

# ***Norwalk Tank Farm Update***

*Presented to the Norwalk Tank Farm  
Restoration Advisory Board*

*July 31, 2003*

# Presentation Overview

## Topics to be Covered

- RBCA Update
- Remediation Operations Update
- April 2003 Semi-Annual Monitoring Event
- Intermediate 24-Inch Block Valve Area Update



# RBCA Update

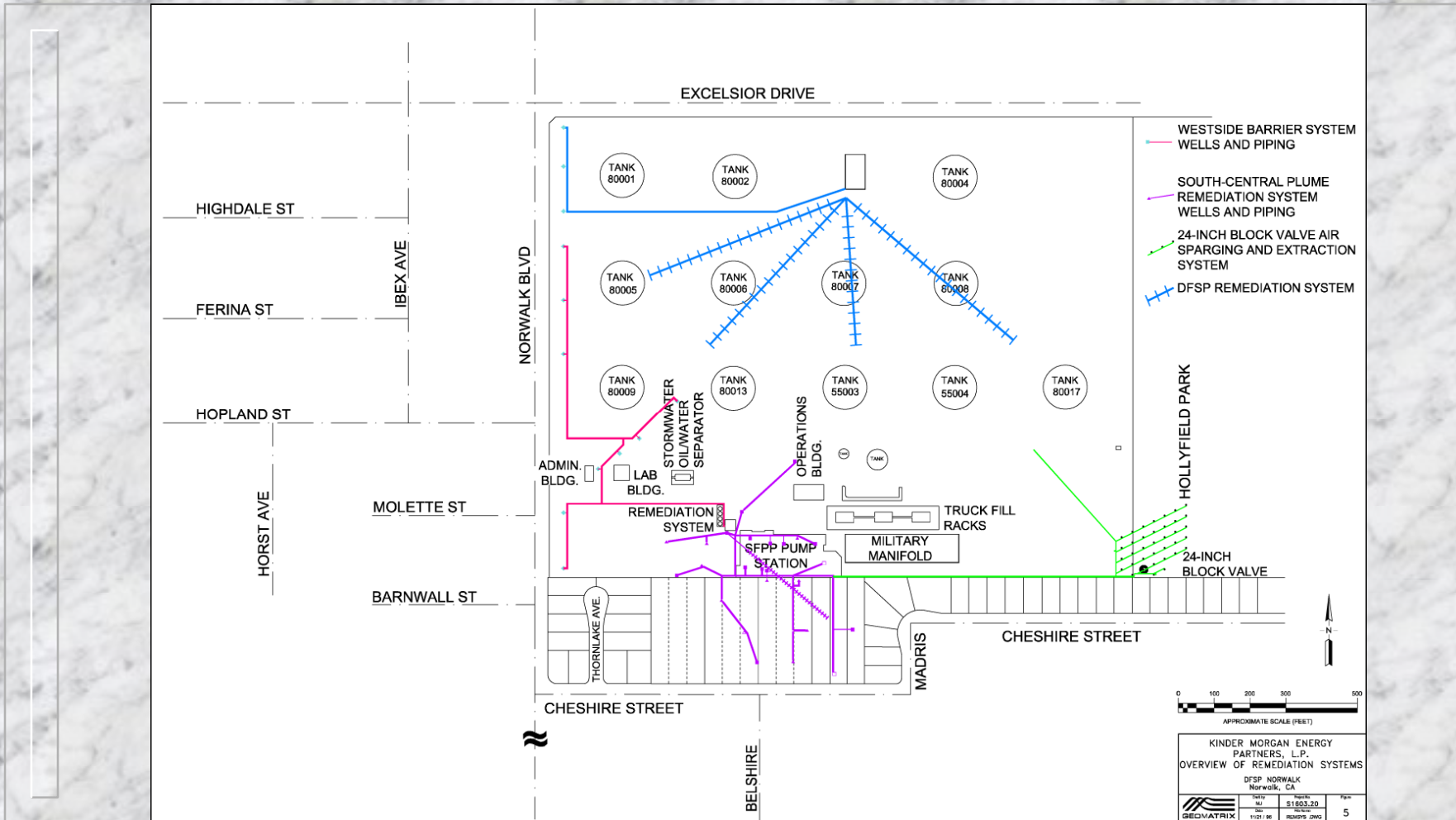
- Response to Additional Comments from RWQCB and OEHHA
  - October 1, 2000 - Submitted initial response to comments (including Sensitivity Analysis document)
  - October 23, 2001 - Received additional RWQCB comments
  - January 30, 2002 - Received additional OEHHA comments
  - February 22, 2002 - Submitted draft of response to OCCS
  - March 7, 2002 - Met with OCCS
  - March 29, 2002 - Submitted response to additional comments

## **RBCA Update cont.**

- The RWQCB and OEHHA comments addressed technical clarification and revisions/additions to the sensitivity analysis. The proposed responses were reviewed with the OCCS prior to submittal to the RWQCB.
- The RWQCB accepted the responses on July 3, 2003 and authorized submittal of the final documents.



# Map of Current Remediation Systems



# Soil Vapor Extraction System

- 16 onsite and 7 off-site vapor extraction wells in the South-Central Plume area.
- 2 vapor extraction wells in the Southeastern 24-Inch Block Valve area.

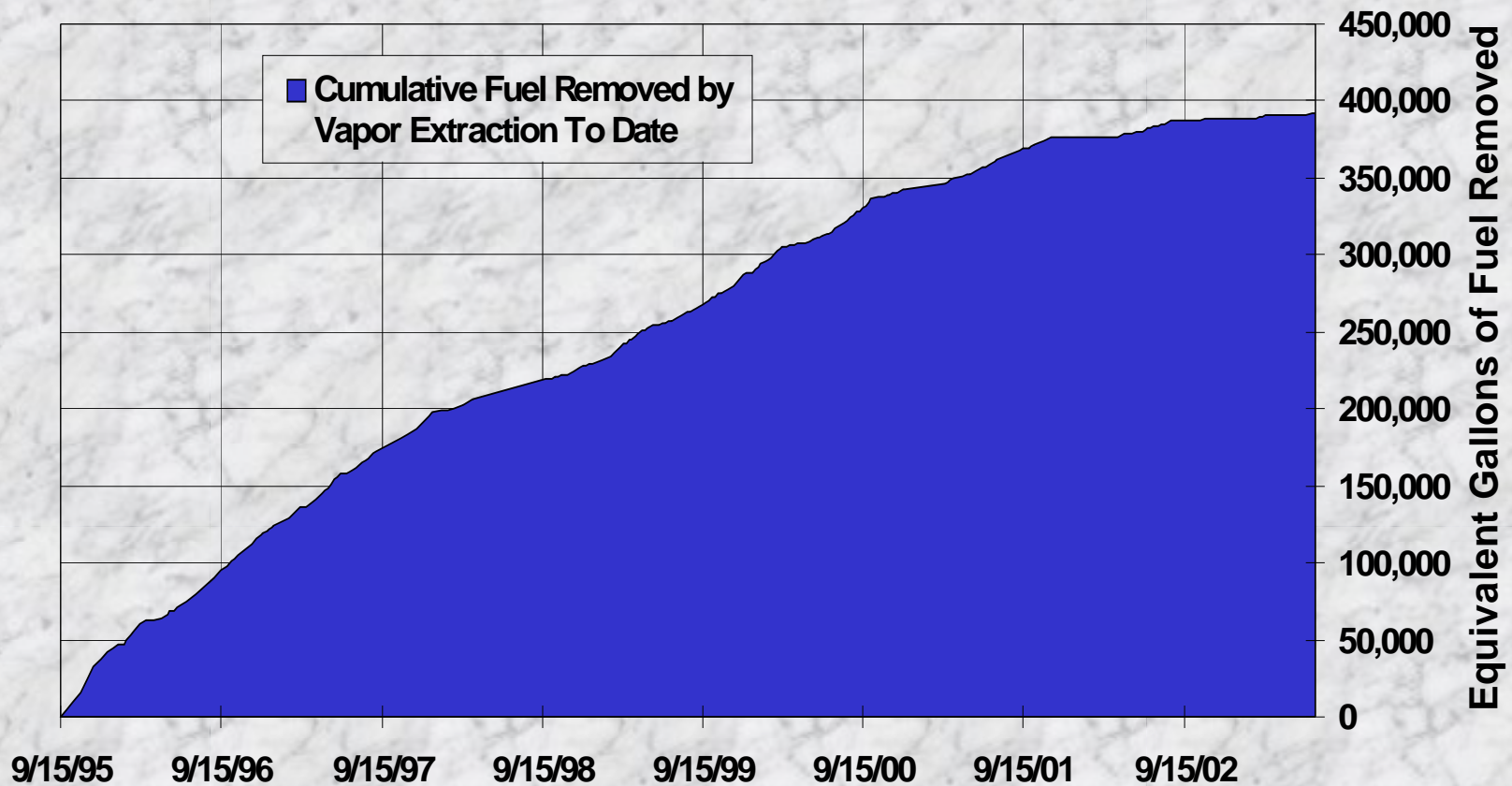


# Soil Vapor Extraction System Operations Summary

- 1,630 gallons equivalent of fuel removed from soil and destroyed by thermal oxidation since April 2003 RAB meeting.
- 392,220 gallons equivalent of fuel removed from soil and destroyed by thermal oxidation since September 1995.
- The soil vapor extraction system was shut down during May 2003 for system upgrades.

# 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
- 6 groundwater/product extraction wells in the South-Central Plume area
- 3 groundwater/product extraction wells and 2 groundwater extraction wells in the Southeastern 24-Inch Block Valve area

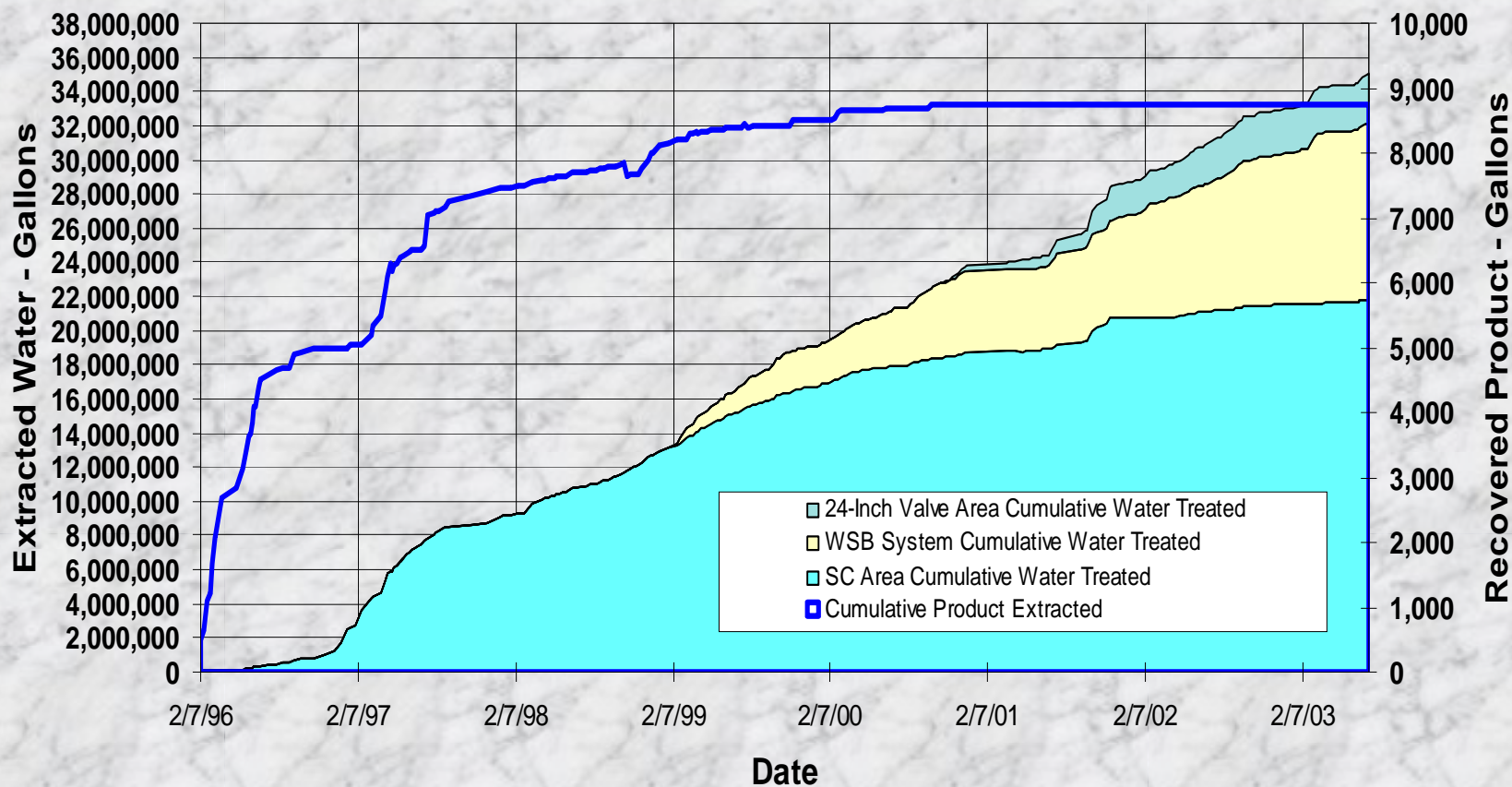
# Groundwater/Product Extraction System Operations Summary

- Total groundwater extracted since April 2003 RAB meeting:
  - South-Central Plume area, 162,500 gallons
  - Southeastern 24-Inch Valve area, 166,900 gallons
  - West Side Barrier area, 373,400 gallons
  - No free product was recovered
- Total groundwater extracted since September 1995:
  - South-Central Plume area, 21.8 million gallons
  - Southeastern 24-Inch Valve area, 2.8 million gallons
  - West Side Barrier area, 10.4 million gallons
  - Total groundwater extracted, 35 million gallons
  - 8,745 gallons free product removed
- The groundwater/product extraction system was shut down during system upgrades in May 2003.



# Groundwater/Product Extraction System Operations Summary

## Produced Extracted and Water Treated Summary



# Remediation System Upgrades

- Installed moisture separator downstream of air stripper to prevent damage to catalytic oxidizer.
- Installed transfer tank to the West Side Barrier system to reduce pressure buildup in conveyance pipelines to improve pump performance.



# April 2003

## Semi-Annual Monitoring Event

- 82 wells sampled, including 4 Exposition wells.
- No chemicals detected in Exposition wells.
- Free product observed in 16 of 152 wells gauged.
- North-Central free-product plume remains as smaller separated plumes in same general areas as noted during previous monitoring events.
- South-Central free-product plume has a reduced free-product thickness and remains in the same general areas as noted during previous monitoring events.
- Free product also observed in truck rack area, southeastern 24-inch valve area, and an area northeast of the South-Central free-product plume.







## **April 2003**

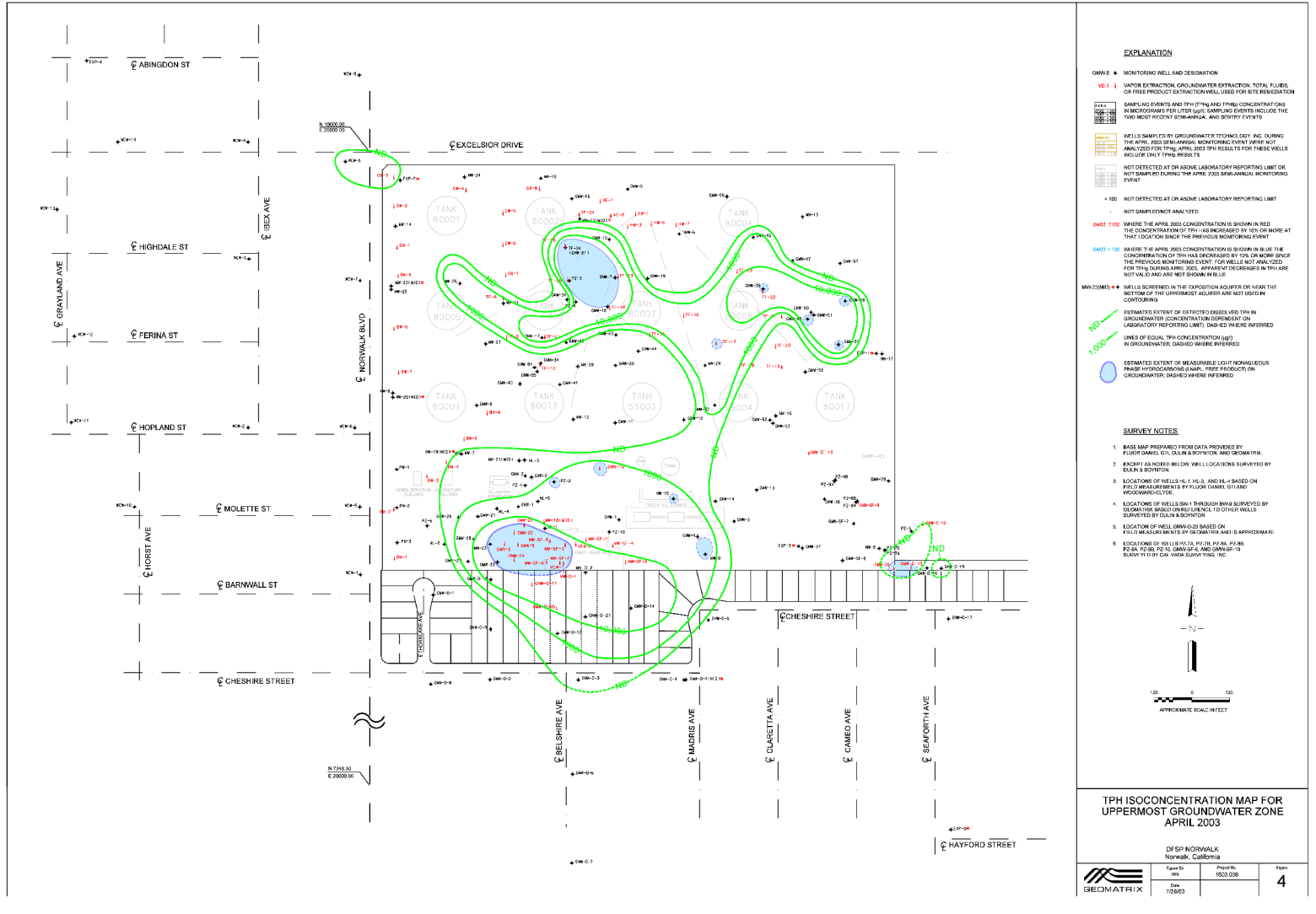
### **Semi-Annual Monitoring Event cont.**

- Lateral extent and concentrations of TPH decreased in the area between the North-Central and South-Central free-product plumes since October 2002. Lateral extent of TPH resembles that of April 2002.
- TPH concentrations in GMW-1 (north of Intermediate 24-Inch Block Valve) continued to decrease.
- TPHfp was detected at a historically high concentration in GWM-O-19 near the southeastern 24-inch block valve. This well will be re-sampled during the next Sentry event.



# TPH Isoconcentration Map

## April 2003







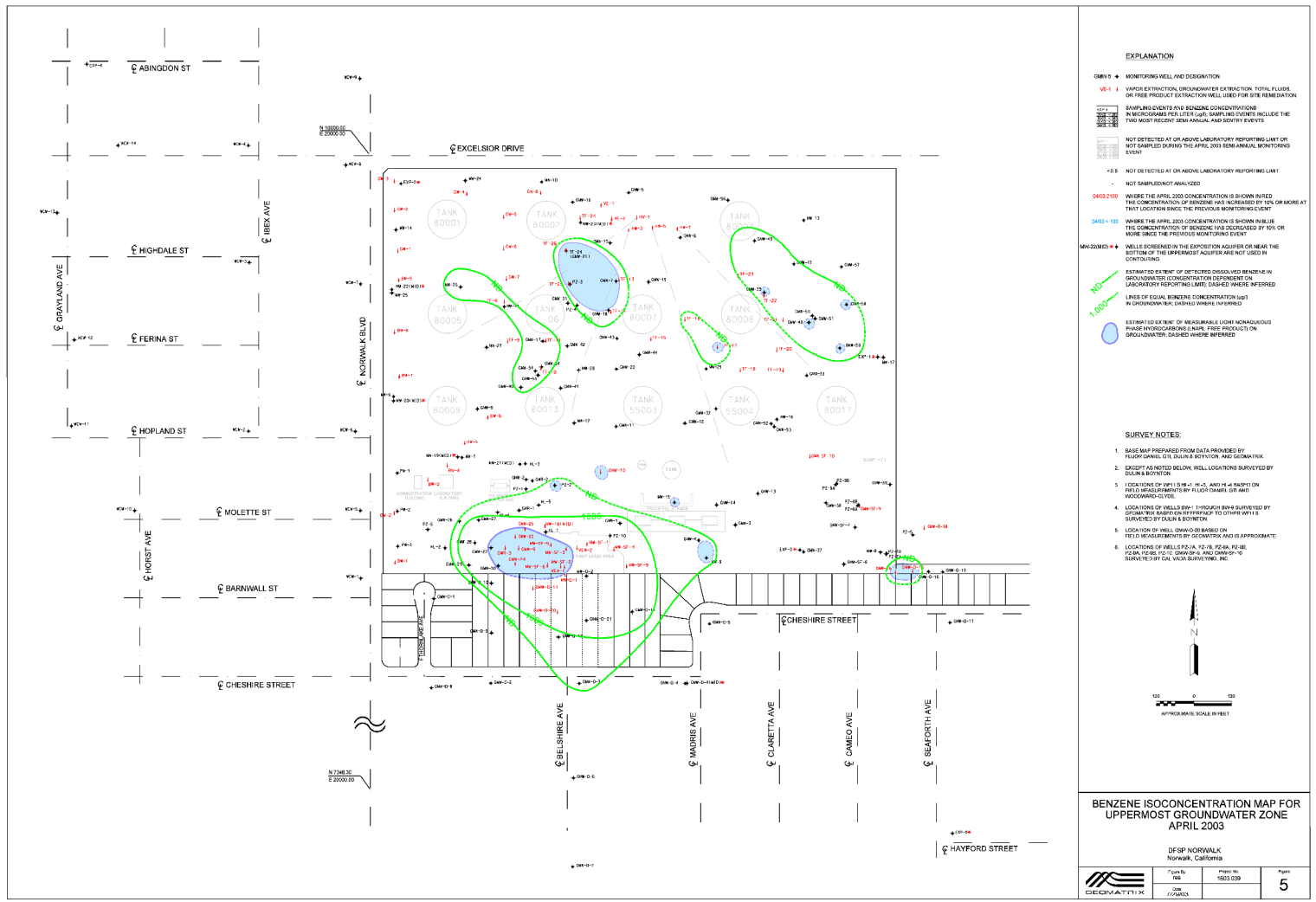
## **April 2003**

### **Semi-Annual Monitoring Event cont.**

- Benzene concentrations decreased in wells GMW-45, GMW- 47, and GMW-57 in the northeast field area.
- Benzene concentrations increased in four wells surrounding the South-Central free-product plume but remained within historical limits for those wells. The benzene concentration decreased in GMW-O-14.
- Benzene was not detected in the southeastern 24-inch valve area during the April 2003 monitoring event.

# Benzene Isoconcentration Map

## April 2003



### EXPLANATION

- DMV-9 • MONITORING WELL AND DESIGNATION
- VE-1 • VAPOR EXTRACTION, GROUNDWATER EXTRACTION, TOTAL FLUIDS, OR THE PRODUCT EXTRACTOR WILL BE USED FOR SITE REMEDIATION
- • SAMPLING EVENTS AND BENZENE CONCENTRATIONS IN MICROGRAMS PER LITER (UG/L). SAMPLING EVENTS INCLUDE THE TWO MOST RECENT SEMI-ANNUAL AND SEVENTY-EVENTS
- • NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT OR NOT SAMPLED DURING THE APRIL 2003 SEMI-ANNUAL MONITORING EVENT
- <5 • NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT - NOT SAMPLED/NOT ANALYZED
- 0403-210 • WHERE THE APRIL 2003 CONCENTRATION IS SHOWN IN RED, THE CONCENTRATION OF BENZENE HAS INCREASED BY 50% OR MORE AT THAT LOCATION SINCE THE PREVIOUS MONITORING EVENT
- 0403-100 • WHERE THE APRIL 2003 CONCENTRATION IS SHOWN IN BLUE, THE CONCENTRATION OF BENZENE HAS DECREASED BY 50% OR MORE SINCE THE PREVIOUS MONITORING EVENT
- MM20M0D • WELLS SCREENED IN THE EXPOSITION AQUIFER OR NEAR THE BOTTOM OF THE UPPERMOST AQUIFER ARE NOT USED IN CONTAINING
- NO • ESTIMATED EXTENT OF DETECTED DISSOLVED BENZENE IN GROUNDWATER CONCENTRATION DEPENDENT ON LABORATORY REPORTING LIMIT, CIRCLES WHERE INFERRED
- 1,000 • LINES OF EQUAL BENZENE CONCENTRATION LOT IN GROUNDWATER, DASHED WHERE INFERRED
- • ESTIMATED EXTENT OF NEAR-SHALL LIGHT NONAQUEOUS PHASE HYDROCARBONS (LNAPL, FREE PRODUCT) IN GROUNDWATER, DASHED WHERE INFERRED

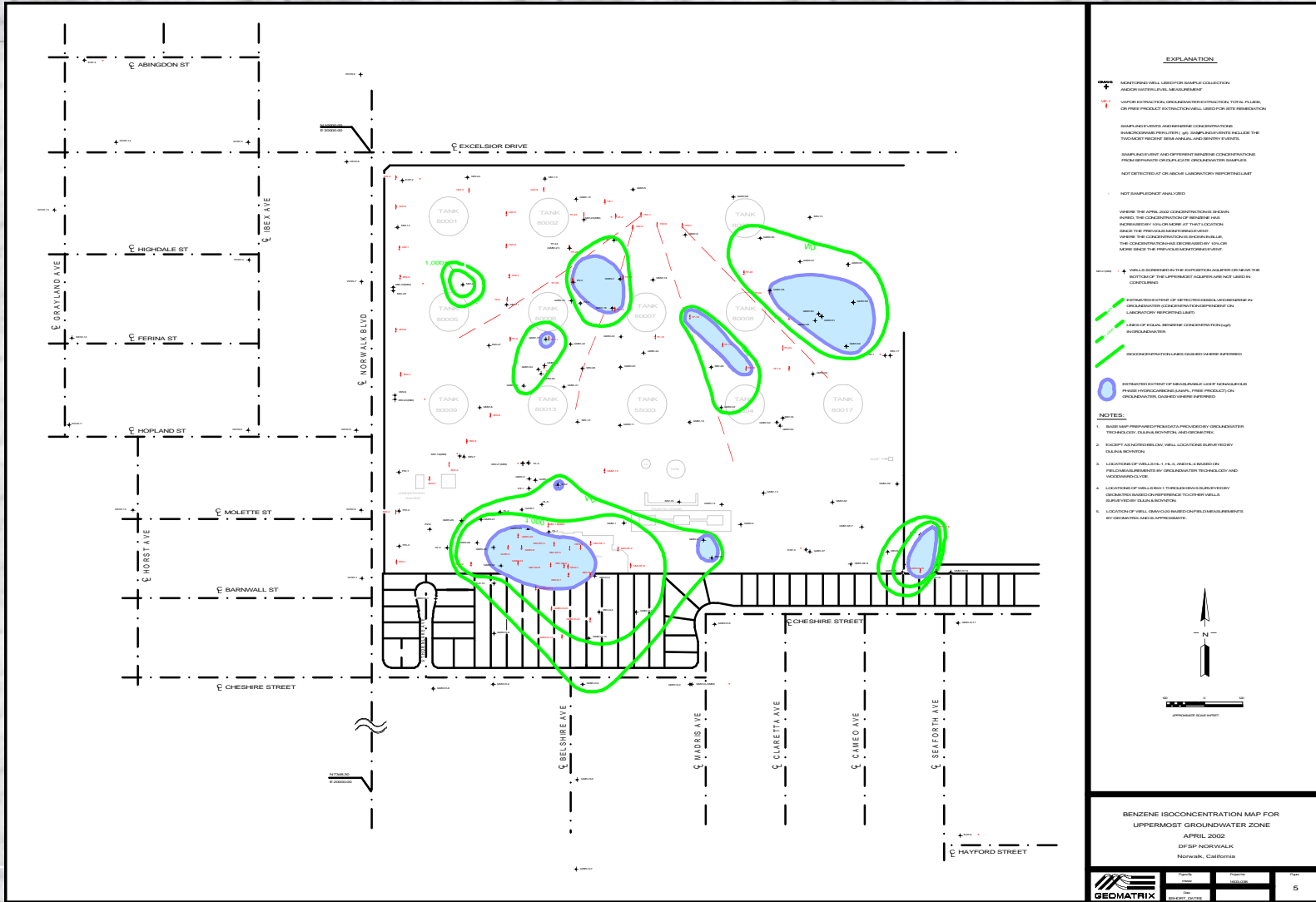
### SURVEY NOTES:

1. BASE MAP PREPARED FROM DATA PROVIDED BY FLORENZ, GARDNER, DULIN & BOYNTON, AND GDM&R, INC.
2. EXCEPT AS NOTED BELOW, WELLS LOCATIONS SURVEYED BY DULIN & BOYNTON.
3. LOCATIONS OF WELLS 80011, 80014, 80015, 80016, 80017, 80018, 80019, 80020, 80021, 80022, 80023, 80024, 80025, 80026, 80027, 80028, 80029, 80030, 80031, 80032, 80033, 80034, 80035, 80036, 80037, 80038, 80039, 80040, 80041, 80042, 80043, 80044, 80045, 80046, 80047, 80048, 80049, 80050, 80051, 80052, 80053, 80054, 80055, 80056, 80057, 80058, 80059, 80060, 80061, 80062, 80063, 80064, 80065, 80066, 80067, 80068, 80069, 80070, 80071, 80072, 80073, 80074, 80075, 80076, 80077, 80078, 80079, 80080, 80081, 80082, 80083, 80084, 80085, 80086, 80087, 80088, 80089, 80090, 80091, 80092, 80093, 80094, 80095, 80096, 80097, 80098, 80099, 80100, 80101, 80102, 80103, 80104, 80105, 80106, 80107, 80108, 80109, 80110, 80111, 80112, 80113, 80114, 80115, 80116, 80117, 80118, 80119, 80120, 80121, 80122, 80123, 80124, 80125, 80126, 80127, 80128, 80129, 80130, 80131, 80132, 80133, 80134, 80135, 80136, 80137, 80138, 80139, 80140, 80141, 80142, 80143, 80144, 80145, 80146, 80147, 80148, 80149, 80150, 80151, 80152, 80153, 80154, 80155, 80156, 80157, 80158, 80159, 80160, 80161, 80162, 80163, 80164, 80165, 80166, 80167, 80168, 80169, 80170, 80171, 80172, 80173, 80174, 80175, 80176, 80177, 80178, 80179, 80180, 80181, 80182, 80183, 80184, 80185, 80186, 80187, 80188, 80189, 80190, 80191, 80192, 80193, 80194, 80195, 80196, 80197, 80198, 80199, 80200, 80201, 80202, 80203, 80204, 80205, 80206, 80207, 80208, 80209, 80210, 80211, 80212, 80213, 80214, 80215, 80216, 80217, 80218, 80219, 80220, 80221, 80222, 80223, 80224, 80225, 80226, 80227, 80228, 80229, 80230, 80231, 80232, 80233, 80234, 80235, 80236, 80237, 80238, 80239, 80240, 80241, 80242, 80243, 80244, 80245, 80246, 80247, 80248, 80249, 80250, 80251, 80252, 80253, 80254, 80255, 80256, 80257, 80258, 80259, 80260, 80261, 80262, 80263, 80264, 80265, 80266, 80267, 80268, 80269, 80270, 80271, 80272, 80273, 80274, 80275, 80276, 80277, 80278, 80279, 80280, 80281, 80282, 80283, 80284, 80285, 80286, 80287, 80288, 80289, 80290, 80291, 80292, 80293, 80294, 80295, 80296, 80297, 80298, 80299, 80300, 80301, 80302, 80303, 80304, 80305, 80306, 80307, 80308, 80309, 80310, 80311, 80312, 80313, 80314, 80315, 80316, 80317, 80318, 80319, 80320, 80321, 80322, 80323, 80324, 80325, 80326, 80327, 80328, 80329, 80330, 80331, 80332, 80333, 80334, 80335, 80336, 80337, 80338, 80339, 80340, 80341, 80342, 80343, 80344, 80345, 80346, 80347, 80348, 80349, 80350, 80351, 80352, 80353, 80354, 80355, 80356, 80357, 80358, 80359, 80360, 80361, 80362, 80363, 80364, 80365, 80366, 80367, 80368, 80369, 80370, 80371, 80372, 80373, 80374, 80375, 80376, 80377, 80378, 80379, 80380, 80381, 80382, 80383, 80384, 80385, 80386, 80387, 80388, 80389, 80390, 80391, 80392, 80393, 80394, 80395, 80396, 80397, 80398, 80399, 80400, 80401, 80402, 80403, 80404, 80405, 80406, 80407, 80408, 80409, 80410, 80411, 80412, 80413, 80414, 80415, 80416, 80417, 80418, 80419, 80420, 80421, 80422, 80423, 80424, 80425, 80426, 80427, 80428, 80429, 80430, 80431, 80432, 80433, 80434, 80435, 80436, 80437, 80438, 80439, 80440, 80441, 80442, 80443, 80444, 80445, 80446, 80447, 80448, 80449, 80450, 80451, 80452, 80453, 80454, 80455, 80456, 80457, 80458, 80459, 80460, 80461, 80462, 80463, 80464, 80465, 80466, 80467, 80468, 80469, 80470, 80471, 80472, 80473, 80474, 80475, 80476, 80477, 80478, 80479, 80480, 80481, 80482, 80483, 80484, 80485, 80486, 80487, 80488, 80489, 80490, 80491, 80492, 80493, 80494, 80495, 80496, 80497, 80498, 80499, 80500, 80501, 80502, 80503, 80504, 80505, 80506, 80507, 80508, 80509, 80510, 80511, 80512, 80513, 80514, 80515, 80516, 80517, 80518, 80519, 80520, 80521, 80522, 80523, 80524, 80525, 80526, 80527, 80528, 80529, 80530, 80531, 80532, 80533, 80534, 80535, 80536, 80537, 80538, 80539, 80540, 80541, 80542, 80543, 80544, 80545, 80546, 80547, 80548, 80549, 80550, 80551, 80552, 80553, 80554, 80555, 80556, 80557, 80558, 80559, 80560, 80561, 80562, 80563, 80564, 80565, 80566, 80567, 80568, 80569, 80570, 80571, 80572, 80573, 80574, 80575, 80576, 80577, 80578, 80579, 80580, 80581, 80582, 80583, 80584, 80585, 80586, 80587, 80588, 80589, 80590, 80591, 80592, 80593, 80594, 80595, 80596, 80597, 80598, 80599, 80600, 80601, 80602, 80603, 80604, 80605, 80606, 80607, 80608, 80609, 80610, 80611, 80612, 80613, 80614, 80615, 80616, 80617, 80618, 80619, 80620, 80621, 80622, 80623, 80624, 80625, 80626, 80627, 80628, 80629, 80630, 80631, 80632, 80633, 80634, 80635, 80636, 80637, 80638, 80639, 80640, 80641, 80642, 80643, 80644, 80645, 80646, 80647, 80648, 80649, 80650, 80651, 80652, 80653, 80654, 80655, 80656, 80657, 80658, 80659, 80660, 80661, 80662, 80663, 80664, 80665, 80666, 80667, 80668, 80669, 80670, 80671, 80672, 80673, 80674, 80675, 80676, 80677, 80678, 80679, 80680, 80681, 80682, 80683, 80684, 80685, 80686, 80687, 80688, 80689, 80690, 80691, 80692, 80693, 80694, 80695, 80696, 80697, 80698, 80699, 80700, 80701, 80702, 80703, 80704, 80705, 80706, 80707, 80708, 80709, 80710, 80711, 80712, 80713, 80714, 80715, 80716, 80717, 80718, 80719, 80720, 80721, 80722, 80723, 80724, 80725, 80726, 80727, 80728, 80729, 80730, 80731, 80732, 80733, 80734, 80735, 80736, 80737, 80738, 80739, 80740, 80741, 80742, 80743, 80744, 80745, 80746, 80747, 80748, 80749, 80750, 80751, 80752, 80753, 80754, 80755, 80756, 80757, 80758, 80759, 80760, 80761, 80762, 80763, 80764, 80765, 80766, 80767, 80768, 80769, 80770, 80771, 80772, 80773, 80774, 80775, 80776, 80777, 80778, 80779, 80780, 80781, 80782, 80783, 80784, 80785, 80786, 80787, 80788, 80789, 80790, 80791, 80792, 80793, 80794, 80795, 80796, 80797, 80798, 80799, 80800, 80801, 80802, 80803, 80804, 80805, 80806, 80807, 80808, 80809, 80810, 80811, 80812, 80813, 80814, 80815, 80816, 80817, 80818, 80819, 80820, 80821, 80822, 80823, 80824, 80825, 80826, 80827, 80828, 80829, 80830, 80831, 80832, 80833, 80834, 80835, 80836, 80837, 80838, 80839, 80840, 80841, 80842, 80843, 80844, 80845, 80846, 80847, 80848, 80849, 80850, 80851, 80852, 80853, 80854, 80855, 80856, 80857, 80858, 80859, 80860, 80861, 80862, 80863, 80864, 80865, 80866, 80867, 80868, 80869, 80870, 80871, 80872, 80873, 80874, 80875, 80876, 80877, 80878, 80879, 80880, 80881, 80882, 80883, 80884, 80885, 80886, 80887, 80888, 80889, 80890, 80891, 80892, 80893, 80894, 80895, 80896, 80897, 80898, 80899, 80900, 80901, 80902, 80903, 80904, 80905, 80906, 80907, 80908, 80909, 80910, 80911, 80912, 80913, 80914, 80915, 80916, 80917, 80918, 80919, 80920, 80921, 80922, 80923, 80924, 80925, 80926, 80927, 80928, 80929, 80930, 80931, 80932, 80933, 80934, 80935, 80936, 80937, 80938, 80939, 80940, 80941, 80942, 80943, 80944, 80945, 80946, 80947, 80948, 80949, 80950, 80951, 80952, 80953, 80954, 80955, 80956, 80957, 80958, 80959, 80960, 80961, 80962, 80963, 80964, 80965, 80966, 80967, 80968, 80969, 80970, 80971, 80972, 80973, 80974, 80975, 80976, 80977, 80978, 80979, 80980, 80981, 80982, 80983, 80984, 80985, 80986, 80987, 80988, 80989, 80990, 80991, 80992, 80993, 80994, 80995, 80996, 80997, 80998, 80999, 81000, 81001, 81002, 81003, 81004, 81005, 81006, 81007, 81008, 81009, 81010, 81011, 81012, 81013, 81014, 81015, 81016, 81017, 81018, 81019, 81020, 81021, 81022, 81023, 81024, 81025, 81026, 81027, 81028, 81029, 81030, 81031, 81032, 81033, 81034, 81035, 81036, 81037, 81038, 81039, 81040, 81041, 81042, 81043, 81044, 81045, 81046, 81047, 81048, 81049, 81050, 81051, 81052, 81053, 81054, 81055, 81056, 81057, 81058, 81059, 81060, 81061, 81062, 81063, 81064, 81065, 81066, 81067, 81068, 81069, 81070, 81071, 81072, 81073, 81074, 81075, 81076, 81077, 81078, 81079, 81080, 81081, 81082, 81083, 81084, 81085, 81086, 81087, 81088, 81089, 81090, 81091, 81092, 81093, 81094, 81095, 81096, 81097, 81098, 81099, 81100, 81101, 81102, 81103, 81104, 81105, 81106, 81107, 81108, 81109, 81110, 81111, 81112, 81113, 81114, 81115, 81116, 81117, 81118, 81119, 81120, 81121, 81122, 81123, 81124, 81125, 81126, 81127, 81128, 81129, 81130, 81131, 81132, 81133, 81134, 81135, 81136, 81137, 81138, 81139, 81140, 81141, 81142, 81143, 81144, 81145, 81146, 81147, 81148, 81149, 81150, 81151, 81152, 81153, 81154, 81155, 81156, 81157, 81158, 81159, 81160, 81161, 81162, 81163, 81164, 81165, 81166, 81167, 81168, 81169, 81170, 81171, 81172, 81173, 81174, 81175, 81176, 81177, 81178, 81179, 81180, 81181, 81182, 81183, 81184, 81185, 81186, 81187, 81188, 81189, 81190, 81191, 81192, 81193, 81194, 81195, 81196, 81197, 81198, 81199, 81200, 81201, 81202, 81203, 81204, 81205, 81206, 81207, 81208, 81209, 81210, 81211, 81212, 81213, 81214, 81215, 81216, 81217, 81218, 81219, 81220, 81221, 81222, 81223, 81224, 81225, 81226, 81227, 81228, 81229, 81230, 81231, 81232, 81233, 81234, 81235, 81236, 81237, 81238, 81239, 81240, 81241, 81242, 81243, 81244, 81245, 81246, 81247, 81248, 81249, 81250, 81251, 81252, 81253, 81254, 81255, 81256, 81257, 81258, 81259, 81260, 81261, 81262, 81263, 81264, 81265, 81266, 81267, 81268, 81269, 81270, 81271, 81272, 81273, 81274, 81275, 81276, 81277, 81278, 81279, 81280, 81281, 81282, 81283, 81284, 81285, 81286, 81287, 81288, 81289, 81290, 81291, 81292, 81293, 81294, 81295, 81296, 81297, 81298, 81299, 81300, 81301, 81302, 81303, 81304, 81305, 81306, 81307, 81308, 81309, 81310, 81311, 81312, 81313, 81314, 81315, 81316, 81317, 81318, 81319, 81320, 81321, 81322, 81323, 81324, 81325, 81326, 81327, 81328, 81329, 81330, 81331, 81332, 81333, 81334, 81335, 81336, 81337, 81338, 81339, 81340, 81341, 81342, 81343, 81344, 81345, 81346, 81347, 81348, 81349, 81350, 81351, 81352, 81353, 81354, 81355, 81356, 81357, 81358, 81359, 81360, 81361, 81362, 81363, 81364, 81365, 81366, 81367, 81368, 81369, 81370, 81371, 81372, 81373, 81374, 81375, 81376, 81377, 81378, 81379, 81380, 81381, 81382, 81383, 81384, 81385, 81386, 81387, 81388, 81389, 81390, 81391, 81392, 81393, 81394, 81395, 81396, 81397, 81398, 81399, 81400, 81401, 81402, 81403, 81404, 81405, 81406, 81407, 81408, 81409, 81410, 81411, 81412, 81413, 81414, 81415, 81416, 81417, 81418, 81419, 81420, 81421, 81422, 81423, 81424, 81425, 81426, 81427, 81428, 81429, 81430, 81431, 81432, 81433, 81434, 81435, 81436, 81437, 81438, 81439, 81440, 81441, 81442, 81443, 81444, 81445, 81446, 81447, 81448, 81449, 81450, 81451, 81452, 81453, 81454, 81455, 81456, 81457, 81458, 81459, 81460, 81461, 81462, 81463, 81464, 81465, 81466, 81467, 81468, 81469, 81470, 81471, 81472, 81473, 81474, 81475, 81476, 81477, 81478, 81479, 81480, 81481, 81482, 81483, 81484, 81485, 81486, 81487, 81488, 81489, 81490, 81491, 81492, 81493, 81494, 81495, 81496, 81497, 81498, 81499, 81500, 81501, 81502, 81503, 81504, 81505, 81506, 81507, 81508, 81509, 81510, 81511, 81512, 81513, 81514, 81515, 81516, 81517, 81518, 81519, 81520, 81521, 81522, 81523, 81524, 81525, 81526, 81527, 81528, 81529, 81530, 81531, 81532, 81533, 81534, 81535, 81536, 81537, 81538, 81539, 81540, 81541, 81542, 81543, 81544, 81545, 81546, 81547, 81548, 81549, 81550, 81551, 81552, 81553, 81554, 81555, 81556, 81557, 81558, 81559, 81560, 81561, 81562, 81563, 81564, 81565, 81566, 81567, 81568, 81569, 81570, 81571, 81572, 81573, 81574, 81575, 81576, 81577, 81578, 81579, 81580, 81581, 81582, 81583, 81584, 81585, 81586, 81587, 81588, 81589, 81590, 81591, 81592, 81593, 81594, 81595, 81596, 81597, 81598, 81599, 81600, 81601, 81602, 81603, 81604, 81605, 81606, 81607, 81608, 81609, 81610, 81611, 81612, 81613, 81614, 81615, 81616, 81617, 81618,



# Benzene Isoconcentration Map

## April 2002



**EXPLANATION**

LOCATION OF WELL LOCATED FOR SAMPLE COLLECTION AND/OR MONITORING PURPOSES  
 UPPER EXTRACTION WELL LOCATED FOR EXTRACTION TOTAL PULVERIZED FUELS PRECIPITATION EXTRACTION WELL LOCATED FOR REMEDIATION PURPOSES  
 CONCENTRATION OF BENZENE IN GROUNDWATER MEASURED AT THAT LOCATION BASED ON THE CONCENTRATION IN THE MONITORING WELL  
 CONCENTRATION OF BENZENE IN GROUNDWATER MEASURED AT THAT LOCATION BASED ON THE CONCENTRATION IN THE MONITORING WELL  
 ESTIMATE OF BOUNDARY OF REMEDIATION LIGHT PRIORITY ZONE (BENZENE)

**NOTES:**

1. MONITORING WELL LOCATIONS DETERMINED BY GEOTECHNICAL AND GEOLOGICAL DATA.
2. EXCEPT AS NOTED, WELL LOCATIONS SURVEYED BY DLA/SR/01/01.
3. LOCATION OF WELLS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

BENZENE ISOCONCENTRATION MAP FOR UPPERMOST GROUNDWATER ZONE  
 APRIL 2002  
 DFSP NORWALK  
 Norwalk, California

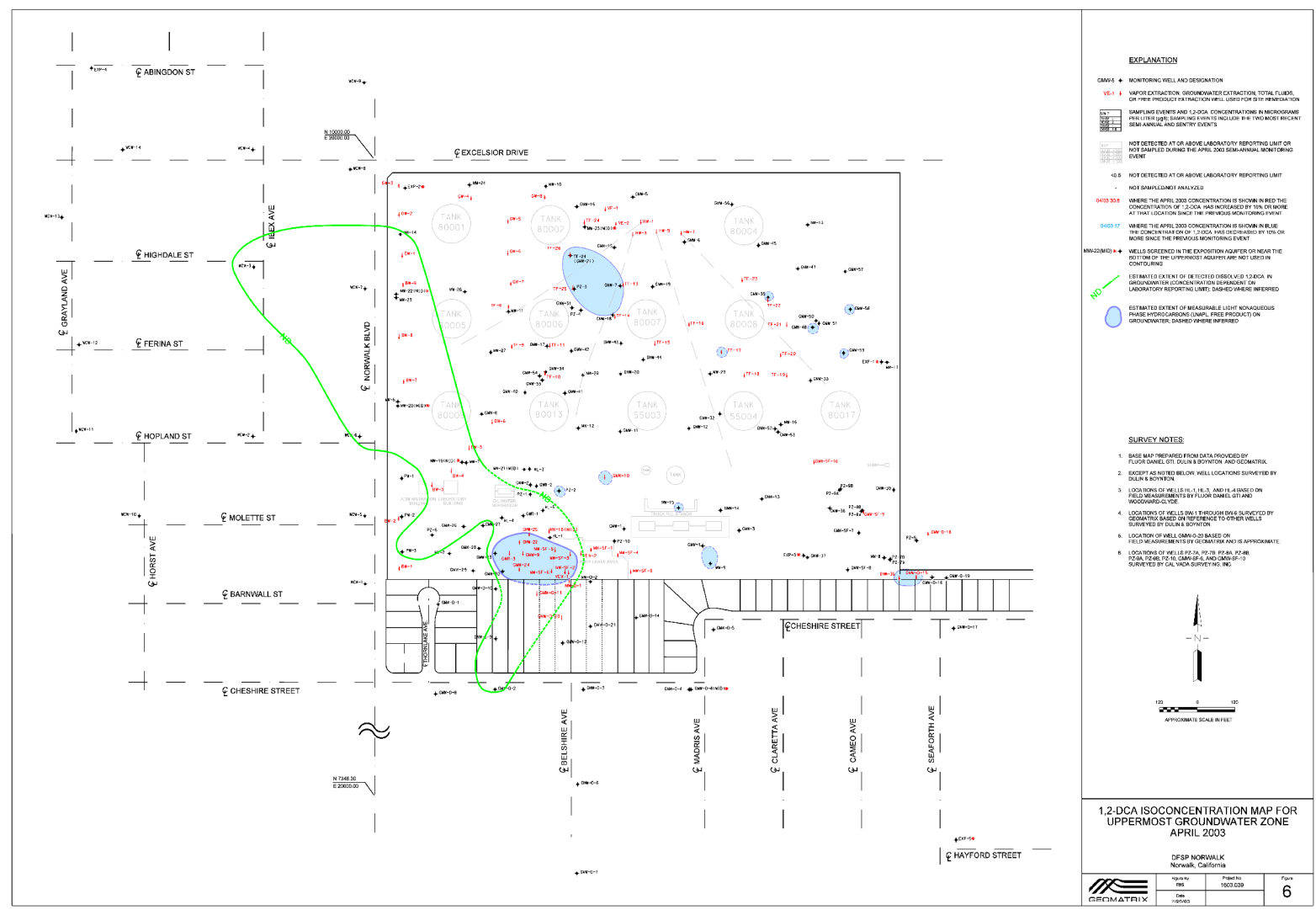
## April 2003

# Semi-Annual Monitoring Event cont.

- Detected concentrations of 1,2-DCA were below the Risk-Based Corrective Action level of 70 ug/l, recently accepted by the RWQCB.
- Concentrations of 1,2-DCA in off-site wells west of the site remained non-detected or similar to those detected during previous monitoring events.
- 1,2-DCA continues to be non-detected in several wells located near the west side barrier wells.



# 1,2-DCA Isoconcentration Map April 2003

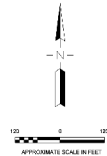


### EXPLANATION

- CMW-6 ◆ MONITORING WELL AND DESIGNATION
- VE-1 ◆ VAPOR EXTRACTION, UNKNOWN/EXTRACTION, TOTAL FLUIDS, OR THE PRODUCT OF EXTRACTION WELLS LISTED FOR SITE REMEDIATION
- EW-1 ◆ SAMPLING EVENTS AND 1,2-DCA CONCENTRATIONS IN MICROORGANISMS FROM FIVE SAMPLES PER WELL INCLUDES BOTH SEMI-ANNUAL AND QUARTERLY EVENTS
- EW-2 ◆ NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT OR NOT SAMPLED DURING THE APRIL 2003 SEMI-ANNUAL MONITORING EVENT
- EW-3 ◆ NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT - NOT SAMPLED/NOT ANALYZED
- EW-4 ◆ WHERE THE APRIL 2003 CONCENTRATION IS SHOWN IN RED THE CONCENTRATION OF 1,2-DCA HAS INCREASED BY 10% OR MORE AT THAT LOCATION SINCE THE PREVIOUS MONITORING EVENT
- EW-5 ◆ WHERE THE APRIL 2003 CONCENTRATION IS SHOWN IN BLUE THE CONCENTRATION OF 1,2-DCA HAS INCREASED BY 50% OR MORE SINCE THE PREVIOUS MONITORING EVENT
- MW-20(M) ◆ WELLS SCREENED IN THE EXHAUSTION HEADER OR NEAR THE BOTTOM OF THE UPPERMOST AQUIFER ARE NOT LISTED IN CONTOURS
- NO ◆ ESTIMATE EXTENT OF DETECTED DISSEMINATED 1,2-DCA IN GROUNDWATER CONCENTRATION OR DEPENDENT ON LABORATORY REPORTING LIMIT; DASHED WHERE INFERRRED
- LNH ◆ ESTIMATE EXTENT OF MEASURABLE LIGHT NON-HALOGENATED THIRDE HYDROCARBON (LNH) - FREE PRODUCTS ON GROUNDWATER; DASHED WHERE INFERRRED

### SURVEY NOTES

1. BASE MAP PREPARED FROM DATA PROVIDED BY FLOOR SAMPLE, GSI, COLIN A. BOYNTON, AND GEOMETRICAL.
2. EXCEPT AS NOTED BELOW, WELL LOCATIONS SURVEYED BY COLIN A. BOYNTON.
3. LOCATIONS OF WELLS HL-1, HL-3, AND HL-4 BASED ON FIELD MEASUREMENTS BY FLOOR DANIEL GSI AND MICROORGANISMS.
4. LOCATIONS OF WELLS BW-1 THROUGH BW-6 SURVEYED BY GEOMETRICAL BASED ON REFERENCE TO OTHER WELLS SURVEYED BY COLIN A. BOYNTON.
5. LOCATION OF WELL GW-20 BASED ON FIELD MEASUREMENTS BY GEOMETRICAL AND IS APPROXIMATE.
6. LOCATIONS OF WELLS PZ-7A, PZ-7B, PZ-8A, PZ-8B, PZ-8C, PZ-8D, PZ-8E, PZ-8F, PZ-8G, AND PZ-8H SURVEYED BY CALVADA SURVEYING, INC.



### 1,2-DCA ISOCONCENTRATION MAP FOR UPPERMOST GROUNDWATER ZONE APRIL 2003

	Drawn by: RSP	Project No.: 1503.03P	Page: <b>6</b>
	Date: 11/26/03		



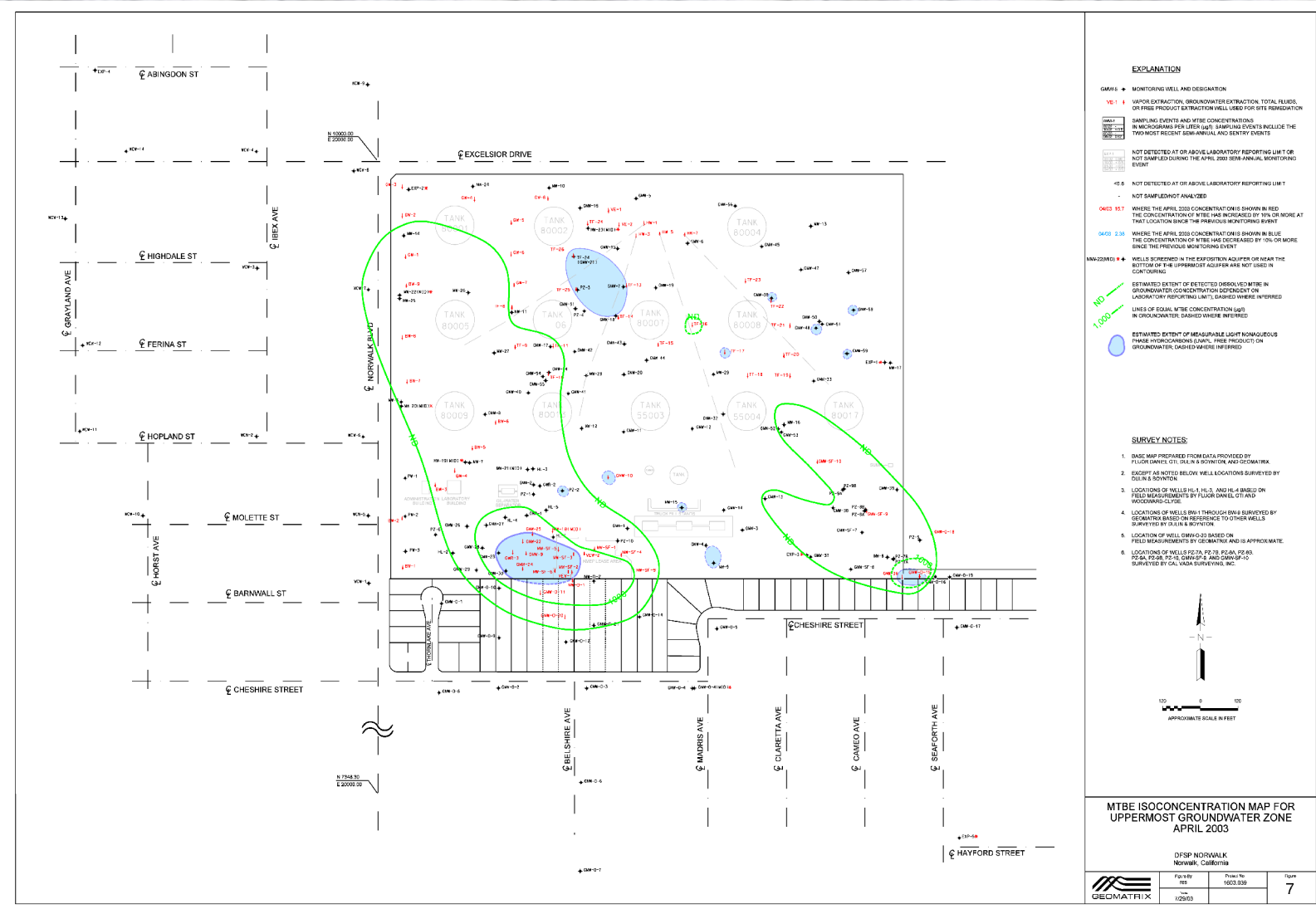


## **April 2003**

### **Semi-Annual Monitoring Event cont.**

- MTBE concentrations in wells MW-19 (MID) and MW-6 continued to decrease
- MTBE remained non-detected in off-site monitoring wells west of the site, except at WCW-7 where the concentration remained low.
- MTBE concentrations in the southeastern portion of the site were generally similar to those observed during the previous semi-annual monitoring event.

# MTBE Isoconcentration Map April 2003







# Intermediate 24-Inch Block Valve Area Update

- Gauged and sampled monitoring wells in the vicinity of the intermediate 24-inch block valve in March 2003.
  - No free product detected.
  - Chemical concentrations were within historical ranges and did not show an increasing trend.
  
- Performed site assessment activities April 10-11, 2003.
  - Lateral extent of soil impacted by release from the intermediate block valve is limited to a distance of approximately 30 feet or less to the northwest and northeast from the intermediate block valve.
  - In the immediate vicinity of the intermediate block valve, concentrations of BTEX, MTBE, TPHg, and TPHd extended down to groundwater at approximately 25 feet bgs.



# Intermediate 24-Inch Block Valve Area Update cont.

- Grab groundwater samples contained TPHg, TPHd, BTEX, and MTBE; however, borings drilled during the assessment were located within or near previously interpreted extent of liquid and dissolved phase plumes.
- Connected temporary soil vapor extraction (SVE) well, located adjacent to intermediate block valve, to existing remediation system.
- Additional SVE well to be installed this quarter.