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SRNL-STI-2017-00301

16 August 2017

TO: Tom Butcher

FROM: Laura Bagwell
Patti Bennett

REVIEWER: Walt Kubilius

Elevation of Water Table and Various Stratigraphic Surfaces beneath E Area Low Level Waste Disposal Facility

PA Strategic Planning Team Topic 3.5.1, Vadose Zone Models, Recommendation 148b

Abstract: This memorandum describes work that supports revision of the Radiological Performance Assessment (PA) for the E Area Low Level Radioactive Waste Disposal Facility (LLRWDF). The work summarized here addresses portions of the PA Strategic Planning Team's recommendation #148b (Butcher and Phifer, 2016):

Recommendation #148b	Date Accepted
3.5.1 Vadose Zone Models	
Consider the following features in selecting the number of models and model geometry (i.e., 2D lateral, 2D longitudinal, or 3D) of Slit and Engineered Trenches for the next PA and document in the Conceptual Model report. The overall goal will be to keep the number of vadose zone models at a minimum. *b. Differences in trench unit vadose zone cross-sections (i.e., trench dimensions, surface slope, position of unit within the UVZ and LVZ, depth to water table, UVZ and LVZ thickness, etc.)*	8-20-15

Scope Summary: The PA Strategic Planning Team recommended compiling data on the depth to groundwater (water table) and depth and thickness of various stratigraphic units beneath E Area. In response to these recommendations, the scope of this work included creation of four subsurface elevation models for E Area:

1) water table
2) Lower Aquifer Zone (LAZ) of the Upper Three Runs Aquifer (UTRA)
3) Tan Clay Confining Zone (TCCZ)
4) Tobacco Road Sand (TRS; interpreted as the boundary between the upper vadose zone [UVZ] and lower vadose zone [LVZ])

From each model, elevation data were extracted at the vertices and centroids of individual low level waste (LLW) disposal units. At these same vertices and centroids, ground surface elevations were extracted from the SRS LiDAR raster (collected 2009). At each vertex and centroid, the elevations of the four subsurfaces were subtracted from the ground elevation to yield depth measurements, thereby satisfying recommendation #148b.

Model Area: The model area is defined by a 100-m spatial buffer around E Area (Figure 1A); this area includes multiple individual LLW disposal units, both extant and future (Figure 1B).

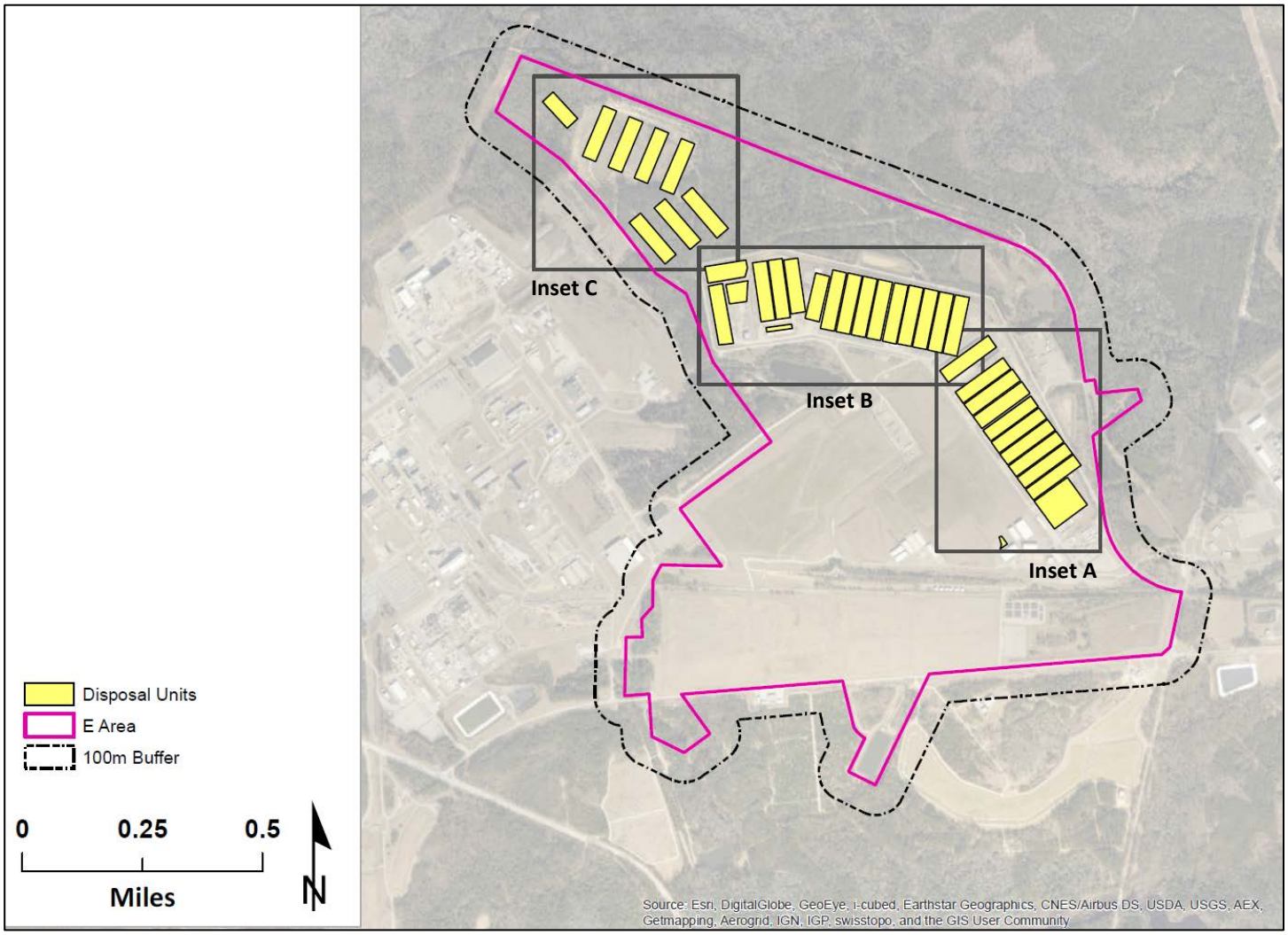

Figure 1A. E Area, 100-meter buffer, and inset maps showing individual LLW disposal units.

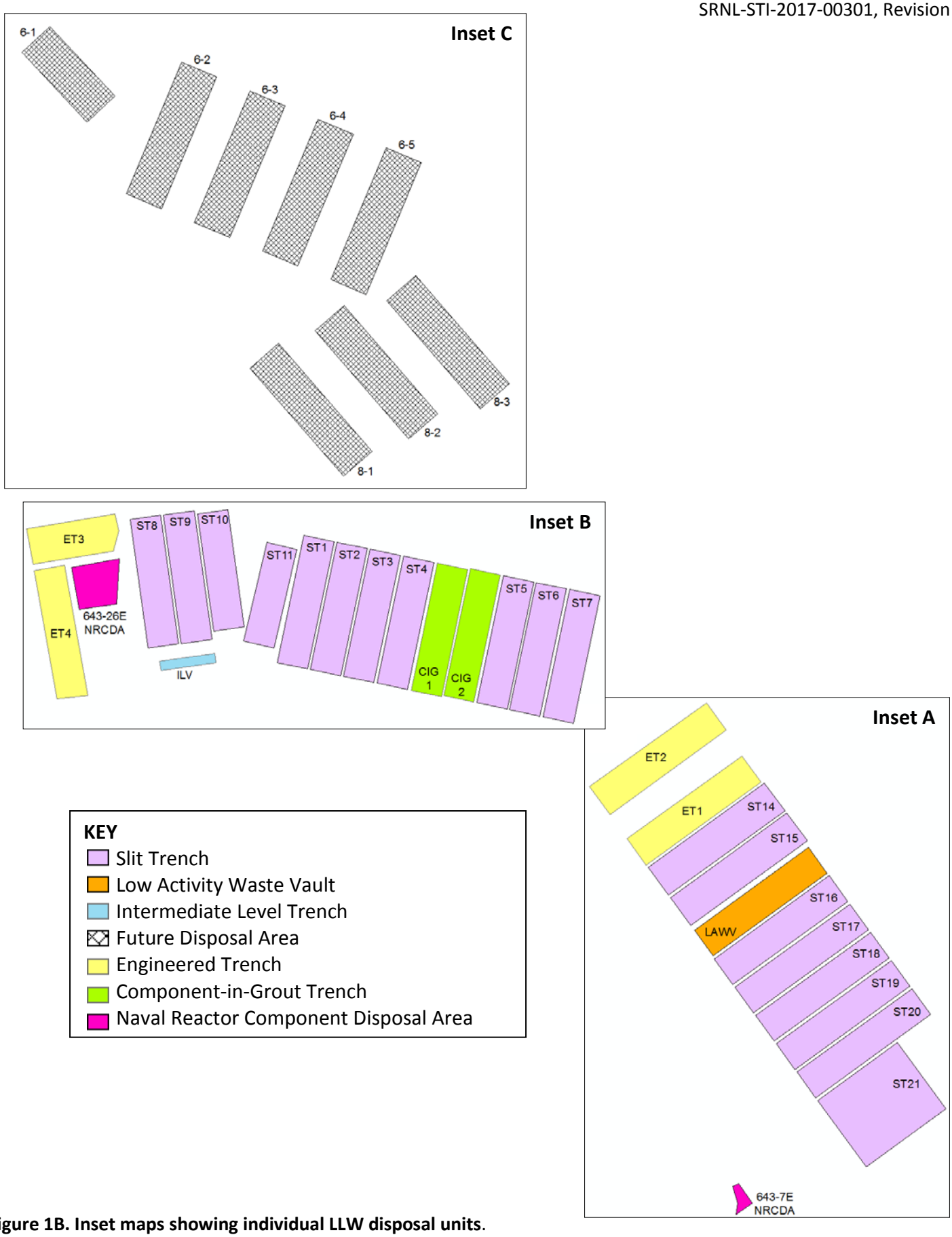

Figure 1B. Inset maps showing individual LLW disposal units.

Subsurface Zone of Interest: Beneath E Area, the relationship between the water table and various stratigraphic units is locally complex and is affected by sediment properties (hydraulic conductivity), by seasonal and long-term precipitation (recharge), and by proximity to Upper Three Runs Creek to the north of the model area. Figure 2 illustrates this complexity, as well as the subsurface units – water table, LAZ, TCCZ, and TRS – for which elevation models were prepared.

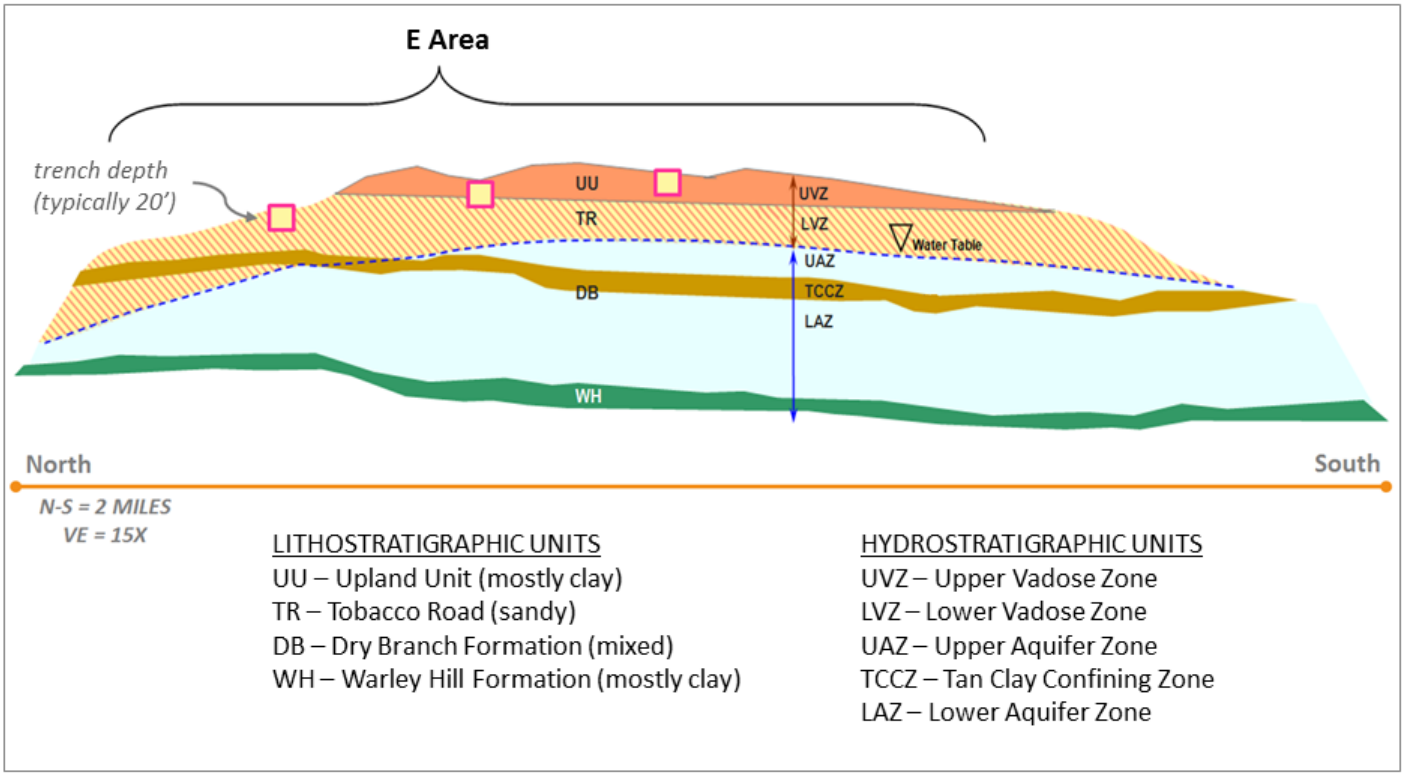

Figure 2. Generalized schematic cross-section through E Area showing underlying stratigraphic units and typical excavation depth of LLW trenches.

Modeling, Extraction, and Mathematical Processes: All existing control points (elevations) for the four subsurface units of interest were assembled into discrete datasets. The water table dataset included mean water levels from 99 monitoring wells during the period 2004-2014 (Hiergesell et al., 2015); to this dataset, 20 additional control points along Upper Three Runs Creek and its tributaries (all gaining streams) were added to improve spatial resolution in the northern part of the model area. Control points for the LAZ, TCCZ, and TRS included 716 stratigraphic "picks" (interpretations) based on core descriptions and borehole geophysical logs (Bagwell et al., 2017; SRS GDMS, 2017; Smits et al., 1997). The number of controls points for each subsurface were as follows: LAZ = 218; TCCZ = 233; TRS = 265.

Control points were loaded into *ArcMap 10.4* and individual elevation models (interpolation rasters) were constructed using the *Exponential with Nugget* algorithm available with the *ArcToolbox / Spatial Analyst / Interpolation / Kriging* tool. Figures 3, 4, 5, and 6 show the elevation models and control points for the water table, LAZ, TCCZ, and TRS, respectively. Appendices 1, 2, 3, and 4 include the control points for the water table, LAZ, TCCZ, and TRS models, respectively; model settings, variograms, etc. are included with each appendix.

Applying the *ArcToolbox / Spatial Analyst / Extraction / Extract Values to Points* tool to each of the four elevation models, the elevation values at the vertices and centroids of the 37 disposal units were extracted. Figure 7 illustrates the modeling and extraction processes. At each vertex and centroid, the elevations of the four subsurfaces were subtracted from the ground elevation (SRS LiDAR) to yield depth measurements. Appendix 5 presents the results of the extractions and subtractions; this revision-controlled dataset constitutes the final deliverable and satisfies recommendation #148b.

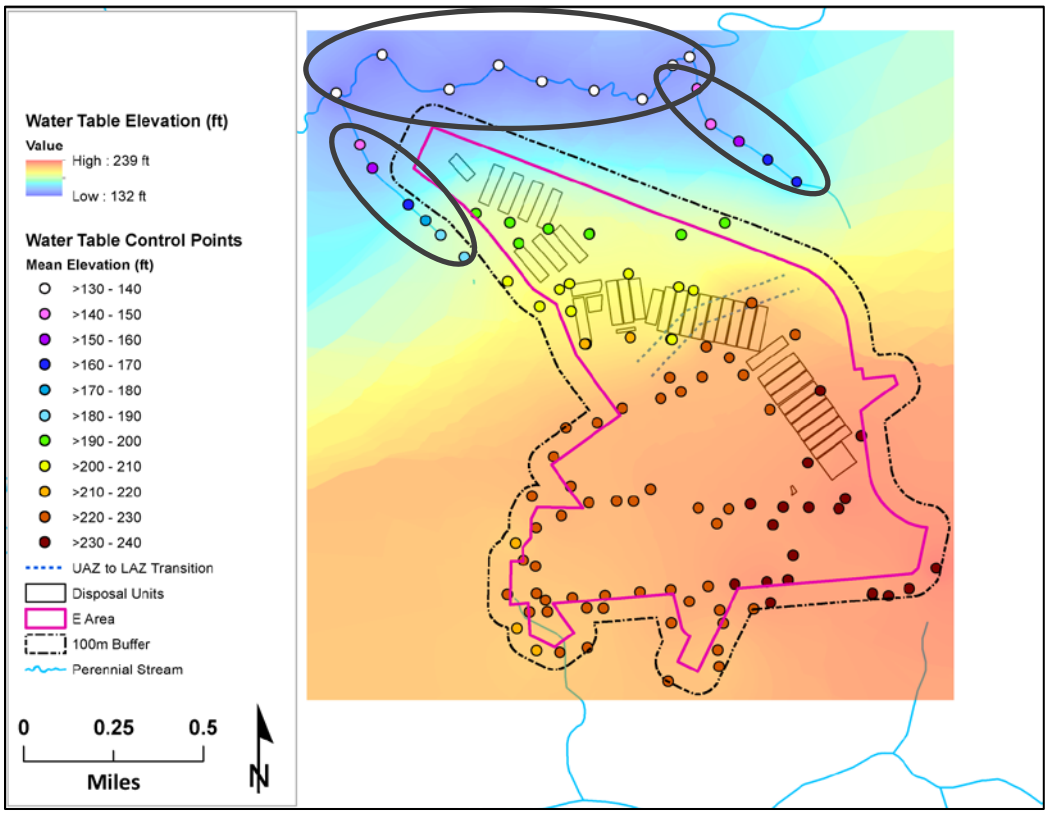

Figure 3. Elevation model and control points for the water table; ovals indicate control points added along perennial streams.

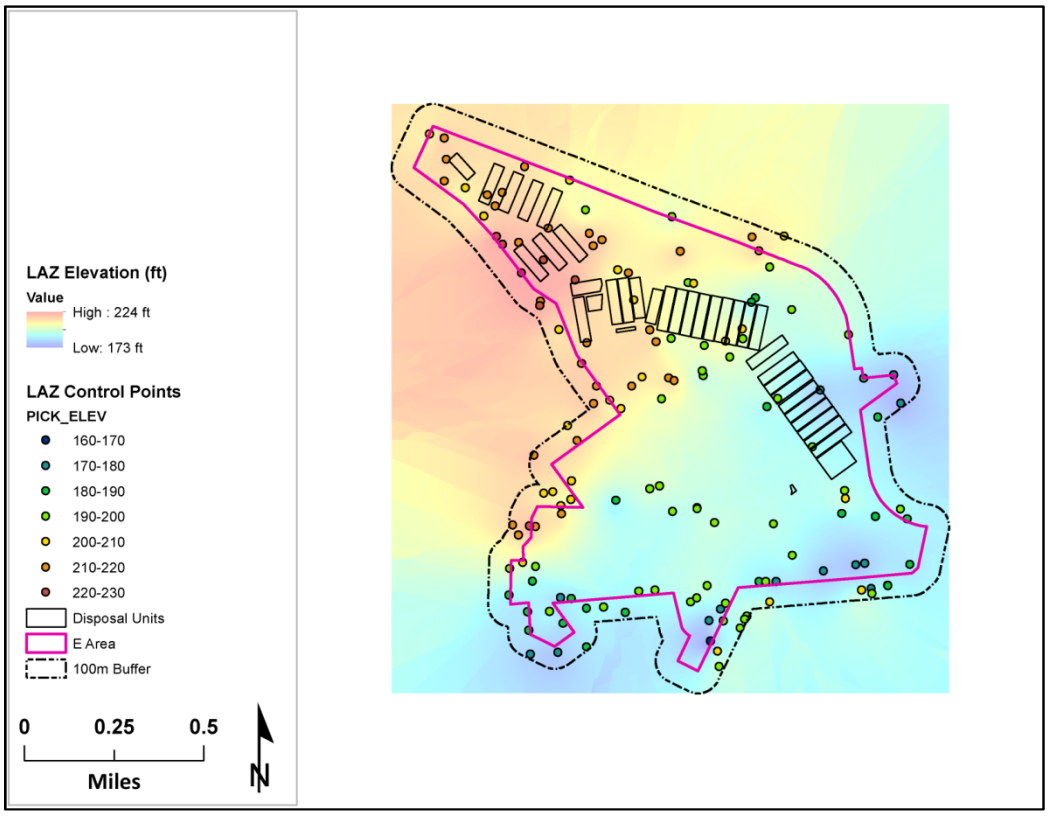

Figure 4. Elevation model and control points for the Lower Aquifer Zone (LAZ).

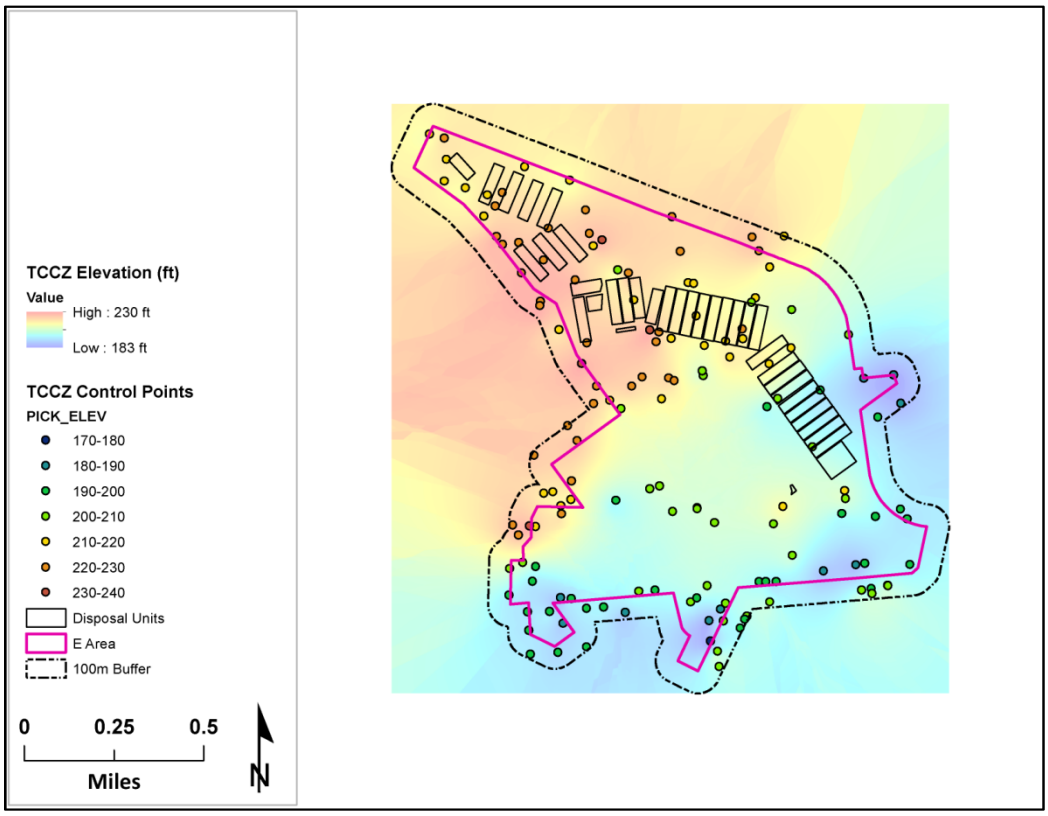

Figure 5. Elevation model and control points for the Tan Clay Confining Zone (TCCZ).

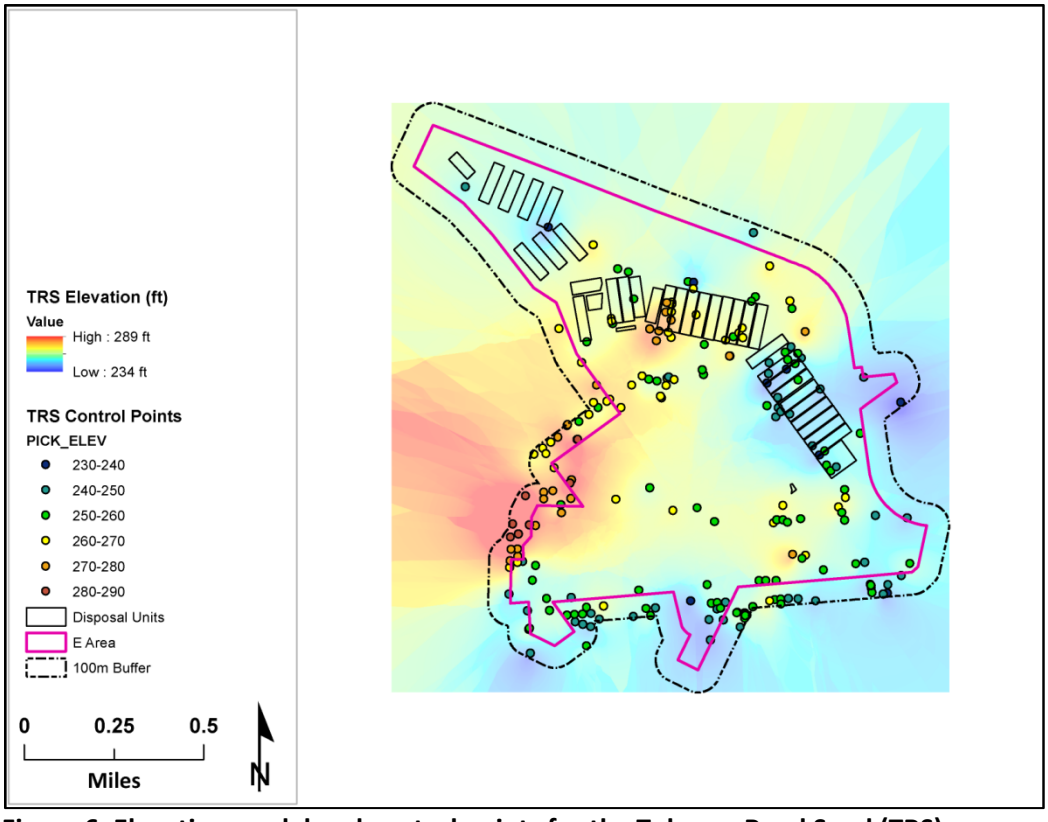

Figure 6. Elevation model and control points for the Tobacco Road Sand (TRS).

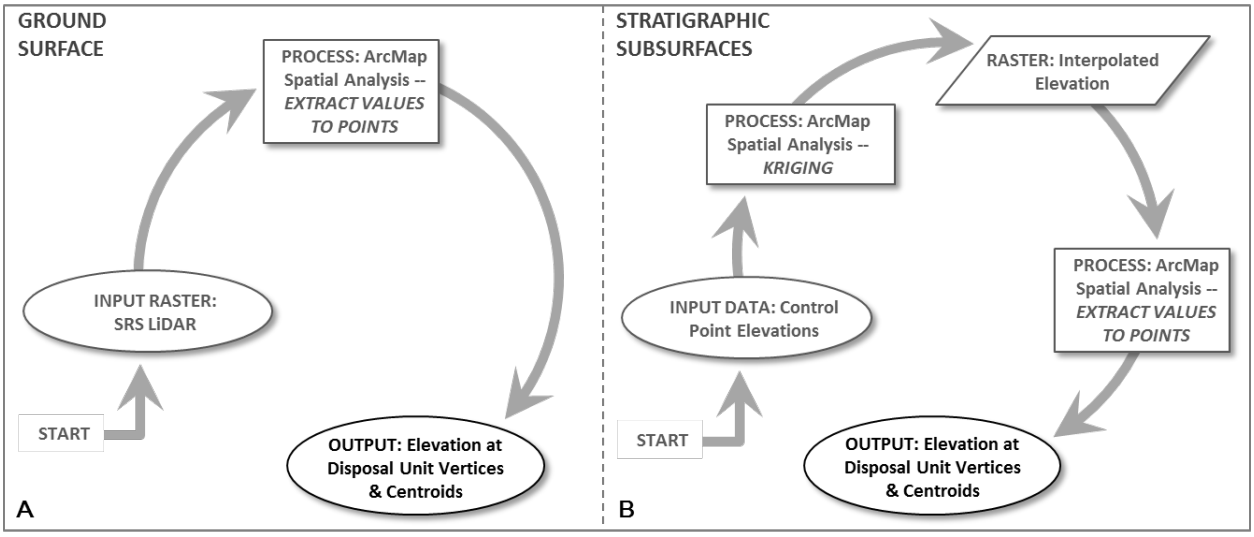

Figure 7. Process for determining elevations of (A) ground surface and (B) stratigraphic subsurfaces (water table, LAZ, TCCZ, and TRS) at vertices and centroids of disposal units.

Observations and Notes on the Elevation Models: The utility of interpolation rasters depends on – and is limited by – the number, density, and accuracy of control points, and on the method and settings of interpolation. In the case of geologic elevation models, understanding these limitations is especially important.

Tobacco Road Sand (TRS): Additional spatial analysis of the TRS elevation raster illustrates a noteworthy caveat on its use, specifically its prediction beyond the actual outcrop extent. Figure 9A shows the geographic extent of the TRS raster, encompassing a rectangular region that includes the entire model area. (The data illustrated in Figure 9A correspond to the data in column "TRS elevation (ft) *from kriged dataset*" in Appendix 5.) Figure 9B shows the effect of truncating the TRS raster to the SRS LiDAR (ground elevation) raster, effectively removing all regions where the TRS has been eroded. The legitimacy of this truncation can be confirmed by comparing the truncated TRS raster with the outcrop geology map (SCGS, 2008). Figure 10 illustrates the general agreement between the mapped outcrop extent of the TRS (and overlying formations) and the truncated TRS raster.

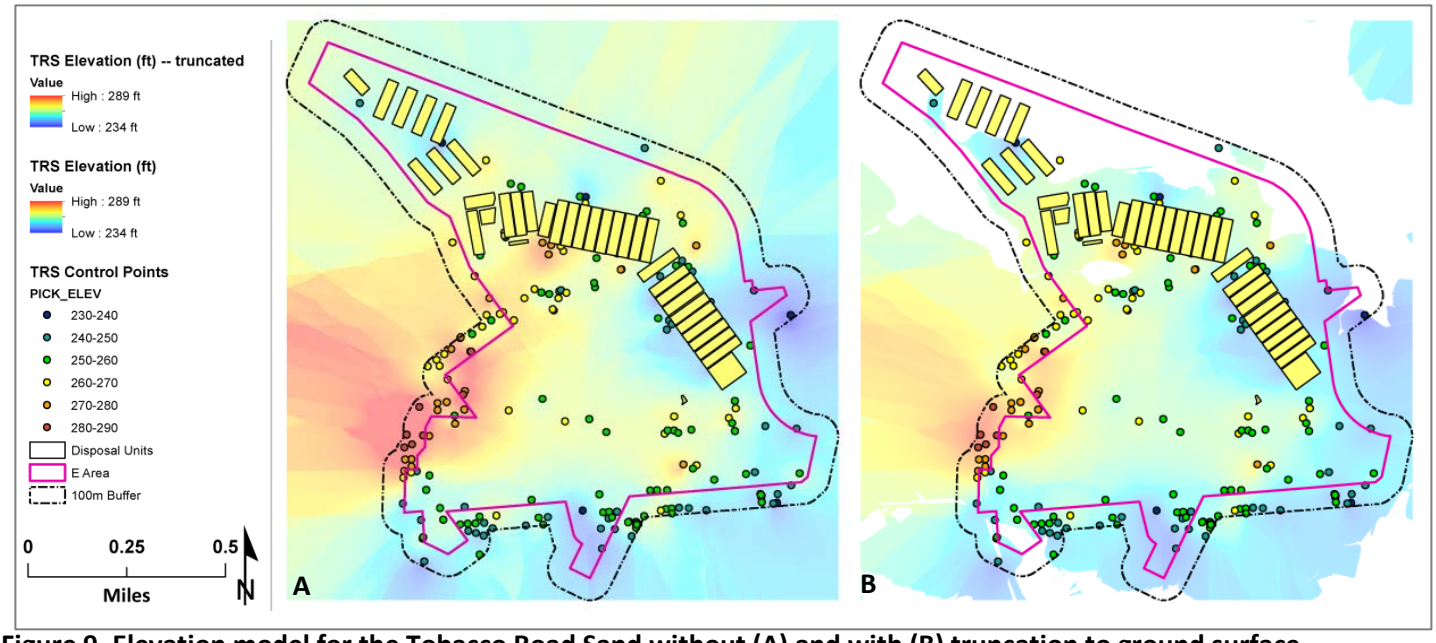

Figure 9. Elevation model for the Tobacco Road Sand without (A) and with (B) truncation to ground surface.

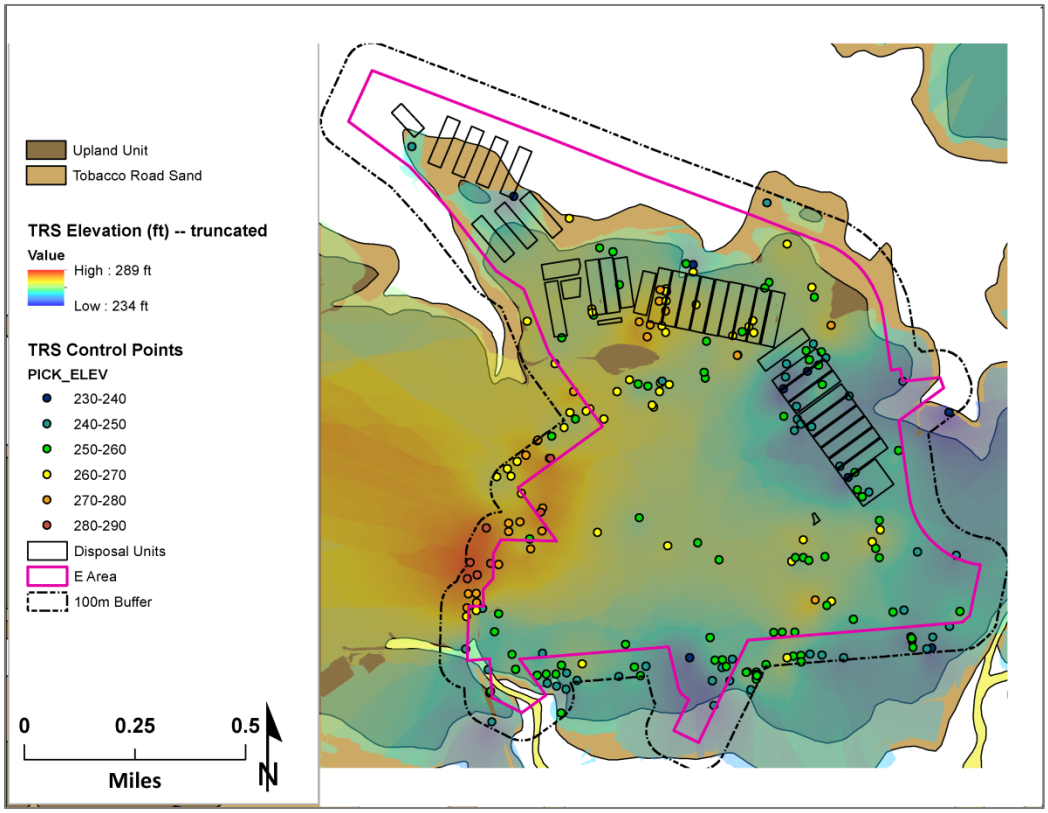

Figure 10. Tobacco Road Sand – truncated elevation model compared with mapped outcrop extent.

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Smits, A.D., Harris, M.K., Hawkins, K.L., and Flach, G.P., 1997, Integrated Hydrogeological Model of the General Separations Area, Volume 1, Hydrogeologic framework, WSRC-TR-96-0399.

SRS GDMS, 2017, Savannah River Site Geological Data Management System.
< *http://sqlsan1/reports$srs1_p/Pages/Report.aspx?ItemPath=/GDMS/GDMS-Web/SearchResultsReport* >

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Appendix 1. Control points (n=119) for elevation model of the water table.

Well Name	UTME (m)	UTMN (m)	Aquifer Unit	Mean (ft)
BGO 1D	438,984.2	3,682,856.1	UAZ	234.9
BGO 2D	438,845.5	3,683,062.3	UAZ	231.1
BGO 3DR	438,676.0	3,683,300.6	UAZ	228.3
BGO 4D	438,557.6	3,683,454.7	UAZ	226.1
BGO 5D	438,494.3	3,683,532.0	UAZ	225.6
BGO 6D	438,372.3	3,683,447.0	UAZ	226.3
BGO 7D	438,277.5	3,683,380.6	UAZ	226.3
BGO 8D	438,186.8	3,683,350.1	UAZ	226.6
BGO 10DR	438,014.0	3,683,305.8	UAZ	226.3
BGO 11DR	437,901.8	3,683,240.8	UAZ	226.2
BGO 13DR	437,706.6	3,683,089.5	UAZ	226.0
BGO 14DR	437,784.2	3,682,956.6	UAZ	225.7
BGO 15D	437,863.9	3,682,883.2	UAZ	225.7
BGO 16D	437,988.2	3,682,890.0	UAZ	226.0
BGO 17DR	438,065.2	3,682,890.4	UAZ	226.6
BGO 18D	438,140.8	3,682,944.0	UAZ	229.0
BGO 20D	438,354.3	3,682,859.1	UAZ	228.9
BGO 21D	438,491.3	3,682,855.6	UAZ	229.9
BGO 22DX	438,588.2	3,682,877.9	UAZ	230.4
BGO 23D	438,735.3	3,682,863.4	UAZ	231.5
BGO 24D	438,851.1	3,682,862.7	UAZ	232.9
BGO 26D	437,628.3	3,682,769.9	UAZ	223.7
BGO 27D	437,626.6	3,682,598.8	UAZ	222.5
BGO 28D	437,630.8	3,682,477.9	UAZ	221.4
BGO 29D	437,498.7	3,682,473.8	UAZ	221.6
BGO 30D	437,669.8	3,682,445.7	UAZ	221.3
BGO 31D	437,790.5	3,682,457.3	UAZ	222.0
BGO 32D	437,937.4	3,682,466.9	UAZ	222.7
BGO 33D	438,093.4	3,682,483.1	UAZ	225.4
BGO 34D	438,231.8	3,682,493.5	UAZ	227.5
BGO 35D	438,399.3	3,682,508.8	UAZ	229.3
BGO 36D	438,517.2	3,682,518.4	UAZ	232.9
BGO 37D	438,662.3	3,682,528.7	UAZ	234.2
BGO 38D	438,756.5	3,682,536.4	UAZ	232.6
BGO 39D	438,778.3	3,682,648.0	UAZ	231.1
BGO 40D	437,535.9	3,682,701.8	UAZ	217.3
BGO 43D	437,763.2	3,683,218.1	UAZ	226.4
BGO 44D	438,228.2	3,683,444.6	UAZ	226.3
BGO 45D	437,571.5	3,682,625.4	UAZ	222.5
BGO 46D	437,677.9	3,682,393.6	UAZ	221.2
BGO 47D	437,854.5	3,682,411.3	UAZ	222.0

Note: Depending on location in the study area, the water table occurs in the UAZ (above the TCCZ) or in the LAZ (beneath the TCCZ). See Figure 2. LAZ control points included in this elevation model are from monitoring wells where the water table occurs beneath the TCCZ, in the LAZ. See Hiergesell et al. (2015) for more detail.

Well Name	UTME (m)	UTMN (m)	Aquifer Unit	Mean (ft)
BGO 48D	437,930.8	3,682,409.1	UAZ	221.6
BGO 49D	438,313.8	3,682,441.0	UAZ	228.9
BGO 50D	437,599.5	3,682,392.1	UAZ	220.9
BGO 51D	438,689.7	3,682,785.0	UAZ	231.1
BGO 52D	438,437.8	3,682,789.8	UAZ	229.2
BGO 53D	437,742.3	3,682,825.8	UAZ	227.4
BGX 1D	438,391.3	3,683,582.2	UAZ	224.9
BGX 2B	438,233.9	3,683,616.1	LAZ	207.9
BGX 2D	438,238.1	3,683,615.0	LAZ	209.8
BGX 3D	438,049.6	3,683,622.7	LAZ	210.1
BGX 4C	437,851.8	3,683,595.2	LAZ	209.2
BGX 4D	437,846.4	3,683,594.3	LAZ	210.3
BGX 5D	437,785.5	3,683,741.4	LAZ	204.2
BGX 6D	437,778.1	3,683,863.5	LAZ	201.9
BGX 7D	438,042.3	3,683,908.5	LAZ	201.4
BGX 8DR	438,333.7	3,683,834.3	LAZ	201.8
BGX 9D	438,593.7	3,683,777.2	UAZ	223.7
BGX 10D	438,788.6	3,683,635.4	UAZ	223.1
BGX 11D	438,901.5	3,683,385.0	UAZ	231.1
BGX 12D	439,084.0	3,683,182.4	UAZ	234.5
BGX006DR	437,733.7	3,683,838.0	LAZ	202.7
BGX013D	438,267.4	3,683,849.1	LAZ	202.1
BSE 1D1	438,678.6	3,682,435.6	UAZ	232.9
BSE 1D3	438,678.6	3,682,435.6	UAZ	231.8
BSE 2D1	438,601.8	3,682,407.5	UAZ	231.2
BSE 2D2	438,601.8	3,682,407.5	UAZ	227.5
BSE 2D3	438,601.8	3,682,407.5	UAZ	227.4
BSW 1D1	437,629.7	3,682,220.5	UAZ	218.3
BSW 1D2	437,629.7	3,682,220.5	UAZ	218.2
BSW 1D3	437,629.7	3,682,220.5	UAZ	217.3
BSW 2D1	437,734.1	3,682,212.3	UAZ	219.2
BSW 2D2	437,734.1	3,682,212.3	UAZ	220.5
BSW 3D1	437,856.6	3,682,234.2	UAZ	220.4
BSW 3D2	437,856.6	3,682,234.2	UAZ	221.5
FCB002DR	437,610.0	3,682,912.9	UAZ	224.7
FSS 2D	437,541.9	3,682,320.9	UAZ	219.3
HMD 1D	437,643.7	3,683,762.5	LAZ	205.9
HMD 2D	437,549.2	3,684,045.7	LAZ	197.3
HMD 3D	437,682.0	3,684,109.6	LAZ	196.9
HMD 4B	437,868.8	3,684,088.1	LAZ	194.4
HMD 4D	437,866.2	3,684,086.0	LAZ	197.1
HOB 5D	439,207.5	3,682,466.5	UAZ	233.3
HSB 65	439,134.0	3,682,470.6	UAZ	231.6

Well Name	UTME (m)	UTMN (m)	Aquifer Unit	Mean (ft)
HSB 65C	439,135.2	3,682,476.7	UAZ	231.0
HSB 85C	439,014.0	3,682,902.1	UAZ	235.8
HSB116D	438,447.2	3,682,148.7	UAZ	221.2
HSB119D	438,442.1	3,682,222.6	UAZ	223.5
HSB120D	438,465.8	3,682,342.8	UAZ	226.3
HSB138D	438,221.0	3,682,082.8	UAZ	222.5
HSB147D	438,235.2	3,682,344.8	UAZ	227.8
HSL 1D	439,299.5	3,682,498.4	UAZ	233.3
HSL 2D	439,420.3	3,682,590.5	UAZ	239.0
NEP 1D	437,357.9	3,684,179.8	LAZ	192.0
NEP 2D	437,510.6	3,684,137.3	LAZ	195.6
NEP 3D	438,278.6	3,684,083.8	LAZ	194.8
NEP 4D	438,473.2	3,684,136.4	LAZ	191.8
NWP 2D	437,500.3	3,683,874.9	LAZ	201.5
SEP001MD	438,450.5	3,682,401.2	UAZ	228.0
UTR_CTRL_1	436,937.3	3,684,890.1	STREAM	132.7
UTR_CTRL_2	437,237.9	3,684,734.5	STREAM	135.1
UTR_CTRL_3	437,460.1	3,684,843.5	STREAM	134.9
UTR_CTRL_4	437,654.9	3,684,770.5	STREAM	135.7
UTR_CTRL_5	437,887.8	3,684,728.9	STREAM	136.4
UTR_CTRL_6	438,103.5	3,684,690.9	STREAM	138.1
UTR_CTRL_7	438,240.0	3,684,842.8	STREAM	139.1
UTR_CTRL_8	438,314.3	3,684,880.7	STREAM	139.4
UTR_CTRL_9	438,348.2	3,684,737.0	STREAM	144.9
UTR_CTRL_10	438,409.6	3,684,578.7	STREAM	147.1
UTR_CTRL_11	438,538.8	3,684,501.1	STREAM	154.1
UTR_CTRL_12	438,664.8	3,684,419.5	STREAM	160.0
UTR_CTRL_13	438,794.9	3,684,322.6	STREAM	161.8
UTR_TRIB_CTRL_1	436,732.0	3,684,717.6	STREAM	132.3
UTR_TRIB_CTRL_2	436,838.9	3,684,486.9	STREAM	147.6
UTR_TRIB_CTRL_3	436,896.0	3,684,382.1	STREAM	151.4
UTR_TRIB_CTRL_4	437,055.8	3,684,217.0	STREAM	167.3
UTR_TRIB_CTRL_5	437,134.2	3,684,149.3	STREAM	178.5
UTR_TRIB_CTRL_6	437,199.8	3,684,084.7	STREAM	183.5
UTR_TRIB_CTRL_7	437,306.7	3,683,981.0	STREAM	187.7

Appendix 2. Control points (n=218) for elevation model of the Lower Aquifer Zone (LAZ).

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Lower Aquifer Zone of UTRA	BGC1A	WELL	438,627.7	3,682,526.2	281.5	97.7	183.8
Lower Aquifer Zone of UTRA	BGC2A	WELL	438,161.9	3,682,488.2	273.1	81.3	191.8
Lower Aquifer Zone of UTRA	BGC3A	WELL	437,737.6	3,682,454.9	271.1	91.6	179.5
Lower Aquifer Zone of UTRA	BGO10A	WELL	438,008.9	3,683,301.0	299.1	92.0	207.1
Lower Aquifer Zone of UTRA	BGO10A	WELL	438,008.9	3,683,301.0	299.1	92.0	207.1
Lower Aquifer Zone of UTRA	BGO10AA	WELL	437,958.9	3,683,338.0	298.8	90.5	208.3
Lower Aquifer Zone of UTRA	BGO10AA	WELL	437,958.9	3,683,338.0	298.8	92.0	206.8
Lower Aquifer Zone of UTRA	BGO12A	WELL	437,811.5	3,683,158.0	311.4	95.5	216.0
Lower Aquifer Zone of UTRA	BGO14A	WELL	437,787.1	3,682,978.0	300.2	88.0	212.2
Lower Aquifer Zone of UTRA	BGO14A	WELL	437,787.1	3,682,978.0	300.2	90.7	209.5
Lower Aquifer Zone of UTRA	BGO16A	WELL	437,985.8	3,682,890.0	302.8	120.0	182.8
Lower Aquifer Zone of UTRA	BGO16A	WELL	437,985.8	3,682,890.0	302.8	120.0	182.8
Lower Aquifer Zone of UTRA	BGO18A	WELL	438,137.9	3,682,942.0	292.9	94.0	198.9
Lower Aquifer Zone of UTRA	BGO18A	WELL	438,137.9	3,682,942.0	292.9	94.0	198.9
Lower Aquifer Zone of UTRA	BGO20A	WELL	438,350.3	3,682,857.7	281.3	87.0	194.3
Lower Aquifer Zone of UTRA	BGO20AA	WELL	438,350.6	3,682,851.6	281.3	87.0	194.3
Lower Aquifer Zone of UTRA	BGO20AA	WELL	438,350.6	3,682,851.6	281.3	87.0	194.3
Lower Aquifer Zone of UTRA	BGO25A	WELL	437,783.7	3,682,894.0	294.7	94.0	200.7
Lower Aquifer Zone of UTRA	BGO25A	WELL	437,783.7	3,682,894.0	294.7	94.0	200.7
Lower Aquifer Zone of UTRA	BGO26A	WELL	437,625.6	3,682,773.0	285.1	73.4	211.7
Lower Aquifer Zone of UTRA	BGO27C	WELL	437,626.3	3,682,594.0	273.9	82.0	191.9
Lower Aquifer Zone of UTRA	BGO27C	WELL	437,626.3	3,682,594.0	273.9	82.0	191.9
Lower Aquifer Zone of UTRA	BGO29A	WELL	437,506.3	3,682,466.0	262.1	77.0	185.1
Lower Aquifer Zone of UTRA	BGO29A	WELL	437,506.3	3,682,466.0	262.1	77.0	185.1
Lower Aquifer Zone of UTRA	BGO31C	WELL	437,785.6	3,682,451.0	271.1	83.0	188.1
Lower Aquifer Zone of UTRA	BGO31C	WELL	437,785.6	3,682,451.0	271.1	83.4	187.7
Lower Aquifer Zone of UTRA	BGO33C	WELL	438,088.4	3,682,483.2	277.4	86.0	191.4
Lower Aquifer Zone of UTRA	BGO33C	WELL	438,088.4	3,682,483.2	277.4	86.0	191.4
Lower Aquifer Zone of UTRA	BGO35C	WELL	438,395.9	3,682,508.0	271.4	74.0	197.4
Lower Aquifer Zone of UTRA	BGO35C	WELL	438,395.9	3,682,508.0	271.4	75.0	196.4
Lower Aquifer Zone of UTRA	BGO37C	WELL	438,657.7	3,682,527.0	284.3	93.0	191.3
Lower Aquifer Zone of UTRA	BGO37C	WELL	438,657.7	3,682,527.0	284.3	93.0	191.3
Lower Aquifer Zone of UTRA	BGO39A	WELL	438,777.8	3,682,644.0	293.7	100.1	193.6
Lower Aquifer Zone of UTRA	BGO3A	WELL	438,663.4	3,683,310.1	288.0	100.0	188.0
Lower Aquifer Zone of UTRA	BGO3A	WELL	438,663.4	3,683,310.1	288.0	100.0	188.0
Lower Aquifer Zone of UTRA	BGO41A	WELL	437,662.9	3,682,923.0	298.3	90.0	208.3
Lower Aquifer Zone of UTRA	BGO41A	WELL	437,662.9	3,682,923.0	298.3	92.2	206.1
Lower Aquifer Zone of UTRA	BGO42C	WELL	437,703.9	3,682,928.0	295.9	87.0	208.9
Lower Aquifer Zone of UTRA	BGO42C	WELL	437,703.9	3,682,928.0	295.9	89.0	206.9
Lower Aquifer Zone of UTRA	BGO43AA	WELL	437,769.1	3,683,225.0	312.2	104.0	208.2
Lower Aquifer Zone of UTRA	BGO44AA	WELL	438,222.1	3,683,438.0	283.3	70.7	212.6

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Lower Aquifer Zone of UTRA	BGO45A	WELL	437,567.8	3,682,613.0	276.9	76.0	200.9
Lower Aquifer Zone of UTRA	BGO45A	WELL	437,567.8	3,682,613.0	276.9	76.9	200.0
Lower Aquifer Zone of UTRA	BGO46B	WELL	437,688.3	3,682,393.0	263.4	70.0	193.4
Lower Aquifer Zone of UTRA	BGO46B	WELL	437,688.3	3,682,393.0	263.4	72.0	191.4
Lower Aquifer Zone of UTRA	BGO47A	WELL	437,854.2	3,682,407.0	264.8	75.0	189.8
Lower Aquifer Zone of UTRA	BGO47A	WELL	437,854.2	3,682,407.0	264.8	75.0	189.8
Lower Aquifer Zone of UTRA	BGO48C	WELL	437,929.7	3,682,412.0	274.7	83.0	191.7
Lower Aquifer Zone of UTRA	BGO48C	WELL	437,929.7	3,682,412.0	274.7	83.9	190.8
Lower Aquifer Zone of UTRA	BGO49A	WELL	438,320.9	3,682,435.0	269.1	77.0	192.1
Lower Aquifer Zone of UTRA	BGO49A	WELL	438,320.9	3,682,435.0	269.1	77.0	192.1
Lower Aquifer Zone of UTRA	BGO50A	WELL	437,588.7	3,682,391.0	253.5	70.0	183.5
Lower Aquifer Zone of UTRA	BGO50A	WELL	437,588.7	3,682,391.0	253.5	70.0	183.5
Lower Aquifer Zone of UTRA	BGO51AA	WELL	438,692.1	3,682,785.0	287.2	93.0	194.2
Lower Aquifer Zone of UTRA	BGO51AA	WELL	438,692.1	3,682,785.0	287.2	93.0	194.2
Lower Aquifer Zone of UTRA	BGO52AA	WELL	438,428.3	3,682,790.7	281.6	85.0	196.6
Lower Aquifer Zone of UTRA	BGO52AA	WELL	438,428.3	3,682,790.7	281.6	85.0	196.6
Lower Aquifer Zone of UTRA	BGO53AA	WELL	437,742.1	3,682,829.1	288.9	73.0	215.9
Lower Aquifer Zone of UTRA	BGO53AA	WELL	437,742.1	3,682,829.1	288.9	74.3	214.7
Lower Aquifer Zone of UTRA	BGO5C	WELL	438,497.4	3,683,533.0	294.2	93.0	201.2
Lower Aquifer Zone of UTRA	BGO5C	WELL	438,497.4	3,683,533.0	294.2	94.8	199.4
Lower Aquifer Zone of UTRA	BGO6A	WELL	438,377.7	3,683,450.0	283.8	89.0	194.8
Lower Aquifer Zone of UTRA	BGO6A	WELL	438,377.7	3,683,450.0	283.8	89.0	194.8
Lower Aquifer Zone of UTRA	BGO6B	WELL	438,373.1	3,683,471.0	284.5	93.0	191.5
Lower Aquifer Zone of UTRA	BGO6B	WELL	438,373.1	3,683,471.0	284.5	93.0	191.5
Lower Aquifer Zone of UTRA	BGO8A	WELL	438,190.8	3,683,345.0	281.3	82.0	199.3
Lower Aquifer Zone of UTRA	BGO8A	WELL	438,190.8	3,683,345.0	281.3	82.0	199.3
Lower Aquifer Zone of UTRA	BGO9AA	WELL	438,057.0	3,683,401.0	282.8	72.0	210.8
Lower Aquifer Zone of UTRA	BGO9AA	WELL	438,057.0	3,683,401.0	282.8	72.0	210.8
Lower Aquifer Zone of UTRA	BGSG1	CONE	438,103.2	3,683,443.2	281.7	71.7	210.0
Lower Aquifer Zone of UTRA	BGSG15	CONE	437,619.5	3,683,091.5	321.8	102.2	219.7
Lower Aquifer Zone of UTRA	BGSG19	CONE	438,477.4	3,683,603.6	286.2	79.6	206.6
Lower Aquifer Zone of UTRA	BGSG22	CONE	438,554.2	3,683,614.7	284.6	86.2	198.5
Lower Aquifer Zone of UTRA	BGSG23	CONE	438,710.2	3,683,347.1	284.6	86.6	198.0
Lower Aquifer Zone of UTRA	BGSG27	CONE	438,867.4	3,683,130.3	286.3	93.1	193.2
Lower Aquifer Zone of UTRA	BGSG33	CONE	439,011.1	3,682,933.4	290.5	97.4	193.1
Lower Aquifer Zone of UTRA	BGSG35	CONE	437,883.4	3,684,029.6	290.8	73.6	217.2
Lower Aquifer Zone of UTRA	BGSG42	CONE	438,476.4	3,682,429.4	266.0	70.8	195.2
Lower Aquifer Zone of UTRA	BGSG5	CONE	438,247.0	3,683,426.5	282.7	66.8	215.9
Lower Aquifer Zone of UTRA	BGSG60	CONE	437,509.0	3,682,584.5	273.9	74.2	199.7
Lower Aquifer Zone of UTRA	BGSG68	CONE	437,548.5	3,682,735.2	289.6	79.2	210.4
Lower Aquifer Zone of UTRA	BGSG8	CONE	437,885.6	3,683,324.4	299.9	80.6	219.3
Lower Aquifer Zone of UTRA	BGT1	CONE	438,551.2	3,683,657.6	282.9	71.5	211.4
Lower Aquifer Zone of UTRA	BGT1	CONE	438,551.2	3,683,657.6	282.9	75.0	207.9

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Lower Aquifer Zone of UTRA	BGT12	CONE	438,166.3	3,683,600.0	284.2	70.0	214.2
Lower Aquifer Zone of UTRA	BGT12	CONE	438,166.3	3,683,600.0	284.2	70.0	214.2
Lower Aquifer Zone of UTRA	BGT13	CONE	438,137.8	3,683,653.7	287.8	71.8	216.0
Lower Aquifer Zone of UTRA	BGT13	CONE	438,137.8	3,683,653.7	287.8	72.0	215.8
Lower Aquifer Zone of UTRA	BGT14	CONE	438,066.1	3,683,788.1	280.7	71.6	209.2
Lower Aquifer Zone of UTRA	BGT14	CONE	438,066.1	3,683,788.1	280.7	72.0	208.7
Lower Aquifer Zone of UTRA	BGT15	CONE	437,994.4	3,683,922.6	277.5	77.0	200.5
Lower Aquifer Zone of UTRA	BGT15	CONE	437,994.4	3,683,922.6	277.5	77.0	200.5
Lower Aquifer Zone of UTRA	BGT16	CONE	437,923.1	3,684,057.2	250.7	33.5	217.2
Lower Aquifer Zone of UTRA	BGT17	CONE	437,850.6	3,684,191.2	240.7	40.7	200.0
Lower Aquifer Zone of UTRA	BGT18	CONE	437,778.1	3,684,325.2	216.5	12.4	204.1
Lower Aquifer Zone of UTRA	BGT2	CONE	438,610.8	3,683,797.8	276.4	86.4	190.0
Lower Aquifer Zone of UTRA	BGT21	CONE	437,898.8	3,683,401.3	294.2	78.0	216.2
Lower Aquifer Zone of UTRA	BGT21	CONE	437,898.8	3,683,401.3	294.2	80.1	214.1
Lower Aquifer Zone of UTRA	BGT22	CONE	437,831.6	3,683,502.9	281.0	64.4	216.6
Lower Aquifer Zone of UTRA	BGT23	CONE	437,730.6	3,683,655.4	270.0	60.0	210.0
Lower Aquifer Zone of UTRA	BGT23	CONE	437,730.6	3,683,655.4	270.0	60.0	210.0
Lower Aquifer Zone of UTRA	BGT24	CONE	437,646.5	3,683,782.4	265.8	46.0	219.8
Lower Aquifer Zone of UTRA	BGT24	CONE	437,646.5	3,683,782.4	265.8	46.0	219.8
Lower Aquifer Zone of UTRA	BGT25	CONE	437,562.4	3,683,909.4	264.8	41.0	223.8
Lower Aquifer Zone of UTRA	BGT25	CONE	437,562.4	3,683,909.4	264.8	41.0	223.8
Lower Aquifer Zone of UTRA	BGT26	CONE	437,478.4	3,684,036.5	250.2	30.1	220.1
Lower Aquifer Zone of UTRA	BGT27	CONE	437,394.2	3,684,163.5	256.9	48.0	208.9
Lower Aquifer Zone of UTRA	BGT27	CONE	437,394.2	3,684,163.5	256.9	50.0	206.9
Lower Aquifer Zone of UTRA	BGT28	CONE	437,310.1	3,684,290.6	258.3	53.5	204.9
Lower Aquifer Zone of UTRA	BGT29	CONE	437,226.1	3,684,417.6	243.0	27.8	215.2
Lower Aquifer Zone of UTRA	BGT29	CONE	437,226.1	3,684,417.6	243.0	28.0	215.0
Lower Aquifer Zone of UTRA	BGT3	CONE	438,675.8	3,683,935.6	275.7	76.4	199.3
Lower Aquifer Zone of UTRA	BGT3	CONE	438,675.8	3,683,935.6	275.7	78.0	197.7
Lower Aquifer Zone of UTRA	BGT30	CONE	437,150.4	3,684,532.0	219.0	13.3	205.7
Lower Aquifer Zone of UTRA	BGT4	CONE	438,740.8	3,684,073.3	259.2	50.8	208.4
Lower Aquifer Zone of UTRA	BGT4	CONE	438,740.8	3,684,073.3	259.2	55.0	204.2
Lower Aquifer Zone of UTRA	BGT49	CONE	437,597.7	3,682,776.3	297.3	70.0	227.2
Lower Aquifer Zone of UTRA	BGT50	CONE	437,523.0	3,682,780.4	296.3	81.8	214.5
Lower Aquifer Zone of UTRA	BGT50	CONE	437,523.0	3,682,780.4	296.3	82.0	214.3
Lower Aquifer Zone of UTRA	BGT51	CONE	437,611.8	3,682,528.7	272.6	82.1	190.5
Lower Aquifer Zone of UTRA	BGT51	CONE	437,611.8	3,682,528.7	272.6	87.0	185.6
Lower Aquifer Zone of UTRA	BGT56	CONE	438,403.8	3,682,352.0	262.9	87.7	175.2
Lower Aquifer Zone of UTRA	BGT56	CONE	438,403.8	3,682,352.0	262.9	88.0	174.9
Lower Aquifer Zone of UTRA	BGT57	CONE	438,409.4	3,682,260.8	259.4	96.6	162.8
Lower Aquifer Zone of UTRA	BGT58	CONE	438,703.7	3,682,527.2	285.8	106.4	179.3
Lower Aquifer Zone of UTRA	BGT60	CONE	438,917.0	3,682,574.6	291.4	115.0	176.4
Lower Aquifer Zone of UTRA	BGT60	CONE	438,917.0	3,682,574.6	291.4	115.0	176.4

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Lower Aquifer Zone of UTRA	BGT61	CONE	439,061.1	3,682,600.7	284.3	108.0	176.3
Lower Aquifer Zone of UTRA	BGT61	CONE	439,061.1	3,682,600.7	284.3	108.0	176.3
Lower Aquifer Zone of UTRA	BGT62	CONE	439,100.7	3,682,607.9	282.0	105.0	177.0
Lower Aquifer Zone of UTRA	BGT62	CONE	439,100.7	3,682,607.9	282.0	106.0	176.0
Lower Aquifer Zone of UTRA	BGT63	CONE	439,149.7	3,682,818.9	293.7	105.0	188.7
Lower Aquifer Zone of UTRA	BGT63	CONE	439,149.7	3,682,818.9	293.7	105.0	188.7
Lower Aquifer Zone of UTRA	BGT63A	CONE	438,997.8	3,682,831.6	290.8	105.0	185.8
Lower Aquifer Zone of UTRA	BGT64	CONE	439,291.6	3,682,807.0	283.3	95.0	188.3
Lower Aquifer Zone of UTRA	BGT64	CONE	439,291.6	3,682,807.0	283.3	95.0	188.3
Lower Aquifer Zone of UTRA	BGT66	CONE	439,160.8	3,683,263.0	244.0	56.0	188.0
Lower Aquifer Zone of UTRA	BGT66	CONE	439,160.8	3,683,263.0	244.0	56.0	188.0
Lower Aquifer Zone of UTRA	BGT67	CONE	439,263.6	3,683,325.3	242.0	69.5	172.5
Lower Aquifer Zone of UTRA	BGT7	CONE	438,309.0	3,683,864.6	276.4	77.0	199.4
Lower Aquifer Zone of UTRA	BGT7	CONE	438,309.0	3,683,864.6	276.4	77.0	199.4
Lower Aquifer Zone of UTRA	BGT8	CONE	438,274.5	3,684,006.7	249.3	32.0	217.3
Lower Aquifer Zone of UTRA	BGT8	CONE	438,274.5	3,684,006.7	249.3	34.0	215.3
Lower Aquifer Zone of UTRA	BGT9	CONE	438,237.1	3,684,160.7	226.0	27.4	198.6
Lower Aquifer Zone of UTRA	BGX11D	WELL	438,901.5	3,683,385.0	273.8	96.8	177.0
Lower Aquifer Zone of UTRA	BGX11D	WELL	438,901.5	3,683,385.0	273.8	97.0	176.8
Lower Aquifer Zone of UTRA	BGX1A	WELL	438,383.2	3,683,584.0	289.1	86.2	202.9
Lower Aquifer Zone of UTRA	BGX1A	WELL	438,383.2	3,683,584.0	289.1	91.0	198.1
Lower Aquifer Zone of UTRA	BGX2B	WELL	438,233.9	3,683,616.1	289.2	91.0	198.2
Lower Aquifer Zone of UTRA	BGX2B	WELL	438,233.9	3,683,616.1	289.2	91.0	198.2
Lower Aquifer Zone of UTRA	BGX4A	WELL	437,856.3	3,683,595.9	288.8	76.0	212.8
Lower Aquifer Zone of UTRA	BGX4A	WELL	437,856.3	3,683,595.9	288.8	76.0	212.8
Lower Aquifer Zone of UTRA	BGX7D	WELL	438,042.3	3,683,908.5	277.1	66.2	210.9
Lower Aquifer Zone of UTRA	BGX8D	WELL	438,335.2	3,683,861.9	276.1	73.1	203.0
Lower Aquifer Zone of UTRA	BGX9D	WELL	438,593.7	3,683,777.2	277.4	90.3	187.1
Lower Aquifer Zone of UTRA	BPSC15	CONE	438,597.5	3,684,070.1	253.0	41.8	211.2
Lower Aquifer Zone of UTRA	BSE1C1	WELL	438,675.5	3,682,435.0	283.7	83.1	200.6
Lower Aquifer Zone of UTRA	DRB3	WELL	438,181.0	3,682,955.0	285.4	88.2	197.2
Lower Aquifer Zone of UTRA	ECP6CP1	CONE	437,449.3	3,684,072.8	256.8	30.4	226.5
Lower Aquifer Zone of UTRA	ECP8SB1	BORING	437,661.1	3,683,966.2	267.2	42.9	224.3
Lower Aquifer Zone of UTRA	FC3A	WELL	437,804.0	3,683,877.2	269.5	47.1	222.4
Lower Aquifer Zone of UTRA	HAT-CPT1	CONE	439,029.5	3,683,633.2	255.8	56.9	198.9
Lower Aquifer Zone of UTRA	HC12A	WELL	439,261.5	3,682,850.4	287.3	97.0	190.3
Lower Aquifer Zone of UTRA	HC12A	WELL	439,261.5	3,682,850.4	287.3	97.0	190.3
Lower Aquifer Zone of UTRA	HC8A	WELL	438,627.9	3,684,007.8	262.3	45.1	217.2
Lower Aquifer Zone of UTRA	HCH4	BORING	439,304.1	3,682,603.0	270.0	86.0	184.0
Lower Aquifer Zone of UTRA	HCH4	BORING	439,304.1	3,682,603.0	270.0	87.0	183.0
Lower Aquifer Zone of UTRA	HIW1BD	WELL	439,087.7	3,682,488.0	275.8	72.0	203.8
Lower Aquifer Zone of UTRA	HIW1MC	WELL	439,130.6	3,682,495.0	272.3	91.0	181.3
Lower Aquifer Zone of UTRA	HIW1MC	WELL	439,130.6	3,682,495.0	272.3	93.0	179.3

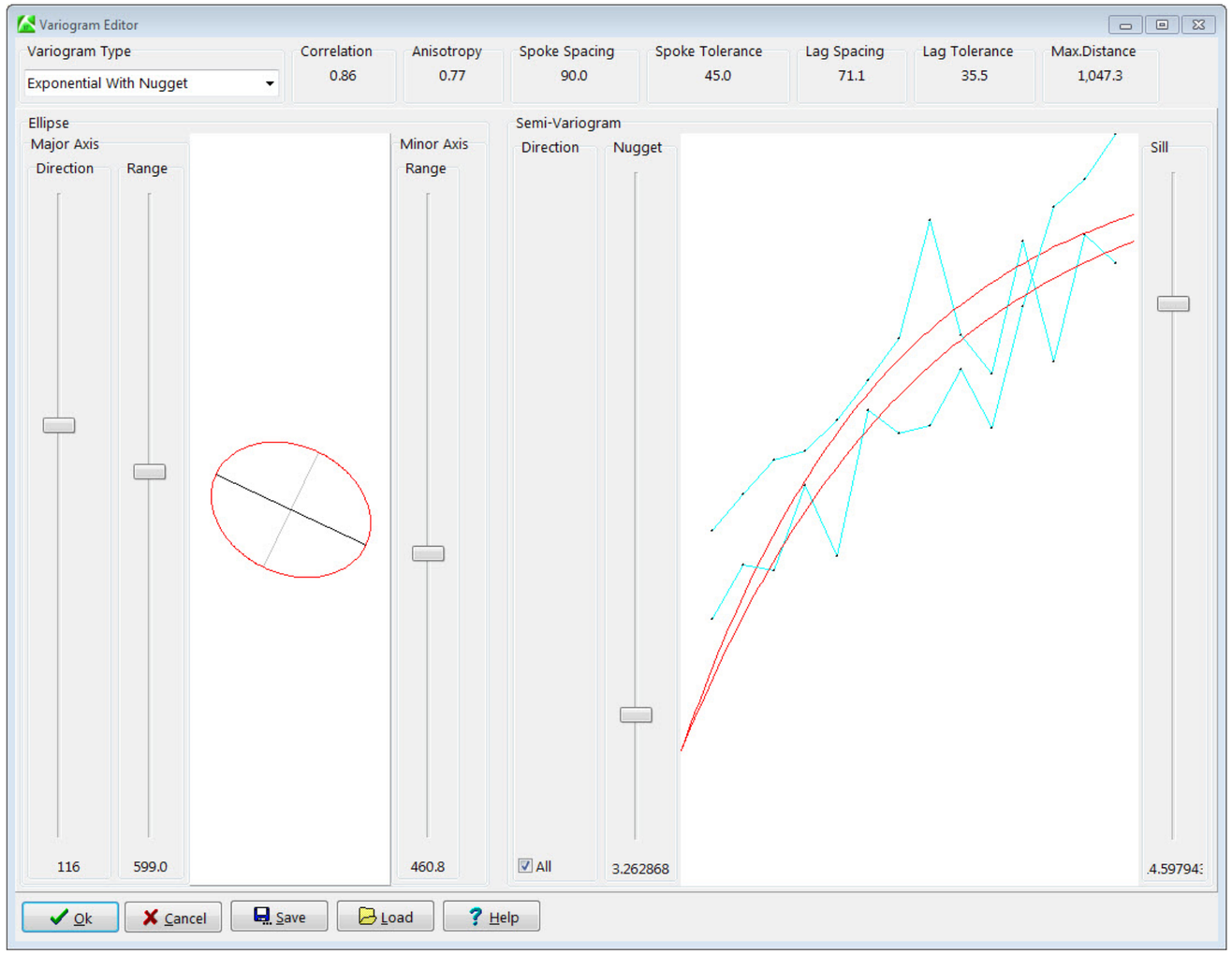
Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Lower Aquifer Zone of UTRA	HIW2A	WELL	438,572.6	3,682,372.0	276.3	80.6	195.7
Lower Aquifer Zone of UTRA	HIW2A	WELL	438,572.6	3,682,372.0	276.3	81.0	195.3
Lower Aquifer Zone of UTRA	HIW2MC	WELL	438,563.2	3,682,357.0	269.0	75.5	193.5
Lower Aquifer Zone of UTRA	HIW2MC	WELL	438,563.2	3,682,357.0	269.0	76.0	193.0
Lower Aquifer Zone of UTRA	HIW4MC	WELL	438,543.5	3,682,318.0	263.4	73.0	190.4
Lower Aquifer Zone of UTRA	HIW4MC	WELL	438,543.5	3,682,318.0	263.4	73.0	190.4
Lower Aquifer Zone of UTRA	HIW5MC	WELL	438,454.7	3,682,403.0	266.1	88.0	178.1
Lower Aquifer Zone of UTRA	HIW5MC	WELL	438,454.7	3,682,403.0	266.1	88.0	178.1
Lower Aquifer Zone of UTRA	HMD1C	BORING	437,643.8	3,683,762.5	262.7	37.0	225.7
Lower Aquifer Zone of UTRA	HMD1C	BORING	437,643.8	3,683,762.5	262.7	41.1	221.6
Lower Aquifer Zone of UTRA	HMD2C	BORING	437,549.3	3,684,045.8	259.3	40.1	219.2
Lower Aquifer Zone of UTRA	HMD2C	BORING	437,549.3	3,684,045.8	259.3	43.0	216.3
Lower Aquifer Zone of UTRA	HMD3C	BORING	437,682.6	3,684,109.0	258.0	39.0	219.0
Lower Aquifer Zone of UTRA	HMD3C	BORING	437,682.6	3,684,109.0	258.0	39.8	218.2
Lower Aquifer Zone of UTRA	HMD4C	BORING	437,866.8	3,684,086.0	249.0	27.6	221.4
Lower Aquifer Zone of UTRA	HMD4C	BORING	437,866.8	3,684,086.0	249.0	29.0	220.0
Lower Aquifer Zone of UTRA	HPT1A	WELL	439,230.6	3,683,452.7	233.8	57.7	176.1
Lower Aquifer Zone of UTRA	HPT2A	WELL	439,096.9	3,683,437.0	257.8	76.8	181.1
Lower Aquifer Zone of UTRA	HSB116C	WELL	438,449.5	3,682,146.0	255.3	60.1	195.3
Lower Aquifer Zone of UTRA	HSB119A	WELL	438,442.5	3,682,214.0	254.8	51.9	203.0
Lower Aquifer Zone of UTRA	HSB120A	WELL	438,467.5	3,682,350.0	266.0	70.0	196.0
Lower Aquifer Zone of UTRA	HSB120A	WELL	438,467.5	3,682,350.0	266.0	73.3	192.7
Lower Aquifer Zone of UTRA	HSB1TB	WELL	439,204.7	3,682,510.1	267.1	68.0	199.1
Lower Aquifer Zone of UTRA	HSB65A	WELL	439,133.2	3,682,473.0	270.7	72.0	198.7
Lower Aquifer Zone of UTRA	HSB65A	WELL	439,133.2	3,682,473.0	270.7	72.0	198.7
Lower Aquifer Zone of UTRA	HSB85A	WELL	439,014.9	3,682,899.0	292.1	92.0	200.1
Lower Aquifer Zone of UTRA	HSB85A	WELL	439,014.9	3,682,899.0	292.1	92.0	200.1
Lower Aquifer Zone of UTRA	HSBTB	WELL	439,205.2	3,682,509.0	267.1	80.9	186.2
Lower Aquifer Zone of UTRA	HTRANC1	CONE	438,241.0	3,682,840.7	308.6	118.6	190.0
Lower Aquifer Zone of UTRA	HTRANC8	CONE	437,739.4	3,682,866.2	299.5	92.4	207.1
Lower Aquifer Zone of UTRA	MBG13	WELL	438,027.7	3,682,388.3	276.0	92.5	183.5
Lower Aquifer Zone of UTRA	NEP1SB	BORING	438,775.0	3,683,744.1	276.2	82.3	194.0
Lower Aquifer Zone of UTRA	OFS1SB	BORING	437,594.3	3,682,308.0	261.6	76.0	185.6
Lower Aquifer Zone of UTRA	OFS1SB	BORING	437,594.3	3,682,308.0	261.6	76.0	185.6
Lower Aquifer Zone of UTRA	OFS2SB	BORING	437,602.0	3,682,201.7	257.5	77.0	180.5
Lower Aquifer Zone of UTRA	OFS3SB	BORING	437,854.0	3,682,234.0	258.1	73.0	185.1
Lower Aquifer Zone of UTRA	OFS3SB	BORING	437,854.0	3,682,234.0	258.1	77.6	180.5
Lower Aquifer Zone of UTRA	ONBP-4	CONE	437,476.2	3,684,269.5	225.5	12.7	212.8
Lower Aquifer Zone of UTRA	ONBP-7	CONE	437,444.8	3,684,209.0	229.0	11.4	217.6
Lower Aquifer Zone of UTRA	ONBP-9	CONE	437,408.9	3,684,258.3	229.7	17.1	212.6
Lower Aquifer Zone of UTRA	PBE2A	WELL	438,349.0	3,682,453.3	248.4	56.3	192.1
Lower Aquifer Zone of UTRA	SP-10	CONE	437,216.0	3,684,319.9	240.0	26.3	213.7
Lower Aquifer Zone of UTRA	SP-14	CONE	437,215.9	3,684,513.0	232.5	15.3	217.2

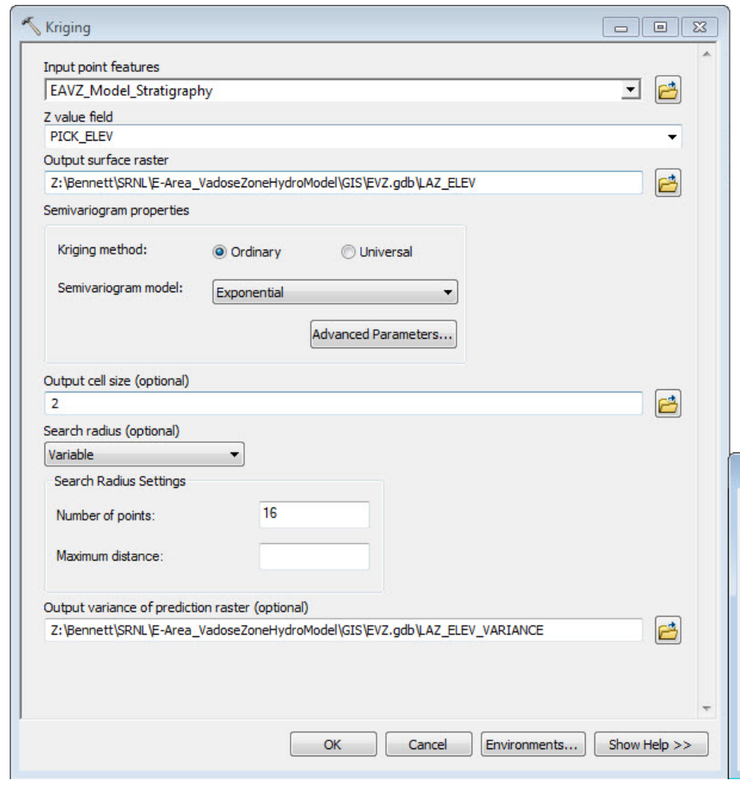
Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Lower Aquifer Zone of UTRA	SP-15	CONE	437,577.2	3,684,384.9	228.9	15.6	213.3
Lower Aquifer Zone of UTRA	SWC24	CONE	437,602.0	3,682,201.7	258.0	78.0	180.0
Lower Aquifer Zone of UTRA	SWC24	CONE	437,602.0	3,682,201.7	258.0	78.0	180.0
Lower Aquifer Zone of UTRA	SWC25	CONE	437,725.7	3,682,209.9	243.0	66.8	176.2
Lower Aquifer Zone of UTRA	SWC36ARA	CONE	437,748.3	3,682,339.4	257.0	75.3	181.7

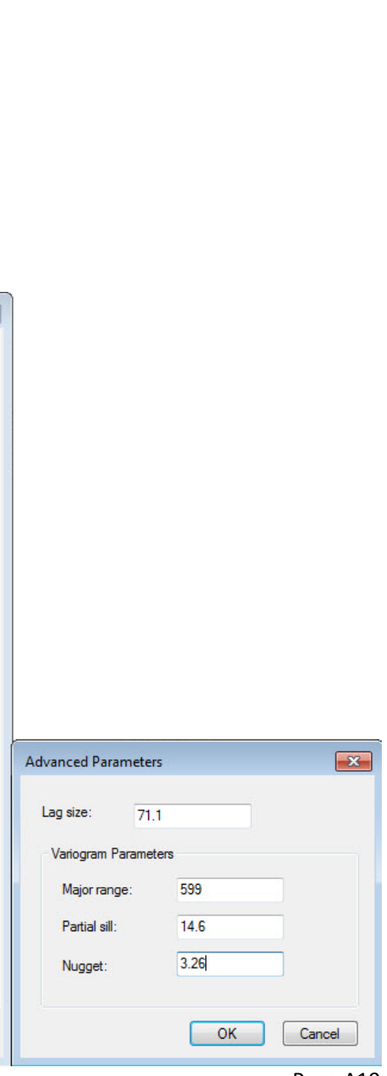
Appendix 2 (continued). Variogram and ArcMap settings for elevation model of Lower Aquifer Zone (LAZ).

Name Z:\Bennett\SRNL\E-Area_VadoseZoneHydroModel\EVZ\LB_LAZ_20170315.RwGrd
Spoke Spacing: 90.0 degrees.
Spoke Tolerance: +/- 45.0 degrees
Distance Increment: 71.1
Distance Tolerance: +/- 35.55
Maximum Cutoff Distance: 1,047.28
Best Variogram (i.e. Best Correlation): Gaussian With Nugget
Correlation Coefficient of Best Variogram: 0.87

Variogram That Was Actually Used: Exponential With Nugget
Correlation Coefficient: 0.86
Nugget: 3.26
Relative Sill: 14.6
Major Axis Direction: N115.6 degrees.
Major Axis Range: 598.99
Minor Axis Direction: N205.6 degrees.
Minor Axis Range: 460.8







Appendix 3. Control points (n=233) for elevation model of the Tan Clay Confining Zone (TCCZ).

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tan Clay Confining Zone	BGC1A	WELL	438,627.7	3,682,526.2	281.5	82.5	199.0
Tan Clay Confining Zone	BGC2A	WELL	438,161.9	3,682,488.2	273.1	73.3	199.8
Tan Clay Confining Zone	BGC3A	WELL	437,737.6	3,682,454.9	271.1	87.3	183.8
Tan Clay Confining Zone	BGO10A	WELL	438,008.9	3,683,301.0	299.1	90.0	209.1
Tan Clay Confining Zone	BGO10A	WELL	438,008.9	3,683,301.0	299.1	90.0	209.1
Tan Clay Confining Zone	BGO10AA	WELL	437,958.9	3,683,338.0	298.8	80.0	218.8
Tan Clay Confining Zone	BGO10AA	WELL	437,958.9	3,683,338.0	298.8	80.0	218.8
Tan Clay Confining Zone	BGO12A	WELL	437,811.5	3,683,158.0	311.4	85.0	226.4
Tan Clay Confining Zone	BGO14A	WELL	437,787.1	3,682,978.0	300.2	80.0	220.2
Tan Clay Confining Zone	BGO14A	WELL	437,787.1	3,682,978.0	300.2	80.0	220.2
Tan Clay Confining Zone	BGO16A	WELL	437,985.8	3,682,890.0	302.8	107.0	195.8
Tan Clay Confining Zone	BGO16A	WELL	437,985.8	3,682,890.0	302.8	107.0	195.8
Tan Clay Confining Zone	BGO18A	WELL	438,137.9	3,682,942.0	292.9	88.7	204.2
Tan Clay Confining Zone	BGO20A	WELL	438,350.3	3,682,857.7	281.3	75.0	206.3
Tan Clay Confining Zone	BGO20AA	WELL	438,350.6	3,682,851.6	281.3	75.0	206.3
Tan Clay Confining Zone	BGO20AA	WELL	438,350.6	3,682,851.6	281.3	75.0	206.3
Tan Clay Confining Zone	BGO23D	WELL	438,735.3	3,682,863.0	287.0	70.3	216.7
Tan Clay Confining Zone	BGO25A	WELL	437,783.7	3,682,894.0	294.7	80.1	214.7
Tan Clay Confining Zone	BGO25A	WELL	437,783.7	3,682,894.0	294.7	83.0	211.7
Tan Clay Confining Zone	BGO26A	WELL	437,625.6	3,682,773.0	285.1	64.9	220.2
Tan Clay Confining Zone	BGO26A	WELL	437,625.6	3,682,773.0	285.1	66.0	219.1
Tan Clay Confining Zone	BGO27C	WELL	437,626.3	3,682,594.0	273.9	75.0	198.9
Tan Clay Confining Zone	BGO27C	WELL	437,626.3	3,682,594.0	273.9	75.0	198.9
Tan Clay Confining Zone	BGO29A	WELL	437,506.3	3,682,466.0	262.1	66.0	196.1
Tan Clay Confining Zone	BGO29A	WELL	437,506.3	3,682,466.0	262.1	66.0	196.1
Tan Clay Confining Zone	BGO31C	WELL	437,785.6	3,682,451.0	271.1	73.0	198.1
Tan Clay Confining Zone	BGO31C	WELL	437,785.6	3,682,451.0	271.1	73.0	198.1
Tan Clay Confining Zone	BGO33C	WELL	438,088.4	3,682,483.2	277.4	74.1	203.3
Tan Clay Confining Zone	BGO33C	WELL	438,088.4	3,682,483.2	277.4	77.0	200.4
Tan Clay Confining Zone	BGO35C	WELL	438,395.9	3,682,508.0	271.4	65.8	205.6
Tan Clay Confining Zone	BGO35C	WELL	438,395.9	3,682,508.0	271.4	67.0	204.4
Tan Clay Confining Zone	BGO37C	WELL	438,657.7	3,682,527.0	284.3	81.6	202.7
Tan Clay Confining Zone	BGO37C	WELL	438,657.7	3,682,527.0	284.3	85.0	199.3
Tan Clay Confining Zone	BGO39A	WELL	438,777.8	3,682,644.0	293.7	86.5	207.2
Tan Clay Confining Zone	BGO39A	WELL	438,777.8	3,682,644.0	293.7	90.0	203.7
Tan Clay Confining Zone	BGO3A	WELL	438,663.4	3,683,310.1	288.0	89.7	198.3
Tan Clay Confining Zone	BGO3A	WELL	438,663.4	3,683,310.1	288.0	91.0	197.0
Tan Clay Confining Zone	BGO41A	WELL	437,662.9	3,682,923.0	298.3	81.0	217.3
Tan Clay Confining Zone	BGO41A	WELL	437,662.9	3,682,923.0	298.3	81.0	217.3
Tan Clay Confining Zone	BGO42C	WELL	437,703.9	3,682,928.0	295.9	79.2	216.7
Tan Clay Confining Zone	BGO42C	WELL	437,703.9	3,682,928.0	295.9	80.0	215.9

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tan Clay Confining Zone	BGO43AA	WELL	437,769.1	3,683,225.0	312.2	90.2	222.1
Tan Clay Confining Zone	BGO44AA	WELL	438,222.1	3,683,438.0	283.3	61.0	222.3
Tan Clay Confining Zone	BGO44AA	WELL	438,222.1	3,683,438.0	283.3	61.4	221.9
Tan Clay Confining Zone	BGO45A	WELL	437,567.8	3,682,613.0	276.9	70.0	206.9
Tan Clay Confining Zone	BGO45A	WELL	437,567.8	3,682,613.0	276.9	70.0	206.9
Tan Clay Confining Zone	BGO46B	WELL	437,688.3	3,682,393.0	263.4	62.2	201.2
Tan Clay Confining Zone	BGO46B	WELL	437,688.3	3,682,393.0	263.4	64.0	199.4
Tan Clay Confining Zone	BGO47A	WELL	437,854.2	3,682,407.0	264.8	67.0	197.8
Tan Clay Confining Zone	BGO47A	WELL	437,854.2	3,682,407.0	264.8	67.0	197.8
Tan Clay Confining Zone	BGO48C	WELL	437,929.7	3,682,412.0	274.7	75.3	199.4
Tan Clay Confining Zone	BGO48C	WELL	437,929.7	3,682,412.0	274.7	77.0	197.7
Tan Clay Confining Zone	BGO49A	WELL	438,320.9	3,682,435.0	269.1	68.0	201.1
Tan Clay Confining Zone	BGO49A	WELL	438,320.9	3,682,435.0	269.1	68.0	201.1
Tan Clay Confining Zone	BGO50A	WELL	437,588.7	3,682,391.0	253.5	58.4	195.1
Tan Clay Confining Zone	BGO50A	WELL	437,588.7	3,682,391.0	253.5	60.0	193.5
Tan Clay Confining Zone	BGO51AA	WELL	438,692.1	3,682,785.0	287.2	81.3	205.9
Tan Clay Confining Zone	BGO51AA	WELL	438,692.1	3,682,785.0	287.2	82.0	205.2
Tan Clay Confining Zone	BGO52AA	WELL	438,428.3	3,682,790.7	281.6	75.0	206.6
Tan Clay Confining Zone	BGO52AA	WELL	438,428.3	3,682,790.7	281.6	75.0	206.6
Tan Clay Confining Zone	BGO53AA	WELL	437,742.1	3,682,829.1	288.9	66.0	222.9
Tan Clay Confining Zone	BGO53AA	WELL	437,742.1	3,682,829.1	288.9	66.5	222.4
Tan Clay Confining Zone	BGO5C	WELL	438,497.4	3,683,533.0	294.2	74.5	219.7
Tan Clay Confining Zone	BGO5C	WELL	438,497.4	3,683,533.0	294.2	76.0	218.2
Tan Clay Confining Zone	BGO6A	WELL	438,377.7	3,683,450.0	283.8	72.1	211.7
Tan Clay Confining Zone	BGO6A	WELL	438,377.7	3,683,450.0	283.8	74.0	209.8
Tan Clay Confining Zone	BGO6B	WELL	438,373.1	3,683,471.0	284.5	82.0	202.5
Tan Clay Confining Zone	BGO6B	WELL	438,373.1	3,683,471.0	284.5	82.0	202.5
Tan Clay Confining Zone	BGO8A	WELL	438,190.8	3,683,345.0	281.3	68.0	213.3
Tan Clay Confining Zone	BGO8A	WELL	438,190.8	3,683,345.0	281.3	68.0	213.3
Tan Clay Confining Zone	BGO9AA	WELL	438,057.0	3,683,401.0	282.8	59.0	223.8
Tan Clay Confining Zone	BGO9AA	WELL	438,057.0	3,683,401.0	282.8	59.0	223.8
Tan Clay Confining Zone	BGSG1	CONE	438,103.2	3,683,443.2	281.7	61.1	220.7
Tan Clay Confining Zone	BGSG15	CONE	437,619.5	3,683,091.5	321.8	97.1	224.7
Tan Clay Confining Zone	BGSG19	CONE	438,477.4	3,683,603.6	286.2	70.3	215.9
Tan Clay Confining Zone	BGSG22	CONE	438,554.2	3,683,614.7	284.6	69.3	215.3
Tan Clay Confining Zone	BGSG23	CONE	438,710.2	3,683,347.1	284.6	80.8	203.8
Tan Clay Confining Zone	BGSG27	CONE	438,867.4	3,683,130.3	286.3	82.3	204.0
Tan Clay Confining Zone	BGSG33	CONE	439,011.1	3,682,933.4	290.5	80.3	210.2
Tan Clay Confining Zone	BGSG35	CONE	437,883.4	3,684,029.6	290.8	71.9	218.9
Tan Clay Confining Zone	BGSG42	CONE	438,476.4	3,682,429.4	266.0	63.2	202.8
Tan Clay Confining Zone	BGSG5	CONE	438,247.0	3,683,426.5	282.7	62.6	220.1
Tan Clay Confining Zone	BGSG60	CONE	437,509.0	3,682,584.5	273.9	67.5	206.4
Tan Clay Confining Zone	BGSG68	CONE	437,548.5	3,682,735.2	289.6	65.5	224.1

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tan Clay Confining Zone	BGSG8	CONE	437,885.6	3,683,324.4	299.9	76.6	223.3
Tan Clay Confining Zone	BGT1	CONE	438,551.2	3,683,657.6	282.9	61.0	221.9
Tan Clay Confining Zone	BGT1	CONE	438,551.2	3,683,657.6	282.9	61.5	221.5
Tan Clay Confining Zone	BGT12	CONE	438,166.3	3,683,600.0	284.2	59.0	225.2
Tan Clay Confining Zone	BGT12	CONE	438,166.3	3,683,600.0	284.2	59.0	225.2
Tan Clay Confining Zone	BGT13	CONE	438,137.8	3,683,653.7	287.8	55.3	232.5
Tan Clay Confining Zone	BGT14	CONE	438,066.1	3,683,788.1	280.7	65.9	214.8
Tan Clay Confining Zone	BGT14	CONE	438,066.1	3,683,788.1	280.7	66.0	214.7
Tan Clay Confining Zone	BGT15	CONE	437,994.4	3,683,922.6	277.5	69.0	208.5
Tan Clay Confining Zone	BGT15	CONE	437,994.4	3,683,922.6	277.5	69.0	208.5
Tan Clay Confining Zone	BGT16	CONE	437,923.1	3,684,057.2	250.7	20.0	230.7
Tan Clay Confining Zone	BGT17	CONE	437,850.6	3,684,191.2	240.7	18.1	222.6
Tan Clay Confining Zone	BGT18	CONE	437,778.1	3,684,325.2	216.5	5.5	211.0
Tan Clay Confining Zone	BGT2	CONE	438,610.8	3,683,797.8	276.4	63.0	213.4
Tan Clay Confining Zone	BGT2	CONE	438,610.8	3,683,797.8	276.4	63.0	213.4
Tan Clay Confining Zone	BGT21	CONE	437,898.8	3,683,401.3	294.2	71.0	223.2
Tan Clay Confining Zone	BGT21	CONE	437,898.8	3,683,401.3	294.2	71.0	223.2
Tan Clay Confining Zone	BGT22	CONE	437,831.6	3,683,502.9	281.0	49.7	231.3
Tan Clay Confining Zone	BGT23	CONE	437,730.6	3,683,655.4	270.0	53.2	216.8
Tan Clay Confining Zone	BGT23	CONE	437,730.6	3,683,655.4	270.0	54.0	216.0
Tan Clay Confining Zone	BGT24	CONE	437,646.5	3,683,782.4	265.8	39.0	226.8
Tan Clay Confining Zone	BGT24	CONE	437,646.5	3,683,782.4	265.8	39.0	226.8
Tan Clay Confining Zone	BGT25	CONE	437,562.4	3,683,909.4	264.8	36.0	228.8
Tan Clay Confining Zone	BGT25	CONE	437,562.4	3,683,909.4	264.8	36.0	228.8
Tan Clay Confining Zone	BGT26	CONE	437,478.4	3,684,036.5	250.2	23.8	226.4
Tan Clay Confining Zone	BGT27	CONE	437,394.2	3,684,163.5	256.9	40.0	216.9
Tan Clay Confining Zone	BGT27	CONE	437,394.2	3,684,163.5	256.9	43.5	213.4
Tan Clay Confining Zone	BGT28	CONE	437,310.1	3,684,290.6	258.3	46.0	212.3
Tan Clay Confining Zone	BGT28	CONE	437,310.1	3,684,290.6	258.3	46.0	212.3
Tan Clay Confining Zone	BGT29	CONE	437,226.1	3,684,417.6	243.0	24.0	219.0
Tan Clay Confining Zone	BGT29	CONE	437,226.1	3,684,417.6	243.0	24.0	219.0
Tan Clay Confining Zone	BGT3	CONE	438,675.8	3,683,935.6	275.7	64.0	211.7
Tan Clay Confining Zone	BGT3	CONE	438,675.8	3,683,935.6	275.7	64.0	211.7
Tan Clay Confining Zone	BGT30	CONE	437,150.4	3,684,532.0	219.0	8.2	210.8
Tan Clay Confining Zone	BGT4	CONE	438,740.8	3,684,073.3	259.2	40.2	219.0
Tan Clay Confining Zone	BGT49	CONE	437,597.7	3,682,776.3	297.3	63.8	233.4
Tan Clay Confining Zone	BGT50	CONE	437,523.0	3,682,780.4	296.3	71.1	225.2
Tan Clay Confining Zone	BGT50	CONE	437,523.0	3,682,780.4	296.3	75.0	221.3
Tan Clay Confining Zone	BGT51	CONE	437,611.8	3,682,528.7	272.6	78.4	194.3
Tan Clay Confining Zone	BGT51	CONE	437,611.8	3,682,528.7	272.6	80.0	192.6
Tan Clay Confining Zone	BGT56	CONE	438,403.8	3,682,352.0	262.9	81.0	181.9
Tan Clay Confining Zone	BGT56	CONE	438,403.8	3,682,352.0	262.9	81.0	181.9
Tan Clay Confining Zone	BGT57	CONE	438,409.4	3,682,260.8	259.4	80.0	179.4

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tan Clay Confining Zone	BGT57	CONE	438,409.4	3,682,260.8	259.4	81.3	178.0
Tan Clay Confining Zone	BGT58	CONE	438,703.7	3,682,527.2	285.8	94.0	191.8
Tan Clay Confining Zone	BGT58	CONE	438,703.7	3,682,527.2	285.8	94.0	191.8
Tan Clay Confining Zone	BGT6	CONE	438,345.5	3,683,716.7	282.2	64.0	218.2
Tan Clay Confining Zone	BGT6	CONE	438,345.5	3,683,716.7	282.2	64.0	218.2
Tan Clay Confining Zone	BGT60	CONE	438,917.0	3,682,574.6	291.4	105.0	186.4
Tan Clay Confining Zone	BGT60	CONE	438,917.0	3,682,574.6	291.4	105.0	186.4
Tan Clay Confining Zone	BGT61	CONE	439,061.1	3,682,600.7	284.3	98.0	186.3
Tan Clay Confining Zone	BGT61	CONE	439,061.1	3,682,600.7	284.3	100.0	184.3
Tan Clay Confining Zone	BGT62	CONE	439,100.7	3,682,607.9	282.0	92.0	190.0
Tan Clay Confining Zone	BGT62	CONE	439,100.7	3,682,607.9	282.0	92.0	190.0
Tan Clay Confining Zone	BGT63	CONE	439,149.7	3,682,818.9	293.7	94.0	199.7
Tan Clay Confining Zone	BGT63A	CONE	438,997.8	3,682,831.6	290.8	93.0	197.8
Tan Clay Confining Zone	BGT63A	CONE	438,997.8	3,682,831.6	290.8	93.0	197.8
Tan Clay Confining Zone	BGT64	CONE	439,291.6	3,682,807.0	283.3	88.0	195.3
Tan Clay Confining Zone	BGT64	CONE	439,291.6	3,682,807.0	283.3	88.0	195.3
Tan Clay Confining Zone	BGT66	CONE	439,160.8	3,683,263.0	244.0	49.0	195.0
Tan Clay Confining Zone	BGT66	CONE	439,160.8	3,683,263.0	244.0	49.7	194.3
Tan Clay Confining Zone	BGT67	CONE	439,263.6	3,683,325.3	242.0	55.5	186.6
Tan Clay Confining Zone	BGT7	CONE	438,309.0	3,683,864.6	276.4	63.4	213.0
Tan Clay Confining Zone	BGT7	CONE	438,309.0	3,683,864.6	276.4	64.0	212.4
Tan Clay Confining Zone	BGT8	CONE	438,274.5	3,684,006.7	249.3	28.0	221.3
Tan Clay Confining Zone	BGT8	CONE	438,274.5	3,684,006.7	249.3	28.0	221.3
Tan Clay Confining Zone	BGT9	CONE	438,237.1	3,684,160.7	226.0	4.6	221.4
Tan Clay Confining Zone	BGX11D	WELL	438,901.5	3,683,385.0	273.8	80.2	193.6
Tan Clay Confining Zone	BGX11D	WELL	438,901.5	3,683,385.0	273.8	81.0	192.8
Tan Clay Confining Zone	BGX1A	WELL	438,383.2	3,683,584.0	289.1	77.7	211.4
Tan Clay Confining Zone	BGX1A	WELL	438,383.2	3,683,584.0	289.1	78.0	211.1
Tan Clay Confining Zone	BGX2B	WELL	438,233.9	3,683,616.1	289.2	73.0	216.2
Tan Clay Confining Zone	BGX2B	WELL	438,233.9	3,683,616.1	289.2	73.0	216.2
Tan Clay Confining Zone	BGX4A	WELL	437,856.3	3,683,595.9	288.8	64.0	224.8
Tan Clay Confining Zone	BGX4A	WELL	437,856.3	3,683,595.9	288.8	68.0	220.8
Tan Clay Confining Zone	BGX7D	WELL	438,042.3	3,683,908.5	277.1	49.9	227.2
Tan Clay Confining Zone	BGX7D	WELL	438,042.3	3,683,908.5	277.1	52.0	225.1
Tan Clay Confining Zone	BGX8D	WELL	438,335.2	3,683,861.9	276.1	62.6	213.5
Tan Clay Confining Zone	BGX9D	WELL	438,593.7	3,683,777.2	277.4	70.0	207.4
Tan Clay Confining Zone	BGX9D	WELL	438,593.7	3,683,777.2	277.4	70.4	207.0
Tan Clay Confining Zone	BPSC15	CONE	438,597.5	3,684,070.1	253.0	26.7	226.3
Tan Clay Confining Zone	BSE1C1	WELL	438,675.5	3,682,435.0	283.7	76.4	207.2
Tan Clay Confining Zone	DRB3	WELL	438,181.0	3,682,955.0	285.4	78.2	207.2
Tan Clay Confining Zone	EAVZCPT11	CONE	438,177.8	3,683,643.3	288.0	64.8	223.3
Tan Clay Confining Zone	ECP6CP1	CONE	437,449.3	3,684,072.8	256.8	26.9	229.9
Tan Clay Confining Zone	ECP8SB1	BORING	437,661.1	3,683,966.2	267.2	38.6	228.5

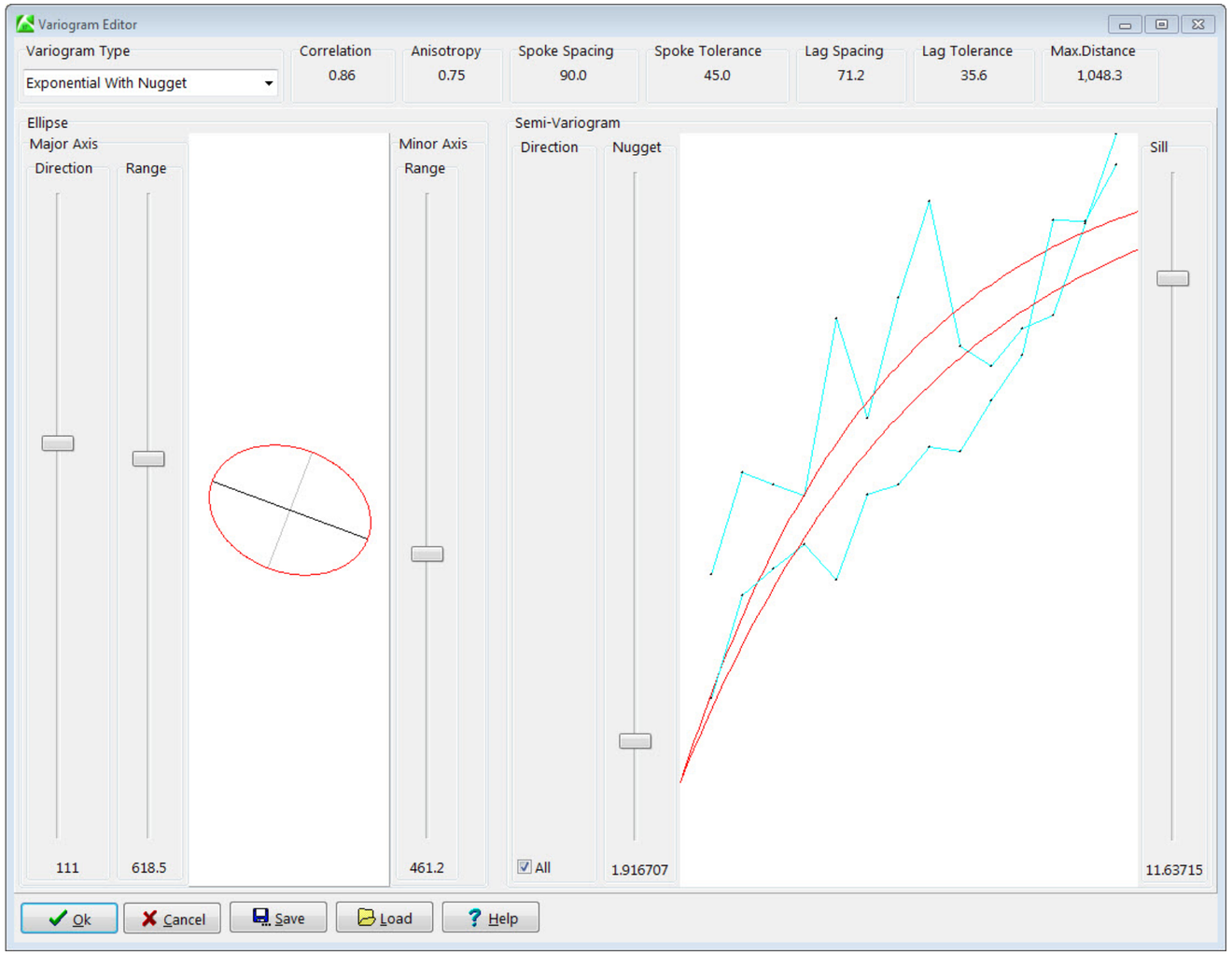
Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tan Clay Confining Zone	FC3A	WELL	437,804.0	3,683,877.2	269.5	41.1	228.4
Tan Clay Confining Zone	HAT-CPT1	CONE	439,029.5	3,683,633.2	255.8	52.7	203.1
Tan Clay Confining Zone	HC12A	WELL	439,261.5	3,682,850.4	287.3	92.0	195.3
Tan Clay Confining Zone	HC12A	WELL	439,261.5	3,682,850.4	287.3	92.0	195.3
Tan Clay Confining Zone	HC8A	WELL	438,627.9	3,684,007.8	262.3	38.5	223.8
Tan Clay Confining Zone	HCH4	BORING	439,304.1	3,682,603.0	270.0	73.0	197.0
Tan Clay Confining Zone	HCH4	BORING	439,304.1	3,682,603.0	270.0	77.0	193.0
Tan Clay Confining Zone	HIW1BD	WELL	439,087.7	3,682,488.0	275.8	69.0	206.8
Tan Clay Confining Zone	HIW1BD	WELL	439,087.7	3,682,488.0	275.8	71.0	204.8
Tan Clay Confining Zone	HIW1MC	WELL	439,130.6	3,682,495.0	272.3	75.0	197.3
Tan Clay Confining Zone	HIW2A	WELL	438,572.6	3,682,372.0	276.3	74.1	202.2
Tan Clay Confining Zone	HIW2A	WELL	438,572.6	3,682,372.0	276.3	75.0	201.3
Tan Clay Confining Zone	HIW2MC	WELL	438,563.2	3,682,357.0	269.0	68.0	201.0
Tan Clay Confining Zone	HIW2MC	WELL	438,563.2	3,682,357.0	269.0	70.0	199.0
Tan Clay Confining Zone	HIW4MC	WELL	438,543.5	3,682,318.0	263.4	66.0	197.4
Tan Clay Confining Zone	HIW4MC	WELL	438,543.5	3,682,318.0	263.4	66.0	197.4
Tan Clay Confining Zone	HIW5MC	WELL	438,454.7	3,682,403.0	266.1	82.0	184.1
Tan Clay Confining Zone	HIW5MC	WELL	438,454.7	3,682,403.0	266.1	82.0	184.1
Tan Clay Confining Zone	HMD1C	BORING	437,643.8	3,683,762.5	262.7	30.1	232.6
Tan Clay Confining Zone	HMD1C	BORING	437,643.8	3,683,762.5	262.7	34.0	228.7
Tan Clay Confining Zone	HMD2C	BORING	437,549.3	3,684,045.8	259.3	35.8	223.5
Tan Clay Confining Zone	HMD2C	BORING	437,549.3	3,684,045.8	259.3	37.0	222.3
Tan Clay Confining Zone	HMD3C	BORING	437,682.6	3,684,109.0	258.0	33.9	224.1
Tan Clay Confining Zone	HMD3C	BORING	437,682.6	3,684,109.0	258.0	34.0	224.0
Tan Clay Confining Zone	HMD4C	BORING	437,866.8	3,684,086.0	249.0	23.6	225.4
Tan Clay Confining Zone	HMD4C	BORING	437,866.8	3,684,086.0	249.0	25.0	224.0
Tan Clay Confining Zone	HPT1A	WELL	439,230.6	3,683,452.7	233.8	53.1	180.7
Tan Clay Confining Zone	HPT2A	WELL	439,096.9	3,683,437.0	257.8	70.0	187.8
Tan Clay Confining Zone	HSB116C	WELL	438,449.5	3,682,146.0	255.3	54.7	200.7
Tan Clay Confining Zone	HSB119A	WELL	438,442.5	3,682,214.0	254.8	42.0	212.8
Tan Clay Confining Zone	HSB119A	WELL	438,442.5	3,682,214.0	254.8	45.2	209.6
Tan Clay Confining Zone	HSB120A	WELL	438,467.5	3,682,350.0	266.0	63.0	203.0
Tan Clay Confining Zone	HSB120A	WELL	438,467.5	3,682,350.0	266.0	64.7	201.3
Tan Clay Confining Zone	HSB1TB	WELL	439,204.7	3,682,510.1	267.1	60.0	207.1
Tan Clay Confining Zone	HSB65A	WELL	439,133.2	3,682,473.0	270.7	62.5	208.2
Tan Clay Confining Zone	HSB65A	WELL	439,133.2	3,682,473.0	270.7	67.0	203.7
Tan Clay Confining Zone	HSB85A	WELL	439,014.9	3,682,899.0	292.1	84.7	207.4
Tan Clay Confining Zone	HSB85A	WELL	439,014.9	3,682,899.0	292.1	88.0	204.1
Tan Clay Confining Zone	HSBTB	WELL	439,205.2	3,682,509.0	267.1	60.0	207.1
Tan Clay Confining Zone	HSBTB	WELL	439,205.2	3,682,509.0	267.1	60.0	207.1
Tan Clay Confining Zone	HTRANC1	CONE	438,241.0	3,682,840.7	308.6	103.5	205.1
Tan Clay Confining Zone	HTRANC8	CONE	437,739.4	3,682,866.2	299.5	86.1	213.4
Tan Clay Confining Zone	MBG13	WELL	438,027.7	3,682,388.3	276.0	87.5	188.5

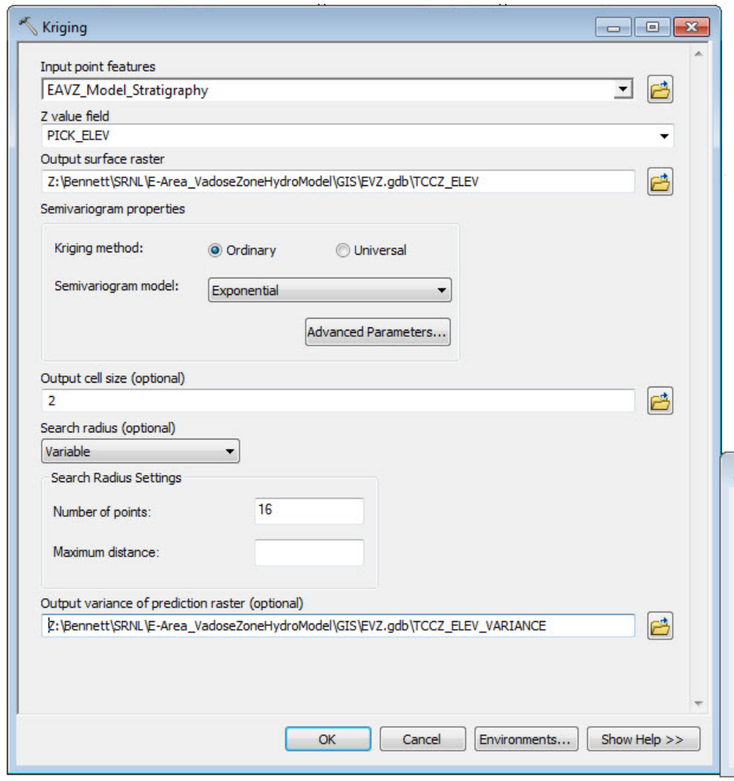
Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tan Clay Confining Zone	MEGACPT4	CONE	438,673.2	3,683,501.2	290.0	71.3	218.7
Tan Clay Confining Zone	MEGACPT5	CONE	438,771.7	3,683,572.9	278.0	64.6	213.4
Tan Clay Confining Zone	NEP1SB	BORING	438,775.0	3,683,744.1	276.2	69.7	206.5
Tan Clay Confining Zone	OFS1SB	BORING	437,594.3	3,682,308.0	261.6	66.0	195.6
Tan Clay Confining Zone	OFS1SB	BORING	437,594.3	3,682,308.0	261.6	66.0	195.6
Tan Clay Confining Zone	OFS2SB	BORING	437,602.0	3,682,201.7	257.5	60.0	197.5
Tan Clay Confining Zone	OFS2SB	BORING	437,602.0	3,682,201.7	257.5	61.1	196.4
Tan Clay Confining Zone	OFS3SB	BORING	437,854.0	3,682,234.0	258.1	62.0	196.1
Tan Clay Confining Zone	OFS3SB	BORING	437,854.0	3,682,234.0	258.1	62.0	196.1
Tan Clay Confining Zone	ONBP-4	CONE	437,476.2	3,684,269.5	225.5	5.1	220.4
Tan Clay Confining Zone	ONBP-7	CONE	437,444.8	3,684,209.0	229.0	8.3	220.7
Tan Clay Confining Zone	ONBP-9	CONE	437,408.9	3,684,258.3	229.7	10.1	219.6
Tan Clay Confining Zone	PBE2A	WELL	438,349.0	3,682,453.3	248.4	50.0	198.4
Tan Clay Confining Zone	SP-10	CONE	437,216.0	3,684,319.9	240.0	24.0	216.1
Tan Clay Confining Zone	SP-14	CONE	437,215.9	3,684,513.0	232.5	11.5	221.0
Tan Clay Confining Zone	SP-15	CONE	437,577.2	3,684,384.9	228.9	12.1	216.8
Tan Clay Confining Zone	SWC24	CONE	437,602.0	3,682,201.7	258.0	63.0	195.0
Tan Clay Confining Zone	SWC24	CONE	437,602.0	3,682,201.7	258.0	63.0	195.0
Tan Clay Confining Zone	SWC25	CONE	437,725.7	3,682,209.9	243.0	50.5	192.5
Tan Clay Confining Zone	SWC36ARA	CONE	437,748.3	3,682,339.4	257.0	67.8	189.2

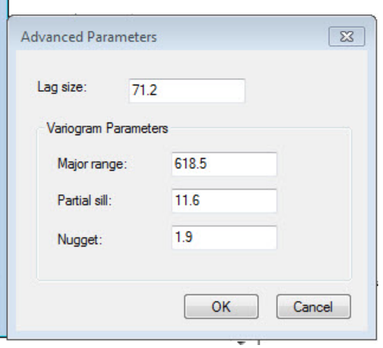
Appendix 3 (continued). Variogram and ArcMap settings for elevation model of Tan Clay Confining Zone (TCCZ).

Name: Z:\Bennett\SRNL\E-Area_VadoseZoneHydroModel\EVZ\LB_TCCZ_20170315.RwGrd
Spoke Spacing: 90.0 degrees.
Spoke Tolerance: +/- 45.0 degrees.
Distance Increment: 71.2
Distance Tolerance: +/- 35.6
Maximum Cutoff Distance: 1,048.26
Best Variogram (i.e. Best Correlation): Exponential With Nugget
Correlation Coefficient of Best Variogram: 0.86

Variogram That Was Actually Used: Exponential With Nugget
Correlation Coefficient: 0.86
Nugget: 1.92
Relative Sill: 11.64
Major Axis Direction: N110.6 degrees.
Major Axis Range: 618.48
Minor Axis Direction: N200.6 degrees.
Minor Axis Range: 461.24







Appendix 4. Control points (n=265) for elevation model of the Tobacco Road Sand (TRS).

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tobacco Road Sand	BGC1A	WELL	438,627.7	3,682,526.2	281.5	31.2	250.3
Tobacco Road Sand	BGO10A	WELL	438,008.9	3,683,301.0	299.1	29.3	269.8
Tobacco Road Sand	BGO10A	WELL	438,008.9	3,683,301.0	299.1	31.9	267.2
Tobacco Road Sand	BGO10AA	WELL	437,958.9	3,683,338.0	298.8	35.5	263.3
Tobacco Road Sand	BGO12A	WELL	437,811.5	3,683,158.0	311.4	37.1	274.3
Tobacco Road Sand	BGO12AR	WELL	437,814.3	3,683,159.0	311.3	21.0	290.3
Tobacco Road Sand	BGO14A	WELL	437,787.1	3,682,978.0	300.2	20.2	280.0
Tobacco Road Sand	BGO14A	WELL	437,787.1	3,682,978.0	300.2	21.9	278.3
Tobacco Road Sand	BGO14AR	WELL	437,779.5	3,682,963.0	298.7	15.0	283.7
Tobacco Road Sand	BGO16A	WELL	437,985.8	3,682,890.0	302.8	38.0	264.8
Tobacco Road Sand	BGO18A	WELL	438,137.9	3,682,942.0	292.9	38.0	254.9
Tobacco Road Sand	BGO1D	WELL	438,984.8	3,682,856.0	293.0	27.0	266.0
Tobacco Road Sand	BGO20AA	WELL	438,350.6	3,682,851.6	281.3	22.2	259.1
Tobacco Road Sand	BGO23D	WELL	438,735.3	3,682,863.0	287.0	19.0	268.0
Tobacco Road Sand	BGO25A	WELL	437,783.7	3,682,894.0	294.7	20.0	274.7
Tobacco Road Sand	BGO26A	WELL	437,625.6	3,682,773.0	285.1	10.0	275.1
Tobacco Road Sand	BGO27C	WELL	437,626.3	3,682,594.0	273.9	21.0	252.9
Tobacco Road Sand	BGO27C	WELL	437,626.3	3,682,594.0	273.9	21.8	252.1
Tobacco Road Sand	BGO29A	WELL	437,506.3	3,682,466.0	262.1	16.1	246.0
Tobacco Road Sand	BGO30C	WELL	437,674.7	3,682,446.0	272.6	17.0	255.6
Tobacco Road Sand	BGO31C	WELL	437,785.6	3,682,451.0	271.1	21.0	250.1
Tobacco Road Sand	BGO31C	WELL	437,785.6	3,682,451.0	271.1	22.0	249.1
Tobacco Road Sand	BGO33C	WELL	438,088.4	3,682,483.2	277.4	22.7	254.7
Tobacco Road Sand	BGO33C	WELL	438,088.4	3,682,483.2	277.4	23.0	254.4
Tobacco Road Sand	BGO35C	WELL	438,395.9	3,682,508.0	271.4	17.1	254.3
Tobacco Road Sand	BGO37C	WELL	438,657.7	3,682,527.0	284.3	24.0	260.3
Tobacco Road Sand	BGO37C	WELL	438,657.7	3,682,527.0	284.3	25.3	259.0
Tobacco Road Sand	BGO39A	WELL	438,777.8	3,682,644.0	293.7	17.0	276.7
Tobacco Road Sand	BGO3A	WELL	438,663.4	3,683,310.1	288.0	32.0	256.0
Tobacco Road Sand	BGO3D	WELL	438,702.4	3,683,259.0	290.8	44.9	245.9
Tobacco Road Sand	BGO41A	WELL	437,662.9	3,682,923.0	298.3	22.2	276.1
Tobacco Road Sand	BGO41A	WELL	437,662.9	3,682,923.0	298.3	23.0	275.3
Tobacco Road Sand	BGO41A	WELL	437,662.9	3,682,923.0	298.3	23.3	275.0
Tobacco Road Sand	BGO42C	WELL	437,703.9	3,682,928.0	295.9	23.0	273.0
Tobacco Road Sand	BGO43A	WELL	437,766.3	3,683,221.0	312.9	38.0	274.9
Tobacco Road Sand	BGO43AA	WELL	437,769.1	3,683,225.0	312.2	35.2	277.0
Tobacco Road Sand	BGO44A	WELL	438,214.6	3,683,433.0	283.0	21.0	262.0
Tobacco Road Sand	BGO44AA	WELL	438,222.1	3,683,438.0	283.3	35.3	248.0
Tobacco Road Sand	BGO45A	WELL	437,567.8	3,682,613.0	276.9	32.0	244.9
Tobacco Road Sand	BGO46B	WELL	437,688.3	3,682,393.0	263.4	7.0	256.4
Tobacco Road Sand	BGO47A	WELL	437,854.2	3,682,407.0	264.8	7.8	257.0

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tobacco Road Sand	BGO47A	WELL	437,854.2	3,682,407.0	264.8	12.8	252.0
Tobacco Road Sand	BGO48C	WELL	437,929.7	3,682,412.0	274.7	11.0	263.7
Tobacco Road Sand	BGO48C	WELL	437,929.7	3,682,412.0	274.7	11.1	263.7
Tobacco Road Sand	BGO49A	WELL	438,320.9	3,682,435.0	269.1	30.0	239.1
Tobacco Road Sand	BGO50A	WELL	437,588.7	3,682,391.0	253.5	4.3	249.2
Tobacco Road Sand	BGO51AA	WELL	438,692.1	3,682,785.0	287.2	25.2	262.0
Tobacco Road Sand	BGO51AA	WELL	438,692.1	3,682,785.0	287.2	25.8	261.4
Tobacco Road Sand	BGO52AA	WELL	438,428.3	3,682,790.7	281.6	21.1	260.5
Tobacco Road Sand	BGO52AA	WELL	438,428.3	3,682,790.7	281.6	22.3	259.3
Tobacco Road Sand	BGO53AA	WELL	437,742.1	3,682,829.1	288.9	10.7	278.2
Tobacco Road Sand	BGO53AA	WELL	437,742.1	3,682,829.1	288.9	10.9	278.0
Tobacco Road Sand	BGO53AA	WELL	437,742.1	3,682,829.1	288.9	14.8	274.1
Tobacco Road Sand	BGO5C	WELL	438,497.4	3,683,533.0	294.2	38.0	256.2
Tobacco Road Sand	BGO5D	WELL	438,494.6	3,683,532.0	294.2	24.0	270.2
Tobacco Road Sand	BGO6A	WELL	438,377.7	3,683,450.0	283.8	27.3	256.5
Tobacco Road Sand	BGO6B	WELL	438,373.1	3,683,471.0	284.5	25.0	259.5
Tobacco Road Sand	BGO8A	WELL	438,190.8	3,683,345.0	281.3	16.3	265.0
Tobacco Road Sand	BGO8A	WELL	438,190.8	3,683,345.0	281.3	17.8	263.5
Tobacco Road Sand	BGO8A	WELL	438,190.8	3,683,345.0	281.3	18.5	262.8
Tobacco Road Sand	BGO8AR	WELL	438,185.2	3,683,352.0	284.6	18.0	266.6
Tobacco Road Sand	BGO8AR	WELL	438,185.2	3,683,352.0	284.6	20.9	263.7
Tobacco Road Sand	BGO8AR	WELL	438,185.2	3,683,352.0	284.6	21.1	263.5
Tobacco Road Sand	BGO9AA	WELL	438,057.0	3,683,401.0	282.8	14.0	268.8
Tobacco Road Sand	BGSG1	CONE	438,103.2	3,683,443.2	281.7	21.0	260.7
Tobacco Road Sand	BGSG10	CONE	437,819.7	3,683,238.0	307.9	51.1	256.8
Tobacco Road Sand	BGSG11	CONE	437,581.5	3,682,905.4	305.0	16.5	288.5
Tobacco Road Sand	BGSG15	CONE	437,619.5	3,683,091.5	321.8	60.4	261.4
Tobacco Road Sand	BGSG17	CONE	437,658.4	3,683,120.5	322.1	54.1	268.0
Tobacco Road Sand	BGSG18	CONE	437,694.1	3,683,146.6	319.5	53.1	266.4
Tobacco Road Sand	BGSG19	CONE	438,477.4	3,683,603.6	286.2	22.6	263.6
Tobacco Road Sand	BGSG2	CONE	438,133.1	3,683,427.8	281.6	26.1	255.6
Tobacco Road Sand	BGSG20	CONE	438,511.7	3,683,618.4	285.3	25.6	259.7
Tobacco Road Sand	BGSG21	CONE	438,536.8	3,683,636.0	284.0	18.2	265.8
Tobacco Road Sand	BGSG22	CONE	438,554.2	3,683,614.7	284.6	20.6	264.1
Tobacco Road Sand	BGSG22	CONE	438,554.2	3,683,614.7	284.6	23.2	261.4
Tobacco Road Sand	BGSG23	CONE	438,710.2	3,683,347.1	284.6	38.2	246.4
Tobacco Road Sand	BGSG24	CONE	438,713.0	3,683,300.3	276.6	29.9	246.7
Tobacco Road Sand	BGSG25	CONE	438,725.2	3,683,283.1	275.5	35.3	240.2
Tobacco Road Sand	BGSG26	CONE	438,764.3	3,683,272.7	275.2	28.0	247.2
Tobacco Road Sand	BGSG27	CONE	438,867.4	3,683,130.3	286.3	40.0	246.3
Tobacco Road Sand	BGSG28	CONE	438,898.0	3,683,088.6	286.4	47.1	239.3
Tobacco Road Sand	BGSG29	CONE	438,922.0	3,683,107.0	285.0	33.5	251.5
Tobacco Road Sand	BGSG3	CONE	438,169.3	3,683,419.8	281.9	25.9	256.0

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tobacco Road Sand	BGSG30	CONE	438,930.9	3,683,043.7	286.3	35.0	251.3
Tobacco Road Sand	BGSG31	CONE	438,948.9	3,683,019.1	286.3	31.7	254.6
Tobacco Road Sand	BGSG32	CONE	438,973.6	3,683,035.9	284.8	37.4	247.5
Tobacco Road Sand	BGSG33	CONE	439,011.1	3,682,933.4	290.5	37.0	253.5
Tobacco Road Sand	BGSG34	CONE	438,706.0	3,682,798.5	289.2	35.0	254.2
Tobacco Road Sand	BGSG35	CONE	437,883.4	3,684,029.6	290.8	23.1	267.7
Tobacco Road Sand	BGSG36	CONE	438,735.2	3,682,798.7	289.8	36.4	253.4
Tobacco Road Sand	BGSG37	CONE	438,754.1	3,682,787.8	289.6	32.5	257.1
Tobacco Road Sand	BGSG38	CONE	438,813.7	3,682,802.3	292.8	35.3	257.5
Tobacco Road Sand	BGSG39	CONE	438,413.5	3,682,425.6	267.5	16.0	251.5
Tobacco Road Sand	BGSG39	CONE	438,413.5	3,682,425.6	267.5	16.3	251.2
Tobacco Road Sand	BGSG4	CONE	438,211.2	3,683,400.4	282.5	22.0	260.5
Tobacco Road Sand	BGSG40	CONE	438,440.5	3,682,427.5	265.0	6.9	258.1
Tobacco Road Sand	BGSG40	CONE	438,440.5	3,682,427.5	265.0	7.0	258.0
Tobacco Road Sand	BGSG41	CONE	438,438.3	3,682,398.5	264.8	16.8	248.0
Tobacco Road Sand	BGSG41	CONE	438,438.3	3,682,398.5	264.8	17.0	247.8
Tobacco Road Sand	BGSG42	CONE	438,476.4	3,682,429.4	266.0	16.0	250.0
Tobacco Road Sand	BGSG42	CONE	438,476.4	3,682,429.4	266.0	17.1	249.0
Tobacco Road Sand	BGSG43	CONE	438,162.7	3,682,404.3	268.4	19.5	248.9
Tobacco Road Sand	BGSG44	CONE	438,120.3	3,682,401.2	269.7	15.9	253.8
Tobacco Road Sand	BGSG45	CONE	438,142.3	3,682,370.3	267.4	12.6	254.8
Tobacco Road Sand	BGSG47	CONE	438,063.7	3,682,366.0	271.8	23.1	248.7
Tobacco Road Sand	BGSG5	CONE	438,247.0	3,683,426.5	282.7	22.0	260.7
Tobacco Road Sand	BGSG53	CONE	437,912.0	3,682,352.9	272.0	22.5	249.5
Tobacco Road Sand	BGSG54	CONE	437,872.1	3,682,320.1	264.0	20.0	244.0
Tobacco Road Sand	BGSG55	CONE	437,874.5	3,682,379.0	266.8	20.2	246.6
Tobacco Road Sand	BGSG56	CONE	437,835.5	3,682,375.7	256.5	3.0	253.5
Tobacco Road Sand	BGSG57	CONE	437,803.4	3,682,341.9	259.0	11.7	247.3
Tobacco Road Sand	BGSG58	CONE	437,800.3	3,682,375.1	263.5	10.2	253.4
Tobacco Road Sand	BGSG59	CONE	437,766.7	3,682,371.4	266.6	10.9	255.7
Tobacco Road Sand	BGSG6	CONE	437,945.4	3,683,329.4	297.7	34.7	263.0
Tobacco Road Sand	BGSG60	CONE	437,509.0	3,682,584.5	273.9	4.5	269.4
Tobacco Road Sand	BGSG61	CONE	437,544.4	3,682,606.6	276.5	6.8	269.7
Tobacco Road Sand	BGSG62	CONE	437,512.0	3,682,615.3	277.0	2.9	274.1
Tobacco Road Sand	BGSG63	CONE	437,545.7	3,682,635.3	277.5	4.3	273.2
Tobacco Road Sand	BGSG64	CONE	437,545.0	3,682,667.7	280.2	3.5	276.7
Tobacco Road Sand	BGSG65	CONE	437,516.0	3,682,666.6	284.6	5.4	279.2
Tobacco Road Sand	BGSG67	CONE	437,512.8	3,682,721.6	291.3	9.0	282.3
Tobacco Road Sand	BGSG68	CONE	437,548.5	3,682,735.2	289.6	4.5	285.1
Tobacco Road Sand	BGSG69	CONE	438,698.2	3,682,440.8	284.2	31.0	253.2
Tobacco Road Sand	BGSG69	CONE	438,698.2	3,682,440.8	284.2	31.4	252.8
Tobacco Road Sand	BGSG7	CONE	437,906.4	3,683,301.2	300.8	41.3	259.5
Tobacco Road Sand	BGSG70	CONE	438,725.6	3,682,443.5	284.1	30.0	254.1

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tobacco Road Sand	BGSG70	CONE	438,725.6	3,682,443.5	284.1	30.4	253.7
Tobacco Road Sand	BGSG70	CONE	438,725.6	3,682,443.5	284.1	30.5	253.6
Tobacco Road Sand	BGSG71	CONE	438,758.3	3,682,447.1	283.3	38.7	244.6
Tobacco Road Sand	BGSG71	CONE	438,758.3	3,682,447.1	283.3	38.8	244.5
Tobacco Road Sand	BGSG71	CONE	438,758.3	3,682,447.1	283.3	39.0	244.3
Tobacco Road Sand	BGSG72	CONE	438,726.9	3,682,420.4	285.2	31.9	253.3
Tobacco Road Sand	BGSG72	CONE	438,726.9	3,682,420.4	285.2	32.0	253.2
Tobacco Road Sand	BGSG72	CONE	438,726.9	3,682,420.4	285.2	32.0	253.2
Tobacco Road Sand	BGSG73	CONE	437,672.4	3,683,093.9	320.9	56.3	264.6
Tobacco Road Sand	BGSG74	CONE	437,709.6	3,683,031.4	306.1	36.6	269.5
Tobacco Road Sand	BGSG75	CONE	437,663.1	3,682,891.8	298.1	21.8	276.3
Tobacco Road Sand	BGSG8	CONE	437,885.6	3,683,324.4	299.9	37.9	262.0
Tobacco Road Sand	BGSG9	CONE	437,865.4	3,683,271.0	303.4	36.7	266.7
Tobacco Road Sand	BGT1	CONE	438,551.2	3,683,657.6	282.9	19.7	263.2
Tobacco Road Sand	BGT12	CONE	438,166.3	3,683,600.0	284.2	6.3	277.9
Tobacco Road Sand	BGT13	CONE	438,137.8	3,683,653.7	287.8	10.1	277.7
Tobacco Road Sand	BGT14	CONE	438,066.1	3,683,788.1	280.7	26.6	254.1
Tobacco Road Sand	BGT15	CONE	437,994.4	3,683,922.6	277.5	19.2	258.3
Tobacco Road Sand	BGT2	CONE	438,610.8	3,683,797.8	276.4	22.2	254.2
Tobacco Road Sand	BGT21	CONE	437,898.8	3,683,401.3	294.2	16.9	277.3
Tobacco Road Sand	BGT22	CONE	437,831.6	3,683,502.9	281.0	16.0	265.0
Tobacco Road Sand	BGT23	CONE	437,730.6	3,683,655.4	270.0	1.5	268.5
Tobacco Road Sand	BGT28	CONE	437,310.1	3,684,290.6	258.3	8.0	250.3
Tobacco Road Sand	BGT28	CONE	437,310.1	3,684,290.6	258.3	8.0	250.3
Tobacco Road Sand	BGT28	CONE	437,310.1	3,684,290.6	258.3	8.3	250.0
Tobacco Road Sand	BGT3	CONE	438,675.8	3,683,935.6	275.7	8.6	267.1
Tobacco Road Sand	BGT49	CONE	437,597.7	3,682,776.3	297.3	10.2	287.1
Tobacco Road Sand	BGT50	CONE	437,523.0	3,682,780.4	296.3	5.9	290.4
Tobacco Road Sand	BGT51	CONE	437,611.8	3,682,528.7	272.6	20.5	252.1
Tobacco Road Sand	BGT56	CONE	438,403.8	3,682,352.0	262.9	22.0	240.9
Tobacco Road Sand	BGT56	CONE	438,403.8	3,682,352.0	262.9	22.3	240.7
Tobacco Road Sand	BGT57	CONE	438,409.4	3,682,260.8	259.4	18.7	240.7
Tobacco Road Sand	BGT58	CONE	438,703.7	3,682,527.2	285.8	26.9	258.9
Tobacco Road Sand	BGT58	CONE	438,703.7	3,682,527.2	285.8	28.0	257.8
Tobacco Road Sand	BGT6	CONE	438,345.5	3,683,716.7	282.2	13.7	268.5
Tobacco Road Sand	BGT60	CONE	438,917.0	3,682,574.6	291.4	41.0	250.4
Tobacco Road Sand	BGT60	CONE	438,917.0	3,682,574.6	291.4	41.1	250.3
Tobacco Road Sand	BGT61	CONE	439,061.1	3,682,600.7	284.3	28.0	256.3
Tobacco Road Sand	BGT62	CONE	439,100.7	3,682,607.9	282.0	34.0	248.0
Tobacco Road Sand	BGT62	CONE	439,100.7	3,682,607.9	282.0	34.4	247.6
Tobacco Road Sand	BGT63	CONE	439,149.7	3,682,818.9	293.7	43.7	250.0
Tobacco Road Sand	BGT63A	CONE	438,997.8	3,682,831.6	290.8	36.1	254.7
Tobacco Road Sand	BGT64	CONE	439,291.6	3,682,807.0	283.3	39.1	244.2

Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tobacco Road Sand	BGT67	CONE	439,263.6	3,683,325.3	242.0	10.0	232.0
Tobacco Road Sand	BGT67	CONE	439,263.6	3,683,325.3	242.0	10.0	232.0
Tobacco Road Sand	BGT67	CONE	439,263.6	3,683,325.3	242.0	10.0	232.0
Tobacco Road Sand	BGT7	CONE	438,309.0	3,683,864.6	276.4	22.3	254.1
Tobacco Road Sand	BGX11D	WELL	438,901.5	3,683,385.0	273.8	30.0	243.8
Tobacco Road Sand	BGX12C	WELL	439,081.2	3,683,186.8	273.1	18.0	255.1
Tobacco Road Sand	BGX1A	WELL	438,383.2	3,683,584.0	289.1	33.1	256.0
Tobacco Road Sand	BGX2B	WELL	438,233.9	3,683,616.1	289.2	20.0	269.2
Tobacco Road Sand	BGX4A	WELL	437,856.3	3,683,595.9	288.8	30.8	258.0
Tobacco Road Sand	BGX7D	WELL	438,042.3	3,683,908.5	277.1	24.1	253.0
Tobacco Road Sand	BGX8D	WELL	438,335.2	3,683,861.9	276.1	41.8	234.3
Tobacco Road Sand	BGX8DR	WELL	438,333.7	3,683,834.3	276.1	12.0	264.1
Tobacco Road Sand	BGX9D	WELL	438,593.7	3,683,777.2	277.4	20.0	257.4
Tobacco Road Sand	BPSC1	CONE	438,835.4	3,683,641.2	280.9	8.3	272.6
Tobacco Road Sand	BPSC2	CONE	438,765.2	3,683,779.7	274.9	12.7	262.2
Tobacco Road Sand	BPSC9	CONE	437,725.6	3,683,169.4	317.2	38.9	278.3
Tobacco Road Sand	BSE1C1	WELL	438,675.5	3,682,435.0	283.7	18.0	265.7
Tobacco Road Sand	BSE2C1	WELL	438,599.3	3,682,409.6	279.8	26.4	253.4
Tobacco Road Sand	BSE2C1	WELL	438,599.3	3,682,409.6	279.8	26.6	253.2
Tobacco Road Sand	BSE2C1	WELL	438,599.3	3,682,409.6	279.8	27.0	252.8
Tobacco Road Sand	DCCPT1	CONE	438,836.5	3,682,640.1	297.0	36.4	260.6
Tobacco Road Sand	DCCPT2	CONE	438,821.0	3,682,625.1	297.0	44.0	253.0
Tobacco Road Sand	DRB5	WELL	438,803.0	3,683,426.0	286.0	26.8	259.2
Tobacco Road Sand	EAVZCPT1	CONE	438,235.3	3,683,773.4	281.0	18.2	262.8
Tobacco Road Sand	EAVZCPT11	CONE	438,177.8	3,683,643.3	288.0	16.2	271.8
Tobacco Road Sand	EAVZCPT2	CONE	438,230.8	3,683,765.6	282.0	16.2	265.8
Tobacco Road Sand	EAVZCPT3	CONE	438,236.7	3,683,763.8	282.0	19.8	262.2
Tobacco Road Sand	EAVZCPT4	CONE	438,213.7	3,683,770.5	281.0	10.2	270.8
Tobacco Road Sand	EAVZCPT5	CONE	438,209.7	3,683,728.4	284.0	10.1	273.9
Tobacco Road Sand	EAVZCPT7B	CONE	438,220.5	3,683,639.0	288.0	18.7	269.3
Tobacco Road Sand	EAVZCPT8	CONE	438,233.8	3,683,693.1	286.0	11.2	274.8
Tobacco Road Sand	EAVZCPT9A	CONE	438,235.0	3,683,729.8	285.0	18.8	266.2
Tobacco Road Sand	HCH4	BORING	439,304.1	3,682,603.0	270.0	13.8	256.2
Tobacco Road Sand	HIN5	WELL	439,202.1	3,682,470.0	268.0	30.5	237.5
Tobacco Road Sand	HIN6	WELL	438,531.0	3,682,384.0	272.4	15.6	256.8
Tobacco Road Sand	HIN6	WELL	438,531.0	3,682,384.0	272.4	15.7	256.7
Tobacco Road Sand	HIN7	WELL	438,563.0	3,682,382.0	275.5	19.4	256.1
Tobacco Road Sand	HIN7	WELL	438,563.0	3,682,382.0	275.5	19.9	255.7
Tobacco Road Sand	HIW1MC	WELL	439,130.6	3,682,495.0	272.3	36.6	235.7
Tobacco Road Sand	HIW1MD	WELL	439,126.0	3,682,510.0	272.7	38.0	234.8
Tobacco Road Sand	HIW2A	WELL	438,572.6	3,682,372.0	276.3	19.5	256.8
Tobacco Road Sand	HIW2MC	WELL	438,563.2	3,682,357.0	269.0	13.6	255.4
Tobacco Road Sand	HIW2MC	WELL	438,563.2	3,682,357.0	269.0	14.9	254.1

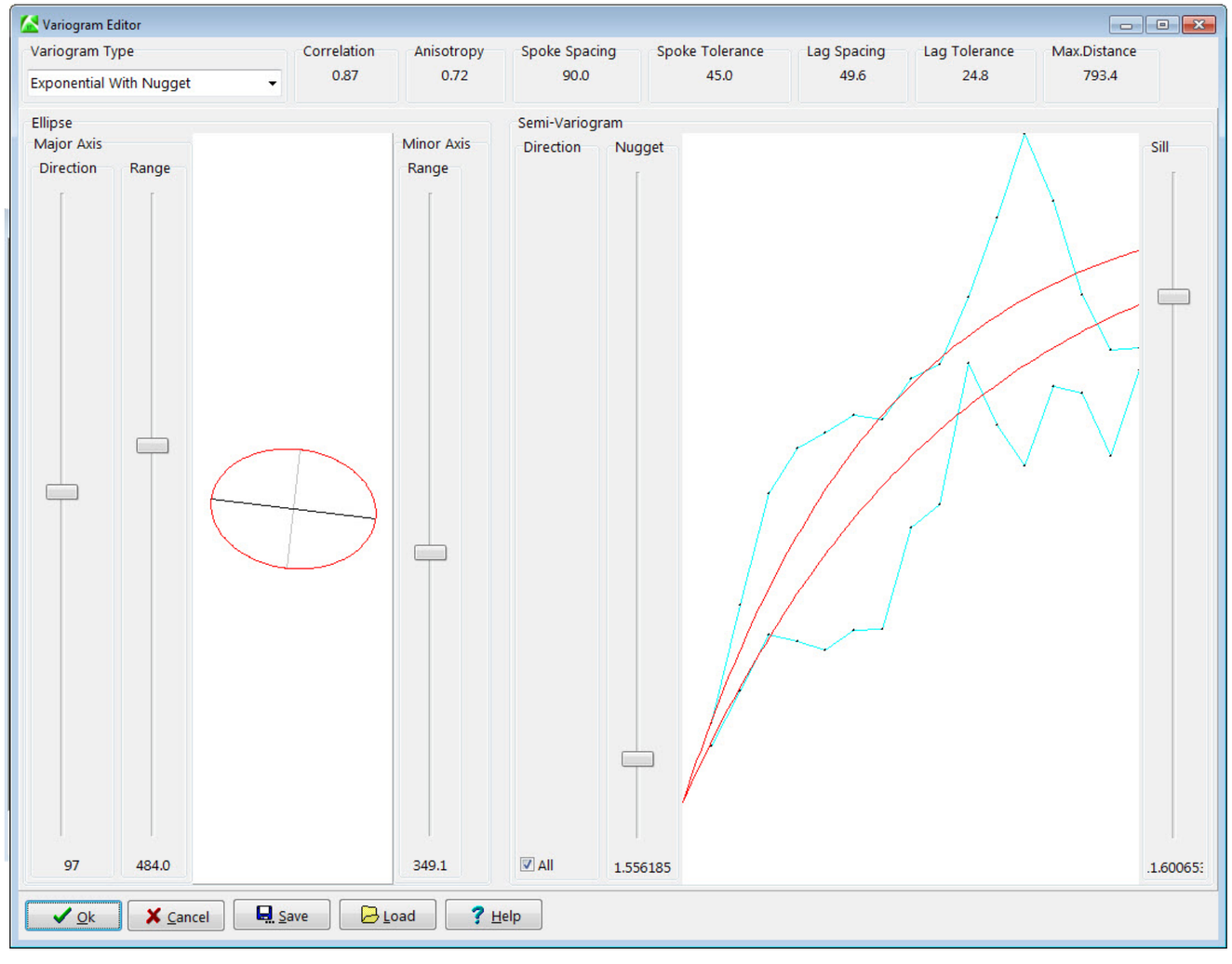
Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tobacco Road Sand	HIW2MC	WELL	438,563.2	3,682,357.0	269.0	15.0	254.0
Tobacco Road Sand	HIW3MC	WELL	438,527.3	3,682,381.0	272.1	14.9	257.2
Tobacco Road Sand	HIW3MC	WELL	438,527.3	3,682,381.0	272.1	15.0	257.1
Tobacco Road Sand	HIW4MC	WELL	438,543.5	3,682,318.0	263.4	16.3	247.1
Tobacco Road Sand	HIW5MC	WELL	438,454.7	3,682,403.0	266.1	15.9	250.2
Tobacco Road Sand	HMD3C	BORING	437,682.6	3,684,109.0	258.0	18.0	240.0
Tobacco Road Sand	HPT2A	WELL	439,096.9	3,683,437.0	257.8	15.1	242.7
Tobacco Road Sand	HSB120A	WELL	438,467.5	3,682,350.0	266.0	20.0	246.0
Tobacco Road Sand	HSB65A	WELL	439,133.2	3,682,473.0	270.7	16.7	254.0
Tobacco Road Sand	HSB85A	WELL	439,014.9	3,682,899.0	292.1	24.0	268.1
Tobacco Road Sand	HSBCPT1	CONE	439,131.2	3,682,503.4	272.5	19.2	253.3
Tobacco Road Sand	HSBCPT11	CONE	438,802.3	3,682,444.5	286.3	36.3	250.0
Tobacco Road Sand	HSBCPT11	CONE	438,802.3	3,682,444.5	286.3	36.8	249.5
Tobacco Road Sand	HSBCPT11	CONE	438,802.3	3,682,444.5	286.3	36.9	249.4
Tobacco Road Sand	HSBCPT2	CONE	439,128.8	3,682,505.7	272.7	18.9	253.8
Tobacco Road Sand	HSBCPT21	CONE	438,880.8	3,682,435.5	275.6	31.5	244.1
Tobacco Road Sand	HSBCPT3	CONE	438,563.4	3,682,374.0	275.0	19.3	255.7
Tobacco Road Sand	HSBCPT3	CONE	438,563.4	3,682,374.0	275.0	21.1	253.9
Tobacco Road Sand	HSBCPT3	CONE	438,563.4	3,682,374.0	275.0	21.2	253.8
Tobacco Road Sand	HSBCPT4	CONE	438,565.8	3,682,370.1	275.4	19.3	256.1
Tobacco Road Sand	HSBCPT4	CONE	438,565.8	3,682,370.1	275.4	20.8	254.7
Tobacco Road Sand	HSBCPT5	CONE	439,184.5	3,682,466.5	268.4	21.3	247.1
Tobacco Road Sand	HSBTB	WELL	439,205.2	3,682,509.0	267.1	18.2	248.9
Tobacco Road Sand	HSC5	WELL	439,265.9	3,682,548.7	266.1	16.7	249.4
Tobacco Road Sand	HTRANC1	CONE	438,241.0	3,682,840.7	308.6	45.1	263.5
Tobacco Road Sand	HTRANC1	CONE	438,241.0	3,682,840.7	308.6	48.2	260.4
Tobacco Road Sand	HTRANC13	CONE	439,011.1	3,682,797.0	291.2	39.0	252.2
Tobacco Road Sand	HTRANC13	CONE	439,011.1	3,682,797.0	291.2	39.2	252.0
Tobacco Road Sand	HTRANC13	CONE	439,011.1	3,682,797.0	291.2	40.0	251.2
Tobacco Road Sand	HTRANC8	CONE	437,739.4	3,682,866.2	299.5	40.1	259.5
Tobacco Road Sand	MEGACPT1	CONE	438,817.4	3,683,523.2	277.0	34.6	242.4
Tobacco Road Sand	MEGACPT2	CONE	438,749.6	3,683,473.9	281.0	41.5	239.5
Tobacco Road Sand	MEGACPT3	CONE	438,663.4	3,683,411.1	287.0	48.7	238.3
Tobacco Road Sand	MEGACPT4	CONE	438,673.2	3,683,501.2	290.0	48.1	242.0
Tobacco Road Sand	MEGACPT5	CONE	438,771.7	3,683,572.9	278.0	30.1	247.9
Tobacco Road Sand	MEGACPT6	CONE	438,756.3	3,683,516.4	280.0	27.2	252.8
Tobacco Road Sand	MEGACPT7	CONE	438,670.1	3,683,453.7	285.0	38.4	246.6
Tobacco Road Sand	MEGACPTEAST	CONE	438,800.6	3,683,544.3	277.0	24.8	252.2
Tobacco Road Sand	MEGACPTNORTH	CONE	438,744.8	3,683,549.9	281.4	26.3	255.2
Tobacco Road Sand	MEGACPTSOUTH	CONE	438,789.4	3,683,496.8	278.7	26.3	252.4
Tobacco Road Sand	NEP1SB	BORING	438,775.0	3,683,744.1	276.2	16.2	260.0
Tobacco Road Sand	NEP1SB	BORING	438,775.0	3,683,744.1	276.2	20.5	255.7
Tobacco Road Sand	OFS1SB	BORING	437,594.3	3,682,308.0	261.6	6.6	255.0

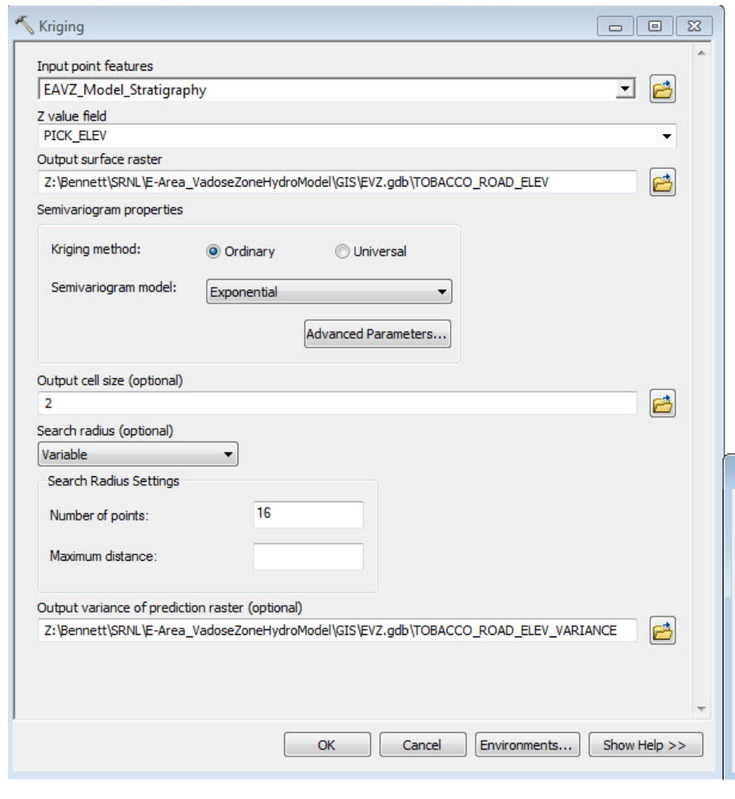
Stratigraphic Unit	Borehole Name	Borehole Type	UTME (m)	UTMN (m)	Ground Elevation (ft)	Pick Depth (ft)	Pick Elevation (ft)
Tobacco Road Sand	OFS2SB	BORING	437,602.0	3,682,201.7	257.5	20.0	237.5
Tobacco Road Sand	SCGS-Aiken #502	BORING	438,602.1	3,684,085.6	253.0	4.0	249.0
Tobacco Road Sand	ST8VL1	CONE	437,971.5	3,683,678.2	285.7	27.6	258.1
Tobacco Road Sand	ST8VL2_CPT	CONE	437,965.8	3,683,700.4	285.8	22.9	263.0
Tobacco Road Sand	ST8VL3_CPT	CONE	437,966.8	3,683,687.2	285.7	22.7	263.0
Tobacco Road Sand	SWC24	CONE	437,602.0	3,682,201.7	258.0	16.0	242.0
Tobacco Road Sand	SWC26	CONE	437,854.0	3,682,234.0	258.0	4.7	253.4
Tobacco Road Sand	SWC31	CONE	437,837.7	3,682,331.4	253.0	6.4	246.6
Tobacco Road Sand	SWC35	CONE	437,597.3	3,682,312.8	262.0	4.8	257.2

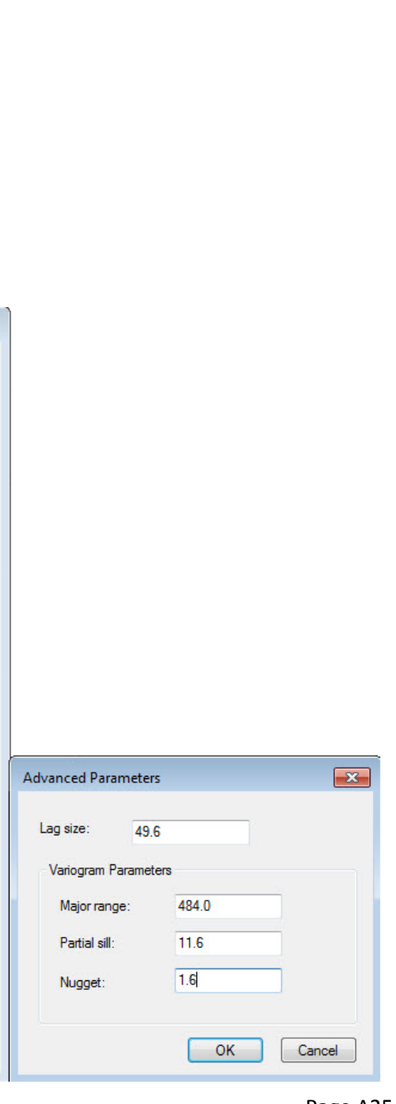
Appendix 4 (continued). Variogram and ArcMap settings for elevation model of Tobacco Road Sand (TRS).

Name: Z:\Bennett\SRNL\E-Area_VadoseZoneHydroModel\EVZ\LB_TobRoad_20170315.RwGrd
Spoke Spacing: 90.0 degrees.
Spoke Tolerance: +/- 45.0 degrees.
Distance Increment: 49.59
Distance Tolerance: +/- 24.79
Maximum Cutoff Distance: 793.41
Best Variogram (i.e. Best Correlation): Exponential With Nugget
Correlation Coefficient of Best Variogram: 0.87

Variogram That Was Actually Used: Exponential With Nugget
Correlation Coefficient: 0.87
Nugget: 1.56
Relative Sill: 11.6
Major Axis Direction: N96.5 degrees.
Major Axis Range: 483.98
Minor Axis Direction: N186.5 degrees.
Minor Axis Range: 349.1







Appendix 5 (10 pages). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units. *(Table is split across 10 pages. See notes on page A35.)*

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Water Table (WT)						Lower Aquifer Zone (LAZ)			
	SRS		UTM NAD 1927			Elevation			Depth (by subtraction from 2009 LiDAR)			Elevation		Depth	
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	WT Elevation (ft) *from kriged dataset*	WT Elevation Delta (ft) at this DU	WT Elevation Observation	Depth (ft) to WT *(highlighted where <55')*	WT Depth Delta (ft) at this DU	WT Depth Observation	LAZ Elevation (ft) *from kriged dataset*	LAZ Elevation Delta (ft) at this DU	Depth (ft) to LAZ	LAZ Depth Delta (ft) at this DU
643-26E NRCDA	57652.37	78292.43	437889.810	3683776.057	279.13	204.3	1.9		74.9	1.9		213.9	3.3	65.2	5.9
	57675.10	78152.40	437920.521	3683745.637	281.03	205.4			75.7			213.1		67.9	
	57504.90	78241.60	437862.595	3683737.090	281.23	205.1			76.1			214.2		67.0	
	57598.20	78434.50	437850.987	3683801.343	277.75	203.5			74.3			215.8		62.0	
	57819.60	78327.40	437924.736	3683814.662	279.72	203.5			76.2			212.5		67.3	
643-7E NRCDA	58396.52	74356.67	438778.929	3682939.925	288.58	231.7	0.4		56.9	3.9		192.6	0.4	96.0	4.0
	58333.30	74311.60	438771.438	3682917.486	287.63	231.8			55.9			192.2		95.4	
	58425.00	74310.50	438794.225	3682933.660	291.73	231.9			59.8			192.3		99.4	
	58426.60	74418.90	438775.180	3682960.651	288.15	231.6			56.6			192.3		95.8	
	58396.40	74424.00	438766.826	3682956.492	287.99	231.5			56.5			192.3		95.7	
	58370.60	74347.90	438774.117	3682933.118	288.42	231.7			56.7			192.6		95.8	
CIG Trench 1	58920.00	77083.65	438418.861	3683705.596	281.49	216.3	14.2	UAZ/LAZ transition here	65.2	4.6		202.4	2.6	79.1	9.3
	59110.00	77362.30	438415.698	3683808.315	277.10	209.2			67.8			201.8		75.3	
	59215.60	77246.10	438462.551	3683798.626	276.34	213.1			63.3			200.6		75.7	
	58730.00	76805.00	438422.025	3683602.878	287.23	223.4			63.8			203.2		84.0	
	58624.40	76921.20	438375.172	3683612.567	287.17	221.1			66.0			202.6		84.6	
CIG Trench 2	59037.50	76964.10	438469.247	3683697.216	281.30	218.8	10.7	UAZ/LAZ transition here	62.5	4.0		202.8	6.0	78.5	7.8
	59333.50	77125.70	438513.187	3683790.108	276.37	216.9			59.5			198.3		78.1	
	59228.30	77242.20	438466.379	3683799.943	276.28	213.3			63.0			200.5		75.8	
	58846.70	76686.00	438472.114	3683594.490	286.97	224.0			63.0			204.3		82.7	
	58741.50	76802.50	438425.306	3683604.325	286.84	223.3			63.5			203.3		83.5	
Engineered Trench 1	59266.19	75919.39	438712.932	3683480.860	287.07	226.2	2.1		60.9	7.8	*less variability here because ET1 was mostly filled/covered except for sump*	193.8	4.3	93.3	5.4
	58944.70	75995.20	438620.137	3683441.885	287.37	226.3			61.1			195.5		91.9	
	58943.80	75845.20	438646.815	3683404.771	287.37	227.0			60.3			194.5		92.8	
	59590.30	75845.10	438806.099	3683520.683	279.06	225.8			53.2			191.1		87.9	
	59590.30	75992.10	438779.737	3683556.896	283.13	224.9			58.2			192.8		90.3	
Engineered Trench 2	59272.80	76206.68	438663.040	3683552.822	262.23	224.9	2.4		37.3	24.4	*artifact of LiDAR; trench partially filled/covered*	196.4	4.4	65.9	24.9
	58946.30	76286.70	438568.257	3683513.983	287.20	225.5			61.7			198.3		88.9	
	58946.00	76127.60	438596.714	3683474.735	287.37	225.9			61.5			196.6		90.8	
	59601.90	76129.00	438758.045	3683592.702	267.55	224.1			43.4			193.9		73.7	
	59603.70	76283.30	438730.818	3683631.037	261.74	223.5			38.3			195.1		66.7	
Engineered Trench 3	57688.28	78547.16	437852.975	3683845.251	275.59	202.5	1.4		73.1	4.5		216.5	8.5	59.1	7.6
	57528.30	78727.80	437781.170	3683861.062	277.62	202.0			75.6			220.6		57.1	
	57934.50	78522.90	437917.983	3683883.428	273.62	201.8			71.9			212.2		61.4	
	57899.40	78443.20	437923.628	3683857.500	275.32	202.5			72.9			212.1		63.3	
	57817.60	78378.90	437915.007	3683826.990	277.49	203.2			74.3			212.8		64.7	
	57448.60	78564.70	437790.784	3683806.590	279.49	203.1			76.4			218.2		61.3	
Engineered Trench 4	57359.86	78201.70	437834.020	3683701.252	282.44	206.0	6.8		76.4	3.6		214.0	4.6	68.4	12.8
	57147.30	77943.50	437827.958	3683599.524	286.05	210.1			76.0			213.3		72.8	
	57283.80	77865.00	437875.662	3683604.664	286.74	209.3			77.4			213.2		73.6	
	57574.40	78465.60	437839.547	3683804.736	277.16	203.3			73.8			216.4		60.8	
	57433.50	78533.80	437792.606	3683796.270	279.79	203.3			76.5			217.8		62.0	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Water Table (WT)						Lower Aquifer Zone (LAZ)			
	SRS		UTM NAD 1927			Elevation			Depth (by subtraction from 2009 LiDAR)			Elevation		Depth	
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	WT Elevation (ft) *from kriged dataset*	WT Elevation Delta (ft) at this DU	WT Elevation Observation	Depth (ft) to WT *(highlighted where <55')*	WT Depth Delta (ft) at this DU	WT Depth Observation	LAZ Elevation (ft) *from kriged dataset*	LAZ Elevation Delta (ft) at this DU	Depth (ft) to LAZ	LAZ Depth Delta (ft) at this DU
Future Plot 6-1	57252.63	81057.82	437295.416	3684385.631	251.51	167.9	14.0	natural WT slope	83.6	10.0		212.2	4.8	39.3	21.0
	57196.90	80849.75	437319.001	3684324.378	257.44	174.7			82.7			209.4		48.0	
	57355.77	80868.72	437354.737	3684357.542	256.69	172.8			83.8			211.0		45.7	
	57308.35	81265.90	437271.830	3684446.884	249.44	160.7			88.7			214.1		35.4	
	57149.48	81246.93	437236.094	3684413.721	241.20	162.5			78.7			214.2		27.0	
Future Plot 6-2	57451.10	80594.73	437427.356	3684307.139	235.20	179.5	20.7	natural WT slope	55.7	29.6	*artifact of LiDAR; former North Borrow Pit excavation*	212.1	2.4	23.1	31.9
	57152.99	80507.96	437369.477	3684232.304	253.08	187.8			65.3			211.0		42.1	
	57235.78	80371.04	437414.426	3684213.420	233.23	189.9			43.3			213.4		19.8	
	57749.21	80681.51	437485.234	3684381.978	222.67	171.1			51.6			212.4		10.2	
	57666.42	80818.42	437440.287	3684400.859	242.12	169.2			72.9			212.1		30.0	
Future Plot 6-3	57611.51	80329.46	437514.444	3684270.556	224.11	184.9	20.9	natural WT slope	39.2	17.0	*artifact of LiDAR; former North Borrow Pit excavation*	213.8	4.2	10.3	26.3
	57313.40	80242.69	437456.565	3684195.720	231.53	191.8			39.7			216.0		15.5	
	57396.19	80105.77	437501.514	3684176.836	251.01	194.8			56.2			216.9		34.1	
	57909.62	80416.23	437572.324	3684345.392	220.63	175.8			44.8			212.9		7.8	
	57826.83	80553.15	437527.375	3684364.275	222.11	173.9			48.2			212.7		9.4	
Future Plot 6-4	57771.91	80064.19	437601.531	3684233.971	221.19	189.9	19.0	natural WT slope	31.2	36.9	*artifact of LiDAR; former North Borrow Pit excavation*	214.1	6.6	7.1	39.6
	57473.80	79977.41	437543.652	3684159.132	262.79	195.5			67.3			217.4		45.4	
	57556.59	79840.50	437588.600	3684140.251	264.17	196.0			68.1			217.5		46.6	
	58070.02	80150.96	437659.409	3684308.806	220.90	183.4			37.5			211.0		9.9	
	57987.23	80287.88	437614.460	3684327.690	219.68	177.0			42.7			212.2		7.4	
Future Plot 6-5	57932.32	79798.91	437688.619	3684197.384	235.07	192.3	13.9	natural WT slope	42.8	22.2	*artifact of LiDAR; former North Borrow Pit excavation*	213.1	10.5	22.0	26.0
	57634.21	79712.14	437630.740	3684122.549	261.02	196.8			64.3			217.8		43.2	
	57717.00	79575.22	437675.689	3684103.665	258.92	197.0			61.9			218.5		40.4	
	58230.43	79885.69	437746.497	3684272.223	225.16	183.1			42.1			208.0		17.2	
	58147.64	80022.60	437701.550	3684291.104	231.39	184.5			46.9			209.6		21.8	
Future Plot 8-1	57245.76	79318.88	437605.567	3683956.007	261.87	199.8	4.8		62.1	16.8		222.7	2.6	39.1	19.2
	57190.90	79013.28	437646.856	3683870.885	273.49	202.3			71.2			222.4		51.0	
	57350.35	79026.54	437683.759	3683902.746	275.29	201.4			73.9			222.5		52.8	
	57300.61	79624.48	437564.277	3684041.129	256.82	197.5			59.3			220.1		36.7	
	57141.16	79611.21	437527.376	3684009.266	254.59	197.5			57.1			221.0		33.6	
Future Plot 8-2	57559.66	79284.78	437689.014	3684003.900	265.15	198.9	3.7		66.2	9.4		221.6	2.8	43.5	10.9
	57504.81	78979.18	437730.303	3683918.778	273.52	200.9			72.6			221.9		51.7	
	57664.26	78992.45	437767.204	3683950.641	267.81	200.1			67.7			220.8		47.0	
	57614.52	79590.38	437647.725	3684089.022	260.89	197.2			63.7			219.1		41.8	
	57455.07	79577.12	437610.822	3684057.161	260.86	197.6			63.2			220.1		40.7	
Future Plot 8-3	57876.89	79210.83	437780.423	3684042.568	260.66	198.3	3.1		62.4	5.1		218.8	3.6	41.9	4.6
	57822.03	78905.23	437821.712	3683957.447	262.99	200.0			63.0			218.9		44.1	
	57981.48	78918.49	437858.615	3683989.308	258.63	199.2			59.5			217.3		41.3	
	57931.74	79516.43	437739.134	3684127.691	254.79	196.9			57.9			215.3		39.5	
	57772.29	79503.16	437702.233	3684095.828	257.84	197.2			60.6			218.2		39.6	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Water Table (WT)						Lower Aquifer Zone (LAZ)			
	SRS		UTM NAD 1927			Elevation			Depth (by subtraction from 2009 LiDAR)			Elevation		Depth	
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	WT Elevation (ft) *from kriged dataset*	WT Elevation Delta (ft) at this DU	WT Elevation Observation	Depth (ft) to WT *(highlighted where <55')*	WT Depth Delta (ft) at this DU	WT Depth Observation	LAZ Elevation (ft) *from kriged dataset*	LAZ Elevation Delta (ft) at this DU	Depth (ft) to LAZ	LAZ Depth Delta (ft) at this DU
	57792.85	77702.91	438030.135	3683656.019	284.81	208.8			76.0			212.9		71.9	
	57679.70	77790.40	437986.571	3683657.283	285.76	208.7			77.1			212.8		72.9	
IL Vault	57657.00	77748.10	437988.564	3683642.791	286.15	209.1	0.8		77.0	1.3		212.9	0.3	73.2	1.3
	57928.40	77658.10	438071.564	3683669.290	285.13	208.4			76.8			212.6		72.5	
	57905.60	77615.40	438073.604	3683654.682	286.15	208.9			77.3			213.0		73.2	
	59267.65	75402.50	438805.985	3683353.787	276.70	229.5			47.2			188.7		88.0	
	59589.30	75475.00	438872.222	3683429.329	277.98	229.6			48.4			184.8		93.2	
LAW Vault	59589.30	75330.00	438898.225	3683393.608	274.80	230.9	2.3		43.9	14.7		181.1	11.6	93.7	7.8
	58946.00	75330.00	438739.748	3683278.245	287.40	229.2			58.2			191.5		95.9	
	58946.00	75475.00	438713.745	3683313.966	287.17	228.6			58.6			192.7		94.5	
	58453.70	77596.08	438212.094	3683748.212	284.90	205.8			79.1			206.6		78.3	
	58157.10	77434.50	438168.002	3683655.218	287.96	208.1			79.9			210.8		77.1	
Slit Trench 1	58263.60	77318.40	438215.059	3683645.716	287.59	207.9	5.6		79.7	6.8		205.4	6.3	82.2	12.4
	58750.00	77757.80	438256.087	3683841.188	275.52	202.4			73.1			204.5		71.0	
	58644.90	77874.20	438209.321	3683851.016	276.34	202.5			73.8			206.6		69.7	
	58200.95	77978.65	438081.223	3683797.134	279.85	204.3			75.5			209.4		70.5	
	58271.60	78278.60	438044.838	3683883.697	287.66	202.0			85.6			208.8		78.9	
Slit Trench 10	58410.20	78204.90	438092.199	3683890.396	280.71	201.8	5.4		78.9	11.1		208.8	3.3	71.9	8.7
	57991.70	77752.40	438070.247	3683703.872	283.95	207.3			76.7			212.0		71.9	
	58130.30	77678.70	438117.608	3683710.571	281.30	206.8			74.5			211.1		70.2	
	58330.29	77729.41	438157.781	3683758.927	281.59	205.2			76.3			208.6		72.9	
	58085.50	77622.10	438116.721	3683688.594	283.49	207.5			76.0			212.0		71.4	
Slit Trench 11	58188.00	77503.10	438163.313	3683677.659	286.35	207.5	4.5		78.8	4.5		210.5	5.3	75.8	6.5
	58472.60	77955.70	438152.260	3683840.195	277.33	203.0			74.3			208.0		69.3	
	58575.10	77836.80	438198.833	3683829.285	277.69	203.2			74.5			206.8		70.9	
	59272.80	75752.40	438744.506	3683440.909	276.80	227.0			49.8			192.4		84.4	
	58944.80	75830.90	438649.626	3683401.427	287.43	227.1			60.3			194.5		93.0	
Slit Trench 14	58944.80	75673.90	438677.781	3683362.750	287.14	227.7	1.8		59.4	10.6		193.9	5.8	93.3	8.9
	59600.80	75673.90	438839.387	3683480.390	277.36	227.4			49.9			188.6		88.7	
	59600.80	75830.90	438811.232	3683519.068	277.13	225.9			51.2			191.0		86.2	
	59273.53	75581.11	438775.402	3683398.842	282.51	228.5			54.0			190.7		91.8	
	58945.40	75659.60	438680.493	3683359.335	287.10	227.8			59.3			193.8		93.3	
Slit Trench 15	58945.90	75502.60	438708.771	3683320.748	287.17	228.5	1.8		58.7	11.9		193.0	8.4	94.2	5.4
	59601.40	75502.60	438870.254	3683438.298	276.74	229.4			47.4			185.4		91.3	
	59601.40	75659.60	438842.099	3683476.975	277.16	227.6			49.6			188.4		88.8	
	59265.40	75242.50	438834.123	3683313.968	273.55	230.2			43.3			187.6		85.9	
	58941.50	75315.00	438741.329	3683273.743	287.53	229.2			58.3			191.5		96.1	
Slit Trench 16	58941.50	75170.00	438767.332	3683238.022	287.37	229.7	1.9		57.6	15.0		190.9	10.8	96.5	10.6
	59589.30	75170.00	438926.918	3683354.192	276.64	231.2			45.5			182.3		94.3	
	59589.30	75315.00	438900.915	3683389.913	274.57	231.0			43.6			180.6		93.9	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Water Table (WT)						Lower Aquifer Zone (LAZ)			
	SRS		UTM NAD 1927			Elevation			Depth (by subtraction from 2009 LiDAR)			Elevation		Depth	
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	WT Elevation (ft) *from kriged dataset*	WT Elevation Delta (ft) at this DU	WT Elevation Observation	Depth (ft) to WT *(highlighted where <55')*	WT Depth Delta (ft) at this DU	WT Depth Observation	LAZ Elevation (ft) *from kriged dataset*	LAZ Elevation Delta (ft) at this DU	Depth (ft) to LAZ	LAZ Depth Delta (ft) at this DU
	59265.40	75082.50	438862.816	3683274.551	281.23	230.8			50.5			187.5		93.7	
	58941.50	75155.00	438770.022	3683234.327	287.43	229.8			57.6			190.9		96.5	
Slit Trench 17	58941.50	75010.00	438796.025	3683198.606	287.79	230.3	1.6		57.5	12.6		190.8	8.4	97.0	4.7
	59589.30	75010.00	438955.611	3683314.776	276.44	231.4			45.0			184.2		92.2	
	59589.30	75155.00	438929.608	3683350.497	276.64	231.2			45.4			182.6		94.1	
	59265.40	74922.50	438891.509	3683235.135	282.28	231.2			51.0			188.4		93.9	
	58941.50	74995.00	438798.714	3683194.911	287.66	230.3			57.4			190.9		96.8	
Slit Trench 18	58941.50	74850.00	438824.717	3683159.190	287.66	230.7	1.6		56.9	12.4		191.5	7.2	96.2	5.6
	59589.30	74850.00	438984.303	3683275.360	276.90	232.0			44.9			185.7		91.2	
	59589.30	74995.00	438958.301	3683311.081	276.44	231.5			45.0			184.3		92.2	
	59265.40	74762.50	438920.202	3683195.719	282.25	231.8			50.5			189.3		93.0	
	58941.50	74835.00	438827.407	3683155.495	287.76	230.7			57.0			191.6		96.2	
Slit Trench 19	58941.50	74690.00	438853.410	3683119.774	287.79	231.1	2.0		56.7	12.1		192.3	6.4	95.5	5.3
	59589.30	74690.00	439012.996	3683235.944	277.82	232.7			45.1			186.9		90.9	
	59589.30	74835.00	438986.993	3683271.664	276.87	232.0			44.9			185.8		91.0	
	58569.68	77468.49	438263.546	3683737.579	290.22	206.9			83.3			204.8		85.4	
	58273.70	77307.10	438219.573	3683644.743	287.56	207.9			79.7			205.0		82.6	
Slit Trench 2	58379.20	77190.10	438266.545	3683634.839	287.43	211.1	8.8	UAZ/LAZ transition here	76.3	10.0		202.5	2.6	85.0	14.0
	58865.80	77630.40	438307.461	3683830.569	276.77	202.3			74.4			202.4		74.4	
	58760.60	77746.90	438260.653	3683840.404	275.72	202.4			73.3			204.2		71.5	
	59265.40	74602.50	438948.894	3683156.303	282.02	232.3			49.7			190.0		92.0	
	58941.50	74675.00	438856.100	3683116.079	287.76	231.2			56.6			192.2		95.6	
Slit Trench 20	58941.50	74530.00	438882.103	3683080.358	287.66	231.6	2.4		56.0	17.3		192.0	5.1	95.7	10.9
	59589.30	74530.00	439041.689	3683196.527	272.80	233.5			39.3			188.0		84.8	
	59589.30	74675.00	439015.686	3683232.248	278.11	232.7			45.4			187.0		91.1	
	59166.37	74327.47	438973.821	3683070.790	284.12	233.0			51.1			191.4		92.7	
	58941.50	74515.00	438884.793	3683076.662	287.56	231.7			55.9			192.0		95.6	
Slit Trench 21	58941.50	74140.00	438952.041	3682984.281	287.50	233.7	2.4		53.8	9.6		192.7	3.3	94.8	5.6
	59391.50	74140.00	439062.899	3683064.979	280.38	234.1			46.3			190.4		90.0	
	59391.00	74515.00	438995.527	3683157.271	280.08	233.0			47.1			189.5		90.6	
	58685.70	77341.65	438314.874	3683727.138	285.20	209.2			76.0			202.9		82.3	
	58389.50	77179.90	438270.912	3683634.173	287.23	211.5			75.8			202.4		84.8	
Slit Trench 3	58495.10	77063.70	438317.764	3683624.485	287.23	215.8	13.5	UAZ/LAZ transition here	71.4	4.6		202.5	0.6	84.7	10.5
	58981.90	77503.40	438358.837	3683820.103	276.70	204.5			72.2			202.4		74.3	
	58876.30	77619.60	438311.984	3683829.792	276.67	202.4			74.3			202.3		74.3	
	58801.22	77214.29	438366.174	3683716.479	283.46	212.7			70.8			202.5		81.0	
	58505.10	77052.60	438322.219	3683623.543	287.27	216.5			70.8			202.5		84.8	
Slit Trench 4	58610.70	76936.40	438369.071	3683613.855	287.20	220.7	15.8	UAZ/LAZ transition here	66.5	5.8		202.5	0.6	84.7	10.1
	59097.20	77375.80	438410.124	3683809.345	276.57	209.0			67.6			201.9		74.7	
	58991.90	77492.30	438363.291	3683819.162	277.23	205.0			72.3			202.3		75.0	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Water Table (WT)						Lower Aquifer Zone (LAZ)			
	SRS		UTM NAD 1927			Elevation			Depth (by subtraction from 2009 LiDAR)			Elevation		Depth	
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	WT Elevation (ft) *from kriged dataset*	WT Elevation Delta (ft) at this DU	WT Elevation Observation	Depth (ft) to WT *(highlighted where <55')*	WT Depth Delta (ft) at this DU	WT Depth Observation	LAZ Elevation (ft) *from kriged dataset*	LAZ Elevation Delta (ft) at this DU	Depth (ft) to LAZ	LAZ Depth Delta (ft) at this DU
	59152.73	76836.46	438520.524	3683686.436	283.10	221.2			61.9			203.6		79.5	
	58856.70	76674.90	438476.568	3683593.549	286.91	224.1			62.8			204.2		82.7	
Slit Trench 5	58961.90	76558.40	438523.376	3683583.714	286.58	224.4	7.2		62.2	6.6		202.2	10.2	84.4	6.4
	59448.80	76998.10	438564.474	3683779.350	277.72	221.4			56.3			194.1		83.6	
	59343.60	77114.50	438517.683	3683789.160	276.11	217.2			58.9			198.0		78.1	
	59266.98	76709.91	438571.364	3683675.748	258.63	222.8			35.9			202.7		55.9	
	58971.00	76548.40	438527.411	3683582.883	286.61	224.4			62.2		*artifact of LiDAR; trench partially filled/covered*	202.0		84.6	
Slit Trench 6	59076.20	76431.80	438574.237	3683573.024	288.12	224.6	2.8		63.5	27.7		200.1	10.9	88.0	32.1
	59563.00	76871.50	438615.310	3683768.642	276.41	223.2			53.2			191.9		84.5	
	59457.80	76988.00	438568.502	3683778.476	278.05	221.7			56.3			193.8		84.2	
	59383.36	76581.21	438623.114	3683664.913	282.54	223.4			59.2			198.9		83.6	
	59087.30	76419.60	438579.160	3683572.009	283.00	224.6			58.4		*artifact of LiDAR; trench partially filled/covered*	199.4		83.6	
Slit Trench 7	59192.50	76303.10	438625.968	3683562.174	267.45	224.8	2.7		42.7	16.5		197.6	7.2	69.8	14.3
	59679.40	76742.70	438667.083	3683757.786	276.74	222.1			54.7			193.9		82.8	
	59574.10	76859.30	438620.232	3683767.627	276.28	223.0			53.2			192.1		84.2	
	57894.30	78130.45	437978.457	3683779.539	279.95	204.7			75.2			211.4		68.6	
	57809.60	77804.00	438016.133	3683683.928	285.17	207.9			77.2			212.5		72.7	
Slit Trench 8	57671.00	77877.70	437968.772	3683677.229	284.48	207.8	5.9		76.7	8.1		212.8	4.8	71.7	10.7
	57979.00	78456.90	437940.781	3683875.149	274.37	202.1			72.3			210.6		63.8	
	58117.60	78383.20	437988.142	3683881.848	282.41	202.0			80.4			208.0		74.4	
	58045.30	78050.15	438030.056	3683786.835	279.23	204.6			74.7			210.1		69.1	
	57822.00	77797.40	438020.371	3683684.526	285.30	207.9			77.4			212.5		72.8	
Slit Trench 9	57960.60	77723.70	438067.732	3683691.225	284.12	207.7	6.0		76.5	11.1		212.4	4.7	71.7	9.9
	58130.00	78376.60	437992.380	3683882.446	283.20	202.0			81.2			207.8		75.4	
	58268.60	78302.90	438039.741	3683889.145	287.63	201.9			85.7			208.6		79.0	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Tan Clay Confining Zone (TCCZ)				Tobacco Road Sand (TRS; ~boundary between UVZ & LVZ)				
	SRS		UTM NAD 1927			Elevation		Depth		Elevation		Depth		
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	TCCZ Elevation (ft) *from kriged dataset*	TCCZ Elevation Delta (ft) at this DU	Depth (ft) to TCCZ	TCCZ Depth Delta (ft) at this DU	TRS elevation (ft) *from kriged dataset*	TRS Elevation Delta (ft) at this DU	Depth (ft) to TRS (*negative where TRS modeled absent)*	Depth (ft) to TRS *(negative depths set to 0)*	Depth (ft) to TRS *(>0 only)*	TRS Depth Delta (ft) at this DU
643-26E NRCDA	57652.37	78292.43	437889.810	3683776.057	279.13	222.0	2.9	57.1	4.9	262.0	2.2	17.2	17.2	17.2	2.9
	57675.10	78152.40	437920.521	3683745.637	281.03	221.8		59.2		261.5		19.5	19.5	19.5	
	57504.90	78241.60	437862.595	3683737.090	281.23	222.6		58.6		262.7		18.5	18.5	18.5	
	57598.20	78434.50	437850.987	3683801.343	277.75	223.3		54.5		261.1		16.6	16.6	16.6	
	57819.60	78327.40	437924.736	3683814.662	279.72	220.4		59.4		260.6		19.1	19.1	19.1	
643-7E NRCDA	58396.52	74356.67	438778.929	3682939.925	288.58	209.8	1.6	78.7	5.2	259.0	2.6	29.5	29.5	29.5	5.7
	58333.30	74311.60	438771.438	3682917.486	287.63	210.7		77.0		260.5		27.1	27.1	27.1	
	58425.00	74310.50	438794.225	3682933.660	291.73	209.5		82.2		258.9		32.8	32.8	32.8	
	58426.60	74418.90	438775.180	3682960.651	288.15	209.0		79.1		257.9		30.3	30.3	30.3	
	58396.40	74424.00	438766.826	3682956.492	287.99	209.4		78.6		258.3		29.7	29.7	29.7	
	58370.60	74347.90	438774.117	3682933.118	288.42	210.2		78.3		259.6		28.9	28.9	28.9	
CIG Trench 1	58920.00	77083.65	438418.861	3683705.596	281.49	215.9	2.2	65.6	12.2	262.8	5.2	18.7	18.7	18.7	8.0
	59110.00	77362.30	438415.698	3683808.315	277.10	215.1		62.0		257.6		19.5	19.5	19.5	
	59215.60	77246.10	438462.551	3683798.626	276.34	215.1		61.2		257.7		18.7	18.7	18.7	
	58730.00	76805.00	438422.025	3683602.878	287.23	214.2		73.1		260.5		26.7	26.7	26.7	
	58624.40	76921.20	438375.172	3683612.567	287.17	213.7		73.4		260.6		26.6	26.6	26.6	
CIG Trench 2	59037.50	76964.10	438469.247	3683697.216	281.30	216.1	1.9	65.2	11.3	261.7	5.0	19.6	19.6	19.6	8.0
	59333.50	77125.70	438513.187	3683790.108	276.37	214.2		62.2		258.3		18.0	18.0	18.0	
	59228.30	77242.20	438466.379	3683799.943	276.28	215.1		61.2		257.5		18.7	18.7	18.7	
	58846.70	76686.00	438472.114	3683594.490	286.97	215.9		71.1		262.5		24.4	24.4	24.4	
	58741.50	76802.50	438425.306	3683604.325	286.84	214.3		72.5		260.8		26.1	26.1	26.1	
Engineered Trench 1	59266.19	75919.39	438712.932	3683480.860	287.07	212.7	4.4	74.4	7.8	244.4	7.8	42.7	42.7	42.7	13.0
	58944.70	75995.20	438620.137	3683441.885	287.37	212.2		75.2		247.2		40.2	40.2	40.2	
	58943.80	75845.20	438646.815	3683404.771	287.37	208.7		78.6		243.5		43.9	43.9	43.9	
	59590.30	75845.10	438806.099	3683520.683	279.06	208.2		70.8		248.2		30.9	30.9	30.9	
	59590.30	75992.10	438779.737	3683556.896	283.13	211.4		71.7		251.3		31.8	31.8	31.8	
Engineered Trench 2	59272.80	76206.68	438663.040	3683552.822	262.23	216.2	3.7	46.0	27.0	251.0	6.7	11.2	11.2	11.2	32.4
	58946.30	76286.70	438568.257	3683513.983	287.20	216.1		71.1		255.5		31.7	31.7	31.7	
	58946.00	76127.60	438596.714	3683474.735	287.37	214.3		73.0		250.8		36.6	36.6	36.6	
	59601.90	76129.00	438758.045	3683592.702	267.55	212.6		55.0		254.1		13.4	13.4	13.4	
	59603.70	76283.30	438730.818	3683631.037	261.74	212.5		49.2		257.5		4.2	4.2	4.2	
Engineered Trench 3	57688.28	78547.16	437852.975	3683845.251	275.59	223.5	7.5	52.1	6.3	260.7	2.1	14.9	14.9	14.9	3.8
	57528.30	78727.80	437781.170	3683861.062	277.62	226.9		50.7		260.6		17.0	17.0	17.0	
	57934.50	78522.90	437917.983	3683883.428	273.62	219.4		54.2		259.9		13.8	13.8	13.8	
	57899.40	78443.20	437923.628	3683857.500	275.32	219.6		55.7		260.6		14.7	14.7	14.7	
	57817.60	78378.90	437915.007	3683826.990	277.49	220.5		57.0		260.9		16.6	16.6	16.6	
	57448.60	78564.70	437790.784	3683806.590	279.49	225.1		54.4		261.9		17.6	17.6	17.6	
Engineered Trench 4	57359.86	78201.70	437834.020	3683701.252	282.44	222.7	2.1	59.8	8.6	263.0	2.8	19.4	19.4	19.4	10.6
	57147.30	77943.50	437827.958	3683599.524	286.05	224.4		61.7		261.3		24.7	24.7	24.7	
	57283.80	77865.00	437875.662	3683604.664	286.74	224.7		62.0		260.2		26.5	26.5	26.5	
	57574.40	78465.60	437839.547	3683804.736	277.16	223.7		53.4		261.2		15.9	15.9	15.9	
	57433.50	78533.80	437792.606	3683796.270	279.79	224.8		55.0		262.1		17.7	17.7	17.7	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Tan Clay Confining Zone (TCCZ)				Tobacco Road Sand (TRS; ~boundary between UVZ & LVZ)					
	SRS		UTM NAD 1927			Elevation		Depth		Elevation		Depth			
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	TCCZ Elevation (ft) *from kriged dataset*	TCCZ Elevation Delta (ft) at this DU	Depth (ft) to TCCZ	TCCZ Depth Delta (ft) at this DU	TRS elevation (ft) *from kriged dataset*	TRS Elevation Delta (ft) at this DU	Depth (ft) to TRS (*negative where TRS modeled absent)*	Depth (ft) to TRS (*negative depths set to 0)*	Depth (ft) to TRS *(>0 only)*	TRS Depth Delta (ft) at this DU
	57252.63	81057.82	437295.416	3684385.631	251.51	217.0		34.5		254.6		-3.1	0.0		
	57196.90	80849.75	437319.001	3684324.378	257.44	215.2		42.2		252.6		4.8	4.8	4.8	
Future Plot 6-1	57355.77	80868.72	437354.737	3684357.542	256.69	216.7	3.3	40.0	19.3	253.8	3.5	2.9	2.9	2.9	19.5
	57308.35	81265.90	437271.830	3684446.884	249.44	218.5		30.9		256.1		-6.7	0.0		
	57149.48	81246.93	437236.094	3684413.721	241.20	218.3		23.0		255.8		-14.6	0.0		
	57451.10	80594.73	437427.356	3684307.139	235.20	218.5		16.7		253.8		-18.6	0.0		
	57152.99	80507.96	437369.477	3684232.304	253.08	217.4		35.7		253.4		-0.3	0.0		
Future Plot 6-2	57235.78	80371.04	437414.426	3684213.420	233.23	219.2	1.8	14.1	30.9	253.5	1.1	-20.3	0.0		31.1
	57749.21	80681.51	437485.234	3684381.978	222.67	217.9		4.8		254.0		-31.3	0.0		
	57666.42	80818.42	437440.287	3684400.859	242.12	217.8		24.3		254.5		-12.4	0.0		
	57611.51	80329.46	437514.444	3684270.556	224.11	219.9		4.2		253.6		-29.5	0.0		
	57313.40	80242.69	437456.565	3684195.720	231.53	220.9		10.6		253.4		-21.9	0.0		
Future Plot 6-3	57396.19	80105.77	437501.514	3684176.836	251.01	222.1	4.3	28.9	26.1	252.7	1.1	-1.7	0.0		31.2
	57909.62	80416.23	437572.324	3684345.392	220.63	217.8		2.9		253.5		-32.9	0.0		
	57826.83	80553.15	437527.375	3684364.275	222.11	217.9		4.2		253.8		-31.7	0.0		
	57771.91	80064.19	437601.531	3684233.971	221.19	220.1		1.1		251.2		-30.0	0.0		
	57473.80	79977.41	437543.652	3684159.132	262.79	222.6		40.2		251.6		11.2	11.2	11.2	
Future Plot 6-4	57556.59	79840.50	437588.600	3684140.251	264.17	222.8	5.7	41.3	40.2	249.6	3.1	14.5	14.5	14.5	47.6
	58070.02	80150.96	437659.409	3684308.806	220.90	217.1		3.8		252.5		-31.6	0.0		
	57987.23	80287.88	437614.460	3684327.690	219.68	217.6		2.1		252.7		-33.1	0.0		
	57932.32	79798.91	437688.619	3684197.384	235.07	220.5		14.6		249.3		-14.3	0.0		
	57634.21	79712.14	437630.740	3684122.549	261.02	223.2		37.8		247.0		14.0	14.0	14.0	
Future Plot 6-5	57717.00	79575.22	437675.689	3684103.665	258.92	224.0	7.4	35.0	29.2	243.7	9.0	15.2	15.2	15.2	42.8
	58230.43	79885.69	437746.497	3684272.223	225.16	216.5		8.6		252.7		-27.6	0.0		
	58147.64	80022.60	437701.550	3684291.104	231.39	216.6		14.7		252.4		-21.0	0.0		
	57245.76	79318.88	437605.567	3683956.007	261.87	227.6		34.3		256.0		5.9	5.9	5.9	
	57190.90	79013.28	437646.856	3683870.885	273.49	228.3		45.2		259.2		14.3	14.3	14.3	
Future Plot 8-1	57350.35	79026.54	437683.759	3683902.746	275.29	228.0	3.6	47.3	18.7	258.5	6.7	16.8	16.8	16.8	17.6
	57300.61	79624.48	437564.277	3684041.129	256.82	224.7		32.1		252.4		4.4	4.4	4.4	
	57141.16	79611.21	437527.376	3684009.266	254.59	226.0		28.6		255.4		-0.8	0.0		
	57559.66	79284.78	437689.014	3684003.900	265.15	226.5		38.7		253.1		12.1	12.1	12.1	
	57504.81	78979.18	437730.303	3683918.778	273.52	227.3		46.3		258.6		14.9	14.9	14.9	
Future Plot 8-2	57664.26	78992.45	437767.204	3683950.641	267.81	226.0	3.0	41.8	10.3	258.7	12.3	9.1	9.1	9.1	5.8
	57614.52	79590.38	437647.725	3684089.022	260.89	224.2		36.7		246.5		14.4	14.4	14.4	
	57455.07	79577.12	437610.822	3684057.161	260.86	224.9		35.9		250.1		10.8	10.8	10.8	
	57876.89	79210.83	437780.423	3684042.568	260.66	224.3		36.4		256.0		4.6	4.6	4.6	
	57822.03	78905.23	437821.712	3683957.447	262.99	224.0		39.0		260.8		2.2	2.2	2.2	
Future Plot 8-3	57981.48	78918.49	437858.615	3683989.308	258.63	222.1	2.2	36.6	7.3	262.8	16.9	-4.2	0.0		16.1
	57931.74	79516.43	437739.134	3684127.691	254.79	223.0		31.8		249.3		5.5	5.5	5.5	
	57772.29	79503.16	437702.233	3684095.828	257.84	224.1		33.8		245.9		12.0	12.0	12.0	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Tan Clay Confining Zone (TCCZ)				Tobacco Road Sand (TRS; ~boundary between UVZ & LVZ)				
	SRS		UTM NAD 1927			Elevation		Depth		Elevation		Depth		
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	TCCZ Elevation (ft) *from kriged dataset*	TCCZ Elevation Delta (ft) at this DU	Depth (ft) to TCCZ	TCCZ Depth Delta (ft) at this DU	TRS elevation (ft) *from kriged dataset*	TRS Elevation Delta (ft) at this DU	Depth (ft) to TRS (*negative where TRS modeled absent)*	Depth (ft) to TRS *(negative depths set to 0)*	Depth (ft) to TRS *(>0 only)*	TRS Depth Delta (ft) at this DU
IL Vault	57792.85	77702.91	438030.135	3683656.019	284.81	224.3	1.9	60.5	2.0	264.5	7.3	20.3	20.3	20.3	7.0
	57679.70	77790.40	437986.571	3683657.283	285.76	223.7		62.1		261.7		24.1	24.1	24.1	
	57657.00	77748.10	437988.564	3683642.791	286.15	224.0		62.1		262.4		23.7	23.7	23.7	
	57928.40	77658.10	438071.564	3683669.290	285.13	225.0		60.2		268.1		17.0	17.0	17.0	
	57905.60	77615.40	438073.604	3683654.682	286.15	225.6		60.6		269.0		17.1	17.1	17.1	
LAW Vault	59267.65	75402.50	438805.985	3683353.787	276.70	200.8	6.0	75.9	10.0	249.0	4.7	27.7	27.7	27.7	15.4
	59589.30	75475.00	438872.222	3683429.329	277.98	199.2		78.8		248.6		29.4	29.4	29.4	
	59589.30	75330.00	438898.225	3683393.608	274.80	195.7		79.1		245.4		29.4	29.4	29.4	
	58946.00	75330.00	438739.748	3683278.245	287.40	201.5		85.9		244.3		43.1	43.1	43.1	
	58946.00	75475.00	438713.745	3683313.966	287.17	201.7		85.5		246.8		40.4	40.4	40.4	
Slit Trench 1	58453.70	77596.08	438212.094	3683748.212	284.90	219.6	8.5	65.3	9.3	269.4	15.2	15.5	15.5	15.5	3.0
	58157.10	77434.50	438168.002	3683655.218	287.96	225.2		62.8		273.7		14.2	14.2	14.2	
	58263.60	77318.40	438215.059	3683645.716	287.59	220.1		67.5		270.8		16.8	16.8	16.8	
	58750.00	77757.80	438256.087	3683841.188	275.52	216.6		58.9		258.6		17.0	17.0	17.0	
	58644.90	77874.20	438209.321	3683851.016	276.34	218.2		58.1		259.1		17.2	17.2	17.2	
Slit Trench 10	58200.95	77978.65	438081.223	3683797.134	279.85	217.7	5.8	62.2	8.8	257.3	13.6	22.6	22.6	22.6	20.0
	58271.60	78278.60	438044.838	3683883.697	287.66	221.0		66.6		255.1		32.6	32.6	32.6	
	58410.20	78204.90	438092.199	3683890.396	280.71	221.2		59.5		255.4		25.3	25.3	25.3	
	57991.70	77752.40	438070.247	3683703.872	283.95	223.3		60.7		265.5		18.5	18.5	18.5	
	58130.30	77678.70	438117.608	3683710.571	281.30	223.5		57.8		268.7		12.6	12.6	12.6	
Slit Trench 11	58330.29	77729.41	438157.781	3683758.927	281.59	220.5	6.9	61.1	3.3	267.1	13.9	14.5	14.5	14.5	5.2
	58085.50	77622.10	438116.721	3683688.594	283.49	225.4		58.1		270.8		12.7	12.7	12.7	
	58188.00	77503.10	438163.313	3683677.659	286.35	224.9		61.5		273.3		13.0	13.0	13.0	
	58472.60	77955.70	438152.260	3683840.195	277.33	219.2		58.1		259.4		17.9	17.9	17.9	
	58575.10	77836.80	438198.833	3683829.285	277.69	218.5		59.2		261.1		16.6	16.6	16.6	
Slit Trench 14	59272.80	75752.40	438744.506	3683440.909	276.80	208.1	4.3	68.7	13.8	245.9	6.6	30.9	30.9	30.9	16.6
	58944.80	75830.90	438649.626	3683401.427	287.43	208.3		79.1		243.5		43.9	43.9	43.9	
	58944.80	75673.90	438677.781	3683362.750	287.14	204.6		82.5		246.3		40.8	40.8	40.8	
	59600.80	75673.90	438839.387	3683480.390	277.36	204.0		73.3		250.1		27.3	27.3	27.3	
	59600.80	75830.90	438811.232	3683519.068	277.13	207.7		69.4		247.3		29.8	29.8	29.8	
Slit Trench 15	59273.53	75581.11	438775.402	3683398.842	282.51	204.0	4.4	78.5	11.8	250.5	3.9	32.0	32.0	32.0	13.7
	58945.40	75659.60	438680.493	3683359.335	287.10	204.3		82.8		246.7		40.4	40.4	40.4	
	58945.90	75502.60	438708.771	3683320.748	287.17	201.9		85.3		247.2		40.0	40.0	40.0	
	59601.40	75502.60	438870.254	3683438.298	276.74	199.9		76.9		250.0		26.8	26.8	26.8	
	59601.40	75659.60	438842.099	3683476.975	277.16	203.7		73.5		250.3		26.9	26.9	26.9	
Slit Trench 16	59265.40	75242.50	438834.123	3683313.968	273.55	199.5	6.3	74.1	11.9	247.5	3.0	26.0	26.0	26.0	16.9
	58941.50	75315.00	438741.329	3683273.743	287.53	201.5		86.0		244.6		43.0	43.0	43.0	
	58941.50	75170.00	438767.332	3683238.022	287.37	201.6		85.7		246.1		41.3	41.3	41.3	
	59589.30	75170.00	438926.918	3683354.192	276.64	195.4		81.2		245.8		30.8	30.8	30.8	
	59589.30	75315.00	438900.915	3683389.913	274.57	195.3		79.3		244.9		29.6	29.6	29.6	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Tan Clay Confining Zone (TCCZ)				Tobacco Road Sand (TRS; ~boundary between UVZ & LVZ)				
	SRS		UTM NAD 1927			Elevation		Depth		Elevation		Depth		
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	TCCZ Elevation (ft) *from kriged dataset*	TCCZ Elevation Delta (ft) at this DU	Depth (ft) to TCCZ	TCCZ Depth Delta (ft) at this DU	TRS elevation (ft) *from kriged dataset*	TRS Elevation Delta (ft) at this DU	Depth (ft) to TRS (*negative where TRS modeled absent*)	Depth (ft) to TRS (*negative depths set to 0*)	Depth (ft) to TRS (*>0 only*)	TRS Depth Delta (ft) at this DU
	59265.40	75082.50	438862.816	3683274.551	281.23	199.4		81.8		247.5		33.7	33.7	33.7	
	58941.50	75155.00	438770.022	3683234.327	287.43	201.7		85.7		246.1		41.3	41.3	41.3	
Slit Trench 17	58941.50	75010.00	438796.025	3683198.606	287.79	202.2	6.7	85.6	5.3	246.2	1.6	41.6	41.6	41.6	12.1
	59589.30	75010.00	438955.611	3683314.776	276.44	196.0		80.5		246.9		29.5	29.5	29.5	
	59589.30	75155.00	438929.608	3683350.497	276.64	195.5		81.2		245.9		30.7	30.7	30.7	
	59265.40	74922.50	438891.509	3683235.135	282.28	199.9		82.4		247.9		34.4	34.4	34.4	
	58941.50	74995.00	438798.714	3683194.911	287.66	202.3		85.4		246.5		41.1	41.1	41.1	
Slit Trench 18	58941.50	74850.00	438824.717	3683159.190	287.66	203.1	7.0	84.6	5.3	246.6	1.3	41.1	41.1	41.1	11.9
	59589.30	74850.00	438984.303	3683275.360	276.90	196.8		80.1		247.7		29.2	29.2	29.2	
	59589.30	74995.00	438958.301	3683311.081	276.44	196.1		80.3		247.0		29.4	29.4	29.4	
	59265.40	74762.50	438920.202	3683195.719	282.25	200.8		81.5		248.7		33.5	33.5	33.5	
	58941.50	74835.00	438827.407	3683155.495	287.76	203.0		84.7		246.6		41.2	41.2	41.2	
Slit Trench 19	58941.50	74690.00	438853.410	3683119.774	287.79	204.1	7.2	83.7	4.8	245.9	3.6	41.9	41.9	41.9	13.5
	59589.30	74690.00	439012.996	3683235.944	277.82	197.4		80.4		249.5		28.4	28.4	28.4	
	59589.30	74835.00	438986.993	3683271.664	276.87	196.9		80.0		247.9		29.0	29.0	29.0	
	58569.68	77468.49	438263.546	3683737.579	290.22	218.2		72.0		266.3		23.9	23.9	23.9	
	58273.70	77307.10	438219.573	3683644.743	287.56	219.8		67.8		270.5		17.0	17.0	17.0	
Slit Trench 2	58379.20	77190.10	438266.545	3683634.839	287.43	216.9	4.8	70.5	12.7	267.7	12.3	19.7	19.7	19.7	6.9
	58865.80	77630.40	438307.461	3683830.569	276.77	215.0		61.8		258.2		18.5	18.5	18.5	
	58760.60	77746.90	438260.653	3683840.404	275.72	216.4		59.3		258.6		17.1	17.1	17.1	
	59265.40	74602.50	438948.894	3683156.303	282.02	201.4		80.6		249.8		32.2	32.2	32.2	
	58941.50	74675.00	438856.100	3683116.079	287.76	204.2		83.6		245.8		41.9	41.9	41.9	
Slit Trench 20	58941.50	74530.00	438882.103	3683080.358	287.66	204.8	7.3	82.8	9.3	244.9	6.8	42.8	42.8	42.8	21.7
	59589.30	74530.00	439041.689	3683196.527	272.80	198.5		74.3		251.8		21.0	21.0	21.0	
	59589.30	74675.00	439015.686	3683232.248	278.11	197.6		80.6		249.7		28.5	28.5	28.5	
	59166.37	74327.47	438973.821	3683070.790	284.12	203.8		80.4		249.8		34.3	34.3	34.3	
	58941.50	74515.00	438884.793	3683076.662	287.56	204.9		82.7		245.0		42.6	42.6	42.6	
Slit Trench 21	58941.50	74140.00	438952.041	3682984.281	287.50	206.7	6.1	80.8	4.3	254.5	9.5	33.0	33.0	33.0	13.1
	59391.50	74140.00	439062.899	3683064.979	280.38	202.0		78.4		250.9		29.4	29.4	29.4	
	59391.00	74515.00	438995.527	3683157.271	280.08	200.7		79.4		250.7		29.4	29.4	29.4	
	58685.70	77341.65	438314.874	3683727.138	285.20	217.3		67.9		266.5		18.7	18.7	18.7	
	58389.50	77179.90	438270.912	3683634.173	287.23	216.7		70.5		267.3		19.9	19.9	19.9	
Slit Trench 3	58495.10	77063.70	438317.764	3683624.485	287.23	215.2	2.6	72.1	10.3	264.6	9.8	22.7	22.7	22.7	4.6
	58981.90	77503.40	438358.837	3683820.103	276.70	214.8		62.0		257.6		19.1	19.1	19.1	
	58876.30	77619.60	438311.984	3683829.792	276.67	214.9		61.7		258.6		18.1	18.1	18.1	
	58801.22	77214.29	438366.174	3683716.479	283.46	216.8		66.6		265.6		17.9	17.9	17.9	
	58505.10	77052.60	438322.219	3683623.543	287.27	215.0		72.3		264.2		23.0	23.0	23.0	
Slit Trench 4	58610.70	76936.40	438369.071	3683613.855	287.20	213.8	3.1	73.4	12.0	260.8	8.0	26.4	26.4	26.4	8.5
	59097.20	77375.80	438410.124	3683809.345	276.57	215.1		61.5		257.6		19.0	19.0	19.0	
	58991.90	77492.30	438363.291	3683819.162	277.23	214.8		62.4		257.6		19.6	19.6	19.6	

Appendix 5 (continued). Coordinates, ground surface elevations, and subsurface elevations at vertices and centroids of disposal units.

	Disposal Unit Vertices & Centroids -- Coordinate & Elevation Data					Tan Clay Confining Zone (TCCZ)				Tobacco Road Sand (TRS; ~boundary between UVZ & LVZ)					
	SRS		UTM NAD 1927			Elevation		Depth		Elevation		Depth			
Disposal Unit (DU)	SRS E (ft)	SRS N (ft)	NAD27 X	NAD27 Y	Ground Elevation (ft) *from 2009 LiDAR*	TCCZ Elevation (ft) *from kriged dataset*	TCCZ Elevation Delta (ft) at this DU	Depth (ft) to TCCZ	TCCZ Depth Delta (ft) at this DU	TRS elevation (ft) *from kriged dataset*	TRS Elevation Delta (ft) at this DU	Depth (ft) to TRS (*negative where TRS modeled absent)*	Depth (ft) to TRS *(negative depths set to 0)*	Depth (ft) to TRS *(>0 only)*	TRS Depth Delta (ft) at this DU
	59152.73	76836.46	438520.524	3683686.436	283.10	217.1		66.0		262.0		21.1	21.1	21.1	
	58856.70	76674.90	438476.568	3683593.549	286.91	216.0		70.9		262.5		24.4	24.4	24.4	
Slit Trench 5	58961.90	76558.40	438523.376	3683583.714	286.58	217.1	5.0	69.5	8.8	261.6	4.7	25.0	25.0	25.0	7.2
	59448.80	76998.10	438564.474	3683779.350	277.72	212.0		65.7		257.8		19.9	19.9	19.9	
	59343.60	77114.50	438517.683	3683789.160	276.11	214.0		62.1		258.3		17.8	17.8	17.8	
	59266.98	76709.91	438571.364	3683675.748	258.63	217.2		41.4		261.5		-2.9	0.0		
	58971.00	76548.40	438527.411	3683582.883	286.61	217.1		69.5		261.5		25.1	25.1	25.1	
Slit Trench 6	59076.20	76431.80	438574.237	3683573.024	288.12	216.8	6.2	71.3	30.0	258.9	4.3	29.2	29.2	29.2	32.1
	59563.00	76871.50	438615.310	3683768.642	276.41	211.0		65.4		257.2		19.2	19.2	19.2	
	59457.80	76988.00	438568.502	3683778.476	278.05	211.8		66.2		257.7		20.3	20.3	20.3	
	59383.36	76581.21	438623.114	3683664.913	282.54	215.1		67.5		259.3		23.2	23.2	23.2	
	59087.30	76419.60	438579.160	3683572.009	283.00	216.7		66.3		258.5		24.5	24.5	24.5	
Slit Trench 7	59192.50	76303.10	438625.968	3683562.174	267.45	216.5	5.7	50.9	16.6	254.0	5.3	13.4	13.4	13.4	11.1
	59679.40	76742.70	438667.083	3683757.786	276.74	211.1		65.7		258.5		18.2	18.2	18.2	
	59574.10	76859.30	438620.232	3683767.627	276.28	211.1		65.1		257.3		19.0	19.0	19.0	
	57894.30	78130.45	437978.457	3683779.539	279.95	219.9		60.1		258.9		21.0	21.0	21.0	
	57809.60	77804.00	438016.133	3683683.928	285.17	223.1		62.1		262.9		22.2	22.2	22.2	
Slit Trench 8	57671.00	77877.70	437968.772	3683677.229	284.48	223.1	6.1	61.4	9.3	260.5	5.3	24.0	24.0	24.0	10.4
	57979.00	78456.90	437940.781	3683875.149	274.37	218.3		56.1		260.0		14.4	14.4	14.4	
	58117.60	78383.20	437988.142	3683881.848	282.41	217.1		65.4		257.7		24.7	24.7	24.7	
	58045.30	78050.15	438030.056	3683786.835	279.23	218.3		61.0		257.3		22.0	22.0	22.0	
	57822.00	77797.40	438020.371	3683684.526	285.30	223.1		62.2		263.2		22.1	22.1	22.1	
Slit Trench 9	57960.60	77723.70	438067.732	3683691.225	284.12	223.7	6.6	60.4	6.1	266.3	11.3	17.8	17.8	17.8	14.8
	58130.00	78376.60	437992.380	3683882.446	283.20	217.2		66.0		257.5		25.7	25.7	25.7	
	58268.60	78302.90	438039.741	3683889.145	287.63	221.2		66.5		255.0		32.6	32.6	32.6	

Appendix 5 of this report (SRNL-STI-2017-00301, Revision 0) is a controlled dataset. A revision summary and a change log worksheet are included with the electronic data table.

Notes on Appendix 5.

1. Depth to water table: Values less than 55' are highlighted for PA considerations; standard trench depth is 20' and PA assumes 35' between bottom of waste and water table.
2. Depth to TRS: This information is provided in three slightly different ways to accommodate areas where the TRS is eroded (absent). Data in column "TRS elevation (ft) *from kriged dataset*" correspond to data illustrated in Figure 9A.
3. For all subsurfaces modeled (water table, LAZ, TCCZ, and TRS), the average depth and average elevation – across the footprint of each disposal unit – are provided.
4. Observations regarding the depth and elevation of the water table are included where appropriate.