

# ***Norwalk Tank Farm Update***

*Presented to the Norwalk Tank Farm  
Restoration Advisory Board*

*July 27, 2006*

# Presentation Overview

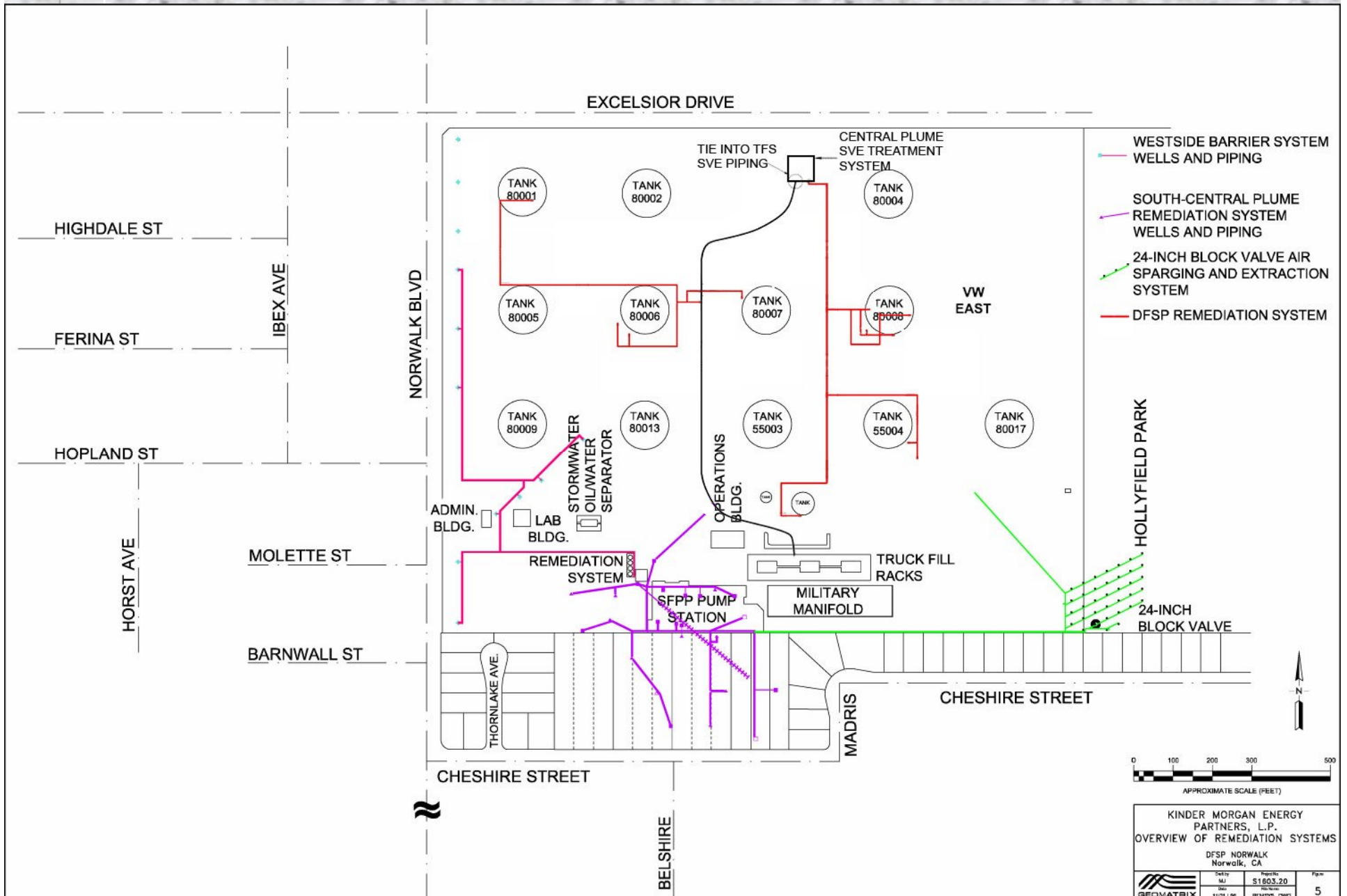
## Topics to be Covered

- HHRA Update
- Remediation Operations Update
- Semi-Annual Groundwater Monitoring
- Second Addendum to RAP

# HHRA Update

- The RWQCB approved the revised HHRA work plan.
- This year, access agreements have been confirmed for 5 of 17 proposed sampling locations. (Last year, access agreements were confirmed for 14 of 17 sampling locations).
- The HHRA work plan will be implemented upon confirming access agreements for the remaining 12 locations.
- Field work tentatively scheduled for second week of August 2006.

# Map of Current Remediation Systems



# Brush Clearance of Southeastern Easement



# Brush Clearance of Southeastern Easement



# Soil Vapor Extraction System Refurbishment

- System refurbishment performed during May and June 2006 and included replacement of the following:
  - two (2) 24” square catalyst cells;
  - refractory material;
  - repainting the outside chamber;
  - electrical panel, motor starters, controllers, relays, and fuses;
  - differential pressure transmitter; and
  - drive motor and an automated 10” process isolation valve / dilution valve on the system inlet

## **Soil Vapor Extraction System Repairs**

- System blower/motor assembly malfunctioned in June 2006.
- Motor replacement completed in July 2006.
- System awaiting blower replacement.
- Expected system restart date in August 2006.



# Soil Vapor Extraction System

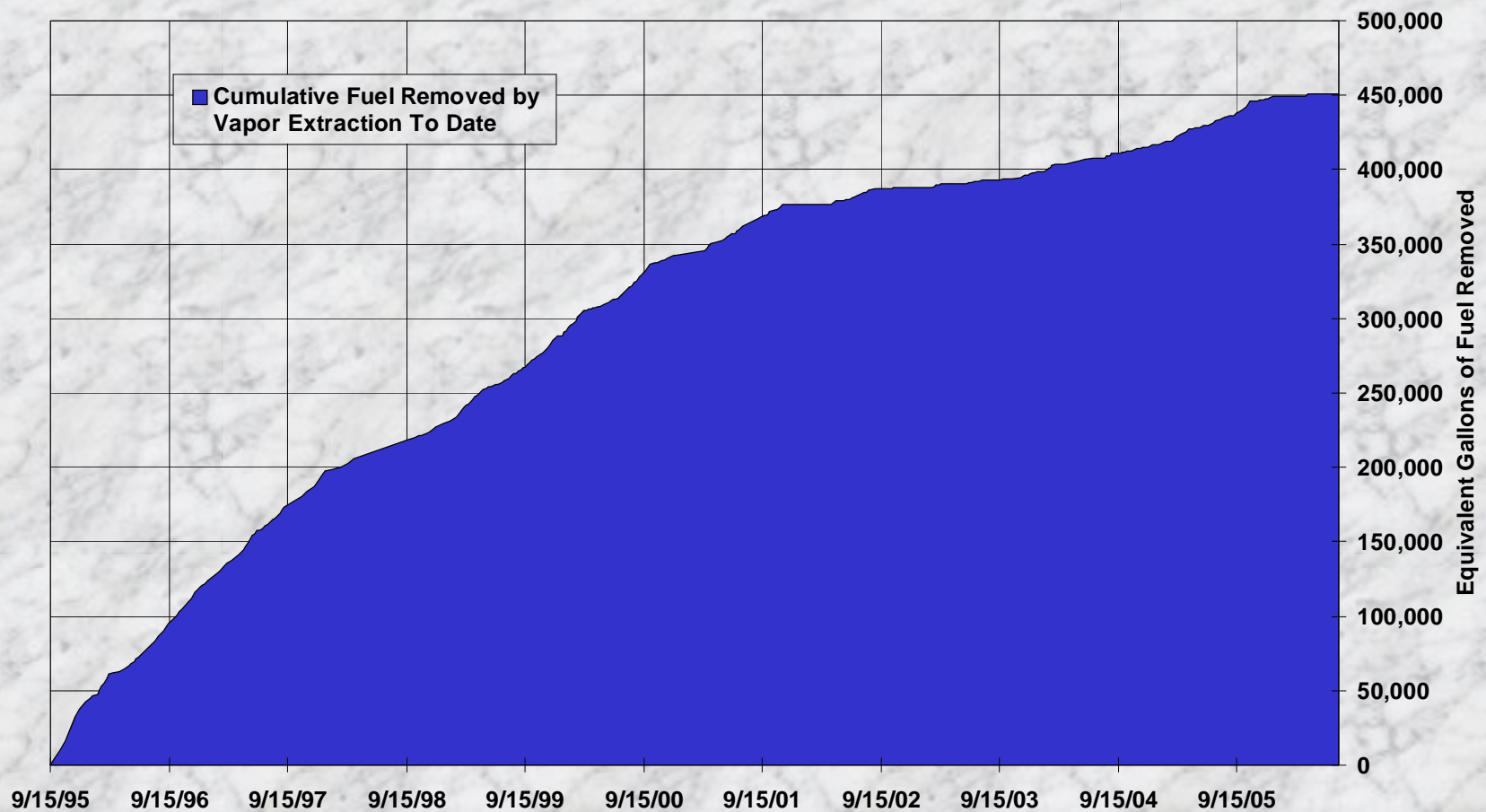
- 17 onsite and 6 off-site vapor extraction wells in the South-Central Plume area.
- 2 vapor extraction wells in the Southeastern 24-Inch Block Valve area.

# Soil Vapor Extraction System Operations Summary

- Approximately 9 gallons equivalent of fuel removed from soil and destroyed by thermal oxidation since the April 2006 RAB meeting.
- Approximately 450,950 gallons equivalent of fuel removed from soil and destroyed by thermal oxidation since September 1995.
- Approximately 50,425 hours of operation since September 1995.

# Soil Vapor Extraction System Operations Summary

Cumulative Fuel Removed by Vapor Extraction To Date



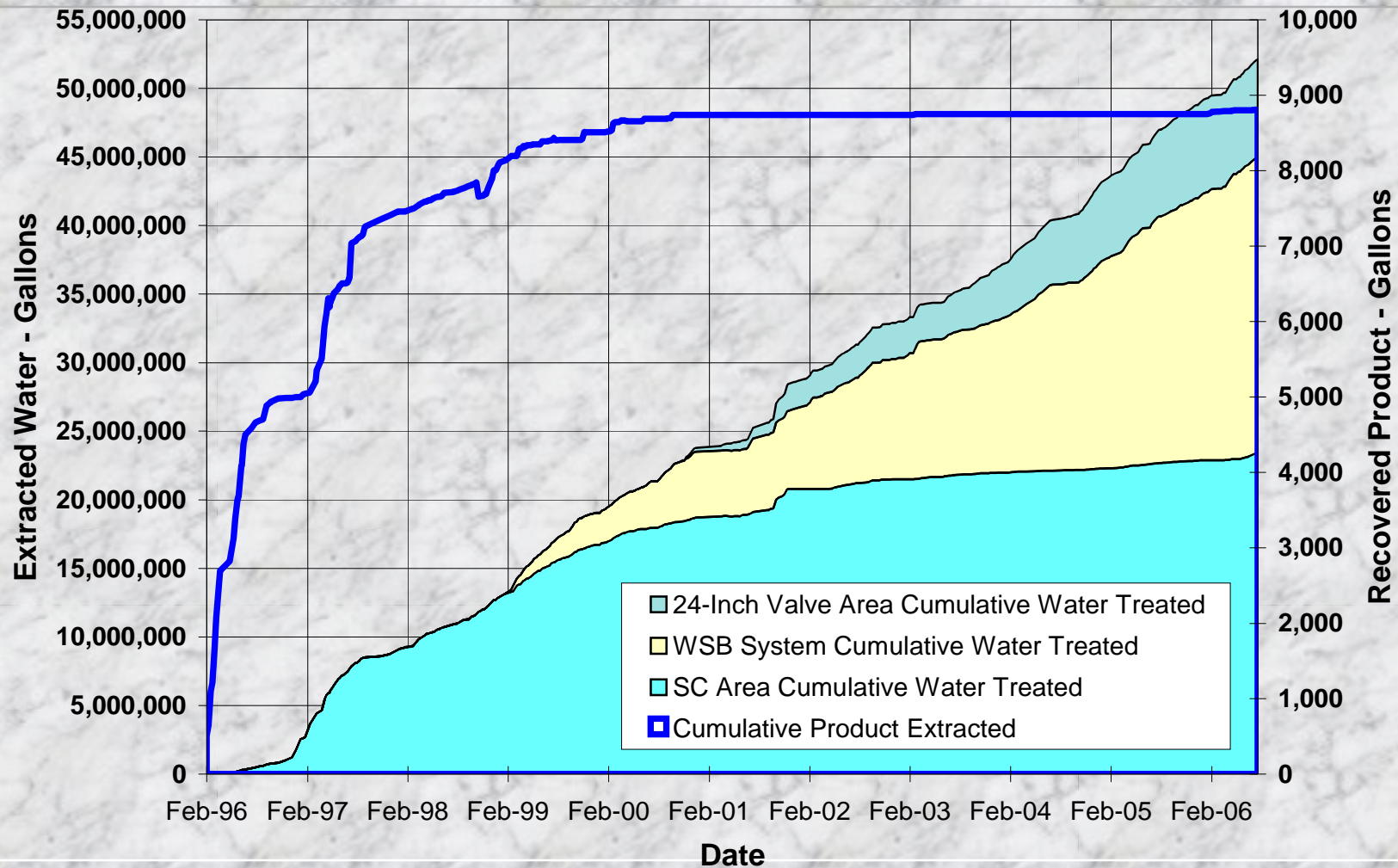
# Groundwater/Product Extraction System

- 8 groundwater extraction wells in the West Side Barrier area
- 4 total fluids (product and groundwater) extraction wells and 4 groundwater extraction wells in the South-Central Plume area
- 2 total fluids (product and groundwater) extraction wells and 1 groundwater extraction well in the Southeastern 24-Inch Block Valve area

# Groundwater/Product Extraction System Operations Summary

- Total groundwater extracted since April 2006 RAB meeting:
  - South-Central Plume area: 420,000 gallons
  - Southeastern 24-Inch Valve area: 251,000 gallons
  - West Side Barrier area: 996,000 gallons
  - Manual product recovery: 17 gallons
- Total groundwater extracted since September 1995:
  - South-Central Plume area: 23.4 million gallons
  - Southeastern 24-Inch Valve area: 7.1 million gallons
  - West Side Barrier area: 21.5 million gallons
  - Total groundwater extracted: 52.0 million gallons
  - 8,803 gallons free product removed

# Groundwater/Product Extraction System Operations Summary



# First Semi-Annual 2006 Groundwater Monitoring Event

- 96 wells sampled, including 5 Exposition wells.
- Groundwater elevations were generally similar to or lower than those reported in November 2005, and approximately one to three feet lower than in May 2005.
- No VOCs were detected in Exposition wells, with one exception. Trichloroethene was detected in EXP-4 at a concentration of 1.1  $\mu\text{g/l}$ . EXP-4 will be sampled during the next sentry event.

# First Semi-Annual 2006 Groundwater Monitoring Event (cont.)

- Free product was detected in the northern tank farm area, the south-central area, the truck rack area, and the southeastern area.
- In the south-central off-site area, VOC concentrations remained non-detect in wells GMW-O-1 and GMW-O-2 and decreased in GMW-O-3 since November 2005.
- In general, the lateral extents of TPH, benzene, MTBE, and 1,2-DCA in the south-central area remain similar to those interpreted during the two previous semi-annual monitoring events.

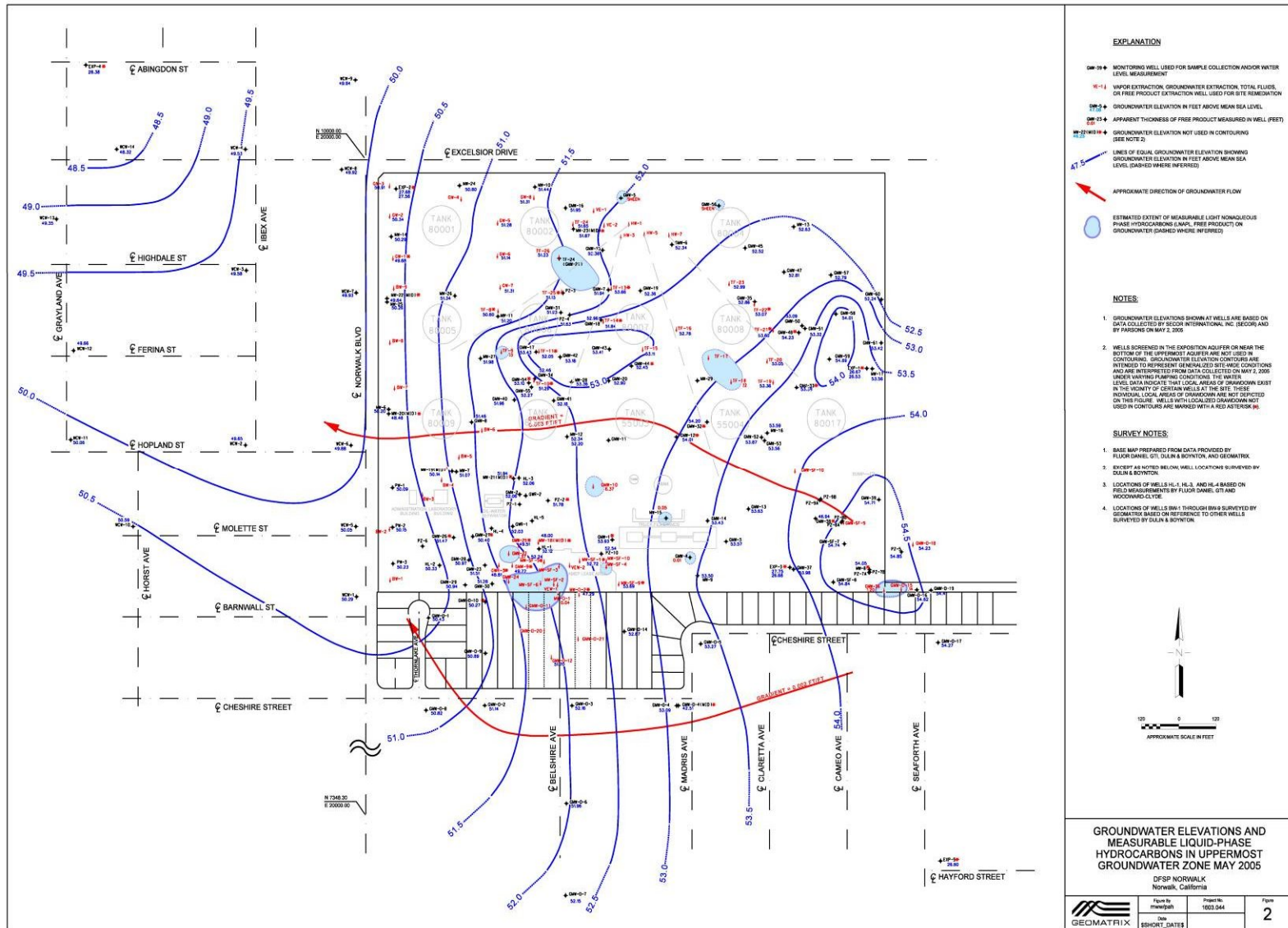


# First Semi-Annual 2006 Groundwater Monitoring Event (cont.)

- In southeastern area, VOCs generally remained stable compared to November 2005. Benzene and 1,2-DCA were not detected. The lateral extent of MTBE has decreased since one year ago.
- In the western off-site area, the lateral extents of 1,2-DCA and MTBE have decreased since November 2005. Benzene was not detected in this area.

# Groundwater Elevations and Measurable Liquid-Phase Hydrocarbons

## May 2005



# Groundwater Elevations and Measurable Liquid-Phase Hydrocarbons

## May 2006



### EXPLANATION

- MW-19: MONITORING WELL USED FOR SAMPLE COLLECTION AND/OR WATER LEVEL MEASUREMENT
- MW-1: VAPOR EXTRACTION, GROUNDWATER EXTRACTION, TOTAL FILLS, OR FREE PRODUCT EXTRACTION WELL USED FOR SITE REMEDIATION
- 50.0: GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 50.5: APPARENT THICKNESS OF FREE PRODUCT MEASURED IN WELL (FEET)
- MW-27: GROUNDWATER ELEVATION NOT USED IN CONTOURING (SEE NOTE 1)
- 51.0: LINES OF EQUAL GROUNDWATER ELEVATION SHOWING GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (DASHED WHERE INTERFERED)
- 53.0: APPROXIMATE DIRECTION OF GROUNDWATER FLOW

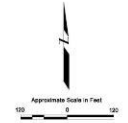
ESTIMATED EXTENT OF MEASURABLE LIGHT NON-HALOGENATED PHASE HYDROCARBONS (LNAPL - FREE PRODUCT) ON GROUNDWATER (DASHED WHERE INTERFERED)

### NOTES

1. GROUNDWATER ELEVATIONS SHOWN AT WELLS ARE BASED ON DATA COLLECTED BY SEDOR, PARSONS, AND GEOMATRIX. (SEE TABLE 3)
2. WELLS SCREENED IN THE EXPOSITION AQUIFER OR BELOW THE BOTTOM OF THE UPPERMOST AQUIFER ARE NOT USED IN CONTOURING. GROUNDWATER ELEVATION CONTOURS ARE RETIRED TO REPRESENT GENERALIZED SITE WIDE CONDITIONS AND ARE INTERFERED FROM DATA COLLECTED ON MAY 1, 2006. WELLS WITH GROUNDWATER ELEVATIONS NOT USED IN CONTOURING ARE MARKED WITH A RED ASTERISK (\*).

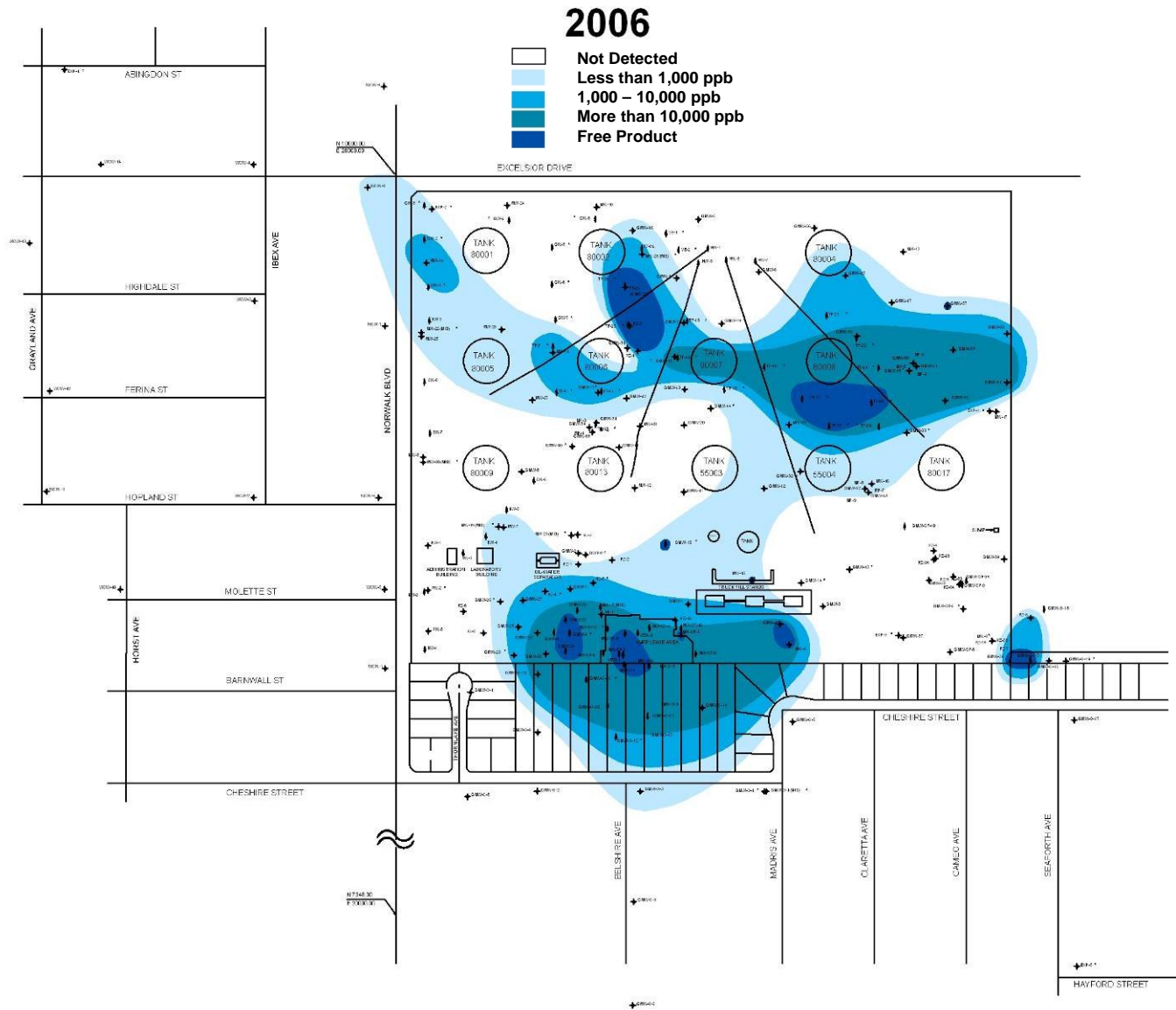
### SURVEY NOTES

1. BASE MAP PREPARED FROM DATA PROVIDED BY FLUOR DANIEL, QTR, DALIN & BOYNTON, AND GEOMATRIX.
2. EXCEPT AS NOTED BELOW, WELL LOCATIONS SURVEYED BY DALIN & BOYNTON.
3. LOCATIONS OF WELLS H-1, H-3, AND H-4 BASED ON FIELD MEASUREMENTS BY FLUOR DANIEL, QTR AND WOODWARD-CLYDE.
4. LOCATIONS OF WELLS H-5 THROUGH H-8 SURVEYED BY GEOMATRIX BASED ON REFERENCE TO OTHER WELLS SURVEYED BY DALIN & BOYNTON.



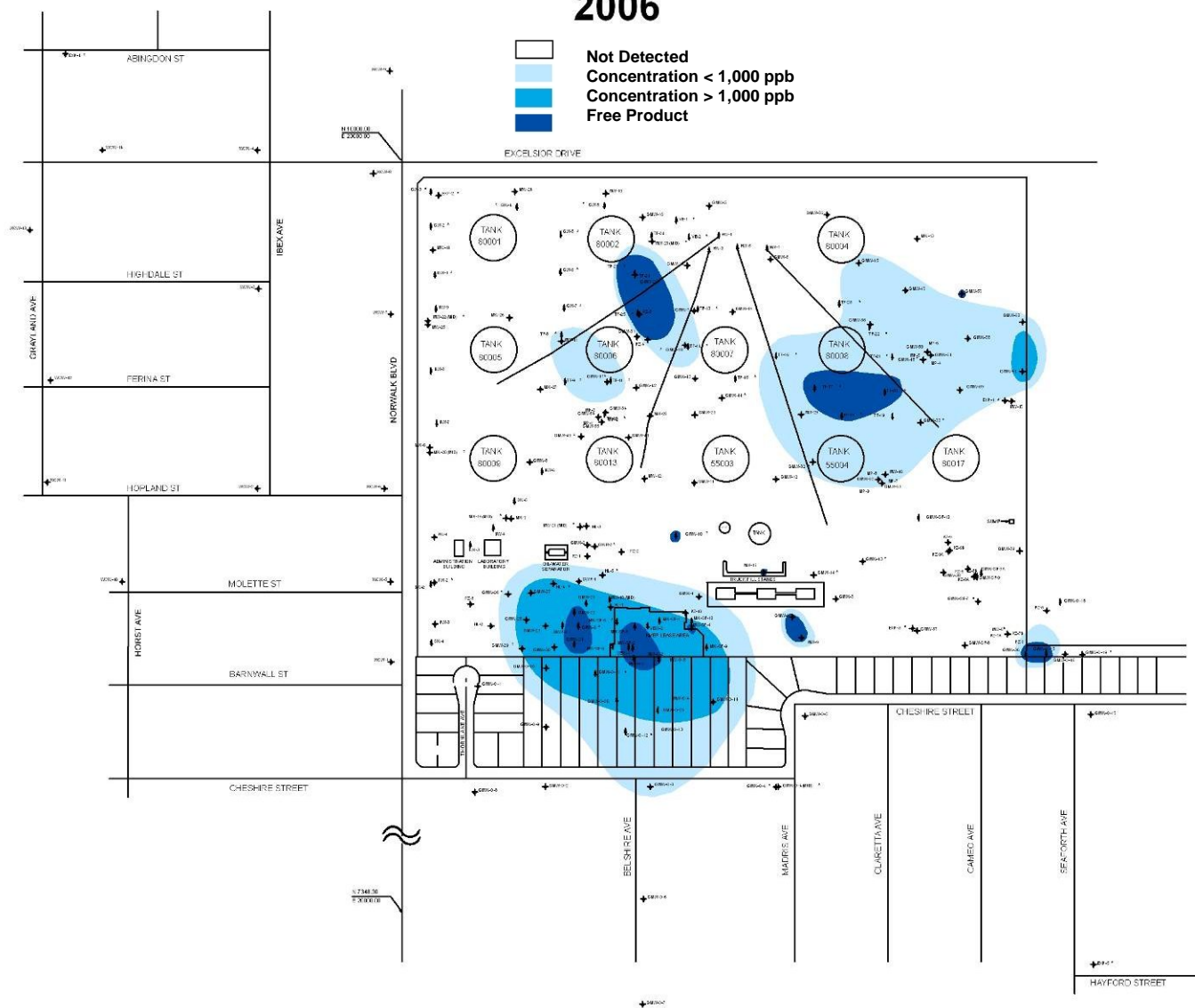
GROUNDWATER ELEVATIONS AND MEASURABLE LIQUID-PHASE HYDROCARBONS IN UPPERMOST GROUNDWATER ZONE MAY 2006  
DFSP NORWALK  
Norwalk, California

# 10-Year TPH



# 10-Year Benzene

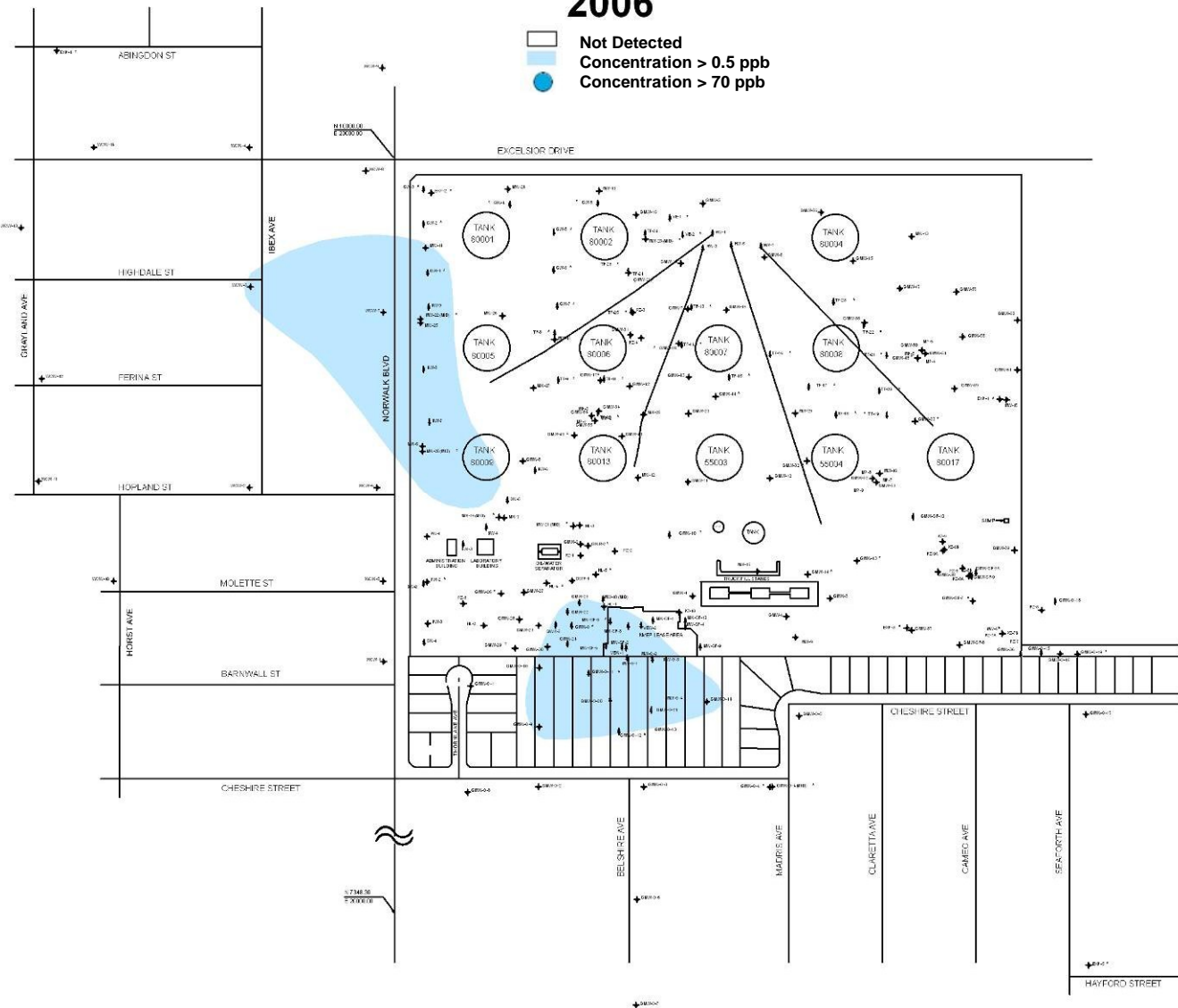
2006



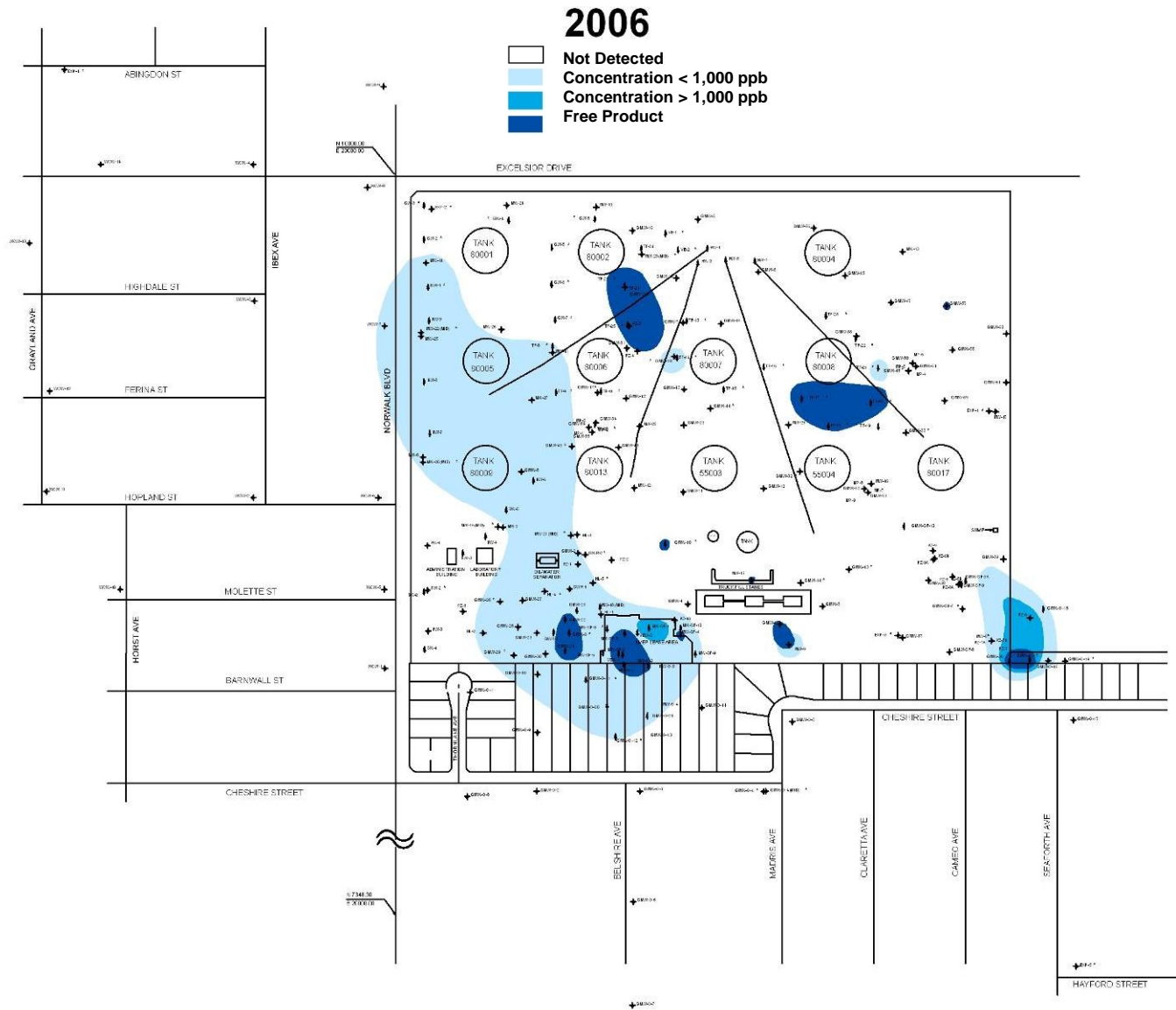
# 10-Year 1,2-DCA

2006

- Not Detected
- Concentration > 0.5 ppb
- Concentration > 70 ppb



# 10-Year MTBE

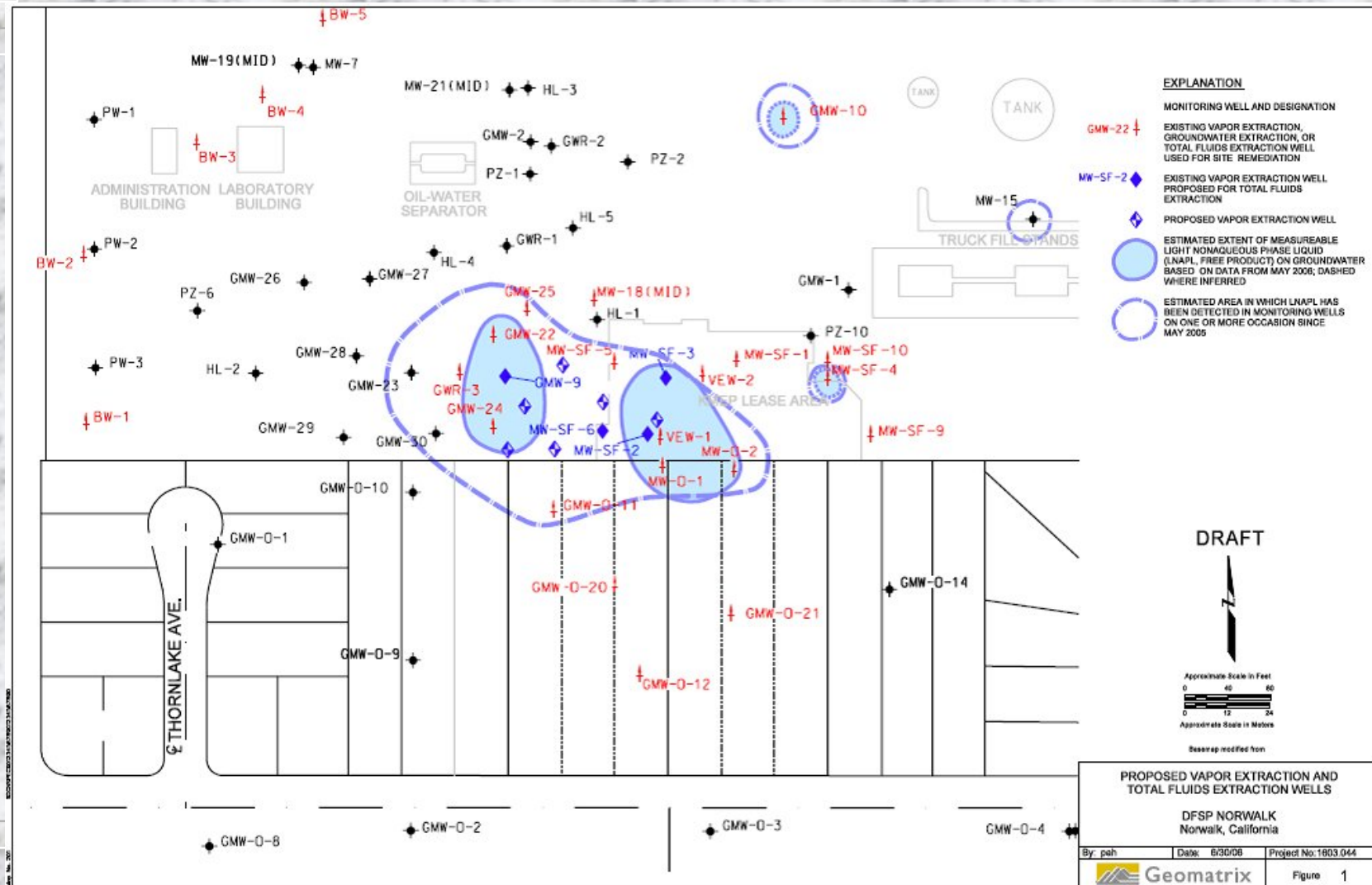


# RAP - Remediation System Expansion

- KMEP proposed to expand the soil vapor extraction and total fluids extraction systems to where residual LNAPL appears to remain
- The expansion includes:
  - Installation of six new soil vapor extraction wells
  - Reconfiguring four existing wells to perform total fluids extraction.
  - Enhancing selected existing remediation wells (i.e., redeveloping wells, upgrading vapor conveyance lines, etc.).



# RAP - Proposed Vapor Extraction and Total Fluids Extraction Wells



# **RAP - Projected System Enhancements Schedule**

- Receive Approval from RWQCB – September 2006
- Complete Remediation System Improvements – November 2006
- Submit Remediation System Evaluation – November 2007
- Begin SVE Rebound Testing – May 2008
- Complete SVE Rebound Testing – November 2008

# **RAP - Projected System Enhancements Schedule (cont.)**

- **Begin Bioventing Operation – December 2008**
- **Begin Bioventing Rebound Testing – September 2009**
- **Complete Bioventing Testing – March 2010**
- **Begin Verification Groundwater Monitoring – April 2010**
- **Complete Verification Groundwater Monitoring – April 2011**
- **Submit Closure Request to RWQCB – June 2011**

