March 3, 1999

Mr. Hugh Murphy
Hazardous Materials Program Coordination
City of Hayward
777 "B" Street
Hayward, CA 94541-5007

Re: Site Mitigation Work Plan
Orchard Avenue Site, Hayward, California
Project No.: M174-EC

Dear Mr. Murphy:

Harza Engineering Company (Harza) is pleased to submit the Site Mitigation Work Plan for the Orchard Avenue Site on behalf of Greystone Homes. Previous investigations performed by Harza identified very low levels of pesticide contamination in the central portion of the site, and in our experience normal construction activities will be sufficient to mitigate these soils. In addition, elevated levels of chromium were identified in a concrete sample collected from one of the buildings at 112 Berry Avenue. The contaminated concrete will be excavated and properly disposed. Due to the low levels of contamination at the site, we do not anticipate that it will be necessary to contact the Alameda County Health Care Services Agency. If you have any questions or require additional information please contact us.

Sincerely,

Harza Engineering Company

Christophe RP Collet
Staff Geologist

Mark C. Litzau
Manager, Environmental Services

CC\MCL:ll
Copies: Addressee (1)
Tom Simonson (Greystone Homes - 1)

Site Mitigation Work Plan
Proposed Development, Orchard Avenue Site
Hayward California
Harza's Project No. M174-EC

March 3, 1999

Prepared For:
Greystone Homes
920 Hillview Court, Suite 280
Milpitas, California 95035

Prepared By:
Harza Engineering Company
425 Roland Way
Oakland California 94621

Christophe RP Collet
Staff Geologist

Mark C. Litzau
Manager, Environmental Services

TABLE OF CONTENTS

Site Mitigation Work Plan
Proposed Development, Orchard Avenue Site
Hayward, California

1.0 INTRODUCTION

This report presents the proposed site mitigation work plan for management of shallow site soils at the Orchard Avenue site. The site is located between Orchard Avenue and Berry Avenue, in Hayward, California, as shown on the Site Vicinity Map (Figure 1) and the Site Plan (Figure 2). The purpose of this work plan is to present and document methodology to manage shallow soils at the site which are potentially impacted by chromium. Additionally, this work plan documents methods to manage pesticide impacted soil in the central portion of the site. It is our understanding that the future development plans for the site entail constructing 76 single-family homes with associated public streets and utilities.

1.1 Site Description

The site is comprised of 5 parcels totaling approximately 11.6 acres located at the western end of Orchard Avenue and Berry Avenue in Hayward, California. The site is bounded on the north and east by residential development, to the southeast by the PG&E transmission line right-of-way, and to the southwest by Southern Pacific Railroad tracks.

Based on review of the United States Geological Survey 15 minute topographic map of Hayward Quadrangle (1959), the elevation at the subject site slopes gently from approximately 67 feet above Mean Sea Level (MSL) in the northwest corner to approximately 60 feet MSL in the southeast corner. Ward Creek, an intermittent stream, occupies a drainage channel adjacent to the northeast side of the subject site. The subject site is located in the relatively flat lowlands of the southeastern part of the San Francisco Bay Region. The alluvial deposits underlying the site area originated from creeks that drained the highlands to the east and flowed into the area of the present San Francisco Bay. These deposits consist of clay and sand with minor lenses of gravel. The site lies approximately 4,000 feet southwest of the Hayward Fault.

Based on previous subsurface investigations performed by Harza at the subject site, the area is primarily underlain by stiff clay to a depth ranging from 3- to 5-feet below ground surface (bgs), followed by a fine- to medium-grained sand to a depth of approximately 8-feet bgs. Underlying this sand is a silty clay with intermittent layers of gravel and fine-grained sand to a depth of 40-feet bgs, the maximum depth explored.

Based on regional information, results of ground water monitoring at nearby sites, and our recent investigations, depth to ground water at the site is 30- to 40-feet bgs.

1.2 Background

The Orchard Avenue site is comprised of five parcels. Harza conducted previous environmental investigations for the parcels at 103 Orchard Avenue, 112, 136, and 148 Berry Avenue. The results of these investigations are presented in our reports titled *Phase I Preliminary Site Assessment* (PSA) dated July 1, 1998 and our letter report titled *Additional Environmental Investigation, Shallow Soil Testing*, dated July 16, 1998. In addition, Harza conducted a PSA and shallow soil quality investigation at 147 Berry Avenue, and results are presented in Harza's report *Phase I Preliminary Site Assessment and Shallow Soil Testing*, dated September 2, 1998. The following sections present a brief summary of the background for each parcel.

1.2.1 103 Orchard Avenue

The property located at 103 Orchard Avenue has been occupied by various industrial manufacturers since about 1954. Prior to the use of the site for industrial purposes, the site was occupied by an orchard. A large building occupies the northern half of the property. The southern half of the property has remained undeveloped since the existence of the old orchard except for a small building used for storage from approximately 1968 to 1983. A rail spur is located on the southern portion of the property.

During our shallow soil quality investigation, soil samples were collected at a depth of approximately 12-inches below ground surface bgs from four locations (C-1, C-2, C-3, C-4) in the central area of the site and two samples were collected from the rail spur at location RS-2, as shown on Figure 2.

Laboratory results reported acetone and methylene-chloride at concentrations below the residential Preliminary Remediation Goals (PRG) in soil samples C-3 and C-4. Arsenic and lead were reported at or below residential PRG in all soil samples. Pesticides were not detected in soil samples from the central portion of the site except for sample C-1, which was reported to contain dieldrin at levels of 0.03 parts per million (ppm), slightly above the residential PRG of 0.028 ppm. The soil sample collected from the rail spur was reported not to contain TPH as diesel or motor above laboratory method reporting limits (MRL). A table summarizing the results of laboratory analysis is presented on Table 1.

1.2.2 112 Berry Avenue

Prior to the 1960s, this property was occupied by an orchard. During the 1960s the property was developed as an industrial site. Historical fire insurance maps identify an etching room the northern most building on the property. A drainage trough present in the former etching room leads to a sump located in the front of the building. A rail spur is present entering this parcel from the south.

During Harza's shallow soil quality investigation a sample was collected from the drainage trough of the etching room (sample DRAIN-1) and one sample RS-1 was collected from the rail spur. Laboratory analytical results from a sample DRAIN-1 revealed elevated chromium levels in the concrete of the drainage trough. Soil sample RSD-1 was reported not to contain TPH as diesel or motor above laboratory MRL. A table summarizing the results of laboratory analysis is presented on Table 1.

1.2.3 136 Berry Avenue

This parcel has been the site of residential buildings since at least 1947. Hayward Building Department files indicated that the original residence was remodeled in 1955 and 1970. Results of our PSA for this property indicated that no soil testing was necessary

1.2.4 147 Berry Avenue

This parcel has been the site of retail nursery facilities since about 1954. Prior to this, the site was used as farmland. Two small underground storage tanks were removed from the property in April of 1992, and the site was granted site closure from the Hayward Fire Department on September 16, 1992. Our *Phase I Preliminary Site Assessment and Shallow Soil Testing*, dated September 2, 1998 revealed pesticides in shallow site soils below residential PRGs. A table summarizing the results of laboratory analysis is presented on Table 2.

1.2.5 148 Berry Avenue

This parcel has been the site of residential buildings since at least 1944. Results of our PSA for this property indicated that no soil testing was necessary

2.0 REMEDIAL OBJECTIVES AND FUTURE SITE USE

Planned future site use is residential development, consisting of 76 single-family homes and associated utilities and streets. The remedial objectives are described below.

Previous environmental investigations conducted by Harza identified chromium and dieldrin as contaminants of concern in the area of the former etching room and in the old orchard area in the central portion of the site. The primary potential contaminant exposure routes are ingestion and inhalation of soil containing chromium or dieldrin. The remedial objective for the site is designed to minimize contact with soil containing dieldrin greater than 0.028 ppm and chromium greater than 210 ppm. The concentration criteria for these chemicals were set at the Preliminary Remediation Goal (PRG) for unrestricted residential use established by the U.S. Environmental Protection Agency (*PRGs*, U.S. Environmental Protection Agency, Region IX, August 1, 1996).

3.0 SITE MITIGATION PLAN

A site specific mitigation plan has been prepared for the Orchard Avenue site to address the contaminants identified in shallow soils in the old orchard area in the central portion of the site and in the vicinity of the former etching room. Prior to implementation of this site mitigation plan, it will be necessary to have concurrence with the appropriate regulatory agency. This could be either the Hayward Fire Department - Hazardous Materials Division, Alameda County Health Care Services Agency - Environmental Health Division (ACHCSA), or the California Department of Toxic Substances Control (DTSC). It is our understanding that the Hayward Fire Department and the ACHCSA would have authority unless they elect to defer to the DTSC.

The site mitigation plan proposed for the Orchard Avenue site has been divided into two sections described below. The first section addresses mitigation of dieldrin impacted soil in the central portion of the site. The second section addresses the mitigation of elevated chromium levels in the vicinity of the etching room.

3.1 Old Orchard Area

Results of our investigation dated July 16, 1998 have indicated the presence of very low levels of dieldrin in sample C-1, collected from a depth of 1-foot bgs. Arsenic and lead were reported at or below residential PRG in all soil samples. Samples C-3 and C-4, collected from a depth of 1-foot bgs, were reported to contain VOCs at levels below residential PRG.

No site mitigation will be necessary to address metals and VOCs in site soils due to the fact that levels of contamination are below residential PRG. The presence of dieldrin in sample C-1 will be mitigated during grading of soil during construction.

3.2 Former Etching Room

Results of our investigations indicated the presence of elevated levels of chromium in concrete from the drainage trough of the former etching room. At the time of our site-reconnaissance, we did not observe any evidence of cracking in the concrete of the trough or sump. Due to the lack of other metals and VOCs in the concrete, it is our opinion that any chromium contamination present is localized to the immediate area of the trough. The following sections describe the site mitigation tasks to be employed for this area.

3.2.1 Excavation and Disposal

For this task the concrete floor of the former etching room, drainage trough, and sump area will be removed and will be properly disposed. At the time of the removal of the concrete, Harza will be present to observe the quality of soil surrounding the former etching room. If evidence of soil contamination is observed, soil samples will be collected to determine the extent of contamination and the proper method of disposal.

3.2.2 Confirmation Sampling

After removal and disposal of the contaminated concrete, confirmation samples will be collected from area of the drainage trough and sump. Two, three-point composite samples will be collected to verify that chromium contamination above residential PRGs is not present in the shallow soil. Soil samples will be analyzed for select metals using EPA Method Series 6000/7000.

3.2.3 Reporting

Following completion of the previously described tasks, a final report will be prepared documenting the results of site mitigation. This report will be distributed to the appropriate regulatory agencies.

4.0 SCHEDULE

Site development will begin after mitigation of identified contaminants. It is anticipated that site development will last approximately one year. In the interim, the site is fenced and locked to preclude encroachment on the property. The site does not appear to represent a short-term threat to human health or the environment.

5.0 LIMITATIONS

The services described in this report were performed consistent with generally accepted professional principles and practices and with our agreement with our client. This report is for the use and information of our client unless otherwise noted. Reliance on this report by another must be at their risk unless of course, we are consulted on the use or limitations.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended for our client within the purposes, locations, time frames, and project parameters indicated. We cannot be responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services without further consultation. We can neither vouch for the accuracy of information supplied by others, nor accept consequences for unconsulted use of segregated portions of this report.

REFERENCES

REFERENCES

Publications and Reports

Harza Engineering Company. *Phase I Preliminary Site Assessment Meek Orchard Property, Hayward, California.* July 1, 1998.

Harza Engineering Company. *Additional Environmental Investigation, Shallow Soil Testing, Meek Orchard Property, Hayward, California.* July 16, 1998

Harza Engineering Company. *Phase I Preliminary Site Assessment and Shallow Soil Testing, Hayward California.* September 2, 1998.

U.S. Environmental Protection Agency, Region IX. *Preliminary Remediation Goals.* August 1, 1996.

TABLES

Table 1
Summary of Soil Quality Analytical Results
Shallow Soil Testing, Meek Orchard Property
Work Plan - Orchard Avenue Site
103 Orchard Avenue and 112 Berry Avenue, Hayward, California

Sample Location	Drain-1	RS-1	RS-2	RS-2	C-1	C-2	C-3	C-4	PRG
Depth	12"	12"	12"	36"	12"	12"	12"	12"	
Description	concrete	native soil	native soil	native soil	native soil	native soil	native soil	native soil	
Petroleum Hydrocarbons									
Diesel	--	ND	ND	ND	--	--	--	--	none
Motor Oil	--	ND	ND	ND	--	--	--	--	none
Pesticides									
DDD	--	--	--	--	ND	ND	ND	ND	1.9
DDE	--	--	--	--	ND	ND	ND	ND	1.3
DDT	--	--	--	--	ND	ND	ND	ND	1.3
Dieldrin	--	--	--	--	**0.03**	ND	ND	ND	0.028
Metals									
Arsenic	--	--	--	--	17	16	22	21	22
Lead	78	--	--	--	62	11	39	17	130
Chromium	**950**	--	--	--	--	--	--	--	210
Copper	28	--	--	--	--	--	--	--	2800
Nickel	19	--	--	--	--	--	--	--	150
Silver	ND	--	--	--	--	--	--	--	380
Zinc	760	--	--	--	--	--	--	--	23000

Notes:

Table lists only detected compounds.

All results reported in milligrams per kilogram or parts per million (ppm).

All samples collected July 7, 1998

--: Not analyzed

ND: Not detected above laboratory method reporting limits.

PRG: Preliminary Remediation Goal for residential use (U.S. EPA Region IX, August 1, 1996)

Table 2
Summary of Soil Quality Analytical Results
Naruo Nusery PSA and Soil Testing
Organochlorine Pesticides

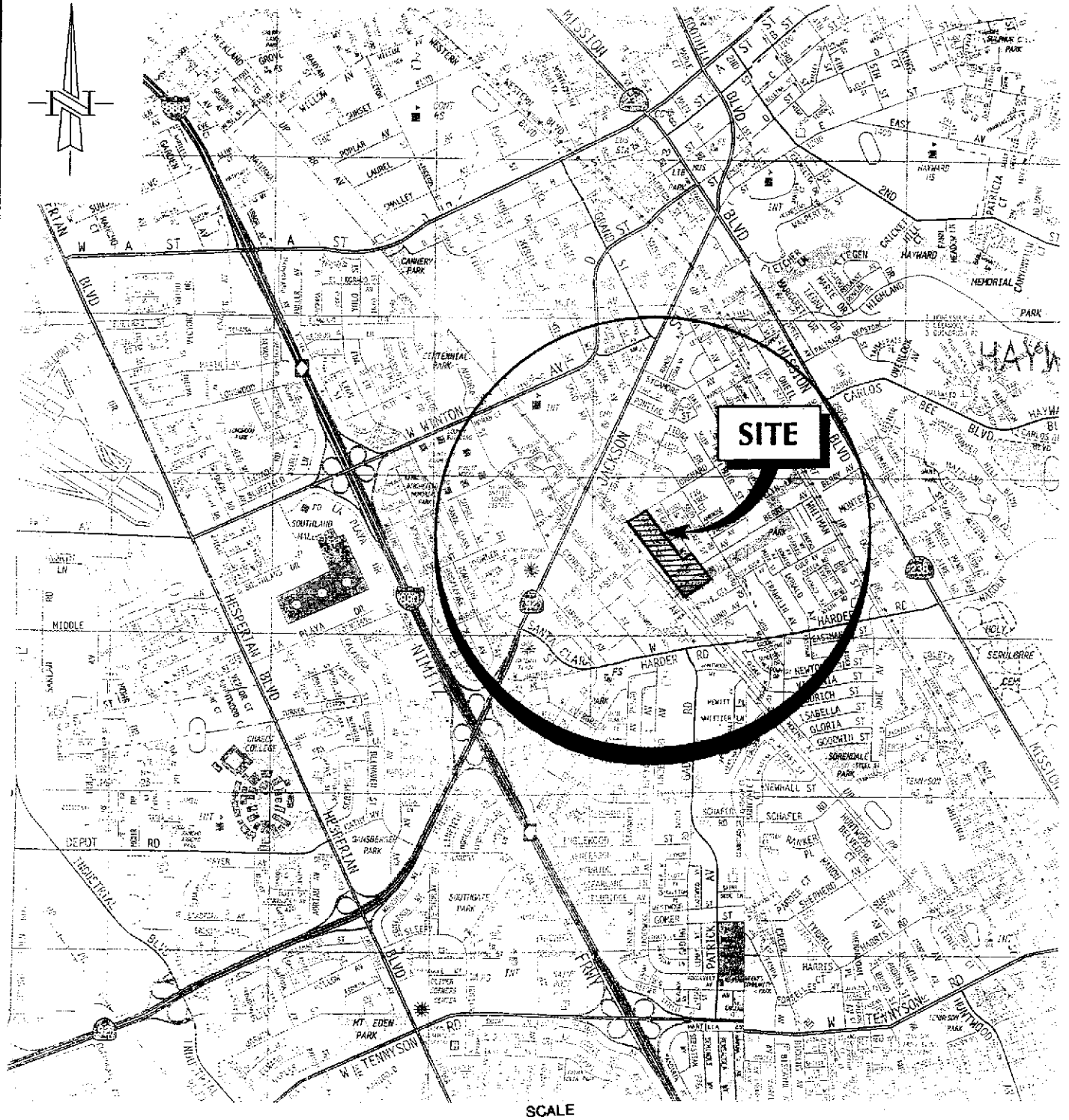
Work Plan - Orchard Avenue Site
147 Berry Avenue Hayward, California

Sample Identification	Sample Depth (feet)	4,4'-DDE	4,4'-DDD	4,4'-DDT	Dieldrin	Chlordane
PA*	1	0.2	0.02	0.72	ND	ND
Comp (OB-A,B, CB-B,C)	1	0.22	ND	0.16	0.02	ND
Comp (1-A,B, 2-C,A)	1	ND	ND	ND	ND	ND
Comp (3-A,B, 4-A,C, 5-A,B)	1	ND	ND	ND	ND	0.63
Comp (6A,B, 7A,B, 8A,B)	1	0.01	ND	0.03	0.02	0.14
Comp (2B, 1C, CBA, 4B)	3	ND	ND	ND	ND	ND
PRG		1.3	1.9	1.3	0.028	1.6

Notes:

Table lists only detected compounds.
All samples collected August 10, 1998
All results reported in milligrams per kilogram or parts per million (ppm).
ND: Not detected above laboratory method reporting limits.
*: The method reporting limit was elevated due to high analyte concentration requiring sample dilution

FIGURES



BASE: THE THOMAS GUIDE, ALAMEDA/CONTRA COSTA COUNTIES, 1998

HARZA
Consulting Engineers and Scientists
425 Roland Way,
Oakland, California, 94621
Tel: (510)568-4001 – Fax:(510)568-2205

DRAWN BY:	HH
PREPD BY:	CC
APP'D BY:	
SCALE:	AS SHOWN
DATE:	11FEB99
DWG NO:	M174-EC-01

SITE VICINITY MAP

ORCHARD AVENUE SITE
Hayward, California

FIGURE
1
PROJECT No.
M174-EC

g:\users\acad\cadwork\m174ec\m174ec-01.dwg