APPENDIX D –
CCR MANAGEMENT UNIT
CROSS SECTIONS

Exhibit No.

D-1

Title

Monitoring Well Network With Cross Section Transect Lines

Client/Project

Tennessee Valley Authority
Cumberland Fossil (CUF) Plant TDEC Order

Project Location

Stewart County, Tennessee

175568209

Prepared by MB on 2023-07-06
Technical Review by MD on 2023-07-06

0 400 800 1,200 1,600 Feet

1:4,800 (At original document size of 22x34)

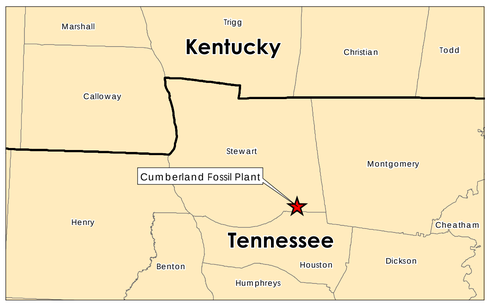
Legend

- Existing Boring
- Groundwater Investigation Monitoring Well
- Other Monitoring Welll
- Piezometer
- Pore Water Piezometer in CCR Material
- Temporary Well
- Cumberland River Gauging Station
- Cross Section Transect Line (Approximate)
- 2021 Imagery Boundary
- 2022 Imagery Boundary
- CCR Unit Area (Approximate)

CCR: Coal combustion residuals

Notes

1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Imagery Provided by Tuck Mapping (c. 2017) and TVA (5/21/2021 and 5/12/2022)



Stantec TVA

Exhibit No.

D-2

Title

GYPSUM STORAGE AREA & DRY ASH STACK CROSS SECTIONS

Client/Project

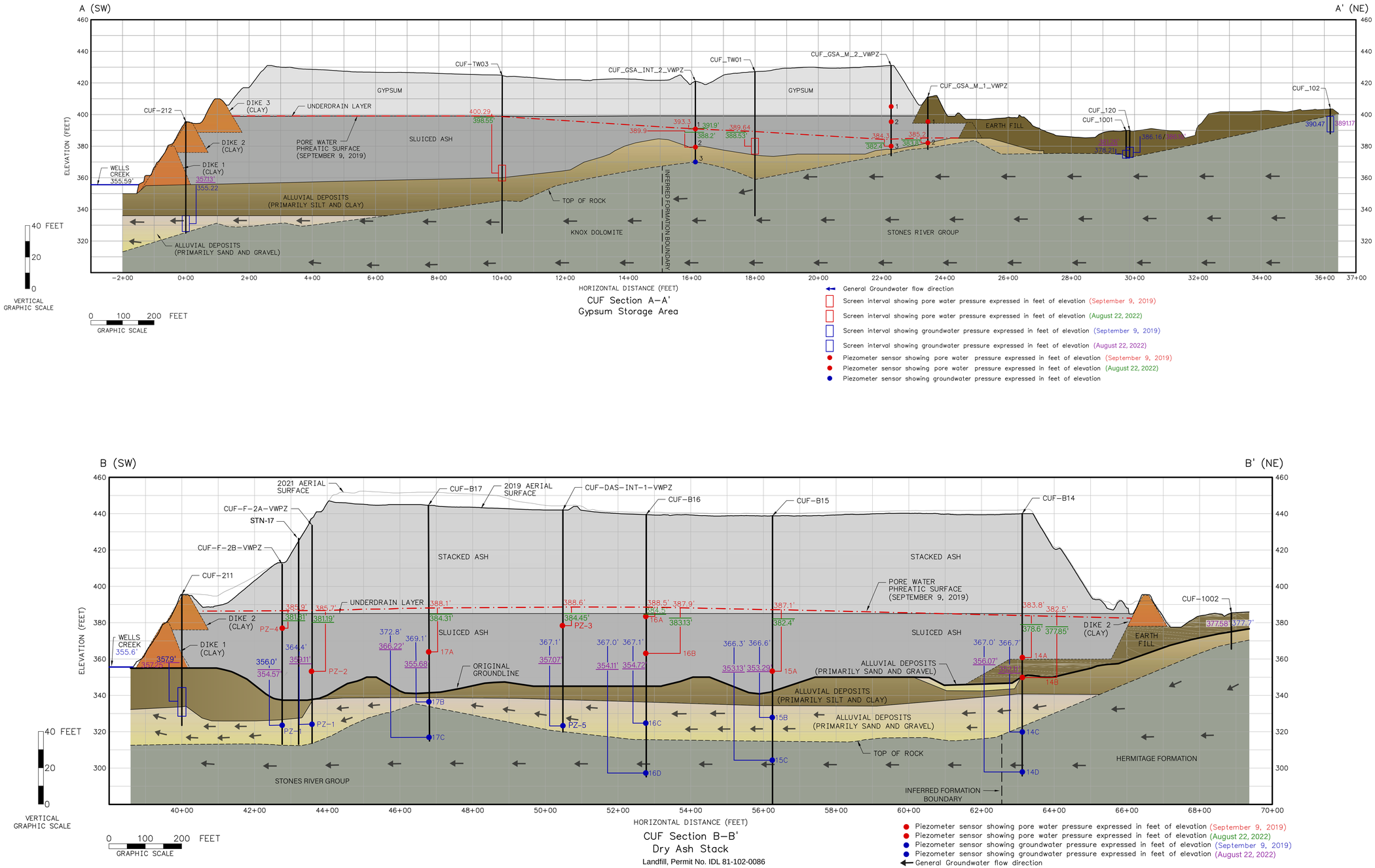
Tennessee Valley Authority
Cumberland Fossil (CUF) Plant TDEC Order

Project Location

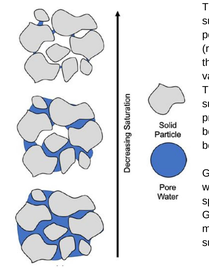
Stewart County, Tennessee

175568209

Prepared by JM on 2022-03-24
Technical Review by VS on 2022-03-24



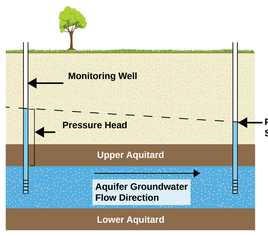
Note: The 2019 pore water phreatic surface, pore water data, and groundwater pressure data shown herein represent conditions prior to Stilling Pond and Retention Pond construction activities (i.e., decanting of the ponds, temporary dewatering pumping within the CCR and alluvial sand). The 2022 data represent conditions during construction, which are influenced by decanting and temporary dewatering pumping. Neither the 2019 data nor the 2022 data corresponds to a closed condition. The phreatic surfaces are expected to decrease after capping of CCR management units.



This figure depicts how subsurface water occurs in the pore spaces in CCR material (referred to as "pore water" in this EAR), and how saturation varies within the CCR material. The phreatic surface is the surface of pore water at which pressure is atmospheric and below which CCR material may be saturated with pore water.

Groundwater is subsurface water that occurs in pore spaces in soil or bedrock. Groundwater generally flows much more slowly than in surface stream or river water.

Figure Reference: Benson, C., Water Flow in Coal Combustion Products and Drainage of Free Water, Report No. 3002021963, Electric Power Research Institute , Palo Alto, CA.



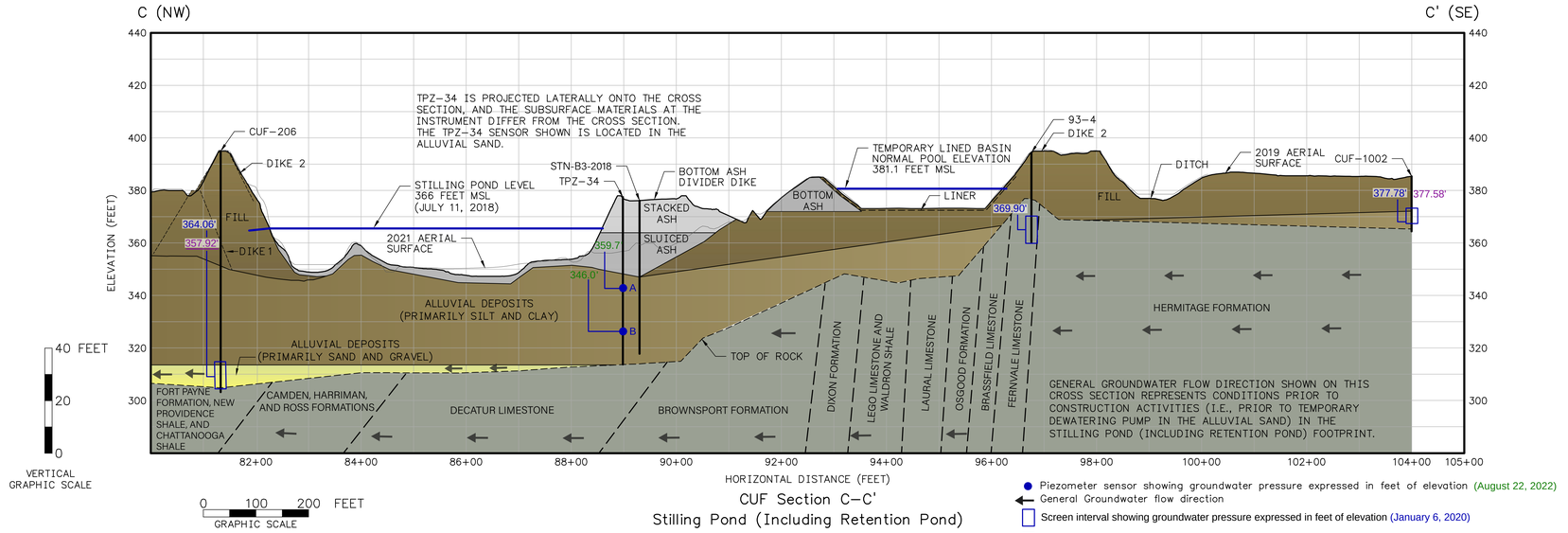
Groundwater is subsurface water that occurs in pore spaces in soil or bedrock. In a confined aquifer, measured groundwater levels rise above the top of the aquifer, but the actual level of groundwater is constrained by the upper aquitard. The difference between the measured groundwater level within the aquifer and the top of the aquifer is called the pressure head. Because the level of groundwater within a confined aquifer is constrained by the upper aquitard, groundwater in a confined aquifer is not in contact with the geologic unit located above the upper aquitard. The aquitard physically separates them. Groundwater level measurements are used to estimate directions of groundwater movement. Groundwater generally flows much more slowly than water in a surface stream or river.

Notes

1. Elevations are in feet amsl
2. Groundwater elevation data are from the CUF Plant Groundwater Investigation SAR, Event #3, and from subsequent gauging conducted on August 22, 2022.
3. Pore Water elevation data are from SAR Event #3 and from subsequent gauging conducted on August 22, 2022.
4. Complexity of bedrock not shown herein; refer to Bulletin 68 (Wilson, et al 1968) for a more detailed discussion of bedrock geology.

Stantec

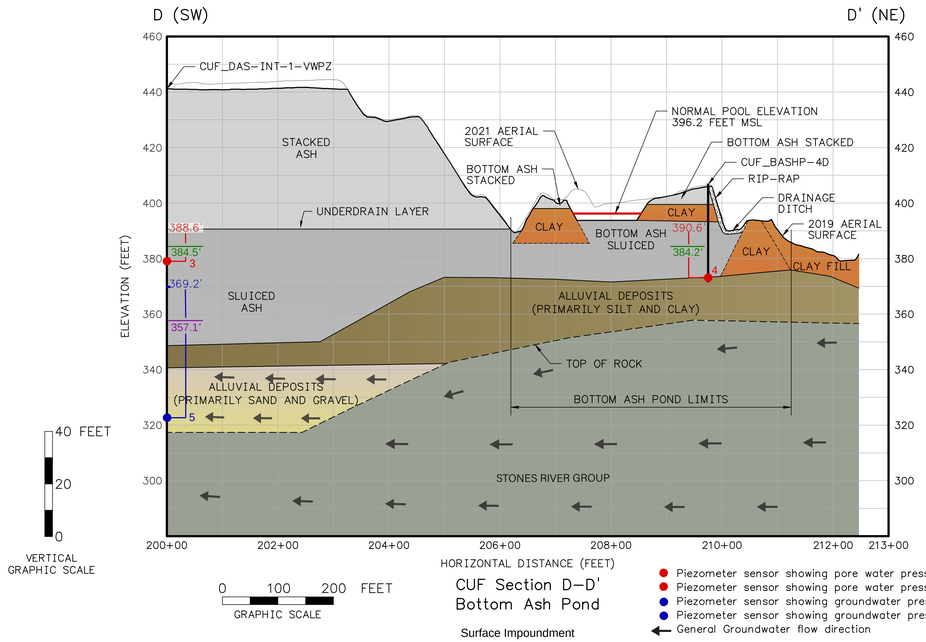
TVA



CUF Section C–C'
Stilling Pond (Including Retention Pond)

Surface Impoundment

- Piezometer sensor showing groundwater pressure expressed in feet of elevation (August 22, 2022)
- General Groundwater flow direction
- Screen interval showing groundwater pressure expressed in feet of elevation (January 6, 2020)
- Screen interval showing groundwater pressure expressed in feet of elevation (August 22, 2022)
- Inferred Formation Boundary



CUF Section D–D'
Bottom Ash Pond

Surface Impoundment

- Piezometer sensor showing pore water pressure expressed in feet of elevation (July 8, 2019)
- Piezometer sensor showing pore water pressure expressed in feet of elevation (August 22, 2022)
- Piezometer sensor showing groundwater pressure expressed in feet of elevation (July 8, 2019)
- Piezometer sensor showing groundwater pressure expressed in feet of elevation (August 22, 2022)
- General Groundwater flow direction

Note: The 2019 pore water phreatic surface, pore water data, and groundwater pressure data shown herein represent conditions prior to Stilling Pond and Retention Pond construction activities (i.e., decanting of the ponds, temporary dewatering pumping within the CCR and alluvial sand). The 2022 data represent conditions during construction, which are influenced by decanting and temporary dewatering pumping. Neither the 2019 data nor the 2022 data corresponds to a closed condition. The phreatic surfaces are expected to decrease after capping of CCR management units.

Exhibit No.

D-3

Title

STILLING POND (INCLUDING RETENTION POND) & BOTTOM ASH POND CROSS SECTIONS

Client/Project

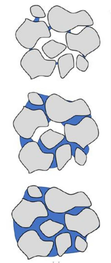
Tennessee Valley Authority
Cumberland Fossil (CUF) Plant TDEC Order

Project Location

Stewart County, Tennessee

175568209

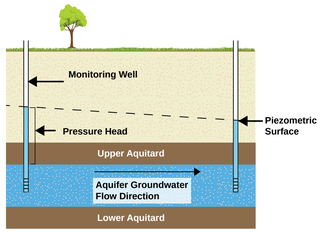
Prepared by JM on 2022-24-03
Technical Review by VS on 2022-24-03



This figure depicts how subsurface water occurs in the pore spaces in CCR material (referred to as "pore water" in this EAR), and how saturation varies within the CCR material. The phreatic surface is the surface of pore water at which pressure is atmospheric and below which CCR material may be saturated with pore water.

Groundwater is subsurface water that occurs in pore spaces in soil or bedrock. Groundwater generally flows much more slowly than in surface stream or river water.

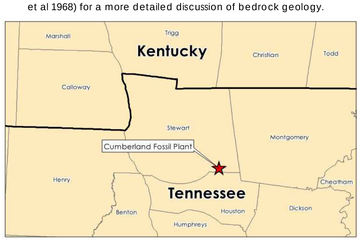
Figure Reference: Benson, C., Water Flow in Coal Combustion Products and Drainage of Free Water, Report No. 3002021963, Electric Power Research Institute , Palo Alto, CA.



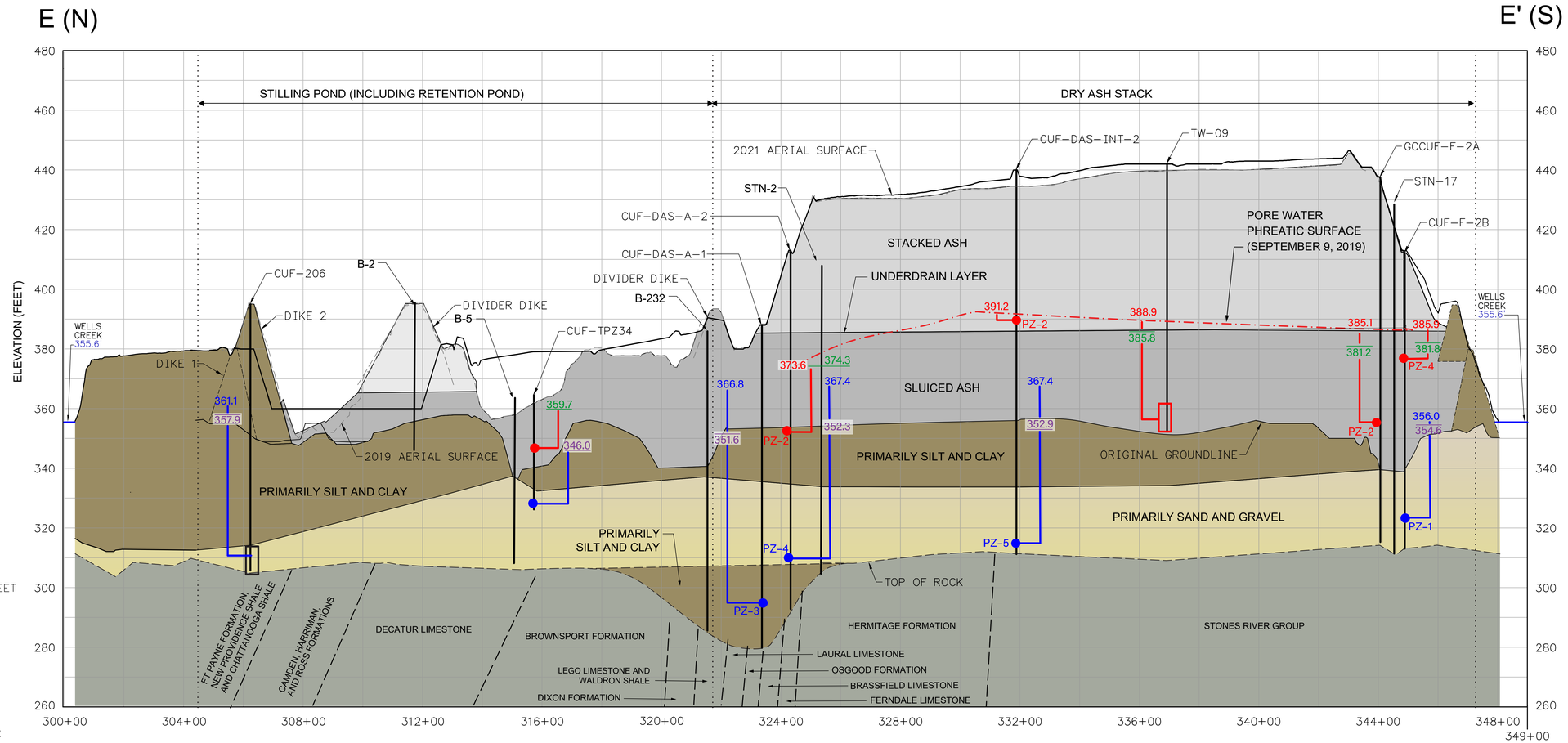
Groundwater is subsurface water that occurs in pore spaces in soil or bedrock. In a confined aquifer, measured groundwater levels rise above the top of the aquifer, but the actual level of groundwater is constrained by the upper aquitard. The difference between the measured groundwater level within the aquifer and the top of the aquifer is called the pressure head. Because the level of groundwater within a confined aquifer is constrained by the upper aquitard, groundwater in a confined aquifer is not in contact with the geologic unit located above the upper aquitard. The aquitard physically separates them. Groundwater level measurements are used to estimate directions of groundwater movement. Groundwater generally flows much more slowly than water in a surface stream or river.

Notes

1. Elevations are in feet amsl
2. Groundwater and pore water elevation data are from the CUF Plant Groundwater Investigation SAR Event #5 (for Cross-Section C-C') and Event #2 (for Cross-Section D-D'), and from subsequent gauging on August 22, 2022.
3. Pore water elevation data are from SAR Event # 2 and from subsequent gauging on August 22, 2022.
4. Complexity of bedrock not shown herein; refer to Bulletin 68 (Wilson, et al 1968) for a more detailed discussion of bedrock geology.



Stantec TVA



CUF Section E–E'
Stilling Pond (Including Retention Pond) & Dry Ash Stack

- Piezometer sensor showing pore water pressure expressed in feet of elevation (September 9, 2019) (August 22, 2022)
- Piezometer sensor showing groundwater pressure expressed in feet of elevation (September 9, 2019) (August 22, 2022)
- Screen interval showing pore water pressure expressed in feet of elevation (September 9, 2019) (August 22, 2022)
- Screen interval showing groundwater pressure expressed in feet of elevation (September 9, 2019) (August 22, 2022)

Exhibit No.
D-4

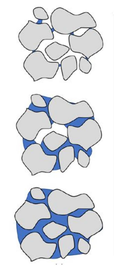
Title
STILLING POND (INCLUDING RETENTION POND) & DRY ASH STACK CROSS SECTION

Client/Project
Tennessee Valley Authority
Cumberland Fossil (CUF) Plant TDEC Order

Project Location
Stewart County, Tennessee

175568209

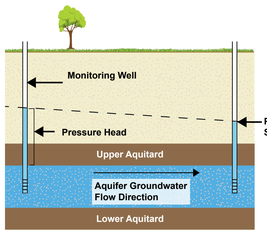
Prepared by KB on 2023-07-26
Technical Review by MD on 2023-07-26



This figure depicts how subsurface water occurs in the pore spaces in CCR material (referred to as "pore water" in this EAR), and how saturation varies within the CCR material. The phreatic surface is the surface of pore water at which pressure is atmospheric and below which CCR material may be saturated with pore water.

Groundwater is subsurface water that occurs in pore spaces in soil or bedrock. Groundwater generally flows much more slowly than in surface stream or river water.

Figure Reference: Benson, C., Water Flow in Coal Combustion Products and Drainage of Free Water, Report No. 3002021963, Electric Power Research Institute , Palo Alto, CA.



Groundwater is subsurface water that occurs in pore spaces in soil or bedrock. In a confined aquifer, measured groundwater levels rise above the top of the aquifer, but the actual level of groundwater is constrained by the upper aquitard. The difference between the measured groundwater level within the aquifer and the top of the aquifer is called the pressure head. Because the level of groundwater within a confined aquifer is constrained by the upper aquitard, groundwater in a confined aquifer is not in contact with the geologic unit located above the upper aquitard. The aquitard physically separates them. Groundwater level measurements are used to estimate directions of groundwater movement. Groundwater generally flows much more slowly than water in a surface stream or river.

Notes

1. Elevations are in feet amsl
2. Groundwater and pore water elevation data are from the CUF Plant Groundwater Investigation SAR Event #3 and from subsequent gauging on August 22, 2022.
3. Pore water elevation data are from SAR Event #3 and from subsequent gauging on August 22, 2022.
4. Complexity of bedrock not shown herein; refer to Bulletin 68 (Wilson, et al 1968) for a more detailed discussion of bedrock geology.