



Qal-Tek



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U.S. NRC Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

Attn: Heather Gepford, Chief NMSB-B

Executive License Application Summary:

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Current Alternative Disposal Process:

Currently, alternate disposal requests (ADR), are performed via a case-by-case application for review by U.S. NRC in accordance with §20.2002. Due to the case-by-case nature of the process, it can be expensive and lengthy for both the NRC and licensees to pursue. Those who have experienced this ADR process report anywhere from six months almost three years before an exemption is granted to the alternate disposal facility. This represents a significant restriction in moving low-activity radioactive materials to safe and cost-effective disposal outlets in a timely manner. The need for timely and cost-effective alternate disposal solutions has never been greater with the advent of accelerated decommissioning of nuclear power plants in the US. A precedent for licensed pre-approval programs exists within the Agreement State framework to support this market demand. Licensed, pre-approval ADR processes are currently operating Tennessee as 'Bulk Survey for Release' or BSFR, and in Texas at the Waste Control Specialists site (WCS) under Agreement State authority. The proposed MVF program offers the U.S. NRC a similar ADR solution. However, the proposed Program offers enhanced oversight and operational standards as compared to the current solutions.

Regulatory Precedent:

Similar Alternate Disposal approaches have been implemented in both Tennessee and Texas under Agreement State licenses and supporting programs and procedures. The programs that have been authorized in both states are very similar to what is being requested by [REDACTED] in this application for the MVF Program License. An overview of both the Tennessee and Texas programs is discussed below and followed by a side-by-side comparison table with the proposed MVF program.

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Tennessee Bulk Survey for Release (BSFR) Program

BSFR operators are licensed by the Tennessee Department of Environment and Conservation (TDEC) via their Agreement State status as delegated by the U.S. NRC. According to TDEC's website¹, "*Tennessee's Bulk Survey for Release (BSFR) program was developed in order to have a standardized process to analyze materials with extremely low levels of radioactive contamination for disposal in specified Class I landfills. These levels of contamination, while detectable with modern equipment, pose no hazard to human health or the environment by being disposed of in this manner. ... Materials that are candidates for the BSFR program are of such low levels other states generally would exempt them from further regulation as a radioactive material and allow*

¹ <https://www.tn.gov/environment/program-areas/rh-radiological-health1/rh-bulk-survey-for-release.html>



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their unrestricted disposal. In contrast, Tennessee has developed a regulatory framework for it. Bulk Survey for Release (BSFR) is a term for a licensed process that has been approved by the Department of Environment and Conservation to allow the disposal of materials with extremely low levels of radioactive contamination at four different Class I landfills in Tennessee."

BSFR Operators essentially function as licensed waste verification, segregation, and processing facilities. All workers at these facilities are trained and monitored Radiation Workers under the sites' TDEC license. Wastes received are licensed and regulated LLRW from other licensees and are shipped using NRC Uniform LLRW Manifest paperwork (NRC Form 540/541). Not all of the waste received may be found to be suitable for BSFR disposal. Therefore, the operators perform sorting and verification operations in order to ensure that all waste packages that are prepared for shipment to a BSFR landfill meet the stringent criteria set forth in the license.

Wastes that are considered for BSFR disposal are pre-qualified via assay (typically through non-destructive assay and scaling factor techniques), verified to meet all of the defined criteria in the license condition(s), then shipped to an approved local landfill (RCRA Subtitle-D) for final, unlicensed disposal. Once the prepared BSFR waste package has been verified to meet all designated criteria, TDEC pre-authorizes for non-licensed disposal of the packages at a RCRA Subtitle-D landfill (i.e., TN Class 1 landfill). TDEC does not require BSFR operators to gain approval of individual waste streams or shipments prior to pre-qualification, verification and disposal in the Class 1 landfills. TDEC has stated that they license "the process (of the BSFR operators), not the individual waste streams."

The approved BSFR landfills have been evaluated for disposal of very-low activity radioactive wastes through environmental modelling using the RESRAD suite of codes. Waste concentrations are limited to ensure that postulated future doses to the public from burial of these types of wastes do not exceed Tennessee's requirement of 1 mrem/yr. Each BSFR landfill has nuclide specific concentration limits correlated with the 1mrem/yr. dose limit, with a sum-of-fractions (SOF) technique implemented for shipments having more than one nuclide.

Three licensees in Tennessee are currently authorized to conduct the BSFR program: Toxco, Energy Solutions, and Unitech Services. There are four Class I landfills in Tennessee authorized to receive wastes under the BSFR program: Chestnut Ridge landfill facility in Heiskell (Anderson County), North Shelby County, South Shelby County, and Carter Valley in Hawkins County.

Waste Control Specialists Exempt Waste Program

Waste Control Specialists (WCS) is a radioactive waste operator located in Andrews, Texas. WCS is licensed by the Texas Commission on Environmental Quality (TCEQ) under Agreement State status as delegated by the U.S. NRC. In addition to LLRW disposal operations at the Andrews, TX site, WCS also has a RCRA Subtitle-C hazardous waste treatment, storage and disposal (TSDF) facility.



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Condition 192 of WCS License No. R04100 introduced a “Conditional Exemption” program under Title 30, part 336.5 of the Texas Administrative Code [30 TAC §336.5(a)], which allows WCS to perform alternate disposal authorization activities in its Storage and Processing Facility to accomplish disposal of low-activity radioactive wastes in their RCRA Subtitle-C landfill. Since the RCRA Subtitle-C landfill is co-located within the “licensed restricted area” of the WCS site, its footprint was included in the sitewide Radiological Performance Assessment that was performed in support of the LLRW licensing effort. This approach gains WCS a significant advantage over BSFR since the results of the Performance Assessment have shown that waste concentrations up to 10% of the Class A LLRW limits can safely be disposed in the RCRA cell without exceeding a post-closure dose limit of 1 mrem/yr. All workers at the WCS Processing Facility are trained and monitored Radiation Workers under the site’s TCEQ license.

WCS' Exempt Program is designed with Waste Tiers (1, 2, and 3), which are defined as:

- Tier 1: SOF < 30% of the Waste Acceptance Criteria (WAC)
- Tier 2: 30% \geq Average SOF < 80% of WAC.
- Tier 3: 80% > Average SOF \leq 100% of WAC.

Wastes received are licensed and regulated LLRW from other licensees and are shipped using an NRC Uniform LLRW Manifest (NRC Form 540/541) paperwork. Similar to BSFR operators, incoming LLRW packages are pre-qualified but remain licensed radioactive material until verification processes ensure compliance with all License Conditions and program procedures.

Once all license conditions have been met, TCEQ allows the verified wastes in Tier 1 and 2 to be exempted from LLRW licensing and disposed in the RCRA Subtitle-C facility without evaluation by TCEQ. However, TECQ requires review and approval of Tier 3 verification results prior to disposal in a RCRA Subtitle-C facility.

Amendment 32 of WCS' TCEQ License No. R04100 states that:

“WCS has the ability to apply licensing exemptions to Tier 1 and 2 wastes that have been shown to meet all License and Program procedural limits. However, Tier 3 wastes, WCS must submit an exemption request letter to TCEQ including results of the verification analyses. TCEQ has 21 days to review and approve/deny the exemption request. If denied, WCS may re-apply to TCEQ at a later time.”

Disposal volume information for WCS' RCRA Exempt Program is not disclosed by the company.

Comparison Between BSFR, WCS Exempt, and Proposed MVF

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Table Notes:

1. Other verification methods and techniques may also be implemented for BSFR and WCS.
2. All receipt and verification activities are performed within a licensed facility where the workers are all trained and qualified Radiation Workers.
3. As compared to Tables 1 and 2 in 10CFR 61.55.

Current NRC ADR Actions:

The NRC is currently reviewing alternate disposal options via revision to the §20.2002 guidance document as well as through the Very Low-Level Waste (VLLW) Scoping Study. Our proposed operations addresses many of the industry and policy needs currently being evaluated and is not dependent upon revision of current policy or introduction of a new lengthy and complex rulemaking process in order to be effective. We believe the proposed solution would be well-received by the licensed community and serve the needs of customers who have low-activity wastes in need of proper disposal.

Regulatory authorization for the proposed MVF program:

In accordance with §20.2002, our proposed program offers a standardized method of meeting the four criteria:

"A licensee or applicant for a license may apply to the Commission for approval of proposed procedures, not otherwise authorized in the regulations in this chapter, to dispose of licensed material generated in the licensee's activities."

Each §20.2002 application shall include:

- (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; and"

The MVF Program provides answers to this requirement specifically in the following documents:

- ADR-01
- OP-PRO-607

- (b) "An analysis and evaluation of pertinent information on the nature of the environment; and"
The MVF Program provides answers to this requirement specifically in the following documents:

- ADR-01
- USE Site Environmental Assessment
- NRC approved SSDA (Docket # 04038368).

- (c) "The nature and location of other potentially affected licensed and unlicensed facilities; and"

The MVF Program provides answers to this requirement specifically in the following documents:



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- ADR-01
- NRC approved SSDA (Docket # 04038368).

(d) "Analyses and procedures to ensure that doses are maintained ALARA and within the dose limits in this part."

The MVF Program provides answers to this requirement specifically in the following documents:

- NRC approved SSDA (Docket # 04038368)
- SP-PRO-008 MVF (Radiation Safety Program Manual)

Requested authorization:

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ADR-01 PUBLIC SUMMARY:

The ADR-01 document outlines how the integrated ADR program will function within the MVF, including how the SSDA is used to calculate and track doses from operations. The ADR-01 contains specific operating parameters which address the implementation and validation for compliance with §20.2002.

NOTE: The underlined sections and titles below represent summary statements from each section of the ADR-01 and edited for public disclosure.

2.0 REGULATORY CONSIDERATIONS

The purpose of this ADR is to provide a safe and cost-effective disposal alternative for waste generating licensees with low-activity radioactive material which can be proven to not introduce long term impacts to the environment or the public. The program described herein represents a significant improvement in how ADRs can

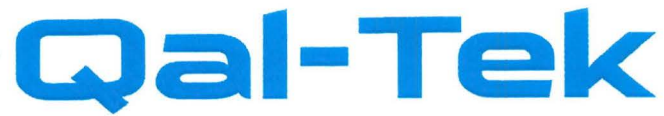


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be reviewed and approved by the NRC. These individual project submittals require a large investment of time and money by both the licensees and NRC with approval timelines taking anywhere from 6 to 29 months depending on the complexity of the project. Authorization of pre-approved procedures and criteria for ADRs at USEI would alleviate the need for individual project submittals by licensees (and USEI) as well as individual reviews and approvals by NRC staff.

This streamlined assessment methodology represents significant process improvements in preparation and review of ADRs prepared under §20.2002 while providing thorough, consistent technical analysis of the USEI facility and proposed licensee waste streams. Highlights of the benefits of a pre-approved §20.2002 program include the following:

- **Improved Process Efficiency** - Less time and effort required from NRC staff on submitted ADRs. Pre-approval of an ADR program to USEI with radionuclide, dose, and volume limits specified will alleviate the NRC staff requirements associated with the review and approval of individual project-based licensee submittals, including drafting of the required Environmental Assessment and Safety Evaluation Report documents;
- **Focus on Safety** – This proposed program represents the most comprehensive study of a non-licensed radioactive waste facility and its operations, ensuring that doses to all personnel are kept ALARA;
- **Ensures Quality** – The proposed program ensures consistent and repeatable technical analysis is performed on all ADR submissions. All operations will be performed under the control of QTA's Radiation Safety and Quality Assurance Programs which have an excellent compliance and safety record.
- **Consistent with NRC Policy** – The proposed ADR approach enhances the availability of USEI to licensees for suitable ADRs, consistent with NRC's revised Policy Statement on Low-Level Radioactive Waste (LLRW) Management and Volume Reduction, which *"Suggests licensees consider all means available to manage LLRW in a manner that is secure and protects public health and safety, such as...Use of the alternate disposal provision in 10 CFR 20.2002."* (NRC 2012). Furthermore, the alternate disposal program requested at the MVF is very similar to existing programs that have already been approved in Tennessee and Texas by NRC Agreement State regulators in those states.
- **It is in the Public Interest** – Implementation of proposed program for ADR procedures under §20.2002 submittals is in the public interest since it will enhance competition for low-activity waste disposal, preserve necessary Class A disposal space for regulated LLRW, and reduce waste disposal costs for licensees and ratepayers.
- **Value to NRC Rulemaking** – the NRC may find the precedent of this program valuable towards minimizing or eliminating the need for future rulemaking related to disposal of very low-level radioactive waste (VLLRW).



Regulatory Precedent

Similar Alternate Disposal approaches have been implemented in both Tennessee and Texas under Agreement State licenses and supporting programs and procedures. The programs that have been authorized in both states are very similar to what is being requested by in this application. An overview of both the Tennessee and Texas programs will be discussed followed by a side-by-side comparison with the proposed MVF program.

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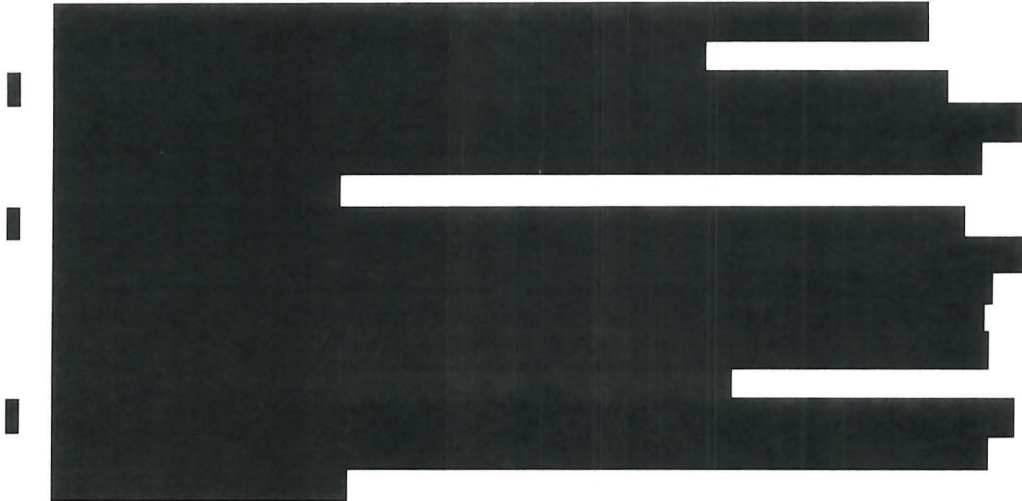
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Case Studies

The ADR-01 includes specific case studies used to validate actual operations against the dose assessments and associated operation processes as they apply to validating their performance against the §20.2002 criteria and the USEI WAC. The case studies also provide basis for the USEI Post-Closure doses as well as maximally exposed individual used to validate the sites long term environmental performance.

5.0 Reporting

The ADR-01 also identifies the risk-based reporting requirements for the U.S. NRC as they are categorized into shipment reporting, specific approvals and annual reporting requirements. In addition to the ADR-01, the attachments provide standardized reporting templates for the streamlined review of USNRC to validate the compliance and performance of the MVF operations and disposal volumes.

6.0 Criticality Safety

Several Nuclear Criticality Safety Assessments (NCSA) have been performed for the [REDACTED] site to support receipt and disposal of low-activity special nuclear material (SNM). The first NCSA was performed as part of the ADR submittal to the NRC for CLIENT A, and validated that wastes containing U-235 may be sent to the [REDACTED] site for disposal since very large margins of safety had been incorporated into the normal operating conditions associated with these wastes and the probability for serious abnormal conditions is acceptably small.

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7.0 Attachments

Site Description



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The site description contained within the ADR-01 are supplied to provide validation against the §20.2002 criteria and specifically include;

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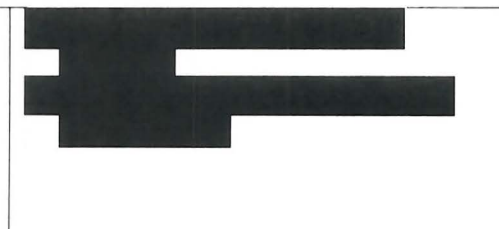
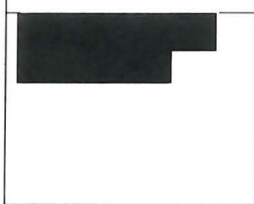
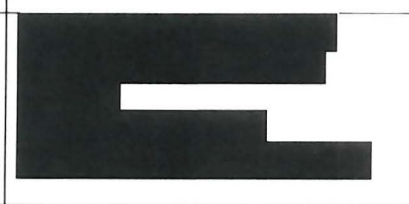

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Thank you for your consideration in this matter,

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Qal-Tek Associates, LLC
Michael Albanese
Radiation Safety Officer (RSO)

A handwritten signature in blue ink, appearing to read "Bryce Rich".

Qal-Tek Associates, LLC
Bryce Rich, CHP
Radiation Safety Committee Chair

A handwritten signature in blue ink, appearing to read "Travis Snowder".

Qal-Tek Associates, LLC
Travis Snowder
Chief Executive Officer (CEO)

Enclosures