

# *Norwalk Tank Farm Update*

*Defense Energy Support Center-*

*Americas West*

*Norwalk Tank Farm*

*Restoration Advisory Board*

*January 28, 2010*



# Presentation Overview

- General Site Activities
- Remediation System Update
- Additional Investigation Update
- Joint Capture Zone Analysis Update
- Update on 5-Year Action Plan
- Planned Activities
- 2<sup>nd</sup> Semiannual Groundwater Monitoring

# General Site Activities

- Oct: Completed weed abatement and debris cleanup around the area near the gate
- Conducted plumbing repair in guards building
- Conducted electrical repair/replacement of lighting around the gate and the A/C unit in the guards building
- Oct 15-27: 2<sup>nd</sup> semiannual 2009 GWM event
- Nov 13: NPDES 3<sup>rd</sup> Quarter 2009 Discharge Monitoring Report (DMR)
- Nov 19: site-walk with City of Cerritos
- Dec 24: vapor sample collected from surge tank headspace for AQMD permit application

# Remediation System Update

- Weekly system inspections
- System performance & compliance sampling  
October 1, 29; November 5, 19, 25; December 18
- Oct 6: groundwater treatment system (GWTS) granular activated carbon (GAC) change outs completed (GAC-1 & GAC-2)
- Oct 12: GWTS shut down for gauging GW-15 and GW-16 to assess effect of pumping in north-eastern area; system remained off for semiannual groundwater monitoring (GWM) event

# Remediation System Update

- Oct 9: vapor extraction system panel delivered and installed
- Nov 16: replaced control valves at GW-2/GW-3
- Nov 18: replaced strainer and sampling valve at GW-16
- Dec 29: repaired GW-2/GW-13 relay and resumed extraction from these wells
- Completed onsite programming of PLC for soil vapor extraction system (SVES)

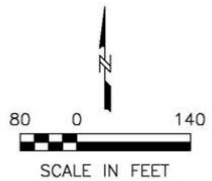
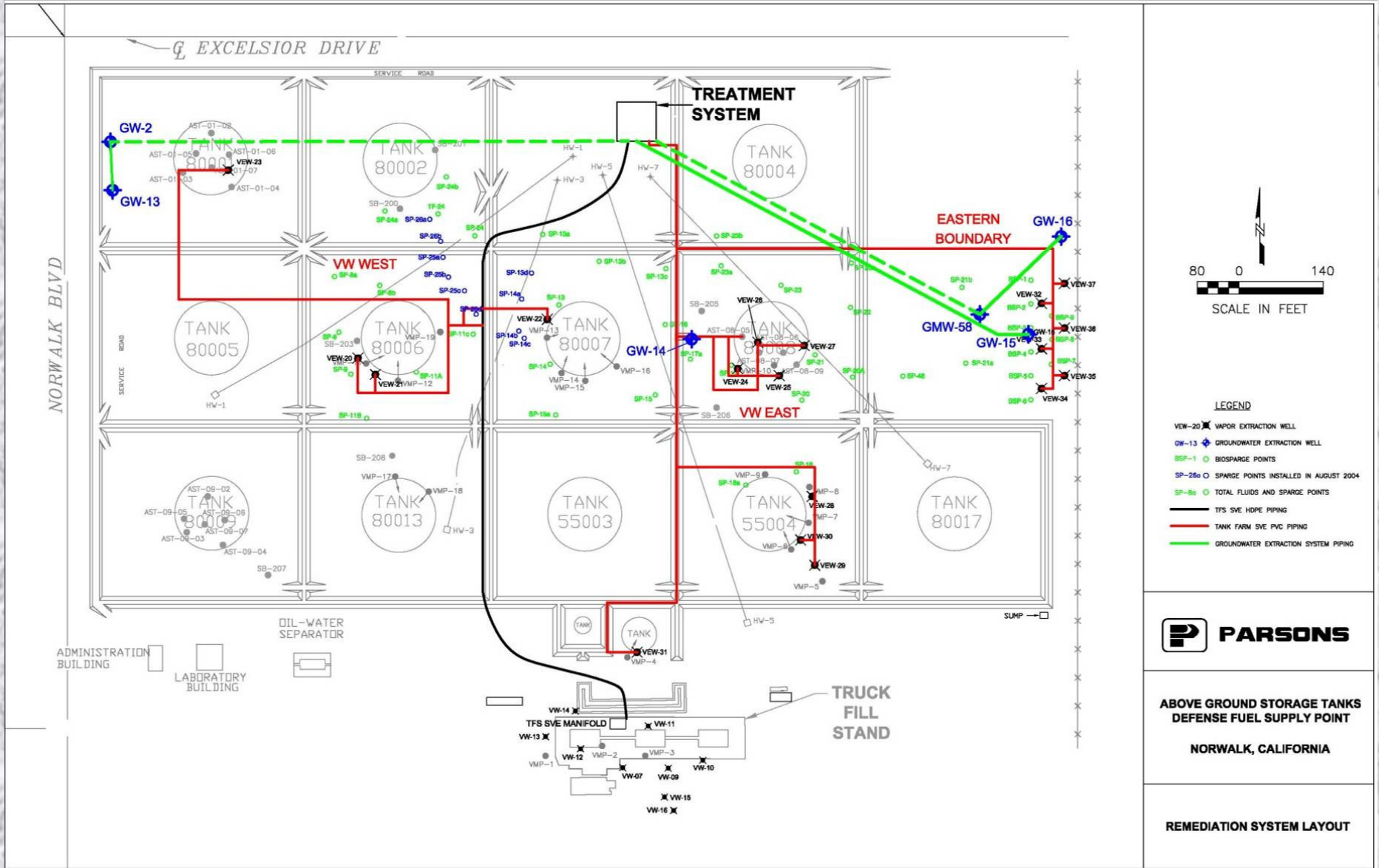
# Overall Operations Summary

- Groundwater extracted and treated:
  - 948,040 gallons in 4<sup>th</sup> quarter 2009
  - 48.3 million gallons, since April 1996
- SVES - Remained Out of Operation; VES upgrade was completed; startup pending AQMD permit approval
- System performance - Since April 1996 through December 2009
  - Total Hydrocarbons Mass Removed: 428,722 gallons
    - Approx. 215,870 gallons recycled and destroyed
    - Estimated 212,851 gallons of hydrocarbons destroyed due to enhanced biodegradation

# GWTS Operations Summary

- System **On** from September 30 through December 31 except for the following periods when it was **Off**:
  - Sept 30 – Oct 6: pending GAC change-out
  - Oct 9 – Nov 2: determine effect of operation of GW-15 & GW-16; 2<sup>nd</sup> semiannual GWM event
  - Nov 18 – Nov 23: pending MYCELX and bag filters change-out
  - Nov 30 – Dec 14: pending bag filters change-out

# DESC System Layout



- LEGEND**
- VIEW-20 ✕ VAPOR EXTRACTION WELL
  - GW-13 ✕ GROUNDWATER EXTRACTION WELL
  - SP-1 ✕ BIOSPARGE POINTS
  - SP-25a ✕ SPARGE POINTS INSTALLED IN AUGUST 2004
  - SP-25b ✕ TOTAL FLUIDS AND SPARGE POINTS
  - TFS SVE HOPE PIPING
  - TANK FARM SVE PVC PIPING
  - GROUNDWATER EXTRACTION SYSTEM PIPING



**ABOVE GROUND STORAGE TANKS  
DEFENSE FUEL SUPPLY POINT  
NORWALK, CALIFORNIA**

**REMIEDIATION SYSTEM LAYOUT**

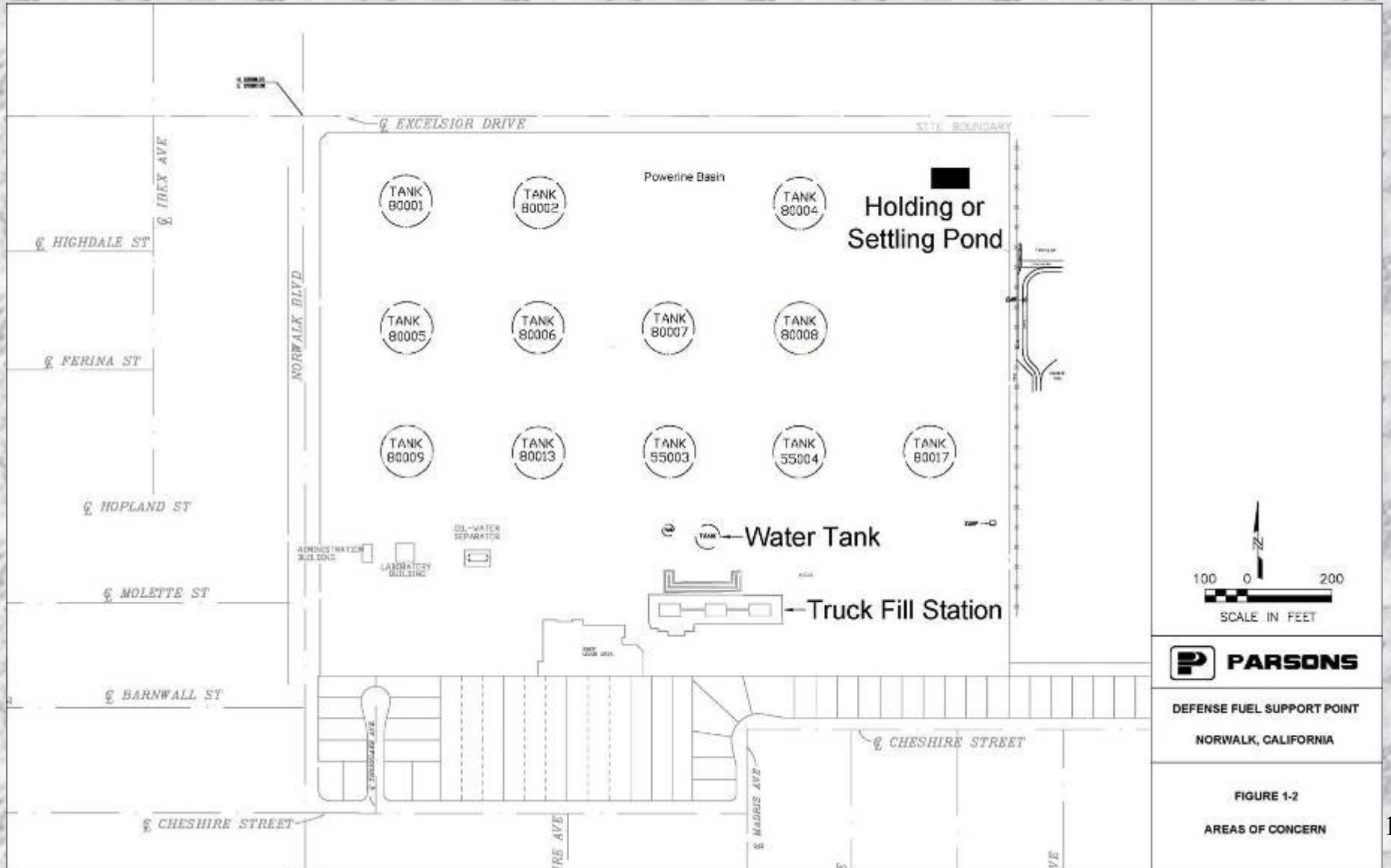


# Additional Investigation Update

## TFS, Water Tank, NE Settling Pond

- Supplemental Investigation Report for Truck Fill Station (TFS), Water Tank, and Northeast (NE) Settling Pond Areas was submitted Nov 30
- Soil at the TFS (including the pump house to the south) and water tank areas are still highly impacted
- Soil at the NE corner shows minor impacts
  - TPH as JP-5, MTBE, and TBA were not detected
  - TPH as gasoline at 0.35 mg/kg
  - Benzene at 1.9 µg/kg

# TFS, Water Tank, NE Settling Pond Site Locations



DEFENSE FUEL SUPPORT POINT  
NORWALK, CALIFORNIA

FIGURE 1-2  
AREAS OF CONCERN

# TFS, Water Tank, NE Settling Pond Recommendations

- Impacted soil plumes still need to be defined at all areas
- Work plan addendums will be forth-coming to include the following activities:
  - NE corner: GORE survey is proposed to identify hot-spot soil gas chemistry then additional DPT borings will be conducted to define impacted soil
  - TFS: Step-out DPTs to the north, east, and south of the TFS; additionally soil around the former pump house will require step-out DPTs in all directions
  - Water Tank Area: Step-out DPTs in all directions
- Once impacted soil areas have been defined, remedial options will be evaluated

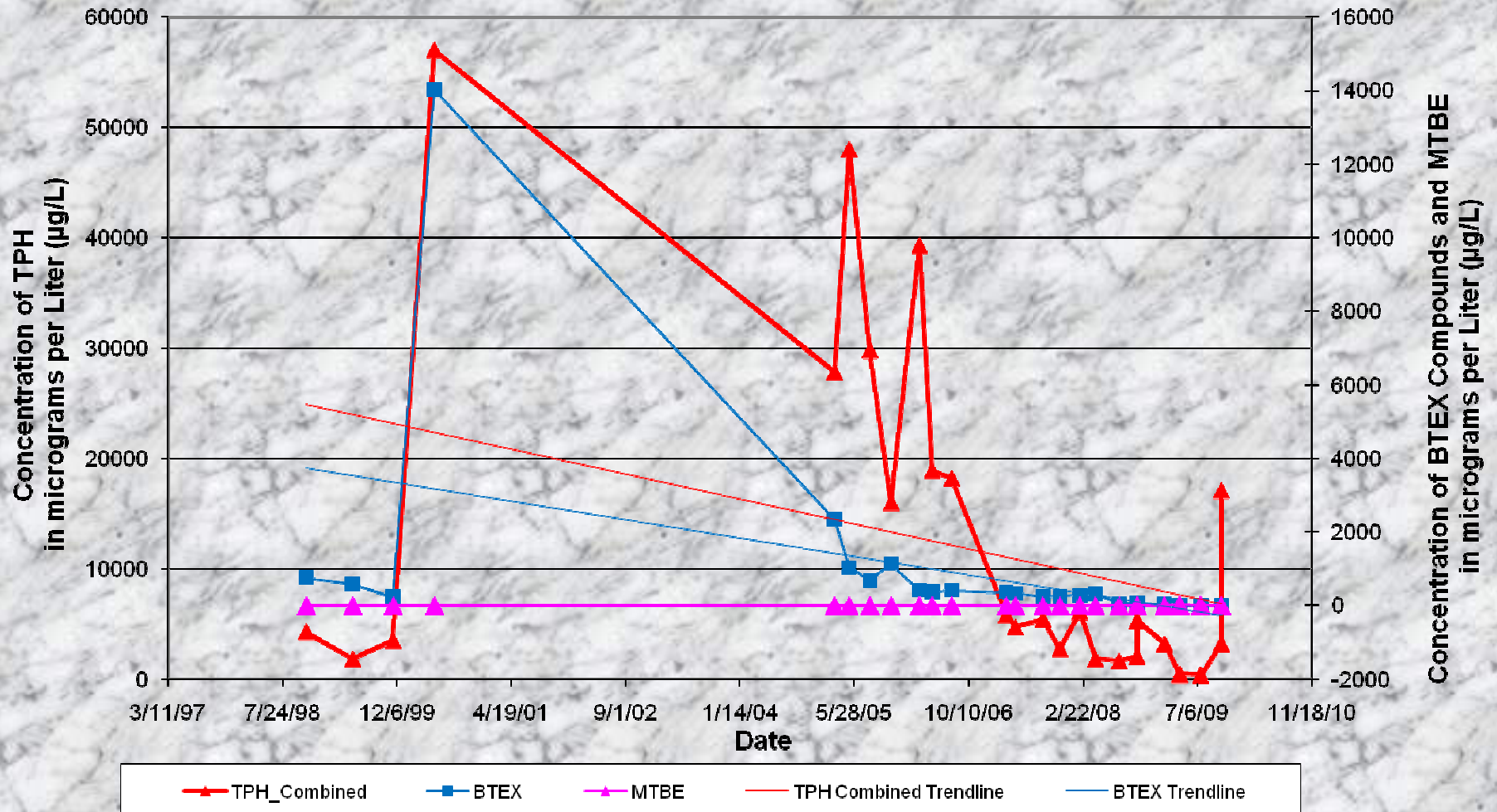
# North-Eastern Area Groundwater Extraction Update

- To recall, groundwater extraction began from GW-15 on April 22 (following the 2Q GWM event) and GW-16 on July 22 (following the 3Q GWM event)
- Since the April and July 2009 GWM events, concentrations of TPH from October 2009 at GMW-59, GMW-60, and GMW-61 have decreased; whereas at GMW-58 and GMW-62 they have increased (concentration slides to follow)
- All concentrations at GMW-63 and GMW-64 located in Holifield Park remain non detect

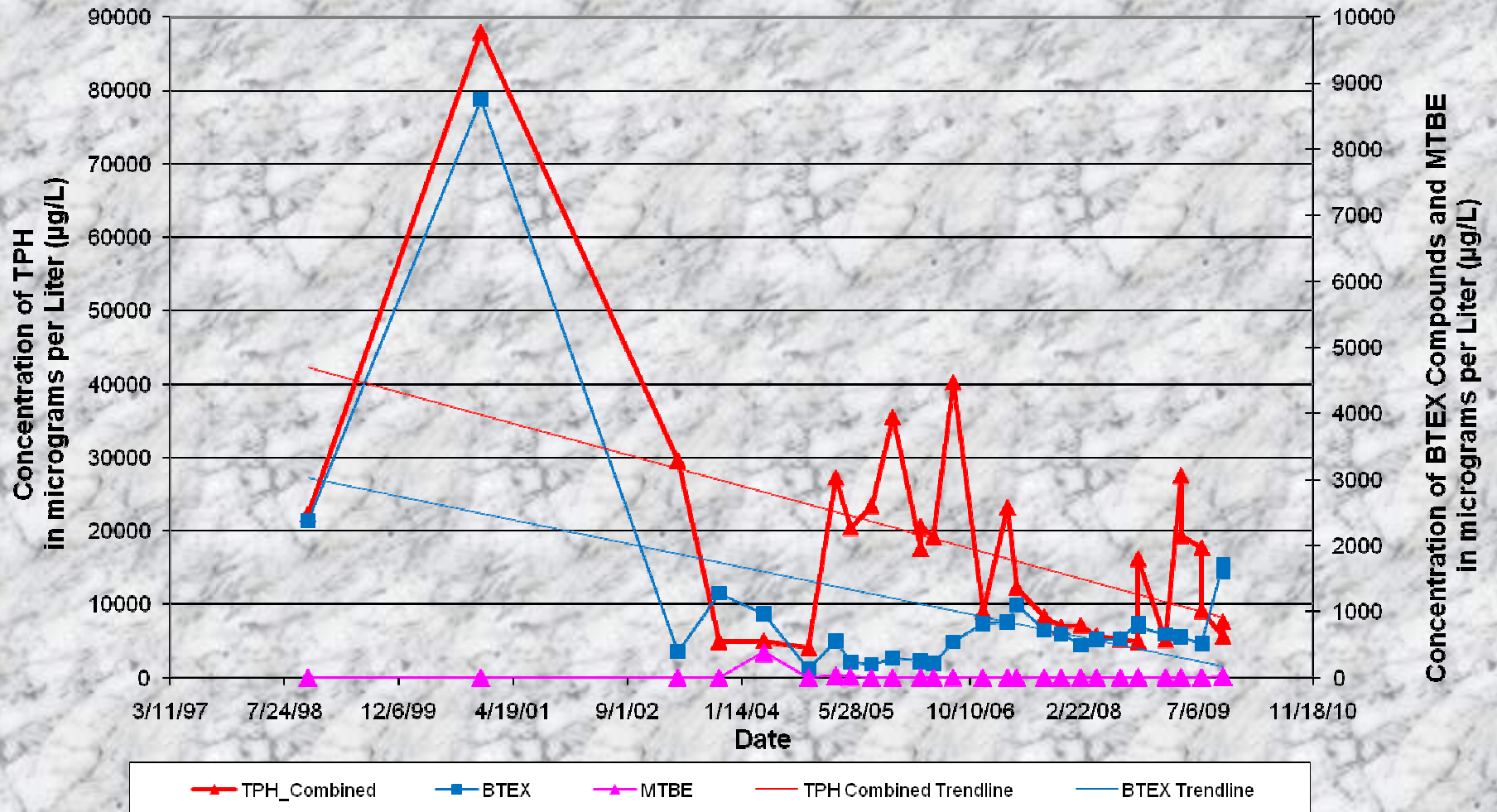
# North-Eastern Area Groundwater Extraction Update

- From preliminary results from the 1<sup>st</sup> quarter sentry 2010 GWM event, TPH has further decreased at all eastern area wells that were monitored except at GMW-62
- The concentration graph (slide to follow) indicates that the slight increase in TPH at GMW-62, is part of the normal seasonal fluctuations observed over the historical trend
- Overall concentrations continue to decrease at GMW-62 and are lower than the July 2009 GWM event

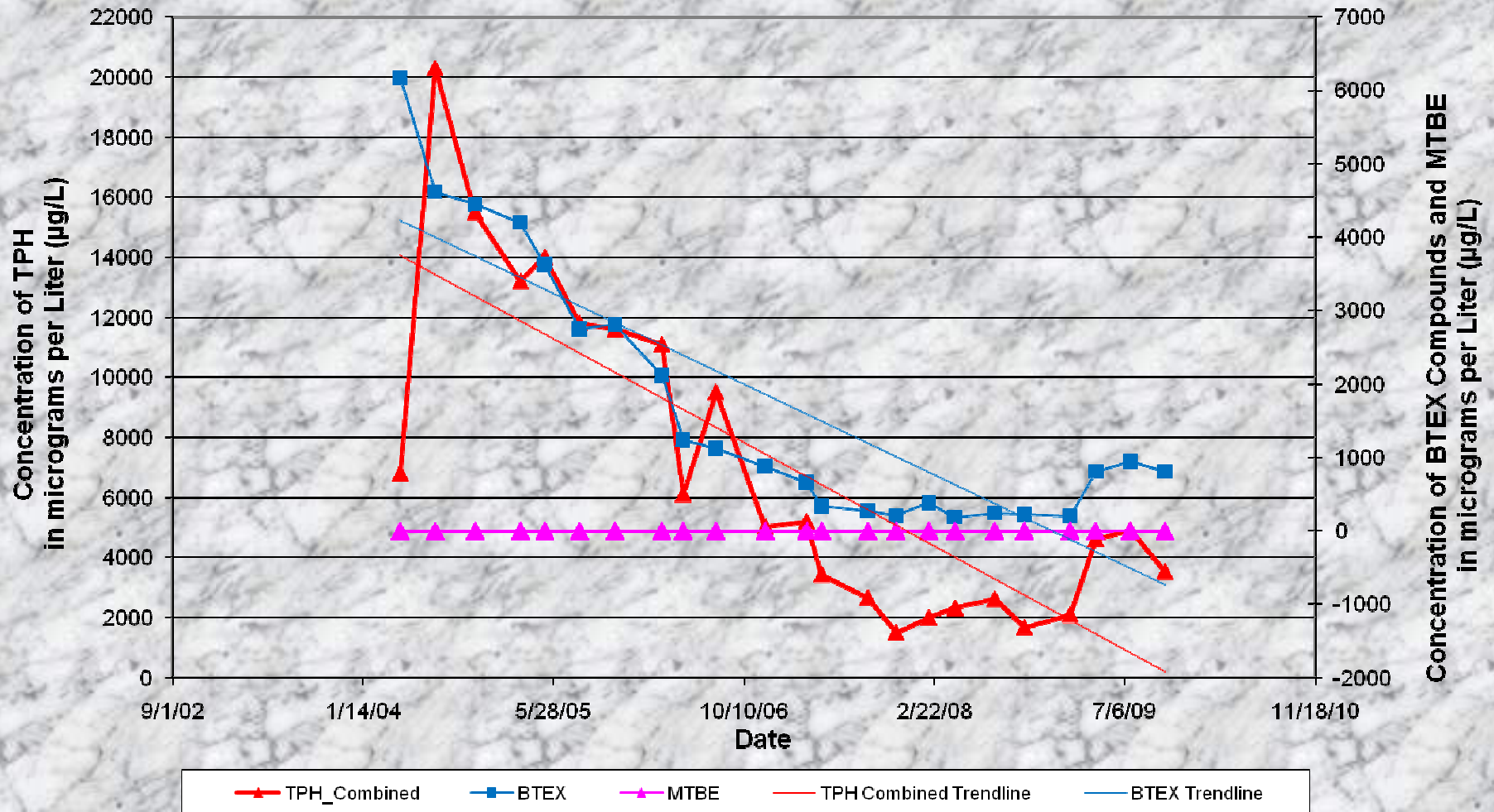
# GMW-58 Concentration Trends



# GMW-59 Concentration Trends

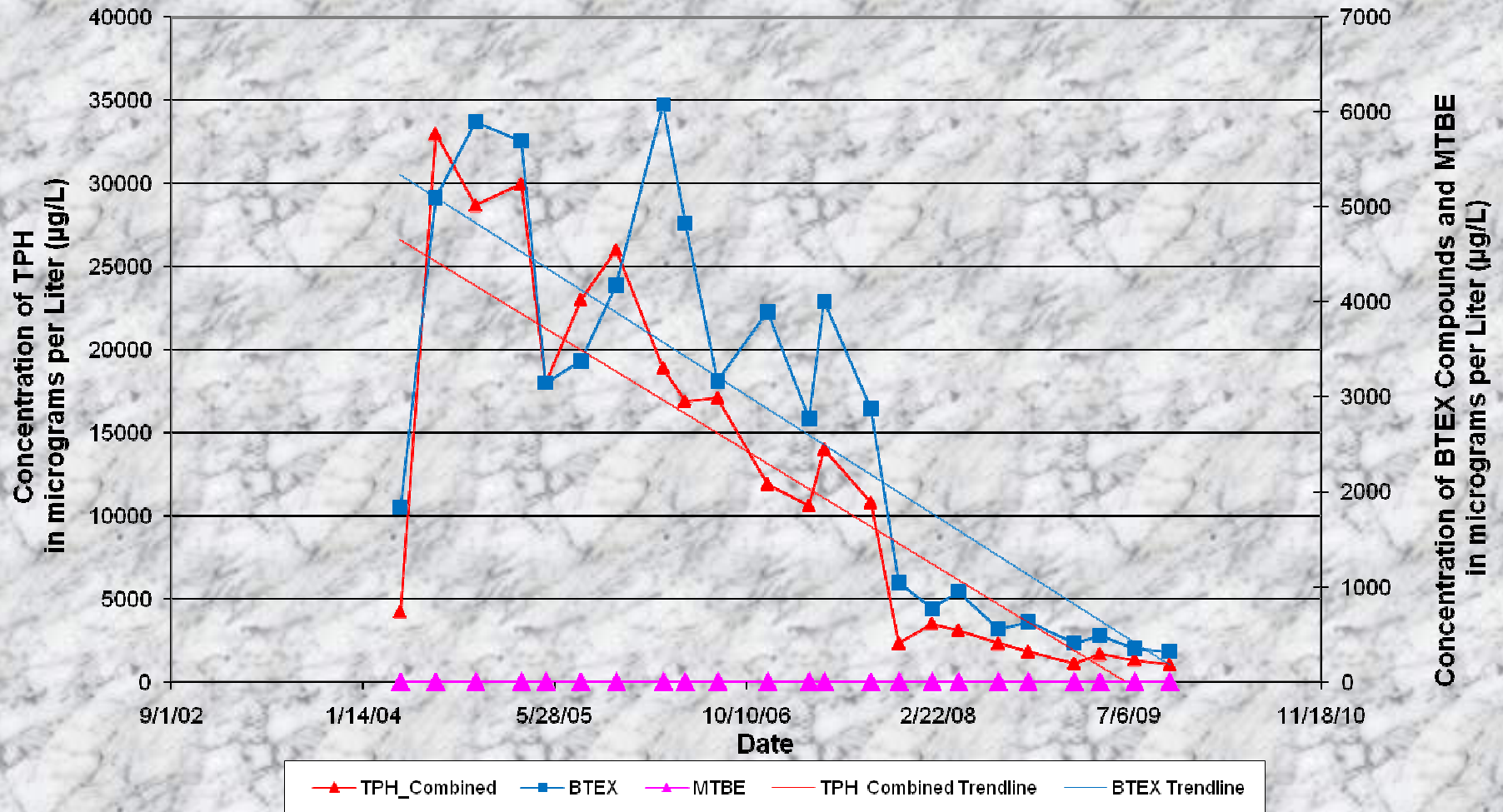


# GMW-60 Concentration Trends

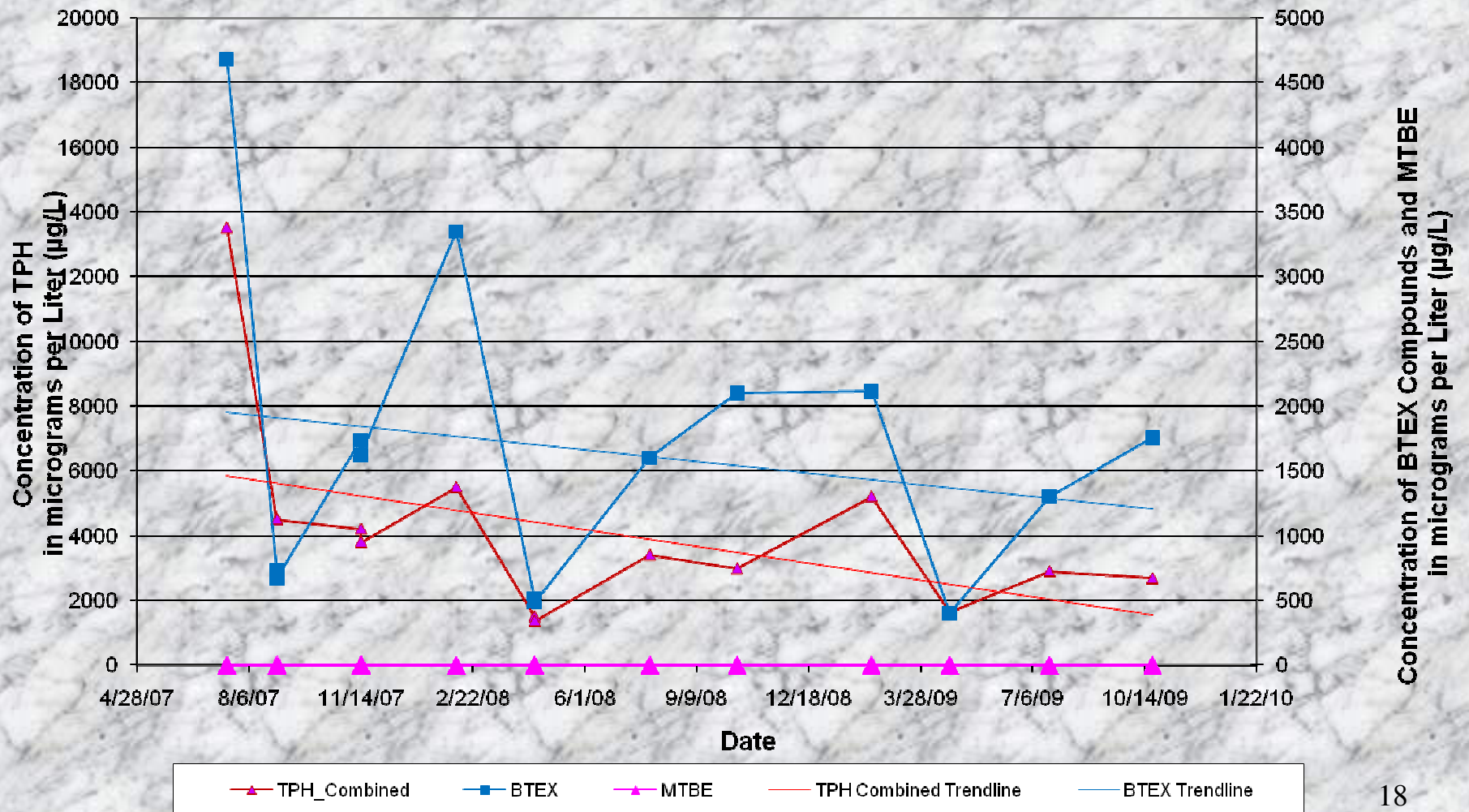




# GMW-61 Concentration Trends



# GMW-62 Concentration Trends



# Joint Capture Zone Analysis Update

## Completed Tasks

- Data compilation
- Initial data analysis and baseline groundwater contour mapping
- Data gap identification: operational site wide water levels, and treatment plant influent concentrations

# Joint Capture Zone Analysis Update

## Current and Upcoming Tasks

- Site-wide synoptic water levels after pumping wells have been pumping for two weeks
- Extraction well sampling to quantify both the mass loading to treatment plant, and the spatial proportions of influent mass
- Groundwater model parameter review and collaboration
- Groundwater contouring and analytical modeling
- Procedural review and potential refinement

# Update on 5-Year Action Plan

## ■ Free product recovery

- Fuel thickness and extent of free product in wells have decreased
- Oct 2009 free product only detected in 8 wells in the north-central, north-eastern, and TFS areas with thicknesses ranging from 0.01 to 1.16 feet (max thickness in Dec 2006 was 4.2 feet)

## ■ Soil venting & Biosparging

- Expanded well network in various areas

# Update on 5-Year Action Plan

## ■ Groundwater extraction

- Effectively decreased free product plumes
- Extraction from north-west corner and north-eastern area for containment has been effective
- Off-site wells continue to show non-detect or decreasing trends in TPH and BTEX concentrations
- Although TPH concentrations in most wells are lower and/or are declining, GW extraction has not been effective at mass removal in certain areas of the site

# Planned Activities for Next Quarter

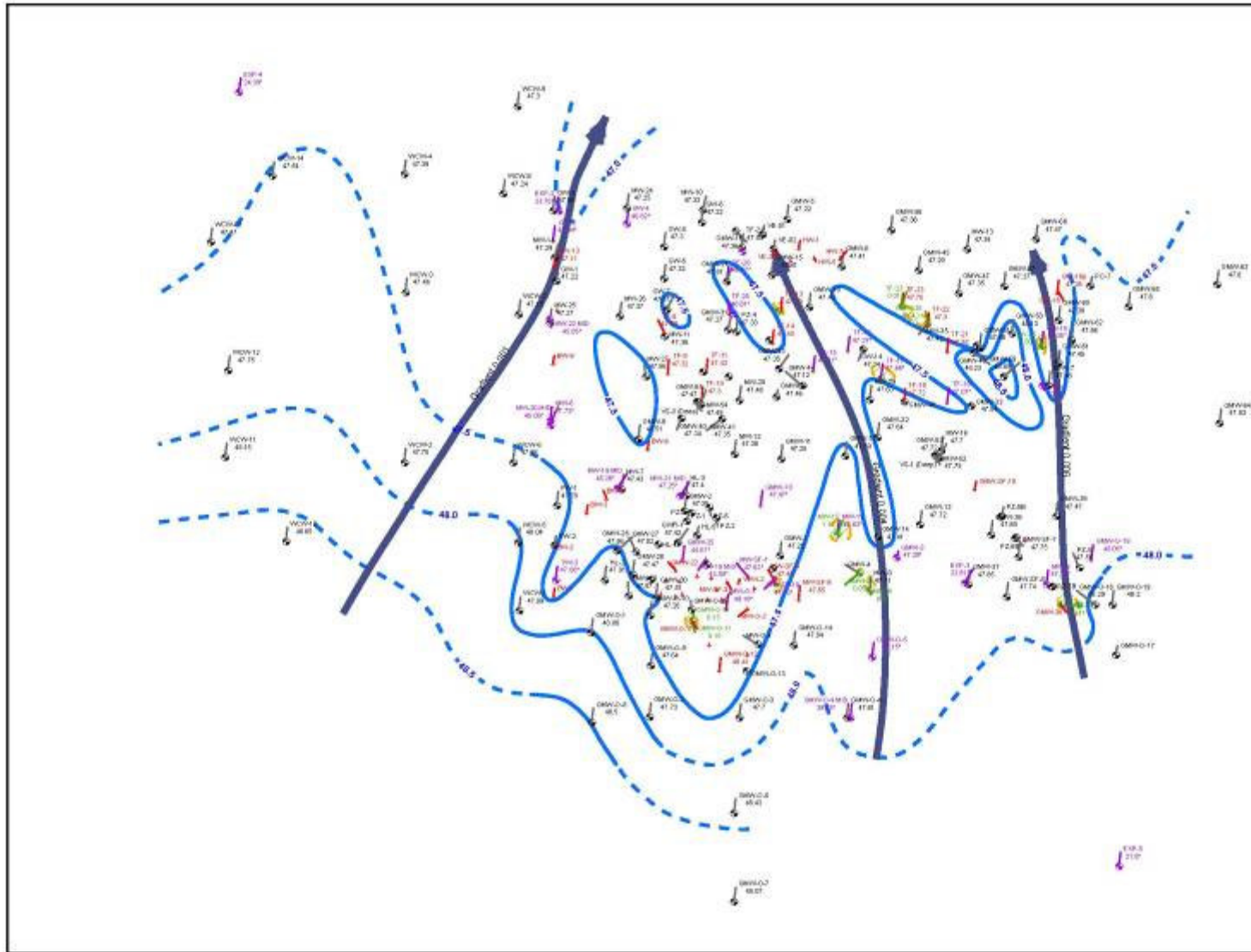
- Continue weekly system inspections, required sampling, evaluation, and optimization
- Arsenic exchange vessel rejuvenation and re-connection
- Site-wide weed abatement
- Conduct 1<sup>st</sup> quarter sentry GWM (Jan 11-13)
- Prepare and submit NPDES DMR for 4<sup>th</sup> quarter 2009
- Prepare and Submit Supplemental Investigation Addendum Work Plans for TFS, Water Tank, and NE Settling Pond Areas
- Continue to work on the joint capture analysis and collect additional data as needed
- Conduct startup and optimization of upgraded SVES (once AQMD permit has been approved)

# Second Semiannual 2009 Groundwater Monitoring Event

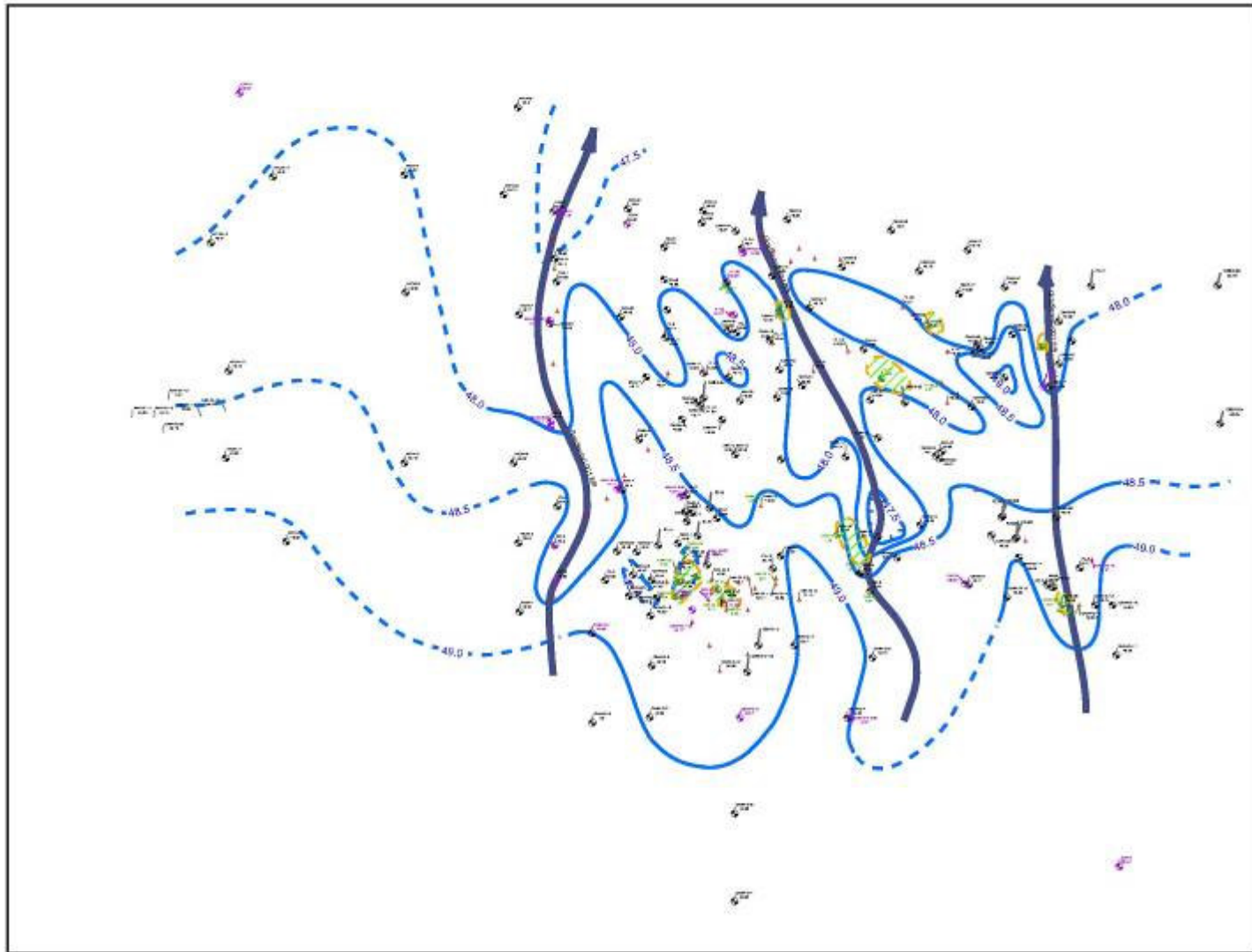
- 96 wells sampled, including 3 Exposition aquifer wells
- Groundwater elevations decreased by approximately 1 foot since April 2009
- No VOCs were detected in Exposition aquifer wells
- Free product was detected in 11 wells and ranged in thickness from 0.01 to 1.16 (MW-15) feet



# Groundwater Elevation and Free Product Plumes - October 2009



# Groundwater Elevation and Free Product Plumes - October 2008



# Second Semiannual 2009 Groundwater Monitoring Event

- VOCs were not detected in any samples collected from the Exposition aquifer wells
- In most areas, the lateral extents of TPH, benzene, 1,2-DCA, and MTBE in groundwater remain similar to those interpreted during April 2009
- In general, TPH concentrations have increased since the April 2009 semiannual event; still, some of the wells have exhibited decreases such as GMW-59, GMW-60, and GMW-61 located in the north-eastern area

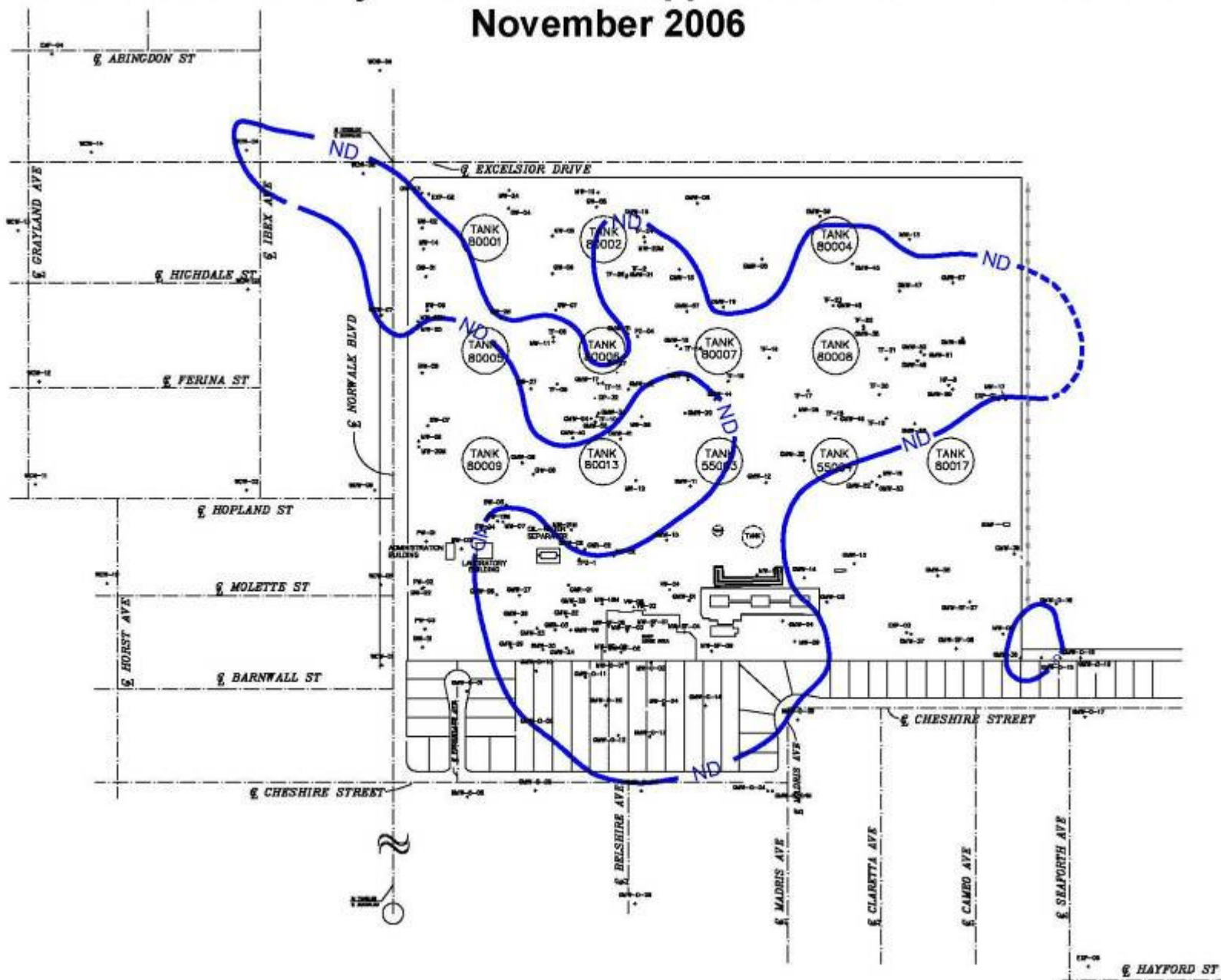
# Second Semiannual 2009 Groundwater Monitoring Event

- Benzene was not detected in any of the off-site wells west of the site
- With the exceptions of MTBE in GMW-6 (north-central area), MW-SF-1 (south-central area), and GMW-O-18 and PZ-5 (southeastern area), the detected concentrations of MTBE were below the conservative risk-based cleanup goal for MTBE (40 µg/L)

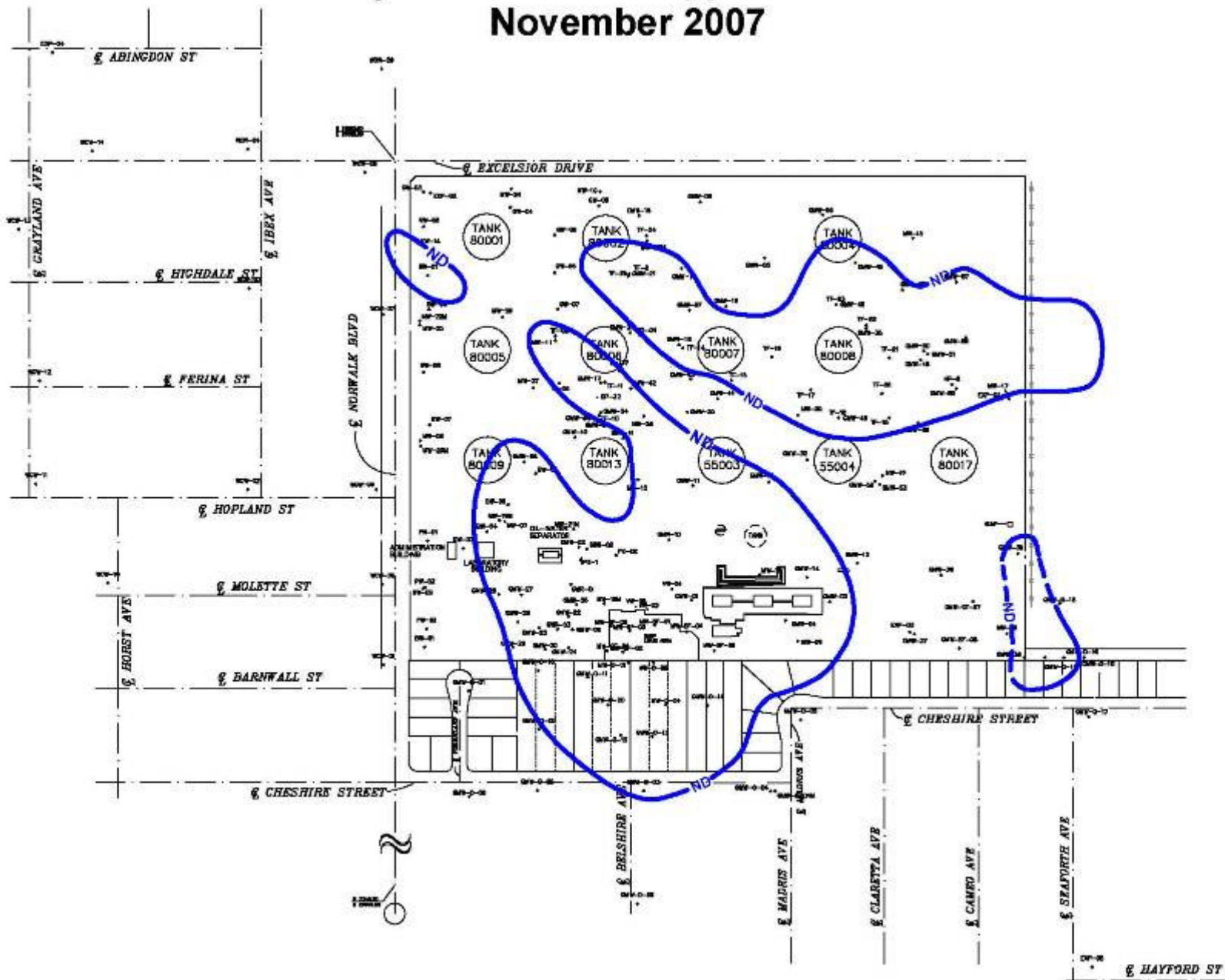
# Second Semiannual 2009 Groundwater Monitoring Event

- Detected concentrations of 1,2-DCA were below the conservative risk-based cleanup goal for 1,2-DCA (70  $\mu\text{g/L}$ )
- 1,2-DCA and MTBE concentrations have remained consistently below the risk-based cleanup goals in the western area and off-site area west of the site and support the continued shutdown of the West Side Barrier pumping system

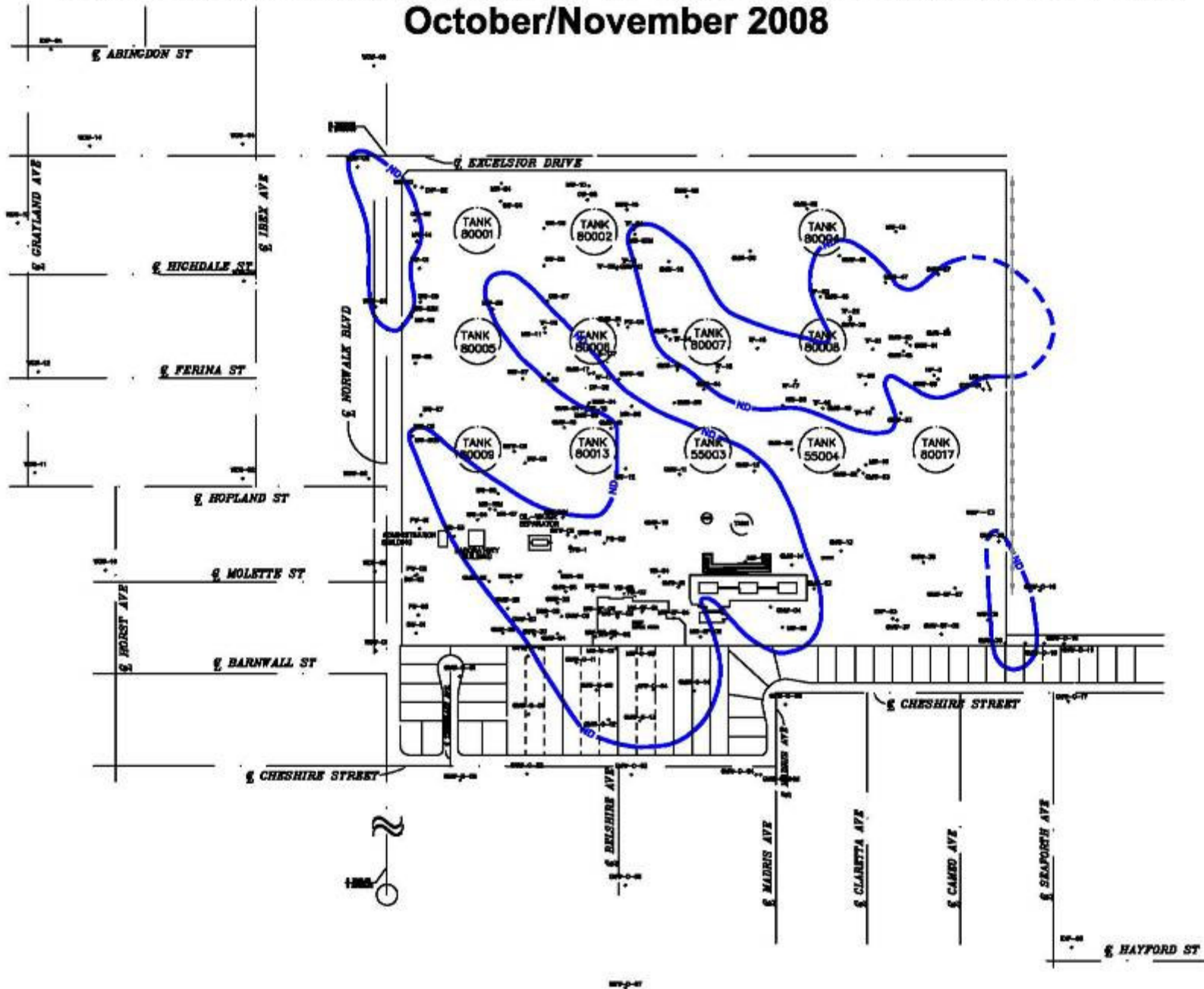
# Total Petroleum Hydrocarbons In Uppermost Groundwater Zone November 2006



# Total Petroleum Hydrocarbons In Uppermost Groundwater Zone November 2007

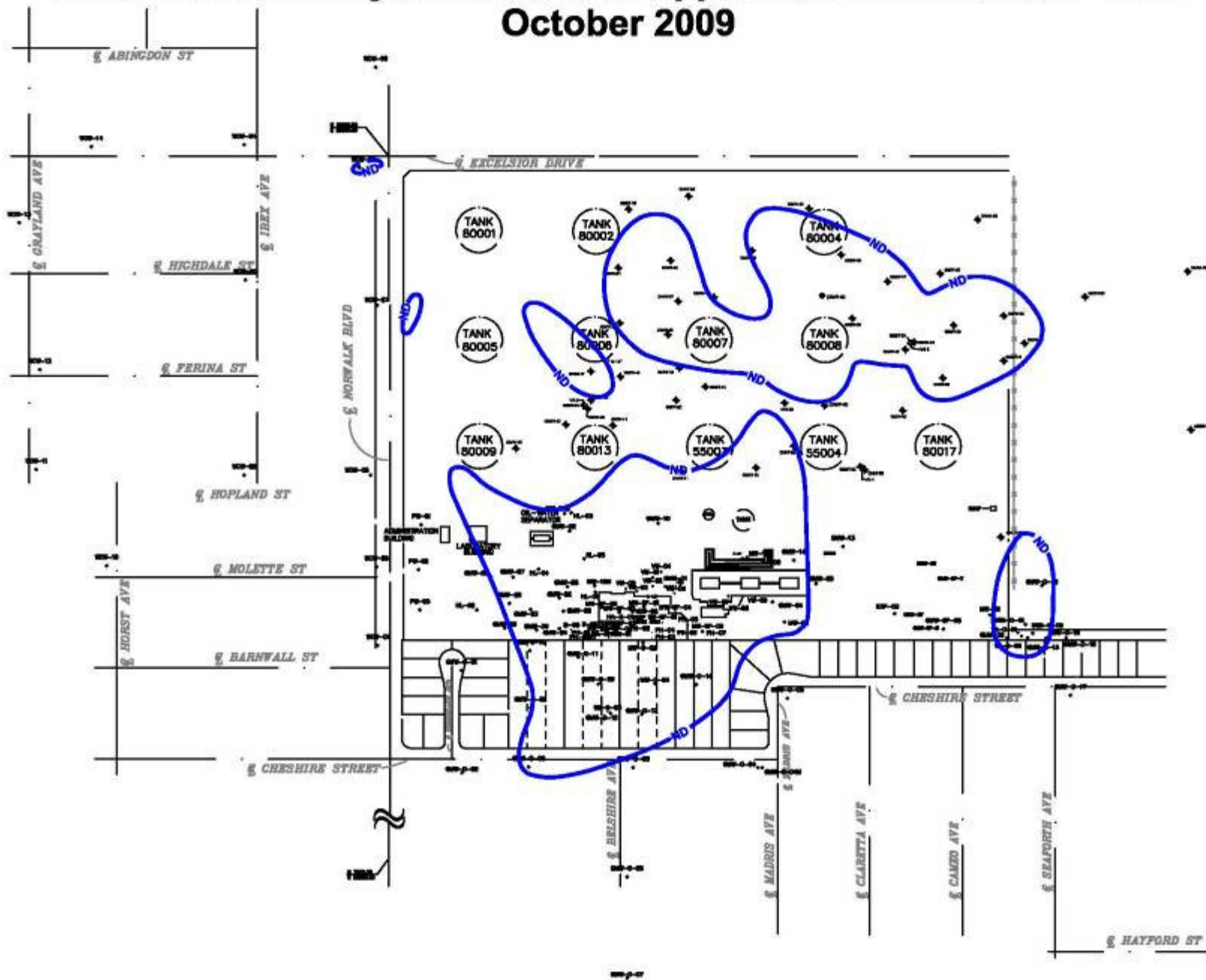


# Total Petroleum Hydrocarbons In Uppermost Groundwater Zone October/November 2008

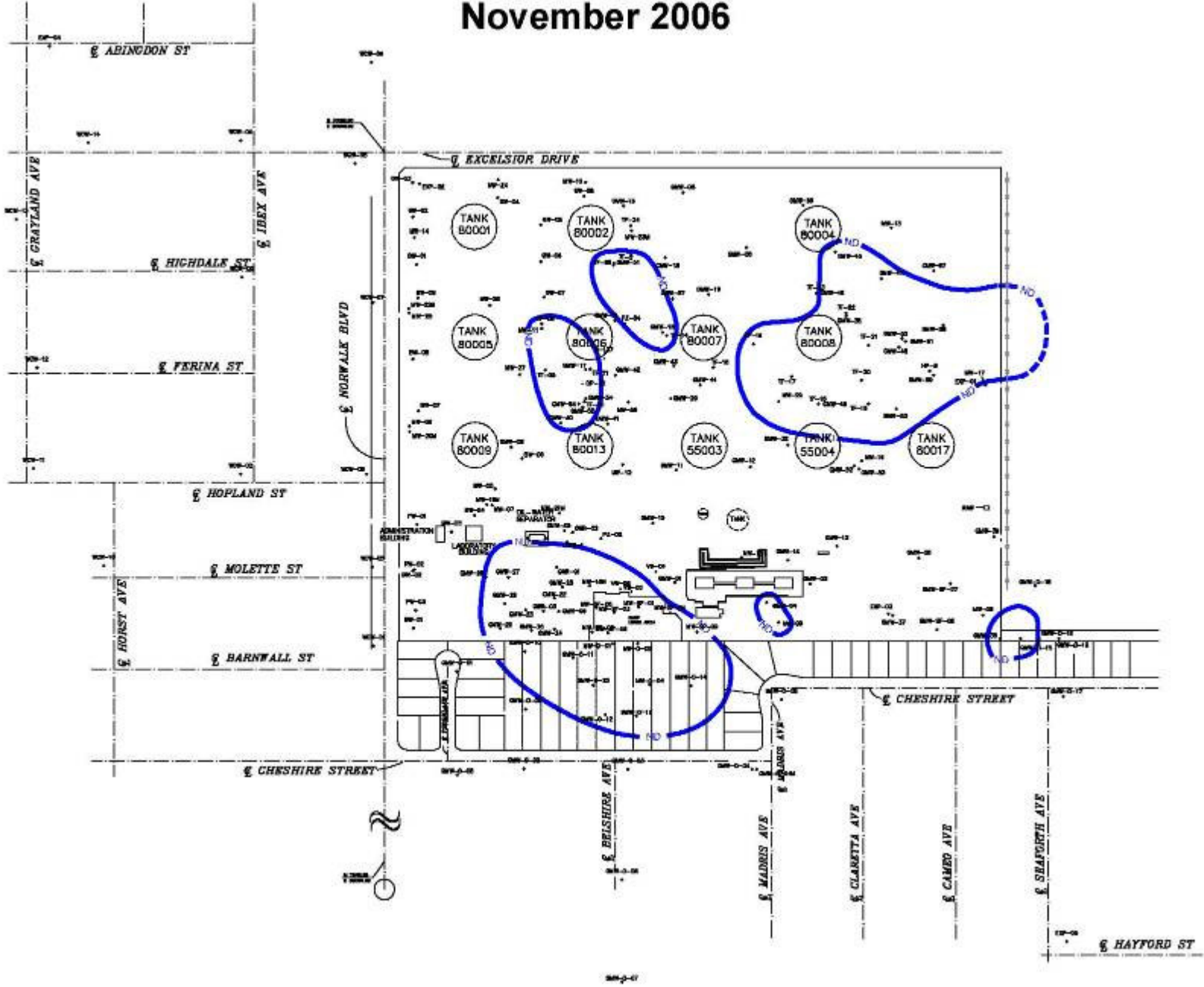




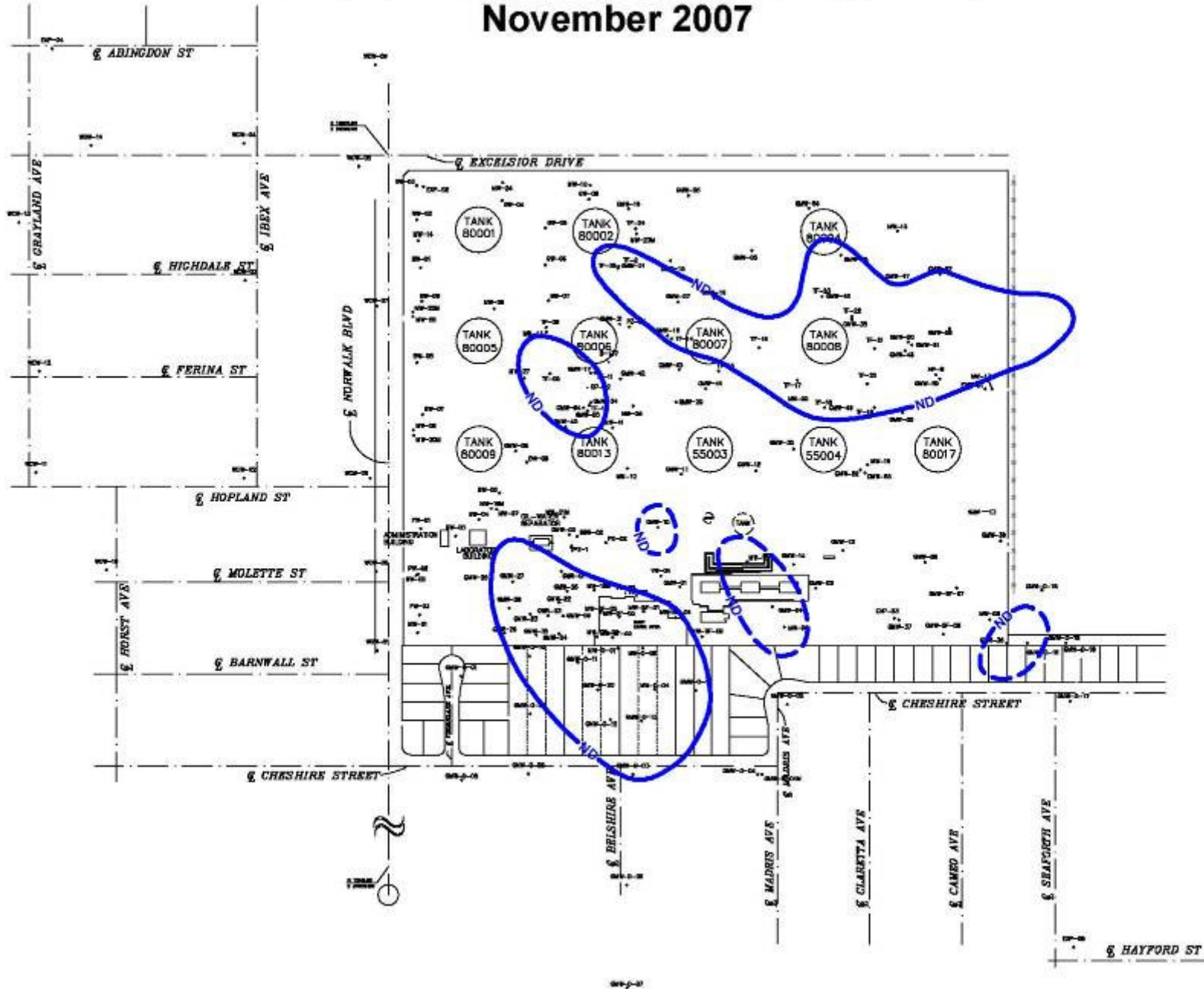
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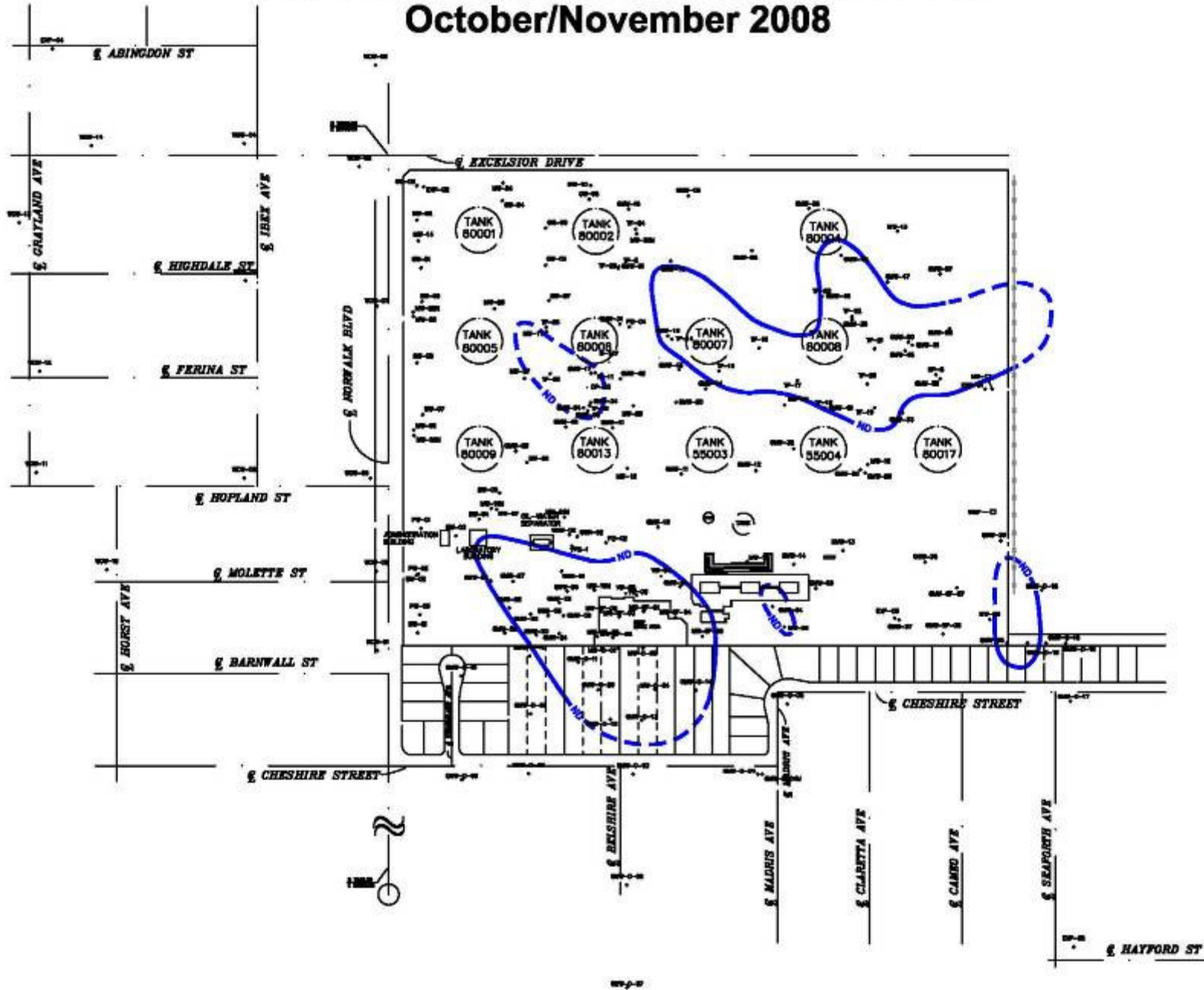
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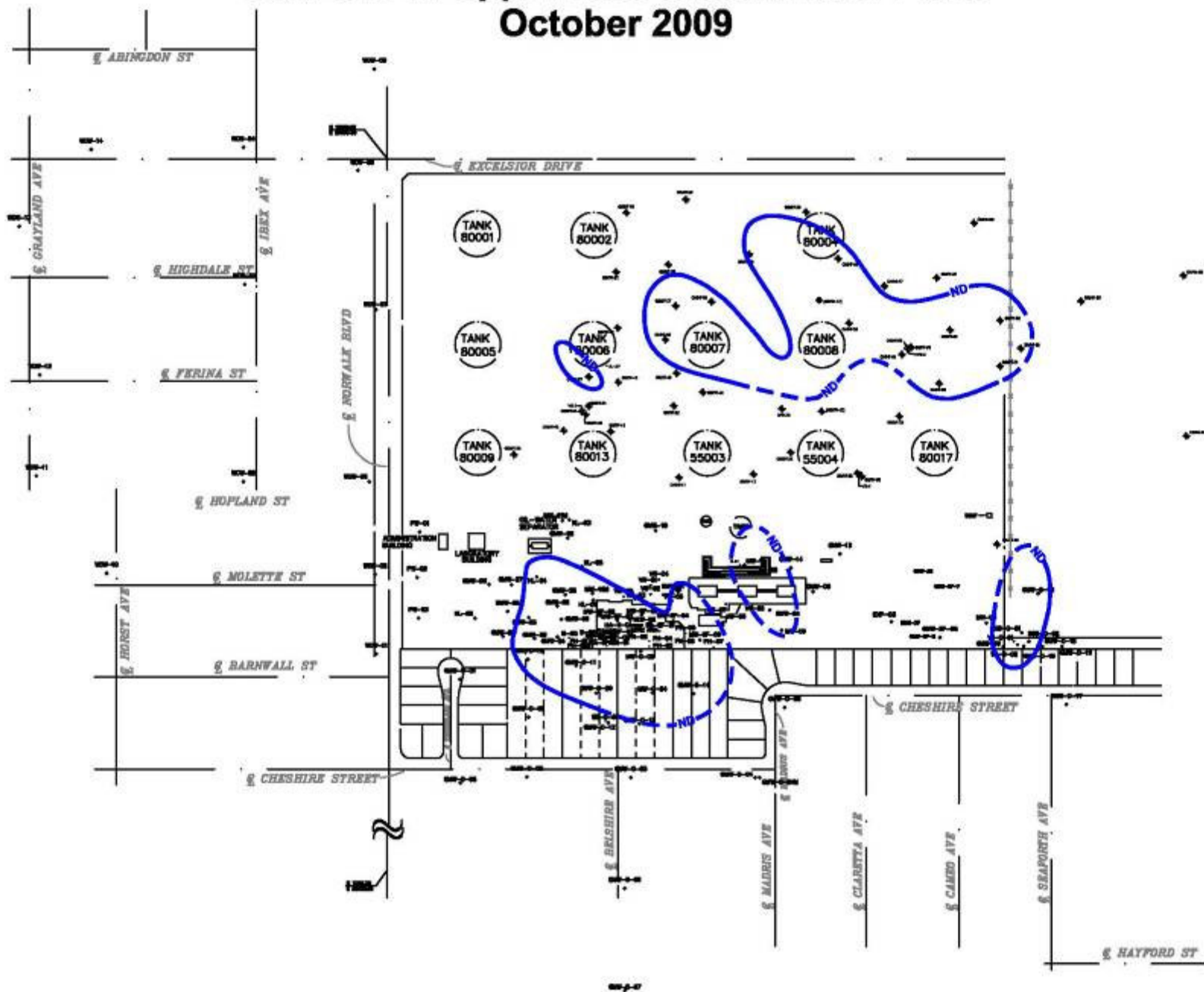
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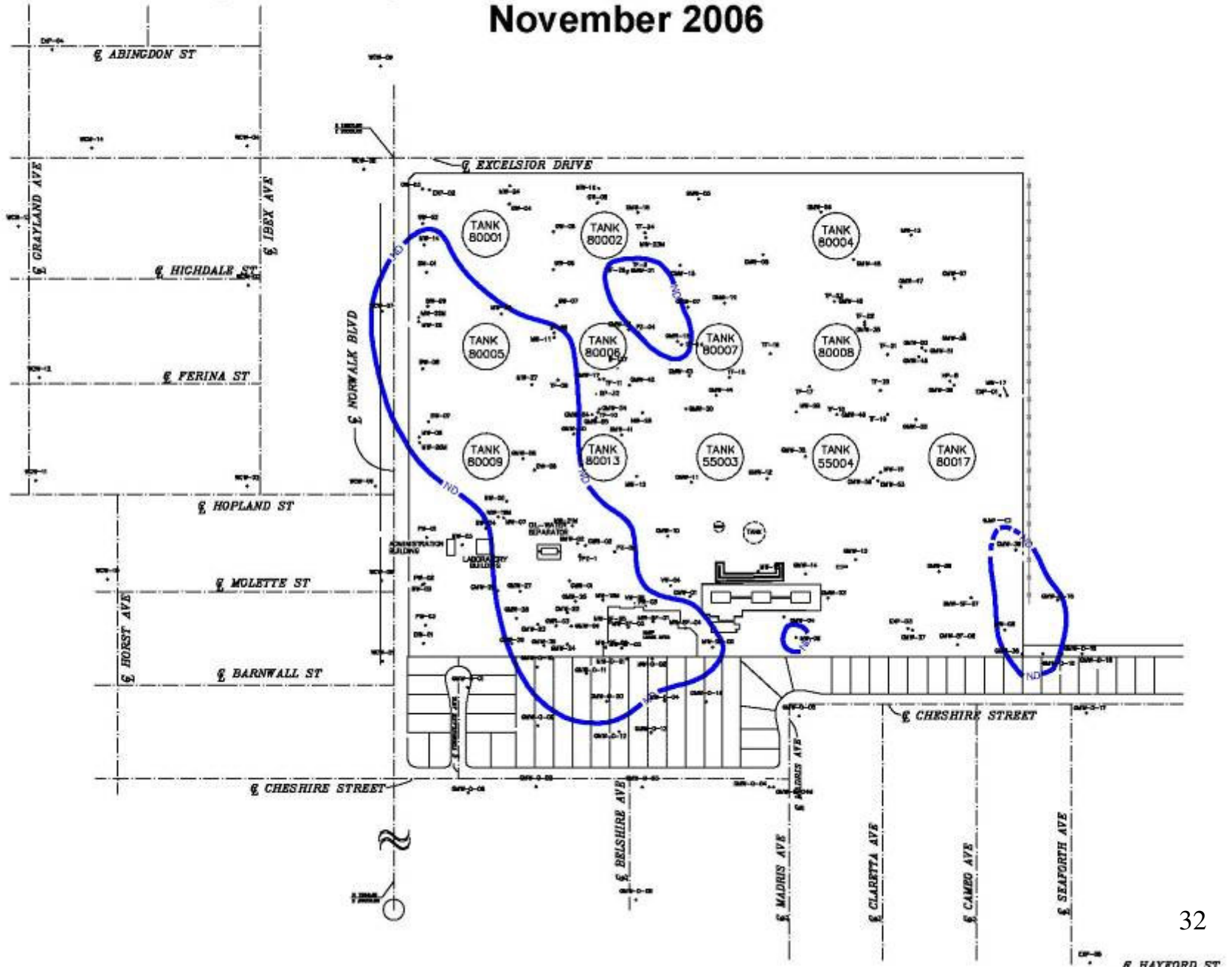
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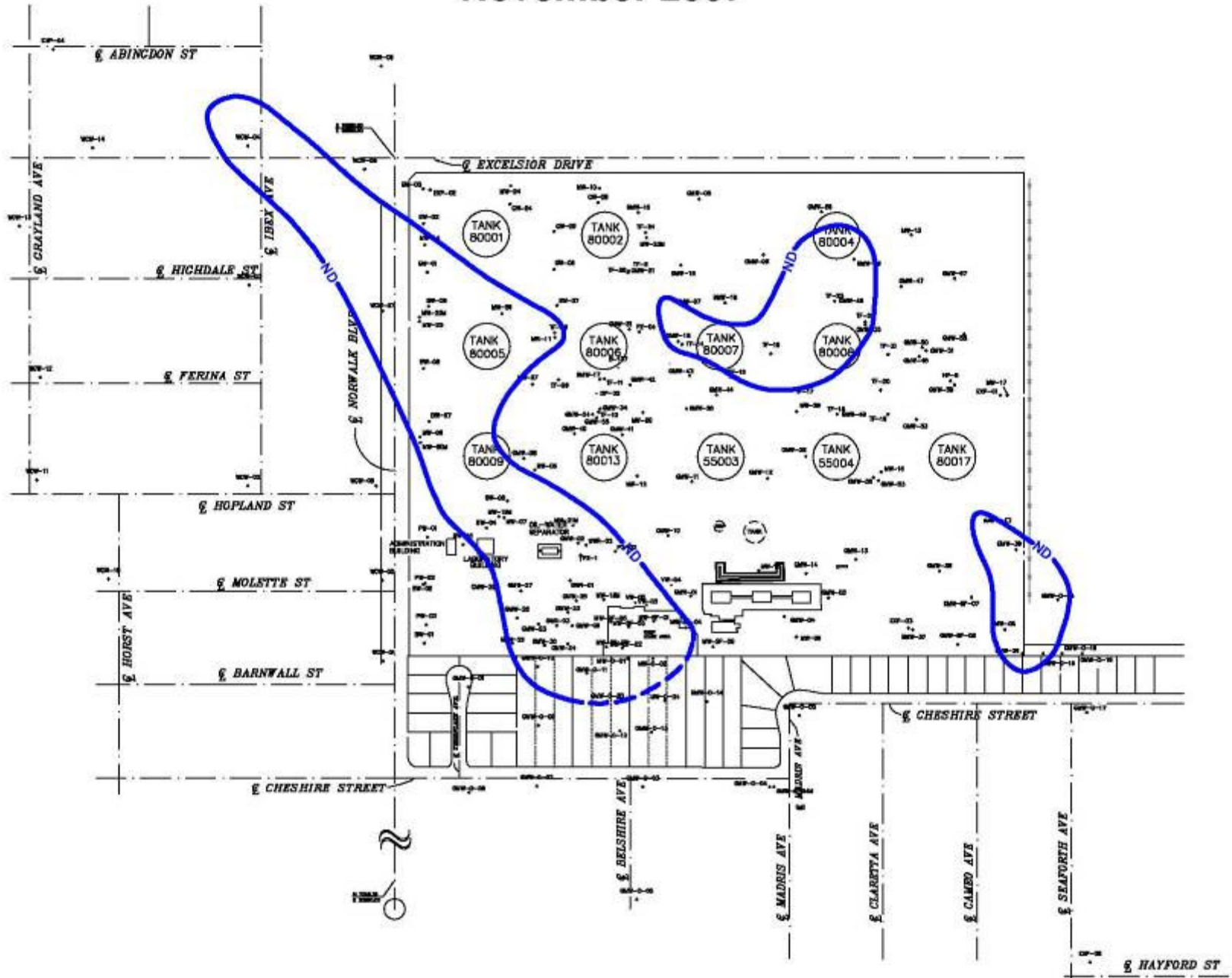
# Benzene In Uppermost Groundwater Zone October 2009



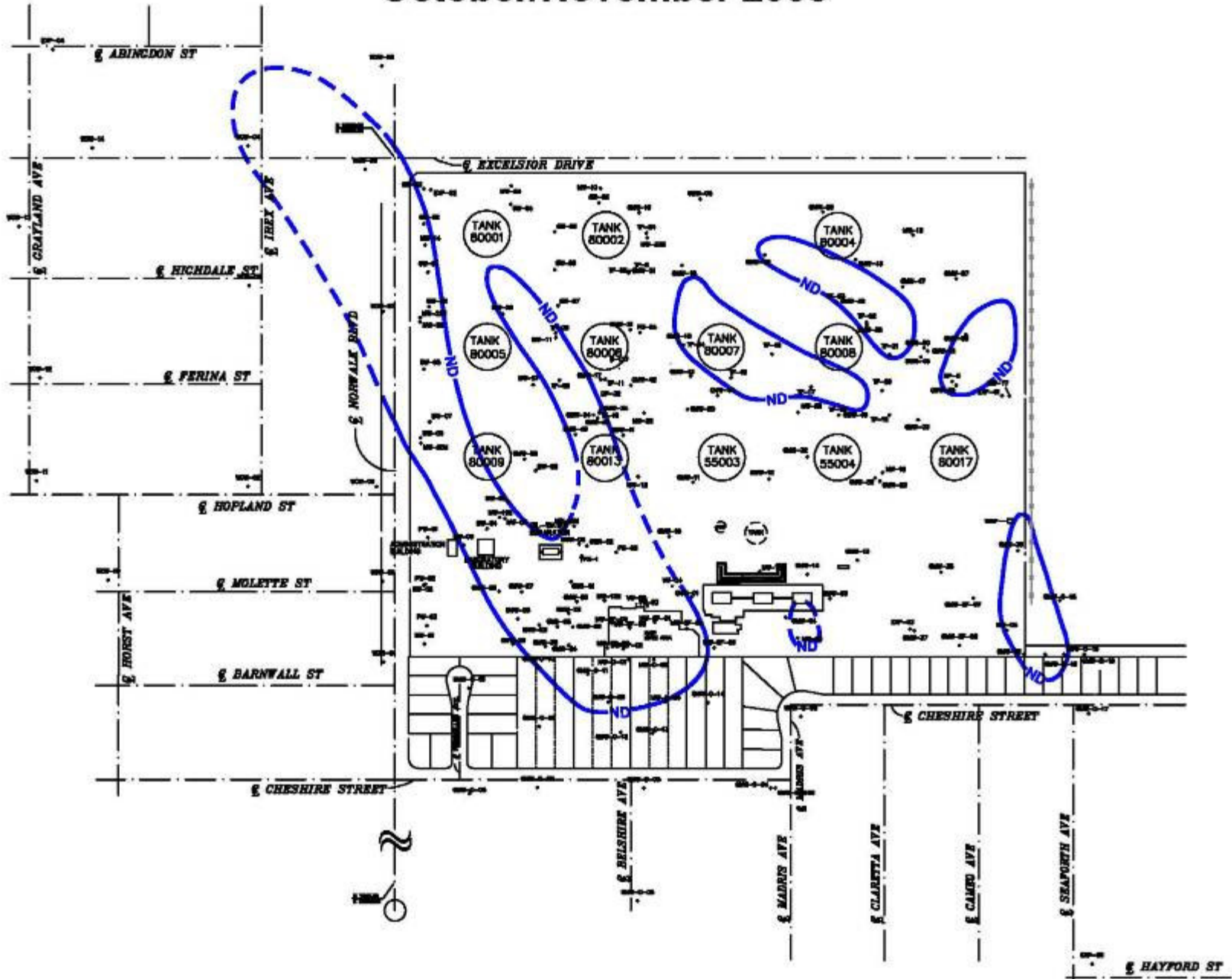
# Methyl tert-butyl ether In Uppermost Groundwater Zone November 2006



# Methyl tert-butyl ether In Uppermost Groundwater Zone November 2007



# Methyl tert-butyl ether In Uppermost Groundwater Zone October/November 2008

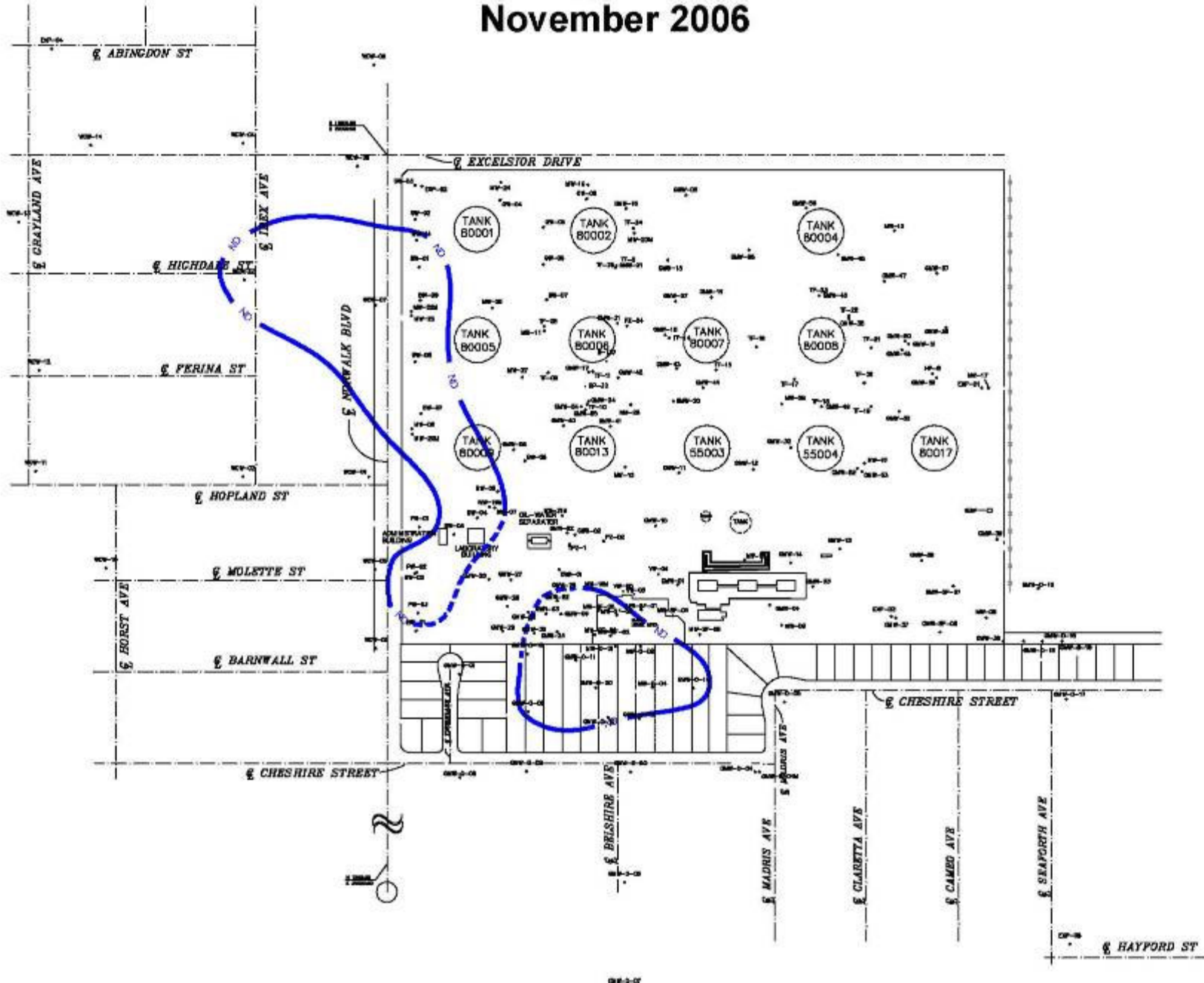




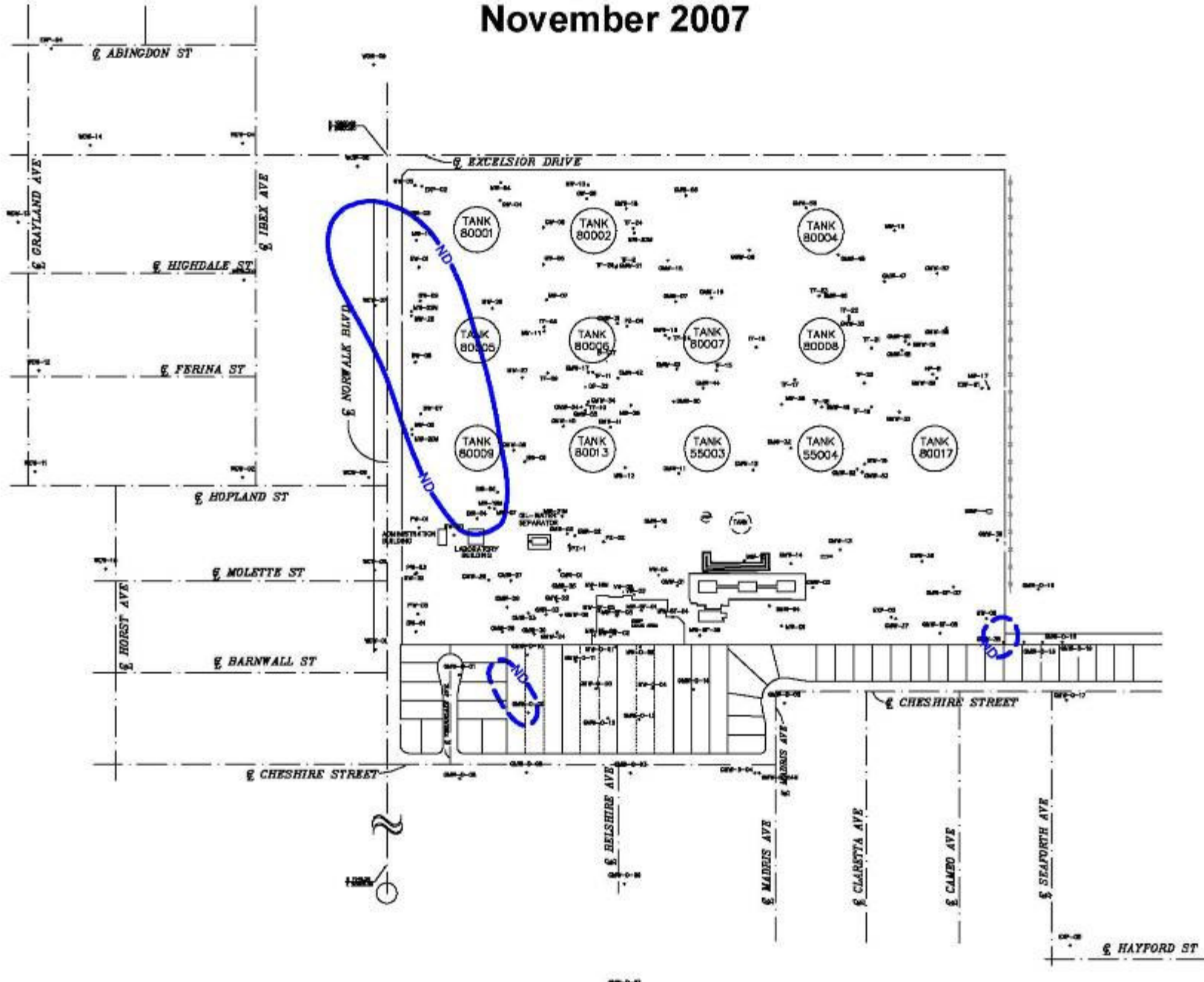
# Methyl tert-butyl ether In Uppermost Groundwater Zone October 2009



# 1,2-Dichloroethane In Uppermost Groundwater Zone November 2006

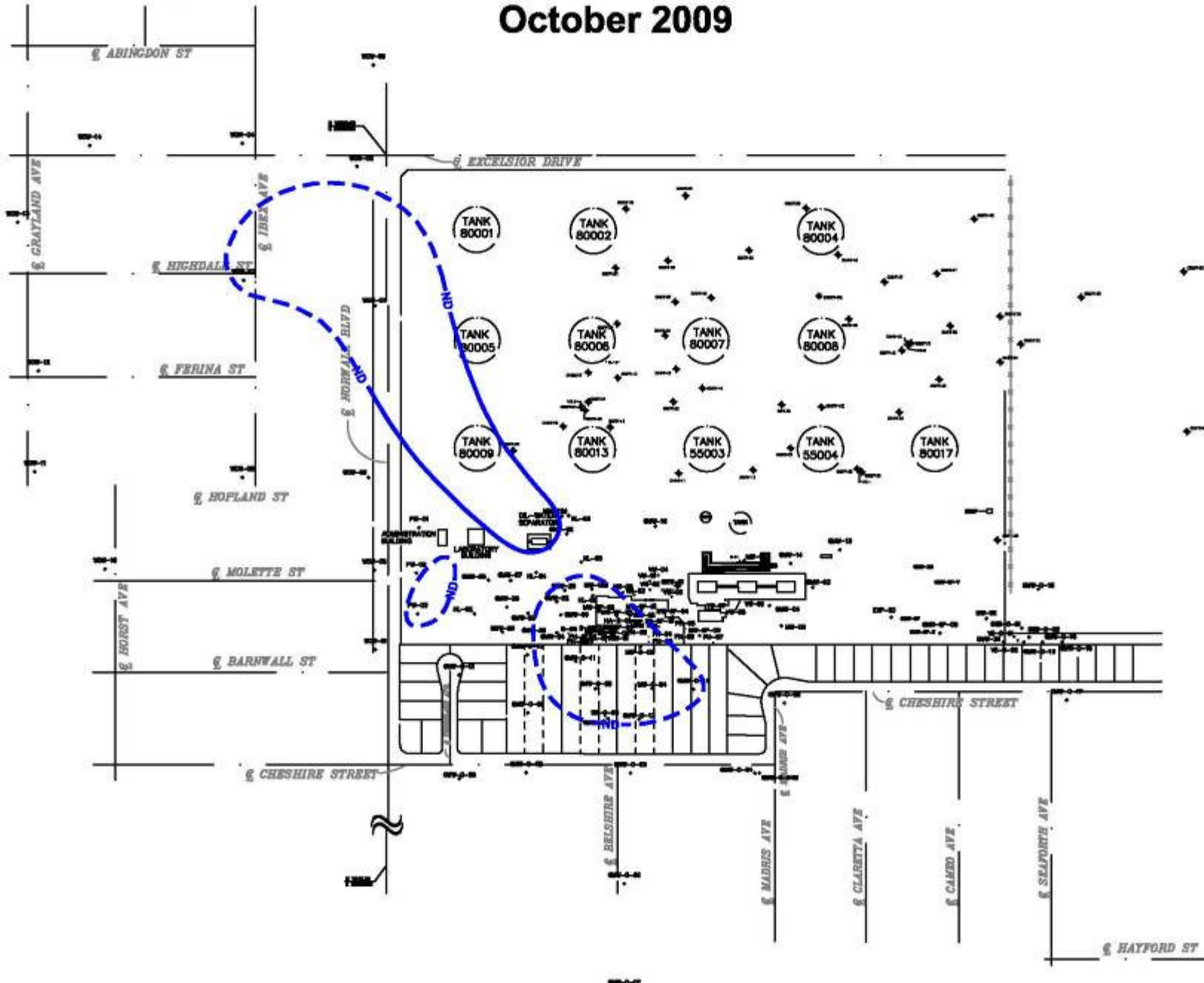


# 1,2-Dichloroethane In Uppermost Groundwater Zone November 2007





# 1,2-Dichloroethane In Uppermost Groundwater Zone October 2009



# Discussion