



State of Utah

SPENCER J. COX
Governor

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Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL

Douglas J. Hansen
Director

October 3, 2022

Vern C. Rogers, Director of Regulatory Affairs
EnergySolutions, LLC
299 South Main Street, Suite 1700
Salt Lake City, UT 84111

RE: Federal Cell Facility Application Requests for Information #2

Dear Mr. Rogers:

The Division of Waste Management and Radiation Control (Division) hereby provides Requests for Information (RFI) regarding the Federal Cell Facility Application dated August 4, 2022. Each individual paragraph in the attached document is numbered and represents an issue discovered in a review of the application. When responding to an RFI, please use the assigned number representing the question. The Division will track all responses and provide regular updated information to the public and reviewers.

The current review does not represent a comprehensive evaluation of the Application's merit and additional RFIs will follow where appropriate.

If you have any questions regarding this letter, please call Otis Willoughby at (801) 536-0220.

Sincerely,

Douglas J. Hansen, Director
Division of Waste Management and Radiation Control

(Over)

Enclosure: Federal Cell Facility Requests for Information #2 (DRC-2022-021351)

DJH/OHW/JK/wa

c: Jeff Coombs, EHS, Health Officer, Tooele County Health Department
Bryan Slade, Environmental Health Director, Tooele County Health Department
EnergySolutions General Correspondence Email
LLRW General Correspondence Email

Federal Cell Application Review

Request for Information or Updates to the Application (RFI)

General

- Each of the RFIs has been assigned an identifier with a numbering convention as follows-
 - Application/Appendix Section
 - Section/Appendix Subsection
 - Section/Appendix Subsubsection (when applicable)
 - Sequential numbering

Example: A question in Section 1, subsection 1, subsubsection 1 -The first RFI # would be 1.1.1-1, the next question in that section/subsection would be numbered 1.1.1-2

Please refer to the assigned RFI number when submitting a response.

Appendix B: Federal Cell Facility Engineering Drawings

- **B-1**

On Page B-2, the names of the engineering drawings list Drawings 0801-G04 and 07007-J01 consecutively, i.e., with no named drawing listed between them. However, in the actual drawings presented in the Appendix, immediately following Page B-3, an untitled aerial photograph exists between Drawing 0801-G04 and Drawing 07007-J01. The untitled photograph existing between Drawing 0801-G04 and Drawing 07007-J01 (near the beginning of the photos and drawings) should be moved to the end of the list (i.e., after Map 111) and labeled as “2021 Aerial Photograph of the Clive Disposal Facility.”

- **B-2**

Map 111 is not a product of the United States Geological Survey, or USGS, as labeled in the list of engineering drawings on Page B-3. A careful examination of Map 111 shows that it is instead a product of the Utah Geological Survey, or UGS. The name of the map should be updated to its proper name: “Map 111: UGS Flood Hazards of Lakes and Failure of Dams in Utah.”

Appendix C: Federal Cell Construction Quality Assurance / Quality Control Manual

- **C-1**

In the table of contents, it states that Annual As-Built Report Specifications section contains specifications 281-183. The numbers seem to be in error, as the page range is backwards, or a number is misrepresented. Please correct the numbers for the Annual As-Built Report Specifications.

- **C-2**

Pages C-1 through C-99 have “Radioactive Material License Application / Federal Cell Facility” in the headers. This includes (sub)Appendices A, B and C (of the Application Appendix C), all of which are dated January 5, 2022. However, the next page is blank and the subsequent pages, are unnumbered, and have headers and footers with “LLRW and 11e.(2) CQA/QC Manual” in the title with a date of February 12, 2020, representing a date from two years earlier, labeled Revision 28c.

- **C-3**

The section labeled with headers “LLRW and 11e.(2) CQA/QC Manual”, have been created two years prior to the first section. The latter section is identified as applying to the LLRW and 11e.(2) Cells, not to the Federal Cell. The two different versions of (sub)Appendices A, B and C as presented in Appendix C of the Application are confusing without explanation. If both references are intended to be presented, please provide explanatory material in the overall introduction indicating their purpose.

Appendix D: Geotechnical

- **D-1**

The following are discrepancies for citations in this section and the accompanying references and/or the associated electronic reference files:

Pages	Citation in Text of Appendix	Reference Listed in REFERENCES	Electronic Reference
3	(Neptune, 2015)	Yes, but <i>two different Neptune (2015) references are given</i>	<i>Missing</i>
3, 17, 25	(DWMRC, 2021)	Yes	<i>Missing</i>
4, 5, 6, 18, 26	(Bingham, 1992)	<i>Bingham Environmental (1992) (Three different documents)</i>	<i>Missing</i>
4, 17, 24, 25	(AMEC 2005)	Yes	<i>Missing</i>
4, 24, 25	(AMEC 2011)	Yes	<i>Missing</i>
4, 25	(AMEC 2012)	Yes	<i>Missing</i>
5, 6	(Stantec 2020)	Yes	<i>Missing</i>

7, 8	(EnergySolutions, 2021)	<i>Missing</i>	<i>Missing</i>
9	(DWMRC 2005)	<i>Missing</i>	<i>Missing</i>
9	(DWMRC 2011)	<i>Missing</i>	<i>Missing</i>
11	(Lee and Kim 2014)	<i>Yes, but should be Lee, K-J, Kim, S-K and Lee, K-H (2014)</i>	<i>Missing</i>
11	(GEOSTUDIO, 2019)	<i>GEO-STUDIO International, Ltd. (2019)</i>	<i>Missing</i>
12,14	(Hynes-Griffin, 1984) <i>[2nd Author Missing]</i>	<i>Hynes-Griffin, Mary E. and Franklin, Arley G. (1984)</i>	<i>Missing</i>
12	USACE (1984)	<i>Missing</i>	<i>Missing</i>
11, 12	USACE (2003)	Yes	<i>Missing</i>
12	Makdisi & Seed (1978)	<i>Makdisi, F.I., and H.B. Seed [1978] [no ampersand]</i>	<i>Missing</i>
5, 12	(EnergySolutions, 2020)	Yes	<i>Missing</i>
16	Makdisi and Seed (1978)	Yes	<i>Missing</i>
17	Idriss and Boulanger (2008)	Yes	<i>Missing</i>
18	(D&M 1984)	<i>Missing</i>	<i>Missing</i>
18	(AGRA 1999)	<i>Missing</i>	<i>Missing</i>
18	(AMEC 2004)	<i>Missing</i>	<i>Missing</i>
19	(Qian et al. 2002)	<i>Yes, but out of order alphabetically in REFERENCES</i>	<i>Missing</i>
29	<i>Missing</i>	ASTM International (incomplete)	<i>Missing</i>

Appendix E: Federal Cell Facility Operating Environmental Monitoring Program

Section 2.0 of Appendix E is entitled REFERENCES, but the included items do not have links to any associated electronic reference files. If the references are an integral part of the Application, a reference file is needed for review.

The following are discrepancies for references and their citations as noted in italics.

2.0 REFERENCES

- **E-1**

Clive, Radiation Protection Program, Salt Lake City, EnergySolutions, Inc, Utah, As Revised. *This reference has no author or publication date listed. In addition, this reference is not cited within the text.*

- **E-2**

Clive, Clive Facility Security Operations Protocol (CL-SE-PR-001), As Revised. *This reference has no author or publication date listed.*

- **E-3**

Drawing 07007-J03, is referred in the text on Page 12, *but does not have proper citation and is missing from the REFERENCES.*

- **E-4**

EPA, 2009 *is cited in the text, but is missing in the REFERENCES.*

- **E-5**

ICRP Publication 60, Recommendations of the International Commission on Radiation Protection, Annals of the International Commission on Radiation Protection Vol. 21 No. 1-3, 1990. *This reference is not cited within the text.*

- **E-6**

ICRP Publication 65, Protection against Radon-222 at Home and at Work, Annals of the International Commission on Radiation Protection Vol. 23 No. 2, 1993. *This reference is not cited within the text.*

- **E-7**

ICRP Publication 66, Human Respiratory Tract Model for Radiation Protection, Annals of the International Commission on Radiation Protection Vol. 24, 1994. *This reference is not cited within the text.*

- **E-8**

ICRP Publication 68, Dose Coefficients for Intakes of Radionuclides by Workers, Annals of the International Commission on Radiation Protection Vol. 24 No. 4, 1995. *This reference is not cited within the text.*

- **E-9**

ICRP Publication 72, Age-dependent Doses to Members of the Public from Intake of Radionuclides, Annals of the International Commission on Radiation Protection Vol. 26 No. 1, 1996. *This reference is not cited within the text.*

- **E-10**

MSI, 2013 *is cited in the text, but missing in the REFERENCES.*

- **E-11**

Regulating the Disposal of Low-Level Radioactive Waste – A Guide to The Nuclear Regulatory Commission’s 10 CFR Part 61, United States Nuclear Regulatory Commission, 1989 *This reference has no author listed.*

- **E-12**

Regulatory Guide 1.86, Termination of Operating Licenses for Nuclear Reactors, United States Nuclear Regulatory Commission, 1974 *This reference has no author listed.*

- **E-13**

NRC Staff Interim Guidance, Evaluations of Uranium Recovery Facility Surveys of Radon and Radon Progeny in Air and Demonstrations of Compliance with 10 CFR 20.1301 – Revised Draft Report for Comment, March 2014. *This reference is not cited within the text.*

- **E-14**

NUREG-1388, Environmental Monitoring of Low-Level Radioactive Waste Disposal Facility, United States Nuclear Regulatory Commission, 1989. *This reference is not cited within the text.*

- **E-15**

NUREG-1573, A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities, United States Nuclear Regulatory Commission, 2000. *This reference is not cited within the text.*

- **E-16**

NRC Regulatory Guide 3.51, XXX, United States Nuclear Regulatory Commission, 19XX *This reference is cited within the text but missing in REFERENCES.*

- **E-17**

NRC Regulatory Guide 3.64, Calculation of Radon Flux Attenuation by Earthen Uranium Mill Tailings Covers, United States Nuclear Regulatory Commission, 1989 *This reference is not cited within the text.*

- **E-18**

NRC Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment, United States Nuclear Regulatory Commission, 2007. *This reference is not cited within the text.*

- **E-19**

NRC Regulatory Guide 4.18, Standard Format and Content of Environmental Reports for Near-Surface Disposal of Radioactive Waste, United States Nuclear Regulatory Commission, 1983. *This reference is not cited within the text.*

- **E-20**

NRC Regulatory Guide 8.34, Monitoring Criteria and Methods to Calculate Occupational Radiation Doses, United States Nuclear Regulatory Commission, 1992. *This reference is not cited within the text.*

- **E-21**

NRC Regulatory Guide 8.37, ALARA Levels for Effluents from Materials Facilities, United States Nuclear Regulatory Commission, 1993. *This reference is not cited within the text*

- **E-22**

NRC Radon Presentation Oak Ridge Institute for Science and Education, 2011. *This reference is not cited within the text.*

- **E-23**

Tables 1 through 3 and Drawing 07007-J01, while referred to in the text on Pages 12, 13 and 15, *do not have citations and are missing from the REFERENCES list.*

- **E-24**

10 CFR Part 20, Standards for Protection Against Radiation, United States Nuclear Regulatory Commission, As Revised. *This reference is not cited within the text.*

- **E-25**

10 CFR Part 40, Domestic Licensing of Source Material, United States Nuclear Regulatory Commission, As Revised. *This reference is not cited within the text.*

- **E-26**

10 CFR Part 61 *is cited in the text but missing in the REFERENCES.*

- **E-27**

49 CFR.173.428, Empty Class 7 (radioactive) materials packaging, United States Department of Transportation, As Revised. *This reference is not cited within the text.*

- **E-28**

49CFR 173.443, Contamination control, United States Department of Transportation, As Revised. *This reference is not cited within the text.*

- **E-29**

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), Volume I: Sources, 2006. *This reference is not cited within the text.*

Appendix G: Federal cell facility waste receipt and inspection procedures

- **G-1**

On Page 3 of 11 of the Federal Cell Facility Generator Certification, Section 3.1.4 says in part,

Certified Federal Cell Facility Generator Approval - The Certified Federal Cell Facility Generator Approval (Attachment 8.2) signifies EnergySolutions' review of the FCF-WPR has been satisfactorily completed.

The title of Attachment 8.2 is indicated here to be the "Certified Federal Cell Facility Generator Approval." However, on Page 3 of 33, in the FCF-CW-PR-203 section, it says:

Any deviation from the requirements of this procedure must be approved in accordance with Attachment 8.2, WAC Variance Request Form.

The latter gives a different name, i.e., "WAC Variance Request Form" for the form associated with Attachment 8.2 than the name referred to in Section 3.1.4. *The discrepancy needs corrected or clarified.*

- **G-2**

An electronic search for Attachment 8.2 shows no attachment of this name associated with Appendix G.

- **G-3**

On Page 5 of 11 of the Federal Cell Facility Generator Certification, Section 4.2 says:

"The federal generator provides EnergySolutions' Director of Technical Services with the information identified on the Federal Cell Facility WPR (Attachment 8.1) regarding their waste types as well as their procedures for radioactive waste characterization, management, and quality assurance/quality control:"

An electronic search for Attachment 8.1 shows no attachment of this name associated with Appendix G.

- **G-4**

On Page 23 of 33 of the FCF-CW-PR-203 section, item 4.21.9.2 says:

“Annotate the quantity of SNM on the scheduling form within Customer Portal or on the Advanced Shipment Notification Form, CL-CW-PR-203-F1, (Attachment 8.3) as described in Step 4.11”.

A search for Attachment 8.3 shows no attachment of this name associated with Appendix G.

- **G-5**

On Page 4 of 16 of the FCF-LB-PR-041 section, item 3.1.14 refers to:

SW-846 (Test Methods for Evaluating Solid Waste, Physical/Chemical Methods) –A set of analytical methods with corresponding quality control requirements specified by the Environmental Protection Agency for the purpose of testing hazardous wastes for chemical composition. See Reference 2.10.

However, Reference 2.10 in the REFERENCES section of FCF-LB-PR-041 is the “FCF-TN-PR-030 Qualification Procedure.” A search indicates that Appendix G does not include a copy of this procedure.

- **G-6**

On Page 5 of 16 of the FCF-LB-PR-041 section, item 3.1.16 refers to:

Treatment Standards – The concentration limits that hazardous wastes must meet for land disposal, as listed in reference 2.8. Underlying Hazardous Constituents (UHCs) described in Reference 2.8 are also applicable if the waste contains characteristic hazardous waste codes.

However, Reference 2.08 in the REFERENCES section of the FCF-LB-PR-041 section is the “FCF-LB-PR-003, Sample Control.” A search indicates that Appendix G does not include a copy of this reference.

- **G-7**

On Page 121 of 189 of Appendix G, labeled as Page 5 of 16 of the FCF-LB-PR-041 section, item 3.2.2 refers to:

Environmental Engineer, or designee, documents analysis requirements in accordance with Reference 2.11, and evaluates analytical data for compliance with the requirements, licenses and permits, and Reference 2.7 and 2.8.

However, References 2.7 and 2.8 in the REFERENCES section of the FCF-LB-PR-041 section are, respectively, “2.7 CL-WM-PR-001, Waste Profile and Acceptance Process” and “2.8 FCF-LB-PR-003, Sample Control.” And 2.11 is not found in the REFERENCES section. A search indicates that Appendix G does not include any of these references.

- **G-8**

On Pages 6 and 7 of 16 of the FCF-LB-PR-041 section, items 3.3.1.7, 3.3.1.8, 3.3.1.9, and 3.3.1.10 are shown with multiple emendations in red font, and/or underlined. Does EnergySolutions wish the Division to evaluate these emendations as if they were in final format?

- **G-9**

On Page 7 of 16 of the FCF-LB-PR-041 section, item 3.3.2.1 refers to “Samples for radiological analysis shall be analyzed in accordance with reference 2.13.”

However, Reference 2.13 does not exist in the REFERENCES part of the FCF-LB-PR-041.

- **G-10**

On Page 7 of 16 of the FCF-LB-PR-041 section, item 3.3.2.3 refers to “Personnel performing this procedure shall be qualified on the tasks or activities contained in this procedure according to reference 2.14, Qualification Procedure.”

However, Reference 2.14 does not exist in the REFERENCES part of the FCF-LB-PR-041.

- **G-11**

On Pages 9, 10 and 11 of 16 of the FCF-LB-PR-041 section, items 3.3.2.9, 4.1.8, and 4.3.1. are shown with multiple emendations in red font, and/or underlined. Does EnergySolutions wish the Division to evaluate these emendations as if they were in final format?

- Text below refers to RFI G-12 through G-22.

On Page 17 of 36 of the FCF-WM-PR-001 Section, the following list of documents is provided:

- 5.1 FCF-WM-PR-001 F2 (EC-0230), Federal Cell Facility Radioactive Waste Profile Record
- 5.2 FCF-WM-PR-001 F3 (EC-0230-SNM), FCF SNM Exemption Certification
- 5.3 FCF-WM-PR-001 F5 (EC-2000), Pre-shipment Sample Authorization Record
- 5.4 FCF-WM-PR-001 F6 (EC-0675), Radiological Evaluation
- 5.5 FCF-WM-PR-001 F7 (EC-0025), Physical Properties Evaluation
- 5.6 FCF-WM-PR-001 F8 (EC-0325), FCF Evaluation
- 5.7 FCF-WM-PR-001 F10 (EC-1800), Federal Cell Facility Notice to Transport
- 5.8 FCF-WM-PR-001 F1, Federal Waste Shipment Authorization
- 5.9 FCF-WM-PR-001 F11, Safety and Health Evaluation Form

- **G-12**

Attachment 5.1 is labeled as “Attachment 5.1 – Federal Cell Facility Waste Profile Record” (without the word Radioactive immediately after Facility). The introductory list has a name of “Federal Cell Facility Radioactive Waste Profile Record.” Naming/Titled documents need to be consistent.

- **G-13**

Attachment 5.2 is labeled as “Attachment 5.2 SNM Exemption Certification” (without the acronym FCF immediately before SNM). The introductory list has a name of “FCF SNM Exemption Certification.” Naming/Titled documents need to be consistent.

- **G-14**

Attachment 5.3 is missing from the FCF-WM-PR-001 Section.

- **G-15**

Attachment 5.4 is labeled as “Attachment 5.4 – Pre-shipment Sample Authorization Record”. The introductory list has a name of Attachment 5.3 Naming/Titled documents need to be consistent.

- **G-16**

Attachment 5.5 is labeled as “Attachment 5.5 – Radiological Evaluation.” The introductory list has a name of Attachment 5.4. Naming/Titled documents need to be consistent.

- **G-17**

Attachment 5.6 is labeled as “Attachment 5.6 – Physical Properties Evaluation.” The introductory list has a name of Attachment 5.5. Naming/Titled documents need to be consistent.

- **G-18**

Attachment 5.7 is labeled as “Attachment 5.7 – Non-RCRA LLRW Evaluation”. The introductory list has a name of Attachment 5.6 or “FCF Evaluation,”. Note the errors in both the attachment number and the attachment name. Naming/Titled documents need to be consistent.

- **G-19**

Attachment 5.8 is missing from the FCF-WM-PR-001 Section.

- **G-20**

Attachment 5.9 is labeled as “Attachment 5.9 – Federal Cell Facility Notice to Transport”. The introductory list has a name of Attachment 5. Naming/Titled documents need to be consistent.

- **G-21**

Attachment 5.10 is labeled as “Attachment 5.10 – Federal Cell Facility Waste Shipment Authorization” (with the word Facility immediately before Waste). The introductory list has a name of Attachment 5.8 or “Federal Waste Shipment Authorization”. Note the errors in both the attachment number and the attachment name. Naming/Titled documents need to be consistent.

- **G-22**

Attachment 5.1 is labeled as “Attachment 5.11 – Safety and Health Evaluation”. The introductory list has a name of Attachment 5.9 or “Safety and Health Evaluation Form”. Note the errors in both the attachment number and the attachment name. Naming/Titled documents need to be consistent.

Appendix H: Federal cell facility waste handling and interim storage procedures

- **H-1**

For document FCF-LD-PR-020, this screenshot of the table of contents shows the following errors:

4	REQUIREMENTS AND GUIDANCE	9
4.1	Safety	9
4.2	Compliance	10
4.3	EPA Compliance (Applicable when shredding PCB contaminated waste).....	Error!
	Bookmark not defined.	
4.4	Shredder Operations.....	Error! Bookmark not defined.
4.6	Disposal of HPTC Material	Error! Bookmark not defined.
4.7	Asbestos Disposal	11
4.8	Ion Exchange Resin (IER) Blending and Disposal.....	Error! Bookmark not defined.
4.9	EnergySolutions Generated Waste at LLRW	Error! Bookmark not defined.
4.10	Removal of Placed Waste	12
4.11	Equipment and Facility Labeling Requirements.....	13
4.12	LLRW-Destined Waste.....	Error! Bookmark not defined.

- **H-2**

Section 4.5 is missing.

- **H-3**

For document FCF-LD-PR-020, Page 14 of 18:

5 ATTACHMENTS AND FORMS

5.1 FCF-LD-PR-020 F1, Placed Waste Removal Record

5.2 Placed Waste Removal Record Completion Instructions

5.3 Example of Shredder Daily Start-Up Checklist

5.4 FCF-LD-PR-020 F2, Equipment and Facility Release Form

5.5 FCF-LD-PR-020 F3, Daily Truck Load Worksheet

For the document FCF-LD-PR-020, the attachment named Attachment 5.3 (Example of Shredder . . .) on Page 14 of 18 is missing.

- **H-4**

For the document FCF-WT-PR-001, the same Attachment number 5.3 is shown for the two separate attachments. No proper attachment number 5.4 is written on or associated with the title of the last attachment.

Appendix I: Federal cell facility waste disposal procedures

- **I-1**

For the document CL-CH-PR-250 Revision 7, attachment documents having numbers 5.4 and 5.5 in their titles are shown incorrectly in the table of contents on Page 7 of 12 as attachments 5.3 and 5.4.

Appendix K: Federal cell facility radiation protection programs and procedures

- **K-1**

On Page 32 of 45, in 4.4.1.1, the following two citations are made:

ANSI 1973

Kusnetz 1956

These are missing in the REFERENCES section.

- **K-2**

On Page 34 of 45, Public Health Services (1957) is cited. This citation is missing in the REFERENCES section.

Appendix L: Decontamination and Decommissioning Plan

- **L-1**

A REFERENCES section exists for Appendix L, but Appendix L contains no citations.

Please provide specific citations and references in support of any information from an outside source provided in a submitted document. Specific citations are generally needed instead of only broad references. Unless it is common knowledge being provided, information in an Appendix taken or derived from a source other than EnergySolutions’ should be referenced using both citations and references.

The eighth reference, one that pertains to Standards for Protection Against Radiation, Subpart E – Radiological Criteria for License Termination, does not contain a date.

Appendix O: DU PA Version 2.0

- **O-1**

On Page 9 of the User Guide for the Clive DU PA Model), it says:

“Duration: If Perform dose calculations is checked, then the user can select the duration of the dose simulation, up to 10,000 yr, in accordance with UAC 313-25-8.(2)(a)”.

However, UAC 313-25-8.(2)(a) does not exist.

Appendix Z: Rock Cover Design Calculations

- **Z-1**

Page Z-2 lists the third analysis provided in Appendix Z as being “Rock Cover Design Calculations, Rev 2”. However, the document found at the end of Appendix Z does not have a title or text that the Document version is Rev 2. This document is called “Class A West (CAW) Rock Cover Design Calculations”, not “Rock Cover Design Calculations” as referred to on Page Z-2. Because of different geometries, the two different embankments described (i.e., the CAW and the Federal Cell) may require different design calculations. Please correct revision titles and ensure that the citation and the Appendix name are consistent.

- **Z-2**

Jensen, 2002 is cited twice on Page 3 of 13 in CAW Rock Cover Design Calculations but a corresponding reference is not provided.