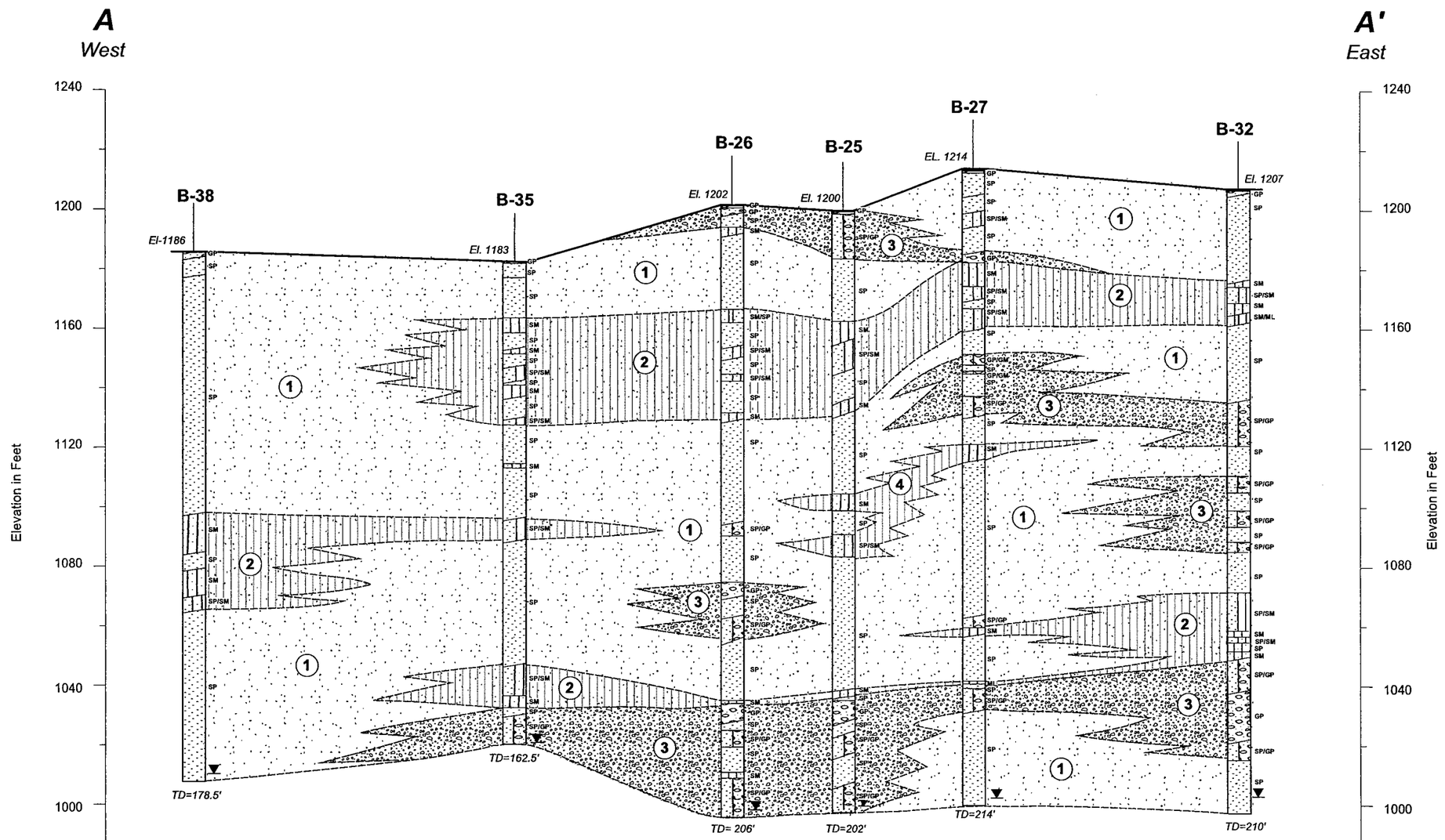

Geologic Units

1. *Predominantly **Sand**-*
   Fine to coarse sand with some gravel and cobbles; numerous thin lenses of gravelly sand and occasional thin lenses of sand with some silt; occasional boulders.
2. *Predominantly **Sand** and **Silty Sand**-*
   Interbedded layers and thin lenses of fine to coarse sand with some silt and silty fine to medium sand; numerous pieces gravel and occasional cobbles
3. *Predominantly **Sandy Gravel** and **Gravelly Sand**-*
   Interbedded layers and thin lenses of sandy fine to coarse gravel and gravelly fine to coarse sand; numerous cobbles and small boulders.
4. *Predominantly **Silty Sand**-*
   Interbedded layers and thin lenses of silty fine to medium sand and fine to coarse sand with silt; occasional thin lenses fine sandy silt; some dispersed fine gravel.

Symbols

- *Inferred Contact Between Geologic Units*
- *Groundwater Elevation*
- *TD= Total Depth Drilled in Feet*
- *SP Sand, Poorly Graded*
- *SM Silty Sand*
- *GP Gravel, Poorly Graded*
- *GM Silty Gravel*
- *ML Silt*

0 40 80 Feet
Vertical Scale

0 160 320 Feet
Horizontal Scale

Note: See Figure 1-4 for location of Cross Section A-A'.

Figure 1-5

GENERALIZED CROSS SECTION A-A' ACROSS THE NORTH-CENTRAL PORTION OF THE SITE

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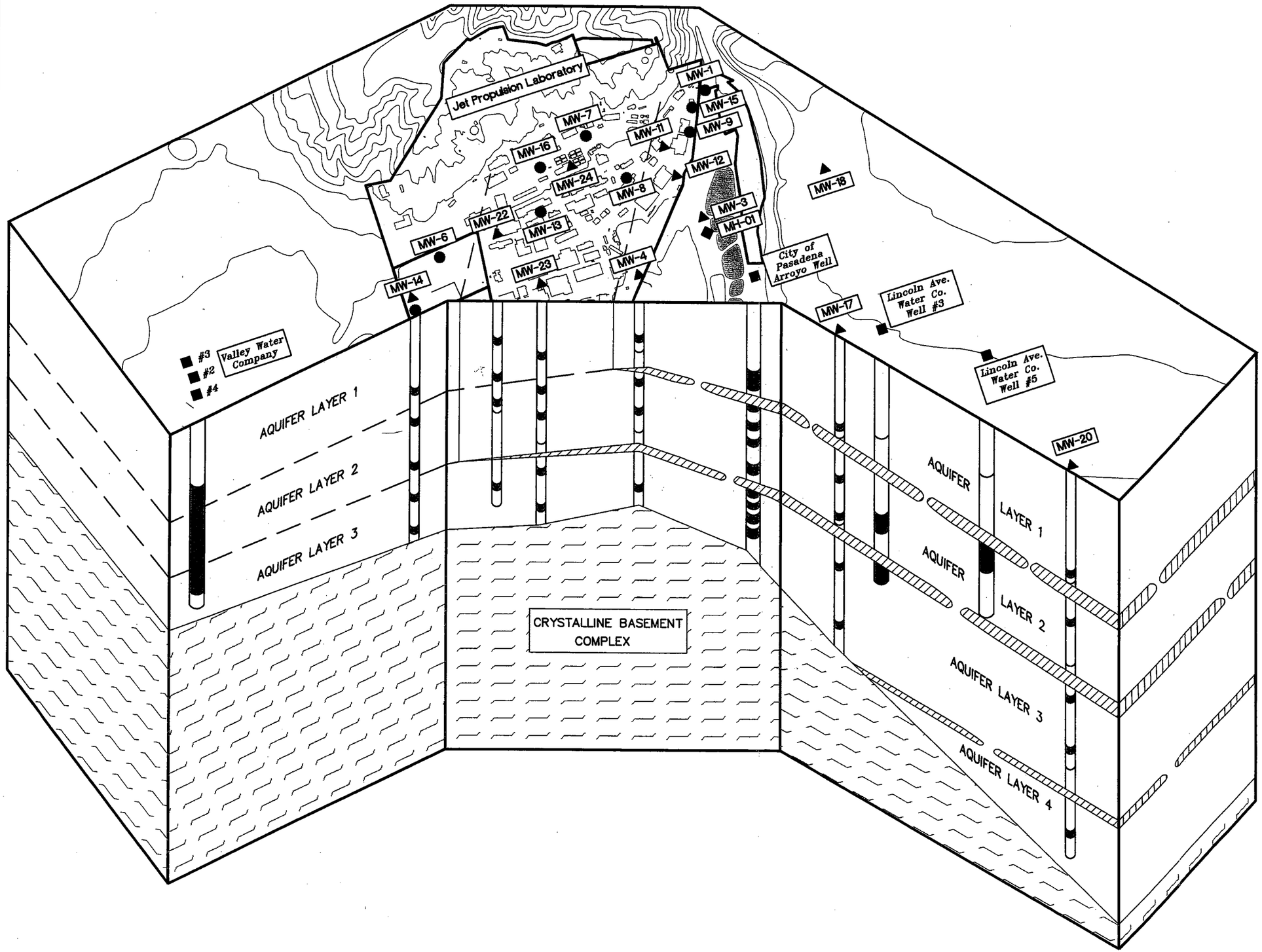

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi–Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- Silt–Rich Interval (discontinuous)
- Screened Interval
- Approximate limits of silt–rich intervals in plan view.

1000 500 0 1000

200 100 0 200

HORIZONTAL SCALE: 1" = 1000'
VERTICAL SCALE: 1" = 200'

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1–6

GENERALIZED CONCEPTUAL MODEL OF JPL AQUIFER LAYERS

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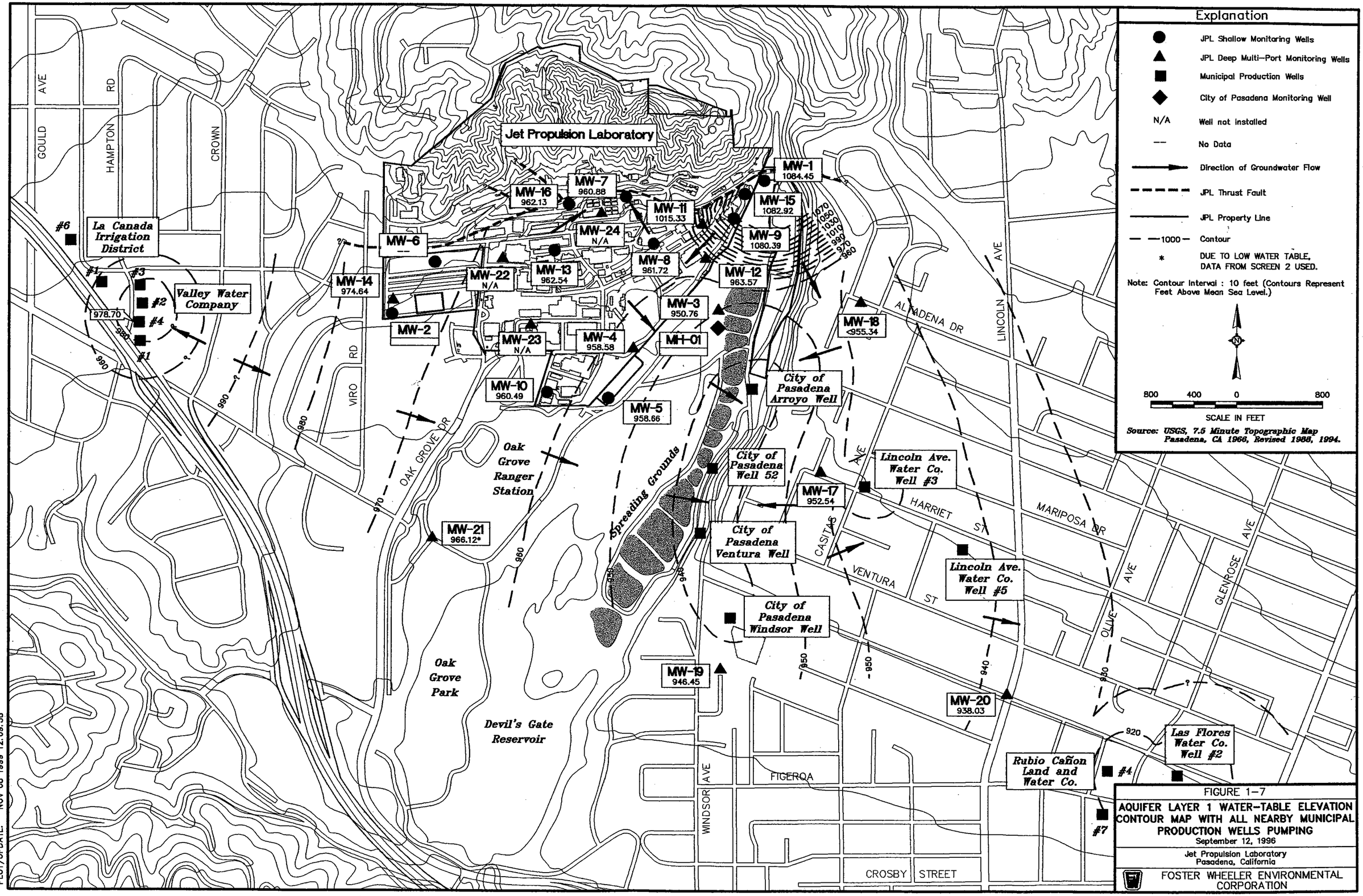

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- N/A — Well not installed
- — — No Data
- Direction of Groundwater Flow
- JPL Thrust Fault
- JPL Property Line
- —1000— Contour
- * DUE TO LOW WATER TABLE, DATA FROM SCREEN 2 USED.

Note: Contour Interval : 10 feet (Contours Represent Feet Above Mean Sea Level.)

N

800 400 0 800

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1-7

AQUIFER LAYER 1 WATER-TABLE ELEVATION CONTOUR MAP WITH ALL NEARBY MUNICIPAL PRODUCTION WELLS PUMPING

September 12, 1996

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I:\1572-JPL\DWG\OU2\FS99\FIG1-7.DWG
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MW-1
MW-2
MW-3 938.12
MW-4 943.76
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11 959.88
MW-12 945.80
MW-13
MW-14 972.39
MW-15
MW-16
MW-17 933.53
MW-18 934.02
MW-19 931.64
MW-20 936.98
MW-21 966.12
MW-22 N/A
MW-23 N/A
MW-24 N/A
MH-01

La Canada Irrigation District
#6
#1
Valley Water Company
#3
#2
#4
#1

City of Pasadena Arroyo Well
City of Pasadena Well 52
City of Pasadena Ventura Well
City of Pasadena Windsor Well

Lincoln Ave. Water Co. Well #3
Lincoln Ave. Water Co. Well #5
Las Flores Water Co. Well #2
Rubio Cañon Land and Water Co.
#4
#7

Oak Grove Ranger Station
Oak Grove Park
Devil's Gate Reservoir
Spreading Grounds

GOULD AVE
HAMPTON RD
CROWN
VIRO RD
OAK GROVE DR
ALTADENA DR
LINCOLN AVE
CASITAS AVE
HARRIET ST
MARIPOSA DR
VENTURA ST
OLIVE AVE
GLENROSE AVE
WINDSOR AVE
FIGEROA
CROSBY STREET

980
970
960
950
940
930
920

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- N/A — Well not installed
- Well not in Aquifer Layer 2
- Direction of Groundwater Flow
- JPL Thrust Fault
- JPL Property Line
- —1000— Contour

Note: Contour Interval : 10 feet (Contours Represent Feet Above Mean Sea Level.)

N

800 400 0 800

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1-8

AQUIFER LAYER 2 POTENTIOMETRIC SURFACE CONTOUR MAP WITH ALL NEARBY MUNICIPAL PRODUCTION WELLS PUMPING

September 1996

Jet Propulsion Laboratory
Pasadena, California

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I:\1572-JPL\DWG\OU2\FS99\FIG1-8.DWG
PLOT/UPDATE: NOV 08 1999 11:45:05

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MW-1
MW-2
MW-3
844.14
MW-4
843.37
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
863.97
MW-12
855.05
MW-13
MW-14
970.92
MW-15
MW-16
MW-17
851.59
MW-18
898.98
MW-19
816.41
MW-20
918.59
MW-21
965.27
MW-22
N/A
MW-23
N/A
MW-24
N/A
MI-01

La Canada Irrigation District
#6
#1
#3
#2
#4
#1
Valley Water Company
City of Pasadena Arroyo Well
City of Pasadena Well 52
City of Pasadena Ventura Well
City of Pasadena Windsor Well
Lincoln Ave. Water Co. Well #3
Lincoln Ave. Water Co. Well #5
Las Flores Water Co. Well #2
Rubio Cañon Land and Water Co.
#4
#7
Oak Grove Ranger Station
Spreading Grounds
Grove Park
Devil's Gate Reservoir

GOULD AVE
HAMPTON RD
CROWN
VIRO RD
OAK GROVE DR
ALTADENA DR
LINCOLN AVE
HARRIETT ST
MARIPOSA DR
OLIVE AVE
GLENROSE AVE
CASITAS AVE
VENTURA ST
WINDSOR AVE
FIGEROA
CROSBY STREET

970
980
990
960
950
940
930
920
910
900
890
880
870
860
850
840
830
820
810
800

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- N/A — Well not Installed
- — — Well not in Aquifer Layer 3
- Direction of Groundwater Flow
- JPL Thrust Fault
- JPL Property Line
- —1000— Contour

Note: Contour Interval : 10 feet (Contours Represent Feet Above Mean Sea Level.)

N

800 400 0 800

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1-9

AQUIFER LAYER 3 POTENTIOMETRIC SURFACE CONTOUR MAP WITH ALL NEARBY MUNICIPAL PRODUCTION WELLS PUMPING

September 1996

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I:\1572-JPL\DWG\OU2\FS99\FIG1-9.DWG
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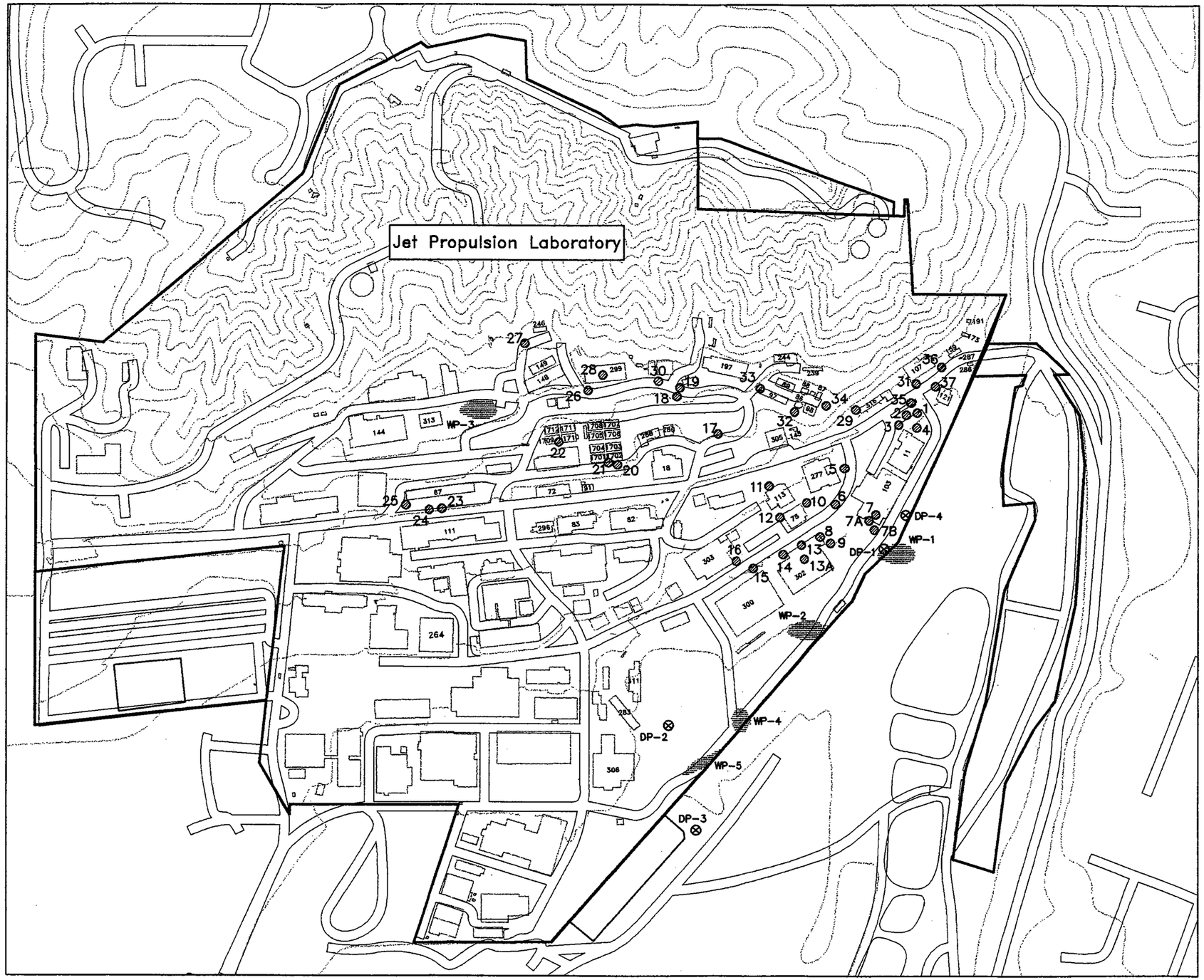

Explanation

⊘1	Seepage Pit or Dry Well Location and Number
⊗DP-1	Surface Water Discharge Points to the Arroyo Seco
WP-1	Suspected Waste Disposal Area

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1-10

LOCATIONS OF KNOWN SEEPAGE PITS/ DRY WELLS, DISCHARGE POINTS AND SUSPECTED WASTE DISPOSAL AREAS

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I:\1572-JPL\DWG\2\FS6-00\FIG1-10.DWG
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SV-1 SV-2 SV-3 SV-4 SV-5 SV-7 SV-8 SV-9 SV-10 SV-11 SV-13 SV-14 SV-15 SV-16 SV-17 SV-19 SV-20 SV-21 SV-22 SV-23 SV-25 SV-26 SV-27 SV-28 SV-29 SV-31 SV-32 SV-33 SV-34 SV-35 SV-37 SV-38 SV-39 SV-40 SV-41 SV-43 SV-44 SV-45 SV-46 SV-47 SV-49 SV-50 SV-51 SV-52 SV-53 SV-54 SV-55 SV-57 SV-58

Explanation

▲ SV-58 Soil Vapor Probe Installed During RI Investigation

300 150 0 300

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1-11

LOCATIONS OF SOIL VAPOR PROBES SAMPLED DURING THE INITIAL SCREENING, EVENT 1

January, 1994

Jet Propulsion Laboratory
Pasadena, California

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I:\1572-JPL\DWG\...02\FS99\FIG1-11.DWG
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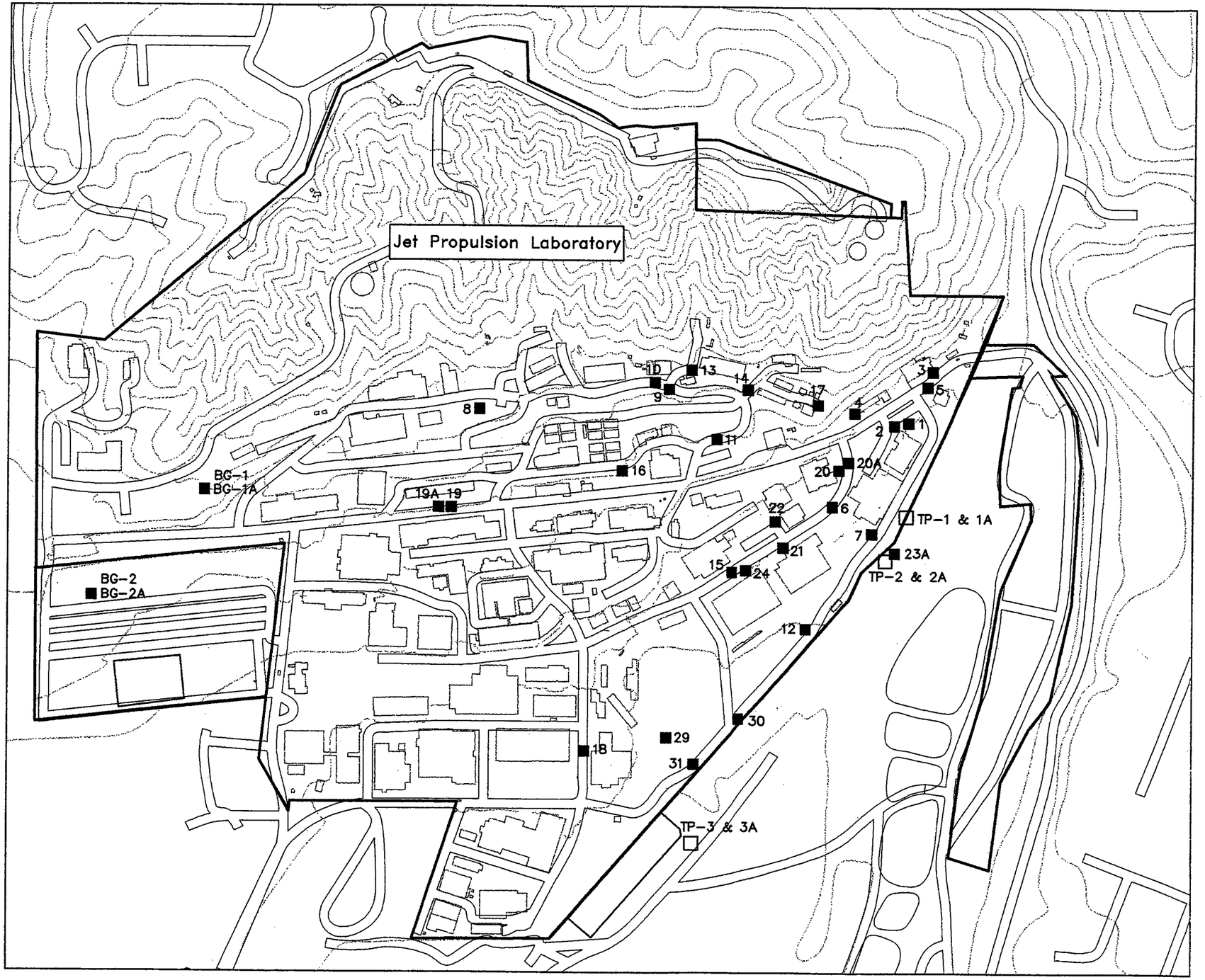

Explanation

- ■ 31 — Soil Boring Drilled During RI Investigation
- □ TP–1 — Test Pit Completed During RI Investigation

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1–12

LOCATIONS OF SOIL BORINGS AND TEST PITS SAMPLED DURING THE OU–2 RI

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I:\1572-JPL\DWG\ou2\FS99\FIG1-12.DWG
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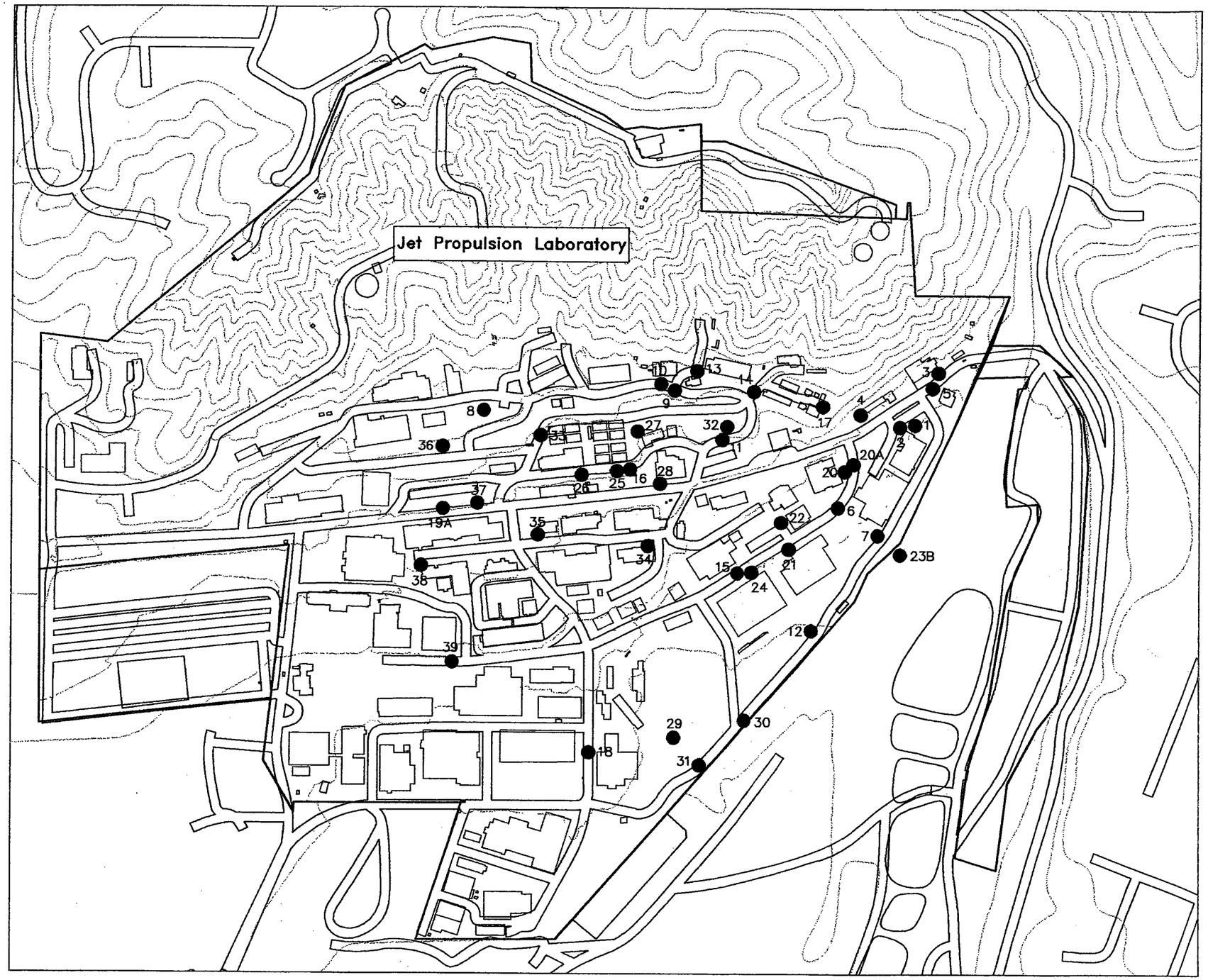

Explanation

● 39 Soil Vapor Well Installed During RI Investigation

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1988, 1994.

FIGURE 1–13

LOCATIONS OF SOIL VAPOR WELLS SAMPLED DURING THE OU–2 RI

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I:\1572-JPL\DWG...2\FS99\FIG1-13.DWG
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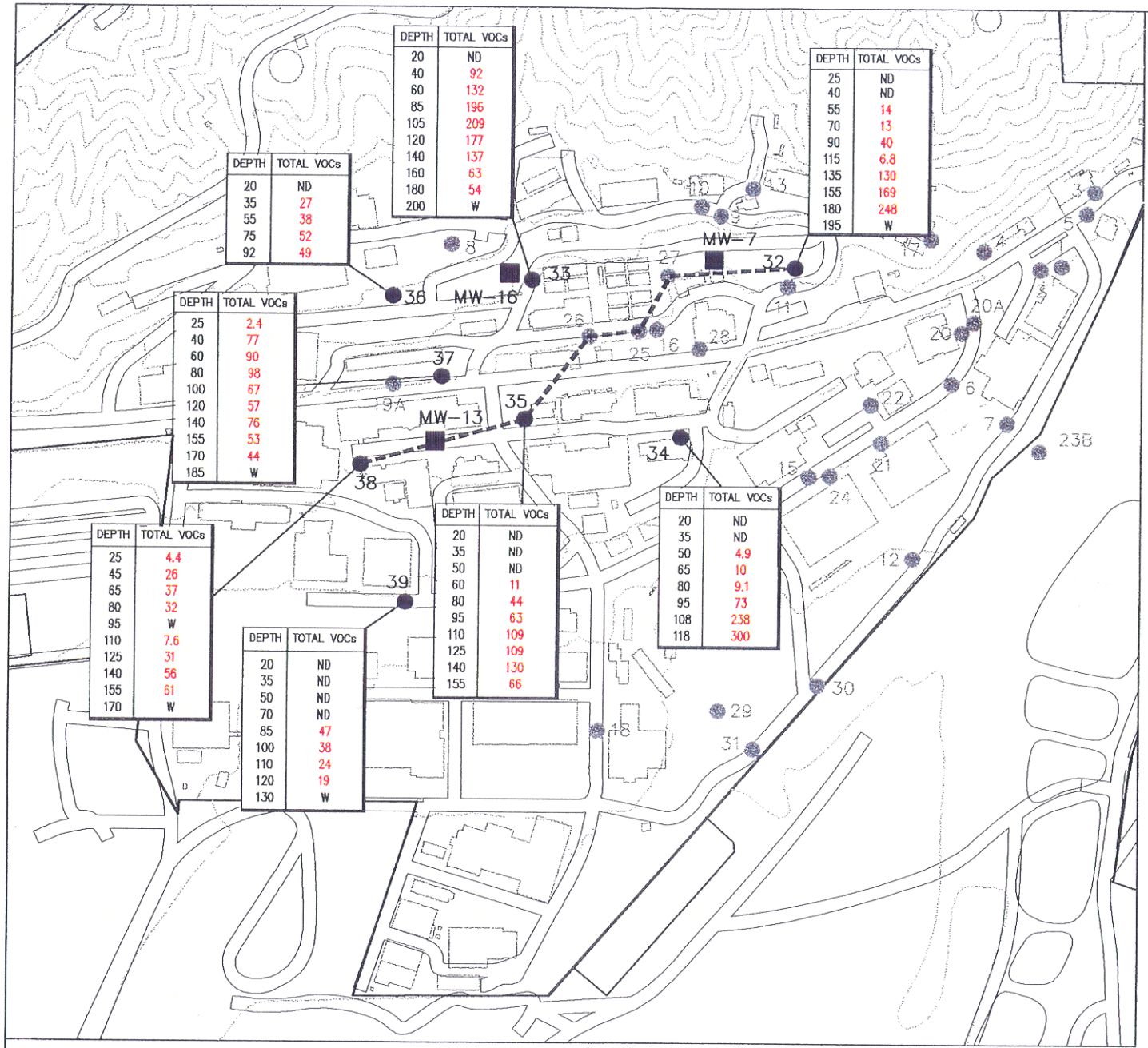

Explanation

- ● 39 — Soil Vapor Wells Sampled During Event 7
- ● 31 — Soil Vapor Wells Not Sampled During Event 7
- MW-7 ■ — Groundwater Monitoring Well
- VOCs — Volatile Organic Conpounds
- ND — Non-Detect @ Laboratory Detection Limit of 1.0 µg/L-Vapor
- W — Sample Port Waterlogged; No Sample Collected
- ----- — Line of Cross Sections

N

400 200 0 400

SCALE IN FEET

Source: USGS, 7.5 Minute Topographic Map Pasadena, CA 1966, Revised 1986, 1994.

NOTE:

Concentrations in µg/L-Vapor

FIGURE 1-14

TOTAL VOC CONCENTRATIONS AT DEPTH, EVENT 7

JUNE, 1998

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION