

Ottawa County
Water Resources Study – Phase-2
Status Update

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Ottawa County Water Resources Study – Phase-2



□ Administrivia

- **July 8, 2014 - Ottawa County Board of Commissioners approved and authorized the Phase-2 contract with MSU.**
- **August 26, 2014 – Contract start date.**
- **September 17, 2014 – Ottawa County Groundwater Task Force approved the chloride sampling protocol.**
- **September 19, 2014 – Public Kick-Off meeting at the Fillmore Street complex.**

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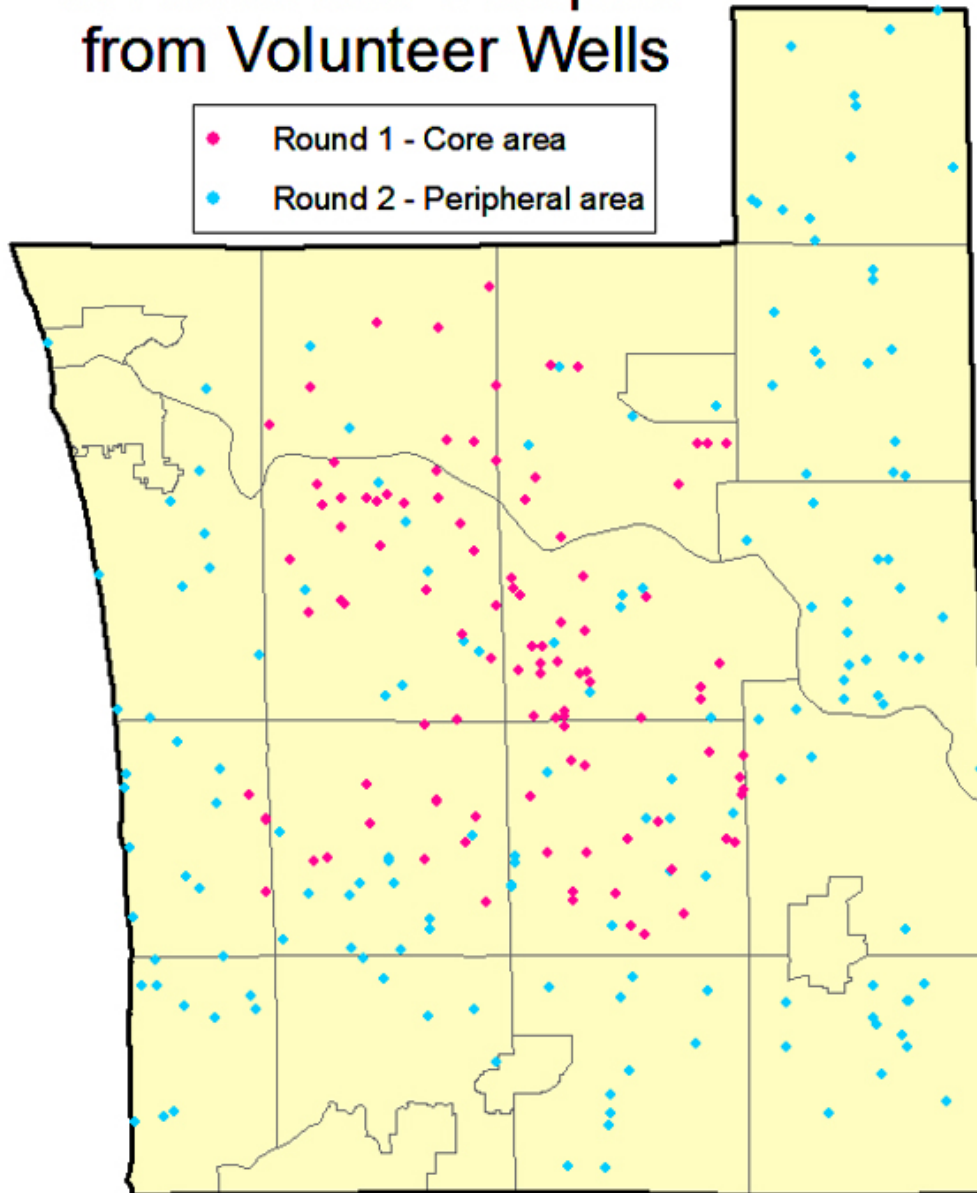
□ Current Tasks and Achievements

- Groundwater sampling for chloride concentration
 - Two rounds of sampling from volunteer sites completed
 - Saturday, September 27 and Saturday, October 11
 - 293 lab tests performed using EPA Standard Method 9212



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Groundwater Samples from Volunteer Wells



□ Current Tasks and Achievements

➤ Groundwater sampling for chloride concentration

▪ Round 1 (core area) – Saturday, September 27

- 120 samples were tested in the lab
- 25 samples (20.8%) exceeded 250 mg/L
 - 66 rock wells – 14 (21.2%) exceeded 250 mg/L
[exceedance values ranged 251 – 1,855 mg/L]
 - 7 deep glacial wells – 3 (42.9%) exceeded 250 mg/L
[exceedance values ranged 330 – 1,273 mg/L]
 - 31 glacial wells – 6 (1.9%) exceeded 250 mg/L
[exceedance values ranged 257 – 1,502]
 - 16 well type unknown – 2 (12.5%) exceeded 250 mg/L
[exceedance values ranged 276 – 279]

□ Current Tasks and Achievements

➤ Groundwater sampling for chloride concentration

▪ Round 2 (peripheral area) – Saturday, October 11

- 173 samples were tested in the lab
- 11 samples (6.4%) exceeded 250 mg/L
 - 57 rock wells – 6 (10.5%) exceeded 250 mg/L
[exceedance values ranged 282 – 926 mg/L]
 - 12 deep glacial wells – 1 (8.3%) exceeded 250 mg/L
[exceedance value = 523 mg/L]
 - 70 glacial wells – 2 (2.9%) exceeded 250 mg/L
[exceedance values ranged 263 – 534]
 - 34 well type unknown – 2 (5.9%) exceeded 250 mg/L
[exceedance values ranged 954 – 1,023]

□ Current Tasks and Achievements

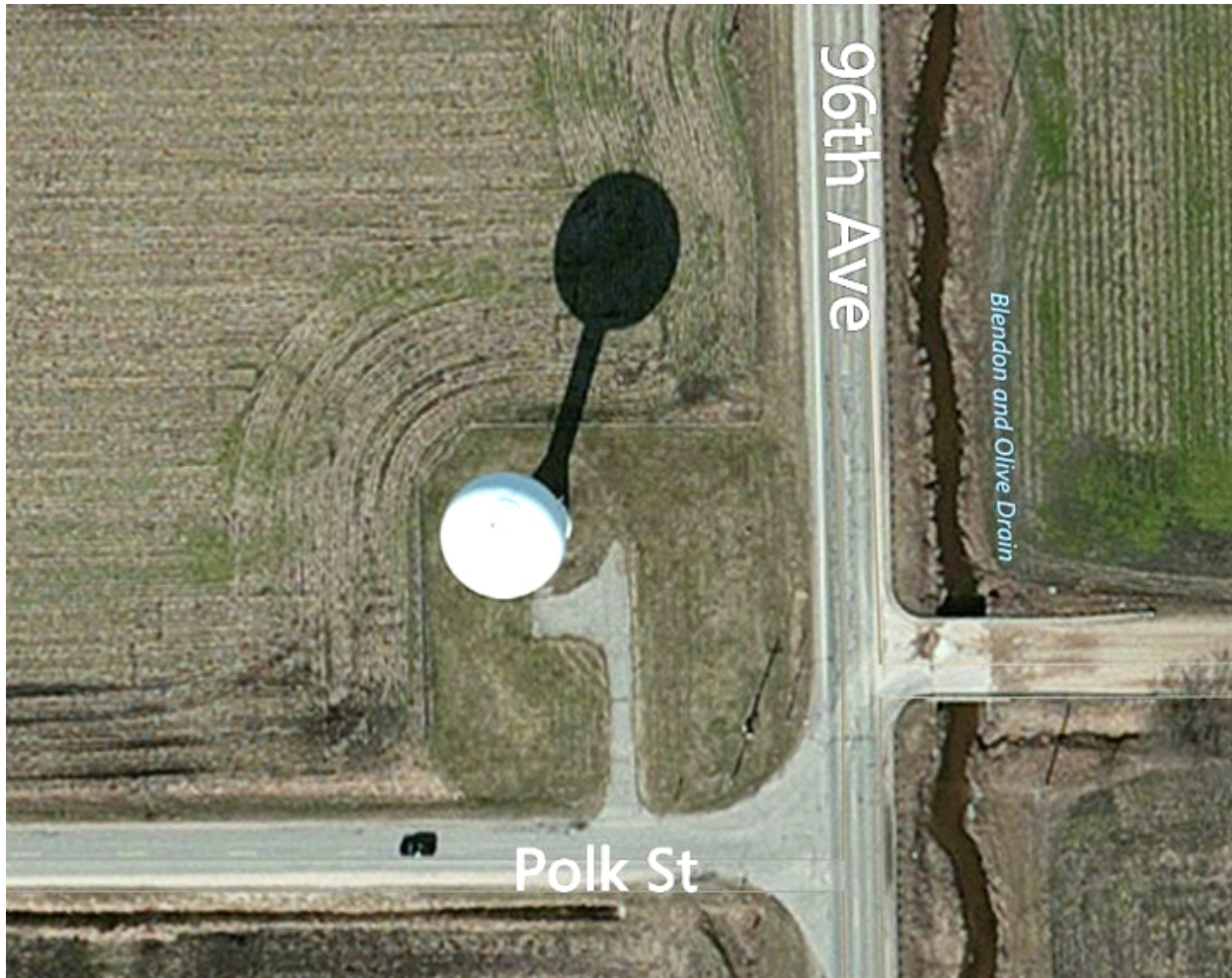
➤ Bedrock aquifer test planning

- Seven sites were evaluated
 - Publically-owned
 - Within a chloride “hotspot” as determined in Phase-1
 - Relatively few water wells within 2,500 feet
 - Trafficable soils for drilling rig and support trucks
 - Proximity to county drain or river to discharge pumped water
- Selected site: water tower parcel, 96th Ave at Polk St.
- Draft RFP for drilling contractors is currently under review
- 1 test well + 2 monitoring wells drilled & completed by mid-December
- Aquifer test completed early January

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□ Current Tasks and Achievements

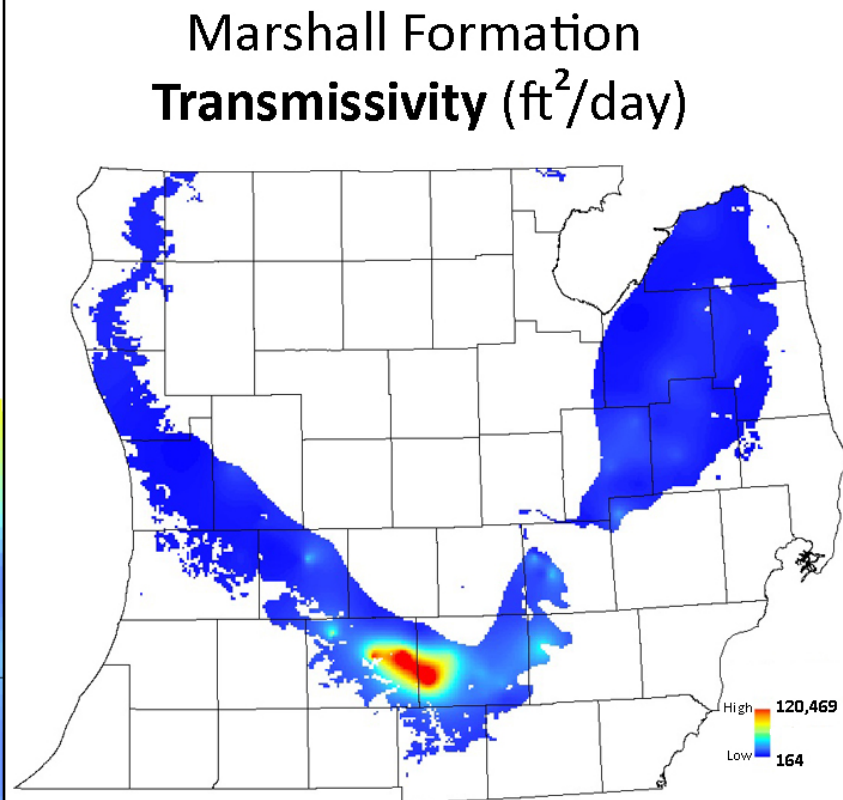
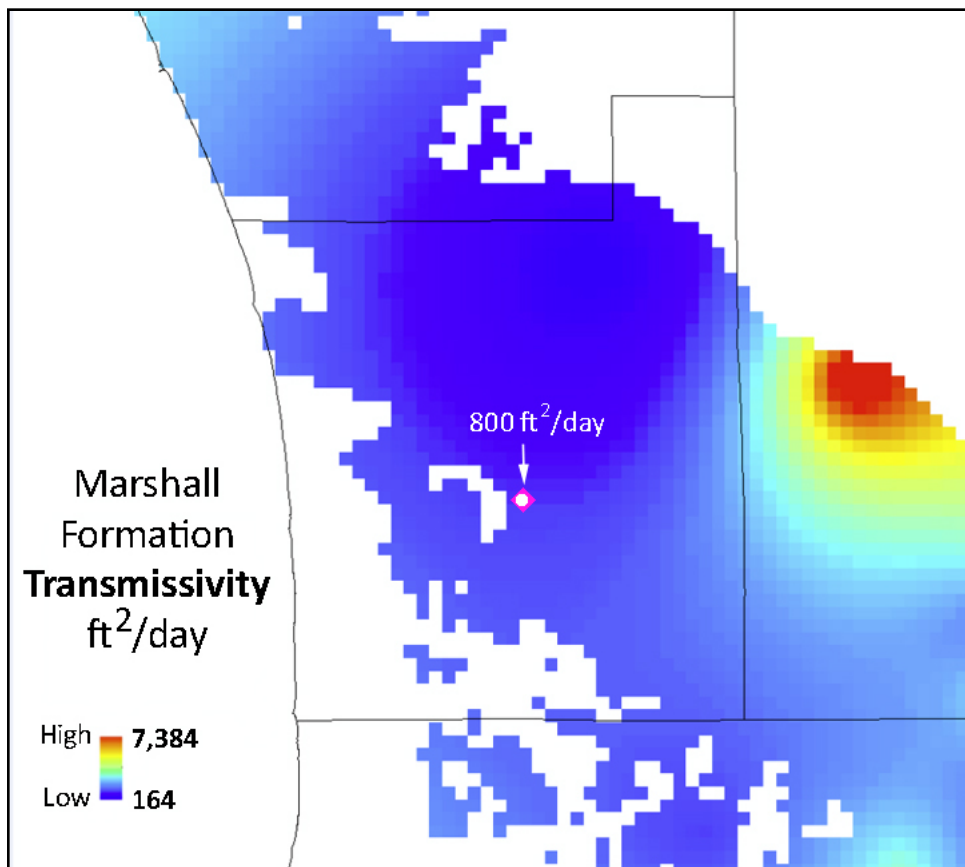
- Bedrock aquifer test planning



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□ Current Tasks and Achievements

➤ Bedrock aquifer test planning

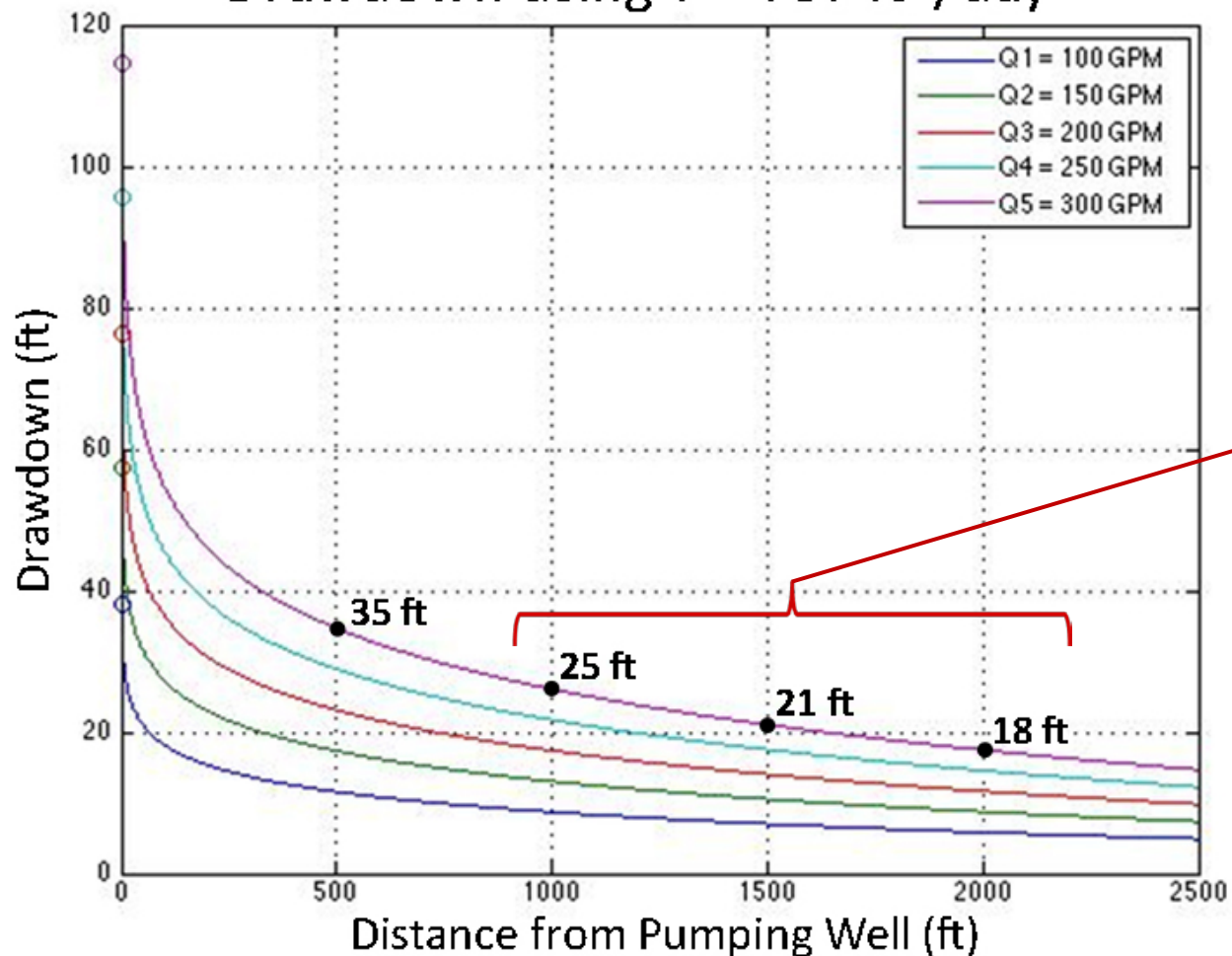


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□ Current Tasks and Achievements

➤ Bedrock aquifer test planning

Drawdown using $T = 737 \text{ ft}^2/\text{day}$

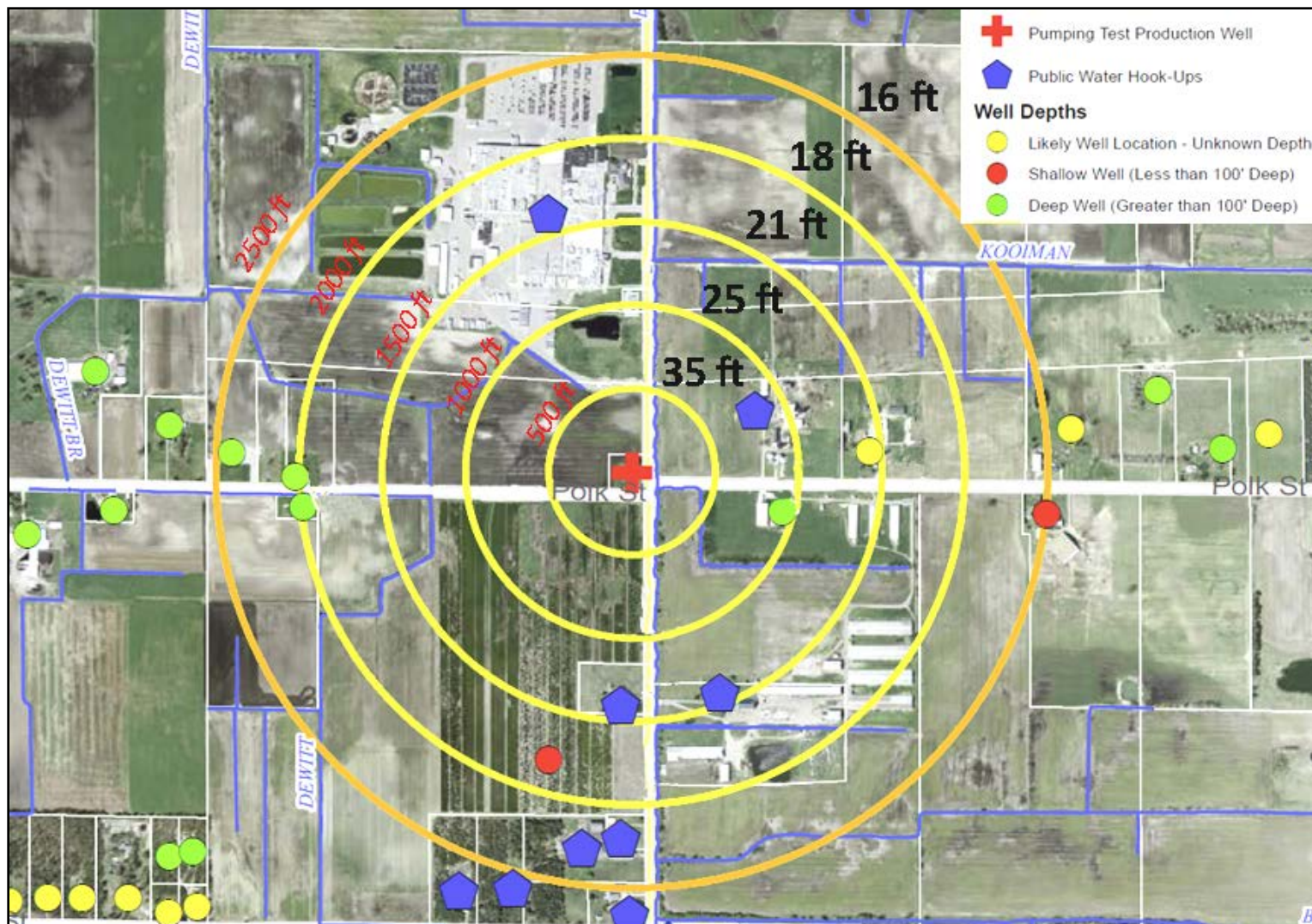


For wells ≥ 935 ft away, the average pump submergence depth = 46 ft.

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□ Current Tasks and Achievements

➤ Bedrock aquifer test planning



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□ Current Tasks and Achievements

➤ Monitoring well equipment purchased & received

▪ Two *Schlumberger Water Services CTD - Divers*

- SWL: +/- 5 cm (barometric compensation provided)
- Conductivity: 0 - 120 mS/cm +/- 1% of reading
- Temperature: 0 – 50 °C +/- 0.1 °C
- Sampling interval: user adjustable 1 sec – 99 hours



□ Current Tasks and Achievements

➤ Streamflow measurements

- Reconnaissance of optimal measurement sites completed
- Stream measurements scheduled to begin next week
- Large stream (ADCP) and small stream ADV equipment is ready for deployment
 - Teledyne - RD Instruments *Sentinel ADCP*
 - Profiling range 1 - 165 meters
 - SonTek *Argonaut-ADV* (acoustic doppler velocimeter)
 - Low velocity down to 0.003 ft/s
 - Shallow water down to 3 cm depth



□ Current Tasks and Achievements

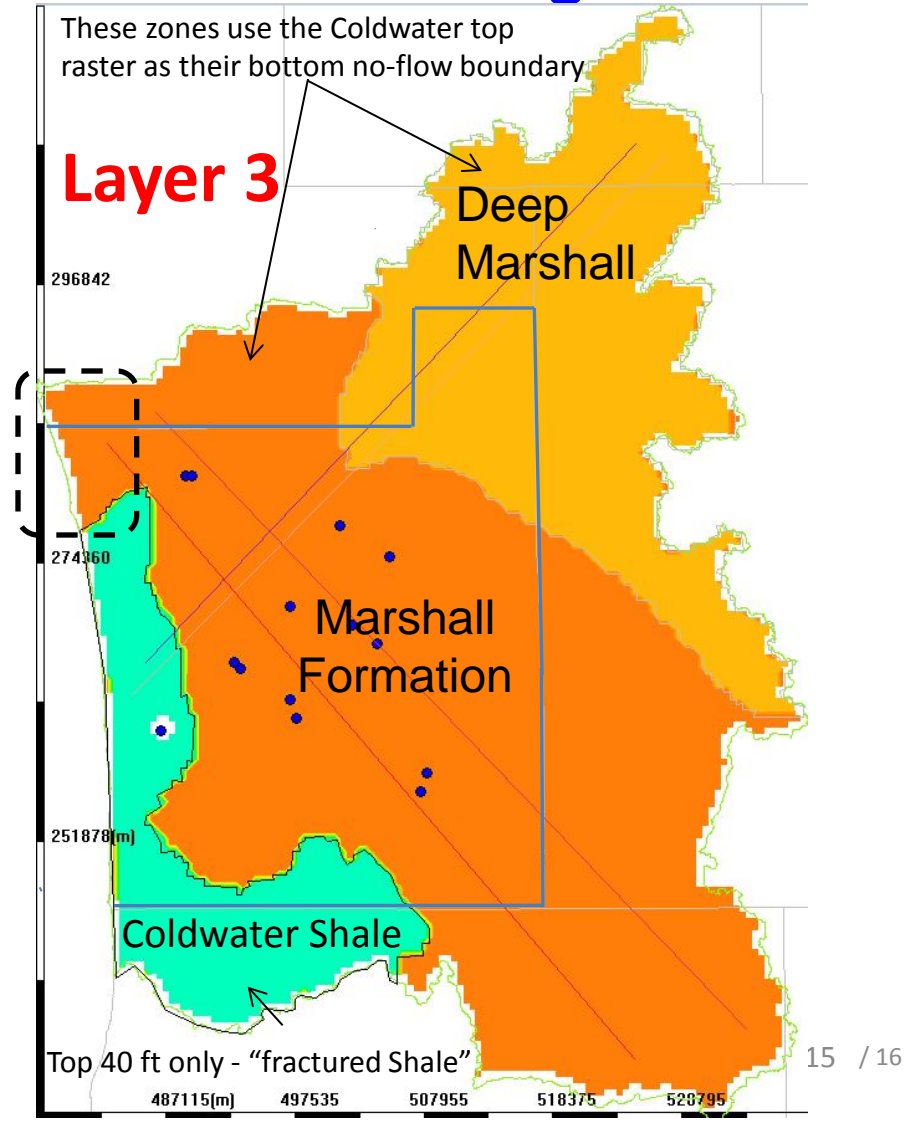
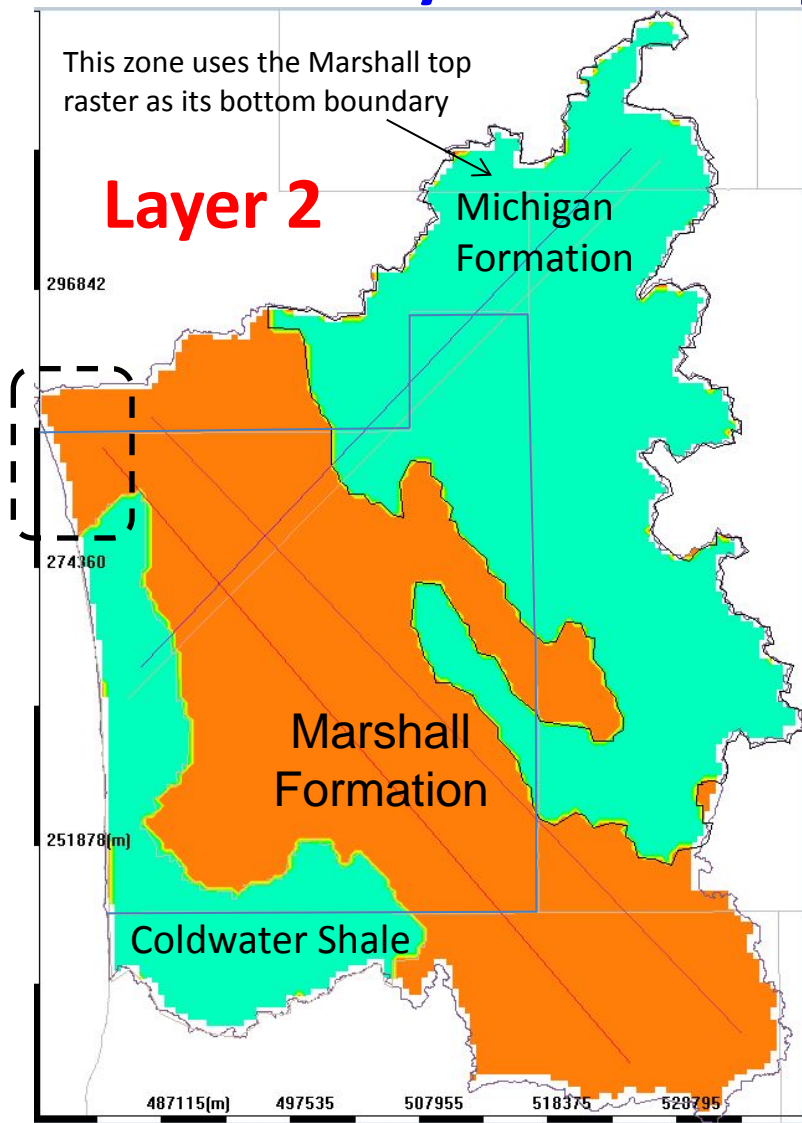
➤ Compilation of PAWS model input parameters

- Ottawa Co. LiDAR DEM - **Obtained**
- National Hydrography Dataset - **Obtained**
- CDL / NLCD 2013 Land Use /Land Cover - **Obtained**
- NRCS Digital Soils - **Obtained**
- *NexRad*, sub-daily, precipitation data – **not yet downloaded**
- Streamflows – **not yet measured**
- Groundwater Heads (USGS + Wellogic data) - **Obtained**
- Subsurface Heterogeneity – **not yet completed**

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Current Tasks and Achievements

Preliminary IGW conceptual model is being tested



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