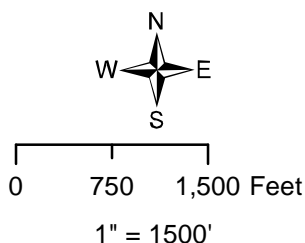
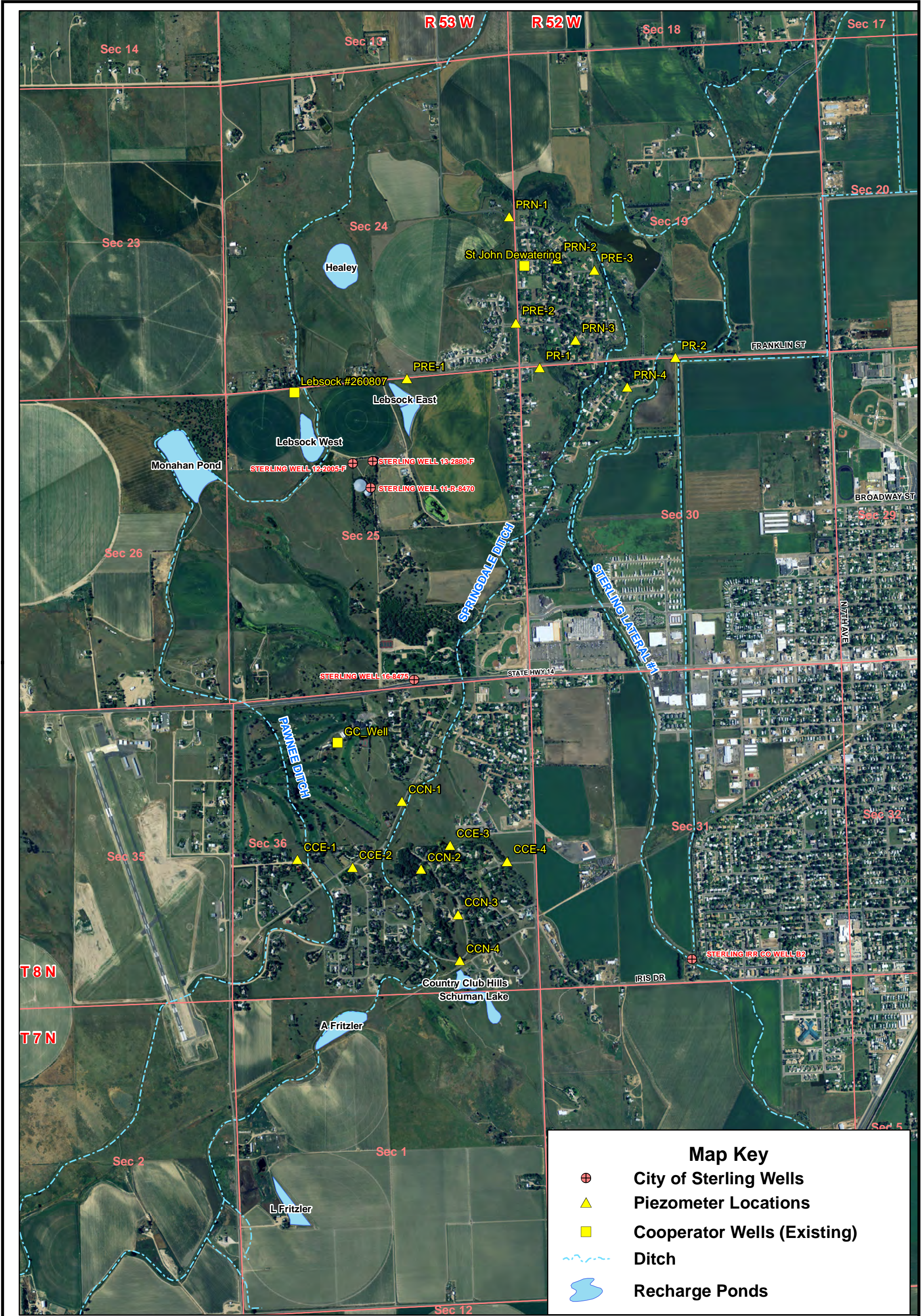


# **Sterling Groundwater Pilot Project**

## **Scope of Work**

1. Acquire existing water level data and identify existing wells suited for monitoring
  - a. Compile water level data acquired by others (City of Sterling, North Sterling Irrigation District, Lower South Platte Water Conservancy District, Colorado State University, US Geological Survey, Natural Resources Conservation Service, Colorado Dept. of Agriculture)
  - b. Identify existing alluvial wells that could be monitored
    - i. Wells associated with public facilities (schools, parks, fairgrounds, etc.)
    - ii. Existing wells no longer actively used.
    - iii. Existing monitoring wells for environmental compliance
    - iv. Existing piezometers
2. Install new monitoring wells in select areas (see proposed site maps)
  - a. Advance borings for geologic characterization in Pawnee Ridge and Country Club Hills subdivisions
  - b. Install nested piezometers in Pawnee Ridge and Country Club Hills to determine direction of groundwater flow
  - c. Conduct pump test (24 hours or to stabilization) within Pawnee Ridge
  - d. Instrument new monitoring wells with water level transducers and dataloggers
3. Monitor and record South Platte stream flow and diversions
  - a. Acquire records from South Platte – Sterling stream gage
  - b. Monitor and record surface water diversions in N. Sterling Canal, Pawnee Ditch, Springdale Ditch, Sterling No. 1 Ditch
4. Monitor and record diversion to recharge ponds
  - a. A. Fritzler, Schuman Lake, Country Club Hills, Lebsock East, Lebsock West, Monahan Pond, Healey,
5. Compile local climate data
6. Monitor and record groundwater withdrawals by large-capacity wells.
7. Compile and analyze decreed augmentation plans within study area.
8. Integrate datasets and identify causal relationships. Report of findings and recommendations.





State of Colorado Division of Water Resources  
Sterling Groundwater Pilot Project







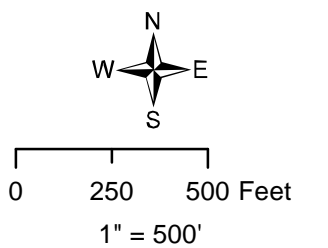


State of Colorado  
Division of Water Resources

## Sterling Groundwater Pilot Project Pawnee Ridge Area

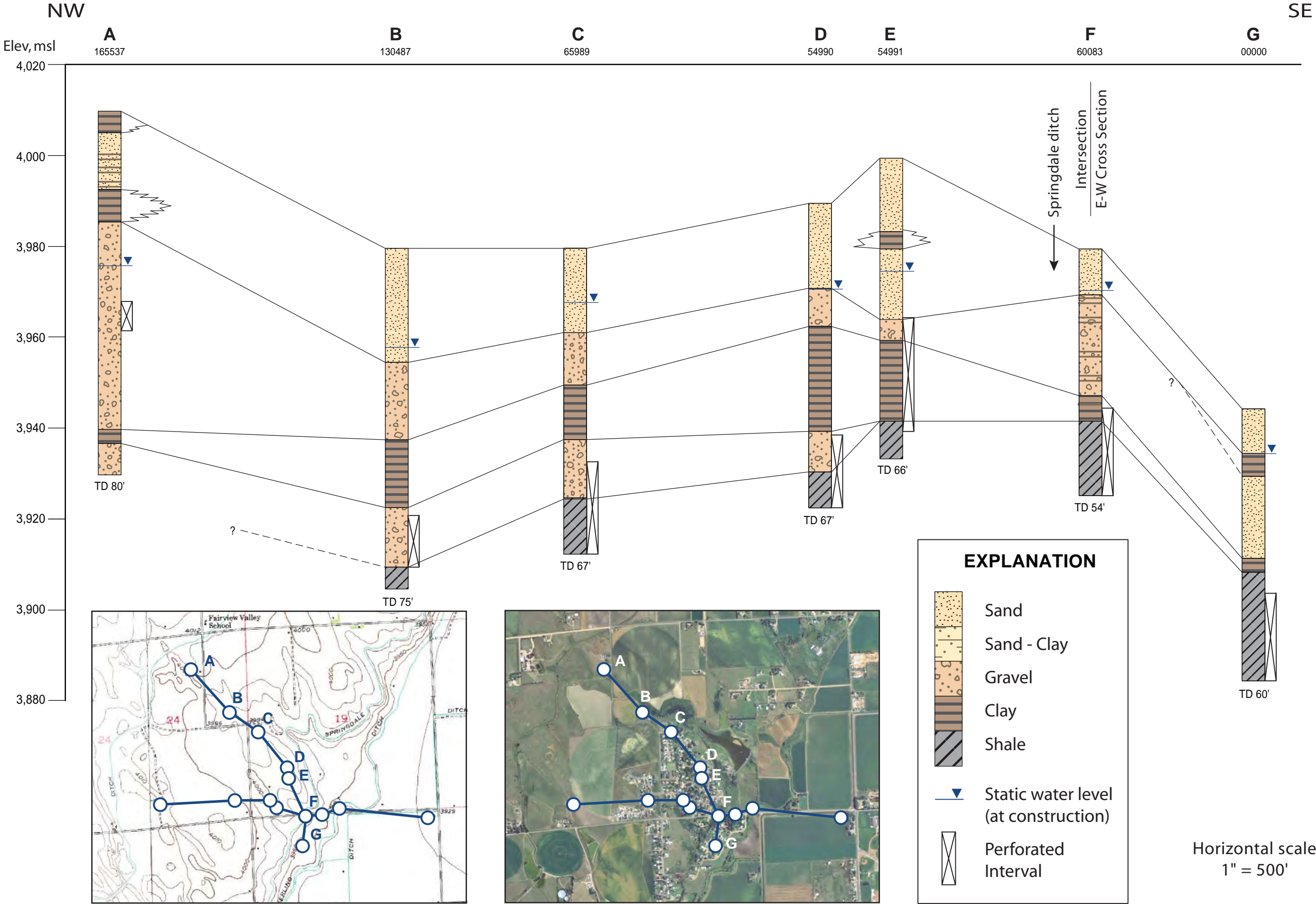
### Map Key

-  Piezometer Locations
-  Cooperator Wells (Existing)
-  Ditch
-  Recharge Ponds



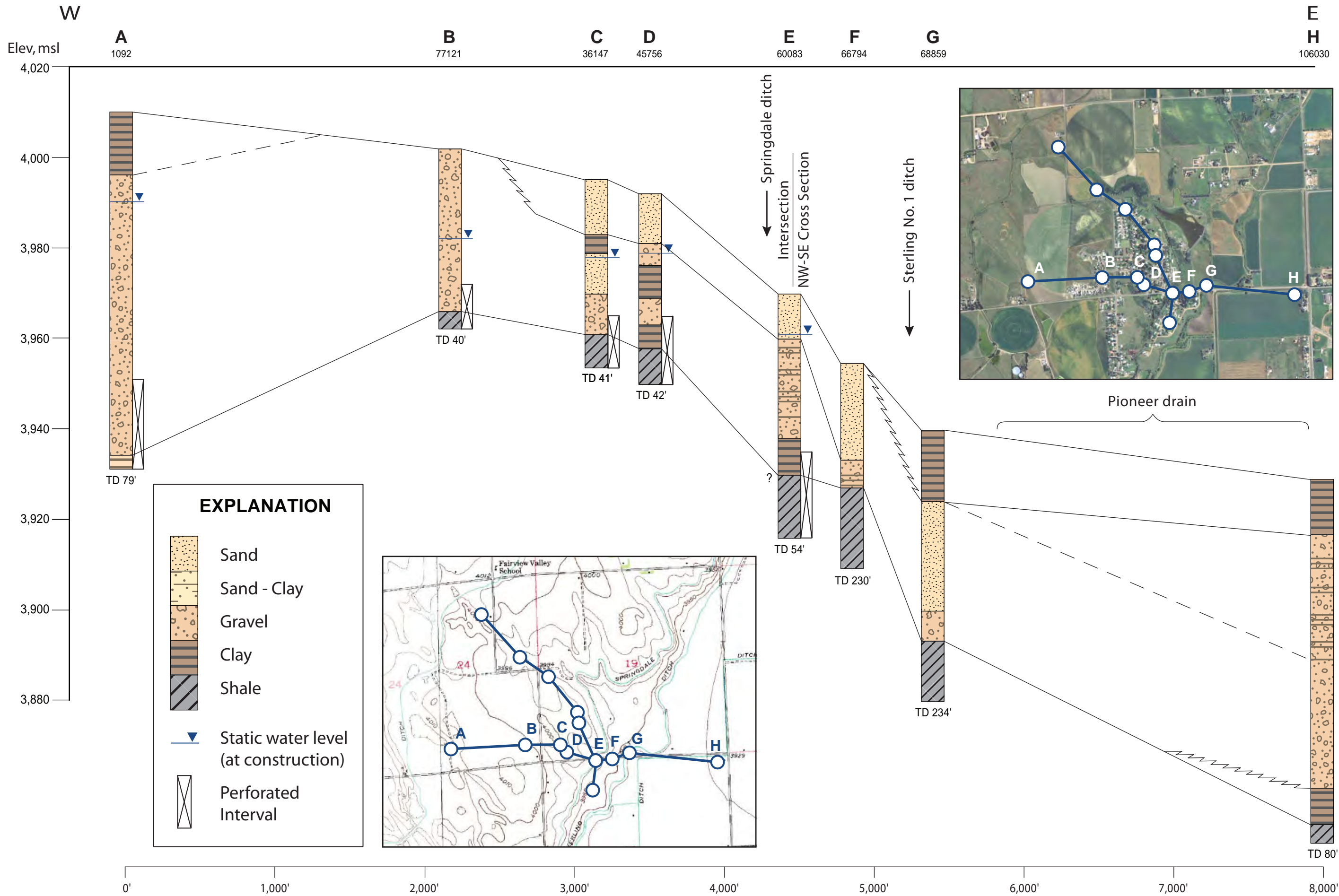


# Pawnee Ridge NW-SE Cross Section



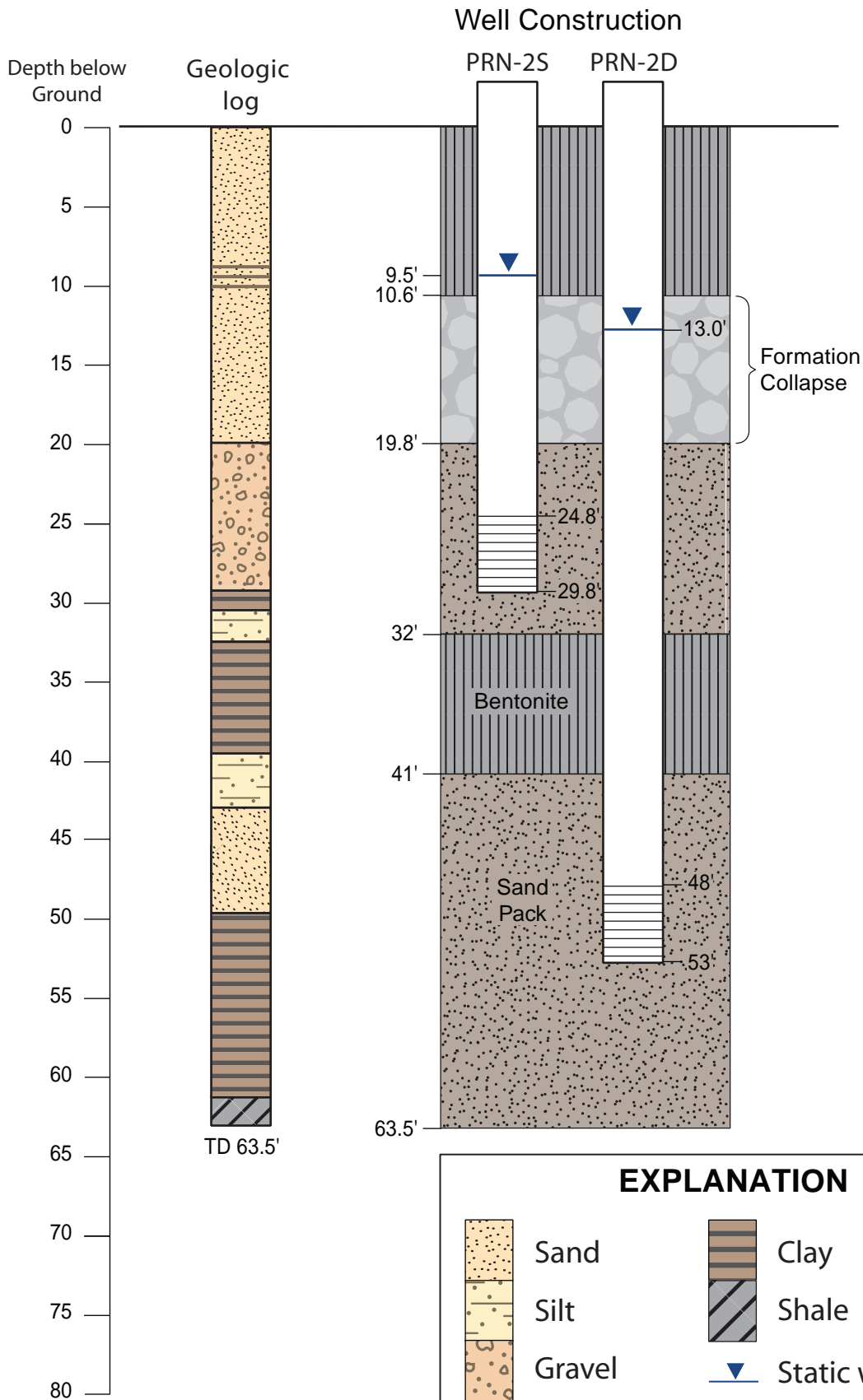


# Pawnee Ridge W-E Cross Section





# Pawnee Ridge (PRN-2)



## Notes:

- 1) Wells installed 5/22/12
- 2) Water levels measured 5/23/12
- 3) Water levels relative to ground surface

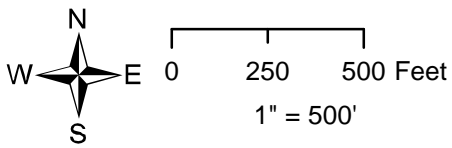
Vertical scale: 1"=10' (no horizontal scale)





**Map Key**

- Piezometer Locations
- Cooperator Wells (Existing)
- Dry Hole
- Ditch
- Recharge Ponds



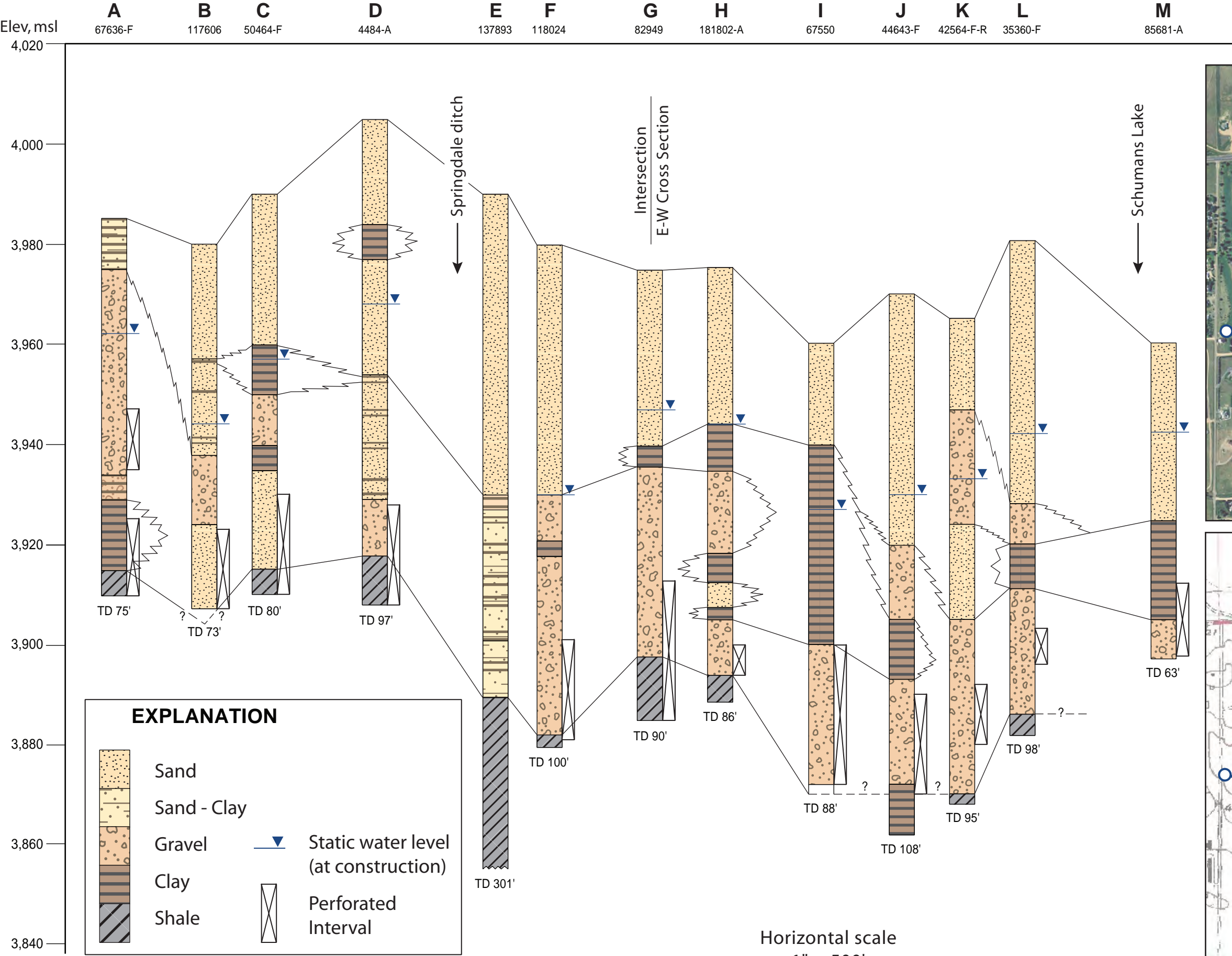
State of Colorado -- Division of Water Resources  
**Sterling Groundwater Pilot Project**  
**Country Club Hills Area**



# Country Club Hills N-S Cross Section

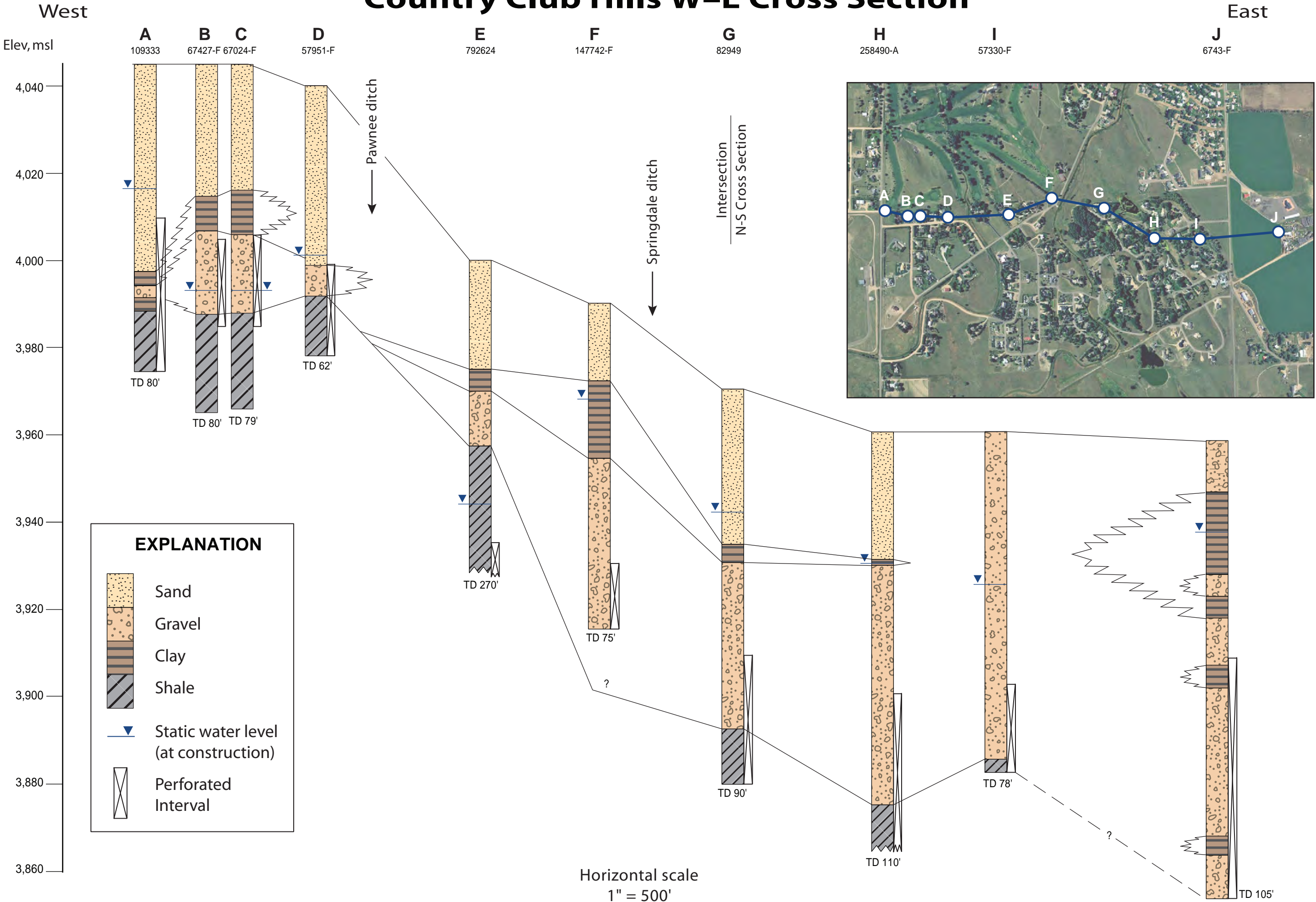
North

South



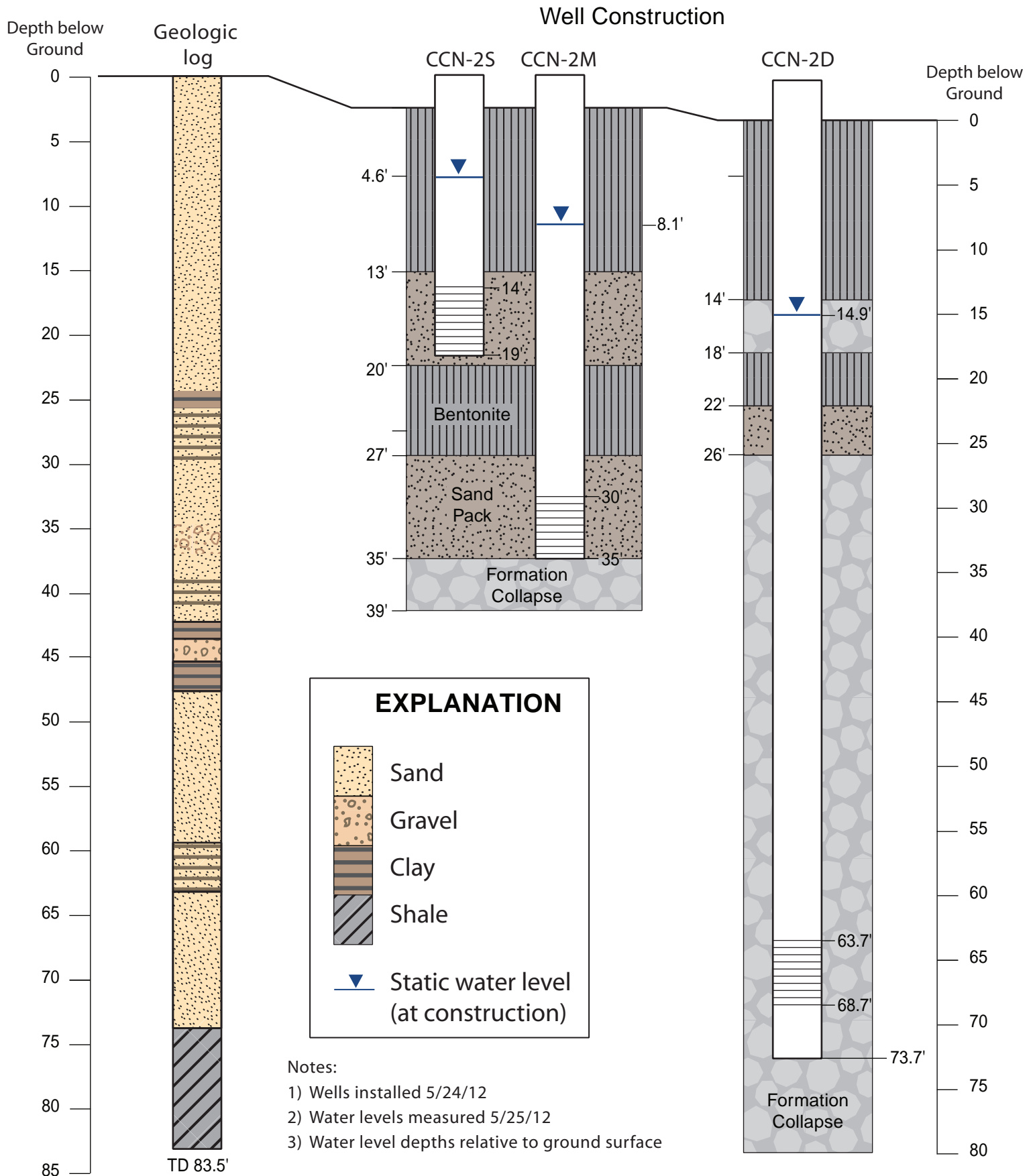


# Country Club Hills W-E Cross Section





# Country Club Hills (CCN-2)



Vertical scale: 1"=10' (no horizontal scale)



## Summary of Sterling Project Drilling Activities

The pages that follow are scans of the field data sheets that document the geologic materials and well completion details of the sixteen (16) piezometers (small diameter groundwater monitoring wells) installed for the Sterling Groundwater Pilot Project. Piezometer construction and installation details are summarized in the table that follows.

Locations for piezometers were selected in the Pawnee Ridge and Country Club Hills subdivisions to provide transects in each area extending generally north to south and east to west. Piezometer locations were sited on public right of ways in consultation with the Logan County Road and Bridge Department or on Logan County open space parcels at locations intended to prevent conflicts with existing land uses and avoid subsurface utilities.

Piezometers were installed in three different mobilizations using auger drilling methods to advance boreholes into the alluvial aquifer. The first mobilization occurred from April 9 through April 13, 2012 using a trailer-mounted Giddings 25-SCT drill rig provided and operated by the Lower South Platte Water Conservancy District (LSPWCD). A mechanical failure ended this drilling phase and the remaining piezometers were installed on May 30. Piezometers drilled by LSPWCD were installed in 4-inch diameter boreholes advanced with solid-stem flight augers. Subsurface materials were described from drill cuttings brought to the surface. At each location, after augering to total depth and cleaning out the hole, the augers were withdrawn from the borehole and the piezometers were constructed of 1.5-inch inside-diameter PVC pipe and glued couplings with five feet of factory milled 0.02-inch slot well screen at the bottom. Saw-cut slots were added to several piezometers above the factory-milled well screen to increase communication with the aquifer. At most locations the borehole collapsed at or near the water table after the augers were removed and the casing string was pushed into the loose sediments as deeply as possible without damaging the pipe or screen. At location CCE-1 the auger was refused at 24 feet below ground surface without encountering water.

The second mobilization for piezometer installation occurred from May 22 through May 25, 2012 using a 66-Boart Longyear hollow-stem auger (HSA) drilling rig operated by Dakota Drilling of Denver, Colorado. This round of drilling provided detailed subsurface characterization from ground surface to bedrock with particular emphasis on the presence of clay layers that separate silt/sand intervals within the alluvial aquifer. Subsurface materials were cored using a split-spoon sampler and logged. One set of nested piezometers were installed in each of the Pawnee Ridge and Country Club Hills subdivisions to evaluate the geology to bedrock and measure vertical groundwater level differences. Shallow and deep piezometers were installed with well screens situated within permeable materials separated by clay layers. At location PRN-2 one distinct clay layer was observed and two piezometers were installed in one 8-inch diameter borehole to monitor the shallow and deep aquifer above and below the clay layer. At location CCN-2 two clay



layers were observed and piezometers were installed in two 8-inch diameter boreholes to monitor the shallow, middle and deep aquifer zones. Piezometers were constructed inside the HSAs and filter pack and bentonite sealant added as the augers were withdrawn from the borehole.

At each of the nested piezometer locations the shallowest piezometer is constructed with 1.5-inch diameter PVC with five feet of factory milled 0.02-inch slot well screen at the bottom. The middle and deep piezometers are constructed with 1-inch diameter PVC and glued couplings with five feet of factory milled 0.02-inch slot well screen at the bottom. At location CCN-2 the deepest piezometer was installed with a 5-foot sump below the screen. Shallow piezometers are constructed of 1.5-inch pipe to accommodate automated water level measurement equipment.

All piezometers were completed with a 4" x 4" locking steel protective cover. Protective covers at each piezometer were painted high-visibility orange in compliance Logan County access agreements. Locked steel protective covers are set in a concrete pad and generally extend 2.5 to 3 feet above grade.



Sterling GW Pilot Project  
Preliminary Borehole and Piezometer Construction Summary

Piezometer ID	Date installed	Hole Depth (ft bgs)	Bottom Screen (ft bgs)	Top Screen (ft bgs)	Top Filter Pack (ft bgs)	Stickup Height (PVC) (ft ags)	Depth to Water (ft bgs)	UTM Coord. Easting (meters)	UTM Coord. Northing (meters)	Approx. Ground Surface Elev. (feet AMSL)
CCE-1	4/9/2012	24	NA	NA	NA	NA	>24'	647659	4497657	4033
CCE-2	4/9/2012	28	22.7	17.7	12.6	2.70	16.2	647945	4497617	3994
CCE-3	5/30/2012	24	15.3	10.3	NA	2.95	6.6	648452	4497730	3957
CCE-4	4/10/2012	28	25.2	15.0	11.8	2.47	10.4	648746	4497647	3960
CCN-1	4/12/2012	40	29.3	24.3	21.3	2.73	23.4	648201	4497959	3983
CCN-2S	5/24/2012	40	19.0	19.0	14.0	2.96	5.5	648296	4497614	3965
CCN-2M	5/24/2012	40	35.0	35.0	30.0	3.0	9.0	648296	4497614	3965
CCN-2D	5/24/2012	80	68.7	63.7	22.0	3.0	14.9	648296	4497614	3965
CCN-3	4/10/2012	28	16.5	7.5	NA	2.5	6.7	648493	4497371	3967
CCN-4	4/9/2012	32	29.8	22.8	NA	2.5	18.5	648502	4497133	3980
PRE-1	4/11/2012	40	26.2	21.2	19.3	2.89	21.2	648227	4500152	4009
PRE-2	4/11/2012	32	19.3	14.3	12.0	2.85	12.5	648792	4500441	3995
PRE-3	4/10/2012	20	13.6	8.6	4.7	2.60	6.4	649199	4500715	3980
PRN-1	4/12/2012	24	21.3	16.3	7.2	3.00	12.4	648757	4500992	3984
PRN-2S	4/22/2012	63.5	29.8	24.8	19.8	2.60	9.9	648997	4500738	3991
PRN-2D	4/22/2012	63.5	53.0	48.0	41.0	2.76	13.2	648997	4500738	3991
PRN-3	4/10/2012	20	11.2	4.9	1.8	1.80	1.3	649102	4500352	3982
PRN-4	4/11/2012	36	24.0	19.0	NA	2.65	14.0	649263	4500256	3972
PR-1	5/30/2012	20	13.2	8.2	NA	2.85	7.2	648916	4500208	3990
PR-2	5/30/2012	40	22.5	17.5	11.4	2.80	6.5	649620	4500262	3936

*Notes:*

CCE-1 was a dry hole at auger refusal depth, there was no well installed at CCE-1 location

TOC - Top of PVC Well Casing                      bgs - below ground surface                      ags - above ground surface

PRN-2S and PRN-2D are installed in the same borehole.

CCN-2S and CCN-2M are installed in the same borehole.

CCN-2S, CCN-2M, and CCN-2D are shallow, middle, and deep level piezometers, respectively.

The CCN-2M piezometer was installed in a middle sand interval observed during drilling.

PRN-2S and PRN-2D are shallow and deep piezometers, respectively. No middle level sand interval was observed at this location.



## Soil Boring Log -Page 1 of

Client DWR Site STERLING Job No. NA Soil Bore/ Well No. CLE-1  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 4/9/12  
 Piez/Casing Size & Type 7.5" PVC Screened Length/Interval NA Total Depth NA  
 Field Geologist/Technician A. HORN Stickup NA Casing Elevation NA Water Table Depth >24'

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Molature	Water Level Samples	WELL CONSTRUCTION
0-4		SILT, SANDY, DARK REDDISH BROWN 2.5 yr 3/4, DRY					DRY HOLE - NO WELL BUILT
4-8		SAND, SILTY, LT. REDDISH BRN 2.5 yr 6/4, DRY, MEDIUM					
8-12		SAND, SILTY, LT. REDDISH BRN 2.5 yr 6/4, MEDIUM, DRY					
12-15		SAND, AS ABOVE					
15-24		SILT, LT. REDDISH BRN 2.5 yr 7/4 DRY					
18		BECOMING SL. MOIST					
20							
25		TO 24', NO SIGN OF WATER					
30							
35							

Drill Rig Type GIDDINGS 25-SCT

Borehole Diameter

4"

MODEL: HDGSRPST



Client DWR Site STERLING Job No. CCE-2 Soil Bore/ Well No. CCE-2  
 Drill Contractor LSPWOD Drilling Method FLIGHT AUGER Date Drilled 4/9/12  
 Piez/Casing Size & Type 1.5 Screened Length/Interval 5' / 17.7 - 22.7 Total Depth 22.7  
 Field Geologist/Technician A. Horn Stickup 2.7 Casing Elevation NA Water Table Depth 16.2

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-2		TOPSOIL, DL. REDDISH BRN 2.5YR 3/4 SL. MOIST					
2-4		CLAY, SILTY, SANDY, WEAK RED 2.5YR 5/2 SL. MOIST, LOW PLASTICITY, GRADING TO LT. CLAYEY, LT. REDDISH BRN 2.5YR 6/4 MOIST					
14'		SAND, SILTY, RED 2.5YR 4/6, VERY MOIST, SOFT, EASY DRILLING VERY LOW PLASTICITY			16.2		
18		WET CUTTINGS FROM 14R,					
22.7							
28							
28							

Drill Rig Type GIDDINGS-SCTBorehole Diameter 4"



Client DWR Site STERLING Job No.                      Soil Bore/ Well No. CCE-3  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 5/30/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 15.3-10.3 Total Depth 15.3  
 Field Geologist/Technician A. Horn Stickup 36" Casing Elevation NA Water Table Depth 6.6

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-8		SAND, MED, RED. BRN 2.5% R 5/4 SLIGHTLY MOIST			SL MOIST		
8-24		SAND, YELLOWISH RED, 5% R 5/6 FINE-RED, WET			WET		
10.3							FORMATION COLLAPSE
15.3							
22		CLAYEN SAND ON AUGERS AT 22'					
24		BOH					
25							
30		WELL CONSTRUCTED OF 1.5" PVC W/ GULCH COUPLINGS 5' FACTORY-SLOTTED 0.020" SCREEN USED					
35							

Drill Rig Type GIDDINGS 25-SC  
170GSRPST

Borehole Diameter 4"

BENTONITE

7.1

10.3

15.3



## Soil Boring Log -Page 1 of

Client DWR Site STERLING Job No. BCE-4 Soil Bore/ Well No. BCE-4  
 Drill Contractor LSPWCD Drilling Method FLIGHT ANGER Date Drilled 4/10/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 10/25.15-15 Total Depth 25.15  
 Field Geologist/Technician A. Horner Slickup 2.5 Casing Elevation NA Water Table Depth 10.4

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-4'		SAND, PK. REDDISH BRN 2.5-4 3/4 MED-COARSE W/ SILT + TRACE CLAY SL. MOIST					
4-12		SAND, SILTY W/ TR. CLAY, RED 2.5-4 3/4 SL. MOIST					
12-16		SAND, W/ TR. CLAY, RED 2.5-4 3/4					
16 -		CUTTINGS DET					
20		CUTTINGS CLAYEY					
25							
30							
35							

BOH @ 28' BGS  
 NOTE:  
 5' FACTORY-SLOTTED SCREEN, SAW-CUT  
 5' ABOVE FACTORY-SLOTTED SCREEN

Drill Rig Type GIDDINGSBorehole Diameter 4"



Client DWR Site STERLING Job No. \_\_\_\_\_ Soil Bore/ Well No. CCN-1  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 4/12/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 5' 29.3-24.3 Total Depth 29.3  
 Field Geologist/Technician A. Horn Stickup 3' Casing Elevation NA Water Table Depth 23.35

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-3		SILT, W/VE. SAND, REDDISH BRN 2.54R, DRY					
3-26		SANDY, LT. RED, 2.54R 6/4 FINE AED SL. MOIST					
26-40		CLAY, SANDY, LT. REDDISH BRN 2.54R 6/4, CST, MOIST					
21.6							
24.3							
26.6							
29.3							

Drill Rig Type GIDDINGS 25-SC  
1FDGSRPST

Borehole Diameter 4"



Client DWR Site STERLING Job No. \_\_\_\_\_ Soil Bore/ Well No. CCN-1  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 4/12/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval SEE P. 1 Total Depth 29.3 (PZ)  
 Field Geologist/Technician A. TURNER Stickup 3 Casing Elevation NA Water Table Depth 23.35

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level	Samples	WELL CONSTRUCTION
40		CLAY, AS ABOVE Bolt = 40'						
45								
50								
55								
60								
65								
70								

Drill Rig Type \_\_\_\_\_

Borehole Diameter \_\_\_\_\_



Client DWR Site STERLING Job No. MA Soil Bore/ Well No. CCN-2  
 Drill Contractor DACOTA Drilling Method ISA Date Drilled 5/23/12  
 Piez/Casing Size & Type 1.140R Screened Length/Interval NA Total Depth 62  
 Field Geologist/Technician A. HORN Stickup NA Casing Elevation NA Water Table Depth 10

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
		0-2 SAND, FINE, REDDISH BRN 2.5YR 5/4,	6/10/8/8		DRY		
		2-4 SAND, AS ABOVE	5/5/5/5		DRY		
5		4-6 SAND, DK RED. BRN 2.5YR 3/4 MEDIUM	4/5/6/5		DRY		
		6-8 SAND, RED, 2.5YR 5/6, FINE	4/3/4/5		5% MOIST		
		8-10 NO RECOVERY	4/4/4/4				
10		10-12 SAND, REDDISH BRN 2.5YR 5/4 FINE	4/5/5/6		WET		
		12-14 SAND, AS ABOVE	2/3/3/5		WET		
15		14-16 SAND, LT. RED. BRN 2.5YR 6/4, FINE	1/1/3/5		WET		
		16-18 SAND, AS ABOVE	6/4/4/6		WET		
		18-20 SAND, LT. RED BRN 2.5YR 5/4, FINE	6/10/6/7		WET		
20		20-22 SAND, AS ABOVE, FLOWING INTO AUGERS	7/8/6/7		WET		
		22-24 SAND, AS ABOVE	10/10/10/10		WET		
		24-25 SAND, AS ABOVE	16		WET		
25		25-26 CLAY, SILTY, PINKISH GRAY 5YR 6/2 STIFF, PLASTIC, FINELY BEDDED	6/4/5/7		WET		
		26-28 SAND, FINE, REDDISH BRN 5YR 5/3, w/ CLAYEY INTERBEDS ~ 0.1" THICK	8/6/7/12		WET		
		28-30 SAND, FINE, AS ABOVE, CLAY LENS ~ 0.14 THICK AT 29.58	7/9/10/15		WET		
30		30-32 SAND, COARSE, REDDISH BRN, 2.5YR 4/4 w/FR. GRAVEL	5/12/23/20		WET		
		32-34 SAND, FINE, RED. BRN, 2.5YR 5/4,	5/4/10/12		WET		
35		34-35 GRAVEL, FINE, RED. BRN 2.5YR 5/4, w/ SAND UP TO ~ 0.02' DIA.	5/8/16/19		WET		

Drill Rig Type GG BOART LONGMAN Borehole Diameter 8 1/2

NO WELL INSTALLED IN THIS BOREHOLE

Client DWR Site STERLING Job No. NA Soil Bore/ Well No. CCN-2  
 Drill Contractor DAKOTA Drilling Method HSA Date Drilled 5/23/12  
 Piez/Casing Size & Type NA Screened Length/Interval 5' Total Depth 62  
 Field Geologist/Technician A. Horn Stickup NA Casing Elevation NA Water Table Depth ~10

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level	Samples	WELL CONSTRUCTION
		35-36 SAND, FINE, RED. BRN 2.5 YR 5/4			WET			
		36-38 SAND, MED-COARSE, RED. BRN 2.5 YR 5/4 w/ TR. GRAVEL TO 0.3'	5/12/21 20		WET			
		38-40 SAND, SILTY, LT. RED. BRN, 2.5 YR 6/4 w/ CLAYEN INTERBEDS ~0.05' THICK	4/5/9/14		WET			
40		40-41.8 SAND, FINE, SILTY, YELLOWISH RED 5 YR 5/6 w/ CLAYEN INTERBEDS	10/9/9/12		WET			
		41.8-42.5 CLAY, YELLOWISH RED 5 YR 5/6 STIFF, PLASTIC	7/18/21/36		WET			
		42.5-43 SAND, FINE, SILTY, YELLOWISH RED 5 YR 5/6 w/ CLAY			WET			
		43-44 CLAY, w/ FINE SAND, TR. GRAVEL YEL. RED 5 YR 5/6 STIFF, PLASTIC	9/14/15/19		WET			
45		44-46 SAND, SILTY, YELLOWISH RED 5 YR 5/8, w/ CLAYEN AND GRAVELY INTERBEDS	9/14/16/18		WET			
		46-46.8 SAND, FINE, SILTY, YELLOWISH RED 5 YR 5/6			WET			
		46.8-48 CLAY, SILTY, YEL. RED 5 YR 5/8, TRACE GRAVEL TO 0.05', STIFF, PLASTIC			WET			
		48-50 SAND, FINE, REDDISH YELLOW 5 YR 5/6, CLAY LENS AT 50.5'	NA		WET			
50		50-52 SAND, FINE, AS ABOVE	5/6/16/19		WET			
		52-54 SAND, VERY FINE, LT. RED. BRN, 5 YR 6/4 SILTY w/ CLAYEN LENSES	4/7/11/21		WET			
		54-56 SAND, VERY FINE, RED. BRN 5 YR 5/4, SILTY	6/12/26/21		WET			
55		56-58 SAND, AS ABOVE	15/21/21/26		WET			
		58-60 SAND, VERY FINE RED. BRN 5 YR 5/4 SILTY, DENSE	15/20/25/30		WET			
60		60-62 SAND, FINE, RED. BRN 5 YR 5/4, w/ CLAYEN INTERBEDS ~0.1' THICK	NA		WET			
		STOP SAMPLING DUE TO FLOWING SANDS BORING BACKFILLED w/ FORMATION COLLAPSE TO 21' BGS, ABANDONED w/ BENTONITE CHIPS FROM 21' TO 1.5' BGS, 18 BAGS SAMPLES FROM 54'-60' AND 18'-24' SEE CCN-2D LOG FOR LITHOLOGY BELOW 62' BGS						
70								

Drill Rig Type 66 BORT LONGEARBorehole Diameter 8 1/2



Client DWR Site STERLING Job No. MA Soil Bore/ Well No. CCN-25/M  
 Drill Contractor DAKOTA Drilling Method 175A Date Drilled 5/24/12  
 Piez/Casing Size & Type 7" + 1.5" Screened Length/Interval 5' 30-35 + 14-19 Total Depth 35' (CCN-2M)  
 Field Geologist/Technician A. HERN Stickup 3' Casing Elevation MA Water Table Depth 5.5, 6.8

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
5			NA	NA	NA		
10					CCN-25		
15					CCN-2M		
20							
22'		SLIGHTLY STIFFER DRILLING PRESUMED TO BE CLAY					
25							
30							
35							

Drill Rig Type 66 BOART LONGYEARBorehole Diameter 8 1/2"

Client DWR Site STERLING Job No. NA Soil Bore/ Well No. CCN-25/M  
 Drill Contractor DAKOTA Drilling Method HS4 Date Drilled 5/24/12  
 Piez/Casing Size & Type 1" + 1.5" PVC Screened Length/Interval SEE P. 1 Total Depth 40  
 Field Geologist/Technician A. Horn Stickup 3' Casing Elevation NA Water Table Depth \_\_\_\_\_

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level	Samples	WELL CONSTRUCTION	
40 39		BOTTOM OF HOLE AT 39' USED 5 BAGS 10-20 SAND USED 3 BUCKETS BENTONITE PELLETS 4 BAGS BENTONITE CHIPS 1-1" PVC SCREEN (5') 1-1.5" PVC SCR (5')						FOR AMPL	COLLAPSE
45 40		1-20' 1" PVC PIPE 2 10' 1" PVC PIPE 2 10' 1.5" PVC PIPE							
15									
20									
25									
30									
35									

Drill Rig Type GO BORDT LONGYEAR Borehole Diameter 8 1/2



Client DWR Site STERLING Job No. NA Soil Bore/ Well No. CCN-2D  
 Drill Contractor DAKOTA Drilling Method ISA Date Drilled 5/24/12  
 Piez/Casing Size & Type 1" PVC Screened Length/Interval 63.7-68.7 Total Depth 80  
 Field Geologist/Technician A. HORN Stickup 3 Casing Elevation NA Water Table Depth 14.8

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
5		SAND					
		CUTTINGS WET AT ~7' BGS					
10		SAND					
15		SAND					
20		DRILLER DID NOT NOTICE CLAY LAYER THAT SHOULD BE ~20' BGS, NO INDICATION IN CUTTINGS					
25		SAND					
30							
35							

Drill Rig Type 66 BOART LONGEAMBorehole Diameter 8 1/2"

Client DWR Site STERLING Job No. MA Soil Bore/ Well No. CCN-2D  
 Drill Contractor DANLOTA Drilling Method HSA Date Drilled 5/22/12  
 Piez/Casing Size & Type 1" PVC Screened Length/Interval SEE P.1 Total Depth 80  
 Field Geologist/Technician A. HERN Stickup SEE P.1 Casing Elevation MA Water Table Depth 14.8

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level	Samples	WELL CONSTRUCTION
40		SAND.  DRILLER NOTICES CHANGE IN DRILLING, STATES THIS MAY BE CLAY LAYER						
45		SAND						
50		SAND						
55		SAND						
60		SAND ↓						
65		SMALL LAYER GRAVEL AT ~63'						
70		SAND						

Drill Rig Type 66 BOMET LONGEER Borehole Diameter 8 1/2



Client DWR Site STERLING Job No. MA Soil Bore/ Well No. CCP-10  
 Drill Contractor DALTON Drilling Method HSA Date Drilled 5/24/12  
 Piez/Casing Size & Type 1" PVC Screened Length/Interval 5' Total Depth 80  
 Field Geologist/Technician A. HERN Stickup SEE P. 1 Casing Elevation MA Water Table Depth 14.8

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION	
75	11	DRILLING INDICATES BEDROCK AT 71'					FORMATION COLLAPSE	73.7
	11	GRAY CLAY ON NGERS						
80	11	BOTTOM OF HOLE						80
15		1" 0.020" SLOT SCREEN USED (FACTORY-SLOTTED) WELL BUILT W/ SCH 40 PVC, ALL JOINTS GLUED						
20								
25								
30								
35								

Drill Rig Type 66 BORT LONGEARBorehole Diameter 8 1/2

# Soil Boring Log -Page 1 of

Client DWR Site STERLING Job No. MA Soil Bore/ Well No. BCP-3  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 4/10/12  
 Piez/Casing Size & Type 1.5" Screened Length/Interval 5' Total Depth 16.5  
 Field Geologist/Technician A. HERN Slickup 2.5 Casing Elevation MA Water Table Depth 6.7

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0		SAND, RED 2.5 HR S/G, MEDIUM, SL. MOIST					
5							
10							
12		WET CUTTINGS SAND, MOD, RED					
15							
20							
25							
30		SAND, MED, RED BOTTOM OF HOLE NOTE: 5' FACTORY-SLOTTED SCREEN, SAW CUT SCREEN TO 4' ABOVE FACTORY-SLOTTED SCREEN.					
35							

Drill Rig Type GIDDINGS Borehole Diameter 4"



## Soil Boring Log -Page 1 of

Client DWR Site STERLING Job No. MA Soil Bore/ Well No. CCN-4  
 Drill Contractor LSPWCD Drilling Method SLIGHT NGON Date Drilled 4/9/12  
 Piez/Casing Size & Type 1.5" Screened Length/Interval 5' 22-29.8 Total Depth 29.8  
 Field Geologist/Technician A. Horn Stickup 2.5 Casing Elevation MA Water Table Depth 18.5

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
5		0-32 SAND, RED, MEDIUM, SL. MOIST					
10		SAND, AS ABOVE					
15							
20		SAND WET AT 22'					
25		SAND					
30							
35		BOH = 32' NOTE: 5' FACTORY-SLOTTED SCREEN USED, SAW CUT SCREEN TO 2' ABOVE FACTORY- SLOTTED SCREEN					

Drill Rig Type GIDDINGS-SCTBorehole Diameter 4"

Client DLR Site STERLING Job No. NA Soil Bore/Well No. PR-1  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 4/12/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 5', 8.2'-13.2' Total Depth 13.2'  
 Field Geologist/Technician A. Horn Stickup 36" Casing Elevation NA Water Table Depth 7.2'

DEPTH (feet)	Lithology	DESCRIPTION	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-3		SILT, w/VE. SAND, LT. RED 2.57R 7/6 SL. MOIST					
3-14		SAND, VERY FINE, LT. RED 2.57R 7/6					
8		CUTTINGS WET					
14-20		GRAVEL, FINE (SAND), LT. RED, 2.57R 7/6 w/SAND, WET					
20		BOH=20'					
		LOGS LEFT IN HOLE, NO WELL SET 4/12/12					
		BOREHOLE RE-ENTERED 5/30/12					
		WELL INSTALLED 5/30/12					
		WELL CONSTRUCTED OF 1.5" PVC w/ GLUED COUPLINGS					
		5' FACTORY-SLOTTED 0.020" SCREEN USED					

Drill Rig Type GIDDINGS 25-SET  
1FDGSRPST

Borehole Diameter 4"

2.5'

7.5'  
8.2'

13.2'

BENTONITE

COLLAPSE

Drill Rig Type GIDDINGS 25-SET Borehole Diameter 4"  
1 HDG SRPST



Client DWR Site STERLING Job No. NA Soil Bore/ Well No. PR-2  
 Drill Contractor ESPEC Drilling Method FLIGHT AUGER Date Drilled 5/30/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval SEE P. 1 Total Depth 13.2  
 Field Geologist/Technician A. Horn Stickup 36" Casing Elevation NA Water Table Depth 6.5

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION		
							FORMATION	COLLAPSE	
40		SAND, CLAYED (FROM AUGER)  BDH  WELL CONSTRUCTED W/ 1.5" SCHEDULE 40 PVC, W/ 5" FACTORY-SLOTTED 0.020" SCREEN. ALL JOINTS GLUED							
45									
50									
55									
60									
65									
70									

Drill Rig Type GIDDINGSBorehole Diameter 4"

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-6	SILT, SANDY, REDDISH BRN, 2.5% R 4/4 SL. MOIST						
6-	SILT, AS ABOVE, W/CLAY						
12-	GRVEL, SILT, SANDY, CLAYEY, LT. REDDISH BROWN 2.5% R 6/4 CUSIS SUB-ROUNDED TO 1" DIA						
24	SAND, W/GRVEL, LT. RED, 2.5% R 6/6 COARSE, ANGULAR, SL. MOIST				21.2		FORMATION COLLAPSE
30	CUTTINGS WET - AT WATER						

Drill Rig Type GIDDINGS 25-SET Borehole Diameter 4"  
1 HDG SRPST

Client SEE P.1 FOR INFO Site 1 MFD Job No. \_\_\_\_\_ Soil Bore/ Well No. PRE-1  
 Drill Contractor \_\_\_\_\_ Drilling Method \_\_\_\_\_ Date Drilled 4/11/12  
 Piez/Casing Size & Type \_\_\_\_\_ Screened Length/Interval \_\_\_\_\_ Total Depth 40  
 Field Geologist/Technician \_\_\_\_\_ Stickup \_\_\_\_\_ Casing Elevation \_\_\_\_\_ Water Table Depth \_\_\_\_\_

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level	Samples	WELL CONSTRUCTION
40		35-40 SAND, IS ABOVE W/ TR. CLAY  BDIT = 40						
45								
50								
55								
60								
65								
70								

Drill Rig Type \_\_\_\_\_

Borehole Diameter \_\_\_\_\_



Client DUR Site STERLING Job No. NA Soil Bore/ Well No. PRE-2  
 Drill Contractor LSPWED Drilling Method FLIGHT AUGER Date Drilled 4/11/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 5' 19.3-14.3 Total Depth 19.3  
 Field Geologist/Technician A. Horn Stickup 2.5 Casing Elevation NA Water Table Depth 12.45

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-4		SILT, SANDY, REDDISH BRN 2.5% 4/4 SL. MOIST					
4-9		SILT, AS ABOVE w/ CLAY					
8'		HARDER DRILLING w/ V.S. SAND					
9-13		SILT, CLAYEY, LT. REDDISH BRN 2.5% 6/4					
13		SAND, CLAYEY, RED, 2.5% 5/6 WET				12.45	
15		CLAY DECREASING					
20		WET CUTTINGS					
30							
35							

BOLT = 32

FORMATION COLLAPSE

Drill Rig Type GIDDINGS 25-SET  
1-10GSRPST

Borehole Diameter 4"

Client DWR Site STERLING Job No. NA Soil Bore/ Well No. PRE-3  
 Drill Contractor LSPWCD Drilling Method LIGHT ANGER Date Drilled 4/10/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 8.6-13.6 Total Depth 13.6  
 Field Geologist/Technician A. Horn Stickup 30' Casing Elevation NA Water Table Depth 6.4

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Molature	Water Level Samples	WELL CONSTRUCTION
0-5'		SILT, W/VC SAND, DK. REDDISH BRN 2.54R 3/3 DRY					
5-		SILT, W/VE SAND, REDDISH GRAY, 2.054R NG/ MOIST, SOFT				6.4'	
11'		WATER					
		BECOMING MORE SANDY AT 15'					
20'		BDIT = 20					
25'							
30'							
35'							

Drill Rig Type GIDDINGS 25-SCT  
17DG SRPST

Borehole Diameter 4"

Client DWR Site STERLING Job No. NA Soil Bore/Well No. PRN-1  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 4/12/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 5' / 21.3 - 19.3 Total Depth 21.3  
 Field Geologist/Technician A. Horn Stickup 3' Casing Elevation NA Water Table Depth 12.4 BGS

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-6		SILT, CLAY, REDDISH BROWN SL. MOIST, MOD-LOW PLASTICITY					
6-10		SAND, SILT, LT RED, 2.5 NR 6/4 SL. MOIST, LOW PLASTICITY					
10-		SAND, CLAY, LT. REDDISH BRN 2.5 NR 6/4 WET					
16.3							FORMATION COLLAPSE
21.3							FORMATION COLLAPSE
24							

BDH = 24'

NOTE: ADDED SAND FROM 16.2  
 TO UNKNOWN DEPTH (~1/2 BAG)  
 TAGGED ANNULUS + DISCOVERED  
 HOLE ONLY OPEN TO 9' BGS,  
 ADDED 1.8' MORE SAND TO 7.2'  
 IN CASE OF SETTLING.

Drill Rig Type GIDDINGS 25-SC  
1-10G SRPST

Borehole Diameter 4"



Client DWR Site STERLING Job No. NA Soil Bore/ Well No. PRN-2  
 Drill Contractor DARTOTA Drilling Method ISA Date Drilled 5/22/12  
 Piez/Casing Size & Type PVC 1" 4.5 Screened Length/Interval 24.8-29.8, 48.53 Total Depth 63.5  
 Field Geologist/Technician A. TORR Stickup 3 Casing Elevation NA Water Table Depth 9.9

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-0.5		SILT, DISKY RED, 2.54R 3/2 DRY, HARD	3/4/4	ML	DRY		
0.5-2		SAND, REDDISH BROWN, 2.54R 4/4 FINE, DRY, SOFT	5/4/7	SP	DRY		
2-4		SAND, REDDISH BROWN 2.54R 4/4, FINE, SL. MOIST, SOFT	8/6/10	SP	SL. MOIST		
4-6		SAND, AS ABOVE, IRON STAINING AT 5' BECOMING MOIST	10/10/8/8	SP			
6-8		SAND, REDDISH BRN, AS ABOVE		SP			
8-10		SAND, AS ABOVE, BECOMING DARKER W/ DEPTH 0.1" THICK CLAY LENS AT ~9.5 CLAY: SOFT, REDDISH GRAY 2.54R NG1, MED PLASTICITY, MOIST	5/3/4	SP	WET	9.9	
10-12		SAND, REDDISH BROWN, 2.54R 4/4, MEDIUM W/ FINE, NO BEDDING OBSV	4/8/11/11	SP	WET		
12-14		SAND, AS ABOVE					
14-14.5		SAND, REDDISH BRN, 2.54R 5/4, FINE, SLIGHTLY MOIST, NO CLAY OBSV. ABOVE	8/3/24	SP	MOIST		
14.5-16		SAND, RED, 2.54R 5/6, WET, MEDIUM	5/3/5/5	SP	WET		
16-18		SAND, AS ABOVE	9/6/18	SP	WET		
18-19.4		SAND, AS ABOVE, WET			WET		
19.4-19.5		SILT, W/IR, CLAY, DARK REDDISH BRN, 2.54R 5/4, MED PLASTICITY, LOW PLASTICITY	8/10/12/13	SW	MOIST		
19.5-20		SAND, REDDISH BRN 2.54R 4/4, FINE	8/17/17	SW	WET		
20-21.3		SAND, AS ABOVE, MEDIUM					
21.3-22		SAND, REDDISH BRN, 2.54R 4/4, COARSE W/ GRAVEL, CLASTS TO 1" DIA, ROUND	15/20/17	SW	WET		
22-24		SAND, RED 2.54R 4/6, W/ GRAVEL, COARSE	15				
24-26		SAND, AS ABOVE, COARSE, W/ GRAVEL	8/8/14/15	SW	WET		
26-28		SAND W/ GRAVEL AS ABOVE, INCREASING GRAVEL	10/15/15/21	SW	WET		
28-29.7		SAND W/ GRAVEL, AS ABOVE	10/10/10/9	SW	WET		
29.7-30		CLAY SILTY, RED, 2.54R 5/4, FINELY BEDDED PLASTIC, MED STIFF	9/8/16	SP	WET		
30-31.1		SAND, REDDISH BRN 2.54R 4/4, COARSE					
31.1-32.5		SILT, CLAYGY, LT. RED 2.54R 6/6 MED. PLAST. SOFT, FINELY BEDDED	8/9/9/10				
32.5-		CLAY, SILTY, LT. RED, 2.54R 6/6, MED STIFF, PLASTIC, FINELY BEDDED	8/8/9/10	CL	MOIST		

Drill Rig Type 66 BOART-LONGYEAR Borehole Diameter 8 1/2"

PRN-2S/D

Soil Boring Log -Page 2 of 2

Client DWR Site STERLING Job No. NA Soil Bore/ Well, No. PRN-2  
 Drill Contractor DAKOTA Drilling Method ISA Date Drilled 5/22/12  
 Piez/Casing Size & Type 1" + 1.5" PVC Screened Length/Interval 5' 53.48 + 29.5-29.8 Total Depth 63.5  
 Field Geologist/Technician A. T. HORN Stickup 3' Casing Elevation NA Water Table Depth 9.9

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level	Samples	WELL CONSTRUCTION
		36-37.5 CLAY, AS ABOVE, MED STIFF, PLASTIC	8/16/13	CL	moist			
		37.5-38 CLAY, SILTY, REDDISH GRAY 2.54R 6/		CL				
		SOFT, MED PLASTICITY	3/4/8/9		moist			
40		38-39.1 CLAY, AS ABOVE						
		39.1-39.6 SAND, CLAYEY, RED 2.54R 5/6 FINE, SOFT						
		39.6-40 CLAY, SILTY, REDDISH GRAY 2.54R 6/	6/8/12/22	ML	WET			
		40-42 SILT, CLAYEY, SANDY, RED, 2.54R 5/6 SOFT, NON-PLASTIC, BECOMING SANDY/GRAVELLY W/ DEPTH						
		42-42.4 SILT, AS ABOVE SANDY	6/8/12/12	SW	WET			
		42.4-42.6 CLAY, REDDISH GRAY 2.54R 5/6 MED STIFF						
		42.6-44.5 SAND, SILTY, RED 2.54R 5/6 FINE, MED PLAS						
45		44.5-44.6 CLAY, LT. REDDISH BRN 2.54R 6/3, MED STIFF, LOW PLASTICITY	6/17/16/20	SW	WET			
		44.6-48 SAND, LT. RED, 2.54R 6/8, COARSE, W/ TR. FINE GRAVEL, SILTY.	3/6/14/15	SW	WET			
		47.5 0.1' CLAY LENS.						
		48-50 SAND, W/ GRAVEL, RED 2.54R 5/6 SILTY, W/ 0.3 SAND FORD BEDS AT 48.5 + 49.5	9/21/19/25	SW	WET			
50		50-52 SAND, AS ABOVE,	10/25/20/30	SW	WET			
		51.7 CLAY, 0.1' THICK.						
		51.8-52.3 SAND, AS ABOVE	10/12/12/13	SW				
		52.3-54 SILT, REDDISH GRAY, 2.54R 6/ W/ CLAY, MOD. - LOW PLASTICITY, SOFT		ML				
55		54-54.6 SAND, FINE, LT. RED BRN 2.54R 6/3	4/6/10/12					
		54.6-55 SILT, RED GRAY 2.54R 6/						
		55-56 CLAY, RED, 2.54R 5/6, STIFF, PLASTIC	4/4/6/10					
		56-58 CLAY, LT. YELLOWISH BRN 104R 6/4, STIFF, PLASTIC						
		58-60 CLAY, GRAYISH BRN, 104R 5/2, MED STIFF, PLASTIC, IRON OXIDE NODULES, 0.01' DIA. EVERY ~ 0.1'	4/10/12/11					
60		60-60.4 SILT, GRAYISH BRN 104R 5/2, MED SOFT	50/61					
		60.4-60.5 GRAVEL, REDDISH BRN, 2.54R 5/6, ROUNDED						
		62-63.5 WEATHERED SHALE BEDROCK, HEAVILY IRON STAINED, SILTY/SANDY	24/41/50/5					
65		18, 5 BAGS SAND						
		4 BAGS BENTONITE CHIPS						
		3.7 BUCKETS BENT PELLETS						
		SCREENS: 5' 0.020 FACTORY SLOTTED						
		SAMPLES FROM 48-52 AND 24-29.7'						
70		2-20' PIPE, 1 10' PIPE (2) 3-10' 1.5" PIPE						

Drill Rig Type 66 BOART LOMBARDBorehole Diameter 8 1/2

Client DWRL Site STERLING Job No. NA Soil Bore/ Well No. PRN-3  
 Drill Contractor LSPWED Drilling Method FLIGHT AUGER Date Drilled 4/10/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 4.9-11.2 Total Depth 20  
 Field Geologist/Technician A. Horn Stickup 2.5 Casing Elevation NA Water Table Depth 6.3

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Molature	Water Level Samples	WELL CONSTRUCTION
0-2		SILT, SANDY, REDDISH BROWN 2.5 YR 2.5			1.3		
2-		SILT, SANDY REDDISH GRAY 2.5 YR NG/ SOFT					
5							
8'		CUTTINGS WET					
8-10'		GRAVEL ON RUBBERS WHEN PULLED					
10-20		SILT, SANDY, REDDISH GRAY, AS ABOVE					
20		BOH=20'					
25		NOTES: WELL SET ON HARD MATERIAL IN HOLE (GRAVEL?) GRAVEL OBSERVED ON RUBBERS FROM 8'-10' WHEN PULLED FROM HOLE, NOT SEEN IN CUTTINGS → WELL PUSHED DOWN 0.7' WHEN SETTING COVER. WELL OPEN TO 11.2' AT TIME.					
30							
35							

Drill Rig Type GIDDINGSBorehole Diameter 4"



Client DLVR Site STERLING Job No. NA Soil Bore/ Well No. PRN-4  
 Drill Contractor LSPWCD Drilling Method FLIGHT AUGER Date Drilled 4/11/12  
 Piez/Casing Size & Type 1.5" PVC Screened Length/Interval 5' 19.24 Total Depth 24.0  
 Field Geologist/Technician A. Horn Stickup 2.5' Casing Elevation NA Water Table Depth 14.0

DEPTH (feet)	Lithology	DESCRIPTION Grain size - Lithology: Color, cements, bedding, odor, miscellaneous, (plasticity, hardness, textural maturity, etc.)	Blow count	USCS	Moisture	Water Level Samples	WELL CONSTRUCTION
0-4		SILT, DK. REDDISH BRN 2.5 9R 3/4, DRY					
4-12		SILT, CLAYEY W/ SAND, REDDISH BRN 2.5 9R 5/4 SL. MOIST					
12-22		BECOMING SANDY SILTY SAND, RED, 2.5 9R 5/6, MEDIUM-FINE, TRACE CLAY, SL. MOIST				14.0	
22-26		SILT, SANDY, RED, 2.5 9R 5/6, SOFT, MOIST OUTLINES WET AT 24' BECOMING MORE SANDY WATER COMING FROM HOLE					
26-36		SAND, RED, WET, SILTY/CLAYEY					
36		BOIT = 36'					

Drill Rig Type GIDDINGS 25-SET Borehole Diameter 4"  
HDG SRPST