

From: [Marlayna Doell](#)
To: [Gerard P. Van Noordennen-ext](#)
Cc: [tom.magette](#)
Subject: RE: La Crosse RCI Response Follow Up
Date: Thursday, November 3, 2022 4:51:00 PM
Attachments: [image001.png](#)

Hi Gerry!

Thank you (as always!) for a productive discussion today. I had a chance to confer with Leah and Randy after the call and I think we have a much clearer understanding of how all these survey units fit together and the ways in which the excavation and survey activities intersected.

To put the bottom line up front: we need to be able to confirm the lateral and vertical extent of the elevated area in RPGPA to demonstrate that the assumptions regarding its boundaries are valid in our evaluation. So we wanted to confirm that (1) the cause/source of the elevated area being in the upper part of the soil layer was mixing of soils during excavation activities for the RPGPA trench and (2) there was not a potential for radioactivity to be moved between survey units as a result of activities in these overlapping survey units (trucks in and out, excavators, etc.). The call today forwarded that goal, so thank you!

If it would be possible to get copies of the elevation figures Jason shared in the near term while the rest of the discussion items are being captured I would really appreciate it. We are updating the corresponding sections of the NRC safety evaluation as we have these calls and that will be a big help in the interest of time!

Also, if it supports the efforts on your end, the NRC folks felt that the two big conclusions we wanted to be able to make related to the call are:

1. VERTICAL EXTENT: There is a reasonable degree of certainty that the elevated area being present in the upper later of the GeoProbe samples resulted from contamination in the RPGPA trench intermixing with the soil when that area was further excavated and the area around the trench was sloped for access.

→ Lower (deepest) limit: Because the deepest layer of the GeoProbe samples did not often contain areas of contamination above MDC, there is reasonable assurance that the area of elevated contamination did not extend *deeper* than the bottom of the survey unit.

→ Upper (shallow) limit: If you would be willing to provide (or point to which document it is already located in!) the full gamma spec information for the GeoProbes where contamination was identified above MDC it would be a useful way to help confirm that the stratum where the highest readings were identified clearly indicate that the elevated area was somewhat uniform in the 624'-627' elevation (i.e., that the next highest readings were enough of a difference to be meaningful and/or that similar "close but not quite the max" readings occurred in other disparate strata). Absent this, if your writeup could include a statement about the bounding assumption for the (spatially) upper limit of the contamination it would be helpful.

2. LATERAL EXTENT: There is a reasonable degree of certainty that the area of elevated contamination did not extend outside of the red boundary in the figure below, nor that the nearby excavation and survey activities would have the potential to spread contamination outside the originally identified area (i.e., into other survey units).

→ Contamination spread: Isolation and control procedures were adequate to provide reasonable assurance that contamination was not “picked up” during other activities in this area and moved to other parts of the site. This was assured in part by the licensee ensuring that the trucks delivering backfill were clean upon entering the survey unit and scanned again before departing (the RCA, or the survey unit, or are they the same in this case?) to verify no contamination was present on the wheels of the vehicles.

→ Original state: If the gamma spec data from the original (angled) GeoProbe samples taken during characterization activities is available, this information would help support that the area of elevated contamination was not present during initial characterization of this area and therefore confirm that it a result of remediation/decommissioning activities in that area. This would bound the lateral area based on the extent of activities in this survey unit. Absent this, if your writeup could include a statement about the bounding assumption for the lateral limits of the contamination it would be helpful.

To be clear, we are more or less at a point to be able to make these conclusions based on the conversations and information provided to date, but would like a final discussion + any additional data provided via an email (can be in response to this email!) that we can capture on the docket to close these items out.

Please let me know if any of the above does not comport with ES’s takeaway from the call today and we can powwow again as needed. I just wanted to get everything out of my head before I lost it! Thank you again for the support, give me a shout if you need anything additional, and have a great afternoon!

Cheers,
Marlayna
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From: Marlayna Doell
Sent: Wednesday, October 26, 2022 1:04 PM
To: Gerard P. Van Noordennen-ext <gpvannoordennen-ext@energysolutions.com>
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Subject: La Crosse RCI Response Follow Up

Hi Gerry and Tom,

We have had a chance to review the RCI responses from last week for the La Crosse Class 1 FSSR review and wanted to provide some feedback. The responses to the second part of RCI 1 regarding the statistical test for L1-SUB-CDR, RCI 2a, and RCI 2c are sufficient to confirm the staff’s

understanding of the associated issues and we have no further questions in those areas.

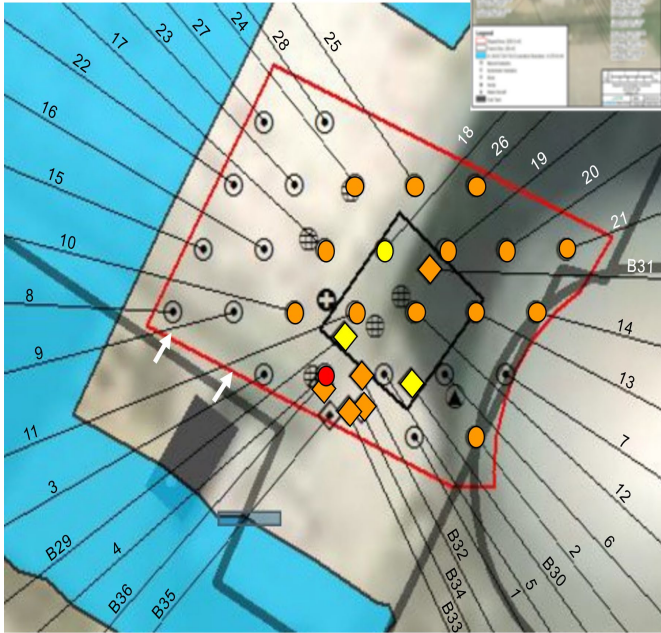
However, we are still confused by the information provided in support of the first part of RCI 1 regarding survey unit overlap and isolation and control for L1-SUB-CDR, L1-SUB-TDS A and L1-SUB-TDS B, especially with respect to the response for RCI 2b on the GeoProbe sampling conducted in the RPGPA survey area.

Thank you for providing the GeoProbe sample nomenclature key that helps with understanding the stratum designator for each sample. From this information and the supporting data provided, it appears that the samples with the highest activity were not often in the deepest part of the excavation; only 3 of the total locations had the maximum Cesium-137 value in the deepest stratum, none of which were above MDC.

Rather, the table provided with the RCI response demonstrates that the highest Cesium-137 activities were often (70%) from the top stratum (624'-627' elevation) of the GeoProbe samples, including the maximum of 24.4 pCi/g for the sample labeled L1-SUB-TDS-FSGS-B04-SB, which is above the operational DCGL.

Given that the RPGPA was backfilled before GeoProbe sampling, the staff needs to understand why the higher levels of contamination appear to be in the backfill portion of the elevation. The figure below shows the systematic and judgmental sample locations that exceeded MDC, and which stratum contained the maximum concentration.

- Cs-137 24.4 pCi/g (B4) adjacent to 1.2 pCi/g (B36); immediately to east are 11.1 pCi/g (B33), and 6.05 pCi/g (B32);
- RPGPA trench box 618 ft elev
- GW flow generally westward to WSW
- Water table fluctuates 620 to 630 ft AMSL
- Ground surface at the time of GeoProbe is apparently 627 ft AMSL
- Top stratum sampled at 624-627 ft



Systematic, Judgmental

- Above operational DCGL, top stratum (624-627 ft elevation)
- ◆ Above MDC, top stratum (624-627 ft elevation)
- ◆ Above MDC, 2nd stratum from top (621-625 ft elevation)
- ↑ Angled GeoProbe, 20 ft "depth" from edge of building from ~639 ft AMSL was part of initial characterization

The original CDR survey area is complicated by the fact that it overlaps with the RPGPA and the TDS-A survey units at different elevations and points in time depending on the associated remediation and survey activities, and it has been difficult to understand the survey coverage and implementation of isolation and control between the CDR, RPGPA, and TDS A.

The team would like to meet to make sure we understand these survey units, as well as the implications of the elevated GeoProbe sample results being within the top layer of the RPGPA, as we complete the safety evaluation. Some of the specific items that we have been discussing on this end include:

- Given that the GeoProbe sampling results containing the 24.4 pCi/g (and the nearby 11.1 pCi/g and 6.05 pCi/g) were in the uppermost stratum of the RPGPA, and assuming that at these locations that stratum was comprised of backfill, why was this level of contamination present in the backfill material? Given the steepness of the sloped walls of the RPGPA on three sides, only the GeoProbe locations immediately adjacent to the survey unit boundary would be expected to contain soil from below excavation surface in the topmost stratum (624'-627' elevation).

- Did the hand scans or visual examination conducted of each GeoProbe sample as it was removed from the soil of the survey unit indicate that there could be a difference in the top stratum of the backfill that would lead to elevated readings (i.e., sloughing from the excavation side walls, intermixing with native soil from elsewhere in the survey unit, part of the stratum consisting of native soil from the survey unit as opposed to clean backfill, etc.)?
- The RCI response states, “Yes, all isolation and control measures were in place and LaCrosseSolutions followed all their isolation and control procedures *until the units were backfilled.*” The team is trying to understand how the isolation and control procedures apply to the survey units after each was backfilled given the proximity of continuing remediation in RPGPA to the adjacent CDR survey unit, as well as the fact that the RPGPA did not receive FSS prior to being backfilled.
- The RCI response states, “The RPGPA (TDS-B) was the second unit surveyed and was backfilled prior to the survey.” The team acknowledges that groundwater was intruding into the trench box area of the RPGPA (black boxed area in the figure), but is questioning if there were any scans of the soil that was not covered in water prior to backfill being emplaced over the entire survey unit – that is, the area that is inside the red box but not in the black trench box square in the figure.
- The RCI response states, “Geoprobe samples were taken through the CDR area, but the final CDR excavation surface was otherwise undisturbed.” The team would like the licensee to clarify this statement. This response appears to state that portions of the original CDR elevation that overlapped with the RPGPA were not remediated to a deeper elevation within the RPGPA survey unit.
- We are still trying to piece together the various elevations and survey unit overlap. At what elevation was the CDR soil at the time of the CDR FSS? It is our understanding that the bottom of the trench box was at the 618’ elevation, but the team does not know the elevation of the soil outside of the trench box that was still within the footprint of the RPGPA survey unit. Some of this area is the sloped walls to the trench box, but what was the elevation of the top of the sloped walls? How does that elevation compare to the rest of the CDR survey unit? Also, is the RPGPA survey unit boundary at the top of the sloped wall?
- The RCI response states, “Portions of the backfill covering the final CDR excavation surface were excavated to slope the TDS-A excavation, but the final CDR excavation surface that was subject to FSS was undisturbed.” Please clarify if this is stating that parts of the CDR survey unit that *did not overlap with TDS-A*, were excavated to provide a slope into the TDS-A excavation. Or is this stating that portions of the part of backfilled CDR that did overlap with TDS-A were excavated during the FSS of TDS-A? Please confirm the elevation of TDS-A when it received FSS as compared to the elevation of CDR where it overlapped with TDS-A.
- Is there any other information available regarding the various elevations of the excavations and backfill during the timeline described in the first portion of RCI 1? Or additional information regarding the surface scanning done at each stage on exposed surfaces before additional backfill was placed (e.g., was the 627’ elevation of the RPGPA scanned after it was

backfilled)? This would be helpful to understand how subsequent scans or other survey activities in the surrounding areas can support the current conclusions regarding these survey units.

Although I assume there may be limited additional data that has not already been provided in support of our previous discussions of the CDR, RPGPA, and TDS A survey units, I think that if we could talk through the CDR, RPGPA, and TDS A figures and photos it would be useful in addressing the above concerns. Understanding how all of these excavations fit together spatially (in terms of the birds-eye view as well as a cross-sectional elevation view) is a challenge and the team needs to have a reasonable understanding of the overlap, while making sense of the survey results, in order to make the final compliance statements related to this area of the LACBWR site.

I know this is a lot of information, but I am hoping that by providing details up front we can be better prepared for a productive discussion to address these concerns. Please let me know if your folks would be available for a call on this topic within the next week or so and I can set something up. Thanks for the support as always and please give me a shout if there are immediate questions or if you need anything additional from this end in support of this discussion.

Thanks again and talk to you soon!
Marlayna

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