

### Questions from the October 26, 2022, Email

1. 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).

*The RPGPA was backfilled to an elevation of 636' prior to sampling. The samples are from the excavation and sloughing of the excavation after the removal of the trench box. The backfill of the trench box area did not happen until the box had been pulled.*

2. 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.)?

*There was no visual difference of the sample tubes to indicate an interface for the backfill/excavation of the RPGPA, hence the sample plan change to sample in layers. Review of field logs indicate no real difference in latched values throughout cores. (-004 and -019 did have slight elevated readings, -003, -032, and -033 did not).*

3. 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.

*As discussed, isolation and control was maintained until the survey units were backfilled. The response to Item 5 in the additional questions below presents a timeline of survey and backfill activities within L1-SUB-CDR, L1-SUB-TDS-A, and L1-SUB-TDS-B, which should shed light on how isolation and control was maintained given the timing and elevation of excavations. No excavation affected the final surface (subject to FSS) of another excavation.*

4. 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.

*There was an RA performed on TDS-B prior to backfill. A summary of the results are presented in the TDS-B Release Record, Section 3. Cs-137 concentrations varied within the samples from Non-Detect to 5.37 pCi/g.*

5. 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.

*The CDR did not require remediation after FSS of the area. The RPGPA sample locations were easier to design and obtain by using the entire footprint of the area. The potential sample locations from the FSS of TDS-B that lay atop of the CDR and Cs-137 concentrations follow:*

*-002 – 0.471 pCi/g*

*-006 – 0.060 (ND) pCi/g*

*-007 – 0.233 pCi/g*

*-013 – 0.102 pCi/g*

*-014 – 0.161 pCi/g*

*-019 – 4.21 pCi/g*

*-020 – 0.845 pCi/g*

*-021 – 0.463 pCi/g*

*-026 – 0.647 pCi/g*

*-031 – 1.88 pCi/g*

*These results are in line with the results of the FSS of CDR – mean of 1.24 pCi/g, max of 6.25 pCi/g.*

6. 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 response to Item 5 in the additional questions below presents a timeline of survey and backfill activities within L1-SUB-CDR, L1-SUB-TDS-A, and L1-SUB-TDS-B, which includes graphical depictions of excavation elevations.*

7. 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.

*The response to Item 5 in the additional questions below presents a timeline of survey and backfill activities within L1-SUB-CDR, L1-SUB-TDS-A, and L1-SUB-TDS-B, which includes graphical depictions of excavation elevations.*

8. 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.

*The response to Item 5 in the additional questions below presents a timeline of survey and backfill activities within L1-SUB-CDR, L1-SUB-TDS-A, and L1-SUB-TDS-B, which includes graphical depictions of excavation elevations.*

#### **Additional Questions from the November 3, 2022, Teleconference**

1. Scan locations for the radiological assessment of TDS-B (outside of the trench box) prior to backfill to 636’ elevation.

*The RA scans were of accessible portions of the area outside the trench box portion of TDS-B. The scans were performed in four areas: north, south, east and west due to accessibility and the small size of the unit.*

2. Was the 636’ elevation of TDS-B scanned?

*Elevation 636’ of L1-SUB-TDS-B was not scanned. The survey unit remained under isolation and controls until backfill to grade occurred (from 636’ to 639’).*

3. Explanation on soil disturbance in sump area of TDS-B.

*Contamination found outside the of the sump area was a result of excavation of soil spreading contamination in the immediate vicinity of the RPGPA sump.*

*Subsurface characterization of the areas around and beneath the Turbine Building show that there was no significant surface or subsurface soil contamination. Table 9-4 of the Characterization Survey Report for 2014 (GG-EO-313196-RS-RP-001, Revision 0), below, shows the results of the subsurface soil analysis performed in survey unit L1-010-102, which were to a maximum depth of 4 meters.*

**Table 9-4 L1010102 Subsurface Soil Analysis**

**Subsurface Soil Sample Analysis**

Sample ID	Sample Depth (meters)	Date	Location		Weight (g)	Wet/Dry	Co-60			Cs-137		
			Northing	Easting			Activity (pCi/g)	1σ (pCi/g)	Critical Level (pCi/g)	Activity (pCi/g)	1σ (pCi/g)	Critical Level (pCi/g)
L1010102-CJ-GS-001-SB	TB Tunnel	10/24/2014	N/A	N/A	819.5	Dry			5.67E-02			5.24E-02
L1010102-CJ-GS-007-SB	1	10/30/2014	570989.709	1642007.360	849.7	Dry			4.70E-02			4.88E-02
L1010102-CJ-GS-008-SB	3	10/30/2014	570989.709	1642007.360	845.8	Dry			4.48E-02			4.66E-02
L1010102-CJ-GS-009-SB	4	10/30/2014	570989.709	1642007.360	906.9	Dry			4.59E-02			4.35E-02
L1010102-CJ-GS-011-SB	1	10/30/2014	570982.821	1642034.275	785.7	Dry			4.54E-02			5.78E-02
L1010102-CJ-GS-012-SB	3	10/30/2014	570982.821	1642034.275	902.3	Dry			4.43E-02			4.94E-02
L1010102-CJ-GS-013-SB	4	10/30/2014	570982.821	1642034.275	871.0	Dry			4.31E-02			4.98E-02

	Co-60	Cs-137
# of Measurements	7	7
# >Critical Level	0	0
Mean	4.67E-02 pCi/g	4.98E-02 pCi/g
Median	4.54E-02 pCi/g	4.94E-02 pCi/g
Max	5.67E-02 pCi/g	5.78E-02 pCi/g
Min	4.31E-02 pCi/g	4.35E-02 pCi/g
Standard Deviation	4.56E-03 pCi/g	4.51E-03 pCi/g

*The figure below (Figure 9-2 of GG-EO-313196-RS-RP-001) shows the locations of the soil samples depicted in the above table. **Note: only two locations are shown in the figure below. Samples 007, 008, and 009 are subsurface of location 002. 011, 012, and 013 are subsurface of location 003.***

**Figure 9-2 L1010102 Biased Sampling Locations**



Table 9-6 of the Characterization Survey Report for 2015 (LC-RS-PN-164017-001, Revision 0), below, shows the results of the subsurface soil analysis performed in survey unit L1-010-102, which were angled bore samples to a maximum depth of 20 feet beneath the Turbine Building.

Characterization Survey Results - Survey Unit # L1010102 Geoprobe Undemeath Turbine Building

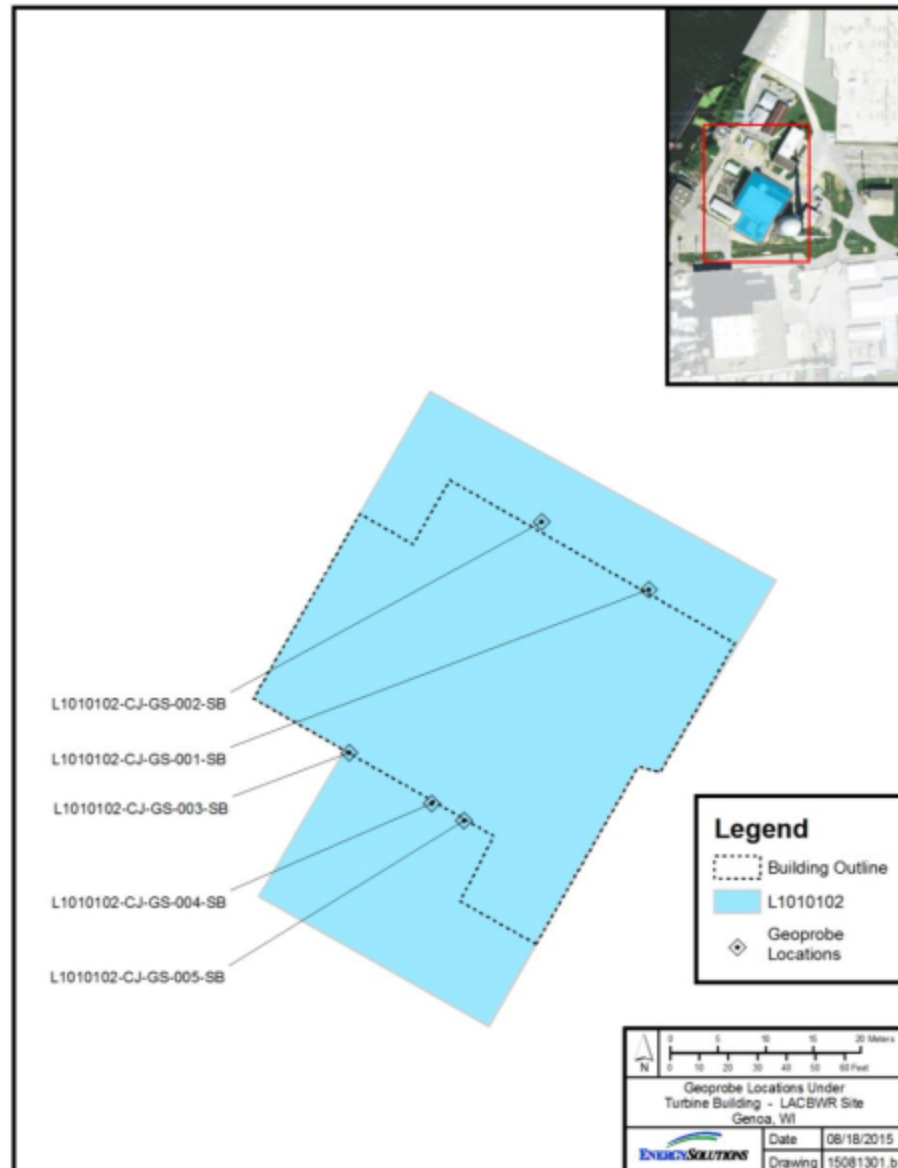
Subsurface Soil Sample Analysis

Sample ID	Sample Depth (feet)	Date	Weight (g)	Wet/Dry	Co-60			Cs-137		
					Activity (pCi/g)	1σ (pCi/g)	MDC (pCi/g)	Activity (pCi/g)	1σ (pCi/g)	MDC (pCi/g)
L1010102-CJ-GS-001-SB	10	6/25/2015	630	DRY			8.04E-02	1.30E-01	2.22E-02	7.67E-02
L1010102-CJ-GS-002-SB	15	6/25/2015	745	DRY			6.62E-02	6.91E-02	1.74E-02	6.26E-02
L1010102-CJ-GS-003-SB	20	6/25/2015	850	DRY			5.61E-02			5.92E-02
L1010102-CJ-GS-004-SB	10	6/25/2015	730	DRY			6.42E-02	8.10E-02	1.84E-02	7.26E-02
L1010102-CJ-GS-005-SB	15	6/25/2015	790	DRY			5.71E-02			6.50E-02
L1010102-CJ-GS-006-SB	20	6/25/2015	750	DRY			5.38E-02			6.40E-02
L1010102-CJ-GS-007-SB	10	6/25/2015	750	DRY			6.05E-02			6.79E-02
L1010102-CJ-GS-008-SB	15	6/25/2015	760	DRY			6.46E-02			6.68E-02
L1010102-CJ-GS-009-SB	20	6/25/2015	760	DRY			6.38E-02			6.48E-02
L1010102-CJ-GS-010-SB	10	6/25/2015	705	DRY			6.18E-02			6.76E-02
L1010102-CJ-GS-011-SB	15	6/25/2015	710	DRY			6.79E-02			6.18E-02
L1010102-CJ-GS-012-SB	20	6/25/2015	755	DRY			6.39E-02			6.81E-02
L1010102-CJ-GS-013-SB	10	6/25/2015	715	DRY			7.20E-02			6.88E-02
L1010102-CJ-GS-014-SB	15	6/25/2015	765	DRY			5.66E-02			6.46E-02
L1010102-CJ-GS-015-SB	20	6/25/2015	760	DRY			5.82E-02	6.68E-02	1.68E-02	6.07E-02

	Co-60	Cs-137
# of Measurements	15	15
# >MDA	0	4
Mean	6.31E-02 pCi/g	7.10E-02 pCi/g
Median	6.38E-02 pCi/g	6.68E-02 pCi/g
Max	8.04E-02 pCi/g	1.30E-01 pCi/g
Min	5.38E-02 pCi/g	5.92E-02 pCi/g
Standard Deviation	6.88E-03 pCi/g	1.70E-02 pCi/g

**Table 9-6 Subsurface Soil Sample Analysis L1010102**

The figure below (Figure 9-4 of LC-RS-PN-164017-001) shows the locations of the soil samples depicted in the above table.



**Figure 9-4 Turbine Building Geoprobe Soil Scanning Locations**

4. How was backfill performed for TDS-B?

*The backfill of L1-SUB-TDS-B was accomplished in a west to east fashion. Dump trucks backed to the western edge of L1-SUB-TDS-B. Prior to entering the survey unit the tires were scanned. The trucks continued backfill activities in the same fashion until the survey unit was at approximate elevation 636'. When entering L1-SUB-TDS-B trucks never traversed on the surveyed surfaces of L1-SUB-TDS-B.*

5. CDR, TDS-A, and TDS-B survey and backfill timeline.

*Excavation and demolition of the Pipe Tunnel/RPGPA (L1-SUB-CDR) was completed in August to September 2017. L1-SUB-CDR was excavated to approximate elevation 627' and L1-SUB-TDS-B was excavated to approximate elevation 618'. Backfill of the area was*

completed between 09/20/2017 and 09/26/2017, except for the RPGPA/Sump area (L1-SUB-TDS-B) which was backfilled 04/18/2019. L1-SUB-CDR was backfilled to approximate elevation 629', and L1-SUB-TDS-B was backfilled to approximate elevation 636'.

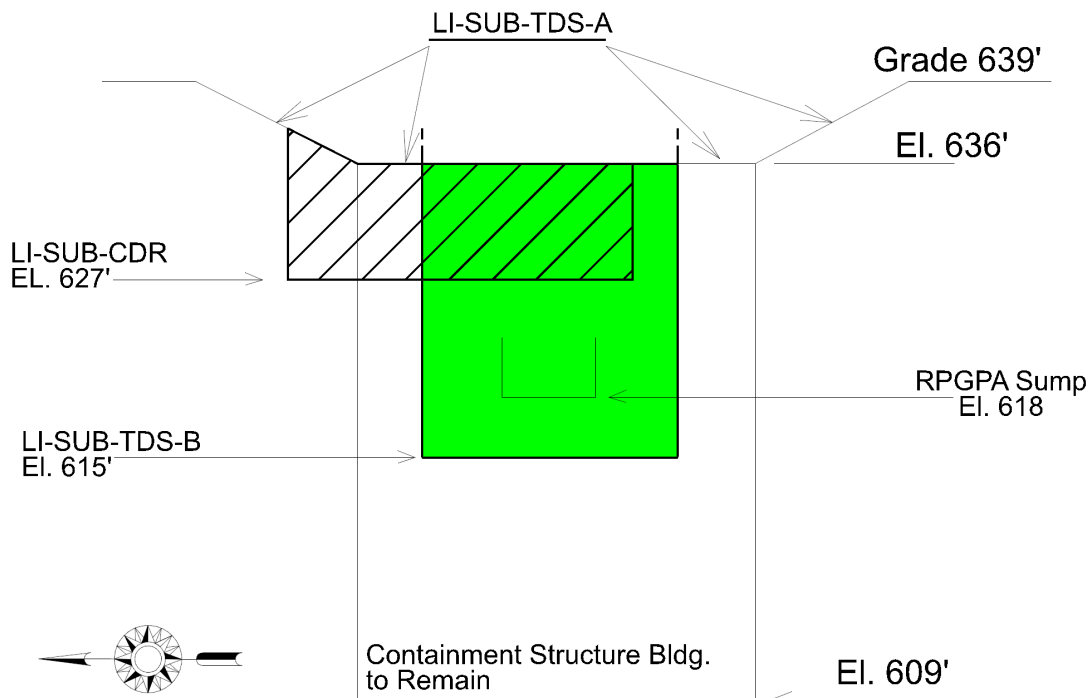
The FSS (Geoprobe) of L1-SUB-TDS-B was performed 05/14/2019 through 05/22/2019. L1-SUB TDS-B samples were collected between elevations 627' and 615'.

Portions of L1-SUB-TDS-A consisted of sloping to enable FSS Technicians to access L1-SUB-TDS-B. L1-SUB-TDS-A never reached the extent of where L1-SUB-CDR was excavated to. In the vicinity of L1-SUB-CDR and L1-SUB-TDS-B, the elevation of L1-SUB-TDS-A ranged from approximate elevations 639' to 632'. The FSS of L1-SUB-TDS-A was performed 06/26/2019 through 07/12/2019. L1-SUB-TDS-A is at different elevations than L1-SUB-TDS-B, the majority of which is higher than L1-SUB-TDS-B.

As explained above, no excavation affected the final surface (subject to FSS) of another excavation. These survey units overlap in some areas on the (x,y) axis, but when taking into account the depth (z) of each excavation, the surfaces subjected to FSS do not interact. All isolation and control measures were adhered to, the main mechanism being the use of backfill, to ensure survey results were not compromised.

Below are figures in support of this response.

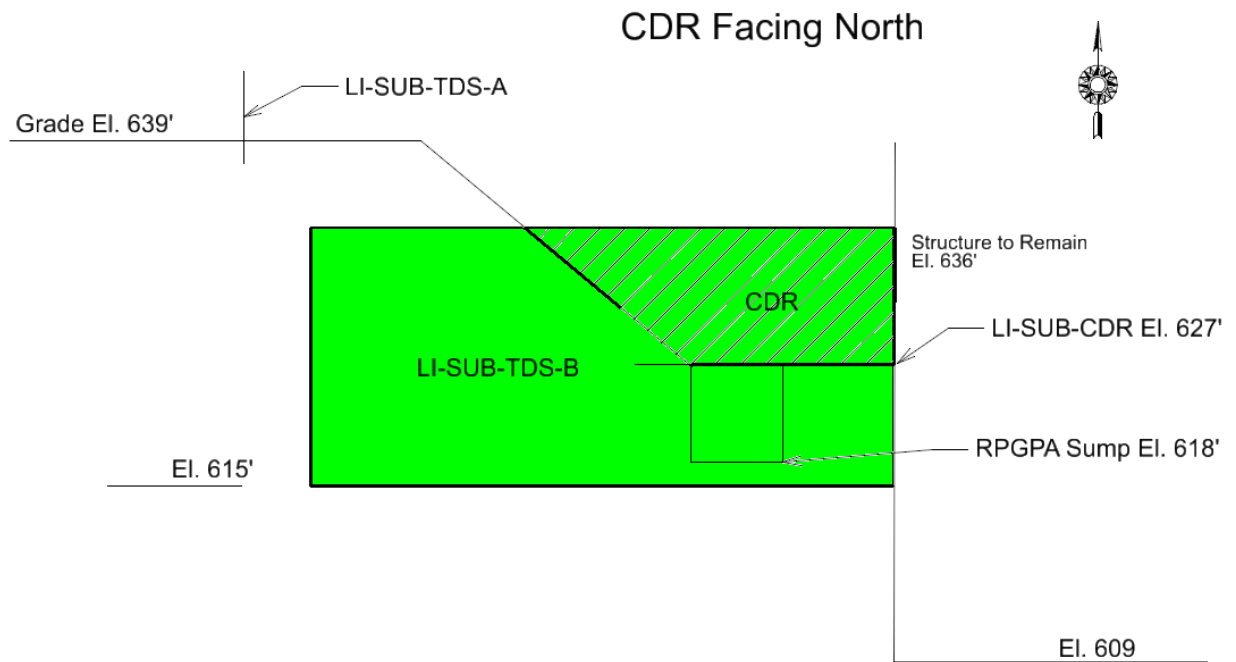
#### East-Facing Layout of CDR, TDS-A, and TDS-B Excavations



CDR Facing East



## North-Facing Layout of CDR, TDS-A, and TDS-B Excavations



## GeoProbes of L1-SUB-TDS-B June – July 2019



**L1-SUB-CDR following Backfill September 2017**

