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NEON Site-Level Plot Summary
Yellowstone (YELL)

Document Information

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Site Background

The National Environmental Observation Network (NEON) Yellowstone (YELL) site consists of rugged hills and small mountains between ranges of higher mountains (Figure 1). Elevations range between 2,275 meters (7,464 feet) to the south of Mount Everts to approximately 1,735 meters (5,692 feet), where the Yellowstone River exits the site area.

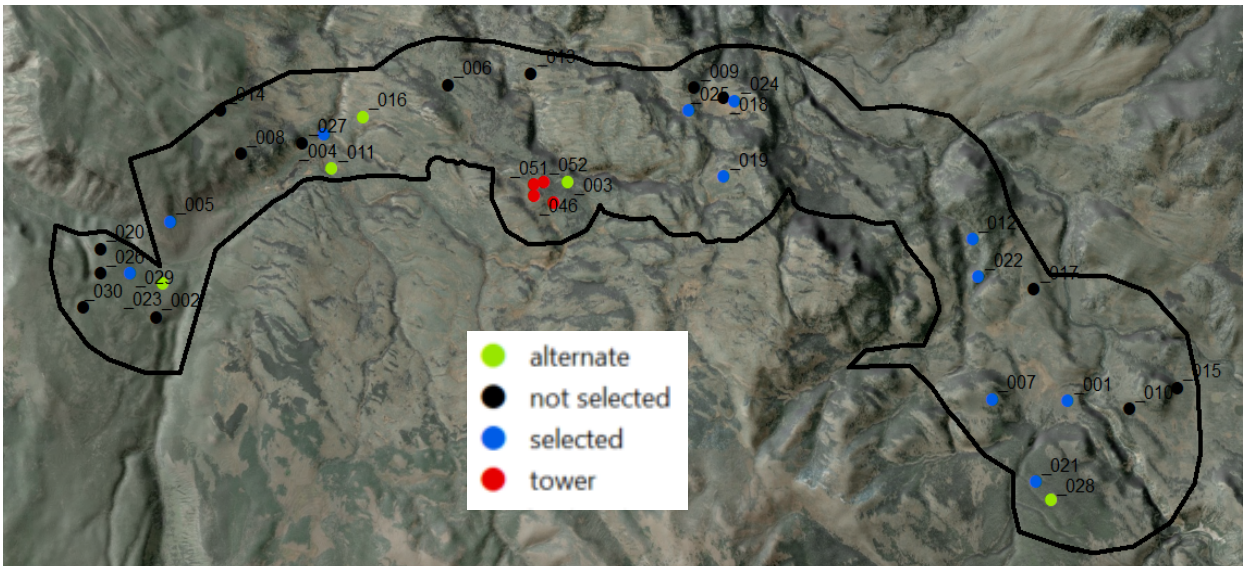


Figure 1. YELL site area (black line) and NEON plots overlaying an aerial image and hillshade. NEON plots are represented by colored dots as indicated in map legend. Colors indicate whether a plot was selected for sampling, selected as an alternate for sampling, not selected, or located within the NEON tower airshed.

Site Information

Bedrock geology, surficial geology, landforms and parent materials

Geology of the YELL site area is principally volcanic formations (Figure 2). The largest coverage occurs within the Tertiary Age Absaroka Volcanic Super-group, Pleistocene Age basalts, rhyolites and intrusive rocks and Pleistocene Age surficial deposits. There are also small areas of Mesozoic sedimentary rocks and Precambrian granitic gneisses.

The YELL site was subject to the Bull Lake and Pinedale Glaciations (Figure 3). However, the more recent Pinedale glaciation completely covered the older Bull Lake glaciation at the YELL NEON site. The Wyoming surficial geology map (Figure 4) primarily describes the YELL sample plots as occurring on glacial deposits and glaciated bedrock areas, with smaller areas of outwash, colluvium, slope wash (slope alluvium) and landslides.

Provisional soils information (Table 1) describes most of the YELL site area landforms as moraines, with smaller areas of glacial-valley walls, glacial valley floors, outwash terraces, outwash fans, kame terraces and escarpments. Parent materials are described as mixed glacial till, till over residuum, outwash, colluvium and outwash.

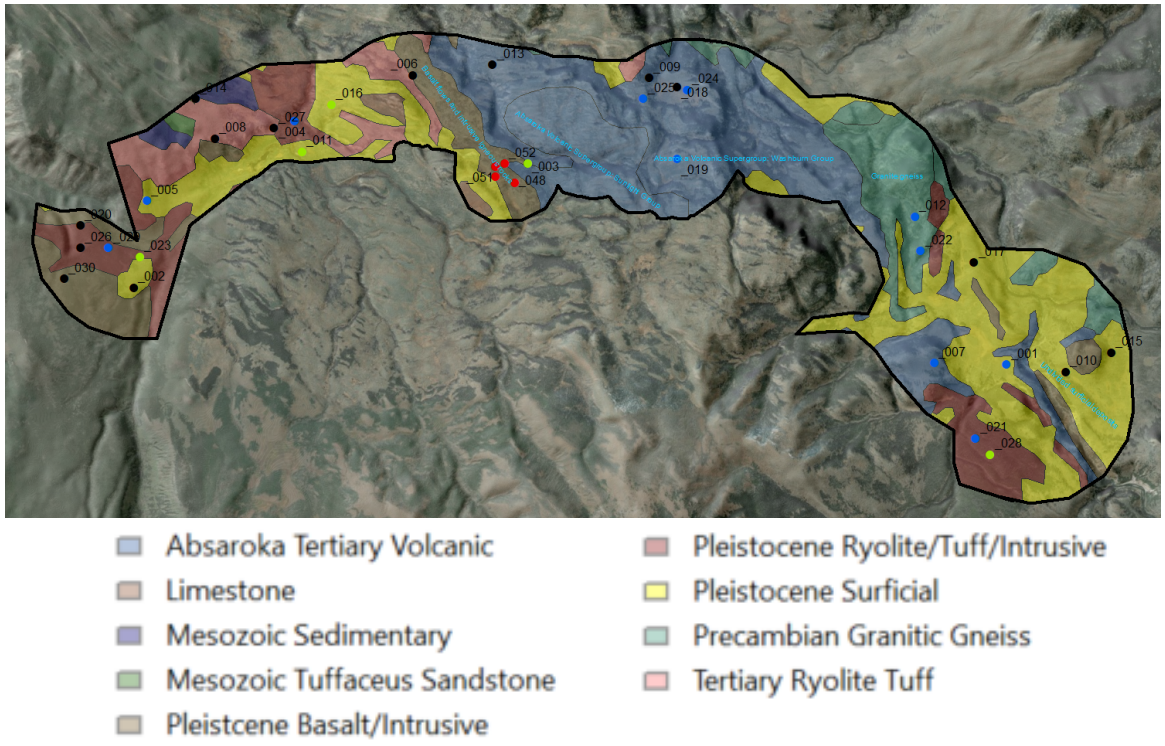
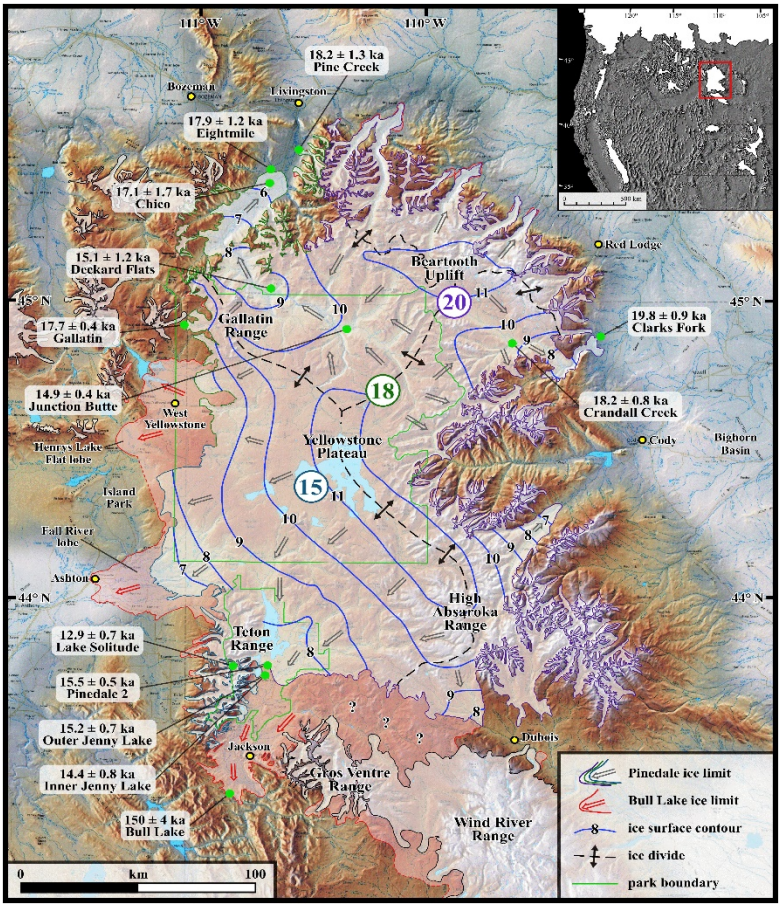


Figure 2. YELL site area and plots overlayed with the Wyoming state-wide geology map. Some similar rock units were combined for the analysis and presentation (Love et al. 1979).

Figure 3. Extent of the Bull Lake and Pinedale glaciations of the Greater Yellowstone Glacial System (GYGS). NEON site is to the west and northwest of Junction Butte. Surface contours on the maximum extent of Pinedale ice are in thousands of feet. Pinedale ice margin line colors correspond with estimates for maximum ages around the periphery of the GYGS: purple – early Pinedale (~22–18 ka); green – middle Pinedale (~18–16 ka); blue – late Pinedale (~16–13 ka). Circles enclosing ages in ka schematically depict southwest migration of the center of ice mass through time. Dashed lines indicate uncertain or approximate ice limits (*source*: Licciardi and Pierce, 2018).



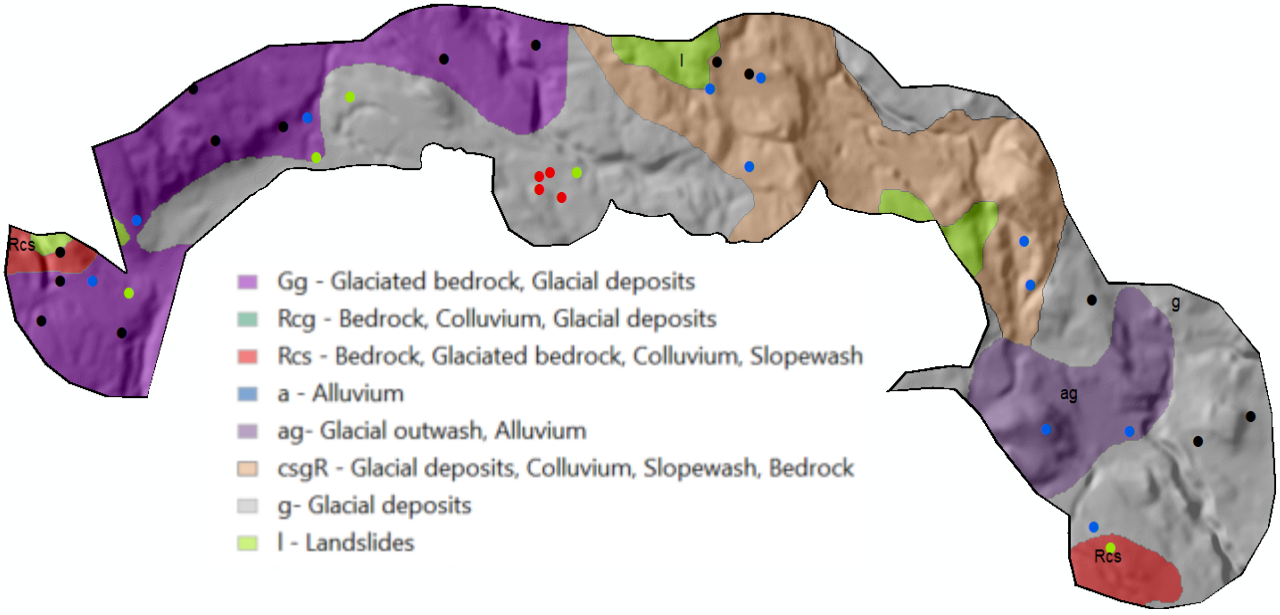


Figure 4. The eight surficial geology units found on the YELL NEON site (Case et. al 1998). Colored dots as in Figure 1.

MU SYM	Component Name	Slope	Landforms	Dominant Slope Shape (horizontal/vertical)	Parent Materials
522	Hobacker		escarpments, glacial-valley walls, moraines	linear/linear	colluvium and/or till
522	Rock outcrop		—	—/—	—
522	Rubble land (talus)		—	—/—	—
1324	Como	2-25	moraines on plateaus, moraines	convex/linear	till derived from rhyolite and/or rhyolitic tuff
1324	Como (mod. deep)	2-25	moraines on plateaus, moraines	convex/linear	till derived from rhyolite and/or rhyolitic tuff
1324	McCort	2-25	moraines on plateaus, moraines	convex/linear	till derived from rhyolite and/or rhyolitic tuff
2213	Greyback	2-35	moraines	convex/linear	till
2213	Hobacker	2-35	moraines	convex/linear	till
2213	Shadow	2-35	moraines	convex/linear	till
2246	Leavittville	2-35	moraines	—/—	till derived from andesite
2246	Lionhead	2-35	Moraines	—/—	till derived from andesite
2246	Midfork	2-35	moraines	—/—	till derived from andesite
2543	Arrowpeak	2-40	moraines	convex/linear	till over residuum weathered from gneiss and/or schist
2543	Midfork	2-40	moraines	convex/linear	till derived from gneiss and/or schist
2543	Rock outcrop		—	—/—	—
2546	Arrowpeak	10-55	glacial-valley floors, moraines	convex/linear	colluvium or till over residuum weathered from andesite or limestone
2546	Hobacker	10-55	glacial-valley floors, moraines	linear/linear	colluvium and/or till derived from andesite and/or limestone
2546	Rock outcrop		—	—/—	—
2546	Rubble land (talus)		—	—/—	—
2924	Greyback	5-25	moraines	convex/linear	till
2924	Hobacker	5-25	moraines	convex/linear	till
2924	Libeg	5-25	moraines	convex/linear	till
2996	Badwater	1-18	outwash terraces, outwash fans, kame terraces	linear/linear	outwash derived from andesite and/or sedimentary rock
2996	Passcreek	1-18	outwash terraces, outwash fans, kame terraces	linear/linear	outwash derived from andesite and/or sedimentary rock
2996	Shook	1-18	outwash terraces, outwash fans, kame terraces	linear/linear	outwash derived from andesite and/or sedimentary rock

Table 1. Slope gradients, landforms, slope shapes and parent materials for each component of soil maps containing YELL plots (Soil Survey Staff, NASIS. Accessed 2018 & 19).

Climate

Precipitation was estimated by the Parameter-elevation Regressions on Independent Slopes (PRISM) Model (Prism Climate Group). Precipitation ranges from 325 mm along the north-central part of the YELL NEON site area up to approximately 625 mm along the southern and western edges of the site (Figure 5). Some northerly aspects, concave slope shapes and lower slope positions may provide conditions where effective precipitation is higher than actual precipitation. Conversely, southerly aspects, convex slope shapes and relatively higher slope positions result in lower effective precipitation. Effective precipitation often explains differences in vegetation and soils in the same precipitation zone, when for example, different vegetation and soil properties are observed on a south-facing slope compared to a nearby north-facing slope.

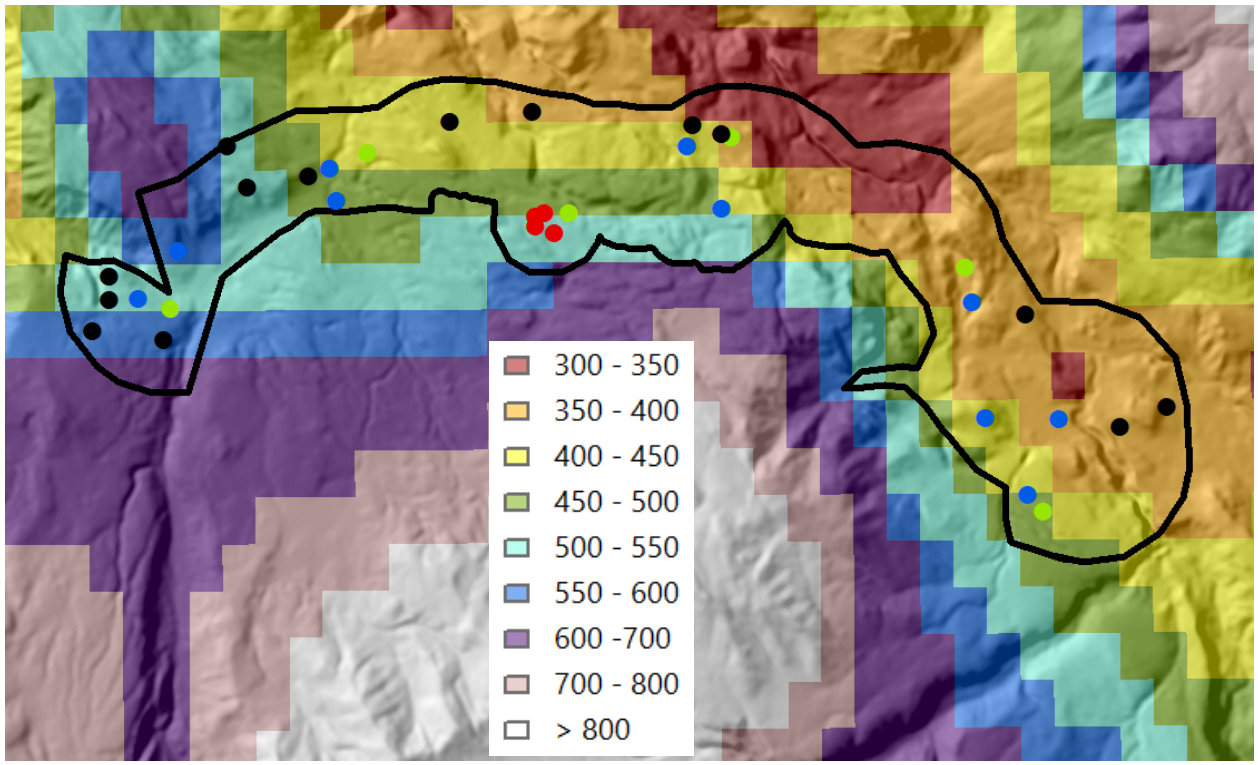


Figure 5. PRISM estimated precipitation (yrs. 1980-2010) for the YELL site. Plots are represented by colored dots, as in Figure 1 (Prism Climate Group, accessed 7/8/2018).

Soils

The soils of Yellowstone National Park (WY665 survey area) have been inventoried but are not available to the public as published or provisional data. However, draft tabular soils data is available in NASIS (Soil Survey Staff, NASIS. Accessed 2018 & 2019) and as a digital spatial layer (Figure 6).

Figure 6. YELL site area soil map units from the draft soil inventory of Yellowstone National Park.

NEON sample plots occur across eight soil map units (Table 2). The most common soil series found in the inventory (in order of frequency) were Hobacker, Greyback, Libeg, Midfork, Arrowwood, Shook, Como, Shadow, Leavittville, Lionhead, Badwater, Passcreek and McCort. The soil inventory estimated Hobacker components (found in several map units) to be approximately 50% of the Yellowstone NEON site area and approximately 65% of those map units that contain NEON plots.

Note that these soil series are mapped only at the family level, which implies similarity to the taxonomy of the named series, but some deviation from the characteristics of the official soil series descriptions (OSD). The use of series family components is common for soils surveys of less-intensively used federal land such as national parks, forest service land and BLM holdings (order-3 and order-4). This summary will at times distinguish between "series family" described as components in the NASIS database and the OSD of the soil series.

Map unit Symbol	Map unit Name	Sum of acres	% of YELL site	Total NEON base plots	# Tower base plots	# Plots chosen	# Alternate plots chosen
513	Rock outcrop-Rubble land-Como family, complex	100	0.6%	0	0	0	
522	Rock outcrop-Rubble land-Hobacker family, complex	785	4.4%	1	0	1	
554	Rock outcrop-Rubble land-Arrowpeak family, complex	252	1.4%	0	0	0	
1324	**Como-Como, moderately deep-McCort families, complex**	**619**	**3.4%**	**2**	**0**	**1**	**1**
1358	Kegsprings-Targhee families-Rock outcrop, complex	159	0.9%	0	0	0	
1532	Kegsprings family-Rock outcrop-Sig family, complex	92	0.5%	0	0	0	
1795	Kegsprings-Agneston-Quietus families, complex	18	0.1%	0	0	0	
2159	Midfork-Storm families-Rock outcrop, complex	284	1.6%	0	0	0	
2167	Hobacker-Kegsprings families-Typic Cryaquolls, complex	234	1.3%	0	0	0	
2195	Midfork-Storm-Quazar families, complex	179	1.0%	0	0	0	
2213	**Hobacker-Greyback-Shadow families, complex**	**2282**	**12.7%**	**14**	**4**	**2**	**1**
2246	**Midfork-Leavittville-Lionhead families, complex**	**1418**	**7.9%**	**1**	**0**	**1**	
2261	Gallatin, Ledgefork families and Typic Cryaquolls, soils	390	2.2%	0	0	0	
2541	Midfork-Arrowpeak families-Rock outcrop, complex	351	2.0%	0	0	0	
2543	**Midfork-Arrowpeak families-Rock outcrop, complex**	**535**	**3.0%**	**1**	**0**	**1**	
2546	**Hobacker-Arrowpeak families-Rock outcrop, complex**	**1533**	**8.5%**	**2**	**0**	**1**	**1**
2662	Gallatin, Grayslake families and Typic Cryaquolls, soils	534	3.0%	0	0	0	
2751	Midfork, Telcher families, soil and -Rock outcrop	930	5.2%	0	0	0	
2915	Hobacker-Elkpeak-Kegsrprings families, complex	40	0.2%	0	0	0	
2924	**Hobacker-Libeg-Greyback families, complex**	**5158**	**28.7%**	**10**	**0**	**2**	**1**
2961	Shook-Quietus families-Typic Cryaquolls, complex	2	0.0%	0	0	0	
2972	Midfork-Frisco-Stubbs families, complex	285	1.6%	0	0	0	
2975	Hobacker-Cratermo-Pineisle families, complex	63	0.4%	0	0	0	
2996	**Shook-Badwater-Passcreek families, complex**	**897**	**5.0%**	**3**	**0**	**2**	**1**
5294	Rock outcrop-Rubble land-Badwater family, complex	200	1.1%	0	0	0	
5419	Rock outcrop-Rubble land-Silvercliff family, complex	257	1.4%	0	0	0	
8125	Vitrandic Humicrypets-Kismetpeak family, complex	44	0.2%	0	0	0	
9564	Quietus-family-Rock outcrop-Typic Cryaquolls, complex	210	1.2%	0	0	0	
358Z	Hanks family, Typic Dystrudepts, hydrothermal, soils and Rock outcrop	49	0.3%	0	0	0	
853Z	Leighcan family, Lithic Cryorthents and Typic Udorthents, hydrothermal, soils	27	0.2%	0	0	0	
W	Water	28	0.2%	0	0	0	
Totals		17955	100%	34	4	11	5

Table 2. Comparison of Soil Map Units and NEON plot status. Map Units in bold were sampled for the NEON project.

All the major soil components mapped at the YELL NEON site are Mollisols with dark surfaces, relatively high organic carbon (OC) contents and high base saturation except for the Como and Shadow series (Table 3). Many of these series, including Hobacker, have a mollic epipedon greater than 40 cm thick (pachic). Loamy-skeletal particle size families (loamy soils with greater than 35% by volume rock fragments) are most dominant in the survey, but smaller amounts of sandy-skeletal, coarse-loamy and fine-loamy particle size families were also identified.

All soils at the YELL NEON site were classified as cryic soil temperature regimes by the provisional soil mapping. Approximately 80% of the map units covering the NEON sample plots have ustic moisture regimes, and 20% have udic moisture regimes. Ustic moisture regimes are typically associated with grassland shrub habitat types, and udic moisture regimes are more commonly associated with forested habitats.

The Hobacker, Greyback, Midfork, Leavittville, Lionhead and Passcreek series families are described in the provisional WY665 soil database as having subsoils that are moderately alkaline with $CaCO_3$ accumulations. The Libeg, Arrowpeak, Shook and McCort series families lack $CaCO_3$ accumulations and have lower pH's that range from neutral to slightly acidic. Como and Shadow soils are moderately acid. Note that these "series families" used in WY665, often have pH and $CaCO_3$ differences from the OSD's.

Vegetation

Grassland and shrubland habitat types are dominant in the YELL site, with species such as big sage (*Artemisia tridentata*), Idaho fescue (*Festuca idahoensis*), common snowberry, *Geranium viscosissimum*, *Poa sandbergi* and silver sagebrush (*Artemisia cana*), reported in the NASIS (National Soil Information System) database (Table 4).

Forest habitat types in this area are characterized by Douglas-fir with pinegrass, and common juniper and white spirea in the understory for the drier forest types. With increasing precipitation, subalpine fir, whitebark pine and grouse whortleberry species become more common. Lodgepole pine is also common on forested sites in the area. Ecological site descriptions have not yet been developed for this area. In addition to precipitation and temperature, factors such as soil properties, soil parent materials (especially the presence/absence of rhyolite) and fire history influence plant species.

Map unit	Component Name	Comp %	SL Range	Low MAP	RV MAP	High MAP	Taxonomic Subgroup	Particle Size	Moisture regime	Subsoil pH
1324	Como	45	2-25	575	825	1400	typic haplocryepts	sandy-skeletal	Typic Udic	mod. acidic
1324	Como	25	2-25	575	825	1400	typic haplocryepts	sandy-skeletal	Typic Udic	mod. acidic
1324	McCort	20	2-25	575	825	1400	ustic haplocryolls	loamy-skeletal	Typic Udic	neutral
2213	Hobacker	40	2-35	500	625	775	pachic haplocryolls	loamy-skeletal	Typic Ustic	mod. alkaline
2213	Greyback	25	2-35	500	625	775	ustic haplocryolls	loamy-skeletal	Typic Ustic	mod. alkaline
2213	Shadow	15	2-35	500	625	775	ustic haplocryepts	loamy-skeletal	Typic Ustic	mod. acidic
2246	Midfork	40	5-35	500	800	1125	typic haplocryolls	loamy-skeletal	Typic Udic	mod. alkaline
2246	Leavittville	30	5-35	500	800	1125	pachic haplocryolls	fine-loamy	Typic Udic	mod. alkaline
2246	Lionhead	15	5-35	500	800	1125	pachic haplocryolls	loamy-skeletal	Typic Udic	mod. alkaline
2543	Midfork	55	5-40	500	800	900	typic haplocryolls	loamy-skeletal	Typic Udic	mod. alkaline
2543	Arrowpeak	15	5-40	500	800	900	lithic haplocryolls	loamy-skeletal	Typic Udic	sli. acidic
2543	Rock outcrop	15		500	800	900				
2546	Hobacker	40	10-55	500	850	1125	pachic haplocryolls	loamy-skeletal	Typic Udic	mod. alkaline
2546	Arrowpeak	25	10-55	500	850	1125	lithic haplocryolls	loamy-skeletal	Typic Udic	sli. acidic
2546	Rock outcrop	10		500	850	1125				
2546	Rubble land	10		500	850	1125				
2924	Hobacker	30	5-25	450	575	775	pachic haplocryolls	loamy-skeletal	Typic Ustic	mod. alkaline
2924	Greyback	25	5-25	450	575	775	ustic haplocryolls	loamy-skeletal	Typic Ustic	mod. alkaline
2924	Libeg	30	5-25	450	575	775	ustic argicryolls	Loamy-skeletal	Typic Ustic	sli. acidic
2996	Shook	40	1-18	500	600	950	pachic haplocryolls	coarse-loamy	Typic Ustic	neutral
2996	Badwater	30	1-18	500	600	950	pachic argicryolls	loamy-skeletal	Typic Ustic	neutral
2996	Passcreek	15	1-18	500	600	950	ustic argicryolls	fine-loamy	Typic Ustic	mod. alkaline
522	Rock outcrop	35		475	675	875				
522	Rubble land	35		475	675	875				
522	Hobacker	25	35-75	475	675	875	pachic haplocryolls	loamy-skeletal	Typic Ustic	mod. alkaline

Table 3. Soil map unit components, component %, slope range, mean annual precipitation range (MAP), taxonomic subgroups, particle sizes, moisture regimes and subsoil pH for all the major soil components which contain YELL plots. Note that the precipitation ranges below are for the entire Yellowstone National Park soil survey area for each map unit. Source: Soil Survey Staff, NASIS. Accessed 2018 & 2019.

Map unit Symbol	Map unit Name	Comp. Name	Comp. %	Vegetation Class ID	Vegetation Class Name	Moisture Regime	Classification
522	Rock outcrop-Rubble land-Hobacker family, complex	Hobacker	25	PK320	Douglas-fir/pinegrass	Ustic	Loamy-skeletal, mixed, superactive Pachic Haplocryolls
				PK310	Douglas-fir/snowberry		
1324	Como-Como, moderately deep-McCort families, complex	McCort	20	SC734	subalpine fir/grouse whortleberry	Udic	Loamy-skeletal, mixed, superactive Ustic Haplocryolls
				SC732	subalpine fir/grouse whortleberry-grouse whortleberry phase		
1324	Como-Como, moderately deep-McCort families, complex	Como	45	SC732	subalpine fir/grouse whortleberry-grouse whortleberry phase	Udic	Sandy-skeletal, mixed Typic Haplocryepts
				SC734	subalpine fir/grouse whortleberry-whitebark pine phase		
1324	Como-Como, moderately deep-McCort families, complex	Como - moderately deep	45	SC732	subalpine fir/grouse whortleberry-grouse whortleberry phase	Udic	Sandy-skeletal, mixed Typic Haplocryepts
				SC734	subalpine fir/grouse whortleberry-whitebark pine phase		
2213	Hobacker-Greyback- Shadow families, complex	Shadow	15	SC310	Douglas-fir/common snowberry	Ustic	Loamy-skeletal, mixed, superactive Ustic Haplocryepts
				SC320	Douglas-fir/pinegrass		
2213	Hobacker-Greyback- Shadow families, complex	Greyback	25	SC320	Douglas-fir/pinegrass	Ustic	Loamy-skeletal, mixed, superactive Ustic Haplocryolls
				SC310	Douglas-fir/common snowberry		
2213	Hobacker-Greyback- Shadow families, complex	Hobacker	40	SC320	Douglas-fir/pinegrass	Ustic	Loamy-skeletal, mixed, superactive Pachic Haplocryolls
				SC310	Douglas-fir/common snowberry		
2246	Midfork-Leavittville-Lionhead families, complex	Lionhead	15	MS0703	artemisia tridentata/festuca	Udic	Loamy-skeletal, mixed, superactive Pachic Haplocryolls
				MS0405	festuca idahoensis/agropyron caninum h.t.-geranium viscosissimum phase		
2246	Midfork-Leavittville-Lionhead	Leavittville	30	MS0405	festuca idahoensis/agropyron caninum h.t.-geranium viscosissimum phase	Udic	Fine-loamy, mixed, superactive Pachic Haplocryolls
				MS0703	artemisia tridentata/festuca idahoensis h.t.		
2246	Midfork-Leavittville-	Midfork	40	MS0703	artemisia tridentata/festuca	Udic	

Map unit Symbol	Map unit Name	Comp. Name	Comp. %	Vegetation Class ID	Vegetation Class Name	Moisture Regime	Classification
	Lionhead families, complex			MS0405	festuca idahoensis/agropyron caninum h.t.-geranium viscosissimum phase		Loamy-skeletal, mixed, superactive Typic Haplocryolls
2543	Midfork-Arrowpeak families-Rock outcrop, complex	Arrowpeak	15	SC310	Douglas-fir/common snowberry	Udic	Loamy-skeletal, mixed, superactive Lithic Haplocryolls
				SC360	Douglas-fir/common juniper		
2543	Midfork-Arrowpeak families-Rock outcrop, complex	Midfork	55	MS0703	artemisia tridentata/festuca	Udic	Loamy-skeletal, mixed, superactive Typic Haplocryolls
				SC360	Douglas-fir/common juniper		
2546	Hobacker-Arrowpeak families-Rock outcrop, complex	Arrowpeak	25	—	—	Udic	Loamy-skeletal, mixed, superactive Lithic Haplocryolls
2924	Hobacker- Libeg-Greyback families, complex	Greyback	25	MS0703	artemisia tridentata/festuca	Ustic	Loamy-skeletal, mixed, superactive Ustic Haplocryolls
				MS0405	festuca idahoensis/agropyron caninum h.t.-geranium viscosissimum phase		
2924	Hobacker- Libeg-Greyback families, complex	Hobacker	30	SC340	Douglas-fir/white spirea	Ustic	Loamy-skeletal, mixed, superactive Pachic Haplocryolls
				MS0703	artemisia tridentata/festuca idahoensis h.t.		
				HP709	silver sagebrush/Idaho fescue h.t.		
2924	Hobacker- Libeg-Greyback families, complex	Libeg	30	MS0205	agropyron spicatum/poa	Ustic	Loamy-skeletal, mixed, superactive Ustic Argicryolls
				MS0703	artemisia tridentata/festuca idahoensis h.t.		
2996	Shook- Badwater-Passcreek families, complex	Passcreek	15	MS0703	artemisia tridentata/festuca idahoensis h.t.	Ustic	Fine-loamy, mixed, superactive Ustic Argicryolls
2996	Shook- Badwater-Passcreek families, complex	Badwater	30	MS0405	festuca idahoensis/agropyron caninum h.t.-geranium viscosissimum phase	Ustic	Loamy-skeletal, mixed, superactive Pachic Argicryolls
				MS0703	artemisia tridentata/festuca idahoensis h.t.		
				MS0402	festuca idahoensis/agropyron spicatum h.t.		
2996	Shook- Badwater-Passcreek families, complex	Shook	40	MS0703 ---- MS0405	artemisia tridentata/festuca festuca idahoensis/agropyron caninum h.t.-geranium viscosissimum phase	Ustic	Coarse-loamy, mixed, superactive Pachic Haplocryolls

Table 4. Soil map unit, component, vegetation and soil classification comparison.

Analysis of Plots for Sampling

The YELL sample plots were evaluated for major environmental characteristics. Sample plots were selected to cover the major soils, bedrock formations, surficial geology units, soil-climatic groups and vegetation types, and to depict the unique combinations of these factors that occur within the YELL site area. To that end, 11 sample plots were selected representing all eight of the possible soil map units, the major bedrock and surficial geology units, udic and ustic soil moisture regimes, and both grassland/shrubland and forested habitat types. In addition to the 11 selected sample plots, 5 alternate sample plots were selected as backups in case sampling could not occur at any of the selected 11 plots (Table 5), however these were not sampled.

The eleven selected sample plots achieved the following criteria:

- At least one sample plot was selected for each of the eight soil units that contain YELL plots.
- The map units of largest extent (2213 and 2924) have two sample plots each.
- Each of the five most extensive surficial geology units had at least one plot selected.
- Each of the major landforms and parent material groups identified in the soil survey inventory include selected sample plots.
- The six most extensive bedrock geology groups had sample plots selected. The geology map unit "Thr" (Huckleberry Ridge Group), located at the tower airshed, did not have a sample plot selected. However, a large soil pit located near the NEON tower was sampled and described by NEON in 2018.
- The ratio of plots selected for sampling roughly corresponds to the ratio of grassland/shrub to forest across the entire YELL site area (7 grassland/shrub plots, 4 evergreen forest plots).
- Most of the YELL site area was mapped as loamy-skeletal Mollisols with ustic soil moisture regimes and glacial till parent materials, and as such most of the selected sample plots reflect these conditions. However, some sample plots were selected to capture more diverse characteristics including sites on outwash terraces and forested Inceptisols and Mollisols with udic soil moisture regimes.

Plot ID	State	County	Plot Type	MU Sym	Plot Status
YELL_001	WY	Park	distributed	2996	Selected
YELL_004	WY	Park	distributed	2996	Selected
YELL_005	WY	Park	distributed	2213	Selected
YELL_007	WY	Park	distributed	2546	Selected
YELL_012	WY	Park	distributed	2543	Selected
YELL_019	WY	Park	distributed	2924	Selected
YELL_021	WY	Park	distributed	1324	Selected
YELL_022	WY	Park	distributed	522	Selected
YELL_024	WY	Park	distributed	2924	Selected
YELL_025	WY	Park	distributed	2246	Selected
YELL_029	WY	Park	distributed	2213	Selected
YELL_003	WY	Park	distributed	2546	Alternate
YELL_011	WY	Park	distributed	2996	Alternate
YELL_016	WY	Park	distributed	2924	Alternate
YELL_023	WY	Park	distributed	2213	Alternate
YELL_028	WY	Park	distributed	1324	Alternate
YELL_002	WY	Park	distributed	2213	Not selected
YELL_006	WY	Park	distributed	2213	Not selected
YELL_008	WY	Park	distributed	2213	Not selected
YELL_009	WY	Park	distributed	2213	Not selected
YELL_010	WY	Park	distributed	2924	Not selected
YELL_013	WY	Park	distributed	2924	Not selected
YELL_014	WY	Park	distributed	2924	Not selected
YELL_015	WY	Park	distributed	2924	Not selected
YELL_017	WY	Park	distributed	2924	Not selected
YELL_018	WY	Park	distributed	2924	Not selected
YELL_020	WY	Park	distributed	2213	Not selected
YELL_026	WY	Park	distributed	2213	Not selected
YELL_027	WY	Park	distributed	2924	Not selected
YELL_030	WY	Park	distributed	2213	Not selected
YELL_046	WY	Park	tower	2213	Not selected
YELL_048	WY	Park	tower	2213	Not selected
YELL_051	WY	Park	tower	2213	Not selected
YELL_052	WY	Park	tower	2213	Not selected

Table 5. Plot sampling status at YELL site. Sampling status indicates whether a plot was selected for sampling and analysis as follows: ‘Selected’ indicates the plot was selected for sampling, ‘Not selected’ indicates the plot was not selected for sampling, ‘Alternate’ indicates the plot is a backup selected for sampling in case a first priority sample plot is rejected by NEON, sensitive archaeological objects are found, or it is impossible to excavate based on field observations. MU Sym: map unit symbol.

Plot Findings

Our sampling team was able to describe and sample all the pre-chosen primary plots as planned. Table 6 summarizes the environmental and geomorphic characteristics of each plot. Table 7 displays a summary and comparison of the geomorphic, geologic and parent material data determined at the plots and in background sources. The 1:500,000 scale Wyoming state maps are the most coarse-scaled data; the information taken from the NASIS soil database represents more detail, while the soil observations for the NEON plots provides the highest detail. The three different sources agreed on nine of 11 plots. On plot YELL_004, our field interpretation of subglacial till from Rhyolite and Basalt on ground moraines was more closely aligned with the Wyoming state bedrock and surficial geology maps than the glacial outwash described for soil map unit 2996 in the NASIS soils database. We thought the plot was more similar to the nearby 2924 map unit. On plot YELL_007, the surficial geology map unit indicated glacial outwash and alluvium, however, the soil survey database and our observations indicated colluvium from mixed volcanic till. Otherwise, there was general agreement between our field observations, the soil survey database and the sate geology maps on parent materials and landforms.

NEON ID	MU Sym	precip & *(effective precip)* mm	elev m	% Slope	Slope Aspect	Slope Shape Vertical/Horizontal	2D/3D and Relative Slope Position
YELL_001	2996	363 *375*	1910	6	160	V/C	-/- lower
YELL_004	2996 near 2924	425 *525*	1996	21	37	C/C	FS/HS lower
YELL_005	2213 near 2924	561 *525*	2118	37	118	V/L	BS/NS upper
YELL_007	2546	404 *475*	2089	32	46	L/C	FS/BS lower
YELL_012	2543	363 *425*	1920	24	260	L/L	FS/BS lower
YELL_019	2924	437 *475*	2160	15	19	L/L	BS/SS (MF) upper
YELL_021	1324	464 *550*	2106	73	345	L/L	SU/IF upper
YELL_022	522	363 *400*	1943	57	270	L/C	BS/SS middle
YELL_024	2924	374 *300*	1999	36	210	L/L	BS/NS middle
YELL_025	2246	403 *375*	2032	5	170	L/V	SU/NS upper
YELL_029	2213	540 *600*	2032	45	0	L/V	SH/SS upper

Table 6. Climatic and geomorphologic data identified for each plot during sampling.
Definitions (left to right) come from Schoeneberger and Wysocki, 2017: "effective precip" is the relative quantity of precipitation stored in the soil; "slope asp" refers to the slope aspect (0 to 360 degrees), slope shape is described in two directions: 1) up and down, perpendicular to the contour and 2) across slope, parallel to the contour) L=linear, C=concave and V=Convex. 2D refers to 2-dimensional hillslope or mountain profile position (SU = summit, SH=shoulder, BS=backslope, FS=footslope. 3D refers to 3-dimensional geomorphic component (IF=interflueve, HS = head slope, NS = nose slope, SS = side slope and MF=mountain flank.

Table 8 summarizes the soil, parent material and vegetation structure determined at each plot. In reviewing these tables, one might want to revisit Tables 1, 2 and 3 to compare with similar data contained within the draft WY665 soil survey database (Soil Survey Staff, NASIS. Accessed 2018 & 19). The Kellogg Soil Survey Laboratory completed their analyses as this summary was being written and those results are also included in this summary report.

There were seven grassland/shrubland plots and six of these classified as Mollisols. The exception was plot YELL_024 which was on a dry, south-facing slope with low vegetation productivity and classified as an Inceptisol.

Of the four forested sites, three had Ochric epipedons (lighter color and relatively lower {OC} content) and one (YELL_012) was an mollic epipedon. However, even YELL_012 had borderline colors for mollic criteria and the lowest OC totals of any surface horizon from the sampled NEON plots.

All forested soils had "O" horizons except for plot YELL_029, which was in a younger lodgepole stand regenerated after the 1988 Yellowstone fires.

Five of the 11 pedons were loamy-skeletal and these were relatively coarse in the fine-earth fractions (sand, silt and clay-sized particles) with between 7 and 17% clay. Three pedons were coarse-loamy and three were fine-loamy based on the weighted averages of the particle-size taxonomic control sections. Overall, the pedon with the least clay was YELL_021 at 7% clay in the subsoil and the most subsoil clay was found at YELL_025 with 31% clay content.

Four pedons were provisionally classified in the field with argillic horizons. This was indicated by significant clay films or clay bridging between sand grains that indicates clay illuviation and field clay estimates that indicated clay increases from the surface horizons down to subsurface horizons. After review of lab data, only two of these pedons had sufficient clay increases to classify as argillic horizons (YELL_005 and YELL_025).

One pedon (YELL_022) was shallow (49 cm) to a bedrock contact (R); two pedons (YELL_025 and YELL_019) were moderately deep (57 cm and 68 cm) to soft bedrock (Cr); and the other eight pedons were either deep (100-150 cm) or very deep (>150 cm).

Surprisingly, only 2 pedons had calcium carbonates and higher pH's: all horizons of YELL_024 and the C horizon (37-57 cm) of YELL_025 had measurable $CaCO_3$ and 1:1 H_2O pH's from 7.9 to 8.3. All other pH's were from 5.6 to 6.8, except for a 7.3 pH on YELL_025 in the horizon above the C horizon noted above.

All horizon for all pedons were greater than 50% base saturation (as measured by NH_4OAC). In addition, laboratory data did not indicate spodic or andic properties in the NEON plots.

Plot ID	MU Sym	Landform ID'd in field	Parent Material ID'd at plot	Landform in WY665 NASIS soils database	Parent Material in NASIS WY665 soils database	Surficial Geology Map of WY - sym. & abbreviated desc.	Geology of Wyoming Map - sym & abbreviated desc.
YELL_001	2996	valley floor/ outwash terrace	outwash from tuff & other volcanics	outwash terraces, outwash fans, kame terraces	outwash from andesite or sedimentary rock	ag-Glacial Outwash & alluvium	Qu-Pleistocene Surficial
YELL_004	2996, near 2924	Ground Moraine	subglacial till from rhyolite & basalt	outwash terraces, outwash fans, kame terraces	outwash from andesite or sedimentary rock	Gg-Bedrock & glaciated Bedrock	Qr-Pleistocene Rhyolite, Tuff & Intrusive
YELL_005	2213 near 2924	Hillslope	colluvium & till from mixed sources	moraines	till	Gg-Bedrock & glaciated Bedrock	Qu-Pleistocene Surficial
YELL_007	2546	Hillslope	colluvium from mixed volcanic till	glacial-valley floors, moraines	colluvium and/or till from andesite or limestone	ag-Glacial Outwash & alluvium	Tas & Taw-Absoraka Volcanic Supergroup (Tertiary)
YELL_012	2543	Hillslope/ Colluvial Apron	colluvium from gneiss & volcanics over subglacial till	moraines	till or till over residuum derived from gneiss and schist	CsgR - Colluvium, slope wash, glacial, bedrock	Wgn-Precambrian Granitic Gneiss
YELL_019	2924	Hillslope	till from volcanics	moraines	till	CsgR - Colluvium, slope wash, glacial, bedrock	Tas & Taw - Absoraka Volcanic Supergroup (Tertiary)
YELL_021	1324	Bench or moraine on Mtn. Slope	till from rhyolite	moraines on plateaus, moraines	till derived from rhyolite and/or rhyolitic tuff	g-Glacial Deposits	Qr-Pleistocene Rhyolite, Tuff & Intrusive
YELL_022	522	Escarp-ment	colluvium from gneiss	escarpments, glacial-valley walls, moraines	colluvium and/or till	CsgR - Colluvium, slope wash, glacial, bedrock	Wgn-Precambrian Granitic Gneiss
YELL_024	2924	Lateral Moraine	mixed till	moraines	till	CsgR - Colluvium, slope wash, glacial, bedrock	Tas & Taw-Absoraka Volcanic Supergroup (Tertiary)
YELL_025	2246	High Hill	subglacial till over residuum from rhyolite	moraines	till derived from andesite	CsgR - Colluvium, slope wash, glacial, bedrock	Tas & Taw-Absoraka Volcanic Supergroup (Tertiary)
YELL_029	2213	Hillslope	colluvium from till of rhyolite, tuff & volcanics	moraines	till	Gg-Bedrock & glaciated Bedrock	Qr-Pleistocene Rhyolite, Tuff & Intrusive

Table 7. Review and comparison of the geomorphic, geologic and soil parent materials identified at the plot and with background sources. Yellow items were identified through sampling, green items in the WY665 provisional NASIS soil database and blue items in the 1:500,000 scale Wyoming geology and surficial geology maps.

ID	Climate Regime Moist/ *Temp*	Dep Cl	Series	Taxonomic Class		Parent Material ID'd at plot	Veg. Group
				Field Determined	Lab adjusted		
YELL_001	Typic Ustic *Cryic*	DE or VD	Shook-like or Browns-gulch	Fine-loamy, mixed, superactive Pachic Haplocryolls	Coarse-loamy, mixed, superactive Pachic Haplocryolls	outwash from mixed sources	Grass/ Shrub
YELL_004	Typic Ustic *Cryic*	DE or VD	Hobacker-like	Loamy-skeletal, mixed, superactive Pachic Argicryolls	Loamy-skeletal, mixed, superactive Pachic Haplocryolls	subglacial till from rhyolite & basalt	Grass/ Shrub
YELL_005	Typic Ustic *Cryic*	DE or VD	SND	Fine-loamy, mixed, superactive Ustic Argicryolls	Fine-loamy, mixed, superactive Ustic Argicryolls	colluvium & till from mixed sources	Grass/ Shrub
YELL_007	Typic Ustic *Cryic*	DE or VD	Hobacker-like	Fine-loamy, mixed, superactive Pachic Argicryolls	Coarse-loamy, mixed, superactive Pachic Haplocryolls	colluvium from mixed volcanic till	Grass/ Shrub
YELL_012	Typic Ustic *Cryic*	DE or VD	Midfork-like	Loamy-skeletal, mixed, superactive Pachic Haplocryolls	Loamy-skeletal, mixed, superactive Ustic Haplocryolls	colluvium from gneiss & volcanics over subglacial till	Forest
YELL_019	Typic Ustic *Cryic*	MD	SND	Fine-loamy, mixed, superactive Ustic Haplocryolls	Fine-loamy, mixed, superactive Ustic Haplocryolls	till from volcanics	Grass/ Shrub
YELL_021	Ustic Udic *Cryic*	DE or VD	Shadow-like	Loamy-skeletal over Fragmental, mixed, superactive Ustic Haplocryepts	Loamy-skeletal over Fragmental, mixed, superactive Ustic Haplocryepts	till from rhyolite	Forest
YELL_022	Typic Ustic *Cryic*	SH	SND	Loamy-skeletal, mixed, superactive Lithic Haplocryepts	Loamy-skeletal, mixed, superactive Lithic Haplocryepts	colluvium from gneiss	Forest
YELL_024	Aridic Ustic *Frigid*	DE or VD	SND	Fine-loamy, mixed, superactive frigid Aridic Calciustept	Coarse-loamy, mixed, superactive, frigid Aridic Haplustepts	mixed till	Grass/ Shrub
YELL_025	Typic Ustic *Cryic*	MD	SND	Fine-loamy, mixed, superactive Ustic Argicryolls	Fine-loamy, mixed, superactive Ustic Argicryolls	subglacial till over residuum from rhyolite	Grass/ Shrub
YELL_029	Ustic Udic *Cryic*	DE or VD	Shadow-like	Loamy-skeletal, mixed, superactive Ustic Haplocryepts	Loamy-skeletal, mixed, superactive Ustic Haplocryepts	colluvium from till of rhyolites, tuff & volcanics	Forest

Table 8. Soil and site properties related to soil climate regimes, soil depth, soil taxonomy, parent materials and vegetation growth forms identified during NEON sampling.

Definitions (left to right) “moist” = moisture regime; “temp” = temperature regime; “dep cl” = depth class, with SH = shallow (<50 cm in depth), MD = moderately deep (50-100 cm) DE = Deep (100-150 cm deep) and VD = very deep (>150 cm); SND = Series Not Defined; Veg = vegetation.

Summary of Soils

The following pedon summaries are presented within five groups based on parent materials and vegetation. The grassland/shrubland soils formed on glacial till group includes six of the pedons both because it was dominant within the YELL NEON site and because the mixed lithology of the parent materials observed made it difficult to group them more precisely. The other four groupings contain only one or two pedons and include one for outwash and three for forest soils.

Grassland/Shrubland soils formed in outwash (generally soil map unit 2996).

YELL_001

Map unit: 2996 -- Shook-Badwater-Passcreek families, complex

Field Investigation taxonomy: Fine-loamy, mixed, superactive Pachic Haplocryoll

Lab adjusted taxonomy: Coarse-loamy, mixed, superactive Pachic Haplocryoll.

Series: Brownsgulch or Shook-like

Prominent characteristics include a mollic epipedon that is markedly thick (pachic). Lab data showed a coarse-loamy particle -size class with 14% clay in the subsoil particle-size control section and pH’s ranging from 6.0-6.8. This soil was also bordering on loamy-skeletal because of the high fragment contents in the C horizon. The lab estimates for clay were lower than our field-estimates.

This soil meets the criteria for the “Shook family” component in the draft WY665 database, although note that it is significantly different than the Shook OSD. The Brownsgulch series OSD is probably a better OSD fit.

This plot was the only pedon that fit this designation. YELL_004 also occurred in the outwash map unit 2996 but was a better fit for the nearby 2924 map unit used on glacial till.

Grassland and Shrubland soils formed primarily of glacial till or colluvium from till derived a wide variety of rocks mostly of volcanic origin including rhyolite, basalt, tuff and andesite and non-volcanic gneiss.

Soil map units 2924, 2213, 2546 and 2246 are including with this grouping.

YELL_004

Map unit: 2996 (near 2924 boundary) -- Hobacker-Libeg- Greyback families, complex

Field Investigation: Loamy-skeletal, mixed, superactive Pachic Argicryolls

Lab adjusted: Loamy-skeletal, mixed, superactive Pachic Haplocryoll.

Series: Hobacker-like

Prominent characteristics include a Mollic epipedon that is markedly thick (pachic). We had predicted an argillic horizon because of evidence of clay illuviation and an increase in clay from the surface into the subsoil. However, lab data did not show a clay increase to support an argillic with 17% clay in the subsoil. pH's ranged from 6.0 to 6.8.

This soil meets the criteria of the "Hobacker family" as defined in CO665, although it lacked the CaCO3 and pH of the Hobacker OSD.

Note that while this plot occurred in the glacial outwash map unit of 2996, it was near the boundary with map unit 2924 and we felt the pedon and parent materials were a better fit for 2924.

YELL_005

Map unit: 2213 (near 2924 map unit boundary) -- Hobacker-Greyback- Shadow families, complex

Field Investigation: Fine-loamy, mixed, superactive Ustic Argicryolls

Lab adjusted; same as field

Series: Not defined

Prominent characteristics include a Mollic epipedon (0-35 cm, A, BAt), an argillic horizon (6-105 cm, BAt, Bt and BCt) and a fine-loamy particle size with a field estimate of 25% clay in the subsoil particle-size control section. pH's was 6.5 to 6.7 and this soil lacked significant CaCO3.

Lab data supported an argillic horizon but not until the BCt (62-105 cm) and that horizon was 21.3% clay. The BAt (14.0% clay) and Bt (14.8% clay) horizons lacked sufficient clay pickup to qualify as part of the argillic horizon. This did not change the taxonomy however.

This pedon was dissimilar to all the components of map unit 2213 since it had an argillic horizon and a non-skeletal particle-size family. This plot was on the boundary of map units 2213 and 2924 but is better grouped with the 2924 map unit because of the observed grassland/shrubland vegetation.

YELL_007

Map unit: 2546 -- Hobacker-Arrowpeak families-Rock outcrop, complex

Field Investigation: Fine-loamy, mixed, superactive Pachic Argicryolls

Lab adjusted: Coarse-loamy, mixed, Pachic Haplocryolls

Series: Hobacker-like

Prominent characteristics determined in the field included a Mollic epipedon (0-60 cm, A1, A2, BAt1, BAt2) that is thick enough to meet the Pachic taxonomic subgroup, a weakly developed

argillic horizon (14-105 cm, BAt1, BAt2 and BCt) with a field estimate of 21% clay in the subsoil particle-size control section (low end of fine-loamy particle-size family).

The lab data did not support an argillic horizon with subsoil clay of 11%. pH was 6.1 to 6.4.

This soil was similar to the Hobacker family component. While it lacked enough fragments to qualify as loamy-skeletal, it still contained between 25 and 35% fragments through the profile. It differed from the Hobacker OSD in lacking CaCO3 and high pH's.

YELL_019

Map unit: 2924 -- Hobacker-Libeg- Greyback families, complex

Field Investigation: Fine-loamy, mixed, superactive Ustic Haplocryoll

Lab adjusted: same as field

Series: Not defined

Prominent characteristics include a mollic epipedon (0-36 cm, A1, A2) and a paralithic contact (Cr horizon) at 68 cm and a fine-loamy particle size family with an estimate of 23% clay in the subsoil.

Lab data confirmed the taxonomy with 19% clay in the subsoil. The 2C horizon in this pedon was estimated at approximately 85% total fragments using a combination of the lab and field data. However, 45% of the fragments were paragravels (moderately cemented) which are not included in the rock fragment calculations for the particle-size control section, thus the weighted average for the particle-size control section of this soil is just under 35% indurated fragments indicating a fine-loamy particle size family. Lab pH's were 6.0 to 6.3.

This soil does not fit any of the components of map unit 2924 because it is moderately deep to a paralithic contact and is less than 35% hard fragments in the subsoil.

YELL_024

Map unit: 2924 -- Hobacker-Libeg- Greyback families, complex

Field Investigation: Fine-loamy, mixed, superactive frigid Aridic Calciustepts

Lab adjusted: Coarse-loamy, mixed, superactive, frigid Aridic Haplustepts

Series: Not defined

Prominent characteristics included secondary carbonates (8-104 cm, Bk1, Bk2, Bk3, CBk) and a fine-loamy particle size family with an estimate of 23% clay in the subsoil. pH was 7.4 to 7.8 throughout.

The lab data did not confirm to field determinations. Lab estimated clay was 15.5% in the subsoil, making this pedon coarse-loamy. Also, this pedon was just shy of meeting criteria for a calcic horizon, which would classify it as an Aridic Calciustept. Also note there was an increase

in clay from the A to the Bk1 and clay bridging in that horizon, but much of the clay increase determined by the lab was carbonate clays which cannot be used to classify a horizon as an argillic. Neither the field investigation nor the lab data suggested an argillic horizon.

This pedon does not match any of the components of the 2924 map unit but most likely can be found in other locations at the NEON site on lower elevations and south facing slopes.

YELL_025

Map unit: 2246 -- Midfork-Leavittville-Lionhead families, complex

Field Investigation: Fine-loamy, mixed, superactive Ustic Argicryolls

Lab adjusted: same as field.

Series: Not defined

Prominent characteristics included a mollic epipedon (0-37 cm A, BAt1, BAt2), an argillic horizon (4-37 cm, BAt1, BAt2) with clay content of 31%, and a paralithic contact (Cr, 57-75 cm). There was slight effervescence (evidence of CaCO3) in the C horizon. pH's ranged from 6.7 in the surface to 8.2 in the C horizon.

This soil does not fit any of the components of map unit 2246 but it would be managed somewhat similarly to the Leavittville family component. It differs in having an argillic horizon, a thinner mollic epipedon (not pachic) and lacks the silty clay loam surface textures found in the Leavittville family component.

Forested soils formed in glacial till with a substantial rhyolite influence

Generally includes map unit 1324 and the more forested portions of 2213.

YELL_021

Map Unit: 1324 -- Como-Como, moderately deep-McCort families, complex

Field Investigation: Loamy-skeletal over Fragmental, mixed, superactive Ustic Haplocryepts

Lab adjusted: same as field

Series: Not defined.

Prominent characteristics were an E horizon (7-35 cm) in the subsoil and fragmental subsoil below 35 cm. In this pedon we estimated the fragmental horizon to be a huge boulder approximately 4 meters in diameter or greater. There is a possibility this was a bedrock contact, but in our estimation, this was not a bedrock-controlled landform and we observed other very large boulders nearby.

Lab data confirmed the taxonomy, although the E horizon at 50.2 percent silt would be an extremely cobbly (cbx) silt loam and not a cbx-sandy loam, as described in the field. pH was 5.6.

This pedon was difficult to judge because of the massive boulder (the fragmental layer) but it was different from Como in having less sand and the fragmental horizon below 35 cm. It was also dissimilar to McCort because it lacked a mollic epipedon. It might be judged somewhat similar to Shadow, which was not a component of this map unit.

YELL_029

Map unit: 2213 -- Hobacker-Greyback-Shadow families, complex

Field Investigation: Loamy-skeletal, mixed, superactive Ustic Haplocryept

Lab adjusted: same as field

Series: Not defined.

Prominent characteristics include a cambic horizon (5-39 cm, Bw1, Bw2) and a loamy-skeletal particle-size family. Lab data confirmed the classification with 8% clay in the particle-size control section. Lab pH's ranged from 6.3 to 6.5.

Although dry colors of the Bw1 and Bw2 were not dark enough to qualify as part of a mollic epipedon (moist colors did fit within the mollic criteria), this pedon had organic carbon totals and base saturation consistent with many mollic epipedons.

This pedon was dissimilar to Hobacker because of the low percent clay. It was dissimilar to both Greyback and Shadow due to the lack of $CaCO_3$ and high pH's and dissimilar to Hobacker and Greyback due to not having a mollic epipedon. However, it was somewhat similar to the Shadow family component, which lacked $CaCO_3$, as this profile did.

Forested colluvial soils in map units with rock outcrop and rubble areas of nonvolcanic rocks of granite, gneiss and schist (map unit 522).

YELL_022

Map unit: 522 -- Rock outcrop-Rubble land-Hobacker family, complex

Field Investigation: Loamy-skeletal, mixed, superactive Lithic Haplocryept

Lab adjusted: same as field

Series: Not defined.

Prominent characteristics included a cambic horizon (15-49 cm, Bw) and a lithic contact at 49 cm. This soil was loamy-skeletal with 9% clay in the Bw and pH's ranged from 5.8 to 6.3.

This pedon was the only one in the Yellowstone NEON site with significant mica flakes, which were field-estimated at 25% for the Bw horizon (15-40 cm). However, our estimates were not high enough to meet micaceous mineralogy, although lab data for minerology (not part of the suite of analyses that the Kellogg lab is running on the NEON project) is the most reliable way of making this determination.

This pedon was not similar to the Hobacker due to its shallow depth, low clay percent and lack of a thick mollic epipedon. It was also much shallower than the Kegsprings minor component.

Forested soils in formed in metamorphic and igneous (non-volcanic) till and residuum (map unit 2543).

YELL_012

Map unit: 2543 -- Midfork-Arrowpeak families-Rock outcrop, complex

Field Investigation: Loamy-skeletal, mixed, superactive Pachic Haplocryoll

Lab adjusted: Loamy-skeletal, mixed, superactive Ustic Haplocryoll

Series: Midfork-like

Prominent characteristics identified in the field included a Mollic epipedon (3-22 cm, A1) and a loamy-skeletal particle size class with a field estimated 16% clay in the subsoil.

Originally, the A2 horizon (22-48 cm) was identified as part of the mollic, which would meet the Pachic subgroup taxonomic classification. However, lab data showed low organic carbon values (< 0.6% OC) were low for the A2 horizon (22-48 cm) and upon reviewing our samples, the dry color for the A2 was too light to meet mollic criteria. Therefore, only the A1 qualifies as part of the mollic. Lab data indicated 9.5% clay with pH's ranging from 6.6 to 7.0.

This soil was taxonomically the same as the Midfork series but it deviated from the Midfork component in having less clay throughout (around 9.5% in this pedon while the Midfork component averages around 20%).

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