CONCEPTUAL SITE MODEL AND RISK ASSESSMENT PROPOSED COMMERCIAL DEVELOPMENT 720 SECOND STREET & 229 CASTRO STREET OAKLAND, CALIFORNIA

Project No. 044-00006
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TABLE OF CONTENTS
Project No. 044-00006

Page

1.0 INTRODUCTION 1

2.0 FACILITY DESCRIPTION 1

2.1 SITE SETTING 1
2.2 HISTORICAL INFORMATION 2
2.3 REGIONAL GEOLOGY 2
2.4 PROJECT DESCRIPTION 3

3.0 PROPOSED CONSTRUCTION PLAN 3

3.1 DEMOLITION OF CURRENT STRUCTURES 3
3.2 FOUNDATION CONSTRUCTION 4
3.3 BUILDING CONSTRUCTION 5
3.4 UTILITIES AND FINAL SITE WORK 5

4.0 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN 6

4.1 SITE CHARACTERIZATION 6
4.2 PROCESS FOR SELECTING CHEMICALS OF POTENTIAL CONCERN 7

5.0 EXPOSURE ASSESSMENT 9

5.1 SOURCES OF CHEMICAL RELEASE, MEDIA OF CONCERN, AND TRANSPORT MECHANISM 9
5.2 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS 10
5.3 POTENTIAL ECOLOGICAL RECEPTORS 11

6.0 SUMMARY 11

7.0 REFERENCES 12

8.0 LIMITATIONS 13

Tables (following text)
Soil Analytical Results, Polynuclear Aromatic Hydrocarbons ..... Table 1
Soil Analytical Results, Metals ..... Table 2
Soil Analytical Results, Petroleum Hydrocarbons and Volatile Organic Compounds ..... Table 3
Groundwater Analytical Results, Petroleum Hydrocarbons and Volatile Organic Compounds ..... Table 4
Soil Analytical Results, Lead ..... Table 5

Figures (following Tables)
Vicinity Map ..... Figure 1
Soil Boring and Monitoring Well Location Map ..... Figure 2
Conceptual Site Plan ..... Figure 3
Conceptual Foundation Cutaway Plan ..... Figure 4
Conceptual Site Model Flow Chart ..... Figure 5

Appendices (following Figures)
Total Lead Analytical Report ..... A

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

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1.0 INTRODUCTION

This report describes the Conceptual Site Model (CSM) and Risk Assessment for the property located at 720 Second Street and 229 Castro Street in Oakland, California (Site; Figures 1 & 2). The CSM and Risk Assessment were prepared by Krazan & Associates, Inc. (Krazan), on behalf of Mortenson. Krazan has also completed a Phase I Environmental Site Assessment (ESA) summarized in Krazan's report *Phase I Environmental Site Assessment 720 Second Street & 229 Castro Street, Oakland, California*, dated February 16, 2000, and collected soil and groundwater samples at the Site as presented in our investigation report *Soil and Groundwater Investigation, Proposed Commercial Development, 720 Second Street & 229 Castro Street, Oakland, California*, dated May 3, 2000. Some of the data presented in these reports are be summarized herein as part of our evaluation of the Site. The organization and content of the CSM are based in general accordance with guidance documents prepared by the United State Environmental Protection Agency (USEPA) and the State of California Department of Toxic Substances Control (DTSC) for the preparation and presentation of such materials (see Section 7.0).

2.0 FACILITY DESCRIPTION

2.1 Site Setting

The Site consists of three parcels of land under contract to Mortenson for purchase. Two of the parcels are owned by the Port of Oakland (Port). The remaining parcel is owned by a private food distributor. The Site occupies a square block of land in the City of Oakland bound by 2nd and 3rd Streets and Castro and Brush Street. It measures approximate 300 feet by 200 feet and encompasses an approximate area of 1.4 acres. The Site is located in an area of Oakland currently utilized for industrial and commercial purposes. Businesses adjacent to the Site include a retail office supplies store, a plating shop, a self-storage business, warehouses, and Port of Oakland storage and administrative facilities. The nearest current residential

neighborhood is located at least 1,500 feet north of the Site. It also appears that industrial work/loft spaces are being developed at the parcel located adjacent to the south of the Site across 2nd Street. Water and sewage disposal in the area of the Site is provided by the East Bay Municipal Utility District (EBMUD). Stormwater runoff is controlled by catch basins along the adjacent city streets. Currently, the eastern one-third of the Site is used for shipping and warehousing and is completely occupied by a brick warehouse/office structure. The western two-thirds of the Site is used by the Port for maintenance and equipment storage. Evidence of an underground storage tank (UST) in the form of a fill port and vent pipe were observed near the north side of the warehouse. No information pertaining to the UST was present in the City of Oakland or Alameda County regulatory agency files. Two main structures and some smaller sheds and temporary storage containers are located on the western portion of the Site.

2.2 Historical Information

The historical information for the Site is based on Krazan's February 16, 2000 Phase I ESA, which included the review of historical aerial photographs, Sanborn Fire Insurance Maps (SFIMs), City of Oakland Building Department records, and business directories. The brick building on the eastern one-third of the Site appears to have been constructed prior to 1950 and has been used for warehousing purposes since that time. Prior to the construction of the warehouse, this portion of the Site was used for residential and commercial purposes. The two main structures, located on the western portion of the Site, were constructed in the late 1960s; other structures, interpreted to be industrial in nature, were present on-site prior to the late 1960s.

The western portion of the Site was used by Phoenix Iron Works (PIW) from circa 1951 to approximately 1972. None of the regulatory agency information reviewed pertained to the operation of PIW. However, Sanborn Fire Insurance Maps (SFIMs) depict welding, pattern storage, foundry storage, flask yard, and other uses by PIW. The 1967 and 1970 SFIMs depict a paint dip tank and drying rack, which are no longer present, on the north side of the main structure (see Figure 2).

2.3 Regional Geology

The site is located in the eastern portion of the San Francisco Bay Area, approximately 1,500 feet north of the Oakland Inner Harbor and approximately 2.5 miles from the San Francisco Bay. The Site is at an elevation of approximately 10 feet above mean sea level with the topography in the area being relatively level with a gentle

slope to the southwest. No surface water drainages are located near the Site, and the nearest surface water bodies are the Oakland Inner Harbor to the south and Lake Merritt, located over a mile to the northeast.

The Site is located within the Coast Ranges Geomorphic Province of California, which is characterized by northwest-trending structural features, including faults and geologic units. Based on investigations conducted by Krazan, the Site is underlain by approximately five feet of fill material which is underlain by beach and dune sand deposits of the Merritt Formation. The Merritt Formation is described as loose, well-sorted, fine- to medium-grained sand with silt and clay.

Based on a review of the USGS topographic map for the area and file information for investigations conducted in the vicinity of the Site, the direction of groundwater flow is approximately south-southwest. Based on the investigations conducted by Krazan, groundwater is present at approximately six feet below the ground surface (BGS).

2.4 Project Description

The Site is proposed for redevelopment as the Oakland Telecom Access Center (OTAC), an advanced, four-story facility designed to meet the unique requirements of the telecommunications industry. The 120,000 square foot building design includes pre-cast and concrete structural capacity of up to 250 pounds per square foot to accommodate the heavy loads of telecommunications equipment. The foundation of the structure will be a solid concrete matt foundation. The roof and parapet have been designed to accommodate antennas for wireless communications. An equipment yard provides space for back-up generators giving the facility the ability to operate 24 hours per day even in the event of a power failure. The general layout of the proposed building is presented in Figure 3.

3.0 PROPOSED CONSTRUCTION PLAN

The proposed project construction plan includes the removal of existing structures, construction of a matt foundation, which involves the excavation of soils to a depth of approximately five feet below the current grade, and final construction of the building and associated parking and landscaping

3.1 Demolition of Current Structures

Initial project work will include establishing temporary erosion and sediment controls around the Site to maintain soils and debris on Site. A number of shallow well points will be installed for the purpose of de-watering at the Site. The de-watering activities will draw down the existing groundwater level at the Site to

allow construction to occur above the groundwater table. While the excavation for the matt foundation is not anticipated to be below the current groundwater level, the dewatering is being conducted to insure that groundwater will not be encountered during excavation and to provide a solid working surface for equipment. Discharge of groundwater will occur in accordance with any applicable permit requirements to either the storm or sanitary sewer. Demolition is anticipated to begin on the western portion of the Site. During demolition, a licensed asbestos abatement contractor will conduct removal of asbestos materials within the warehouse at the east side of the site in accordance with applicable laws for such activities. Additionally, abatement of lead-based paint identified on structures at the subject site will be conducted if required. Demolition of the warehouse will follow the abatement. Demolition of the buildings will include removal of all foundations and concrete slabs at and below grade. Removal of the identified UST and any affected soils will then occur. The Site will then consists of relatively level unpaved soil.

During the demolition phase, some of the on-site underground utilities that are to be located in or through the future parking area may be installed.

3.2 Foundation Construction

The proposed building has been designed to sit two (2) feet above existing grade to minimize excavation and interface of the foundation with existing groundwater. Subsequent to the demolition phase, soil at the Site will be excavated and set aside to provide for placement of the matt foundation. Excavation will begin at the east property line and proceed westward. Excavated materials will be temporarily stockpiled on plastic sheeting on the southern portion of the Site in the area of the future parking lot. It is estimated that approximately 9,000 cubic yards of soil will be excavated and temporarily stockpiled. The stockpile will be covered with plastic sheeting to minimize wind blown dust and sedimentation due to rain. It is estimated that approximately 6,700 cubic yards will be returned to areas on top of the matt and beneath the slab-on-grade building at the Site. Remaining overburden soil will be exported and disposed of off-site in accordance with applicable laws.

During the excavation work, two shafts will be drilled approximately 55 feet below the ground surface for the elevators. The shafts will be approximately two feet in diameter and will be double walled, in accordance with manufacturer specifications, to prevent infiltration of groundwater. The drilling of the shafts will not impact groundwater quality because the drilling will be conducted following the excavation

of fill, and will only encounter the Merritt Formation. Also, the sealing of the shafts will prevent migration of groundwater from the shallow to deeper zones.

The walls of the equipment yard will be supported by drilled piers. Drilling will occur in a similar manner as discussed for the elevator shafts. The piers will be two feet in diameter, drilled to approximately 12 to 15 feet BGS. The soil generated as part of this activity will be managed similarly to other excavated soil at the Site.

After excavation is completed in an area, the reinforcing steel and formwork will be installed for the matt foundation and the concrete matt will be placed. At this point, the stockpiled soil will be replaced around and over the matt for fill to slab-on-grade level. Simultaneously, the construction of the first floor concrete shear walls (floor 1 to 2) will begin.

3.3 Building Construction

The second floor concrete shear walls (floor 2 to 3) will be constructed after completion of first floor shear walls. Then, two floors of structural pre-cast structure will be erected. Concrete topping slabs will be placed over these pre-cast floors and construction of the next two floors of shear walls (floor 3 to 4 and 4 to roof) will occur. Again, once the shear walls are complete, structural pre-cast for these remaining structures will be erected and topped with a concrete slab. Once the structure is complete, work will begin to enclose the walls and roof of the building.

3.4 Utilities and Final Site Work

Concurrent with the final stages of building construction work, installation will proceed on the utilities that will be located over the matt foundation. It is anticipated that all of the utility installations (water, storm sewer, electrical, sanitary sewer, fiber, etc.) will occur above the existing groundwater table. Electrical lines and fiber lines entering the building will be within conduits. An maintenance or changing of the lines would occur through the conduits, eliminating the need for future trenching through the cap; the facility has been designed to accommodate future lines, should the need arise. When these utilities are complete, a concrete slab-on-grade will cap the utility/fill area (Figure 4). Remaining soils stockpiled in the parking/drive areas will be graded to meet the grades required as a result of raising the building. Then a 4-inch thick asphalt topping or concrete walks/paving will cap the parking area. Approximately 96 percent of the Site, including all occupied areas, will be capped with hardscape. At landscaped areas, the existing

soils will be removed and lawfully disposed of to a depth of two feet, and replaced with a cap of two feet of imported clean soils. At this point, the entire Site will be capped.

4.0 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

4.1 Site Characterization

Krazan has conducted extensive environmental review for the Site, the results of which are summarized in Krazan's February 16, 2000 Phase I ESA. The historical use of the western portion of the Site as a steel company, and the former existence of a paint dip tank at the property, suggested the need for additional investigation to determine whether the subsurface had been impacted by hazardous materials. As such, Krazan initiated a characterization of the soil and groundwater at the Site in accordance with procedures and guidelines established in the U.S. Environmental Protection Agency *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846).* The proposed removal of the UST, and a discussion of any related impacts will be addressed separately from this document. The results of the characterization are described in the report by Krazan titled *Soil and Groundwater Investigation, Proposed Commercial Development, 720 Second Street & 229 Castro Street, Oakland, California,* dated May 3, 2000, and the results are summarized below.

Based on the previous uses of the Site as identified in the environmental review of the Phase I ESA, the chemicals of potential concern (COPCs) for the Site included metals, petroleum hydrocarbons, volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs).

As part of Krazan's characterization of the Site, Krazan drilled 28 soil borings from which we collected 40 soil samples and eight groundwater samples. In addition, Krazan installed three groundwater monitoring wells. The locations of the borings and groundwater monitoring wells are presented in Figure 2. Soil borings were advanced in the vicinity of the paint dip tank and UST, the only potential point sources identified in Krazan's investigation. The remaining borings were selected randomly based on procedures and guidelines for site characterization established in the U.S. Environmental Protection Agency *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846).* The results of the soil samples are summarized in Tables 1, 2, 3, and 5, respectively. The results of the groundwater samples are summarized in Table 4.

Based on the results of the characterization, no point source areas of contamination were identified with the exception of the UST, which will be properly removed and documented separately from this document. Elevated concentrations of lead were detected in some of the samples from the fill soils at the Site. In addition, one isolated detection of PAHs was obtained in that area. As such, the area of concern at the Site is identified as the fill soil.

The groundwater samples collected from the borings advanced during site characterization did not contain COPCs. The three groundwater monitoring wells installed on May 25, 2000 at the Site were sampled on June 27, 2000 and the samples were analyzed for total lead. Based on the analytical results, lead was not detected in groundwater above the reporting limit of 0.015 milligrams per liter (mg/l). Because this data were not previously reported, the laboratory report is included in Appendix A of this report. As such, with the exception of the area near the UST, the groundwater at the Site has not been impacted by any COPCs.

4.2 Process for Selecting Chemicals of Potential Concern

The chemicals detected as part of the characterization were compared to U.S. Environmental Protection Agency Region IX Preliminary Remedial Goals (PRGs) for industrial land use. The PRGs are conservative values used for screening human-health risks associated with contaminated media. The rationale for the PRG screening process is to focus the risk assessment and eliminate COPC that are not a risk at the Site based on the conservative values established by the U.S. Environmental Protection Agency. Based on the screening process, the final chemicals of concern at the Site are lead and PAHs. In one sample, several PAH compounds were detected at concentrations greater than the EPA Region IX PRGs for dermal contact and soil ingestion for an industrial land use setting. The concentrations of PAHs were, however, below the PRGs for inhalation of vapors from soil. These materials were detected within the historical fill but not detected in the underlying Merritt Formation. The 90% UCL (one tailed) lead concentration (961 mg/kg) was below the PRG for lead for industrial sites while the 95% UCL (one tailed) (1,036 mg/kg) was above the PRG[1]. The PRG for industrial sites is 1,000 mg/kg. The 1,000 mg/kg risk-based threshold assumes that no engineering or institutional controls are implemented at a site and includes inhalation, dermal, and ingestion exposures. Because the 95% UCL for lead was above the PRG for industrial sites, the project design includes engineering and institutional controls to minimize or eliminate exposure for construction

[1]The 90% UCL was used to characterize the soils quality. A 90% UCL corresponds to a 90% probability that the true mean concentration of total lead concentration at the site is below 961 mg/kg. A 95% UCL increases the probability to 95% indicating that there is a 95% probability that the true mean of total lead concentration at the site is below 1,036

workers, future utility workers, and future site users associated with the reuse of on-site soils.[2] The engineering and institutional controls, detailed in the Short Term and Long Term Management plans for this project include:

- Capping of the entire Site with either building foundation, asphalt parking lot, or two feet of clean imported soil in landscaped areas. These are permanent features for the life of the project that will be inspected on an annual basis.

- Placement of all electrical and fiber lines in conduits from the sidewalks into the building. This will eliminate the need for trenching on the Site when tenants change or additional providers wish access to the facility. In addition, excess capacity in the conduits have been provided, further limiting the possibility of having to trench across the Site. Sanitary sewer and storm sewer lines would be placed in trench(es) within the parking lot area; these trench(es) would be backfilled with clean imported fill.

- Placement of reused soils at a minimum of two feet above the groundwater table to eliminate leaching potential of contaminants of concern into the groundwater. In addition, the Site will be capped, further minimizing infiltration through the fill and thus decreasing the potential for leaching of contaminants into the groundwater as compared to existing conditions.

- Excavation for elevator shafts will occur after fill material has been removed, and the project will use piers rather than piles to support the walls in the equipment yard. Both actions will eliminate the potential of introducing fill materials into the underlying Merritt Sands.

- Implementation of all construction activities in accordance with a health and safety plan to minimize construction worker and future utility worker exposure prior to construction of the slab-on-grade.

- Port to provide oversight that all construction will be implemented in accordance with County-approved procedures.

- Preparation of a deed restriction for the Site ensuring that the land use is consistent with the environmental conditions at the Site to the satisfaction of ACEHS or other approving agencies.

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mg/kg.

[2]Excavated soils that are not reused on the site will be hauled and disposed of off-site as waste. The waste will be classified by sampling in accordance with applicable disposal facility requirements.

5.0 EXPOSURE ASSESSMENT

Exposure assessments estimate the chemical intake of each potential receptor via one or more complete exposure pathways. The four elements of a complete exposure pathway are as follows:

- A source of chemical release;
- A mechanism of release through a transport medium;
- A potential receptor.
- A point of contact between the potential receptor and the transport medium; and

If any one of these elements is missing, an exposure pathway is considered incomplete and there is no risk to the receptor.

An exposure assessment typically evaluates pathways, receptors, exposure duration, exposure frequency, and routes of exposure to assess total human exposures to the COPCs at a Site. The exposure assessment incorporates the physical setting as well as the future land use of the area. As discussed earlier in this report, the Site occupies a block of land in the City of Oakland which is bound by 2nd and 3rd Streets and Castro and Brush Street. Currently, the Site is used as shipping and warehousing for a food distributor and for maintenance and storage of equipment. The Site is located in an area of Oakland which is currently utilized for industrial and commercial purposes. Businesses adjacent to the Site include a retail office supplies store, a plating shop, a self-storage business, warehouses, and Port facilities. It also appears that industrial work/loft spaces are being developed at the parcel located adjacent to the south of the Site across 2nd Street. The nearest existing residential neighborhood is located at least 1,500 feet north of the Site. A multi-story building used as a telecommunication access center is proposed for the Site.

This assessment was conducted to address the redevelopment and future use of the Site, a commercial telecommunications facility. Accordingly, our analysis and evaluation is based on conditions deemed realistic for the proposed reuse.

5.1 Sources of Chemical Release, Media of Concern, and Transport Mechanism

Based on the historical operations at the Site and the characterization conducted by Krazan, no point sources for COPCs were identified at the Site. Area-wide concentrations of lead and one isolated

occurrence of PAHs, presumably present within historical fill materials prior to placement, are present in the historical fill soils at depths between one and five feet BGS beneath the Site.

The only media of concern at the Site is the historical fill soils at depths of approximately one to five feet below the current surface grade. The groundwater and deeper, native soils have not been affected by the COPCs.

Potential transport mechanisms identified for the COPCs at the Site include dust-borne particulate transport and soil transport by storm water during foundation construction (Figure 5). Because groundwater has not been affected by the COPCs, groundwater transport of COPCs off-site was not considered. Leaching to groundwater was not considered as a transport mechanism for the following reasons: 1) the soil containing COPCs is located above the current and anticipated future groundwater table; 2) as is described in the Short Term Risk Management (STRM) plan (included under separate cover), existing soil containing COPCs soil will be removed to the base of the existing fill material as part of the matt foundation construction; and 3) following completion of the matt foundation, the excavated material will be replaced around and above the matt foundation, which is and will remain higher than the groundwater level. As such, contaminated soil will not come into contact with the groundwater table. Therefore, it would be expected that the conditions of the Site with respect to the location of soil containing COPCs will not be significantly different following site development. As has been demonstrated by Krazan's characterization of the Site, the groundwater has not been impacted by COPCs, and based on the above discussion, it not anticipated to be impacted in the future.

5.2 Potential Receptors and Exposure Pathways

The potential receptors in the exposure evaluation consist of the individuals who might come in contact with the impacted media.

Future on-site occupants of the proposed telecommunication facility are not considered potential receptors because the Site will be completely capped with the building and parking areas, and two feet of clean fill will be placed within the minor landscaped areas (approximately four percent of the Site). Additionally there are no recreation areas or other areas where occupants of the building would come into contact with surface soils. Furthermore, future on-site occupants have no potential exposure to volatile emissions from

the soil, because VOCs are not COPCs for soil or groundwater. Therefore, there is no point of contact for a COPC with a receptor, and all potential exposure pathways are incomplete.

Potential exposure to off-site occupants of buildings could only be considered complete by way of dust-borne particulates during construction of the foundation at the Site. However, dust control measures, as outlined in the STRM plan for the Site development, have been designed to minimize and/or eliminate this exposure, and therefore this pathway is considered incomplete.

The future construction worker may have potential contact with soil during excavation activities associated with construction of the foundation only. The complete exposure pathways for the future construction worker are: incidental ingestion soils, dermal contact with soils, and inhalation of dust-borne particulates. Potential exposure through inhalation of volatile emissions from the soil is an incomplete pathway, because VOCs were not identified as a final soil COPCs. The construction work at the Site involving soil handling will be conducted under provisions of a Health and Safety Plan as outlined in the STRM plan, and therefore the potential exposure pathways for the future construction worker will be incomplete.

5.3 Potential Ecological Receptors

The only potential ecological receptors identified based on the CSM are aquatic organisms in the San Francisco Bay and Oakland Inner Harbor, located approximate 1,500 feet south of the Site. The potential exposure pathway for the ecological receptor includes transport of soil from the Site during the construction of the foundation via stormwater runoff. A Stormwater Pollution Prevention Plan (SWPP) for the development of the Site has been prepared and is incorporated into the STRM plan. Additionally, construction of the foundation at the Site is expected to be completed prior to the rainy season, further minimizing the likelihood of transport of sediments.

The migration of groundwater to the San Francisco Bay was not considered a potential exposure pathway because the groundwater at the Site has been analyzed for VOCs, PAHs, and lead, and none of these chemicals have been detected in groundwater.

6.0 SUMMARY

In summary, under the assumed exposure and development conditions as presented in the CSM, the two potential exposure pathways and receptors to chemicals of concern at the Site are exposure to historical fill

soil by the future construction worker, and transport of sediment to the San Francisco Bay during construction. In both cases, the exposure pathways will be mitigated and/or eliminated by means of a Health and Safety Plan and Stormwater Pollution Prevention Plan. As such, these potential exposure pathways are considered incomplete. The results of the conceptual site model are illustrated in Figure 5.

7.0 REFERENCES

California Department of Toxic Substances Control (DTSC), Cal/EPA, 1992, *Supplemental Guidance For Human Health Multimedia Risk Assessments of Hazardous Waste Site and Permitted Facilities*, July.

California Department of Toxic Substances Control (DTSC), Cal/EPA, 1994, *Preliminary Endangerment Assessment Guidance Manual*, January.

Krazan & Associates, Inc., 2000, *Phase I Environmental Site Assessment 720 Second Street & 229 Castro Street, Oakland, California*, dated February 16, 2000.

Krazan & Associates, Inc., 2000, *Soil and Groundwater Investigation, Proposed Commercial Development, 720 Second Street & 229 Castro Street, Oakland, California*, dated May 3, 2000.

U.S. Environmental Protection Agency (USEPA), 1989, *Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation Manual (Part A) Interim Final*, EPA/540/1-89/002, December

U.S. Environmental Protection Agency (USEPA), 1999, *Region IX Preliminary Remedial Goals*.

8.0 LIMITATIONS

The findings of this report were based upon the results of field and laboratory data, coupled with the interpretation of subsurface conditions, and future construction aspects proposed for the Site. Therefore, the findings are accurate only to the degree implied by review of the collected data and by professional interpretation. Additionally, should new data become available or the proposed uses of the Site change, Krazan's evaluation could be different that that presented in this report.

The findings presented herewith are based on professional interpretation using state-of-the art methods and equipment and a degree of conservatism deemed proper as of this report date. It is not warranted that such data cannot be superseded by future geotechnical, environmental, or technical developments.

This investigation and report were authorized by and prepared for the exclusive use of our client. Unauthorized use of or reliance on the information contained in this report without the expressed written consent of Krazan & Associates, Inc., is strictly prohibited.

If there are any questions or if we can be of further assistance, please do not hesitate to contact our office at (408) 271-2200.

Respectfully submitted,
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