GROUNDWATER MONITORING REPORT – SEPTEMBER 2011 SAMPLING EVENT

BROADWAY-PANTANO WQARF SITE

TUCSON, ARIZONA

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Stantec

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

This Groundwater Monitoring Report presents the results of groundwater monitoring and sampling activities conducted from September 19, 2011 to September 28, 2011 for the Broadway-Pantano Water Quality Assurance Revolving Fund (WQARF) Site (the Site), located in Tucson, Arizona (Figure 1). This work was completed in accordance with Arizona Department of Environmental Quality (ADEQ) Task Assignment EV10-0046 and the Arizona Superfund Response Action Contract No. EV09-0010.

The objectives of the field activities presented in this report were to: 1) collect accurate depth-to-water (DTW) measurements at wells within the Site monitoring network, and 2) collect depth-specific groundwater samples for laboratory analysis. All groundwater samples were submitted to an Arizona Department of Health Services (ADHS)-licensed analytical testing laboratory for analysis of volatile organic compounds (VOCs). Selected groundwater samples also were analyzed for nitrite-nitrate content and for the following metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Together, these are referred to as the RCRA-8 metals, where RCRA is an acronym for Resource Conservation Recovery Act. The chemicals of concern (COC) in groundwater at the Site include tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene, vinyl chloride, and methylene chloride. The primary COC is PCE which has an Aquifer Water Quality Standard (AWQS) of 5 micrograms per liter (µg/L).

All field activities and analytical laboratory methodologies and protocols were conducted in general accordance with the ADEQ-approved Revised Quality Assurance Project Plan (Stantec, 2011).

The main purpose for collecting these data is for use in completing the Remedial Investigation, conducting the Feasibility Study, and, ultimately, devising a Final Remedy. These data are also used in assessing the effectiveness of the Western containment system early response action.

2.0 FIELD ACTIVITIES

2.1 SITE MONITORING NETWORK

The Site monitoring network consists of 67 wells and these wells include active and inactive City of Tucson (COT) water production wells, active privately-owned water production wells, groundwater remediation wells (both injection and extraction), and groundwater monitoring wells. Of these wells, 411-P (removed from service in 2009), WR-207A, C-114A, C-020B, and C-056A are no longer monitored. The privately-owned water production well, Catalina Village, and COT monitoring wells WR-702A, WR-703A, and WR-704A were added to the site monitoring network for the September 2011 monitoring event. The well locations and well type information for wells included in the Site monitoring network and wells located in the vicinity of the Site are shown on Figure 2. A subset of wells within the Site monitoring network is used to monitor the performance of the Western Containment System (WCS), which began operation in March 2003. The WCS performance monitoring network (PMN) includes the following 24 wells:

- Monitoring wells BP-1, BP-2, BP-3, BP-4, BP-5, BP-20, BP-21, SE-001, SJ-001, SJ-002, WR-155A, WR-178A, WR-180A, WR-352A, WR-354A, and C-026A.
- Injection wells R-090A and R-091A;
- Extraction wells R-092A and C-026B;
- Privately-owned active water production well 416-P;
- COT production wells C-020B, C-056A, and C-058A (C-020B and C-056A are not currently monitored).

2.2 SEPTEMBER 2011 FIELD ACTIVITY

A site-wide gauging and sampling event was conducted between September 19 and 28, 2011.

2.2.1 Groundwater Level Gauging

Water levels were gauged at the wells listed on Table 1. Well 411-P (St. Joseph's Hospital) was not gauged because the well was not in operation and was not accessible for gauging or sampling (removed from service in 2009). The water level for well C-026B was reported as "suspect" by URS due to a possible data retrieval error and given that the water elevation for C-026B was about two feet lower than the water elevations for the WR-155A and C-026A wells (both located within about 20 feet of C-026B), the C-026B water elevation was not used in contouring. Well C-026B was not in operation when the gauging event was conducted. The water level for well BP-24A was also not used for contouring because it appeared to be anomalous. Tabulated historical water level data from 2001 through 2011 are included in Appendix A and groundwater hydrographs are included in Appendix B. The groundwater elevation contour map for the Site and the flow rates for the WCS PMN injection and extraction wells are shown on Figure 3. The groundwater elevation map for the WCS area and the flow

rates for the WCS PMN injection and extraction wells are shown on Figure 4. It should be noted that the water level elevation data for the WCS PMN injection (R-090A, and R-091A) and extraction wells (C-026B and R-092A) shown on Figure 3 and Figure 4 are corrected for well efficiency. The change in groundwater elevation from March 2003 (baseline event prior to the startup of the WCS) to September 2011 is shown on Figure 5. The groundwater elevation change from April 2007 to September 2011 is shown on Figure 6. The WCS was shut down from September 2006 to April 2007 and a new baseline was established using the water level measurements collected in April 2007.

2.2.2 Groundwater Sampling

Depth-specific groundwater samples were collected from the wells listed on Table 2 and Table 3. WCS extraction well C-026B and water production well 411-P were not sampled because the wells were not in operation during the sampling event. The groundwater samples were analyzed by TestAmerica for VOCs using EPA Method 8260B. The groundwater sample collected from well 416-P was analyzed by TestAmerica for nitrate and nitrite content using EPA Method 300.0. Groundwater samples collected from wells BP-9, D-022A, R-068A, R-069B, WR-273A, WR-274A, WR-275A, WR-353A, and WR-367A were analyzed for RCRA-8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using EPA Methods 6010B and 7470A. The depth-specific PCE concentration data for the Site are shown on Figure 7. The depth-specific PCE concentration data for the WCS area are shown on Figure 8. Tabulated historical analytical data from 2001 through 2011 are included in Appendix C and Appendix E. Time series concentration graphs for selected VOCs and wells are included in Appendix D. Field notes are included in Appendix F. Laboratory reports are included in Appendix G through Appendix K.

2.2.3 Transducer Download and Maintenance

For wells equipped with transducers, electronic data recorded since August 2010 were downloaded to a field computer. The locations of wells equipped with transducers as of September 28, 2011 are shown on Figure 9. The transducers were removed from the wells prior to collecting the groundwater samples described in Section 2.2.2. The condition of the transducers and cables were inspected, and the desiccant cartridges were refilled as needed. After the groundwater samples were collected, the transducers were re-installed in the wells. Field personnel were unable to download water level data from the transducers deployed in wells BP-4, BP-7, BP-9, D-039A, WR-179A, and WR-180A. These transducers were removed and will be sent to the manufacturer for data retrieval and repair. The transducer maintenance log is included in Appendix F.

3.0 ANALYTICAL TESTING PROGRAM

3.1 ANALYTICAL METHODS

Groundwater samples were analyzed by TestAmerica. All samples were analyzed for VOCs using EPA Method 8260B. Selected samples were also were analyzed for nitrate and nitrite content using EPA Method 300.0; for arsenic, barium, cadmium, chromium, lead, selenium, and silver using EPA Method 6010B; and for mercury using EPA Method 7470A. The analytical results are summarized in Table 2 and Table 3. Historical analytical data from 2001 through 2011 are summarized in Appendix C and Appendix E.

3.2 DATA VERIFICATION

The analytical data were verified by comparing the following information to the specifications of the Site-specific Quality Assurance Project Plan (QAPP): chain-of-custody documentation, sample temperature at check in, holding time, surrogate spike recovery, laboratory control sample recovery, matrix spike and matrix spike duplicate recovery, duplicate sample results, equipment blank sample results, and trip blank sample results. The results of the data verification indicate that the laboratory assigned a number of qualifiers primarily related to percent recovery of spiked analytes in method blanks (refer to the Data Verification Report in Appendix L). No data qualifiers were assigned to Site COCs nor did data qualifiers affect reported results. As such, the data set is considered useable for the purposes indicated in Section 1 of this document.

4.0 FINDINGS

In September 2011, DTW measurements ranged from 290.83 (WR-459A) to 383.33 (D-041A) feet below the top of the well casing (Table 1). Groundwater levels across the Site have risen up to 19.11 feet (R-125A) since the WCS was re-started in 2007; however, the groundwater gradient has remained relatively constant. The water level rise is shown on Figure 5 and Figure 6 and is also illustrated on the hydrographs in Appendix B. Groundwater flow in the vicinity of the Broadway North Landfill between wells WR-353A and WR-180A was toward the northwest at an approximate gradient of 0.002 feet/foot (Figure 3). Groundwater flow in the vicinity of the Broadway South and Prudence Landfills between wells WR-435A and BP-16 was to the northwest an approximate gradient of 0.003 feet/foot (Figure 3). Groundwater flow in the WCS area between wells BP-5 and BP-3 was to the west at an approximate gradient of 0.002 feet/foot (Figure 4).

PCE, TCE, and vinyl chloride were the only VOC constituents detected at concentrations that equaled or exceeded the respective AWQSs of 5 µg/L PCE, 5 µg/L TCE, and 2 µg/L vinyl chloride. The maximum concentrations of PCE (190 µg/L) and TCE (50 µg/L) were detected in the vicinity of the Broadway North Landfill in the groundwater sample collected from well WR-274A at a depth of 5 feet below the water table (BWT). Vinyl chloride (2.6 µg/L) was only detected in the groundwater sample collected from well WR-358A at a depth of 25 feet BWT. PCE was detected in COT wells WR-702A (6.8 µg/L at 25 feet BWT/8.3 µg/L at 50 feet BTW) and WR-704A (12 µg/L at 25 feet BTW and 10 µg/L at 35 feet BTW); VOCs have not been detected in exceedance of the AWQSs in well WR-703A. These wells were installed in January 2009 to investigate the westward extent of the VOC plume. Based on the results of groundwater samples collected from wells WR-702A and WR-704A, the plume extends west of the WCS to at least the location of well WR-704A (Figure 7 and Figure 8). RCRA-8 metals (arsenic, barium, cadmium, chromium, lead, selenium, and silver) were not detected in exceedance of the AWQSs. Nitrate [12 milligrams per liter (mg/L)] and nitrite (12 mg/L) were detected in the groundwater sample collected from well 416-P.

5.0 REFERENCES

Stantec Consulting Services, Inc, 2011. Revised Quality Assurance Project Plan, Collection and Analysis of Groundwater Samples, Broadway Pantano WQARF Site (Last updated: September 12, 2011), update in progress.

TABLES
Groundwater Monitoring Report
Broadway-Pantano WQARF Site
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Table 1
Summary of Groundwater Elevation Data
September 2011 Gauging Event
Broadway-Pantano WQARF Site
Tucson, Arizona

Well ID	Date Gauged	Depth to Groundwater (feet)	Saturated Screen Interval (feet)	Groundwater Level Elevation (feet amsl)	Transducer
BP-1	9/19/2011	304.29	131.71	2231.11	X
BP-2	9/19/2011	308.55	131.45	2231.90	X
BP-3	9/19/2011	305.09	124.91	2228.39	X
BP-4	9/19/2011	313.09	121.91	2234.17	
BP-5	9/19/2011	332.90	122.10	2237.41	X
BP-7	9/19/2011	332.28	123.72	2247.06	
BP-8	9/19/2011	354.80	117.20	2247.84	X
BP-9	9/19/2011	327.68	127.82	2253.93	
BP-10	9/20/2011	341.73	118.27	2253.04	
BP-11	9/20/2011	350.57	100.00	2256.21	
BP-15	9/20/2011	351.35	117.15	2244.10	X
BP-16	9/20/2011	350.82	119.18	2251.71	X
BP-19	9/20/2011	300.01	119.99	2245.42	X
BP-20	9/19/2011	304.95	125.05	2227.26	X
BP-21	9/19/2011	304.51	125.49	2229.18	X
BP-22	9/20/2011	347.77	80.00	2257.92	
BP-23	9/20/2011	344.99	95.01	2254.91	
BP-24A	9/20/2011	323.74	31.26	2244.00	X
BP-24B	9/20/2011	322.46	20.00	2245.55	
BP-24C	9/20/2011	322.39	20.00	2245.89	
BP-25	9/20/2011	300.15	74.85	2250.01	X
C-022A	9/19/2011	341.03	49.97	2244.23	
C-026A	9/22/2011	307.35	229.65	2232.80	
C-026B (1)	9/20/2011	308.62	211.38	2230.62	
C-058A	9/22/2011	317.01	170.99	2225.43	
D-021A	9/22/2011	335.40	202.60	2243.32	
D-022A	9/23/2011	328.70	119.30	2250.12	
D-039A	9/21/2011	364.86	28.14	2253.20	
D-040A	9/21/2011	380.68	115.32	2256.36	
D-041A	9/21/2011	383.33	318.67	2258.83	
R-068A	9/27/2011	325.17	42.83	2252.72	
R-069B	9/23/2011	310.12	54.88	2251.44	
R-090A (1)	9/20/2011	297.50	192.50	2255.24	
R-091A (1)	9/20/2011	297.20	192.80	2256.97	
R-092A (1)	9/20/2011	349.00	141.00	2212.96	
R-124A	9/21/2011	357.22	52.78	2262.81	
R-125A	9/21/2011	332.95	62.05	2279.63	
SE-001	9/19/2011	314.66	50.34	2229.43	X
SJ-001	9/23/2011	344.09	42.91	2239.64	X
SJ-002	9/19/2011	348.12	42.88	2241.04	X
WR-155A	9/22/2011	306.52	293.48	2232.40	
WR-177A	9/21/2011	335.79	131.21	2251.06	X
WR-178A	9/20/2011	326.20	127.80	2234.39	X
WR-179A	9/19/2011	352.16	137.84	2245.75	
WR-180A	9/19/2011	318.86	141.14	2241.27	
WR-181A	9/21/2011	297.23	142.77	2251.59	X
WR-186A	9/23/2011	295.78	110.22	2249.71	
WR-207B	9/20/2011	322.16	127.84	2255.09	X
WR-273A	9/20/2011	306.12	34.88	2249.77	X
WR-274A	9/23/2011	319.05	28.95	2249.49	

Table 1
Summary of Groundwater Elevation Data
September 2011 Gauging Event
Broadway-Pantano WQARF Site
Tucson, Arizona

Well ID	Date Gauged	Depth to Groundwater (feet)	Saturated Screen Interval (feet)	Groundwater Level Elevation (feet amsl)	Transducer
WR-275A	9/27/2011	323.90	36.10	2250.68	
WR-352A	9/20/2011	324.41	39.00	2234.21	
WR-353A	9/20/2011	303.20	38.00	2249.90	
WR-354A	9/20/2011	329.34	50.66	2235.50	X
WR-358A	9/23/2011	302.67	46.00	2247.24	X
WR-367A	9/20/2011	346.36	64.64	2254.40	
WR-435A	9/20/2011	360.05	59.95	2259.48	X
WR-458A	9/23/2011	301.24	123.76	2241.25	
WR-459A	9/23/2011	290.83	114.17	2245.60	
WR-702A	9/22/2011	300.77	92.23	2225.56	
WR-703A	9/22/2011	295.66	98.34	2225.08	
WR-704A	9/22/2011	299.72	50.28	2222.12	

amsl = above mean seal level
(1) = Water level measurements are provided by URS based on transducer readings and are rounded to the nearest foot.

Table 2
Summary of Groundwater Quality Data, Selected VOCs and Nitrate
September 2011 Sampling Event
Broadway-Pantano WQARF Site

Sample ID		Sample Date	Constituent Concentration (µg/L) U.S. Environmental Protection Agency Analytical Method 8260B											
	Sample Depth		Tetrachloroethene (PCE)	Trichloroethene (TCE)	Vinyl chloride	Benzene	cis-1,2-Dichloroethene	Methylene chloride	trans-1,2-Dichloroethene	Dichlorodifluoromethane	Bicarbonate Alkalinity (as CaCO3) SM 2320B (mg/L)	Nitrate (mg/L) (2)	Nitrite (mg/L)	Nitrate-Nitrite (mg/L)
Aquifer Water Quality Standards			**5**	**5**	**2**	**5**	**70**	**5**	**100**	**NE**	**NE**	**10**	**1**	**10**
Catalina Village	WH	9/28/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<4.0	NA	NA	NA	NA
411-P	WH	9/28/2011	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
416-P	WH	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	**12**	<0.20	**12**
BP-1	50	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-2	25	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100 (1)	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-3	50	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-4	50	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-5	50	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-7	5	9/20/2011	**3.8**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	25	9/20/2011	**3.9**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	25 (1)	9/20/2011	**4.1**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-8	5	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	25	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-9	5	9/23/2011	**2.7**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-10	25	9/23/2011	**3.7**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/23/2011	**3.6**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-11	18	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-15	5	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-16	5	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50 (1)	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-19	25	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-20	25	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-21	25	9/23/2011	**1.6**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/23/2011	**1.7**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-22	25	9/21/2011	**8.4**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	25 (1)	9/21/2011	**8.2**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-23	25	9/26/2011	**35**	**3.2**	<1.0	<1.0	**1.0**	<4.0	<1.0	**4.2**	NA	NA	NA	NA
BP-24A	5	9/26/2011	**17**	**3.5**	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	20	9/26/2011	**18**	**3.5**	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-24B	60	9/26/2011	**24**	**4.8**	<1.0	<1.0	**2.6**	<4.0	<1.0	**12**	NA	NA	NA	NA
	80	9/26/2011	**20**	**4.1**	<1.0	<1.0	**1.9**	<4.0	<1.0	**9.4**	NA	NA	NA	NA
BP-24C	115	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	135	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
BP-25	5	9/26/2011	**10**	**2.1**	<1.0	<1.0	**1.7**	<4.0	<1.0	**5.3**	NA	NA	NA	NA
	30	9/26/2011	**17**	**3.0**	<1.0	<1.0	**1.9**	<4.0	<1.0	**10**	NA	NA	NA	NA
	55	9/26/2011	**13**	**2.2**	<1.0	<1.0	<1.0	<4.0	<1.0	**8.4**	NA	NA	NA	NA
C-022A	25	9/26/2011	**18**	**2.0**	<1.0	<1.0	<1.0	<4.0	<1.0	**6.3**	NA	NA	NA	NA
C-026A	50	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
C-058A	50	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA

Table 2
Summary of Groundwater Quality Data, Selected VOCs and Nitrate
September 2011 Sampling Event
Broadway-Pantano WQARF Site

Sample ID		Sample Date	Constituent Concentration (µg/L) U.S. Environmental Protection Agency Analytical Method 8260B											
	Sample Depth		Tetrachloroethene (PCE)	Trichloroethene (TCE)	Vinyl chloride	Benzene	cis-1,2-Dichloroethene	Methylene chloride	trans-1,2-Dichloroethene	Dichlorodifluoromethane	Bicarbonate Alkalinity (as CaCO3) SM 2320B (mg/L)	Nitrate (mg/L) (2)	Nitrite (mg/L)	Nitrate-Nitrite (mg/L)
Aquifer Water Quality Standards			**5**	**5**	**2**	**5**	**70**	**5**	**100**	**NE**	**NE**	**10**	**1**	**10**
D-021A	25	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	25 (1)	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
D-022A	5	9/27/2011	**50**	**13**	<1.0	<1.0	**7.6**	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100	9/27/2011	**46**	**12**	<1.0	<1.0	**7.1**	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100 (1)	9/27/2011	**51**	**13**	<1.0	<1.0	**7.6**	<4.0	<1.0	<4.0	NA	NA	NA	NA
D-039A	10	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
D-040A	10	0/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
R-068A	5	9/27/2011	**36**	**7.4**	<1.0	<1.0	**7.2**	<4.0	<1.0	<4.0	NA	NA	NA	NA
R-069B	5	9/23/2011	**1.8**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
R-092A	WH	9/28/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
SE-001	27	9/19/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
SJ-001	5	9/23/2011	**6.4**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	22	9/23/2011	**6.7**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
SJ-002	5	9/26/2011	**2.1**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	23	9/26/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	23 (1)	9/26/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-177A	5	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	25	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	100	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-178A	5	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50 (1)	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-179A	5	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-180A	50	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50 (1)	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-181A	5	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-207B	5	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-273A	5	9/26/2011	**8.7**	**2.8**	<1.0	<1.0	**2.3**	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-274A	5	9/27/2011	**190**	**50**	<1.0	**1.5**	**36**	<4.0	**1.3**	**11**	NA	NA	NA	NA
WR-275A	5	9/27/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-352A	87	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-353A	103	9/21/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-354A	29	9/20/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-358A	25	9/23/2011	**60**	**11**	**2.6**	**1.7**	**9.7**	<4.0	<1.0	**24**	NA	NA	NA	NA
WR-367A	5	9/26/2011	**8.8**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/26/2011	**1.9**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-435A	5	9/23/2011	**1.3**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-702A	25	9/22/2011	**6.8**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/22/2011	**8.3**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	**4.0**	NA	NA	NA	NA
WR-703A	25	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
	50	9/22/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA
WR-704A	25	9/22/2011	**12**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	**5.8**	NA	NA	NA	NA
	35	9/22/2011	**10**	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<4.0	NA	NA	NA	NA

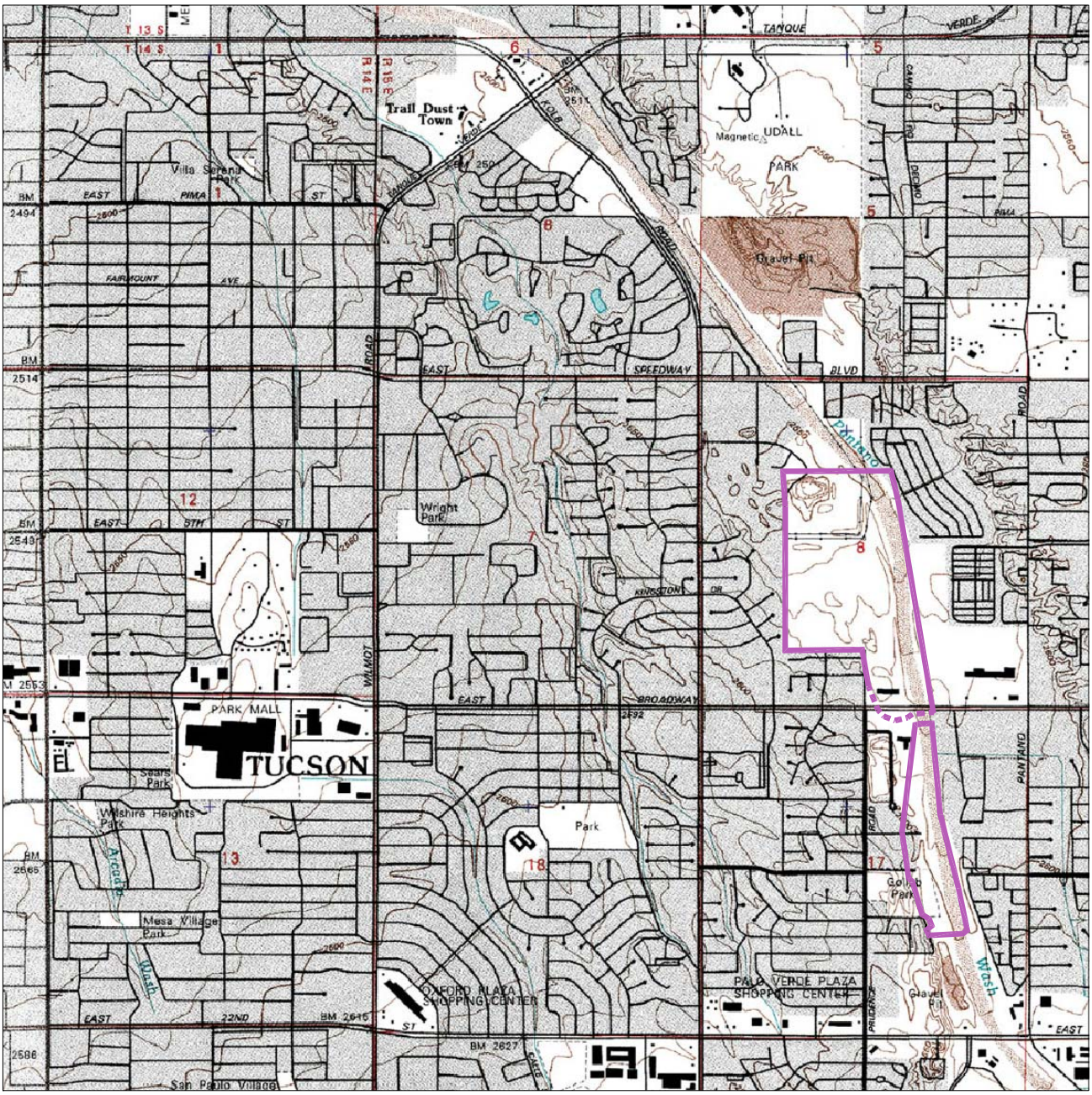
(1) = Duplicate sample
µg/L = micrograms per liter
(2) = See laboratory report for analytical method
NS = Not Sampled
NE = Not Established
WH = Well Head
NA = Not Analyzed
***SHADED BOLD =** Equals or exceeds Arizona Department of Environmental Quality Aquifer Water Quality Standard*
***BOLD** = Equals or exceeds laboratory detection limit*

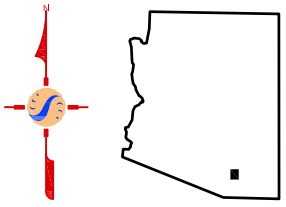
Table 3
Summary of Groundwater Quality Data
RCRA-8 Metals
September 2011 Sampling Event
Broadway-Pantano WQARF Site

Sample ID	Sample Depth (FBW)	Sample Date	Constituent Concentration (mg/L) (1)							
			Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Aquifer Water Quality Standards			**0.05**	**2**	**0.005**	**0.1**	**0.05**	**0.002**	**0.05**	**NE**
BP-9	5	9/23/2011	<0.10	**0.12**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
D022A	5	9/27/2011	<0.10	**0.20**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
R-068A	5	9/27/2011	<0.10	**0.35**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
R-069B	5	9/23/2011	<0.10	**0.11**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
WR-273A	5	9/26/2011	<0.10	**0.22**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
WR-274A	5	9/27/2011	<0.10	**0.28**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
WR-275A	5	9/27/2011	<0.10	**0.32**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
WR-353A	103	9/21/2011	<0.10	**0.080**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010
WR-367A	5	9/26/2011	<0.10	**0.19**	<0.0010	<0.010	<0.015	<0.00050	<0.10	<0.010

FBW = feet below water
mg/L = milligrams per liter
(1) = See laboratory report for analytical method
BOLD *= Equals or exceeds laboratory reporting limit*

FIGURES
Groundwater Monitoring Report
Broadway-Pantano WQARF Site
Tucson, Arizona
Arizona Dept. of Environmental Quality
400 West Congress Street, Suite 433
Tucson, Arizona
STANTEC Job No. 212202353





ARIZONA

0 1/2 1

APPROXIMATE SCALE IN MILES

3-D TopoQuads Copyright 1999 Delorme Yarmouth, ME 04096 Source Data: USGS Detail: 13-3 Datum: WGS84

APPROXIMATE EXTENT OF FORMER LANDFILLS.

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FOR:			FIGURE:
BROADWAY - PANTANO WQARF SITE TUCSON, ARIZONA		SITE VICINITY MAP	1
JOB NUMBER: 21222353	DRAWN BY: CMG	CHECKED BY: TAK	APPROVED BY: TAK	DATE: 2/10/2012

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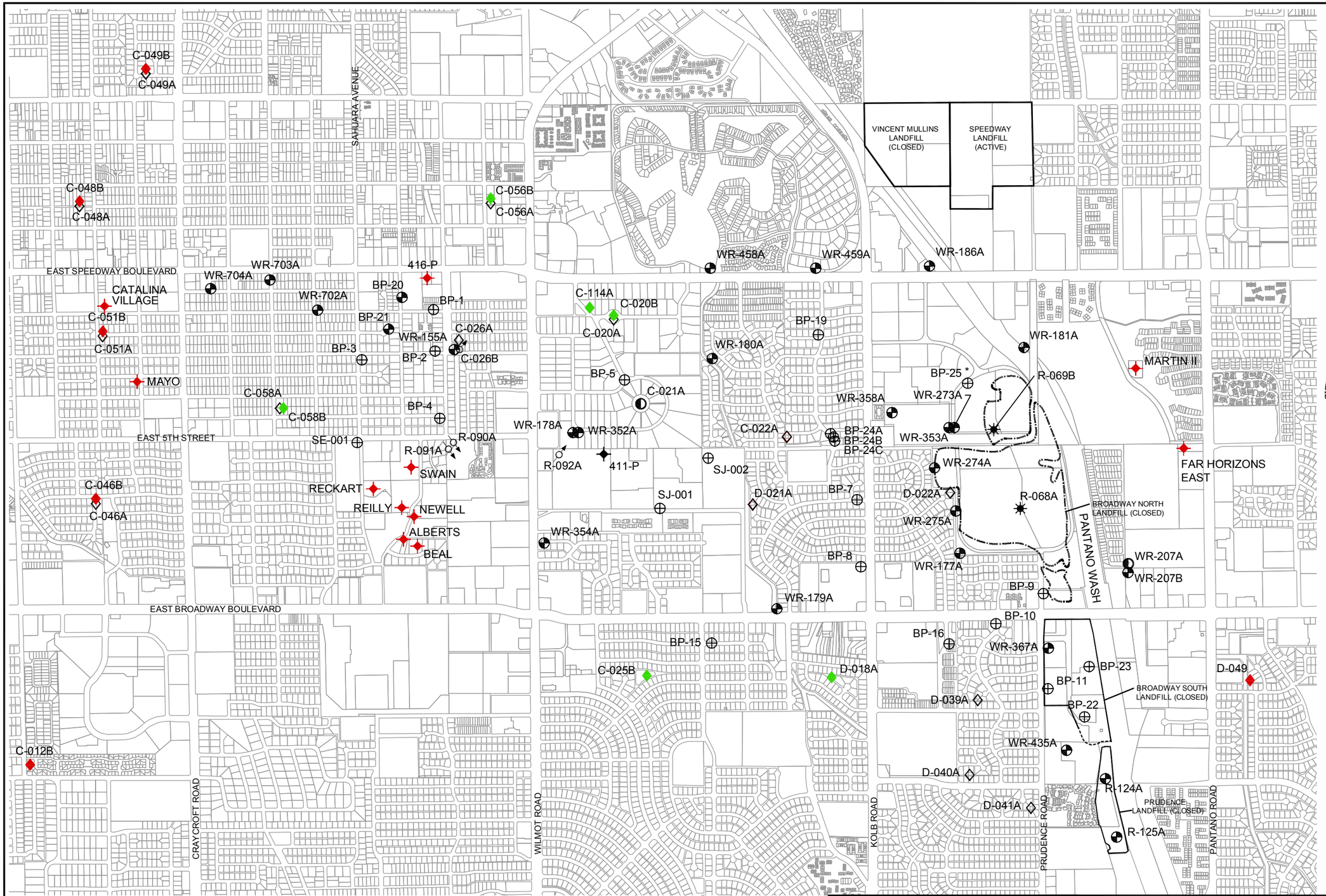

LEGEND

- COT ABANDONED MONITORING WELL
- COT INACTIVE PRODUCTION WELL
- COT ACTIVE PRODUCTION WELL
  - - WATER WELL IN PRODUCTION
  - - LAST-ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL (ACTIVE)
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- INJECTION WELL
- WESTERN CONTAINMENT SYSTEM APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL

* NEWLY INSTALLED WELL, MAY 2008

N

0 1500 3000

SCALE IN FEET

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FOR:
BROADWAY - PANTANO WQARF SITE
TUCSON ARIZONA

SITE PLAN

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202353	CMG	TAK	TAK	2/10/2012

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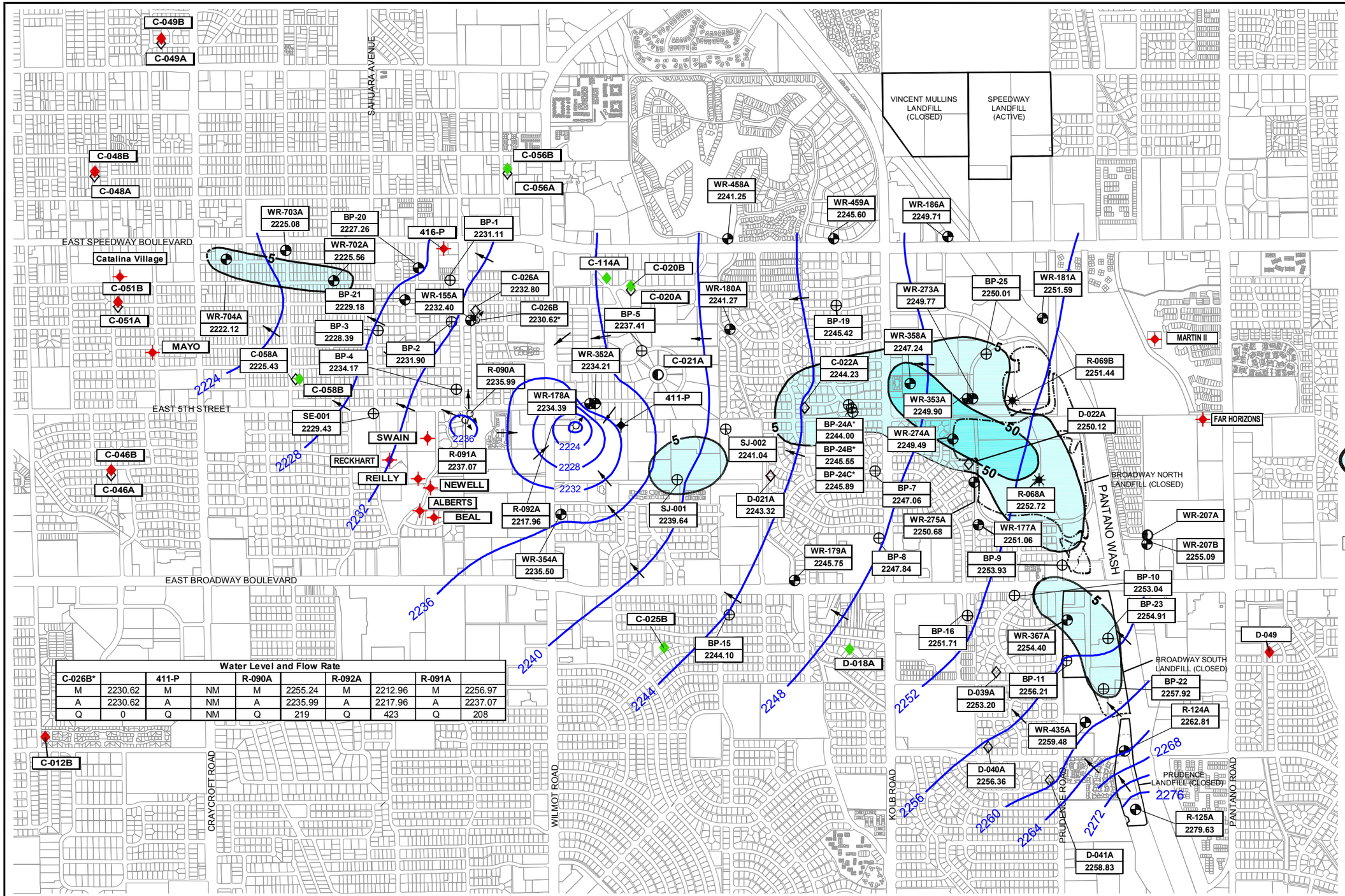

Water Level and Flow Rate									
C-026B*		411-P		R-090A		R-092A		R-091A	
M	2230.62	M	NM	M	2255.24	M	2212.96	M	2256.97
A	2230.62	A	NM	A	2235.99	A	2217.96	A	2237.07
Q	0	Q	NM	Q	219	Q	423	Q	208

LEGEND

- COT ABANDONED MONITORING WELL
- COT INACTIVE PRODUCTION WELL
- COT ACTIVE PRODUCTION WELL
  - - WATER WELL IN PRODUCTION
  - - LAST-ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL (ACTIVE)
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- WESTERN CONTAINMENT SYSTEM INJECTION WELL
- APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE EXTENT OF PCE GREATER THAN 5.0 MICROGRAMS PER LITER. PCE RESULTS ARE FOR SAMPLES COLLECTED ON SEPTEMBER 19- 28, 2011. PLUME CONTOURS ARE CONFIGURED USING HIGHEST PCE CONCENTRATION FROM EACH WELL.
- D-021A — NOT GAUGED OR OTHERWISE MEASURED IF NO WATER LEVEL ELEVATION IS SHOWN
- 2230.63 — GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL, AMSL)
- * — DATA NOT USED IN CONTOURING

MEASURED	M	2272
ADJUSTED	A	2245
FLOW RATE	Q	404

Q = FLOW RATE IN GALLONS PER MINUTE (GPM)

N

0 1500 3000

SCALE IN FEET

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FOR: BROADWAY-PANTANO WQARF SITE
TUCSON, ARIZONA

GROUNDWATER ELEVATION CONTOUR MAP SEPTEMBER 19 - 28, 2011

FIGURE: 3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202353	CMG	TAK	TAK	2/10/2012

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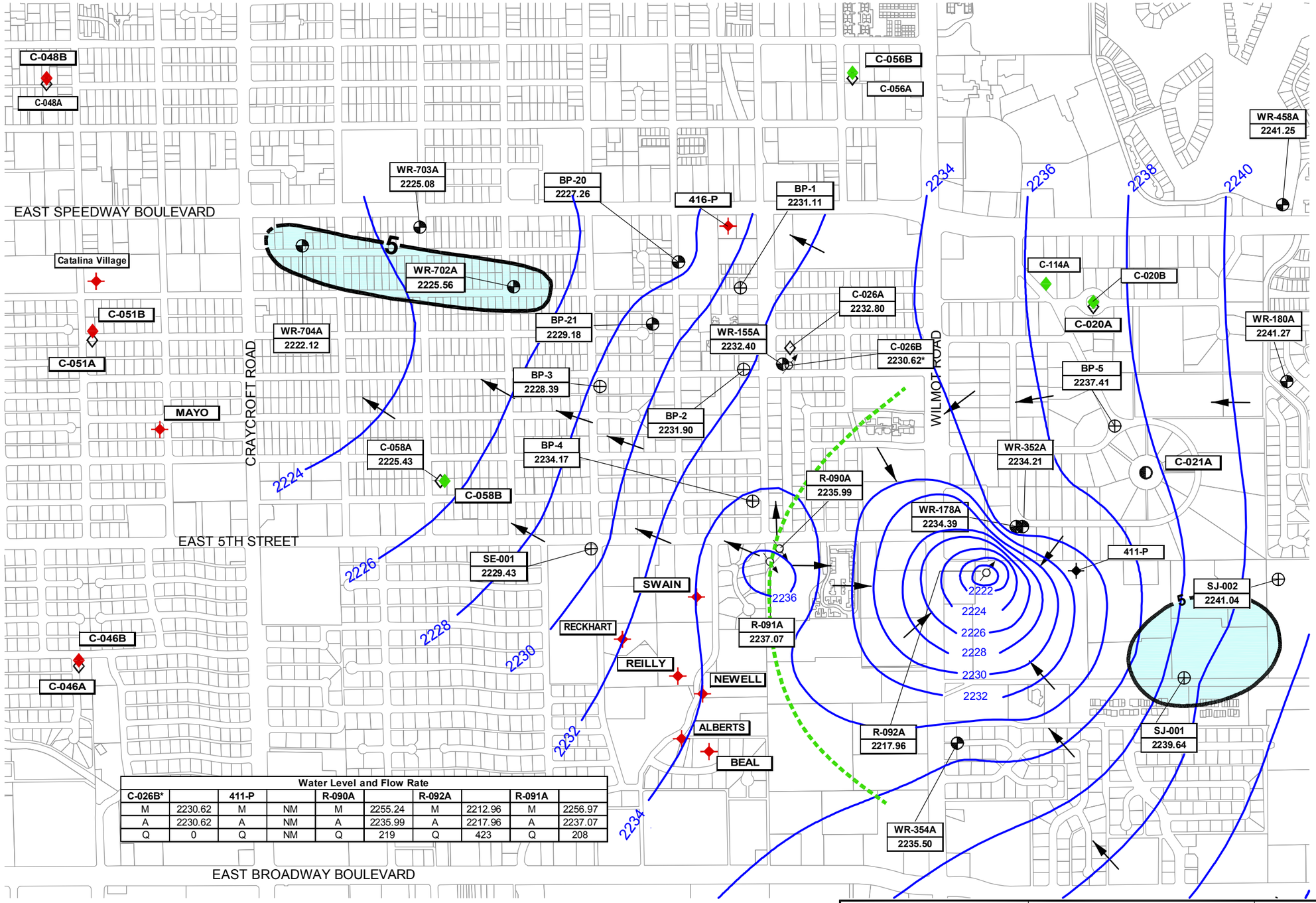

Water Level and Flow Rate									
C-026B*		411-P		R-090A		R-092A		R-091A	
M	2230.62	M	NM	M	2255.24	M	2212.96	M	2256.97
A	2230.62	A	NM	A	2235.99	A	2217.96	A	2237.07
Q	0	Q	NM	Q	219	Q	423	Q	208

LEGEND

- COT ABANDONED MONITORING WELL
- COT INACTIVE PRODUCTION WELL
- COT ACTIVE PRODUCTION WELL
  - - WATER WELL IN PRODUCTION
  - - LAST-ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL (ACTIVE)
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- WESTERN CONTAINMENT SYSTEM INJECTION WELL
- APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL
- GROUNDWATER FLOW DIRECTION
- ESTIMATED CAPTURE AREA
- D-021A — NOT GAUGED OR OTHERWISE MEASURED IF NO WATER LEVEL ELEVATION IS SHOWN
- 2230.63 — GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL, AMSL)
- APPROXIMATE EXTENT OF PCE GREATER THAN 5.0 MICROGRAMS PER LITER. PCE RESULTS ARE FOR SAMPLES COLLECTED IN SEPTEMBER 19 - 28, 2011. PLUME CONTOURS ARE CONFIGURED USING HIGHEST PCE CONCENTRATION FROM EACH WELL.
- * NOT USED IN GROUNDWATER ELEVATION CONTOUR.

MEASURED	M	2272
ADJUSTED	A	2245
FLOW RATE	Q	404

Q = FLOW RATE IN GALLONS PER MINUTE (GPM)

N

0 800 1600

SCALE IN FEET

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FOR: BROADWAY-PANTANO WQARF SITE
TUCSON, ARIZONA

WCS GROUNDWATER ELEVATION CONTOUR MAP SEPTEMBER 19 - 28, 2011

FIGURE: 4

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202353	CMG	TAK	TAK	2/10/2012

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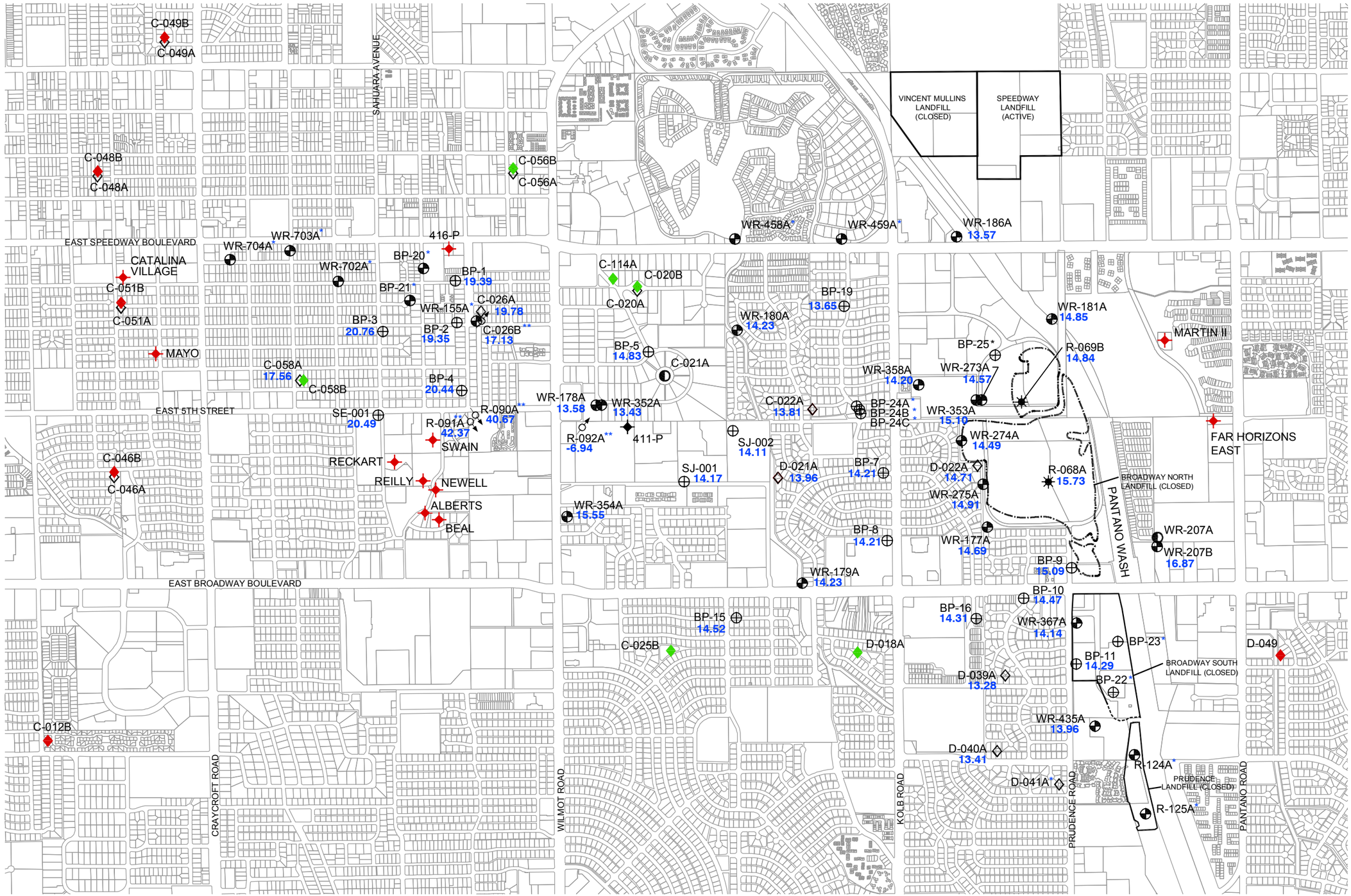

LEGEND

- COT ABANDONED MONITORING WELL
- COT INACTIVE PRODUCTION WELL
- COT ACTIVE PRODUCTION WELL
  - - WATER WELL IN PRODUCTION
  - - LAST-ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- WESTERN CONTAINMENT SYSTEM INJECTION WELL
- APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL

* DATA FROM MARCH 2003 NOT AVAILABLE OR WELL WAS INSTALLED AFTER MARCH 2003

** DATA NOT ADJUSTED FOR WELL EFFICIENCY

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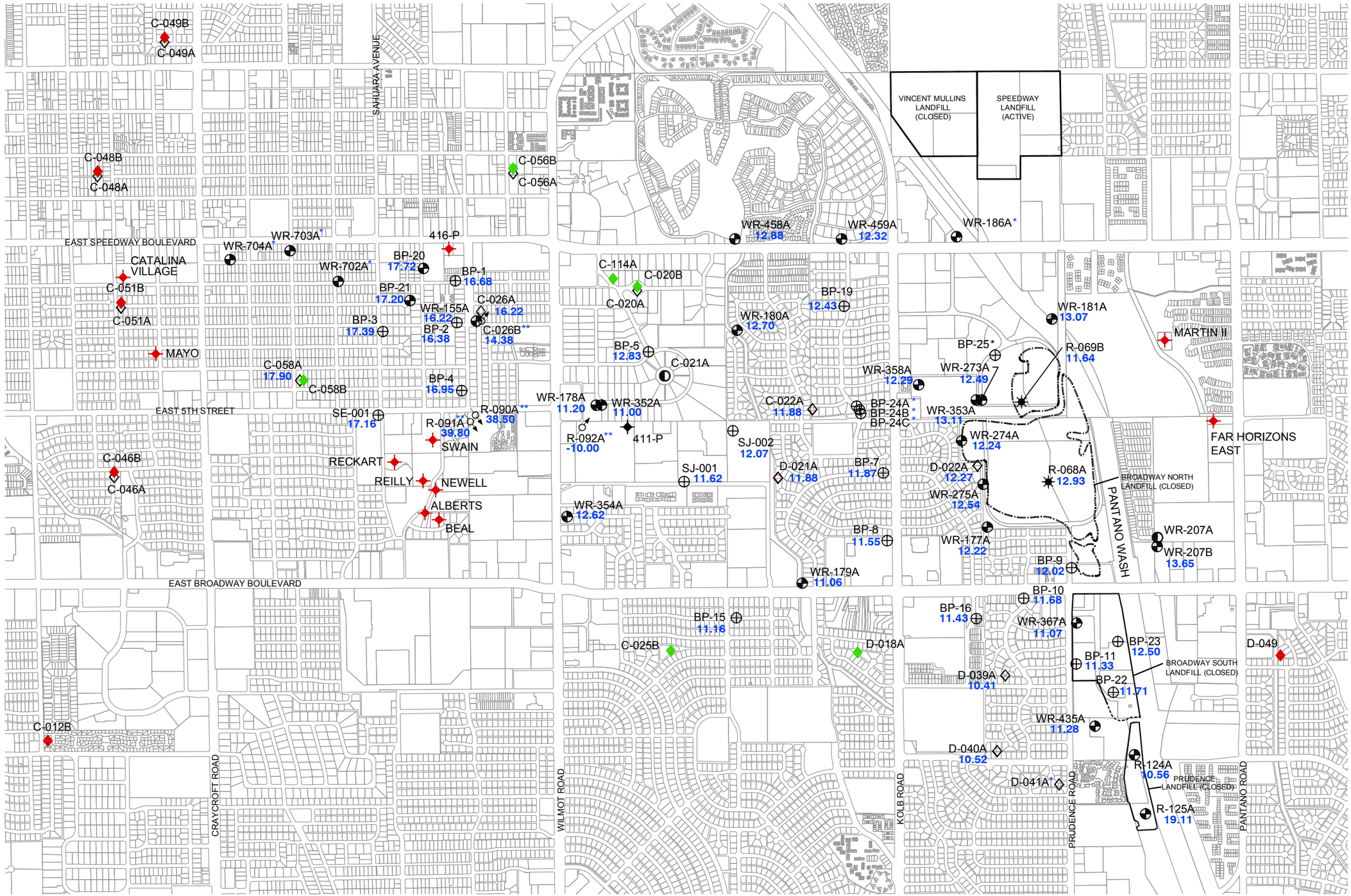
FOR:
BROADWAY - PANTANO WQARF SITE
TUCSON, ARIZONA

GROUNDWATER ELEVATION CHANGE MARCH 2003 TO SEPTEMBER 2011

FIGURE: 5

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202353	CMG	TAK	TAK	2/11/2012



LEGEND

- COT ABANDONED MONITORING WELL
- COT INACTIVE PRODUCTION WELL
- COT ACTIVE PRODUCTION WELL
  - - WATER WELL IN PRODUCTION
  - - LAST-ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL (ACTIVE)
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- WESTERN CONTAINMENT SYSTEM INJECTION WELL
- APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL

* DATA FROM APRIL 2007 NOT AVAILABLE OR WELL WAS INSTALLED AFTER APRIL 2007

** DATA NOT ADJUSTED FOR WELL EFFICIENCY

N

0 1500 3000

SCALE IN FEET

FILEPATH:I:\ASRAC-NEW BP (20401)\4.3 Maps\2011\GW Elevation Change 2007_2011.dwg | Layout Tab: 11x17 COLOR | Drafter: cgraves | Jun 14, 2012 at 17:59

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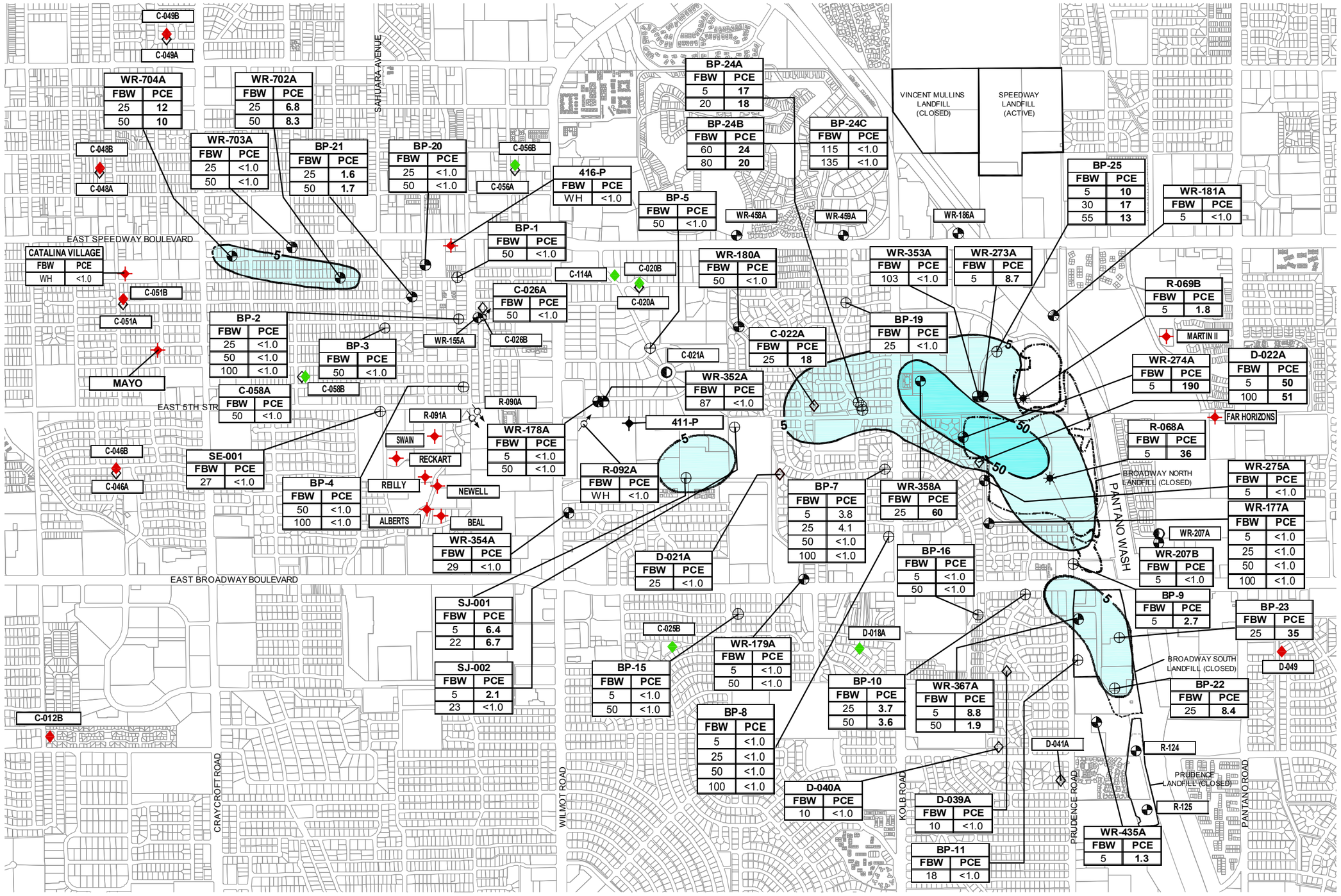
FOR:
BROADWAY - PANTANO WQARF SITE
TUCSON, ARIZONA

GROUNDWATER ELEVATION CHANGE APRIL 2007 TO SEPTEMBER 2011

FIGURE: 6

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202353	CMG	TAK	TAK	2/11/2012



LEGEND

- COT ABANDONED MONITORING WELL
- COT/TW INACTIVE PRODUCTION WELL
- COT/TW ACTIVE PRODUCTION WELL
- - WATER WELL IN PRODUCTION
- - LAST ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL (ACTIVE)
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- WESTERN CONTAINMENT SYSTEM INJECTION WELL
- APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL
- APPROXIMATE EXTENT OF PCE GREATER THAN 5.0 MICROGRAMS PER LITER. PCE RESULTS ARE FOR SAMPLES COLLECTED ON SEPTEMBER 19 - 29, 2011. PLUME CONTOURS ARE CONFIGURED USING HIGHEST PCE CONCENTRATION FROM EACH WELL.

NOTES:

- <1.0 DISSOLVED-PHASE PCE ANALYTICAL RESULTS IN MICROGRAMS PER LITER. <1.0 COMPOUND NOT DETECTED AT OR ABOVE THE LABORATORY METHOD REPORTING LIMIT SHOWN.
- FBW SAMPLE DEPTH (FEET BELOW WATER).
- PCE TETRACHLOROETHENE

N

0 1500 3000

SCALE IN FEET

FILEPATH:I:\ASRAC-NEW BP (20401)\4.3 Maps\2011\SITE WIDE PCE MAP SEPT 2011.dwg | Layout Tab: Site Wide | Drafter: cgraves | Jun 08, 2012 at 11:35

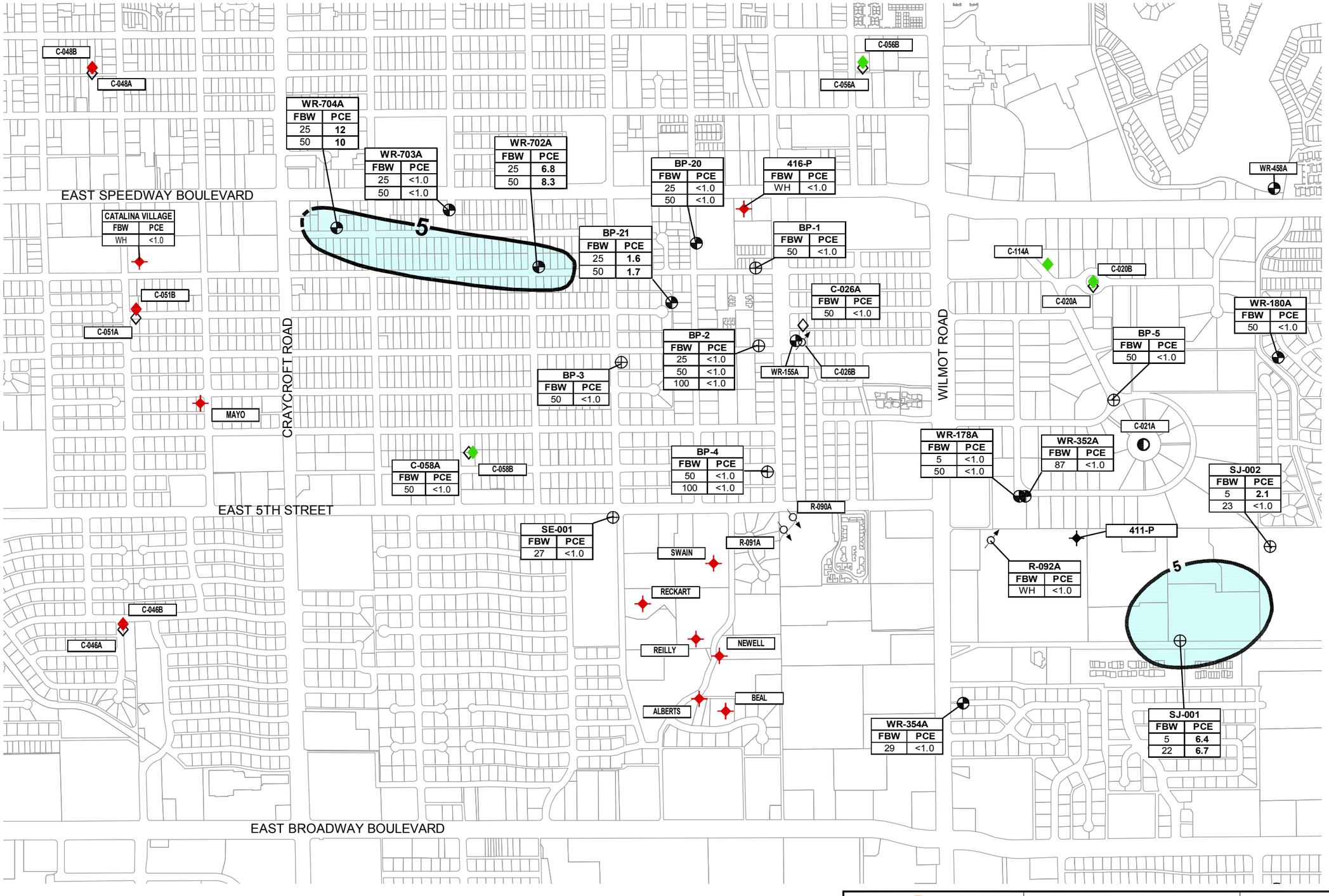
Stantec
8211 S. 48th Street
Phoenix, Arizona 85044
Phone: (602) 438-2200 Fax: (602) 431-9562

FOR: BROADWAY-PANTANO WQARF SITE
TUCSON, ARIZONA

GROUNDWATER PCE CONCENTRATIONS MAP SEPTEMBER 19 - 28, 2011

FIGURE: 7

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202353	CG	TAK	TAK	2/10/2012



LEGEND

- COT ABANDONED MONITORING WELL
- COT/TW INACTIVE PRODUCTION WELL
- COT/TW ACTIVE PRODUCTION WELL
  - - WATER WELL IN PRODUCTION
  - - LAST ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL (ACTIVE)
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- WESTERN CONTAINMENT SYSTEM INJECTION WELL
- APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL
- APPROXIMATE EXTENT OF PCE GREATER THAN 5.0 MICROGRAMS PER LITER. PCE RESULTS ARE FOR SAMPLES COLLECTED ON SEPTEMBER 19 - 28, 2011. PLUME CONTOURS ARE CONFIGURED USING HIGHEST PCE CONCENTRATION FROM EACH WELL.

NOTES:

- <1.0 DISSOLVED-PHASE PCE ANALYTICAL RESULTS IN MICROGRAMS PER LITER. <1.0 COMPOUND NOT DETECTED AT OR ABOVE THE LABORATORY METHOD REPORTING LIMIT SHOWN.
- FBW SAMPLE DEPTH (FEET BELOW WATER)
- PCE TETRACHLOROETHENE

N

0 1500 3000

SCALE IN FEET

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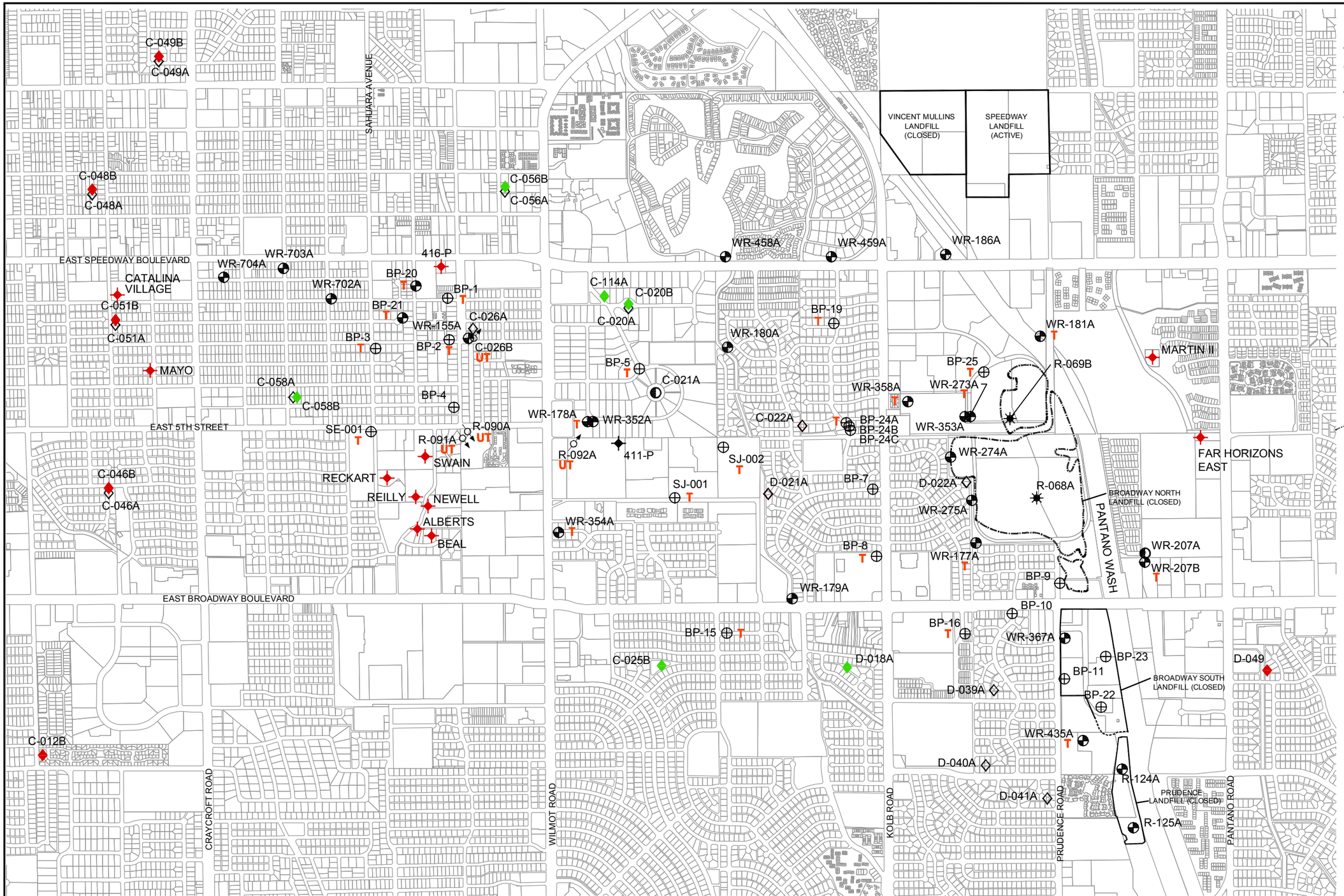
FOR: BROADWAY-PANTANO WQARF SITE
TUCSON, ARIZONA

WCS GROUNDWATER PCE CONCENTRATIONS MAP SEPTEMBER 19 - 28, 2011

FIGURE: 8

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212202353	CG	TAK	TAK	2/10/2012

FILEPATH:I:\ASRAC-NEW BP (20401)\4.3 Maps\2011\WCS PCE MAP SEPT 2011.dwg | Layout Tab: WCS PCE | Drafter: cgraves | Jun 14, 2012 at 17:14



LEGEND

- COT ABANDONED MONITORING WELL
- COT INACTIVE PRODUCTION WELL
- COT ACTIVE PRODUCTION WELL
- - WATER WELL IN PRODUCTION
- - LAST-ON/FIRST-OFF WATER PRODUCTION WELL
- ADEQ MONITOR WELL
- COT MONITOR WELL
- PRIVATE WELL (ACTIVE)
- PRIVATE WELL (INACTIVE)
- AIR INJECTION WELL/MONITOR WELL
- WESTERN CONTAINMENT SYSTEM EXTRACTION WELL
- WESTERN CONTAINMENT SYSTEM INJECTION WELL
- UT URS TRANSDUCER
- T STANTEC TRANSDUCER AS OF SEPTEMBER 2011
- APPROXIMATE BOUNDARY OF BROADWAY NORTH LANDFILL MATERIAL

FILEPATH:I:\ASRAC-NEW BP (20401)\4.3 Maps\2011\SEPT 2011 TransducerLocations.dwg | Layout Tab: Transducer Map | Drafter: cgraves | Jun 14, 2012 at 16:52

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FOR: BROADWAY-PANTANO WQARF SITE
TUCSON, ARIZONA

TRANSDUCER LOCATION MAP SEPTEMBER 28, 2011

FIGURE: 9

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212202353	CMG	TAK	TAK	2/10/2012