



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 6, 2022

Mr. G. T. Powell
President and Chief Executive Officer
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 – APPROVAL FOR ALTERNATE
DISPOSAL PROCEDURES FOR VERY LOW-LEVEL RADIOACTIVE
MATERIAL (EPID: L-2021-LLL-0022)

Dear Mr. Powell

By letter dated November 4, 2021, as supplemented by letters dated December 3, 2021, August 19, 2022, and November 22, 2022, STP Nuclear Operating Company (the licensee) requested that the U.S. Nuclear Regulatory Commission (NRC) approve an alternate disposal request (ADR), in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 20.2002, "Method for obtaining approval of proposed disposal procedures," for South Texas Project (STP), Units 1 and 2.

The NRC approves the disposal procedure of specific low-level waste generated at STP at Texas Class 1 and 2 industrial landfills, as described in the licensee's request, as supplemented. The enclosed safety evaluation documents the basis for the acceptability of the 10 CFR 20.2002 ADR. The NRC staff also evaluated the environmental impacts of the approval and determined that granting the request would not result in any significant environmental impacts. For this action, an Environmental Assessment and Finding of No Significant Impact were prepared and published in the *Federal Register* on December 5, 2022 (87 FR 74450).

In accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions regarding this matter, I may be reached at (301) 415-6256 or via e-mail at Dennis.Galvin@nrc.gov.

Sincerely,

/RA/

Dennis J. Galvin, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-498 and 50-499

Enclosure:
Safety Evaluation

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

STP NUCLEAR OPERATING COMPANY

SOUTH TEXAS PROJECT, UNITS 1 AND 2

DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

By letter dated November 4, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21308A603), as supplemented by letters dated December 3, 2021 (ML21337A126), August 19, 2022 (ML22231A469), and November 22, 2022 (ML22326A296), STP Nuclear Operating Company (STPNOC, the licensee) requested that the U.S. Nuclear Regulatory Commission (NRC) approve an alternate disposal request (ADR) for the disposal of very low-level radioactive waste (VLLW), in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 20.2002, "Method for obtaining approval of proposed disposal procedures," for South Texas Project (STP), Units 1 and 2. This ADR specifically addresses the STPNOC's existing practice for disposing of VLLW through an agreement with the State of Texas and requests NRC approval to continue this practice in accordance with NRC regulations. The December 3, 2021, letter revised the submittal, the August 19, 2022, letter provided responses to requests for additional information (RAIs), and the November 22, 2022, letter clarified the RAI responses.

STPNOC is currently disposing of the VLLW pursuant to a long-standing agreement with the State of Texas. However, as noted in the NRC's letter to STPNOC, dated August 10, 2021 (ML21180A195), NRC authority is required to perform this action since STPNOC is an NRC licensee. Thus, approval of the ADR would allow the licensee to continue to dispose of VLLW meeting the criteria described below in Texas-regulated Class 1 and 2 industrial landfills in accordance with NRC and Texas regulations.

2.0 REGULATORY EVALUATION

A licensee or applicant seeking NRC authorization to dispose of licensed material using procedures not otherwise authorized by NRC regulations may submit a request in accordance with 10 CFR 20.2002. The request must provide sufficient details and supporting analyses to satisfy the requirements associated with the four parts of the regulation, including demonstrating that the radiological doses from the proposed disposal will be within the dose limits of 10 CFR Part 20, "Standards for Protection Against Radiation," and will be as low as reasonably achievable (ALARA).

The ADR process described in 10 CFR 20.2002, which is summarized in "Guidance for the Reviews of Proposed Disposal Procedures and Transfers of Radioactive Material Under 10 CFR 20.2002 and 10 CFR 40.13(a)" (ML18296A068), is a two-step process involving both

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the regulator responsible for the material being considered for disposal at the time of the request and the regulator responsible for the proposed disposal option. This separation of regulatory authority is clarified in Regulatory Issue Summary 2016-11, "Requests to Dispose of Very Low-Level Radioactive Wastes Pursuant to 10 CFR 20.2002," dated November 13, 2016 (ML16007A488) and the Office of Federal and State Materials and Environmental Management Programs (FSME) All Agreement States letter, "Clarification of the Authorization for Alternate Disposal of Material Issued Under 10 CFR 20.2002 and Exemption Provisions in 10 CFR (FSME-12-025)," dated March 13, 2012 (ML12065A038).

STPNOC's request requires approvals from both the NRC and the State of Texas. The NRC is the regulatory authority that issued the license to STPNOC and is therefore responsible for the licensed VLLW and for evaluating whether the request satisfies the requirements outlined in the regulation, including demonstrating that doses associated with disposing of the material will be maintained ALARA. The State of Texas, which is an NRC Agreement State, maintains the regulatory authority over the Class 1 and 2 industrial landfills being considered for the disposal of the VLLW in question and, thus, maintains responsibility for approving the disposal of the requested material and ensuring that the disposal actions are performed in accordance with regulations described in the Texas Administrative Code (TAC).

The requested action of releasing the material from STP authority is a licensing action and, per NRC requirements in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," this action requires an evaluation of possible environmental impacts associated with the requested action. The NRC staff has prepared an Environmental Assessment (EA) (ML22293A001) in accordance with NRC requirements in 10 CFR 51.21, "Criteria for and identification of licensing and regulatory actions requiring environmental assessments," and 10 CFR 51.30, "Environmental assessment," and with the associated guidance in NRC report NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS [Office of Nuclear Material Safety and Safeguards] Programs," dated August 2003 (ML032450279), and the Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-203, "Procedural Guidance for Categorical Exclusions, Environmental Assessments, and Considering Environmental Issues," dated July 2020 (ML20016A379). The conclusions found in the EA and this safety evaluation provide support for the NRC's decision of whether the 10 CFR 20.2002 request is acceptable.

3.0 TECHNICAL EVALUATION

STPNOC requests to ship and dispose of VLLW generated from the secondary side of the day-to-day operations at the site at Texas Class 1 or 2 industrial landfills. This technical evaluation considers the request against the four subparts of 10 CFR 20.2002.

3.1 10 CFR 20.2002(a) – "A Description of the Waste Containing Licensed Material to be Disposed of, Including the Physical and Chemical Properties Important to Risk Evaluation, and the Proposed Manner and Conditions of Waste Disposal"

3.1.1 Description of Waste

The licensee is requesting approval to dispose of VLLW in accordance with 10 CFR 20.2002. The term "VLLW" does not have a statutory or regulatory definition, but it is generally understood as material created during the conduct of NRC- or Agreement State-licensed activities that contains some residual radioactivity, including naturally occurring radionuclides, which may be safely disposed in hazardous or municipal solid waste landfills.

VLLW represents a small fraction of the hazard of waste at the Class A limits in 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The VLLW being considered for disposal in this ADR is generated during day-to-day plant operations at STP. These materials include dewatered sewage sludge, ion exchange media, desiccant, ventilation filtration media, and soil that may contain small amounts of radioactive material. These materials qualify as Class 1 and 2 hazardous waste per the descriptions provided in Subchapter R, "Waste Classification," of Texas regulation 30 TAC 335. Although no specific volume of VLLW was considered, STPNOC noted in its December 3, 2021, and August 19, 2022, letters that an annual volume of 51 cubic meters per year (m³/yr) of these materials, which is based on the average annual volume of "Low Level Exempt Quantities of Sewage, Sludge, Resin, and Oily Sludge" reported in their annual effluent release reports for the years 2015, 2016, and 2017, is representative of the expected annual volumes of material that will be disposed in accordance with this request (table 1). As discussed below, the licensee anticipates making between 5 and 12 shipments annually to dispose of this VLLW. The licensee expects that it would perform these disposals for the next 56 years, an estimate based on the remaining life of the current license plus an additional 20 years of subsequent license renewal (if sought) and 10 years of decommissioning activities.

Table 1. Summary of Annual Volumes and Number of Shipments of "Low Level Exempt Quantities of Sewage, Sludge, Resin, and Oily Sludge"

Year	Volume (m ³)	Mass (g)	# of Shipments
2015	1.93E+01	1.93E+07	1
2016	7.62E+01	7.62E+07	4
2017	5.71E+01	5.71E+07	4
Total	1.53E+02	1.53E+08	9
Average	5.09e+01	5.09E+07	3

3.1.2 Radionuclides of Concern

Table 2 provides a summary of the radionuclides and concentrations being considered for this review. The table also includes the exempt radionuclide concentration and activity limits identified in the Texas regulations 25 TAC 289.251(l)(1) and 25 TAC 289.251(l)(2).

The NRC staff reviewed the STP Administrative Concentration Limits proposed by the licensee as well as the radionuclide concentrations measured in the material disposed between 2015 and 2017, considered by the licensee to be representative of the material being disposed going forward, and confirmed that the radionuclide concentrations in the material shipped for disposal are less than the proposed administrative concentration limits as well as the concentration limits required by the State of Texas. As noted below, doses calculated using the proposed concentration limits for both the average shipment volume and the 3-year total volume of material shipped for disposal from 2015 through 2017, 51 m³ and 153 m³, respectively, were less than 0.02 millisieverts per year (mSv/yr) (2 millirem per year (mrem/yr)).

Table 2. Proposed Radionuclides and Concentrations Compared to the Texas Commission on Environmental Quality (TCEQ) Concentration and Activity Disposal Limits Listed in 25 TAC 289.251(l)(1) and 25 TAC 289.251(l)(2)

Radionuclides	TAC Concentration Limit pCi/g	TAC Activity Limit pCi	STP Administrative Concentration Limit pCi/g
Be-7	2.00E+04	None	1.00E+00
C-14	8.00E+03	1.00E+08	1.00E+00
Co-57	5.00E+03	1.00E+08	1.00E+00
Co-58	1.00E+03	1.00E+07	1.00E+00
Co-60	5.00E+02	1.00E+06	5.00E-01
Cr-51	2.00E+04	1.00E+09	2.00E+00
Cs-137	None	1.00E+07	1.50E-01
Fe-55	8.00E+03	1.00E+08	1.00E+01
H-3	3.00E+04	1.00E+09	2.00E+01
Mn-54	1.00E+03	1.00E+07	1.00E+00
Ni-63	None	1.00E+07	6.0E+00
Sb-125	1.00E+03	1.00E+07	4.00E+00
Sr-90	None	1.00E+05	1.00E-05
Zn-65	1.00E+03	1.00E+07	1.00E+00
Zr-95	6.00E+02	1.00E+07	1.00E+00

1 $\mu\text{Ci/g}$ = 1000000 pCi

Multiply Curies (Ci) by 3.7×10^{10} to obtain Becquerels (Bq)

3.1.3 Proposed Manner and Conditions of Waste Disposal

In accordance with the licensee's request, disposals authorized with this approval would only apply to the specific materials and the specific radionuclides identified in this request and released from the STP license. Specific waste being considered for disposal includes the dewatered sewage sludge, ion exchange media, desiccant, ventilation filtration media, and soil identified in the submittal. Disposal is limited to a total project volume of 5,000 m³, a bounding volume provided by the licensee and based on past average disposal volumes and a project life of 56 years, and individual radionuclide concentrations associated with each shipment that cannot exceed the proposed STP Administrative Concentration Limits listed in table 2.

The licensee confirmed that the processes used at STP to package and ship the material would not differ from the packaging and shipping processes discussed in the Generic Environmental Impact Statement (GEIS), NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report," Volume 1, Revision 1, dated June 2013 (ML13106A241), or the Supplemental Environmental Impact Statement (SEIS), Supplement 48 to NUREG-1437, "Generic Environmental Impact State for License Renewal of Nuclear Plants, Supplement 48: Regarding South Texas Project, Units 1 and 2," dated November 2013 (ML13322A890), for the site and are performed in accordance with STP's current operating procedures.

The licensee plans to use trucks to ship the VLLW, which will be packaged in B-25 boxes or 55-gallon drums; in some cases, vacuum trucks may be used. Prior to shipping, STP will collect and analyze individual samples of the waste associated with each shipment in accordance with normal operating procedures to confirm that radionuclide concentrations in the VLLW meet both NRC and TCEQ regulatory requirements.

The VLLW will be delivered to the Texas Class 1 or 2 industrial landfill and disposed via near-surface disposal in layers 15.24 centimeters (cm) (6 inches) deep. Once in place, the VLLW will be overlaid with a minimum cover of 15.24 cm (6 inches) of uncontaminated soil in accordance with Texas regulations. Disposal and other related activities performed at the industrial landfill will be performed in accordance with Texas regulations.

3.1.4 Disposal Area

Waste being considered in this ADR will be disposed at a Texas Class 1 or 2 industrial landfill in accordance with Texas regulations for the disposal of exempt waste. The State of Texas has approved the disposal of exempted waste in Class 1 and 2 industrial landfills in accordance with 25 TAC 289.251(e)(1) and 25 TAC 289.251(e)(2) provided the radionuclide concentrations and activities are less than the values provided in 25 TAC 289.251(l)(1) and 25 TAC 289.251(l)(2), respectively. As noted above, the State of Texas maintains the responsibility for regulating the establishment, operation, and closure of the Texas Class 1 and 2 industrial landfills where the VLLW is being disposed. The licensee will document where each shipment was disposed, the volume of material, and radionuclide content. The licensee will maintain this information in files available for inspection.

3.2 10 CFR 20.2002(b) – “An Analysis and Evaluation of Pertinent Information on the Nature of the Environment”

Satisfaction of 10 CFR 20.2002(b) requires an understanding of the environment in which the material would be disposed.

The licensee proposes to dispose of the VLLW at a Texas Class 1 or 2 industrial landfill. These industrial landfills are expected to vary due to their locations, environmental characteristics, and different modes of operation. As noted above, in accordance with NRC regulations, NRC staff are not responsible for approving the specific industrial landfill(s) being considered; this action is performed by the State of Texas. However, NRC staff is responsible for considering the entire disposal action as part of this review to ensure that the material will be disposed of safely.

The licensee provided details in its December 3, 2021, and August 19, 2022, letters regarding the requirements in TAC Title 30, Part 1, Chapter 330, “Municipal Solid Waste,” for obtaining a permit to develop and operate municipal solid waste landfills. A permit application request for a municipal solid waste landfill requires a description of the existing conditions and land characteristics of the area where the industrial landfill would be located as well as the surrounding area, details related to the design of the site, and a site operating plan that discusses how the operator will conduct daily operations at the facility. Specific to TAC Title 30 Rule 330.57(c) and (d), the permit application must also contain sufficient details describing how operating the site would pose no reasonable probability of adverse effects on the health, welfare, environment, or physical property of nearby residents or property owners. In addition to the specific permit application requirements, the State of Texas maintains stringent requirements related to day-to-day operations, monitoring and maintenance activities, access controls, as well as closure and post-closure requirements.

For example, between 2015 and 2017¹, STP disposed of VLLW at the Blue Ridge Landfill, a municipal solid waste landfill located in Fresno, Texas (Fort Bend County) that is permitted to receive and dispose of Class 1 and 2 industrial waste. The Blue Ridge Landfill satisfies the regulations identified above by incorporating a compacted clay liner, a high-density polyethylene liner, a fabric drainage layer, and gravel drainage corridors and leachate collection pipes that were incorporated into the design of the landfill to provide a boundary between the waste and the natural environment. During operation, systems are in place to collect and monitor surface water, rainwater, gas, and leachate (i.e., groundwater). Once complete, capping will include bringing the elevation to final grade and placing a final cover of soil or clay, low-density polyethylene liner, a geocomposite layer, and topsoil and vegetation to keep liquids out and gases in. Other municipal solid waste facilities permitted by the State of Texas to accept and dispose of Class 1 or 2 industrial waste may have different but comparable characteristics as required by Texas regulations.

Although an annual volume of VLLW is not specified in the request, NRC staff considered past annual disposal volumes, which the licensee indicated are representative of future disposal volumes, and conclude that the volumes of VLLW being considered in this request are minimal relative to the total volume of material being disposed of at Texas Class 1 or 2 industrial landfills over the course of a year. Considering the small volumes of material and provided the permitting, construction, and operation of Texas Class 1 and 2 industrial landfills comply with TAC regulations, the NRC staff does not consider these disposals to be a concern.

3.3 10 CFR 20.2002(c) – “The Nature and Location of Other Potentially Affected Licensed and Unlicensed Facilities”

Approval of the ADR requires consideration of other licensed and unlicensed sites that may be impacted by exempting the material from future licensing and permitting its disposal at a site that does not possess an NRC license.

Activities related to this request that occur at STP, an NRC-licensed facility in the State of Texas, are already occurring in a centralized area of the site and are performed in accordance with STPNOC’s license. The NRC staff does not expect the requested action to impact other licensed or unlicensed sites in the vicinity of the licensee.

As noted in the previous section, the additional volumes of VLLW being considered are minimal relative to the Class 1 and Class 2 industrial waste already going to these facilities and, thus, would not be expected to impact the disposal operations at Texas Class 1 or 2 industrial landfills. NRC staff considered the small annual volumes and TCEQ’s regulatory requirements related to the development, operation, and closure of industrial landfills and does not expect the disposal of this VLLW to impact licensed or unlicensed sites in the vicinity of the Texas Class 1 or 2 industrial landfill.

¹ The licensee’s annual effluent release reports for 2015 (ML16110A350), 2016 (ML17121A039), and 2017 (ML18115A137) document the disposal of VLLW at the Blue Ridge Landfill.

3.4 10 CFR 20.2002(d) – “Analyses and Procedures to Ensure that Doses are Maintained ALARA and Within the Dose Limits in this Part”

3.4.1 Activities Performed by the Licensee

The licensee confirmed that the processes used at STP to package and ship the material would not differ from the packaging and shipping processes discussed in the GEIS or SEIS for the site and are performed in accordance with STP's current operating procedures.

The licensee confirmed that the preparation and packaging of the VLLW associated with this request would not differ from the processes discussed in the GEIS and SEIS for the site. Additionally, STPNOC noted in its August 19, 2022, letter that these activities are performed by qualified radiation workers in accordance with STP's radiation protection program, which incorporates ALARA practices and satisfies the radiation protection requirements in 10 CFR Part 20. The SEIS also notes that STP maintains the solid waste packaging system (SWPS), which is designed to process, package, and store solid radioactive waste generated by plant operations prior to it being shipped offsite. The SWPS is designed to maintain radiation exposures to plant personnel within the dose limits of 10 CFR 20.1201, “Occupational dose limits for adults,” and ALARA and to ensure that packaging and transporting of the waste complies with NRC regulations in 10 CFR Parts 61 and 71, “Packaging and Transportation of Radioactive Material,” and the U.S. Department of Transportation regulations 49 CFR Parts 171, “General Information, Regulations, and Definitions,” through 179, “Specifications for Tank Cars.”

3.4.2 Transportation-Related Considerations

According to the December 3, 2021, and August 19, 2022, letters, STP plans to send between 5 and 12 shipments per year and assumes that the shipments will be transported to a Texas Class 1 or 2 landfill located within a 3-hour drive from STP. The licensee assessed the dose to the truck driver using a point source calculation based on the estimated volume of 153 m³ of VLLW and a total annual activity of 7.4E+5 Bq (2.00E-5 Ci) of cobalt 60 (Co-60) to represent the activities for all the radionuclides being considered in this request. Due to the variations in radionuclides included in individual shipments, the licensee chose Co-60 to represent the activity of all the possible radionuclides being considered because it is the most conservative with regards to external exposure. The calculation also assumed that a single driver would be performing all 12 shipments a year for a total of 36 hours per year. Using this approach, the licensee calculated an average dose of 1.65E-05 mSv (1.65E-03 mrem) per trip and an annual dose of 1.98E-04 mSv/yr (1.98E-02 mrem/yr). NRC staff reviewed this approach and found it to be acceptable. NRC staff also noted that the exposure scenarios associated with the disposal activities at the industrial landfills, discussed in Section 3.4.3 of this safety evaluation, would bound the doses calculated for the truck driver due to the time and proximity of the worker to the VLLW.

3.4.3 Doses Associated with Landfill Disposal Activities

STP considered the doses to workers involved with the disposal of the material at the Texas Class 1 or 2 industrial landfills. Although the NRC is not responsible for regulating VLLW disposal activities at industrial landfills in the State of Texas, NRC staff still considered the doses associated with the disposal actions at the industrial landfill as well as future land uses to ensure that the proposed disposal actions are safe and appropriate.

Since characteristics for individual Texas Class 1 or 2 industrial landfills can vary, the licensee calculated doses to workers involved with the disposal of VLLW at a generic industrial landfill using RESRAD-ONSITE, Version 7.2 (RESRAD-ONSITE). Conservative parameter values used in the analysis assumed that VLLW was evenly spread at a depth of 15.24 cm (6 inches) and covered with 15.24 cm (6 inches) of clean soil to demonstrate compliance with Texas regulations and resulted in a dose of 1.28E-02 mSv/yr (1.28 mrem/yr). NRC staff duplicated the licensee's analysis and performed additional analyses to calculate doses using typical industrial worker and resident farmer scenarios and specific volumes provided in STP's submittal in response to RAIs. This includes 153 m³, the 3-year total volume shipped between 2015 and 2017, 51 m³, the average annual volume shipped between 2015 and 2017, and 5,000 m³, a bounding volume proposed by STP based on past average disposal volumes and a project life of 56 years. Table 3 summarizes the RESRAD-ONSITE exposure pathways and parameter values that were modified from the default values by both the licensee and NRC staff. Doses were calculated using the proposed STP Administrative Concentration Limits for all the radionuclides listed in table 2 except for tritium. These concentrations were provided in response to discussions between NRC staff and the licensee and are the maximum acceptable radionuclide concentrations proposed by the licensee in accordance with this request. The licensee indicated that they included tritium in its list of radionuclides because it is always present but did not include it in the dose modeling since it does not contribute to the dose. An independent analysis performed by the NRC staff that included tritium confirmed this conclusion. The licensee noted in the response to RAIs that the State of Texas would evaluate specific industrial landfills used for disposing of VLLW to ensure that they satisfy the TAC regulatory requirements.

Table 3. RESRAD Parameter Values Used to Assess Dose

	Licensee Analysis	Industrial Worker	Resident Farmer
Exposure Pathways	External Gamma Inhalation Drinking Water Soil Ingestion	External Gamma Inhalation Drinking Water Soil Ingestion	External Gamma Inhalation Plant Ingestion Meat Ingestion Milk Ingestion Aquatic Foods Drinking Water Soil Ingestion
Parameters			
Area of Contamination (m ²)	1004	1004	1004
Thickness of contamination (m)	0.1524	0.1524	0.1524
Length parallel to aquifer flow (m)	31.69	31.69	31.69
Thickness of cover (m)	0.1524	0.1524	0.1524
Inhalation Rate (m ³ /yr)	8400	11400	8400
Indoor Time Fraction	0.50	0.17	0.50
Outdoor Time Fraction	0.25	0.06	0.25

¹ Multiply mrem/yr by 0.01 to convert doses to mSv/yr

Table 4 provides the doses calculated for each exposure scenario for the different volumes of material considered. The licensee also calculated all-pathway doses to members of the public using RESRAD-ONSITE. The NRC staff reviewed the analyses and confirmed that the doses

were bounded by the doses calculated from onsite exposures. NRC staff also performed bounding dose calculations that considered the disposal of the total volume of material, 5,000 m³, being proposed for disposal by the licensee in this request. NRC staff considered the same exposure scenarios and exposure pathways identified above. The only parameter values that were modified were the “Area of Contamination,” which was calculated based on the contamination thickness being 6 inches (15.24 cm), and the “Length parallel to aquifer flow,” which was modified to equal the square root of the “Area of contamination.”

Table 4. Doses Associated with the Disposal of Maximum Volumes of Material at a Single Time

Volume of material (m ³)	Dose (mrem/yr) ¹	
	Industrial Worker	Resident Farmer
51	1.28E+00	1.76E+00
153	1.28E+00	1.85E+00
5000	1.28E+00	2.71E+00

¹ Multiply mrem/yr by 0.01 to convert doses to mSv/yr

4.0 REGULATORY FINDINGS

4.1 10 CFR 20.2002 Criteria

As noted above, approval of this ADR requires approvals from both the NRC and the State of Texas. The NRC staff are responsible for evaluating whether the request satisfies the regulatory requirements outlined in 10 CFR 20.2002 for an alternate disposal procedure while the State of Texas maintains the authority for authorizing the use of Texas Class 1 or 2 industrial landfills to accept the material for disposal without a radiological State license. Although the NRC maintains no regulatory oversight of the industrial landfills, the NRC does require assurances that the material being released from the licensee will be disposed of safely and in an appropriate manner.

The NRC staff reviewed the information provided by the licensee to support its 10 CFR 20.2002 ADR. As documented above and consistent with 10 CFR 20.2002(a), the NRC staff concludes that the STPNOC provided an adequate description of the VLLW and the proposed manner and conditions of waste disposal. STPNOC considered a bounding volume of VLLW and maximum radionuclide concentrations associated with the VLLW that result in a dose that is less than 0.02 mSv/yr (2 mrem/yr). The details provided by the licensee, in combination with Texas regulations governing the permitting, operation, and closure of Texas Class 1 or 2 industrial landfills and the minimal impacts expected from the disposal of small volumes of the VLLW, provide pertinent information to assess the impacts to the environment in accordance with 10 CFR 20.2002(b) and to other licensed and unlicensed sites in the vicinity of the industrial landfill in accordance with 10 CFR 20.2002(c).

The NRC staff also concluded that multiple conservatisms are incorporated into the request to ensure that doses will not be more than “a few mrem” per year to any member of the public. These include the use of a bounding and overly conservative volume of VLLW that can be disposed of in a single year as well as bounding concentrations for which the radionuclide content of the VLLW cannot exceed. NRC staff consider the calculated doses, which are based on the proposed STP Administrative Concentration Limits provided by the licensee and the volumes discussed above, to be consistent with 10 CFR 20.2002(d).

4.2 Texas Regulations

Pursuant to the guidance provided in FSME-12-025, the State of Texas is responsible for approving the use of Texas Class 1 or 2 industrial landfills for disposal of VLLW being considered in this ADR as exempt waste per Texas regulations. Requirements included in the TAC address the permitting, operations, monitoring and maintenance, and closure of industrial landfills within the State. NRC staff reviewed the various applicable regulatory requirements and confirmed that they are sufficient and would ensure the safe disposal of VLLW.

5.0 CONCLUSION

Based on these findings, the NRC staff concludes that this ADR is acceptable under 10 CFR 20.2002. This approval allows for the disposal of up to 5,000 m³ of the requested material using the proposed STP Administrative Concentration Limits, including the use of a sum of fractions approach to the concentrations, identified in table 2 provided STPNOC remains within the specific constraints related to volumes and shipments identified in the request. The NRC staff has concluded that approving this requested action will not endanger life or property, is consistent with the common defense and security, and is in the public interest.

Principal Contributor: A. Schwartzman, NMSS

Date: December 6, 2022

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 – APPROVAL FOR ALTERNATE DISPOSAL PROCEDURES FOR VERY LOW-LEVEL RADIOACTIVE MATERIAL (EPID: L-2021-LLL-0022) DATED DECEMBER 6, 2022

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