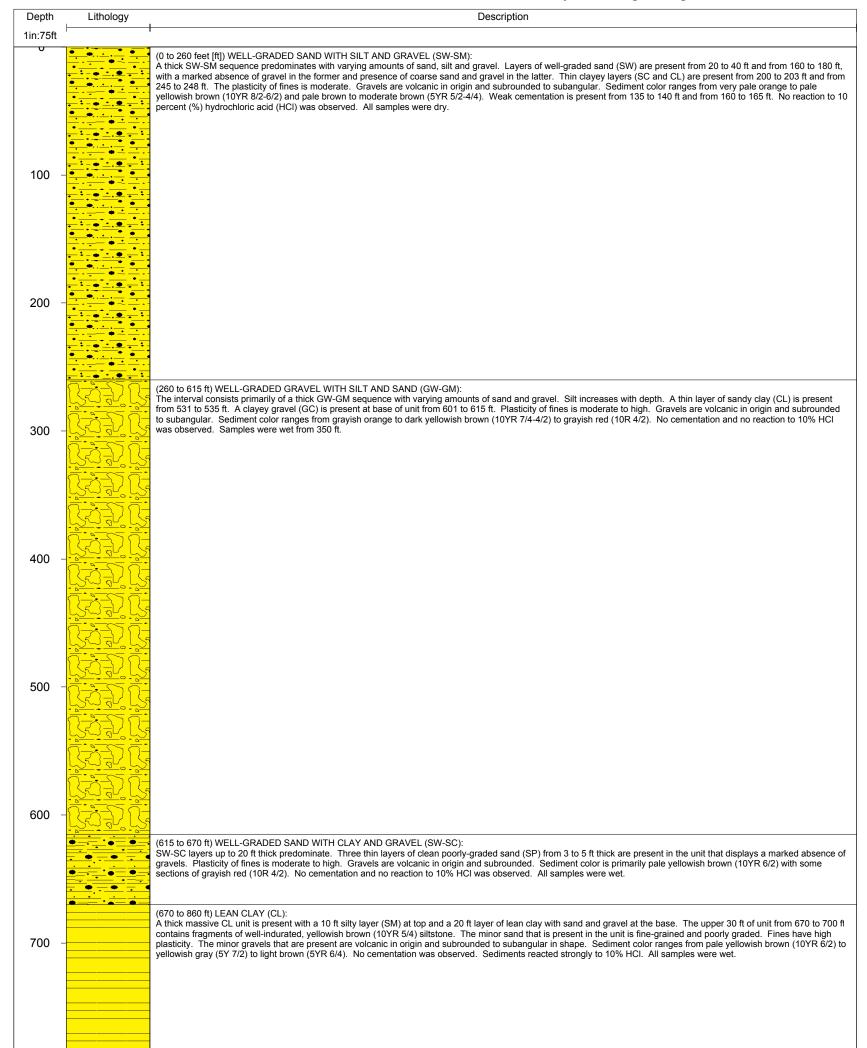
Nye County Early Warning Drilling Program

Summary Lithologic Log for NC-EWDP-2DB



(860 to 925 ft) CLAYEY GRAVEL WITH SAND (GC):

800

900

1000

A thick GC unit predominates. Gravel content increases downward and coarsens downward from 860 to 910 ft. From 910 to 925 ft there is a marked decrease in gravel content and increased clay content. Plasticity of clay is low from 860 to 910 ft, and moderate to high from 910 to 925 ft. Gravels are volcanic in origin and subrounded to subangular in shape. Sediment color ranges from pale red (10R 6/2) to moderate red (5R 5/4) to light gray (N6). No cementation was observed and sediments displayed a weak to moderate reaction to 10% HCl. All samples were wet.

(925 to 1,010 ft) OLDER ALLUVIUM/COLLUVIUM, OR VOLCANIC CONGLOMERATE:

This is a coarse monolithic unit, possibly with cobble and boulder size clasts. Clast content increases from 50 to 90% from top to bottom of unit. Clay content increases from approximately 5 to 40% from 925 to 1,000 ft, and decreases back to approximately 5% from 1,000 to 1,010 ft. Clasts are volcanic in origin and subrounded to subangular from 925 to 1,000 ft, and become rounded in the basal layer from 1,000 to 1,010 ft. Color ranges from grayish red (10R 4/2) to moderate orange pink (10R 7/4). Induration is weak from 925 to 1,000 ft and strong from 1,000 to 1,010 ft. Reaction to 10% HCl varies from moderate to strong. All samples were wet.

(1,010 to 1,155 ft) INTERBEDDED SANDSTONE/SILTSTONE/CLAYSTONE:

Unit is composed of thinly bedded (5 to 10 ft thick) sandstone, siltstone and claystone. Interbedding is interrupted by 2 sandstone layers: a dark reddish brown (10R 3/4) deeply weathered congiomeratic sandstone from 1,075 to 1,080 ft, and a massive reddish brown (10R 4/6) sandstone containing dendritic manganese oxide from 1,135 to 1,155 ft. Siltstone is finely laminated (2 to 5 mm). Colors alternate from moderate orange pink (10R 7/4) to grayish orange pink (10R 8/2) to pale greenish yellow (10Y 7/2). Sedimentary units are moderately to well indurated. A moderate to strong reaction to 10% HCl was observed from 1,080 to 1,155 ft. All samples were wet.

1100 -		
1200 -		(1,155 to 1,205 ft) ASH-FLOW TUFF (TRAM TUFF): Ashflow tuff comprises two units: an upper volcaniclastic section from 1,155 to 1,180 ft and a lower altered and weathered primary volcanic section from 1,180 to 1,205 ft. The upper volcaniclastic section consists of pale orange (10YR 8/2) sandstone and lesser claystone and siltstone locally with fragments of crystal-rich tuff. The lower volcanic section consists of a highly weathered and clay-altered ashflow tuff unit with partially preserved primary volcanic textures. Tuff is moderate reddish brown (10R 4/6), contains 10% white (N9) to very light gray (N8) flattened pumice with a maximum length of 1 mm, and is crystal-rich with a felsic/mafic ratio of 1 to 1. Mafics include fresh biotite and rare dendritic manganese oxide. Lithics are absent. All samples were wet.
		(1,205 to 1,310 ft) CLAYSTONE AND SILTSTONE: Unit consists of thin interbeds (10 to 20 ft thick) of claystone and siltstone. Claystone varies in color from pale reddish brown (10R 5/4) to moderate reddish brown (10R 4/6). Siltstone is grayish orange (10YR 7/4) to orange pink (10YR 7/4), very hard, platy, and thinly bedded (2 to 5 mm). Unit contains an interbed of red (5R 5/4) fine sandstone from 1,275-1,280. All samples were wet.
1300 -	<u>1959:191</u>	(1,310 to 1,330 ft) WELL-GRADED GRAVEL WITH SAND (GW): Unit primarily consists of a massive GW layer with a minor silty zone from 1,318 to 1,321 ft. Gravel clasts are subrounded in shape, sedimentary in origin, and composed of chert, quartzite, claystone, and siltstone. Chert and quartzite are medium light gray (N6) and dark gray (N3); claystone and siltstone are moderate reddish brown (10R 4/6). Claystone and siltstone clasts are likely uphole contamination. No cementation was observed. Sediments above the silty zone displayed a weak to moderate reaction to 10% HCI. No reaction to HCI was observed below the silty zone. All samples were wet.
		(1,330 to 1,364 ft) SILTSTONE: Unit consists of a thick, massive, moderately well indurated siltstone. Siltstone is moderate reddish brown (10R 4/6) and becomes grayish red (10R 4/2) near the base. Unit displayed a moderate reaction to 10% HCl from 1,330 to 1,340 ft, and a strong reaction from 1,340 to 1,364 ft. All samples were wet. (1,364 to 1,392 ft) WELL-GRADED GRAVEL (GW):
1400 -		Thick massive GW layers with heterogeneous gravel lithologies predominate. Gravel clasts are subrounded, sedimentary in origin, and consist of black, grayish black, dark gray, and light gray chert and quartzite (N1, N2, N3, and N7) and moderate orange pink (10R 7/4) siltstone. Gravels are subrounded. No cementation was observed and siltstone clasts reacted strongly to 10% HCI. All samples were wet. (1,392 to 1,565 ft) SANDY CLAYSTONE: Interval is composed of a light brown (5YR 6/4) claystone with grayish brown (5YR 3/2) mottling. Sand content increases and traces of gravel occur from 1,392 to 1,510 ft.
		Gravel clasts are subrounded, range in size from fine to coarse, are composed predominantly of sandstone and quartzite, and may be uphole contamination. From 1,510 to 1,516 ft sand and gravels are absent and the claystone is massive, homogeneous, and well indurated. All samples were wet.
1500 -		
1600 -		(1,565 to 1,610 ft) WELL-GRADED GRAVEL (GW): Unit primarily consists of a massive GW sequence of smaller size gravels with minor (< 10%) coarse sand. Traces of clay are present at 1,585 ft and 1,596 ft; otherwise fines are absent. Gravel clasts are subrounded, sedimentary in origin, and consist of chert, quartzite, siltstone, sandstone, and carbonates. Carbonates clasts vary in color from dark gray (N3) to grayish black (N2), chert and quartzite from grayish orange (10YR 7/4) to moderate brown (5YR 5/4), and siltstone and sandstone from medium gray (N5) to dark gray (N4). No cementation was observed and only carbonate gravel clasts reacted to 10% HCI. All samples were wet. (1.610 to 1.830 ft) CLAYSTONE AND SANDSTONE:
		Unit composed of alternating thick (up to 95 ft) massive claystone sequences with thin (5 to 10 ft thick) sandstone beds. Unit contains sand, silt, and gravel that varies throughout the interval generally decreasing with depth and may represent uphole contamination from overlying gravel-rich sequences. Gravel clasts are predominantly fine grained and subrounded to rounded, sand is fine to coarse grained. Gravel clasts are composed of quartzite, chert, limestone, sandstone, and siltstone. Claystone sequences are predominantly moderate brown (5YR 4/4) to light brown (5YR 6/4). Sandstone ranges from moderate brown (5YR 4/4) to light brown (5YR 6/1) to light gray (N7) to pale yellowish brown (10YR 6/2). Reaction to 10% HCl is moderate to strong throughout the interval. All samples were wet.
1700 -		
1800 -		
		(1,830 to 1,850 ft) WELL-GRADED GRAVEL WITH SAND (GW): Interval consists of a massive gravel layer with fine grained sand. Gravel clasts are subrounded, sedimentary in origin and composed of quartzite, chert and carbonate. Color of clasts range from medium dark gray (N4) to grayish black (N2) to brownish gray (5YR 4/1) to pale olive (10Y 6/2) to moderate yellowish brown (10YR 6/4). No cementation was observed and sediment reacted weakly to 10% HCI. All samples were wet. (1,850 to 2,150 ft) CLAYSTONE AND SANDSTONE:
1900 -		Upper section from 1,850 to 2,100 ft is a well-indurated massive claystone with minor sandstone interbeds. The upper section grades into sandstone from 2,075 to 2,100 ft. Coarse sandstone predominates from 2,100 to 2,120 ft and is separated from a basal claystone (2,120 to 2,150 ft) by a sharp contact. The upper claystone is moderate brown (5YR 4/4) with grayish brown (5YR 4/2) mottling, sandstone is dark yellowish brown (10YR 4/2), and basal claystone is dark yellowish brown (10YR 4/2) with dark grey (N3) mottling. Claystone and sandstone are well-indurated and react weakly to 10% HCl. All samples were wet.

2000	
2100	
	(2,150 to 2,190 ft) CLAYEY GRAVEL WITH SAND (GC): The interval consists of a thick sequence of GC with fines decreasing with depth. Sequence could possibly consist of alternating gravel and clay layers. Clay has high plasticity. Gravel clasts are rounded to subrounded, sedimentary in origin, and consist of quartzite and sandstone or chert. Color of gravel clasts ranges from light gray (N8) to light olive brown (5Y 5/6) to moderate brown (5YR 3/4). No cementation was observed. Reaction to 10% HCl is moderate to strong from 2,150 to 2,175 ft and sediment displays no reaction below 2,175 ft. All samples were wet.
2200	(2,190 to 2,396 ft) SANDSTONE AND CLAYSTONE: Unit is composed of sandstone from 2,190 to 2,310 ft, claystone from 2,310 to 2,390 ft, and reworked rhyolitic gravel from 2,390 to 2,396. Fine to coarse gravels comprise 15 to 20% of the sandstone and claystone units and probably represent contamination from overlying gravel sequences. Sandstone is light brown (5YR 6/4), fine- to medium-grained, and well-indurated. Claystone is moderate brown (5YR 5/4), well-indurated, contains up to 10% fine- to medium-grained sand and is interbedded with sandstone from 2,336 to 2,365 ft. Basal rhyolitic gravel is dark gray (N3) and consists of clasts of hard, dense microcrystaline rhyolite clasts with concoidal fracture. Reaction to 10% HCl is moderate to strong below 2,250 ft. All samples were wet.

