DFSP Norwalk
RESTORATION ADVISORY BOARD

August 23, 2018

Remediation of Upper 10 Feet

Soil Remediation Project Progress:

- All Planned Excavations and Cross Trenching Completed
- Approximately 175,000 tons of Soil Excavated
- 77,000 tons of Cleaned Soil Tested and Approved for Backfill
- 98,000 tons Treated and Approved for Backfill
- All Soil Between 0 to 10 feet with *Contamination Above Cleanup Goals* have been Excavated and Treated

Remediation of Upper 10 Feet

Soil Remediation Project Progress (Cont'd):

- **All Excavations Backfilled**
- **Soil Gas Surveys Completed**
- **Human Health Risk Screening Completed and Documented**
- **Eastern Area Report: *No Further Action* from RWQCB, April 2018**
- **Western Area Report submitted to the RWQCB, *pending RWQCB review***

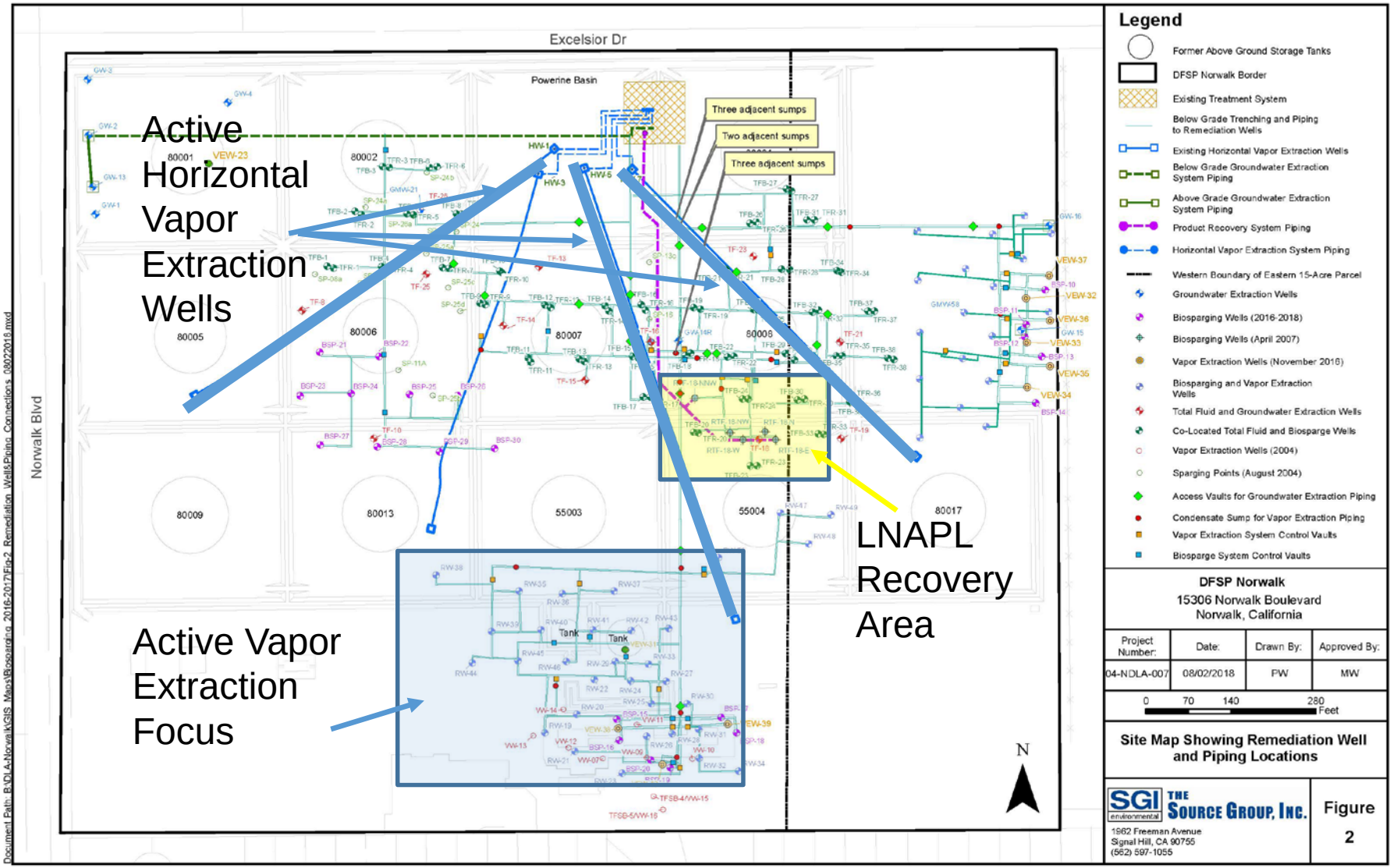
Status of Remediation System

- **Groundwater Remediation:**
  - **672,006 gallons of groundwater extracted and treated in Q1-Q2 2018**
  - **78.4MM gallons of groundwater extracted and treated since April 1996**
- **SVE System:**
  - **9,418 pounds of vapor-phase hydrocarbons removed in Q1-Q2 2018**
  - **2.98MM pounds of vapor-phase hydrocarbons removed since April 1996**
- **LNAPL Recovery:**
  - **278 gallons of LNAPL were recovered during Q1-Q2 2018 via hand bailing, absorbent socks, and automatic pumping**
  - **50,000 gallons of LNAPL recovered since April 1996**

Status of Remediation System

- **SVE system is currently operating – from re-developed horizontal SVE wells and re-installed SVE wells in east and south parts of the Site**
  - **Tank Farm: HW-1, HW-5, & HW-7**
  - **Truck Rack: VEW-38, VEW-40, RW-19, -20, -22, -24, -26 through -30, -32, -33, -35 through -38 and -40 through -50**
  - **Operation Limited by Vapor Treatment Capacity**
- **LNAPL recovery continues in wells TF-18, RTF-18-N, TF-18, RTF-18-N, RTF-18-W and RTF-18-NW**

Focus on Deep Soil and LNAPL



Status of Remediation System

- A temporary 300-scfm gas-fired oxidizer is currently being operated due to increased vapor concentrations – operations limited to day time due to noise concerns
- A 750-scfm capacity vapor extraction system, with carbon treatment, is used for horizontal wells
- Original 3,000-scfm gas-fired oxidizer no longer functional and has been dismantled
- New 3,000-scfm gas-fired oxidizer has been constructed and shipment to Site is pending
- Electrical Upgrades are required and are being coordinated with SCE
- Natural Gas Services Upgrades are required and are being coordinated with SoCal Gas

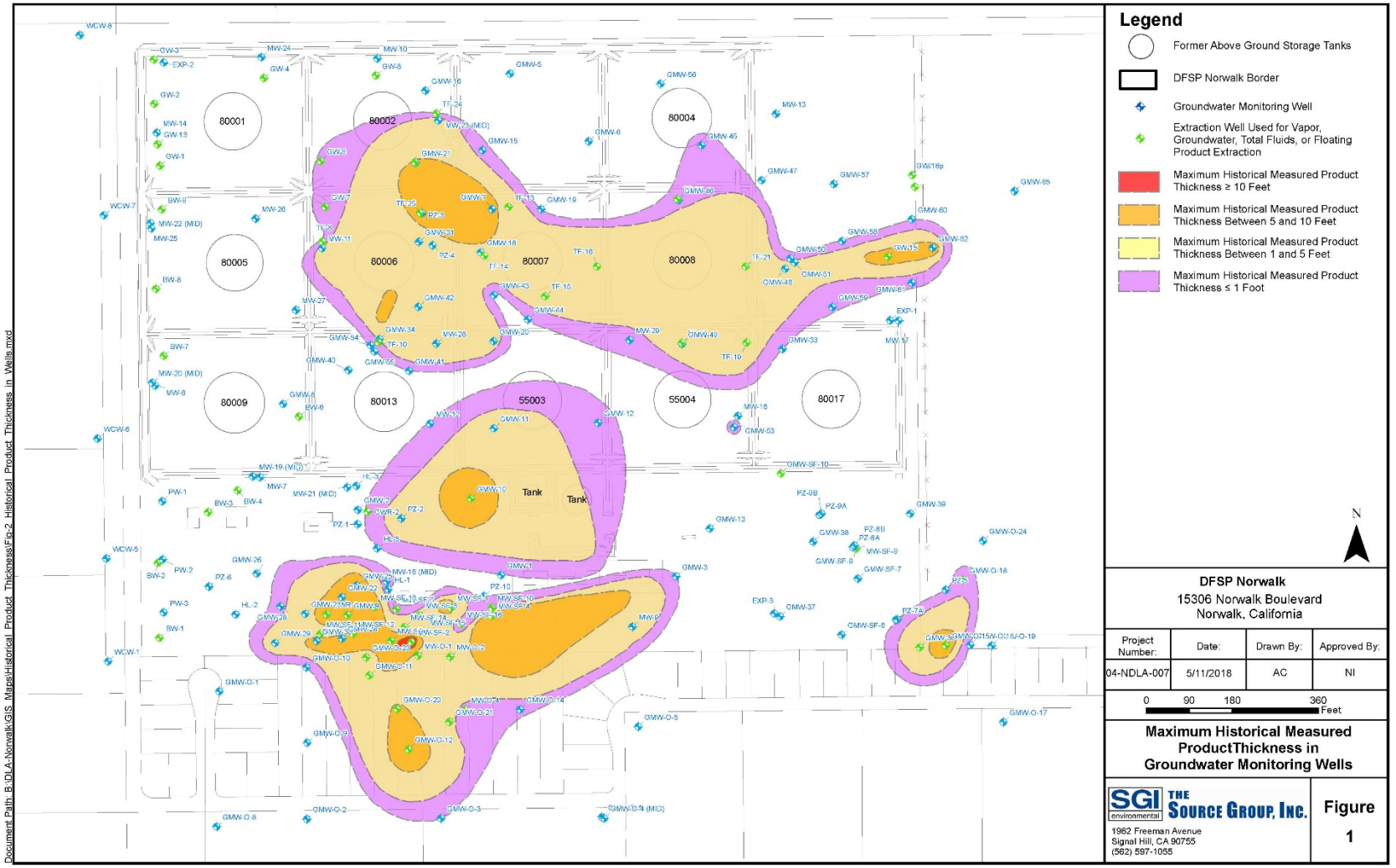
Old Thermal Oxidizer

New Thermal Oxidizer

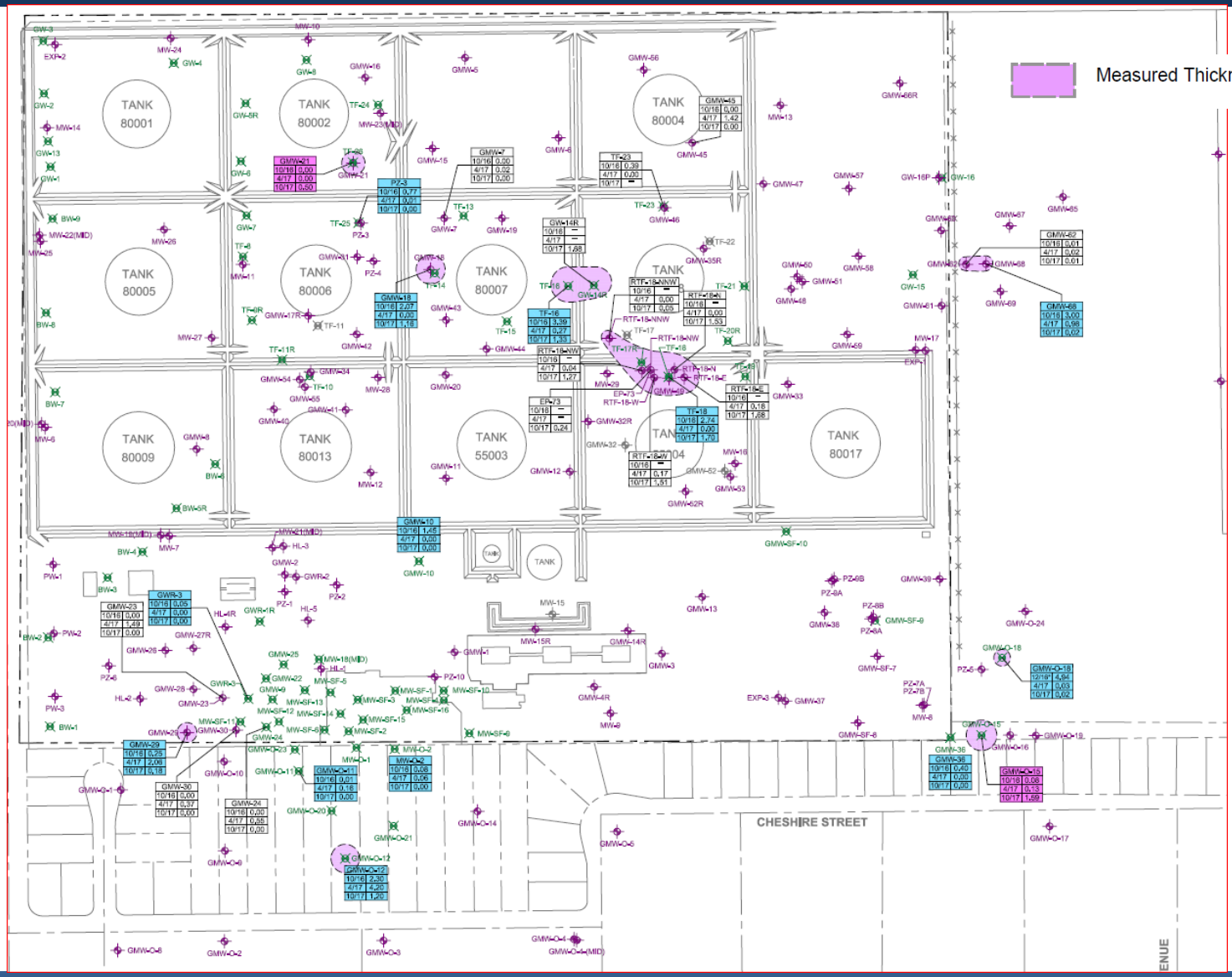
Focus LNAPL Removal

- Currently Finalizing and Updating LNAPL CSM
- LNAPL Bench Test for Surfactant Completed: Evaluation of Potential Flushing of LNAPL-Possible Pilot Test to Evaluate LNAPL Recovery Methods and Options for Enhancement
  - Findings – Surfactants are not a Suitable Technology for Use at this Time
- Completed Field Testing to Evaluate Methods of Enhancing LNAPL Recovery and Effectiveness of GW Remediation
  - Vacuum-Enhanced LNAPL Recovery
  - LNAPL Bail-down and Recharge
  - Total Fluids (combined LNAPL and Groundwater Removal) Testing

LNAPL - Maximum



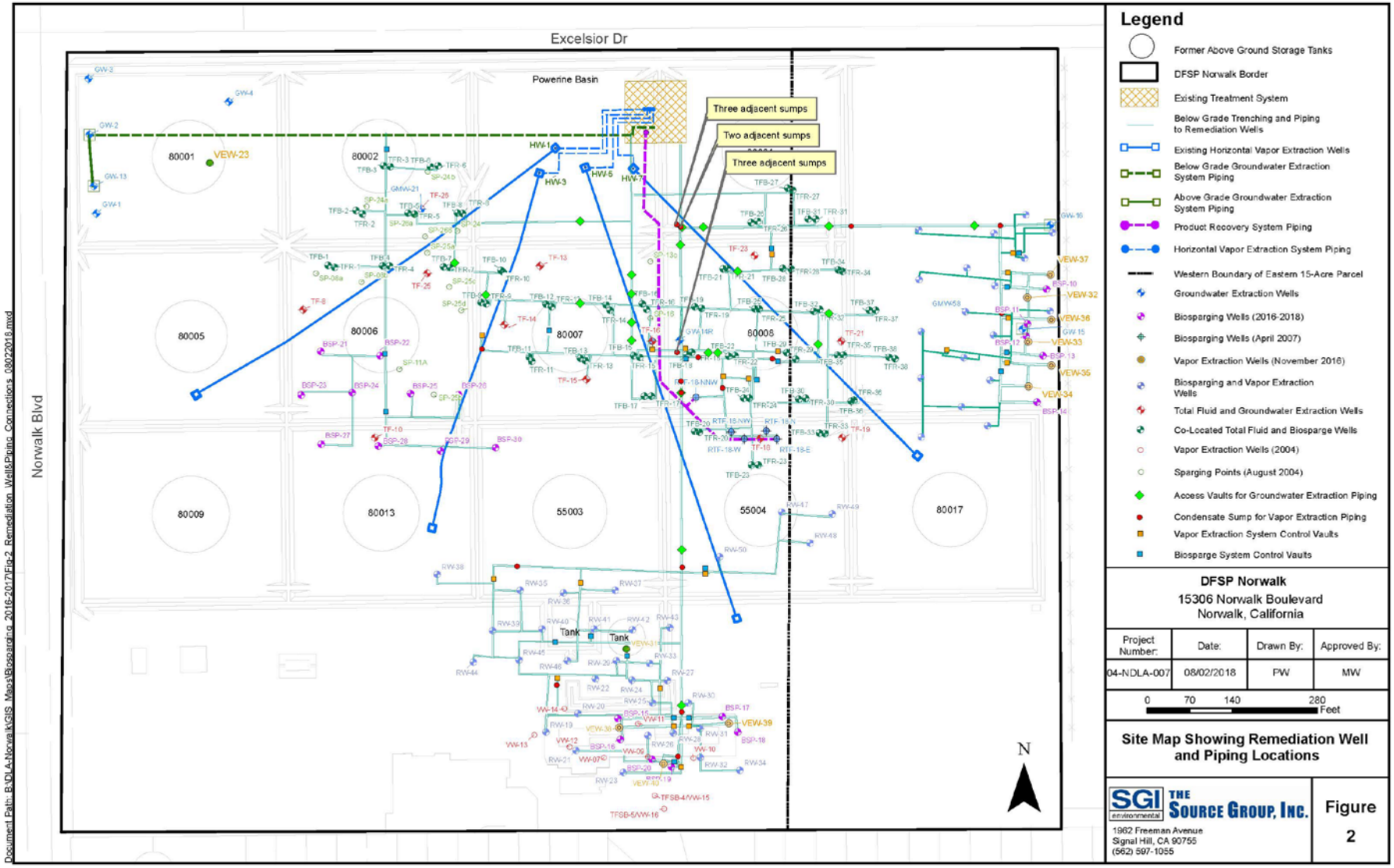
LNAPL - Current



Focus on Deep Soil and LNAPL

- **Based on the Findings of Field and Laboratory Testing, the Remediation System Was Expanded:**
  - **40 New Total Fluids (LNAPL and Groundwater) Wells Throughout the Tank Farm – To Enhance Recovery of LNAPL and Groundwater**
  - **65 New Biosparge Wells - To Enhance Remediation of Groundwater**
  - **16 New Vapor Extraction Wells – To Enhance Remediation of Deeper Soils – Augmenting 4 Horizontal VE Wells and 50 Existing Vapor Extraction Wells**
- **Increasing Biosparge Capacity via New 150-scfm Blower**
- ***Expanded System - Fully Operational by Fall of 2018!***

Focus on Deep Soil and LNAPL



Long-Term Stewardship

- **Long-term Groundwater Monitoring and Sampling Continues after Active Remediation Complete**
- **Integration of Wells into Future Site Development Plans**
  - **May Require Decommissioning of Some Wells and/or Relocation of Critical Wells**
  - **Anticipated Reduction in Sampling Frequency and Number of Wells Sampled**
- **DLA and Landowner Coordinate Access and Schedules**
- **Continued Coordination with Stakeholders**
- **Request for No Further Action and Well Decommissioning**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