RUBICON
Engineering Corporation

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Mr. Joe Weidmann
c/o BOEING REALTY CORPORATION
4900 E. Conant Street
Long Beach, California 90808

Technical Memorandum
Transducer Data
Boeing Realty Corporation
Former C-6 Facility
Los Angeles, California

Dear Mr. Weidmann:

This technical memorandum presents the results of the water level measurements collected at the Boeing Realty Corporation's (BRC) Former C-6 Facility (the site) in Los Angeles, California. Water levels were recorded by Rubicon Engineering Corporation (Rubicon) at selected wells at the site between November 1, 2005 through February 24, 2006 using pressure transducers and automated dataloggers.

Water levels were monitored to detect any potential impact from ongoing groundwater extraction and injection testing at nearby facilities. Specifically, a Pilot Extraction and Aquifer Response Test Workplan Revision 4.0, dated August 12, 2005, was prepared by Hargis + Associates, Inc. (Hargis) on behalf of the Montrose Chemical Corporation (Montrose). Figure 1 presents a vicinity map showing the location of the Former C-6 facility and other nearby facilities, including Montrose. Figure 1 also shows the proposed locations for Montrose's extraction and injection wells which are screened within the Bellflower Sand and the Gage Aquifer. At the Former C-6 facility, a discontinuous mud layer referred to as the Middle Bellflower Mud (MBFM) interrupts the Bellflower Sand, dividing the hydrogeologic unit into the B-Sand (above the MBFM) and C-Sand (below the MBFM). The thickness of the MBFM decreases across the site in a southeast direction. The B- and C-Sands eventually merge southeast of the Former C-6 Facility as the MBFM pinches out.

To identify potential impacts of the nearby extraction and injection, BRC requested that Rubicon temporarily equip select groundwater monitoring wells at the Former C-6 facility with pressure transducer and dataloggers.

Field Procedures

A total of 12 monitoring wells were equipped with transducers. These included four clusters of wells each having a well screened in the B-Sand, C-Sand, and Gage Aquifer. The locations of

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the transducer-equipped wells are shown in Figure 2. The corresponding well completion details are shown in Table 1.

The transducers were first installed in the 12 monitoring wells on November 1, and 2, 2005. Specifically, a Water Level Logger Model WL15, manufactured by Global Water, was installed in each well. The WL15 is a datalogger and submersible pressure transducer combination designed for automated recording of water levels. The dataloggers were placed within the well boxes and the pressure transducers were suspended below the water table at each well. The transducers were capable of measuring the height of water above the placement depth. The dataloggers were set to record the water levels every 30 minutes.

At the time the transducers were installed, the depth to water at each well was measured manually using an electric well sounder. These depth-to-water measurements are included in Table 2. The depth-to-water measurements, along with the reference elevations, were used to calculate the initial groundwater elevations corresponding to the transducer water-height measurements.

After the initial installation of the transducers in November 2005, Rubicon visited the site again in December 2005, and January and February 2006 to download the transducer data and manually measure water levels. The manual water level measurements are summarized in Table 2.

During a December 2005 rainfall event, the well boxes for Wells MWG002 and MWG003 filled with water, damaging the datalogger electronics. Transducer measurements for these wells are therefore only available through the time of the previous download on December 1, 2005. The transducer/dataloggers for these wells were removed in January 2006. Pursuant to a request by BRC, the remaining 10 transducer/loggers were removed on February 24, 2006. Following the removal of the transducer/loggers, the final data was downloaded. During this download event it was determined that the battery for the datalogger previously installed in Well MWB019 had failed on January 17, 2006. Therefore, data for Well MWB019 was available only through this date.

Data Reduction and Analysis

The groundwater elevations, as measured using the 12 pressure transducers are shown in Figure 3. Water level elevations indicate a general increasing trend of approximately 0.5 feet from November 2005 to February 2006. Figure 3 also shows that water level elevations in the B-Sand, C-Sand, and Gage Aquifer were also subject to rhythmic fluctuations, with changes up to 0.4 feet over a 24-hour time period.

The data presented in Figure 3 has been broken out in subsequent figures for clarity. Figures 4, 5, and 6 show the data for the B-Sand, C-Sand, and Gage Aquifer wells, respectively. Figure 7 presents data for one well in each of these water bearing zones, clustered in the northeastern portion of the site. This figure indicates that the water level elevation in the B-Sand (Well WCC-09S) was consistently higher than in the underlying C-Sand (Well MWC-009). The water

level elevation in the C-Sand was, in turn, greater than in the underlying Gage Aquifer (Well MWG-001).

According to BRC representatives, a constant rate extraction test was performed on behalf of Montrose in a B-Sand Well (Well BF-EW-1, see Figure 1), between December 4 and December 7, 2005. It is not known at what extraction rate the test was performed. Inspection of the water level data at the BRC site (Figure 3) does not show any appreciable effect from the off-site extraction. In fact, the BRC wells showed a general increase in water level elevations during this interval.

Respectfully Submitted,

RUBICON ENGINEERING CORPORATION

David C Hogshead

David C. Hogshead, P.E.
Senior Engineer

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Tables

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Table 1

Completion Details
Transducer-Equipped Wells
Boeing Realty Corporation, Former C-6 Facility
Los Angeles, California

Well I.D.	Water Bearing Unit	Easting[1] (feet)	Northing[1] (feet)	Reference Elevation (ft MSL)[2]	Boring Total Depth (feet)	Screen Depth Interval (feet)	Depth to Top of Filter Pack (feet)	Casing Diameter (inches)	Casing Type	Slot Size (inches)	Drilled Date
MWB012	B-Sand	6,470,031	1,769,026	52.43	90.5	64.5-84.5	62	4	Sched 40 PVC	0.02	05/17/2004
MWB019	B-Sand	6,469,966	1,768,100	55.18	90.5	65-85	62	4	Sched 40 PVC	0.02	05/17/2004
TMW_11	B-Sand	6,470,717	1,768,211	49.85	83	58-78	55	2	Sched 40 PVC	0.01	02/01/1999
WCC_9S	B-Sand	6,470,680	1,769,416	57.39	92	60-90	55	4	Sched 40 PVC	0.01	09/21/1989
CMW0001	C-Sand	6,470,696	1,768,190	54.37	124	99-124	97	4	Sched 40 PVC	0.01	08/15/2003
MWC009	C-Sand	6,470,654	1,769,372	53.99	125	101-121	97.5	4	Sched 40 PVC	0.02	04/28/2005
MWC015	C-Sand	6,470,300	1,768,828	51.51	128	100-125	126.5	4	Sched 40 PVC	0.02	05/17/2004
MWC017	C-Sand	6,469,975	1,768,100	55.16	128	100-125	99	4	Sched 40 PVC	0.02	05/17/2004
MWG001	Gage Aquifer	6,470,702	1,769,156	54.13	190	156-186	152	2	Sched 40 PVC	0.02	04/22/2005
MWG002	Gage Aquifer	6,470,701	1,768,459	54.78	195	162-192	158	2	Sched 40 PVC	0.02	04/28/2005
MWG003	Gage Aquifer	6,470,052	1,768,923	53.08	185	154.5-184.5	150	2	Sched 40 PVC	0.02	09/12/2005
MWG004	Gage Aquifer	6,470,227	1,768,396	52.05	186	155-185	150	2	Sched 40 PVC	0.02	09/12/2005

[1] California State Plane, NAD 83, Zone 5
[2] ft MSL denotes feet above Mean Sea Level

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Table 2

Manual Water Level Measurements
Boeing Realty Corporation, Former C-6 Facility
Los Angeles, California

Water Bearing Unit	Well I.D.	Date Measured	Reference Elevation (ft MSL)[1]	Depth to Water (feet)	Ground Water Elevation (ft MSL)
B-Sand	MWB012	11/1/2005	52.43	62.23	-9.80
		12/1/2005	52.43	62.17	-9.74
		1/10/2006	52.43	62.04	-9.61
		2/24/2006	52.43	61.74	-9.31
	MWB019	11/1/2005	55.18	65.62	-10.44
		12/1/2005	55.18	65.62	-10.44
		1/10/2006	55.18	65.48	-10.30
		2/24/2006	55.18	65.26	-10.08
	TMW-11	11/1/2005	49.85	59.78	-9.93
		12/1/2005	49.85	59.77	-9.92
		1/10/2006	49.85	59.71	-9.86
		2/24/2006	49.85	59.47	-9.62
	WCC-9S	11/2/2005	57.39	66.51	-9.12
		12/1/2005	57.39	66.50	-9.11
		1/10/2006	57.39	66.44	-9.05
		2/24/2006	57.39	66.09	-8.70
C-Sand	CMW001	11/1/2005	54.37	64.86	-10.49
		12/1/2005	54.37	64.82	-10.45
		1/10/2006	54.37	64.72	-10.35
		2/24/2006	54.37	64.40	-10.03
	MWC009	11/1/2005	53.99	63.49	-9.50
		12/1/2005	53.99	63.45	-9.46
		1/10/2006	53.99	63.35	-9.36
		2/24/2006	53.99	63.02	-9.03
	MWC015	11/1/2005	51.51	61.44	-9.93
		12/1/2005	51.51	61.39	-9.88
		1/10/2006	51.51	61.30	-9.79
		2/24/2006	51.51	60.97	-9.46
	MWC017	11/1/2005	55.16	65.72	-10.56
		12/1/2005	55.16	65.72	-10.56
		1/10/2006	55.16	65.60	-10.44
		2/24/2006	55.16	65.29	-10.13
Gage	MWG001	11/1/2005	54.13	64.99	-10.86
		11/2/2005	54.13	64.96	-10.83
		12/1/2005	54.13	64.88	-10.75
		1/10/2006	54.13	64.71	-10.58
		2/24/2006	54.13	64.35	-10.22
	MWG002	11/1/2005	54.78	66.03	-11.25
		12/1/2005	54.78	65.92	-11.14
		1/10/2006	54.78	65.76	-10.98
		2/24/2006	54.78	65.41	-10.63
	MWG003	11/1/2005	53.08	63.89	-10.81
		12/1/2005	53.08	63.74	-10.66
		1/10/2006	53.08	63.58	-10.50
		2/24/2006	53.08	63.28	-10.20
	MWG004	11/1/2005	52.05	63.10	-11.05
		12/1/2005	52.05	63.00	-10.95
		1/10/2006	52.05	62.84	-10.79
		2/24/2006	52.05	62.49	-10.44

[1] ft MSL denotes feet above Mean Sea Level

Figures

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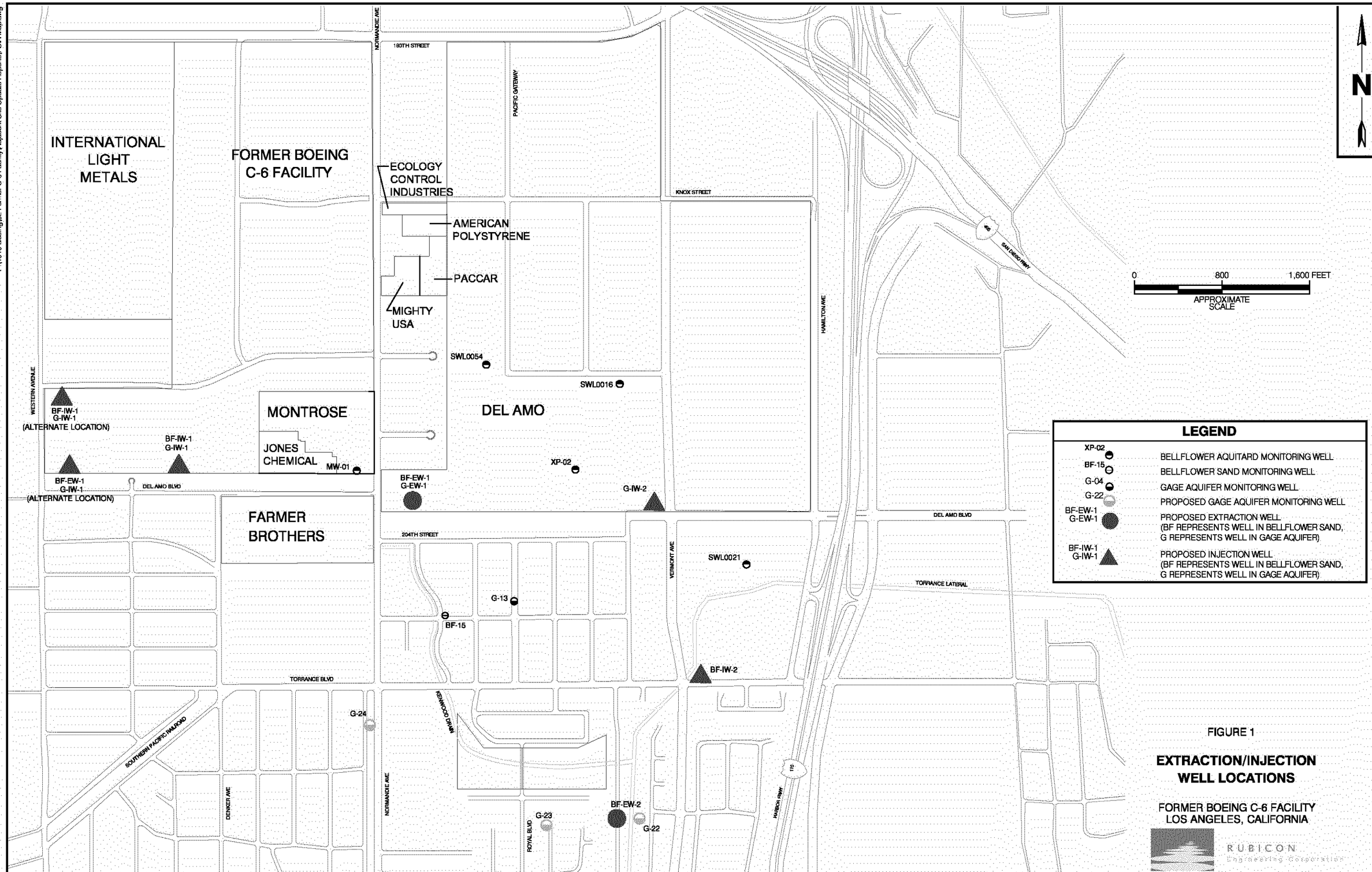

FIGURE 1

EXTRACTION/INJECTION WELL LOCATIONS

FORMER BOEING C-6 FACILITY
LOS ANGELES, CALIFORNIA

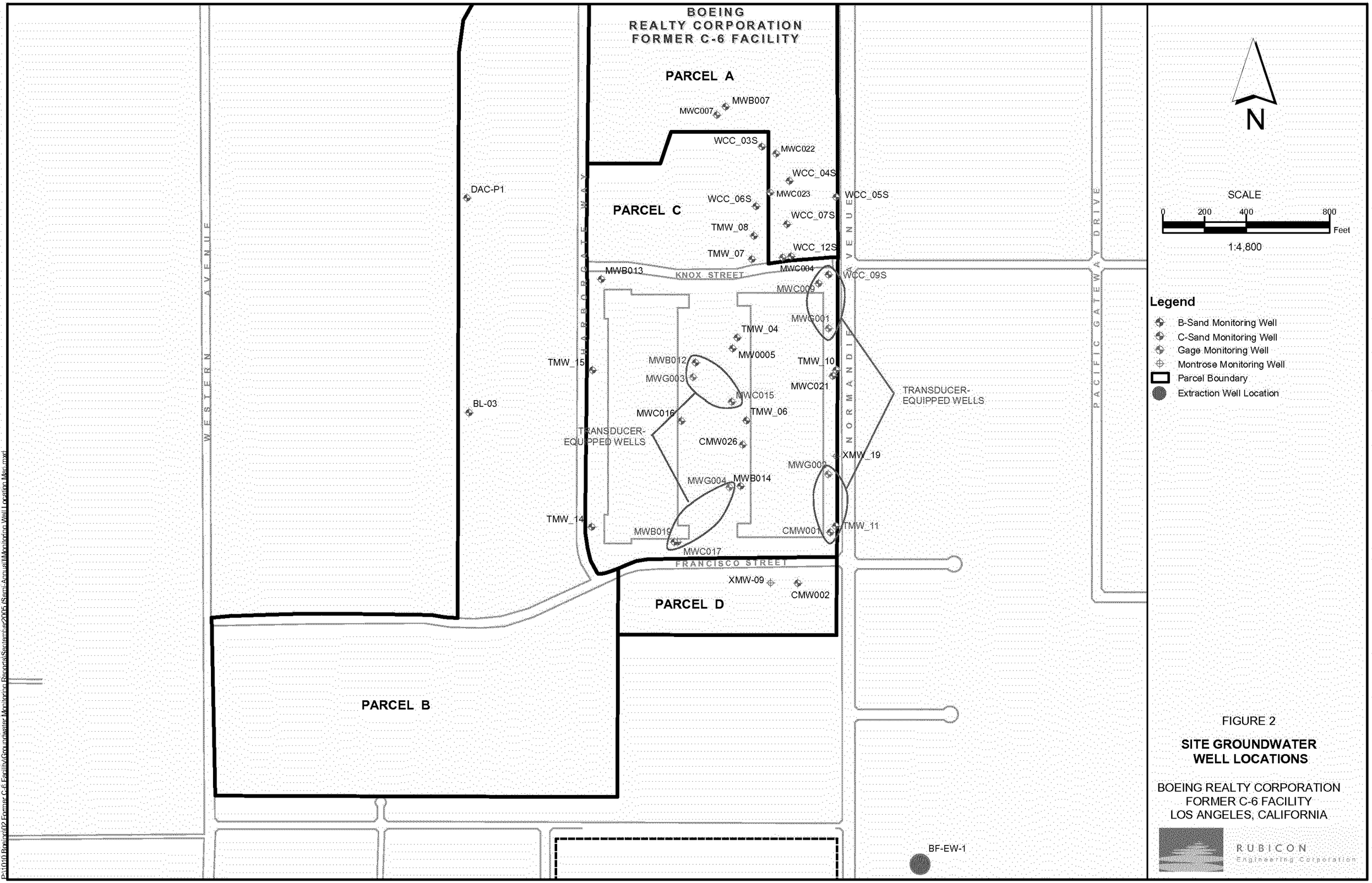

FIGURE 2

SITE GROUNDWATER WELL LOCATIONS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

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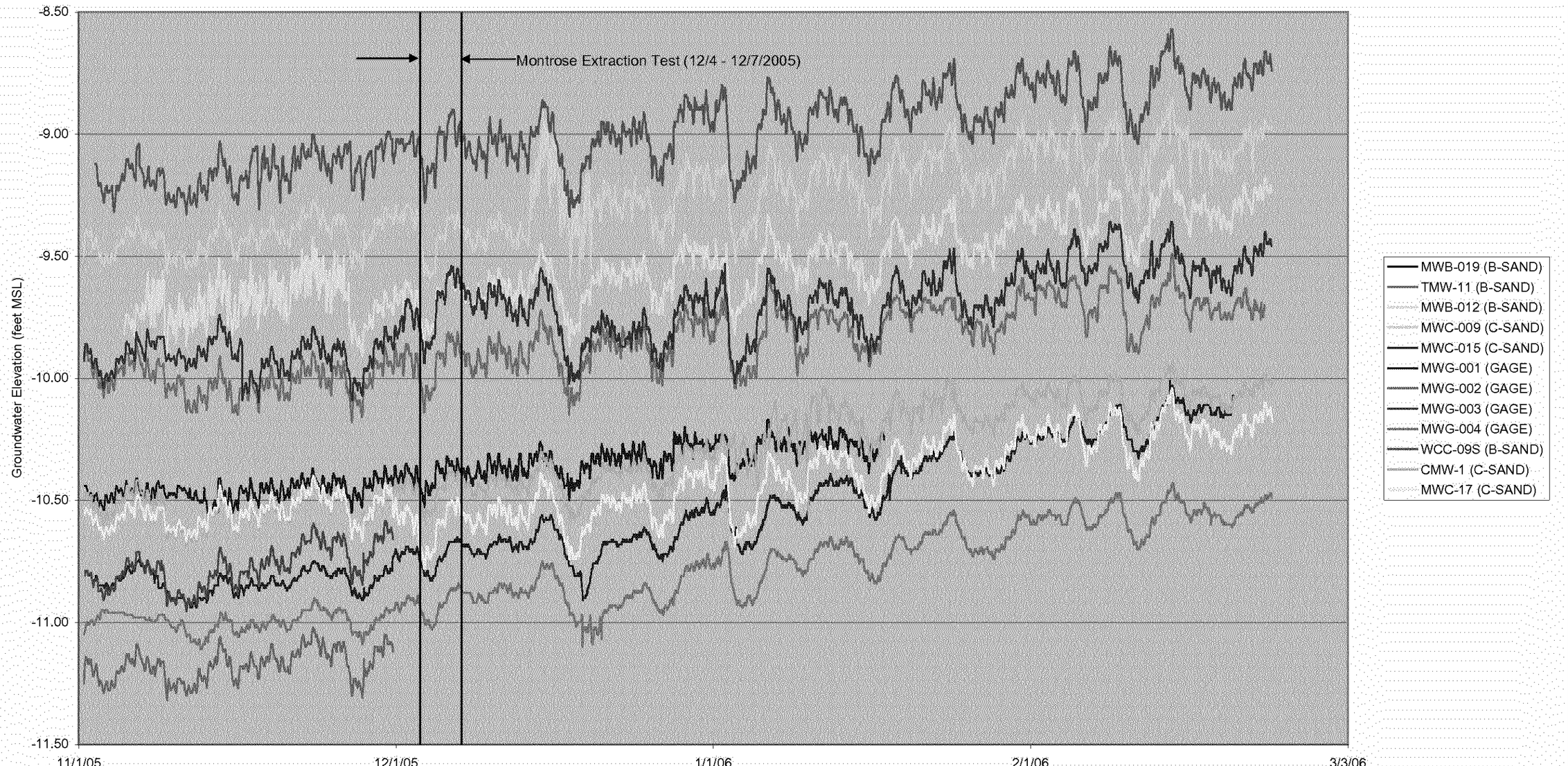

FIGURE 3

TRANSDUCER GROUNDWATER LEVEL MEASUREMENTS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

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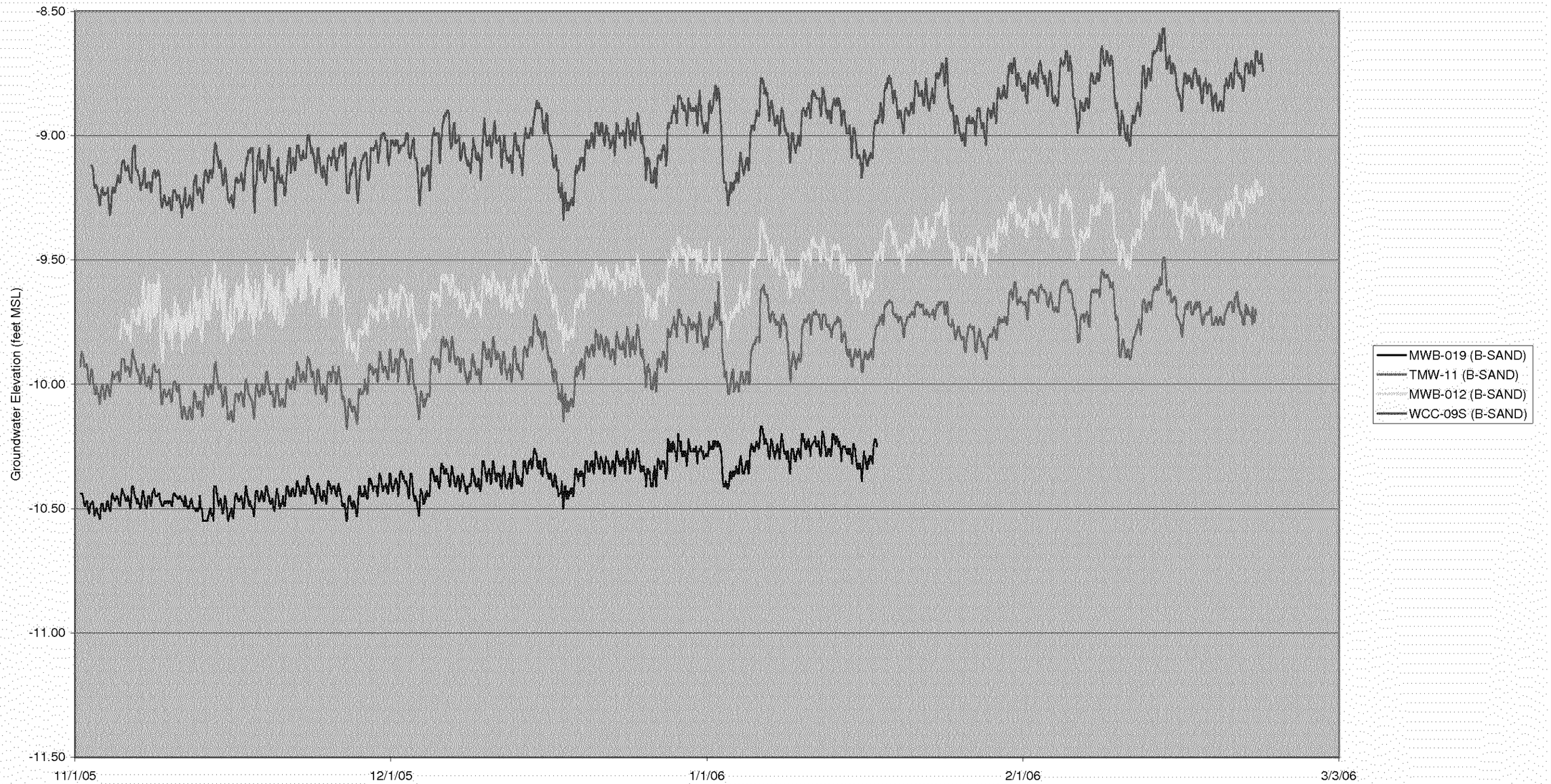

FIGURE 4

TRANSDUCER GROUNDWATER LEVEL MEASUREMENTS B-SAND WELLS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

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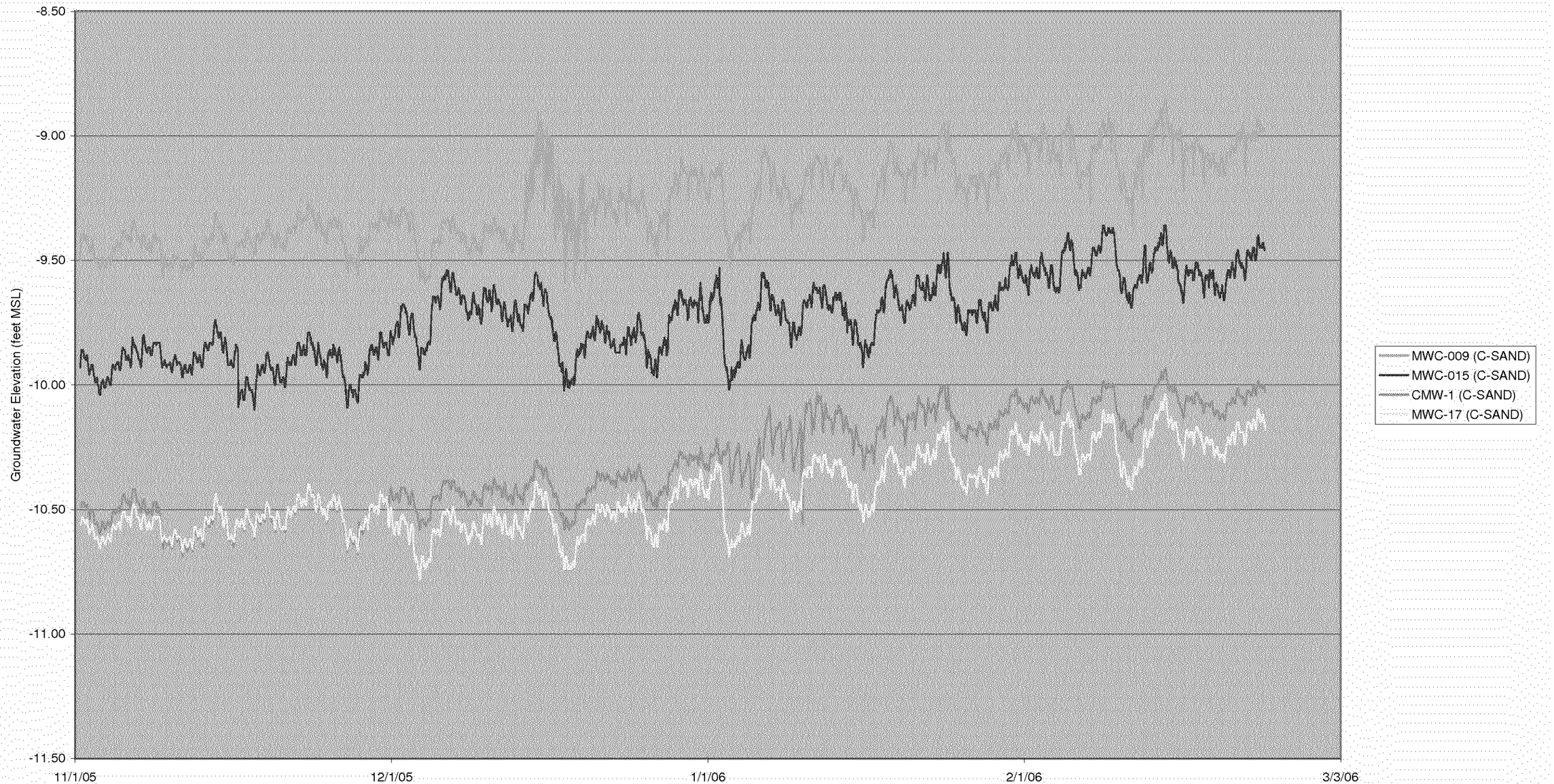

FIGURE 5

TRANSDUCER GROUNDWATER LEVEL MEASUREMENTS C-SAND WELLS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

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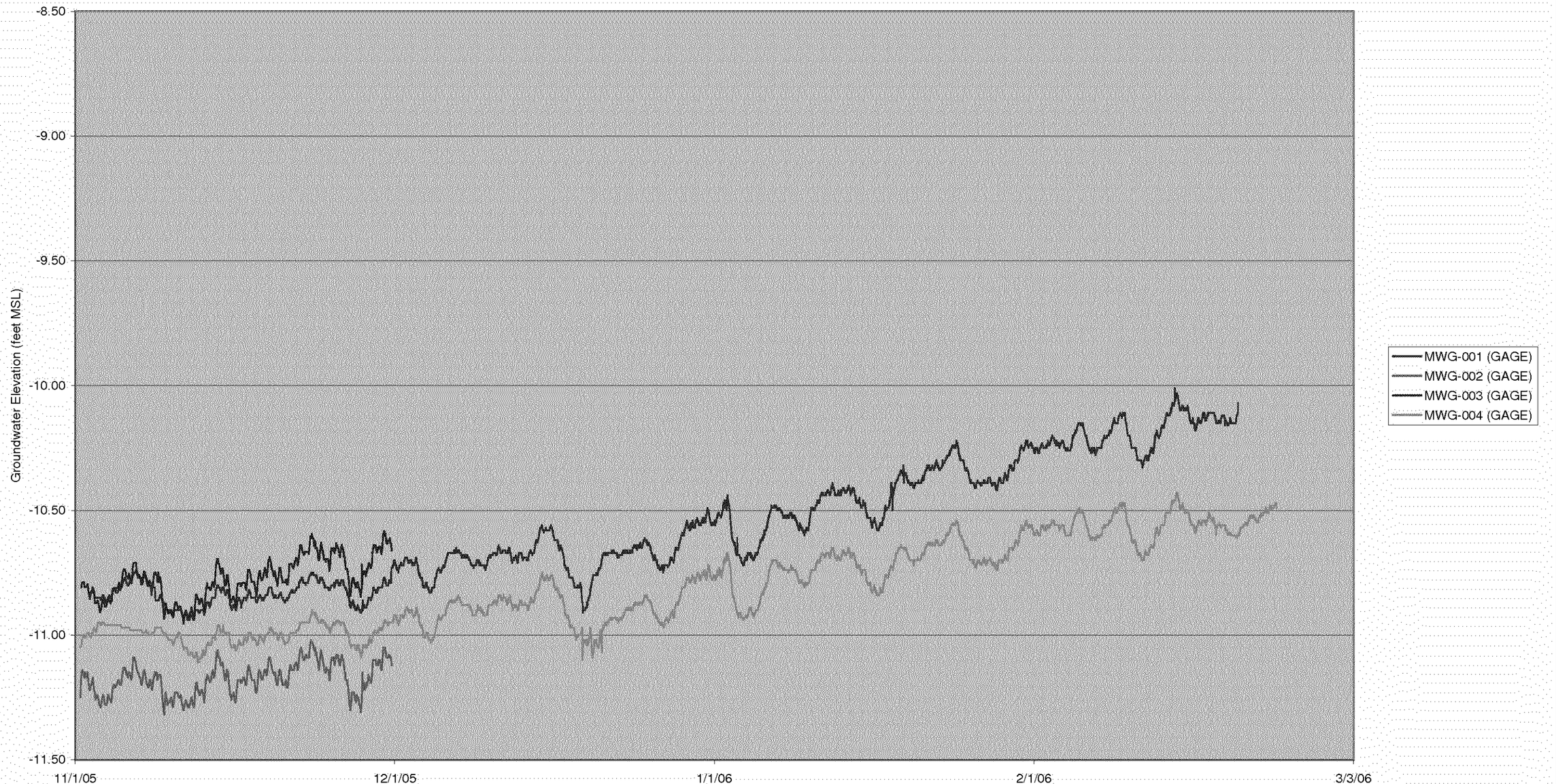

FIGURE 6

TRANSDUCER GROUNDWATER LEVEL MEASUREMENTS GAGE AQUIFER WELLS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

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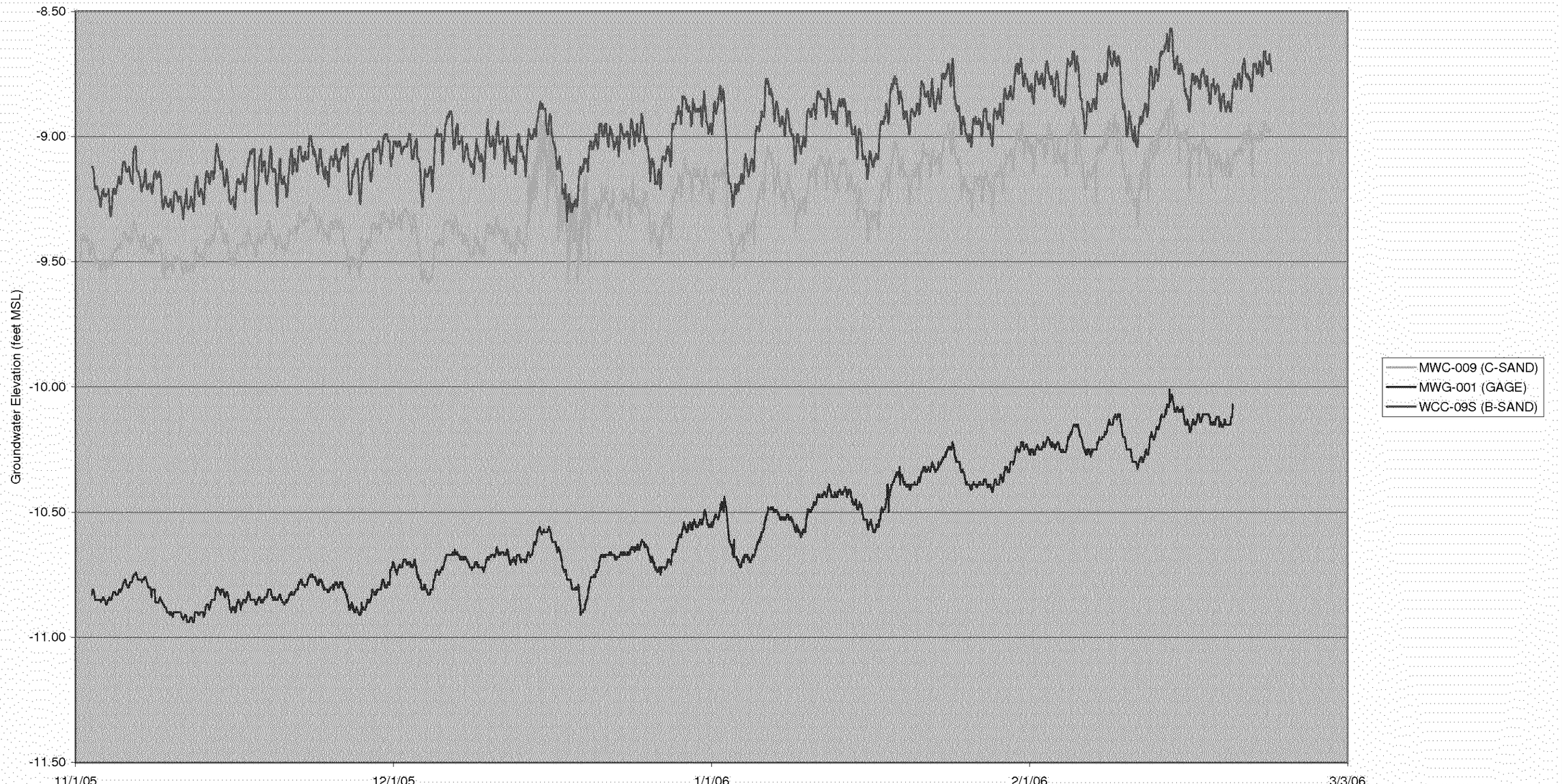

FIGURE 7

TRANSDUCER GROUNDWATER LEVEL MEASUREMENTS NORTHEASTERN WELL CLUSTER

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FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

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