

December 18, 2005

TO: KEVIN GRAVES

Alameda County

JAN 10 2006

Environmental Health

FROM: DENNIS PARFITT, CEG 1223

RE: HOOSHI'S AUTO SERVICE, 1499 MAC ARTHUR BLVD., OAKLAND, CA

Presented below is my analysis of the data contained in the record provided by Alameda County Environmental Health (ACEH). Attached are four photos of the site that provide some perspective. I conclude that:

- 1.) Water quality data for groundwater samples from site wells are positively skewed due to the presence of shallow confined groundwater and well screens that extend into source zone, fine-grained soil.
- 2.) Mobile LNAPL has been removed to the extent practicable.
- 3.) Site conditions do not represent a substantial threat to public health and safety.

BACKGROUND

The site is located at the southwest corner of the intersection of 14th Avenue and Mac Arthur Blvd. ...the Highway 580 right-of-way abuts the site to the south. The property is bounded on three sides (west, south, and east) by a cinder block retaining wall that attains a height of about 8.2 feet along 14th Ave.

Three USTs (2 -1k and 1 - 0.5k) were installed circa 1940 and removed in October 1990. Some over excavation was performed when the USTs were removed but it was apparently not well documented. In January 1993, monitor wells MW-1, -2, and -3 were drilled to a depth of 20 feet bgs and completed with screened intervals from 10 to 20 feet bgs. Groundwater was encountered at about 13 feet bgs.

In June 1996, monitor wells MW-4, -5, and -6 were drilled to 20 feet bgs and completed with screened intervals from about 5 feet to 20 feet bgs. Groundwater was encountered at about 14 feet bgs in well borings MW-4 and -5. Soil samples were also collected from 8 geoprobe borings that were advanced to 7 to 14.5 feet bgs.

In September 2000, SVE was initiated using wells MW-1, -2, and -5. In response to the applied vacuum, water levels rose 4 to 5 feet (to about 8 feet bgs) in all site wells except well MW-4. The induced rise in the site water level rendered well MW-5 as the only viable SVE well. SVE continued for about 8 months and recovered an estimated 16.5 pounds of gasoline.

Petitioner contends that the site meets the 5 Regional Board criteria for a "low-risk" site. The County thinks otherwise. The criteria are:

1. THE LEAK HAS STOPPED AND ONGOING SOURCES, INCLUDING SPH, HAVE BEEN REMOVED

ACHE contends that "...a compelling demonstration that SPH has been completely removed from the subsurface has not been made."

Data indicate that residual NAPL is present in dense clayey soils at about 8 to 12 feet bgs. Given the fine-grained nature of the soil containing the NAPL, complete removal is not technically feasible except via excavation. SPH has been removed to the extent practicable.

2. THE SITE HAS BEEN ADAQUATELY CHARACTERIZED

Geology: ACHE contends that "...there has been a lot of information collected, but the information has not been thoroughly interpreted or integrated into a coherent SCM." The County then proposes a SCM that has an aquitard beneath the site at 4 to 12 feet bgs, explains how the screened intervals of MW-4, -5, and -6 bridge the aquitard, and then speculates on the ineffectiveness of the monitoring system and how some of the wells may be contributing to cross-contamination.

Petitioner has characterized the stratigraphy at the site as fill (0 to 6 feet bgs¹) underlain by 4 to 8 feet of clay (ACHE's aquitard) which is in turn underlain by clayey sand to the depth explored (20 feet). Soil sample analytical data indicate that the majority of residual mass of gasoline remaining in site soil is contained in the clayey stratum beneath the fill material.

Hydrogeology: ACHE contends that the "groundwater flow field" is not well characterized. This relates to the variable groundwater flow directions apparent in the data set and causes ACHE to speculate on the presence of vertical flow, the efficacy of the remediation system to remove NAPL, and the adequacy of array of wells to delineate the plume.

Petitioner contends that groundwater at the site flows southwesterly toward the SF Bay. This presumption appears valid given the westerly slope aspect of the area despite the data that show some times northerly and often mounding around MW-2 near the center of the site.

The water level in well MW-4 is shown to fluctuate up to 6 feet seasonally making its location up-gradient in the winter and down-gradient in the fall. Rainfall runoff from the adjacent property is directed and then discharged to a point less than 10 feet from the location of MW-4. This concentration of runoff enhances groundwater

¹ It may be inferred, based on the height of the retaining wall, that the fill reaches a thickness of about 8 feet at the southeast corner of the site.

recharge at that point and results in the apparent northerly flow direction. It can also be inferred that recharge is concentrated in the area of the former USTs (i.e., mounding around MW-2). This is a low area between the sidewalk along Mac Arthur Blvd and the office and auto repair garage.

3. THE DISSOLVED HYDROCARBON PLUME IS NOT MIGRATING

ACHE contends that site characterization and monitoring to date has been inadequate and cannot be relied upon to demonstrate plume stability. Petitioner contends that the plume is stable based on the WQ results from wells MW-4 and -6 (both ND for TPHg and BTEX).

As long a well MW-2 is screened into the source zone soil and the water level remains shallower than about 11 to 12 feet bgs, this well will continue to produce samples with very high concentrations of gasoline constituents that shouldn't be used to assess plume stability. Given the water level data, ALL of the remaining 5 site wells are usually down-gradient of MW-2 and provide ample WQ data to assess the plume dynamics. Well MW-4 has had sporadic detections of low concentrations of TPHg and BTEX (benzene = 2.1 ppb as recently as 10/02) since its installation in 1996. Ditto MW-6 (benzene = 1.0 ppb in 5/99). Well MW-3 produced groundwater samples with elevated TPHg concentrations (>500 ppb) and low BTEX concentrations (<10 ppb) through August 2000 and ND for all since April 2001. Well MW-1 also produced groundwater samples with elevated TPHg concentrations (>1,000 ppb) and moderate BTEX concentrations (typically 100 ppb) through May 2000; the most recent sample had a reported 140 ppb TPHg and total BTEX less than 2 ppb. Constituent concentrations in samples from well MW-5, while somewhat erratic, clearly show a declining trend since October 2001. The WQ data taken in total indicate a limited source area and a stable plume.

4. NO WATER WELLS, DEEPER DRINKING WATER AQUIFERS, SURFACE WATER, OR OTHER SENSITIVE RECEPTORS ARE LIKELY TO BE IMPACTED

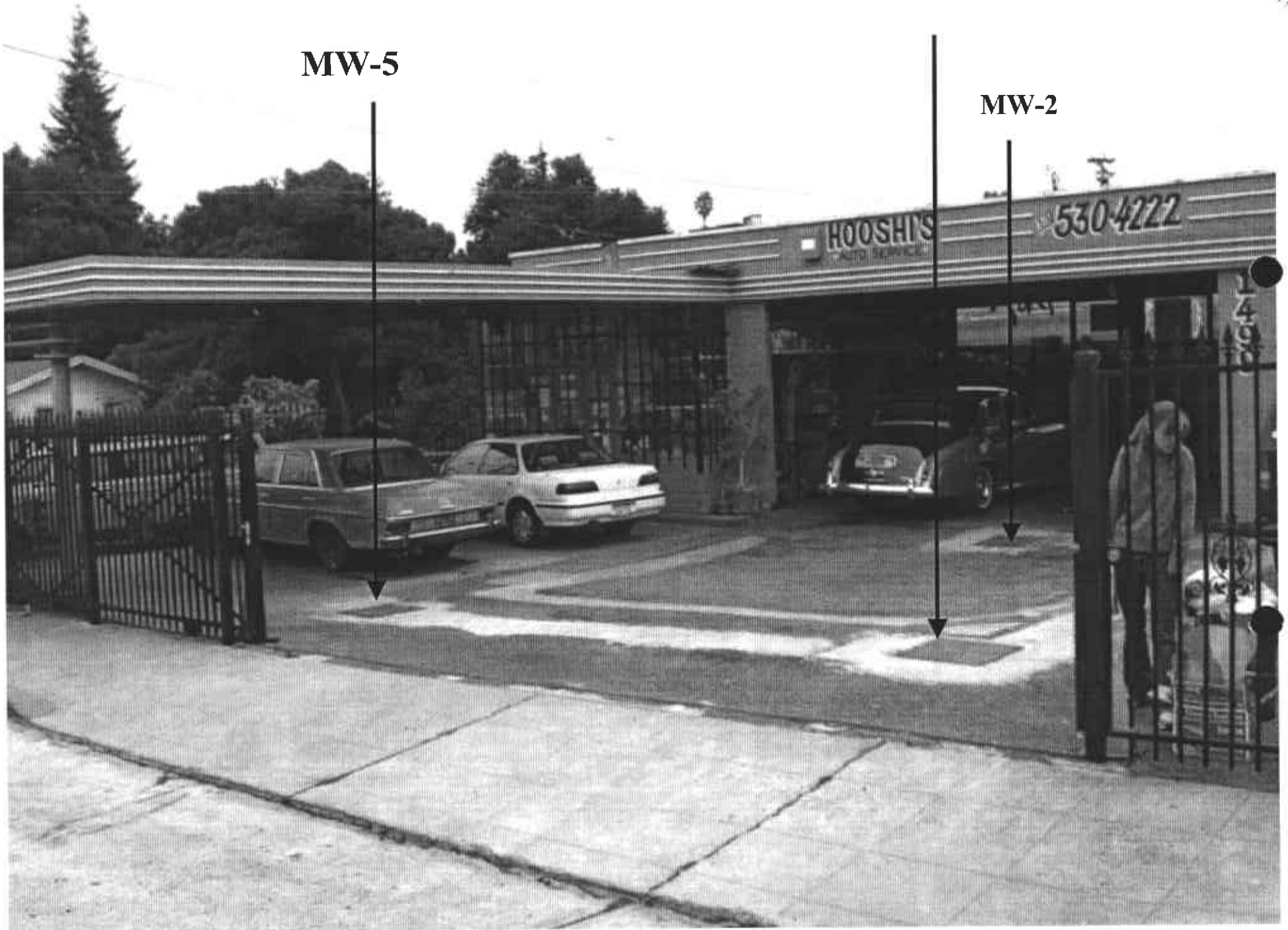
ACHE contends that petitioner did not evaluate possible preferential pathways such as sewers and storm drains in that groundwater has been as shallow as 5 feet bgs (12/29/04). Petitioner has not evaluated these potential pathways. However, the shallow depth to groundwater represents the potentiometric surface of groundwater beneath the aquitard at about 12 feet bgs and not unconfined, water table conditions.

5. THE SITE PRESENTS NO SIGNIFICANT RISK TO HUMAN HEALTHY OR THE ENVIRONMENT

ACHE contends that petitioner did not evaluate the potential for vapor migration health risk and cites 1,200 ppb benzene in groundwater at 5 feet bgs from well MW-2. Petitioner did not directly evaluate the potential for vapor exposure.

MW-5

MW-2

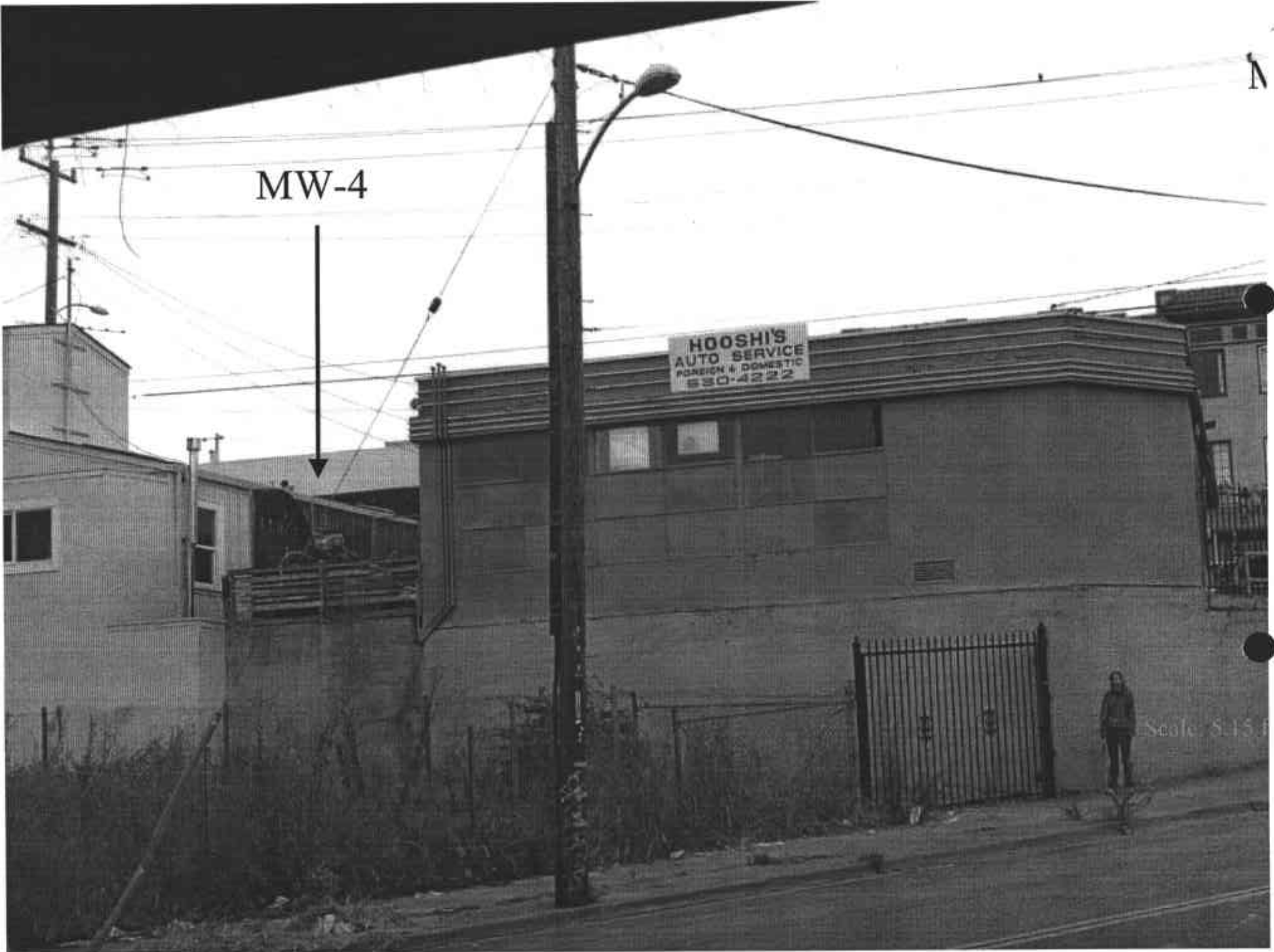


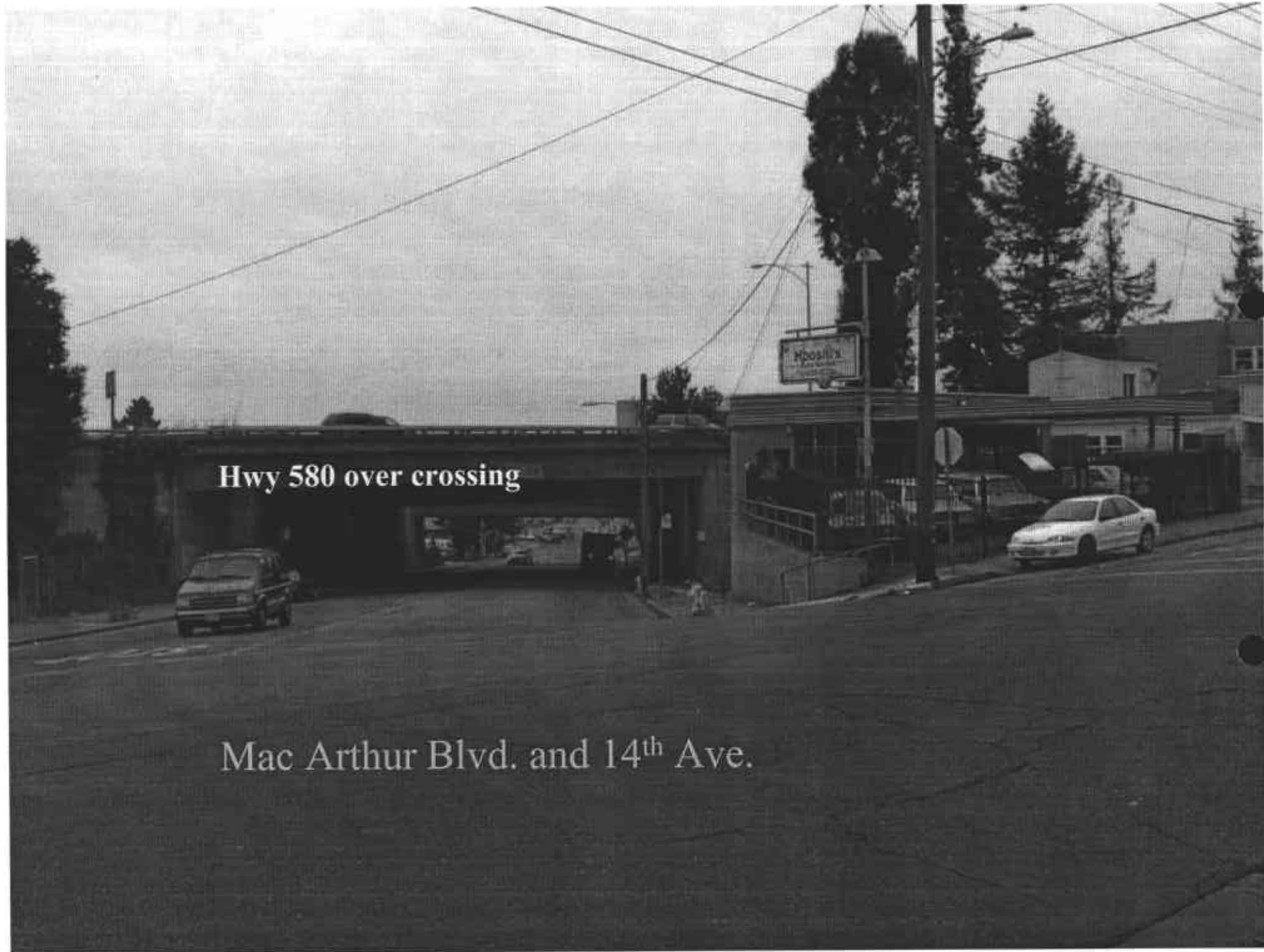
MW-4



HOOSHI'S
AUTO SERVICE
PASSENGER & DOMESTIC
530-4222

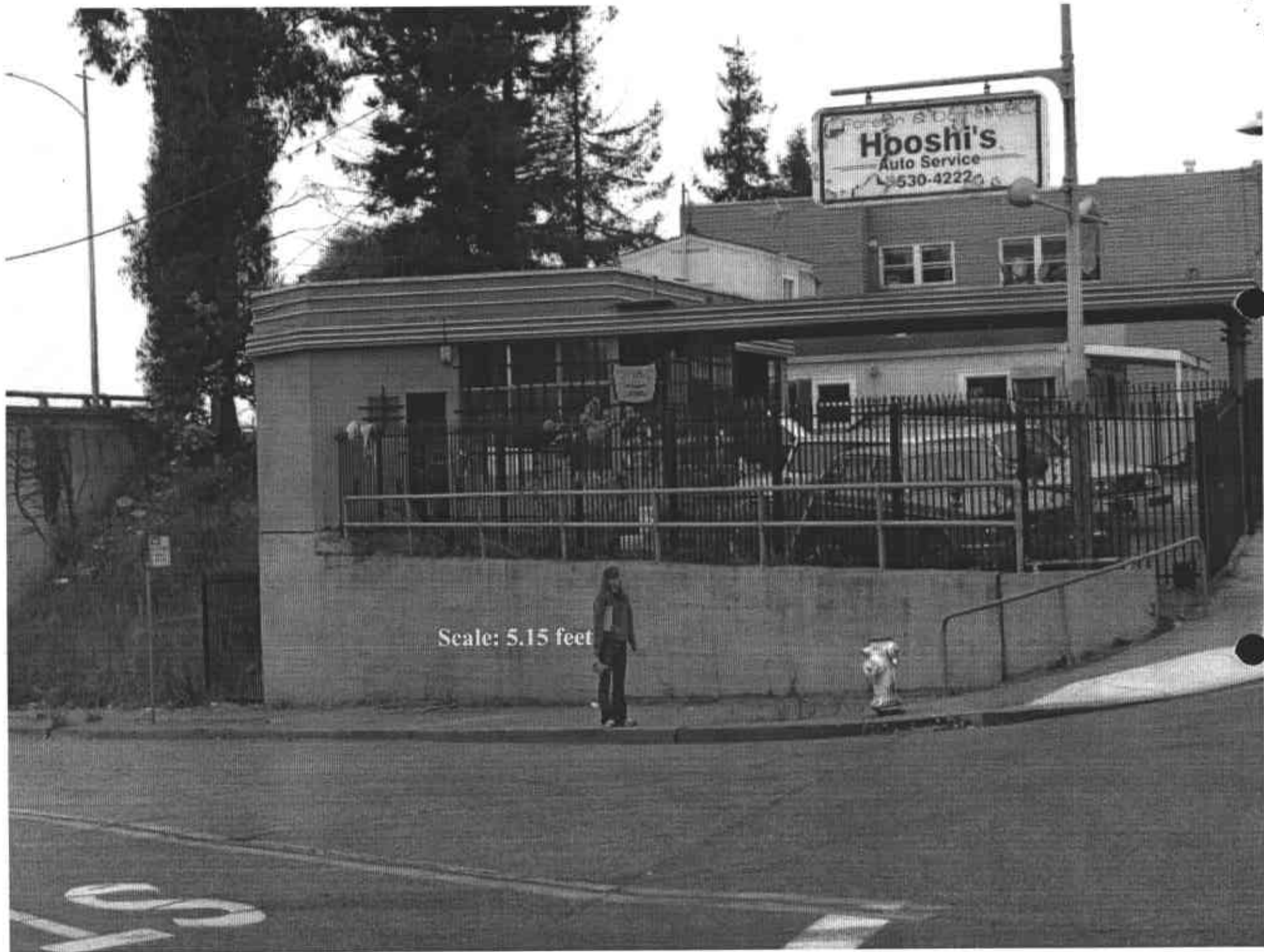
Scale 5:15





Hwy 580 over crossing

Mac Arthur Blvd. and 14th Ave.



Hooshi's
Auto Service
530-4222

Scale: 5.15 feet

STOP