# Recent Downward Trend in Piney Point Aquifer Water Levels

James City, New Kent, and York counties

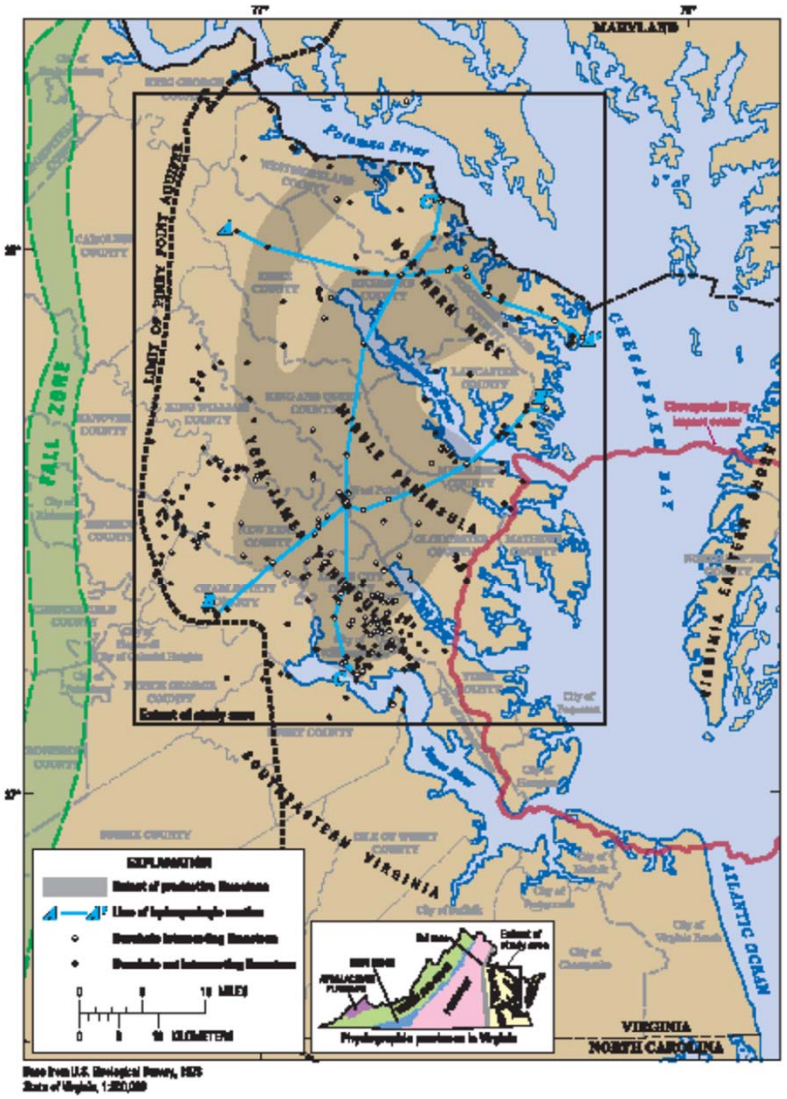
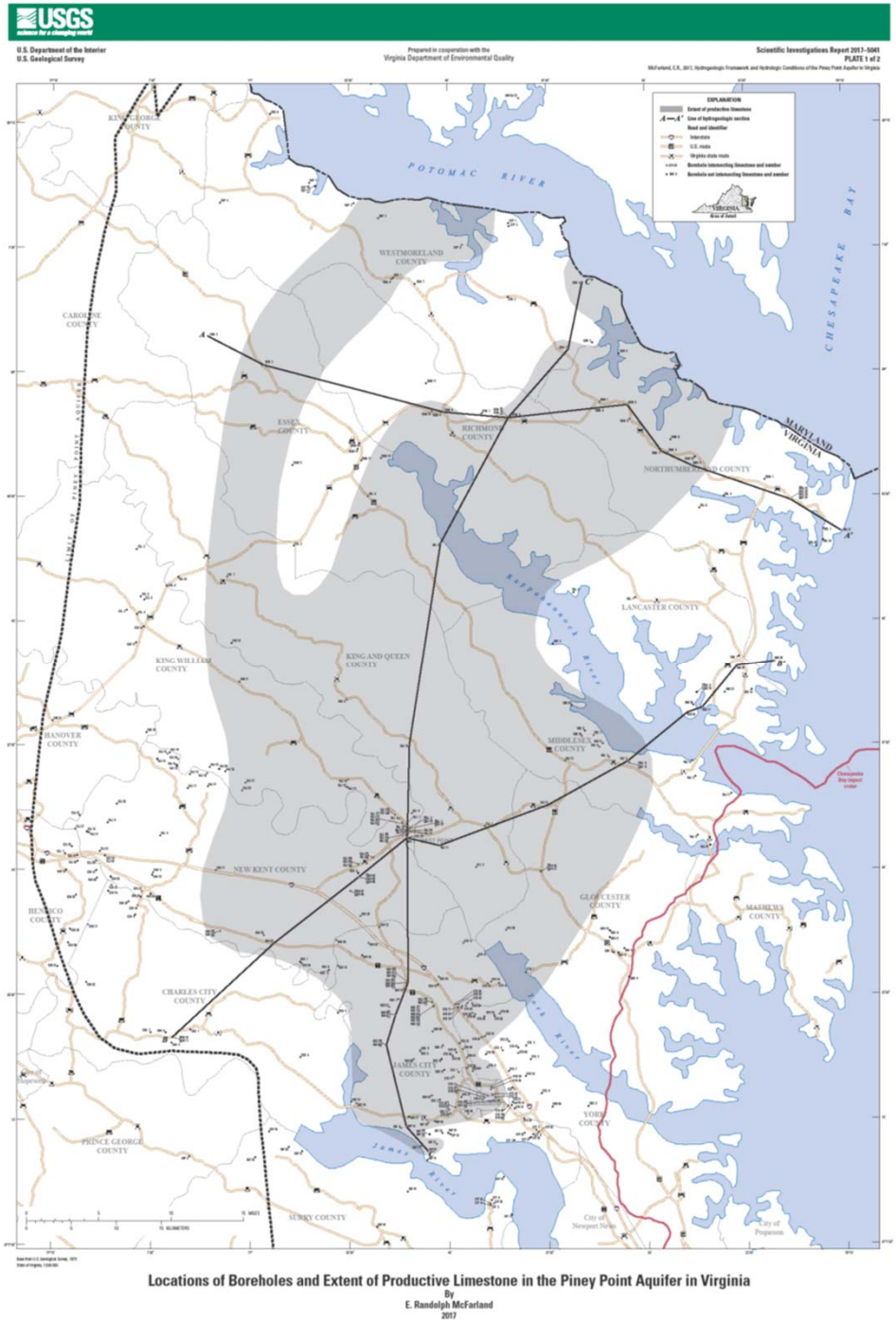
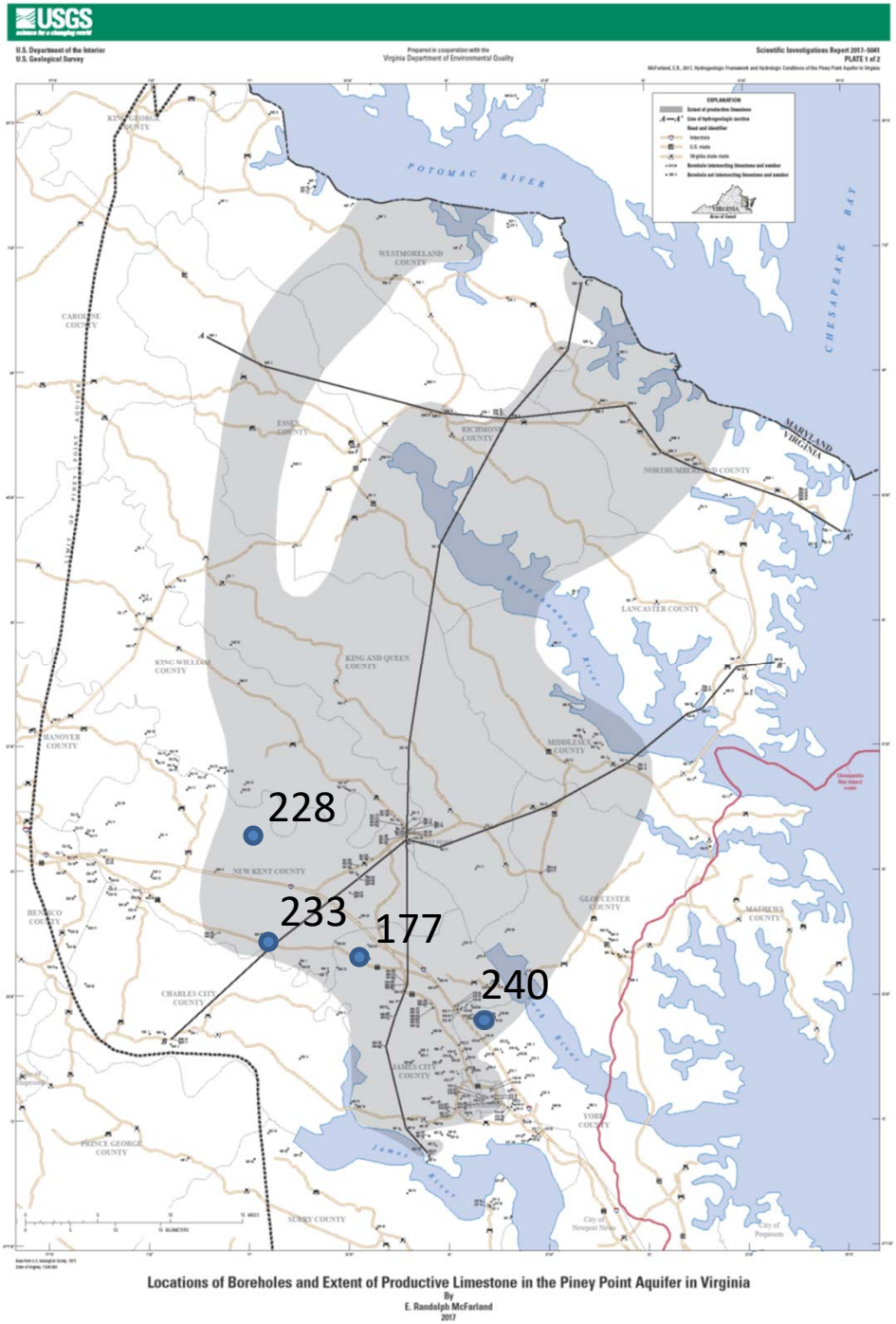



Figure 1. Locations of boreholes, lines of hydrogeologic section, and extent of the Piney Point aquifer and productive limestones in Virginia. (Hydrogeologic sections are shown on plate 2.)

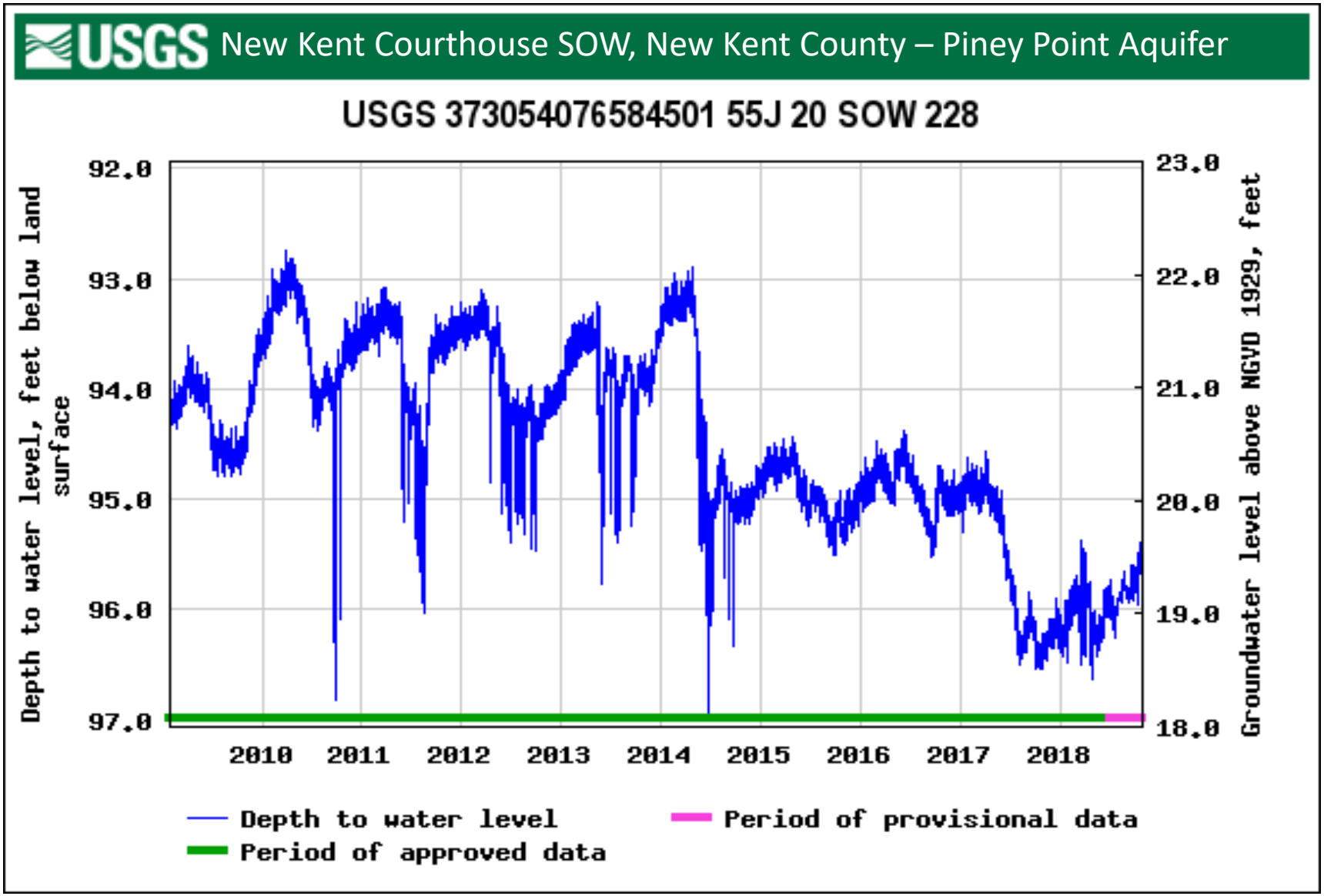
Extent of Productive Limestone in the Piney Point Aquifer in Virginia shaded in gray. (from USGS Scientific Investigations Report 20175041 by E. Randolph McFarland).



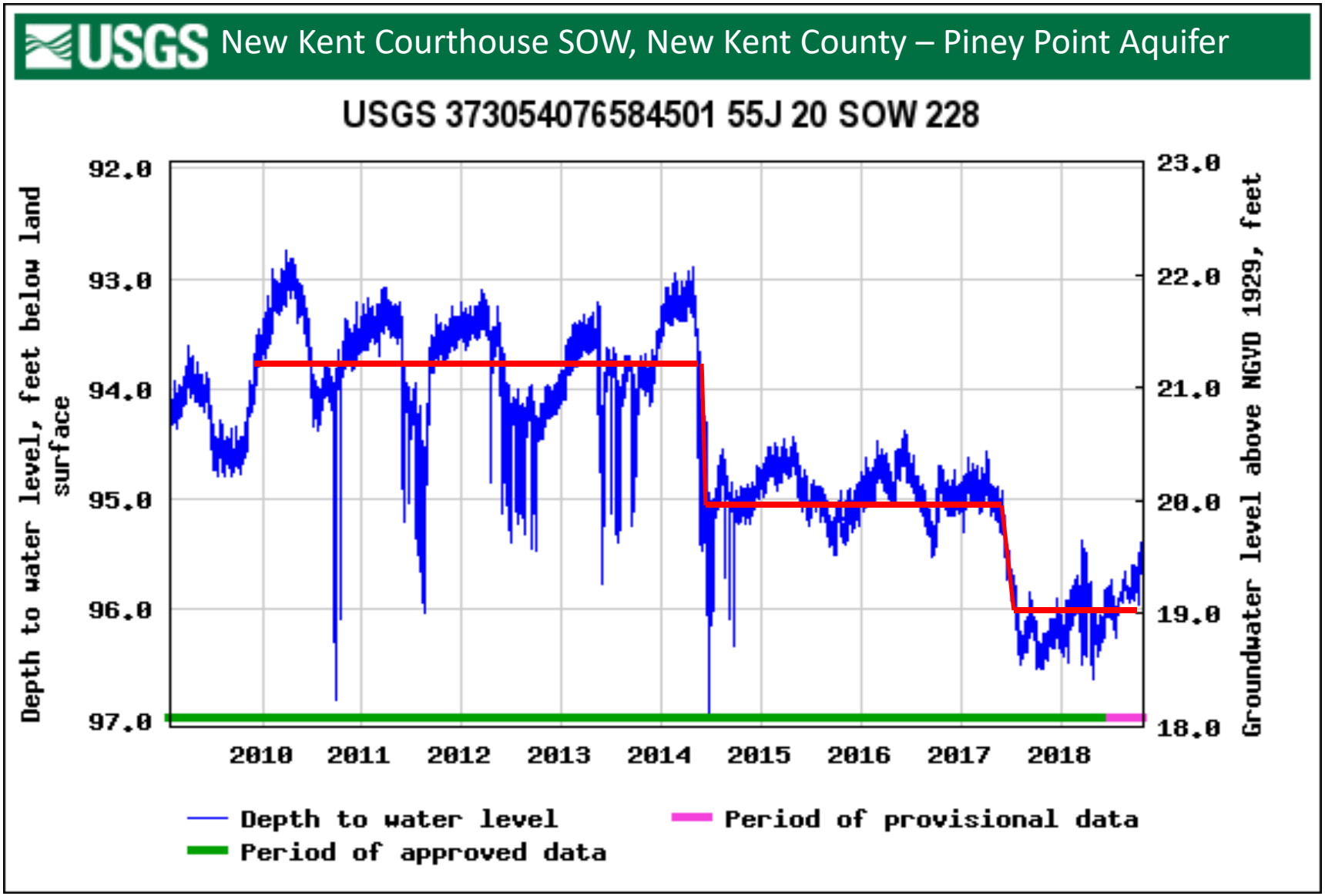

Extent of Productive Limestone in the Piney Point Aquifer in Virginia shaded in gray (from USGS Scientific Investigations Report 2017-5041 by E. Randolph McFarland).



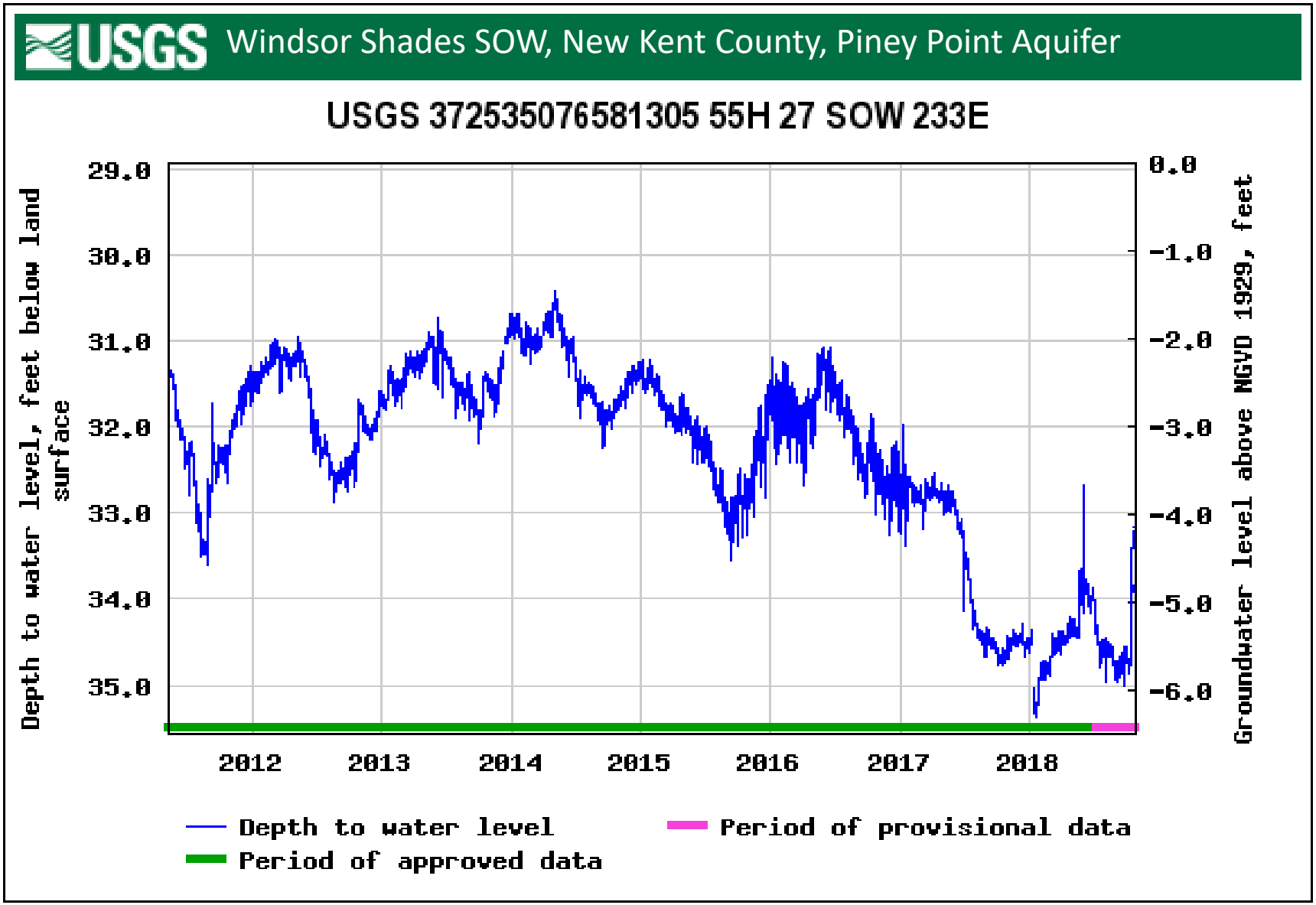

Three monitoring wells DEQ maintains in the Piney Point aquifer designated by blue circles and corresponding SOW numbers (SOW 228 and 233 in New Kent County, SOW 177 in James City County, SOW 240 in York County).



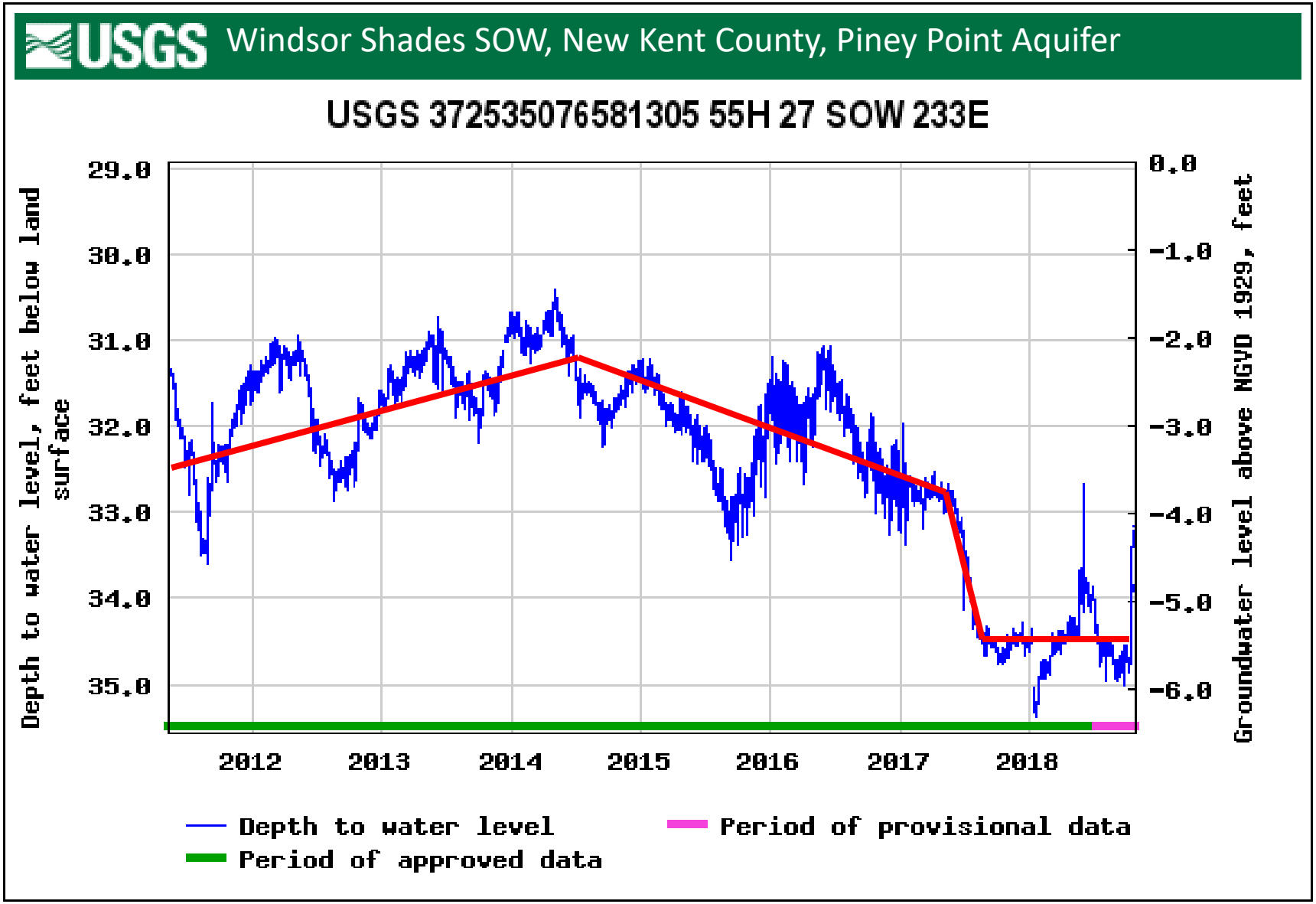

Real-Time, water level measured every 15 minutes. Aquifer top 165 feet bls, approximately 69 feet below current level.



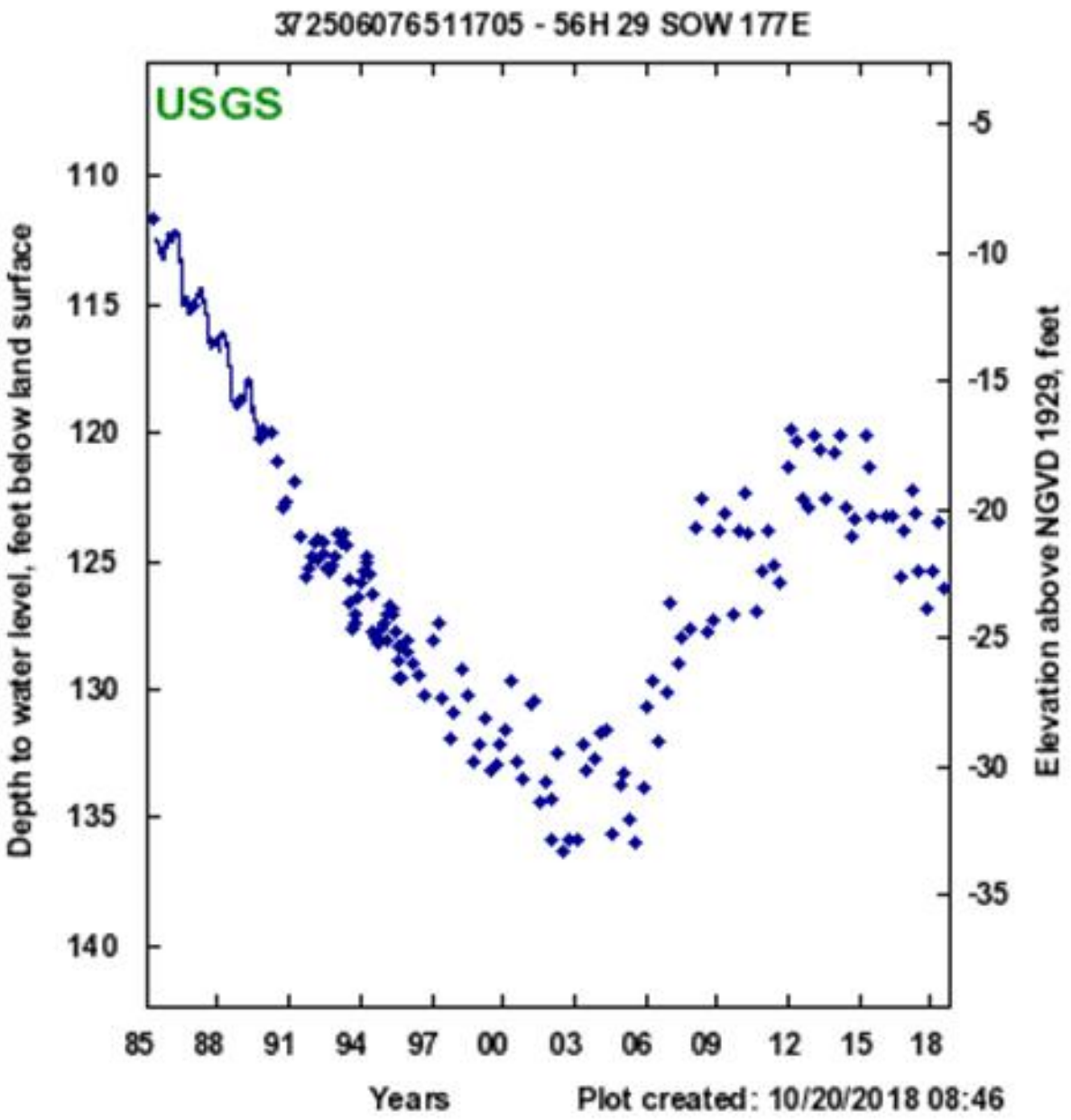

Level trend from 2009 through mid 2014 and a stepped decline since then (declines approximately 1 to 1.5 feet).




Real-Time, water level measured every 15 minutes.
Aquifer top 80 feet bls, approximately 45 feet
below current level.

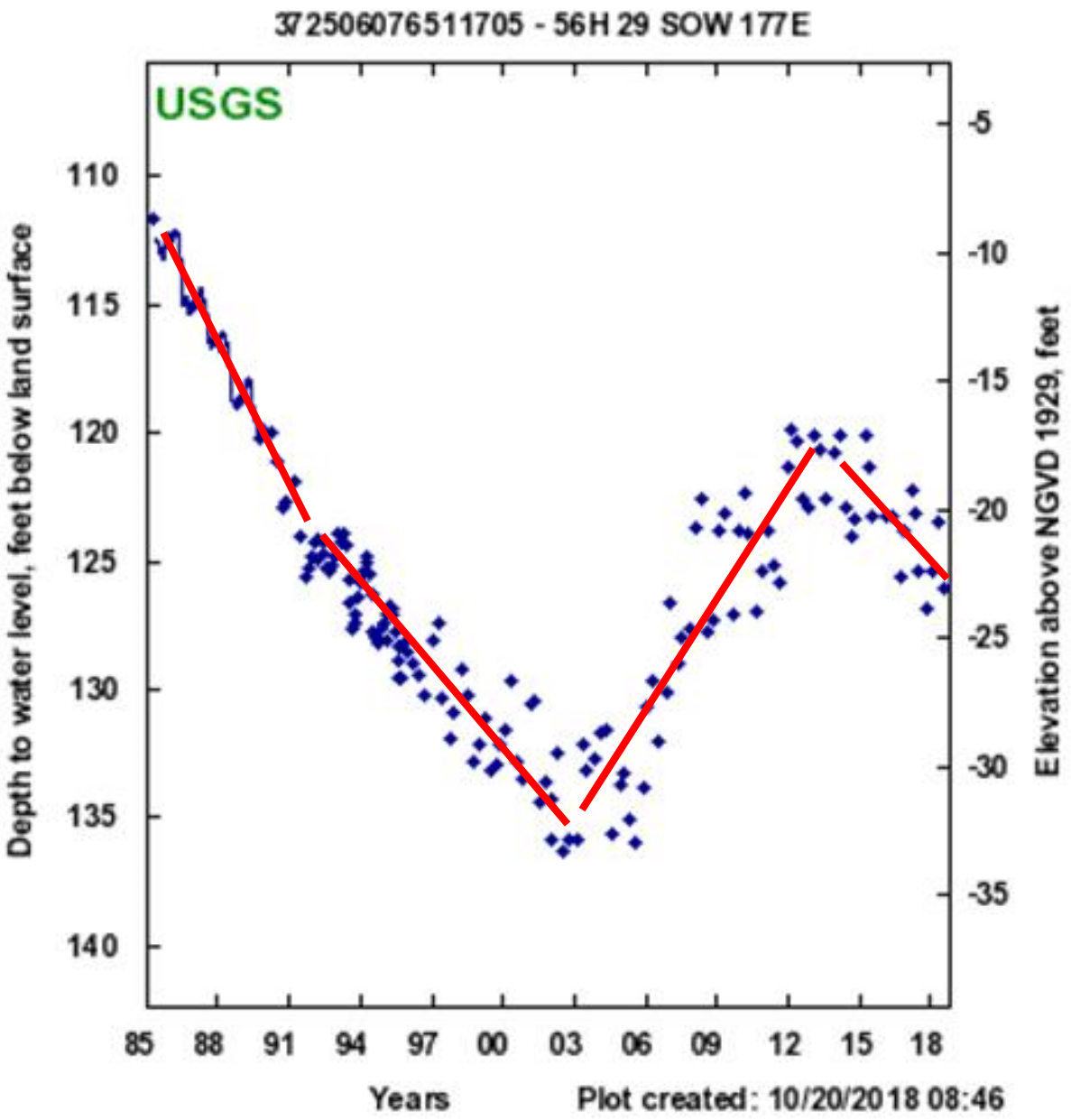



Upward trend from 2011 through mid 2014 and declining trend since then (declines of 1 to 1.5 feet).



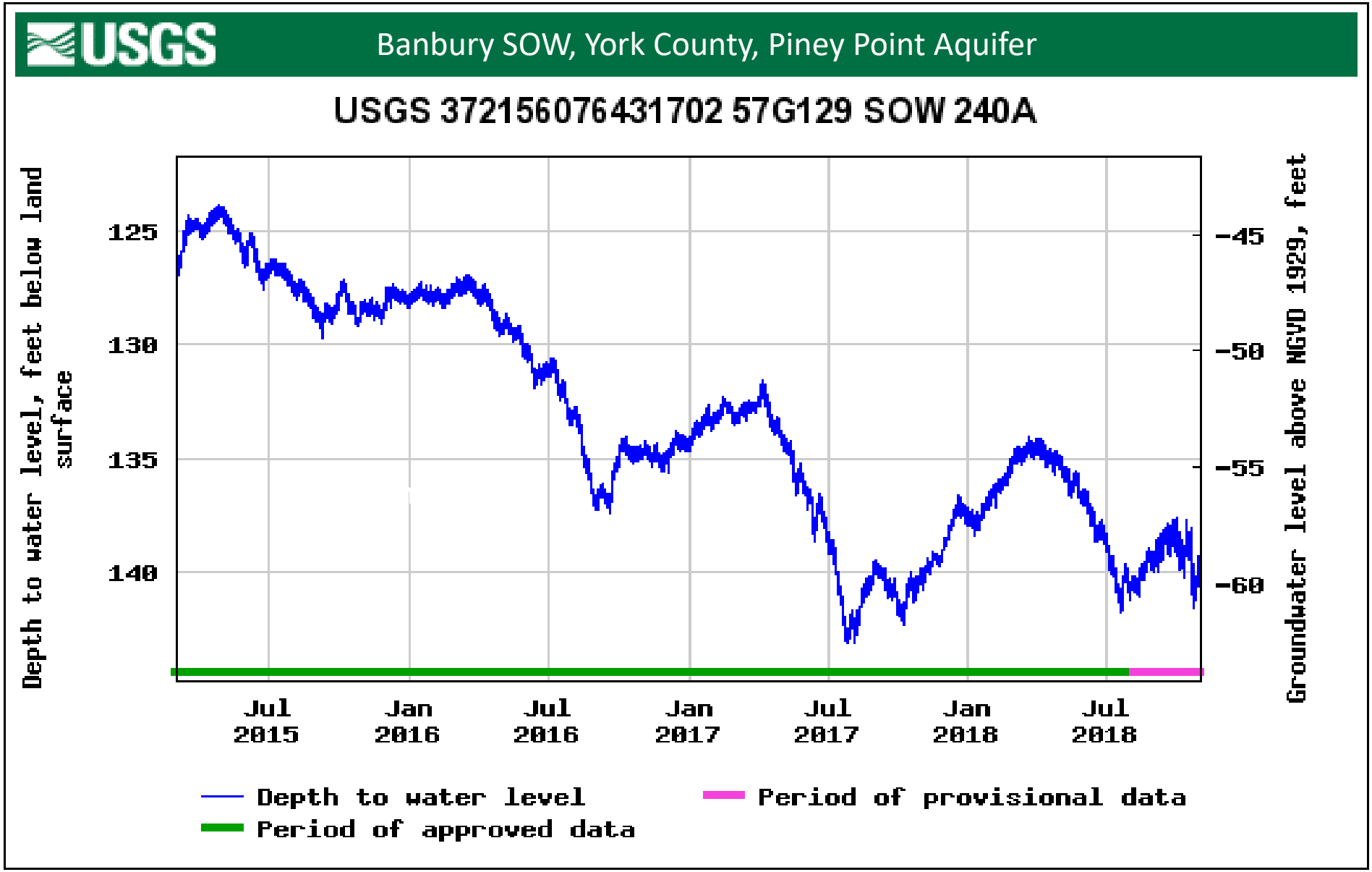

Diascund SOW, James City County – Piney Point Aquifer

Periodic, water level measured every 3 months (Aquifer top 164’ feet bls, approximately 39 feet below current level).

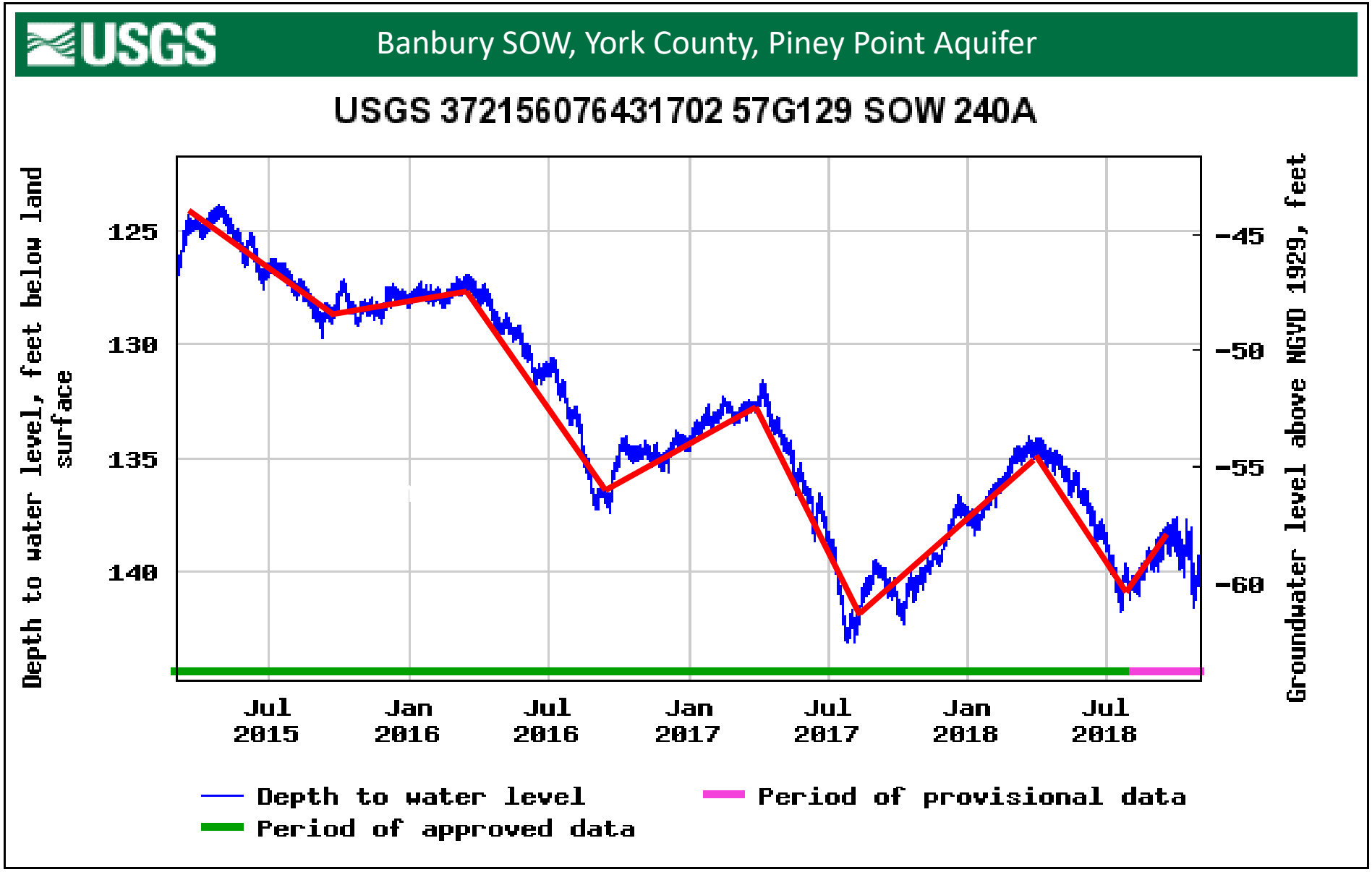



Diascund SOW, James City County – Piney Point

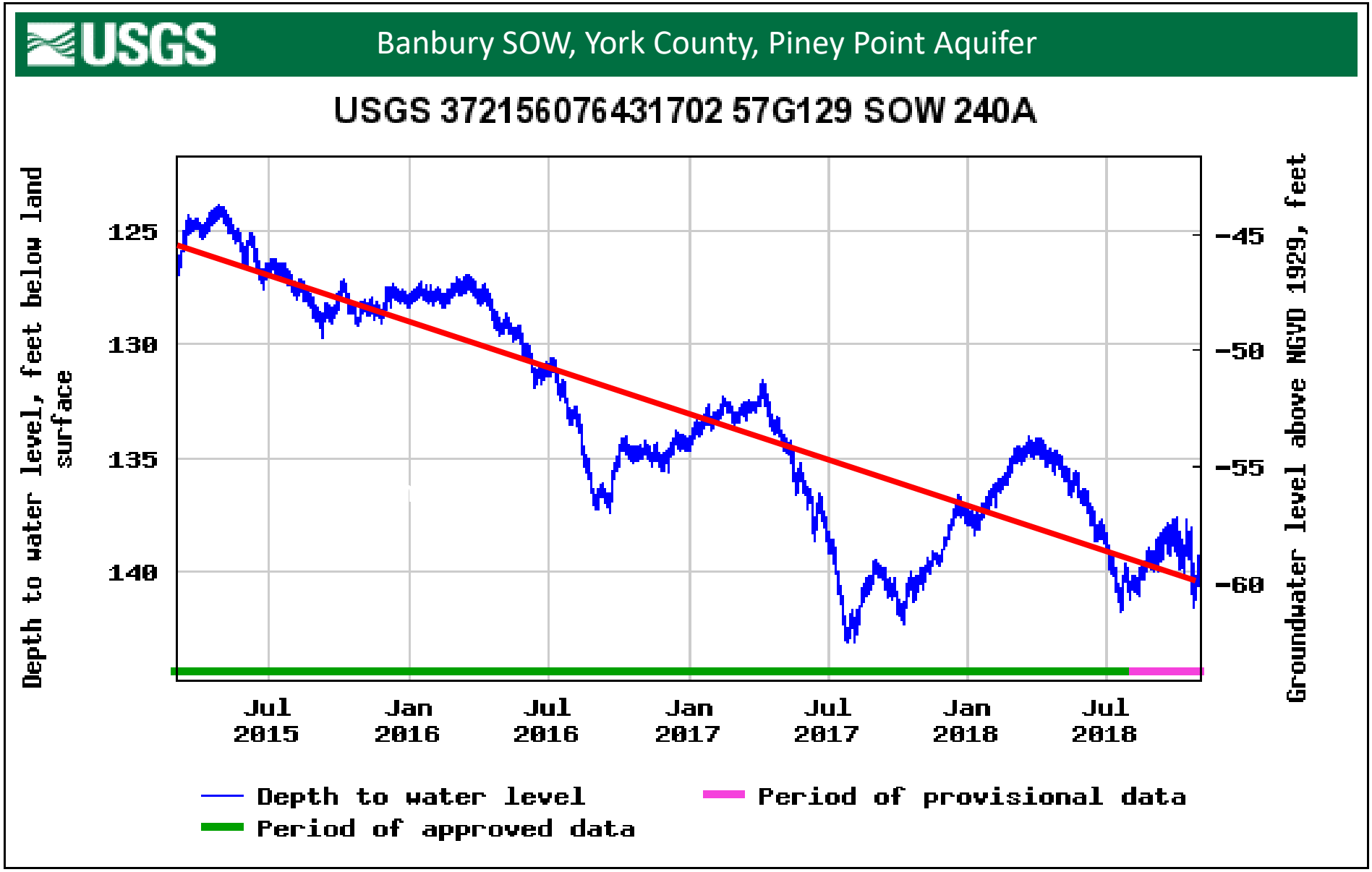
Declining trend 1985 to 2003,
Increasing trend 2003 to 2013,
Declining trend since then.




Real-Time, water level measured every 15 minutes (Aquifer top 228 feet bls, approximately 88 feet below current level).




Summer decline and Winter/Spring recovery from 2014 to present.




But an overall downward trend from 2014 to present. Approximately 10 feet over 3 years (Jul 2015 to Jul 2018).

Declining water levels in the Piney Point aquifer since 2013 – 2014 in the James City/New Kent/York county areas.

Water levels decreasing at 1 to 3 feet (episodically to annually).

Potential Contributors to these declines:

Recovery of housing construction = more residential wells?

Decrease in Winter/Spring water level recovery?

Drier/Drought periods causing episodic declines?

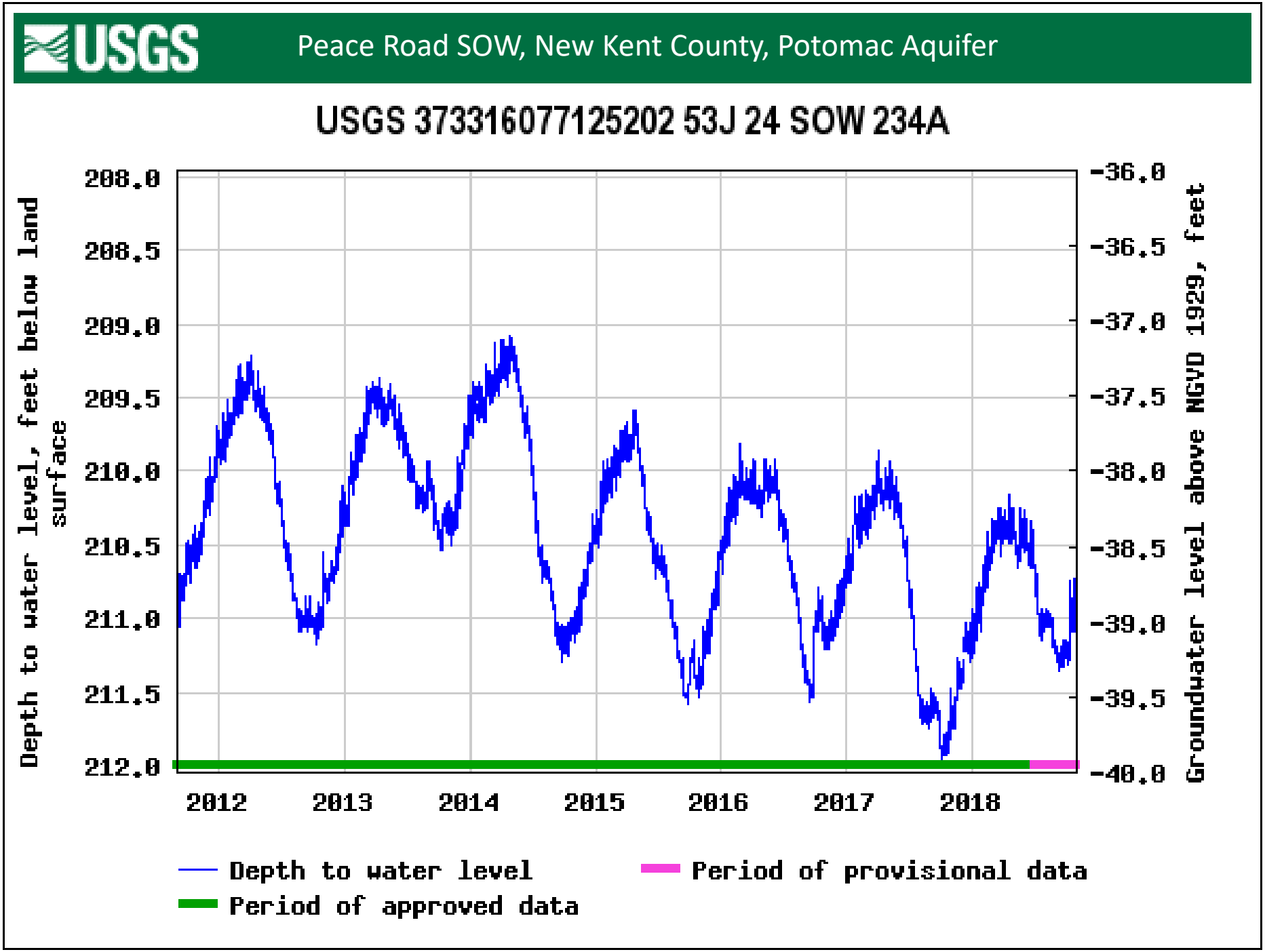
Increase in center pivot irrigation systems?

Unpermitted/unknown large withdrawal or withdrawals?

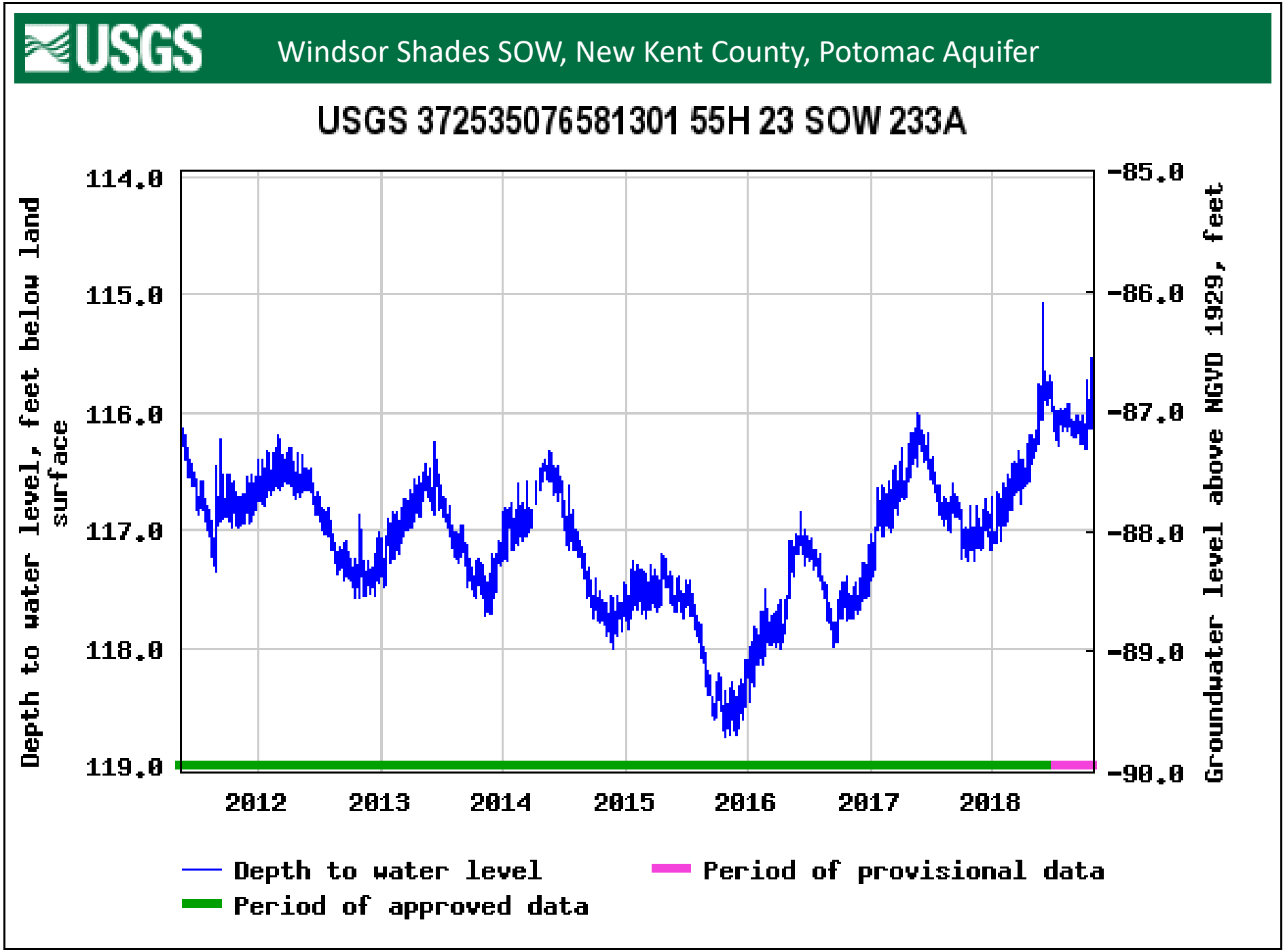
# Potomac Aquifer Slides

# Trends in Potomac Aquifer Water Levels

New Kent and James City Counties


USGS
Peace Road SOW, New Kent County, Potomac Aquifer
USGS 373316077125202 53J 24 SOW 234A
Depth to water level, feet below land surface
208.0
208.5
209.0
209.5
210.0
210.5
211.0
211.5
212.0
-36.0
-36.5
-37.0
-37.5
-38.0
-38.5
-39.0
-39.5
-40.0
Groundwater level above NGVD 1929, feet
2012
2013
2014
2015
2016
2017
2018
Depth to water level
Period of provisional data
Period of approved data

USGS Windsor Shades SOW, New Kent County, Potomac Aquifer



USGS Diascund SOW, James City County – Potomac Aquifer