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- Title page with the following information:
 - Company (Author) name
 - Report date
 - Project Name
 - Company's job number
 - Site address
- Executive Summary / Introduction of the report
- Table of contents
- Project Location Map / Vicinity Map
- Site / Exploration Plans, Boring Location Plans
- Cross-sections / Subsurface profiles
- Exploration Logs
- Monitoring Well Logs
- Cone Penetrometer Logs
- Groundwater Elevation Tables / Data

Includes data from Previous Reports

No new data / data review

Missing Data / Illegible Data

Explanation Engelhardt Data

Comments: _____

PACRIM GEOTECHNICAL INC

8/8

#7167

**GEOTECHNICAL REPORT
ISSAQUAH PARK AND RIDE IMPROVEMENTS
ISSAQUAH, WASHINGTON
FOR
KPG, INC.**

**MAY 15, 1998
PROJECT NUMBER 052-001**

geotechnical
engineering
and
applied
earth
sciences

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INTRODUCTION

This report presents the findings of our subsurface exploration and geotechnical engineering study for the planned Issaquah Park and Ride lot improvements in the southeast quadrant of the intersection of Renton/Issaquah Road (SR 900) and Newport Way NW. Our services are being performed in general accordance with our scope of services letter dated October 24, 1997, and your signed approval of the scope of work dated November 18, 1997. In the event that any changes in the nature, design or location of the Park and Ride lot is planned, the conclusions and recommendations contained in this report should be reviewed and modified, or verified, as necessary.

PROJECT DESCRIPTION

The project site is located in the southeast quadrant of the intersection of Renton/Issaquah Road and Newport Way NW, in the city of Issaquah, Washington. The location of the site is shown in Figure 1, Project Vicinity Map. The existing park and ride lot is located in the northeast quadrant of the same intersection.

The new expansion to the existing park and ride will be about 150 stalls and cover an area from 2 to 3 acres. The site is currently occupied by several abandoned greenhouses and other small structures, and a gravel drive that traverses the property. Tibbetts Creek passes southwest of the site, and a wetland (identified by others) currently exists in the northwest portion of the site.

The proposed development will consist of cutting and filling in association with leveling the site, and placing pavement and landscaping as necessary to complete the expansion of the existing park and ride. We understand that traffic loads associated with the geotechnical design will be primarily from cars, and that bus access will continue to occur at the existing park and ride.

A stormwater detention area near TP-7 (see Figure 2) will be constructed, and a proposed farmers market near TP-8 may be constructed at a later date.

SCOPE OF SERVICES

Our scope of services included exploring the site by completing eight soil test pits on the property in order to define the characteristics of the subsurface soil and groundwater. The test pits were completed at the approximate locations shown on the attached Site and Exploration Plan, Figure 2. Information from all eight test pits was used to provide geotechnical information and recommendations for design, including:

- Distribution and characteristics of subsurface soils
- Site preparation requirements
- Structural fill requirements
- Drainage considerations
- Considerations for pavement design
- An evaluation of potential hydrocarbon contamination from an abandoned, adjacent gas station.

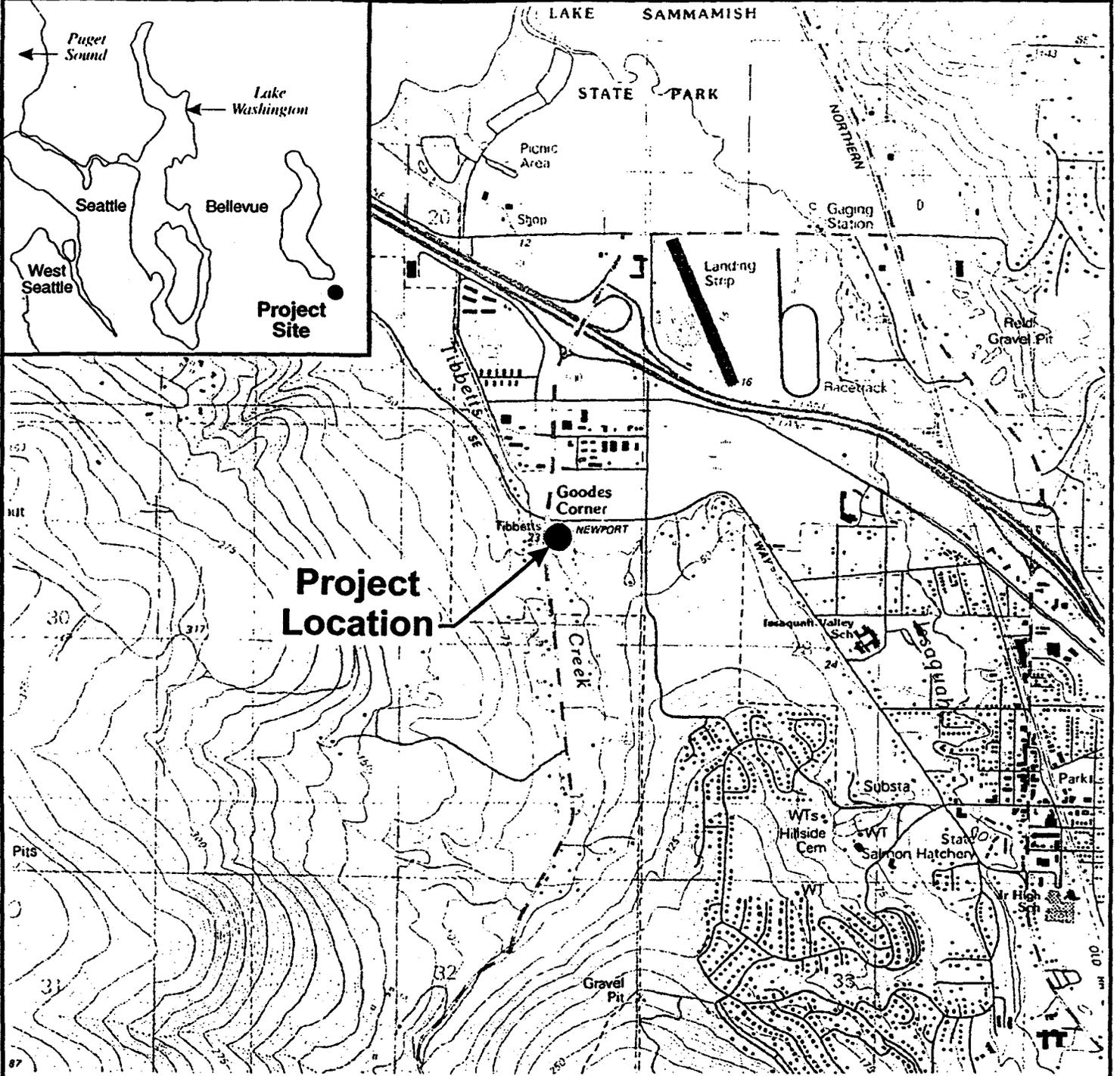
SITE CONDITIONS

The site is located in the City of Issaquah, on relatively flat property approximately two miles south of the southern end of Lake Sammamish. Site elevations which were determined from the Tibbetts Valley Park - Master Plan, provided by the city of Issaquah, varied from 74 to 82 feet (determined from project datum). The site sloped generally from north to south, with the highest elevations located at the southern end of the site. The site was covered with low grass vegetation. A gravel road, approximately 10 feet in width, traversed the eastern portion of the site. Wood debris, mostly in the form of wood chip walkways and planter boxes, was present throughout areas of the site located to the west of the gravel road. Several buildings, including a pole barn and three abandoned greenhouses, presently lie within the planned site. Tibbetts Creek passes within approximately 150 feet of the southwest portion of the site.

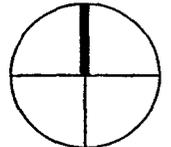
We understand that the site was formerly occupied by a nursery, and that a gas station was previously located adjacent to the northwest border of the site within the triangular area between the two roadways and the project site (see Figure 2). A previous environmental site assessment by others (Black & Veatch, 1996) found soil and groundwater contamination to be present near the former gas station. Additional soil samples were tested to evaluate the extent, if any, of the contamination and the effect on design and construction.

Subsurface Exploration

Our field study included excavating a series of eight exploration pits to gain information about the site. The excavations were completed using a rubber-tired backhoe on December 10, 1997 by Custom Backhoe & Dumptruck Service, Inc. under subcontract to PacRim Geotechnical Inc. Further details of the subsurface exploration program are contained in Appendix A. The various types of sediments as well as the depths where characteristics of the sediments changed are indicated on the exploration logs, also presented in Appendix A. The depths indicated on the logs where conditions changed may represent gradational variations between sediment types in the field. Our explorations were located in the field by measuring and pacing from known site features (property boundaries, buildings, etc.) shown on Figure 2. The locations of the test pits



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 Issaquah Park and Ride Improvements

FIGURE 1

PROJECT VICINITY MAP

Project Number 052-001

APPENDIX A

FIELD EXPLORATION PROGRAM

Subsurface conditions for the project were explored by excavating test pits. Eight test pits were completed within the proposed site on December 10, 1997 to depths ranging from 7 feet to 15 feet. The approximate locations of the test pits are shown on Figure 2. The explorations were located in the field by pacing relative to existing features. The results of the exploration plan are shown on the summary test pit logs included in this appendix from Figures A-1 through A-8.

The excavations were completed using a rubber-tired backhoe supplied and operated by Custom Backhoe & Dumptruck Service, Inc. Selected soil samples were taken in the field and transported to our lab for further testing. A geotechnical engineer from our firm was present throughout the field work program to observe the excavations, perform sampling, and to prepare descriptive logs of the explorations. Soils were classified in general accordance with ASTM D-2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)". The final exploration logs represent our interpretation of the contents of the field logs and the results of laboratory testing.

LOG OF TEST PIT TP-1

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Surface Elevation = 74 feet | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|--------|--------------|----------|----------------|---|------------------|
| | | | | | | OL | | Dark brown highly organic SILT, trace fine to medium sand, soft, very moist. (topsoil/fill) | |
| | | 102 | | | | OL | | Light brown highly organic SILT with wood chips, trace fine to medium sand, soft, wet. (fill) | |
| TPH Analysis | | 26 | | | | ML | | Light gray fine to medium sandy SILT, trace organics, indistinct bedding, very soft, wet. (recent alluvium) | ▽ |
| 0 ppm | | 43 | | | | | | Light brown clayey SILT, mottled orange, very soft, wet. | 70 |
| | | | | | 5 | ML MH | | | |
| 0 ppm | | 45 | | | | | | | |
| | | | | | | SM ML | | Light gray fine to medium sandy clayey SILT, indistinct bedding, soft, wet. | 65 |
| 0 ppm | | 29 | | | | | | | |
| | | | | | 10 | SP | | Fine to coarse SAND with silt, trace fine gravel, indistinctly bedded, scattered white nodules, loose, wet. | |
| 0 ppm | | | | | | | | | |
| | | | | | | | | Moderate seepage Moderate caving for entire trench | |
| | | | | | | | | ppm= parts per million (hand held photoionization detector reading) | 60 |

TEST PIT ISSA-P&R.GPJ PACRIM.GDT 5/15/98

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 13.0 feet

Groundwater Level Observed: ▼

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FIGURE A-1 **LOG OF TEST PIT TP**
 SHEET 1 OF



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LOG OF TEST PIT TP-2

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Description | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|---|--------------|------|--|---|------------------|
| | | | | | | | | Surface Elevation = 76 feet | |
| 0 ppm | | | |  | | OL |  | Dark brown highly organic SILT, trace fine to medium sand. (topsoil) | 75 |
| 0 ppm TPH analysis | | 53 | |  | | ML |  | Dark brown SILT, mottled orange, trace fine sand, trace organics, roots, medium stiff, moist. (recent alluvium) | |
| | | | | | | SW |  | Orange fine to coarse SAND, indistinct bedding, trace silt, loose to medium dense, saturated. | |
| 0 ppm | | 54 | |  | 5 | CL |  | Dark gray silty CLAY, mottled orange, medium stiff, wet. | |
| | | | | | | GW |  | Orange brown fine to coarse GRAVEL, trace sand, little silt, medium dense, wet. | 70 |
| 0 ppm | | 29 | |  | | |  | Light brown mottled rust fine to medium sandy clayey SILT, medium stiff, wet. | |
| | | | | | 10 | | | | |
| 0 ppm | | | |  | | ML | | | 65 |
| | | | | | | | | | |
| 0 ppm | | | |  | | | | | |

TEST PIT ISSA-P&R.GPJ PACRIM.GDT 51568

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 15.0 feet

Groundwater Level Observed: ▼

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 Issaquah Park and Ride Improvements Job No. 052-001
FIGURE A-2 **LOG OF TEST PIT TP-2**
SHEET 1 OF 2



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LOG OF TEST PIT TP-3

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Surface Elevation = 78 feet | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|---|--------------|------|---|---|------------------|
| | | | | | | OL |  | Dark brown highly organic SILT, trace fine sand, soft, moist. (topsoil/fill) | |
| 0 ppm | | | |  | | | | | |
| 0 ppm | | 51 | |  | | | | Light brownish orange SILT, trace fine sand, soft, very moist, (recent alluvium) | 75 |
| | | | | | | | | Becomes wet and medium stiff. | |
| 0 ppm | | | |  | 5 | ML |  | | |
| 9.4 ppm TPH analysis | | 42 | |  | | | | Becomes gray mottled rusty. | |
| TPH analysis | | | |  | | | | Scattered coal pieces. Slight sheen on ground water, hydrocarbon odor. | 70 |
| | | | | | 10 | | | Test pit terminated at 9' due to caving. Heavy caving 0'-9' Slight seepage at 3' and 6' | |
| | | | | | | | | ppm= parts per million (hand held photoionization detector reading) | 65 |

TEST PIT ISSA-P&R.GPJ PACRIM.GDT 5/15/98

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 9.0 feet

Groundwater Level Observed: ▼

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 Issaquah Park and Ride Improvements Job No. 052-001

FIGURE A-3 **LOG OF TEST PIT TP-3**
SHEET 1 OF 1



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LOG OF TEST PIT TP-4

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Surface Elevation = 79 feet | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|--------|--------------|------|----------------|---|------------------|
| | | | | | | OL | | Dark brown highly organic SILT, trace fine sand, numerous roots, soft, moist. (topsoil) | |
| | | | | | | ML | | Light brown SILT, mottled orange, trace fine sand, very soft, very moist. (recent alluvium) | |
| | | 47 | | | | ML | | Becomes wet. | |
| | | 35 | | | | ML | | Gray clayey SILT, mottled rust, trace sand, numerous root holes, soft, wet. | 75 |
| | | | | | 5 | SW | | Rusty orange fine to coarse SAND, trace to some fine to coarse gravel, trace silt, discontinuous bedding, medium dense, wet. | |
| | | | | | | ML | | Light gray to olive gray fine to medium sandy clayey SILT, discontinuous interbeds of fine to medium sand, medium stiff, moist. | 70 |
| | | 35 | | | 10 | | | Slight seepage 2.5' Moderate seepage 5' to 7' Heavy caving 2'-7' Test pit terminated at 9' due to heavy caving. | 65 |

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 9.0 feet

Groundwater Level Observed:

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 Issaquah Park and Ride Improvements Job No. 052-001

FIGURE A-4 **LOG OF TEST PIT TP-4**
 SHEET 1 OF 1

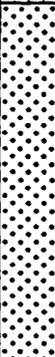
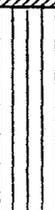


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TEST PIT ISSA-P&R.GPJ PACRIM.GDT 5/15/98

LOG OF TEST PIT TP-5

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Description | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|---|--------------|------|--|--|------------------|
| | | | | | | OL |  | Dark brown highly organic SILT with fine sand, very soft, moist. (topsoil) | |
| | | 30 | |  | | ML |  | Dark brown SILT, trace fine to medium sand, trace gravel, rust colored interbedding, medium stiff, very moist. (recent alluvium) | |
| | | | | | | SW |  | Rusty orange fine to coarse SAND, trace gravel, trace silt, medium dense, wet. | 75 |
| | | | | | 5 | GW |  | Fine to coarse GRAVEL with fine to coarse sand, trace silt, medium dense, wet. | |
| | | | | | | CL |  | Gray silty CLAY, mottled orange, discontinuous fine to medium sand interbedding, soft, wet. | |
| | | | | | | ML |  | Gray clayey SILT, discontinuous fine to medium sand interbedding, soft, wet. | 70 |
| | | | | | 10 | | | | |
| | | | | | | | | Moderate seepage at 1' Heavy seepage at 4.5' Test pit terminated at 9' due to heavy caving. | 65 |

Surface Elevation = 77 feet

TEST PIT ISSA-P&R.GPJ PACRIM.GDT 5/15/98

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 9.0 feet

Groundwater Level Observed: ▼

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 Issaquah Park and Ride Improvements Job No. 052-00
FIGURE A-5 **LOG OF TEST PIT TP-**
SHEET 1 OF



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LOG OF TEST PIT TP-6

Surface Elevation = 73 feet

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Description | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|--------|--------------|------|----------------|--|------------------|
| | | | | | | OL | | Dark brown highly organic SILT with fine to coarse sand, medium stiff, moist. (topsoil) | |
| | | 49 | | | | ML | | Brown SILT, trace fine to medium sand, trace fine gravel, medium stiff, very moist. (recent alluvium) | |
| | | 58 | | | | ML | | Light brown mottled rusty-orange SILT, trace fine to medium sand, trace organics, soft, very moist. | |
| | | | | | | ML | | Gray clayey SILT, trace fine sand, fine to medium silty sand interbedding, soft, wet. | 70 |
| | | 45 | | | 5 | ML | | | |
| | | | | | | GW | | Rusty orange fine to coarse GRAVEL with fine to medium sand, medium dense, wet. | |
| | | | | | 10 | | | | 65 |
| | | | | | | | | Moderate seepage at 2.5' and 4' Heavy seepage at 5.5' Test pit terminated at 7' due to heavy caving. | 60 |

TEST PIT ISSA-P&R.GPJ PACRIM.GDT 5/15/98

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 7.0 feet

Groundwater Level Observed:

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 Issaquah Park and Ride Improvements Job No. 052-001

FIGURE A-6 **LOG OF TEST PIT TP-6**
SHEET 1 OF 1



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LOG OF TEST PIT TP-7

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Surface Elevation = 77 feet Remarks | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|--------|--------------|------|----------------|---|------------------|
| | | | | | | OL | | Dark brown organic SILT, soft, very moist. (topsoil) | |
| | | 55 | | | | ML | | Brown SILT, trace fine sand, trace gravel, medium stiff, wet. (recent alluvium) | 75 |
| | | 53 | | | 5 | ML | | Light brown gray clayey SILT, mottled rusty orange, soft to medium stiff, wet. | 70 |
| | | | | | 10 | | | Medium to heavy seepage at 5' Heavy caving at 5' Test pit terminated at 7'. | 65 |

IT PIT ISSA-P&R.GPJ PACRIM.GDT 5/15/98

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 7.0 feet

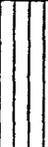
Groundwater Level Observed: ▼

KPG
 Issaquah Park and Ride Improvements Job No. 052-0
FIGURE A-7 **LOG OF TEST PIT TP**
SHEET 1 OF



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LOG OF TEST PIT TP-8

| Remarks and Other Tests | Dry Density (pcf) | Moisture Content (%) | Sample # | Sample | Depth (feet) | USCS | Graphic Symbol | Description | Elevation (feet) |
|-------------------------|-------------------|----------------------|----------|---|--------------|------|--|--|------------------|
| | | | | | | | | Dark brown organic SILT, medium stiff, moist. (topsoil/fill) | |
| | | 64 | |  | | OL |  | | |
| | | | | | 5 | ML |  | Light brown clayey SILT, trace fine sand, medium stiff, moist. (recent alluvium) | 70 |
| | | 40 | |  | | SM |  | Light brown gray to mottled rusty orange silty fine to medium SAND, medium dense, very moist. | |
| | | | | | | ML |  | Light gray to mottled rusty orange fine to medium sandy clayey SILT, discontinuous fine to medium gray sand interbedding, medium stiff, wet. | |
| | | | | | 10 | | | | 65 |
| | | | | | | | | Light seepage at 3' Heavy seepage at 6' Moderate caving at 5'-6' Test pit terminated at 8.5' due to heavy caving. | 60 |

Surface Elevation = 74 feet

TEST PIT ISSA-P&R.GPJ PACRIM.GDT 5/15/98

Date Excavated: 12/10/97
 Elevation Datum: Project
 Completion Depth: 8.5 feet

Groundwater Level Observed: ▼

KPG
 Issaquah Park and Ride Improvements Job No. 052-001
FIGURE A-8 **LOG OF TEST PIT TP-8**
SHEET 1 OF 1



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