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General Comment

US Ecology, Inc. comments provided in the attached file.

Attachments

US Ecology Comments_VLLW Scoping Study_051418

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US Ecology, Inc.

Subject: Docket ID NRC-2018-0026, Very Low-Level Waste Scoping Study

US Ecology, Inc. has operated licensed low-level radioactive waste disposal facilities in the United States since the 1960s. The company is also a pioneer in providing safe, secure disposal of low-activity radioactive waste (LARW) at permitted Subtitle C hazardous waste disposal facilities. Alternative disposal at appropriate Subtitle C facilities has provided a protective, cost-effective disposal option to many NRC and Agreement State licensees.

Expanded utilization of appropriate alternative disposal for Very Low-Level Waste (VLLW) is in the national interest to conserve both economic resources and existing LLRW disposal capacity while minimizing interim storage timeframes pending disposal. We commend NRC staff for their efforts in promoting a national conversation on VLLW with hopes that it leads to policy and/or regulations that provide consistency and clarity to the regulated community in the area of low-activity radioactive waste disposal.

US Ecology is pleased to be able to provide comments on the NRC's Very Low-Level Waste Scoping Study. Our responses to the questions posed by NRC in its regulatory notice dated February 14, 2018 are provided below.

1. *The United States does not have a formal regulatory definition of VLLW. What should the NRC consider in developing its own regulatory definition for VLLW? Is there another definition of VLLW that should be considered? Provide a basis for your response.*

   US Ecology Response: US Ecology does not believe rulemaking to formally define a VLLW classification is necessary given the existing regulatory framework provided by 10 CFR Parts 61 and 20. While international precedent exists for a formal definition of VLLW along with radionuclide-specific concentrations below which VLLW disposal is generally acceptable (e.g. IAEA GSG-1), US Ecology believes applying existing, widely accepted performance-based criteria that must be met for a specific disposal facility to accept what might be thought of as VLLW offers a more protective and efficient approach.

   This approach would also be consistent with the direction of the latest Part 61 rulemaking efforts that allow site-specific performance assessments and waste acceptance criteria (WAC) in lieu of the §61.55 Tables. To implement this, we recommend that timely regulatory guidance be issued on low-activity waste disposal generally suitable for alternate disposal under §20.2002 along with a more streamlined staff approach to processing such approvals at specific facilities. Specific criteria are identified in our response to Question 2 below.

2. *The existing regulatory framework within 10 CFR 61.55 divides low-level radioactive waste into four categories: Class A, Class B, Class C, and Greater Than Class C. Should the NRC revise the waste classification system to establish a new category for VLLW? What criteria should NRC consider in establishing the boundary between Class A and VLLW categories?*

US Ecology Response: US Ecology does not think it is necessary for NRC to create a new "VLLW" category in §61.55 as an addition to the existing LLW regulatory structure. Our rationale for this position is that NRC should take into consideration the current regulatory framework for low-activity waste that is being disposed of now outside of the Part 61 framework. At present, in order to pursue "alternate disposal" via §20.2002, a licensee must be granted authorization and the non-licensed receiving facility must receive a licensing exemption from NRC or an Agreement State. Once the licensing nexus is removed from that radioactive material, there are no further regulatory requirements under either Parts 20 or 61.

As noted in our Response to Question #1, US Ecology recommends a performance-based approach to low-activity waste disposal in the United States utilizing existing regulations. We recommend that NRC policy guidance be issued with the approval of the Commission that includes the following:

- Radionuclide activity concentrations at the lower end of existing Class A waste, i.e., ≤10% of the published concentrations, are eligible for disposal under §20.2002 at qualified disposal facilities provided that applicable waste acceptance criteria for the facility allow disposal of such wastes.
- A disposal facility interested in being classified as a VLLW facility must show via a site-specific performance assessment that it has the operating, design, and geological/climatological characteristics to meet standard dose criteria for the proposed waste acceptance criteria (WAC). US Ecology recommends that NRC consider 100 mrem/year for occupational doses to workers and 25 mrem/year for post-closure and inadvertent intruder analyses.
- The Dose Standards recommended above are already in use by NRC for similar regulatory purposes in other programmatic areas. Both are well understood and accepted by the regulated community and could provide ample working flexibility by well-qualified disposal sites to serve the licensed community. The existing "less than few millirem per year" criteria (≤5 mrem/yr) used for alternate disposal authorizations should not be considered for VLLW as it is overly restrictive and inconsistent with these other dose criteria.

This approach would allow interested sites to pursue site-specific disposal WACs provided the proposed radionuclide concentrations could be shown to be protective to human health and the environment up to a chosen dose limit. This method is currently used under §20.2002 for Alternate Disposal Procedures on a case-by-case basis. US Ecology feels that NRC should take advantage of the collective knowledge and experience base of the licensee and waste management communities who have participated in the §20.2002 process and build off the aspects of this program that have been proven to work while improving others that do not.

3. *The NRC's alternative disposal request guidance entitled, "Review, Approval, and Documentation of Low-Activity Waste Disposals in Accordance with 10 CFR 20.2002 and 10 CFR 40.13(a)," which is undergoing a revision, allows for alternative disposal methods that are different from those already defined in the regulations and is most often used for burial of waste in hazardous or solid waste landfills permitted under the Resource Conservation and Recovery Act (RCRA). Should the NRC expand the existing guidance to include VLLW disposal or consider the development of a new guidance for VLLW disposal? Why or why not?*

US Ecology Response: US Ecology supports a policy solution to the VLLW issue. Although we feel it would be possible to achieve a workable solution by revising the existing §20.2002 Guidance Document, we feel there are distinct advantages to having Staff draft new Guidance on VLLW. The reasons for this position include:

- VLLW requires a fresh perspective in order to achieve policy that will truly benefit the United States and address the industry challenges associated with generation of large quantities of low-activity radioactive waste;
- While the §20.2002 Alternate Disposal process has been shown to be effective, the NRC policy positions and regulatory criteria associated with it are not capable of meeting the needs of the changing low-activity waste disposal market (see Response to Question 2 for details).
- NRC would be better served to have Staff draft new Guidance that the Commission could vote on that addresses handling, transportation and disposal of VLLW to ensure that the current challenges in the low-activity waste disposal environment are appropriately addressed. It would allow NRC an opportunity to streamline the §20.2002 approvals process to make access to appropriate non-licensed disposal facilities easier for licensees.
- A new VLLW Guidance should include policies and procedures that would allow qualified disposal sites to become pre-approved for VLLW disposal using a site-specific, performance based approach without the need for project-specific reviews/approvals or licensing exemptions.

A valuable precedent in this area was established during the promulgation of the Energy Policy Act of 2005. When the new subcategories of Byproduct Material were defined (11.e.3 and 11.e.4) and introduced into NRC regulatory space as part of the Energy Policy Act, there was the potential for a regulatory conflict on the disposal side since the materials now being regulated by NRC were previously under the jurisdiction of the states as naturally-occurring radioactive materials (NORM), technologically-enhanced NORM (TENORM), and accelerator-produced radioactive materials (NARM). While the NRC promulgated their rules for implementation of the EP Act, they created a new authorization for "Disposal of Certain Byproduct Material" in §20.2008, which stated that (paraphrased): (a) "*Licensed material as defined in paragraphs (3) and (4) of the definition of byproduct material...is not defined as low-level radioactive waste*"; and (b) "*A licensee may dispose of byproduct material, as defined in paragraphs (3) and (4) of the definition of Byproduct material set forth in §20.1003, at a disposal facility authorized to dispose of such material in accordance with any Federal or State solid or hazardous waste law, including the Solid Waste Disposal Act, as authorized under the Energy Policy Act of 2005.*" (underline added for emphasis)

Although the solution NRC implemented as part of the EP Act Rulemaking was simple, it has been shown to be elegant and comprehensive in its effectiveness. While NRC was able to begin regulating segments of TENORM and NARM as byproduct material, they did not feel the need to reverse course on disposal and begin regulating these materials as LLRW just because there was a licensing nexus now being drawn. This regulatory position sent a clear message to the regulated community – the NRC recognizes that the low-activity NORM/TENORM/NARM that had been disposed at state regulated RCRA Subtitle-C hazardous waste facilities was safe and secure and that there were no technical or public health reasons to interfere or reverse it. US

Ecology believes the NRC could pursue a similar path for VLLW for the following supporting reason:

- The low-activity materials considered as 'VLLW' would be low-enough in concentration (and risk-profile) to justify exclusion from handling as LLRW just as NRC did with 11.e.3 and 11.e.4 byproduct material;
- A portion of the radioactive materials that most likely would be disposed of as VLLW are already being disposed at non-licensed, state-regulated RCRA hazardous waste facilities under authorization via §20.2002. In fact, US Ecology has proven that large quantities of low-activity radioactive materials can be safely and securely disposed in RCRA Subtitle-C hazardous waste facilities like the one in Grand View, Idaho.

4. *If the NRC were to create a new waste category for VLLW in 10 CFR part 61, what potential compatibility issues related to the approval of VLLW disposal by NRC Agreement States need to be considered and addressed? How might defining VLLW affect NRC Agreement State regulatory programs in terms of additional responsibilities or resources?*

   US Ecology Response: US Ecology strongly supports a policy solution to the VLLW issue and not rulemaking associated with Part 61 or other NRC regulations.

   A policy solution that defines VLLW and qualifies sites upon application would not create any substantial compatibility issues for Agreement States. First, low-activity radioactive materials are already being shipped to the existing licensed facilities as LLRW due to Compact requirements or sheer difficulty of pursuing an alternate disposal request under §20.2002. The only foreseeable impact to Agreement States (and non-Agreement States for that matter) would be due to application of new disposal facilities wishing to be designated as a VLLW site.

5. *Following the Low-Level Radioactive Waste Policy Amendments Act of 1985, states formed regional compacts for the disposal of low-level radioactive waste. If the NRC were to create a new waste category for VLLW, does it fall within regional compact authority to control VLLW management and disposal? How might defining VLLW affect regional compacts in terms of additional responsibilities or resources?*

   US Ecology Response: A sound VLLW policy decision by NRC should not have any impact on the Regional LLRW Compacts. As discussed in our responses to Questions #2 and #3, NRC has already established regulatory pathways for low-activity radioactive materials (materials similar in nature to what could be 'VLLW' in the future) to be disposed outside of the regional Compact system. This includes wastes that meet the criteria in either §20.2002 or §20.2008. We urge the NRC to implement a policy position for VLLW that would utilize the same framework for low-activity waste as the existing pathways that are already available to licensees.

6. *Environmental Protection Agency-imposed waste analysis requirements for facilities that generate, treat, store, and dispose of hazardous wastes are defined in 40 CFR parts 264 through 270. How would NRC incorporate and apply waste analysis requirements for VLLW at RCRA Subtitle C and D facilities? Should the NRC impose concentration limits and/or treatment standards for VLLW disposal?*

US Ecology Response: This question addresses one aspect of the current case-by-case authorization/exemption disposal process that works well and would not require much, if any, change as a result of a new VLLW policy position. Under the current review and approval protocols for a §20.2002 alternate disposal authorization, the NRC applies the same performance-based methods and criteria to RCRA Subtitle C hazardous waste facilities in order to show compliance with the published "less than few millirem" criteria. NRC does not impose any new waste analysis requirements for the characterization data presented as part of a §20.2002 alternate disposal request. Nor does NRC stipulate in §20.2008 that 11.e.3 or 11.e.4 byproduct material eligible for disposal at state-regulated hazardous waste facilities undergo new or different waste analysis requirements prior to disposal. These same arguments could hold true for any new VLLW category being considered as part of the Scoping Study.

Once radioactive materials are exempted out of NRC licensing space as part of a §20.2002, the EPA (and their RCRA implementing States) then inherit regulatory responsibility for these materials under each sites' RCRA license and permits. This "hand-off" approach between NRC and EPA for exempted low-activity radioactive materials has worked very well over the last 15 years and does not need to be significantly altered to continue to work well for VLLW.

US Ecology recommends that NRC's interaction with EPA-regulated hazardous waste facilities within the context of VLLW disposal remain at the onset of facility qualification and approval. After a qualified site has been granted approval to accept VLLW (at whatever limits suitable to meet the chosen performance-based criteria), active regulation by the NRC would no longer be required. All regulations relative to hazardous waste should be left to EPA and its implementing state regulatory agencies. NRC needn't concern itself with treatment standards outside of its primary regulatory mission.

US Ecology firmly believes that any chosen VLLW policy solution be performance-based in nature and not subject to "one-size-fits-all" concentration limits for VLLW. Further detail and justification is provided in our response to Question #8.

7. *Are there any unintended consequences associated with developing a VLLW waste category?*

US Ecology Response: We see opportunities for several unintended consequences resulting from creation of a new VLLW category. First, if NRC chooses to publish radionuclide concentrations below which are suitable for disposal at VLLW sites, there is the distinct possibility that state legislatures across the country would immediately introduce legislation banning disposal of VLLW within their borders. We feel this unintended consequence can be mitigated by implementing performance-based site approvals for VLLW disposal to ensure that VLLW disposal is occurring at only the most appropriate and qualified sites. Having buy-in from local residents, stakeholders, and elected officials is paramount to the success of any disposal facility. Several states, including Idaho, Texas, and Utah, have already shown their willingness to allow for disposal of low-activity radioactive materials (including byproduct material). The facilities in these states alone already represent ample disposal capacity to serve the entire nuclear industry into the indefinite future. This includes the proposed volumes of decommissioning waste discussed within the industry over the next 30-40 years. There is no tangible need for NRC to "create VLLW disposal capacity" in the industry by publishing standardized concentrations like those in IAEA GSG-1.

A second unintended consequence was already touched on in our Responses to Questions 2, 4, and 5, specifically regarding involvement of the Regional LLRW Compacts. US Ecology strongly urges the NRC to pursue a VLLW solution that does not statutorily place it under the jurisdiction of the Compact system, i.e., within Part 61. US Ecology provides several alternative options in this document that would allow VLLW to be appropriately and safely transported and disposed at qualified facilities under free interstate commerce.

8. *What analytical methods/tools should be used to assess the risk of disposing of VLLW at licensed LLW disposal facilities or RCRA Subtitle C and D facilities? (i.e., generic or site-specific)*

US Ecology Response: US Ecology urges NRC to consider a site-specific performance-based qualification process for sites wishing to receive VLLW. NRC has extensive experience reviewing and approving sites using technically defensible site-specific methods, so extending similar criteria to VLLW would not be a significant departure from the existing regulatory schema nor would it beyond the technical capabilities of the NRC's Low-Level Waste and Performance Assessment Branches.

A possible approach for satisfying SSPB protocols would be to require a site-specific performance assessment using the industry standard GoldSim modeling platform. This platform has been successfully used to implement site-specific WACs for LLRW sites like Energy Solutions in Clive, Utah, Waste Control Specialists in Andrews, TX, and DOE's Nevada National Security Site (NNSS).

An alternative approach for meeting SSPB standards would to use the same methods that NRC has used for individual alternate disposal authorizations under §20.2002 and §40.13(a). These methods include the Microshield® code for modeling and simulation of occupational external dose rates, the RESRAD suite of codes for environmental fate and transport modeling of radionuclides proposed for disposal at a particular site, and a priori dose calculation methods for inadvertent intruder scenarios outlined in NUREG-0782 along with dose conversion factors published in NUREG/CR-4370. All of these methods have been successfully used by US Ecology to satisfactorily meet the requirements of §20.2002 obtain licensing exemptions for the transportation, handling, and disposal of low-activity radioactivity at our Grand View, Idaho RCRA Subtitle-C hazardous waste facility. NRC has found these methods to be technically acceptable and defensible with respect to the *less than a few millirem* dose standard as well as the desired 'Finding of No Significant Impact' decision rendered from the Environmental Assessment process. These methods have been shown to be sufficient to meet all technical and regulatory requirements of §20.2002. Since the fundamental requirements for qualification as a VLLW site are similar (if not identical) to those for §20.2002, NRC should continue to accept these methods.

9. *How should economic factors be considered in the VLLW Scoping Study?*

US Ecology Response: NRC should consider multiple economic factors regarding creation of a new VLLW waste category, including but not necessarily limited to:

- First and foremost, NRC needs to clearly define what the stated agency goals of a VLLW effort are as these can significantly alter and time and cost of the overall regulatory process, both for NRC as well as for the regulated community.
- Impact on disposal cost of low-activity waste to the licensed community. This should be scoped to include potential cost savings associated with licensed disposal avoidance as well as potential impacts to licensed facilities.
- Long-term liability issues associated with disposal of large quantities of VLLW in non-licensed disposal facilities.
- Costs to States resulting from new or enhanced regulation of low-activity radioactive materials now called VLLW. While it is understood that many states may choose not to participate in this arena, NRC should still look into the potential impacts to those that do.

US Ecology appreciates the opportunity to comment on the VLLW Scoping Study questions. Please contact me at 208-319-1634 or joe.weismann@usecology.com if we can provide additional information.

Respectfully Submitted,

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