

# ***Norwalk Tank Farm Update***

*Presented to the Norwalk Tank Farm  
Restoration Advisory Board*

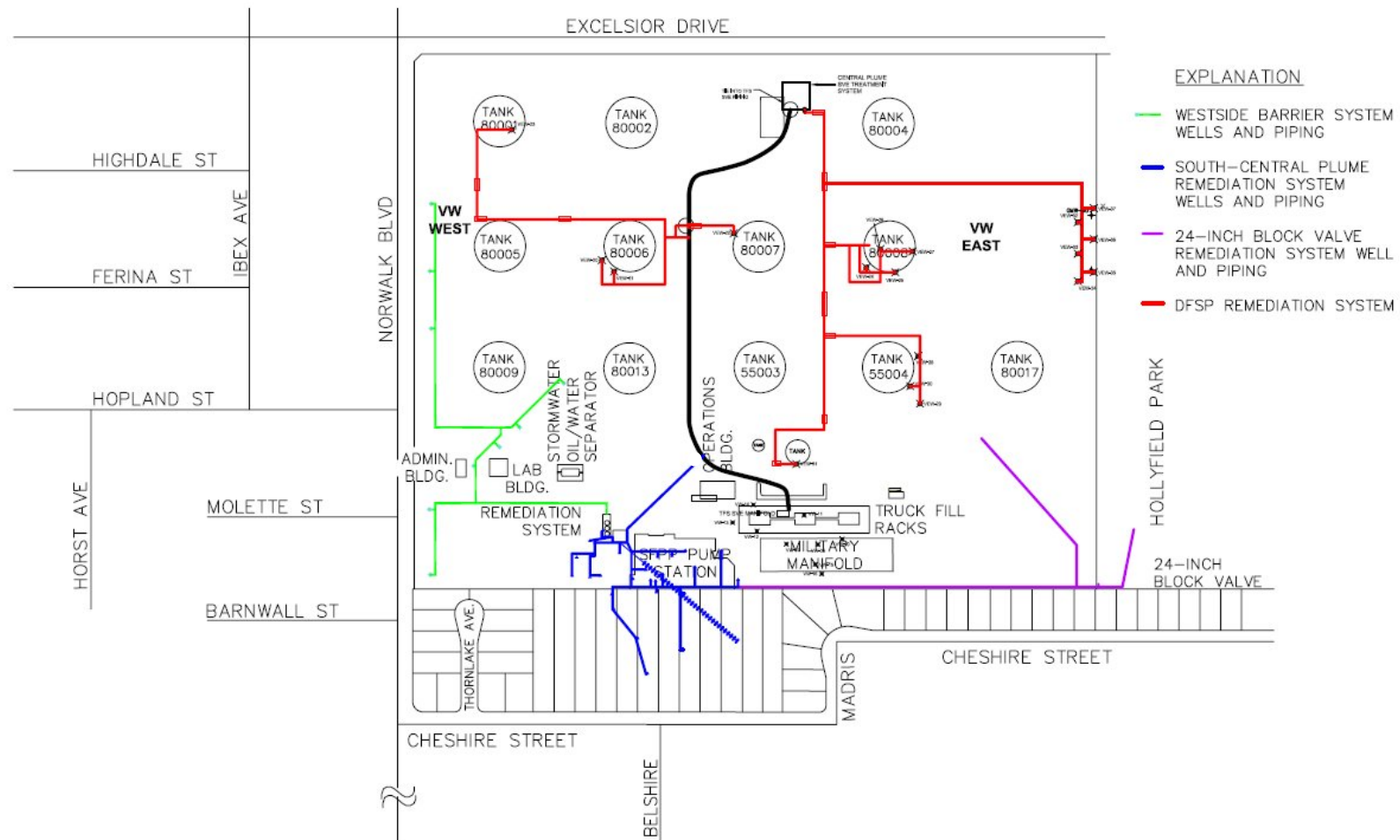
*October 23, 2008*

# Presentation Overview

## Topics to be Covered

- Remediation Operations Update
- Third Quarter 2008 Sentry Groundwater Monitoring Event
- Additional Off-Site Assessment Results

# Map of Remediation Systems



# Soil Vapor Extraction System

- 24 on-site and 6 off-site vapor extraction wells in the South-Central Plume area.
- 2 vapor extraction wells in the Southeastern 24-Inch Block Valve area.

# Soil Vapor Extraction System Operations Summary

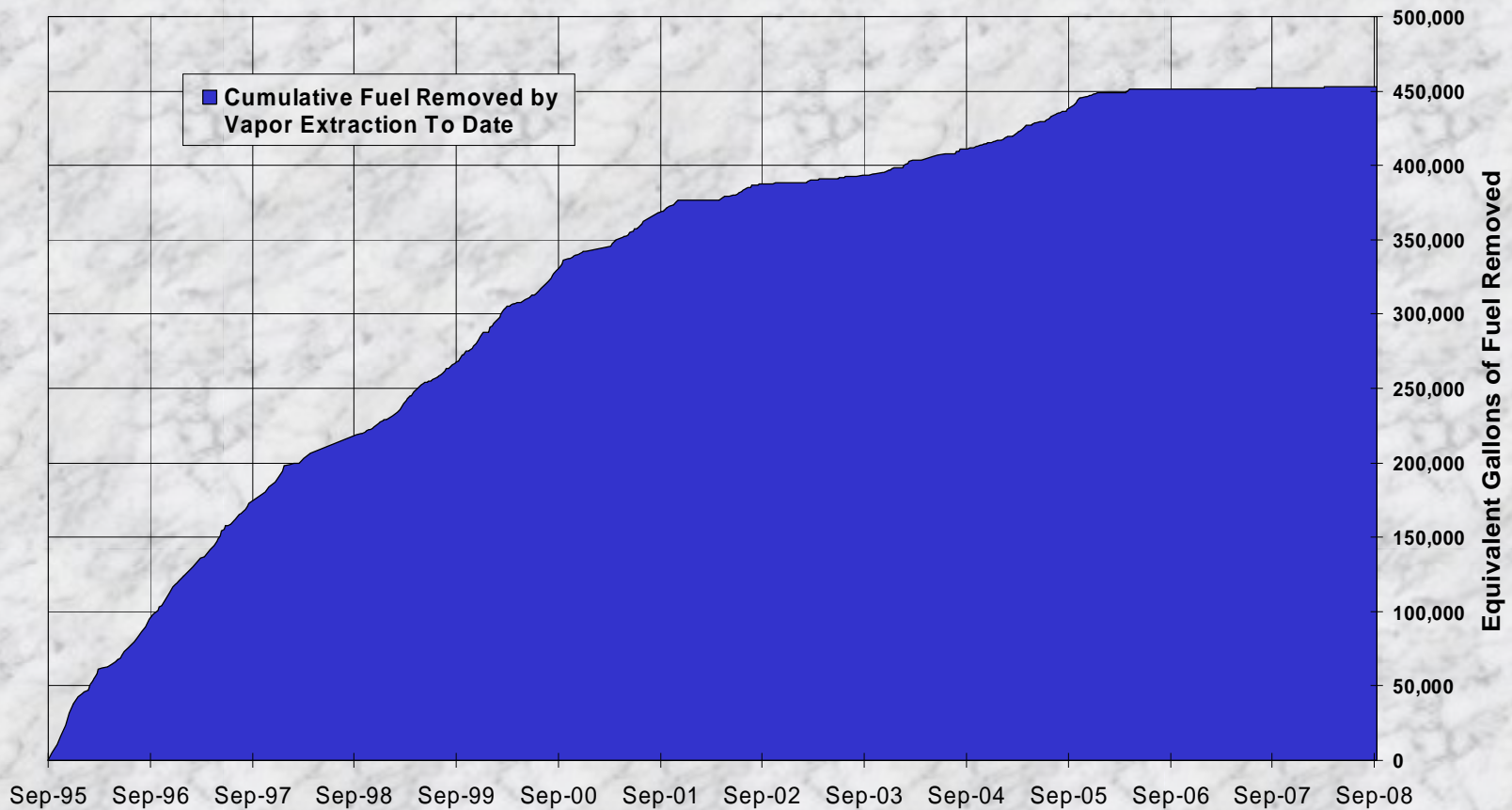
- Approximately 239 gallons equivalent of fuel removed from soil and destroyed by catalytic oxidation during third quarter 2008.
- Approximately 453,000 gallons equivalent of fuel removed from soil and destroyed by catalytic and thermal oxidation since September 1995.
- Approximately 63,100 hours of operation since September 1995.

# Soil Vapor Extraction System Operations Summary

- The SVE system operated continuously during third quarter 2008 with the following exceptions:
  - Electrical disruption due to a faulty breaker at main electrical panel (approximately 7 days); SVE blower motor was replaced and systems were restarted.
  - Third quarter 2008 sentry groundwater monitoring event (approximately 14 days).
  - Power interruption (approximately 1 day).
- Percent operation for third quarter 2008: 76%
- Percent operation excluding planned shutdown period for groundwater monitoring: 90%

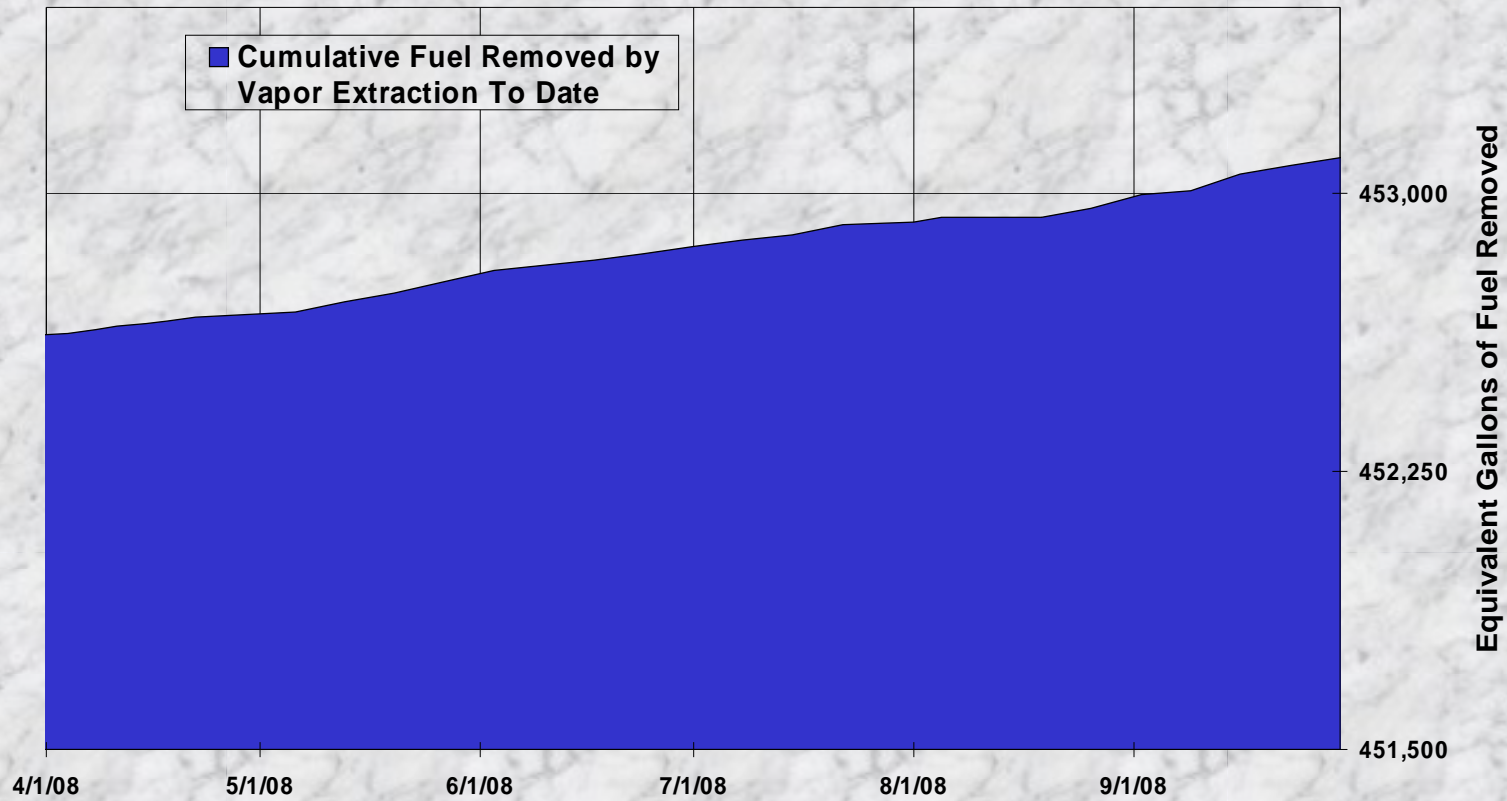
# Soil Vapor Extraction System Operations Summary

## Cumulative Fuel Removed by Vapor Extraction To Date



# Soil Vapor Extraction System Operations Summary

## Cumulative Fuel Removed by Vapor Extraction - Past Six Months





# Groundwater/Product Extraction System

- 18 total fluids (product and groundwater) extraction wells and 2 groundwater extraction wells in the South-Central Plume area
- 2 total fluids (product and groundwater) extraction wells in the Southeastern 24-Inch Block Valve area
- The West Side Barrier system was shut down in August 2008.

# Groundwater/Product Extraction System Operations Summary

- Total groundwater extracted third quarter 2008:
  - South-Central Plume area: 1,370,000 gallons
  - Southeastern 24-Inch Valve area: 229,000 gallons
  - West Side Barrier area: 11,000 gallons
- Total groundwater extracted since September 1995:
  - South-Central Plume area: 30.2 million gallons
  - Southeastern 24-Inch Valve area: 8.9 million gallons
  - West Side Barrier area: 26.9 million gallons
  - Total groundwater extracted: 66 million gallons
  - 8,917 gallons free product removed\*

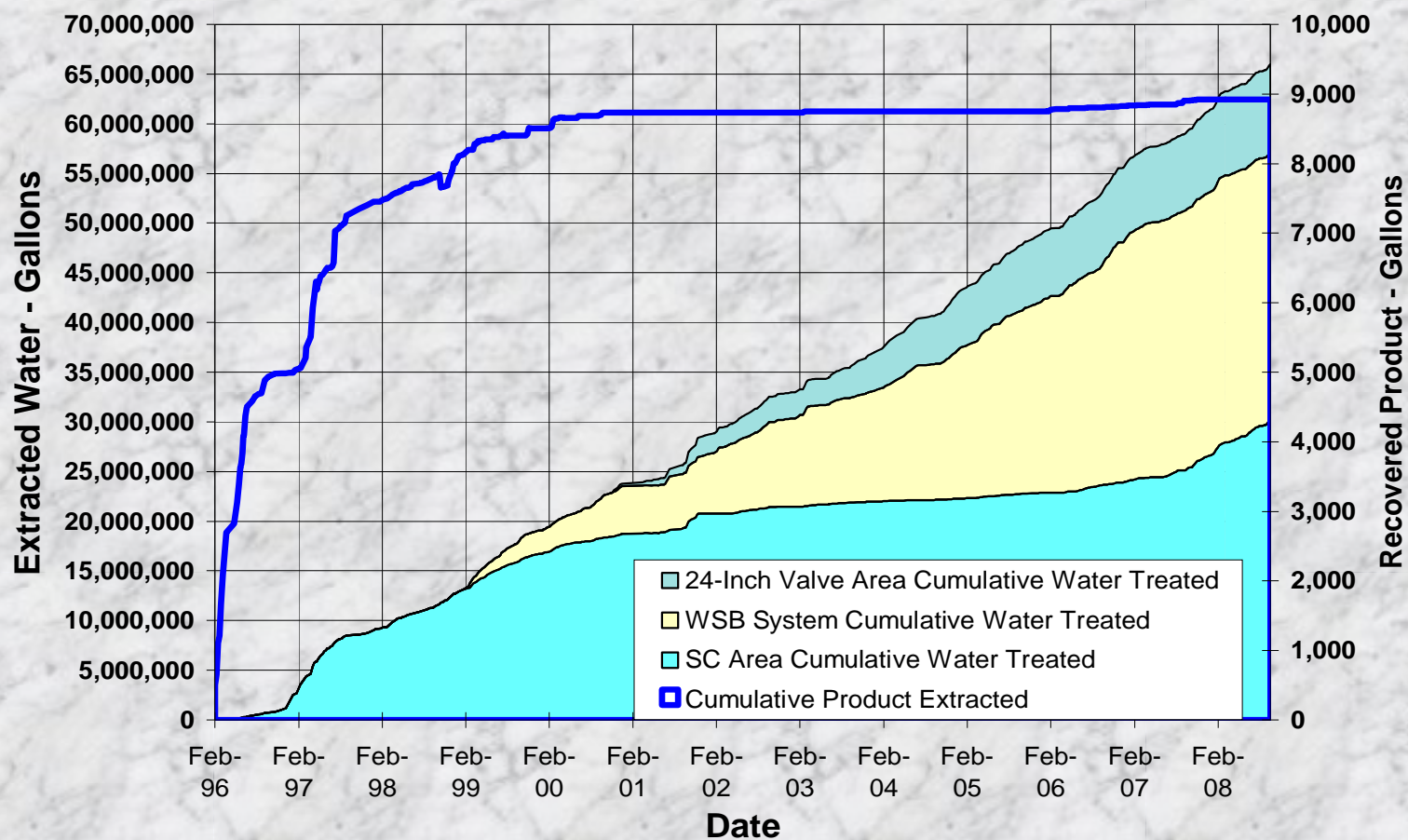
\* The total volume of free product removed is estimated based on measurements of free product accumulation in the product holding tank and measurements of free product removed manually from individual wells. This estimate does not account for free product that is removed via total fluids extraction and becomes emulsified in the relatively larger volume of groundwater extracted.

# Groundwater/Product Extraction System Operations Summary

- The groundwater/product extraction system operated continuously during third quarter 2008 with the following exceptions:
  - Electrical disruption due to a faulty breaker at main electrical panel (approximately 7 days); SVE blower motor was replaced and systems were restarted.
  - Third quarter 2008 sentry groundwater monitoring event (approximately 14 days).
  - Power interruption (approximately 1 day).
  - High level alarm in air stripper sump; air stripper transfer pump was replaced (approximately 3 days) and groundwater/product extraction system was restarted.
  - The West Side Barrier system was shut down in August 2008.
- Percent operation for third quarter 2008: 72%
- Percent operation excluding planned shutdown period for groundwater monitoring: 86%

# Groundwater/Product Extraction System Operations Summary

Summary of Product Extracted and Water Treated



## Planned Remediation Activities

- Continue SVE, TFE, and GWE in the South-Central and Southeastern areas.
- Continue to monitor concentrations of dissolved 1,2-DCA and MTBE in western area.
- Continue routine system inspections.
- Continue data collection for monitoring and evaluation of remediation systems.
- Continue adjustments to remediation wells to optimize remediation.
- Collect data to evaluate bioremediation.

## **Third Quarter Sentry 2008 Groundwater Monitoring Event**

- The third quarter 2008 sentry event was conducted during August 8 – 14, 2008.
- Soil vapor and groundwater/product extraction systems were shut down prior to groundwater monitoring activities.
- Groundwater elevations generally decreased in both uppermost and Exposition aquifers beneath the site since April 2008.
- 17 wells sampled, including 4 Exposition wells.

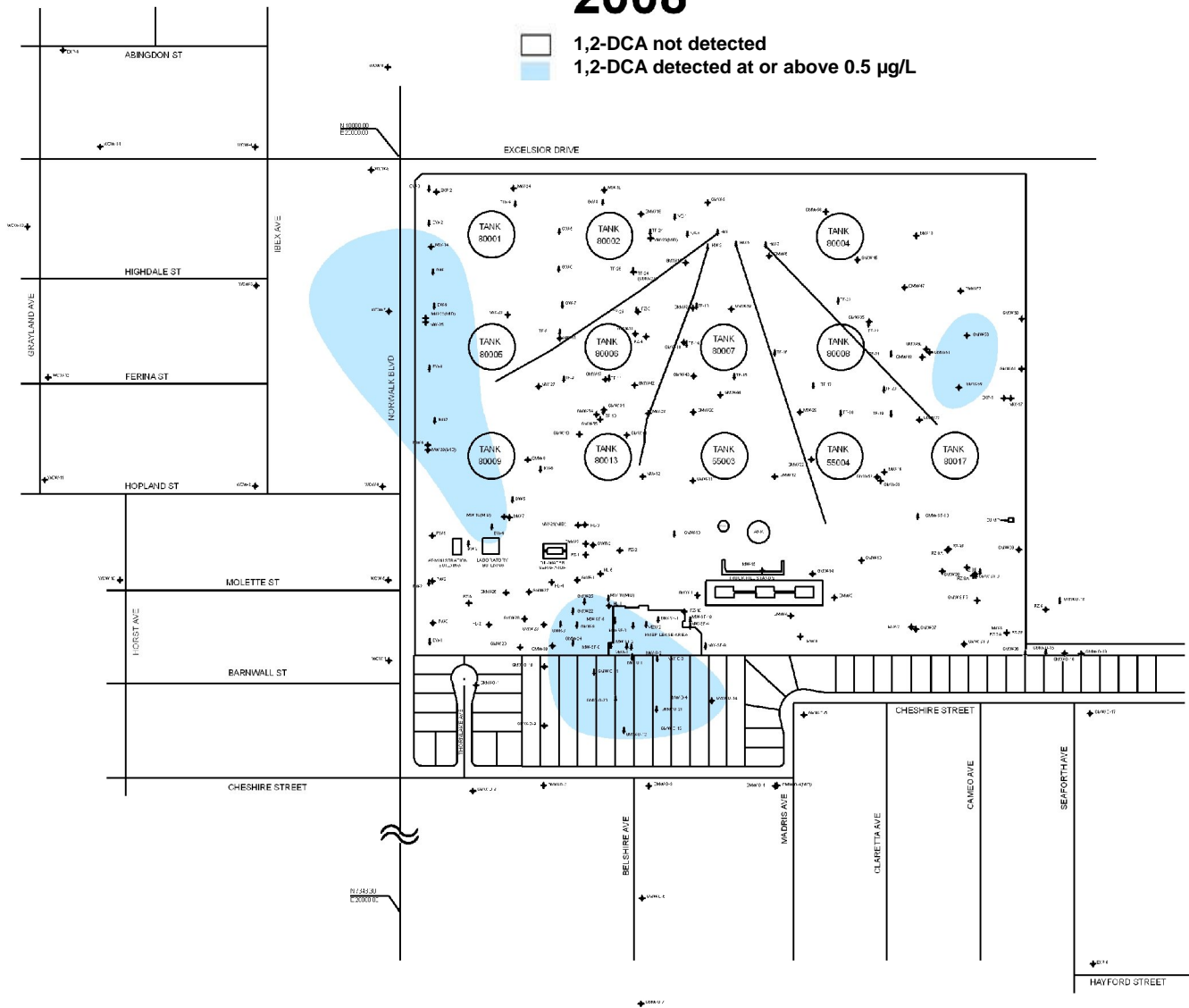
## **Third Quarter 2008 Sentry Groundwater Monitoring Event**

- 36 wells were gauged; free product was detected in 7 wells in the south-central and southeastern areas where free product has been detected previously.
- No VOCs, TPHg, or TPHfp were detected in Exposition aquifer monitoring wells or southern off-site wells GMW-O-1, GMW-O-2, and GMW-O-3.
- Concentrations of 1,2-DCA and MTBE in WCW-3 and WCW-7 have remained below risk-based corrective action (RBCA) goals for both 1,2-DCA (70 ug/L) and MTBE (40 ug/L) since August 2005.

# 1,2-DCA

## 2008

- 1,2-DCA not detected
- 1,2-DCA detected at or above 0.5 µg/L

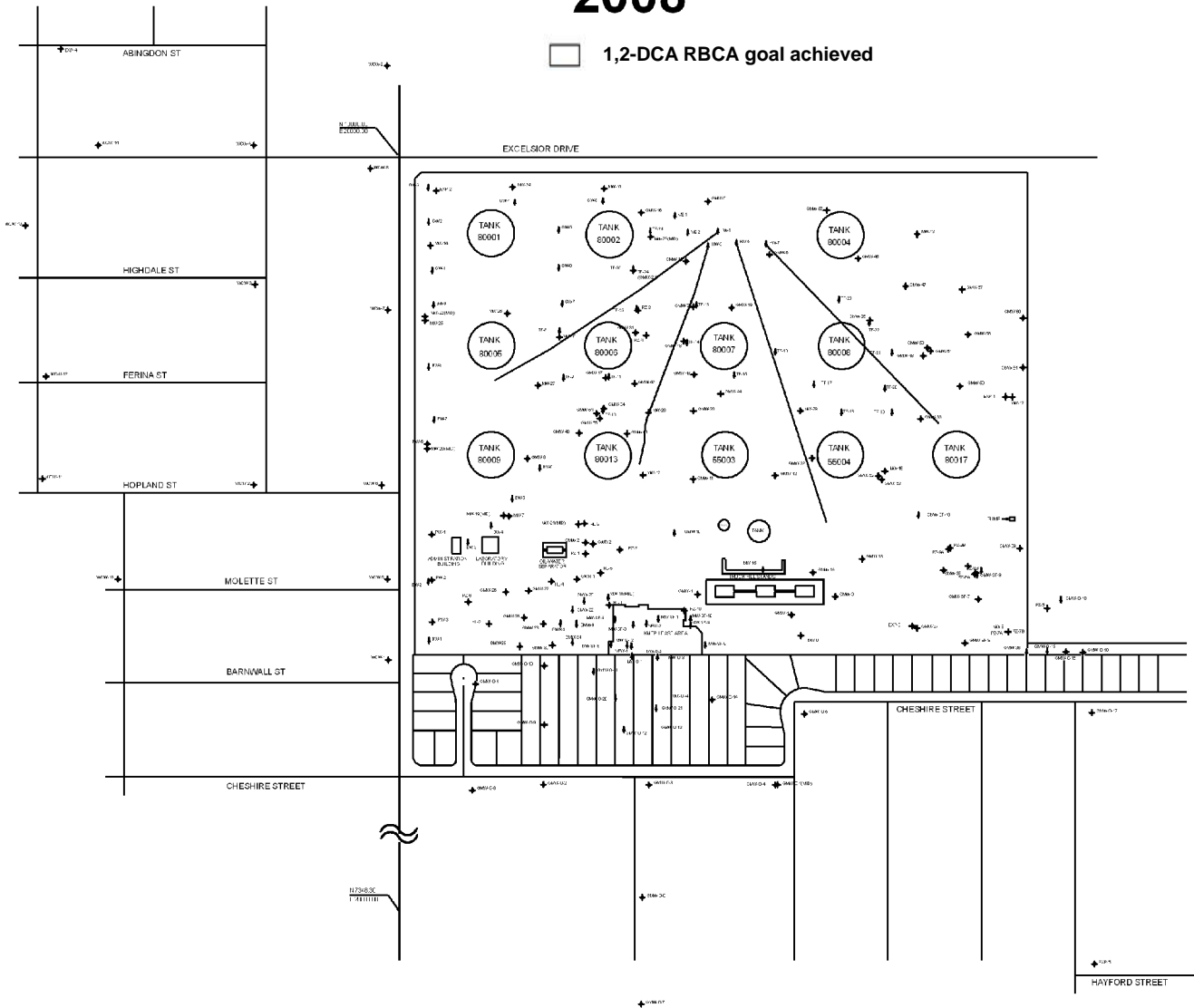




# 1,2-DCA RBCA Goal: 70 µg/L

2008

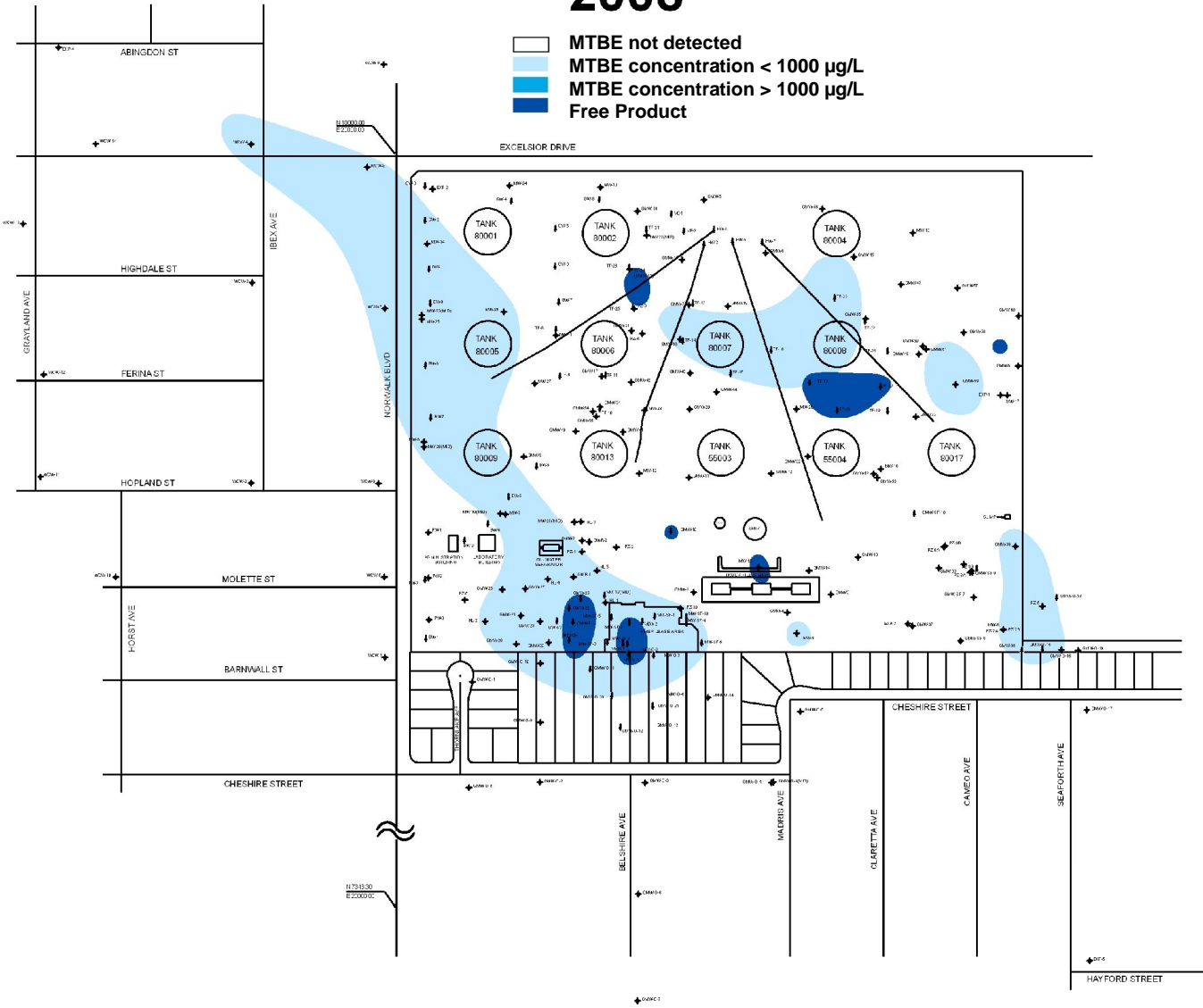
□ 1,2-DCA RBCA goal achieved



# MTBE

## 2008

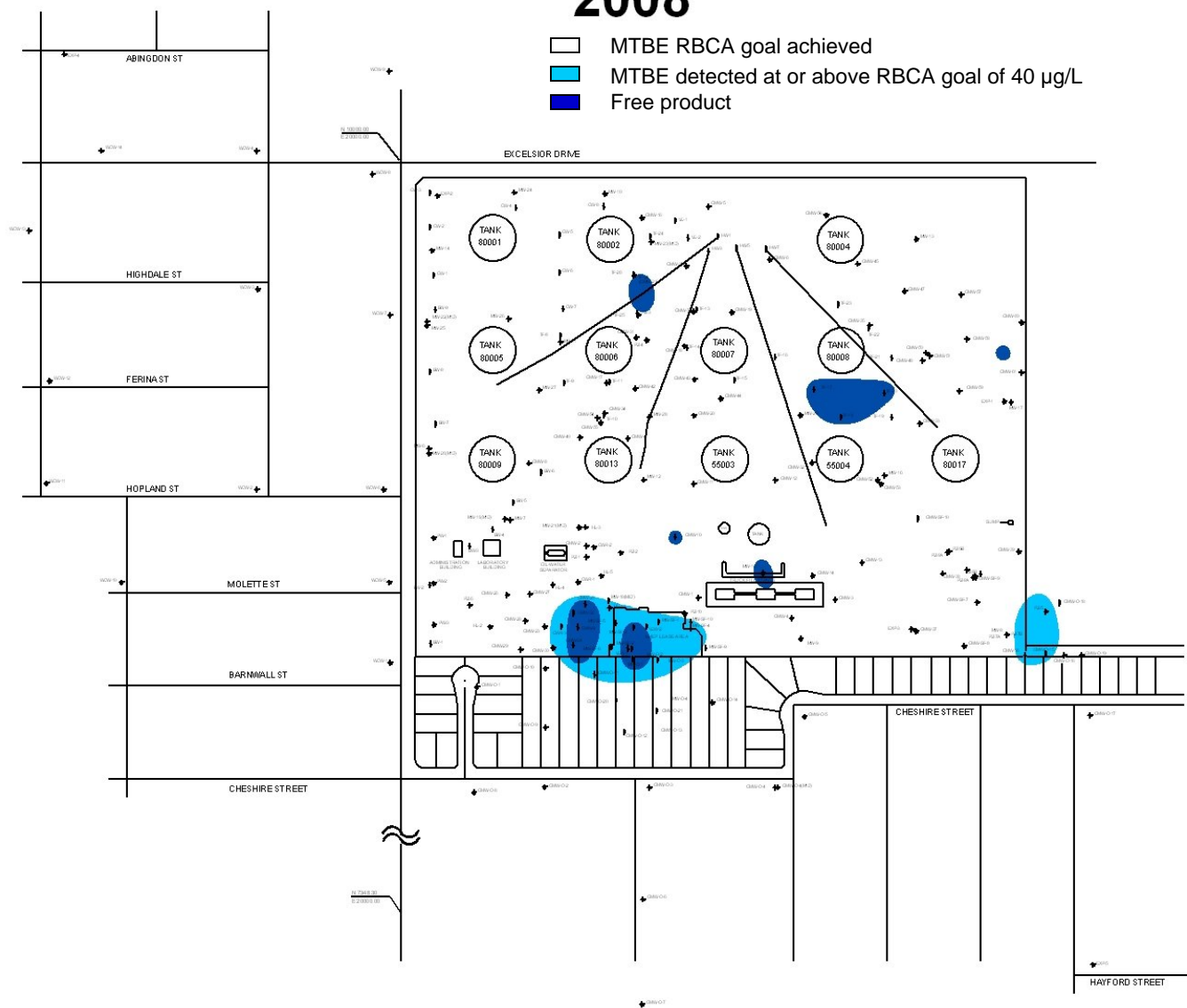
- MTBE not detected
- MTBE concentration < 1000 µg/L
- MTBE concentration > 1000 µg/L
- Free Product



# MTBE RBCA Goal: 40 $\mu\text{g/L}$

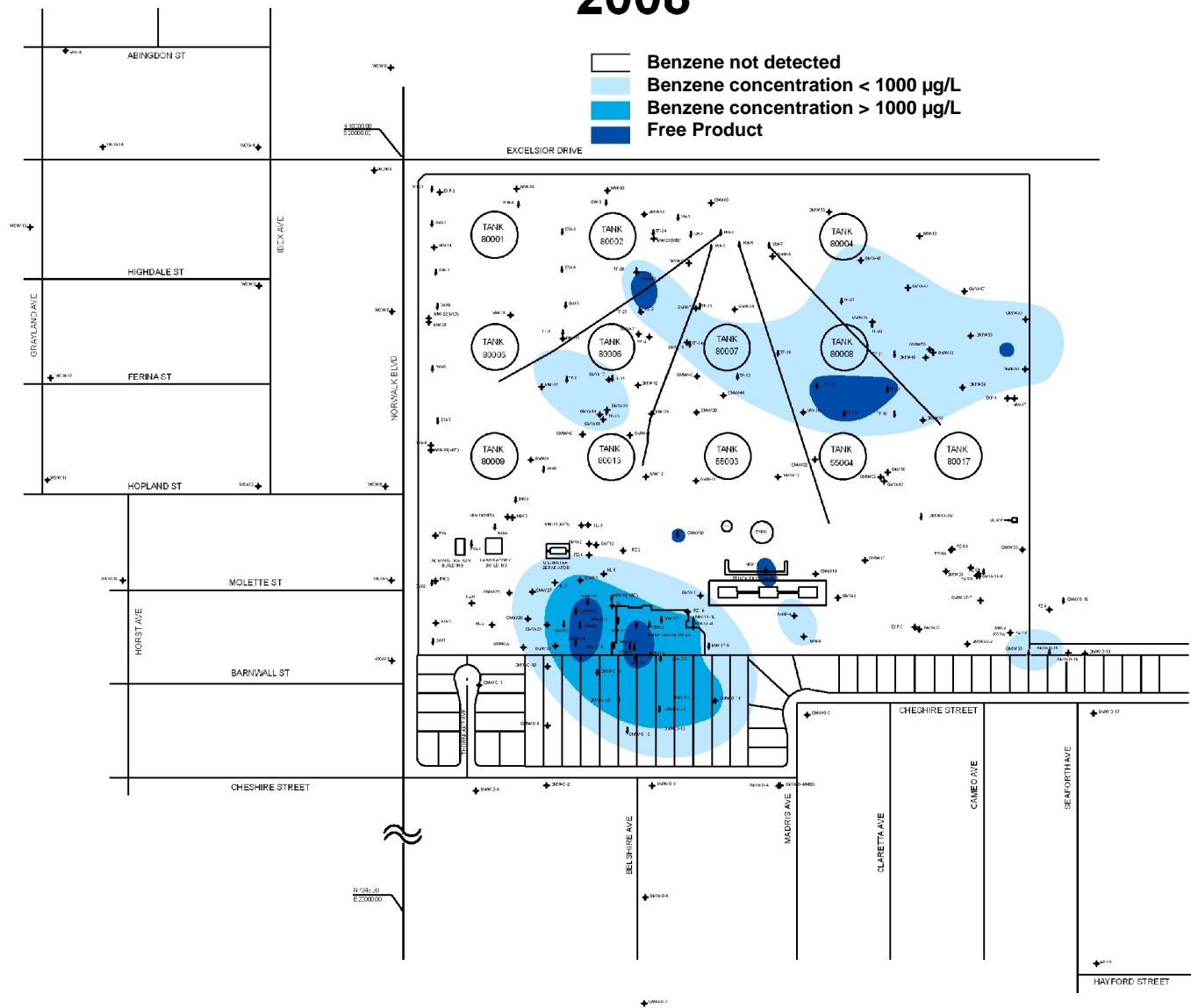
## 2008

- MTBE RBCA goal achieved
- MTBE detected at or above RBCA goal of 40  $\mu\text{g/L}$
- Free product



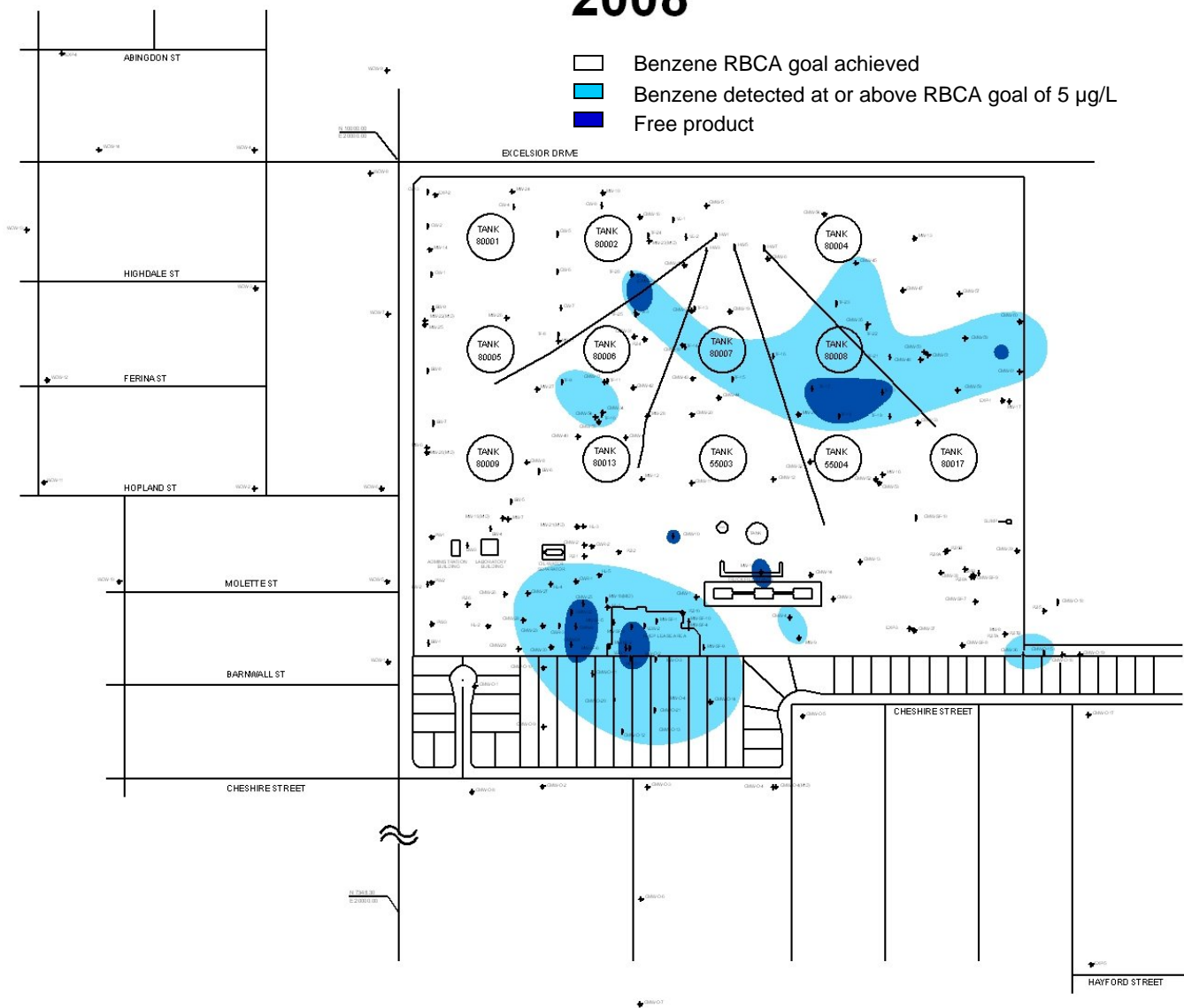
# Benzene

## 2008



# Benzene RBCA Goal: 5 µg/L

2008



# **Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)**

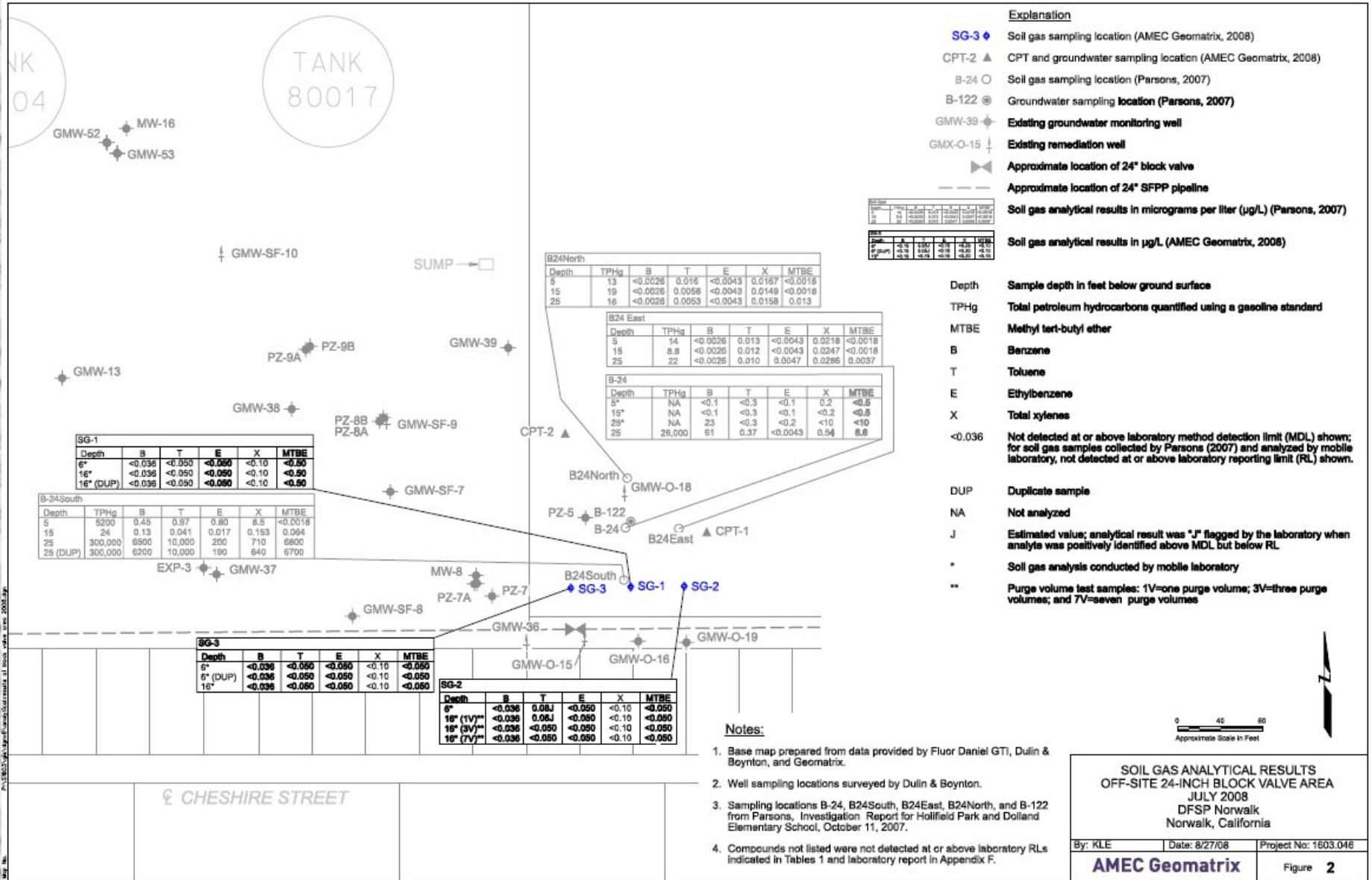
## **Assessment Objectives:**

- 1a. Further assess the presence and distribution of benzene and other volatile fuel constituents in soil gas as identified during the 2006/2007 Holifield Park investigation at B-24SOUTH
- 1b. Evaluate potential surface emissions of volatile fuel constituents if indicated by results of soil gas survey
2. Verify presence and depth of Bellflower aquitard in the southwestern portion of Holifield Park
3. Delineate lateral extent of dissolved fuel constituents in groundwater east of boring B-122
4. Delineate vertical extent of dissolved fuel constituents in groundwater in the southwestern portion of Holifield Park

## **Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)**

- **Soil Gas Sampling Results:**
  - Three soil vapor sampling locations (SG-1, SG-2, and SG-3) were completed in southwestern portion of Holifield Park on July 8, 2008.
  - Soil gas samples were collected at depths of approximately 6 and 16 feet at each location.
  - Results indicated that VOCs were not detected at or above their respective residential CHHSLs in soil gas samples. Soil gas results did not indicate the need for further testing.
  - ✓ Objective 1 addressed.

# Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)





# **Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)**

- **Groundwater Assessment Results:**
  - Cone Penetrometer Test (CPT) borings were advanced at two locations, CPT-1 and CPT-2, in the southwestern portion of Holifield Park on July 8, 2008.
  - The top of the Bellflower aquitard was encountered at depths of approximately 48.5 feet (CPT-1) and 48 feet (CPT-2).
  - ✓ Objective 2 addressed.



## **Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)**

- **Groundwater Assessment Results (continued):**
  - Three discrete-depth groundwater samples were collected in the vicinity of CPT-1 at depths of approximately 29, 41, and 47 feet.
  - CPT-1 is located approximately 70 feet east of Parsons' 2007 sample location B-122.
  - Target analytes including TPH, BTEX, MTBE, and other fuel oxygenates were not detected in the groundwater samples collected near CPT-1.
  - The eastern extent of dissolved fuel constituents in groundwater in this area has been delineated.
  - ✓ Objective 3 addressed.

## **Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)**

- **Groundwater Assessment Results (continued):**
  - Three discrete-depth groundwater samples were collected in the vicinity of CPT-2 at depths of approximately 29, 36, and 47 feet.
  - CPT-2 is located approximately 105 feet northwest of B-122 and approximately 185 north-northwest (hydraulically downgradient) of the 24-inch block valve.
  - TPHg, MTBE, and/or TBA were detected in the groundwater samples collected near CPT-2.
  - Distribution of fuel constituents was similar to those observed in previous investigations.

## **Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)**

- **Groundwater Assessment Results (continued):**
  - The cumulative results of historical groundwater monitoring and groundwater assessments, in combination with the confirmed presence of the Bellflower aquitard, have adequately delineated the vertical distribution of dissolved fuel constituents in groundwater in the southwestern portion of Holifield park.
  - ✓ Objective 4 addressed.

# **Additional Off-Site Assessment (Southeastern 24-Inch Block Valve Area)**

- **Conclusions:**
  - Assessment objectives have been adequately addressed.
  - No further assessment of vadose zone or groundwater conditions is necessary near the off-site 24-inch block valve area.
  - The “Additional Off-Site Assessment Report” was submitted to the Los Angeles Regional Water Quality Control Board on August 28, 2008.