



January 29, 2019

The Dow Chemical Company
Michigan Operations
Midland, MI 48674

CERTIFIED MAIL

7014 0150 0000 7880 4087

Jack Schinderle, Director
Waste Management and Radiological Protection Division
Michigan Department of Environmental Quality (MDEQ)
P.O. Box 30241
Lansing, MI 48909

RECEIVED

FEB 01 2019

HAZARDOUS WASTE SECTION

cc: Dan Dailey, MDEQ, P.O. Box 30241, Lansing, MI 48909;
Trisha Confer, MDEQ, Saginaw Bay District Office, 401 Ketchum Street, Suite B, Bay
City, MI 48708

SUBJECT: THE DOW CHEMICAL COMPANY, MIDLAND PLANT - MID 000 724 724
MINOR MODIFICATION REQUEST FOR THE REMOVAL OF PURGE
WELLS 5, 6, AND 7 FROM THE 7TH STREET WELL AREA CHEMICAL
MONITORING PROGRAM

In accordance with R 299.9519(5) of the administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of NREPA, 1994 PA 451, as amended, The Dow Chemical Company (Dow) is requesting approval of a minor modification to the Operating License to remove three purge wells located in the 7th Street Purge Well Area (PW-5, PW-6, and PW-7) from the 7th Street Well Area Chemical Monitoring Program.

In accordance with the 2013 Interim Response Activity Work Plan for the 7th Street Purge Well Area, Dow completed interim measures to improve the performance of hydraulic controls, including the installation of a 365 foot long section of 8-inch diameter stainless steel screened horizontal well intended to replace PW-5, PW-6, and PW-7. Plans to abandon these purge wells once a pilot shutdown study was completed were subsequently discussed with DEQ periodically during routine monthly corrective action status update meetings and detailed in the approved 2017 *Corrective Action Implementation Summary Report and 2018 Work Plan*.

The pilot shutdown of the PW-5, PW-6, and PW-7 began on June 18, 2018 and initial results were discussed with MDEQ at the June 2018 Corrective Action Status Meeting. Subsequently, the enclosed summary of the evaluation was provided to MDEQ on August 31, 2018 via email. MDEQ reviewed the assessment and concurred that the horizontal well installed in 2014 in the 7th Street Purge Well Area can hydraulically control the flow of groundwater away from the Tittabawassee River without the purge wells and they should be abandoned.

As these wells are currently part of the 7th Street Well Area Chemical Monitoring Program found in Table 2-F of the Midland Plant Sampling and Analysis Plan, Dow is requesting approval to remove these wells from the required annual sampling program prior to abandonment. As detailed in the 2018 *Corrective Action Implementation Summary Report and 2019 Work Plan*, Dow would like to complete this work within the first quarter of 2019. Once this modification request is

Mr. Jack Schinderle, Director

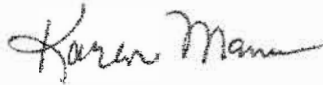
THE DOW CHEMICAL COMPANY, MIDLAND PLANT - MID 000 724 724; MINOR
MODIFICATION REQUEST FOR THE REMOVAL OF PURGE WELLS 5, 6, AND 7 FROM THE
7TH STREET WELL AREA CHEMICAL MONITORING PROGRAM

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approved Dow will proceed with the abandonment consistent with the procedures outlined in
Appendix K of Attachment 15 of the Operating License.

If you have any questions regarding this information, please contact Steve Lucas at 989-638-
6012.



Karen Mann
EH&S Responsible Care Leader
Environment, Health and Safety
1790 Building, Washington Street
Midland, MI 48674
(989)-636-2646

Enclosures

jem

7th Street Purge Well Pilot Shutdown



7th Street Purge Well Area

- ***The 2017 Corrective Action Implementation Summary and 2018 Work Plan*** stated:

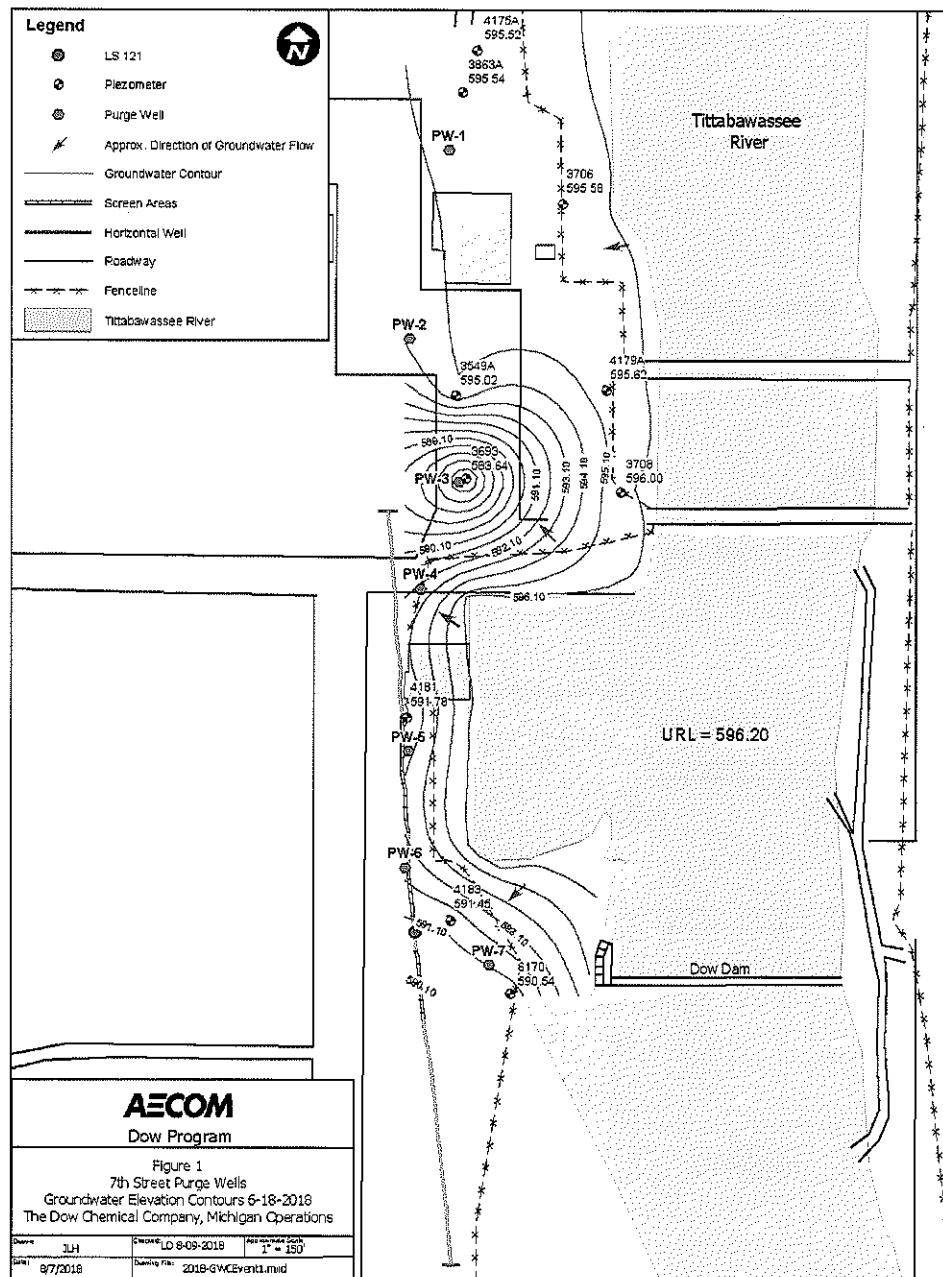
“Dow will cease pumping wells PW-5, PW-6, and PW-7 [in 2018]. During the initial shutdown of the wells, water levels will be [measured] from the piezometers listed in Table 2-F of the SAP on a daily basis for a period of one week. Provided performance criteria are still met, routine monthly monitoring will resume, and PW-5, PW-6, and PW-7 will be properly abandoned by the end of 2018.”

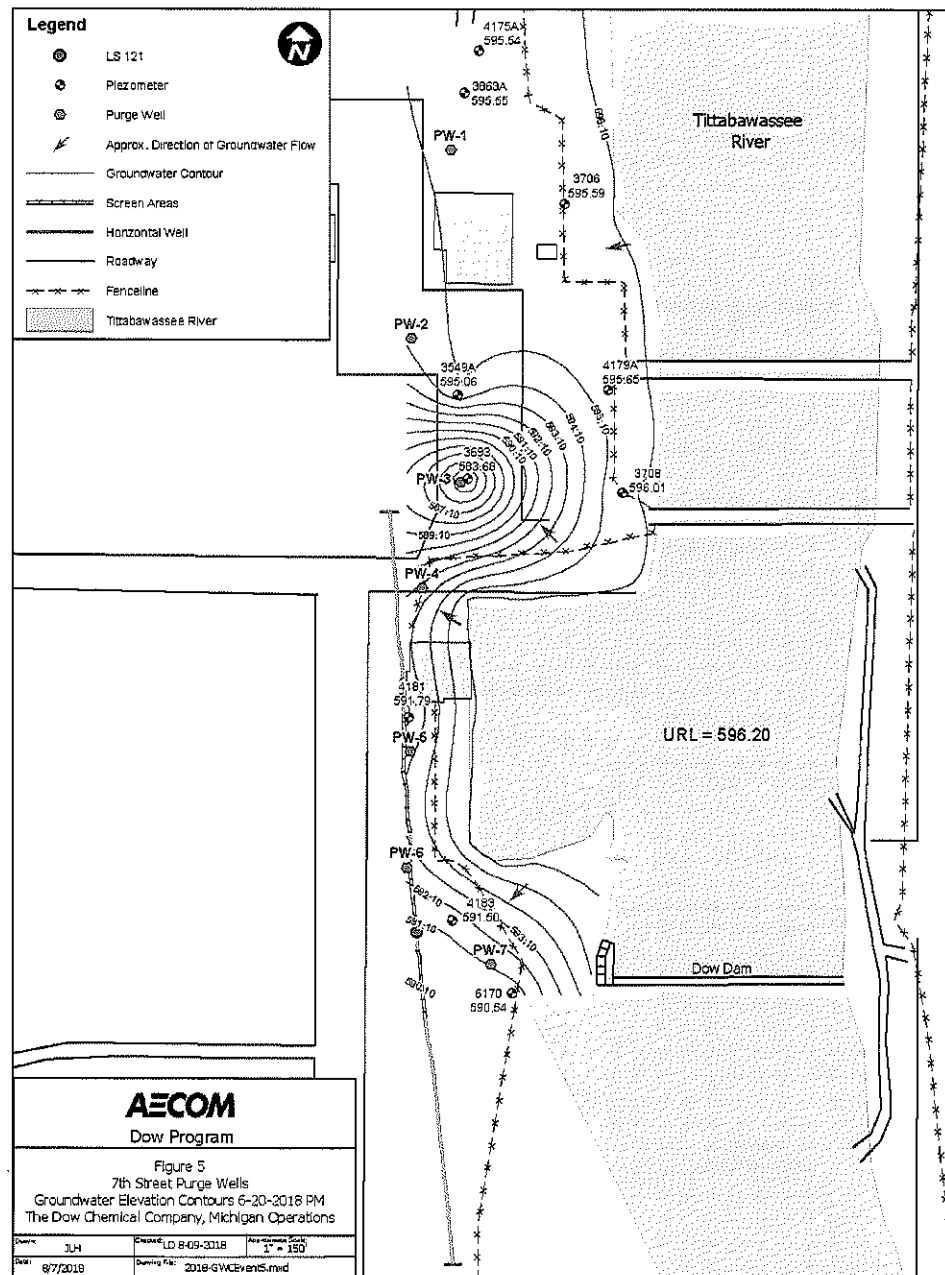
7th Street Purge Well Pilot Shutdown

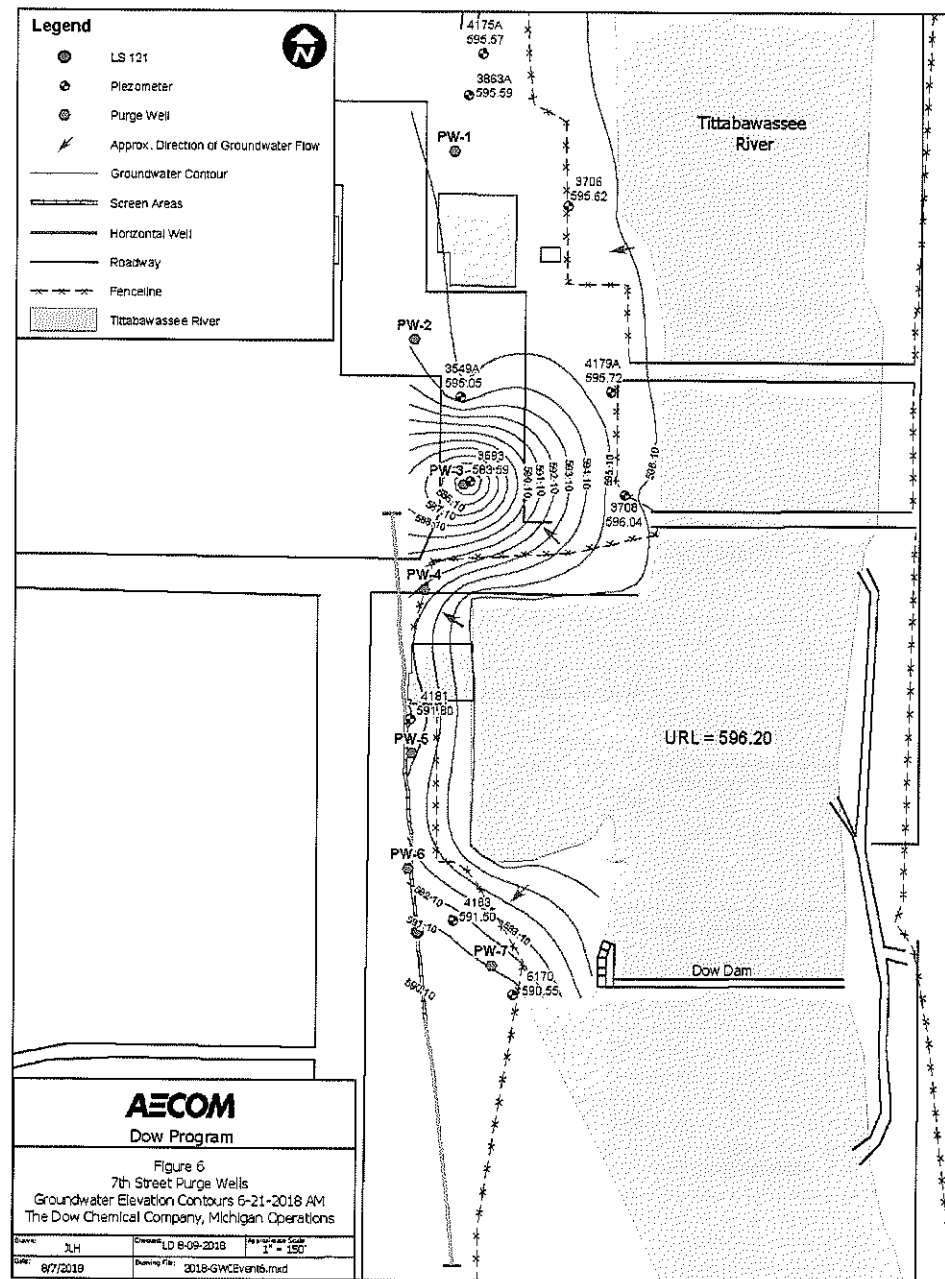
- Pumps at purge wells PW-5, PW-6, and PW-7 were shutdown on June 18, 2018.
- Water levels gauged for 7 days after shutdown (but not over the weekend (June 23 & 24))
 - Piezometers gauged are listed in SAP Table 2-F, gauging occurred twice a day on June 19-21 and once a day on June 18, 22 & 25.
 - Transducers in operation in piezometers 6170, 4183, and 4181 captured data over the weekend (June 23 & 24).
- Gauging results, groundwater elevations, river level elevations, contour maps, and hydrographs of transducer data compared to river level are presented in the following slides.

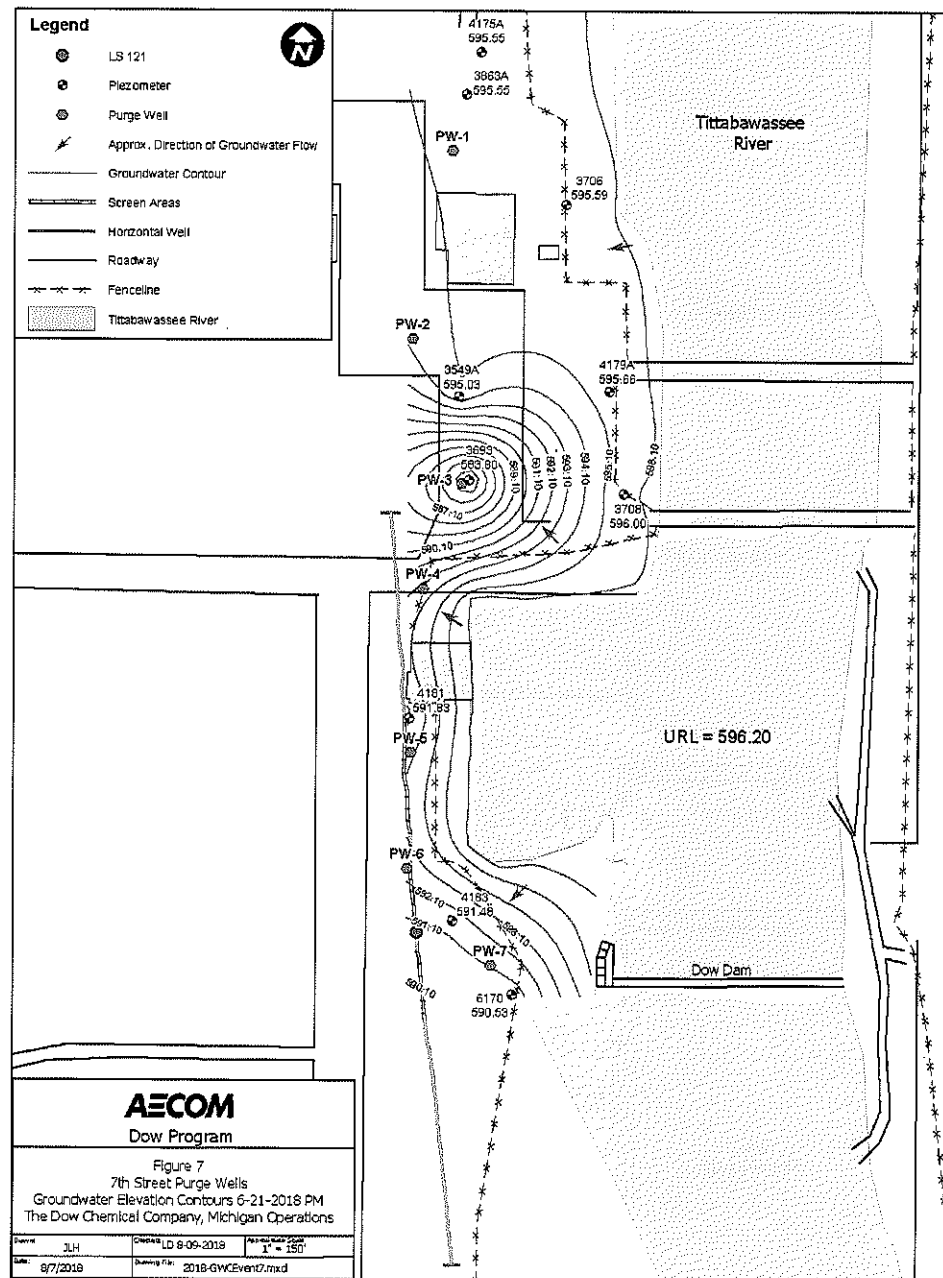
Table 1. Groundwater and River Water Levels Observed During 7th Street Purge Well Pilot Shutdown (June 2018)

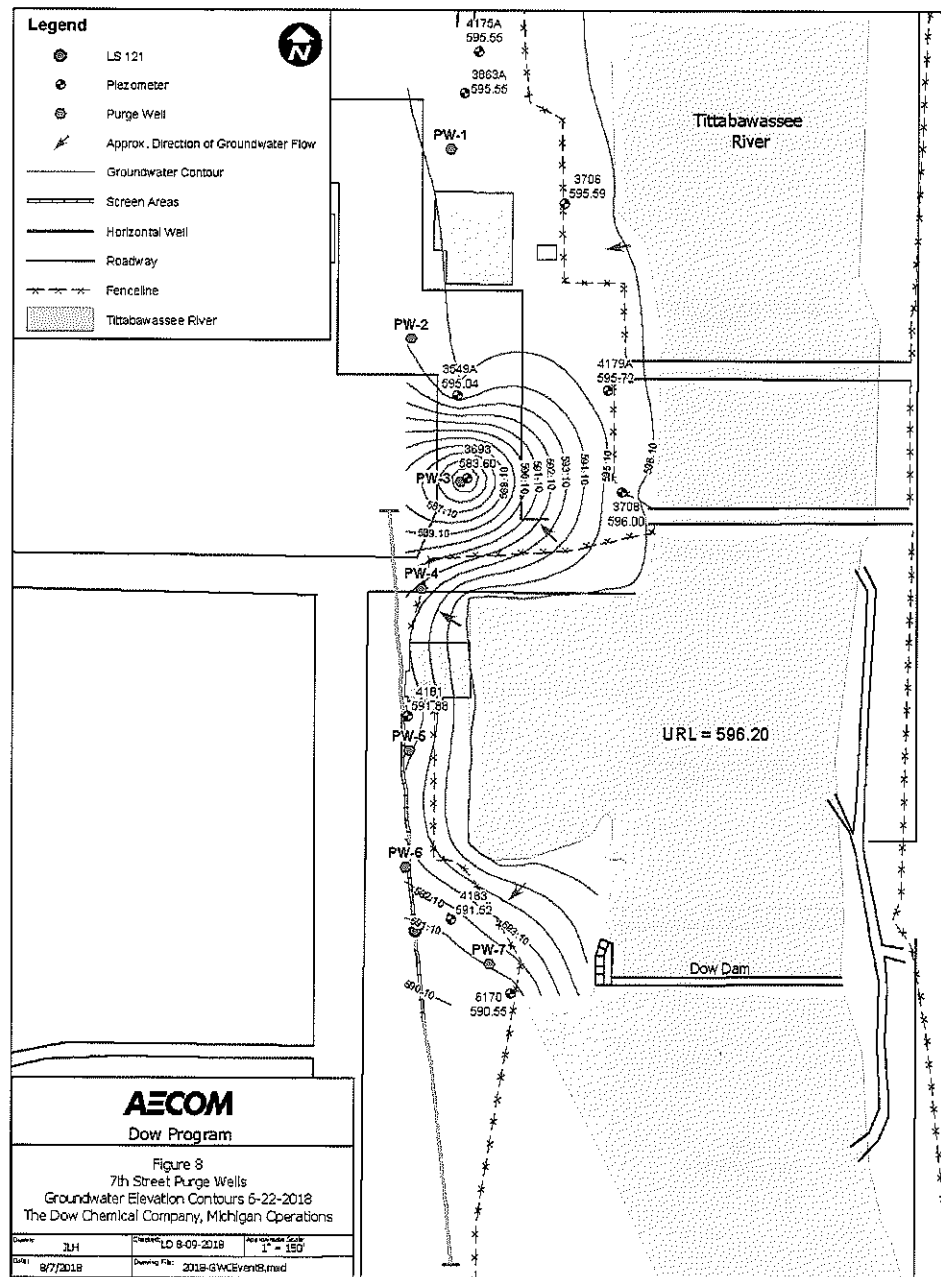
Gauge Date	Gauge Event	Groundwater Elevations/River Levels (ft)											
		4175A	3863A	3706	4179A	3708	3549A	3693	4181	4183	Upper River Level	6170	Lower River Level
6/18/2018	1	595.52	595.54	595.58	595.62	596.00	595.02	583.64	591.78	591.45	596.2	590.54	591.6
6/19/2018 AM	2	595.53	595.54	595.57	595.67	596.00	594.98	583.45	591.75	591.47	596.2	590.55	591.6
6/19/2018 PM	3	595.50	595.52	595.56	595.63	595.98	594.99	583.47	591.83	591.48	596.2	590.54	591.6
6/20/2018 AM	4	595.55	595.57	595.60	595.68	595.98	595.06	583.62	591.83	591.50	596.2	590.55	591.7
6/20/2018 PM	5	595.54	595.55	595.59	595.65	596.01	595.06	583.68	591.79	591.50	596.2	590.54	591.6
6/21/2018 AM	6	595.57	595.59	595.62	595.72	596.04	595.05	583.59	591.80	591.50	596.2	590.55	591.8
6/21/2018 PM	7	595.55	595.55	595.59	595.66	596.00	595.03	583.80	591.83	591.48	596.2	590.53	591.7
6/22/2018	8	595.55	595.55	595.59	595.72	596.00	595.04	583.60	591.88	591.52	596.2	590.55	591.7
6/25/2018	9	595.49	595.51	595.53	595.58	595.97	594.89	583.26	591.73	591.44	596.1	590.50	591.5











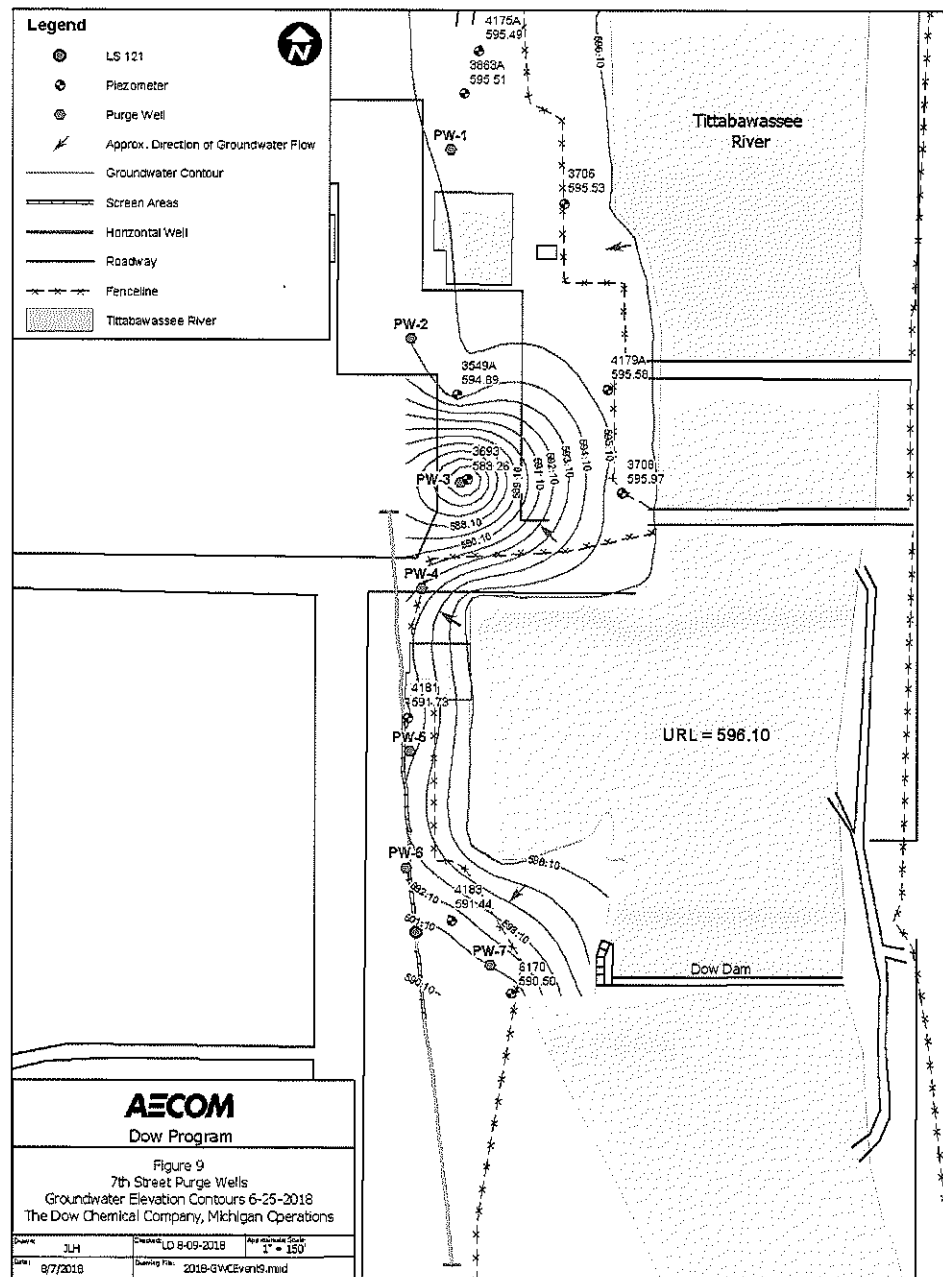


Figure 10

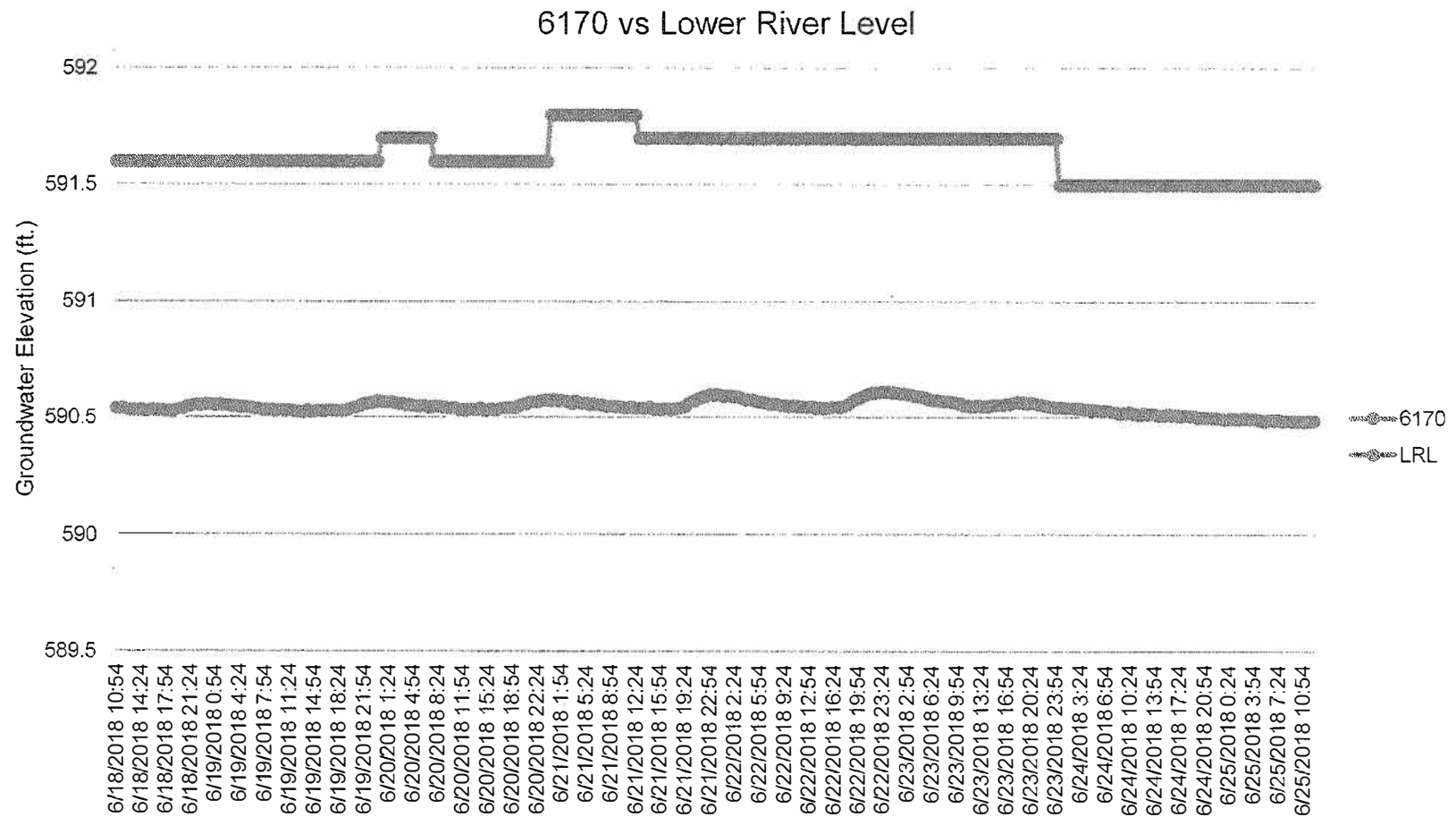


Figure 11

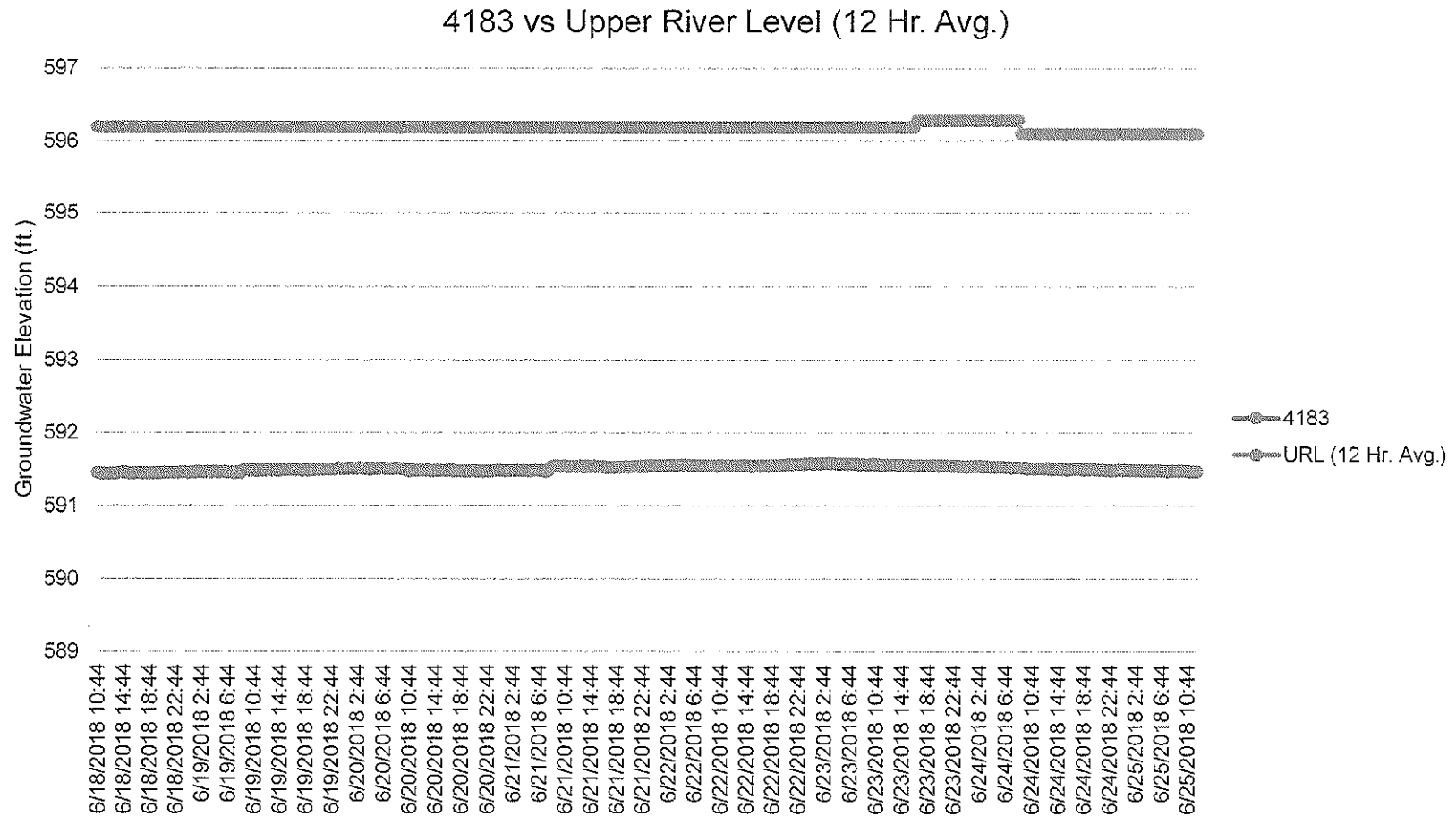
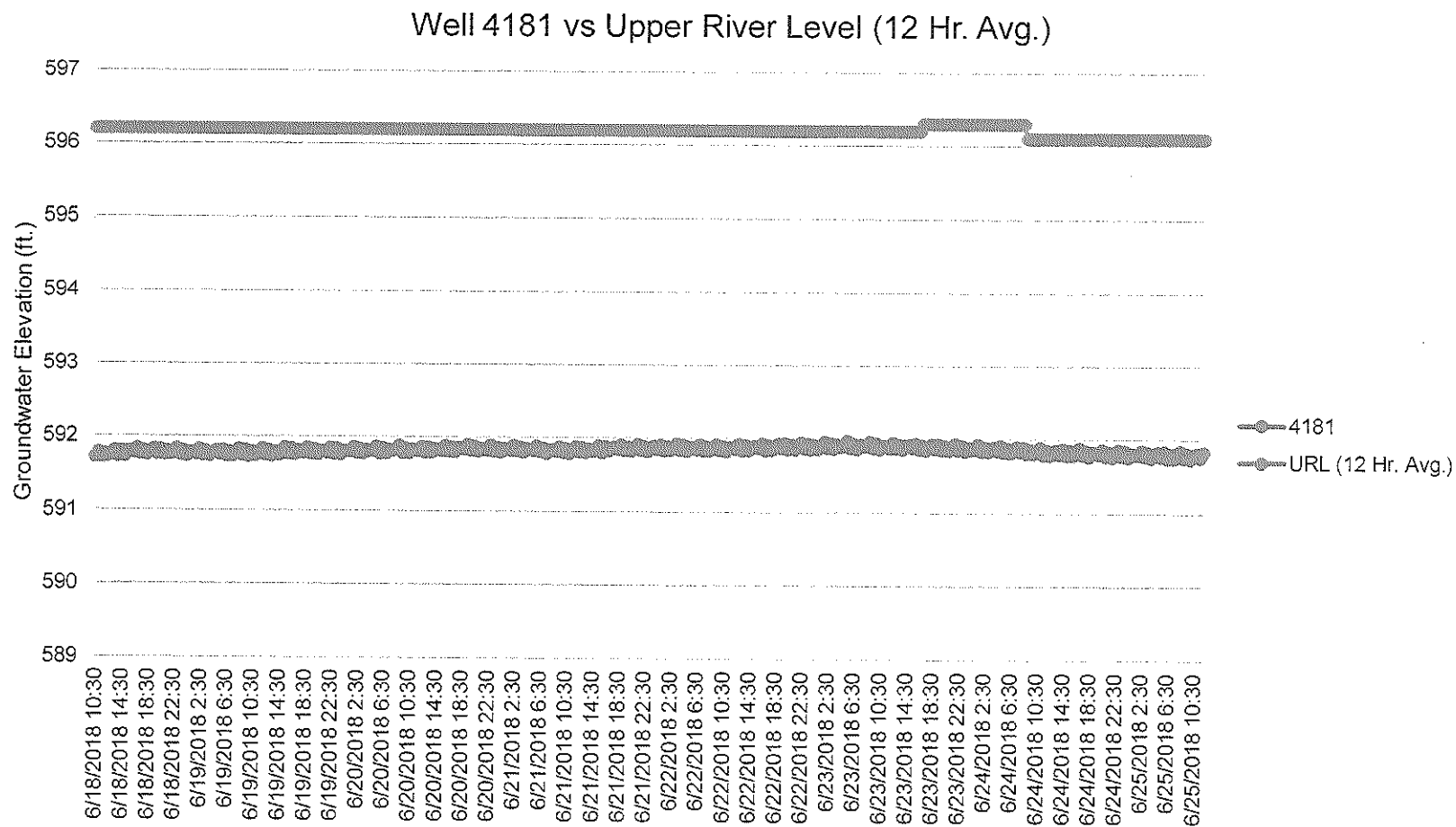


Figure 12



Findings from Pilot Shutdown and Path Forward

- Groundwater levels observed during the pilot shutdown indicate the gradient toward the horizontal well was maintained when the pumps in PW-5, PW-6 and PW-7 were shut off.
- The performance criteria outlined in the SAP was met (hydraulic control of groundwater in the area was maintained) when purge wells PW-5, PW-6, and PW-7 were not in operation.
- The purge wells remain shut down.
- Routine monthly monitoring resumed.
- PW-5, PW-6, and PW-7 will be plugged and abandoned no later than November 30, 2018.