Groundwater Data Summary for the
Park Falls Unit, Chequamegon-Nicolet National Forest
Price and Vilas Counties, Wisconsin

Plate 1
Transmissivity

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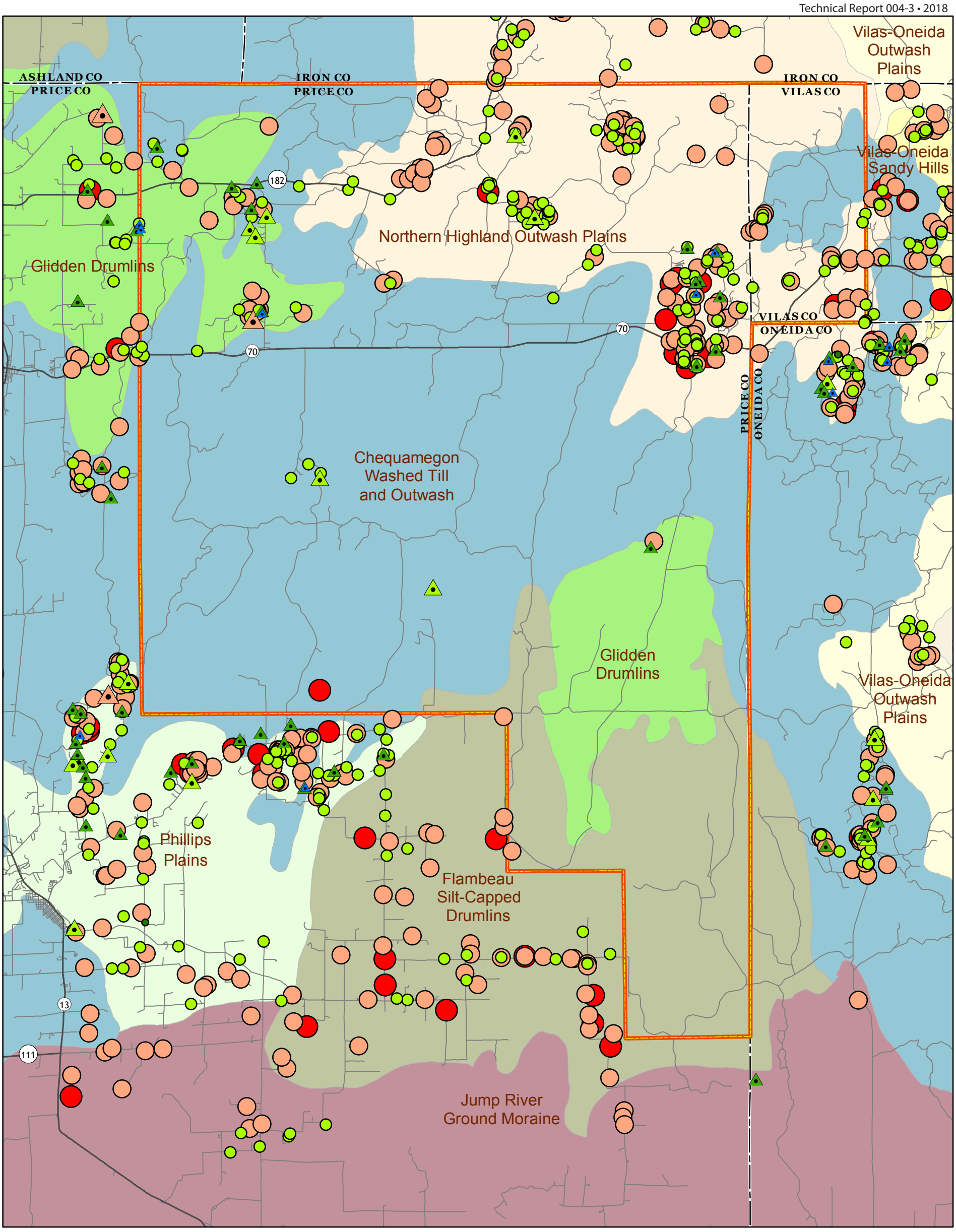

Land Type Association

- Vilas-Oneida Sandy Hills
- Oneida Sandy Moraines
- Northern Highland Outwash Plains
- Vilas-Oneida Outwash Plains
- Phillips Plains
- Flambeau silt capped Drumlins
- Glidden Drumlins
- Chequamegon Washed Till and Outwash
- Jump River Ground Moraine

Glacial T, log ft²/day	Bedrock T, log ft²/day
<2	<1
2–3	1–2
>3–4	>2–3
>4	>3

Park Falls Unit

0 1 2 4 Miles

N

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Ecological classifications from Land Type Associations (Wisconsin Department of Natural Resources, 1999). Political boundaries from WDNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

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Plate 2
Hydraulic conductivity of unlithified materials

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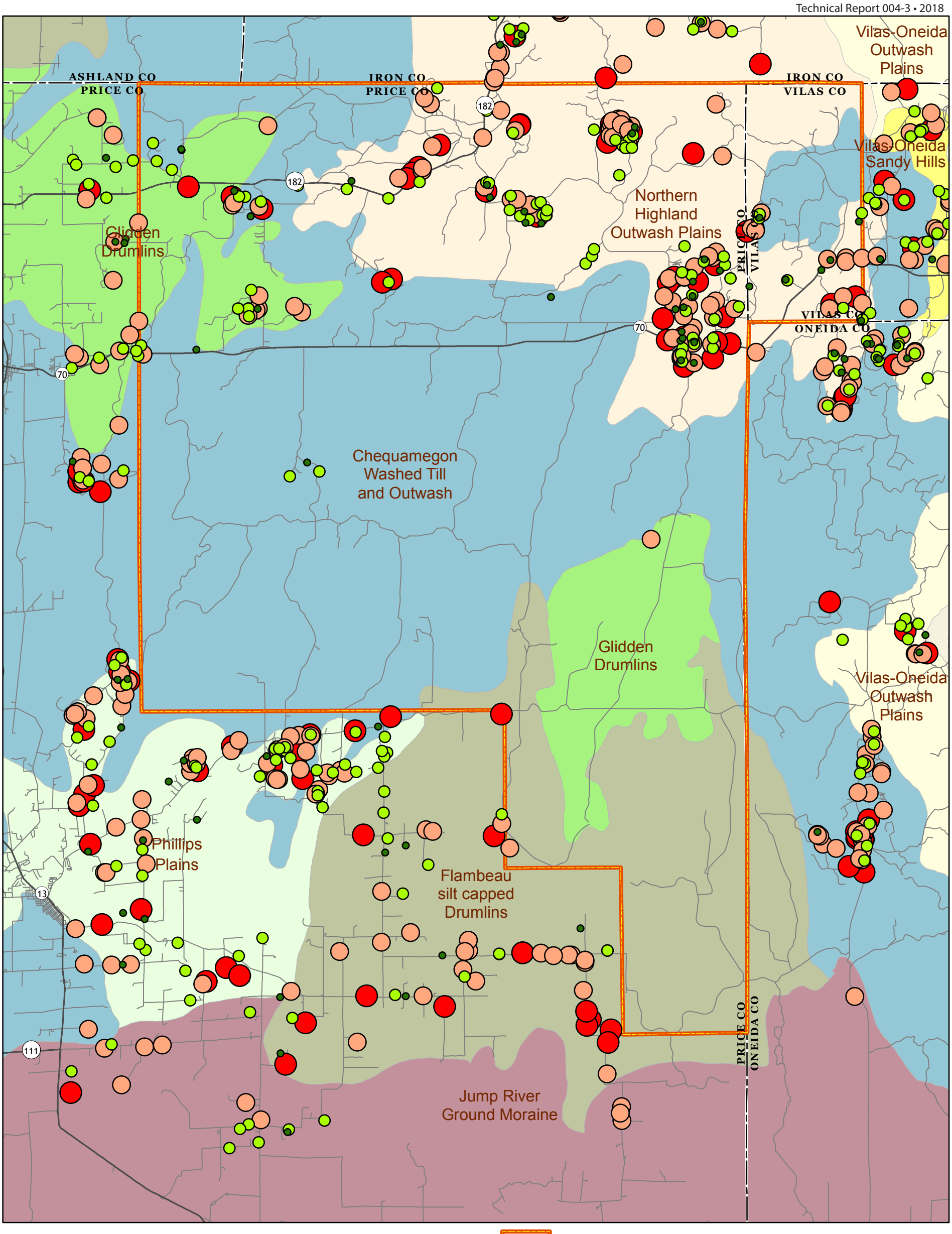

Land Type Association

- Vilas-Oneida Sandy Hills
- Oneida Sandy Moraines
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- Vilas-Oneida Outwash Plains
- Phillips Plains
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- Glidden Drumlins
- Chequamegon Washed Till and Outwash
- Jump River Ground Moraine

Hydraulic conductivity, log ft/day

- <1
- 1–1.5
- >1.5–2
- >2

Park Falls Unit

0 1 2 4 Miles

N

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Ecological classifications from Land Type Associations (Wisconsin Department of Natural Resources, 1999). Political boundaries from WDNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

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Plate 3
Hydraulic conductivity of bedrock

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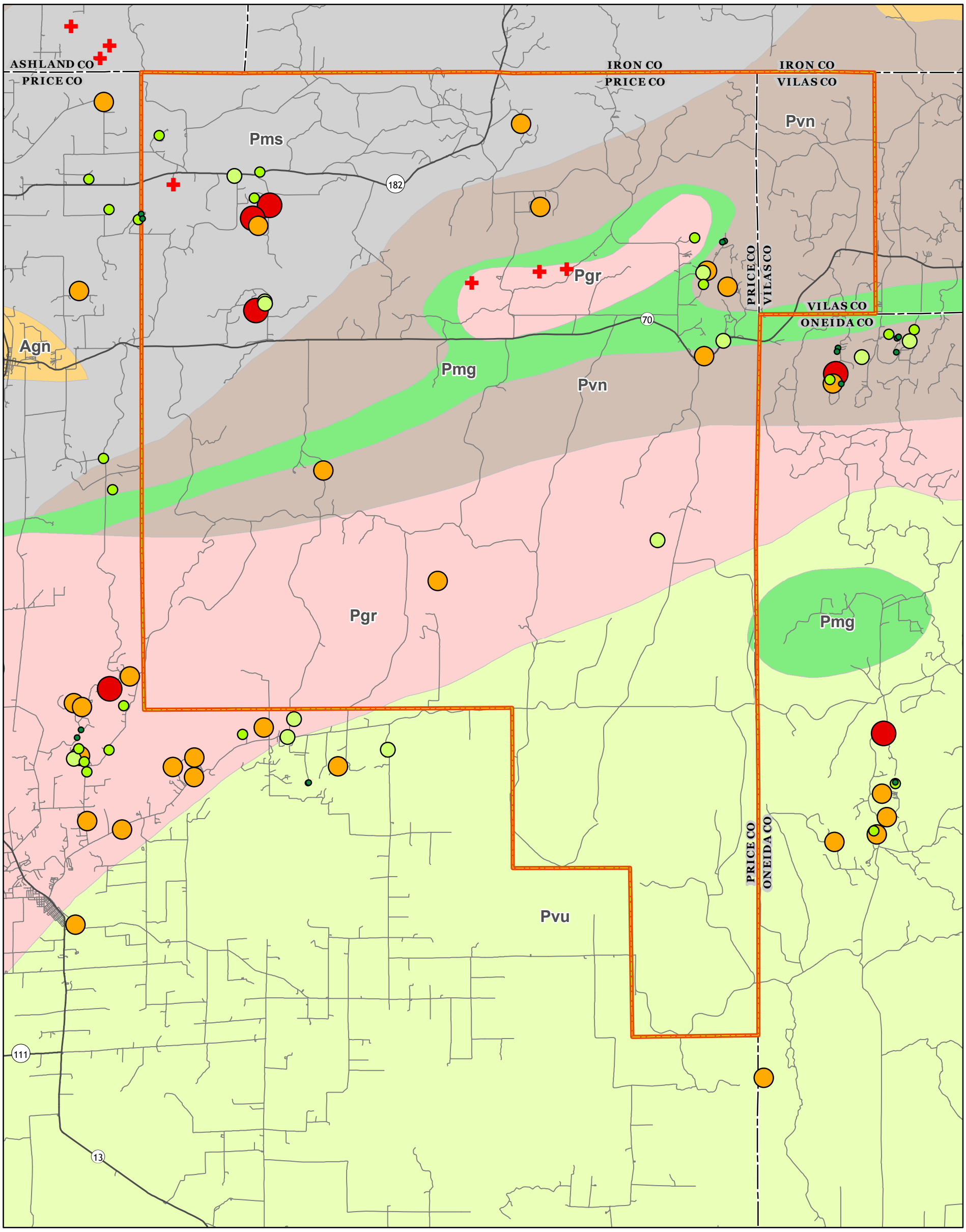


Bedrock hydraulic conductivity, log ft/day

- <–1
- >–1 to 0
- >0 to 1
- >1 to 2
- >2

Park Falls Unit

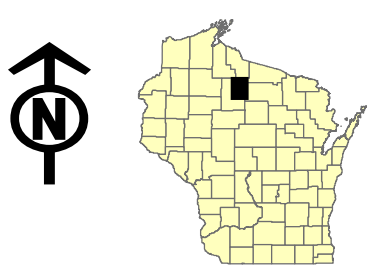
Historic outcrops

Bedrock geology

Pgr, Pvn, Pmg, Pvu, Pms, Agn

Refer to Table 1 for unit descriptions.

0 — 4 Miles



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Bedrock map from Mudrey and others, 1987. Political boundaries from WDNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015.

Groundwater Data Summary for the
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Plate 4
Data points, water table, springs, and spring discharge

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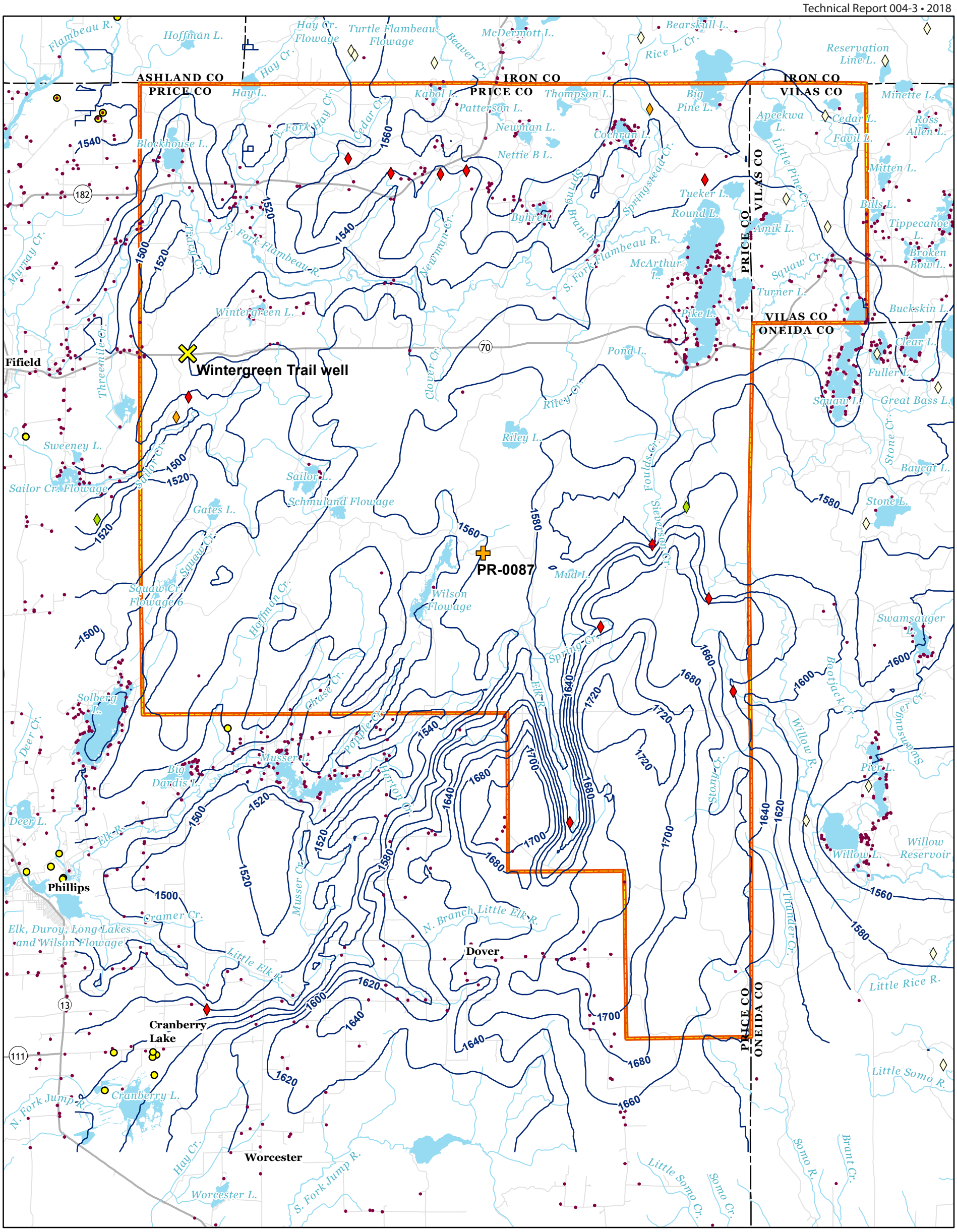

- Located wells
- High-capacity wells
- Wintergreen Trail monitoring well
- PR-0087 monitoring well
- Regional water table, contour interval 20 ft
- Park Falls Unit

Mapped springs and spring ponds (flow in cubic feet per second)

- No measurement
- <0.1
- 0.1–0.5
- >0.5–1.0
- >1.0

0 4 Miles

Water table compiled from Cates and Batten (1999) and Patterson (1989). Springs and spring ponds from Macholl (2007). Political boundaries from Wisconsin DNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

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Plate 5
Elevation of bedrock surface

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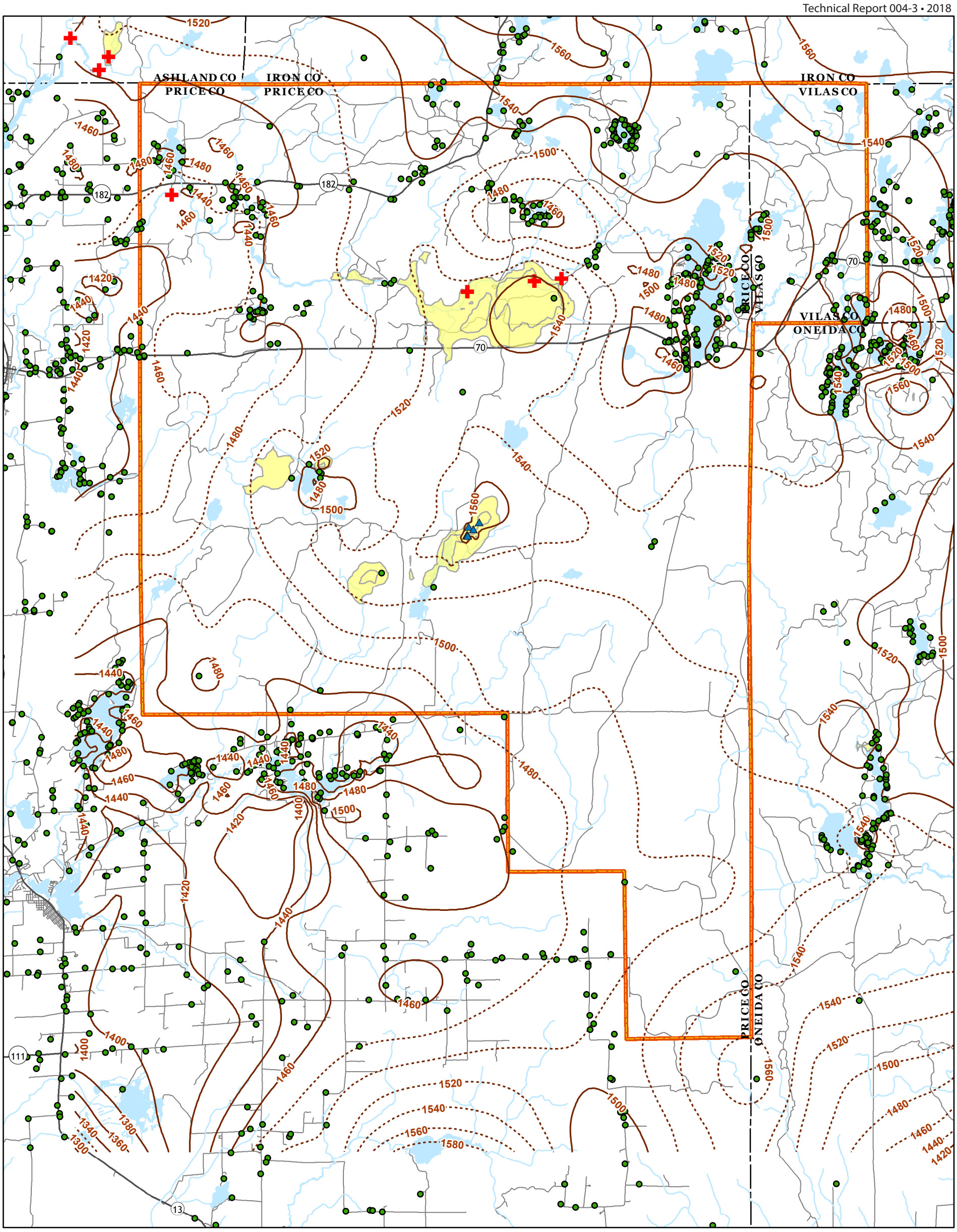

Bedrock elevation, ft; contour interval 20 ft

Bedrock elevation inferred

Bedrock WCR data points

Geophysical survey - bedrock high

Historic outcrops

Shallow bedrock (<10 ft)

Park Falls Unit

0 4 Miles

N

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Political boundaries from Wisconsin DNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

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Plate 6
Depth to bedrock

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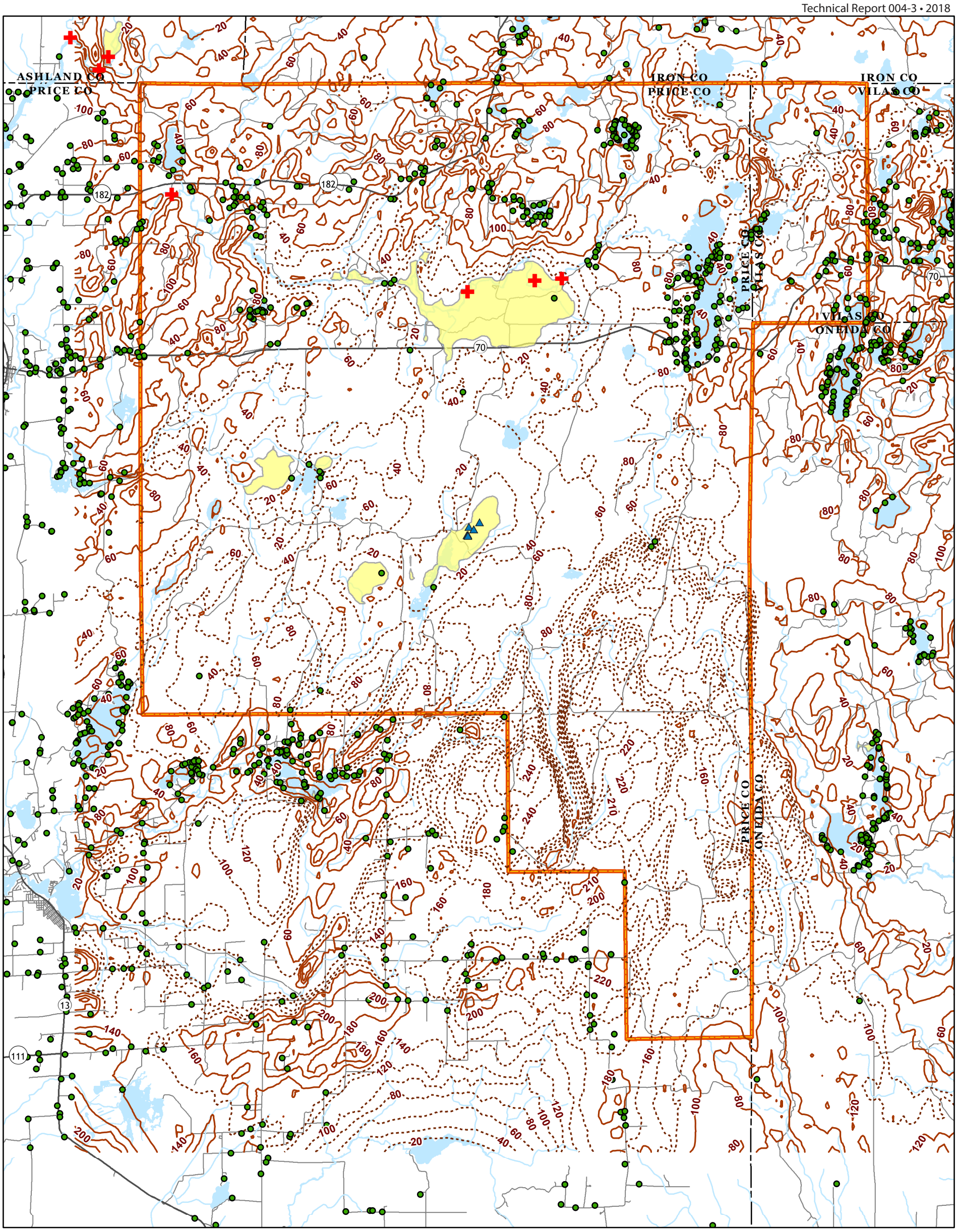

Depth to bedrock, ft; contour interval 20 ft
Depth to bedrock, inferred
Bedrock WCR data points
Historic outcrops
Geophysical survey - bedrock high
Shallow bedrock (<10 ft)
Park Falls Unit

0 4 Miles

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Political boundaries from Wisconsin DNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

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Plate 7
Saturated thickness of unlithified materials

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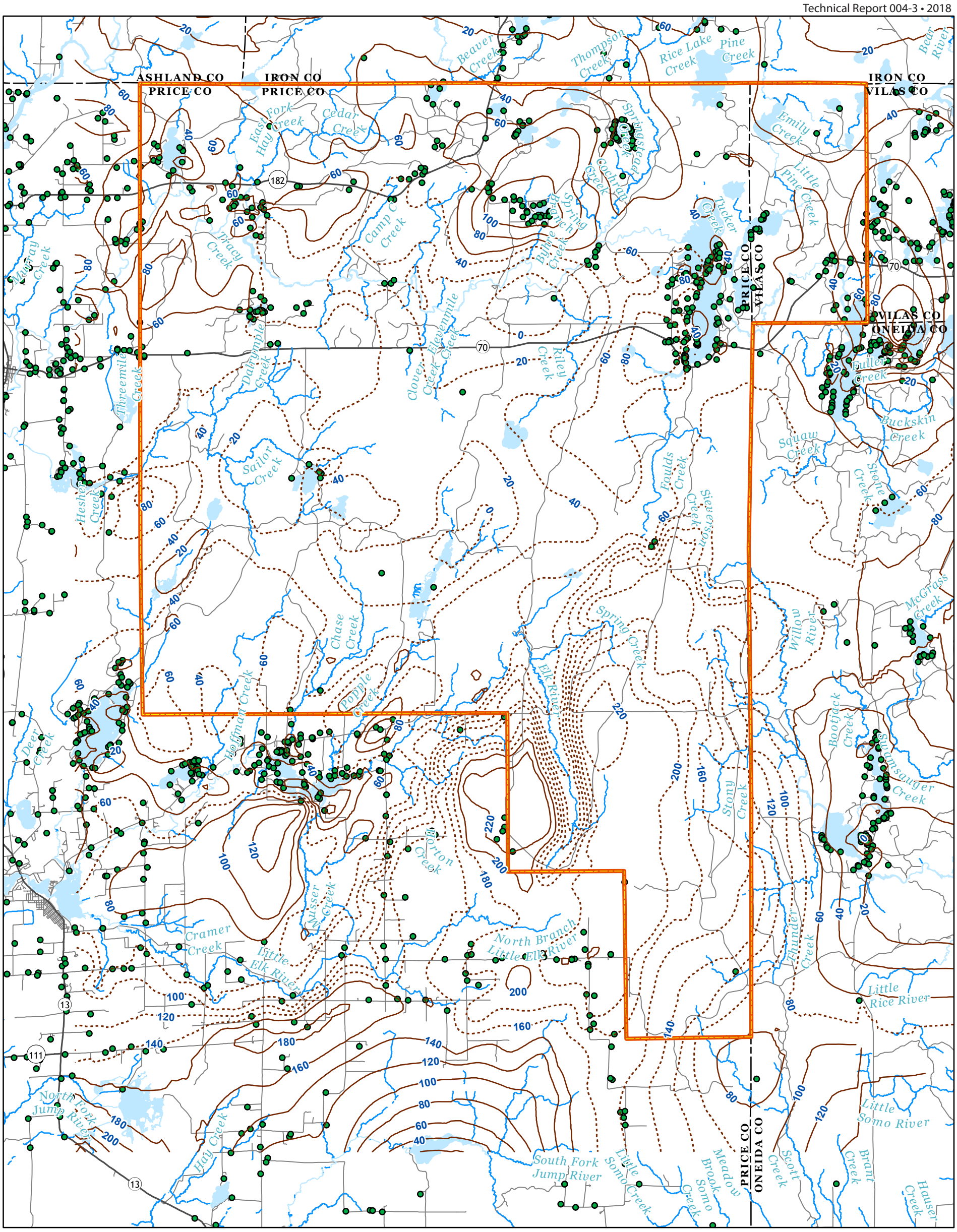

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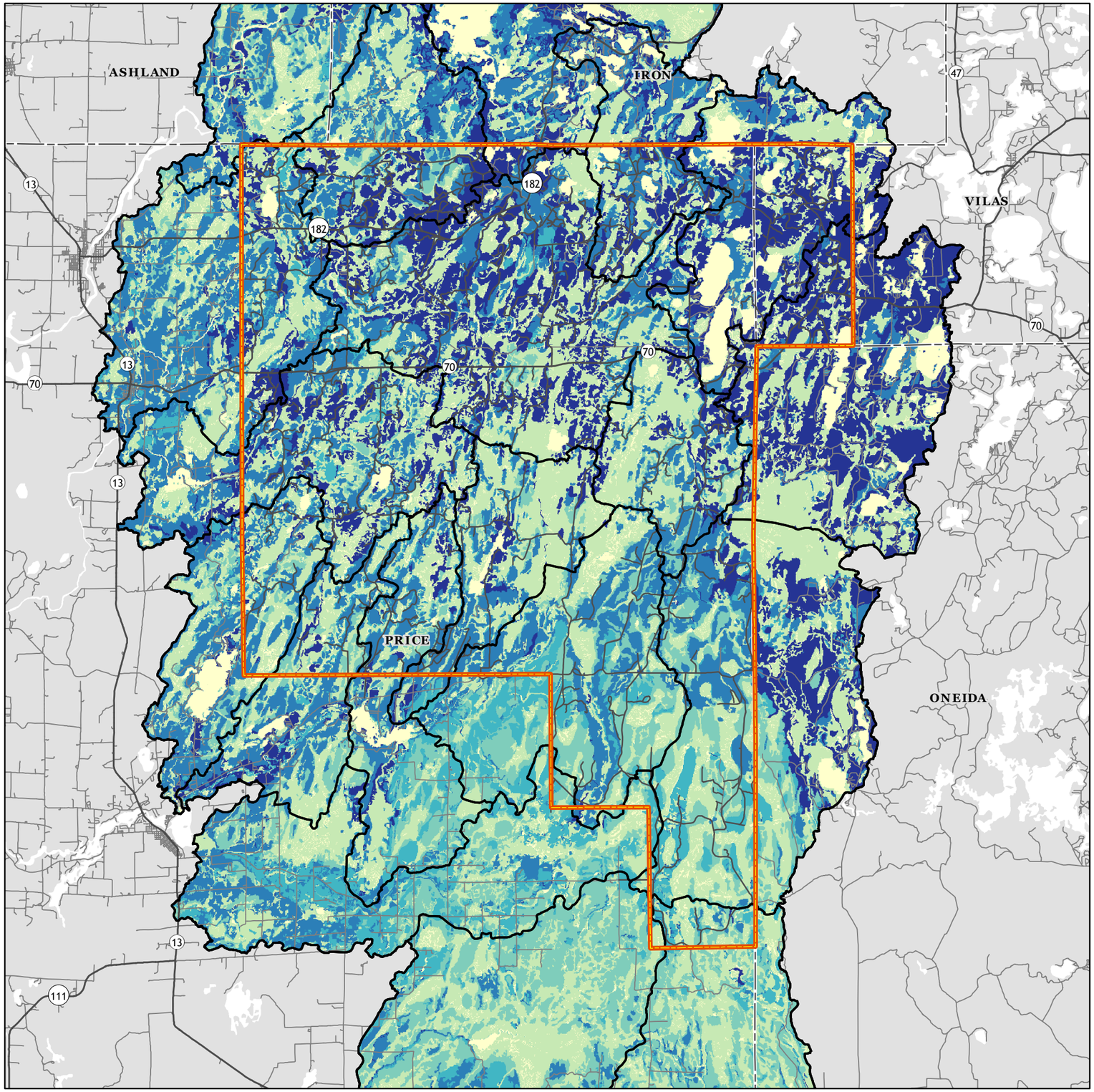
Political boundaries from Wisconsin DNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

Plate 8
Average annual groundwater recharge (2000–2010)

Watersheds of the Park Falls Unit of the Chequamegon-Nicolet National Forest
Wisconsin



1:200,000

Miles

0 5 10

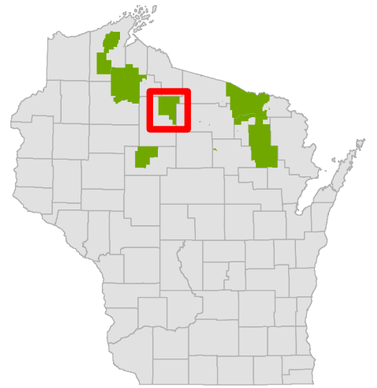
Park Falls Unit

Watershed

Mean annual recharge, 2000–2010

Inches

- <3
- 3–6
- >6–9
- >9–12
- >12–15
- >15



Groundwater recharge was estimated through application of a soil-water balance model. The model estimates the distribution of groundwater recharge through time by using a modified Thornthwaite-Mather method to track soil moisture storage and flux on a spatially referenced grid at daily time increments.

Inputs to the soil-water balance model include map data layers for land surface topography and soil and land cover characteristics, as well as daily climate records. Model outputs included datasets of annual recharge for the model grid and time period, and tabular summaries of daily and annual water-balance calculations.

More information about model setup and results can be found in the accompanying report.

Political boundaries from Wisconsin DNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Watershed boundaries and hydrography from National Hydrography Dataset, 2011–12.

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Plate 9
Surface water chemistry and simulated baseflow

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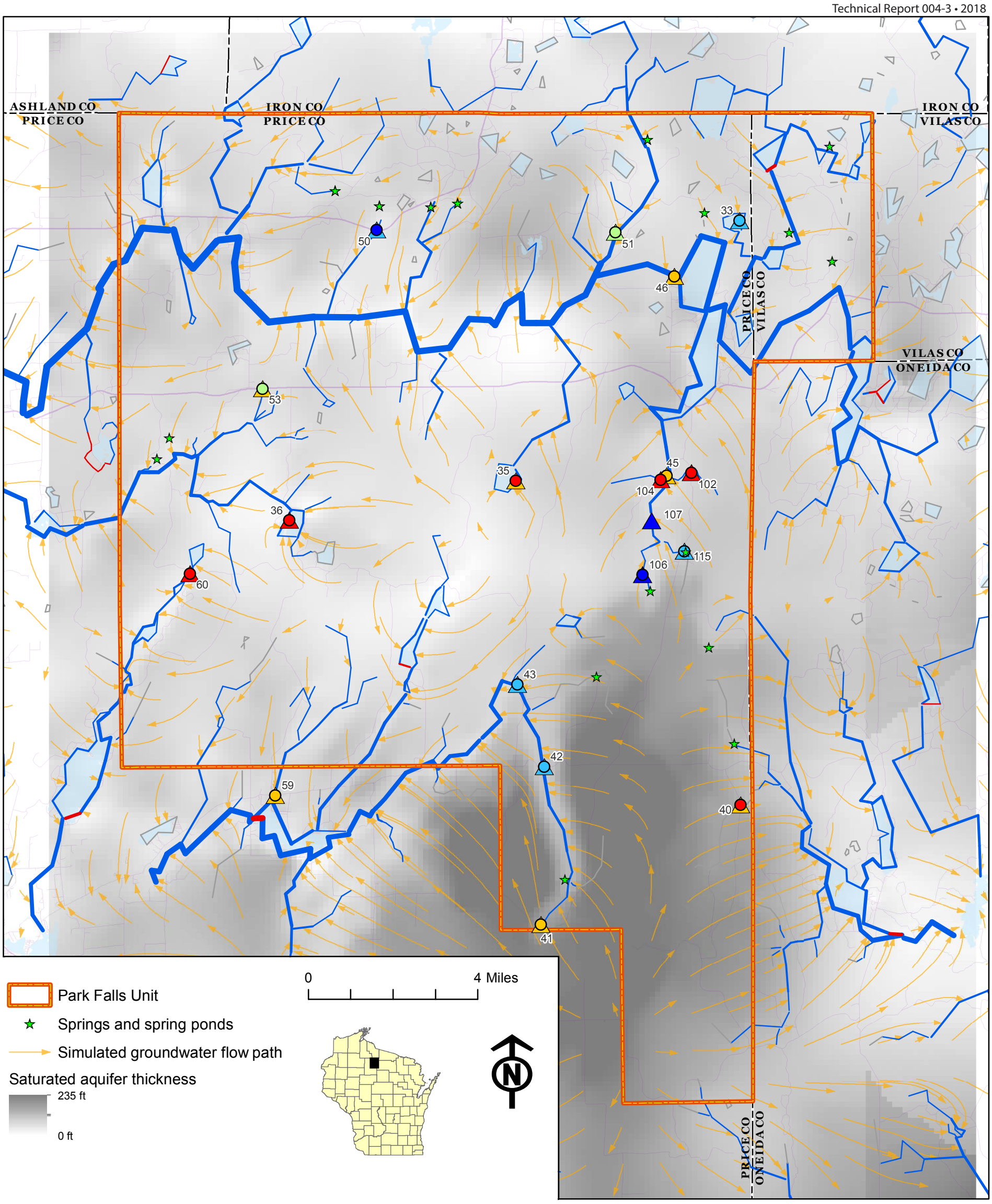

Stream and lake samples[1]

Conductivity, µs/cm	Alkalinity, mg/L
<40	<15
40–70	15–30
>70–100	>30–45
>100–130	>45–60
>130	>60

[1]Label indicates site number

Simulated stream baseflow, by color and lineweight[2]

Aquifer interaction	Baseflow, cfs
Dry	<1
Gaining from groundwater	1–3
Losing to groundwater	>3–6
	>6–10
	>10–15
	>15–20
	>20–30
	>30–60
	>60–100
	>100

[2]Color indicates interaction with aquifer; lineweight proportional to baseflow volume. Gray lines indicate streams that are represented in the flow model but have zero simulated baseflow. Far-field streams not shown.

Springs and spring ponds from Macholl, 2007. Political boundaries from Wisconsin DNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

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Plate 10
Model-simulated water table

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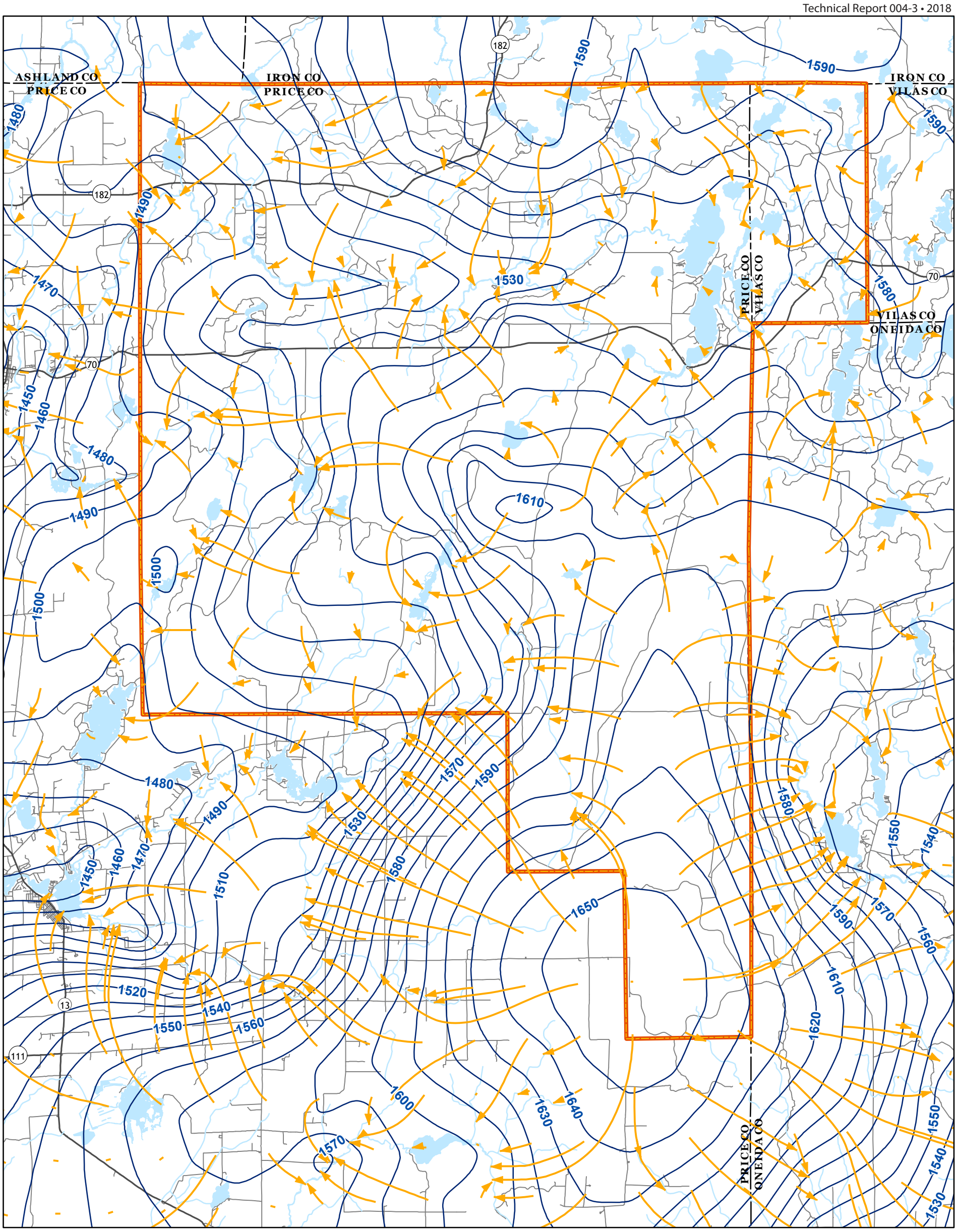

Park Falls Unit

Simulated water table, ft; contour interval 10 ft

Simulated flow path

0 4 Miles

N

Water-table elevations and flow paths generated from regional groundwater flow model (see report for details). Political boundaries from Wisconsin DNR, 2011. National Forest boundaries from the USDA Forest Service, 2011. Roads from U.S. Census Bureau, 2015. Hydrography from National Hydrography Dataset, 2012.

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