

MARKETPLACE SITE
EMERYVILLE, CALIFORNIA
FEBRUARY 15, 1990

GROUNDWATER ISSUES:

ISSUE #1:

- A free product has been found floating on the groundwater in Well W-5 and trace amounts in Well W-16 on the Bay Street parcel at the eastern boundary of the Marketplace site.

PROPOSED SOLUTION:

- The free product has been physically (Aqua Terra Technologies, 1988; McLaren, 1989) and chemically (Woodward Clyde 1982, 1987; Earth Metrics, 1988; Aqua Terra Technologies, 1988; McLaren 1989) characterized and has been classified as a heavy fuel oil or heavy crude oil. The extent of the free product plume appears limited to a small area around Well W-5. The Martin Group recognizes that the RWQCB guidelines consider the free product a potential threat to groundwater quality and has submitted a proposed workplan to remove the free product from Parcel No. 4 (December 13, 1989). We believe further chemical characterization of the free product is unnecessary as all waste oils are treated as hazardous materials and the removal of this substance will be managed as such.

ISSUE #2:

- Recent groundwater data indicate the presence of TPH/D of up to 20 ppm in groundwater in the same area as the floating product plume.

PROPOSED SOLUTION:

- The highest concentration of the TPH/D was measured in Well W-5 along the upgradient boundary of the Marketplace site on the Bay Street parcel currently under the jurisdiction of the City of Emeryville. The TPH/D may be related to the free product, but at this time an off-site source can not be ruled out. No TPH/D was detected in downgradient monitoring Wells W-13 and W-14. Quarterly monitoring of existing wells was proposed in the free product remediation plan (December 13, 1989).

MARKETPLACE SITE

ISSUE #3:

- Data reported by Earth Metrics and noted by the Alameda County Department of Environmental Health showed what appeared to be elevated levels of metals in the groundwater at isolated locations.

Recent groundwater data (McLaren 1989) indicate that no heavy metal concentrations exceeding Federal and State drinking water standards are present, with the following exceptions:

- Arsenic was measured at concentrations slightly above the state MCL for drinking water. However, the data indicate that arsenic in the groundwater may be migrating to the Marketplace site from an upgradient location.
- A single sample from Well W-7 contained a lead concentration of 80 ppb, which slightly exceeds the State MCL of 50 ppb.

PROPOSED SOLUTION:

- The data suggest that metal concentrations in the groundwater are low and generally below state MCLs for drinking water. Our analysis indicates that these levels present a negligible risk to aquatic life in the San Francisco Bay. We propose that groundwater continue to be monitored for arsenic and lead as part of a proposed quarterly monitoring program (December 13, 1989).

SOIL ISSUES:

ISSUE #4:

- Possible heavy metal contamination in soil.

PROPOSED SOLUTION:

- Heavy metal contamination of soil appears to be limited to an area in Parcel 1 surrounding boring EM-8. In order to limit human contact, The Martin Group in August, 1989, proposed and implemented containment measures, similar to those previously approved by the appropriate agencies for properties in the Highway 80 corridor. The approved management strategy was to leave the metals and implement the following containment measures.
 - All surface areas must be covered with asphalt or concrete.
 - All landscaped areas must be covered with 16"-18" clean fill.

With these containment measures in place, there is no potential for human exposure to the soils.

MARKETPLACE SITE

ISSUE #5:

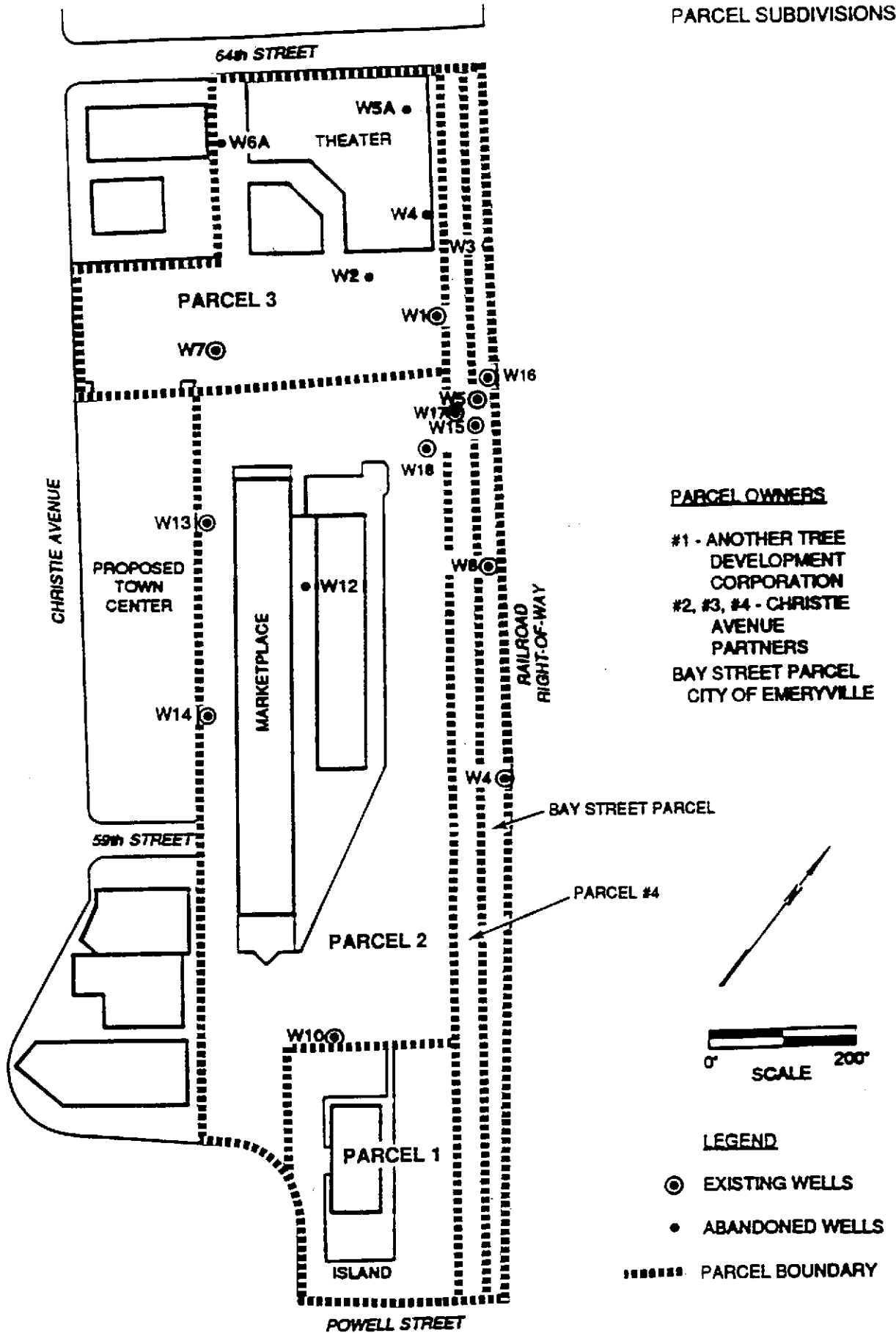
- The nature of the asphaltic material and free product found at the site has not been adequately characterized.

PROPOSED SOLUTION:

- Four investigations have been conducted to determine the nature of the two substances. Through review of the four investigations it is clear that there are two different types of petroleum compounds on the site. One is an asphalt-like material that has been found in soils in various locations on the Marketplace property. The second is an oil product that has been found floating on the groundwater in Well W-5. These two petroleum hydrocarbons are physically and chemically different and they are not always co-located.
 - Removal of the free product has been proposed.
 - The asphaltic material poses no human health or environmental threat and should therefore be left in place and away from human contact.

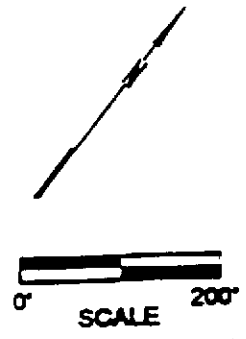
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FIGURE 1-2
SITE PLAN WITH
PARCEL SUBDIVISIONS



PARCEL OWNERS

- #1 - ANOTHER TREE DEVELOPMENT CORPORATION
- #2, #3, #4 - CHRISTIE AVENUE PARTNERS
- BAY STREET PARCEL CITY OF EMERYVILLE



LEGEND

- ⊙ EXISTING WELLS
- ABANDONED WELLS
- PARCEL BOUNDARY

**FIGURE 1-3
APPROXIMATE LOCATION OF
PREVIOUS INDUSTRIAL
BUILDINGS AND TANKS**

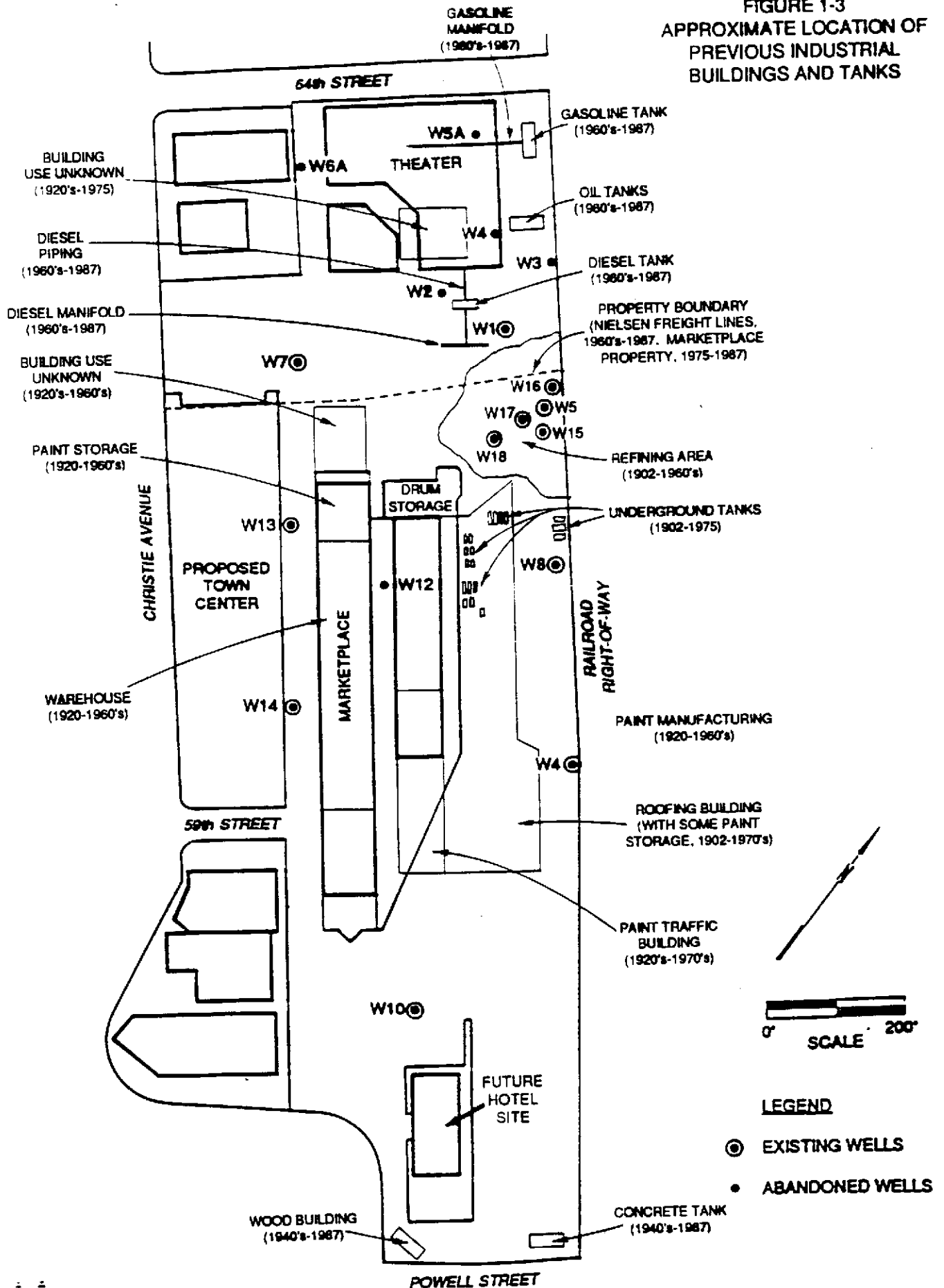


TABLE 2-1

SOIL AND GROUNDWATER INVESTIGATIONS AT THE
MARKETPLACE AND NIELSEN SITES

| Date of Report | Consultant | Title |
|----------------|----------------------------------|---|
| 1982 | Woodward Clyde Consultants (WCC) | Assessment of Subsurface Contaminants Marketplace Property |
| 1987 | Woodward Clyde Consultants (WCC) | Environmental Assessment, Former Nielsen Freight Line Site and Adjacent Parcel |
| 1988 | EarthMetrics (EM) | Draft Work Plan for Soils Contamination Characterization of the Marketplace Site |
| 1989a | McLaren | Data Review and Work Plan to Conduct Further Groundwater Characterization at the Marketplace/Nielsen Properties |
| 1989b | McLaren | Marketplace/Nielsen Hydrogeologic Investigation |
| 1989c | McLaren | Marketplace Free Product Subsurface Investigation |

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FIGURE 3-6
DISTRIBUTION OF CHLORIDE
IN GROUNDWATER

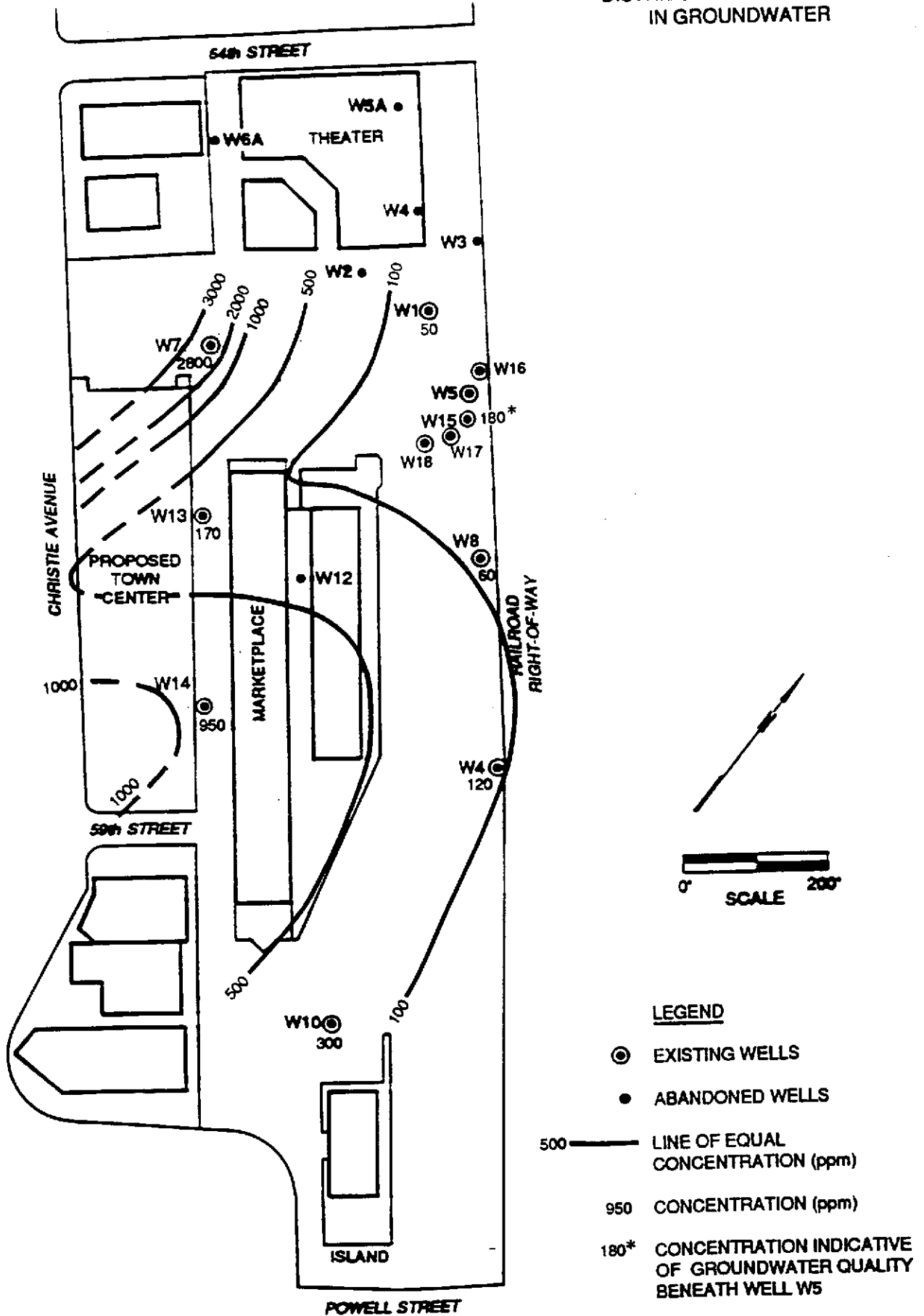


FIGURE 1-10
GROUNDWATER
SURFACE ELEVATIONS
AND FLOW DIRECTION
OCTOBER 11, 1989

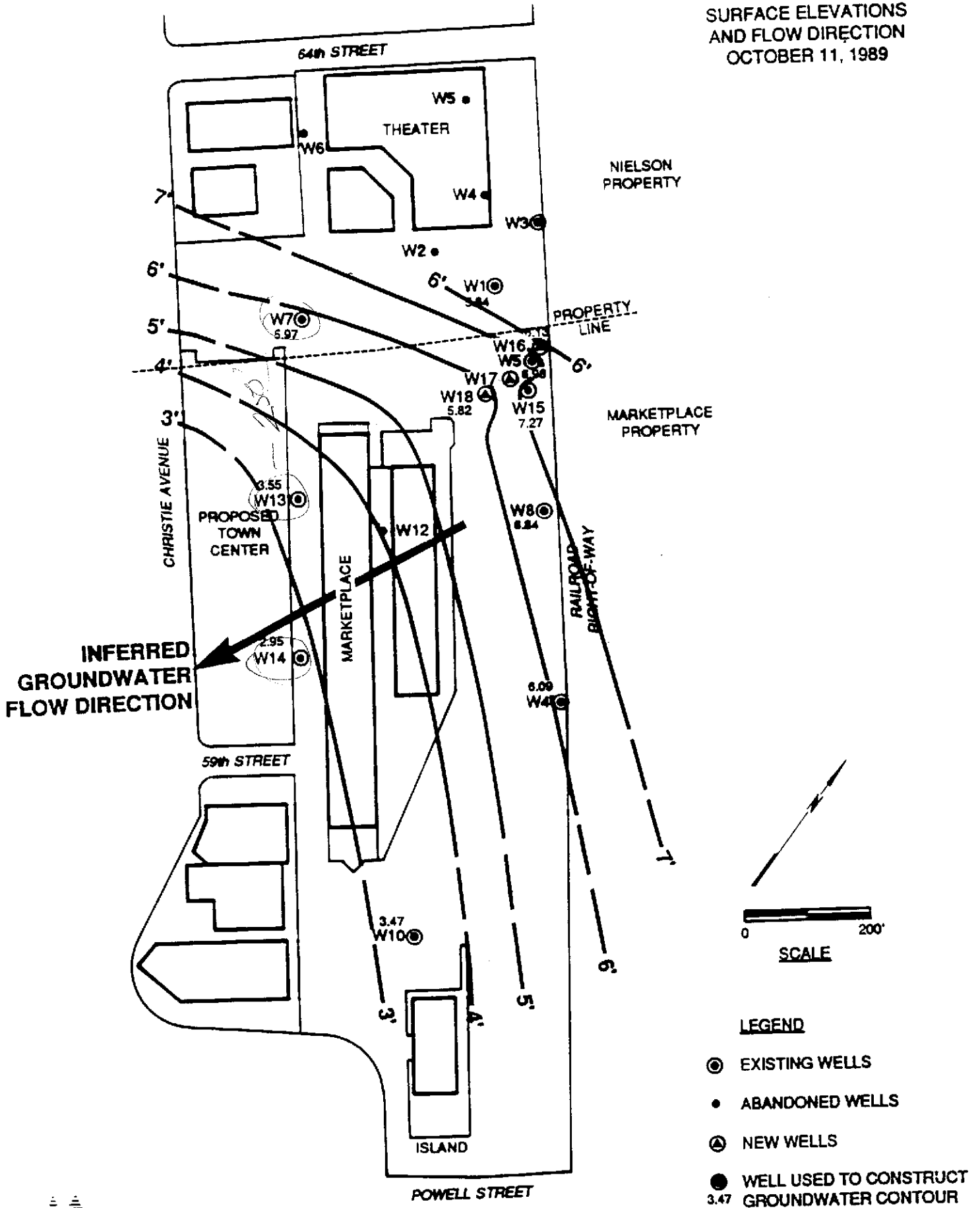


FIGURE 1-8
CROSS SECTION C-C'

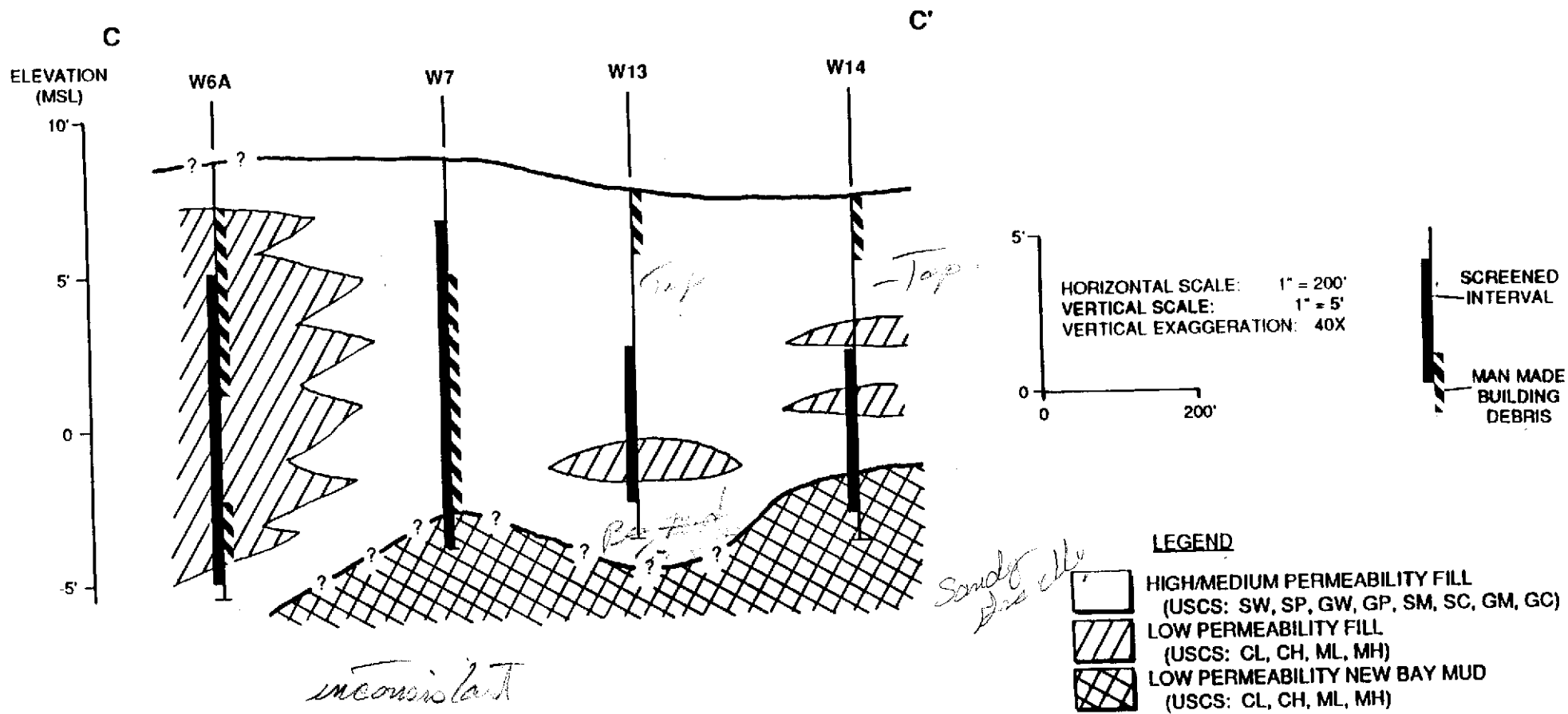
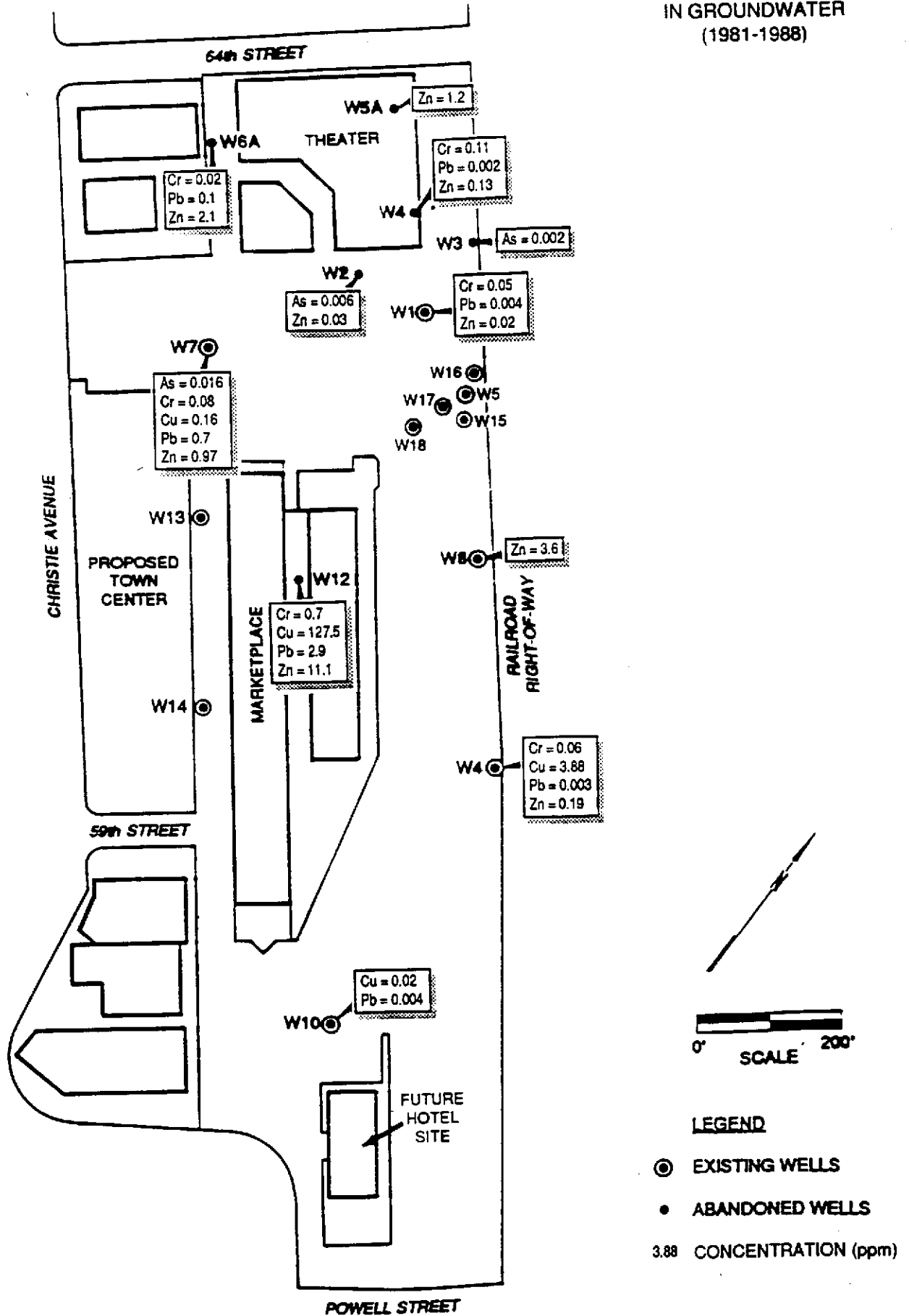
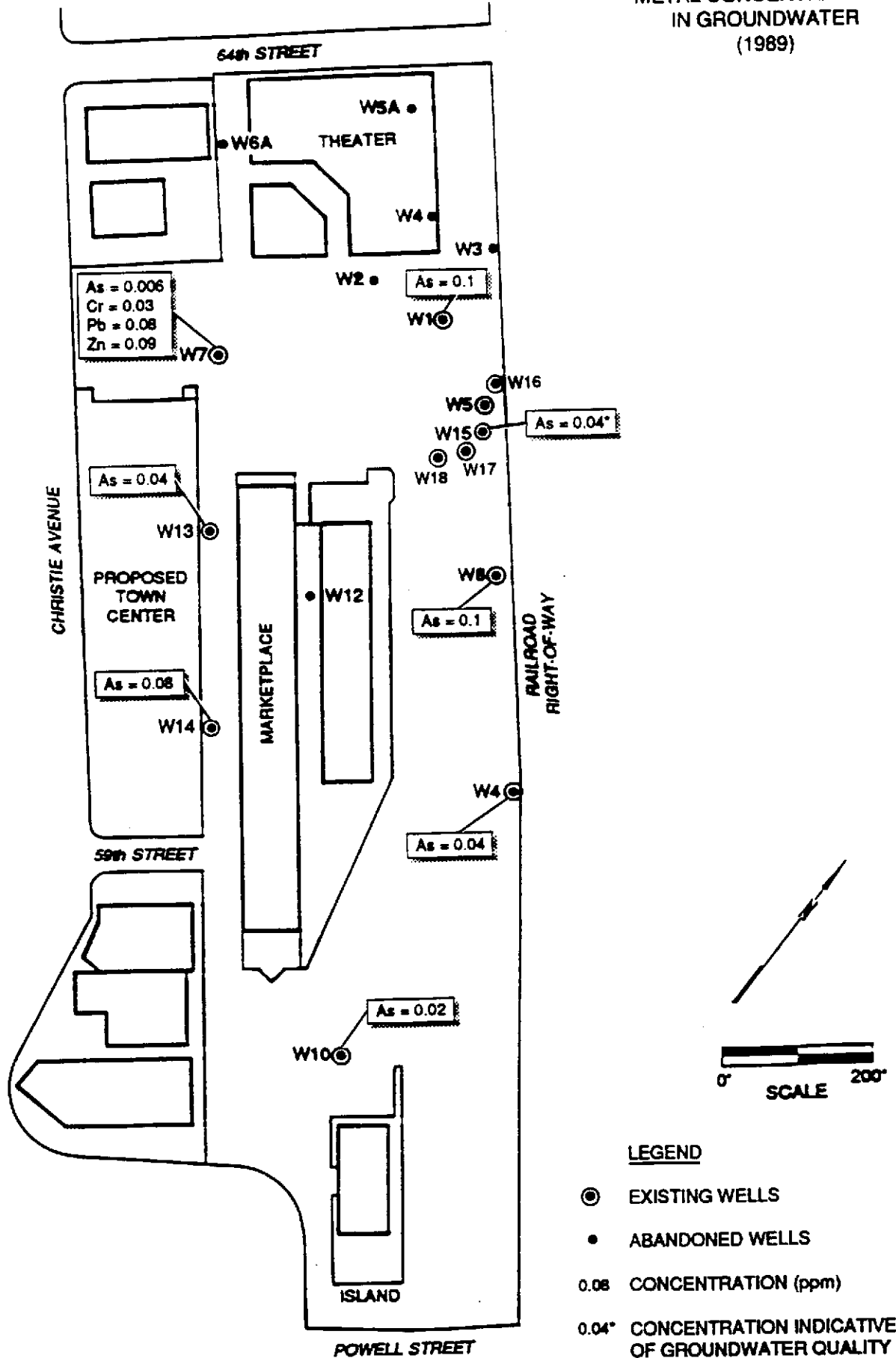


FIGURE 3-1
METAL CONCENTRATION
IN GROUNDWATER
(1981-1988)

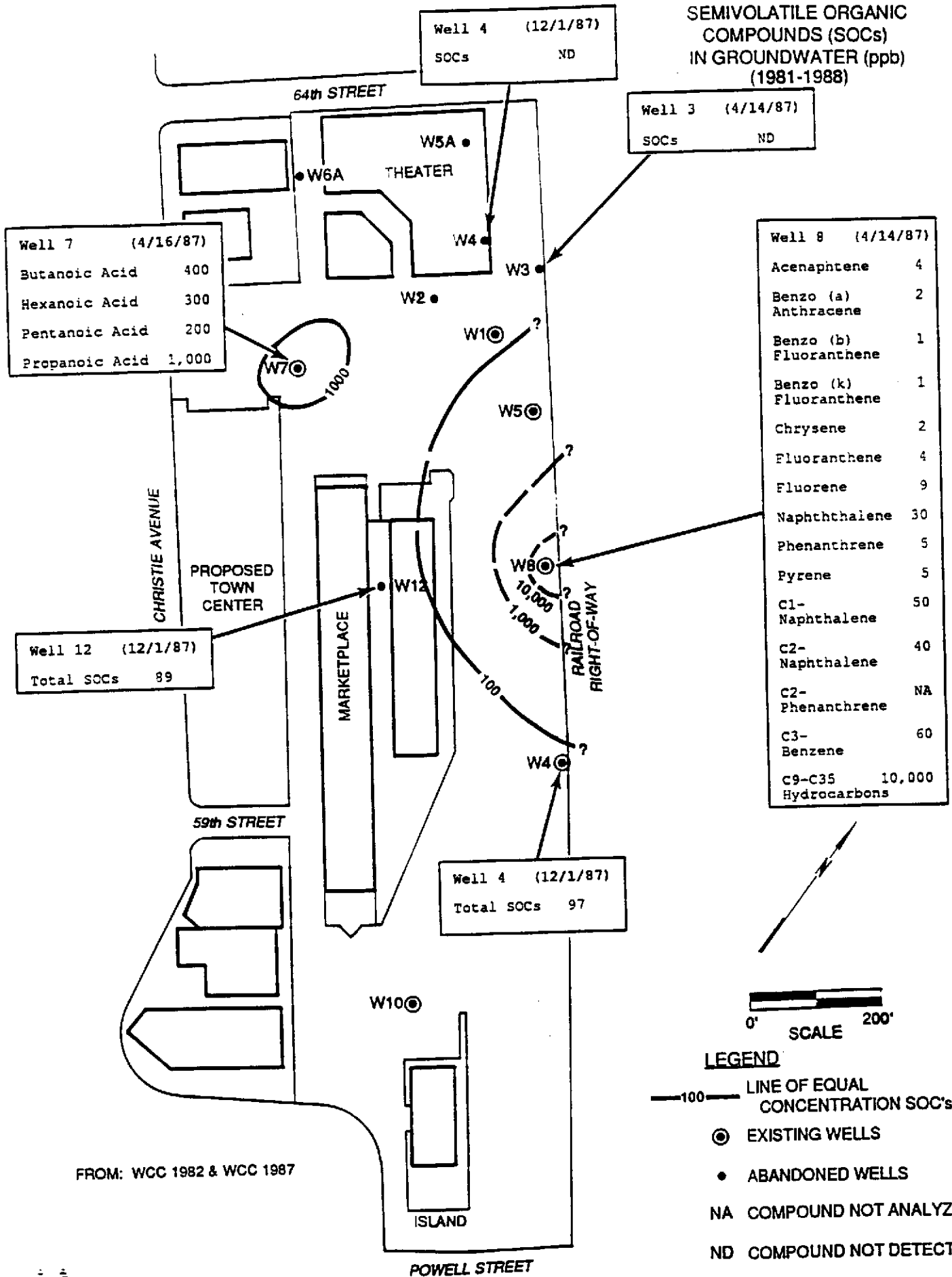


DATA FROM: McLAREN, 1989a
AND WCC 1982 & 1987

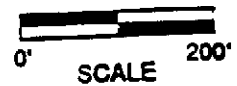
FIGURE 3-2
METAL CONCENTRATIONS
IN GROUNDWATER
(1989)



**FIGURE 3-3
SEMIVOLATILE ORGANIC
COMPOUNDS (SOCs)
IN GROUNDWATER (ppb)
(1981-1988)**



FROM: WCC 1982 & WCC 1987



LEGEND

- 100— LINE OF EQUAL CONCENTRATION SOC's (ppb)
- ⊙ EXISTING WELLS
- ABANDONED WELLS
- NA COMPOUND NOT ANALYZED
- ND COMPOUND NOT DETECTED

SOCs SEMIVOLATILE ORGANIC COMPOUNDS



FIGURE 3-4
SEMIVOLATILE ORGANIC
COMPOUNDS (SOCs)
IN GROUNDWATER (ppb)
(1989)

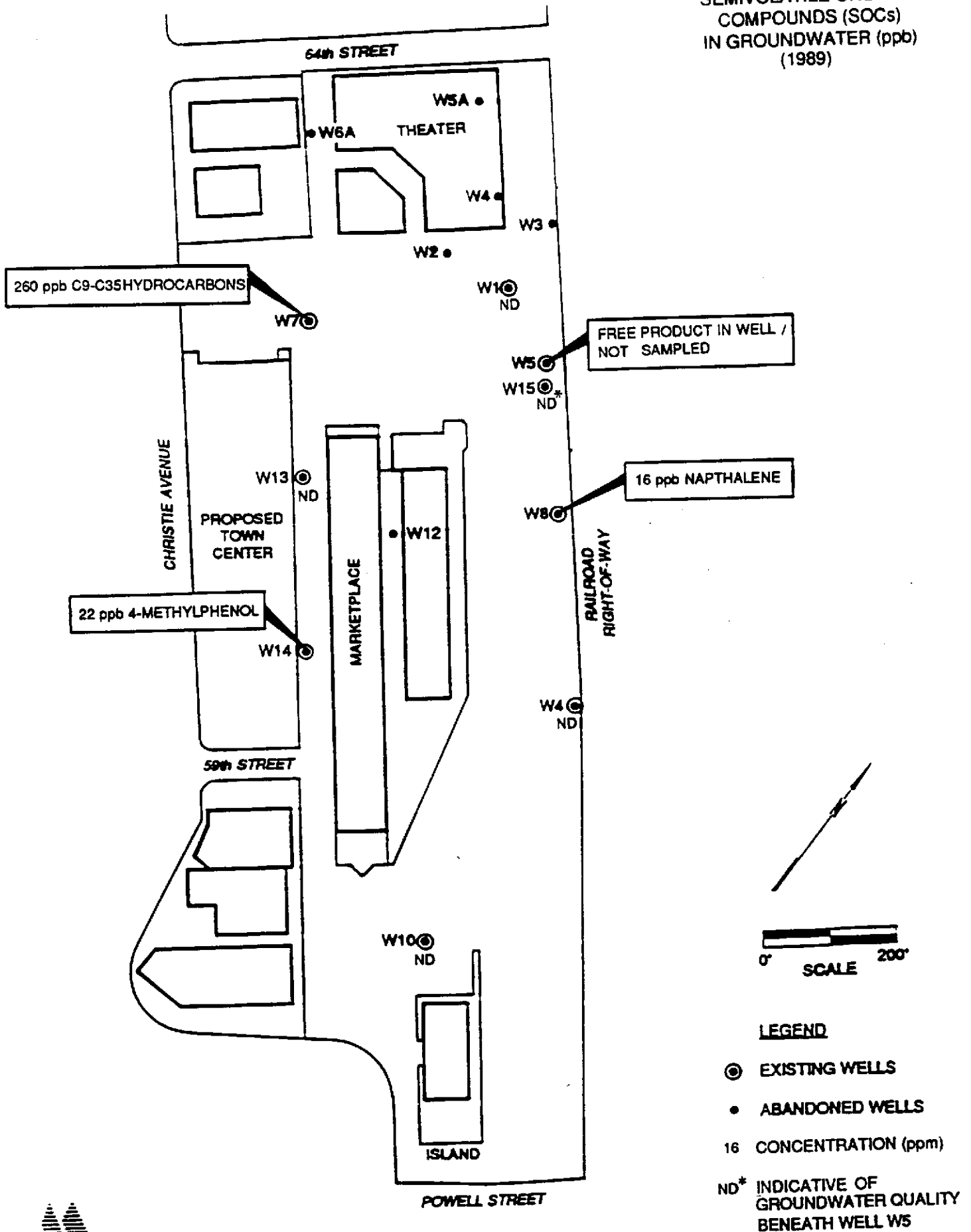
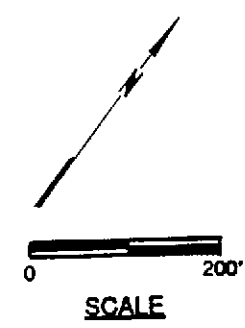
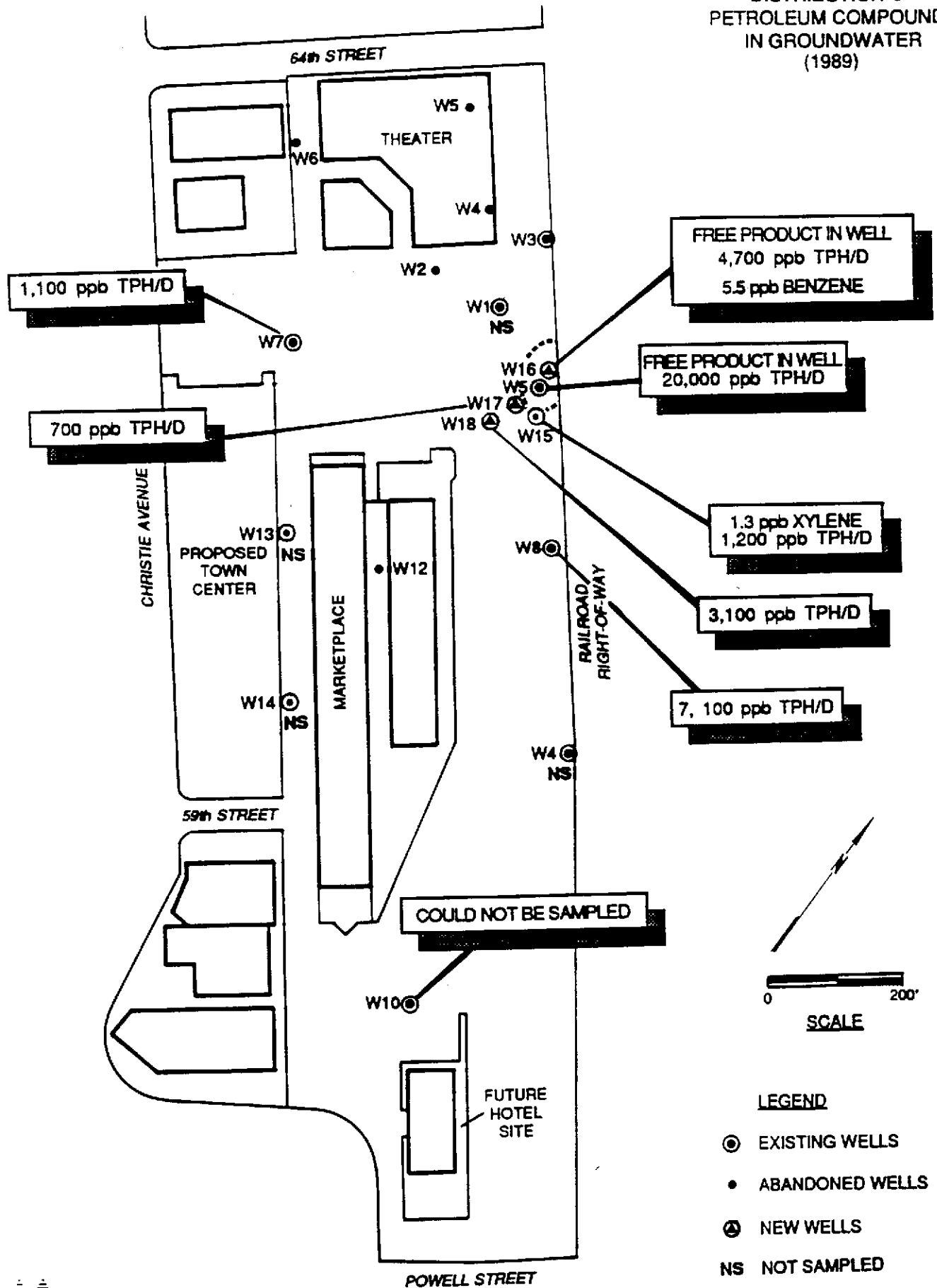


FIGURE 3-5
DISTRIBUTION OF
PETROLEUM COMPOUNDS
IN GROUNDWATER
(1989)

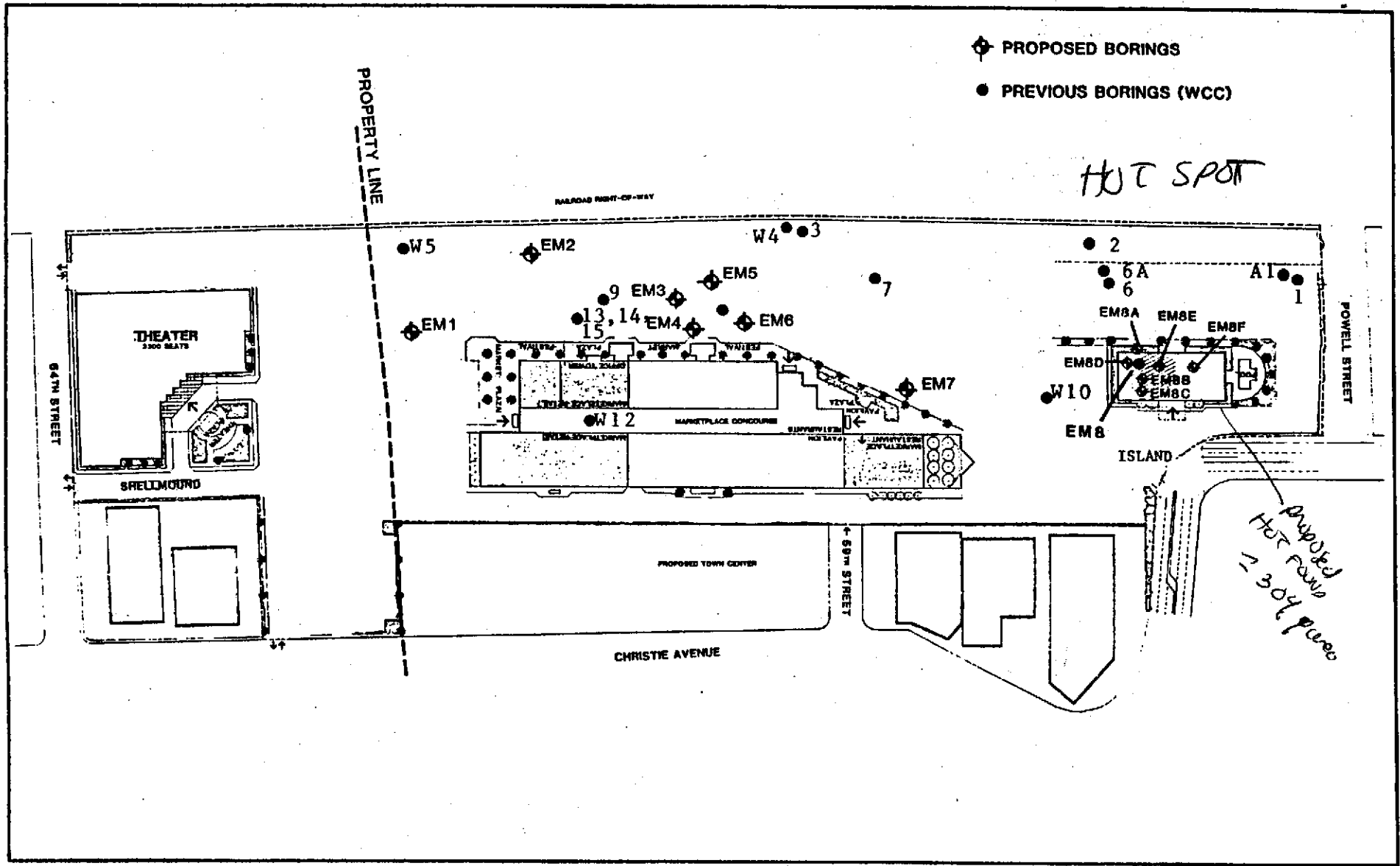


- LEGEND**
- ⊙ EXISTING WELLS
 - ABANDONED WELLS
 - ⊕ NEW WELLS
 - NS NOT SAMPLED
 - EXTENT OF FREE PRODUCT
- FROM: McLAREN, 1989c

- 20
RJR

RECOMMENDATIONS - MARKETPLACE SITE

- Leave soil with metals greater than TTLC in place.
- Leave asphaltic material in place.
- Bail free product from Wells W-5 and W-16.
- Monitor Wells W-1, W-4, W-7, W-10, W-13, W-14, W-16, and W-18 for TPH/D on quarterly basis.
- Monitor Wells W-15, W-16, and W-18 for BTEX on quarterly basis.
- Monitor Wells W-1, W-7, W-8, W-13, W-14, and W-16 for AS and PB on semi-annual basis.
- Monitor Wells W-13, W-14, W-16, and W-18 for total oil and grease on semi-annual basis.
- Monitor water levels on quarterly basis.
- Submit quarterly reports to ACHD and RWQCB.



SCALE
 1" = 160'

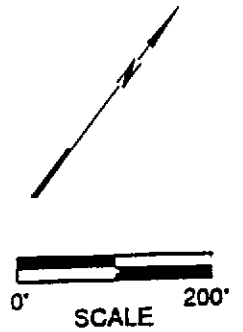
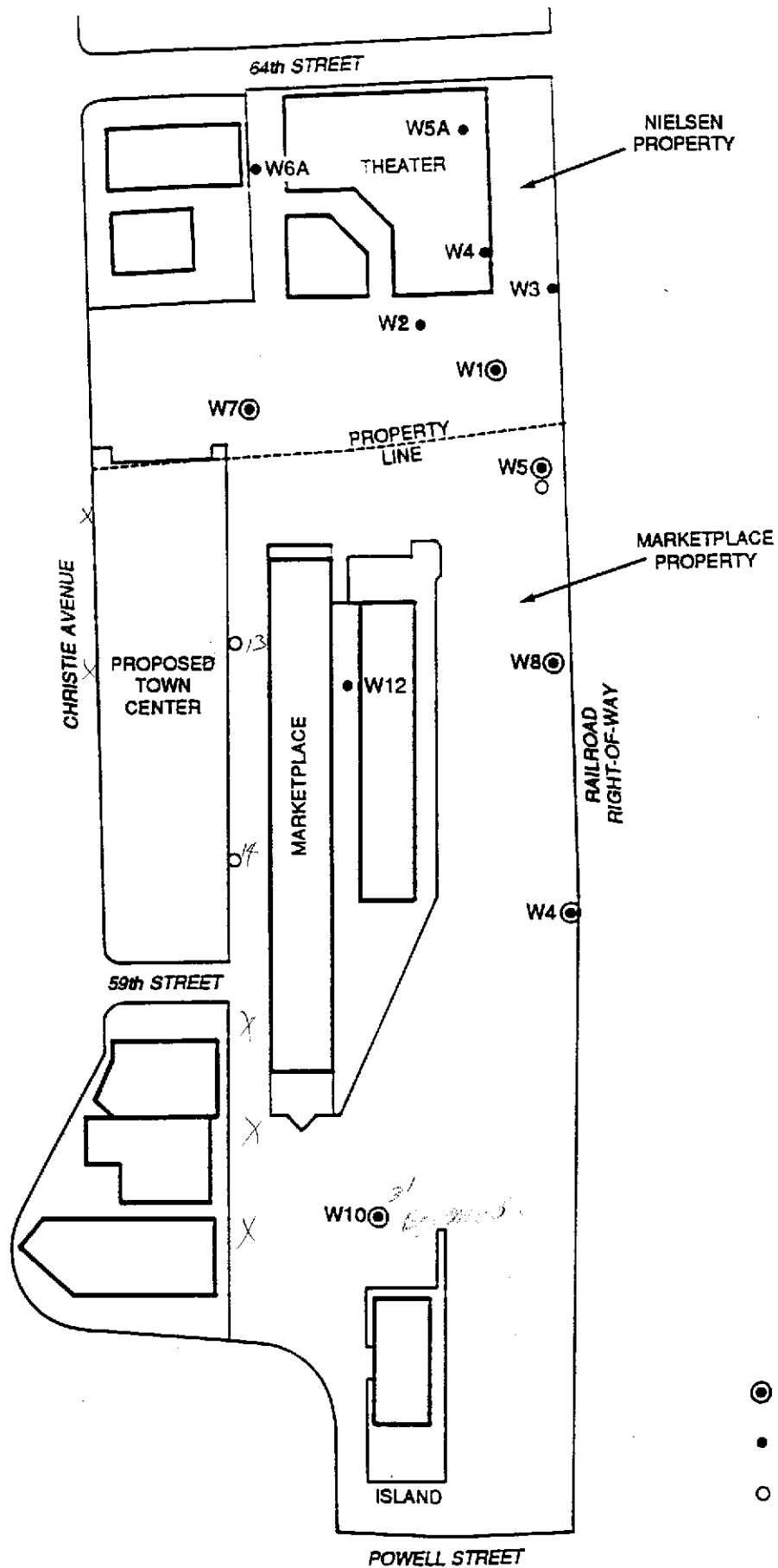
FIGURE 1. MARKETPLACE PROJECT SITE DETAILING BORING LOCATIONS

MARKET PLACE - NIELSEN PROPERTIES
FEBRUARY 15, 1990
SITE MITIGATION AMENDMENTS

| SITE | DESCRIPTION | APPROVE / DISAPPROVE - WHY | | DATE OF COMPLETION |
|------|---|-------------------------------------|--------------------------|--|
| 1 | Add Monitoring Wells @ SW Boundary as per Amended Plan - 8-9-89/Fig 10 | <input type="checkbox"/> | <input type="checkbox"/> | <i>Site Characterization down gradient from N-7 determine ground water flow between W14 + south boundary</i> |
| 2 | Removal and treatment of contaminants from ground water | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3 | Quarterly water analysis of monitoring well. Total oil and grease, PNA, lead, zinc, copper, <i>Ms.</i> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 4 | Monitoring schedules will be evaluated after 2 years or after two non-detectable quarterly samples are reported. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5 | Leave asphalt materials in site provided they receive an appropriate waste discharge permit issued by RWQCB. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <i>County can accept with feed restriction</i> |
| 6 | The Risk Assessment provided by the Developer should be submitted to the SDOHS Risk Assessment Unit for final approval. | <input type="checkbox"/> | <input type="checkbox"/> | |

This agreement is reached amongst the undersigned participants representing the State Department of Health Services, Regional Water Quality Control Board, Count of Alameda Environmental Health, the Martin Group Developers, and the McLaren Group Consultants).

FIGURE 10
PROPOSED
MONITOR
WELLS



LEGEND

- ⊙ EXISTING WELLS
- ABANDONED WELLS
- PROPOSED WELLS



Feb. 14, 1990

| Metal | drinking water standards | ttlc | stlc |
|----------|--------------------------|------|------|
| Arsenic | 0.5 | 500 | 5 |
| Chromium | .05 | 500 | 5 |
| Copper | 1.0 | 2500 | 25 |
| Lead | .05 | 1000 | 5 |
| Zinc | 5.0 | 5000 | 250 |
| Cadmium | .01 | 100 | 1 |

TABLE 6
 RESULTS FROM EARTH METRICS INCORPORATED SAMPLING OF (12/87) FROM
 MARKETPLACE AND NIELSEN PROPERTIES

| WELL OR LOG NUMBER | PARCEL NUMBER | SAMPLE DATE | ARSENIC (ppm) | BARIUM (ppm) | CADMIUM (ppm) | CHROMIUM (ppm) | COPPER (ppm) | LEAD (ppm) |
|-------------------------|------------------|----------------|------------------|-----------------|------------------|-------------------|-----------------|---------------|
| EM-1 | 2 | 1987 | <12.0* | 145.6* | 100* | 56.7* | 102.9* | 67.9* |
| EM-2 | BS | 1987 | ND | 133.6* | 3.5* | 32.2* | 24.2* | 30.4* |
| EM-3 | 2 | 1987 | <12.9 | 517.8* | 6.2* | 59.1* | 176.2* | 85.2* |
| EM-4 (one sample taken) | 2 | 1987 | 14.3 | 98.6 | 13.1 | 146.2 | 615.6 | 60 |
| EM-5 | BS | 1987 | ND | 264.3* | 5.3* | 56.7* | 29.4* | 5.8* |
| EM-6 | 2 | 1987 | <13.2* | 141.7* | 9.9* | 141.8* | 310.5* | 45.0* |
| EM-7 (one sample taken) | 2 | 1987 | ND | 45.3 | 1.3 | 29.6 | 7.7 | ND |
| EM-8 | 1 | 1987 | 19.2* | 377.2* | 24.8* | 133.3* | 46,819.0** | 2,129.9** |
| EM-8A | 1 | 1988 | <4.0 | 30.1 | 4.02 | 24.7 | 61.1 | 12.1 |
| EM-8B | 1 | 1988 | 20.6 | 203.8 | 26.8 | 105.7 | 4,025.7** | 2,347.7** |
| EM-8C | 1 | 1988 | 45.5 | 92.2 | 37.6 | 181.6 | 11,663.2** | 7,080.5** |
| EM-8D | 1 | 1988 | <3.9 | 71.6 | 1.8 | 33 | 44.9 | 29.1 |
| EM-8E | 1 | 1988 | 17.9 | 184.4 | 9.91 | 363.6 | 4,585.4** | 10,634.7** |
| EM-8F | 1 | 1988 | <4.0 | 120.9 | 3.43 | 45.1 | 4,585.4** | 210.9 |

PARCEL 1 = ANOTHER TREE CORPORATION (RICHARD PRITZKER)

PARCEL 2 = CHRISTIE AVENUE PARTNERS-JS

PARCEL 3 = CHRISTIE AVENUE PARTNERS-JS

PARCEL 4 = CHRISTIE AVENUE PARTNERS-JS

PARCEL BS = BAY STREET - PROPERTY OF CITY OF EMERYVILLE

* Maximum of all samples collected at each depth

** Exceeds the TTL

ND = Not Detected; NS = Not Sampled

TABLE 6
 RESULTS FROM EARTH METRICS INCORPORATED SAMPLING OF (12/87) FROM
 MARKETPLACE AND NIELSEN PROPERTIES
 CONTINUED

| WELL OR LOG NUMBER | PARCEL NUMBER | NICKEL (ppm) | SELENIUM (ppm) | ZINC (ppm) | CHLORINE (ppm) | BROMINE (ppm) | IODINE (ppm) | OIL AND GREASE (ppm) |
|-------------------------|---------------|--------------|----------------|------------|----------------|---------------|--------------|----------------------|
| | | | | | <0.5 | <0.1 | 0.13 | 8,100* |
| EM-1 | 2 | 41.1 | ND | 142.3 | <0.5 | <0.1 | <0.05 | 5831 |
| EM-2 | BS | 31.4* | ND | 66.0* | <0.5 | <0.1 | 0.07 | NS |
| EM-3 | 2 | 80.2* | ND | 137.8* | <0.5 | <0.27 | 0.05 | 1233 |
| EM-4 (one sample taken) | 2 | 167.3 | ND | 79.1 | <0.5 | ND | <0.05 | NS |
| EM-5 | BS | 110.8* | ND | 64.8* | <0.5 | ND | <0.05 | NS |
| EM-6 | 2 | 99.8* | ND | 124.5* | <0.5 | ND | ND | NS |
| EM-7 (one sample taken) | 2 | 24.1 | ND | 22.4 | <0.5 | ND | NS | 95* |
| EM-8 | 1 | 61.7* | ND | 24,317.3** | NS | NS | NS | NS |
| EM-8A | 1 | 7.7 | <4.0 | 77.3 | NS | NS | NS | NS |
| EM-8B | 1 | 37.9 | <48.7 | 8,663.4** | NS | NS | NS | NS |
| EM-8C | 1 | 82.7 | <39.6 | 13,337.4** | NS | NS | NS | NS |
| EM-8D | 1 | 20.3 | <3.9 | 61.7 | NS | NS | NS | NS |
| EM-8E | 1 | <12.3 | <12.5 | 3787.3 | NS | NS | NS | NS |
| EM-8F | 1 | 18.6 | <4.0 | 226.1 | NS | NS | NS | NS |

PARCEL 1 = ANOTHER TREE CORPORATION (RICHARD PRITZKER)

PARCEL 2 = CHRISTIE AVENUE PARTNERS-JS

PARCEL 3 = CHRISTIE AVENUE PARTNERS-JS

PARCEL 4 = CHRISTIE AVENUE PARTNERS-JS

PARCEL BS = BAY STREET - PROPERTY OF CITY OF EMERYVILLE

* Maximum of all samples collected at each depth

** Exceeds the TTLC

ND = Not Detected; NS = Not Sampled

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TABLE 7
RESULTS FROM EARTH METRICS INCORPORATED SAMPLING OF(12/87) FROM
MARKETPLACE AND NIELSEN PROPERTIES

| WELL OR LOG NUMBER | PARCEL NUMBER | SAMPLE DATE | NAPH- THALENE (ppm) | ACENAPH- THYLENE (ppm) | ACENAPH- THENE (ppm) | FLUORENE (ppm) | PHENANTH- RENE (ppm) |
|-----------------------|------------------|----------------|---------------------------|------------------------------|----------------------------|-------------------|----------------------------|
| EM-1 | 2 | 1988 | <6.2 | <12.5 | 17.8 | <1.2 | 7.8 |
| EM-8C | 1 | 1988 | <6.2 | <12.5 | <6.2 | <1.2 | 4.3 |

PARCEL 1 = ANOTHER TREE CORPORATION (RICHARD PRITZKER)

PARCEL 2 = CHRISTIE AVENUE PARTNERS - JS

TABLE 7
 RESULTS FROM EARTH METRICS INCORPORATED SAMPLING OF(12/87) FROM
 MARKETPLACE AND NIELSEN PROPERTIES
 CONTINUED

Handwritten initials: PWS

| WELL OR LOG NUMBER | PARCEL NUMBER | ANTHRA-CENE (ppm) | FLUORAN-THENE (ppm) | PYRENE (ppm) | BENZO(A) ANTHRACENE (ppm) | CHRYSENE (ppm) | BENZO(B) FLUORANTHENE (ppm) |
|--------------------|---------------|-------------------|---------------------|--------------|---------------------------|----------------|-----------------------------|
| EM-1 | 2 | <0.2 | <1.2 | <0.6 | 4.8 | <0.6 | 5.5 |
| EM-8C | 1 | <0.2 | 30.2 | 16.7 | 2.6 | 0.8 | 3.7 |

PARCEL 1 = ANOTHER TREE CORPORATION (RICHARD PRITZKER)
 PARCEL 2 = CHRISTIE AVENUE PARTNERS - JS

TABLE 8
 SOIL RESULTS COLLECTED BY EARTH METRICS INCORPORATED FROM
 NIELSEN AND MARKETPLACE SITES

| BORING NUMBER | PARCEL NUMBER | SAMPLE DATE | TAKEN BY | OIL AND GREASE (ppm) | PETROLEUM HYDROCARBONS | | TAR THICKNESS (FEET) |
|------------------|------------------|----------------|-------------|----------------------------|--|---|----------------------------|
| | | | | | LOW BOILING POINT GASOLINE (ppm) | HIGHER BOILING POINT GASOLINE (ppm) | |
| E1 | 3 | 1987 | EMI | 243 | <0.14 | <211 | 1 |
| E2 | 3 | 1987 | EMI | 281 | <0.14 | <211 | 0.5 |
| E3 | 3 | 1987 | EMI | 7021* | NS | 1736 | 5 |
| E4 | 3 | 1987 | EMI | 1016 | NS | 626* | 5 |
| E5 | 3 | 1987 | EMI | <6 | NS | NS | 1.5 |
| E6 | 3 | 1987 | EMI | NS | 0.79 | NS | 1 |
| E7 | 3 | 1987 | EMI | NS | 1.8 | NS | 0.5 |
| E8 | 3 | 1987 | EMI | <6 | <0.14 | <210 | 0 |

NS = NO SAMPLE

ND = NOT DETECTED

PARCEL 3 = CHRISTIE AVENUE PARTNERS - JS