

**Pre-Audit Submittal Table for Final Status Survey Final Report Volume 3, Chapter 1 – Land Survey Areas (LSA) Overview  
(License No. SNM-00033, Docket No. 070-00036)**

The purpose of the pre-submittal audit is to provide general guidance on the content that is expected in the Final Status Survey Report (FSSR) according to NUREG 1757, Vol 2, Rev 1. The table is used to facilitate discussions on the structure and content of draft reports and to help ensure that the final report will contain the relevant information the staff will need to carry out its review. Note that review of a draft report does not constitute final acceptance or approval of the final FSSR and there may be additional changes necessary during the staff's review of the final report.

ID	Page No.	Issues/Paragraph	Discussion Points	Proposed Resolution	Westinghouse Response	NRC Discussion	Path Forward
1.	vi of vii and 36	Missing a few acronyms...including: RG DCGLso DCGLpd	The Abbreviations and Acronyms list does not define these terms. They are discussed in Section 3.2.4 Buried Piping/ Structure Dose, specifically in regards to buried piping.  RG is defined on page 5, but is not included in the acronym list.	Please define the terms both in the Acronym list and upon first use in the text.			
2.	1	Procedures list	HDP Procedures are missing the revision number.	Add the current revision number to the procdures.			
3.	3, 10	Expectations versus Reality of Excavations	Did the excavations reveal what was expected? For example, the nominal dimensions were outlined in the regulations, but that is not necessarily what size burial pit was found. Also, there were logbooks, but they were missing some significant information (e.g., radium plates, mercury) If the AEC regulations were not followed, then are they relevant?  On pg 10 it states, "Ultimately, the excavation remediation activities bore out what was expected."	Discuss whether the excavations resulted in what was expected.  On pg 10, discuss this statement in the context that unexpected material and debris was found in the burial pits (e.g., radium plates)			
4.	4-5	Fissile Concentration/ NCS Limits; Thickness of Lift for NCS Surveys	In general the discussion about NCS surveys is somewhat hard to follow and its relevance to the FSSR is not readily communicated.  For example it is stated, "Screening typically involved duplicate performance of radiological surveys using sodium iodide scintillation detectors, and defined appropriate volumes of material to ensure that NCS limits were not exceeded. The objective of the in-situ radiological surveys was to identify any item or region of soil/waste with a fissile concentration exceeding 1 gram U-235 in any contiguous 10 liter volume." The threshold is presented as 1 gU-235/10L on pg 4 and then as 0.1g U-235/L on pg 5. This does not reflect what was indicated in HDP-PR-HP-601 which is 15 grams in a non-conforming item or an average of 0.1 grams uniformly distributed.  The first and second bullet on pg 5 do not reflect the change to 6 inch lifts. The last paragraph should reference the procdures (HDP-PR-HP-601) that were impacted by the change to 6 inch lifts.  Also, the discussion regarding the Criticality Safety Controls to identify 40 g or segregate 15 g of U-235 is confusing and the connection with FSS is lacking.	Describe "typically" and any execptions to duplicate performance of surveys. Explain the fissile concentration threshold as it was employed in the field. Revise bullets and last paragraph on pg 5 accordingly. Please relate how the Criticality Safety controls are being used to demonstrate compliance with the FSS.			
5.	7	Exemptions to visual inspection	"In conjunction with the GWS, remediation areas were required to be visually inspected prior to exhumation of any material, unless specifically exempted."	Please explain the specific exemptions.			
6.	7	Core Bores; 1 <sup>st</sup> and 2 <sup>nd</sup> paragraphs	"The core bores were required to be dug 7 feet deep from the original pre-excavation surface, but at least 3 feet from the excavated surface, depending on the depth of the excavation." How were the core bores performed (methodology)? What is meant by deep "from"? Was the intention to say "deeper than"?  Report states that the core cuttings were evaluated against a different criteria than the bore hole. Why? What is the significance?	Please claify the methodology for performing core bores and intent of language.  Please explain the relevance of the core bore data to the FSSR. Is it being used to justify that the end of the burial pit had been reached, or otherwise used to determine compliance with the release criteria? The			

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			<p>"If the core bore data was less than the above criteria and no waste material indicative of a burial pit was found, it was used as a decision point that assumed the bottom of the burial pit had been reached and criticality controls were no longer necessary. Even though additional radiological remediation may still have been required for the soil surrounding a burial pit, by eliminating the NCS controls, work could progress at a faster pace and with fewer resources. (As a note, core bore data was not used in the development of the FSS Plan. It was only used in the assessment of the need for NCS controls.)"</p>	<p>relevance of this data to the FSS report is unclear.</p>			
7.	8-9	<p>Tc-99 mobility statements are not consistent with site-specific Kds.</p> <p>Statement about finding only Tc-99 at depth should be qualified.</p>	<p>It is stated, "Because Tc-99 is less likely to bind to soil and is more mobile it will travel more readily with water." However, a Kd of 71 cm<sup>3</sup>/g (Deep Layer) or 246 cm<sup>3</sup>/g (Surface, Root, and Uniform) was assigned for uranium and a Kd of 106 cm<sup>3</sup>/g was assigned for technetium in the contaminated and unsaturated zones based on site specific measurements.</p> <p>It is also stated, "While both Tc-99 and uranium have been identified near the surface, only Tc-99 has been identified at depth." Is this only referring to the Evaporation Pond Data? Only at depths of 30 ft? Does this mean that only Tc-99 was identified at values that were a significant fraction of the DCGLs or detected at all? For example, Table 4-14 in the HRCR which shows that uranium was detected in the Deep Zone samples (below 5 ft). Table 14-20 also showed some detects for Uranium.</p>	<p>Please describe how the statements about Tc-99 mobility versus uranium mobility are consistent with the site-specific Kd assumptions given that the site specific Kds assigned were very similar.</p> <p>Please refer to the data that qualifies the statement that only Tc-99 has been found at depth.</p> <p>In order to help explain the Tc-99/limestone connection, a reference to Section 2.10 could be included here.</p>			
8.	8	<p>4<sup>th</sup> paragraph reference to Excavation DCGL</p>	<p>"None of the results were in excess of the Tc-99 Uniform DCGL of 25.1 pCi/g or the Excavation DCGL value of 74.0 pCi/g." Should this sentence compare results to the Root DCGL instead of the Excavation DCGL?</p>	<p>Please revise paragraph as needed.</p>			
9.	9	<p>Measurement error threshold value</p>	<p>Term is not defined.</p>	<p>Please define measurement error threshold value.</p>			
10.	9	<p>Tc-99 Migration in vicinity of hybrid wells.</p>	<p>The general discussion of Tc-99 contamination in the vicinity of the hybrid wells is not detailed enough to alleviate all concern regarding the hybrid wells serving as a possible conduit.</p>	<p>Please include a detailed discussion about Tc-99 remediation in the Burial Pit Area in a subsequent Chapter(s) on the Burial Pit Area, or groundwater.</p>			
11.	9	<p>Phreatic surface as reason burial pits do not exist below excavation.</p>	<p>It is stated that "While in some locations it is clearly demonstrated that another burial pit could not exist because the excavation went to the phreatic surface...". Following times of heavy precipitation, higher levels of groundwater have been present at the site. It is possible that an area that was above the phreatic surface when the burial pits were placed to be below the phreatic surface because of an increase in the groundwater table.</p>	<p>Discuss the possibility that a burial pit could exist below the current phreatic surface in due to groundwater table fluctuation since the burial pits were created.</p>			
12.	10	<p>Visual evidence of reaching bottom of burial pit.</p>	<p>"Once the bottom of the burial pit was reached it was evident by the change in color of the soil, the hardness difference between the softer burial pit material and the hard native soil, a disappearance of debris, and, a sharp decline in radiological readings."</p>	<p>Please provide any photographs supporting this statement that show the bottom of the burial pit and change in color.</p>			
13.	11	<p>Soil Borings</p>	<p>"Based on the review, none of the sample results showed there was contamination at a depth that would be indicative of a second burial pit below an existing burial pit."</p>	<p>Discuss which radionuclides of concern were measured in the soil borings.</p>			
14.	12	<p>Undocumented Burial Pits</p>	<p>"Additionally, no evidence was found to indicate that burial of known uranium bearing materials (i.e., levels greater than free-release criteria) occurred during this time period."</p>	<p>Discuss what evidence was sought after to potentially indicate that burial of uranium materials.</p>			

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			<p>"Initially, the entire area where documented Burial Pits were expected to be found was excavated to a depth of at least 4 ft to identify any burials." Figure 2-21 doesn't seem to support this statement? Its hard to discern between the darkest blue and other dark blue in the Figure which tells where was excavated to 4 ft. For example, were no burials expected in the purple or darkest blue areas on Figure 2-21 since these were not excavated to depth of 4 ft?</p> <p>"No documented burials were located outside of the area where the burial pit logs indicated they would be, but some undocumented burials were located within Documented Burial Area." How many undocumented burials were located within the Documented Burial Area? Was it close to 25 since the top of the page mentions 25 undocumented burials could have existed?</p>	<p>Please discuss if entire burial pit area was excavated to 4 ft. and how this agrees with the contours shown in Fig 2-21.</p> <p>Discuss the possibility of potential burial pits existing between the burial pits which were remediated or along the edges of the burial pit area.</p>			
15.	14	2 <sup>nd</sup> to last bullet	Sentence is a fragment.	Revise sentence.			
16.	15	1 <sup>st</sup> bullet about RASS	States that RASS verified that DCGLs were met. A RASS is used to estimate if the compliance goals can be met but is not usually used to verify the DCGLs.	Revise sentence.			
17.	18-19	Evaporation Pond Area sampling of Tc-99.	Last paragraph of this section on page 18-19 states that a sample of 221 pCi/g was found, and that later sampling efforts did not find any concentrations above the DCGL. The discrepancy between the two sampling efforts should be better described. Is there reasonable assurance the contamination was remediated in nearby areas where it was originally found?	Include additional discussion about the Tc-99 at depth in the Evaporation Pond Area.			
18.	19	Natural Gas Pipeline	<p>"This report shows that remediation activities around the NGP may be minimized while still meeting regulatory requirements for unrestricted release, maintaining doses to members of the public ALARA, ensuring worker safety, and maintaining the integrity of the NGP."</p> <p>It is unclear which report is being referred to here. Also, review of the FSS data for the pipeline has not been conducted so this statement should be qualified to say that the purpose of the report was to provide data that could be used to compare against regulatory requirements as opposed to stating that it shows regulatory requirements are met.</p>	Provide the report which is being referenced. Qualify the statement about meeting regulatory requirements.			
19.	21	1 <sup>st</sup> paragraph, states "some exceptions in LSA-05-01."	Explain these exceptions and their impact in subsequent chapter associated with LSA-05-01"	Incorporate into subsequent Chapter.			
20.	21-22	Septic Tank Contaminaton	<p>"Radiological surveys and sampling of the septic tank only identified low levels of residual contamination and no discrete quantities of SNM." The staff understand that a portion of the septic tank remains and is therefore interested in the contamination which was found.</p> <p>Can you quantify what is meant by low levels of contamination and discrete quantities?</p>	Please quantify the contamination which was found in the septic tank.			
21.	22-23	Site Pond, Creek Area	<p>"In 1995, it was identified that occasional upsets in the operation of the SWTP over a period of time had resulted in contamination collecting in the Site Creek sediments."</p> <p>Was radioactive contamination expected to be present in the SWTP?</p> <p>"Samples taken at the confluence of the Site Creek and Joachim Creek indicated contamination had not extended to Joachim Creek."</p> <p>Was the contamination limited to a small part of the creek? Had it traveled downstream in the Site Creek much? What evidence does WEC have to support this statement? How many samples were taken and where? In the water or sediment?</p>	Please describe if contamination was expected in the SWTP and describe the occasional upsets in more detail or give an example. Please describe if additional details on the Site and Joachim Creek contamination will be provided in subsequent chapters.			

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22.	24	Tc-99 in Documented Burial Pit Area	<p>"In summary, based on sample results, it has been determined that there is very little probability that Tc-99 could exist at levels that exceed the excavation DCGL at a depth below where excavation activities ceased because there was very little Tc-99 that existed in the majority of the burial pit area to begin with."</p> <p>The NRC is unable to evaluate this statement (or similar statements) without seeing the data in subsequent chapters.</p>	Note that the NRC will only be able to evaluate broad scoped summary statements after all subsequent data has been provided.			
23.	26	Class 2 and Class 3 Survey Areas	It seems late in the document to first introduce the concept of Class 1, 2 and 3 Survey Areas. It seems that the point of this section is to state that some reclassification was required. However, the content of this section doesn't provide any info on how these survey units were surveyed.	Please expand on this section to include survey methods.			
24.	Table 5-1, Table on Page 46	Footnote to table references Section 14	Footnote in Table 5-1 references Section 14, which is probably a cut-paste error from the DP. Footnote in Table of Distribution Ratios includes reference to "Reference 14-4"	Please check for Section 14 references throughout and adjust as appropriate.			
25.	30	Section 3.0, Release Criteria, etc.	Insignificant Radionuclides are not discussed. Please discuss them here or refer to discussion in Vol 1 Chap 1 if included in that Chapter.	Describe non-significant contaminants and how they are accounted for in DCGLs.			
26.	31	3.1 LSA Release Criteria	The terminology of CSM, approach, or geometry does not seem to be consistent within this section. This is confusing because it discusses 4 CSMs, but in reality there are 2 different approaches (or conceptual models). One is the Uniform approach and the second is the 3-layer approach. There were four RESRAD models since each of the three layer DCGL is 25 mrem. It would seem more appropriate to refer to four geometries and 2 conceptual approaches for determining compliance.	Please review for consistent use of terminology.			
27.	32	Uniform DCGLs are not more conservative	<p>"It was believed that as a result of the overall quality of the soil remediation that was conducted that the vast majority of the LSAs would meet the Uniform DCGL criteria, which was the most conservative approach."</p> <p>The Uniform and 3-layer approaches are equally conservative in that they both equate to 25 mrem. One is not more conservative than the other.</p>	Please revise given that Uniform is not more conservative than the 3-layer approach.			
28.	32	Using only one or two of the three layers in the Three-layer approach for SOF.	<p>"In some cases, all three layers may not be present, for example, when there is no contamination below the depth of 1.5 m. In this case, compliance is demonstrated using the unity rule for the Surface and Root DCGLs only. If no contamination is present below 0.15 m, compliance would be demonstrated by comparison to the Surface DCGL only."</p> <p>Note that WEC will need to have sufficient evidence (e.g., sampling data) that there is no contamination below 1.5m or below the surface layer in these cases.</p>	Demonstrating compliance with the 3-layer approach but only including the SOFs from one or two layers requires sufficient evidence that there is no underlying contamination.			
29.	33, 35	Elevated Areas and Area Factors, Elevated Area Dose	<p>This text of document should describe Constraints 1 and 2 assumed for calculating the AF in Table 3-2. It should describe when to use AFs in Table 3-2a versus 3-2b or 3-2c. As is, many AFs are presented and there is little discussion about when it is appropriate to apply each specific AF.</p> <p>The equation on pg 35 and accompanying context do not specify which soil AFs should be used in which circumstances. This section should include a discussion about UNIFORM area factor versus 3-layer approach and how that impacts the AFs which might be applied. For example, what if the elevated area is in both the</p>	Describe assumptions for calculating the AF in Table 3-2. Describe when to use which AF.			

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			Surface and Root or the Root and Deep layers? Also, the report states that linear or exponential interpolation will be used but does not provide the circumstance for using one versus the other.				
30.	<b>Examples: 32, 47, 51</b>	Section 3.1.1, final paragraph discusses what has transpired to date, in regards as to which DCGL has been applied thus far (present tense), Section 6 discusses the final status survey as a plan rather than what has occurred (future tense), and Section 6.2.2 reverts to, what actually occurred past tense.	There are numerous other tense shifts throughout that do not make sense for a report that is intended to represent the site's final status. This would be considered a minor issue in most cases. However, as a report, it should contain complete information as to what occurred at the site. However, in some cases the document discusses "to date" (present tense) information rather than at completion information (past tense). As this document represents a final status report, the expectation is that information contained would be perhaps a summary of what was planned with the primary emphasis on the results and what actually occurred. Much of the document is prepared as though it were a plan (future tense).	Consider appropriate revisions to ensure this Chapter and Volume contains complete final status survey documentation to minimize or eliminate future revisions that may be required to account for activities that have not yet been completed.			
31.	<b>32 and 33</b>	The data acquirement methods for the multi-stratum DCGL compliance determination is a complex issue, requiring data (soil sample results) from excavation bases, soil beneath the base if the Root and/or Deep Zones had not been reached, side wall samples (to account for soil volumes between excavations if samples from the 3 zones were not collected in the manner specified on page 51 of 112 (Section 6.2.1), and lastly reuse or offsite backfill soil.	The document would benefit by an early discussion of, and examples for, how compliance will be demonstrated and how an adequate number of samples were acquired to satisfy the requirements for the multi-stratum DCGL approach. It would be beneficial if all information relevant to how this will be accomplished were provided at this point in the document, i.e. Section 3.1.1. However, the required information is currently located within different sections that the reader must identify before the question can be answered.  The method for acquiring most of the necessary data are not addressed until Section 6.2.1. Related comments regarding inclusion of side wall samples are also provided below.	Consider providing a complete discussion with an example in this section to clearly illustrate what is a relative complex compliane demonstration method. HEM 13-10 Chapter 14 Rev 1-2 contains a rudimentary example of a scenario that could be expanded to better illustrate the final configuration of soil, and the origin of the samples from which the data will be used to demonstrate compliance.			
32.	<b>and 33</b>	Section 3.2.1 makes the following statement: Any samples taken within an elevated area, including systematic...used to evaluate the the average radioactivity within the elevated area, will be excluded from the survey unit average.	Request clarification regarding the statement concerning removing systematic samples from the survey unit average. If the systematic samples referred to are part of the systematic FSS sample population, all such samples are included in the data assessment. However, the language could be interpreted to mean that an area of elevated activity was identified and a separate systematic sampling plan was prepared and implemented to assess only the area of elevated activity, then the systematic samples referred to are a separate population and therefore not inclusive of the FSS systematic sample population for the survey unit. Also request clarification on whether the C in the Equation for Average SOF weighted includes all systematic samples, or if it is intended to exclude the elevated samples. Ci, R Average concentration of ith measured ROCs in the Root stratum layer;  The text also states that biased sampling results less than the DCGLw will typically be excluded from the survey unit average, but may be included with caution. Biased samples should not be included in the determination of the survey unit average.	Please clarify the intent of the language.			
33.	<b>34</b>	Average SOF equations	Equations should be numbered. The top equation should indicate that it uses the Uniform DCGL. In general there should be additional discussion in this section along with figures that describe the various scenarios that might take place in a Survey Unit (e.g., contamination in all three layers, overlapping contamination in some layers but not across the entire Survey Unit, reuse soil on top of contaminated layers, etc.) It seems as if the Average SOF weighted equation is appropriate if there is only contamination present in one layer within any given	Please clafiy the various scenarios for implementing the 3-layer approach (average weighted SOF) and provide a basis for the fractional areas that will be assumed.			

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			vertical slice. There should be discussion of the possibility that all 3 layers have some contamination (where all three fractional terms are eliminated or where they are all equal to 1). This section should also discuss how the fractional areas (weights) are planned to be approximated by the number of samples and give the basis for that assumption.				
34.	36	Section 3.2.3 states "If there are positive results above background during post remediation sampling..."	The definition of above background is not provided.	Please include or provide reference to the definition for above background and the justification for the selected threshold.			
35.	36	Section 3.2.3, Groundwater Dose	The last sentence seems to be a run-on sentence. In general, this paragraph seems to be a plan for a plan. What kind of investigations would be performed and how would WEC determine if the investigations are necessary?	Please clarify the groundwater investigations and when they would be determined to be necessary.			
36.	36	Section 3.2.4. Buried Piping/Structure Dose	The relevance of this section to the Volume on LSAs is not apparent. Much of this text seems better suited for the Volume on Piping Survey Units? Also, DCGLso and DCGLpd are not defined.	Please clarify the relevance of this information to this Vol 3, Chap 1. Define acronyms.			
37.	37	Section 3.2.5, Reuse Soil Dose	In general, this section might need revision based on comments from Vol 2 Chap 1. It might be more efficient to refer to Vol 2 to avoid problems with keeping the the language consistent between revisions. This section should instead focus on how the reuse SOF will be calculated which will be added to the rest of the SOF for the Land Survey Unit. For example, which approach (Uniform versus 3-Layer) will be applied under which circumstances and how the appropriate SOF of the reuse pile will be calculated.  "However, in June 2015, the NRC concluded that the reuse stockpiles were not suitable for use as backfill when evaluated to the Uniform DCGLw criteria based upon an evaluation in which the analytical results were evaluated by the application of a Modified Investigation Level (MIL) for Tc-99." This sentence is confusing. I think the verb application is misused here. It seems to be saying that when compared to the Uniform Tc-99 MIL, the results exceeded the MIL and therefore the reuse stockpiles were not suitable for reuse?  "As a conservative measure HDP determined it would continue to utilize the Uniform DCGLw to evaluate the dose impacts of using a particular stockpile of soil as backfill, but also restrict the placement of the reuse soil based on compliance with the MIL for the Surface or Deep CSM's. Survey units in which Reuse Stockpiles were to be placed would be evaluated using the DCGLs for the three stratum conceptual site model rather than the uniform DCGLw which would facilitate the use of the Surface and Excavation DCGLs for the reuse soil stockpiles." Please clarify the intent of this paragraph. The first sentence seems to be conflict with the second sentence. It's unclear what the phrase "which would facilitate" is describing.  This section is lacking a description of the controls and procedures applied for managing how deep the reuse soil was placed if reuse soil was intended for a specific stratum.	Please clarify the language in the reuse stockpile section to discuss how the reuse stockpile SOF will be estimated and incorporated into the SOF calculated for the Survey Unit. Please include a discussion of the controls used for managing placement of reuse soil in any given stratum.			
38.	37	Total Dose Equation	It is slightly confusing if this total dose will be presented for each Land Survey Area in the subsequent chapters for Volume 3 since the piping and groundwater discussions/data will be in Vol 5 and Vol 6. It might make more sense to combine the reuse SOF with the average and elevated area SOFs for any given LSA in this Volume 3, and then discuss the piping and groundwater contributions in the final Volume 7.	Clarify in which volume of the FSSR, the total dose will be presented. Possibly distinguish between a total LSA dose versus the total dose that incorporates piping and groundwater.			

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			It would be helpful to have an equation for f_backfill, and to consider renaming the f_backfill to f_reuse to avoid confusion with clean backfill. (This equation was not provided in Volume 2, Chap 1).				
39.	43	The second paragraph on this page introduces the definitions of DCGL <sub>w</sub> and DCGL <sub>EMC</sub> . These are introductory concepts.	Discussions of DCGLs began much earlier in Section 3. These basis definition provided here in Section 5.0 are more appropriate for Section 3.	Consider moving the text.			
40.	45	Surrogate Evaluation Areas and Distribution Ratio to Infer Tc-99 Table	"For sites with multiple radionuclides, it may be possible to measure one of the radionuclides and infer the amount of other radionuclide(s) when demonstrating compliance with the release criteria through the application of a surrogate relationship." The use of surrogates has not been approved for demonstration with compliance. This sentence is also inconsistent with the language later in the section, which states "Surrogate Evaluation Areas, and the distribution ratios above are utilized in FSS planning only." It is unclear why this information is relevant to the FSS since it is not to be used for compliance purposes.	Clarify the intent of this sentence, and the intent of including the Surrogate Evaluation Areas and Distribution Ratios for U-235 to Infer Tc-99 Table in the FSSR.			
41.	45	Contamination in Class 2 or Class 3 Areas.	The discussion and commitments as to follow up actions for contamination identified with Class 2 or 3 areas appears to be a more lenient approach than that specified in RAI resolution (see resolution for RAI 14-7 of ML1118802900).  "Although expected to occur infrequently, a situation could arise where it can be determined that the origin of a location of localized elevated concentration (>DCGL <sub>w</sub> ) within a Class 2 or 3 survey unit is understood, and it is highly unlikely that a similar condition exists elsewhere within the survey unit. In this instance, it may be determined that reclassification and re-survey are not required." Additional limitations should be specified such as size of area affected, how elevated, etc. Will the licensee ensure that at a minimum the surveys of the affected area would satisfy Class 1 requirements?	Ensure commitments/specifications regarding investigations and actions provided for in the DP and subsequent RAI resolution are carried through the FSS process.			
42.	46 and 52-53	Side Wall Sampling for Tc-99	A discussion is provided regarding side wall sampling, specifically for Tc-99. The reviewer notes that this issue was discussed in the previous meetings regarding data for the multi-layer CSM. It is unclear if the side wall samples are to be included in the multi-layer assessment. Refer to earlier discussion regarding a more thorough explanation of data sources and examples for demonstrating compliance with the multi-layer CSM approach.  Page 52-53 also includes mention of excavation sidewall samples. The final bullet of Section 6.2.3 on pg 53 states: Collect a judgmental sample(s) at sidewall location(s) not based on radiological scans, but selected at the discretion of the Health Physics Technician performing soil sampling. Was this the agreed method for sidewalls vs. random sampling?	Refer to earlier proposed resolution (e.g., teleconferences from August 11, 12, and 19) regarding a more thorough explanation of data sources and examples for demonstrating with the multi-layer CSM approach in this overview Chapter.  Please incorporate into Vol 3, Chap 1 the resolution which resulted from the August 11, 12, and 19 public teleconferences and the revised version of "Sidewall sampling of Land Survey Areas" (HEM-15-MEMO-038).			
43.	46	Equation for the modified DCGL	The values in the equation are not described. It appears as if the 160.3 is an older version of the Tc-99 adjusted DCGL from the DP in Table 14-4.	Please describe the terms in the equation and revise as necessary.			
44.	49	Scan MDC	The final sentence of Section 6.1.2 states that "This technology eliminates the need to account for the surveyor efficiency, thereby reducing the scan MDC by approximately 29%. It is the reviewer's recollection that in previous discussions regarding setting the surveyor efficiency to a value of 1 when using GPS technology as unsupported and that the agreed upon path was a surveyor efficiency of no greater than 0.75,	Please confirm acceptability of statements regarding scan MDCs.			

**Pre-Audit Submittal Table for Final Status Survey Final Report Volume 3, Chapter 1 – Land Survey Areas (LSA) Overview  
(License No. SNM-00033, Docket No. 070-00036)**

The purpose of the pre-submittal audit is to provide general guidance on the content that is expected in the Final Status Survey Report (FSSR) according to NUREG 1757, Vol 2, Rev 1. The table is used to facilitate discussions on the structure and content of draft reports and to help ensure that the final report will contain the relevant information the staff will need to carry out its review. Note that review of a draft report does not constitute final acceptance or approval of the final FSSR and there may be additional changes necessary during the staff's review of the final report.

			which would result in a scan MDC reduction of 17% from the 0.5 surveyor efficiency, rather than 29% if the surveyor efficiency is assumed to be 1.				
45.	50	Section 6.1.3 Investigation Action Level	The final paragraph of Section 6.1.3 discusses binning of the electronic gamma scan data as a function of the Z-score of sample population mean. Such a method may or may not be appropriate to adequately identify areas for further investigation. Research has determined that basing Z-score data presentation on the mean of the entire population has a greater instance for false negative errors. The Z-scoring method is greatly enhanced when the Z-scoring is based on the background data sub-set that is typically identifiable within full dataset.  It is unclear in the document whether the Z-scoring is based on the complete set of data within a given survey unit or the background data sub-population.	Clarification on the Z-scoring method is requested.			
46.	50	Section 6.2.1 Systematic Soil Sampling background values	Next to last paragraph on pg 50 references two different Ra background values depending on ingrowth.	Explain how the two different background values are applied.			
47.	50	Section 6.2.1 Systematic Soil Sampling	There is a lack of discussion regarding how the systematic grid for sampling and biased sampling are decided. For example, Section 6.2.2 on Biased Sampling states "Surface soil samples were obtained at biased locations and from other locations to ensure adequate coverage." However, the data contributing to the decisions are not explained.	Please discuss how the number of systematic samples are decided and how the number and location of biased samples are decided.			
48.	52	100% GWS definition	"In the RAI's it was clarified that 100% of exposed surfaces would be subject to scanning, and procedures were implemented to direct 100% scan of all accessible surfaces."  This paragraph should include the discussion that took place during the October 29, 2015 public teleconference. For example, Westinghouse's FSS should reflect that 100% GWS is the expected objective. Westinghouse should provide justification when 100% GWS coverage is not achieved, or does not appear to be achieved based on the output of the GPS software. The extent of justification required may be greater for situations where 100% survey was not performed due to inaccessibility than is required when gaps appear due to artifacts of the GPS system.	Please distinguish between "exposed surfaces" versus "accessible surfaces" in this statement. Please describe when 100% GWS of all exposed OR all accessible areas was not able to be performed (in this or subsequent Chapters).			
49.	56	Section 6.3 on this page mentions checklists provided in Section 5 of NUREG-1507.	NUREG-1507 does not contain the referred to checklist.	Please clarify the location of the referenced checklist.			
50.	57	Release Record Contents	In cases where the content of the subsequent Chapters is the same across the survey units, it may be more efficient to bring the information forward into Chapter 1 and only describe deviations in the individual Chapters. Many of the items listed under b appear to be things that would remain the same between survey units.	Consider if any of the subsequent Chapter information can be brought forward to Chapter 1.			
51.	60-62, Table 3-1	Table 3-1 is titled as Adjusted and Modified Soil DCGL <sub>w</sub> Values for Demonstrating Compliance, Tc-99 Surrogate Evaluation Area.	Per Section 5.0, page 45 of 112 and based on previous RAIs, Modified DCGLs are not to be used for demonstrating compliance, only for planning the required number of samples in the unity relative shift calculation. The Adjusted DCGLs	Please clarify the intent of the values in Table 3-1. Please explain use of inferred Tc-99 versus measured Tc-99 with regard to demonstrating compliance.			

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			(Table 5-1) are the DCGL_w values adjusted to take into account the contribution from insignificant radionuclides and should be used for compliance.				
52.	General	Figures	Some figures are very difficult to read due to small/blurry text. A reference directions (north arrow) on some figures to help orient would be helpful. Also, visible legends may help in some cases.  The reviewer had difficulty understanding some references from the text to the figures. Discussion of what the figures are supposed to be showing would be appreciated as well as being able to mentally place similar figures showing similar things but from different angles with respect to location and orientation.	Please clarify content and purpose of figures.			
53.	General	Missing Information	The report does not mention the instances where storm water had moved contamination from one LSA to an area that had already undergone an FSS.	Please include this information in this or subsequent Chapters.			