WAC. Inspections may be included when evaluating radioactive material. When necessary and feasible, EC staff may inspect radioactive material that is generated from remedial activities in Colorado before the material is transported to the GJDS.[5] EC staff or other designated LMS contractor staff will typically inspect radioactive material that is generated from remedial activities outside of Colorado before the material is transported to the GJDS. EC staff may also inspect radioactive material shipments upon their arrival at the GJDS to ensure the material is acceptable for disposal in the GJDS cell. Section 3.4 describes further how radioactive material may be evaluated.

[5] Personnel from the Colorado Department of Public Health and Environment typically inspect radioactive material that is generated from remedial activities in Colorado before the material is transported to the GJDS, as described in Section 2.3. Personnel from CDPHE do not inspect radioactive material that is generated from remedial activities outside of Colorado,

An EC staff member may sign as the waste investigator a completed *Grand Junction Disposal Site Waste Profile and Disposal Approval* worksheet (LMS 8002GJO), hereafter called the GJDS worksheet or the worksheet, to provide detailed information about radioactive material that is intended for disposal in the GJDS cell. EC staff or a designee must sign the completed GJDS worksheet to signify final approval for the disposal of radioactive material in the GJDS cell before any disposal occurs. Section 3.5 elaborates on the use of the GJDS worksheet.

2.3 Colorado Department of Public Health and Environment Staff

Colorado Department of Public Health and Environment (CDPHE) staff will typically inspect radioactive material before the material is transported to the GJDS if the material originates from UMTRCA Title I uranium processing sites[6] in Colorado.[7] CDPHE inspections would be performed to help evaluate whether a radioactive material is acceptable for disposal in the GJDS cell.

CDPHE staff will typically sign the completed GJDS worksheet (Section 3.5) as the waste investigator for radioactive material that is generated from remedial activities at UMTRCA Title I uranium processing sites in Colorado.

Parties other than CDPHE staff, such as EC staff, may inspect radioactive material and sign the completed GJDS worksheet as the waste investigator when LM, through the LMS contractor, is directly involved in remedial activities or if LM or the LMS contractor determines a CDPHE inspection or signature on the GJDS worksheet is not required.

2.4 Waste Generator

The waste generator is responsible for complying with all WAC and associated requirements presented in this document. The waste generator must ensure that radioactive material is acceptable for disposal in the GJDS cell in accordance with the WAC. A waste generator may be required to sign the GJDS worksheet as the waste generator if CDPHE doesn't sign the worksheet as the waste investigator. This usually occurs when LM, through the LMS contractor, is directly involved in remedial activities.

2.5 Waste Transporter

The waste transporter, in cooperation with the waste generator, is responsible for (1) complying with all the WAC presented in this document that pertain to properly containing and transporting radioactive material to the GJDS and (2) adhering to GJDS procedures for receiving radioactive material (see Section 4.2).

[6] UMTRCA Title I uranium processing sites are listed in UMTRCA Title I, as amended, Section 102.
[7] When necessary and feasible, EC staff may inspect radioactive material that originates from UMTRCA Title I uranium processing sites in Colorado.

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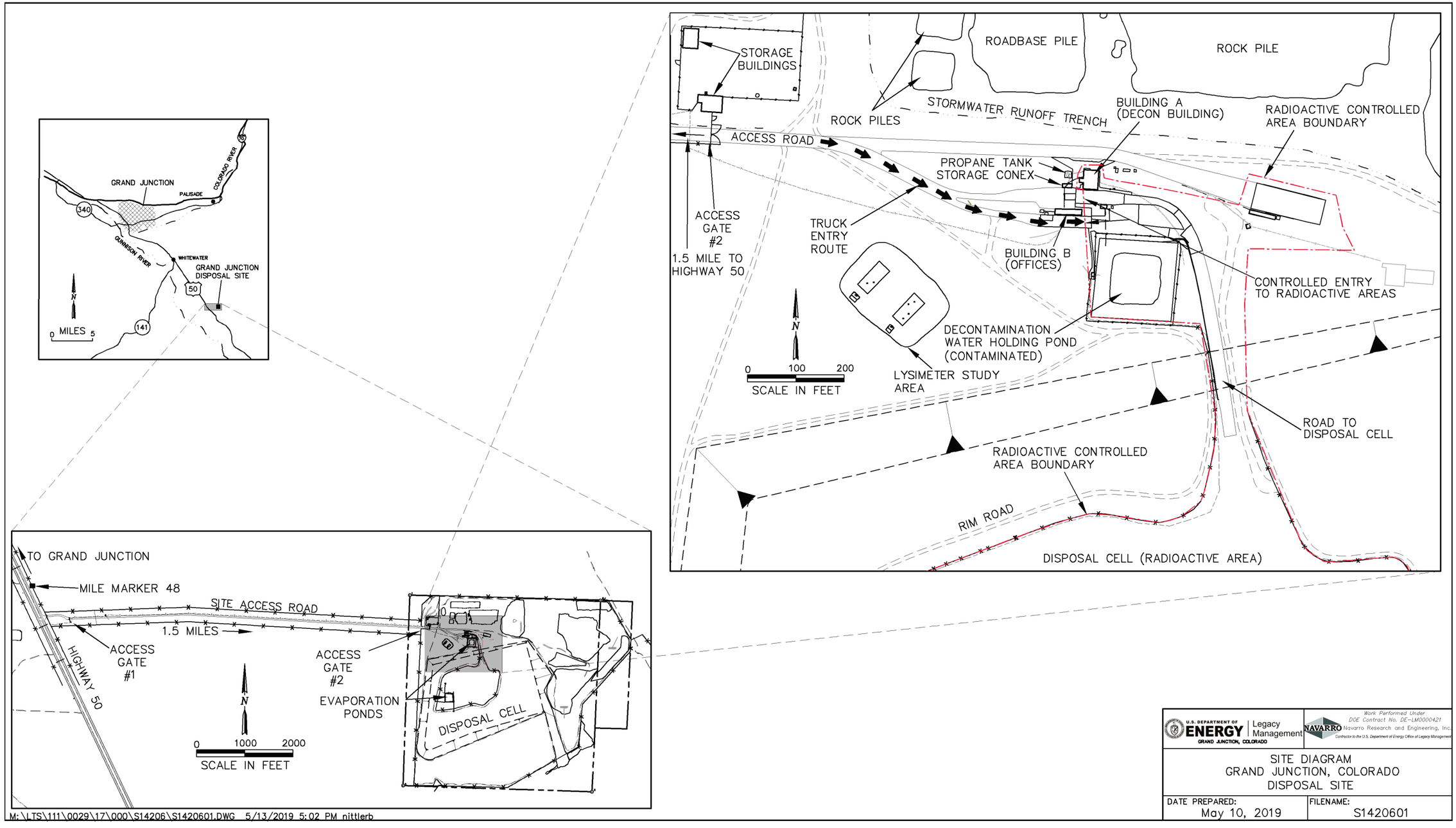

Figure 2. Site Diagram, Grand Junction, Colorado, Disposal Site

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3.0 Waste Acceptance Criteria: Waste Type

3.1 Acceptable Waste

Material must have the following radiological, chemical, and physical properties to be acceptable for disposal as waste in the GJDS cell.

A. Radiological properties

Material must have all of the following radiological properties to be acceptable for disposal in the GJDS cell.

- Material must be radioactive. The GJDS is not intended for the disposal of materials that are nonradioactive. Material is designated as radioactive if it is either (1) intrinsically radioactive or (2) presumed to be radioactive because of contact or association with other radioactive materials or because the material originated from an area identified as radioactive (these are examples of "process knowledge"; see the "Definitions" section in this document). DOE, or the LMS contractor acting on behalf of DOE, has the final authority to determine whether a material is radioactive for disposal purposes in the GJDS cell.
- Radioactive material must (1) be related to the uranium milling process (see "process related" in the "Definitions" section in this document) and (2) contain radiological constituents that are common to the uranium milling process, such as radiological constituents found in uranium mill tailings—radium-226, thorium-230, uranium, or certain uranium isotopes (e.g., uranium-238 or uranium-234). This includes radioactive materials generated by LMS contractor activities associated with uranium-milling-related radioactive materials, such as radiological surveys, site investigations, environmental monitoring, remedial actions, or decontamination work.
- Radioactive material must (1) qualify as one of the following types of radioactive material and (2) originate from the specified sites[8]:
  - Residual radioactive material (RRM)—as defined in UMTRCA Title I Section 101(7) (see "residual radioactive material" in the "Definitions" section in this document)—that is generated from an UMTRCA Title I uranium processing or disposal site[9,10] or from a property in the vicinity of an UMTRCA Title I uranium processing site that is contaminated with RRM from that processing site (see the next paragraph and "vicinity property" in the "Definitions" section in this document).

[8] All the types of acceptable radioactive material listed in Section 3.1.A are, in some way, related to the uranium milling process.

[9] For the purposes of this document, uranium processing refers to the milling of ores to extract uranium, and not to uranium processing that takes place after milling, such as the enrichment phase of uranium processing.

[10] UMTRCA Title I uranium processing sites are listed in UMTRCA Title I, as amended, Section 102. UMTRCA Title I disposal sites are those sites constructed for the permanent disposal of radioactive materials remediated from UMTRCA Title I uranium processing sites or their associated vicinity properties.

A vicinity property may have been designated, remediated, or both under the UMTRA Project. If a property in the vicinity of an UMTRCA Title I uranium processing site was not a designated or remediated property as part of the UMTRA Project,[11] it is the responsibility of the waste generator to demonstrate that the radioactive material from that property is related to the UMTRCA Title I uranium processing site.

— Byproduct material—as defined in the Atomic Energy Act, as amended, Section 11e(2), and commonly referred to as "11e(2) byproduct material" (see "byproduct material" in the "Definitions" section in this document)—that is generated from the Monticello Mill Tailings Site (MMTS) in Monticello, Utah,[12] or from a property in the vicinity of the MMTS that is contaminated with 11e(2) byproduct material from the MMTS (see the next paragraph and "vicinity property" in the "Definitions" section in this document).

  A vicinity property may have been designated, remediated, or both under DOE-sponsored remedial actions associated with the two LM sites in Monticello.[13] If a property in the vicinity of the MMTS was not a designated or remediated property as part of DOE-sponsored remedial actions in Monticello,[14] it is the responsibility of the waste generator to demonstrate that the radioactive material from that property is related to the MMTS.

— Radioactive material that is generated from LMS contractor groundwater monitoring or treatment activities at an UMTRCA Title I uranium processing site or at the LM sites in Monticello is considered RRM or 11e(2) byproduct material, respectively, and therefore is acceptable for disposal in the GJDS cell.

B. Chemical properties

Radioactive material described in Section 3.1.A must be free of other hazardous constituents to be acceptable for disposal in the GJDS cell. See Section 3.2.B for a description of hazardous constituents that are prohibited from disposal in the GJDS cell.

[11] Although not specifically designated properties, public streets and utilities that were contaminated with RRM were part of the UMTRA Project.

[12] A uranium processing site was once on the MMTS.

[13] The two LM sites in Monticello consist of (1) the MMTS and (2) all the vicinity properties contaminated with 11e(2) byproduct material from the MMTS. The vicinity properties contaminated with 11e(2) byproduct material were collectively designated as the Monticello Vicinity Properties Site.

[14] Although not specifically designated properties, public streets and utilities that were contaminated with 11e(2) byproduct material were part of DOE-sponsored remedial actions in Monticello.

Radioactive materials such as uranium mill tailings, groundwater, or surface water that are present at LM UMTRCA Title I uranium processing or disposal sites or at the LM sites in Monticello, Utah, or radioactive materials that are generated from LMS contractor groundwater monitoring or treatment activities at those sites, may include substances designated as co-constituents. Co-constituents include substances such as ammonium, arsenic, barium, chloride, chromium, manganese, molybdenum, nitrate, radium, selenium, strontium, sulfate, uranium, or vanadium. These are designated as co-constituents because they were inherent in the uranium-bearing ores that were historically milled at those sites or because they were present in or produced by materials or chemicals used in the uranium milling process. Such co-constituents that are related to historical uranium milling activities are not considered prohibited hazardous constituents when present in the acceptable radioactive materials described in Section 3.1.A. Therefore, such radioactive materials and their associated co-constituents are acceptable for disposal in the GJDS cell.

Examples of radioactive materials with co-constituents related to historical uranium milling activities that are acceptable for disposal in the GJDS cell include the following:

Note

- *The LM Tuba City, Arizona, Disposal Site is an UMTRCA Title I disposal site that has an evaporation pond containing radioactive materials related to the uranium milling process. These materials consist of contaminated sediment, groundwater, and materials generated from LMS contractor groundwater treatment activities. Co-constituents in the Tuba City evaporation pond's radioactive materials may include chloride, molybdenum, nitrate, selenium, sulfate, and uranium.*
- *The LM Shiprock, New Mexico, Disposal Site is an UMTRCA Title I disposal site that has an evaporation pond containing radioactive materials related to the uranium milling process. These materials consist of contaminated sediment and groundwater. Co-constituents in the Shiprock evaporation pond's radioactive materials may include ammonium, manganese, nitrate, selenium, strontium, sulfate, and uranium.*
- *The LM MMTS in Monticello, Utah, has an evaporation pond with radioactive materials related to the uranium milling process. These materials consist of contaminated sediment and groundwater. Co-constituents in the MMTS evaporation pond's radioactive materials may include arsenic, manganese, molybdenum, nitrate, selenium, uranium, and vanadium*.

C. Physical properties

Radioactive material described in Section 3.1.A must have the following physical properties to be acceptable for disposal in the GJDS cell:

- Solid radioactive material[15] must be sized and configured to satisfy the construction specifications and compaction requirements for placement in the GJDS cell. Those requirements include the following:
  - The maximum volume of any single piece of material (e.g., concrete) must not exceed 1 cubic yard (27 cubic feet).
  - The maximum dimension of any single piece of material (e.g., pipe, wood) must be shorter than the width of the transport vehicle's bed.
  - Pipe, culvert, and similarly shaped materials that cannot be crushed must be split in half lengthwise and nested together.
  - Any miscellaneous radiologically contaminated containers (e.g., aerosol spray cans, paint cans) must be empty, dry, and crushed before being transported to the GJDS. If a waste generator wishes to dispose a larger radiologically contaminated empty container, such as a 55-gallon drum, in the GJDS cell, the waste generator must discuss the container with the LMS contractor before transporting it to the GJDS. The waste generator may need to provide the contractor with any known history about the container, such as the container's contents and the conditions of the location where the container originated.

    
    Note

    The contents of a radiologically contaminated container must not be removed solely for the purpose of disposing of the empty container in the GJDS cell. An empty container that contained a known hazardous constituent may be regulated as a hazardous waste; the disposal of hazardous waste in the GJDS cell is prohibited. If the contents of a container were known and emptied by the waste generator, the waste generator shall consult with the LMS contractor before transporting the container to the GJDS to determine if the container is acceptable for disposal.

  The waste generator must properly size and configure solid radioactive material as described above before the material is transported to the GJDS unless, before transport, the waste generator can make other arrangements with the LMS contractor to complete those actions at the GJDS.

- Liquid radioactive material must be one of the following types of water:
  - Groundwater or surface water from one of the sites specified in Section 3.1.A and that LM or the LMS contractor recognize is contaminated with acceptable radiological constituents or radioactive materials described in Section 3.1.A because of historical uranium processing or DOE remedial activities at those sites

[15] Solid radioactive material in many physical forms is acceptable for disposal in the GJDS cell, including environmental media (e.g., dirt, rocks, vegetation), construction materials (e.g., concrete, metal, wood), building debris, equipment, personal protective equipment, miscellaneous trash, and other materials.

— Precipitation water, decontamination water, or other water that is contaminated because it has been in contact with one of the following:

  - Contaminated groundwater or surface water (as described above)
  - The types of radioactive material described in Section 3.1.A

— The water described above cannot contain any prohibited hazardous constituents as described in Section 3.2.B

Liquid radioactive material, as described above, typically will be managed in an evaporation pond at the GJDS, not placed directly on radioactive materials in the GJDS cell. Liquid radioactive material may be placed on radioactive materials in the GJDS cell if conditions warrant, such as if the liquid is needed for dust control, and only if LM and the LMS contractor mutually agree that it is appropriate. Sediment remaining in the evaporation pond eventually will be disposed with materials in the GJDS cell. Approval will not be granted to receive liquid radioactive material at the GJDS if the evaporation pond does not have the capacity to manage additional liquid radioactive material. LM or the LMS contractor will determine how much capacity the evaporation pond needs to receive additional liquid radioactive material.

If an acceptable radioactive material, as described earlier, may pose a hazard to GJDS personnel because of unusual physical features (e.g., sharp objects, sticky material, or inhalation hazard) or unforeseen characteristics, the waste generator must forewarn the LMS contractor about the hazard and mitigate the hazard to the contractor's satisfaction before the material is transported to the GJDS. Acceptable radioactive material with an inadequately mitigated hazard may be prohibited from disposal in the GJDS cell.

Section 3.3 describes the process for allowing exceptions to the WAC that are presented in Section 3.1.

LM and the LMS contractor reserve the right to refuse the disposal of the preceding acceptable radioactive materials in the GJDS cell because of problems with the GJDS activities schedule, staff availability, weather, seasonal constraints, budget constraints, or unforeseen circumstances.

3.2 Prohibited Waste

Material with any of the following radiological, chemical, or physical properties is prohibited from disposal as waste in the GJDS cell.

A. Radiological properties

Material with any of the following radiological properties is prohibited from disposal in the GJDS cell:

- Nonradioactive material; the GJDS is intended for disposal of radioactive materials (designation of material as radioactive is further explained in Section 3.1.A)
- Radioactive material that (1) is not related to the uranium milling process and (2) does not contain radiological constituents that are common to the uranium milling process, as described in Section 3.1.A

- Radioactive material that (1) does not qualify as one of the acceptable types of radioactive material and (2) did not originate from specified sites, as described in Section 3.1.A; such material includes:
  - 11e(2) byproduct material from sites other than the LM sites in Monticello, Utah, including 11e(2) byproduct material from sites designated as UMTRCA Title II sites[16]
  - high-level waste[17]
  - transuranic waste[17]
  - low level waste[17]

B. Chemical properties

Radioactive material that is mixed with any prohibited hazardous constituents[18] is prohibited from disposal in the GJDS cell. Prohibited hazardous constituents include:

- Asbestos
- Hazardous chemicals
- Petroleum products (e.g., fuel [gasoline, diesel, etc.], used oil, hydraulic fluid)
- Antifreeze
- Hazardous waste as defined in 40 CFR 261 or in corresponding State of Colorado hazardous waste regulations at 6 CCR 1007-3 Part 261
- Regulated concentrations of polychlorinated biphenyls (PCBs) as described in 40 CFR 761
- Other prohibited constituents or materials specified as hazardous by LM or the LMS contractor (e.g., electronic waste, batteries, hazardous gases, drilling fluids, or sewage)

The prohibition against radioactive material that is mixed with prohibited hazardous constituents applies even if the radioactive material is otherwise acceptable in accordance with Section 3.1; the prohibited hazardous constituents mixed with acceptable radioactive material may be subject to other environmental regulations that prevent the disposal of those hazardous constituents in the GJDS cell.

[16] An amendment to UMTRCA in 1996, implemented through Public Law 104–259, "An Act to Extend the Authorization of the Uranium Mill Tailings Radiation Control Act of 1978, and for Other Purposes", authorized 11e(2) byproduct material specifically from the LM sites in Monticello, Utah, to be disposed in the GJDS cell. However, the 1996 UMTRCA amendment did not also authorize 11e(2) byproduct material from UMTRCA Title II sites to be disposed in the GJDS cell.

[17] As defined in the *Radioactive Waste Management Manual* (DOE Manual 435.1-1 Chg 2).

[18] Certain constituents present in the acceptable radioactive materials described in Section 3.1.A are considered co-constituents, not hazardous constituents, that are acceptable for disposal in the GJDS cell. Section 3.1.B describes what co-constituents are and why they are acceptable for disposal in the GJDS cell.

C. Physical properties

Radioactive material with any of the following physical properties is prohibited from disposal in the GJDS cell:

- Solid radioactive material that is not properly sized and configured as described in Section 3.1.
- Radioactive material that is or contains free liquid[19], except the acceptable liquid radioactive material described in Section 3.1.

LM or the LMS contractor may prohibit the disposal of any radioactive materials that are deemed to be unacceptable because of any unusual, unmanageable, or unsafe physical form or other condition that would endanger workers at the GJDS or prevent proper handling or placement of the materials in the GJDS cell.

Section 3.3 describes the process for allowing exceptions to the WAC that are presented in Section 3.2.

LM and the LMS contractor reserve the right to refuse any radioactive material that is determined not to comply with the WAC described in Sections 3.1 and 3.2. In addition, LM and the LMS contractor reserve the right to require the waste generator or transporter to remove from the GJDS any unacceptable radioactive material that is transported to or disposed in the GJDS cell.

3.3 Exceptions to Waste Acceptance Criteria

Exceptions to the WAC described in Sections 3.1 and 3.2 may be considered on an individual basis. The waste generator must submit a written request to LM or the LMS contractor to dispose radioactive material in the GJDS cell that does not comply with the WAC described in Sections 3.1 and 3.2. Considerable time may be required for LM or the LMS contractor to evaluate and respond to a request for an exception to the WAC in Sections 3.1 and 3.2, and there is no guarantee that an exception will be granted. LM may need to consult with other authorities, such as other DOE offices, the U.S. Environmental Protection Agency (EPA), the State of Colorado, or the U.S. Nuclear Regulatory Commission, concerning the disposal of certain radioactive materials in the GJDS cell that do not comply with the WAC described in Sections 3.1 and 3.2.[20] LM must approve in writing any exceptions to the WAC in Sections 3.1 and 3.2 before such radioactive materials can be disposed in the GJDS cell.

If excepted radioactive materials are approved by LM for disposal in the GJDS cell, the specific disposal location within the cell for those materials will require a land survey recorded in GJDS records.

[19] A free liquid may mean a visible, freestanding liquid; a liquid dripping from a solid material; or any liquid that is generated from a solid material that fails EPA SW-846 Method 9095B, Paint Filter Liquids Test (EPA SW-846).

[20] Example: In 2000, DOE, EPA, and the U.S. Nuclear Regulatory Commission approved the disposal of certain radioactive materials that were mixed with PCBs in the GJDS cell.

3.4 Waste Characterization

The waste generator is responsible for determining the radiological, chemical, and physical characteristics of a radioactive material to ensure that it complies with the WAC. Radioactive material characteristics must be identified and documented for evaluation by LM or the LMS contractor before a material is approved for disposal as a waste in the GJDS cell.

The characteristics of a radioactive material can be determined by several means, including the following:

- **Process knowledge:** Characteristics of a radioactive material can be determined through knowledge of historical analytical data associated with the radioactive material, the activity that produced the material, other materials associated with the radioactive material, the conditions of the location where the radioactive material was found, or historical activities at the property where the radioactive material was found. Such information can be acquired by researching records or other written information, including information on the internet, or by interviewing people who have knowledge about the radioactive material.
- **Inspection:** Characteristics of a radioactive material can be determined through visual inspection of physical features of the material—such as color, structure, or material type (e.g., wood, metal, dirt, concrete)—or of the area where the material was found.


Note

If radioactive material intended for disposal in the GJDS cell originates in Colorado, it may be inspected by a representative of CDPHE or the LMS contractor before the material is approved for disposal in the GJDS cell. Typically, only the LMS contractor inspects radioactive material that originates outside Colorado.

- **Field measurement:** Characteristics of a radioactive material can be determined by collecting "real time" measurements from the material before it is excavated or removed for disposal. For example, a field measurement can be taken with a radiological meter. Other instruments, such as an organic vapor analyzer, can be used to screen for the presence of certain hazardous constituents.
- **Laboratory analysis:** Characteristics of a radioactive material can be determined by analyzing samples of a radioactive material in a laboratory that is acceptable to LM or the LMS contractor. For example, samples of a radioactive material can be analyzed to identify radionuclides or the presence of hazardous constituents.

LM and the LMS contractor reserve the right to require a waste generator to do any or all of the radioactive material characterization activities described above to ensure that a material is acceptable for disposal in the GJDS cell and to protect the health and safety of workers and the environment. Radioactive material that is not adequately characterized by the waste generator to the satisfaction of LM or the LMS contractor will not be approved for disposal at the GJDS.

3.5 Waste Profile and Disposal Approval Documentation

A GJDS worksheet must be completed before radioactive material can be disposed in the GJDS cell. The worksheet is used to document comprehensive information about a radioactive material, such as place of origin; activity that generated the material; radiological, chemical, and physical

properties; quantity; and worker safety concerns. The GJDS worksheet must explain any exceptions from the WAC identified in Sections 3.1 and 3.2. Additional information can be attached to the worksheet, as necessary, to satisfy documentation requirements. The worksheet is available from the LMS contractor in electronic format.

The waste generator—the person who owns or generates the waste—may be required to complete and sign the GJDS worksheet. Various personnel other than the waste generator, such as LMS contractor EC staff, contractor S&H staff, or CDPHE personnel, may contribute to completing and signing the worksheet. A waste investigator—a person with detailed knowledge about the waste but who is not the waste owner or generator—may complete and sign the GJDS worksheet instead of the waste generator. A waste investigator must be as knowledgeable about the waste as the waste generator and have the permission of the waste generator and the LMS contractor to sign the GJDS worksheet.


Note

For radioactive material that the City of Grand Junction stockpiles on City property for subsequent disposal in the GJDS cell, a CDPHE representative must sign the GJDS worksheet as the waste investigator. In addition, the CDPHE representative may sign the worksheet as the waste investigator for radioactive material on other properties in Colorado if circumstances warrant.

The waste generator or investigator must provide the completed and signed worksheet to the LMS contractor for evaluation before a radioactive material can be approved for disposal as waste in the GJDS cell. LMS contractor EC staff must evaluate the information on the GJDS worksheet to determine whether the radioactive material complies with the GJDS WAC.

If LMS contractor EC staff determine that the radioactive material described on the GJDS worksheet complies with the GJDS WAC, EC staff or an EC designee must sign the completed worksheet to signify final approval for the disposal of the radioactive material in the GJDS cell.

LM and the LMS contractor reserve the right to refuse any radioactive material for disposal in the GJDS cell that is not properly described or approved for disposal using the GJDS worksheet.

An example of the GJDS worksheet is provided in Appendix A.

4.0 Waste Acceptance Criteria: Transportation and Receiving

Requirements for transporting and receiving radioactive material at the GJDS are described below. The waste generator and waste transporter must comply with these requirements and with any GJDS operating procedures (e.g., *Waste Receiving, Placing, and Decontaminating Procedure for the Grand Junction, Colorado, Disposal Site* [DOE 2018]) to dispose radioactive material in the GJDS cell.

4.1 Waste Transportation Requirements

4.1.1 General Waste Transportation Requirements

- The waste generator and transporter shall ensure that, when radioactive material is being excavated and loaded for transport, the material contains enough moisture to prevent visible dust when it is unloaded in the GJDS cell but not so much moisture that free liquid is created in the radioactive material.
- The initial cleanliness of a vehicle, the condition of the material being transported, GJDS conditions, and the weather can affect the time required to decontaminate and release a vehicle from the GJDS for unrestricted use. The waste transporter shall ensure that the vehicle bed is clean of all material before loading radioactive material for transport to the GJDS. While loading at the waste generator's site, the transporter should be cautious not to spread contamination to the inside of the vehicle's cab. If radiological contamination is detected inside the vehicle's cab at the GJDS, the cab will require decontamination, which will require additional time before the vehicle can be released from the GJDS.
- The waste transporter shall ensure that transport vehicles, including tailgates and vehicle beds, are maintained in good operating condition in accordance with the manufacturer's specifications and free of oil, hydraulic, and fuel leaks. At the discretion of LMS contractor staff, vehicles with fluid leaks or mechanical defects may be required to leave the GJDS without unloading radioactive material.
- The waste generator and transporter are responsible for determining whether a radioactive material intended for disposal in the GJDS cell qualifies as a U.S. Department of Transportation (DOT) Class 7 radioactive material. For radioactive material that qualifies as a DOT Class 7 radioactive material, the waste generator and the transporter must comply with applicable DOT hazardous material shipping requirements (packaging, marking, labeling, placarding, shipping papers, etc.). If a radioactive material shipment requires the use of a DOT hazardous material shipping paper, the waste transporter must provide a copy of the completed and signed shipping paper to LMS contractor staff upon arrival at the GJDS.
- The waste transporter shall prevent the release of radioactive material from the vehicle bed and tailgate and the release of windblown dust and debris from the top of the vehicle bed during transport.

4.1.2 Acceptable Vehicles and Waste Containers

- The waste generator and transporter must be able to accurately describe any transport vehicles and waste containers that are planned for use and receive approval from LM or the LMS contractor before transporting any radioactive material to the GJDS for disposal.
- Acceptable vehicles for transporting radioactive material to the GJDS include end dump trucks, such as single or tandem axle dump trucks; end dump trucks with "pup" trailers; side dump trucks; flatbed trucks carrying one or more approved individual waste containers; and tanker trucks containing acceptable liquids. Smaller vehicles, such as pickup trucks and sport utility vehicles, also are acceptable.
- Belly dump trucks and trucks with "roll-off bins" are prohibited.

- Some of the acceptable vehicles described above (e.g., end dump trucks, side dump trucks, and tanker trucks) may serve as the waste container itself for large quantities of radioactive material, such as soil or debris. An acceptable vehicle (e.g., a flatbed truck) may carry acceptable waste containers, such as properly secured "super sacks" (e.g., PacTec bags) for solids, "poly" tanks for liquids, metal containers, or boxes. Smaller vehicles (e.g., pickup trucks and sport utility vehicles) may transport smaller acceptable containers, such as boxes, bags, cans, sample containers, or other containers.
- The acceptable vehicles and containers described above must have appropriate safeguards for preventing the release of radioactive material during transport, such as diaper liners, gaskets, secured tarps, tailgate locks, closed valves, secured lids, and sealed closures. The waste generator and transporter may be required to accurately describe to the LMS contractor what safeguards will be used to prevent the release of radioactive material during transport.
- Vehicles that have entered the disposal cell must be decontaminated before exiting the disposal cell area in accordance with Section 4.2.4. Waste containers for smaller quantities of radioactive material are typically disposed with the radioactive material rather than being decontaminated.
- If a vehicle or container was previously used for radioactive material shipments to or from sites other than the GJDS, the waste generator or transporter, at the request of the LMS contractor (usually contractor S&H staff), may need to provide the LMS contractor with the following information before the waste generator loads and transports radioactive material to the GJDS:
  - Type of radioactive material that was previously transported in the vehicle or container (e.g., uranium ore, thorium ore, low level wastes, or transuranic wastes)
  - Facility or location where the vehicle or container was previously used (e.g., White Mesa Mill near Blanding, Utah; Los Alamos National Laboratory in Los Alamos, New Mexico; or the EnergySolutions disposal facility in Clive, Utah)
  - Radiological survey release data for the vehicle or container
- The LMS contractor reserves the right to perform preliminary radiological surveys and inspect any vehicles or waste containers that the waste generator or transporter intends to use before radioactive material is loaded for transport to the GJDS.
- LM and the LMS contractor shall not incur any costs or liability from the waste generator or waste transporter for any delays, loss of vehicle use, or vehicle damage resulting from activities at the GJDS.
- The waste generator or transporter must submit a written request to the LMS contractor to be granted an exception to use a vehicle or waste container other than the acceptable vehicles and containers described above.[21] Considerable time may be required to evaluate and respond to requests to use other vehicles or waste containers, and there is no guarantee that the use of other vehicles or waste containers will be approved. Special arrangements, considerable planning and scheduling time, and specific work controls may be required if vehicles or waste containers other than those described above are approved for use.

[21] The LMS contractor can evaluate and grant the use of alternate vehicles or waste containers without consulting LM.

LM and the LMS contractor reserve the right to reject any transport vehicles or waste containers, either before shipment or when a shipment arrives at the GJDS, that are determined to be unacceptable. This includes any otherwise acceptable vehicle or waste container (as described above) that is deemed unfit for entry into the site or into the disposal cell (e.g., because of leaking vehicle fluids, flat tire, other unsafe vehicle condition, leaking radioactive material, or an unforeseen problem with the vehicle load or waste container).

4.2 Waste Receiving Requirements

4.2.1 General Waste Receiving Requirements

- The waste transporter shall not allow any untrained personnel in vehicles while at the GJDS.
- The waste transporter shall not bring any animals, minors (individuals under age 18), firearms, explosives, alcoholic beverages, or federally designated illegal substances to the GJDS.
- If a radioactive material being transported to the GJDS qualifies as DOT Class 7 radioactive material, the transporter must provide LMS contractor staff with a copy of the pertinent DOT hazardous material shipping papers upon arrival at the GJDS.
- The waste transporter's loaded vehicles shall not exceed DOT legal vehicle dimensions and weight limits. The transporter shall provide LMS contractor staff with evidence of the weight of the transport vehicle and the radioactive material contained in the vehicle upon arrival at the GJDS. At the discretion of GJDS staff, overweight vehicles may be required to leave the GJDS without unloading radioactive material.
- Vehicles transporting radioactive material to the GJDS shall not be parked at the site overnight unless special conditions exist (e.g., there are no acceptable alternatives for staging a loaded transport vehicle offsite overnight) and prior arrangements are agreed to by the LMS contractor.

4.2.2 Training Requirements for Transporter Drivers

The *Pre-Haul Driver Orientation* form (LMS 1071) is used for a one-time mandatory briefing for all vehicle drivers delivering radioactive material to the GJDS. The briefing provides information such as entrance and exit protocols for the GJDS cell, decontamination procedures, and required documentation (e.g., weight tickets and sign-in log). Vehicle drivers must also take appropriate radiological training specified by the LMS contractor. If a large quantity of radioactive material must be transported using multiple vehicles over an extended period, the waste generator and transporter shall arrange a specific time with the LMS contractor for all drivers to come to the GJDS for training before transport begins. The required briefing and other training may take 90 minutes or longer.

4.2.3 Requirements for Entering and Exiting the GJDS Disposal Cell

- The LMS contractor will not permit vehicles transporting radioactive material to enter the GJDS cell if the contractor determines conditions in the cell are too wet, winds are too high, there is a risk of water freezing in the decontamination area, or other unsafe conditions exist in the cell area.

- When a vehicle arrives at the GJDS, it must stop at the disposal cell's vehicle entry point. The driver must exit the truck and sign in at the office trailer, including signing the access control log. Required sign-in information includes the date of delivery, driver's name, name of company hauling the material, truck license number, where the radioactive material originated at the time of loading, and total tons or cubic yards of radioactive material. The LMS contractor's construction site supervisor (CSS) and S&H personnel are responsible for checking the information provided by drivers to ensure that the required information is entered and is accurate and complete. The CSS will obtain the following documentation from drivers delivering radioactive material, as applicable: copies of weight tickets and copies of DOT hazardous material shipping papers.
- The driver will be issued a two-way communication device to communicate while inside the radiological control area.

Note

Two-way communication is not permitted while driving a vehicle inside the GJDS cell. The vehicle driver shall come to a full stop and park the vehicle or set the vehicle brakes before conversing with other personnel with a two-way communication device.

- The vehicle driver shall wait for permission from GJDS staff to drive the vehicle into the disposal cell area for unloading. When permission is received, the driver will proceed as directed by GJDS staff. Initially the driver may be required to follow an escort vehicle or equipment into the disposal cell.
- The vehicle driver shall keep the windows and vents to outside air closed at all times while in the disposal cell. No eating, drinking, chewing (e.g., tobacco or gum), smoking, applying cosmetics, or any similar activity is permitted in the vehicle while it is in the disposal cell. The driver must not exit the vehicle at any time while in the disposal cell.
- The vehicle driver shall use "recirculated air" instead of outside air (if such a feature is available in the vehicle cab) when using the vehicle's air-conditioning or heating unit while in the disposal cell.
- When the vehicle is inside the disposal cell, operation of the dump bed shall be by the driver or operator from inside the vehicle cab.
- If a vehicle breaks down in the disposal cell, the waste generator or transporter must make special arrangements with the LMS contractor to repair the vehicle inside the disposal cell or pull the vehicle out of the disposal cell for repair, either of which could take considerable time.
- After disposal is complete, the driver will be directed by GJDS staff to the vehicle decontamination area.
- Once decontamination of the vehicle has been completed (see Section 4.2.4), a GJDS radiological control technician (RCT) will direct the driver to move the vehicle into the radiological buffer area (RBA). While the GJDS RCT performs a radiological survey of the vehicle in the RBA, the driver will be permitted to exit the vehicle and RBA and use the GJDS facilities as needed. Once the vehicle passes the RCT radiological survey for an unrestricted release, the driver will be permitted to drive the vehicle from the RBA to an uncontaminated area and depart from the GJDS.

4.2.4 Requirements for Vehicle Decontamination and Unrestricted Release

After a vehicle has unloaded radioactive material in the disposal cell, the vehicle must undergo decontamination and an unrestricted release radiological survey in accordance with LMS contractor requirements and 10 CFR 835.1101(b) and (c) before departing from the GJDS. The time required to complete decontamination and an unrestricted release survey depends on several factors, such as the initial cleanliness of the vehicle (both the exterior of the vehicle and inside the vehicle cab), vehicle type, waste type, moisture condition of the waste, and number of loads being processed.

A decontamination consists of a thorough high-pressure wash of the entire vehicle exterior, including the vehicle bed. If necessary, the interior of the vehicle cab will also be decontaminated by hand washing or wiping down surfaces. After decontamination, the entire vehicle, including the bed and inside of the cab, will be surveyed for radiological contamination by a GJDS RCT. Once the unrestricted release criteria are met, the vehicle can be released to leave the GJDS. If the unrestricted release criteria are not met, the vehicle will require a second decontamination and second unrestricted release survey.

4.2.5 Time Required to Complete a Waste Delivery

The number of waste transport vehicles that can be processed daily at the GJDS can vary widely based on several factors, such as the type of vehicle, weather, soil conditions in the GJDS cell, and the different times required to complete decontamination and unrestricted release surveys. The protocol at the GJDS is to accommodate only one delivery vehicle at a time in the cell. Before a waste delivery occurs, the waste generator and waste transporter should discuss with the LMS contractor the total time that the contractor expects it will take for a vehicle to complete a waste delivery. Waste transporters should plan on spacing waste delivery vehicles accordingly.


Note

Neither LM nor the LMS contractor can guarantee the number of waste transport vehicles that can be received or the quantity of radioactive material that can be disposed at the GJDS each day. Those numbers can only be estimated and are subject to the factors described above and in Section 4.2.6. Other factors may also affect those numbers, such as GJDS operations, GJDS staff availability, budget constraints, or unforeseen circumstances. For these reasons, LM and the LMS contractor reserve the right to change the estimated number of waste transport vehicles that can be received and the quantity of radioactive material that can be disposed at the GJDS at any time before or during the time the GJDS is open for disposing radioactive materials. Furthermore, LM and the LMS contractor shall not incur any costs or liability from the waste generator or waste transporter for making any changes to those numbers.

4.2.6 GJDS Schedule

- The GJDS is typically opened once a year (though sometimes as infrequently as once every 3 years) to receive radioactive material; when opened, it is usually for several consecutive weeks.
- The GJDS is open *only* during warm months due to safety and health concerns and decontamination protocols, typically May 1 to October 15.

- The GJDS is open *only* during daylight hours, typically 7 a.m. to 5 p.m. Monday through Friday, due to safety and health concerns.
- The LMS contractor will receive vehicles transporting radioactive material to the GJDS on *only* the scheduled dates, weekly workdays, and daily work hours previously agreed to by all parties before the start of any material deliveries. Radioactive material will not be received outside of the previously accepted work schedule unless agreed to by all parties.

5.0 References

6 CCR 1007-3 Part 261. Colorado Department of Public Health and Environment, "Identification and Listing of Hazardous Waste," *Code of Colorado Regulations*.

10 CFR 835.1101. U.S. Department of Energy, "Control of Material and Equipment," *Code of Federal Regulations*.

40 CFR 261. U.S. Environmental Protection Agency, "Identification and Listing of Hazardous Waste," *Code of Federal Regulations*.

40 CFR 761. U.S. Environmental Protection Agency, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," *Code of Federal Regulations*.

49 CFR 172.101. U.S. Department of Transportation, "Purpose and Use of Hazardous Materials Table," *Code of Federal Regulations*.

49 CFR 173 Subparts C, D, and I. U.S. Department of Transportation, *Code of Federal Regulations*.

42 USC 7922. "Termination of Authority of Secretary," *United States Code*.

49 USC 5103. "General Regulatory Authority," *United States Code*.

DOE (U.S. Department of Energy), 2018. *Waste Receiving, Placing, and Decontaminating Procedure for the Grand Junction, Colorado, Disposal Site,* LMS/GRJ/S11343-1.0, Office of Legacy Management, December.

DOE Manual 435.1-1 Chg 2 (Admin Chg), *Radioactive Waste Management Manual*, U.S. Department of Energy, June 8, 2011.

EPA (U.S. Environmental Protection Agency), SW-846. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, Method 9095B, Paint Filter Liquids Test, EPA publication SW-846, continually updated.

Public Law 104–259, "An Act to Extend the Authorization of the Uranium Mill Tailings Radiation Control Act of 1978, and for Other Purposes," October 9, 1996.

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Appendix A

Example of *Grand Junction Disposal Site Waste Profile and Disposal Approval* Worksheet (LMS 8002 GJO)

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NAVARRO
Contractor to the U.S. Department of Energy Office of Legacy Management

Grand Junction Disposal Site Waste Profile and Disposal Approval

Date: Click or tap to enter a date.

Waste Generator or Investigator: By completing and signing this worksheet, you are confirming that your waste conforms to the criteria and conditions specified below. These criteria and conditions comply with the waste acceptance criteria and other requirements specified in the *Grand Junction Disposal Site Waste Acceptance Criteria* (GJDS WAC). Waste that does not comply with the GJDS WAC in terms of both the (1) *waste type* and (2) *transportation and receiving requirements* will not be approved for disposal at the GJDS, other than specific exceptions that are documented and approved within this worksheet. The U.S. Department of Energy Office of Legacy Management (DOE LM) and the LM support (LMS) contractor reserve the right to require the waste generator or transporter to remove any waste that it transports to or disposes of at the GJDS that does not comply with the GJDS WAC.

Waste Profile

Site where waste originated:

Click or tap here to enter text.

Site description/use/history (check one, provide additional site information below as needed):

- ☐ Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Site or associated vicinity property
- ☐ Monticello Mill Tailings Site (Operable Unit I, II, or III) or Monticello Vicinity Properties Site
- ☐ Other (additional site information must be provided below)

Additional site information:

Click or tap here to enter text.

Process or activity that created the waste:

Click or tap here to enter text.

Physical properties of the waste (material type, shape, color, odor, consistency, etc.):

Click or tap here to enter text.

Estimated quantity of waste (weight, volume, etc.): Click or tap here to enter text.

The waste must conform to the following criteria, apart from those exceptions documented and agreed to herein.

- Waste is radioactive or presumed to be radioactive and is related to the uranium milling process; contains radiological constituents that are common to the uranium milling process (documented later in this worksheet); and is either residual radioactive material (RRM) from an UMTRCA Title I site or 11e(2) byproduct material from DOE LM sites in Monticello, Utah
- Waste is not high-level waste, transuranic waste, or low-level waste, as defined in the DOE *Radioactive Waste Management Manual* 435.1-1
- Waste does not contain hazardous chemicals
- Waste does not contain petroleum products or antifreeze
- Waste does not contain hazardous waste as defined in Title 40 *Code of Federal Regulations* Part 261 or Volume 6 *Code of Colorado Regulations* 1007-3 Part 261
- Waste does not contain regulated concentrations of polychlorinated biphenyls (PCBs)
- Waste does not contain asbestos
- Waste does not contain other hazardous constituents or materials (e.g., electronic waste, batteries, hazardous gases, drilling fluids, or sewage)
- Waste does not contain liquid, except acceptable water described in the GJDS WAC
- Discarded containers that are included with the waste are empty, dry, and crushed
- Waste meets GJDS sizing and configuration requirements:
  - The maximum volume of any piece of material must not exceed 1 cubic yard
  - The maximum dimension of any piece of material (e.g., pipe, wood, concrete) must be less than the width of the bed of the transport vehicle
  - Pipe, culvert, etc. that cannot be adequately crushed must be split in half lengthwise and nested together

Note: Waste that will be disposed of at the GJDS that does not conform to the criteria specified above or to other criteria specified in the GJDS WAC must be described further in the **Exceptions to GJDS WAC** section of this worksheet.

Primary radiological constituents: Click or tap here to enter text.

Radiological survey measurements (include unit of measurement): Click or tap here to enter text.

NAVARRO
Contractor to the U.S. Department of Energy Office of Legacy Management

Grand Junction Disposal Site Waste Profile and Disposal Approval

Describe any safety hazard, significant inconvenience, or unusual conditions that the waste may pose to workers at the GJDS (e.g., sharp objects, nauseous odor, powdery material):

Click or tap here to enter text.

Source of the waste profile information above (check all that apply):

☐ Process knowledge (describe below as needed)

☐ Interview with waste generator or other person knowledgeable about the waste (describe below as needed)

☐ Physical inspection Inspector's name and organization: Click or tap here to enter text.

☐ Laboratory analysis Are laboratory analytical results attached? ☐Yes ☐No

Additional waste profile information:

Click or tap here to enter text.

Transportation and Receiving

Type of vehicle used to transport waste (check all that apply):

☐End dump truck ☐End dump truck with pup ☐Side dump truck ☐Flatbed truck ☐Other (describe below)

Additional information about transport vehicle:

Click or tap here to enter text.

Type of container used to hold waste if other than transport vehicle:

Click or tap here to enter text.

Was transport vehicle or waste container previously used for radioactive material shipments to or from sites other than the GJDS? ☐Yes ☐No

If Yes, the waste generator or transporter may need to provide the LMS contractor with a written description of the type of radioactive material, name of the site or facility where the truck or waste container was used, and a copy of radiological survey release data for the truck and/or waste container.

Does waste qualify as a U.S. Department of Transportation (DOT) hazardous material? ☐Yes ☐ No

If Yes, transporter must provide a copy of the DOT hazardous material shipping paper to the LMS contractor upon arrival at the GJDS.

Additional transportation and receiving information:

Click or tap here to enter text.

Exceptions to GJDS WAC

The following waste that does not comply with the GJDS WAC will be disposed of at the GJDS:

Click or tap here to enter text.

Note: The generator of waste that does not comply with the GJDS WAC must submit a written request to DOE LM to dispose of such waste at the GJDS. A copy of that written request must be included with this completed worksheet. A representative of DOE LM, such as the DOE LM manager for the GJDS, must provide written approval for the disposal of waste at the GJDS that does not comply with the GJDS WAC. That written approval must be included with this completed worksheet.

NAVARRO
Contractor to the U.S. Department of Energy Office of Legacy Management

Grand Junction Disposal Site Waste Profile and Disposal Approval

Waste Generator or Investigator Declaration and Signature

I hereby declare that, to the best of my knowledge, the information documented herein is accurate and complete. I understand and agree to the requirements specified in the GJDS WAC, and I certify that the waste described within this worksheet complies with the GJDS WAC in terms of (1) waste type and (2) transportation and receiving requirements, apart from those exceptions documented and agreed to herein.

Click or tap here to enter text.		Click or tap to enter a date.
Print name	Signature	Date

Affiliation (check one):

☐LMS contractor Name of employer: Click or tap here to enter text.

☐Other Name of agency, company, etc.: Click or tap here to enter text.

LMS Contractor Disposal Approval Declaration and Signature

I concur that the waste described in this worksheet complies with the requirements specified in the GJDS WAC in terms of (1) waste type and (2) transportation and receiving requirements, apart from those exceptions documented and agreed to herein. I approve the disposal of the waste described within this worksheet at the GJDS.

Click or tap here to enter text.		Click or tap to enter a date.
Print name	Signature	Date

LMS contractor employer: Click or tap here to enter text.

DOE LM Disposal Approval for Waste That Does Not Comply with the GJDS WAC

The waste described in the **Exceptions to GJDS WAC** section of this worksheet, which does not comply with the GJDS WAC, is approved for disposal at the GJDS.

☐DOE LM written approval is attached.

A representative of DOE LM must sign below if DOE LM written approval is not attached.

Click or tap here to enter text.		Click or tap to enter a date.
Print name	Signature	Date

DOE LM position title: Click or tap here to enter text.

Additional Information:

Click or tap here to enter text.

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