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NEON Site-Level Plot Summary
Onaqui Site (ONAQ)

Document Information

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Site Background

The Onaqui (ONAQ) NEON site is near Vernon, Utah. The site is in Major Land Resource Area (MLRA) 28A–Great Salt Lake Area. The site consists of 24,194 acres and is in the foothills of the Onaqui Mountains.

Site Information

Elevation ranges from approximately 5,165 to 8,150 feet above sea level.

The parent materials at the ONAQ site are alluvium, colluvium, and slope alluvium derived from Paleozoic age limestone and quartzite.

Land use is dominated by rangeland and wildlife habitat.

Plant communities are dominated by semi desert shrub rangeland. Several plots contained Pinyon and Utah Juniper as significant plant species.

Major soil components on the site include Taylorsflat, Onaqui, Onaqui taxadjunct, Sterling, Sevy, Strevell, Benning taxadjunct, Borvant taxadjunct, and Jardal soils.

These soils are on the following landforms: fan remnants and mountain slopes.

Analysis of Plots for Sampling

Soil map unit, geology, landform, and major vegetative communities were used to select sites for sampling. There are 8 different soil map units within the ONAQ project area, but the pre-selected sampling plots occurred in 6 of the map units with the other two map units being small acreage and non-representative. The analysis resulted in 11 plots of 32 total plots being selected for field description, field sampling, and lab characterization. The 21 plots not sampled either occurred in non-typical settings or were duplicates of one of the 11 chosen plots.

Roughly 3% of the area encompassing the NEON site sampling boundary consisted of map units that were not sampled (18% of the sites total map units). These included:

Map unit symbol	Map Unit Name	% Total area
8	Bramwell silt loam, 0 to 2 percent slopes	0.03
21	Hiko Peak gravelly loam, 2 to 15 percent slopes	2.48
	Total	**2.51**

Sampled map units represent approximately 97% of the NEON site area (82% of the site's total map units):

Map unit symbol	Map Unit Name	% Total area
7	Taylorsflat loam, 1 to 5 percent slopes	21.39
24	Hiko Peak-Taylorsflat complex, 1 to 15 percent slopes	12.52
38	Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes	19.42
47	Podmor-Onaqui-Rock outcrop association, 20 to 60 percent slopes	14.57
64	Taylorsflat loam, 1 to 5 percent slopes	27.77
65	Taylorsflat loam, saline, 0 to 3 percent slopes	1.82
	Total	**97.49**

The selected sample plots are representative of the most extensive map units in the project area. The random plot selection captured the major landform positions within the project area.

Plot Findings

The 11 pedons sampled represent 6 soil map units. The observed soil components are Taylorsflat, Onaqui, Sterling, Sevy, Strevell, Benning taxadjunct, Borvant taxadjunct, and Jardal soils. 6 plots sampled were shrubby rangeland and wildlife habitat, and 5 plots sampled were pinyon and juniper tree covered sites.

Landforms - NEON Plots ONAQ_004, 008, 011, 015, 018, 024, 025, and 029 consist of soils formed on fan remnants in alluvium; plots ONAQ_012, 030, and 032 consist of soils formed on mountain slopes in colluvium and slope alluvium. Sampled plots were 73% alluvium and 27% colluvium and slope alluvium.

Summary of Soils

Fan remnant landforms dominate the project area. The lower fan remnants consist mainly of very deep loamy soils with light colored surface horizons and subsurface horizons of calcium carbonate accumulations. The upper portions of the fan remnants typically have a dark colored surface horizon, are greater than 35% rock fragments, and are shallow to a calcium carbonate hardpan. The higher elevation mountain slope landform areas typically have greater than 35% rock fragments, have dark colored surface horizons and are shallow to limestone or quartzite bedrock.

The below plots were all evaluated and determined they contribute to representing the variability of soils within the Onaqui (ONAQ) NEON project area and add to the understanding of the site and soils found there.

ONAQ_004 represents an area within map unit 24 - Hiko Peak-Taylorsflat complex, 1 to 15 percent slopes which represents the lower fan remnant areas coming off of the Onaqui Mountains. This site represents a similar soil to Taylorsflat component within map unit 64 that has a clay enriched subsurface horizon and will correlate to Sevy series.

ONAQ_008 represents an area within map unit 7 - Borvant gravelly loam, 2 to 15 percent slopes which represents mainly the rockier upper fan remnant areas coming off of the Onaqui Mountains above the finer textured lower fan remnants. This site is on a steeper dissection of a fan remnant and has no calcium carbonate hardpan in the upper 100cm. This site was correlated to very deep and gravelly Sterling series which will be a minor component in this map unit.

ONAQ_011 represents an area within map unit 65 - Taylorsflat loam, saline, 0 to 3 percent slopes which represents the lowest extent of the fan remnant areas coming off of the Onaqui Mountains as the landscape breaks into the stream terrace and flood plain alluvium of Faust Creek. This site represents Taylorsflat series which has a light colored surface horizon, subsurface horizons with calcium carbonate accumulations, very deep and loamy.

ONAQ_012 represents an area within map unit 47 - Podmor-Onaqui-Rock outcrop association, 20 to 60 percent slopes which represents lower mountain slope areas of the Onaqui Mountains. The site falls within the range and characteristics of the Onaqui soil component which has a dark colored surface horizon, greater than 35 percent rock fragments, and is shallow to limestone bedrock.

ONAQ_015 and ONAQ 024 represent areas within map unit 64 - Taylorsflat loam, 1 to 5 percent slopes which represents a lower fan remnant off of the Onaqui Mountains and above the landscape break into the stream terraces and flood plain of Faust Creek. This map unit is the dominant area of the Onaqui site. This site represents Taylorsflat series which has a light colored surface horizon, subsurface horizons with calcium carbonate accumulations, very deep and loamy.

ONAQ_018 represents an area within map unit 64 - Taylorsflat loam, 1 to 5 percent slopes (symbol 64 of ut611 survey) map unit which represents the lower fan remnant areas coming off of the Onaqui mountains and above the landscape break into the stream terraces and flood plain of Faust Creek. This soil is a similar soil to Taylorsflat but has a coarser texture with a gravelly substratum and was correlated to Strevell series, which is a minor component in this map unit.

ONAQ_025 represents an area within map unit 7 - Borvant gravelly loam, 2 to 15 percent slopes (symbol 7 of ut611 survey) map unit which represents the upper fan remnant areas coming off of the Onaqui Mountains. This site lies in a part of the fan remnant where an inset fan has spilled out onto the upper portion of the landform forming a younger loamy minor component that has formed a thick dark colored surface horizon. Benning series is the closest soil series for this area but this area has a mesic temperature regime rather than Benning concept's frigid temperature regime, so this soil was named Benning Taxadjunct. Spatial data currently has this plot in map unit 38 but will be edited to adjacent map unit 7 for this plot (location is on a fan remnant);

ONAQ_029 represents an area within map unit 7 - Borvant gravelly loam, 2 to 15 percent slopes which represents mainly the rockier upper fan remnant areas coming off of the Onaqui Mountains above the finer textured lower fan remnants. This site represents an area where no dark colored surface horizon was formed and was identified as Borvant taxadjunct which is a similar component to Borvant in this map unit. This pedon was classified as Borvant Taxadjunct which is greater than 35 percent rock fragments and shallow to a strongly cemented calcium carbonate hardpan.

ONAQ_030 represents an area within map unit 38 - Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes which represents lower mountain slope areas of the Onaqui Mountains. This site will represent a minor component and was classified as Onaqui Taxadjunct because it has a mesic temperature regime rather than frigid, has greater than 35 percent rock fragments and is shallow to limestone bedrock.

ONAQ_032 represents an area within map unit 38 - Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes which represents mainly the lower mountain slope areas of the Onaqui Mountains. This site represents minor component Jardel series with a dark colored surface horizon, subsurface horizon of calcium carbonate accumulation, and a moderately deep very strongly cemented calcium carbonate hardpan.