W-6583-03

Environmental Conditions Assisted Living Facility South Dearborn Street and 6th Avenue South Seattle, Washington

March 1996

NIKKEI Concerns
c/o Arai/Jackson
1601 East John
Seattle, Washington 98112

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March 29, 1996

NIKKEI Concerns
c/o Arai/Jackson
1601 East John
Seattle, Washington 98112

Attn: Mr. Rich Murakami

RE: ENVIRONMENTAL CONDITIONS, ASSISTED LIVING FACILITY, SOUTH DEARBORN STREET AND 6TH AVENUE SOUTH, SEATTLE, WASHINGTON

This letter presents a discussion of the potential for contaminated soil and related construction impacts for the proposed Assisted Living Facility Project, northeast of the intersection of South Dearborn Street and 6th Avenue South in Seattle, Washington. Our scope of work included reviewing our Level I Environmental Site Assessment (ESA) (Shannon & Wilson, 1993), our Geotechnical Report (Shannon & Wilson, 1996), and information on adjacent properties. This work was authorized by Ms. Anne Arakaki-Lock on March 8, 1996, by a signed confirming letter.

POTENTIAL FOR CONTAMINATED SOIL

The Level I ESA identified potential environmental concerns; therefore, limited Level II analytical testing was conducted during the geotechnical investigation. None of the samples tested exceeded the Model Toxics Control Act (MTCA) residential cleanup levels for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); or metals. However, based on the diesel and gasoline concentrations detected, there is cause to suspect that TPH contamination may be present in the subsurface. The potential environmental concerns are associated with the following:

- A former gas station with potential underground storage tanks (USTs).
- A former hotel heating oil UST, removed in 1993.
- Migration from off-site sources.
- Uncontrolled fill placed in the early 1900s.

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- Coal tar and creosote on the former tideflats at the base of the fill.
- Other heating oil USTs from former structures.
- Treated timber piling from former structures.

Each of the areas of potential concern is described in detail in the previous reports. To relate those concerns to the proposed construction, we have prepared the attached Table 1. Specific site locations referenced in the table are shown on Figure 1.

As shown on Table 1, the most likely contaminants at the site are TPH and polyaromatic hydrocarbons (PAHs). While this table summarizes the most likely scenarios, other combinations of different contaminants and construction activities are possible. In the event that contaminated soils are encountered during construction, several options are available for handling and disposing of these materials, and each instance should be evaluated separately to determine the most acceptable disposal options. Contaminated soil is defined by having regulated substances present at concentrations greater than MTCA regulatory levels.

CONSTRUCTION ISSUES

Contaminated soil may be encountered during construction in excavations or during installation of augercast piles. The following paragraphs describe in general the issues for shallow (<10 feet deep), intermediate (10 to 25 feet deep), and deep (>25 feet deep) soil contamination.

As a general rule, shallow contamination encountered during excavation for foundations or related features should be remediated by excavation and proper disposal. We understand that most excavations will not extend any deeper than 4 feet. If contaminated soil is encountered, the excavation should be extended laterally and vertically until analytical testing confirms acceptable concentrations in the excavation. This would leave you with no deed restrictions on the property and no listing on state lists of contaminated sites with respect to shallow soils.

Based on the proposed construction, the only time that contaminated soil would be encountered from depths greater than about ten feet is during augercast pile installation. Depending on the nature of the contamination (concentration, type of contaminant, proximity to the groundwater table), various courses of action are possible. One possible course of action is to properly dispose of the pile cuttings only and take no further action on what may

be in the subsurface. However, this could leave you with a deed restriction and a listing on a state database of known contaminated sites. A major drawback is the difficulty of obtaining financing if contaminated soil is left on site.

If contamination is present at depths greater than 10 feet, additional sampling would likely be required to determine the nature and extent of the contamination to determine if and what further action is required. If contamination is encountered at or below the groundwater table, groundwater sampling would likely be required by the Washington State Department of Ecology (Ecology). Depending on the nature and extent of the contamination, possible actions could range from no further action to installation of a groundwater remediation system.

Given the proposed construction, the reasonableness of excavation and disposal as a means of remediation decreases considerably for depths greater than about 25 feet. It is possible that leaving contaminated soil in place could be justified to Ecology, depending on the nature of the contamination. For example, in the case of PAH contamination at the base of the fill (35 to 50 feet deep), cleanup would not be reasonable, given the regional extent of known PAH concentrations on the old, buried tideflats.

REGULATORY CONSIDERATIONS

The site is not currently considered a contaminated site under MTCA regulations. If contamination is encountered during construction activities, MTCA regulations would apply, and the following actions would be required:

- Ecology must be notified within 90 days.
- The site must be remediated.
- A remediation report must be filed with Ecology.

Once notification occurs, Ecology would evaluate the significance of the findings and assign priority ranking to the site. If it is considered a high priority (high ecological or health hazard), then they would take action. Otherwise, Ecology would wait for the remediation report from the site owner. Depending on the site conditions, Ecology may or may not require further action. If cleanup occurs simultaneously with discovery, one report could be filed within the 90-day period.

RECOMMENDATIONS FOR CONSTRUCTION

In any event, any contaminated soil excavated or brought to the surface as cuttings should be properly handled and disposed of in accordance with the environmental laws of Washington State (MTCA and Dangerous Waste Regulations). We recommend the following:

- Although soil concentrations did not exceed MTCA regulations, a health and safety plan should be prepared for site work to protect workers and the general public. This plan should address working in potentially contaminated soil. Air quality should be monitored by an experienced health and safety person. The health and safety plan could be provided by the construction contractor or an environmental consultant/industrial hygienist.

- A qualified environmental scientist should monitor the excavation and excavated soil for indications of contamination, and should collect samples for analytical testing if contamination is present or suspected. Monitoring should include field screening with a photoionization detector (PID) to detect hydrocarbon vapors.

- Excavated soil or cuttings suspected of being contaminated should be separately stockpiled on heavy-mil plastic, in drums, or in a truck or container. Excavated soils should be properly disposed of in accordance with the environmental laws of Washington State. In order to determine proper disposal methods, analytical testing would be required to characterize the excavated soils. Depending on the type and degree of contamination, disposal could include recycling at an asphalt facility, treatment through thermal desorption, and/or landfilling.

- Potential analytical testing of stockpiled soils would include: Washington Total Petroleum Hydrocarbons as Gasoline (WTPH-G) plus BTEX, Washington Total Petroleum Hydrocarbons as Diesel (WTPH-D) extended to include oil, and PAHs. If concentrations exceed regulatory or disposal levels, then additional tests may be required, such as for polychlorinated biphenyls (PCBs) and metals. Regulatory and disposal levels are defined in MTCA and the Dangerous Waste Regulations.

- If concentrations of petroleum hydrocarbons or other contaminants do not exceed MTCA regulatory criteria and Ecology Class 2 uses, then the soil could be reused on site. If, however, concentrations are higher, disposal options would have to be developed to meet the appropriate land-disposal criteria, such as Regional Disposal Company's facilities in Roosevelt,

Washington; be treated by incineration, such as at TPS in Tacoma, Washington; or be reused/recycled in asphalt production. Costs for these disposal options start at $40 a ton, which does not include trucking.

- If concentrations of petroleum hydrocarbons or other hazardous constituents in soil exceed MTCA regulatory criteria, then Ecology must be notified by the owner within 90 days of discovery, in accordance with MTCA, Chapter 173-340 WAC, Section 300 (Site Discovery). The contamination must then be remediated and a follow-up report filed with Ecology. Remediation could involve capping the site, completely excavating the contamination, or monitoring groundwater. As discussed above, leaving some contamination on site may be allowed.

- If concentrations exceed MTCA regulatory criteria in soil located at or below the groundwater table, then Ecology must be notified and groundwater sampling may be required.

You and the contractor should be aware of the potential delays and added costs associated with stockpiling and analytical testing of the soil. Depending on the potential extent of contamination and levels of concentrations, overexcavation may be required to adequately address environmental concerns. An environmental consultant should (1) be retained to review construction specifications to confirm that environmental issues are addressed, and (2) provide construction monitoring for contamination and consulting services if contamination is encountered.

LIMITATIONS

The conclusions and recommendations presented in this report are based on our interpretation of site conditions, which was based on limited sampling. We assume that the materials encountered are representative of the subsurface conditions.

Shannon & Wilson has prepared this report in a professional manner, using that level of skill and care normally exercised for similar projects under similar conditions by reputable and competent environmental consultants currently practicing in this area, and in accordance with the terms and conditions set forth in our confirming letter dated February 29, 1996. Shannon & Wilson is not responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the report was prepared.

The facts and conditions referenced in this report may change over time, and the conclusions and recommendations set forth here apply only to the facts and conditions as described at the time of this report. Conclusions and recommendations were made within the operative constraints of the scope, budget, and schedule for this project. We believe that the conclusions stated here are factual, but no guarantee is made or implied.

This letter report was prepared for the exclusive use of NIKKEI Concerns, Arai/Jackson Architects, and other members of the design team. Shannon & Wilson has prepared the attached "Important Information About Your Environmental Report" to assist you and others in understanding the use and limitations of our reports.

Sincerely,

SHANNON & WILSON, INC.

Kathy Goetz Troost, R.P.G., R.E.P.A.
Associate

KAT:JFZ/arh

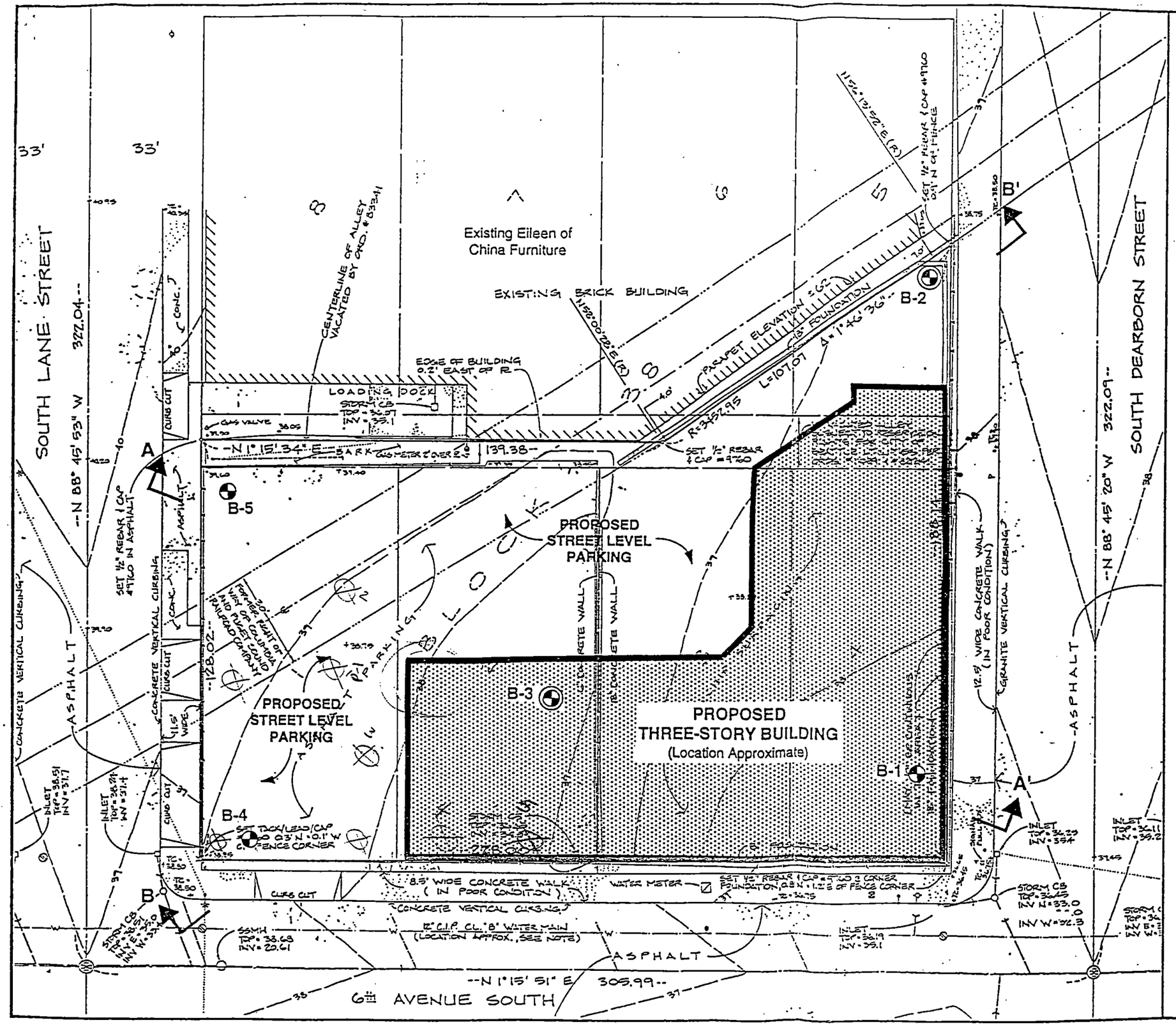
Enclosures: Table 1 - Potential for Encountering Contaminated Soil
Figure 1 - Site and Exploration Plan
Important Information About Your Environmental Report

TABLE 1

POTENTIAL FOR ENCOUNTERING CONTAMINATED SOIL

Potential Source of Contaminated Soil	Most Likely Contaminant(s) in Soil	Site Location	Depth of Potential Contamination	Relevant Construction Activity			
				Grade Beam Excavations	Augercast Pile Installations	Utility Trenches	Elevator Pit
Former gas station USTs and piping	Gasoline, BTEX, diesel, and lead	Lots 1 and 2	Ground surface to soil/groundwater interface (~23 feet)	X	X	X	X
Former hotel heating oil UST, removed in 1993	Diesel, oil, and PCBs	Southeast corner of site and proposed building, near former boring B-2	Ground surface to soil/groundwater interface (~23 feet)	X	X	X	X
Off-site sources	TPH and metals	East half and north and south perimeters of block	Soil/groundwater interface (~23 feet)		X		
Fill	TPH and metals	Entire block	0 to 45 feet	X	X	X	X
Buried shoreline	PAHs	Entire block	~35 to 50 feet		X		
Abandoned USTs not previously identified	TPH	Entire block	Ground surface to soil/ groundwater interface (~23 feet)	X	X	X	X
Treated timber piling	PAHs	Sporadic-related to former structures	Few feet to 60 feet	X	X	X	X

Notes: Of the analytical tests conducted so far, none are considered to be above state action levels.
BTEX = benzene, toluene, ethylbenzene, and xylenes
PAHs = polycyclic aromatic hydrocarbons
PCBs = polychlorinated biphenyls
TPH = total petroleum hydrocarbons
USTs = underground storage tanks



LEGEND

B-1 Boring Designation and Approximate Location

B-2 Boring and Monitoring Well Designation and Approximate Location

A Generalized Subsurface Profile

0 30 60

Scale in Feet

NOTES

1. Site plan developed from drawing by Aramaki, Boren and Associates for NIKKEI Concerns, dated August 1993.
2. The facility locations are based on drawings dated January 23, 1996, received from Arai/Jackson Architects.

Assisted Living Facility
Seattle, Washington

SITE AND EXPLORATION PLAN

March 1996 W-6583-03

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FIG. 1

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Dated: March 29, 1996

To: NIKKEI Concerns

Attn: Mr. Rich Murakami

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

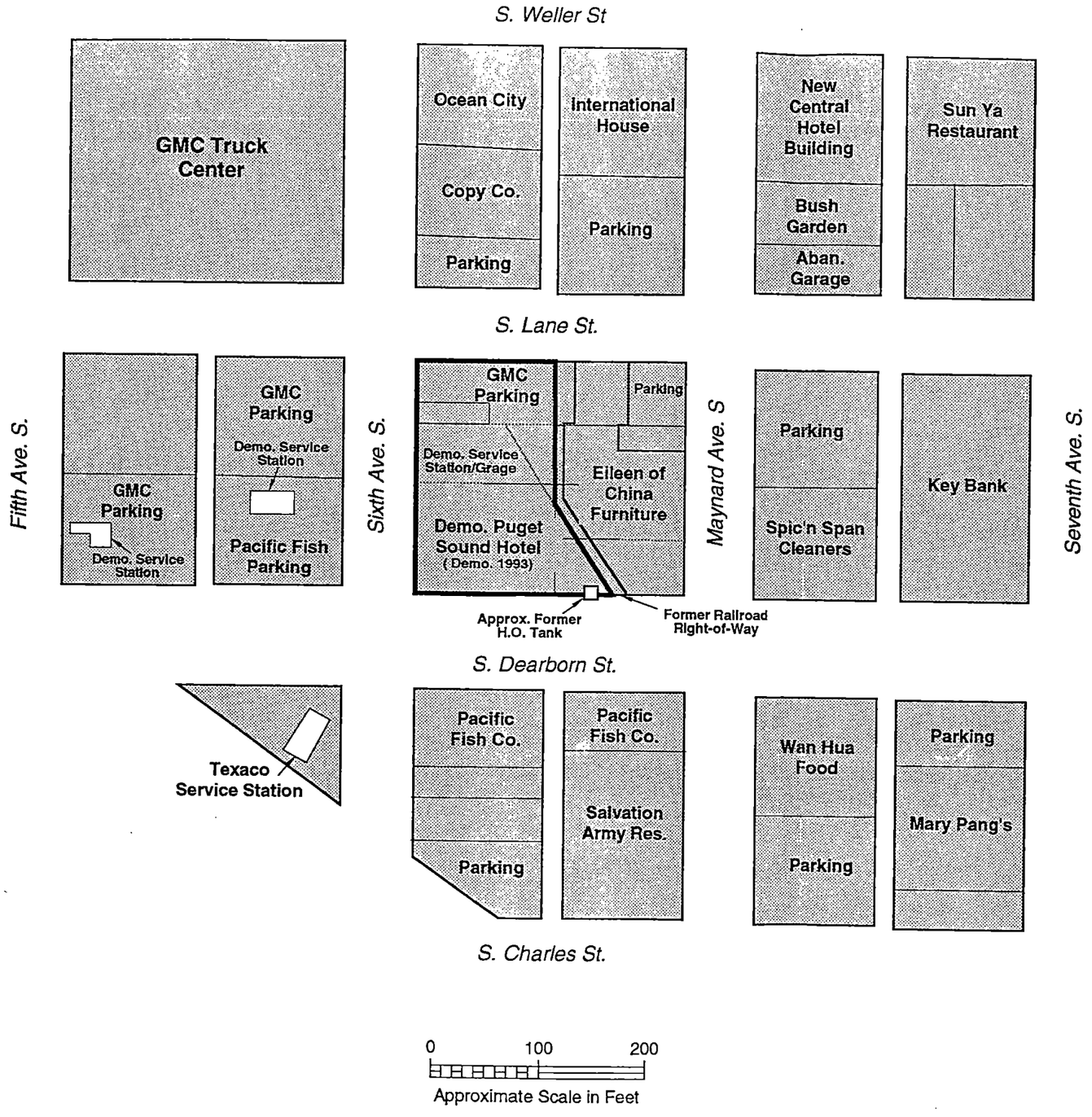
Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland



NOTE

Site plan adapted from drawing provided by Kroll Map Company 2009 of Seattle central business district.

Proposed Assisted Living Facility
Phase I Environmental Site Assessment
Seattle, Washington

SITE PLAN

September 1993 W-6583-01

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FIG. 2