Policy Issue
(Notation Vote)

December 31, 2012 SECY-13-0001

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: STAFF RECOMMENDATIONS FOR IMPROVING THE INTEGRATION OF THE ONGOING 10 CFR PART 61 RULEMAKING INITIATIVES

PURPOSE:

To request Commission approval of a staff proposal for improving the efficiency of the ongoing rulemaking efforts to update the 10 CFR Part 61 regulatory framework for the disposal of commercial low-level radioactive waste. If adopted, these recommendations would also improve the integration of earlier Commission direction. This paper also evaluates public comments received in response to the expanded 10 CFR Part 61 rulemaking.

SUMMARY:

The staff is proposing an integrated approach to revising 10 CFR Part 61. First, staff requests Commission approval to stop further efforts associated with SECY-10-0165. The staff believes that the current rulemaking under SRM-COMWDM-11-002/COMGEA-11-0002, which directed an amendment to the 2011 version of the draft proposed rule, accomplishes the Commission's original direction in SRM-SECY-08-0147, implements some of the options presented in SECY-10-0165, and meets the expanded direction in SRM-COMWDM-11-002/COMGEA-11-0002. The staff believes that this limited scope integrated rulemaking best accomplishes the Commission's direction with respect to 10 CFR Part 61, and a separate rulemaking would no longer be needed to address the issues raised in SECY-10-0165.

Second, the staff has evaluated public comments received in response to the expanded 10 CFR Part 61 rulemaking that the Commission directed the staff to prepare in SRM-COMWDM-11-002/COMGEA-11-0002. Based upon its review of these comments and consistent with this recommended integration effort, the staff does not believe that the current 10 CFR Part 61 rulemaking should be further expanded to include the additional issues raised in the public comments.

CONTACT: Michael P. Lee, FSME/DWMEP
301-415-688

The recommendations proposed in this paper would have no impact on the existing staff direction to submit a revised rulemaking package by July 2013, consistent with SRM-SECY-08-0147 and SRM-COMWDM-11-002/COMGEA-11-0002.

BACKGROUND:

Enclosure 1 illustrates the variety of directions issued to staff regarding the current proposed site-specific analysis rulemaking to revise the disposal requirements in 10 CFR Part 61, as well as future rulemaking activities pertaining to 10 CFR Part 61. Elements of this direction are described below.

SECY-10-0165: In SRM M100617B (dated July 1, 2010), the Commission directed the staff to outline an approach for a comprehensive revision to 10 CFR Part 61 that was risk-informed and performance-based, including the resources and the timeline for completing the rulemaking. In response to SRM M100617B, the staff prepared SECY-10-0165 (dated December 27, 2010) and described the need to engage stakeholders and solicit their views on whether there should be amendments to the current 10 CFR Part 61 before proceeding with any rulemaking. In the Commission paper, staff identified a number of options to develop risk-informed and performance-based low-level radioactive waste (LLW) disposal regulations:

1. Risk-inform the current waste classification framework at § 61.55.

2. Revise 10 CFR Part 61 in a comprehensive manner.

3. Develop a site-specific waste acceptance criteria (WAC).

4. Align 10 CFR Part 61 with international approaches.

5. Supersede direction given in SRM-08-0147.

The Commission subsequently directed the staff to prepare a notation vote paper summarizing the stakeholder feedback received on SECY-10-0165 by October 2014 and to provide suggestions, as well as a recommendation, for the Commission to consider. In response, the staff sponsored a series of public meetings in 2011 and 2012 on SECY-10-0165 to discuss the options presented in that paper. The 2012 meetings were conducted as joint meetings held in connection with the staff's public outreach efforts associated with SRM-COMWDM-11-002/COMGEA-11-0002 (dated January 19, 2012). The staff has collected feedback on the options presented in SECY-10-0165.

Additional Comments Received in Response to SRM-COMWDM-11-002/COMGEA-11-0002:
Previously, in SRM-SECY-08-0147 (dated March 18, 2009), the Commission directed the staff to proceed with a limited rulemaking to amend 10 CFR Part 61 to include a requirement for a site-specific performance assessment for the disposal of large quantities of depleted uranium and other long-lived isotopes in a near-surface disposal facility. Although the current rule does not include an explicit site-specific performance assessment requirement, the Commission expects licensees and applicants will use performance assessment methodology to demonstrate compliance with 10 CFR Part 61. See the *1995 Probabilistic Risk Assessment*

Policy Statement at 60 FR 42627. In a second SRM, SRM-SECY-10-0043 (dated October 13, 2010), the staff was directed to include blended LLW streams as part of this rulemaking.

In 2009, the staff held a number of public meetings to solicit comments on LLW performance assessments (74 FR 30175)[1]. Based on the comments received in connection with these meetings, the staff developed a technical basis document to support the rulemaking (Agency Document Access and Management System [ADAMS] Accession Number ML111040419) and shared it with the Agreement States. The draft proposed rulemaking language prepared in 2011 would have required that licensees of currently operating LLW disposal facilities and future 10 CFR Part 61 applicants conduct site-specific performance assessments to demonstrate compliance with the regulatory requirements to protect the general public from radiation doses consistent with § 61.41. In connection with the proposed performance assessment requirement, the staff also recommended that the time of compliance be specified at 20,000 years (ML111030586) to account for the presence of large quantities of long-lived isotopes that might be disposed of in a near-surface disposal facility. Additionally, the 2011 draft proposed rulemaking included a new requirement to conduct an intruder analysis under § 61.42 with a chronic exposure limit of 500 millirem/year. These analyses would identify additional restrictions or prohibitions that would be necessary at a particular disposal site for LLW with long-lived isotopes.

In addition to the rulemaking, the staff planned to prepare a separate guidance document for public review and comment. The staff then made the draft proposed rule text (ML111150205) publicly available in May 2011 and solicited public comment on it (76 FR 24831). In August 2011, the staff briefed the Advisory Committee on Reactor Safeguards (ACRS) on the draft proposed rule text, including the basis for the recommended time of compliance. In September 2011, the ACRS issued a Committee Letter Report on the draft documents (ML11256A191).

In a third SRM, designated SRM-COMWDM-11-0002/COMGEA-11-0002, and issued before the proposed rule package was sent to the Commission, the Commission directed the staff to amend the 2011 version of the draft proposed rule, and to seek public comment on the following four regulatory issues:

- Whether licensees should be allowed to use International Commission on Radiological Protection (ICRP) dose methodologies in a site-specific performance assessment for the disposal of LLW.

- Whether the regulations should incorporate a two-tiered approach that establishes a compliance period that covers the reasonably foreseeable future and a longer period of performance that is not established *a priori* but rather is established to evaluate the performance of the site over longer timeframes. The period of performance is developed based on the candidate site characteristics (waste package, waste form, disposal technology, cover technology and geo-hydrology) and the peak dose to a designated receptor.

[1] The staff previously obtained stakeholder feedback on LLW performance assessment methods in connection with the development of NUREG-1573 ("A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities"), including sponsoring a two-day workshop in 1995.

- Whether disposal facilities should be allowed to establish site-specific Waste Acceptance Criteria (WAC) based on the results of the site's performance assessment and intruder analysis.

- Whether the provisions of the revised proposed rule that require the site-specific performance assessments and the development of the site-specific WAC, should specify a compatibility category that ensures alignment between the States and Federal Government on safety fundamentals, while providing the States with the flexibility to determine how to implement these safety requirements.

The SRM directed the staff to provide a revised proposed rule package to the Commission within 18 months. The SRM also directed the staff to conduct public outreach meetings to seek stakeholder comments on the four regulatory issues identified by the Commission and to engage Agreement State representatives. Overall, there has been public support for amending 10 CFR Part 61 along the lines proposed by the Commission. The public comments received on the 2011 and 2012 versions of draft proposed rule language will be discussed in the Commission paper transmitting the revised proposed rule package consistent with SRM-SECY-08-0147 and SRM-COMWDM-11-002/COMGEA-11-0002.

In addition to the comments received on the four regulatory issues identified in SRM-COMWDM-11-002/COMGEA-11-0002, the staff received a number of additional public comments on the integrated 10 CFR Part 61 rulemaking.

DISCUSSION:

SECY-10-0165: In connection with the staff's 2012 public outreach effort, staff received some comments in support of Options 2, 4, and 5 of SECY-10-0165. Some of the stakeholders questioned the need for any additional rulemaking beyond the current limited-scope rulemaking, which suggests that some stakeholders prefer Options 1 and 3 (risk informing the current waste classification tables at §61.55 and developing a site-specific WAC).

Since receiving revised Commission direction in SRM-COMWDM-11-002/COMGEA-11-0002, staff has received some public feedback indicating a waning interest on commenting further on the SECY-10-0165 options. The reason given is that the intent of the Commission's direction in SRM M100617B has been fulfilled through plans to effectively complete two of the five options presented in SECY-10-0165 (specifically Options 1 and 3). For example, both staff and stakeholders recognize that implementing the WAC option, to address the disposal of large quantities of depleted uranium, blended LLW, and other waste streams containing long-lived isotopes, corresponds to Option 3 in SECY-10-0165. Stakeholders are also aware that the staff has received Commission direction to update the § 61.55 waste classification tables and in doing so, determine the classification of depleted uranium; this effort is scheduled to begin in fiscal year 2015. This action corresponds to Option 1 in SECY-10-0165.

The staff recommends that the Commission approve this integrated approach to the rulemaking and terminate efforts associated with pursuing the other options described in SECY-10-0165. Based on the comments received from stakeholders and on the staff analysis (Enclosure 2),

staff sees no compelling reason to engage in further public discussions on the other rulemaking options proposed in SECY-10-0165.

SRM-COMWDM-11-002/COMGEA-11-0002: In response to the Commission's request for feedback on the four regulatory issues identified in the January 2012 SRM, the staff participated in six events, including three public meetings sponsored by the NRC staff.[2] Stakeholder feedback on the four regulatory issues, including feedback from the Agreement States has been summarized in the regulatory basis document that has been developed in support of the current limited-scope rulemaking; those comments do not concern the issues discussed in this Commission paper.

In connection with those discussions, though, stakeholders also provided recommendations on five additional topics that they want the NRC to consider as part of the ongoing limited-scope rulemaking. Those stakeholder recommendations included:

- Updating the existing waste concentration tables at § 61.55 to reflect the latest ICRP dose conversion factors and dose methodologies.

- Revisiting the current regulatory basis for the duration of institutional controls at a LLW disposal facility, currently specified as 100 years in § 61.30, and extending it to 300 years.

- Revisiting earlier assumptions concerning the minimum reporting requirements for certain isotopes cited in the Part 20 Appendix G LLW shipping manifest.

- Developing criteria for the disposal of greater-than-Class C (GTCC) LLW.

- Developing clearance criteria for the disposal of low activity radioactive waste.

With respect to the first stakeholder recommendation to update the § 61.55 waste classification tables, the staff has already received direction from the Commission to budget resources to update those tables; this effort is scheduled to begin in fiscal year 2015. Further, incorporating a site-specific WAC would allow licensees to use updated dose conversion factors and dose methodologies in advance of any update to those tables. Accordingly, the goal of allowing updated dose conversion factors would be achieved through these efforts.

The staff determined that the second stakeholder recommendation to revisit the current regulatory basis for 100 years of active institutional controls is not necessary for three reasons. First, the staff is not aware of any new information that would compel it to re-examine the basis for this time period. Second, the current LLW regulations envision a period of passive controls, extending over a few hundred years following the 100-year period of custodial care, which would provide some additional protection against the disturbance of a LLW disposal site by an inadvertent intruder. Third, the active institutional control period is related to the 10 CFR Part 61 waste classification system used to define Class A LLW. Because the duration of the active institutional controls is closely tied to that system, the staff believes that discussions concerning

[2] Staff summaries of the NRC-sponsored public meetings can be found under the following ADAMS numbers: March 2, 2012 − ML120860043; May 15, 2012 − ML12171A179; and July 19, 2012 − ML12244A494.

the duration of institutional controls are more appropriate for the later initiative to revise and update the § 61.55 waste classification tables.

The third stakeholder recommendation concerns the reporting of certain highly-mobile radionuclides[3] as required by Appendix G of 10 CFR Part 20. The staff determined that there is sufficient interest in the Appendix G LLW shipping manifest requirements pertaining to these radionuclides to warrant further discussions with stakeholders. The staff intends to engage stakeholders in separate discussions on how existing guidance found in NUREG/BR-0204, "Instructions for Completing NRC's Uniform Low-Level Radioactive Waste Manifest," might be amended to address the concerns about shipping manifest requirements. The staff is planning to conduct these discussions in Phoenix, Arizona, following the annual *Waste Management Conference,* in March 2013. Because these revisions involve a staff guidance document that is not directly related to this rulemaking, the staff does not plan to propose any changes to the shipping manifest requirements found in Appendix G of 10 CFR Part 20 at this time.

Considering the fourth stakeholder recommendation, the staff has determined that the current rulemaking is not the appropriate agency action to include the development of GTCC disposal criteria. Under the Low-Level Radioactive Waste Policy Amendments Act of 1985, Section 3(b)(1)(D), Congress assigned the Federal Government (in this case the U.S. Department of Energy) the responsibility for the disposal of GTCC waste. The existing Commission Policy is that GTCC waste shall be disposed of in a deep geologic repository (54 FR 22578) unless an acceptable disposal alternative meets with Commission approval as set forth in 10 CFR § 61.55(a)(2)(iv)).

Finally, the Commission previously decided to defer decision-making on low-activity radioactive waste and clearance levels. The staff is not aware of any significant change that would prompt reconsideration of the Commission's deferred decision.[4] Therefore, the staff does not believe that it is necessary to revisit this topic in this rulemaking.

Based on the stakeholder comments received and on the staff analysis (Enclosure 3), the staff does not recommend that the current limited-scope rulemaking be expanded to include those stakeholder suggestions.

AGREEMENT STATE VIEWS:

As a part of the above-noted activities, staff reached-out to the Agreement States.[5] The staff considered the Agreement States' comments when it developed the conclusions and recommendations described above. The Agreement States provided some feedback on potential revisions to 10 CFR Part 61. As part of those discussions, Agreement State representatives recommended that the staff consider the additional stakeholder-suggested regulatory changes being proposed. Some Agreement State representatives expressed the view that any revisions to 10 CFR Part 61 should not be such that they would compel the states

[3] The specific isotopes in question cited in the public meeting included carbon-14, technectium-99, iodine-129, chlorine-36, and tritium.

[4] See SRM-SECY-05-0054, "Proposed Rule: Radiological Criteria for Controlling the Disposition of Solid Materials," dated June 1, 2005.

[5] These discussions included direct, government-to-government telephone calls with the LLW disposal facility-sited Agreement States as well as a separate meeting with NRC Agreement States on May 15, 2012, in Orlando, Florida.

to receive large quantities of depleted uranium. Views were also expressed that the current 100-year duration for active institutional controls was sufficient whereas others felt that the duration should be extended to 300 years.

COMMITMENT:

The staff will meet with stakeholders in March 2013 to examine how NUREG/BR-0204 might be updated in connection with the reporting of certain isotopes in LLW manifests that might be subject to minimum detection limits.

RECOMMENDATION:

The staff recommends ending further efforts associated with SECY-10-0165. The staff also recommends that the Commission proceed with the integrated approach to revising 10 CFR Part 61. Staff efforts would focus on implementing Commission direction through this integrated limited scope rulemaking described above.

RESOURCES

This paper does not address any resource implications.

COORDINATION:

The Office of the General Counsel has no legal objection to this paper.

/RA by Michael F. Weber for/

R. W. Borchardt
Executive Director
for Operations

Enclosures:
1. 10 CFR Part 61 Rulemaking Assignments
2. Summary of Public Comments
3. Additional Rulemaking Recommendations

10 CFR Part 61 Rulemaking Assignments

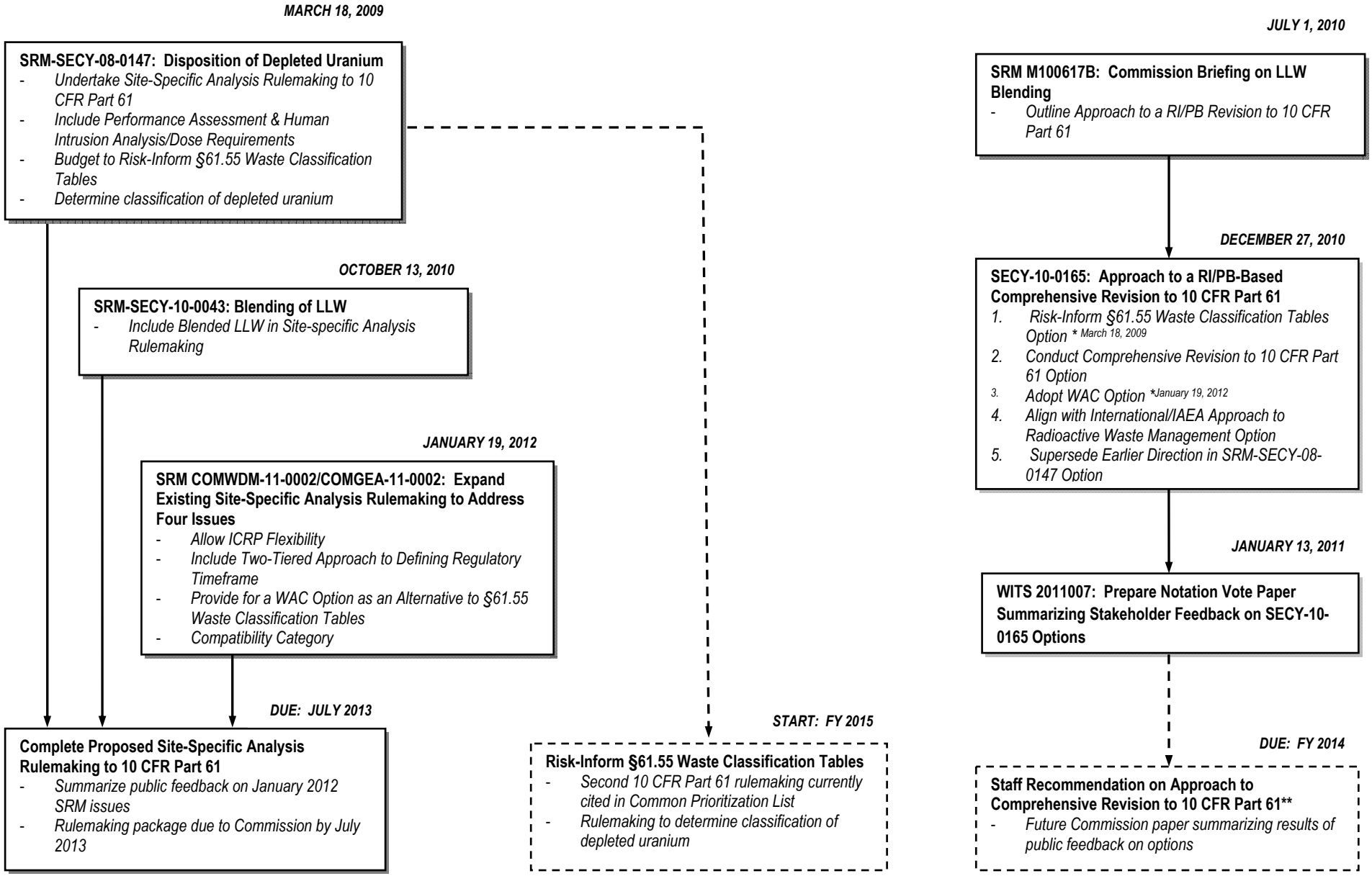

Figure illustrates previous Commission direction to staff. Activities yet to be initiated or completed are indicated by dashed lines.

*** Option accounted for in other Commission direction. Date of direction is indicated.**

**** Staff recommendation in this Commission paper to end this effort.**

Enclosure 1

SUMMARY OF PUBLIC COMMENTS RECEIVED IN RESPONSE TO SECY-10-0165 CONCERNING POTENTIAL CHANGES TO THE COMMERICAL LOW-LEVEL RADIOACTIVE WASTE DISPOSAL REGULATIONS

The Commission previously directed the staff to outline an approach to developing a risk-informed and performance-based revision to 10 CFR Part 61. In response to this direction, the staff prepared SECY-10-0165. As part of that Commission paper, the staff described plans to engage stakeholders and solicit their views on whether there should be amendments to the current 10 CFR Part 61 and if so, what the nature of those amendments should be. The staff held a public meeting on SECY-10-0165 on March 4, 2011, in Phoenix, Arizona, following the annual *Waste Management Symposium*. This was a joint meeting conducted with the U.S. Department of Energy (DOE) who, at the time, was updating its Order 435.1, which is used by DOE to manage Government-generated low-level radioactive waste (LLW). In association with this meeting, the staff also published a *Federal Register* (FR) notice (76 FR 10810; dated February 28, 2011) requesting comments on the regulatory options described in SECY-10-0165. Both a transcript and meeting minutes are available through the Agencywide Document Access and Management System (ADAMS), Accession Nos. ML110900072 and ML12249A215, respectively. Later, the staff used its 2012 public meetings held in response to Staff Requirements Memorandum (SRM)-COMWDM-11-0002/COMGEA-11-0002[1] to also seek feedback on the options and issues described in SECY-10-0165. Only a few comments were received concerning the options proposed in SECY-10-0165 at these meetings.

The comments received on SECY-10-0165 are discussed below; the comments received in response to SRM-COMWDM-11-002/COMGEA-11-002 are discussed in Enclosure 3.

COMMENTS COLLECTED AT PUBLIC MEETINGS:

Stakeholders provided only a few comments on SECY-10-0165 at the March 2011 public meeting. Recommendations for revising the 10 CFR Part 61 regulatory framework included the following: either limiting the changes to those defined by SRM-SECY-08-0147 (i.e., to introduce a site-specific performance assessment and human intrusion analysis requirement to the rule), or adopting the International Atomic Energy Agency (IAEA)[2] system for managing all radioactive waste streams (Option 4). Other stakeholders suggested that the U.S. Nuclear Regulatory Commission (NRC) staff examine how other countries manage LLW before reaching any decision on how to revise the regulations.

Other stakeholders suggested that before proposing any changes to the LLW regulations, the staff should first re-examine the technical assumptions originally used to develop the 10 CFR Part 61 regulations in the late 1970s and early 1980s. The results of this re-examination would form the basis for deciding how to revise 10 CFR Part 61. Another stakeholder suggested that the NRC and DOE adopt essentially identical methods to regulate LLW. Finally, stakeholders recommended that the NRC partner with Agreement States as part of any rulemaking endeavor.

[1] See FR notices dated February 22, 2012 (77 FR 10401), May 8, 2012 (77 FR 26991), and July 11, 2012 (77 FR 40817).

[2] See International Atomic Energy Agency, "Classification of Radioactive Waste – General Safety Guide," Vienna, International Atomic Energy Agency Safety Standards Series No. GSG-1, 2009.

In 2012, the staff participated in six events, including three public meetings sponsored by the NRC. Most of the public comments at these meetings were directed to the Commission's January 2012 SRM, but the staff also received a few comments on the proposals described in SECY-10-0165. Most of the comments came from representatives of Energy*Solutions* and Waste Control Specialists. Representatives for both companies stated that SECY-10-0165 had been overtaken by the Commission's most recent direction in SRM-COMWDM-11-0002/ COMGEA-11-0002, specifically the proposed requirement to allow licensees to establish site-specific Waste Acceptance Criteria (WAC) as an alternative to the existing § 61.55 waste concentration tables. The companies stated that the January 2012 SRM, which essentially selected Option 3 (WAC) from SECY-10-0165, effectively ended further discussion on the SECY-10-0165 proposals. Once the collective rulemaking direction provided in SRM-SECY-08-0147 and SRM-COMWDM-11-0002/COMGEA-11-0002 has been satisfied, these stakeholders believe that no further revisions to 10 CFR Part 61 are necessary.

WRITTEN COMMENTS:

As of September 1, 2012, the staff received six sets of detailed comments in response to SECY-10-0165. In their joint comments, two nuclear consultants suggest that, subject to certain specific proposed changes they recommend, no comprehensive revision is necessary to the Commission's commercial LLW regulations. Upon review, the staff determined that their proposed changes (ML12222A141) align with Commission direction contained in SRM-SECY-08-0147 and SRM-COMWDM-11-0002/COMGEA-11-0002, with one key exception: they propose changing the compatibility designation of § 61.58 ("Alternative requirements for waste classification and characteristics"), currently category 'D' for compatibility to some more restrictive (but unspecified) compatibility designation. In its comments, *Louisiana Energy Services* (ML110960075) suggested that the existing version of 10 CFR Part 61 provides adequate protection of public heath and safety and that no amendments are needed. In a third set of comments (ML11111A135), *The Council on Radionuclides and Radiopharmaceuticals* (CORAR) suggests that the Commission's LLW regulations are outdated and need modernization consistent with current LLW disposal practices and waste streams. In another set of comments (ML12208A094), CORAR later recommended that the Commission approve a comprehensive revision to 10 CFR Part 61 that would align the Commission's commercial LLW regulations with the radioactive waste classification system recommended by the IAEA—this proposal corresponds to Option 4 in SECY-10-0165. This alignment, in CORAR's view, would also lead to the development of a designated disposal site for large quantities of depleted uranium in an intermediate-depth [geologic] setting (CORAR's preferred disposal scenario). CORAR also noted that an intermediate-depth disposal site could also be used for other long-lived waste streams such as greater-than-Class C LLW.[3] Another set of comments, submitted by a private citizen, pertained to the National high-level radioactive waste program at Yucca Mountain, Nevada, and were outside the scope of the staff's February 2011 public comment request. Comments submitted on behalf of *The Health Physics Society* (ML12198A289) supported the option that would allow licensees to establish site-specific WAC for their respective disposal facilities and in doing so, essentially embrace the approach used by DOE to manage government-owned LLW. In the last set of written comments, Energy*Solutions* (ML12222A139) expressed the view that no

[3] The staff also received several similar comments along this line in from stakeholders in connection with SRM-COMWDM-11-0002/COMGEA-11-0002.

additional revisions to 10 CFR Part 61 beyond those already identified in the Commission's January 2012 SRM were necessary and that SECY-10-0165 should be withdrawn. Energy*Solutions* also suggested that the staff's longer-term assignment to update the § 61.55 waste classification tables (Option 1) was not necessary because the ongoing rulemaking to introduce an explicit performance assessment requirement would be sufficient to protect public health and safety.

ANALYSIS:

As summarized above, the staff determined that these comments support its recommendation to proceed with the integrated rulemaking and to cease efforts associated with SECY-10-0165. The integrated rulemaking would achieve the Commission's direction in SRM-COMWDM-11-002/COMEGEA-11-002. Additionally, consistent with earlier Commission direction in SRM-SECY-08-0147, the staff plans to budget for a rulemaking to risk-inform the § 61.55 waste classification tables which is also addressed in SRM-COMWDM-11-002/COMEGEA-11-002.

ADDITIONAL RULEMAKING COMMENTS RECEIVED IN RESPONSE TO SRM-COMWDM-11-002/COMGEA-11-002

Consistent with the Commission's public outreach directive, as described in Staff Requirements Memorandum (SRM) COMWDM-11-0002/COMGEA-11-0002 (dated January 19, 2012), the staff sponsored public meetings seeking stakeholder comments on the Commission's four regulatory issues, directly engaged NRC Agreement State representatives, and participated in other previously-scheduled public events and professional meetings. The types and nature of the staff's public outreach efforts in 2012 are described in the table below.

DATE	2012 EVENT	COMMENT
March 2	NRC-Sponsored Public Meeting (Phoenix, AZ)	Public meeting conducted following *Waste Management 2012* symposium
April 23−24	Spring 2012 Low-Level Radioactive Waste (LLW) Forum Meeting (San Francisco, CA)	Staff presentation
May 8−10	Organization of Agreement States/Conference of Radiation Control Program Directors Annual Meeting (Orlando, FL)	Staff presentation
May 15	NRC-Sponsored Public Meeting (Dallas, TX)	Public Meeting
June 21	Electric Power Research Institute (EPRI) International LLW Conference & Exhibit Show (Tucson, AZ)	Staff presentations
July 19	NRC-Sponsored Public Meeting (Rockville, MD)	Public Meeting (including expert panels)

In addition to expressing views on the four regulatory issues identified by the Commission in its January 2012 SRM, stakeholders provided additional comments (both written and verbal) concerning potential revisions to 10 CFR Part 61. The table below only contains comments that the staff received on the January 2012 SRM and the staff's preliminary observations. Other public comments (including the views of the Agreement States) on the four regulatory issues identified COMWDM-11-0002/COMGEA-11-0002 have been summarized in the regulatory basis document that has been developed in support of the current site-specific analysis rulemaking; those comments do not concern the issues discussed in this Commission paper. That document is now publicly available in ADAMS (ML12306A480).

STAKEHOLDER COMMENTS	PRELIMINARY STAFF OBSERVATIONS
The waste concentration tables at Section 61.55 should be updated to reflect the latest International Commission on Radiological Protection (ICRP) dose conversion factors and dose methodologies.	In the decades following promulgation of the Commission's LLW disposal regulations, the § 61.55 waste classification tables have not been updated although the earlier ICRP recommendations have been superseded by more current editions. The most recent ICRP recommendations concerning radiation and tissue weighting factors are found in Publication 103 (ICRP 2007); however, ICRP Publication 103 has not been generally adopted by the NRC. In 2010, EPRI published an analysis describing how disposal concentration limits and individual disposal risks might hypothetically change based on more recent information available from both the ICRP and the National Council on Radiation Protection and Measurements. Using LLW performance assessment methods, the EPRI-sponsored report by James and others (2010) examines how updated ICRP dose conversion factors, in concert with current commercial LLW disposal practices, might change existing § 61.55 waste classification assignments. The staff has already received direction from the Commission to budget resources to update the § 61.55 waste classification tables; this effort is scheduled to begin in fiscal year 2015. Further, incorporating a site-specific Waste Acceptance Criteria option to the regulations would allow licensees to use updated dose conversion factors and dose methodologies in advance of any update to those tables.
The current regulatory basis for the duration of active institutional controls at a LLW disposal facility, currently specified as 100 years in Section 61.30, should be revisited. The NRC should consider extending it to 300 years.[1] *Any decision to extend the duration of active institutional controls should be supported by a cost/benefit analysis.* *Any decision to extend active institutional controls should be done so independent of any changes that might be made to the § 61.55 waste classification tables. Those tables should be maintained in the regulations.*	In the workshops leading to the development of 10 CFR Part 61, a key policy issue concerned who should own the land used for the disposal of commercial LLW. Public comments generally favored governmental ownership of the disposal site at the end of operations followed by a period of institutional management (or control) providing custodial care. However, during those regional workshops, it was acknowledged that there was no 'magic number' concerning how long 'active' controls should be in place providing the requisite custodial care. It was also recognized that perpetual care of any decommissioned commercial LLW disposal site was an unrealistic expectation as such care would likely be a significant burden on future society. In recognition of the desire to minimize future administrative care burdens associated with commercial LLW disposal sites, a majority of workshop participants at one of the regional public workshops expressed a preference for a 100-year active institutional control period in conjunction with a 400-year period of passive care. In another regional workshop, some participants were only in favor of a 50-year period of active institutional controls. See NUREG-0872 (NRC 1981, p. C-35).

[1] Text in italics below contain additional, related *Stakeholder Comments* on this specific topic.

STAKEHOLDER COMMENTS	PRELIMINARY STAFF OBSERVATIONS
	For the purposes of the 10 CFR Part 61 Environmental Impact Statement (EIS), the staff examined what impact the duration of active institutional controls had on estimated doses. Time durations considered in those analyses (NRC 1981, p. 3-5) ranged from 50 to 300 years. When the 10 CFR Part 61 proposed rule was first published for public comment in 1981, the staff selected 100 years as the preferred alternative (46 FR 38091). This proposal was also based, in part, on unspecified work attributed to the U.S. Environmental Protection Agency (EPA). Several commenters on the initial proposed rule alternatively proposed that the duration of the custodial care period be raised to 300 years (47 FR 57459). In approving the final rule, the Commission noted that it found *no compelling reason* to extend the duration of active custodial care beyond 100 years suggesting that there was no benefit at the margin for a longer-duration caretaker period. In the final rule, the concentration limits for Class A LLW were pegged to the 100-year duration. Moreover, once those controls end, the staff envisions that there will be some persisting societal knowledge concerning the decommissioned LLW disposal site for a period of up to 500 years. See NRC (1989b, p. 10). For its part, in its 1978 recommendations concerning future Federal radiation guidance, EPA suggested that active institutional controls should be relied on for no more than 100 years (43 FR 53263). EPA also suggested that if the radiation hazard extends beyond 100 years, then engineered and natural barriers should be used to essentially contain and isolate the hazards (*Op cit*.). Later, in connection with the development of draft LLW standards in 1983, EPA continued to promote the notion that a 100-year period of active institutional controls could be supported (48 FR 39563). Staff understands that the basis for EPRI's recommendation to extend the duration of active institutional controls may be two-fold. First, it is to better align the domestic policy in this area with international practice. IAEA *General Safety Guide 1*, for example, (IAEA 2009, p. 13) indicates that *some* member countries have in-place a 300-year period of active institutional controls. Second, there is a 1996 analysis evaluating the potential for human intrusion at the U.S. Department of Energy LLW disposal site located in Area 3 of the Nevada National Security Site (formerly the Nevada Test Site). In this analysis (Black and others 1997) the authors found that the likelihood of inadvertent intrusion into the disposal site over a 10,000-year period was, depending on the scenario, 10% or less. In a subsequent presentation of those results by one of the study's authors, it was argued that a longer-duration active institutional control period — between 250 to 300 years — might now be appropriate for near-surface disposal facilities (P. Black/Neptune & Associates, personal communication, June 2012).

STAKEHOLDER COMMENTS	PRELIMINARY STAFF OBSERVATIONS
	Since the 100-year duration for active institutional controls is closely tied to the 10 CFR Part 61 waste classification system, consideration of the duration of institutional controls is more appropriate for the Fiscal Year 2015 initiative to revise and update the § 61.55 waste classification tables.
The earlier assumptions concerning certain isotopes cited in the 10 CFR Part 20 Appendix G LLW shipping manifest should be revisited. The isotopes in question are the so-called phantom 4 isotopes (i.e., carbon-14, technetium-99, iodine-129, and tritium). Stakeholders suggested that C-14, Tc-99, and I-129 are being over-estimated in dose assessments because the 10 CFR Part 20 LLW manifest requirement relies on a default value for the purposes of accounting even when the amount of the physical isotope in question is below some lower limit of detection threshold. Chlorine-36 was also cited as an isotope that was also possibly over-reported. It was also suggested the NUREG/BR-0204 needs to be re-written.	In 1982, during the review of the Draft 10 CFR Part 61 EIS that supported the initial proposed rule, commenters questioned the 10 CFR Part 20 manifest reporting requirement for specific radionuclides; the radionuclides in question were C-14, Tc-99, I-129, and H-3. In the 10 CFR Part 61 Final EIS (NRC 1982, p. 5-43), the staff found that these same radionuclides were key contributors to the groundwater pathway dose. As a consequence, the NRC staff reiterated that there was a continued need to report on those four radionuclides. In 1995 revisions to 10 CFR Part 20 (60 FR 15649), the staff continued to maintain the manifest reporting requirement need for these radionuclides. Nevertheless, existing staff guidance found in NUREG/BR-0204 (NRC 1998) might be amended to address the concerns related to the over-reporting of certain radionuclides currently subject to minimum detection limits. Staff intends to conduct a public meeting on this topic in 2013 to explore how the guidance might be updated to reflect improvements in radionuclide detection methods.
Criteria for the disposal of greater-than-Class C (GTCC) LLW should be developed.	In 1989, the Commission amended § 61.55(b)(2)(iv) to permit the disposal of GTCC LLW in a geologic repository licensed under 10 CFR Part 60 or in some other type of disposal facility design approved by the Commission (54 FR 22578). Previously, both the Commission (NRC 1989a) and the former Office of Technology Assessment (1989) concluded that given the quantities of GTCC and the likely costs of disposal, a separate disposal facility for GTCC LLW was not justified and that disposal in a deep geologic repository for spent nuclear fuel and other high-level radioactive waste was an acceptable alternative. Consistent with its disposal obligation, the U.S. Department of Energy (DOE or the Department) later issued a Draft EIS for GTCC LLW, for public comment in 2011 (76 FR 10574). In a February 2011 letter (Gelles 2011), DOE invited the NRC to comment of the GTCC Draft EIS. For the purposes of this particular EIS, NRC is a *commenting* agency. NRC's comments can be found in Camper (2011).

STAKEHOLDER COMMENTS	PRELIMINARY STAFF OBSERVATIONS
	Before DOE makes a final decision on a disposal method or location, the Department must submit a report to Congress that includes a description of the disposal alternatives under consideration and await Congressional approval. Certain alternatives could involve disposal options that may not require a NRC license under 10 CFR Part 61.
Clearance criteria for the disposal of low-activity radioactive waste (LAW) should be developed.	LAW can have radionuclide concentrations greater than background, but at concentrations significantly less than Class A limits. LAW is not defined by the Atomic Energy Act. EPA (1988) has previously suggested that there are as many as 70 potential sources of LAW. EPA (2000) has also suggested that the volume of material in question generated annually is about four orders of magnitude greater in comparison to quantities of so-called classic 10 CFR Part 61 types of LLW (10^9 ft^3 for LAW compared to 10^5 ft^3 for commercial LLW) leading to concerns over competition for limited disposal space at currently operating LLW sites. In Section 10 of the *Low-level Radioactive Waste Policy Amendments Act of 1985*, Congress directed the NRC to establish standards for identifying radioactive waste streams (i.e., LAW) that might be exempt from regulation under 10 CFR Part 61. Such attempts by the NRC in the past were unsuccessful and in 1992, Congress revoked the Commission's earlier *Policy Statements* on Below Regulatory Concern pertaining to LAW. See Ryan and others (2007, p. 21). In 2002, the Commission directed the staff to explore and document the feasibility of conditional or restricted clearance of solid materials that originate in restricted or impacted areas of NRC-licensed facilities but which have no, or very small amounts of, residual radioactivity resulting from licensed operations under 10 CFR Part 20. In response, the staff worked with EPA and prepared a draft proposed rule for public comment in 2005. See SECY-05-0054 (NRC 2005). Shortly thereafter, the Commission directed the staff not to make the rule available for public comment, and instead re-directed the staff to continue to evaluate LAW exemption requests using alternate procedures. See Vietti-Cook (2005). Accordingly, licensees may choose to dispose of some LLW at facilities other than 10 CFR Part 61 LLW disposal facilities by using such alternate procedures. (See ML12065A038). Also in 2005, Congress amended the AEA, extending NRC control over additional forms of radioactive material — specifically, short-lived naturally occurring radioactive material (NORM) and naturally-occurring and accelerator-produced radioactive materials (NARM) waste residues. However, this authority did not extend to the more abundant diffuse sources of LAW cited by the EPA in its 2000 study. In 2007, the Commission amended its regulations to include these additional radioactive materials consistent with Section 11(e)(3) of the Atomic Energy Act, as amended (NRC 2007).

STAKEHOLDER COMMENTS	PRELIMINARY STAFF OBSERVATIONS
	In 2003, EPA issued an advance notice of proposed rulemaking or ANPR (68 FR 65120), seeking comment on approaches to ensure a more consistent approach to the management of LAW. No action has been taken since publication of the ANPR. In 2005, the Commission previously decided to defer any decision making on LAW.[2] Finally, in 2008, in response to a Commission request, NRC's former Advisory Committee on Nuclear Waste and Materials examined the LAW disposal issue. That review found that some States permitted the disposal of LAW in both Subtitle-C (hazardous) and Subtitle-D (municipal) disposal facilities, licensed under the Resource Conservation and Recovery Act (RCRA) regulations, depending on whether the waste steam in question was chemically-mixed. See Ryan (2008).

References

Black, P., B. Moore, B. Crowe, M. Hooten, K. Black, S. Rawlinson, and L. Barker, "A common-sense probabilistic approach to assessing inadvertent human intrusion into low-level radioactive waste at the Nevada Test Site," in *Proceedings of the Waste Management '97 Conference, March 2-7, 1997, Tucson, Arizona,* Conference Preprint LA-UR-97-728.

Camper, L.W., Director, Division of Waste Management and Environmental Policy/U.S. Nuclear Regulatory Commission, Letter to C. Gelles, Office of Disposal Operations/U.S. Department of Energy, Subject: "Response to the Department of Energy's Request for the U.S. Nuclear Regulatory Commission's Perspective on Four Specific Topics in the Draft Environmental Impact Statement for the Disposal of Greater-than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste," August 5, 2011. [ML111800487]

Gelles, C., Director, Office of Disposal Operations/U.S. Department of Energy, Letter to L.W. Camper, Director, Division of Waste Management and Environmental Policy/U.S. Nuclear Regulatory Commission, General Subject: "DOE's 2011 Draft Environmental Impact Statement of GTCC and GTCC-like LLW," February 16, 2011. [ML110690783]

International Atomic Energy Agency, "Classification of Radioactive Waste. General Safety Guide," Vienna, IAEA General Safety Standards Series No. GSG-1, 2009.

[2] See SRM-SECY-05-0054, dated June 1, 2005.

International Commission on Radiological Protection, “The 2007 Recommendations of the International Commission on Radiological Protection,” *Annals of the ICRP*, Vol. 37, Nos. 2-4, 2007. [ICRP Publication 103.]

James, D., T. Kalinowski, and J. Bohnsak, “Options for Improved Low Level Waste Disposal Using 10 CFR 61.58,” Palo Alto, Electric Power Research Institute, Technical Report 1021098, December 2010.

U.S. Environmental Protection Agency, “Criteria for Radioactive Wastes [Invitation for Comment: Environmental Protection]; *Federal Register*, vol. 43, no. 221, pp. 53262-53267, November 15, 1978.

U.S. Environmental Protection Agency, “Environmental Radiation Protection Standards for Low-Level Radioactive Waste Disposal [Advanced Notice of Proposed Rulemaking]; *Federal Register*, vol. 48, no. 170, p. 39563, August 31, 1983.

U.S. Environmental Protection Agency, “Evaluation of EPA’s Guidelines for Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) – Report to Congress,” EPA 402-R-00-01, June 2000.

U.S. Environmental Protection Agency, “Approaches to an Integrated Framework for Management and Disposal of Low-Activity Waste: Advance Notice of Proposed Rulemaking,” *Federal Register*, Vol. 68, No. 222, pp. 65119–65151, November 18, 2003.

U.S. Department of Energy, “Notice of Availability of the Draft Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC–Like Waste, and Notice of Public Hearings [Notice of Availability],” *Federal Register*, Vol. 76, No. 38, pp. 10574–10577, February 25, 2011.

U.S. Nuclear Regulatory Commission, “Licensing Requirements for Land Burial of Radioactive Waste: Proposed Rulemaking,” *Federal Register*, Vol. 46, No. 142, pp. 38081–38105, July 24, 1981.

U.S. Nuclear Regulatory Commission, “Draft Environmental Impact Statement on 10 CFR Part 61: Licensing Requirements for Land Disposal of Radioactive Wastes,” Office of Nuclear Material Safety and Safeguards, NUREG-0782, 4 vols., September 1981.

U.S. Nuclear Regulatory Commission, “Final Environmental Impact Statement on 10 CFR Part 61: Licensing Requirements for Land Disposal of Radioactive Wastes,” Office of Nuclear Material Safety and Safeguards, NUREG-0945, 3 vols., November 1982.

U.S. Nuclear Regulatory Commission, “Licensing Requirements for Land Disposal of Radioactive Waste: Final Rule,” *Federal Register*, Vol. 47, No. 248, pp. 57446–57482, December 27, 1982.

U.S. Nuclear Regulatory Commission, “Disposal of Radioactive Wastes: Final Rule,” *Federal Register*, Vol. 54, No. 100, pp. 22578–22583, May 25, 1989.

U.S. Nuclear Regulatory Commission, “Regulating the Disposal of Low-Level Radioactive Waste. A Guide to the U.S. Nuclear Regulatory Commission’s 10 CFR Part 61,” Office of Nuclear Material Safety and Safeguards, NUREG/BR-0121, August 1989.

U.S. Nuclear Regulatory Commission, “Low-Level Waste Shipment Manifest Information and Reporting: Final Rule,” *Federal Register*, Vol. 60, No. 58, pp. 15649–15667, March 27, 1995.

U.S. Nuclear Regulatory Commission, “Instructions for Completing NRC’s Uniform Low-level Radioactive Waste Manifest,” NUREG/BR-0204, July 1998.

U.S. Nuclear Regulatory Commission, “Proposed Rule: Radiological Criteria for Controlling the Disposition of Solid Materials (RIN 3150-AH18),” SECY-05-0054, March 31, 2005. [ML050750495]

U.S. Nuclear Regulatory Commission, “Requirements for Expanded Definition of Byproduct Material: Proposed Rule,” *Federal Register*, Vol. 71, No. 145, pp. 42952–42994, July 28, 2006.

U.S. Nuclear Regulatory Commission, “Final Rule: Requirements for Expanded Definition of Byproduct Material (RIN: 3150-AH84),” SECY-07-0062, May 14, 2007. [ML070720153]

Office of Technology Assessment, “An Evaluation of Options for Managing Greater-Than-Class C Low-Level Radioactive Waste – Background Paper,” U.S. Congress, OTA-BP-0-50, October 1988.

Ryan, M.T., M.P. Lee, and H.J. Larson, “History and Framework of Commercial Low-Level Radioactive Waste Management in the United States: ACNW White Paper,” U.S. Nuclear Regulatory Commission, NUREG-1853, January 2007.

Ryan, M.T., Chairman/Advisory Committee on Nuclear Materials and Waste, Letter to the Honorable D.E. Klein, Chairman/U.S. Nuclear Regulatory Commission, Subject: Advisory Committee on Nuclear Materials and Waste Low-Activity Radioactive Waste Working Group Meeting of February 13-14, 2008,” April 30, 2008. [ML081220463]

Vietti-Cook, A.L., Secretary/U.S. Nuclear Regulatory Commission, Memorandum to L.A. Reyes, Executive Director for Operations/ U.S. Nuclear Regulatory Commission, Subject: “Staff Requirements − SECY-05-0054 − Proposed Rule: Radiological Criteria for Controlling the Disposition of Solid Materials (RIN 3150-AH18),” June 1, 2005. [ML051520185]