



# DEFENSE LOGISTICS AGENCY

THE NATION'S COMBAT LOGISTICS SUPPORT AGENCY



**DFSP Norwalk  
RESTORATION  
ADVISORY BOARD**

February 27, 2020



WARFIGHTER FIRST



# Shallow Soil



## Soil Remediation Project Progress

- **Western Area Report** submitted to the RWQCB; *Office of Environmental Health Hazard Assessment (OEHHA)* has provided comments via memo to the RWQCB.
- Principal concern was the occurrence of isolated areas of tetrachloroethylene (PCE) in areas along western border and southeast corner of Western Portion
- Additional Soil Gas was collected, in accordance with a work plan approved by the RWQCB.



# Shallow Soil



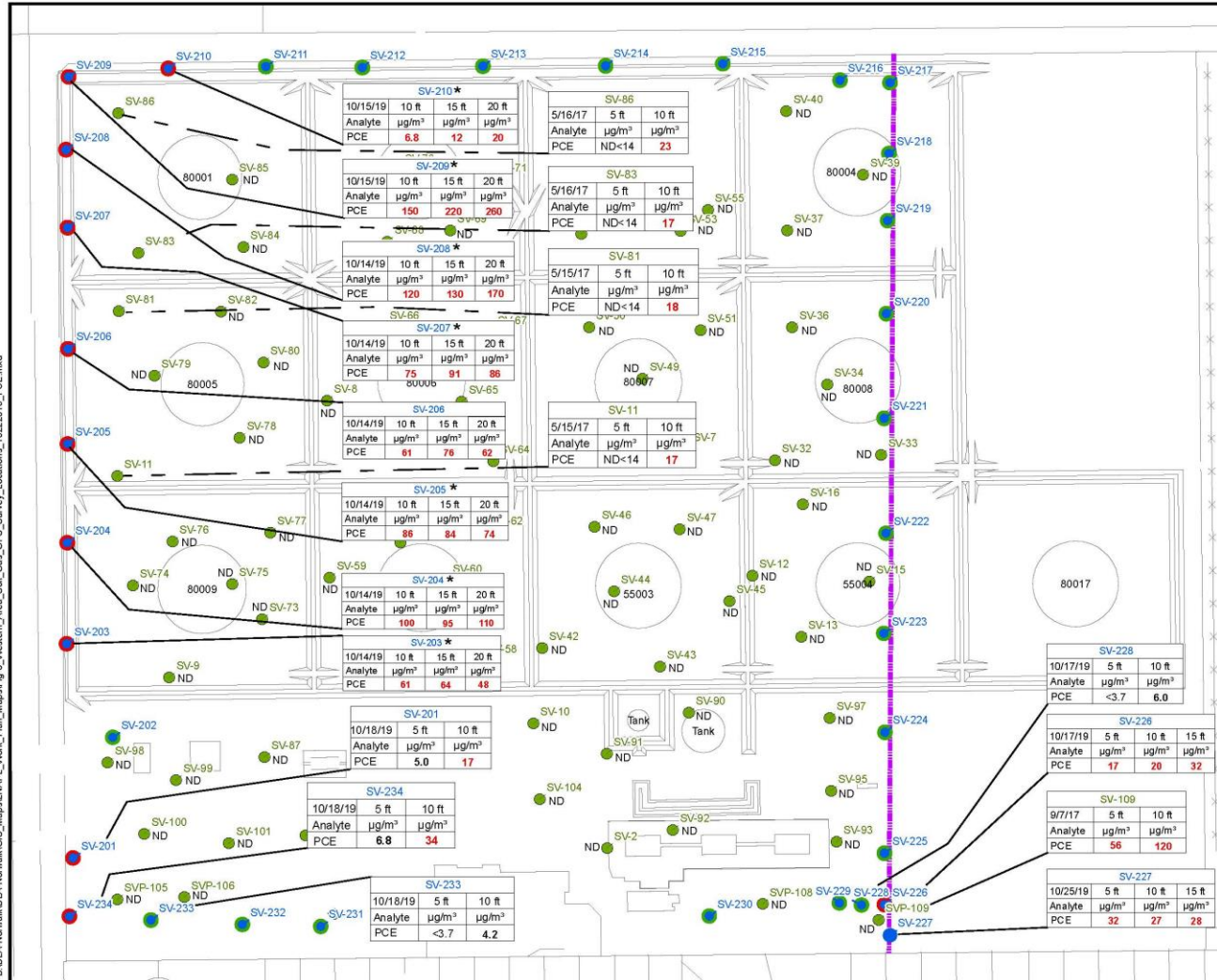
## Soil Remediation Project Progress

- ***Additional Soil Gas Data Showed:***
  - ***Central Portion of Western Area – Clean***
  - ***Western Boundary – Elevated PCE – Off-site Source***
  - ***Southeast Corner – Elevated PCE – Unknown Source***
  - ***Risk Evaluation Compared to Acceptable Thresholds of:***
    - ***Commercial/Industrial:       1 x 10<sup>-5</sup>***
    - ***Residential:                       1 x 10<sup>-6</sup>***
  - ***Western Boundary – Incremental Risk of 2 x 10<sup>-5</sup>***
  - ***Southeast Corner – Incremental Risk of 2 x 10<sup>-6</sup>***
- ***DLA will be requesting NFA for Western, On-site Portion***





# PCE in Shallow Soil Gas



### Legend

- SV-109 Previously Installed Soil Vapor Probe Locations. Values are provided from the 9-2017 sampling event at those points which contained detectable concentrations of PCE. "ND"'s indicate that the point did not contain detectable PCE when sampled in 2017.
- SV-210 Recently Installed Soil Vapor Probe Locations Exceeding PCE Residential Screening Levels
- SV-228 Recently Installed Soil Vapor Probe Locations Below PCE Residential Screening Levels
- Western Part Boundary
- 260 PCE Concentration is Above Residential Soil Gas Screening Levels ( $15 \mu\text{g}/\text{m}^3$ )
- 12 PCE Concentration is Below Residential Soil Gas Screening Levels ( $15 \mu\text{g}/\text{m}^3$ )

### Notes

- \*Drilling location on perimeter berm road, listed depth reflects the 5 ft higher elevation of the road. (i.e. 10 ft depth = 5 ft below surrounding grade).
- Deeper probe sampled a few days after shallower probe sampling.
- The Residential Soil Gas Screening Level is  $15 \mu\text{g}/\text{m}^3$ .
- Data tables shown only for locations with detected PCE values.
- PCE = Tetrachloroethene.

<b>DFSP Norwalk</b>			
15306 Norwalk Boulevard Norwalk, California			
Project Number:	Date:	Drawn By:	Approved By:
091-NDLA-018	10/23/2019	SM / KN	PP

### Perimeter Soil Gas Sampling Results - PCE

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1962 Freeman Avenue, Signal Hill, CA 90755  
(562) 597-1055

**Figure**

**3**

E:\DLA-Norwalk\GIS\_Maps\MapFig3\_Western\_Area\_Soil\_Gas\_GPS\_Survey\_Locations\_10222019\_PCE.mxd



# Status of Remediation System



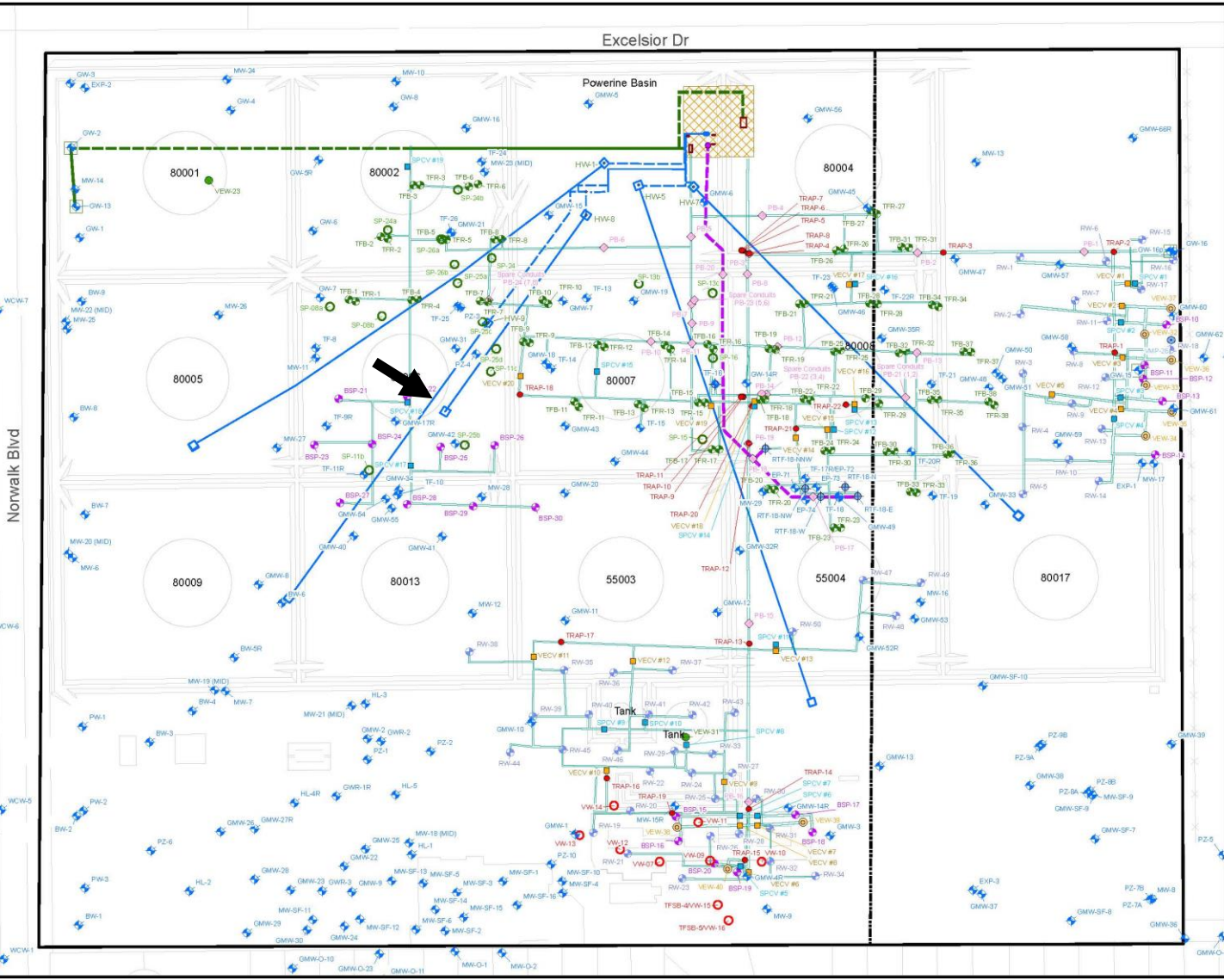
- **Soil and Groundwater Treatment System Components:**
  - **Five Horizontal Vapor Extraction Wells**
  - **40 Total Fluids (LNAPL and Groundwater) Recovery Wells Throughout the Tank Farm**
  - **65 Biosparge Wells -**
  - **66 Vertical Vapor Extraction Wells**
- **Four Current Remedial Technologies:**
  - **Soil Vapor Extraction (2 vapor treatment systems)**
  - **Groundwater Extraction & Treatment**
  - **Air Sparging/Bioremediation**
  - **LNAPL Removal**



# Map of Remediation Wells



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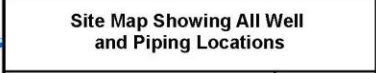


### Legend

- Former Above Ground Storage Tanks
- Fence
- DFSP Norwalk Border
- Treatment System Enclosure
- Below Grade Trenching and Piping to Remediation Wells
- Existing Horizontal Vapor Extraction Wells
- Below Grade Groundwater Extraction System Piping
- Above Grade Groundwater Extraction System Piping
- Product Recovery System Piping
- Horizontal Vapor Extraction System Piping
- Western Boundary of Eastern 15-Acre Parcel
- System Manifold within Treatment Enclosure
- Total Fluid and Groundwater Monitoring Wells
- TF-18 Area LNAPL Recovery Wells
- Biosparging Wells
- Vapor Extraction Wells (November 2016)
- Biosparging and Vapor Extraction Wells
- Co-Located Total Fluid and Biosparge Wells
- Vapor Extraction Wells (2004)
- Sparging Points (August 2004)
- Pull Box (for Wire or Tubing)
- PVC Condensate Trap for Vapor Extraction Piping
- Vapor Extraction System Control Vaults
- Biosparge System Control Vaults

**DFSP Norwalk**  
 15306 Norwalk Boulevard  
 Norwalk, California

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**Site Map Showing All Well and Piping Locations**

1982 Freeman Avenue  
 Signal Hill, CA 90755  
 (562) 597-1055



# Status of Remediation Systems



- **Groundwater Remediation:**
  - **79.7 million gallons of groundwater extracted and treated since April 1996**
  - **Groundwater Extraction System Restarted – 310,000 gallons Since October 2019: Discharge to Sewer after Treatment**
- **SVE System:**
  - **78,500 lbs removed in Q4 2019 (compared to only 6,918 pounds of vapor-phase hydrocarbons removed in Q2 2019 when Therm Ox not operating)**
- **LNAPL Recovery:**
  - **Amount of LNAPL recovered: 174 gallons in Q4: LNAPL thicknesses are decreasing**
  - **10,088 gallons of LNAPL recovered since Jan 2014**





# Improvements in Remediation

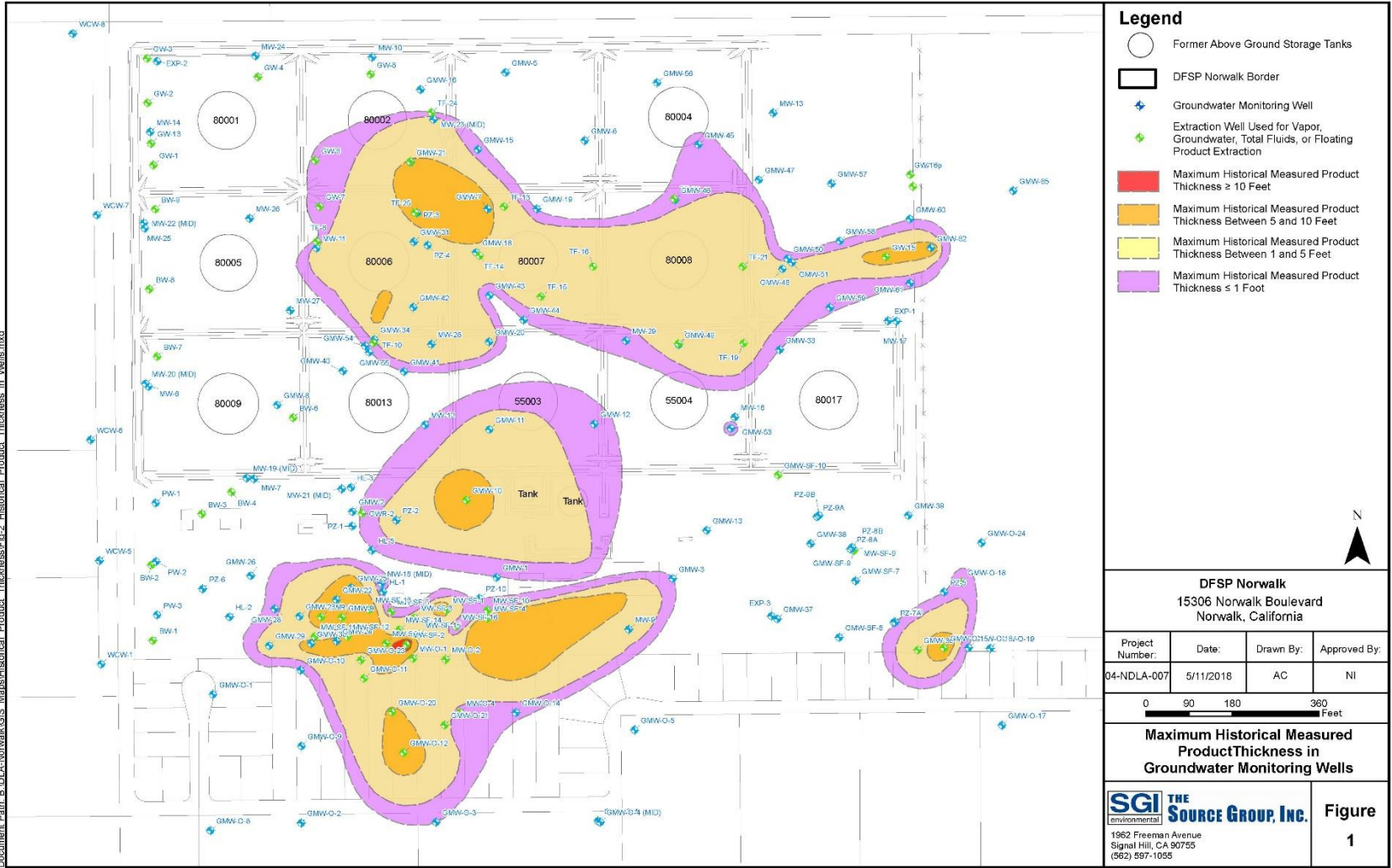


- **Since Last Summer RAB meeting: ThermOx sound-proofed, operating 24/7- 10X more removal**
- **Groundwater Discharge to Sewer after treatment reduces costs of sampling/reporting**
- **Sanitation District treated water gets re-infiltrated into aquifers**
- **Maps of LNAPL and Dissolved contaminants show clear reduction**





# LNAPL - Maximum



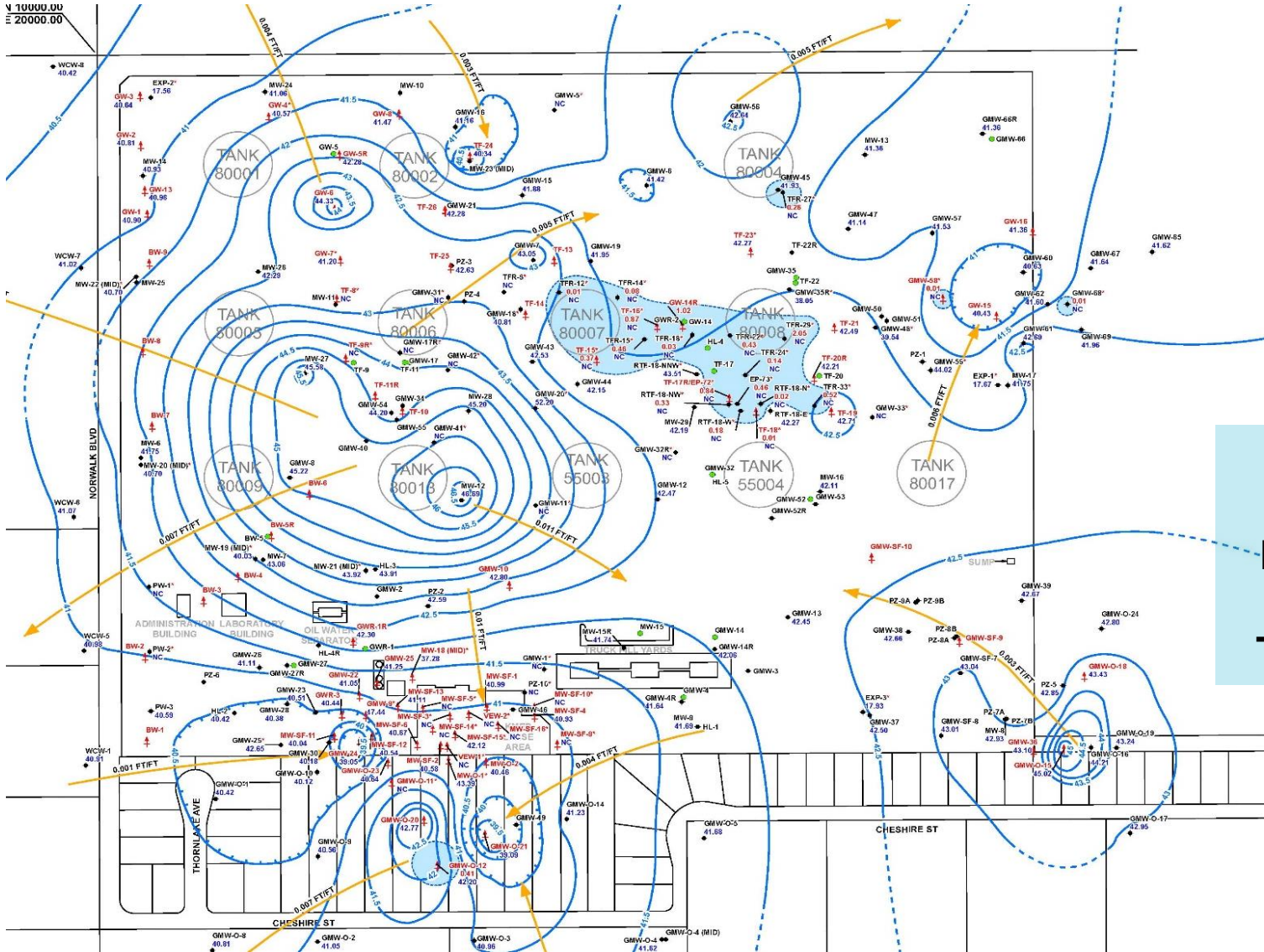
Document Path: B:\DLA-Norwalk\GIS\_Maps\Historical\_Product\_Thickness\Fig.2\_Historical\_Product\_Thickness\_in\_Wells.mxd



# LNAPL – Current (high groundwater)



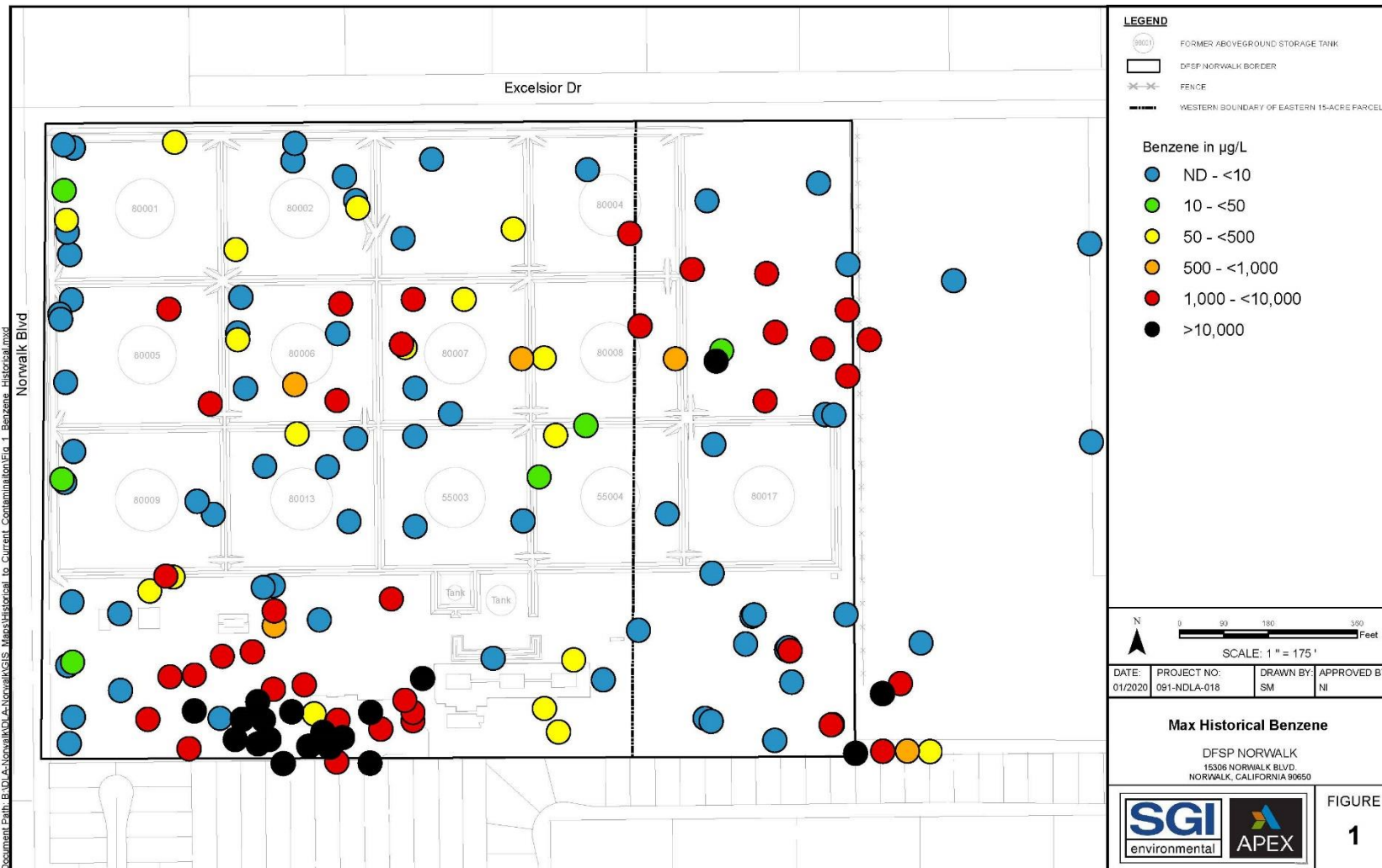
V 19000.00  
E 20000.00



**Sky Blue  
Areas –  
LNAPL <1  
Foot  
Thickness**



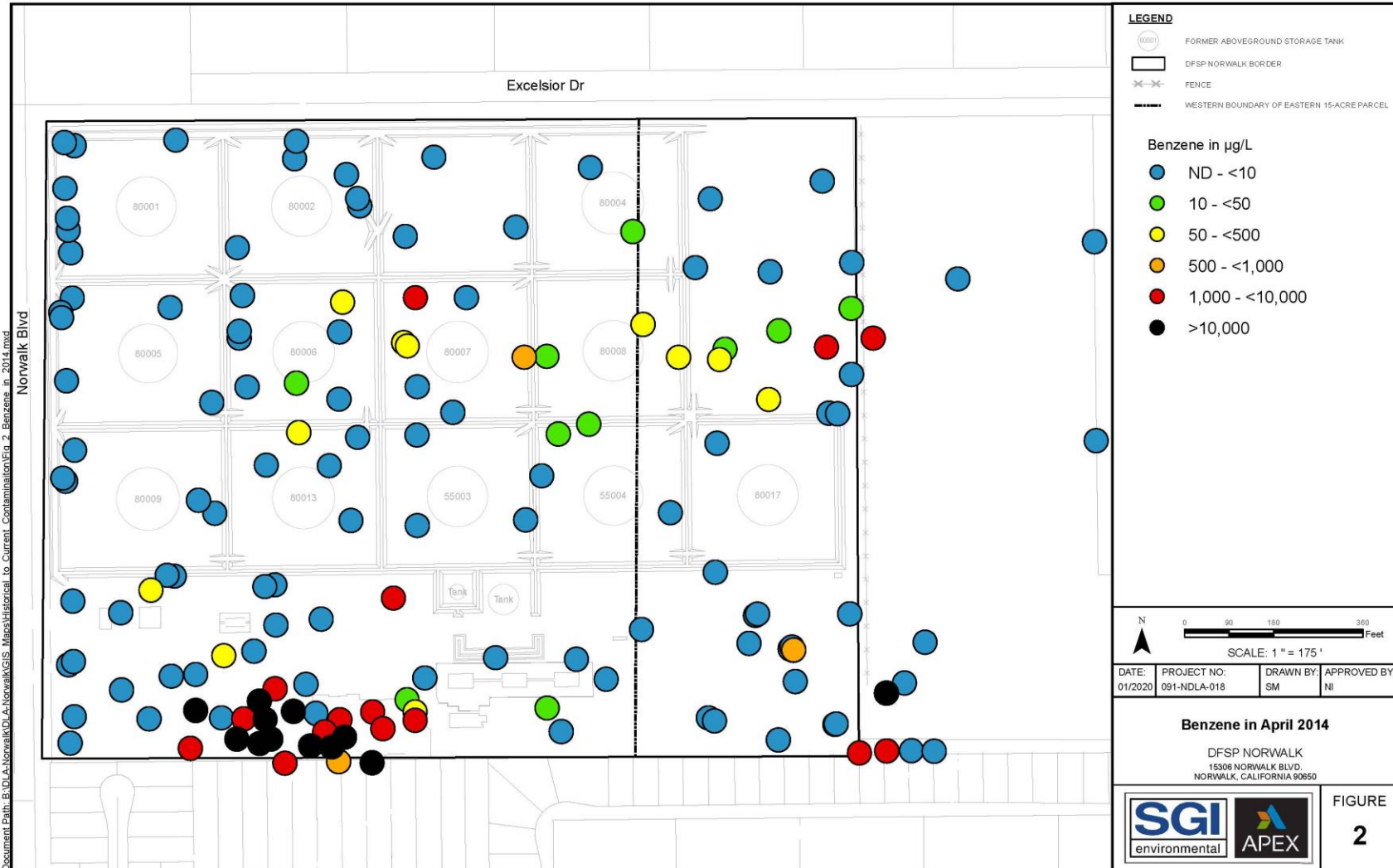
# Dissolved Benzene – Max Values







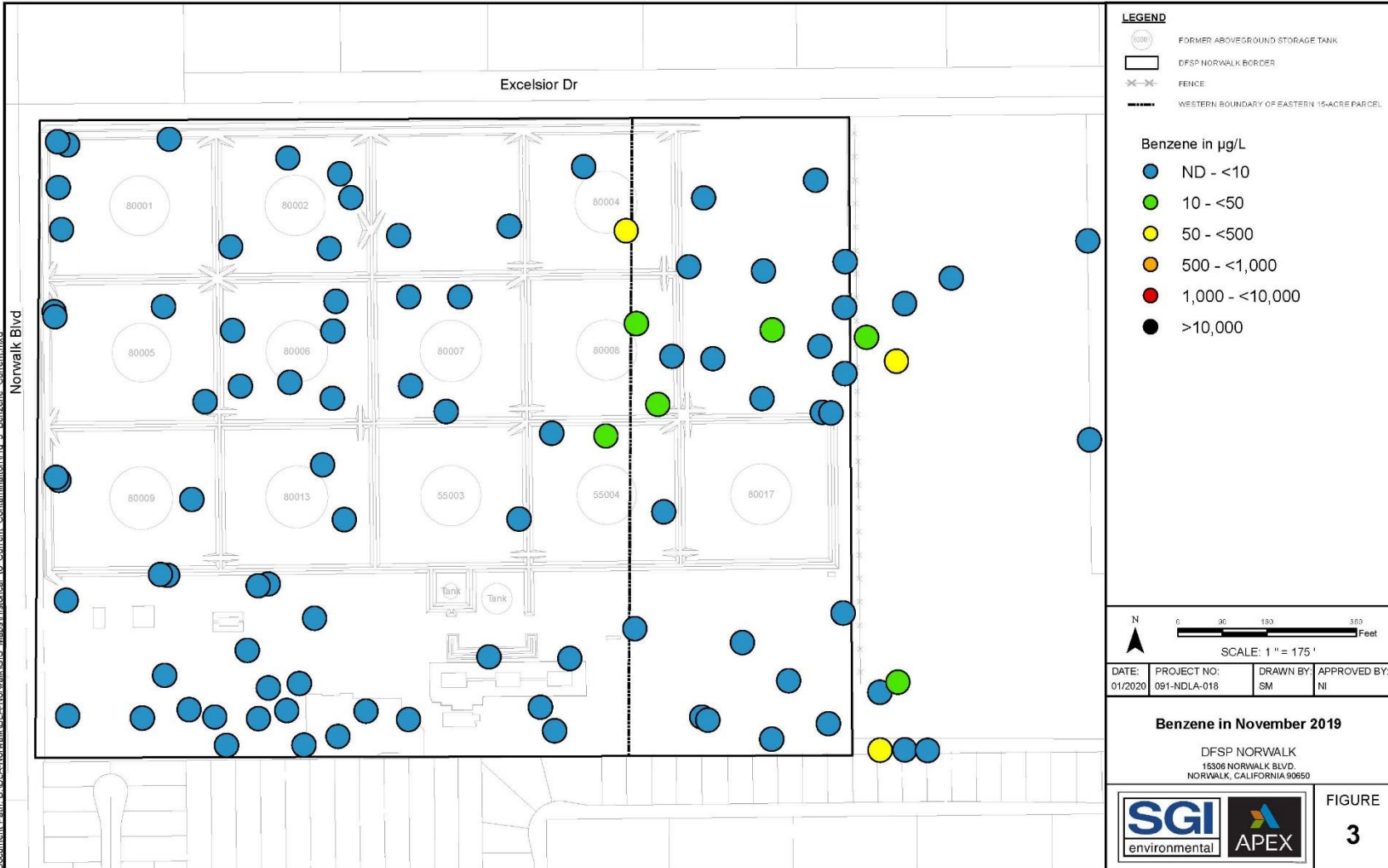
# Dissolved Benzene – 2014 Values





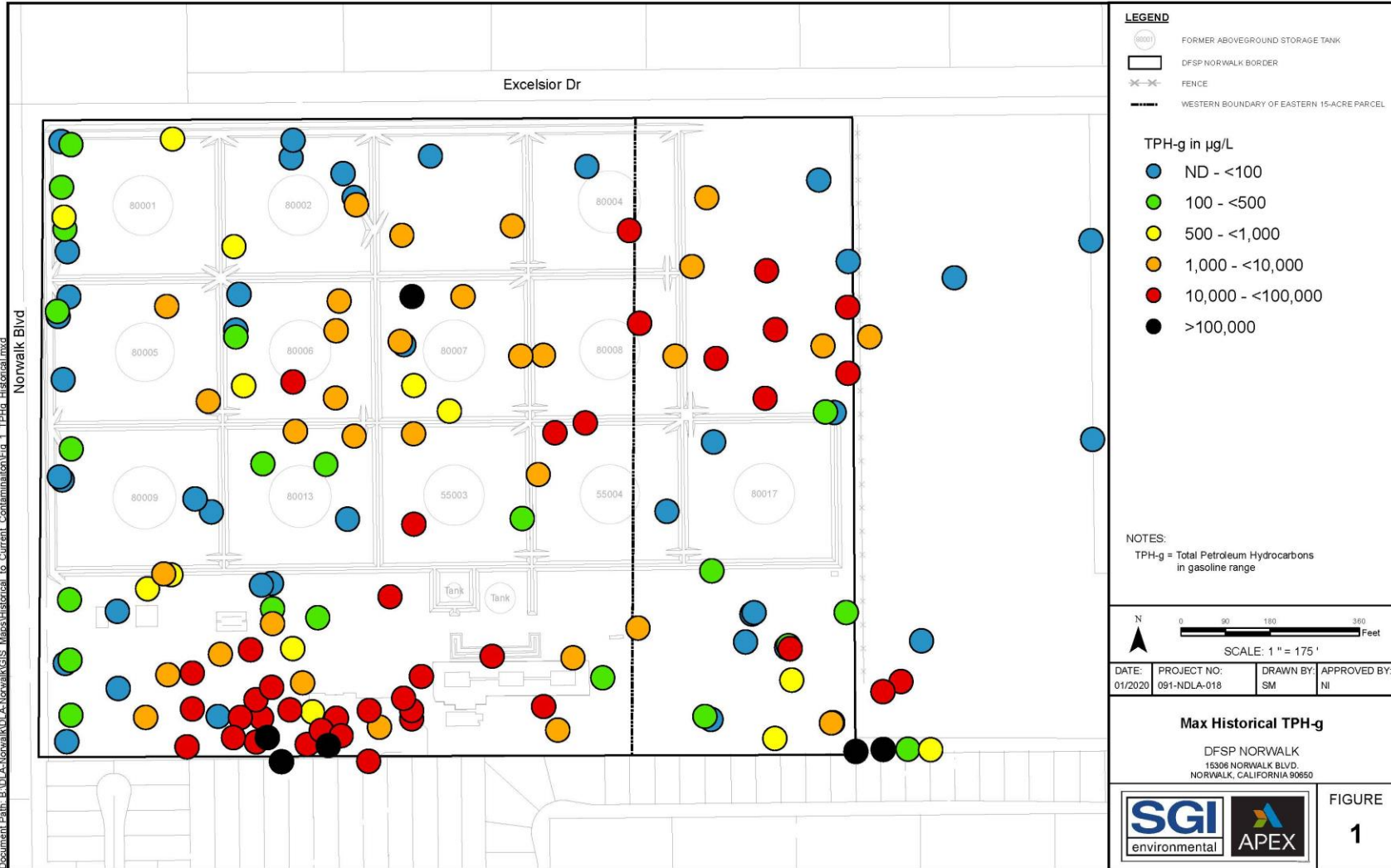


# Dissolved Benzene – Current Values



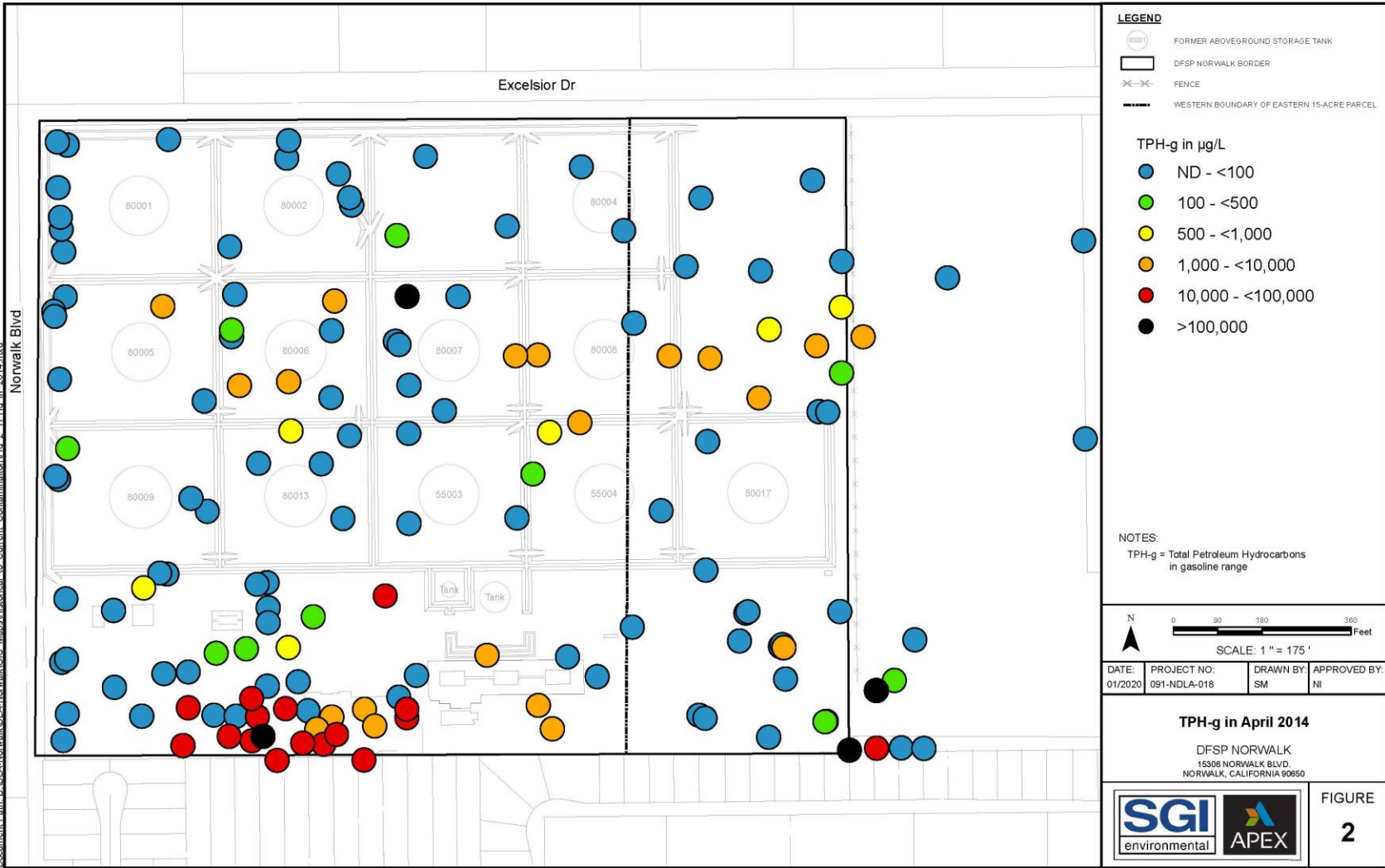


# Dissolved GRO – Maximum Values





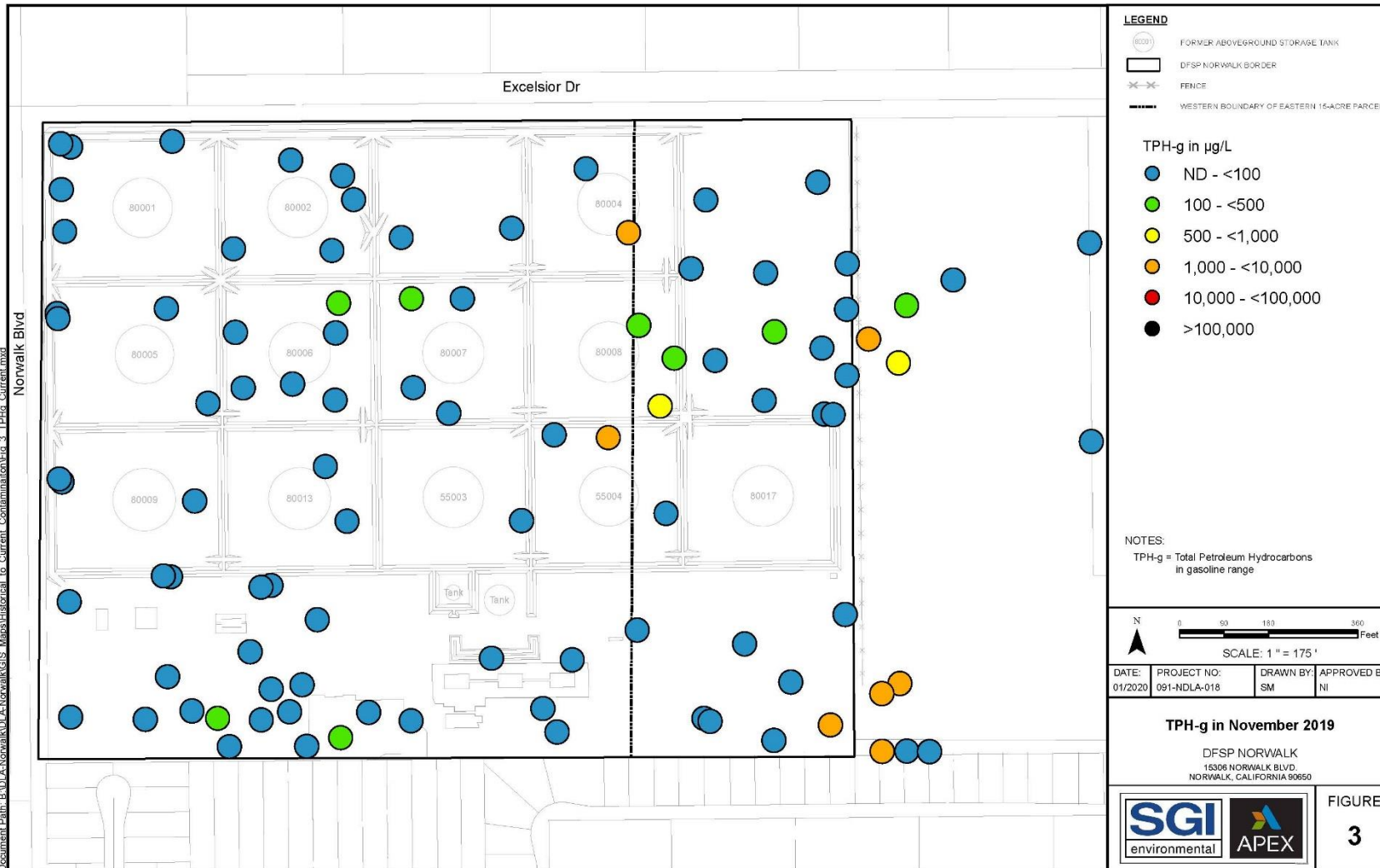
# Dissolved GRO – 2014 Values



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# Dissolved GRO – Current Values

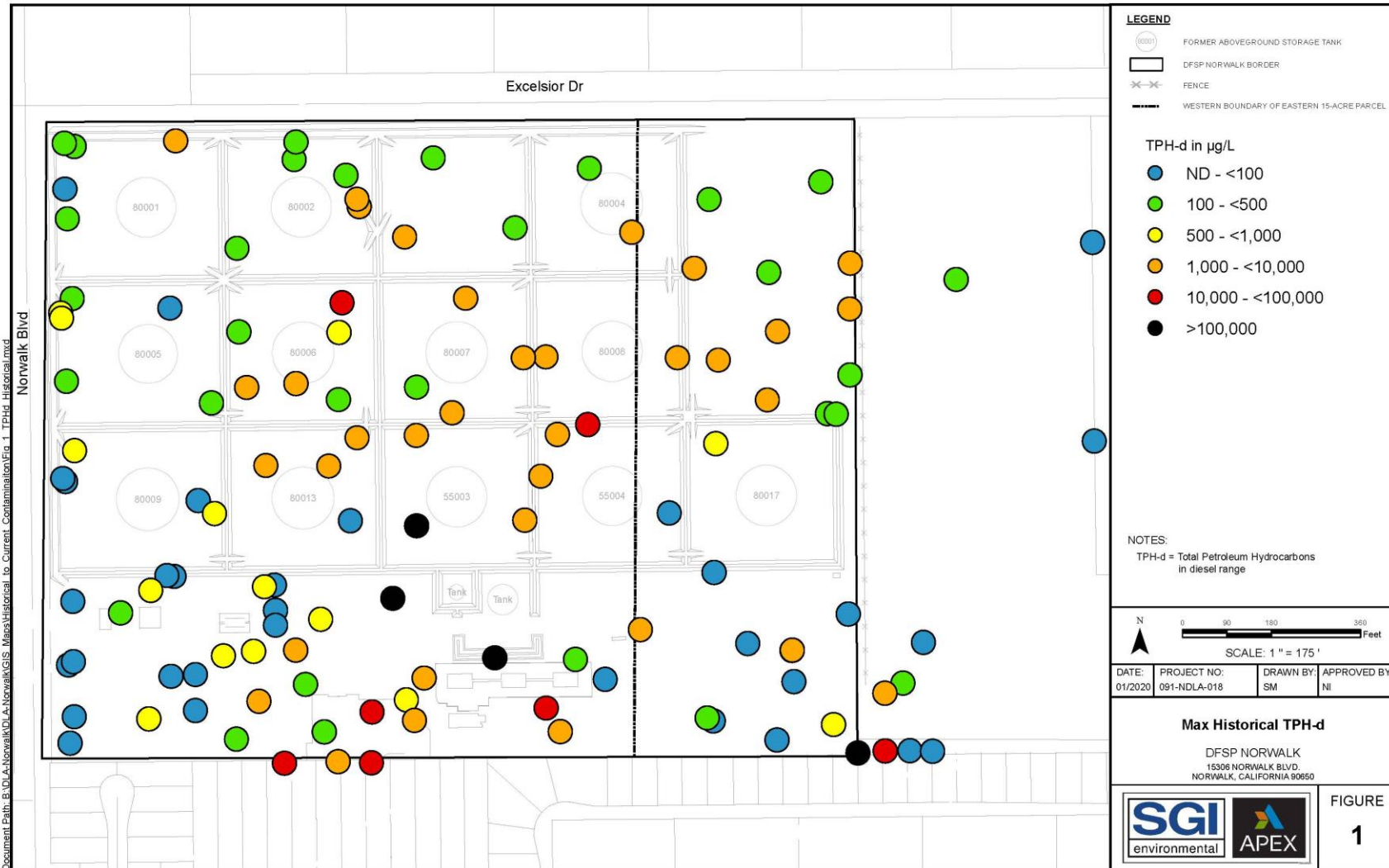


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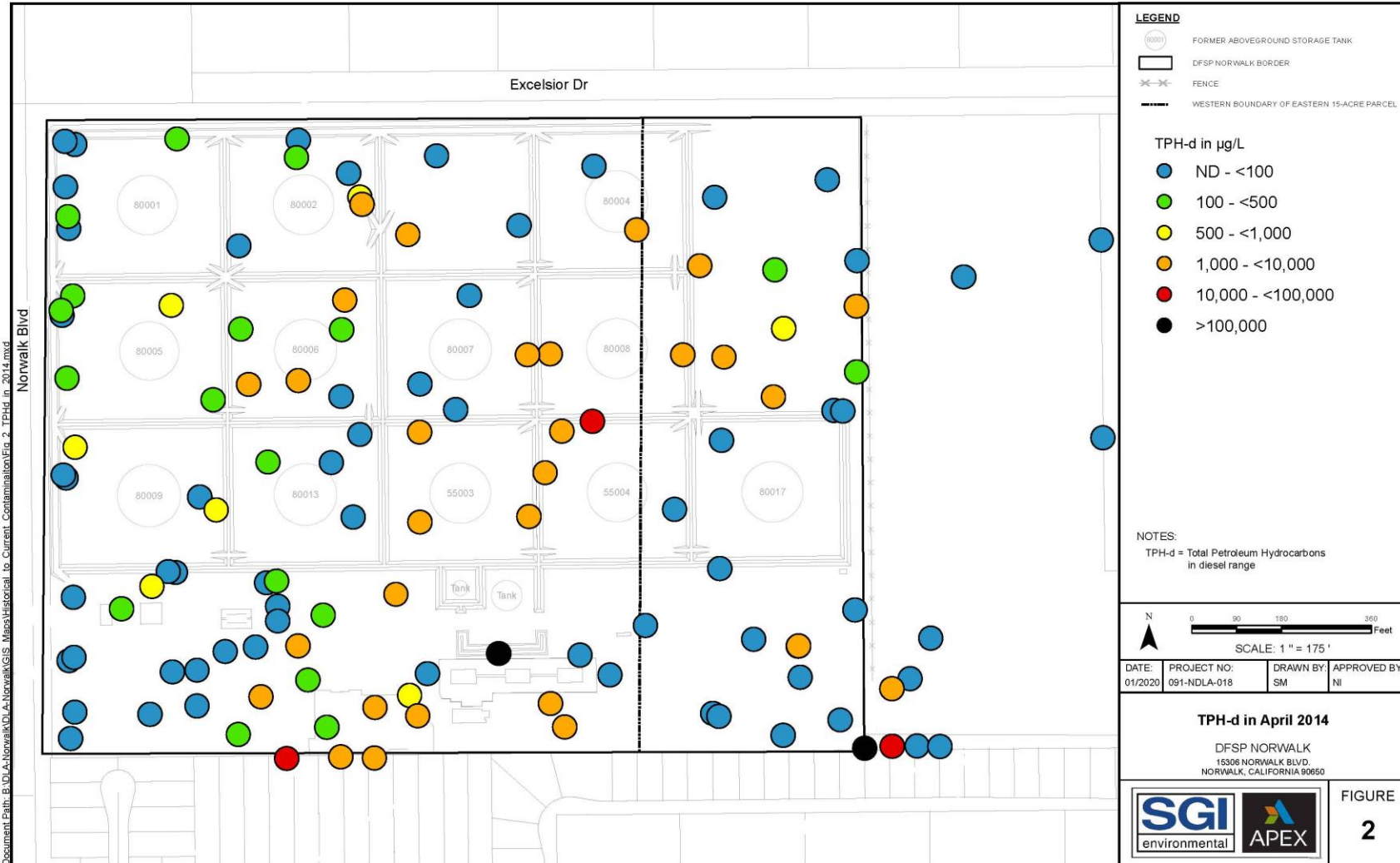


# Dissolved DRO – Maximum Values



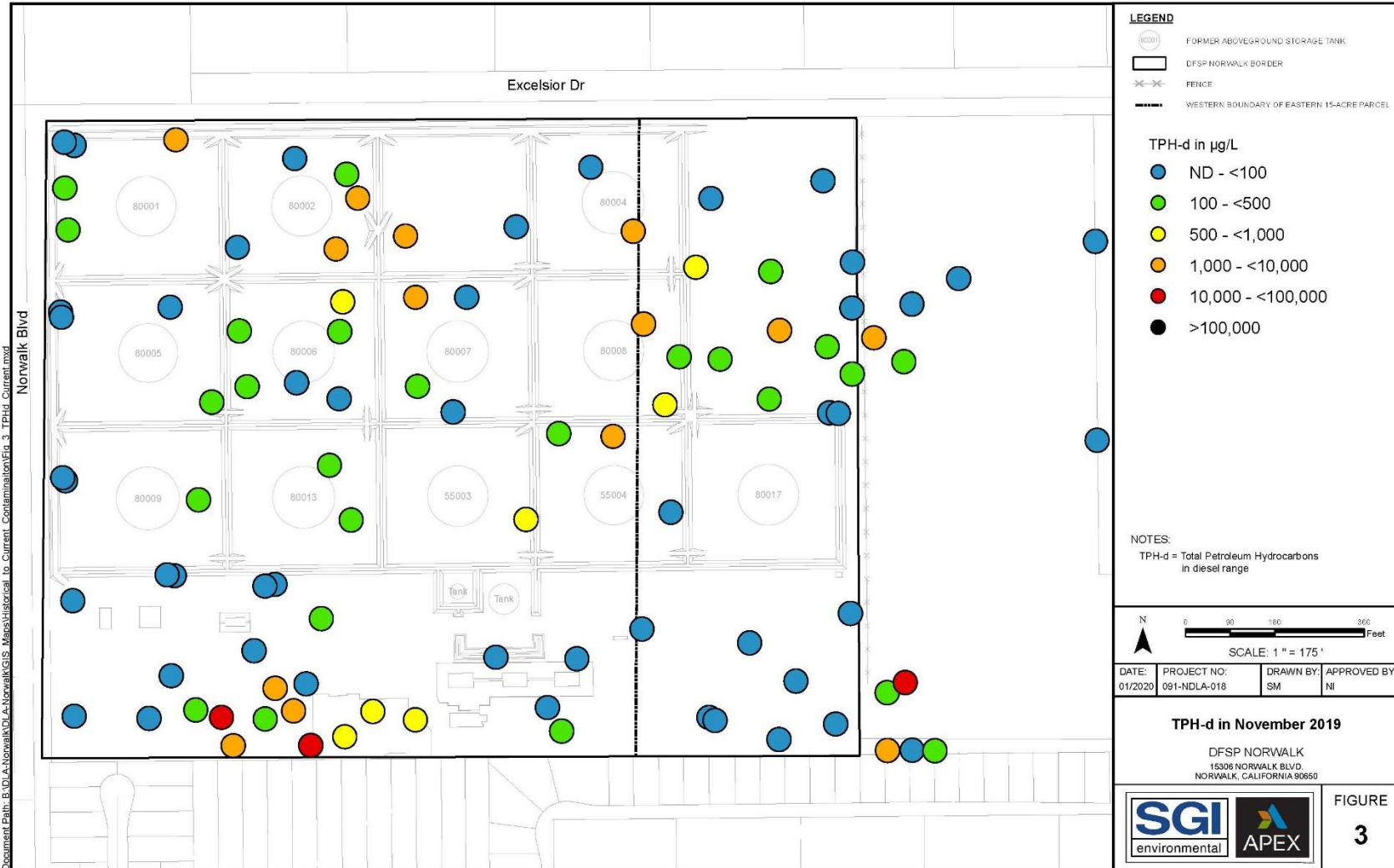


# Dissolved DRO – 2014 Values





# Dissolved DRO – Current Values







# We Fight Dust







# We Work in The Rain





# We Clean the Environment!





