



Unexpected Construction Dewatering Event Causes Changes in Groundwater Plume Flow Direction and Failure of the Groundwater Extraction System

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A presentation to:
Battelle Chlorinated Conference

June 2024

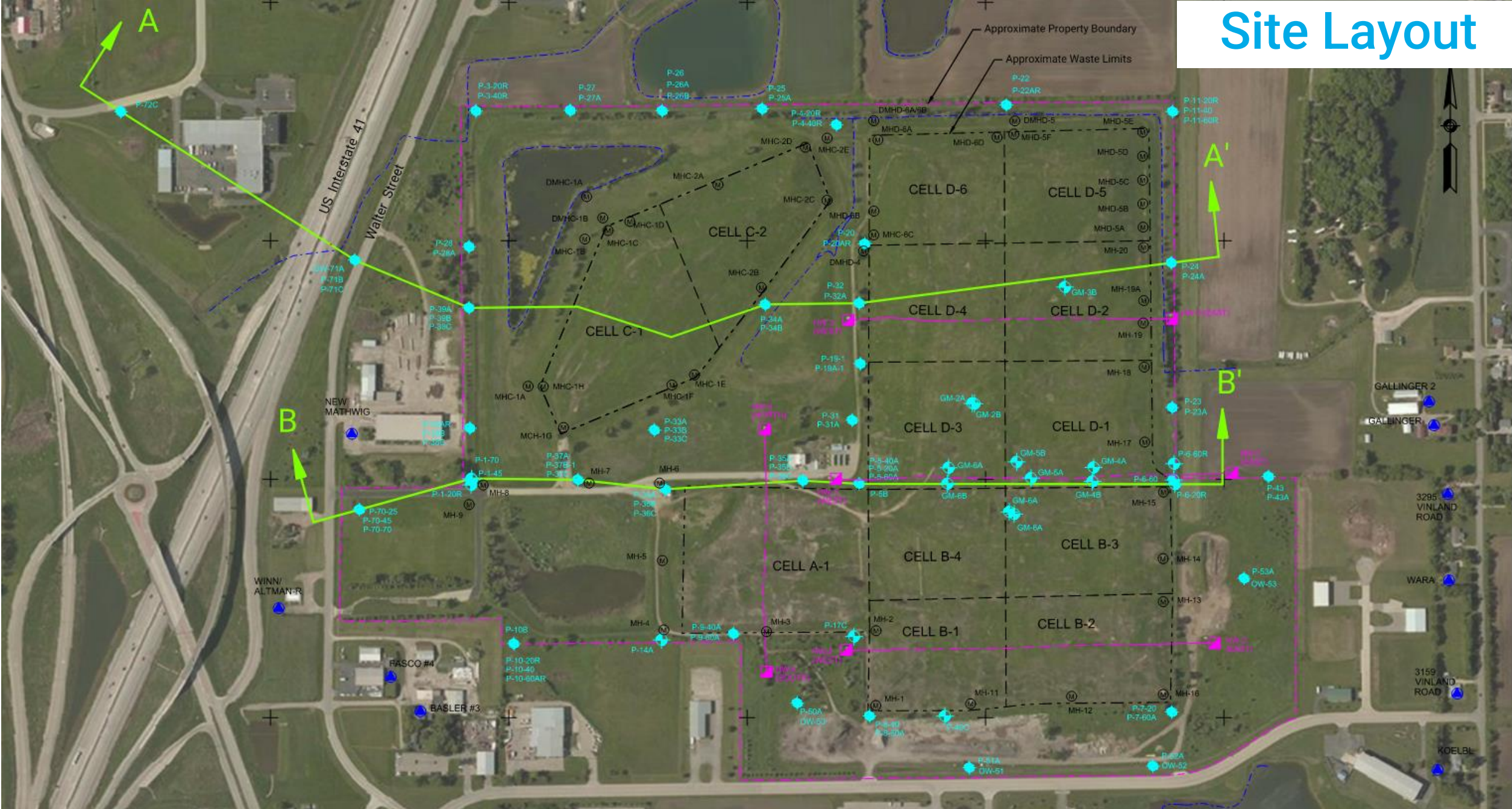


Outline

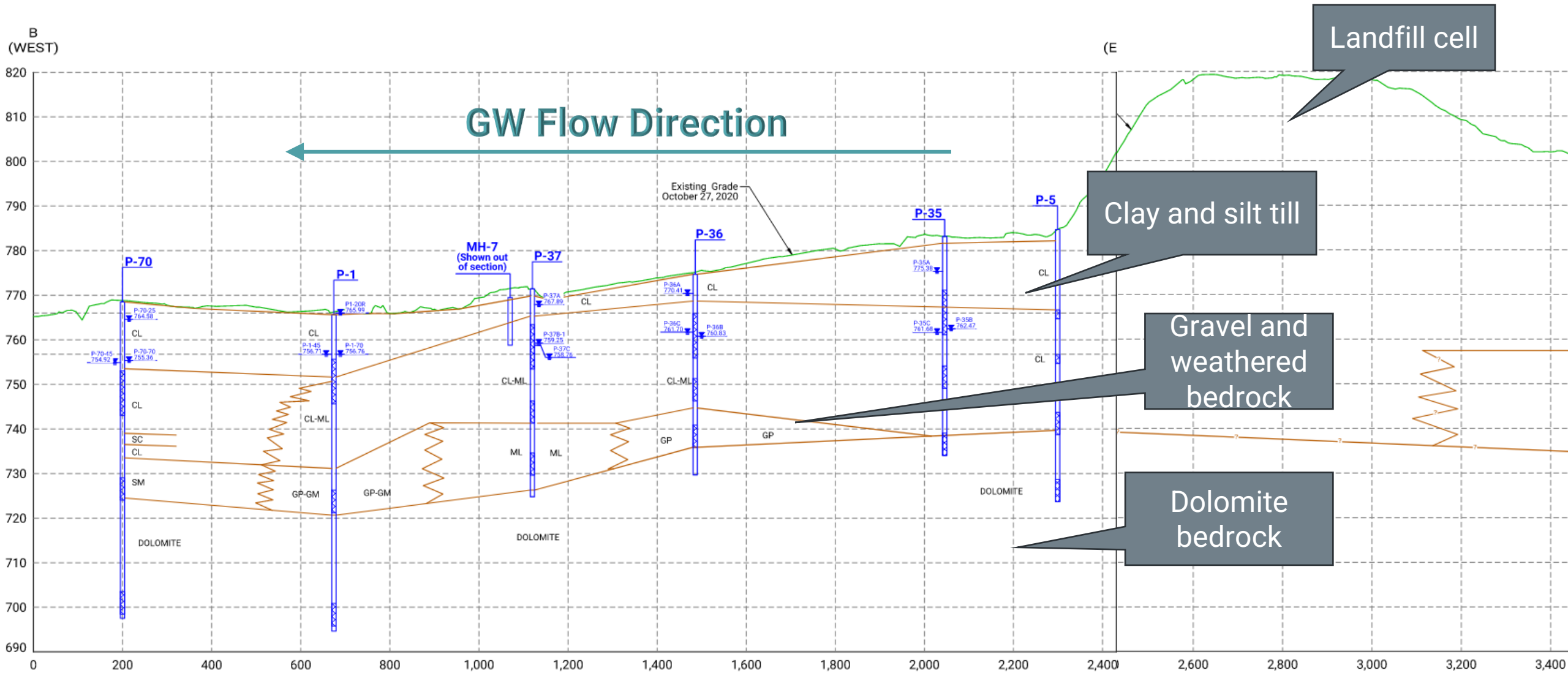
- ◆ Site background
 - Site use
 - Lithologic and hydrogeologic setting
 - Historic groundwater extraction system
- ◆ Groundwater drawdown event
 - Impact on groundwater flow
 - Interruption of HGWES system
 - Impact on chlorinated solvent plume

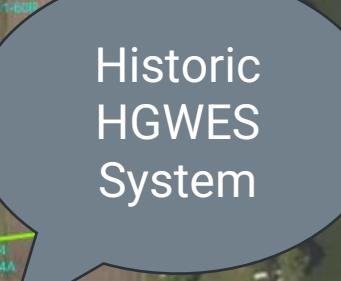
How did off-site drawdown affect plume?

Site Layout



Geologic Setting

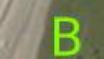




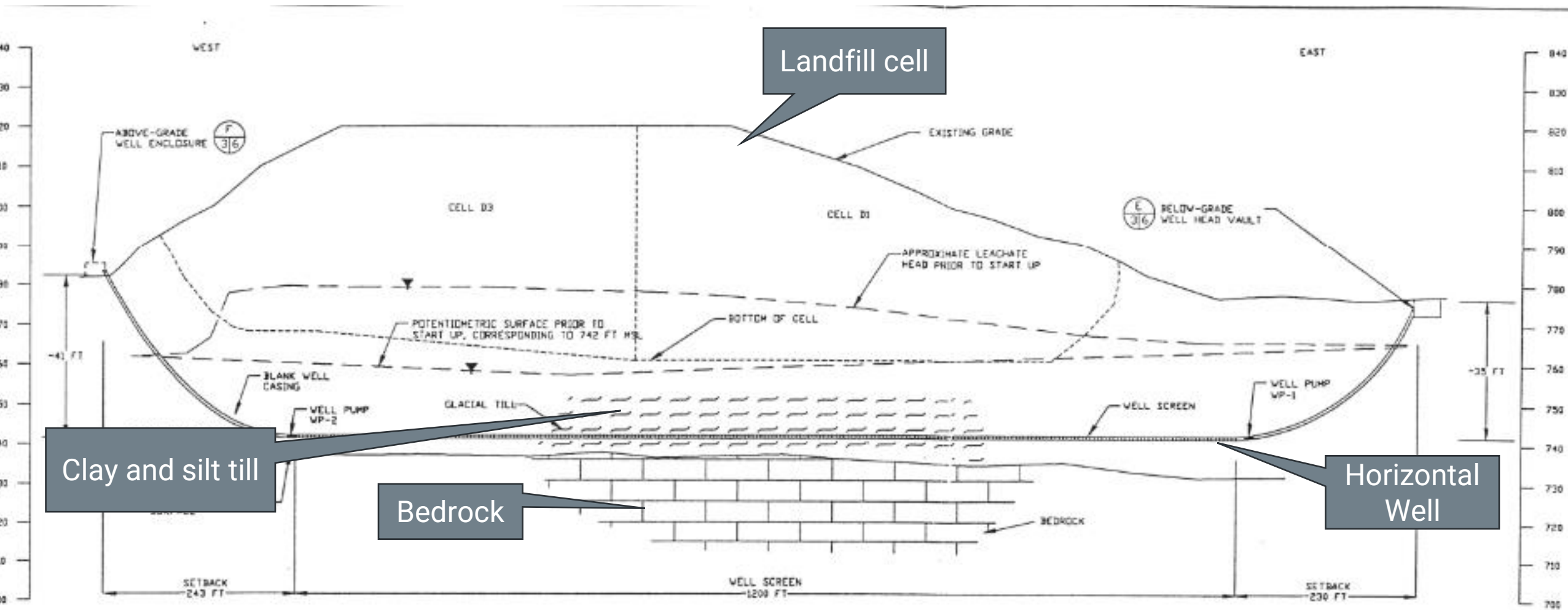
P-11-20R
P-11-40
P-11-60D

Historic HGWES System

P-20
P-24A

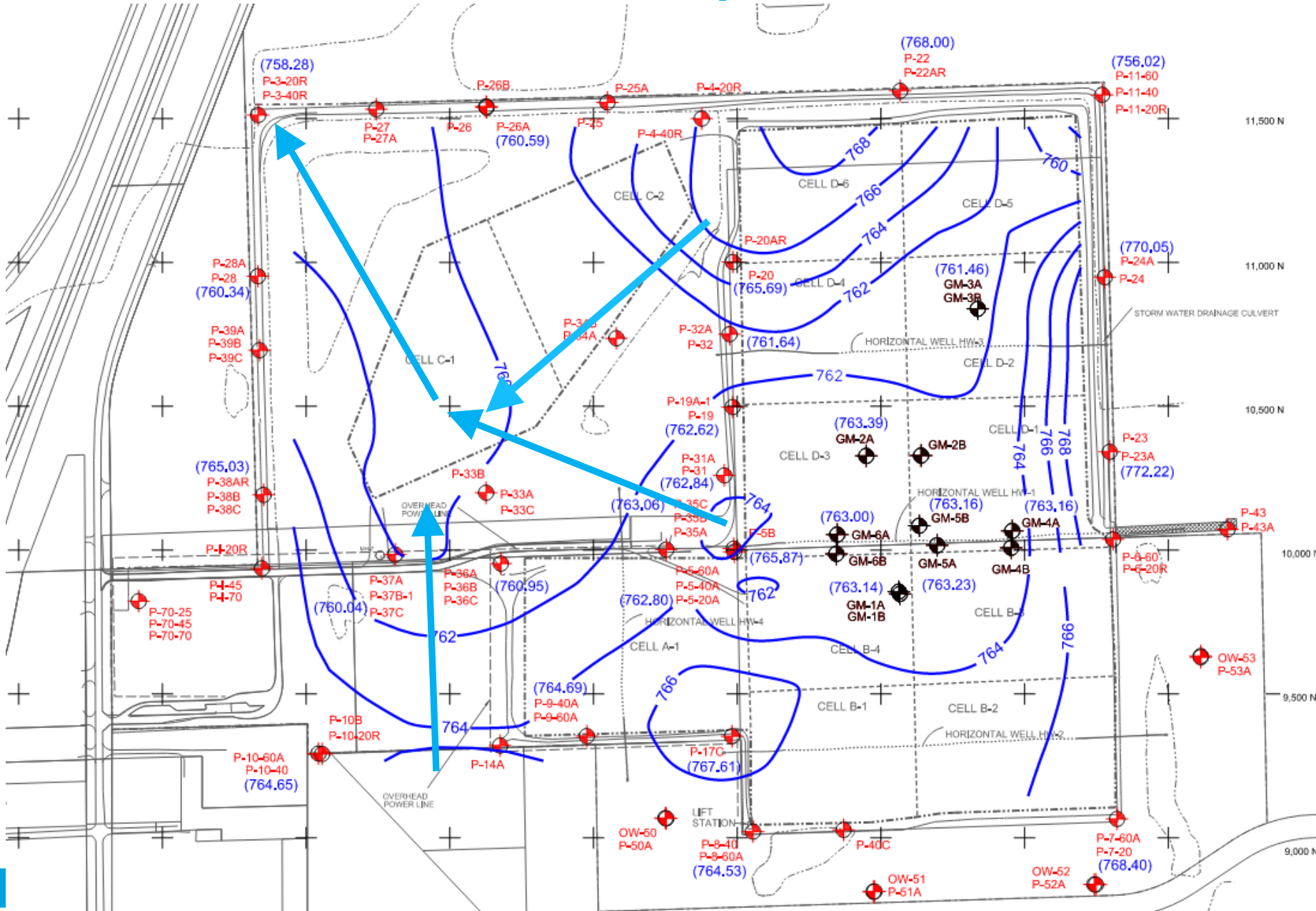


Groundwater Extraction System



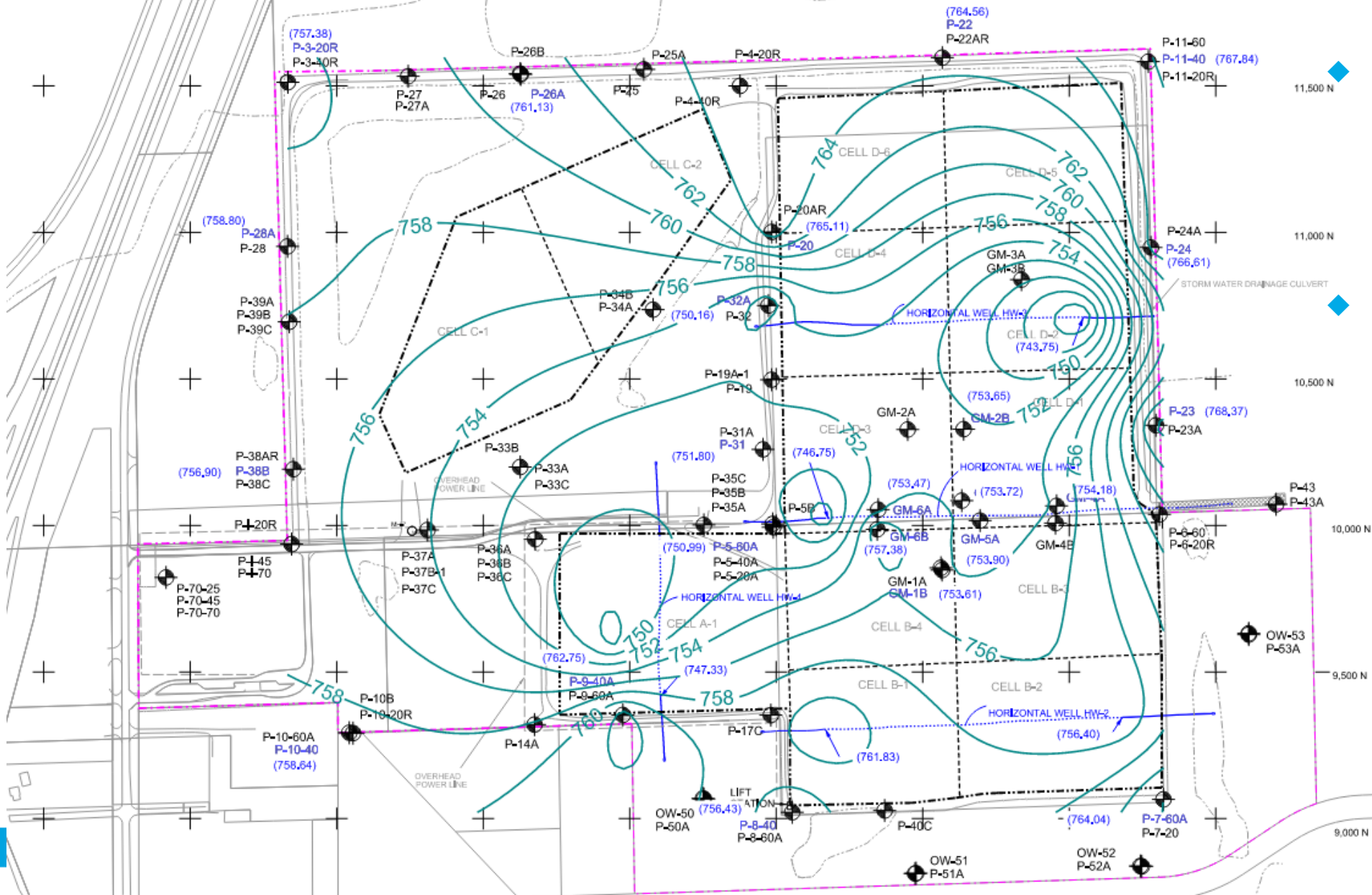
Horizontal extraction lines in till, below cell, above bedrock

1998 Baseline Middle Depth Groundwater Contours



- ◆ Before HGWES System was Installed
- ◆ GW Flow to NW
- ◆ Flattens out in NW Corner of Property

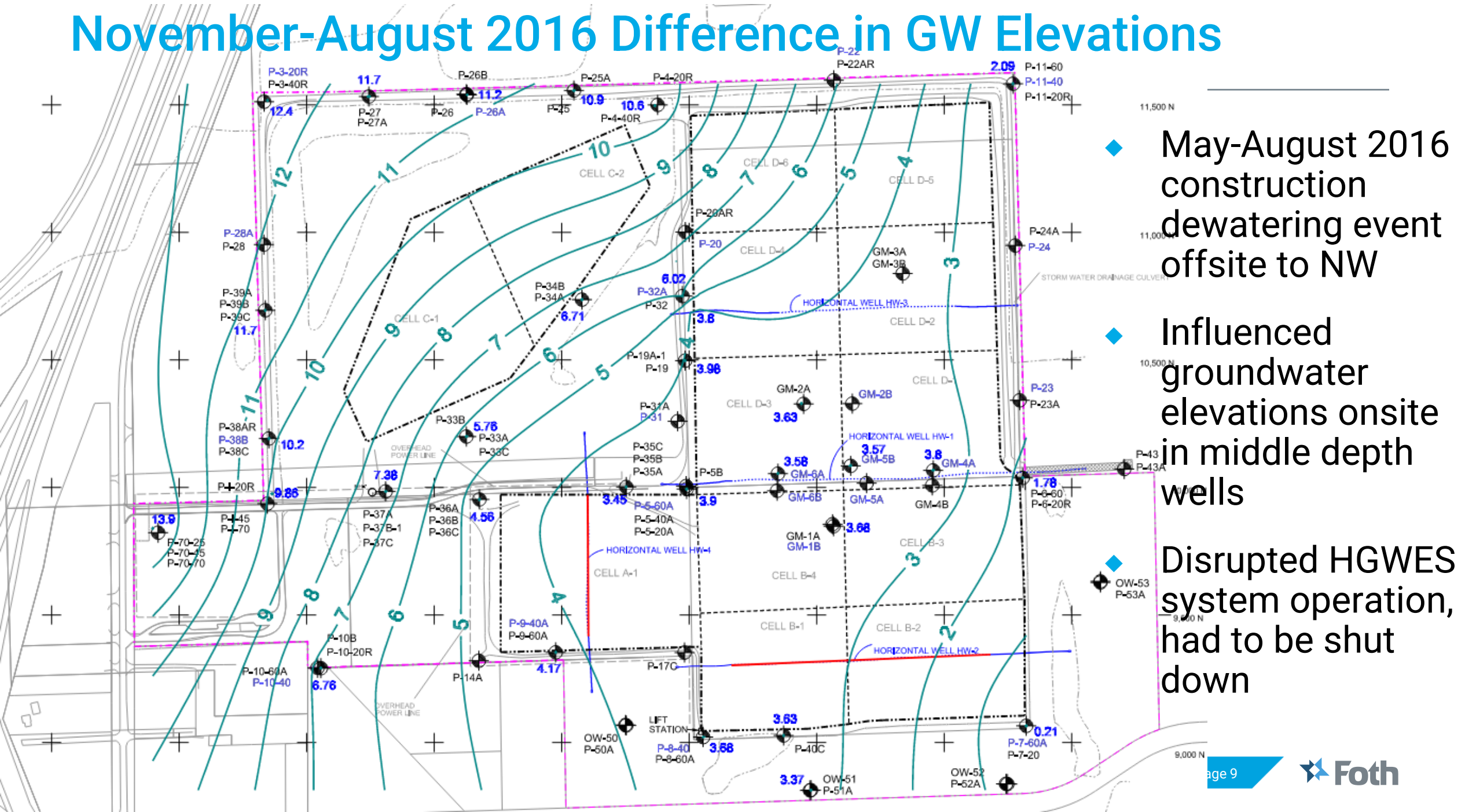
May 2016 Middle Depth Groundwater Contours



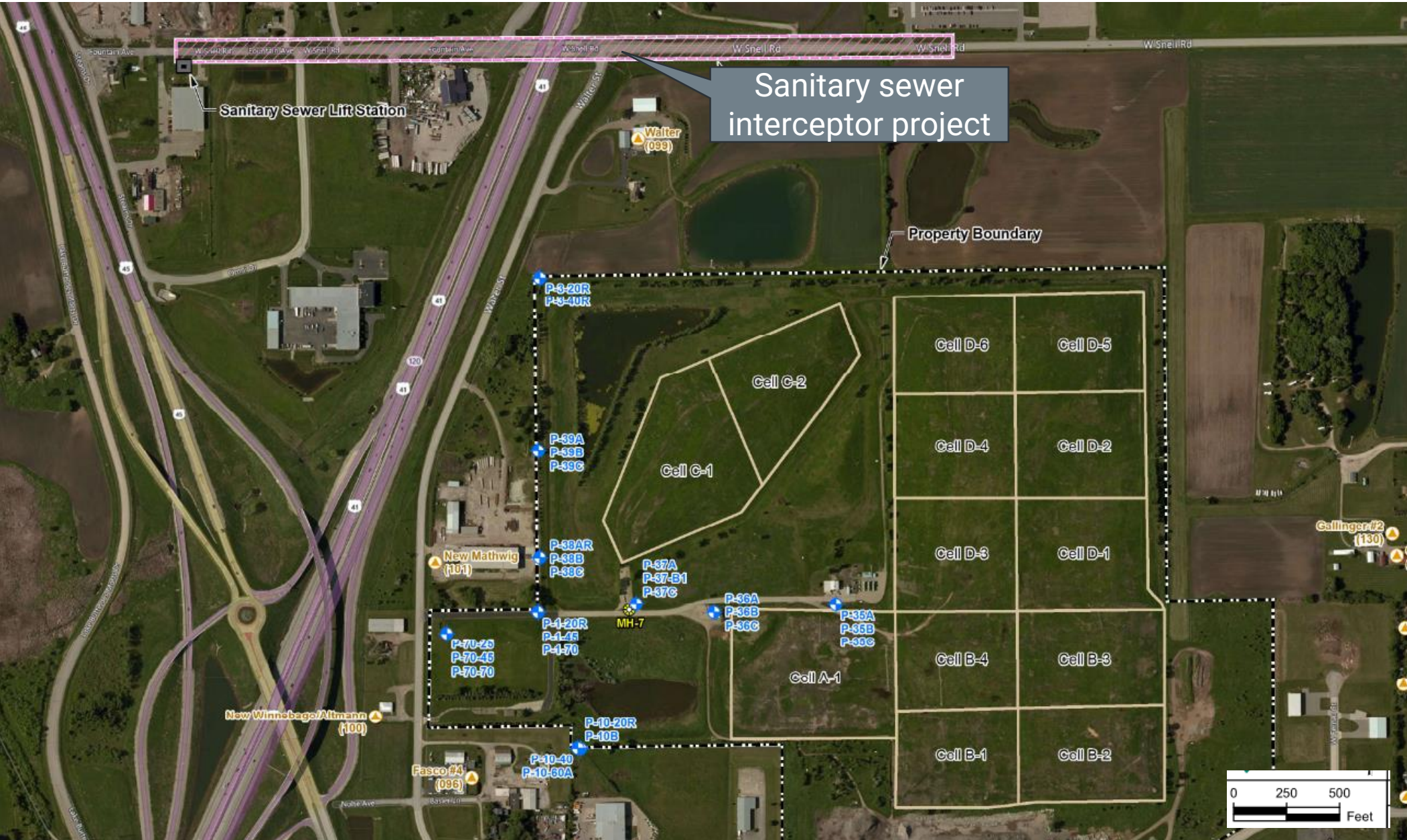
◆ Horizontal Groundwater Extraction System operating

◆ Depressing water table under landfill cells

November-August 2016 Difference in GW Elevations

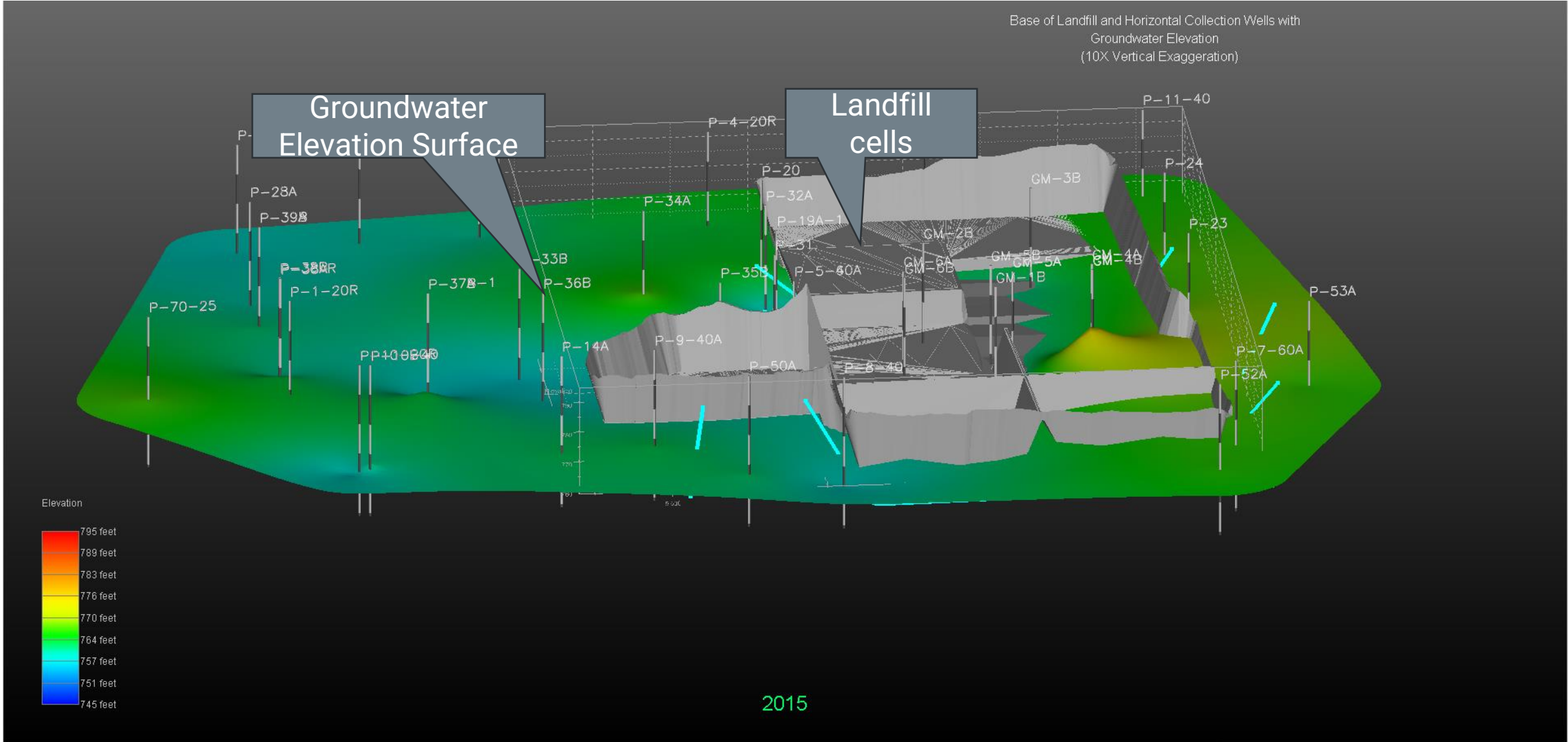


Drawdown Location

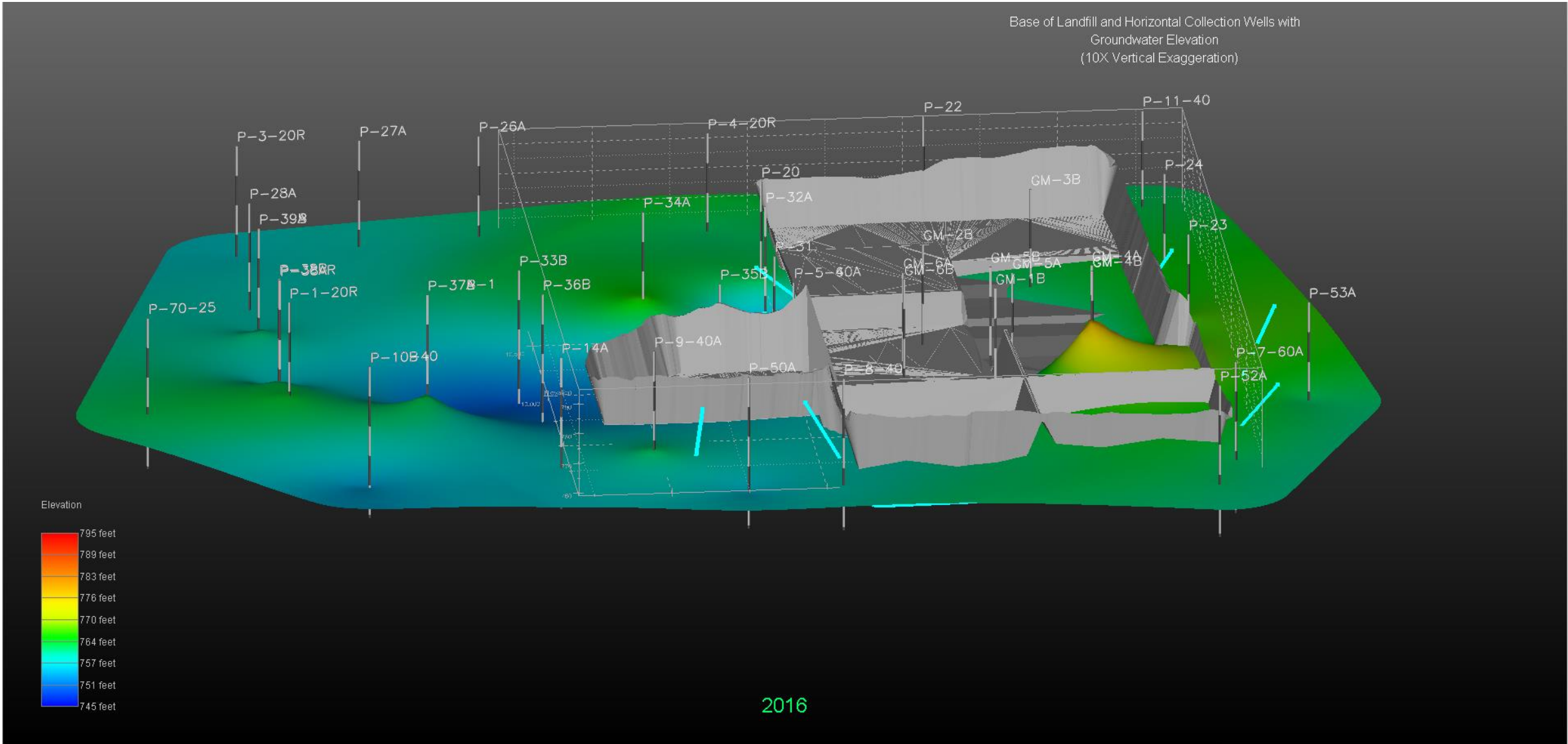


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Intermediate Groundwater Elevations 2015

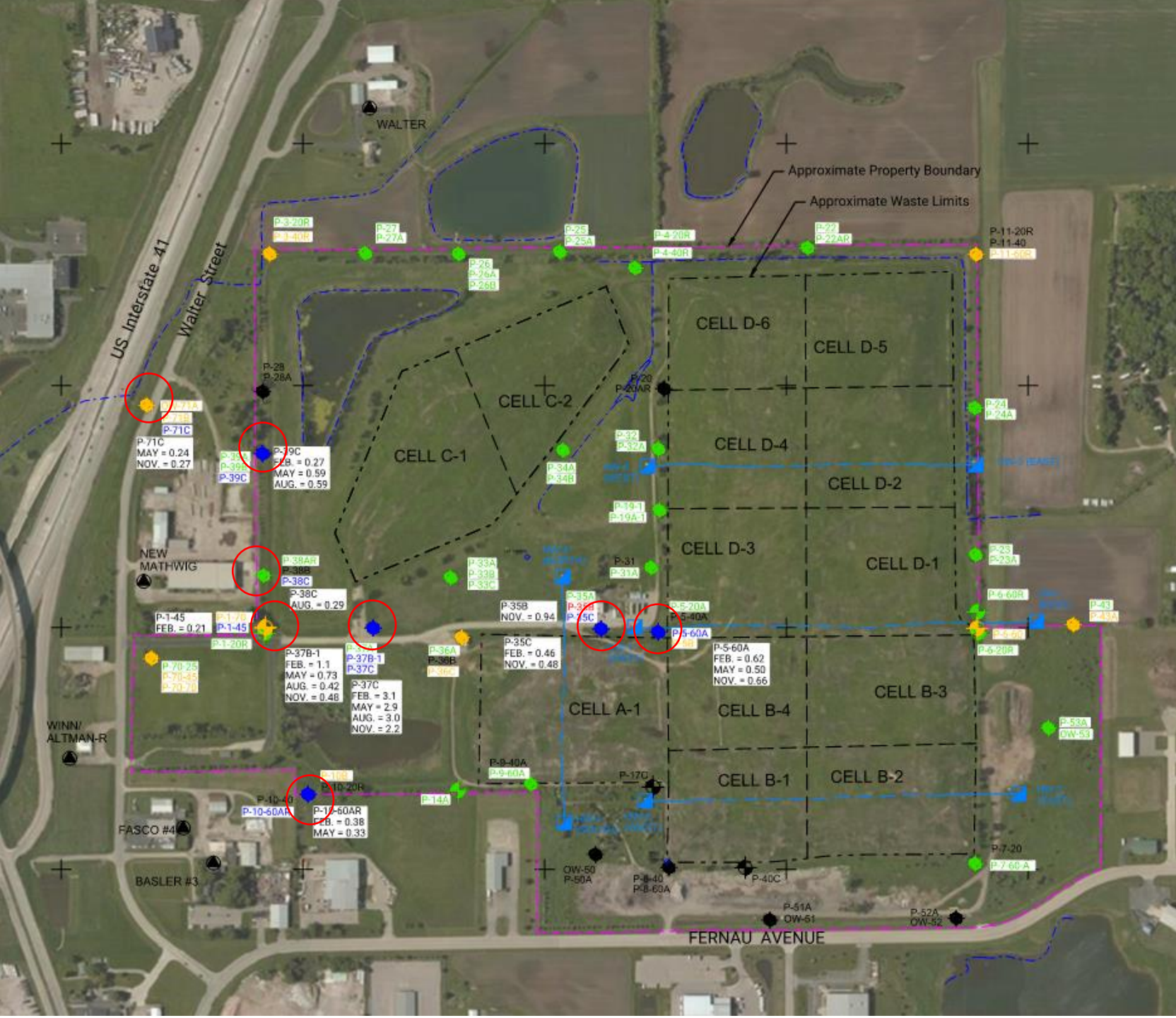


Intermediate Groundwater Elevations 2016 During Dewatering



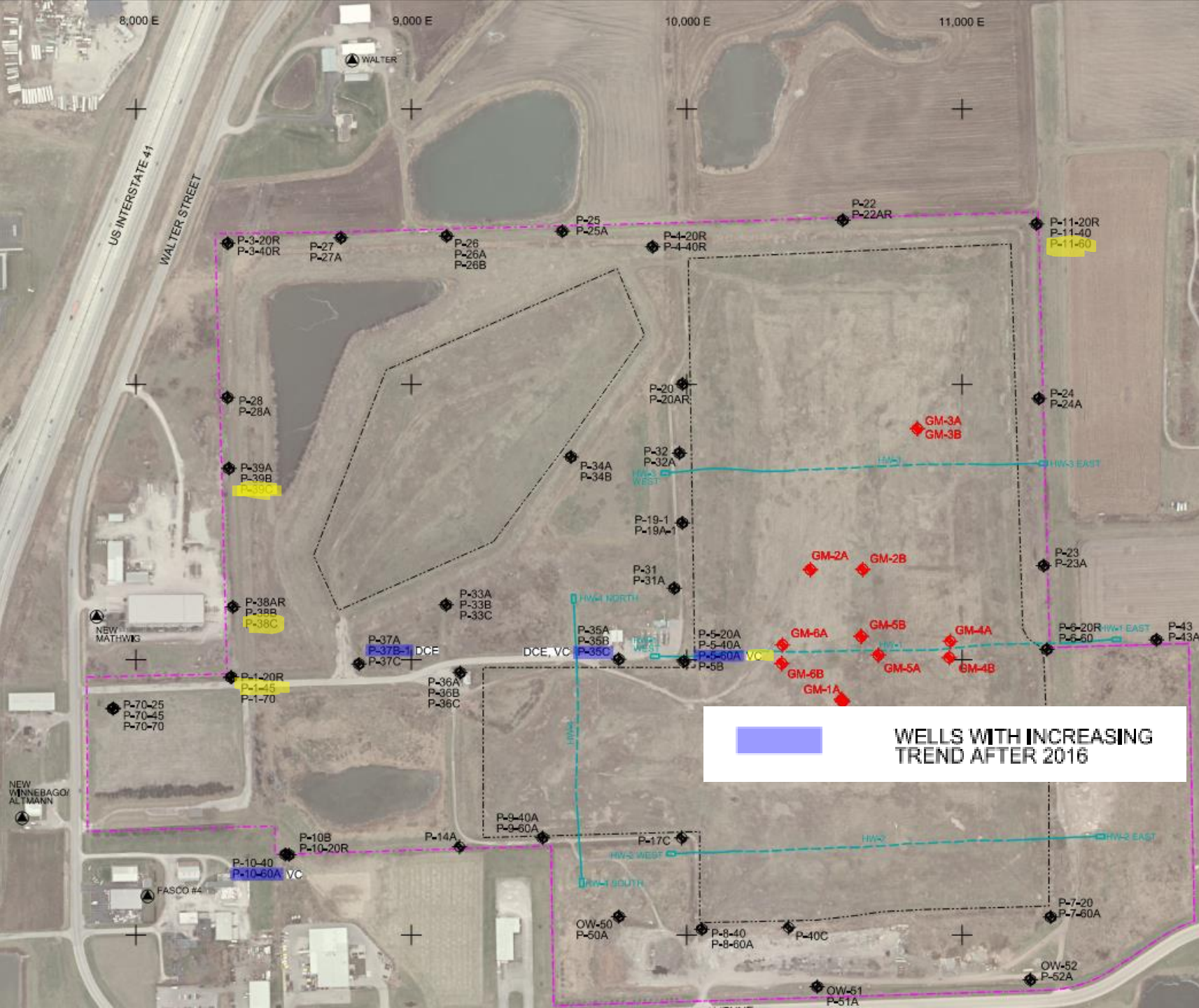
Intermediate Groundwater





Chlorinated Solvent Plume After Drawdown Event

New exceedances on western property boundary



Chlorinated Solvent Plume After Drawdown Event

Some increasing trends in wells to the west

Summary

- ◆ Flow/transport of legacy CVOCs controlled by lithology and utilities
- ◆ Dewatering off-site caused drawdown in on-site wells
- ◆ Drawdown event caused shut-down of aging system
- ◆ Plume smeared downward and north by pumping
- ◆ Regulatory implications for off-site migration
- ◆ Site is now in remediation program

Off-site dewatering drew plume downward and off-site

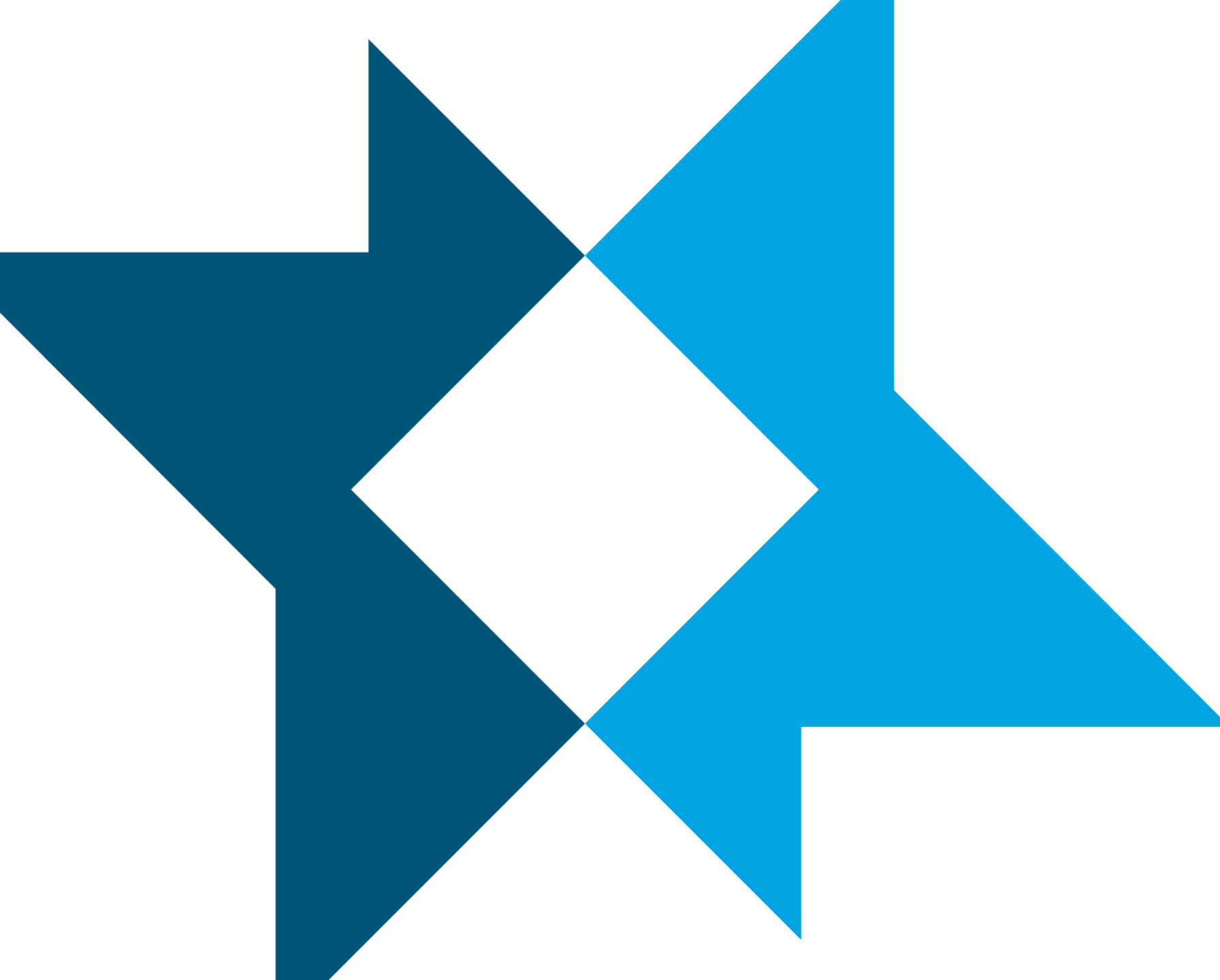
Planned Changes in Plume Management Approach

- ◆ Site added to public registry of contaminated sites
 - ◆ Supplemental investigation and remedial options assessment started
 - ◆ Looking for more efficient source control
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- ◆ Acknowledgments: Dr. Stephen G. Lehrke, Ph.D.

Pivoting to reassess the source control strategy

Questions & Answers





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