

TRYCK NYMAN HAYES, INC.

ENGINEERS/SURVEYORS/LANDSCAPE ARCHITECTS
TRANSPORTATION AND COMMUNITY PLANNING

Post-it* Fax Note	7671	Date	8/26/96	# of pages	2
To	Scott Pexton	From	GARY GUSTAFSON		
Co./Dept		Co.			
Phone #		Phone #			
Fax #	269-71649	Fax #			

August 23, 1996

Mr. Gary Gustavson
Heritage Land Bank
Municipality of Anchorage
P.O. Box 196650
Anchorage, AK 99519-6650

Dear Gary:

REF: Soil Testing and Ground Water Monitoring Services on Section 36 of the Hillside Area RFP #26-96 - Professional Services Fee Proposal Additional Information

Per our conversation you have requested clarification on several items involving the electromagnetic/resistivity work as follows:

- What is the confidence level difference between the high and the low confidence levels of our proposals?
- What is the line spacing and how long are the brushed lines going to go?
- During the brushing activity what happens when we encounter a tree?

We proposed to evaluate "DEPTH TO BEDROCK" using one of two levels of confidence. The purpose for using a high level of confidence is to reduce the number of test pits thus reducing costs and ecological damage. The low confidence level uses the same geophysical techniques as the high confidence program, the difference being the low confidence approach will have twice the line spacing, thus reducing the information we record by half. The low confidence approach is recommended if a moderate to large number of test pits are to be used. Since the resistivity results will be used to calibrate the electromagnetic profiles, the confidence level of the electromagnetic profiles decreases in the low confidence program. The end result of both programs is to provide a subsurface profile along each line that evaluates depth to bedrock.

Basically, the depth to bedrock is interpolated between each profile and sounding, therefore as the number of profiles/soundings is decreased, the potential for missing outcroppings or variations in the bedrock bottom is increased. It is difficult to place an exact quantitative number as to the difference between the accuracy levels in providing an exact map of the bedrock bottom, as the accuracy at each profile/sounding is the same under both scenarios. It is the interpolation between the profiles/soundings that will affect the accuracy and that is a

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measure of the amount of variations that is anticipated along the bedrock surface (i.e. if the bedrock surface is consistent or does it vary significantly between profiles/soundings). To offset the reduction in profiles/soundings it is normally recommended that testpits/borings be used to fill in the missing profiles and verify any potential anomalies that may occur. The length of each profile, and therefore the length of each brushed line, is determined by the width of each developable parcel (i.e. the profile line is setup perpendicular to the parcel length, Clarks Road as an example, and will vary with the width of the developable parcel at that point). If trees are encountered during the brushing of the lines they are left in place and the survey line, as well as any soundings that may occur at that point, is placed around the tree. Line of site between soundings is required so additional soundings may be required when trees are encountered.

The following table shows the similarities and differences of the two geophysical approaches:

Similarities	High Confidence	Low Confidence
Resistivity line spacing	1000'	2000'
Resistivity spacing on each line	200'	200'
Number of resistivity profiles	5 to 6	3
Number of resistivity soundings	25 to 30	15
Electromagnetic profile line spacing	500'	1000'
Electromagnetic spacing on each line	25'	25'
Number of Electromagnetic profiles	11 to 12	5 to 6
Number of Electromagnetic stations	400 to 480	240
Data reduction method	same	same
Reporting and quality assurance	same	same
Evaluation methods	same	same

I hope this resolves the questions involving this procedure. If you have any additional questions or if there is anything else that I can assist you with, please contact me at your convenience.

Respectfully,
Tryck Nyman & Hayes, Inc.

Kenneth M. Duffus, P.E.
TNH Project Manager

cc: Ted Trueblood
Dan Young, Terrasat, Inc.