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September 7, 2007

CRW Engineering Group, LLC
3940 Arctic Blvd., Suite 300
Anchorage, Alaska 99503

Attention: Karl Hulse, P.E.

Subject: Foundation Recommendations
Bulk Fuel Upgrades
Ekwok, Alaska
DMA Job No. 4084.054

This letter presents the results of our geotechnical review for the proposed bulk fuel upgrades in Ekwok, Alaska. The object of our review was to evaluate the soil and groundwater conditions at the proposed bulk fuel upgrade sites for the City of Ekwok and for the school, in order to develop conclusions and recommendations regarding fuel tank foundations. Our review and recommendations are based on existing file information and test pit logs and samples provided by CRW Engineering Group, LLC (CRW); DMA did not conduct a field investigation.

There are two potential sites for the City bulk fuel facility and one proposed site for the school bulk fuel facility. The bulk fuel facilities will each consist of a tank farm with three to four 30,000 gallon, double-walled, aboveground storage tanks (ASTs). The ASTs will be mounted on skids and placed on gravel pads at the selected site(s). A vicinity and site map is presented on Plate 1.

Community Setting

The community of Ekwok is on the west bank of the Nushagak River, approximately 43 air miles northeast of Dillingham in the Bristol Bay region of Alaska. The area lies within the Nushagak lowlands, a low-lying hilly terrain with irregularly

shaped moraine knolls and ridges, which have formed as a result of glaciation that covered the entire Bristol Bay area during the early to middle Pleistocene. The area around Ekwok is underlain by glaciofluvial outwash deposits, formed as glacier-fed streams have moved and sorted glacial till deposits towards the Nushagak. The land around Ekwok is characterized by rolling hills covered with bottomland spruce-poplar forest and moist tundra.

The climate at Ekwok is influenced by both maritime and continental regimes. Summers are cool and humid and winters are moderately cold. Extremely strong winds are common during winter months; the prevailing winds are from the north and east in winter, and southwest in summer. Average summer temperatures range from 37 degrees Fahrenheit (°F) to 66°F and average winter temperatures range from 4°F to 30°F. Ekwok receives an average precipitation of 26 inches. The Nushagak river is ice free from mid-May through mid-November. Ekwok is mapped as an area underlain by isolated masses of permafrost, however according to residents, permafrost is not commonly encountered in the village.

In 1978, Hartman and Johnson presented climatic data for engineering design in the *Environmental Atlas of Alaska*. Their findings were based on recorded air temperature data for the 30 years prior to 1978. Recent weather trends have been warmer than the period used to compile the *Environmental Atlas of Alaska.* Climatic data for Ekwok is summarized in the table below.

	H&J 1978
Average Air Temperature:	33.0° F
Average Freezing Index:	2300° F-days
Design Freezing Index:	3600° F-days
Average Thawing Index:	2700° F-days
Design Thawing Index:	3550° F-days

Existing Data

We began our investigation by reviewing previous geotechnical explorations in Ekwok. Selected boring logs and laboratory data are provided in Appendix A.

Duane Miller & Associates* (DM&A) *(March 1989), Soil Investigation, BBHA Housing Project, Ekwok, Alaska – In October 1988, DM&A excavated ten test pits to

investigate subsurface conditions in Ekwok for a housing project. Seven test pits were excavated 5 to 9 feet deep in the Nakelutin Subdivision west of the runway, and four test pits were excavated to 9 feet deep above the steep bluffs bordering the river. Subsurface conditions at the Nakelutin Subdivision consist of a thin organic mat, 0.5 to 1 foot thick, underlain by wet, medium-stiff silt, 2 to 5 feet below the surface. The silt is highly frost susceptible. Poorly sorted sand and gravel underlies the silt and is present to the depths explored, 5 to 9 feet deep. The silt content of the sand and gravel decreased with depth. Subsurface conditions along the Nushagak River bluff line consist of a thin organic mat, about 0.5 feet thick, underlain by coarse, non-plastic silt. In the three southernmost test pits, the silt grades to silty sand at 2 to 5 feet deep, and in the northernmost test pit, sandy silt. The silty sand is moderately frost susceptible. A percolation test performed in one of the test pits above the bluff revealed a percolation rate of 3 inches per minute. The area appears to be well drained. Neither groundwater nor frozen ground was encountered during the investigation.

Site Conditions

Two potential sites are being considered for the City's bulk fuel facility. The first site, Site A, is north of the existing tank farm, on a gravel pad constructed by the Alaska Department of Transportation and Public Facilities (ADOT), which was temporarily used to support runway improvement work. The pad appears to be constructed of about 4 to 5 feet of gravel fill placed on geotextile over the natural ground surface. A surface sample of the pad fill that was tested in DMA's laboratory indicated that the material is well-graded sandy gravel with less than 2% passing the No. 200 sieve. Differential settlement on the pad has not been observed. Site B is north of the existing tank farm on an undeveloped lot that is flat and forested with willow and alder. Both Sites A and B are in the southern, low-lying part of the village, within 10 to 20 feet of the river elevation. Site A is approximately 430 feet from the Nushagak River (varies with season), and Site B is approximately 100 feet from the river. Low-lying areas of the village may be subject to ice-jam flooding. The U.S. Army Corps of Engineers' flood plain manager reports that flooding has occurred in 1931 or 1932, 1936 and 1957. Flooding has also occurred as recently as 2005, according to the National Weather Service.

The proposed site for the school's tank farm is on undeveloped land northeast of the school building. The site is relatively flat, on high ground above the Nushagak River bluffs in the northern part of the village. The site is vegetated with spruce-poplar forest with small clearings of dwarf shrubs and grasses. The locations of the three potential sites, are presented on Plate 1, Site & Vicinity Map.

Field Exploration

CRW conducted a field exploration in Ekwok in June 2007. Three test pits were excavated, one at each of the potential bulk fuel sites for the City, and one for the proposed bulk fuel site for the school. Photographs taken during the field work are presented in Appendix B. The test pits were logged and soil samples were recovered by Karl Hulse, P.E., of CRW. Test pit logs and soil samples were submitted to DMA for review and examination. In the laboratory, the samples were reexamined to confirm field classifications and samples were tested for natural moisture content and grain size distribution.

Test Pit Logs provided by CRW with DMA comments are presented on Plates 2 and 3. The soils have been classified according to the Unified Soils Classification System described on Plate 4. Laboratory test results are tabulated on Plate 5, the Summary of Samples. The results of particle size analyses are presented on Plate 6.

Subsurface Conditions

<u>City Bulk Fuel - Site A (ADOT pad)</u>

The test pit at the City Site A was excavated adjacent to the existing gravel pad constructed by ADOT. Subsurface conditions consisted of a thin organic mat, 1 foot deep, underlain by silt to 2.5 feet. Gravel was encountered beneath the silt and was present to the depth of the test pit, 5 feet. Photo 6 (Appendix B) taken during test pit excavation shows significant groundwater ponding in the bottom of the test hole at about 4 feet below the ground surface. The ground surface elevation at the test pit is about 86 feet MSL, within 15 to 20 feet of the river elevation.

City Bulk Fuel - Site B

Site B for the City fuel tank farm is covered with a 1-foot thick organic mat, which is underlain by brown, saturated fine sandy silt to 3 feet below the surface. The brown silt transitions to a light brown-gray, wet, slightly plastic silt with some fine-grained sand. Beneath the silt, orange-brown gravel was encountered at 8 feet below the surface and was present to 9 feet, the depth of the test pit. The silt observed in the test pit is frost susceptible. Marginally frozen ground was reported in the test pit at 4 feet deep and was apparently present to the depth of the pit. The frozen soil is likely due to seasonal frost penetration from the previous winter. Photo 4 (Appendix B) taken during excavation shows groundwater accumulating in the bottom of the test pit at about 8.5 feet below the ground surface. Site B is close to the river (within 100 feet on May 8, 2006, the date of aerial imagery used in Plate 1), and is generally within 10 feet of river elevation.

School Bulk Fuel Site

The subsurface conditions present in the test pit excavated at the school site consists of a thin organic mat, 8 inches thick, which is underlain by brown, silty fine-grained sand, transitioning to gray silty sand at about 5 feet below the surface and extending to the bottom of the test pit, 8 feet deep. The silty sand at the school site is most likely similar to silty sand previously found above the bluff in Ekwok, which is moderately frost susceptible. Marginally frozen ground was observed at 3 feet below the surface and was apparently present to the depth of the test pit. The frozen ground is most likely due to seasonal frost penetration from the previous winter. The site sits on relatively high ground, above the Nushagak River bluffs, and appears to be well-drained.

Discussion and Conclusions

Based on our data review and laboratory testing, the following conclusions are made regarding foundations for the bulk fuel storage tanks.

- The existing gravel pad at Site A (ADOT pad) will provide suitable support for the bulk fuel storage tanks without additional site preparation or modification.

- At Site B and the School Site, a gravel pad should be constructed to support the tanks. The pad(s) should be at least 3 feet thick and should be constructed of non-frost susceptible (NFS) or possibly frost-susceptible (PFS) material conforming with the U.S. Army Corps of Engineers NFS or PFS classification, generally a mixture of well-graded sand and gravel containing 6 percent or less finer than the No. 200 sieve.

- To prepare for pad construction at Site B and/or the School Site, the development area should be cleared and grubbed of trees, roots, vegetation, and organic materials. Removal of the organic surface soils is expected to require stripping approximately 8 inches to 1 foot of material off the site. The organic soils can either be disposed of offsite or along the perimeter of the site. After stripping, the exposed surface is anticipated to consist of mineral silt or silty fine sand.

- After removal of organic and deleterious material, a layer of filter fabric such as Mirafi 500 should be placed on the surface to provide separation between the native silty soils and the fill embankment.

- Fill should be placed in layers not exceeding 12 inches nominal thickness and each layer should be compacted with a vibratory roller to 95% its modified Proctor value, as determined by ASTM D-1557. If the first lift or two begins to deflect or "pump" under compactive force, the compactive effort should be stopped and fill placement continued. Fill material should only be placed or compacted when it is unfrozen. Do not place frozen soil.

- Permanent fill slopes should be no steeper than about 2H:1V (horizontal to vertical), and preferably flatter. Temporary excavation side slopes should be 1.5H: 1V or as required for stability, conforming to Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1926 Subpart P for Type C soil, which corresponds to the soils on this site.

- If the top of the pad is below the design flood elevation, the tanks should be anchored against movement using either "duckbill" type anchors; concrete deadmen buried within the pad; or a concrete slab or sleepers to provide ballast.

- Construction of the pad embankment and placement and filling of the bulk fuel storage tanks will result in some total and differential settlements of the underlying native silt. Total settlements are expected to be on the order of about 1 inch, and differential settlement generally less than 1/2 inch. Maintenance

regrading of the pad surface may be periodically needed if "birdbaths" develop as a result of settlement.

- Piping or other utility connections to the tanks and between adjacent tanks must be designed to tolerate some annual movement due to frost heave of the subgrade soils and some differential movement due to settlement.

- Ekwok is situated near the Holitna, Mulchatna, Lake Clark, and Bruin Bay Fault systems and is subject to strong ground motions, like most areas in southwest Alaska. Maximum considered earthquake (MCE) ground motions are summarized below based on International Building Code (IBC 2006) and U.S. Geological Survey (USGS) databases. Based on the available site-specific soil data and geology of the site, we anticipate a stiff soil profile, Site Class D, as defined in Table 1615.1.1 of the 2000 IBC.

Mapped Spectral Accelerations (0.2 sec short period (Ss) and 1 sec period (S1))

Period (sec)	MCE Sa (%g)	
0.2	30.6	MCE Value of Ss, **Site Class B**
1.0	13.8	MCE Value of S1, **Site Class B**

Spectral Parameters **for Site Class D**

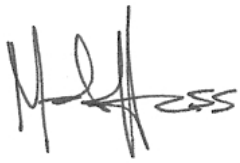
Period (sec)	MCE Sa (%g)		
0.2	47.6	S_{MS} = FaSs	Fa = 1.56
1.0	31.1	S_{M1} = FvS1	Fv = 2.25

Design Spectral Response Acceleration Parameters **for Site Class D**

Period (sec)	MCE Sa (%g)	
0.2	31.7	$S_{DS} = 0.667\ S_{MS}$
1.0	20.7	$S_{D1} = 0.667\ S_{M1}$

- The plans and specifications should be reviewed by us to verify that they are in conformance with the intent of the recommendations in this report. The placement and compaction of fill should be inspected and tested by an experienced soils engineer. Inspection will permit the detection of unanticipated conditions and allow verification that the work is done in accordance with the intent of the recommendations in this report.

Very truly yours,
Duane Miller Associates LLC



Paul Ramert, P.E.
Civil Engineer 8489

Melanie Hess
Staff Earth Scientist

Attachments:

Plate 1	Vicinity & Site Map
Plates 2 & 3	CRW Test Pit Logs
Plate 4	Soil Classification Chart
Plate 5	Summary of Samples
Plate 6	Particle Size Data
Appendix A	DM&A 1989 Data
Appendix B	CRW Site Photographs

LEGEND

CRW Test Pit

DM&A 1989 Test Pit

200 0 200 400 600

Approximate Scale In Feet

Nakelutin Subdivision

TP-7

TP-6

TP-5

TP-2

TP-4

TP-3

TP-1

CITY - SITE A
(ADOT PAD)

CITY - SITE B

SCHOOL
SITE

TP-9

TP-8

Ekwok

Base © 2006 Digital Globe, Imagery Dated May 28, 2006

Duane Miller Associates LLC
Job No.: 4084.054
Date: August 2007

SITE & VICINITY MAP
Bulk Fuel Upgrades
Ekwok, Alaska

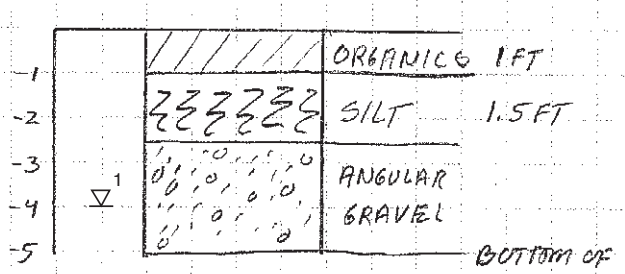
Plate
1

CRW ENGINEERING GROUP, LLC
3940 Arctic Blvd. • Suite 300
Anchorage, Alaska 99503
(907) 562-3252 Fax 561-2273

JOB EKWOK BULK FUEL UPGRADE
SHEET NO. _____ OF _____
CALCULATED BY KARL HULSE DATE _____
CHECKED BY _____ DATE _____
SCALE SITE VISIT DATE: 7/19/07

CITY TANK FARM - SITE A (ADOT PAD)

DOT/PF EQUIPMENT STAGING PAD TEST PIT



NOTES:

1. TEST HOLE EXCAVATED @ TOE OF EXISTING GRAVEL PAD SLOPE
2. AREA COVERED IN SCRUB BRUSH.
3. ADJACENT GRAVEL PAD APPEARED 4-5 FT THICK, REPORTEDLY CONSTRUCTED AS AN OVERLAY (GEOTEXTILE ON EXISTING GROUND COVERED W/ 4-5 FT. OF PIT RUN GRAVEL).
4. NO APPARENT DIFFERENTIAL SETTLEMENT.

DMA NOTES

1. Water table level is approximate. Water table estimated from photo log provided by CRW.

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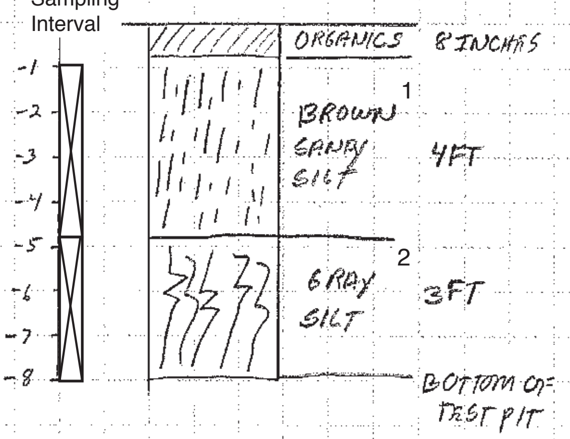
JOB: EKWOK BULK FUEL UPGRADE
SHEET NO. ______ OF ______
CALCULATED BY: KARL HULSE DATE ______
CHECKED BY ______ DATE ______
SCALE: SITE VISIT DATE: 7/19/07

SCHOOL TANK FARM SITE

SCHOOL TEST PIT

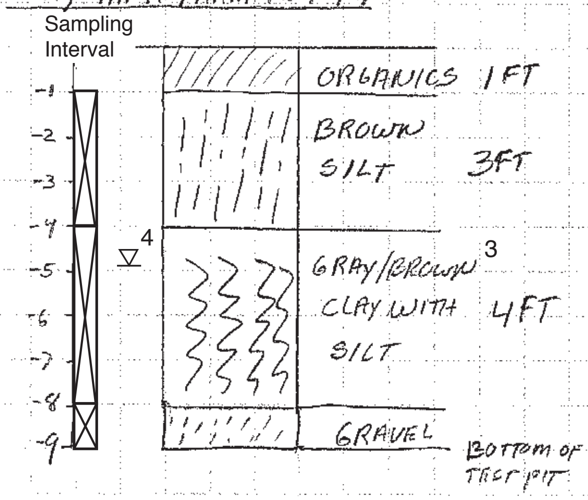


NOTES:

1. SOILS APPEARED MARGINALLY FROZEN BELOW A DEPTH OF 3FT.
2. AREA TREED W/ SPRUCE. TEST HOLE EXCAVATED IN SMALL CLEARING.

CITY TANK FARM - SITE B

CITY TANK FARM TEST PIT

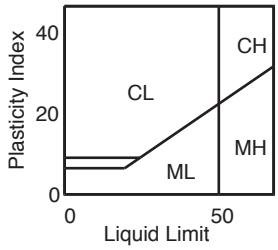


NOTES:

1. SOILS APPEARED MARGINALLY FROZEN BELOW A DEPTH OF 4 FT.
2. GROUND COVERED BY WILLOW BRUSH 1"-3" DIAMETER

DMA NOTES

1. CRW logged soil as sandy silt (ML). DMA laboratory analysis indicates sample is silty fine-grained sand (SM).
2. CRW logged soil as silt (ML). DMA laboratory analysis indicates sample is silty fine-grained sand (SM).
3. CRW logged soil as clay (CL). DMA laboratory analysis indicates sample is plastic silt (ML).
4. Water table level is approximate. Water table estimated from photo log provided by CRW.

MAJOR DIVISIONS			SYMBOL		TYPICAL NAMES
COARSE GRAINED SOILS 50% or more larger than #200 sieve, 0.075 mm	GRAVELS More than half of the coarse fraction is larger than #4 sieve size, > 4.75 mm.	Clean gravels with little or no fines	GW		Well graded gravels, sandy gravel
			GP		Poorly graded gravels, sandy gravel
		Gravels with more than 12% fines	GM		Silty gravels, silt sand gravel mixtures
			GC		Clayey gravels, clay sand gravel mixtures
	SANDS More than half of the coarse fraction is smaller than #4 sieve size, < 4.75 mm.	Clean sands with little or no fines	SW		Well graded sand, gravelly sand
			SP		Poorly graded sands, gravelly sand
		Sands with more than 12% fines	SM		Silty sand, silt gravel sand mixtures
			SC		Clayey sand, clay gravel sand mixtures
FINE GRAINED SOILS > 50% finer than #200 sieve	SILTS and CLAYS Plasticity Chart 	Liquid limit less than 50	ML		Inorganic silt and very fine sand, rock flour
			CL		Inorganic clay, gravelly and sandy clay, silty clay
			OL		Organic silts and clay of low plasticity
		Liquid limit greater than 50	MH		Inorganic silt
			CH		Inorganic clay, fat clay
			OH		Organic silt and clay of high plasticity
HIGHLY ORGANIC SOILS			Pt		Peat and other highly organic soil

UNIFIED SOIL CLASSIFICATION SYSTEM

KEY TO TEST DATA

PP = Pocket Penetrometer
Dd = Dry Density (pcf)
LL = Liquid Limit
PL = Plastic Limit
PI = Plastic Index
NP = non Plastic
SpG = Specific Gravity
SA = Sieve Analysis
MA = Sieve and Hydrometer Analysis
OLI = Organic Loss
RD = Relative Density
D1557 = modified Proctor
TS = Thaw Consolidation
Con = Consolidation
TXUU = Unconsolidated Undrained Triaxial
TXCU = Consolidated Undrained Triaxial
TXCD = Consolidated Drained Triaxial

Strength Data
XXX(YYY), where
XXX = $(\sigma_1-\sigma_3)/2$
YYY = σ_3

KEY TO SAMPLE TYPE

Gr= Grab sample
Ag = Auger grab
Ab = Auger bulk
Ac = Air chip
Sh = 2.5" ID split barrel w/ 340 lb. manual hammer
Sh* = 2.5" ID split barrel w/ 140 lb. manual hammer
Sha= 2.5" ID split barrel w/ 340 lb. automatic hammer
Tw = Shelby tube
Ss = 1.4" ID split barrel w/ 140 lb. manual hammer
Cc = 3.25" continuous core barrel

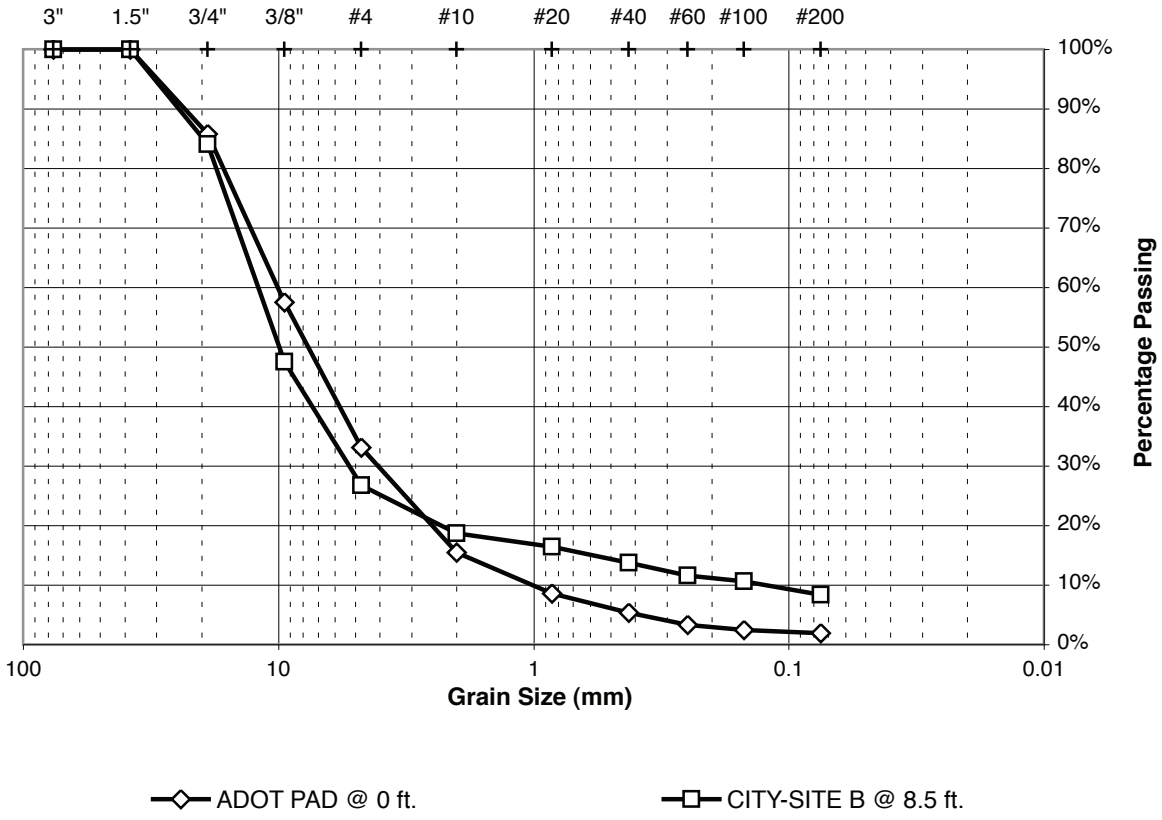
GROUP	ICE VISIBILITY	DESCRIPTION		SYMBOL	
N	Segregated ice not visible by eye	Poorly bonded or friable		Nf	
		Well bonded	No excess ice	Nb	Nbn
			Excess microscopic ice		Nbe
V	Segregated ice is visible by eye and is one inch or less in thickness	Individual ice crystals or inclusions		Vx	
		Ice coatings on particles		Vc	
		Random or irregularly oriented ice		Vr	
		Stratified or distinctly oriented ice		Vs	
		Uniformly distributed ice		Vu	
ICE	Ice greater than one inch in thickness	Ice with soil inclusions		ICE + soil type	
		Ice without soil inclusions		ICE	

ICE CLASSIFICATION SYSTEM

Test Hole	Sample Depth	Soil Type (USCS)	Thermal State	Sampler Type	Moisture Content	% Gravel	% Sand	% Passing #200	Other Tests
ADOT-PAD*	0.0 ft.	GW	U	Gr	1.2%	67%	31%	1.9%	SA
CITY-SITE B	1.0 ft. - 4.0 ft.	ML	U	Gr	46.3%	0%	33%	66.7%	
CITY-SITE B	4.0 ft. -8.0 ft.	ML	MF	Gr	37.0%	0%	26%	73.8%	
CITY-SITE B	8.0 ft. - 9.0 ft.	GP-GM	MF	Gr	9.8%	73%	18%	8.4%	SA
SCHOOL	1.0 ft. - 5.0 ft.	SM	U	Gr	11.7%	0%	74%	25.8%	
SCHOOL	5.0 ft. - 8.0 ft.	SM	MF	Gr	12.0%	0%	55%	45.0%	

* Sample was taken from surface of ADOT pad. No samples recovered from test pit at CITY-SITE A.

Sample =>	ADOT PAD	CITY-SITE B
Depth =>	0.0 ft.	8.5 ft.
3" =>	100%	100%
1.5" =>	100%	100%
3/4" =>	86%	84%
3/8" =>	58%	48%
#4 =>	33%	27%
#10 =>	15%	19%
#20 =>	9%	16%
#40 =>	5%	14%
#60 =>	3%	12%
#100 =>	2%	11%
#200 =>	1.9%	8.4%
Analysis of Data		
D10 size =>	1.013 mm	0.123 mm
D30 size =>	4.076 mm	5.294 mm
D50 size =>	7.670 mm	9.958 mm
D60 size =>	10.092 mm	12.033 mm
Coeff. of Uniformity, Cu =	9.96	97.75
Coeff. of Curvature, Cc =	1.62	18.92
Gravel (+#4) percentage =	67%	73%
Sand percentage =	31%	18%
Fines percentage =	1.9%	8.4%
Unified Soil Class Symbol =	**GW**	**GP-GM**

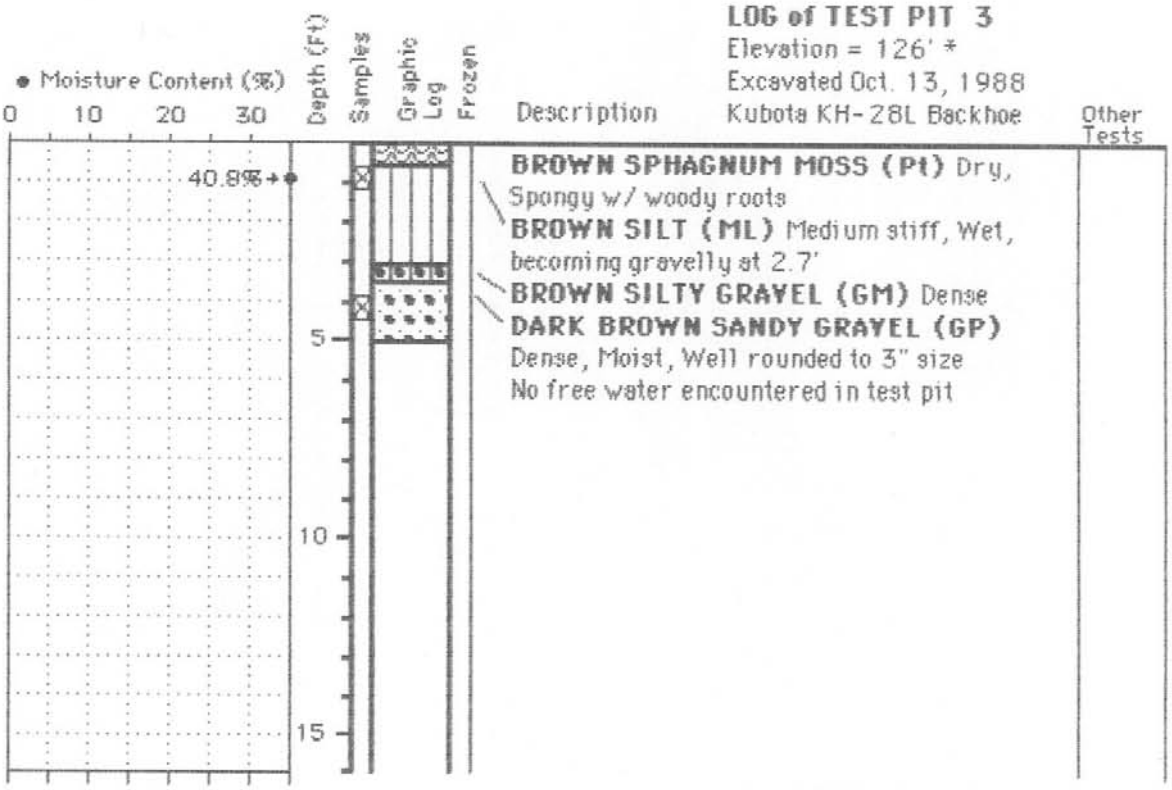


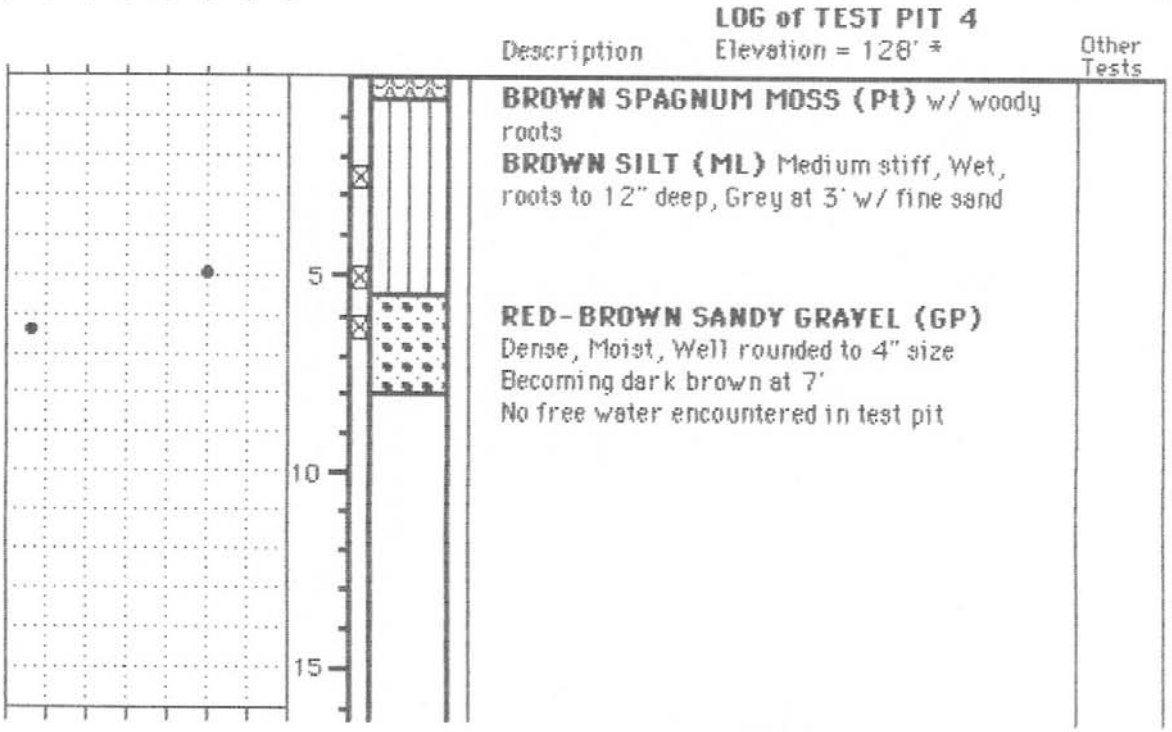
Appendix A: DM&A 1989 Data

Test Pit Logs 3 through 6, 8 and 9

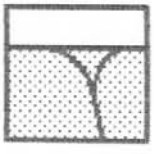
Particle Size Analysis

4084.054 – Ekwok Bulk Fuel Upgrades





* Elevations are interpolated from contours shown on the topographic map by Barrett Maxwell & Assoc, 12-2-88



Duane Miller & Associates
Arctic and Geotechnical Engineering
Job No. : 4037.07
Date : Mar. 1989

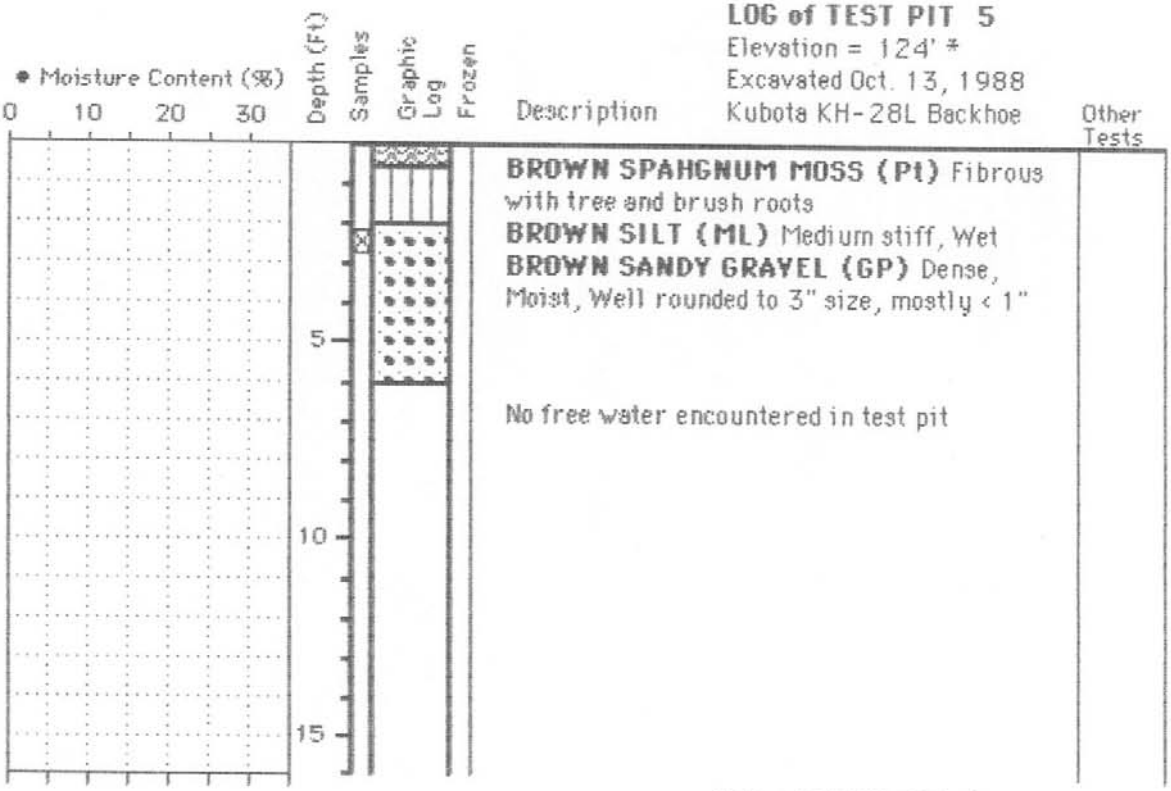
LOGS of TEST PITS 3 & 4

Self Help Housing Project
Bristol Bay Housing Authority
Ekwok, Alaska

Plate 3

LOG of TEST PIT 5

Elevation = 124' *
Excavated Oct. 13, 1988
Kubota KH-28L Backhoe

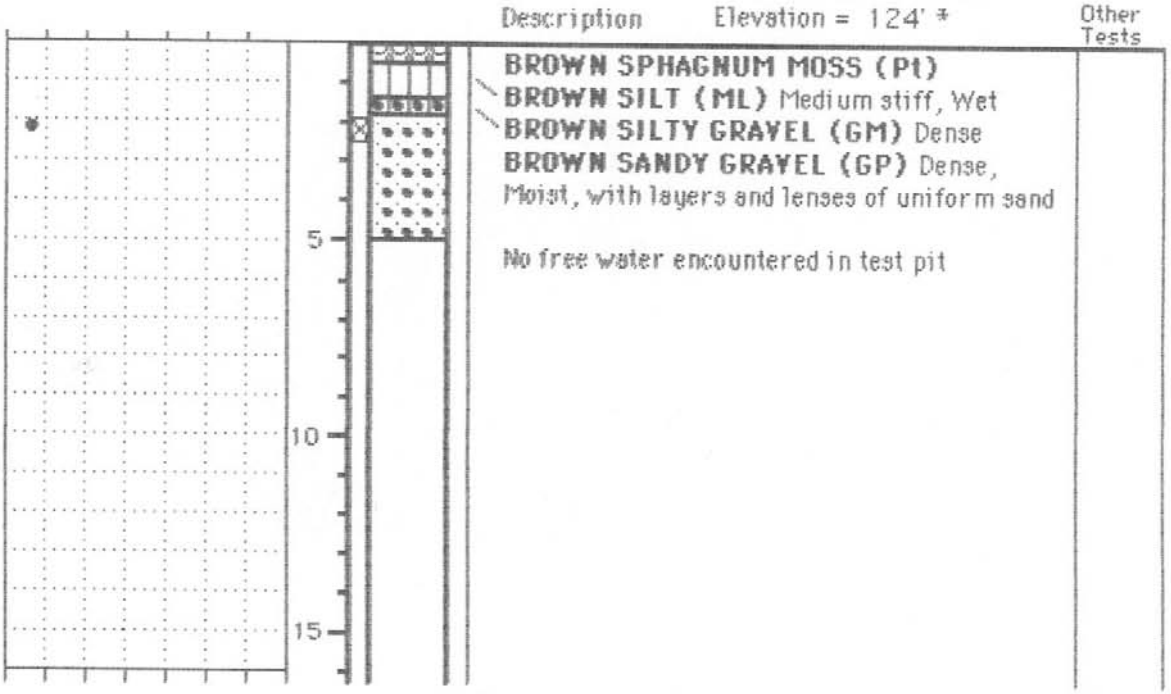


BROWN SPAHGNUM MOSS (Pt) Fibrous with tree and brush roots
BROWN SILT (ML) Medium stiff, Wet
BROWN SANDY GRAVEL (GP) Dense, Moist, Well rounded to 3" size, mostly < 1"

No free water encountered in test pit

LOG of TEST PIT 6

Elevation = 124' *



BROWN SPHAGNUM MOSS (Pt)
BROWN SILT (ML) Medium stiff, Wet
BROWN SILTY GRAVEL (GM) Dense
BROWN SANDY GRAVEL (GP) Dense, Moist, with layers and lenses of uniform sand

No free water encountered in test pit

* Elevations are interpolated from contours shown on the topographic map by Barrett Maxwell & Assoc, 12-2-88

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Job No. : 4037.07
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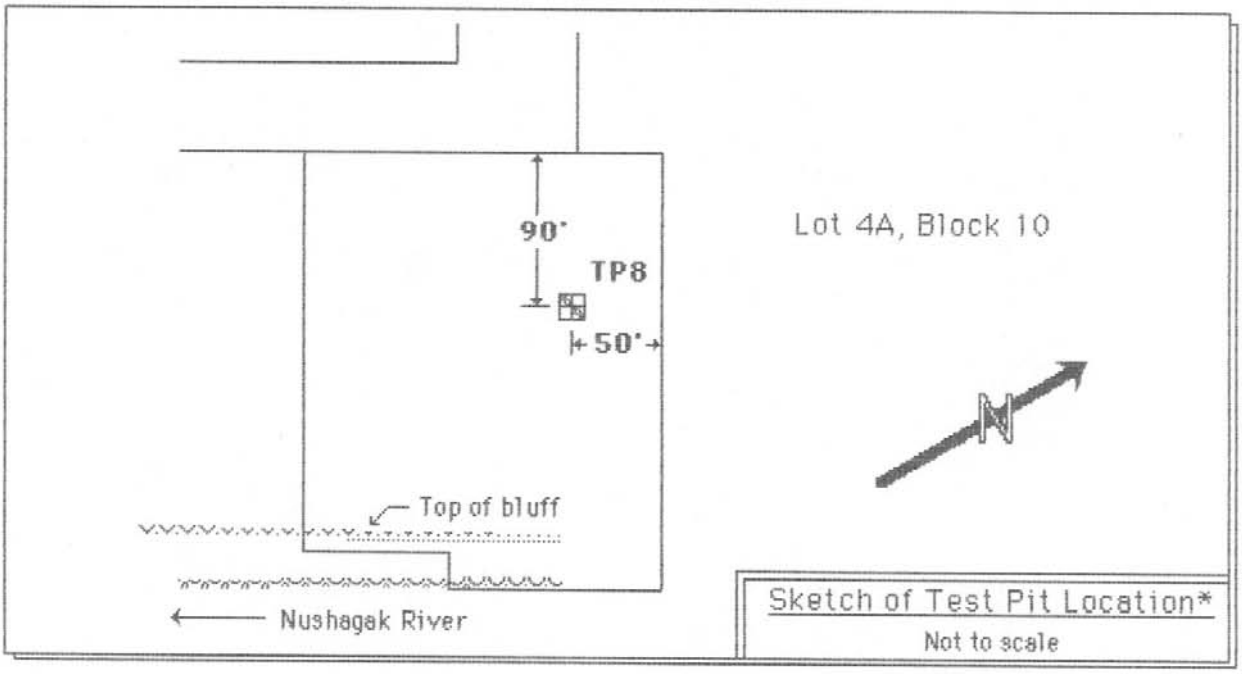
LOGS of TEST PITS 5 & 6

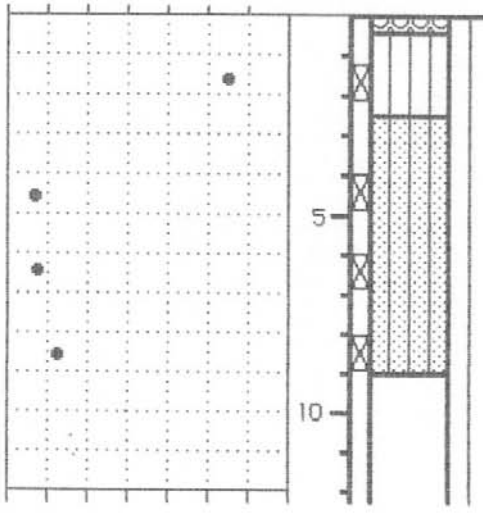
Self Help Housing Project
Bristol Bay Housing Authority
Ekwok, Alaska

Plate 4



LOG OF TEST PIT 8

Kubota KH-28L Backhoe
Elevation = 127' ± *
Excavated on Oct. 14, 1988



Samples	Graphic Log	Frozen	Description	Other Tests
			Brown Sphagnum Moss (Pt) and roots **MOTTLED BROWN-GREY-RED SILT (ML)** Medium stiff, Moist, Increasing sand with depth	
			MOTTLED ORANGE-GREY SILTY SAND (SM) Very dense, Moist	
			Percolation test in 6" diameter by 8" deep hand dug pit at 6-foot depth = 3 minute/inch	MA
			No free water observed in test pit	

* Elevations and locations are taken from "Topographic & As-Built Survey", Drawing No. 88-16B by Barrett - Maxwell & Associates, 12-2-88

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LOG OF TEST PIT 8
Self Help Housing Project
Bristol Bay Housing Authority
Ekwok, Alaska

Plate
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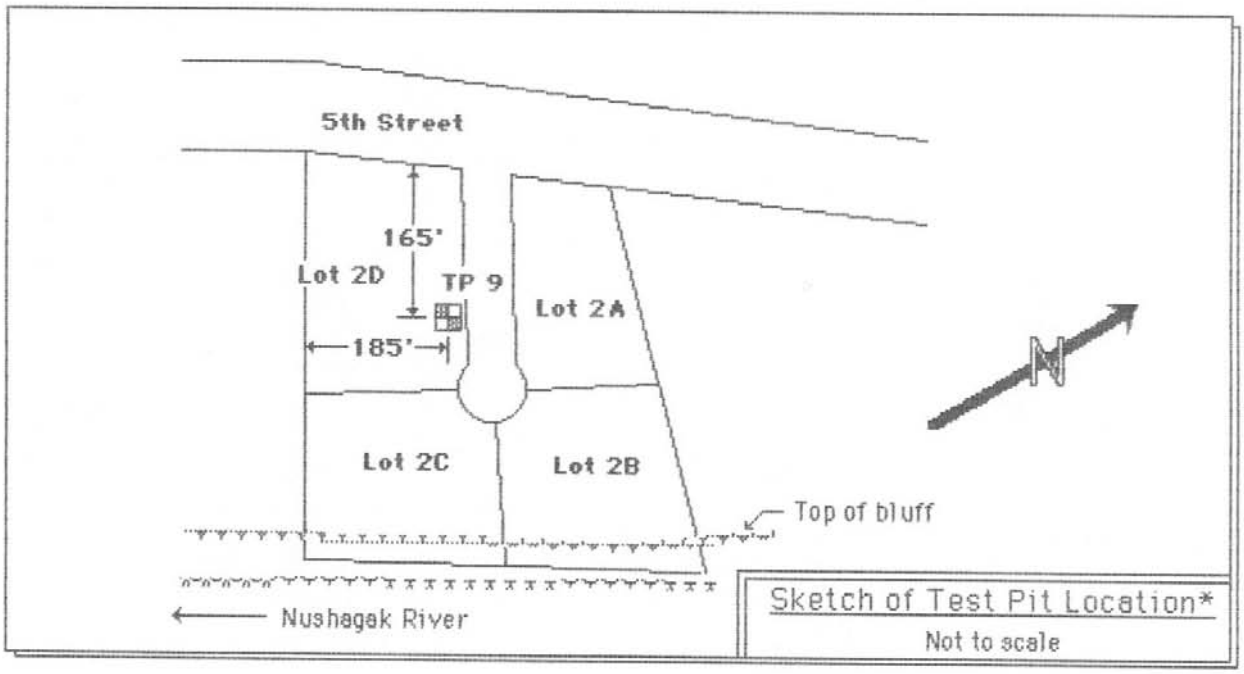
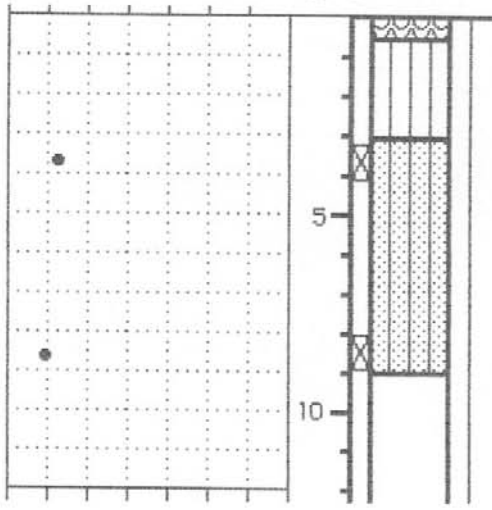


Sketch of Test Pit Location*
Not to scale

LOG OF TEST PIT 9

Kubota KH-28L Backhoe
Elevation = 131'± *
Excavated on Oct. 14, 1988



Samples	Graphic Log	Frozen	Description	Other Tests
			Brown Spahgnum Moss (Pt) with roots and organic silt	
			MOTTLED BROWN-ORANGE SILT (ML) Medium stiff, Wet, becoming stiff at 24", Moist, Increasing sand content with depth	
			BROWN SILTY SAND (SM) Dense, Moist	
			No free water encountered in test pit	MA

* Elevations and locations are taken from "Topographic & As-Built Survey of Sunshine View Subdivision, Drawing 88-16C by Barrett - Maxwell & Associates, 12-2-88

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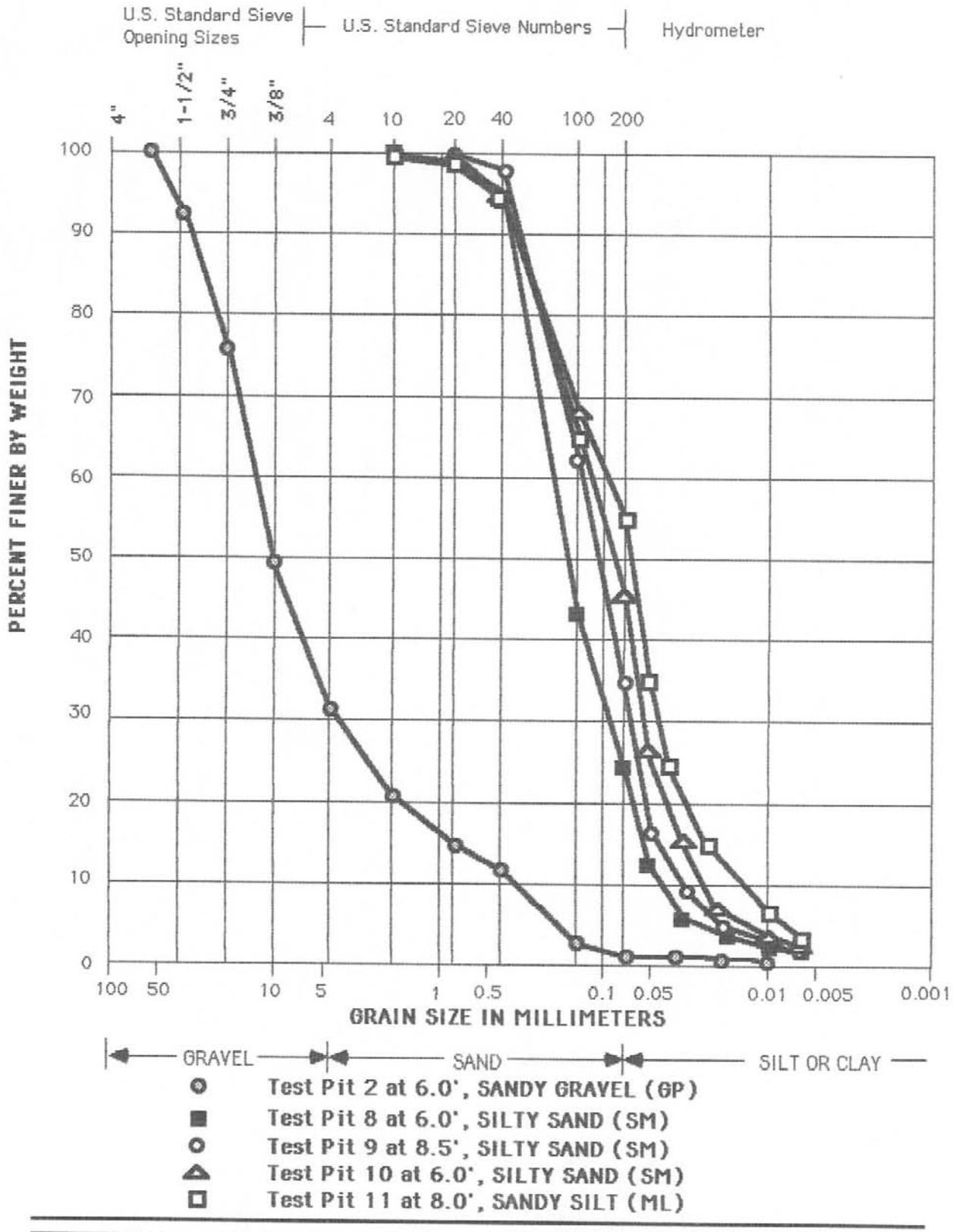
LOG OF TEST PIT 9
Self Help Housing Project
Bristol Bay Housing Authority
Ekwok, Alaska

Plate 7



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Particle Size Analysis

Self Help Housing
Bristol Bay Housing Authority
Ekwok, Alaska

Plate
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Appendix B: CRW Photo Log

Photos 1 and 2	School Test Pit
Photos 3 and 4	City Site B Test Pit
Photos 5 and 6	City Site A Test Pit

4084.054 – Ekwok Bulk Fuel Upgrades

Photo 1 – Excavating School Test Pit

Photo 2- School Test Pit

Photo 3- Excavating City Tank Farm Test Pit


Photo 4- City Tank Farm Test Pit

Photo 5- Excavating ADOT Pad Test Pit


Photo 6- ADOT Pad Test Pit