UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WASTE MANAGEMENT AND RADIATION CONTROL
RADIOACTIVE MATERIAL LICENSE

Pursuant to Utah Code Ann. Title 19, Chapter 6 and the Radiation Control Rules, Utah Administrative Code (Utah Admin. Code) R313, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material designated below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This licensee is subject to all applicable rules, and orders now or hereafter in effect and to any conditions specified below.

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LICENSEE

1. Name: EnergySolutions, LLC (EnergySolutions)

2. Address: 299 South Main Street
Suite 1700
Salt Lake City, UT 84111

3. License Number UT 2300249
Amendment #22

4. Expiration Date
January 25, 2013
(under timely renewal)

5. License Category – 4-a
In accordance with letter dated January 6, 2016 this license is amended in its entirety.

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6. Radioactive material (element and mass number)	7. Chemical and/or physical form	8. Maximum quantity licensee may possess at any one time
A. Any Radioactive Material including Special Nuclear Material specified in License Condition 13.A through J.	A. Notwithstanding License Conditions 9 (Authorized Use), 16 (Prohibitions and Waste Acceptance Requirements), and 56 (containerized waste), typically large volume, bulky or containerized, soil or debris. Debris can include both decommissioning (cleanup) and routinely generated operational waste including but not limited to radiologically contaminated paper, piping, rocks, glass, metal, concrete, wood, bricks, resins, sludge, tailings, slag, residues, personal protective equipment (PPE) that conforms to the size limitations in currently approved CQA/QC Manual.	A. 20,000 Curibes***
B. Special Nuclear Material	B. See 7.A of this license	B. As specified in License Condition 13.A through J.
C. Cesium-137	C. Sealed Source(s) evaluated as stated in R313-22-210	C. Not to exceed 11 millicuries per

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			source; Not to exceed 6 sources total
D.	Americium-241	D. Sealed Neutron Source(s) evaluated as stated in R313-22-210	D. Not to exceed 51 millicuries per source; Not to exceed 6 sources total.
E.	Americium-241 Americium-243 Neptunium-237 Plutonium-236 Plutonium-239 Plutonium-242 Thorium-229 Thorium-230 Uranium-232 Uranium-238 Curium-244 Hydrogen-3 Carbon-14 Iron-55 Nickel-59 Nickel-63 Technetium-99	E. Liquid	E. Not to exceed 5 microcuries total activity per isotope; Not to exceed 16 sources total.
F.	Strontium-90/Yttrium-90	F. Liquid	F. Not to exceed 5 microcuries total activity
G.	Americium-241	G. Sealed Source(s) evaluated as stated in R313-22-210	G. Not to exceed 5 microcuries total activity
H.	Thorium-230	H. Sealed Source(s) evaluated as stated in R313-22-210	H. Not to exceed 48.6 microcuries total activity

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I.	Plutonium-239	I.	Sealed Source(s) evaluated as stated in R313-22-210	I.	Not to exceed 21.9 microcuries total activity
J.	Strontium-90/Yttrium-90 and Americium-241	J.	Sealed Source(s) evaluated as stated in R313-22-210	J.	Not to exceed 8.1 millicuries per source; Not to exceed 6 sources total.
K.	Am-241, Cd-109, Co-57, Te-123m, Cr-51, Sn-113, Sr-85, Cs-137, Co-60, Y-88, Th-230, Na-22, Mn-54, Eu-155 and Pb-210	K.	Calibration or Reference Source(s) evaluated as stated in R313-22-210	K.	Not to exceed 5 microcuries per isotope; Not to exceed 25 sources total.
L.	Uranium-234, Uranium-235, Uranium-238, Americium-241, and Plutonium-239	L.	Calibration or Reference Source(s) evaluated as stated in R313-22-210	L.	Not to exceed 20 nanocuries per isotope.
M.	Cobalt-60 and Cesium-137	M.	Calibration or Reference Combined Source(s)	M.	Not to exceed 0.4 microcuries per source; Not to exceed 6 sources total.
N.	Barium-133	N.	Calibration or Reference Source(s) evaluated as stated in R313-22-210	N.	Not to exceed 30 microcuries per source. Not to exceed 3 sources
O.	Americium-241 and Europium-152	O.	Calibration or Reference Combined Sources evaluated as stated in R313-22-210	O.	Not to exceed 2 microcuries per source; Not to exceed 4 sources total.
P.	Cesium-137	P.	Sealed Source(s) evaluated as stated in R313-22-210	P.	Not to exceed 12 millicuries per source; Not to exceed 3 sources total.

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*** Applies to undisposed maximum quantity at the Class A West disposal cell and the Mixed Waste landfill cell.

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9. AUTHORIZED USE

A. Licensee may receive, store, and dispose by land burial, radioactive material as naturally occurring and accelerator produced material (NARM) and low-level radioactive waste. Prior to receiving an initial, low-level radioactive waste shipment for disposal from a generator, the Licensee shall obtain documentation which demonstrates that the low-level radioactive wastes have been approved for export to the Licensee. Approval is required from the low-level radioactive waste compact of origin (including the Northwest Compact), or for states unaffiliated with a low-level radioactive waste compact, the state of origin, to the extent a state can exercise such approval.

B. In accordance with Utah Code Annotated 19-3-105, the Licensee may not receive Class B or Class C low-level radioactive waste without first receiving approval from the Director of the Division of Waste Management and Radiation Control (Division) and also receiving approval from the Governor and the Legislature.

C. The Licensee shall fulfill and maintain compliance with all License Conditions and shall meet all compliance schedules stipulated in the Ground Water Quality Discharge Permit, number UGW 450005 (hereafter GWQ Permit), issued by the Director of the Division.

D. The Licensee may receive and store up to twenty (20) empty radioactive waste transportation casks under the following conditions:

- The casks are dedicated to the transportation of low level radioactive wastes.
- Storage of the casks is confined to the Restricted Area within the area specified in License Condition 10, except when staged for return to commerce within 7 days.
- Internal contamination is kept minimal as practical but will not exceed the contamination limits specified for Department of Transportation, Class 7 Hazardous Material, Radioactive Material, Excepted Package-Empty Packaging, UN2908.
- During storage, casks are to be secured in accordance with their Department of Transportation or Nuclear Regulatory Commission approved design specifications.

E. The Licensee may dispose of a volume of Class A Low-Level Radioactive Waste (LLRW) and Naturally Occurring and Accelerator Produced Radioactive Materials (NARM) in the Class A West disposal cell described in License Condition 40 not exceeding 8,724,097 cubic yards, and in the Mixed Waste Landfill Cell not exceeding 1,354,092 cubic yards. Together, the total aggregate volume of waste

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disposed of in the Class A West disposal cell and the Mixed Waste Landfill Cell shall not exceed 10.08 million cubic yards. Class A waste LLRW is defined in Utah Radiation Control Rule R313-15-1009 and NARM at R313-12-3.

F. The Licensee shall not accept, possess, store or dispose of any radioactive waste delivered to the disposal site by any conveyance, unless the associated Uniform Low-Level Radioactive Waste Manifest has a valid Generator Site Access Permit number, issued by the Division, thereon affixed.

G. The Licensee may receive and treat radioactively contaminated aqueous liquids and liquid mercury as characterized in the waste profile at the mixed waste facilities only, the waste must be Class A LLRW at receipt. Treated aqueous liquids may be disposed at the Mixed Waste Facility or the LLRW Facility, in accordance with Exhibit 3 of the current Waste Characterization Plan approved by the Division. Treated (amalgamated) liquid mercury shall be disposed at the Mixed Waste Facility only.

H. Reserved

I. Licensed material in License Conditions 6.C and 6.D, sealed source(s) contained in compatible portable gauging devices (registered pursuant to Utah Admin. Code R313-22-210 or an equivalent U.S. Nuclear Regulatory Commission or Agreement State regulation) for measuring properties of materials.

J. Licensed material in License Conditions 6.E through 6.O, for operational checks and efficiency determinations of radiation detection instrumentation.

K. Reserved

L. Licensed material in License Condition 6.P, sealed source(s) contained in MGP Instruments, Inc. Model IRD-2000 dosimeter calibrators/irradiators for tests and source checks of electronic dosimeters.

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SITE LOCATION

10. A. The Licensee may receive, store and dispose of licensed material at the Licensee's facility located in Section 32 of Township 1 South and Range 11 West, Tooele County, Utah.

B. Section 32, Township 1 South and Range 11 West, Tooele County, Utah, is defined by the following points of reference:

Southwest Section Corner:	Latitude 40° 40' 51.890" N
	Longitude 113° 7' 28.580" W
Elevation	4269.76 feet above mean sea level (amsl)

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Southeast Section Corner	Latitude 40° 40' 51.879" N Longitude 113° 6' 20.011" W
Elevation	4277.27 feet-amsl
Northwest Section Corner	Latitude 40° 41' 44.098" N Longitude 113° 7' 28.654" W
Elevation	4273.06 feet-amsl
Northeast Section Corner	Latitude 40° 41' 44.086" N Longitude 113° 6' 20.109" W
Elevation	4280.83 feet-amsl

C. The Southwest Section Corner marker of Section 32 shall be the Point of Beginning (POB).

D. The Licensee shall cause a survey to be conducted by a Utah licensed land surveyor to identify the section corners of Section 32, Township 1 South, and Range 11 West, Tooele County, Utah (as defined in License Condition 10.B). Licensee shall place monuments with brass caps at the identified section corner locations. Monuments shall be permanent and constructed in a manner that will protect them from being disturbed.

E. Authorized Use of Sealed Sources
   i. Licensed material in License Conditions 6.C and 6.D used as authorized in License Condition 9.I, and licensed materials in License Conditions 6.E through 6.P used as authorized in License Condition 9.J and identified as sealed sources may be used and stored on all property owned by the Licensee at their Clive facility. The property is located in Sections 29, 32 and in parts of Sections 28 and 33 in Township 1 South, Range 11 West and parts of Sections 4, 5 and 6 in Township 2 South, Range 11 West SLBM, Tooele County, Utah.
   ii. Licensed material not authorized for use specified in License Conditions 9.I and 9.J or not defined as sealed sources in License Condition 9.J shall be used and stored only at the Licensee's facilities referenced in License Condition 10.B.

CONDITIONS

11. The open cell area within the Class A West disposal embankment, where waste disposal/placement has occurred or may occur, but the cover system has not been completed shall be limited to 3,650,000 square feet. Uncovered radioactive waste shall be limited to a surface area of 1,020,000 square feet.

12. Pursuant to Utah Admin. Code R313-12-55(1), the Licensee is granted an exemption to Utah Admin Code R313-25-9, as it relates to land ownership and assumption of ownership.

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SPECIAL NUCLEAR MATERIAL

13. In accordance with the Order issued by the U.S. Nuclear Regulatory Commission dated January 14, 2003, Docket No. 040-8989, License No. SMC-1559, EnergySolutions may possess Special Nuclear Material (SNM) within the restricted area of the EnergySolutions facility as described in License Condition 10 provided that:

A. Concentrations of SNM in individual waste containers must not exceed the values listed in Table 13-A at time of receipt:

Table 13-A

Column 1 Radionuclide	Column 2 Maximum Concentration (pCi/g)	Column 3 Measurement Uncertainty (pCi/g)
U-235[a]	1,900	285
U-235[b]	1,190	179
U-235[c]	26	10
U-235[d]	680	102
U-233	75,000	11,250
Pu-236	500	75
Pu-238	10,000	1,500
Pu-239	10,000	1,500
Pu-240	10,000	1,500
Pu-241	350,000	50,000
Pu-242	10,000	1,500
Pu-243	500	75
Pu-244	500	75

a - for uranium below 10 percent enrichment and a maximum of 20 percent of the weight of the waste of materials listed in License Condition 13.B
b - for uranium at or above 10 percent enrichment and a maximum of 20 percent of the weight of the

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waste of materials listed in License Condition 13.B

c - for uranium at any enrichment with unlimited quantities of materials listed in License Condition 13.B and License Condition 13.C

d - for uranium at any enrichment with sum of materials listed in License Condition 13.B and License Condition 13.C not exceeding 45 percent of the weight of the waste

* The measurement uncertainty values in Column 3 above represent the maximum one-sigma uncertainty associated with the measurement of the concentration of the particular radionuclide.

The SNM must be homogeneously distributed throughout the waste. If the SNM is not homogeneously distributed, then the limiting concentrations must not be exceeded on average in any contiguous mass of 600 kilograms.

B. Except as allowed by notes a, b, c, and d in License Condition 13.A, waste must not contain "pure forms" of chemicals containing carbon, fluorine, magnesium, or bismuth in bulk quantities (e.g., a pallet of drums, a B-25 box). By "pure forms," it is meant that mixtures of the above elements such as magnesium oxide, magnesium carbonate, magnesium fluoride, bismuth oxide, etc. do not contain other elements. These chemicals would be added to the waste stream during processing, such as at fuel facilities or treatment such as at mixed waste treatment facilities. The presence of the above materials will be determined by the generator, based on process knowledge or testing.

C. Except as allowed by notes c and d in License Condition 13.A, waste accepted must not contain total quantities of beryllium, hydrogenous material enriched in deuterium, or graphite above one percent of the total weight of the waste. The presence of the above materials will be determined by the generator, based on process knowledge, physical observations, or testing.

D. Waste packages must not contain highly water soluble forms of uranium greater than 350 grams of uranium-235 or 200 grams of uranium-233. The sum of the fractions rule will apply for mixtures of U-233 and U-235. Highly soluble forms of uranium include, but are not limited to: uranium sulfate, uranyl acetate, uranyl chloride, uranyl formate, uranyl fluoride, uranyl nitrate, uranyl potassium carbonate, and uranyl sulfate. The presence of the above materials will be determined by the generator, based on process knowledge or testing.

E. Mixed waste processing of waste containing SNM will be limited to stabilization (mixing waste with reagents), micro-encapsulation, macro-encapsulation using low-density and high density polyethylene, macroencapsulation using cementatious mix (Macro Mix), and thermal desorption.

When waste is processed using the thermal desorption process, EnergySolutions shall confirm the SNM concentration following processing and prior to returning the waste to temporary storage.
Liquid waste may be stabilized provided the SNM concentration does not exceed the SNM concentration limits in License Condition 13.A. For containers of liquid waste with more than 600

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kilograms of waste, the total activity (pCi) of SNM shall not exceed the SNM concentration in License Condition 13.A times 600 kilograms of waste. Waste containing free liquids and the solids shall be mixed prior to treatment. Any solids shall be maintained in a suspended state during transfer and treatment.

F. EnergySolutions shall require generators to provide the following information for each waste stream:

Before Receipt

1. Waste Description. The description must detail how the waste was generated, list the physical forms in the waste, and identify uranium chemical composition.
2. Waste Characterization Summary. The data must include a general description of how the waste was characterized (including the volumetric extent of the waste, and the number, location, type, and results of any analytical testing), the range of SNM concentration ranges, and the analytical results with error values used to develop the concentration ranges.
3. Uniformity Description. A description of the process by which the waste was generated showing that the spatial distribution of SNM must be uniform, or other information supporting spatial distribution.
4. Manifest Concentration. The generator must describe the methods to be used to determine the concentrations on the manifests. These methods could include direct measurement and the use of scaling factors. The generator must describe the uncertainty associated with sampling and testing used to obtain the manifest concentrations.

EnergySolutions shall review the above information and, if adequate, approve in writing this pre-shipment waste characterization and assurance plan before permitting the shipment of a waste stream. This will include statements that EnergySolutions has a written copy of all the information required above, that the characterization information is adequate and consistent with the waste description, and that the information is sufficient to demonstrate compliance with License Conditions 13.F.1 through 13.F.4. Where generator process knowledge is used to demonstrate compliance with License Conditions 13.A, 13.B, 13.C, or 13.D, EnergySolutions shall review this information and determine when testing is required to provide additional information in assuring compliance with the License Conditions. EnergySolutions shall retain this information as required by the State of Utah to permit independent review.

At Receipt

EnergySolutions shall require generators of SNM waste to provide a written certification with each waste manifest that states the SNM concentrations reported on the manifest do not exceed the limits in License Condition 13.A, that the measurement uncertainty does not exceed the uncertainty value in License Condition 13.A, and that the waste meets License Conditions 13.B through 13.D.

G. Sampling and radiological testing of waste containing SNM must be performed in accordance with the following: One sample for each of the first ten shipments of a waste stream; or one sample for each of

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the first 100 cubic yards of waste up to 1,000 cubic yards of a waste stream; and one sample for each additional 500 cubic yards of waste following the first ten shipments or following the first 1,000 cubic yards of a waste stream. Sampling and radiological testing of debris waste containing SNM can be waived if the SNM concentration is lower than one tenth of the applicable limit in License Condition 13.A.

H. EnergySolutions shall notify the NRC, Region IV office within 24 hours if any of the above License Conditions are violated, including if a batch during a treatment process exceeds the SNM concentration in License Condition 13.A. A written notification of the event must be provided within 7 days.

I. EnergySolutions shall obtain NRC approval prior to changing any activities associated with the above License Conditions.

J. Notwithstanding License Condition13.A through 13.I, for the Containerized Waste Facility described in License Condition 40, the following limits for possession of SNM apply to the total combined quantities of SNM at the Containerized Waste Facility:

Consistent with the definition of special nuclear material given in UAC R313-12-3, the maximum quantity of special nuclear material which the EnergySolutions may possess at any one time, shall not exceed: 350 grams of U-235, 200 grams of U-233, and 200 grams Pu, or any combination of them in accordance with the following formula:

$$\frac{(\text{Grams U-235})}{350} + \frac{(\text{Grams U-233})}{200} + \frac{(\text{Grams Pu})}{200} \leq 1$$

"Possession" and "Disposal" are defined in License Conditions 63 and 64 respectively.

MIXED WASTE

14. A. The Licensee may receive for treatment, storage, and disposal any radioactive waste as authorized by this license that is also determined to be hazardous (commonly referred to as mixed waste) as permitted by the State-issued Part B Permit, under EPA ID Number UTD982598898, issued and modified by the Director of the Utah Division of Solid and Hazardous Waste.

B. The Licensee may dispose of treated mixed waste in the Class A West disposal cell if it meets the criteria described in Exhibit 3 of the current Waste Characterization Plan.

C. All other mixed wastes shall be disposed in the Mixed Waste Landfill Cell only.

WASTE TREATMENT AND PROCESSING

15. A. Prior to receipt of any low level radioactive or mixed wastes requiring treatment before disposal, the Licensee shall, based on knowledge of the technology to be used for treatment/processing of each

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particular radioactive or mixed waste, calculate and document that the resultant processed waste is neither Class B nor Class C waste.

B Reserved

C. Following treatment at the Mixed Waste facility the Licensee shall classify the resultant processed waste in accordance with Utah Admin. Code R313-15-1009.

D. The Licensee shall manifest treated waste from the Mixed Waste facility for disposal in accordance with Utah Admin. Code R313-15-1006.

PROHIBITIONS AND WASTE ACCEPTANCE REQUIREMENTS

16. A. Sealed sources as defined in Utah Admin. Code (UAC) R313-12 shall not be accepted for disposal.

B. In accordance with Utah Admin. Code R313-15-1009(2)(a)(v), waste shall not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.

C. In accordance with Utah Admin. Code R313-15-1009(2)(a)(vi), waste shall not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste.

D. In accordance with Utah Admin. Code R313-15-1009(2)(a)(vii), waste shall not be pyrophoric.

E. Waste containing untreated biological, pathogenic, or infectious material including radiologically contaminated laboratory research animals is prohibited

F. Liquid Waste Restrictions
   i. Except for liquid mercury and minimal quantities as described in License Condition 17 and in the current Waste Characterization Plan, receipt of non-aqueous liquid waste is prohibited unless specifically approved by the Director.
   ii. Treated liquid radioactive waste shall be disposed at the Mixed Waste Facility or the LLRW Facilities in accordance with Exhibit 3 of the current Waste Characterization Plan.
   iii. Only the Division approved solidification or absorption agents as listed in the State-issued Part B Permit are authorized for liquid waste treatment.
   iv. Liquid radioactive waste shall be solidified or absorbed in a manner such that no liquid component is disposed.
   v. Only containers authorized by the U. S. Department of Transportation as specified in the regulations (49 CFR parts 100 thru 180) for transporting liquid radioactive materials shall be accepted for all liquid radioactive wastes, regardless of radioactivity concentrations.

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G. In accordance with Utah Admin. Code R313-15-1009(2)(a)(viii), gaseous waste received for disposal in the Containerized Waste Facility shall be packaged at an absolute pressure that does not exceed 1.5 atmospheres at a temperature of 20 degrees Celsius and the total activity of any container shall not exceed 100 curies (3.7×10^{12} Bequerels).

H. In accordance with Utah Admin. Code R313-15-1009(2)(a)(ii), waste received for disposal in the Containerized Waste Facility shall not be packaged in cardboard or fiberboard containers.

I. The Licensee shall not accept for disposal any neutron source (e.g., polonium-210, americium-241, radium-226 in combination with beryllium or other target).

J. Incinerator ash shall be treated, in preparation for disposal, in a manner that renders it non-dispersible in air.

K. Radioactive waste containing chelating agents greater than 0.1 percent by weight shall be disposed of in the Mixed Waste Landfill Cell.

L. The Licensee shall not accept containerized radioactive waste unless:
   i. Each disposal container has been classified in accordance with Utah Admin. Code R313-15-1009. In addition, the Licensee shall require that all radioactive waste received for disposal meet the requirements specified in the Nuclear Regulatory Commission, " Concentration Averaging and Encapsulation Branch Technical Position", as amended.
   ii. Each disposal container is marked as either Class A Stable or Class A Unstable as defined in the most recent version of the "Low-Level Waste Licensing Branch Technical Position on Radioactive Waste Classification." issued by the U.S. Nuclear Regulatory Commission.
      a. When destined for the Containerized Waste Facility, the marking may be affixed to either the disposal container or transport package, in accordance with Utah Admin. Code R313-15-1006(4) and Section III of Appendix G of 10 CFR 20.1001 to 20.2402 (incorporated by reference).
   iii. Each disposal container is marked with a unique package identification number, clearly visible on the package, that can be correlated with the manifest for the waste shipment in which the package arrives at the facility.

M. The Licensee may accept containerized Class A LLRW in the following waste packages for disposal in the Containerized Waste Facility of the Class A West disposal cell:
   i. DOT "strong, tight" containers in accordance with 49 CFR 173 and meeting the following void space criteria: void spaces within the waste and between the waste and its packaging shall be reduced to the extent practicable, but in no case shall less than 85 percent of the capacity of the container be filled.
   ii. High-Integrity Containers (HICs) exceeding the void space criteria provided in License Condition 16.M.i, shall be approved by the Director.

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iii. DOT "strong, tight" containers in accordance with 49 CFR 173 exceeding the void space criteria provided in License Condition 16.M.i and large components shall be placed as approved by the Director.

iv. Oversized DOT containers (larger than 215 cubic feet) meeting the void space criteria provided in License Condition 16.M.i shall be placed in accordance with the currently approved LLRW Construction QA/QC Manual.

MANAGEMENT OF FREE LIQUIDS

17. A. In accordance with Utah Admin. Code R313-15-1009(2)(a)(iv), solid waste received for disposal shall contain as little free standing and non-corrosive liquid as reasonably achievable, but shall contain no more free liquids than one percent of the volume of the waste.

B. Solid waste received and containing unexpected aqueous free liquid in excess of 1% by volume shall have the liquid removed and placed in the evaporation ponds or the liquid solidified prior to management.

C. Unexpected non-aqueous free liquids less than 1% of the volume of the waste within the container shall be solidified prior to disposal.

D. Should shipment(s) arrive with greater than 1% unexpected free liquids (total of aqueous and non-aqueous), the Licensee shall notify the Division of Radiation Control within 24 hours that the shipment(s) failed the requirements for acceptance and manage in accordance with the Waste Characterization Plan.

RADIATION SAFETY

18. The Licensee shall comply with the provisions of Utah Admin. Code R313-18, "Notices, Instructions and Reports to Workers by Licensees or Registrants—Inspections"; and Utah Admin. Code R313-15, "Standards for Protection Against Radiation."

19. The Licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of Utah Admin. Code R313-19-100, "Transportation."

20. Written procedures incorporating operating instructions and appropriate safety precautions for licensed activities shall be maintained and available at the location specified in License Condition 10.A. The written procedures established shall include the activities of the radiation safety and environmental monitoring programs, the employee training program, operational procedures, analytical procedures, and instrument calibration. At least annually, the Licensee shall review all procedures to determine their continued applicability.

21. The Licensee's Radiation Safety Officer (RSO) shall review and approve written procedures as stated in License Condition 20 and subsequent changes to the procedures related to waste disposal operations.

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ROUTINE MONITORING AND CONTAMINATION SURVEYS FOR NEW LICENSEES:

22. The Licensee shall conduct contamination surveys in accordance with Table 22-A:

TABLE 22-A

Type	Location	Frequency
A. Gamma Radiation Levels	1. Perimeter of Restricted Area(s)	1. Weekly
	2. Office Area (s)	
	2.a. [27] Decon Access Control Building	2.a. Weekly*
	2.b. [33] Mixed Waste Access Building	2.b. Weekly*
	2.c. [1] Accessible areas of the LARW Building	2.c. Weekly
	2.d. [1] Inaccessible area of the LARW Building	2.d. Weekly*
	2.e. [7] LLRW Operations Building	2.e. Weekly
	2.f. [100] Administration Building	2.f. Quarterly
	3. Eating/Change Area(s)	
	3.a. [27] Decon Access Control Building	3.a. Weekly*
	3.b. [33] Mixed Waste Access Building	3.b. Weekly*
	3.e. [7] LLRW Operations Building	3.e. Weekly
	3.f. [100] Administration Building	3.f. Quarterly
	4. Transport Vehicles	4. Upon vehicle arrival at site and before departure.
	5. Mixed Waste Facility	5. Weekly
	6. Decontamination facilities	
	6.a. Reserved	6.a. Reserved
	6.b. [23] Rotary Rail Wash	6.b. Weekly

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Type	Location	Frequency
	6.c. Mixed Waste Decon Pad	6.c. Weekly*
	6.d. [20] Track 4 Rail Wash	6.d. Weekly
	6.e. [21] Intermodal Wash Facility	6.e. Weekly
B. Contamination Wipes	1. Eating Area(s)/Change Area(s)	
	1.a. [27] Decon Access Control Building	1.a. Weekly*
	1.b. [33] Mixed Waste Access Building	1.b. Weekly*
	1.e. [7] LLRW Operations Building	1.e. Weekly
	1.f. [100] Administration Building	1.f. Quarterly
	2. Reserved	
	3. Office Areas(s)	
	3.a. [27] Decon Access Control Building	3.a. Weekly*
	3.b. [33] Mixed Waste Access Building	3.b. Weekly*
	3.c. [1] Accessible areas of the LARW Building	3.c. Weekly
	3.d. [1] Inaccessible area of the LARW Building	3.d. Weekly*
	3.e. [7] LLRW Operations Building	3.e. Weekly
	3.f. [100] Administration Building	3.f. Quarterly
	4. Reserved	4. Reserved
	5. Equipment/Vehicles	5. Once before release
	6. Decontamination facilities	
	6.a. Reserved	6.a. Reserved
	6.b. [23] Rotary Rail Wash	6.b. Weekly
	6.c. Mixed Waste Decon Pad	6.c. Weekly*

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Type	Location	Frequency
	6.d. [20] Track 4 Rail Wash	6.d. Weekly
	6.e. [21] Intermodal Wash Facility	6.e. Weekly
	7. Mixed Waste Facility	7. Weekly
	8. [24] Shredder Facility and control room	8. Weekly
	9. [23] Rotary Dump and control room	9. Weekly
C. Employee/Personnel	1. Skin & Personal clothing	1. Prior to exiting restricted area
D. Gamma Exposure	1. [100] Administration Bldg.(s)	1. Quarterly
E. Radon Concentration	1. [100] Administration Bldg.(s)	1. Quarterly

* When in operation/use, the survey shall be done weekly. When not in operation/use, the survey shall be done monthly. Operational status shall be documented weekly. Non-operational status is defined as no human entry other than routine health physics survey or security confirmation.
[#] Building numbers in parentheses are taken from Exhibit II-6 to the Contingency Plan provided as Attachment II-6 to the state-issued Part B Permit.

23. The Licensee shall determine internal exposure of employees under its bioassay program, in accordance with Utah Admin. Code R313-15-204.

24. The Licensee shall implement a respiratory protection program that is in accordance with Utah Admin. Code R313-15-703.

25. The Licensee shall calibrate air sampling equipment at intervals not to exceed six months.

26. The operational environmental monitoring program shall be conducted in accordance with the current Environmental Monitoring Plan approved by the Division.

27. Vehicles, containers, facilities, materials, equipment or other items for unrestricted use shall not be released from the Licensee's control if contamination exceeds the limits found in Table 27-A. When not released from Licensee’s control for unrestricted use, conveyances released for commercial transport of radioactive waste or materials shall comply with the requirements and applicable contamination limits set forth in 49 CFR 173 and the requirements of 10 CFR 71.5.

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TABLE 27-A

Nuclide[a]	Column 1 Average [b,c,f]	Column 2 Maximum [b,d,f]	Column 3 Removable [b,e,f]
U-nat, U-235, U-238, and associated decay products	5,000 dpm alpha/ $100cm^2$	15,000 dpm alpha/ $100cm^2$	1,000 dpm alpha/ $100cm^2$
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/$100cm^2$	300 dpm/$100cm^2$	20 dpm/$100cm^2$
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/$100cm^2$	3,000 dpm/$100cm^2$	200 dpm/$100cm^2$
Beta-gamma emitters (nuclides with decay modes other than alpha emissions or spontaneous fission) except Sr-90 and other noted above.	5,000 dpm beta, gamma/$100cm^2$	15,000 dpm beta-gamma/$100cm^2$	1,000 dpm beta-gamma/$100cm^2$

a. Where surface contamination on both alpha-and beta-gamma emitting nuclides exists, the limits established for alpha-and beta-gamma emitting nuclides should apply independently.
b. As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.
c. Measurements of average contamination should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each such object.
d. The maximum contamination level applies to an area of not more than 100 cm^2.
e. The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping the area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.
f. The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters shall not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

28. The Licensee shall submit the following to the Director for review and approval pending resolution of all issues as judged by the Director:
    A. The Licensee shall submit a corrective action plan for the Cover Test Cell for Director approval by no later than July 23, 2008. The corrective action plan shall identify all means necessary to collect valid

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data to verify actual performance of the cover system. Said plan shall include Cover Test Cell design, construction, instrumentation, monitoring, reporting, and comparison of actual performance to projected performance. The Cover Test Cell corrective action plan shall include:

i. Performance goals to meet the objective of verifying modeled cover system performance.
ii. Methodologies and plans that provide quantitative and qualitative results capable of satisfying the objective.
iii. Design, construction, and operational plans to implement the methodologies and plans.
iv. Quality control and quality assurance requirements of work to be performed. Quality control and quality assurance specifications and procedures shall state specific actions and processes the Licensee will use to ensure compliance with designs and specifications, monitoring, reporting, ensure data validity, timely detect data deficiencies, enhance accuracy of data interpretation, and ensure correctness of results prior to being submitted to the Division.
v. In the event that the plan results in new instrumentation or construction, the Licensee shall complete all such activities within 30-days of Director approval. Within 30-days of completion of said construction, the Licensee shall submit an As-Built report for Director approval.

B. The Licensee shall submit an annual report for Director approval by March 1 of each calendar year. This annual report shall detail the Licensee's progress in implementing the corrective action plan, provide the data collected in the past year, analyze the data, and interpret the meaning of the data relative to the overall objective of the corrective action plan.

REPORTING

29. The Licensee shall submit the following reports to the Director:

A. Semi-annual results from the Environmental Monitoring Program, as amended. The report(s) shall be submitted within 90 days after the expiration of each reporting period. Reporting Period shall mean:

First Period	January1 to June 30
Second Period	July 1 to December 31

B. A quarterly summary report detailing the radioisotopes, activities, weighted average concentrations, volume, and tonnage for waste received during the calendar quarter. The report of volume (cubic feet and cubic yards) and tonnage (tons) shall be partitioned according to waste type: Low Level Radioactive Waste (LLRW), LLRW with PCBs, Mixed Waste (MW), MW with PCBs, MW Treatment, NORM, Containerized Class A, uranium/thorium mill tailings (i.e. 11e.(2) wastes), and waste generated prior to congress passing the Uranium Mill Tailings Radiation Control Act in 1978. The report(s) shall be submitted within 30 days after the expiration of each calendar quarter. Calendar Quarter shall mean:

First Quarter	January, February, and March

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Second Quarter	April, May, and June
Third Quarter	July, August, and September
Fourth Quarter	October, November, and December

C. Reserved

D. For the Mixed Waste Landfill Cell, the Licensee shall ensure that the maximum acceptable activities, used as source terms in the groundwater performance modeling are not exceeded after facility closure. Therefore, the Licensee shall notify the Director, at the earliest knowledge, that the following nuclides are scheduled for disposal: berkelium-247 and chlorine-36.

E. For the Class A West disposal cell, the Licensee shall ensure that the maximum acceptable activities used as source terms in the groundwater performance modeling are not exceeded after facility closure. Therefore, the Licensee shall notify the Director, at the earliest knowledge, that the following nuclides are scheduled for disposal: berkelium-247, calcium-41, chlorine-36, iodine-129, rhenium-187, and Technetium-99.

F. An annual report shall be submitted by March 31st and shall report the cumulative void space (expressed as a percent of waste volume) disposed of in the Containerized Waste Facility for the previous year.

30. Except as provided by this License Condition, the Licensee shall maintain the results of sampling, analyses, surveys, and instrument calibration, reports on inspections, and audits, employee training records as well as any related review, investigations and corrective actions, for five (5) years. The Licensee shall maintain personnel exposure records in accordance with Utah Admin. Code R313-15-201.

STAFFING/QUALIFICATIONS

31. Radiation Safety operations for bulk, containerized and mixed waste, portable gauging device(s), radioactive source(s), and dosimeter calibrator(s)/irradiator(s) shall be conducted by or under the supervision of Thomas A. Brown, RSO.

32. A. The Licensee's staff shall meet the qualifications as described in the current Appendix I, Organization Layout approved by the Division.

B. Licensed material in License Conditions 6.C and 6.D. shall be used by, or under the supervision and in the physical presence of, the RSO or individuals who have been trained in the Licensee's standard operating and emergency procedures and have satisfactorily completed at least one of the following:

i. The device manufacturer's training course for safe use and handling of portable gauging devices containing licensed material; or

ii. A portable gauge training program conducted in accordance with the provisions of a specific

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license issued by the Director, an Agreement State or the U.S. Nuclear Regulatory Commission.

C. Licensed material in License Conditions 6.E through 6.P shall be used by, or under the supervision of, the RSO, or individuals designated in writing by the RSO.

D. The Licensee shall maintain the organizational independence of the programs that monitor and enforce employee safety, environmental protection, and public safety from programs responsible for production and profitability and other influences or priorities that might compromise quality and radiation safety.

E. The Licensee shall establish a method for any employee or contractor to anonymously submit questions, concerns, ideas, or other comments regarding employee safety, environmental protection, and public safety to the Corporate Radiation Safety Officer (CRSO). The method shall include documentation of all comments submitted, the Applicant's response to each comment, and a method for communicating the Licensee's response to employees and contractors.

CONSTRUCTION ACTIVITIES

33. The Licensee shall obtain prior written approval from the Director prior to construction of significant facilities. Significant facilities shall include, but are not limited to waste, stormwater, and wastewater related handling, storage, and transfer projects.

34. The Licensee shall address and resolve all concerns the Division has identified regarding clay mining activities in areas adjacent to Section 32, as provided in a February 16, 2007 Division letter to the Licensee, including a February 9, 2007 Round 1 Interrogatory by the URS Corporation (URS 39400018.3090). The Licensee shall deliver detailed analyses, explanations, descriptions, and appropriate justification to the Division no later than July 1, 2008. If the Director determines that unacceptable adverse conditions exist or might develop or evolve, the Licensee shall submit for approval a remedial action plan within 30 days of written notice of the determination by the Director. The remedial action plan will address, among other topics, description of proposed activities, justification that the proposed activities will be adequate to protect the facilities in Section 32 from possible impacts of clay mining, and engineering design, specifications, and construction of proposed remedial actions.

35. A. In accordance with Utah Admin. Code R313-25-8, the Licensee shall not dispose of significant quantities of concentrated depleted uranium prior to the approval by the Director of the performance assessment required in Utah Admin. Code R313-25-8.

B. Performance assessment: A performance assessment, in general conformance with the approach used by the Nuclear Regulatory Commission (NRC) in SECY-08-0147, shall be submitted for Director review and approval. The performance assessment shall be revised as needed to reflect ongoing guidance and rulemaking from NRC. For purposes of this performance assessment, the compliance period will be a minimum of 10,000 years. Additional simulations will be performed for a minimum 1,000,000-year time frame for qualitative analysis.

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C. Revised disposal embankment design: If the performance assessment specified in License Condition 35.B indicates that changes to disposal operations and cover design are necessary to ensure compliance with the requirements of 10 CFR Part 61 or Utah Admin. Code R313, EnergySolutions will provide a revised design that does meet those requirements, for all wastes that have been and are reasonably anticipated to be disposed of at the facility within 180 days of Director approval of the performance assessment.

D. Remediation: If following the completion of the Division's review of the performance assessment described in License Condition 35.B, the disposal of DU as performed after the date of this license condition would not have met the requirements of the performance assessment, the facility will undertake remediation to ensure that the performance standards are met, or if that is not possible, shall remove the DU and transport it off-site to a licensed facility.

E. Surety: The Licensee shall fund the surety for the remediation, in License Condition 35.D. Within 30-days of the effective date of this license condition, the licensee shall submit for Director review and approval, the surety cost estimates for remediation of existing Savannah River DU waste disposal and planned, similar large quantity DU waste disposal.

36. A. The West Rail Spur and Unloading facility shall be operated as a transfer station for Surface Contaminated Objects (SCO) and large components, (waste storage is prohibited). These objects may be set on the gravel pad for 24 hours to facilitate unloading and transferring to the Class A West disposal cell.

B. The West Rail Spur and Unloading facility shall be operated as a transfer station for conveyances to be unloaded at the Containerized Waste Facility (unloading of waste packages is prohibited).

37. All ion exchange resins shall be disposed of as follows:
A. Solidified using solidification agents approved by the Director and disposed of in the Containerized Waste Facility; or

B. Packaged in High-Integrity Containers (HIC) approved by the Director, carbon-steel liners, unapproved HICs, or poly HICs meeting the void space criteria described in License Condition 16.M.i and disposed of in the Containerized Waste Facility; or

C. Packaged in HIC approved by the Director, carbon-steel liners, unapproved HICs, or poly HICs not meeting the void space criteria described in License Condition 16.M.i and disposed of as approved by the Division under License Condition 16.M.ii or 16.M.iii in the Containerized Waste Facility; or

D. Disposed of in accordance with the requirements of the Construction Quality Assurance/Quality Control Manual.

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38. The Licensee shall construct the Class A West disposal Cell identified in the Ground Water Quality Discharge Permit No. UGW450005 and in accordance with approved engineering design drawings "Series 10014".

39. Waste placement and backfilling within the Containerized Waste Facility shall be conducted in accordance with the following:

    A. The Containerized Waste Facility shall conform to the characteristics defined, analyzed, and described in the Engineering Justification Report "Class A Disposal Cell Containerized Waste Facility" (dated April 12, 2001); Engineering Justification Report, Addendum "Fifteen Percent Void Space Criteria" (Revision 1 dated October 10, 2001); and the AMEC letter to Envirocare of Utah, Inc. "Placement of Drums and B-25 Containers with 15 Percent Voids; Envirocare Class A - Containerized Waste Facility Near Clive, Utah" (dated October 2, 2001). Waste containers that have void space in excess of 15 percent shall be filled to the top of the container opening using Controlled Low Strength Material (CLSM) in accordance with the Construction QA/QC manual. The Licensee is exempt from the CLSM cold weather requirements and the 48 hour notification for void remediation only at the CWF Facility.

    B. Waste container configurations, backfill materials and associated placement activities, shall be those approved by the Director following specifications contained in the Work Element: Containerized Waste Facility-Waste Placement Test Pad and the Work Element Containerized Waste Facility- Waste Placement Sections of the currently approved LLRW Construction Quality Assurance/Quality Control Manual.

    C. Waste delivered in a shielded transportation cask shall remain in the cask until the waste is approved for disposal and the disposal location is prepared for the shipment. Waste received for disposal in the Containerized Waste Facility shall not be handled, stored or transferred within the contaminated portion of the Restricted Area without the approval of the RSO.

    D. The Containerized Waste Facility shall be operated as a contamination-free portion of the Restricted Area until containerized waste disposal operations are completed. Bulk waste may then be used to complete the filling of the cell.

    E. Interim storage is applicable only to the Containerized Waste Facility. Packages containing radioactive material shall not be stored for a period of longer than 30 days from the date of receipt. Retention of waste materials above ground pending disposal up to 3 working days does not constitute storage. Areas surrounding packages in storage shall be managed in accordance with the most current version of EnergySolutions' Standard Operating Procedure (SOP) CL-RS-PR-150, *Posting Requirements for Radiological Hazards*.

    F. Disposal of non-containerized decomposable or compressible waste at the Containerized Waste Facility

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is prohibited. Such waste shall be disposed of as debris in bulk waste portions of the Class A West disposal embankment, in accordance with debris placement requirements of the currently approved LLRW and 11e.(2) CQA/QC Manual.

40. The LARW and Class A West Disposal Cells, shall be defined by the areas enclosed by the points of reference in the Ground Water Quality Discharge Permit No. UGW450005. The Containerized Waste Facility within the Class A West disposal cell shall be separated from the non-containerized area by a 6-foot chain link fence on the berm around the Containerized Waste Facility perimeter area.

41. On or before August 1, 2012, the Licensee shall submit, for Director's review and approval, a detailed plan for a study of the clayey soils to be used in the radon barrier of the CAW embankment cover. The objective of this study is to determine the amount of strain that the soils can withstand without cracking when subjected to both axial lengthening and bending as would be experienced when the clay settles differentially as part of the cover system. Within nine months of Director's approval of the study plan, the Licensee shall execute the study and submit a report with results of the study. Based on results of the study and the Director's review, the Director may require the Licensee to modify the embankment and cover design.

42. On or before December 21, 2012, the Licensee shall submit a revised cover design (including at least descriptions, design calculations, drawings, and specifications) and an assessment addressing performance of the revised Class A West cover design and transport of potential releases from the proposed Class A West disposal unit.

43. Reserved

44. The Licensee shall fulfill all requirements and maintain compliance with all License Conditions in the LLRW and 11e.(2) CQA/QC Manual and engineering drawings currently approved by the Director of the Division.

45. All engineering related soil tests conducted by the Licensee to demonstrate compliance with Condition 44 shall be performed by a laboratory certified and accredited by the AASHTO Materials Reference Laboratory (AMRL). Said certification/accreditation shall apply to clay liner, clay radon barrier, soil filter layers, sacrificial soils, and riprap materials, or other soil or man-made materials as directed by the Director of the Division. Said certification shall include all engineering test methods required by License Condition 44, or as directed by the Director. Certification is not required for the Division approved sealed single ring infiltrometer permeability test contained in Appendix B to the LLRW and 11e.(2) CQA/QC Manual.

46. Reserved

47. The Licensee shall not initiate disposal operations in newly excavated or newly tied-in areas until the Division has inspected and the Director has approved the cell/embankment liner.

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CONSTRUCTION DRAWINGS.

48. A. The Licensee shall provide a comprehensive set of drawings for the entire Clive site. The drawings shall correctly: (1) locate all structures, utilities, fences, ponds, drainage features railroad tracks, roads, storage facilities, loading and off-loading facilities, disposal embankments, all environmental monitoring locations including instruments/devices, and any other appurtenances related to the operation, maintenance and closure of the disposal facility; and (2) provide survey control including elevations in sufficient detail to fully describe the site. The drawings shall be developed in accordance with the standards of professional care. A drawing index shall be included that identifies drawings by discrete number. Each drawing shall include a revision block that documents the latest changes or modifications by date and includes the initials of the responsible reviewer for QA/QC tracking purposes.

B. Drawings showing approved future designs shall be marked as "Final Drawings." Final drawings or drawings developed for construction shall be sealed by a Utah registered professional engineer. The drawings shall be developed in accordance with the standards of professional care.

C. Within 30 days of completion of any project that requires approval by the Director, a set of "As-Built" drawings shall be submitted for review. The drawings shall indicate as-built conditions as they existed no earlier than 30 days prior to the submittal. Drawings of finished construction shall be marked as "As-Built" in the final entry in the revision block.

SITE OPERATING PROCEDURES

49. Shipments containing free liquid in excess of 1% shall be absorbed, evaporated, or the liquids removed only at facilities with approved secondary containment or the rail rollover facility.

50. A. On-site generated waste shall be managed according to its radiological, physical and chemical characteristics. Solid phase material shall be disposed in either the Class A West Cell, Mixed Waste Cell, or the 11e.(2) Cell. Waste water from decontamination facilities will be put in the evaporation ponds or sprayed on disposal cells for purposes of dust and engineering controls.

B. Site equipment that has reached the end of its useful life, is not operational and does not meet the removable contamination limits of License Condition 27, Table 27-A, shall be disposed in the LLRW Class A West Cell within 90 days as debris in accordance with requirements of the LLRW Construction Quality Assurance/Quality Control Manual or stored on approved facilities for storage, transfer, and sampling of bulk waste.

C. Facility vehicles transferring or unloading waste shall not be left unattended.

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51. The following shall be implemented for LLRW and 11e.(2) Waste segregation purposes:

    A. LLRW and 11e.(2) waste shall not be managed simultaneously at the Shredder Facility, Rotary Dump Facility, or Rail Digging facility;

    B. Any vehicle or facility used to manage waste for disposal within the 11e.(2) disposal embankment, must be clearly labeled to designate 11e.(2) management. The labels shall be visible from both sides of a vehicle/facility designated for 11e.(2) waste management.

    C. Equipment, vehicles and facilities, which are used for management of LLRW will be cleaned of any material before being used for 11e.(2) waste management activities. Equipment, vehicles and facilities shall be cleaned of all waste material to a limit of 500 grams per square foot prior to being used for other waste types.

52. Waste shipments or transportation packages received shall meet the following contamination control requirements for removable contamination
    - Not to exceed 240 dpm/100cm^2 alpha
    - Not to exceed 2,400 dpm/100cm^2 beta-gamma

    (assuming a wipe efficiency of 0.10)

    Except for transportation casks that exhibit "weeping" radioactive contamination resulting from previous use in contaminated underwater operations, which were shipped in accordance with 49 CFR 173.443(b), in this case, the removable contamination upon receipt shall not exceed:
    - 2,400 dpm/100cm^2 alpha
    - 24,000 dpm/100cm^2 beta-gamma

    (assuming a wipe efficiency of 0.10)

    If a shipment or transportation package does not meet the above contamination requirements, the Licensee shall take actions to reduce the risk for spread of contamination.

53. A. Quarterly, the Licensee shall clean the facility roads within the area delineated in License Condition 10.B, or more frequently when needed. The material collected from cleaning the roads shall be disposed within an approved disposal embankment for Class A waste.

    B. The Licensee shall apply on a biweekly basis (once every two weeks) between the first day of May and the last day of September a polymer-based stabilizer in accordance with the manufacturer's instructions on all exposed contaminated cell areas and areas of waste within the Class A West disposal embankment which have been disturbed in the previous two weeks. Except when sufficient precipitation has fallen within two weeks to create ground surface conditions beyond the manufacturer's recommended specifications (the polymer-based stabilizer specifications shall be provided to the Director prior to any application thereof), the Licensee shall notify the Director's

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engineering staff via email when enough precipitation has fallen that is beyond manufacturer's recommended specifications and the polymer solution will not be applied.

C. The Licensee shall minimize the dust created during the process of placing and moving waste, through the use of water. Water or other engineering controls shall be placed on roads and in areas which work is being performed.

D. The Licensee shall cease loading, hauling, and dumping of un-containerized waste whenever the 5-minute average wind velocities exceed 35 miles per hour. When both the 5-minute average and 5-minute maximum wind velocities are less than 35 mph as observed on the meteorological station, management of un-containerized waste may resume.

54. The Licensee shall fulfill and maintain compliance with all License Conditions and requirements in the current Site Radiological Security Plan approved by the Division.

55.

A. For the Class A West disposal cell, the Licensee shall ensure that the average concentrations of selected radionuclides do not exceed the limits stated in Table 55A.

Table 55A. Limiting Radionuclide Concentrations in Waste Disposed of in Class A West Disposal Cell.

Radionuclide	Maximum Average Radionuclide Concentration[1] in Waste Disposed of Under Top Slope (pCi/g)	Maximum Average Radionuclide Concentration[1] in Waste Disposed of Under Side Slope (pCi/g)
berkelium-247	0.0065	0.00388
calcium-41	35,300	34.1
chlorine-36	15.9	9.72
iodine-129	---	21.9
rhenium-187	---	19,100
technetium-99	---	1,720

1. Maximum average radionuclide concentration for a radionuclide is determined as the quotient of the Total Activity (in picocuries) of that radionuclide disposed of under the respective slope and the Total Mass disposed of under the respective slope for the Active Cell (in grams) + Completed Cell (in grams).

B. For the Mixed Waste disposal cell, the Licensee shall ensure that the actual cumulative activity of chlorine-36 does not exceed 8.75 picocuries per gram in accordance with the following formula:

$$\frac{\text{Total Activity of chlorine-36 Received (picocuries)}}{\text{Total Mass of Active Cell (grams) + Completed Cell (grams)}} \leq 8.75 \text{ picocuries per gram}$$

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C. For the Mixed Waste disposal cell, the Licensee shall ensure that the actual cumulative activity of berkelium-247 does not exceed 0.00314 picocuries per gram in accordance with the following formula:

$$\frac{\text{Total Activity of berkelium-247 Received (picocuries)}}{\text{Total Mass of Active Cell (grams) + Completed Cell (grams)}} \leq 0.00314 \text{ picocuries per gram}$$

56. Containerized Class A waste shall be certified by the generator to meet the Waste Acceptance Criteria in accordance with the current Waste Characterization Plan described in License Condition 58.

57. A. The Licensee shall move rail shipments into the Restricted Area within seven (7) days of arrival. The shipments may be returned to the carrier when management of the waste is not possible within the seven (7) day period, unless additional time is approved by the Director of the Division.

B. Empty outbound railcars shall be picked up by the local rail service within fourteen (14) days of release from the Restricted Area, unless additional time is approved by the Director of the Division.

C. Railcars that have been decontaminated and surveyed both internally and externally and found meet the limits found in Table 27-A do not have to picked up by local rail service within fourteen (14) days.

D. The Licensee may perform the following activities on incoming shipments on rail lines outside of Section 32, not including the main line adjacent to Section 32:
1. Visual Inspection
2. Radiation level surveys
3. Affix labels

58. The Licensee shall fulfill and maintain compliance with all License Conditions and requirements in the current Waste Characterization Plan.

59. Reserved.

60. Wind dispersed Dry Active Waste (DAW) located outside of the Contaminated Restricted Area is prohibited.

61. Truck, railcar, and other equipment washdown (decontamination) facilities, including evaporation ponds, shall be controlled with fences or other approved barriers to prevent intrusion.

62. All burial embankments and waste storage areas, including immediately adjacent drainage structures, shall be controlled areas, surrounded by a six-foot chain link fence. Upon site closure, all permanent fences shall be six feet high chain link topped with three strand barbed wire, tip tension wire, and twisted selvedge.

63. Radioactive and mixed wastes within Section 32 and all rail spurs controlled by the Licensee around the

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Licensee's Disposal Facility are possessed by the Licensee. Waste conveyed to the facility by truck is in transport as long as the commercial carrier driver and vehicle remain at the Clive disposal facility. The Licensee does not possess such waste for purposes of determining compliance with surety requirements and SNM quantity limits, except that the Licensee does, however, possess any waste containing SNM that is not disposed of on the day it is delivered to the facility.

64. "Disposal" is the locating of radioactive waste into a lift of the disposal embankment. Disposal does not include the storage of waste in containers on a lift when the container will ultimately be emptied, the staging of containerized waste in the disposal embankment; or waste as "In Cell Bulk Disposal."

MANIFEST/SHIPPING REQUIREMENTS

65. The Licensee shall comply with Utah Admin. Code R313-15-1006 and Utah Admin. Code R313-25-33(8), Requirements for Low-Level Waste Transfer for Disposal at Land Disposal Facilities and Manifests.

66. The Licensee shall not accept radioactive waste for storage and disposal unless the Licensee has received from the shipper a completed manifest that complies with Utah Admin. Code R313-15-1006 and Utah Admin. Code R313-25-33(8).

67. The Licensee shall maintain copies of complete manifests or equivalent documentation required under License Conditions 65 and 66 until the Director authorizes their disposition.

68. The Licensee shall notify the Director within 24 hours followed by written notification within seven (7) days of any waste shipment that arrives at the Licensee's property and does not comply with applicable rules or license conditions. Specifically, notifications required under this license condition shall be made for shipments that:
    A. contain wastes prohibited under Utah Code Annotated 19-3-103.7,

    B. contain prohibited wastes and do not meet waste acceptance requirements found in License Condition 16,

    C. do not conform to Generator Site Access requirements found in Utah Admin. Code R313-26-4(5), and

    D. contains free liquids (greater than 1% unexpected free liquids) or leaking shipment discrepancies.

    All other shipment discrepancies (i.e. DOT and waste manifest) shall be noted on the waste manifest and the waste manifest retained on site for Division review.

69. The Licensee shall not accept radioactive waste from entities not in compliance with Utah Admin. Code R313-15-1006.

70. The Licensee shall acknowledge receipt of the waste within one (1) week of waste receipt by returning a signed copy of the manifest or equivalent document to the shipper. The shipper to be notified is the Licensee

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who last possessed the waste and transferred the waste to the Licensee. The returned copy of the manifest or equivalent documentation shall indicate any discrepancies between materials listed on the manifest and materials received.

71. The Licensee shall notify the shipper (e.g., the generator, the collector, or processor) and the Division when any shipment or part of a shipment has not arrived within 60 days after receiving the advance manifest.

72. The Licensee shall maintain a record for each shipment of waste disposed of at the site. At a minimum, the record shall include:
    A. The date of disposal of the waste;

    B. The location of the waste in the disposal site;

    C. The condition of the waste packages received;

    D. Any discrepancy between the waste listed on the shipment manifest or shipping papers and the waste received in the shipment;

    E. A description of any evidence of leaking or damaged packages or radiation or contamination in excess of applicable regulatory limits; and
    F. A description of any repackaging of wastes in any shipment.

FINANCIAL ASSURANCE/CLOSURE

73. The Licensee shall at all times maintain a Surety that satisfies the requirements of Utah Admin. Code R313-25-31 in an amount adequate to fund the decommissioning and reclamation of Licensees' grounds, equipment and facilities by an independent contractor. The Licensee shall annually review the amount and basis of the surety and submit a written report of its findings by December 1 each year for Director approval. At a minimum, this annual report shall meet the following requirements:
    A. Summary of Changes – the annual report shall include a written summary of any change in the cost estimate previously approved by the Director, including, but not limited to:
        i. A description of any modification, addition, or deletion of any direct cost or post-closure monitoring and maintenance (PCMM) cost line item, including supporting justification, calculations and basis;
        ii. Any change to the unique reference number (cost line item) assigned approved by the Director for any direct or PCMM cost line item;
        iii Updates to the cost estimate for decommissioning the CAW embankment to ensure the cost estimate remains current in the event that the Director determines the CA and CAN embankments must be closed as a single embankment using the approved design of the CAW embankment. The cost estimate must meet the requirements of License Condition 73; and,
        iv. Updates to the cost estimates for closing and decommissioning the CA and CAN embankments as

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separate embankments using the approved designs for each embankment. The surety shall be based on the approved cost estimate for the CA and CAN embankments until the Director determines it is no longer feasible for the CA and CAN embankments to be closed separately. At that time, the surety shall be based on the approved cost estimate provided for License Condition 73.A.iii. The update to the cost estimate for the CA and CAN embankments must include funding to move excess materials that have been placed outside of the approved CA design to the CAN embankment, as well as all other costs associated with closing the CA and CAN embankments separately. The cost estimate must meet the requirements of License Condition 73.

B. Indirect Costs shall be based on the sum of all direct costs in accordance with the following values:

Surety Reference No.	Description	Percentage
300	Working Conditions	5.5%
301	Mobilization/ Demobilization	4.0%
302	Contingency	15.0%
303	Engineering and Redesign	2.25%
304	Overhead and Profit	19.0%
305	Management Fee and Legal Expenses	4.0%
306	DEQ Oversight	4.0%

C. RS Means Guide estimates of direct construction costs provided in the annual report shall be derived from or based on the most recent edition of the RS Means Guide for Heavy Construction.

D. Report Certification – the annual report shall be prepared under the direct supervision of and certified by a Professional Engineer or Professional Geologist currently licensed by the State of Utah with at least five (5) years of construction cost estimation experience. The annual report shall be developed in accordance with the standards of professional care.

E. Electronic Format – the Licensee shall provide the report in both paper and electronic formats, as directed by the Director.

F. Within 60-days of Director approval of said annual report, the Licensee shall submit written evidence

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that the surety has been adequately funded.

G. The Licensee shall prepare and maintain current a gravel resource evaluation report on-site that quantifies the gravel reserves remaining in the Grayback Hills Gravel Pit located in Section 24 of T. 1 N., R. 12 W (SLBM). Such report shall be prepared and certified on or before December 1 of each year by a professional engineer or professional geologist currently registered in the State of Utah.

74. One (1) year prior to the anticipated closure of the site, the Licensee shall submit for review and approval by the Director a site decontamination and decommissioning plan. As part of this plan, the Licensee shall demonstrate by measurements and/or modeling that concentrations of radioactive materials which may be released to the general environment, after site closure, will not result in an annual dose exceeding 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public.

75. In accordance with UAC R313-25-33(6), the Licensee shall submit a copy of its financial statement for the previous year, within 30 days of its completion and certification.

76. The Licensee shall at all times maintain a Surety for perpetual care, using an instrument that satisfies the requirements of Utah Admin. Code R313-22 and R313-25. The Surety for perpetual care shall be in the amount last approved by the Waste Management and Radiation Control Board, as provided in Utah Code Ann. 19-1-307(2), less the amount contributed to the Radioactive Waste Perpetual Care and Maintenance Account created under Utah Code Ann. 19-3-106.2.

SPECIAL HANDLING

77. Except while waste packages are being handled in the active areas of the Containerized Waste Facility, external gamma radiation levels shall be posted in accordance with the most current version of EnergySolutions' SOP CL-RS-PR-150, *Posting requirements for Radiological Hazards*.

78. The Licensee shall observe the following controls on waste handling at the Containerized Waste Facility:
   A. Before unloading any waste container whose external gamma radiation at the surface exceeds 10 R/hr, an ALARA review shall be performed and documented and a pre-job briefing shall be conducted.

   B. As part of the ALARA review, the Licensee shall determine and record (1) estimates of the radiation dose rates for the waste container, disposal unit working face, and any other potentially significant radiation sources; (2) expected durations of exposures to and distances from each radiation source; and (3) expected doses to each person involved in the actual disposal operation.

   C. Before unloading any waste container whose external gamma radiation at the surface exceeds 200 R/hr, a practice run shall be conducted. The practice run shall involve shielding, container(s) filled with non-radioactive material, and handling equipment that are similar to those involved with the actual shipment. Similarity includes similar rigging and physical characteristics (e.g., weight, dimensions, and

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attachments). Those personnel who will participate in receiving, processing, handling, and disposing of the actual waste will participate in the practice run, using actual procedures. The Licensee shall notify the Division 24 hours in advance of conducting the practice runs.

D. On a case-by-case basis, the Director may exempt the Licensee from conducting the required practice run, considering the results of earlier practice runs and actual experience handling waste containers with high radiation levels.

79. Reserved.

80. The Licensee shall notify in writing the Director at the earliest possible date, but no later than 10 days before scheduled receipt of each shipment with contact radiation levels in excess of 200 R/hr. The notification shall include the anticipated dates of receipt and plan for disposal in the Containerized Waste Facility.

81. The RSO or other qualified person designated by the RSO shall be present for and shall observe the receipt, processing, handling, and disposal of each waste package with contact radiation levels in excess of 200 R/hr.

82. The Licensee shall dispose of only closed containers in the Containerized Waste Facility. The Licensee shall not dispose of any breached waste container in the Containerized Waste Facility without first repairing the breached container or overpacking it in an undamaged container. The Licensee is authorized to open packages at its facility only to:

A. Repair or repackage breached containers.

B. Inspect for compliance with conditions of this license.

C. Confirm package contents and fill voids in packages/containers that have greater than 15% void space.

D. Accomplish other purposes as approved by the Director.

83. The Licensee shall handle and emplace LLRW packages in the Containerized Waste Facility such that packaging integrity is maintained during handling, emplacement, and subsequent backfilling. Waste packages deposited in the Containerized Waste Facility shall be protected from any adverse effects of operations which may damage them.

SEALED SOURCES AND/OR DEVICES

84. A. i. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by equivalent regulations of an Agreement State.

ii. In the absence of a certificate from a transferor indicating that a leak test has been made within

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the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by equivalent regulations of an Agreement State prior to the transfer, a sealed source received from another person shall not be put into use until tested.

iii. Sealed sources need not be tested if they are in storage and are not being used. However, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source shall be stored for a period of more than 3 years without being tested for leakage and/or contamination.

iv. The leak test shall be capable of detecting the presence of 185 becquerels (0.005 µCi) of radioactive material on the test sample. If the test reveals the presence of 185 becquerels (0.005 µCi) or more of removable contamination, a report shall be filed with the Director in accordance with R313-15-1208, and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Utah Waste Management and Radiation Control Rules. The report shall be filed within 5 days of the date the leak test result is known with the Division of Waste Management and Radiation Control, P.O. Box 144850, Salt Lake City, Utah 84114-4850. The report shall specify the source involved, the test results, and corrective action taken.

v. (a) The Licensee is authorized to collect leak test samples in accordance with License Condition 85.D of this license, the Licensee's renewal application (dated March 1, 2001), and the Licensee's Memo (dated March 11, 2002).

(b) The analysis of leak test samples shall only be performed by individuals who meet the qualifications of a Radiation Safety Technician I or II, as defined by this license. The analysis of leak test samples shall be performed in accordance with the Licensee's renewal application (dated March 1, 2001), and the Licensee's Memo (dated March 11, 2002). Alternatively, tests for leakage and/or contamination, including sample collection and analysis, may be performed by other persons specifically licensed by the Director, the U.S. Nuclear Regulatory Commission, or an Agreement State to perform such services.

vi. Records of leak test results shall be kept in units of Becquerels or microcuries and shall be maintained for inspection by representatives of the Director.

B. Sealed sources or source rods, containing licensed material shall not be opened or sources removed from source holders, devices, or detached from source rods by the Licensee, except as specifically licensed by the Director, an Agreement State, or the U.S. Nuclear Regulatory Commission to perform such services.

C. The Licensee shall conduct a physical inventory every six months to account for all sealed sources and/or devices received and possessed under this license. The records of inventories shall be maintained for three years from the date of the inventory for inspection by the Division, and shall include the quantities and kinds of radioactive material, manufacturer's name and model numbers, location of the sources and/or devices, and the date of the inventory.

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PORTABLE GAUGING DEVICES:

85. A. Each portable gauging device shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The gauge or its container must be locked when in transport, storage or when not under the direct surveillance of an authorized user.

B. Each portable gauging device shall be kept under the constant surveillance (direct surveillance) of individuals trained in accordance with License Condition 32.B of this license, when the device is not in secured storage, as required by Utah Admin. Code R313-15-801(1)(2) and R313-19-34(9).

C. Reserved.

D. Any cleaning and/or maintenance of portable gauging device(s) or the collection of leak test samples, performed by the Licensee, shall only be performed with the radioactive source/source rod in the safe shielded position.

E. All cleaning and/or maintenance of portable gauging device(s), performed by the Licensee shall only be performed in accordance with License Condition 85, and the manufacturer's instructions and recommendations.

F. Any cleaning, maintenance, or repair of portable gauging device(s) that requires removal of the sources/source rod shall be performed only by the manufacturer or by other persons specifically licensed by the Director, an Agreement State, or the U.S. Nuclear Regulatory Commission to perform such services.

DOSIMETER CALIBRATOR(S)/IRRADIATOR(S):

86. A. The LDM-2000 reader shall only be connected to a maximum of two IRD-2000 irradiator modules.

B. Devices(s) shall only be:
   i. installed in areas where device(s) can be secured and limited to individuals authorized to use device(s) pursuant to License Condition 86.A and License Condition 32.C.
   ii. used by individuals who meet the qualifications of a Radiation Safety Technician I or II, as defined by this license.
   iii. used in accordance with the manufacturer's operating manual and certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by equivalent regulations of an Agreement State. The Licensee shall follow the manufacturer's recommendations for preventative maintenance and operational testing.

C. Maintenance and servicing of device(s) shall only be performed by the manufacturer or persons specifically licensed by the Director, the U.S. Nuclear Regulatory Commission, or an Agreement State to perform such services.

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D. The Licensee shall not perform calibration(s) for non-MGP Instrument dosimeters.

INCREASED CONTROL CONDITIONS

87. Reserved

88. Reserved

CLOSEOUT CONDITIONS

89. Except as specifically provided otherwise in this license, the Licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The Utah Radiation Control Rules, Utah Admin. Code R313 shall govern unless the statements, representations, and procedures in the Licensee's application and correspondence are more restrictive than the rules.

A. License renewal application, Revision 2, dated June 20, 2005.

B. The following documents refer to revisions made in Amendment 22:
   (1) Letter CD04-0481, dated October 27, 2004, Amendment and Modification Request – Class A North Embankment.
   (2) Letter CD04-0548, dated December 23, 2004, Revised Class A North Disposal Embankment License Amendment Request.
   (3) URS Review of Revised Class A North Embankment Amendment Request, dated December 29, 2004.
   (4) Letter CD05-0024, dated January 17, 2005, Class A North Disposal Embankment License Amendment Request Revision 2.
   (5) Letter CD05-0265, dated May 20, 2005, Revision of Appendix R, Environmental Monitoring and Surveillance Plan.
   (6) Letter CD05-0266, dated May 25, 2005, Surety Calculations for the Class A North Disposal Cell.
   (7) Memo: Treesa Parker to John Hultquist, dated May 25, 2005, proposed revisions to RML for Amendment 22
   (8) Email: Treesa Parker to Christine Hiaring, dated June 1, 2005, License Amendment 22 Minor Changes for Consistency.

C. The following documents refer to revisions made in Amendment 22A:
   (1) Division letter dated November 14, 2005.

D. The following documents refer to revisions made in Amendment 22B:
   (1) Letter CD05-0333, dated June 30, 2005, RML no. UT 2300249 Request for approval of revisions to Appendix I, Organization, and amendment of License Condition 32.A.
   (2) Memorandum dated August 2, 2005, Subject; Review of Appendix I

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(3) Letter CD05-0398, dated August 16, 2005, Request for approval of revisions to Appendix I, Organization and amendment of license condition 31.A,B,C, and 32.A.
(4) Letter CD05-0507, October 26, 2005, Additional information regarding proposed revisions to Appendix I, Organization and amendment of license condition 31.A,B,C, and 32.A.
(5) Letter CD05-0453, dated September 19, 2005 Request for amendment of License Condition 9.10 RML UT2300478; Organization.
(6) Letter dated November 22, 2005, Request for information regarding request to revise Appendix I of the 11e(2) License Application and Amendment of L.C. 9.10.
(7) Letter dated October 11, 2005, Re: Request for Information: Revision to Appendix I and amendment 31A. B. C. and 32.A. dated August 16, 2005 (CD05-0398).
(8) Memorandum, dated October 3, 2005, Subject; Appendix I, revisions to RML UT2300249 conditions 31 A, B, C, and 32 A.
(9) Letter CD05-0411, dated August 23, 2005, Payment of administrative cost for Appendix I amendment request dated August 16, 2005.
(10) Letter CD05-0472, dated September 30, 2005, License condition 39.E amendment
(11) Email dated August 10, 2005, Subject: Draft amendment for LC 39.E and attached August 10, 2005, License Condition 39 E. amendment "draft".
(12) Email dated September 16, 2005, Subject: RE: FW: Draft amendment for LC 39.E.
(13) Letter CD05-0285, dated June 1, 2005, Envirocare containerized waste facility concrete overpacks corrective action plan.
(14) Letter dated June 2, 2005, filling waste package voids at the containerized waste facility using controlled low strength material (CLSM)
(15) Letter CD05-0326, dated June 27, 2005, Re: Letter to Mr. Dane Finerfrock, dated April 13, 2005, CD05-0181.
(16) Letter CD05-0366, dated July 26, 2005, Re: Letter to Dane Finerfrock, dated June 27, 2005, CD05-0326.
(17) Letter CD06-0011, dated January 12, 2006, Request to amend License Condition No. 2, Address.
(18) Letter CD06-0043, dated February 3, 2006, Request to amend License Condition No. 1, Company Name.
(19) Letter dated February 6, 2006, evidence of name change with the Utah Department of Commerce.
(20) Email dated October 6, 2005, Subject: License condition 39.E.
(21) Memorandum from Woodrow W. Campbell through Loren Morton and Dane Finerfrock to Envirocare File, dated January 13, 2006 regarding AMRL Soils Lab Certification for the Envirocare Soils Lab.
(22) Email dated February 15, 2006, from Loren Morton to Dan Shrum, Subject: License Amendment for Condition 73.
(23) Email dated December 23, 2005, from Loren Morton to Dane Finerfrock, Subject: Proposed Changes to License Condition 73 - Annual Surety Evaluation Report.
(24) Letter dated February 22, 2006, Subject: Revise void remediation procedure OPC-6.0.

E. The following documents refer to revisions made in Amendment 22C:

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(1) Letter CD05-0435, dated September 8, 2005, Request to amend RML UT 2300249: Condition 58, Waste Characterization Plan.
(2) Letter CD05-0557, dated December 5, 2005, RML UT 2300249; Condition 58 Waste Characterization Plan –Revised License Amendment Request.
(3) Letter CD06-0072, dated February 27, 2006, Radioactive Material License UT 2300249: Condition 58 Waste Characterization Plan – Revised License Amendment Request.
(4) Email dated February 24, 2006, from Boyd Imai to Sean McCandless Re: Waste Characterization Plan.
(5) Letter CD06-0059, dated February 15, 2006, Radioactive Material License UT 2300249 –Self Identified Noncompliance.
(6) Letter dated March 17, 2006, from the DRC regarding the February 15, 2006, letter of noncompliance.
(7) Letter CD06-0055) dated February 9, 2006, Request to Amend RML UT 2300249 to show addition of Liquid Radioactive Sources to License Condition 6.E.
(8) Letter (CD06-0092) dated March 8, 2006, RML UT 2300249; Request for administrative amendment. Conditions 21.A and B and Condition 81.

F. The following documents refer to revisions made in Amendment 22E:
(1) CD06-0389, "Request to amend Radioactive Materials License No. UT 23000249 and 11e.(2) Radioactive Materials License No. UT 23000478 – Request for approval revised Appendix I, *Organization*," October 6, 2006.
(2) Shredder Facility
a. CD05-0448, "Radioactive Materials License No. UT 2300249 (RML) and Groundwater Quality Discharge Permit UGW450005 (GWQDP). Request to Construct Shredding Facility," September 15, 2005.
b. CD05-0532, "Request to Construct Shredding Facility – Revised Design and Interrogatory Response," November 14, 2005.
c. CD05-0556, "Request to Construct Shredding Facility – Additional Information," December 2, 2005.
d. CD06-0036, "Request to Construct Shredding Facility – Response to Round 2 Interrogatories", February 1, 2006.
e. CD06-0098, "Request to Construct Shredding Facility – Response to Round 3 Interrogatory," March 10, 2006.
f. ASTM F-1417, "ASTM Method F 1417-92," March 29, 2006.
g. CD06-0188, "Request to Construct Shredder Facility – Response to Round 4 Interrogatory," May 9, 2006.
h. CD06-0211, "Request to Construct Shredder Facility – Response to Round 4B Interrogatory," May 25, 2006.
i. CD06-0234, "Requests to Construct Shredder and Rotary Dump Facilities – Revised Wastewater Management Process," June 19, 2006.

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j. "EnergySolutions LLC Low-Level Radioactive Waste Closure & Post-Closure Trust License UT 2300249 Trust #16673400," June 29, 2006.
k. CD-0346, "Interim Wastewater Management Plan for the Shredder Facility – Response to August 18, 2006, Request for Additional Information," August 31, 2006.
l. CD06-0388, "Radioactive Material License UT 2300429 and Groundwater Quality Discharge Permit (GWDP) No UGW450005 Shredder Facility – Request to Operate," October 5, 2006.
m. CD06-0407, "Comment on Proposed Amendment of Radioactive Material License UT 2300249 and Groundwater Quality Discharge Permit (GWDP) No UGW450005, October 18, 2006.
n. CD06-0414, "Radioactive Material License UT 2300249 and Groundwater Quality Discharge Permit No UGW450005 Shredder Facility – Submittal of Revised Drawings" October 25, 2006.
o. CD06-0425, "Groundwater Quality Discharge Permit No UGW450005 (GWQDP) Submittal of Revised Appendix J and K," November 7, 2006.

(3) Rotary Dump Facility
a. CD05-0564, "Request to Construct – Rotary Dump," December 12, 2005.
b. CD05-0570, "Request to Construct Rotary Dump 00 Submittal of Dose Assessment," December 16, 2005.
c. CD06-0086, "Request to Construct Rotary Dump Facility – Response to Round 1 Interrogatory", March 2, 2006.
d. ASTM F-1417, "ASTM Method F 1417-92," March 29, 2006.
e. CD06-0147, "Request to Construct Rotary Dump Facility – Revised Drawings," April 10, 2006.
f. CD06-0210, "Request to Construct Rotary Dump Facility – Response to Round 2 Interrogatory," May 25, 2006.
g. CD06-0211, "Request to Construct Rotary Dump Facility – Response to Round 4B Interrogatory", May 25, 2006.
h. CD06-0226, "Request to Construct Rotary Dump Facility – Response to Round 2B Interrogatories," June 8, 2006.
i. CD06-0234, "Requests to Construct Shredder and Rotary Dump Facilities – Revised Wastewater Management Process," June 19, 2006.

(4) Intermodal Container Wash Building
a. CD05-0291a, "Radioactive Materials License No. UT 2300249 (RML) and Groundwater Quality Discharge Permit UGW450005 (GWQDP). Request to Construct Intermodal Container Wash Building and Access Control Building," June 9, 2005.
b. CD05-0388, "Request to Construct Intermodal Container Wash Building – Revised Design and Supplemental Information," August 8, 2005.
c. CD05-0432, "Request to Construct Intermodal Container Wash Building – Revised Design and Interrogatory Response," September 1, 2005.

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d. CD06-0110, "MARSSIM Release for New Intermodal Container Wash Facility," March 22, 2006.
e. CD06-0206, "Radioactive Material License UT 2300249 and Groundwater Quality Discharge Permit No UGW450005 Intermodal Container Wash Building – Request to Operate," May 22, 2006.
f. "EnergySolutions LLC Low-Level Radioactive Waste Closure & Post-Closure Trust License UT 2300249 Trust #16673400," June 29, 2006.
g. CD06-0259, "Groundwater Quality Discharge Permit (GWDP) No UGW450005 Intermodal Container Wash Building – Revised Appendix J and K," July 10, 2006

(5) Decontamination Access Control Building
a. CD05-0291b, "Radioactive Materials License No. UT 2300249 (RML) and Groundwater Quality Discharge Permit UGW450005 (GWQDP). Request to Construct Intermodal Container Wash Building and Access Control Building," June 9, 2005.
b. CD05-0367, "MARSSIM Release of New Boxwash Access Control", July 26, 2005.
c. CD06-0139, "Radioactive Material License UT 2300249 and Groundwater Discharge Quality Permit (GWDP) No UGW450005 Decontamination Access Control Building – Request to Operate", April 6, 2006.
d. "EnergySolutions LLC Low-Level Radioactive Waste Closure & Post-Closure Trust License UT 2300249 Trust #16673400," June 29, 2006.
e. CD06-0245, "Groundwater Discharge Quality Permit (GWDP) No UGW450005 Decontamination Access Control Building – Revised Appendix J and K and Drawing No 05015-S100," June 30, 2006.

(6) East Side Drainage Project
a. CD06-0175, "Request to Construct East Side Drainage and Gray Water System Modifications," May 1, 2005.
b. CD06-0244, "East Side Drainage and Gray Water System Modifications – Response to DRC Review," June 30, 2006.
c. CD06-0293, "Groundwater Discharge Quality Permit No UGW450005 East Side Drainage and Gray Water System – Revised Design and BAT Plans," August 4, 2006.
d. CD06-0327, "Groundwater Discharge Quality Permit No UGW450005 East Side Drainage and Gray Water System – Revised Appendix J BAT Performance Monitoring Plan and Appendix K BAT Contingency Plan," August 23, 2006.
e. CD06-0328, "Groundwater Discharge Quality Permit No UGW450005 East Side Drainage and Gray Water System – Revised Drawings," August 24, 2006.

G. The following documents refer to revisions made in Revision 0 of the License Renewal Application:
(1) AGRA Earth & Environmental, Inc. 1999. Summary Seismic Stability and Deformation Analysis: Envirocare LARW Disposal Facility, Clive, Tooele County, Utah. September 1, 1999. (1998 LRA Appendix J)
(2) AGRA Earth & Environmental, Inc. 2000a. Evaluation of Settlement of Compressible Debris Lifts: LARW Embankments, Clive, Tooele County, Utah. June 1, 2000.

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(3) AGRA Earth & Environmental, Inc. 2000b. Evaluation of Settlement of Incompressible Debris Lifts: LARW Embankments, Clive, Tooele County, Utah. June 1, 2000.
(4) AMEC Earth & Environmental, Inc. 2000a. Letter Report: Allowable Differential Settlement and Distortion of Liner and Cover Materials. October 4, 2000.
(5) AMEC Earth & Environmental, Inc. 2000b. Letter Report Stability Considerations: Proposed LLRW Embankment. October 25, 2000.
(6) AMEC Earth & Environmental, Inc. 2000c. Letter Report Stability Considerations - Addendum: Proposed LLRW Embankment. November 8, 2000.
(7) AMEC Earth & Environmental, Inc. 2001. Response to Interrogatory Number 2: Placement if HICs in Caissons. October 1, 2001.
(8) AMEC Earth & Environmental, Inc. 2002. Placement of Large Liners in Caissons. June 19, 2002.
(9) Bingham Environmental. 1996. Project Memorandum HEC-1 and HEC-2 Analysis, LARW Application for License Renewal, Envirocare Disposal Facility, Clive Utah. November 26, 1996. (1998 LRA Appendix KK)
(10) EnergySolutions (Rebeccah McCloud) to Utah Division of Radiation Control (Dane Finerfrock). 2006. Correspondence concerning corporate ownership and name changes. February 6, 2006.
(11) EnergySolutions (Tye Rogers) to Utah Division of Radiation Control (Dane Finerfrock). 2006. Correspondence concerning corporate ownership and name changes. February 3, 2006.
(12) EnergySolutions LLC. 2007. "2006 Annual 083106 Rev 052107.xls" [annual surety review], Revision 22, May 21, 2007
(13) EnergySolutions to Utah Division of Radiation Control. 2006. Letter number CD06-0348, Radioactive Materials License No. UT2300249 – Revision to License Condition 26, Appendix R request submitted to DRC on March 17, 2006. September 1, 2006.
(14) Envirocare of Utah, Inc. to URS Corporation. 2005. Personal communication via electronic mail (Sean McCandless and Robert D. Baird, PE). January 27, 2005.
(15) Envirocare of Utah, Inc. to Utah Division of Radiation Control. 2004. Letter number CD04-0287, Updated Specific Gravity Report and Request for Eliminating Specific Gravity Monitoring. June 9, 2004.
(16) Envirocare of Utah, Inc. to Utah Division of Radiation Control. 2005. Letter number CD05-0487, Cover Test Cell Evaporative Zone Depth (EZD) Report. October 13, 2005 June 9, 2004.
(17) Envirocare of Utah, Inc. 2000a. Pre-Licensing Plan Approval Application for a License Amendment Allowing Disposal of Class B & C Low-Level Radioactive Waste. (revision of January 5, 2000 plan) March 15, 2000.
(18) Envirocare of Utah, Inc. 2000b. Rock Cover Design. July 26, 2000.
(19) Envirocare of Utah, Inc. 2001. "Clive Facility Total Ditch Flow Calculations." October 30, 2001.
(20) Envirocare of Utah, Inc. 2003c. Application for Renewal: Radioactive License Materials License Number UT-2300249. July 2, 2003.
(21) Envirocare of Utah, Inc. 2005d. Application for Renewal: Radioactive License Materials License Number UT-2300249, Revision 2 (including all Appendices). June 20, 2005.
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(24) Shrum, Dan to Robert D. Baird, PE, CCE (URS Corporation). 2005. Via electronic mail. February 28, 2005.
(25) SWCA Environmental Consultants, Inc. 2000. Assessment of Vegetative Impacts on LLRW.
(26) Tooele County Recorder. 1993. Entry No. 5489, Book 348, Page 104. March 16, 1993.
(27) Utah Bureau of Radiation Control (Larry F. Anderson) letter to Envirocare of Utah, Inc. (Khosrow B. Semnani, President). 1987. "Radioactive Material License No. UT 2300249." November 18, 1991.
(28) Utah Department of Environmental Quality (Diane R. Nielson, Executive Director) and Envirocare of Utah, Inc. (Khosrow B. Semnani, President). 1993. "Agreement Establishing Covenants and Restrictions." March 16, 1993.
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(31) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Tye Rogers). 2005a. "Response to December 4, 2004 Report - Restoration of Site Drainage: Request for Additional Information." February 23, 2005.
(32) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Tye Rogers). 2005b. "Response to March 25, 2005 Envirocare Response to the February 27, 2005 DRC Request for Information - Restoration of Site Drainage." April 22, 2005.
(33) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Tye Rogers). 2007. "Restoration of Grade - Round 1 Interrogatories: Notice of Upcoming Requirements and Request for Schedule." February 16, 2007.
(34) Utah Division of Radiation Control (Loren Morton) to EnergySolutions (Tye Rogers) . 2006. Correspondence regarding "DRC Response to Eight Submittals by EnergySolutions Regarding Proposed Class A Combined (CAC) Disposal Cell: Request for Additional Information, Round 3 Interrogatory." March 3, 2006.
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(36) Utah Division of Radiation Control (William Sinclair) to Envirocare of Utah, Inc. 2000. Correspondence concerning expectations in addressing the land ownership issue. March 6, 2000.
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(41) Whetstone Associates, Inc. 2003b. Memorandum to Dan Shrum, Envirocare of Utah, "Open Cell Modeling Results for Years 7 – 12," Technical Memorandum 4101T, August 28, 2003.
(42) Whetstone Associates, Inc. 2004. Revised Western LARW Cell Infiltration and Transport Modeling. July 19, 2004.
(43) Zion's Bank and Energy Solutions, LLC, 2007. Surety Details. March 27, 2007.
(44) "Envirocare's Cover Test Cell Evaporative Zone Depth (EZD) Report", Daniel B. Shrum of Envirocare of Utah, LLC to Dane L. Finerfrock of Utah Division of Radiation Control, CD05-0487, October 13, 2005.
(45) "Cover Test Cell Data Report Addendum: Justification to Change EZD from 18-inches to 24-inches", Envirocare of Utah, LLC, October 5, 2005.
(46) "October 13, 2005 Envirocare Submittal Regarding Cover Test Cell Evaporative Zone Depth (EZD) Report: CAC Cell Round 2 Interrogatory", Loren B. Morton of Utah Division of Radiation Control to Daniel B. Shrum of Envirocare of Utah, LLC, November 1, 2005.
(47) "Class A Combined Embankment Interrogatories: Clarification of Envirocare October 13, 2005 Evaporative Zone Depth Report", Daniel B. Shrum of Envirocare of Utah, LLC to Dane L. Finerfrock of Utah Division of Radiation Control, CD05-0518, November 2, 2005.
(48) "Response to DRC Letter dated November 1, 2005 in Regards to Envirocare's October 13, 2005 Evaporative Zone Depth Report", Daniel B. Shrum of Envirocare of Utah, LLC to Dane L. Finerfrock of Utah Division of Radiation Control, CD05-0520, November 3, 2005.
(49) "Cover Test Cell As-Built Report", Envirocare of Utah, LLC, January 24, 2002.
(50) Appendix N, "Cover Test Cell Monitoring Report" dated June 20, 2003, Envirocare of Utah, LLC, License Renewal Application, Revision 2, dated June 20, 2005
(51) Appendix G, "Drawings" variously dated, Envirocare of Utah, LLC, License Renewal Application, Revision 2, dated June 20, 2005.
(52) "Attachment 4: EZD Cover Test Cell Data" CD-ROM attached to "Radioactive Material License #UT2300249 and Groundwater Quality discharge Permit No. UGW450005. Class A Combined Disposal Embankment – Response to September 19, 2005 Interrogatories", Tye Rogers of Envirocare of Utah, LLC to Dane L. Finerfrock of Utah Division of Radiation Control, CD05-0574, December 16, 2005.
(53) "HDU Data", Mike LeBaron of Envirocare of Utah, LLC to Loren Morton of Utah Division of Radiation Control and Robert Baird of URS Corporation, e-mail dated December 19, 2005.
(54) "Cover Test Cell WCR Data", Mike LeBaron of Envirocare of Utah, LLC to Loren Morton of Utah Division of Radiation Control and Robert Baird of URS Corporation, e-mail dated December 20, 2005.
(55) "Matric Potential Conversion Factor", Mike LeBaron of Envirocare of Utah, LLC to Loren

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Morton of Utah Division of Radiation Control and Robert Baird of URS Corporation, e-mail dated December 21, 2005.

(56) "RE: Evaporative Pan Data (39400085.10300 OUT)", Mike LeBaron of Envirocare of Utah, LLC to Loren Morton of Utah Division of Radiation Control and Robert Baird of URS Corporation, e-mail dated December 22, 2005.

(57) "Report Combined Embankment Study: Envirocare", AMEC Earth and Environmental, Inc., December 13, 2005.

(58) "Geotechnical Study Increase in Height and Footprint: Envirocare LARW Facility Near Clive, Utah", AMEC Earth and Environmental, Inc., May 27, 2005.

(59) "Class A Disposal Cell: Containerized Waste Facility: Engineering Justification Report", Envirocare of Utah, April 12, 2001.

(60) "Class A Disposal Cell: Containerized Waste Facility: Engineering Justification Report: Addendum 15 Percent Void Space Criteria", Envirocare of Utah, October 2, 2001.

(61) "Mixed Waste Embankment Engineering Justification Report" Revision 2, Envirocare of Utah, October 20, 2001

(62) "Minimum Temperature Return Rates", personal communication from Jim Ashby, November 1, 2000.

(63) "Review of Cover Design for LARW Cell", TerraMatrix/Montgomery Watson to Envirocare of Utah, February 5, 1998.

(64) "Cover Test Cell As-Built Report", Envirocare of Utah, January 24, 2002.

(65) Letter CD02-0097, "Revised CQA/QC Manual - Containerized Waste Facility: Placement of Large Liners/HICs", Envirocare of Utah to Utah Division of Radiation Control, March 18, 2002.

(66) Letter CD02-0269, "Revised CQA/QC Manual - Containerized Waste Facility: Placement of Large Liners/HICs - Response to Interrogatories", Envirocare of Utah to Utah Division of Radiation Control, July 3, 2002.

(67) Letter CD02-0315, "Revised CQA/QC Manual - Containerized Waste Facility: Placement of Large Liners/HICs - Revised Settlement Analysis and CQA/QC Language", Envirocare of Utah to Utah Division of Radiation Control, August 7, 2002.

(68) Letter CD02-0339, "Revised CQA/QC Manual - Containerized Waste Facility: Placement of Large Liners/HICs - Proposed Revision 15 of the LLRW CQA/QC Manual", Envirocare of Utah to Utah Division of Radiation Control, August 26, 2002.

(69) Letter CD01-0212, "Engineering Justification Report - Waste Placement with CLSM", Envirocare of Utah to Utah Division of Radiation Control, May 16, 2001.

(70) Letter CD01-0296, "Containerized Waste Facility - Placement of Class A Ion-Exchange Resins in Polyethylene HICs and Steel Liners", Envirocare of Utah to Utah Division of Radiation Control, July 5, 2001.

H. The following documents refer to revisions made in Amendment 1:

(1) Letter CD07-0420, "RML UT2300249, Condition 58 –Request for Amendment to the Waste Characterization Plan, dated July 23, 2007.

(2) Letter CD08-0078, "RML UT2300249, Condition 58 –Request for Amendment to the Waste

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Characterization Plan."
(3) Letter CD08-0004, "RML UT2300249 Amendment for Calibration Sources" dated January 2, 2008.
(4) Letter CD08-0066, "RML UT2300249; Request to amend License Condition 32" dated February 28, 2008.
(5) Email dated February 29, 2008, from Boyd Imai to Mark Ledoux Re: Amendment Request (CD08-004).
(6) Email dated November 23, 2007, from John Hultquist to Sean McCandless, Request for Information regarding WCP:
(7) Letter dated March 7, 2008, Utah Division of Radiation Control (Dane Finerfrock) to EnergySolutions, LLC. (Sean McCandless). "Appendix I Organization dated February 28, 2008."
(8) Memorandum from John Hultquist to File; dated March 11, 2008, Review of WCP revised November 9, 2007, and March 10, 2008.

I. The following documents refer to revisions made in Amendment 2:
(1) Executive Secretary's letter dated May 16, 2008 [LA# 116-2008]

J. The following documents refer to revisions made in Amendment 3:
(1) Letter CD08-0218, "Clive Transportation Hub" dated July 9, 2008.
(2) Email dated July 28, 2008, from Mark Ledoux to Boyd Imai, "Clive cask hub."
(3) Letter CD08-0339, Request to Amend License Conditions 10, 38, 43, and Table 40.A, dated October 21, 2008.
(4) Letter CD08-0137, Request for Amendment to Condition 54, Site Radiological Security Plan, dated May 5, 2008.
(5) Email dated May 6, 2008, from Mark Ledoux to John Hultquist, License condition 57 proposed changes.
(6) Letter CD08-0111, RML UT2300249 License Condition 26, and RML UT2300478 License Condition 13.1.D Environmental Monitoring Plan, dated April 4, 2008
(7) Letter CD08-0115, RML UT2300249 License Condition 26, and RML UT2300478 License Condition 13.1.D Environmental Monitoring Plan, dated April 9, 2008
(8) Email dated November 13, 2008, from John Hultquist to Sean McCandless, Summary of meeting regarding the Env. Monitoring Plan.
(9) Email dated December 11, 2008, from Sean McCandless to John Hultquist, Procedure CL-RS PR-120 Rev 2. Access Control Points, DRC Comment Rev.
(10) Letter CD08-0376, RML UT2300249 License Condition 26, and RML UT2300478 License Condition 13.1.D Environmental Monitoring Plan, dated November 24, 2008
(11) Email dated December 15, 2008, from Sean McCandless to John Hultquist, Procedure CL-RS PR-120 Rev 2. Access Control Points, Form update.

K. The following documents refer to revisions made in Amendment 4:
(1) Letter dated January 26, 2009, (CD09-0020) from Daniel Shrum to Dane Finerfrock; Radioactive Material License No: UT230029 and UT2300478; Revision of Appendix I, *Organization*.

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(2) Letter dated January 28, 2009, John Hultquist to Dan Shrum, Request for Information, Revision to Appendix I *Organization* submitted January 26, 2009.
(3) Letter dated February 9, 2009, (CD09-0038) from Dan Shrum to Dane Finerfrock, Revision to Appendix I *Organization*. Response to Request for Information.

L. The following documents refer to revisions made in Amendment 5:
(1) Letter dated July 27, 2009, (CD09-0188) from Daniel Shrum to Dane Finerfrock; Radioactive Material License Number UT 2300249 - Request for Amendment.
(2) Letter dated May 6, 2009, (CD09-0116) from Sean McCandless to Dane Finerfrock, Radioactive Material License #UT 2300249 – Request for Amendment and Response to April 15, 2009, Request for Information.
(3) Letter dated May 28, 2009, Dane Finerfrock to Sean McCandless, 2009 Module 14 Engineering Inspection – Soil Lab and Testing Methods with accreditation for License Condition 45, Radioactive Materials License UT 2300249 Closeout Letter.
(4) Letter dated April 7, 2009, (CD09-0091) from Sean McCandless to Dane Finerfrock Radioactive Material License #UT 2300249 and Ground Water Quality Discharge Permit No. UGW450005 - Response to DRC Request for Information
(5) Memorandum from Dave Esser to File, dated May 21, 2009, Proposed correction to the Ground Water Quality Discharge Permit UGW45005 and Radioactive Material License UT2300249 – Amendment Review regarding section, disposal cell, and buffer zone Latitude and Longitude coordinates.

M. The following documents refer to revisions made in Amendment 6:
(1) Letter dated October 22, 2007, (CD07-0340) from Sean McCandless to Dane Finerfrock; Radioactive Material License Number UT 2300249 - Request for Amendment to Conditions 14.B and 16.F.ii.
(2) Letter dated November 20, 2007, from John Hultquist to Sean McCandless, Formerly Characteristic Hazardous Waste meeting, request to Amendment, Radioactive Material License #UT 2300249.
(3) URS Memorandum dated December 10, 2007, Gary Merrell to Dane Finerfrock Review of Whetstone Technical Memorandum, "Formerly Characteristic Waste Modeling of Class A and Class A North Cells," from Susan Wyman to Dan Shrum, September 25, 2007.
(4) Letter dated January 21, 2009, (CD09-0015) from Sean McCandless to Dane Finerfrock Formerly Characteristic Waste – Response to Letter dated November 20, 2007.
(5) Letter dated January 21, 2009, (CD09-0014) Timothy Orton to Dennis Downs, Div. of Solid and Hazardous Waste, Class 2 Modification – Management of Wastes at the Mixed Waste Facility that will be disposed at the LLRW Facility.
(6) Memorandum dated February 18, 2009, from Boyd Imai to John Hultquist, EnergySolutions Amendment Request (CD07-0340).
(7) Memorandum dated September 21, 2009, from Boyd Imai to John Hultquist, Review; Formerly Characteristic Waste – License Amendment Request.

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(8) Letter dated August 31, 2009, Sean McCandless to Dane Finerfrock, Radioactive Material License No. UT2300249 – Revised request for Amendment – Formerly Characteristic (LLRW Destined) Waste.
(9) Email dated October 15, 2009, Sean McCandless to John Hultquist, Formerly Characteristic, Attachments Revised RML 10/8/09 and WCP Revised 10/8/09.
(10) Memorandum dated October 19, 2009, from Boyd Imai to John Hultquist, Formerly Characteristic Wastes – Transfer to LLRW.

N. The following documents refer to revisions made in Amendment 7:
(1) Letter dated September 21, 2009, (CD09-0241) from Val J. Christensen to Amanda Smith; RML No. UT2300249 – Commitments Relating to Depleted Uranium Disposal.
(2) Letter dated October 1, 2009, (CD09-0258) from Val J. Christensen to Dane Finerfrock; RML No. UT2300249 – Commitments Relating to Depleted Uranium Disposal
(3) Notice of Agency Action to Consider Proposed License Condition No. 35 dated October 21, 2009.
(4) Email dated February 22, 2010, from Laura Lockhart to Dane Finerfrock and John Hultquist, License Condition documents –comment response document.

O. The following document refer to revision made in Amendment 8:
(1) Letter dated June 1, 2010, (CD10-0162) from Sean McCandless to Dane Finerfrock; RML No. UT2300249—Request for Amendment.
(2) Letter dated July 15, 2010, (CD10-0200) from Sean McCandless to Rusty Lundberg; RML No. UT2300249—Revision of Appendix I, *Organization.*
(3) Letter dated August 2, 2010, (CD10-0219) from Sean McCandless to Rusty Lundberg; RML No. UT2300249—Revision of Appendix I, *Organization.*
(4) Letter dated November 1, 2010, (CD10-0298) from Rick Chalk to Rusty Lundberg; 1. Radioactive Material License UT 2300249, License Condition 16.1 (sic) Letter dated November 23, 2009 to Dane Finerfrock from Mark Ledoux, CD09-0323, 2. Administrative request from DRC to EnergySolutions to amend License UT 2300249, License Conditions 6, 7, and 8.
(5) Email date November 18, 2010, from Thomas Brown to Boyd Imai, LC 8 E, K, M and O.

P. The following documents refer to revision made in Amendment 9:
(1) Letter dated December 6, 2010, (CD10-0347) from Dan B. Shrum to Rusty Lunberg; RML No. UT2300249—Amendment Request – Condition 35.B, Depleted Uranium.
(2) Memorandum dated December 13, 2010, from John Hultquist to File regarding Amendment request.

Q. The following documents refer to revision made in Amendment 10:
(1) Letter dated February 24, 2011, (CD11-0045) from Dan Shrum to Rusty Lundberg; Radioactive Material License No. UT2300249, License Condition 35.B.
(2) Letter dated February 24, 2011, from Rusty Lundberg to Dan Shrum Radioactive Material License No. UT2300249, License Condition 35.B Depleted Uranium Performance Assessment.

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(3) Letter dated March 14, 2011 (CD11-0075) from Dan Shrum to Rusty Lundberg Radioactive Material License No. UT2300249, License Condition 35.B Depleted Uranium Performance Assessment.

R The following documents refer to revision made in Amendment 11:

(1) Letter dated September 30, 2010, (CD10-0264) from L. Wayne Johns to Rusty Lundberg; Radioactive Material License No. UT2300249, License Condition 26, and Radioactive Material License No. UT2300478, License Condition 13.1.D Environmental Monitoring Plan.
(2) Letter dated October 21, 2010, (CD10-0290) from L. Wayne Johns to Rusty Lundberg; Radioactive Material License No. UT2300249, License Condition 26, and Radioactive Material License No. UT2300478, License Condition 13.1.D Environmental Monitoring Plan.
(3) Memorandum dated October 21, 2010, from Bill Craig to File; EnergySolutions request to change Appendix R.
(4) Email dated January 25, 2011, from John Hultquist (DRC) to Sean McCandless (ES) regarding draft license and statement of basis.
(5) Email dated January 27, 2011, from John Hultquist (DRC) to Sean McCandless (ES) responding to proposed language change to LC 60.

S The following documents refer to revisions made in Amendment 12:

(1) Letter dated August 2, 2011, (CD11-0183) from Sean McCandless to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 6.E, 9 and 10.
(2) Letter dated August 17, 2011, (CD11-0224) from Sean McCandless to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 6.E, 9 and 10; Revised Request.
(3) Letter dated August 25, 2011, (CD11-0234) Sean McCandless to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 52 and 54.
(4) Email dated October 5, 2011, from Ryan Johnson (DRC) to Sean McCandless (ES); Request to Amend License Condition 52.
(5) Email dated October 5, 2011, from Ryan Johnson (DRC) to Sean McCandless (ES); Request to Amend License Condition 54.
(6) Letter dated October 13, 2011 (CD11-0282) Sean McCandless to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 52 and 54.
(7) Letter dated October 27, 2011, from Rusty Lundberg to Dan Shrum; Radioactive Material License No. UT2300249: Division of Radiation Control's (DRC) Response to Amend License Conditions 52 and 54, dated August 25, 2011.
(8) Letter dated October 27, 2011, (CD11-0293) from Sean McCandless to Rusty Lundberg; Radioactive Material License No. UT2300249, Response to Inspection Report dated October 18, 2011. Radiation Safety Inspection, Containerized Waste Facility (CWF) Operations.

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(9) Letter dated November 2, 2011, (CD11-0298) from Rick Chalk to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 6.E, 9 and 10; Revised Request.
(10) Letter dated November 7, 2011, from Rusty Lundberg to Sean McCandless; Radioactive Material License No. UT2300249: Division of Radiation Control's (DRC) Response to Amend License Conditions 39.B, dated October 27, 2011.
(11) Email dated November 8, 2011, from Ryan Johnson (DRC) to Sean McCandless (ES); Draft Statement of Basis and Amendment #12 of Radioactive Material License UT2300249.
(12) Letter dated November 8, 2011, (CD11-0307) from Sean McCandless to Rusty Lundberg, Radioactive Material License No. UT2300249; Revision of Appendix I, *Organization*.
(13) Email dated November 15, 2011, from Ryan Johnson (DRC) to Sean McCandless (ES); Amendment request for LC 32.A.

T The following documents refer to revisions made in Amendment 13:
(1) Letter dated August 2, 2011, (CD11-0183) from Sean McCandless to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 6.E, 9 and 10.
(2) Letter dated August 17, 2011, (CD11-0224) from Sean McCandless to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 6.E, 9 and 10; Revised Request.
(3) Letter dated November 2, 2011, (CD11-0298) from Rick Chalk to Rusty Lundberg; Radioactive Material License No. UT2300249, Request to Amend License Conditions 6.E, 9 and 10; Revised Request.
(4) Email dated November 17, 2011, from Ryan Johnson (DRC) to Sean McCandless (ES); Amendment request to store gauges on Section 29.

U. The following documents were submitted in support of proposed Amendment #14:
1) AMEC Earth & Environmental, Inc. 2011. Report: Geotechnical Update Report – EnergySolutions Clive Facility Class A West Embankment, February 15, 2011
2) AMEC Earth & Environmental, Inc. 2011. Cover Letter – Response to Interrogatory CAW R313-25-8(4)-16/1: Seismic Hazard Evaluation, EnergySolutions Clive Facility, Class A West Embankment, Clive, Tooele County, Utah. report: Geotechnical Update Report – EnergySolutions Clive Facility Class A West Embankment, Clive, Tooele County, Utah. October 25, 2011.
3) AMEC Earth & Environmental, Inc. 2011. Response to Interrogatory CAW R313-25-8(4)-16/1: Seismic Hazard Evaluation, EnergySolutions Clive Facility, Class A West Embankment, Clive, Tooele County, Utah. October 25, 2011
4) AMEC Earth & Environmental, Inc. 2011. Response to Interrogatory CAW R313-25-8(4)-16/2: Seismic Hazard Evaluation, EnergySolutions Clive Facility, Class A West Embankment, Clive, Tooele County, Utah. December 23. 2011.

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5) AMEC Earth & Environmental, Inc. 2012. Report: Response to Interrogatory CAW R313-25-8(4)-16/3: Seismic Hazard Evaluation/Seismic Stability Analysis Update, EnergySolutions Clive Facility, Class A West Embankment, Clive, Tooele County, Utah. April 6, 2012.
6) AMEC Earth & Environmental, Inc. 2012. Addendum: Additional Cyclic Softening Analysis, EnergySolutions Clive Facility, Class A West Embankment, Clive, Tooele County, Utah. May 3, 2012.
7) EnergySolutions, LLC. 2011. (CD11-0123) License Amendment Request: Class A West Embankment, with Attachments 1 Through 7 and cover letter from Sean McCandless to Mr. Rusty Lundberg at Utah Division of Radiation Control dated May 2, 2011.
8) EnergySolutions, LLC. 2011. (CD11-0207) Radioactive Material License #UT2300249 and Ground Water Quality Discharge Permit No. UGW450005. Amendment and Modification Request – Class A West Embankment; Correction to Letter dated July 27, 2011, to Mr. Rusty Lundberg at Utah Division of Radiation Control.
9) EnergySolutions, LLC. 2011. (CD11-0295) Responses to Round 1 Interrogatories: License Amendment Request (UT2300249) for the Class A West Embankment and cover letter to Mr. Rusty Lundberg at Utah Division of Radiation Control, October 28, 2011.
10) EnergySolutions, LLC. 2011. (CD11-0327) Supplemental Responses to Round 1 Interrogatories: License Amendment Request (UT2300249) for the Class A West Embankment, November 28, 2011 and cover letter to Mr. Rusty Lundberg at Utah Division of Radiation Control, November 29, 2011.
11) EnergySolutions, LLC. 2012. (CD12-008) Radioactive Material License #UT2300249, Class A West - Round 2 Interrogatory Response, dated January 12, 2012.
12) EnergySolutions, LLC. 2012. (CD12-0049) Radioactive Material License #UT2300249, Class A West - Response to Division Request and Round 3 Interrogatory dated February 23, 2012.
13) EnergySolutions, LLC. 2012. (CD12-0065) Radioactive Material License #UT2300249, Revised CAW Well Spacing Analysis, dated March 3, 2012.
14) EnergySolutions, LLC. 2012. (CD12-0075) Radioactive Material License #UT2300249 and Ground Water Quality Discharge Permit No. UGW450005, Amendment and Modification Request - Class A West Embankment: Response to Round 3 Interrogatory URCR R313-25-7(3)-04, with attachments. Letter from Tim Orton, EnergySolutions, to Mr. Rusty Lundberg, Utah Division of Radiation Control, dated March 20, 2012.
15) EnergySolutions, LLC. 2012. (CD12-0093) Radioactive Material License #UT2300249 - Class A West Embankment: Class A West: Round 3 Seismic Stability Response, dated April 4, 2012.
16) Email dated April 6, 2012, from Sean McCandless to John Hultquist and Robert Baird; Final Report for CAW Round 3 Interrogatory Response.
17) EnergySolutions, LLC. 2012. (CD12-0095) Radioactive Material License #UT 2300249 and Ground Water Quality Discharge Permit No. UGW450005. Amendment and Modification Request – Class A West Embankment: Complete, Electronic Submittal.
18) EnergySolutions, LLC. 2012. (CD12-0114) Radioactive Material License #UT2300249 - Class A West Embankment: Liquefaction Addendum, Response to DRC Comments and Suggestions and Complete Electronic Copy.

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19) Whetstone Associates, Inc. 2011. EnergySolutions Class A West Disposal Cell Infiltration and Transport Modeling Report, April 19, 2011.
20) Whetstone Associates, Inc. 2011. EnergySolutions Class A West Disposal Cell Infiltration and Transport Modeling Report, November 28, 2011.
21) Whetstone Associates, Inc. 2012. EnergySolutions Class A West Disposal Cell Infiltration and Transport Modeling Report, February 23, 2012.
22) EnergySolutions, LLC. 2012. (CD12-00185) Radioactive Material License #UT2300249 and Ground Water Quality Discharge Permit No. UGW450005 - Class A West Embankment: Clay Distortion Study Plan.

V. The following documents were submitted in support of proposed Amendment #15:

(1) Letter (CD12-0275) dated October 24, 2012, from Sean McCandless of EnergySolutions to Rusty Lundberg of the DRC. Radioactive Material Licenses UT 2300249 and UT 2300478; Request to amend License and approve revised Appendix I, *Organization*.

(2) Letter dated December 14, 2012, from John Hultquist of the DRC to Sean McCandless of EnergySolutions. Request for Information (RFI) for Appendix I, *Organization* Submittal dated October 24, 2012: Radioactive Material Licenses UT 2300249 & UT 2300478.

(3) Letter (CD12-0315) dated December 19, 2012, from Sean McCandless of EnergySolutions to Rusty Lundberg of the DRC. Radioactive Material License Nos. UT 2300249 and UT 2300478: Response to Request for Information for Appendix I, *Organization*.

(4) Letter (CD13-0033) dated February 4, 2013, from Sean McCandless of EnergySolutions to Rusty Lundberg of the DRC. Radioactive Material Licenses UT 2300249 and UT 2300478; Revised request to amend License and approve revised *Organization*.

W. The following documents were submitted in support of proposed Amendment #16:

(1) Letter (CD12-0275) dated October 24, 2012, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material Licenses UT 2300249 and UT 2300478; Request to amend License and approve revised Appendix I, Organization.

(2) Letter (CD12-0296) dated November 30, 2012, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License No. UT 2300249; 2012 Annual Surety Update (Update).

(3) Letter dated March 6, 2013, from Rusty Lundberg of the DRC to Sean McCandless of Energy*Solutions*. Request for Information (RFI) 2012 Annual Surety Update: Radioactive Material Licenses UT 2300249.

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(4) Letter (CD13-0119) dated April 25, 2013, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License No. UT 2300249; Annual Surety Submittal -- Response to Additional Request for Information.

(5) Letter (CD13-0144) dated May 16, 2013, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material Licenses UT 2300249 Request for Administrative Corrections to Conditions 32.E and 76.

(6) Letter (CD13-0238) dated August 22, 2013, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material Licenses UT 2300249; Request for Minor Modifications to Conditions 22.A. and B., 31, 39.E, and 77.

(7) Letter (CD13-0255) dated September 19, 2013, from Vern Rogers of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License No. UT2300249; Revised Requests for Modifications to Conditions 22, 31, 39.E, and 77.

(8) Email dated October 11, 2013, from John Hultquist of the DRC to Sean McCandless of Energy*Solutions*. License Amendment 16.

(9) Email dated October 14, 2013, from Vern Rogers of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License UT 2300249; Response to Proposed Amendment 16

X. The following documents were submitted in support of proposed Amendment #17:

(l) Letter (CD13-0267) dated September 24, 2013, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material Licenses UT 2300249; Amendment Request, License Condition 68.

(2) Letter (CD14-0017) dated January 31, 2014, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material Licenses UT 2300249; Amendment Request, License Condition 32.A.

(3) Memo to Energy*Solutions*, LLC File Division of Radiation Control; from Connie Rauen, P.E through Ryan Johnson and John Hultquist, Licensing and Permitting Section, DRC;. Licensing and Permitting Section, DRC; dated February 13, 2014; Subject: *Review of ES Radioactive Material License #UT 2300249 –Amendment Request, License Condition 32.a.*

(4) Memo to File: Radioactive Material License (RML) UT2300249 License Amendment 17, from Ryan Johnson through Rusty Lundberg and John Hultquist; dated February 28, 2014; Subject: *Changes to License Condition 68*.

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(5) Letter (CD14-0125) dated May 28, 2014, from Sean McCandless of Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License UT 2300249-Resquest for Minor Modifcation to Condition 14.A.

Y. The following documents were submitted and in support of proposed Amendment #18:

(1) Letter (CD14-0271) dated December 10, 2014, from Vern Rogers, Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License UT 2300249; Revision of Appendix I, *Organization*.

(2) Email dated December 19, 2014 from John Hultquist, DRC to Vern Rogers, Energy*Solutions* regarding LC 32.A and currently approved Appendix I.

(3) Email dated December 23, 2014 from Steve Gurr, EnergySolutions to John Hultquist, DRC updating revision number and date of Appendix I.

(4) Letter (CD14-0291) dated December 30, 2014, from Vern Rogers, Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License UT 2300249; Revision of Appendix I, *Organization – resubmission*.

Z. The following document was submitted and in support of proposed Amendment #19:

(1) Letter (CD15-0083) dated March 31, 2015, from Vern Rogers, Energy*Solutions* to Rusty Lundberg of the DRC. Radioactive Material License UT2300249; Condition 75 - Extension and Category 1 - Administrative License Amendment Request.

AA. The following document was submitted or referenced and in support of proposed Amendment #20:

(1) Federal Register Volume 79 Number 133 dated July 11, 2014, Part V Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

(2) Letter (CD15-0100) dated April 15, 2015, from Vern Rogers of EnergySolutions to Rusty Lundberg of the DRC. Radioactive Materials License UT2300249; Response to Notice of Enforcement Discretion with DRC Inspection Module 11 Rev. 8, Qualifications and Training and Request to withdraw and resubmit Revised Appendix I, Organization.

(3) Letter (CD15-0114) dated May 7, 2015, from Vern Rogers of EnergySolutions to Rusty Lundberg of the DRC. Radioactive Materials License UT2300249; Condition 57; Amendment Request.

(4) Email from Ryan Johnson of the DRC to Vern Rogers of EnergySolutions dated May 7, 2015:

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Appendix I changes.

(5) Emails between Steve Gurr of EnergySolutions and Ryan Johnson of the DRC dated from May 11, 2015 to June 1, 2015, Response to Appendix I.

(6) Letter (CD-15-0124) dated May 20, 2015, from Vern Rogers of EnergySolutions to Rusty Lundberg of the DRC, Radioactive Materials License UT2300249; Additional Response to Questions regarding Appendix I, *Organization*.

(7) Letter (CD15-0132) dated June1, 2015, from Vern Rogers of EnergySolutions to Rusty Lundberg of the DRC, Radioactive Material License UT2300249; Consolidation of Amendment Requests.

(8) Emails between Vern Rogers of EnergySolutions and Ryan Johnson of the DRC dated June 3, 2015, UT2300249-Condition 53.B.

AB. The following documents were submitted or referenced and in support of proposed Amendment #21:

(1) Letter (CD16-0002) dated January 6, 2016, from Timothy L. Orton, P.E. to Scott T. Anderson, Radioactive Materials License UT 2300249- **Appendix F, *Clive Site Radiological Security Plan*** proposed revision 5 and **Appendix I, *Organization*** proposed revision 28.

(2) Letter (CD16-0075) dated April 11, 2016, from Timothy L. Orton, P.E. to Scott T. Anderson, Radioactive Materials License UT 2300249- Re-submission of **Appendix F, *Clive Site Radiological Security Plan* proposed revision 5 and Appendix I, *Organization Layout*** proposed revision 28.

(3) Letter (CD16-0101) dated May 16, 2016, from Timothy L. Orton, P.E. to Scott T. Anderson, Radioactive Materials License UT 2300249- Re-submission of **Appendix F, *Clive Site Radiological Security Plan*** proposed revision 5.

AC. The following documents were submitted or referenced and in support of proposed Amendment #22:

(1) Letter (CD17-0089) dated April 6, 2017, from Vern C. Rogers to Scott T. Anderson, Radioactive Material License UT2300249; **Condition 16 Amendment Request**

(2) Letter (CD17-0101) dated April 21, 2017, from Timothy L. Orton, P.E. to Scott T. Anderson, Radioactive Material License UT2300249, CQA/QC Manual revised Figures

(3) Letter (CD17-0108) dated May 4, 2017, from Vern C. Rogers to Scott T. Anderson, Radioactive Materials License UT2300249; **Condition 6.N, 7.N, 8.N Amendment Request**

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(4) Letter (CD17-0120) dated May 22, 2017, from Vern C. Rogers to Scott T. Anderson, Radioactive Material License UT2300249; **Condition 43 Amendment Request**

(5) Letter (CD17-0167) dated July 20, 2017, from Vern C. Rogers to Scott T. Anderson, Radioactive Material License UT2300249; **Condition 52 Amendment Request**

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25 August 2017
Date

Scott T. Anderson, Director