DEVELOPMENT SERVICES
ENVIRONMENTAL COORDINATOR
450 110th Ave NE., P.O. BOX 90012
BELLEVUE, WA 98009-9012

OPTIONAL DETERMINATION OF NON-SIGNIFICANCE (DNS) NOTICE MATERIALS

The attached materials are being sent to you pursuant to the requirements for the Optional DNS Process (WAC 197-11-355). A DNS on the attached proposal is likely. This may be the only opportunity to comment on environmental impacts of the proposal. Mitigation measures from standard codes will apply. Project review may require mitigation regardless of whether an EIS is prepared. A copy of the subsequent threshold determination for this proposal may be obtained upon request.

File No.	11-111292-LO
Project Name/Address:	Chang Residence Remodel 255 Shoreland Drive SE
Planner:	Reilly Pittman
Phone Number:	425-452-4350
Minimum Comment Period:	**July 28, 2011**

Materials included in this Notice:

- ☒ Blue Bulletin
- ☒ Checklist
- ☒ Vicinity Map
- ☒ Plans
- ☒ Other: Critical Areas Report
  Geotech Report

SEPA Checklist Reviewed by Reilly Pittman on 7/8/2011

City of Bellevue Submittal Requirements	27a

ENVIRONMENTAL CHECKLIST

4/18/02

If you need assistance in completing the checklist or have any questions regarding the environmental review process, please visit or call the Permit Center (425-452-6864) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4). Our TTY number is 425-452-4636.

BACKGROUND INFORMATION

Property Owner: YING CHANG

Proponent: LARRY JACKOWSKI (PROJECT MANAGER)

Contact Person: TOM KUNTHOLM ARCHITECT AIA
(If different from the owner. All questions and correspondence will be directed to the individual listed.)

Address: 600 FIRST AVE. SUITE 205 SEATTLE, WA 98104

Phone:

Proposal Title: CHANG RESIDENCE ADDITION/REMODEL

Proposal Location: 255 SHORELAND DRIVE S.E. BELLEVUE, WA 98004
(Street address and nearest cross street or intersection) Provide a legal description if available.

Please attach an 8 ½" x 11" vicinity map that accurately locates the proposal site.

Give an accurate, brief description of the proposal's scope and nature:

1. General description: REMODEL EXTERIOR OF HOUSE. REMOVE AND REBUILD DECKS ADDITION TO 3RD FLOOR. ADDITION & REMODEL TO 1ST FLOOR.
2. Acreage of site: 14,900 SQ FT. 1/4 ACRE +
3. Number of dwelling units/buildings to be demolished: 0
4. Number of dwelling units/buildings to be constructed: 1
5. Square footage of buildings to be demolished: N.A.
6. Square footage of buildings to be constructed: 1,900 SQ FT. OF NEW HEATED SPACE
7. Quantity of earth movement (in cubic yards): ± 10 CU. YDS. (NEW FOUNDATION WORK)
8. Proposed land use: SINGLE FAMILY RESIDENCE & GARAGE
9. Design features, including building height, number of stories and proposed exterior materials: FOUR STOREY WOOD FRAMED HOUSE W/ NEW STONE VENEER & STUCCO EXTERIOR & DECKS. COLUMN ELEMENTS, EXTERIOR STAIRS.
10. Other

Received
APR 20 2011
Permit Processing

RP

Estimated date of completion of the proposal or timing of phasing:

WINTER 2011/2012

Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

NO.

List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. SURVEY (BOUNDARY & TOPO. W/. UTILITIES & SHORELINE. GEOTECH REPORT.

Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. List dates applied for and file numbers, if known.

NONE AT THIS TIME.

List any government approvals or permits that will be needed for your proposal, if known. If permits have been applied for, list application date and file numbers, if known.

SHORELINE EXEMPTION PERMIT
CRITICAL AREAS REVIEW
BUILDING PERMIT.

Please provide one or more of the following exhibits, if applicable to your proposal.
(Please check appropriate box(es) for exhibits submitted with your proposal):

☐ Land Use Reclassification (rezone) Map of existing and proposed zoning

☐ Preliminary Plat or Planned Unit Development
Preliminary plat map

☐ Clearing & Grading Permit
Plan of existing and proposed grading
Development plans

☐ Building Permit (or Design Review)
Site plan
Clearing & grading plan

☐ Shoreline Management Permit
Site plan

A. ENVIRONMENTAL ELEMENTS

1. **Earth**

a. General description of the site: ☐ Flat ☐ Rolling ☐ Hilly ☒ Steep slopes ☐ Mountains ☐ Other

b. What is the steepest slope on the site (approximate percent slope)?

40% +

c. What general types of soil are found on the site (for example, clay, sand, gravel, peat, and muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

1' – 4½ FEET OF LOOSE SILTY SAND OVER 3½' – 9' DEEP MEDIUM SANDY TO SANDY SILT LAYER, OVER DENSE SILTY FINE SAND 8½' DEEP. OVER STIFF SILTY CLAY, PER GEOTECH REPORT.

RP

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.
SITE NOT MAPPED AS LANSLIDE HAZARD. NO NOTICEABLE SIGNS OF SLOPE INSTABILITY. LOW POTENTIAL FOR SOIL LIQUEFALTION IN A SIESMIC EVENT. PER GEOTECH REPORT.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.
VERY LITTLE FILL PROPOSED. A MINIMAL AMOUNT AT LANDSCAPING AT WEST SIDE OF HOUSE. UNDER FIVE CU. YDS. OF TOPSOIL. SOME CUTTING OF GRADE AT WEST SIDE OF HOUSE. ± 8 CU. YDS.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
YES, DUE TO STEEP SLOPE AT NORTH & SOUTH SIDES OF HOUSE.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?
33 %

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
SILT FENCE CONSTRUCTION DURING CONSTRUCTION.
NEW DRAINAGE TO BE INSTALLED & CONTROLLED TIGHT LINE TO LAKE.

2. AIR

a. What types of emissions to the air would result from the proposal (i.e. dust, automobile odors, and industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.
VEHICLE EMISSIONS FROM DELIVERY TRUCKS & EQUIPMENT.
SHORT DURATION PIN PILE DRIVER.
SMALL AMOUNT OF DIRT AIRBORNE FROM FOUNDATION WORK.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.
NO.

c. Proposed measures to reduce or control emissions or other impacts to the air, if any:
WETTING DOWN SOIL DURING DRY MONTHS OF CONSTRUCTION
" " " DURING DEMOLITION.

3. WATER

a. Surface

(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If

RP

appropriate, state what stream or river it flows into.

PROPERTY FRONTS ON LAKE WASHINGTON.

(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If Yes, please describe and attach available plans.

YES: ALL REMODEL & CONSTRUCTION TO BE WITHIN 200' OF SHORELINE.

(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

N.A.

(4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

NO.

(5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

NO.

(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

NO.

b. Ground

(1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description.

NO.

(2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

N.A.

RP

c. Water Runoff (including storm water)

(1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

ALL SURFACE WATER RUNOFF ~~WILL B~~ FROM PROPOSED NEW CONSTRUCTION AND EXISTING ROOF AREAS OF HOUSE IS TO BE TIGHTLINED AND DISPERSED AT SHORE OF LAKE.

(2) Could waste materials enter ground or surface waters? If so, generally describe.

PIN PILES AND NEW FOOTINGS WILL REQUIRE WATER FOR CONCRETE. IT IS ANTICIPATED THAT SOME WATER WILL ENTER THE SOIL. NO WORK IS TO BE DONE WITHIN THE SHORELINE BUFFER AREA OTHER THAN TEMPORARY STORAGE OF MATERIALS.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

NATIVE PLANTS PROPOSED NEAR LAKE SHORE
TERRACED PLANTING AT NORTH & SOUTH SIDE OF HOUSE.

4. Plants

a. Check or circle types of vegetation found on the site:

- ☒ deciduous tree: alder, maple, aspen, other
- ☒ evergreen tree: fir, cedar, pine, other
- ☒ shrubs
- ☒ grass
- ☐ pasture
- ☐ crop or grain
- ☐ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
- ☐ water plants: water lily, eelgrass, milfoil, other
- ☐ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

EXISTING SHRUBS AND TURF WILL BE REMOVED AND REPLACED WITH NEW PLANTINGS ALONG PERIMETER OF REMODELED HOUSE. Cedar tree removed form site. RP

c. List threatened or endangered species known to be on or near the site.

NONE.
POSSIBLE THREATENED SALMON SPECIES IN LAKE WASHINGTON.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

NATIVE PLANTS PROPOSED TO BE ADDED NEAR LAKE SHORE AT NORTHWEST PORTION OF SITE.

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5. **ANIMALS**

a. Check or circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

- [x] Birds: hawk, heron, eagle, songbirds, other:
- [ ] Mammals: deer, bear, elk, beaver, other:
- [x] Fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.
SALMON SPECIES IN LAKE WASHINGTON.

c. Is the site part of a migration route? If so, explain.
NO.

d. Proposed measures to preserve or enhance wildlife, if any:
NO.

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy need? Describe whether it will be used for heating, manufacturing, etc.
NAT. GAS, ELEC.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
NO.

c. What kinds of energy conservation features are included in the plans of the proposal? List other proposed measures to reduce or control energy impacts, if any:
SHADING AT SOUTH & WEST EXPOSURES. UPGRADED INSULATION.

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.
No

(1) Describe special emergency services that might be required.
NONE.

(2) Proposed measures to reduce or control environmental health hazards, if any.
TEMPORARY EROSION CONTROL DURING CONSTRUCTION.

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b. Noise

(1) What types of noise exist in the area which may affect your project (for example, traffic, equipment, operation, other)?

NEARBY FLOAT PLANE DOCKS.
NOISE FROM SKI BOATS ETC.

(2) What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example, traffic, construction, operation, other)? Indicate what hours noise would come from the site.

PIN-PILE DRIVING WILL BE A SHORT TERM (12-3 DAYS) NOISE FACTOR.
TRUCKS, CONC. PUMPING, EQUIPMENT, TOOLS DURING 8 HR. WORK DAYS.

(3) Proposed measures to reduce or control noise impacts, if any:

NEIGHBORS TO BE CONTACTED FOR NOISE EVENTS SUCH AS PIN PILE DRIVING, EXCAVATION. **BCC 9.18 regulates noise, RP**

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

ALL RESIDENTIAL PROPERTIES, SINGLE FAMILY.

b. Has the site been used for agriculture? If so, describe.

NO.

c. Describe any structures on the site.

EXISTING RESIDENCE, DETACHED GARAGE DOCK.

d. Will any structures be demolished? If so, what?

NO.

e. What is the current zoning classification of the site?

R-4

f. What is the current comprehensive plan designation of the site?

Single-Family High Density

g. If applicable, what is the current shoreline master program designation of the site?

Lake Washington

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

STEEP SLOPE AREAS AS DELINEATED SHORELINE AREA.

I. Approximately how many people would reside or work in the completed project?

FAMILY OF FIVE.

j. Approximately how many people would the completed project displace?

NONE.

k. Proposed measures to avoid or reduce displacement impacts, if any:

N.A.

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i. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

NO CHANGE OF USE IN SINGLE FAMILY RESIDENTIAL ZONE.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

(1) HOUSING UNIT MIDDLE\UPPER INCOME.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

NONE.

c. Proposed measures to reduce or control housing impacts, if any:

N.A.

10. Aesthetics

New structure required to meet height restrictions of 40' max facade and 35' building height measured from average existing grade per LUC 20.20.010 and LUC 20.25E.080

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? 39' HIGH

EXT. MATERIALS: STUCCO, WOOD FASCIA, LIGHTWEIGHT TILE ROOF, STONE VENEER.

b. What views in the immediate vicinity would be altered or obstructed?

NONE.

c. Proposed measures to reduce or control aesthetic impacts, if any:

GREATLY ENHANCING EXISTING DEGRADED RESIDENCE WITHOUT ADDING HEIGHT. IMPROVING ELEVATION FROM BOTH STREET AND SHORELINE.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

NONE, OTHER THAN INDOOR LIGHTING AND LOW LEVEL DECK LIGHTING AFTER DARK.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

NO.

RP

c. What existing off-site sources of light or glare may affect your proposal?
GLARE OFF WEST FACING LAKE.

d. Proposed measures to reduce or control light or glare impacts, if any:
ROOF OVERHANGS GLAZING IN WINDOWS, PLANTINGS.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?
BOATING, SWIMMING WATER RELATED ACTIVITIES.

b. Would the proposed project displace any existing recreational uses? If so, describe.
NO.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
NONE.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.
NO.

b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.
NONE KNOWN

c. Proposed measures to reduce or control impacts, if any:
NONE.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.
SHORELAND DRIVE.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?
NO. MAIN STREET BUSSES 3/4 MILE AWAY.

c. How many parking spaces would be completed project have? How many would the project eliminate?
3 ON SITE. NO CHANGE.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not Including driveways? If so, generally describe (indicate whether public or private).
NO.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
NO.

RP

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

APPROX. 4 PER DAY

g. Proposed measures to reduce or control transportation impacts, if any:

NONE,

15. Public Services

a. Would the project result in an increased need for the public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

NO.

b. Proposed measures to reduce or control direct impacts on public services, if any.

NONE.

16. Utilities

a. Circle utilities currently available at the site: (electricity) (natural gas) (water) (refuse service) (telephone), (sanitary sewer), septic system, other.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

NO CHANGE FROM EXISTING.

Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature..... Thomas Cat .....

Date Submitted..... 3.30.'11 .....

RP

CHANG RESIDENCE
REMODEL & ADDITION

255 SHORELAND DR. SE
BELLEVUE WA 98044

LEGAL DESCRIPTION:
LOT 12, MEYDENBAUER POINT, ACCORDING TO THE PLAT THEREOF RECORDED IN VOL. 94 OF THE PLATS PAGES 54&55 IN KING CO. WA.

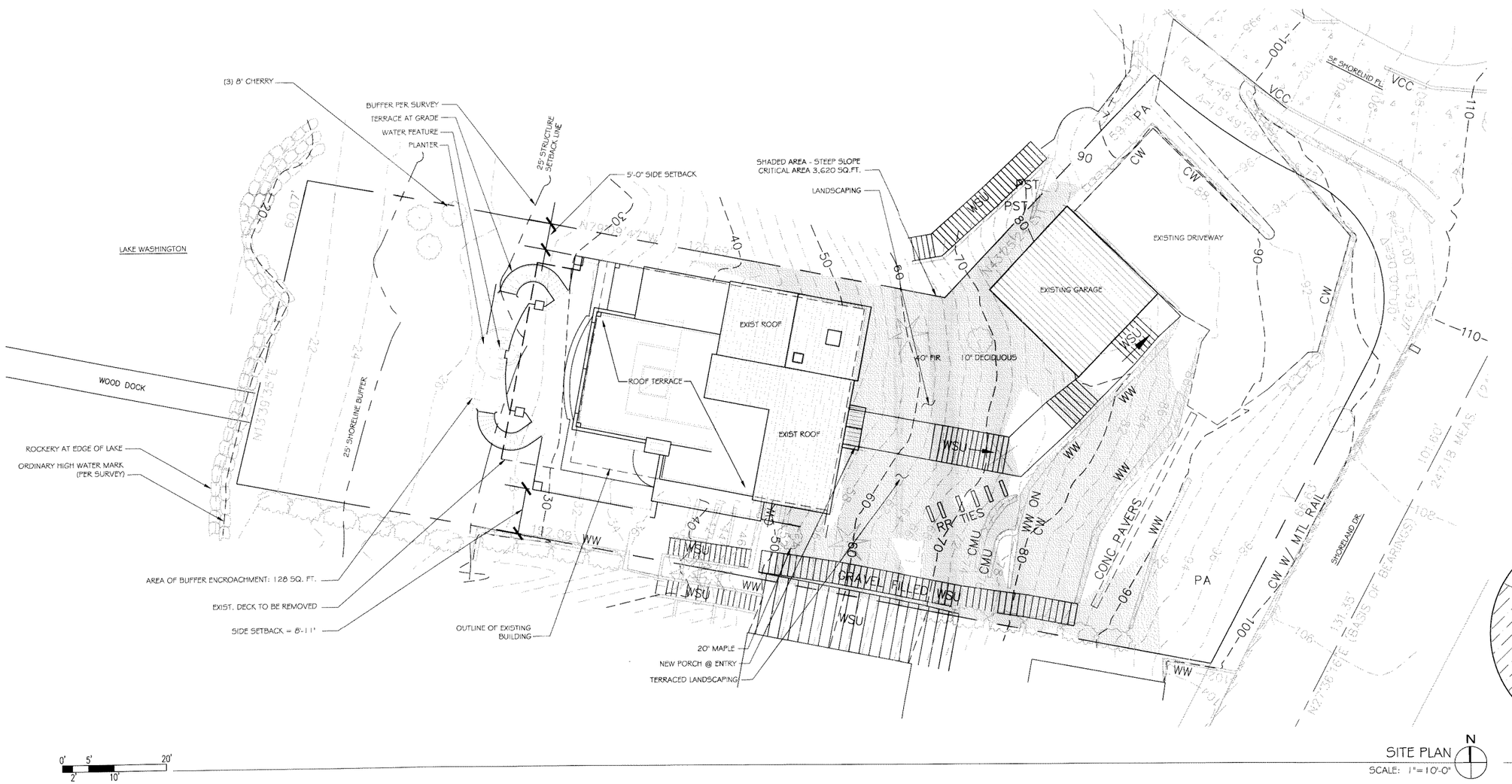
SQ. FOOTAGE	
BUILDINGS	
GARAGE:	535 SQ. FT.
HOUSE & DECKS:	2,848 SQ. FT.
WALKWAYS ABOVE 30"	241 SQ. FT.
TOTAL:	3,624 SQ. FT.
SITE AREA	
TOTAL:	14849 SQ. FT
LESS CRITICAL SLOPE AREA (3620 × .4)	11,229 SQ. FT.
LOT COVERAGE:	24.4%

3620 / 11,229 = 32.3%

ARCHITECT
TOM KUNIHOLM ARCHITECTS
600 FIRST AVE, STE 205
SEATTLE, WA 98104
206.625.9010

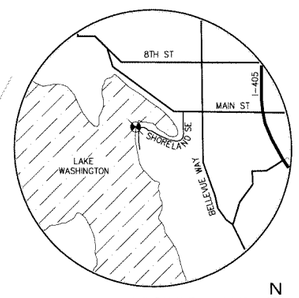
STRUCTURAL ENGINEER
AKB ENGINEERS INC.
16205 NE 44TH CT
REDMOND, WA 98101-4104
425.503.5974

LANDSCAPE ARCHITECT
-



SITE PLAN
SCALE: 1"=10'-0"

SHEET INDEX



VICINITY MAP
SCALE: NTS

Tom
Kuniholm
Architects

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600 1st Ave
Suite 205
Seattle, Washington
98104

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KUNI HOLM

CHANG RESIDENCE
REMODEL & ADDITION
255 SHORELAND DR. SE
BELLEVUE, WA 98044

Received
JUL 07 2011
Permit Processing

DATE: 6 / 27 / 11

A0.0

25' SHORELINE STRUCTURE SETBACK

25' SHORELINE BUFFER

LAKE WASHINGTON

WOOD DOCK

NEW ACCESS PATH

ORDINARY HIGH WATER MARK

SE SHORELAND PL.

SHORELAND DR.

EXISTING GARAGE

EXISTING DRIVEWAY

CONC. PAVERS

PA

WSU

WW

CW

CMU

RR TIES

N79°09'42"W 125.69'

N13°39'35"E

N43°25'24"E

R=114.48'
Δ=15°49'08"

R=225.00' L=39.27'
Δ=90°00'00"

59.06' PA

101.60'
247.18' MEAS. (247.19' PLAT)

131.35'

N27°36'16"E (BASIS OF BEARINGS)

105 SQ FT

PLAN LEGEND

- PROPERTY LINE
- 25' SHORELINE BUFFER
- 25' SHORELINE STRUCTURE SETBACK

IMPACTS LEGEND

	SHORELINE STRUCTURE SETBACK IMPACT	183 SF
	STEEP SLOPE IMPACT	716 SF

MITIGATION LEGEND

	STEEP SLOPE RESTORATION (DECKS TO BE REMOVED)	514 SF
	SHORELINE MITIGATION	183 SF
	STEEP SLOPE MITIGATION	716 SF

GRAPHIC SCALE
(IN FEET)

0 10 20 30 40 60

SCALE: 1:20

N

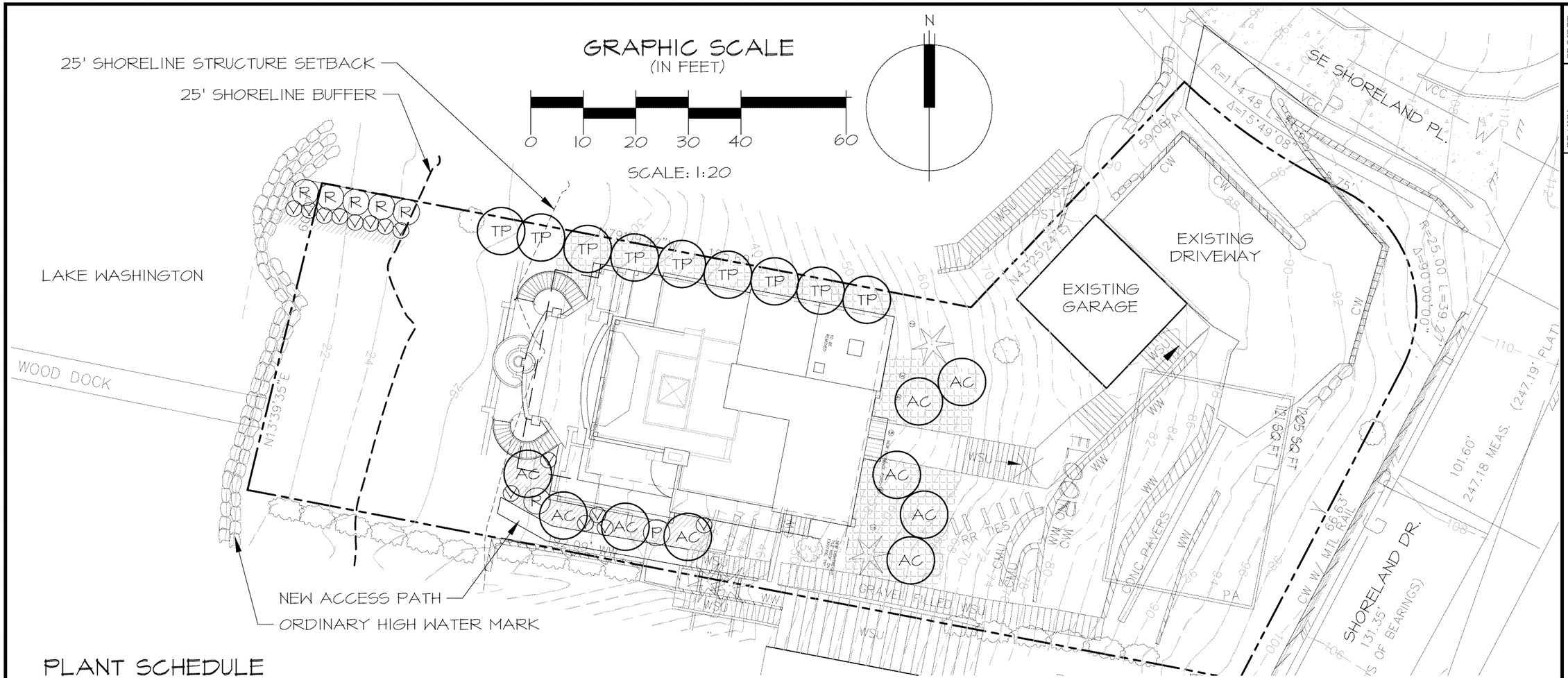
PROJECT 4055
DRAWN SO
SCALE AS NOTED
DATE 06-24-11
REVISED

1/3

FIGURE 1: OVERVIEW PLAN
MITIGATION PLAN
CHANG RESIDENCE
KING COUNTY, WASHINGTON

Altmann Oliver Associates, LLC
PO Box 578 Carnation, WA 98014
Office (425) 333-4535 Fax (425) 333-4569
AOA Environmental Planning & Landscape Architecture

4055-MIT-06-24-11.dwg



PLANT SCHEDULE

TREES

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE	NOTES
AC	ACER CIRCINATUM	VINE MAPLE	AS SHOWN	9	2 GAL.	MULTI-STEM (3 MIN.)
TP	THUJA PLICATA	WESTERN RED CEDAR	AS SHOWN	9	10' HT.	FULL & BUSHY

SHRUBS

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE	NOTES
P	PHILADELPHUS LEWISII	MOCK ORANGE	5' O.C.	1	1 GAL.	MULTI-CANE (3 MIN.)
R	RIBES SANGUINEUM	RED CURRANT	5' O.C.	6	1 GAL.	MULTI-CANE (3 MIN.)
V	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3' O.C.	14	1 GAL.	FULL & BUSHY

GROUNDCOVER

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE	NOTES
	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	2' O.C.	43	1 GAL.	FULL & BUSHY
	POLYSTICHUM MUNITUM	SWORD FERN	3' O.C.	107	1 GAL.	FULL & BUSHY

PROJECT 4055
DRAWN SO
SCALE AS NOTED
DATE 06-24-11
REVISED
2/3

FIGURE 2: PLANTING PLAN
MITIGATION PLAN
CHANG RESIDENCE
KING COUNTY, WASHINGTON

Altmann Oliver Associates, LLC
AOA
Environmental Planning & Landscape Architecture
PO Box 578 Carnation, WA 98014
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4055-MIT-06-24-11.dwg

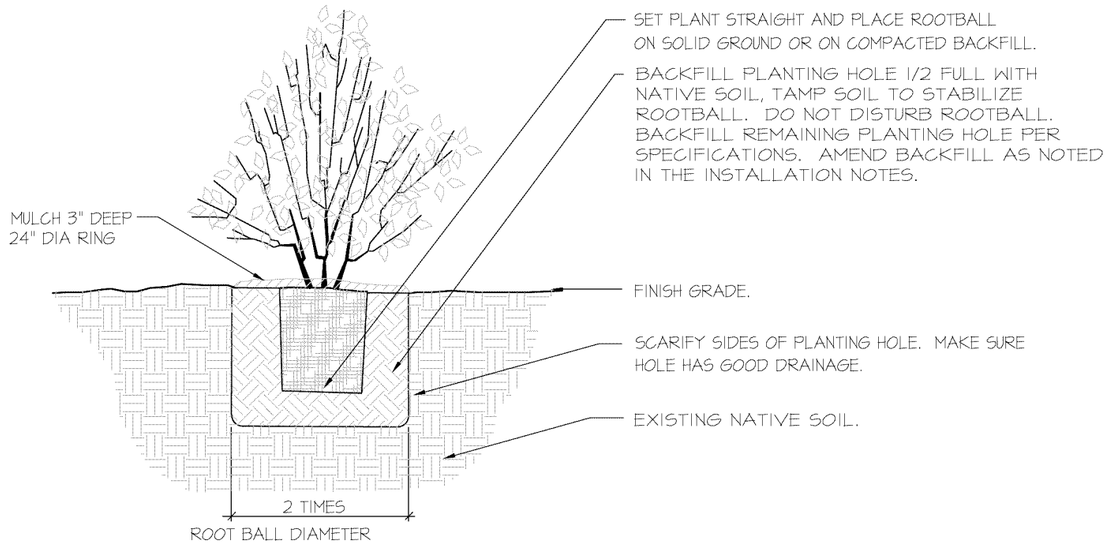
SPECIFICATIONS

1. CONTRACTOR INFORMATION. WHEN IT IS AVAILABLE, CONTACT INFORMATION SHALL BE PROVIDED TO THE CITY OF BELLEVUE THAT INCLUDES NAMES, ADDRESSES AND PHONE NUMBERS OF PERSONS/FIRMS THAT WILL BE RESPONSIBLE FOR INSTALLING REQUIRED PLANTS AND PERFORMING REQUIRED MAINTENANCE.
2. CONTRACTOR'S QUALIFICATIONS. ALL WORK SHALL BE PERFORMED BY A LICENSED LANDSCAPE CONTRACTOR REGISTERED IN THE STATE OF WASHINGTON. CONTRACTOR MUST BE EXPERIENCED IN MITIGATION AND RESTORATION WORK. THE CONTRACTOR SHALL PROVIDE THAT THERE IS ONE PERSON ON THE SITE AT ALL TIMES DURING WORK AND INSTALLATION WHO IS THOROUGHLY FAMILIAR WITH THE TYPE OF MATERIALS BEING INSTALLED AND THE BEST METHODS FOR THEIR INSTALLATION, AND WHO SHALL DIRECT ALL WORK BEING PERFORMED UNDER THESE SPECIFICATIONS. THIS PERSON SHALL HAVE A MINIMUM OF FIVE (5) YEARS EXPERIENCE INSTALLING NATIVE PLANT MATERIALS FOR WETLAND MITIGATION OR RESTORATION PROJECTS, UNLESS OTHERWISE ALLOWED BY THE LANDSCAPE DESIGNER, WETLAND BIOLOGIST AND/OR THE CITY OF BELLEVUE.
3. ALL PLANTS SHOULD BE INSTALLED BETWEEN DECEMBER 1ST AND MARCH 15TH.
4. INTERMEDIATE INSPECTIONS. ALL PLANTS SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE DESIGNER AND/OR WETLAND BIOLOGIST PRIOR TO INSTALLATION. CONDITION OF ROOTS OF A RANDOM SAMPLE OF PLANTS WILL BE INSPECTED, AS WELL AS ALL ABOVEGROUND GROWTH ON ALL PLANTS. ROOTS OF ANY BARE ROOT PLANTS, IF PERMITTED FOR USE, WILL BE INSPECTED. PLANT MATERIAL MAY BE APPROVED AT THE SOURCE, AT THE DISCRETION OF THE LANDSCAPE DESIGNER AND THE WETLAND BIOLOGIST, BUT ALL MATERIAL MUST BE RE-INSPECTED AND APPROVED ON THE SITE PRIOR TO INSTALLATION. PLANT LOCATIONS SHALL ALSO BE INSPECTED AND APPROVED PRIOR TO PLANTING.
5. PRIOR TO INSTALLATION OF PLANT MATERIAL, THE PLANTING AREAS WILL BE LAID OUT BASED ON THE PLANTING PLAN, AND ALL HIMALAYAN BLACKBERRY, ENGLISH IVY OR OTHER INVASIVE PLANT SPECIES LOCATED IN THE PLANTING AREAS WILL BE REMOVED BY HAND.
6. ALL PLANTS SHALL BE PIT-PLANTED IN PLANTING PITS EXCAVATED 2X THE DIAMETER OF THE PLANT. PITS SHALL BE BACKFILLED WITH A 30/10 MIX OF ORGANIC WEED-FREE COMPOST TO NATIVE SOIL. PITS SHALL BE AMENDED WITH A HYDRATED SOIL POLYMER (INSTALLED AT RATES PER MANUFACTURER'S SPECIFICATIONS). PLANTS SHALL BE INSTALLED 2" HIGH AND SURFACED MULCHED TO A DEPTH OF 2" WITH MEDIUM-COURSE BARK MULCH PLACED CONTINUOUSLY THROUGHOUT THE PLANTING BED.
7. ALL PLANTS SHALL BE NURSERY GROWN (IN WESTERN WA OR OR) FOR AT LEAST 1 YEAR FROM PURCHASE DATE, FREE FROM DISEASE OR PESTS, WELL-ROOTED, BUT NOT ROOT-BOUND AND TRUE TO SPECIES.
8. PLANT LAYOUT SHALL BE APPROVED BY AOA PRIOR TO INSTALLATION AND APPROVED UPON COMPLETION OF PLANTING.
9. UPON COMPLETION OF PLANTING, BARE AREAS SHALL BE STRAW MULCHED TO A DEPTH OF 1" AND ALL PLANTS SHALL BE THOROUGHLY WATERED.
10. UPON APPROVAL OF PLANTING INSTALLATION BY AOA, THE CITY OF BELLEVUE WILL BE NOTIFIED TO CONDUCT A SITE REVIEW FOR FINAL APPROVAL OF CONSTRUCTION.
11. MAINTENANCE SHALL BE REQUIRED IN ACCORDANCE WITH THE CITY OF BELLEVUE SENSITIVE AREAS MITIGATION GUIDELINES AND APPROVED PLANS.
12. ALL PLANTS SHALL BE HAND-WATERED, AS NECESSARY DURING THE FIRST TWO DRY SEASONS. BETWEEN JUNE 15 - OCTOBER 31. FLOW SHOULD ENSURE COMPLETE SATURATION OF THE ROOT ZONE.
13. MAINTENANCE SHALL BE IMPLEMENTED ON A REGULAR BASIS ACCORDING TO THE SCHEDULE BELOW.

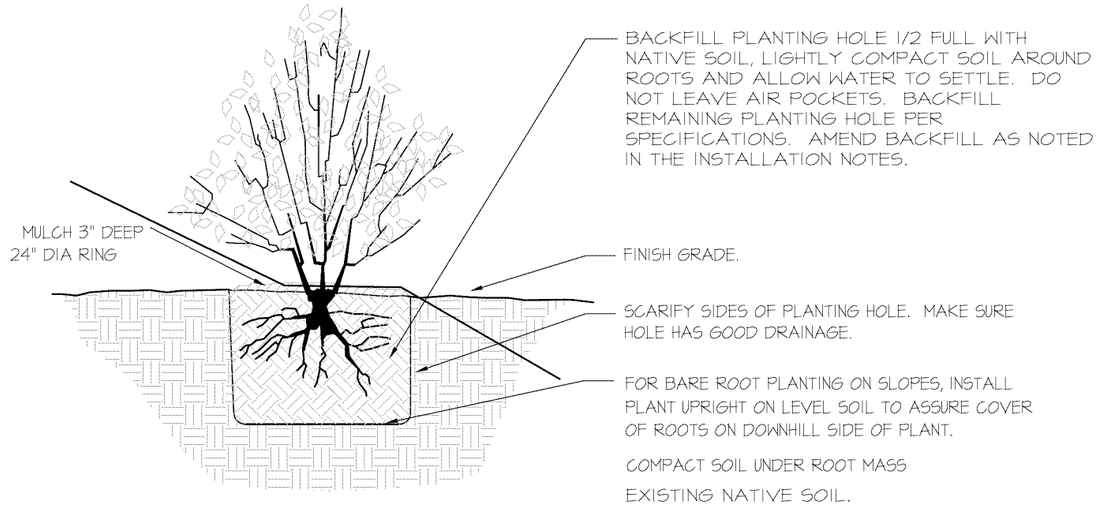
ANNUAL MAINTENANCE SCHEDULE

MAINTENANCE ITEM	J	F	M	A	M	J	J	A	S	O	N	D
WEED CONTROL			1	1	1	1	1	1	1	1	1	
GENERAL MAINT.	1	1	1	1	1	1	1	1	1	1	1	1

1-8 = NUMBER OF TIMES TASK SHALL BE PERFORMED PER MONTH.



1 CONTAINER TREE/SHRUB PLANTING DETAIL (typ.)
N.T.S.



2 BARE-ROOT TREE/SHRUB PLANTING DETAIL (typ.)
N.T.S.

PROJECT 4055
DRAWN SO
SCALE AS NOTED
DATE 06-24-11
REVISED
3/3

FIGURE 3: SPECIFICATIONS & DETAILS
MITIGATION PLAN
CHANG RESIDENCE
KING COUNTY, WASHINGTON

Altmann Oliver Associates, LLC
AOA Environmental Planning & Landscape Architecture
PO Box 578 Carnation, WA 98014 Office (425) 333-4535 Fax (425) 333-4569

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Altmann Oliver Associates, LLC
AOA
PO Box 578 Carnation, WA 98014 Office (425) 333-4535 Fax (425) 333-4509
Environmental Planning & Landscape Architecture

June 23, 2011

AOA-4055

Tom Kuniholm
600 First Ave., Suite 205
Seattle, WA 98104

SUBJECT: **Chang Residence Remodel at 255 Shoreland Drive SE**
Critical Areas Study: Slope and Shoreline Mitigation
City of Bellevue File No: 11-111292-LO

Dear Tom:

On June 3, 2011 I conducted a reconnaissance on the subject property to assess impacts to critical areas from previous un-permitted activities, and as part of the proposed re-model of the existing residence. The project site is located on Lake Washington, which requires a 25-foot buffer and a 25-foot structure setback from the surveyed ordinary high water (see survey drawing prepared by Axis Survey & Mapping). In addition, the majority of the central and eastern portions of the site consists of steep slope (see Geotechnical Report).

1.0 CRITICAL AREA IMPACTS

The proposed project requires the impact of 183 s.f. of existing lawn located within the 25-foot shoreline structure setback area. In addition, the project includes a total of 716 s.f. of steep slope impact area located along the south and west sides of the house. This steep slope impact area consists of a combination of: 1) the unpermitted stairway along the south property line, 2) replacement decks along the south façade, and 3) improvements to the west façade. One large cedar tree was also apparently removed on the slope south of the house due to safety concerns.

With the exception of the previously removed cedar tree, no significant vegetation is proposed for removal within the impacted steep slope or shoreline structure setback areas. All of the proposed impact areas have a very low functional value and currently consist of sparsely vegetated yard areas that provide minimal stability to the slope and provide little habitat value. Furthermore, it is our understanding that all of the previously impacted steep slope areas were in a similar developed condition with little habitat value.

2.0 CRITICAL AREA MITIGATION

Mitigation for the minor loss of function associated with the 183 s.f. of impact to the existing lawn area located within the shoreline structure setback will consist of planting native shrubs within a 183 s.f. area of existing yard located along the shoreline in the northwest portion of the site. Enhancement of this area would increase the habitat value of the area over current conditions.

Mitigation for the 716 s.f. of steep slope impact will occur through: 1) the removal of two existing decks along the east side of the house that will be restored with native vegetation and 2) planting sparsely vegetated slope areas along the north and south sides of the house. The overall slope enhancement area will total 716 s.f. and has been designed to increase the habitat value of the slope by increasing the plant species and structural diversity while increasing stability.

Mitigation for the loss of the cedar tree that was removed from the south side of the house for safety concerns would occur through the planting of three new large cedar trees off the northwest corner of the house.

Implementation of the mitigation plan should replace and exceed the minor functions currently provided by the impacted critical areas.

2.1 Goal, Objectives, and Performance Standards for Mitigation Areas

The primary goal of the mitigation plan is to increase the habitat and stability functions of the existing degraded critical areas. To meet this goal, the following objectives and performance standards have been incorporated into the design of the plan:

Objective A: Increase the structural and plant species diversity within the mitigation areas.
Performance Standard: Following every monitoring event for a period of at least five years, the mitigation areas will contain a total of at least 6 native plant species. In addition, there will be 100% survival of all woody planted species throughout the mitigation areas at the end of the first year of planting. Following Year 1, success will be based on an 80% survival rate or similar number of recolonized native woody plants.

Objective B: Limit the amount of invasive and exotic species within the mitigation areas.
Performance Standard: After construction and following every monitoring event for a period of at least five years, exotic and invasive plant species will be maintained at levels below 10% total cover in the designated mitigation areas. Invasive species include, but are not limited to, Himalayan and evergreen blackberry, Japanese knotweed, and English ivy.

2.2 Construction Management
Prior to commencement of any work in the mitigation areas, the clearing limits will be staked and any existing vegetation to be saved will be clearly marked. A pre-construction meeting will be held at the site to review and discuss all aspects of the project with the landscape contractor and the owner.

A consultant will supervise plan implementation during construction to ensure that objectives and specifications of the mitigation plan are met. Any necessary significant modifications to the design that occur as a result of unforeseen site conditions will be jointly approved by the City of Bellevue and the consultant prior to their implementation.

2.3 Monitoring Methodology
The monitoring program will be conducted for a period of five years, with annual reports submitted to the City. Vegetation monitoring will include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weeds.

Photo-points will be established from which photographs will be taken throughout the monitoring period. These photographs will document general appearance and progress in plant community establishment in the mitigation areas. Review of the photos over time will provide a visual representation of success of the mitigation plan.

2.4 Maintenance Plan
Maintenance will be conducted on a routine, year round basis. Additional maintenance needs will be identified and addressed following periodic maintenance reviews. Contingency measures and remedial action on the site shall be implemented on an as-needed basis at the direction of the consultant or the owner.

2.5 Weed Control
Routine removal and control of non-native and other invasive plants within the designated mitigation areas shall be performed by manual means. Undesirable and weedy exotic plant species shall be maintained at levels below 10% total cover within all mitigation areas during the five-year monitoring period.

2.6 General Maintenance Items
Routine maintenance of planted trees and shrubs shall be performed. Measures include resetting plants to proper grades and upright positions. Tall grasses and other competitive weeds shall be weeded at the base of plants to prevent engulfment. Weed control should be performed by hand removal.

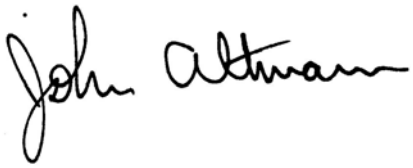
2.7 Contingency Plan
All dead plants will be replaced with the same species or an approved substitute species that meets the goal of the mitigation plan. Plant material shall meet the same specifications as originally-installed material. Replanting will not occur until after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.). Replanting shall be completed under the direction of the consultant, City of Bellevue, or the owner.

2.8 As-Built Plan
Following completion of construction activities, an as-built plan for the mitigation area will be provided to the City of Bellevue. The plan will identify and describe any changes in relation to the original approved plan.

If you have any questions regarding the mitigation plan, please give me a call.

Sincerely,

ALTMANN OLIVER ASSOCIATES, LLC



John Altmann
Ecologist

PanGEO INCORPORATED
Geotechnical & Earthquake Engineering Consultants

April 4, 2011
Revised on May 27, 2011
File No. 10-093.100

Mr. Ying Chang
255 Shoreland Drive SE
Bellevue, WA 98004

Subject: **Revised Geotechnical Engineering Report**
Proposed Improvements
255 Shoreland Drive SE, Bellevue, Washington

Dear Mr. Chang,

As requested, PanGEO, Inc. has completed a geotechnical engineering study to assist you and your project team with the design and construction of the proposed improvements at the above-referenced site. This study was performed in general accordance with our mutually agreed scope of work outlined in our proposal dated February 10, 2011, and was subsequently approved on March 11, 2011. Our service scope included reviewing readily available geologic and geotechnical data, reviewing preliminary project plans, drilling two geotechnical borings and excavating two hand borings, conducting a site reconnaissance, and developing the conclusions and recommendations presented in this report.

SITE AND PROJECT DESCRIPTION

The subject site is located at 255 Shoreland Drive SE, on the Lake Washington shore, in Maydenbauer Bay, Bellevue, Washington (see Vicinity Map, Figure 1). The property is approximately L-shaped, and is bordered to the west by Lake Washington, to the east by Shoreland Drive SE, and to the south and north by existing single-family dwellings (see Figure 2). An existing house and a detached garage currently occupy the site (see Figure 2). Based on a review of the topographic survey map and site plans, the site grade generally descends from east to west with gradients ranging from 15 to 60 percent. The total vertical relief from the east property line to the west property line is about 80 feet. The area west of the house is generally flat.

Based on the information provided, the proposed improvements will be limited to the areas located roughly between the existing entry of the house to about 30 feet from the shore of Lake Washington (see Figure 2), and will include the following elements:

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Seattle, WA 98102
Tel (206) 262-0370
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- Repair the existing entry bridge (the unpermitted deck being constructed around the entryway will be removed and disturbed ground will be restored);
- Add additional interior space to the upper floor and remodel the building siding;
- Construct a new terrace and two curved stairs on the west side of the house. This area is currently occupied by an unpermitted wood deck that will be removed to allow for terrace construction. The new terrace and stairs will slightly expand beyond the west edge of the unpermitted deck;
- Add a new 4-story moment frame to reinforce the existing house structure for seismic condition;
- Construct new footings under the existing skirting walls and a new wall along the west side of the house as part of the planned structural improvements;
- Remove the small decks on the south side of the house and replace with the new decks with the same footprint; and
- Construct a stair on the slope along the south property line (the stair had already been constructed without a permit).

The conclusions and recommendations in this report are based on our understanding of the proposed development, which is in turn based on the project information provided. If the above project description is incorrect, or the project information changes, we should be consulted to review the recommendations contained in this study and make modifications, if needed.

SUBSURFACE EXPLORATIONS

Our subsurface exploration program consisted of drilling two test borings (BH-1 and BH-2) and excavating two hand holes (HH-1 and HH-2) at the subject site. Test borings BH-1 and BH-2 were drilled to depths of about 16½ and 26½ feet below the existing grade, respectively, on June 10, 2010, using a hand-operated portable drill rig owned and operated by CN Drilling of Seattle, Washington. The hand borings HH-1 and HH-2 were excavated to depths of about 4 and 6 feet, respectively, below the surface using hand augers on March 17, 2011. The approximate locations of the test borings and hand holes were taped in the field from on-site features, and are plotted on Figure 2.

The portable drill rig was equipped with 4-inch outside diameter hollow stem augers. Soil samples were obtained from the borings at 2½- and 5-foot depth intervals in general accordance with Standard Penetration Test (SPT) sampling methods (ASTM test method D-1586) in which the samples are obtained using a 2-inch outside diameter split-spoon sampler. The sampler was driven into the soil a distance of 18 inches using a 140-pound weight freely falling a distance of

30 inches. The number of blows required for each 6-inch increment of sampler penetration was recorded. The number of blows required to achieve the last 12 inches of sample penetration is defined as the SPT N-value. The N-value provides an empirical measure of the relative density of cohesionless soil, or the relative consistency of fine-grained soils.

An engineer and an engineering geologist from PanGEO were present during the field exploration to observe the drilling, assist in sampling, to describe and document the soil samples obtained from the test borings, and to conduct the hand boring excavations. The soil samples from test borings were described and field classified in general accordance with the symbols and terms outlined in Figure 3, and the summary boring logs are included as Figures 4 through 7.

SITE GEOLOGY AND SUBSURFACE CONDITIONS

SITE GEOLOGY

The Geologic Map of King County (Booth, et. al. 2007) mapped the surficial geologic unit at the subject site as Advance Outwash (Map Unit Qva). Advance Outwash deposit is described by Booth, et al. as moderately to well sorted, slightly oxidized sand and gravel that had been overridden by glacial ice. Advance Outwash typically exhibit low compressibility and high strength characteristics in its undisturbed state.

SOIL CONDITIONS

The following is a description of the soils encountered at the site. Please refer to the summary boring logs (Figures 4 through 7) for a detailed description of the conditions encountered at each boring location.

UNIT 1: Fill – Approximately 1 and 4½ feet of loose to very loose, slightly silty to silty sand with some roots and gravel was encountered in BH-1 and BH-2, respectively, which were drilled east of the house. In hand borings HH-1 and HH-2 drilled west of the house, approximately 1½ feet of loose silty sand was encountered below the surface. We interpret this near-surface unit as fill.

UNIT 2: Colluvium – Below the fill, approximately 3½ and 9 feet of soft to medium stiff, slightly sandy to sandy silt was encountered in BH-1 and BH-2, respectively. We interpret this unit to be colluvium, or slope wash that was deposited at site as a result of mass waste from the upper slope area. This unit was not encountered in hand borings HH-1 and HH-2.

UNIT 3 – Advanced Outwash: Below the colluvium, Boring BH-1 encountered a layer of dense silty fine sand of approximately 8½ feet thick. This soil unit is consistent with the mapped Advanced Outwash deposits. This unit was not encountered in boring BH-2, and hand borings HH-1 and HH-2.

UNIT 4 – Glaciolacustrine: Below the fill in HH-1 and HH-2, stiff, silt and sandy silt were encountered and extended to the maximum depths of the hand borings to about 4 and 6 feet below the surface. Very stiff to hard, silt to silty clay was also encountered below Advance Outwash in BH-1 and colluvium in BH-2. This unit extended to at least the bottom of the borings at about 16½ and 26½feet below the surface in BH-1 and BH-2, respectively. We interpret this soil unit as Glaciolacustrine deposits.

GROUNDWATER

Groundwater was not encountered in the borings BH-1 and BH-2 during drilling. However, groundwater was measured at a depth of about 12½ feet approximately one hour after drilling in BH-1, perched on the sand/silt interface. Perched groundwater was observed at about one foot below the surface in HH-1 and HH-2, atop of the silt layer. It should be noted that groundwater elevations and seepage rates are likely to vary depending on the season, local subsurface conditions, and other factors. Groundwater levels and seepage rates are normally highest during the winter and early spring.

GEOTECHNICAL DESIGN RECOMMENDATIONS

GEOLOGIC HAZARDS ASSESSMENT

We conducted a geologic hazards assessment for the proposed development as part of our study. The assessment includes evaluation of Landslide Hazards, Seismic (Earthquake) Hazards, Coal Mine Hazards, and Erosion Hazards. Based on our review of the City of Bellevue's Geologic Hazards Map and site topographic map, the project site contains steep slopes (40 percent and greater) and is mapped as an erosion hazard area. The west edge of the site is also mapped within a seismic hazard area but is not mapped as a coal mine hazards area. The following sections contain our assessment of potential Geologic Hazards and their possible effects on the proposed improvements.

Landslide Hazards and Steep Slopes

The site is not mapped as a landslide hazard area in accordance with City of Bellevue's Geologic Hazards Map, but contains slopes of 40% or greater. As part of our study, we conducted a site reconnaissance to observe signs of past slope movement and instability. Based on observations made during our site reconnaissance, we did not observe any noticeable signs of slope instability. Based on our observations of ground features and the results of our field exploration, it is our opinion that the site is globally stable in its current configurations. Based on our understanding of the proposed improvements, it is also our opinion that the proposed project will not adversely impact the overall stability of the subject and surrounding properties, provided that the

recommendations presented in this report are properly incorporated into the design and construction of the project.

Erosion Hazards Assessment

The site is mapped within a potential erosion control area in accordance with the City of Bellevue's Geologic Map. Based on the borings drilled and hand borings excavated, the site soils encountered exhibit low to moderate erosion potential when disturbed and left unprotected. However, in our opinion, the erosion hazards at the site can be effectively mitigated with the best management practice during construction and with properly designed and implemented landscaping for permanent erosion control. During construction, the temporary erosion hazard can also be effectively managed with an appropriate erosion and sediment control plan, including but not limited to installing silt fence at the construction perimeter, placing quarry spalls or hay bales at the disturbed and traffic areas, covering stockpile soil or cut slopes with plastic sheets, constructing a temporary drainage pond to control surface runoff and sediment trap, placing rocks at the construction entrance, etc.

Permanent erosion control measures should be applied to the disturbed areas as soon as feasible. These measures may include but not limited to planting and hydroseeding. The use of permanent erosion control mat may also be considered in conjunction with planting/hydroseeding to protect the soils from erosion.

Seismic Hazards

The City of Bellevue and King County Code defines seismic hazard areas as those areas subject to severe risk of earthquake damage as a result of seismically induced settlement or soil liquefaction. According to the City of Bellevue's Geologic Hazards Map, the majority of the site is not designated a seismic hazard area except a small strip along Lake Washington. Based on the stiff and fine-grained nature of the site soils encountered at shallow depths during our field exploration, in our opinion, the potential for soil liquefaction and associated seismic settlement at the site during a design earthquake is low. As such, special design considerations associated with soil liquefaction are not required.

CRITICAL AREAS AND SETBACKS

New improvements on the house – An unpermitted deck is located on the west side of the house (see Plate 1 on following page). We understand that this deck was constructed to replace a low deck at the same location. The current design calls for a new terrace which will be located roughly at the same location as the unpermitted deck. Other planned improvements on the house will include new footings under the existing skirting walls, a new footing on the west side of the house, and replacement of two small decks on the south side of the house. These proposed

improvements will be located within the steep slope and setback areas. However, improvements on the existing house including the new wall footings, a new terrace, two stairs, and two decks should be considered as necessary repair and remodel to the existing house. The new structures will be supported by pin piles to minimize the ground disturbance in the steep slope areas. These proposed improvements, provided they are properly designed, will not have adverse impacts on the site stability. As such, in our opinion, these improvements may be constructed as planned and be exempted from the critical area design standard.

Plate 1. View of the house and unpermitted deck, looking east.

Plate 2. View of the unpermitted stairway along the south property line, looking down toward west.

Stairway along the south property line – An unpermitted stairway was constructed in the steep slope along the south property line (see Figure 2). The stairway was constructed with pressure-treated timbers which are anchored into ground with wood posts. The steps of the stairway are backfilled with crushed rock (see Plate 2). In our opinion, this wood stairway should be considered as a landscape improvement. Based on the subsurface conditions and our field observations, the stairway is currently stable and construction of the stairway will not have adverse impacts on the site stability. In our opinion, the as-built stairway was constructed closely following the existing ground contours, and presents the minimum modifications of the steep slope for the at-grade stairway construction.

SEISMIC DESIGN PARAMETERS

The following provides seismic design parameters for the site that are in conformance with the 2006 and later editions of the International Building Code (IBC), which specifies a design earthquake having a 2% probability of occurrence in 50 years (return interval of 2,475 years), and the 2002 USGS seismic hazard maps:

Site Class	Spectral Acceleration at 0.2 sec. (g) S_S	Spectral Acceleration at 1.0 sec. (g) S_1	Site Coefficients		Design Spectral Response Parameters		Control Periods (sec.)		Design PGA (S_{DS}/2.5)
			F_a	F_v	S_{DS}	S_{D1}	T_O	T_S	
C	1.40	0.47	1.00	1.33	0.93	0.42	0.09	0.45	0.37

The spectral response accelerations were obtained from the USGS Earthquake Hazards Program Interpolated Probabilistic Ground Motion website (2002 data) for the project latitude and longitude.

FOUNDATIONS

New foundations will be needed to support the proposed terrace, steel moment frame, and the existing skirting walls. Because of the variable nature of the foundation soil conditions anticipated, use of conventional shallow footings will require more earthwork than pin pile foundations and may likely cause undesirable differential foundations movement. As such, it is our opinion that the new structural elements outlined above should be supported by a deep foundation system consisting of small diameter steel piles (pin piles). The following sections present our foundation design recommendations.

Pin Pile Foundations

Based on the site access conditions, in our opinion, the pin pile foundations should consist of 2-inch diameter, Schedule 80, galvanized, steel piles. Allowable axial compression capacity of 6 kips may be used for the 2-inch diameter pin piles. Tensile capacity of the pin piles should be ignored. Penetration resistance required to achieve the capacities will be determined based on the hammer used as discussed in the following sections. Total and differential foundation settlements are anticipated to be on the order of about ½ inch or less.

The required pile length in order to develop the recommended pile capacity is expected to vary, depending on the depth of the bearing soil at the foundation locations. For planning and cost estimating purposes, a pile length of about 15 feet may be assumed for the site. The actual pile lengths should be determined during construction based on the actual driving conditions.

Pile splices may be made with compression fitted sleeve pipe couplers (see Typical Splicing Detail on Page 8). Splicing using welding of pipe joints should not be used, as welds will typically be broken during driving.

2-inch diameter steel pipe piles are typically installed using a 90-pound jackhammer or a 140-pound air hammer. The quality of a pin pile foundation is dependent in part on the experience and professionalism of the installation company. Therefore, a qualified contractor with pin pile driving experience on similar projects should be selected to install the piles.

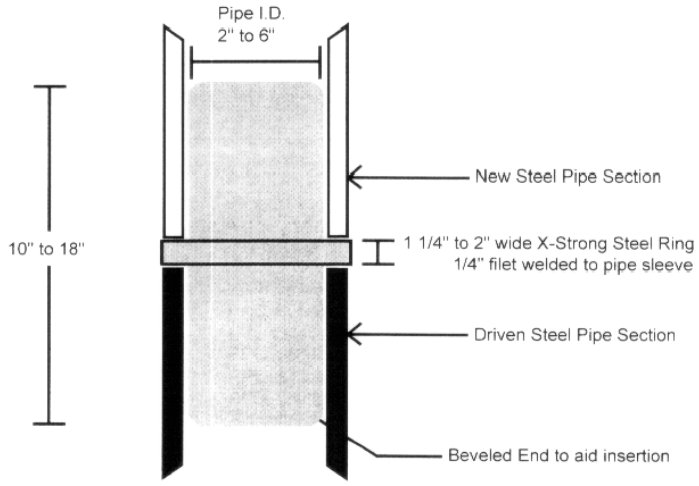
We recommend that the following specifications be included on the foundation plan:

1. 2-inch pin piles shall consist of galvanized Schedule-80, ASTM A-53 Grade "B" pipe.

2. 2-inch piles shall be driven to refusal with a minimum 90-pound jackhammer or a 140-pound air hammer. Refusal is defined as less than 1 inch of penetration in 60 seconds of continuous driving with a minimum 90-pound jackhammer or a 140-pound air hammer. If different type hammers are used, the appropriate driving/refusal criteria can be determined based on the load test results.

3. Piles shall be driven in nominal sections and connected with compression fitted sleeve couplers (see detail below – Courtesy of McDowell Pile King, Kent, WA).

4. The geotechnical engineer of record or his/her representative shall provide full time observation of pile installation.



Typical Pin Pile Splicing Detail

Lateral Resistance: The capacity of vertical pin pipes to resist lateral loads is very limited and should be ignored in design. Lateral forces from wind or seismic loading should be resisted by the passive earth pressures acting against the pile caps and below-grade walls or batter piles. Passive resistance values may be determined using an equivalent fluid weight of 150 pounds per cubic foot (pcf) for sloping grounds or 300 pcf for the level ground. This value includes a safety factor of about 1.5 assuming that properly compacted granular fill will be placed adjacent to and

surrounding the pile caps and grade beams. Alternatively, pin piles may be battered no flatter than 4V:1H to resist the lateral loads.

RESPONSE TO CITY OF BELLEVUE COMMENTS

As part of our study, we reviewed City of Bellevue's Pre-Development Review letters dated February 4 and May 16, 2011, and examined the critical areas comments contained in the letters. The following are City's comments and our response:

1. *Comments 1: Any areas of temporary disturbance and permanent disturbance caused by the construction of the stairway, decks, or any other recent improvements*

   Response: Based on our field observations, the areas of ground disturbance by recent improvements include the unpermitted deck area east of the house around the entry bridge, the unpermitted deck area west of the house, and the stairway areas along the south property line.

2. *Comment 2: Expansion of the house beyond the foundation noted on the survey submitted*

   Response: We understand that the new terrace and stairs on the west side of the house will be expanded slightly beyond the original house and deck footprint. Please refer to the architectural plans.

3. *Each Item in LUC 20.25H.125, LUC 20.25H.140, LUC 20.25H.145, and LUC 20.25H.255B*

   The following are City of Bellevue's Land Use Code (LUC) 20.25H.125, LUC 20.25H.140, LUC 20.25H.145 and our response (in red) to each item:

   LUC 20.25H.125 Performance standards – Landslide hazards and steep slopes.
   In addition to generally applicable performance standards set forth in LUC 20.25H.055 and 20.25H.065, development within a landslide hazard or steep slope critical area or the critical area buffers of such hazards shall incorporate the following additional performance standards in design of the development, as applicable. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function.

   A. Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography; - The structures and improvements are designed to minimize alterations to the natural contour.

   B. Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation; - The proposed improvements will not change the existing critical slopes.

C. The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties; - The proposed improvements will not have adversely impacts to the subject and neighboring properties.

D. The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining wall; - The existing natural slopes will be maintained and no artificial slopes are planned for the project.

E. Development shall be designed to minimize impervious surfaces within the critical area and critical area buffer; - The proposed improvements are designed to minimize the impervious surface.

F. Where change in grade outside the building footprint is necessary, the site retention system should be stepped and regrading should be designed to minimize topographic modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria; - The proposed improvements are designed to minimize the site topographic modifications.

G. Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation; - Building foundation walls are utilized to the maximum extent possible for the project. The proposed terrace walls will be supported by pin piles and will not have adverse impacts on the site stability and critical slopes.

J. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210. – Disturbed areas will be restored per Land Use Code.

LUC 20.25H.140 Critical areas report – Additional provisions for landslide hazards and steep slopes.

B. Area Addressed in Critical Area Report.

In addition to the general requirements of LUC 20.25H.230, the following areas shall be addressed in a critical areas report for geologically hazardous areas:

1. Site and Construction Plans. The report shall include a copy of the site plans for the proposal and a topographic survey; - Site plan provided.

2. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region; - Site geology and subsurface data assessed.

3. Analysis of Proposal. The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties; and – Geological hazards evaluated in the report.

4. Minimum Critical Area Buffer and Building Setback. The report shall make a recommendation for a minimum geologic hazard critical area buffer, if any, and minimum building setback, if any, from any geologic hazard based upon the geotechnical analysis. – Minimum critical area and building setback recommendations provided in the report.

LUC 20.25H.145 Critical areas report – Approval of modification.
Modifications to geologic hazard critical areas and critical area buffers shall only be approved if the Director determines that the modification:

A. Will not increase the threat of the geological hazard to adjacent properties over conditions that would exist if the provisions of this part were not modified; - The proposed improvements will not increase the threat of the site geological hazards.

B. Will not adversely impact other critical areas; - The proposed improvements will not have adversely impacts on the site critical areas.

C. Is designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than would exist if the provisions of this part were not modified; - The proposed improvements will mitigate the site geologic hazards.

D. Is certified as safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the state of Washington; - The geologic hazards and geotechnical elements of the project were evaluated by a qualified civil engineer licensed in the State of Washington.

E. The applicant provides a geotechnical report prepared by a qualified professional demonstrating that modification of the critical area or critical area buffer will have no adverse impacts on stability of any adjacent slopes, and will not impact stability of any existing structures. Geotechnical reporting standards shall comply with requirements developed by the Director in City of Bellevue Submittal Requirements Sheet 25, Geotechnical Report and Stability Analysis Requirements, now or as

hereafter amended; - The geotechnical report was prepared by a qualified engineer in general accordance with the City of Bellevue's submittal requirements.

F. Any modification complies with recommendations of the geotechnical support with respect to best management practices, construction techniques or other recommendations; and – The geotechnical elements of the proposed project should be constructed in general accordance with the recommendations contained in the geotechnical report.

LUC 20.25H.255B – The proposed improvements will not have adverse impacts on the site stability and represents minimum alteration and modification to the steep slope and buffer areas. In our opinion, the proposed improvements are considered feasible from a geotechnical standpoint.

4. *An examination of how the proposed improvements represent the minimum necessary modification of the steep slope*

Response: The unpermitted deck east of the house will be removed and the disturbed ground will be restored to pre-construction condition. All new foundations will consist of pin piles to minimize ground disturbance. In our opinion, the proposed foundation system represents the minimum necessary ground disturbance.

As previously stated, the wood stairway along the south property line is currently stable and construction of the stairway will not have adverse impacts on the site stability. The unpermitted stairway along the south property line, in our opinion, presents the minimum disturbance to the steep slope for the at-grade construction as the stair closely follow the contour of the ground surface. We believe that removing the as-built stairway would result in more ground disturbance. As such, from a geotechnical standpoint, it is our opinion that as-built stairway may be left in place. However, we recommend any exposed/bare ground be properly vegetated to prevent future erosion.

GENERAL EARHWORK CONSIDERATIONS

SITE PREPARATION

Site preparation for the proposed improvements includes removing unpermitted decks, and excavations to the design subgrade. All stripped surface materials should be properly disposed off-site or be "wasted" on site in non-structural landscaping areas. Following site clearing and excavations, the adequacy of the subgrade where structural fill, foundations, slabs, or pavements are to be placed should be verified by a representative of PanGEO.

TEMPORARY EXCAVATIONS AND SHORING

As currently planned, we anticipate that construction of the new terrace and north foundations will involve excavations on the order of 3 to 4 feet or less. We anticipate the excavations to encounter mostly medium stiff to very stiff silt. All temporary excavations deeper than 4 feet should be sloped or shored. All temporary excavations should be performed in accordance with Part N of WAC (Washington Administrative Code) 296-155. The contractor is responsible for maintaining safe excavation slopes and/or shoring.

Based on the soil conditions at the site, in general, it is our opinion that temporary excavations may be sloped 1H:1V or flatter. The cut slopes may also need to be flattened in the wet reasons and should be covered with clear plastic sheets. We also recommend that heavy construction equipment, building materials, excavated soil, and vehicular traffic should not be allowed within a distance equal to 1/3 the slope height from the top of any excavation.

The temporary excavations and cut slopes should be re-evaluated in the field during construction based on actual observed soil conditions, and may need to be flattered in the wet reasons and should be covered with plastic sheets. The cut slopes should be covered with plastic sheets in the raining season. We also recommend that heavy construction equipment, building materials, excavated soil, and vehicular traffic should not be allowed within a distance equal to 1/3 the slope height from the top of any excavation.

MATERIAL REUSE

In our opinion, the on-site fine-grained soil (silt) should not be used as structural but may be used as general fill in the non-structural landscape areas. Structural fill, if needed, should consist of imported well-grade granular material, such as WSDOT Gravel Borrow. Well-graded recycled concrete may also be considered as a source of structural fill. Use of recycled concrete as structural fill should be approved by the project geotechnical engineer. If use of the existing sandy soils is planned, the excavated soil should be stockpiled and protected with plastic sheeting to prevent softening from rainfall.

STRUCTURAL FILL PLACEMENT AND COMPACTION

In the context of this report, structural fill is defined as compacted fill placed under footings, concrete stairs and landings, and slabs, or other load-bearing areas. Structural fill should be moisture conditioned to within about 3 percent of optimum moisture content, placed in loose, horizontal lifts less than 8 inches in thickness, and systematically compacted to a dense and relatively unyielding condition and to at least 95 percent of the maximum dry density, as determined using test method ASTM D 1557.

Depending on the type of compaction equipment used and depending on the type of fill material, it may be necessary to decrease the thickness of each lift in order to achieve adequate

compaction. PanGEO can provide additional recommendations regarding structural fill and compaction during construction.

WET WEATHER EARTHWORK

In our opinion, the proposed site construction may be accomplished during wet weather (such as in winter) without adversely affecting the site stability. However, earthwork construction performed during the drier summer months likely will be more economical. Winter construction will require the implementation of best management erosion and sedimentation control practices to reduce the chance of off-site sediment transport. Some of the site soils contain a high percentage of fines and are moisture sensitive. Any footing subgrade soils that become softened either by disturbance or rainfall should be removed and replaced with structural fill, Controlled Density Fill (CDF), or lean-mix concrete. General recommendations relative to earthwork performed in wet conditions are presented below:

- Site stripping, excavation and subgrade preparation should be followed promptly by the placement and compaction of clean structural fill or CDF;
- The size and type of construction equipment used may have to be limited to prevent soil disturbance;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Bales of straw and/or geotextile silt fences should be strategically located to control erosion and the movement of soil;
- Structural fill should consist of less than 5% fines; and
- Excavation slopes should be covered with plastic sheets.

SURFACE DRAINAGE AND EROSION CONSIDERATIONS

Surface runoff can be controlled during construction by careful grading practices. Typically, this includes the construction of shallow, upgrade perimeter ditches or low earthen berms in conjunction with silt fences to collect runoff and prevent water from entering excavations or to prevent runoff from the construction area from leaving the immediate work site. Temporary erosion control may require the use of hay bales on the downhill side of the project to prevent water from leaving the site and potential storm water detention to trap sand and silt before the water is discharged to a suitable outlet. All collected water should be directed under control to a positive and permanent discharge system.

Permanent control of surface water should be incorporated in the final grading design. Adequate surface gradients and drainage systems should be incorporated into the design such that surface

runoff is directed away from structures. Potential problems associated with erosion may also be reduced by establishing vegetation within disturbed areas immediately following grading operations.

ADDITIONAL SERVICES

To confirm that our recommendations are properly incorporated into the design and construction of the proposed project, PanGEO should be retained to conduct a review of the final project plans and specifications, and to monitor the construction of geotechnical elements. The City of Bellevue, as part of the permitting conditions, will also require geotechnical construction inspection services. PanGEO can provide you a cost estimate for construction monitoring services at a later date.

We anticipate that the following additional services will be required:

- Review final project plans and specifications
- Verify implementation of erosion control measures;
- Evaluate and confirm the stability of temporary excavation slopes;
- Observe foundation construction including pin pile installation;
- Confirm the adequacy of the compaction of structural backfill; and
- Other consultation as may be required during construction

Modifications to our recommendations presented in this report may be necessary, based on the actual conditions encountered during construction.

CLOSURE

We have prepared this report for Mr. Ying Chang, and the project design team. Recommendations contained in this report are based on a site reconnaissance, a subsurface exploration program, review of pertinent subsurface information, and our understanding of the project. The study was performed using a mutually agreed-upon scope of work.

Variations in soil conditions may exist between the locations of the explorations and the actual conditions underlying the site. The nature and extent of soil variations may not be evident until construction occurs. If any soil conditions are encountered at the site that are different from those described in this report, we should be notified immediately to review the applicability of our recommendations. Additionally, we should also be notified to review the applicability of our recommendations if there are any changes in the project scope.

The scope of our work does not include services related to construction safety precautions. Our recommendations are not intended to direct the contractors' methods, techniques, sequences or procedures, except as specifically described in our report for consideration in design.

Additionally, the scope of our work specifically excludes the assessment of environmental characteristics, particularly those involving hazardous substances. We are not mold consultants nor are our recommendations to be interpreted as being preventative of mold development. A mold specialist should be consulted for all mold-related issues.

This report has been prepared for planning and design purposes for specific application to the proposed project in accordance with the generally accepted standards of local practice at the time this report was written. No warranty, express or implied, is made.

This report may be used only by the client and for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both off and on-site), or other factors including advances in our understanding of applied science, may change over time and could materially affect our findings. Therefore, this report should not be relied upon after 24 months from its issuance. PanGEO should be notified if the project is delayed by more than 24 months from the date of this report so that we may review the applicability of our conclusions considering the time lapse.

It is the client's responsibility to see that all parties to this project, including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk. Any party other than the client who wishes to use this report shall notify PanGEO of such intended use and for permission to copy this report. Based on the intended use of the report, PanGEO may require that additional work be performed and that an updated report be reissued. Noncompliance with any of these requirements will release PanGEO from any liability resulting from the use this report.

We appreciate the opportunity to be of service.

Sincerely,

Michael H. Xue, P.E.
Senior Geotechnical Engineer

Siew L. Tan, P.E.
Principal Geotechnical Engineer

Enclosures:

Figure 1	Vicinity Map
Figure 2	Site and Exploration Plan
Figure 3	Terms and Symbols for Boring and Test Pit Logs
Figure 4	Log of Test Borings BH-1
Figure 5	Log of Test Borings BH-2
Figure 6	Log of Hand Borings HH-1
Figure 7	Log of Hand Borings HH-2

REFERENCES

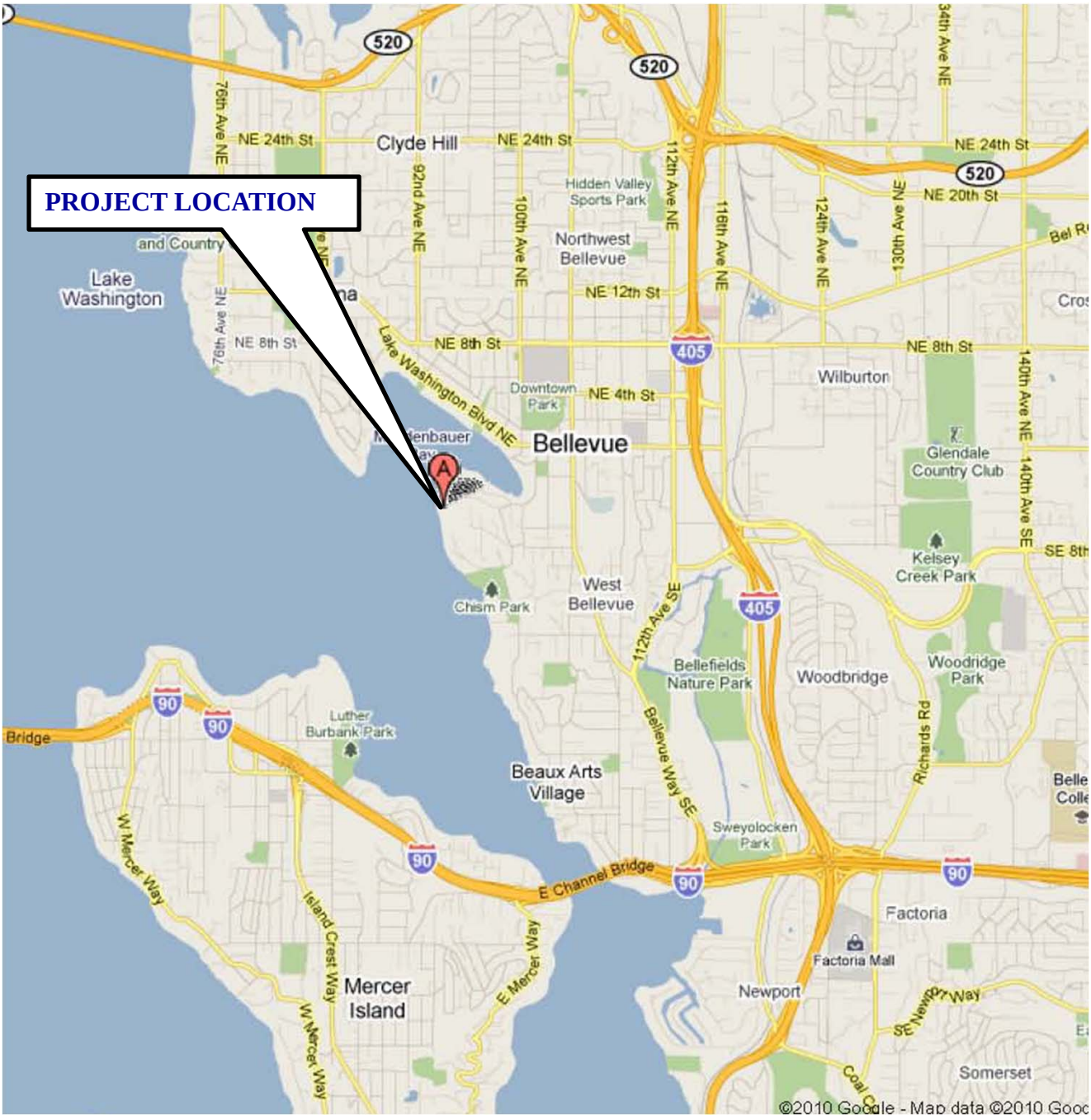
Booth, D. B., Troost, K.G., Wisher, A. P., 2007, *The Geologic Map of King County, Washington, scale 1:100,000.*

City of Bellevue GIS Map, 2007, *Surface Geology and Soils with Severe Erosion Potential Map.*

City of Bellevue GIS Map, 2007, *Geologic Hazards Map.*

International Code Council, 2006, *International Building Code (IBC).*

WSDOT, 2010, *Standard Specifications for Road, Bridges, and Municipal Construction.*



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Reference: Google Map

PanGEO INCORPORATED	**Proposed Improvements** **255 Shoreland Drive SE** **Bellevue, Washington**	**VICINITY MAP**	
		Project No. 10-093	Figure No. 1

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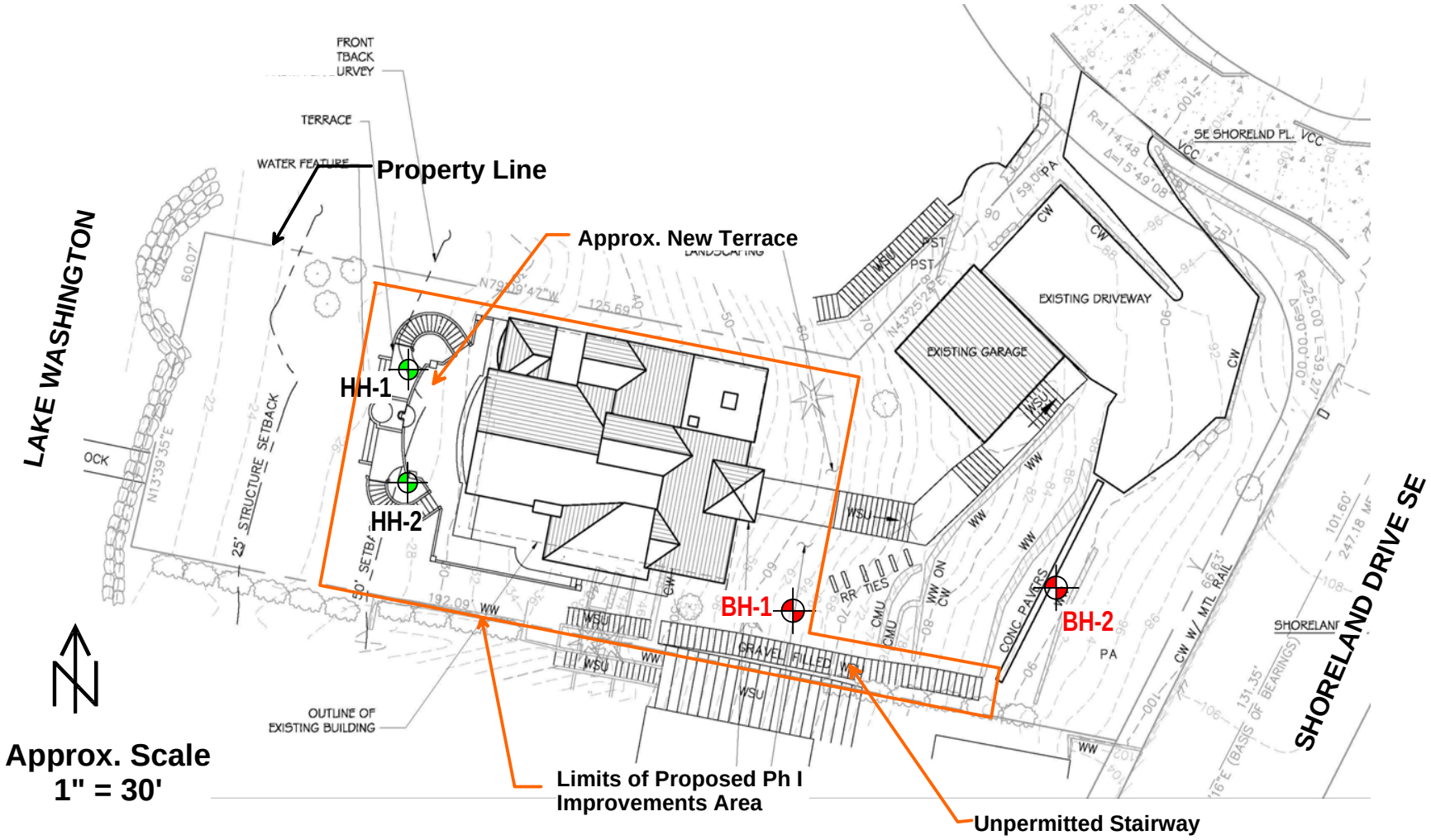

Note: Base map modified from Site Plan prepared by Tom Kuniholm Architects.

Legend:

BH-1 Approx. Test Boring Location

HH-1 Approx. Test Boring Location

PanGEO INCORPORATED

Proposed Improvements
255 Shoreland Drive SE
Bellevue, Washington

SITE AND EXPLORATION PLAN

Project No.	Figure No.
10-093	2

RELATIVE DENSITY / CONSISTENCY

SAND / GRAVEL			SILT / CLAY		
Density	SPT N-values	Approx. Relative Density (%)	Consistency	SPT N-values	Approx. Undrained Shear Strength (psf)
Very Loose	<4	<15	Very Soft	<2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Med. Dense	10 to 30	35 - 65	Med. Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	>50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	>30	>4000

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		GROUP DESCRIPTIONS	
Gravel 50% or more of the coarse fraction retained on the #4 sieve. Use dual symbols (eg. GP-GM) for 5% to 12% fines.	GRAVEL (<5% fines)	GW	Well-graded GRAVEL
		GP	Poorly-graded GRAVEL
	GRAVEL (>12% fines)	GM	Silty GRAVEL
		GC	Clayey GRAVEL
Sand 50% or more of the coarse fraction passing the #4 sieve. Use dual symbols (eg. SP-SM) for 5% to 12% fines.	SAND (<5% fines)	SW	Well-graded SAND
		SP	Poorly-graded SAND
	SAND (>12% fines)	SM	Silty SAND
		SC	Clayey SAND
Silt and Clay 50%or more passing #200 sieve	Liquid Limit < 50	ML	SILT
		CL	Lean SILT
		OL	Organic SILT or CLAY
	Liquid Limit > 50	MH	Elastic SILT
		CH	Fat CLAY
		OH	Organic SILT or CLAY
Highly Organic Soils		PT	PEAT

Notes: 1. Soil exploration logs contain material descriptions based on visual observation and field tests using a system modified from the Uniform Soil Classification System (USCS). Where necessary laboratory tests have been conducted (as noted in the "Other Tests" column), unit descriptions may include a classification. Please refer to the discussions in the report text for a more complete description of the subsurface conditions.

2. The graphic symbols given above are not inclusive of all symbols that may appear on the borehole logs. Other symbols may be used where field observations indicated mixed soil constituents or dual constituent materials.

DESCRIPTIONS OF SOIL STRUCTURES

Layered: Units of material distinguished by color and/or composition from material units above and below

Laminated: Layers of soil typically 0.05 to 1mm thick, max. 1 cm

Lens: Layer of soil that pinches out laterally

Interlayered: Alternating layers of differing soil material

Pocket: Erratic, discontinuous deposit of limited extent

Homogeneous: Soil with uniform color and composition throughout

Fissured: Breaks along defined planes

Slickensided: Fracture planes that are polished or glossy

Blocky: Angular soil lumps that resist breakdown

Disrupted: Soil that is broken and mixed

Scattered: Less than one per foot

Numerous: More than one per foot

BCN: Angle between bedding plane and a plane normal to core axis

COMPONENT DEFINITIONS

COMPONENT	SIZE / SIEVE RANGE	COMPONENT	SIZE / SIEVE RANGE
Boulder:	> 12 inches	Sand	
Cobbles:	3 to 12 inches	Coarse Sand:	#4 to #10 sieve (4.5 to 2.0 mm)
Gravel		Medium Sand:	#10 to #40 sieve (2.0 to 0.42 mm)
Coarse Gravel:	3 to 3/4 inches	Fine Sand:	#40 to #200 sieve (0.42 to 0.074 mm)
Fine Gravel:	3/4 inches to #4 sieve	Silt	0.074 to 0.002 mm
		Clay	<0.002 mm

TEST SYMBOLS

for In Situ and Laboratory Tests listed in "Other Tests" column.

CBR	California Bearing Ratio
Comp	Compaction Tests
Con	Consolidation
DD	Dry Density
DS	Direct Shear
%F	Fines Content
GS	Grain Size
Perm	Permeability
PP	Pocket Penetrometer
R	R-value
SG	Specific Gravity
TV	Torvane
TXC	Triaxial Compression
UCC	Unconfined Compression

SYMBOLS

Sample/In Situ test types and intervals

- 2-inch OD Split Spoon, SPT (140-lb. hammer, 30" drop)
- 3.25-inch OD Spilt Spoon (300-lb hammer, 30" drop)
- Non-standard penetration test (see boring log for details)
- Thin wall (Shelby) tube
- Grab
- Rock core
- Vane Shear

MONITORING WELL

- Groundwater Level at time of drilling (ATD)
- Static Groundwater Level
- Cement / Concrete Seal
- Bentonite grout / seal
- Silica sand backfill
- Slotted tip
- Slough
- Bottom of Boring

MOISTURE CONTENT

Dry	Dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water

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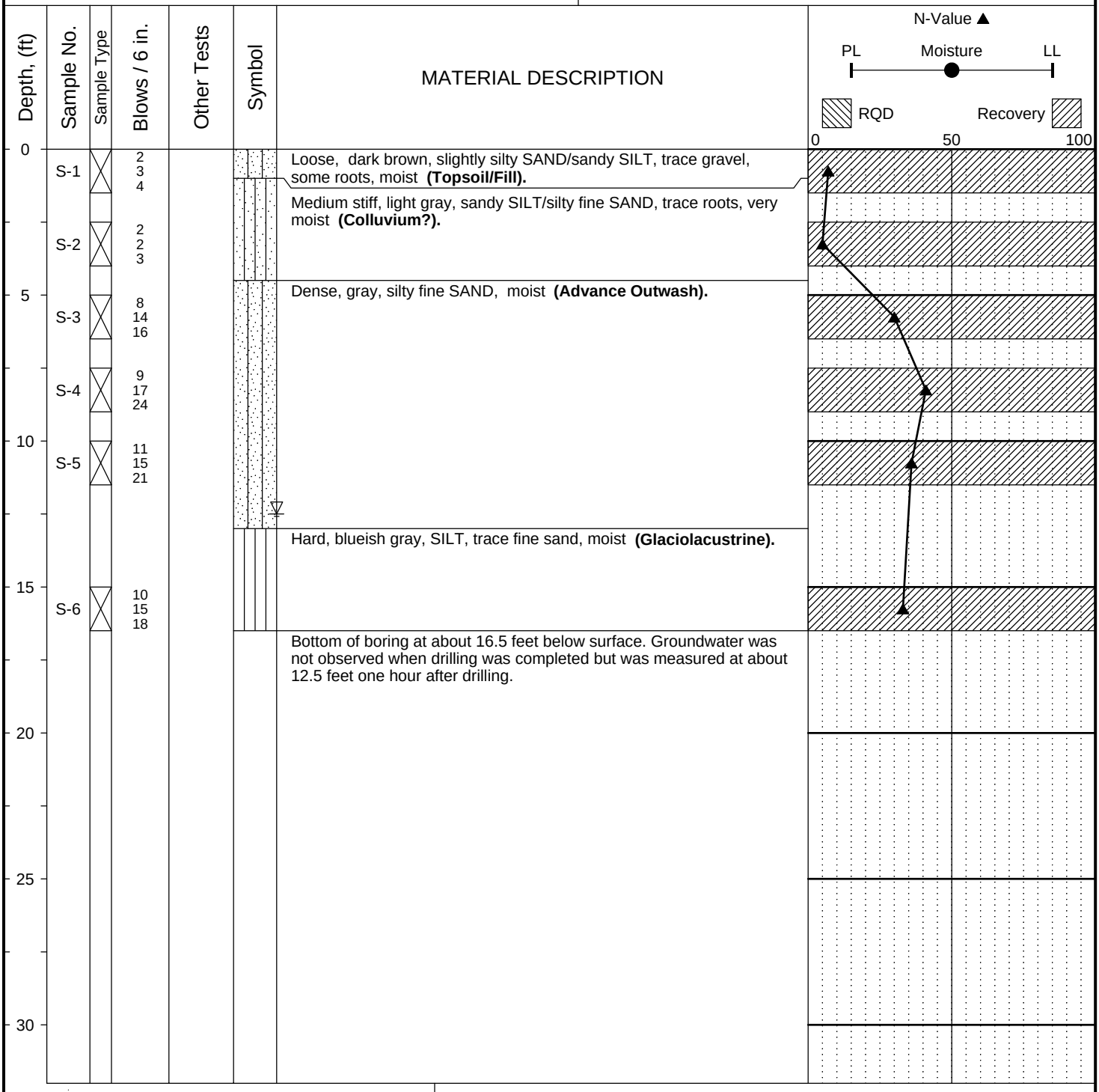
Terms and Symbols for Boring and Test Pit Logs

Figure 3

Project:	255 Shoreland Drive SE, Bellevue, WA	Surface Elevation:	~63'
Job Number:	10-093	Top of Casing Elev.:	na
Location:	Seattle, Washington	Drilling Method:	HSA - Acker Rig
Coordinates:	Northing: , Easting:	Sampling Method:	SPT - Cathead



Completion Depth:	16.5ft
Date Borehole Started:	6/10/10
Date Borehole Completed:	6/10/10
Logged By:	HMX
Drilling Company:	CN Drilling

Remarks: Boring was drilled with a hand portable drill rig. Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer operated with a rope and cathead mechanism.

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LOG OF TEST BORING BH-1

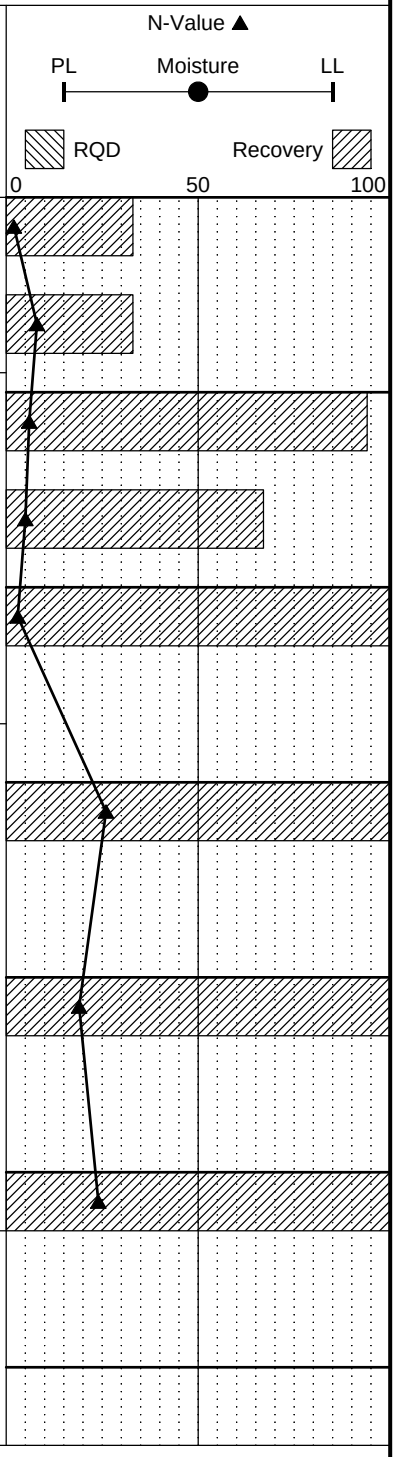
Figure 4

The stratification lines represent approximate boundaries. The transition may be gradual.

LOG OF BOREHOLE 10-093 BORING LOGS.GPJ PANGEO.GDT 7/30/10

Project:	255 Shoreland Drive SE, Bellevue, WA	Surface Elevation:	~88.5'
Job Number:	10-093	Top of Casing Elev.:	na
Location:	Seattle, Washington	Drilling Method:	HSA - Acker Rig
Coordinates:	Northing: , Easting:	Sampling Method:	SPT - Cathead

Depth, (ft)	Sample No.	Sample Type	Blows / 6 in.	Other Tests	Symbol	MATERIAL DESCRIPTION
0	S-1		1 1 1			Very loose, dark brown-brown, silty sand, trace roots, some gravel, very moist **(Fill).**
	S-2		2 4 4			-becomes brown silty SAND, trace gravel, loose, moist.
5	S-3		2 2 4			Medium stiff, brown-tan, slightly sandy SILT, moist **(Colluvium?).**
	S-4		1 2 3			-becomes tan-brown SILT, some fine sand, iron oxide stains, medium stiff, very moist.
10	S-5		1 2 1			-becomes gray-blue SILT, trace fine sand and gravel, slightly fractures, soft, very moist.
15	S-6		6 9 17			Very stiff, light gray to gray, SILT, trace sand, rusty iron oxide stains, moist **(Glaciolacustrine).**
20	S-7		5 7 12			-becomes blue, clayey SILT/silty CLAY, very stiff, moist.
25	S-8		6 9 15			-becomes gray-blue, SILT to clayey SILT, trace iron oxide stains, very stiff, moist.
						Bottom of boring at about 26.5 feet below surface. Groundwater was not observed during drilling.
30						



Completion Depth:	26.5ft
Date Borehole Started:	6/10/10
Date Borehole Completed:	6/10/10
Logged By:	HMX
Drilling Company:	CN Drilling

Remarks: Boring was drilled with a hand portable drill rig. Standard Penetration Test (SPT) sampler driven with a 140 lb. safety hammer operated with a rope and cathead mechanism.

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LOG OF TEST BORING BH-2

Figure 5

The stratification lines represent approximate boundaries. The transition may be gradual.

Project:	255 Shoreland Drive SE, Bellevue, WA	Surface Elevation:	~29'
Job Number:	10-093	Top of Casing Elev.:	
Location:	Seattle, Washington	Drilling Method:	Hand Auger
Coordinates:	Northing: , Easting:	Sampling Method:	

Depth, (ft)	Sample No.	Sample Type	Blows / 6 in.	Other Tests	Symbol	MATERIAL DESCRIPTION
0						Loose, gray, slightly silty SAND/sandy SILT, trace gravel, some roots, very moist to wet **(Fill).**
2						Medium stiff to stiff, gray, SILT/clayey SILT, blocky texture, occosional organics, very moist **(Glaciolacustrine).**
4						-becomes stiff to very stiff.
						Bottom of hand boring at about 4.5 feet below surface. Perched groundwater seepage was observed at about one foot below teh surface.
6						
8						
10						
12						
14						
16						

N-Value ▲

PL Moisture LL

RQD Recovery

0 50 100

Completion Depth:	4.0ft
Date Borehole Started:	3/17/11
Date Borehole Completed:	3/17/11
Logged By:	NES
Drilling Company:	

Remarks: Boring was drilled with a hand auger. Groundwater seepage was observed at about one foot below the surface.

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LOG OF TEST BORING HH-1

Figure 6

The stratification lines represent approximate boundaries. The transition may be gradual.

Project:	255 Shoreland Drive SE, Bellevue, WA	Surface Elevation:	~29'
Job Number:	10-093	Top of Casing Elev.:	
Location:	Seattle, Washington	Drilling Method:	Hand Auger
Coordinates:	Northing: , Easting:	Sampling Method:	

Depth, (ft)	Sample No.	Sample Type	Blows / 6 in.	Other Tests	Symbol	MATERIAL DESCRIPTION
0						Loose, brown-gray, silty SAND, trace gravel, some roots, very moist to wet **(Fill).**
2						Medium stiff to stiff, gray, SILT/sandy SILT, trace fine gravel and organics, very moist **(Glaciolacustrine).**
4						-becomes stiff to very stiff.
6						Bottom of hand boring at about 6 feet below surface. Perched groundwater was observed at one foot below the surface.
8						
10						
12						
14						
16						

N-Value ▲

PL Moisture LL

RQD Recovery

0 50 100

Completion Depth:	6.0ft
Date Borehole Started:	3/17/11
Date Borehole Completed:	3/17/11
Logged By:	NES
Drilling Company:	

Remarks: Boring was drilled with a hand auger. Groundwater seepage was observed at about one foot below the surface.

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Phone: 206.262.0370

LOG OF TEST BORING HH-2

Figure 7

The stratification lines represent approximate boundaries. The transition may be gradual.

LOG OF BOREHOLE 10-093 BORING LOGS.GPJ PANGEO.GDT 3/30/11