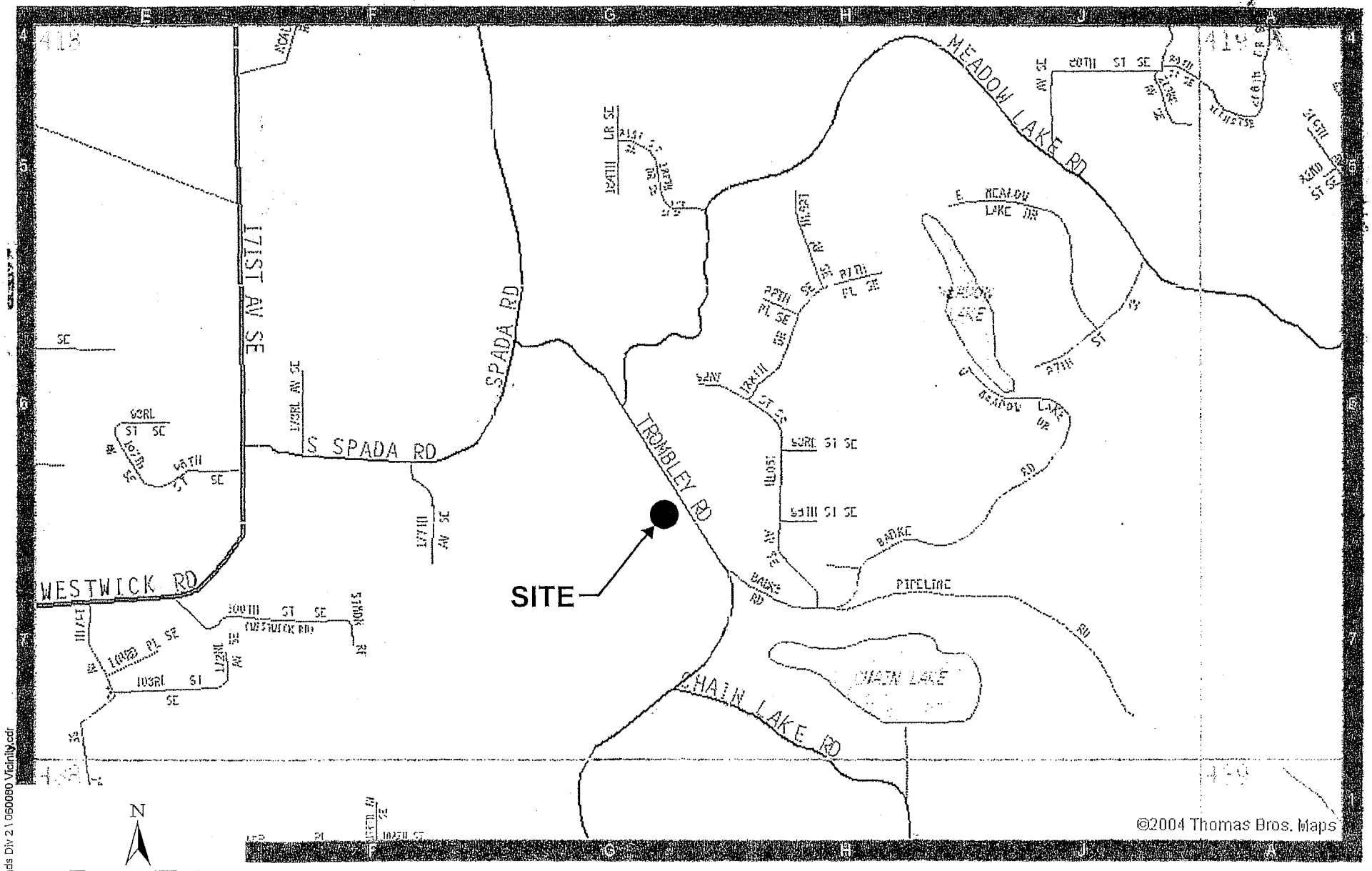

N

NO SCALE

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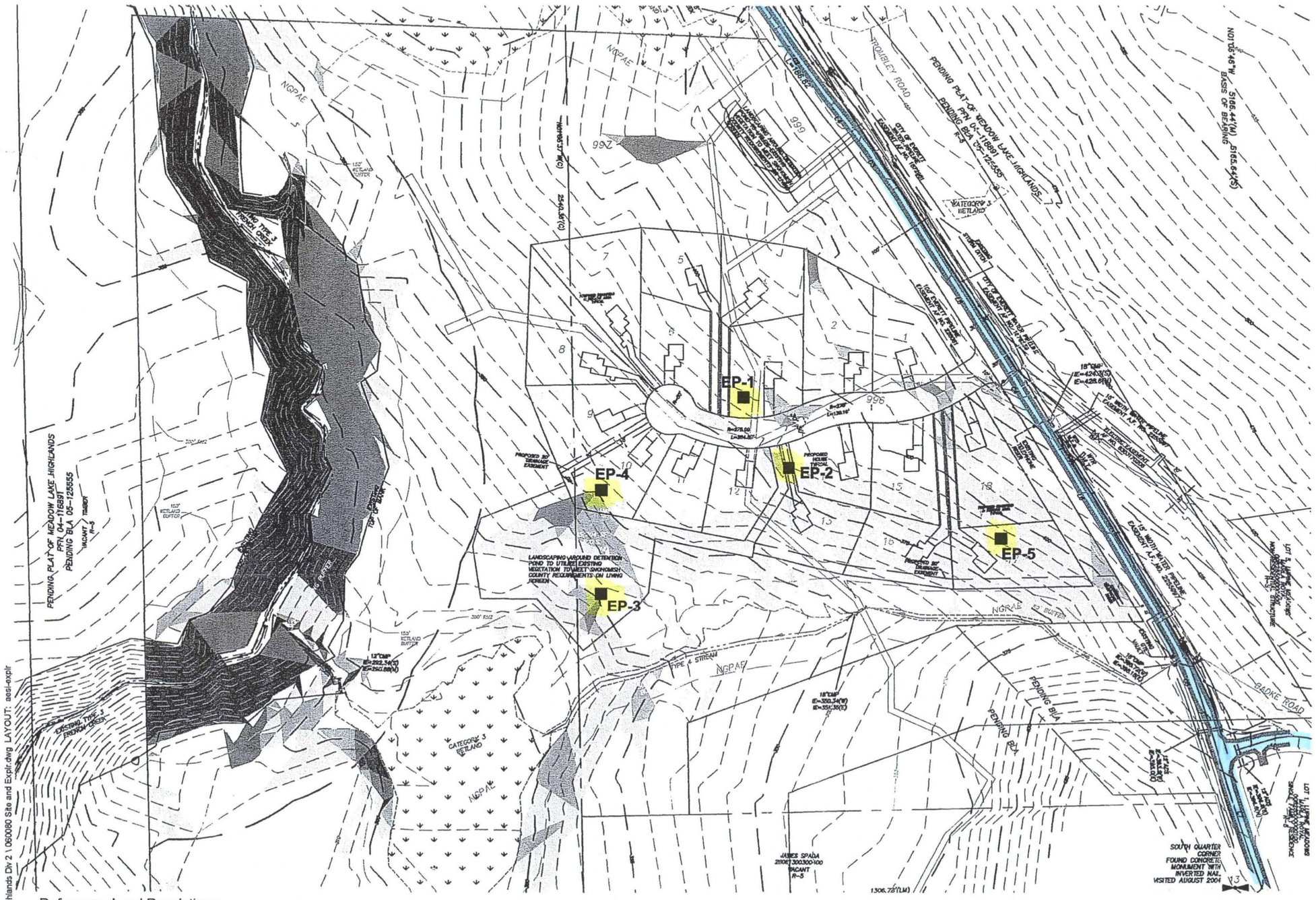
VICINITY MAP
MEADOW LAKE HIGHLANDS DIV 2
SNOHOMISH COUNTY, WASHINGTON

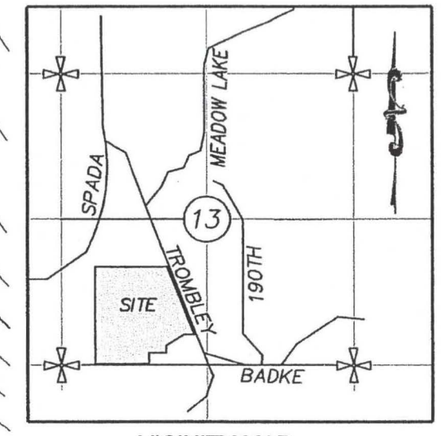
FIGURE 1
DATE 2/06
PROJ. NO. KE060080A

060080 Meadow Lake Highlands Div 2 \ 060080 Vicinity.cdr

TP 79 - TP 83

Document ID 29





VICINITY MAP

SLOPE DETERMINATION RANGES
PER SCC 30.41B.210

COLOR	RANGE	% OF SITE	ACREAGE OF SITE
	0-15	70	41.58
	15-20	16	9.58
	20-25	2	1.45
	25-33	5	3.09
	33-100	7	3.87

N

0 100 200
FEET

X 1/10
10%

Reference: Land Resolutions

060080 Meadow Lake Highlands Div 2 \ 060080 Site and Expir.dwg LAYOUT: aesi-expir

Associated Earth Sciences, Inc.

SITE AND EXPLORATION PLAN

MEADOW LAKE HIGHLANDS DIV 2
SNOHOMISH COUNTY, WASHINGTON

FIGURE 2

DATE 2/06

PROJECT NO. KE060080A

40% of 25

Qgo/tim

SUBSURFACE EXPLORATION

We completed five exploration pits in the proposed development areas on February 3, 2006 at the locations shown on Figure 2. Logs of our explorations are attached to this letter-report. The locations of our explorations were determined by orientation from lot survey stakes encountered in the field and are considered approximate.

Within the proposed home construction areas inclined at greater than 15 percent, we encountered natural, loose, grading to dense silty to clean sand and gravel interpreted as Vashon recessional outwash, overlying dense to very dense silty sand with gravel interpreted as Vashon lodgement till. Exploration pit EP-1 was excavated at the outer edge of an existing primitive roadway and encountered 5 feet of loose to medium dense fill with organics, likely placed during road construction, directly overlying till. The outwash generally became medium dense at a depth of 2 to 3 feet below existing site grades. The outwash ranged in thickness from 5 feet (EP-4) to 11 feet (EP-2). Till was encountered in all explorations to the maximum depth explored of 13 feet. Our geologic interpretations are consistent with geology shown on the *Ground Water Resources of Snohomish County, Washington*, Geological Survey Water Supply Paper 1135 by Newcomb, 1952.

Slow ground water seepage was encountered in exploration pits EP-1, EP-2, and EP-4 within narrow, discrete zones above the till. However, in EP-3, we encountered very rapid ground water seepage from a zone extending from 6 to 10 feet below existing grades. Ground water appears to be perched upon the till with localized recharge from the east. We did not encounter ground water seepage in EP-5.

RECOMMENDATIONS AND DESIGN CRITERIA

Landslide Hazard Areas

Based on our surface and subsurface exploration and review of the Snohomish County development codes, it appears that most of the on-site slopes inclined at greater than 15 percent that are at least 10 feet in height are consistent with the description of Landslide Hazard Areas defined in Section 30.91L.040 of the SCC. However, in our opinion, only two areas of the site should be classified as Landslide Hazard Areas because they are susceptible to at least seasonal basal undercutting by streams. These areas include the flanks of French Creek and portions of the ravine downslope from exploration pit EP-4. Within the other sloped areas of the site, we either did not encounter ground water seepage (EP-5), or the amount of ground water seepage, shallow slope inclinations, and in-place density of the existing natural sediments were not consistent with conditions in which landslides occur, in our experience. In addition, we did not identify any colluvial soils or shear planes within our exploration pits, and did not observe obvious evidence of deep or surficial downslope soil movement during our reconnaissance of the proposed development area. Therefore, except for the recommendations noted below, no new buffers, NGPAs, building setbacks, and/or

LOG OF EXPLORATION PIT NO. EP-1

TP 79

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered. DESCRIPTION
	Duff and Topsoil
	Fill
1	Loose to medium dense, moist, brown and black, silty SAND with organics, gravel, cobbles, and plastic.
2	
3	
4	
5	**Weathered Till**
6	Medium dense, moist, red-brown, silty fine to medium SAND with gravel and cobbles.
7	
8	**Till**
9	Dense grading to very dense at 10', moist, gray, silty SAND with gravel, few cobbles.
10	
11	Bottom of exploration pit at depth 10 feet Slow seepage at 6' to 8'. Moderate caving 0 to 5'.
12	
13	
14	
15	
16	
17	
18	
19	
20	

Meadow Lake Highlands
Snohomish County, WA

Associated Earth Sciences, Inc.

Logged by: SGB

Approved by:

Project No. KE060080A

2/3/06

KCTP3 060080A.GPJ February 6, 2006

LOG OF EXPLORATION PIT NO. EP-2

TP 80

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered. DESCRIPTION
	Duff and Topsoil
1	Weathered Outwash
2	Loose grading to medium dense at 2', moist, brown, fine to medium SAND with silt and gravel.
3	
4	
5	Recessional Outwash
6	Medium dense, wet, gray, silty fine to medium SAND to SAND with silt, gravel, and cobbles.
7	
8	
9	
10	
11	Till
12	Very dense, moist, silty SAND with gravel to sandy SILT with gravel.
13	Bottom of exploration pit at depth 12 feet Slow seepage at 8.5'.
14	
15	
16	
17	
18	
19	
20	

Meadow Lake Highlands
Snohomish County, WA

Associated Earth Sciences, Inc.

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Project No. KE060080A

2/3/06

KCTP3 060080A.GPJ February 6, 2006

LOG OF EXPLORATION PIT NO. EP-3

TP 81

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered. DESCRIPTION
	Duff and Topsoil
1	
	Weathered Outwash
2	Loose to medium dense, moist, silty SAND with gravel and cobbles.
3	Medium dense at 3'.
4	
5	
6	**Recessional Outwash**
7	Dense, saturated, brown, medium to coarse SAND with gravel, cobbles, and few boulders.
8	
9	
10	**Till**
11	Saturated, gray and brown, SILT with sand, gravel, cobbles, and occasional boulders.
12	
13	
14	Bottom of exploration pit at depth 13 feet Rapid seepage 6' to 10'. Moderate caving 0 to 10'.
15	
16	
17	
18	
19	
20	

Meadow Lake Highlands
Snohomish County, WA

Associated Earth Sciences, Inc.

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Approved by:

Project No. KE060080A

2/3/06

KCTP3 060080A.GPJ February 16, 2006

LOG OF EXPLORATION PIT NO. EP-4 TP 82

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered. DESCRIPTION
	Duff and Topsoil
1	**Weathered Outwash** Loose grading to medium dense at 3', brown, silty SAND with gravel, cobbles, and roots.
2	
3	
4	**Recessional Outwash** Medium dense, wet, brown, medium SAND with silt and gravel.
5	**Till** Very dense, moist, mottled gray, silty SAND with gravel and cobbles.
6	
7	
8	
9	
10	
11	Bottom of exploration pit at depth 10 feet Slow seepage 4' to 5'. Slight caving 0 to 4'.
12	
13	
14	
15	
16	
17	
18	
19	
20	

Meadow Lake Highlands
Snohomish County, WA

Associated Earth Sciences, Inc.

Logged by: SGB

Approved by:

Project No. KE060080A

2/3/06

KCTP3 060080A.GPJ February 6, 2006

LOG OF EXPLORATION PIT NO. EP-5

TP 83

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered. DESCRIPTION
	Duff and Topsoil
1	**Weathered Soil**
2	Loose, moist, red-brown, silty fine SAND with gravel and roots.
3	**Recessional Outwash**
4	Medium dense, moist, brown, fine to medium SAND with gravel, cobbles, and trace silt.
5	
6	
7	**Till**
8	Very dense, moist, gray, silty fine to medium SAND with gravel and cobbles.
9	
10	Bottom of exploration pit at depth 9 feet No ground water.
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Meadow Lake Highlands
Snohomish County, WA

Associated Earth Sciences, Inc.

Logged by: SGB

Approved by:

Project No. KE060080A

2/3/06

KCTP3 060080A.GPJ February 6, 2006