AURORA MINES INC.

REPORT ON

SEISMIC REFRACTION INVESTIGATION

ANDERSON CREEK PLACER PROJECT

MAYO MINING DISTRICT

MAYO, YUKON

Latitude: 63°43'N

Longitude: 135°02'W

by

Russell A. Hillman, P.Eng.

April, 2001 **PROJECT FGI-580**

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This report has been examined by the Geological Evaluation Unit under Section 41 Yukon Placer Mining Act and is recommended as allowable representation work in the amount of $ 19,900

for Chief Geologist, Exploration and Geological Services Division, Northern Affairs Program for Commissioner of Yukon Territory.

CONTENTS

ILLUSTRATIONS

1. INTRODUCTION

In the period April 6 to April 12, 2001, Frontier Geosciences Inc. carried out a seismic refraction investigation for Aurora Mines Inc. at the Anderson Creek Placer Project, located in the Mayo Mining District approximately 45 kilometres east-northeast of Mayo, Yukon. A Survey Location Plan of the area of investigation is shown at 1:250,000 scale in Figure 1.

The seismic refraction survey was carried out to determine the nature and thicknesses of the overburden materials and the depths to bedrock. The specific objective was to profile the bedrock to locate any potential, infilled, placer channels in the bedrock surface. The seismic refraction survey included eight separate lines totalling approximately 2000 metres in length. The locations of the seismic lines are illustrated at 1:5,000 scale in the Site Sketch in Figure 2.

AURORA MINES INC. ANDERSON CREEK PLACER PROJECT
SEISMIC REFRACTION SURVEY
SURVEY LOCATION PLAN
FRONTIER GEOSCIENCES INC.
DATE: APRIL 2001 / SCALE 1:250,000 / FIG. 1

0.0 2.5 5.0 7.5 10.0

KILOMETRES

THIS FIGURE IS A SEGMENT OF THE NTS MAP SHEET 105M, "MAYO"

2. THE SEISMIC REFRACTION SURVEY METHOD

2.1 Equipment

The seismic refraction investigation was carried out using a Geometrics, Smartseis, S-24, 24 channel, signal enhancement seismograph and Mark Products Ltd., 48 Hz geophones. Geophone intervals along the multicored seismic cables were maintained at 5 metres in order to produce high resolution data on subsurface layering. The zero delay or instantaneous blasting caps in the small explosive charges used for energy input, were detonated electrically with a Geometrics, HVB-1, high voltage, capacitor type blaster.

2.2 Survey Procedure

For each spread, the seismic cable was stretched out in a straight line and the geophones implanted. Six, separate "shots" were then initiated: one at either end of the geophone array, two at intermediate locations along the seismic cable, and one off each end of the line to ensure adequate coverage of the basal layer. The shots were detonated individually and arrival times for each geophone were recorded digitally in the seismograph. Data recorded during field surveying operations was generally of good to excellent quality.

Throughout the survey, notes were recorded regarding seismic line positions in relation to topographic and geological features, and claim posts in the area. Relative elevations along the seismic lines were recorded by chain and inclinometer. with absolute contour information provided by the 1:250,000 scale NTS map sheet, “Mayo.”

2.3 Interpretive Method

The final interpretation of the seismic data was arrived at using the method of differences technique. This method utilizes the time taken to travel to a geophone from shotpoints located to either side of the geophone. Using the total time, a small vertical time is computed which represents the time taken to travel from the refractor up to the ground surface. This time is then multiplied by the velocity of each overburden layer to obtain the thickness of each layer at that point.

3. GEOPHYSICAL RESULTS

3.1 General

The results of the eight seismic lines carried out in the survey area are illustrated at 1:500 scale in Figures 3 through 14, in the Appendix. Ground surface profiles are approximate and were determined by chain and inclinometer measurements and reference to elevation contours published in the 1:250,000 NTS map sheet, "Mayo."

3.2 Discussion

The analysis of the seismic data indicates that two distinct velocity layers underlie the site area. The surficial layer with velocities varying from 1500 m/s to 1520 m/s is consistent with surficial exposures of glacial till, saturated silt, sand, gravels and cobbles and possibly, weathered or altered schist bedrock.

The surficial layer velocities at several locations were difficult to determine due to the presence of frozen ground or a relatively shallow, dense overburden layer. Refractions emanating from these high speed layers in some instances, obscured the slower-travelling compressional wave through the overburden. The overburden arrivals were frequently evident as second arrivals on the seismic traces.

The basal layer with velocities varying from 1900 m/s to 4400 m/s is the interpreted bedrock surface. Generally, the basal velocities fall in the range of 2860 m/s to 4400 m/s indicating competent bedrock. Lower velocity zones on seismic lines SL-1C, SL-3 and SL-7 indicate less competent rock such as a shear or fault zone. The relatively narrow 1900 m/s zone on seismic line SL-7 may be consistent with a vertically-walled channel cut into the bedrock. In that case, the bedrock surface would be greater than indicated in Figure 13.

With the exception of the middle grouping of lines, the bedrock surface was identified as a second arrival in the seismic data. Early shock wave arrivals in the data were determined to be due to shallow frozen ground or a buried, high speed, overburden layer. In most instances, the shock wave arrivals from the deeper, competent bedrock surface were apparent as later arrivals in the seismic data.

The lowest group of seismic lines encompassing SL-1, spreads 1 to 4, SL-2 and SL-8 are located in the current mining area. The interpretation for seismic line SL-1 reveals a significant depression in the bedrock surface in the vicinity of station 140NE. Further to the northeast, the interpreted bedrock surface deepens quickly to depths of the order of 55m on spreads no.'s 1 and 4.

Along crossline SL-2, a bedrock depression over 30 m in interpreted depth is evident at about station 160NW. The axis of this depression is approximately 35m southeast of the present location of Anderson Creek. No similar feature is apparent on seismic line SL-8 due likely, to the limited seismic data recorded on that traverse.

The interpretations for the middle group of seismic lines shown in Figures 5, 6, 9, 10 and 11 display relatively shallow interpreted bedrock depths throughout the area. The data along seismic line 1 shows little variation in bedrock depths as do crosslines SL-3 and SL-4. Seismic line SL-5, however, shows a 10m bedrock depression at about station 100NW. This bedrock feature is consistent with an elongate ground surface depression that may be a higher, abandoned channel of Anderson Creek.

The highest group of seismic lines are illustrated in Figures 7, 12 and 13. The interpretation for seismic line SL-1E indicates deep bedrock with a sharp rise in the bedrock surface to the northeast. This sharp rise in the bedrock may be due to a fault in the bedrock surface. Crossline SL-7 displays shallow bedrock with four distinct bedrock velocity zones. The rapid lateral change in bedrock velocities along line SL-7 also suggests a fault zone.

The interpretation for seismic line SL-6 shows relatively deep bedrock with a well-defined bedrock depression at about station 43NW. This depression based on its position and gradient up from the middle group of lines, is likely the original Anderson Creek channel.

4. LIMITATIONS

The depths to subsurface boundaries derived from seismic refraction surveys are generally accepted as accurate to within ten percent of the true depths to the boundaries. In some cases, unusual geological conditions may produce false or misleading data points with the result that computed depths to subsurface boundaries may be less accurate. In seismic refraction surveying difficulties with a "hidden layer" or a velocity inversion may produce erroneous depths. The first condition is caused by the inability to detect the existence of layers because of insufficient velocity contrasts or layer thicknesses. A velocity inversion exists when an underlying layer has a lower velocity than the layer directly above it.

In this survey, some difficulty was encountered in identification of bedrock surface, second arrivals after the onset of earlier shock wave events from frozen ground or dense, overburden layers. This second arrival data was infrequently obscured by other seismic arrivals and may be less reliable in some instances.

The results are interpretive in nature and are considered to be a reasonably accurate representation of existing subsurface conditions within the limitations of the seismic refraction method.

For: Frontier Geosciences Inc.

Russell A. Hillman, P.Eng.

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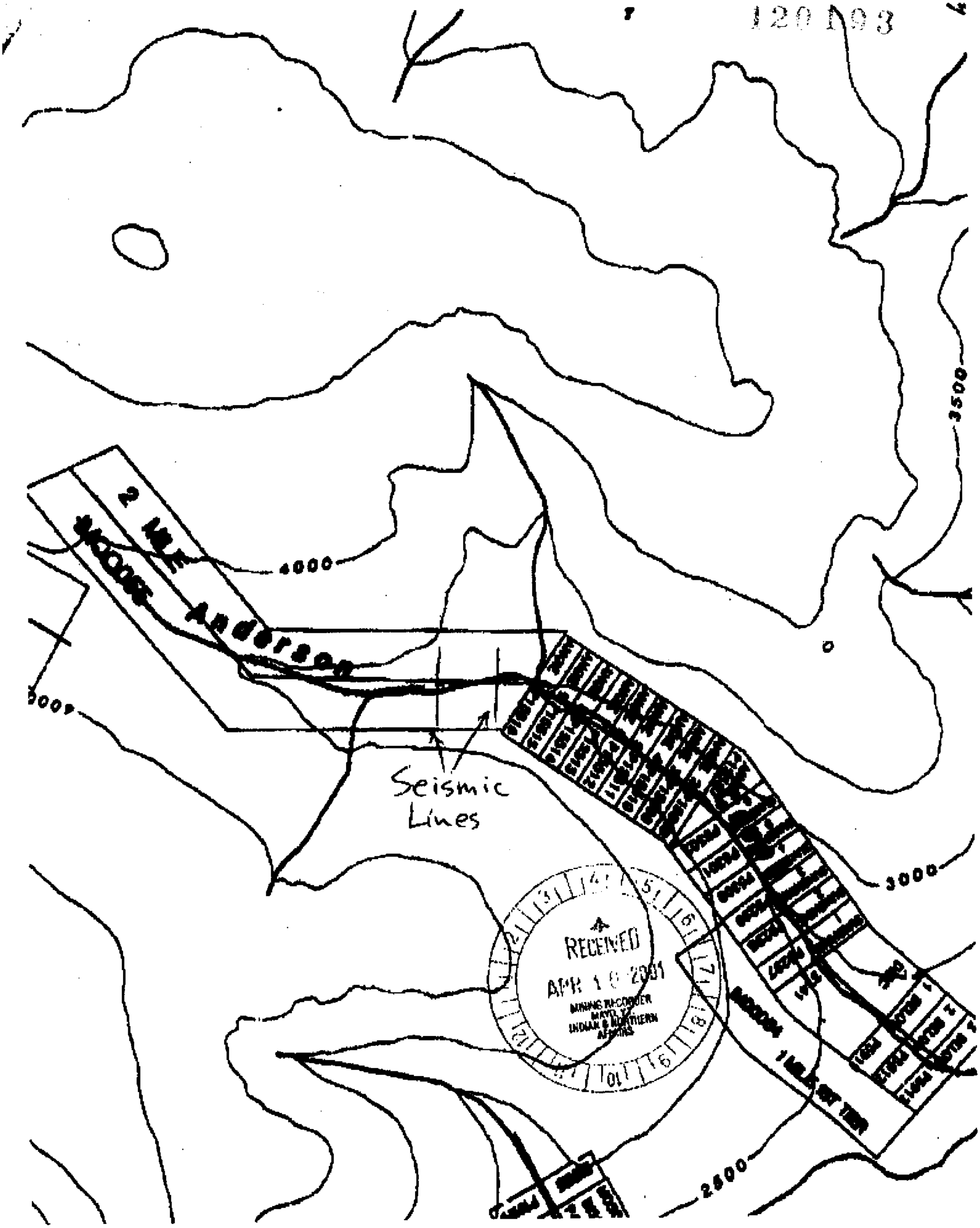
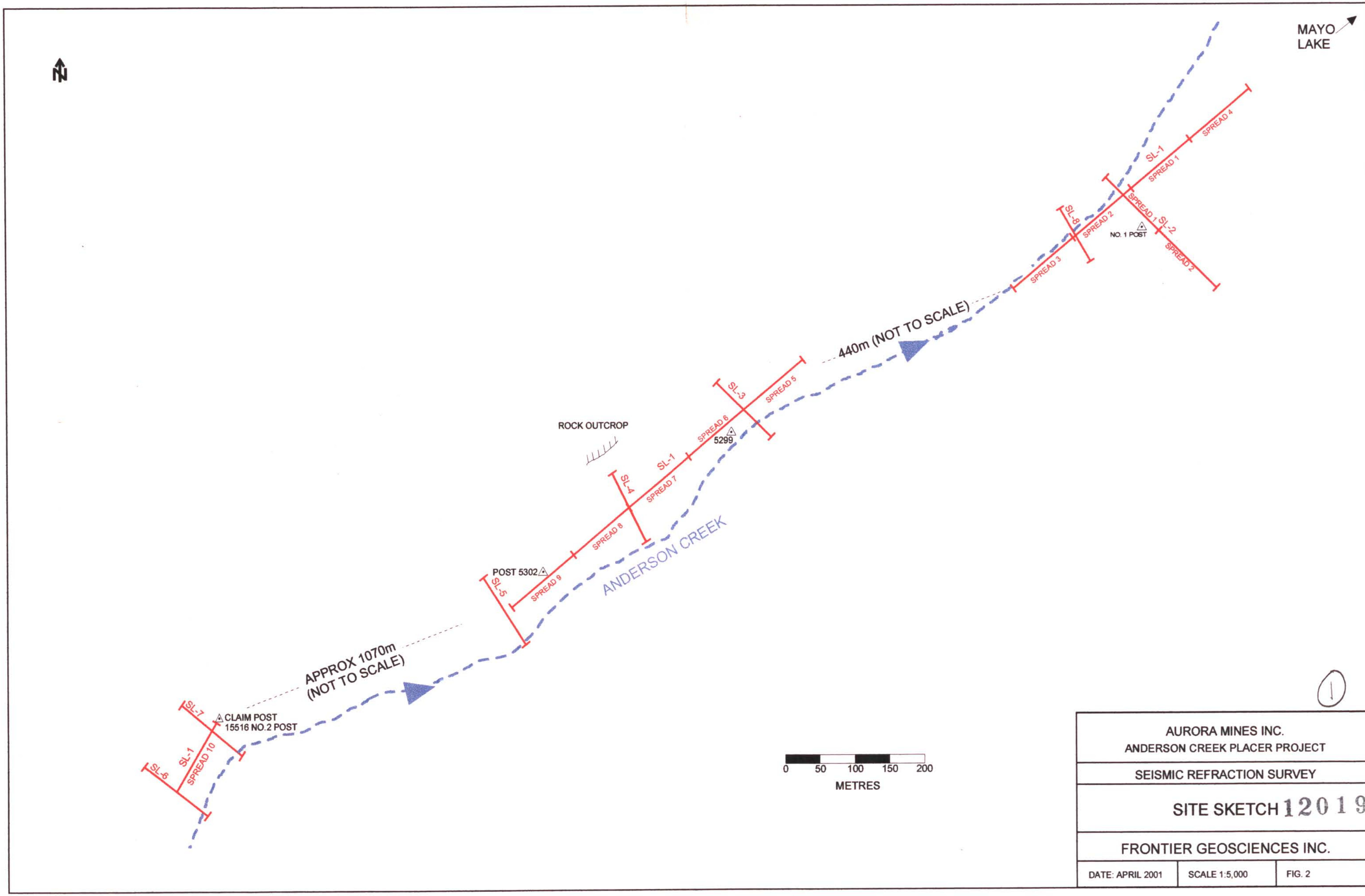

2 MILE
MOOSE
Anderson
4000
3500
3000
2500
Seismic Lines
RECEIVED
APR 10 2001
MINING RECORDER
MAYO, Y.T.
INDIAN & NORTHERN AFFAIRS



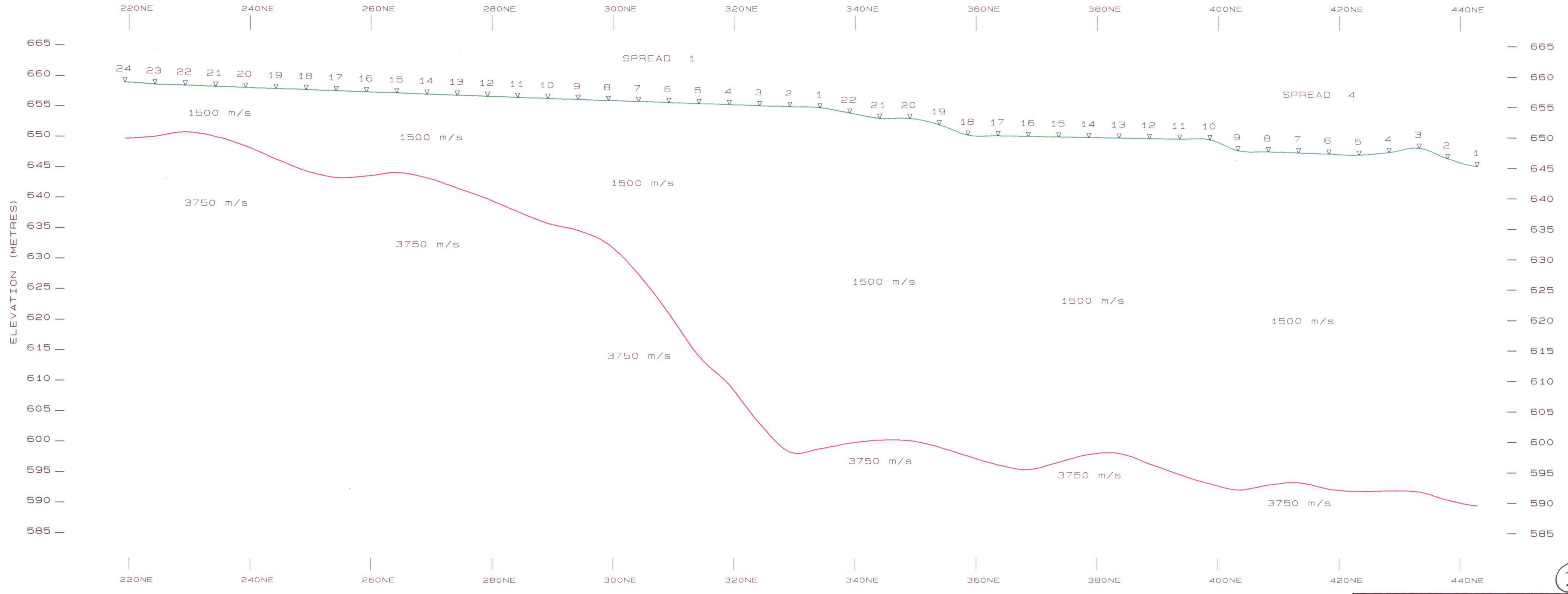
AURORA MINES INC.
ANDERSON CREEK PLACER PROJECT

SEISMIC REFRACTION SURVEY

SITE SKETCH 120193

FRONTIER GEOSCIENCES INC.

DATE: APRIL 2001	SCALE 1:5,000	FIG. 2



(2)

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-1A

AURORA MINES INC.
ANDERSON CREEK

SEISMIC REFRACTION SURVEY

INTERPRETED DEPTH SECTION SL-1A

FRONTIER GEOSCIENCES INC.

DATE: APRIL 2001	FIG. 3

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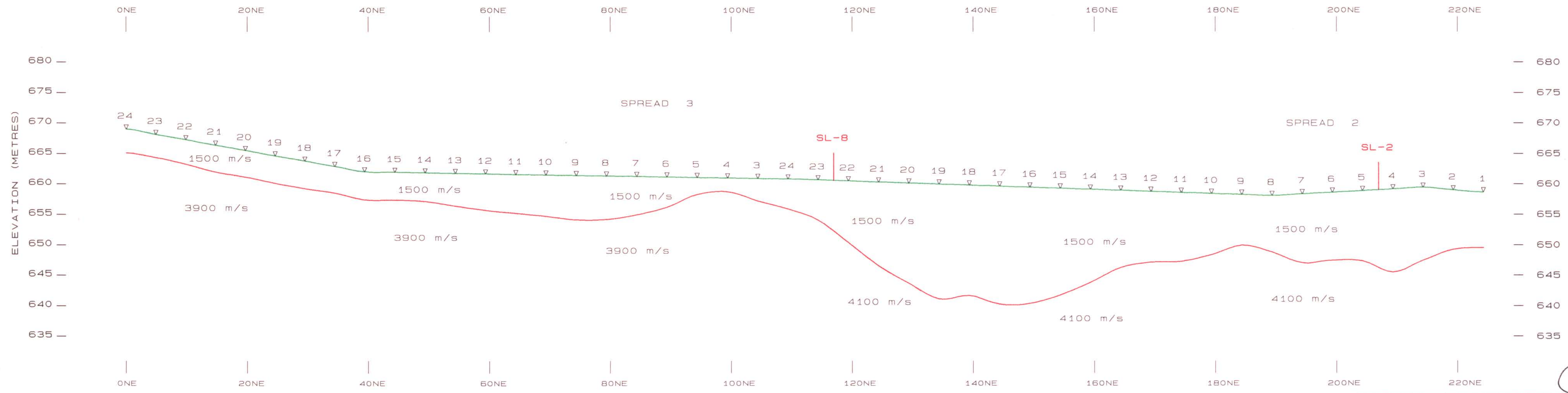

(3)

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-1B

AURORA MINES INC.

ANDERSON CREEK

SEISMIC REFRACTION SURVEY

INTERPRETED DEPTH SECTION SL-1B

FRONTIER GEOSCIENCES INC.

DATE: APRIL 2001		FIG. 4

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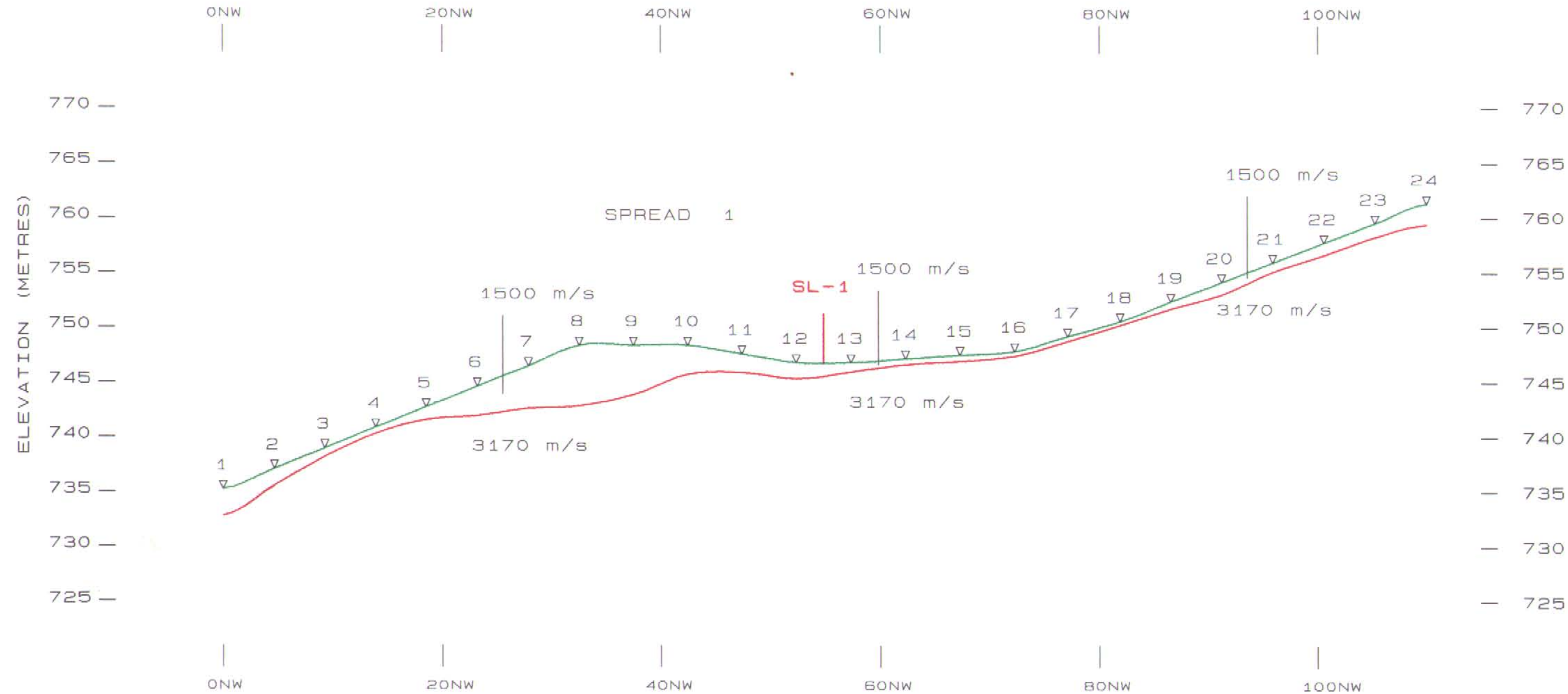

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-4

AURORA MINES INC.
ANDERSON CREEK

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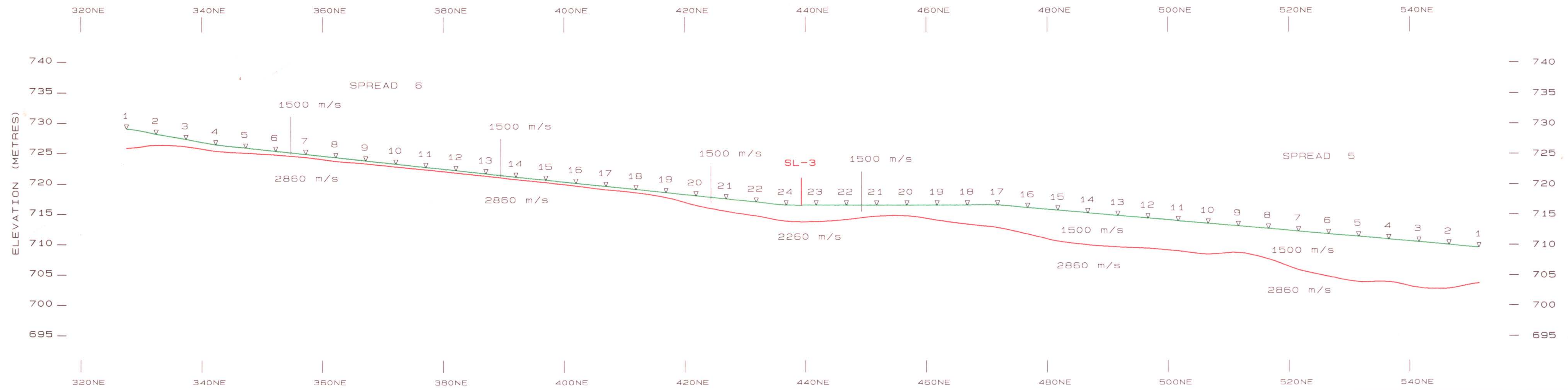
SEISMIC REFRACTION SURVEY

INTERPRETED DEPTH SECTION SL-4

FRONTIER GEOSCIENCES INC.

DATE: APRIL 2001

FIG. 10



SEISMIC LINE SL-1C

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

AURORA MINES INC.
ANDERSON CREEK

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SEISMIC REFRACTION SURVEY

INTERPRETED DEPTH SECTION SL-1C

FRONTIER GEOSCIENCES INC.

DATE: APRIL 2001 | FIG. 5

120193

SEISMIC LINE SL-1D

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

AURORA MINES INC. ANDERSON CREEK	6
SEISMIC REFRACTION SURVEY	
INTERPRETED DEPTH SECTION SL-1D	
FRONTIER GEOSCIENCES INC.	
DATE: APRIL 2001	FIG. 6

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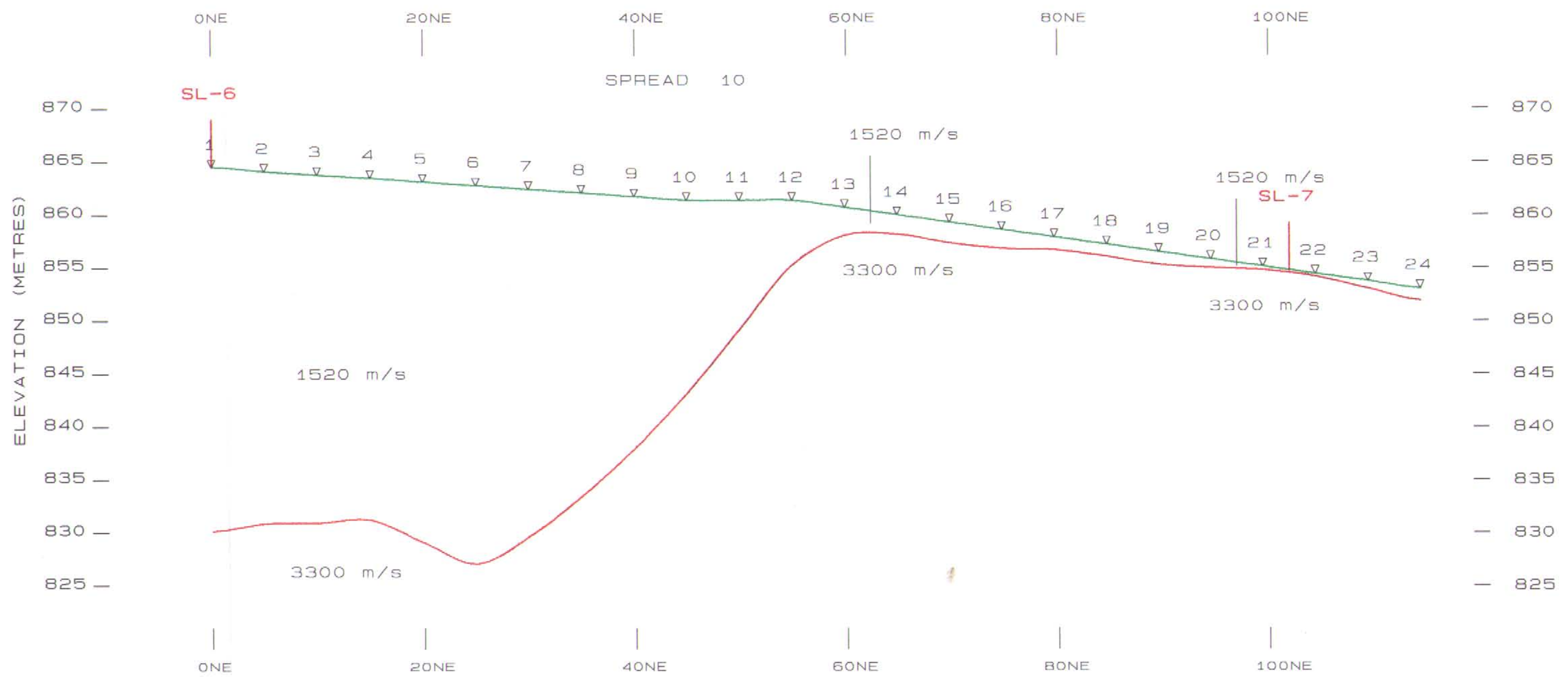
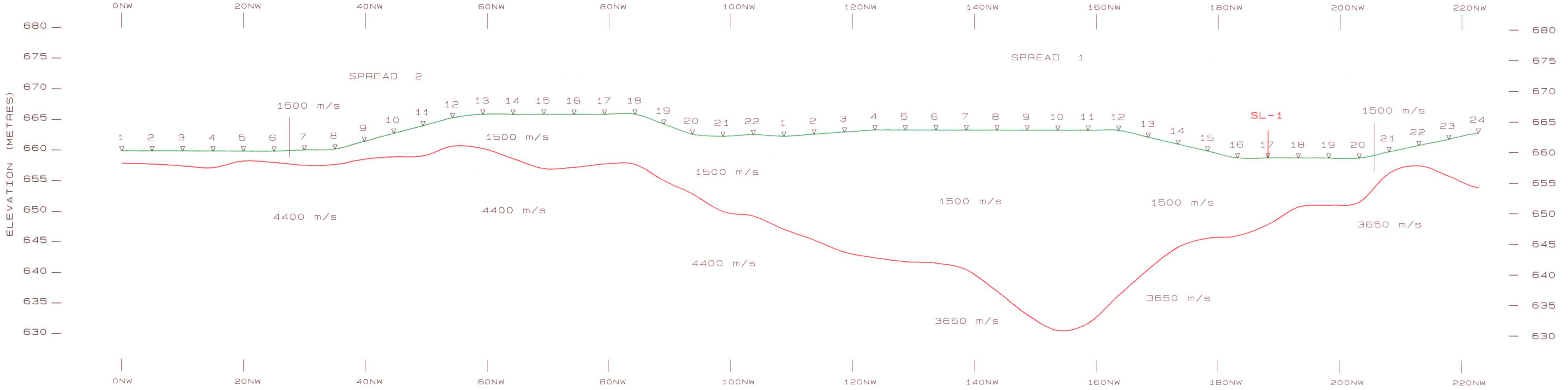


SEISMIC LINE SL-1E

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

AURORA MINES INC. ANDERSON CREEK	7
SEISMIC REFRACTION SURVEY	
INTERPRETED DEPTH SECTION SL-1E	
FRONTIER GEOSCIENCES INC.	
DATE: APRIL 2001	FIG. 7



NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-2

AURORA MINES INC.
ANDERSON CREEK
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SEISMIC REFRACTION SURVEY

INTERPRETED DEPTH SECTION SL-2

FRONTIER GEOSCIENCES INC.

DATE: APRIL 2001		FIG. 8

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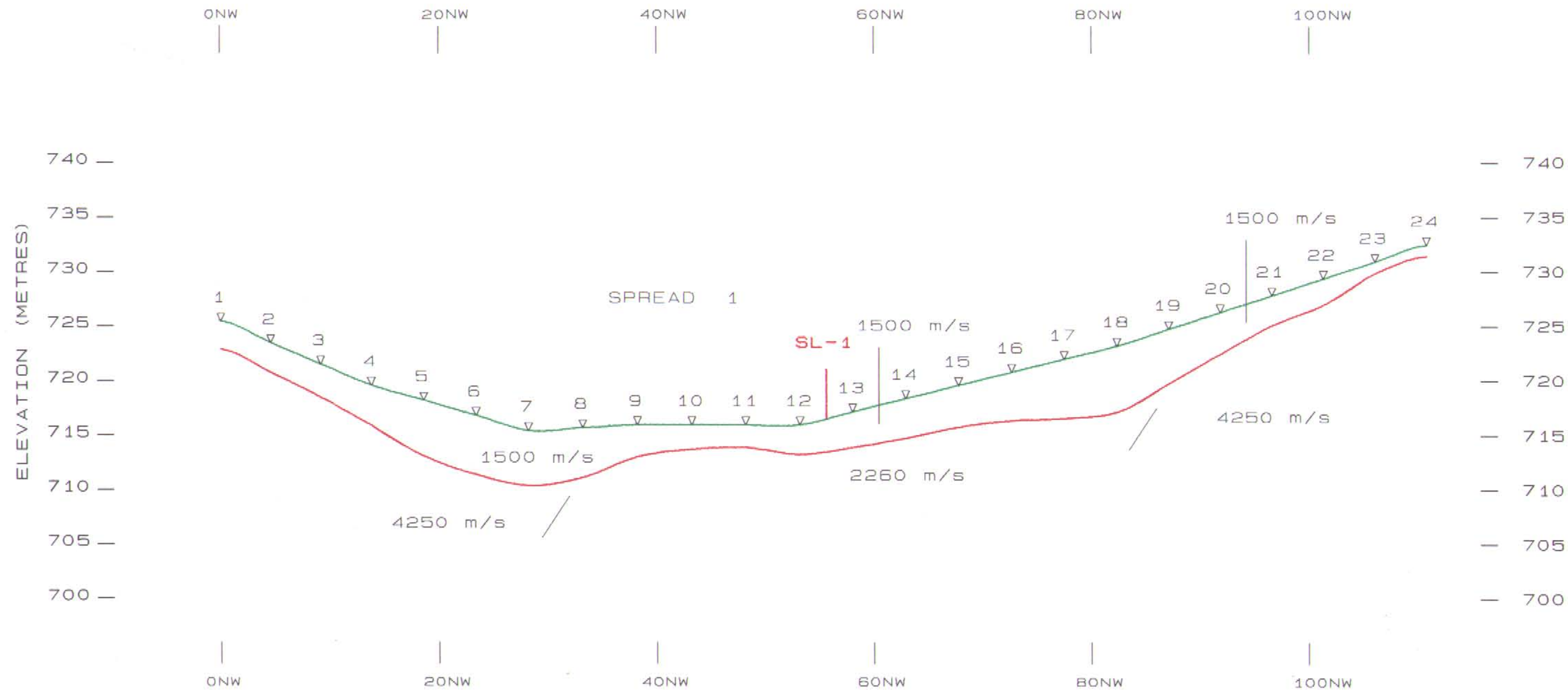

NOTES:
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HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-3

AURORA MINES INC. ANDERSON CREEK		9
SEISMIC REFRACTION SURVEY		
INTERPRETED DEPTH SECTION SL-3		
FRONTIER GEOSCIENCES INC.		
DATE: APRIL 2001		FIG. 9

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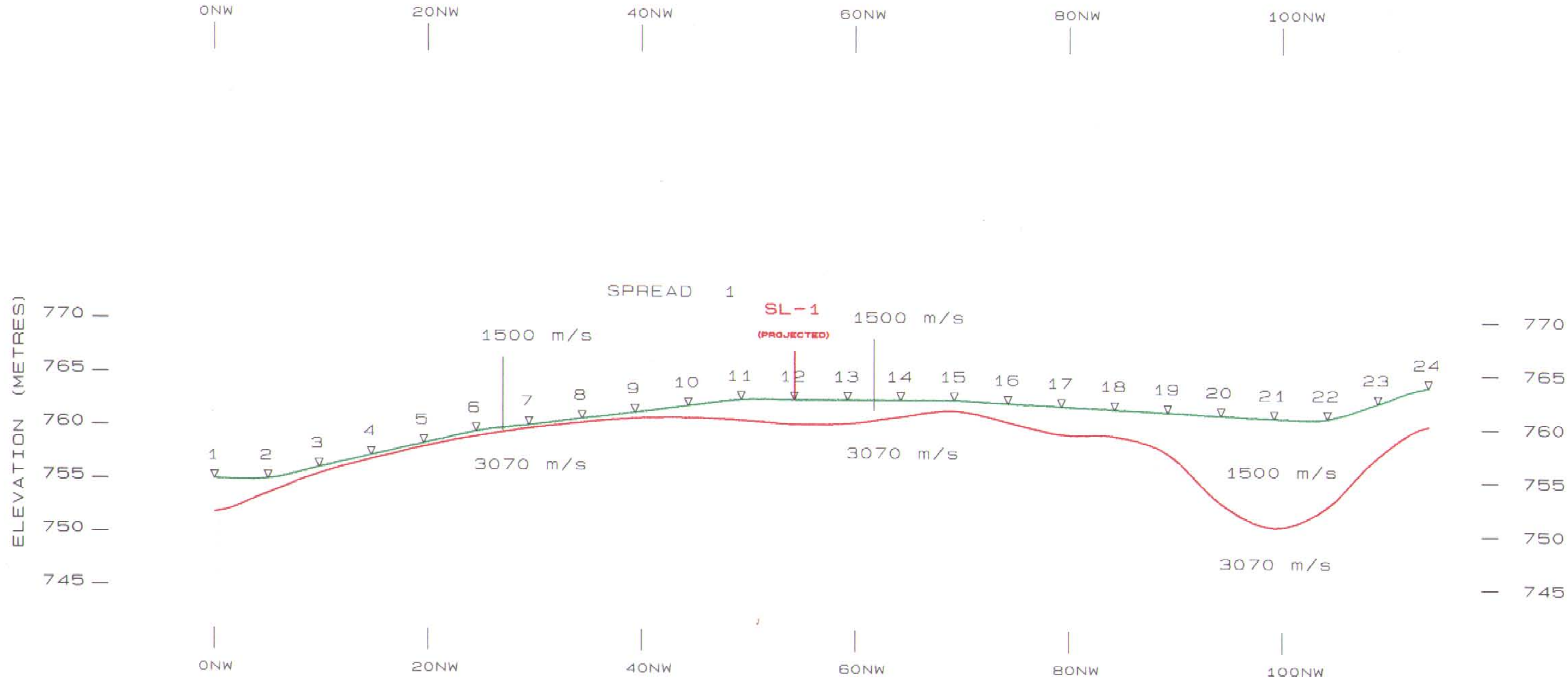

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-5

AURORA MINES INC. ANDERSON CREEK	10
SEISMIC REFRACTION SURVEY	
INTERPRETED DEPTH SECTION SL-5	
FRONTIER GEOSCIENCES INC.	
DATE: APRIL 2001	FIG. 11

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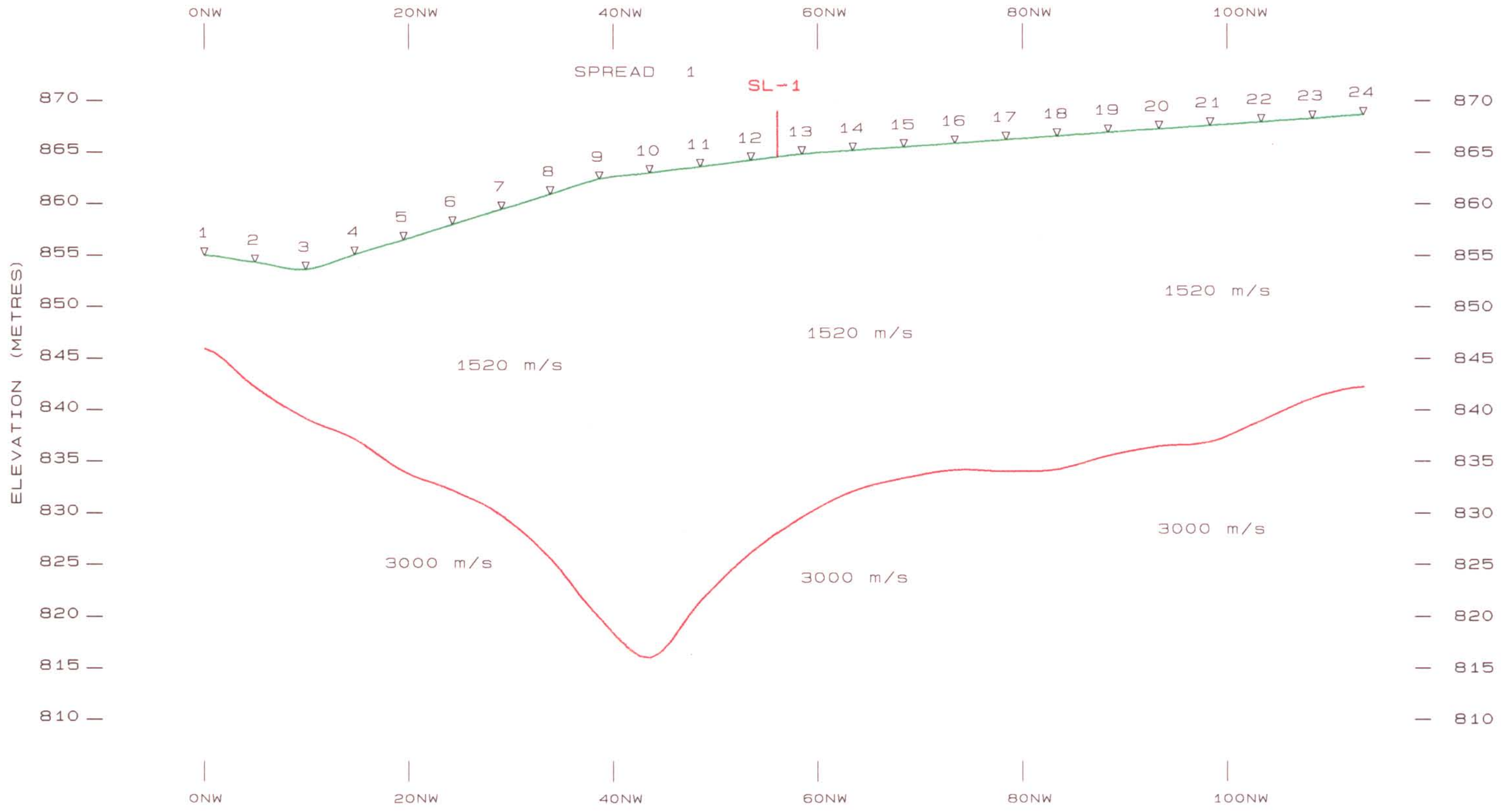

SEISMIC LINE SL-6

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

AURORA MINES INC. ANDERSON CREEK	11
SEISMIC REFRACTION SURVEY	
INTERPRETED DEPTH SECTION SL-6	
FRONTIER GEOSCIENCES INC.	
DATE: APRIL 2001	FIG. 12

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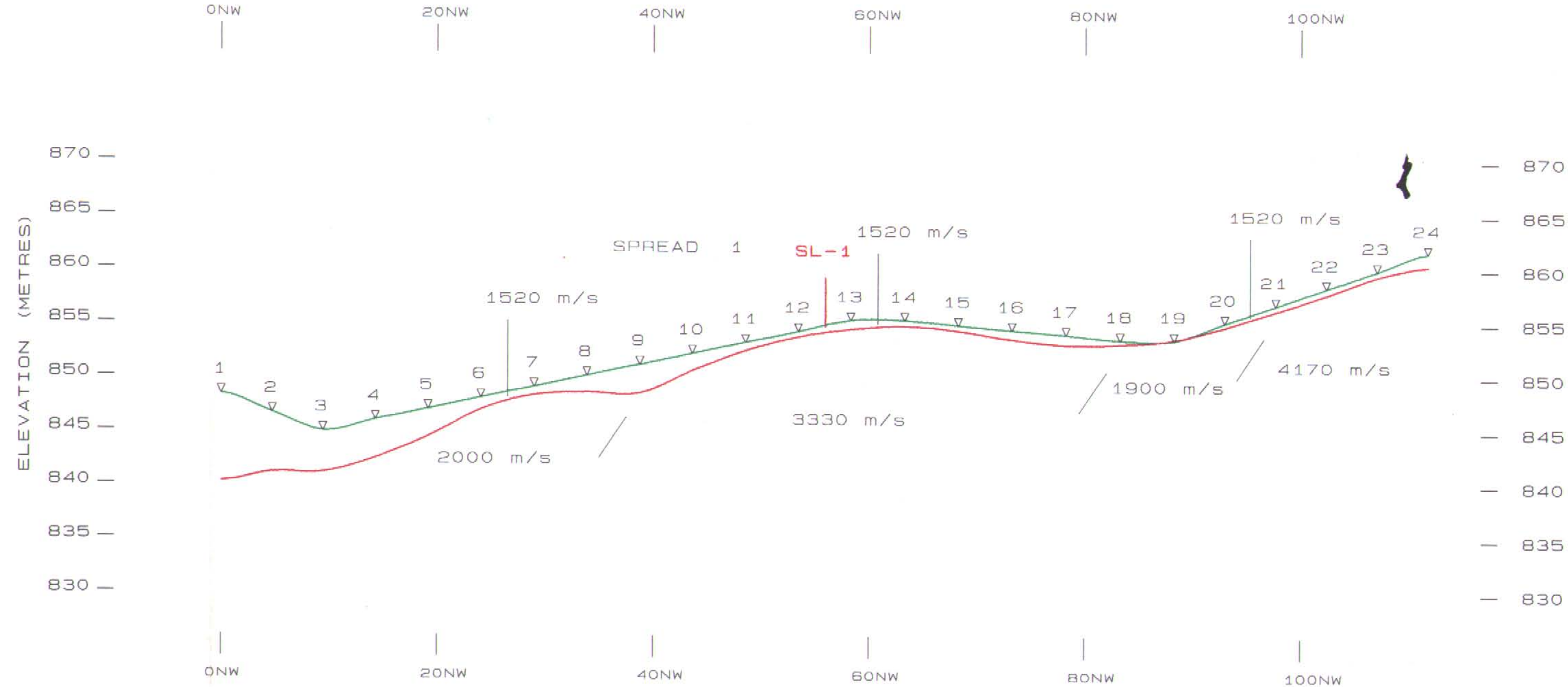

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-7

AURORA MINES INC. ANDERSON CREEK	12
SEISMIC REFRACTION SURVEY	
INTERPRETED DEPTH SECTION SL-7	
FRONTIER GEOSCIENCES INC.	
DATE: APRIL 2001	FIG. 13

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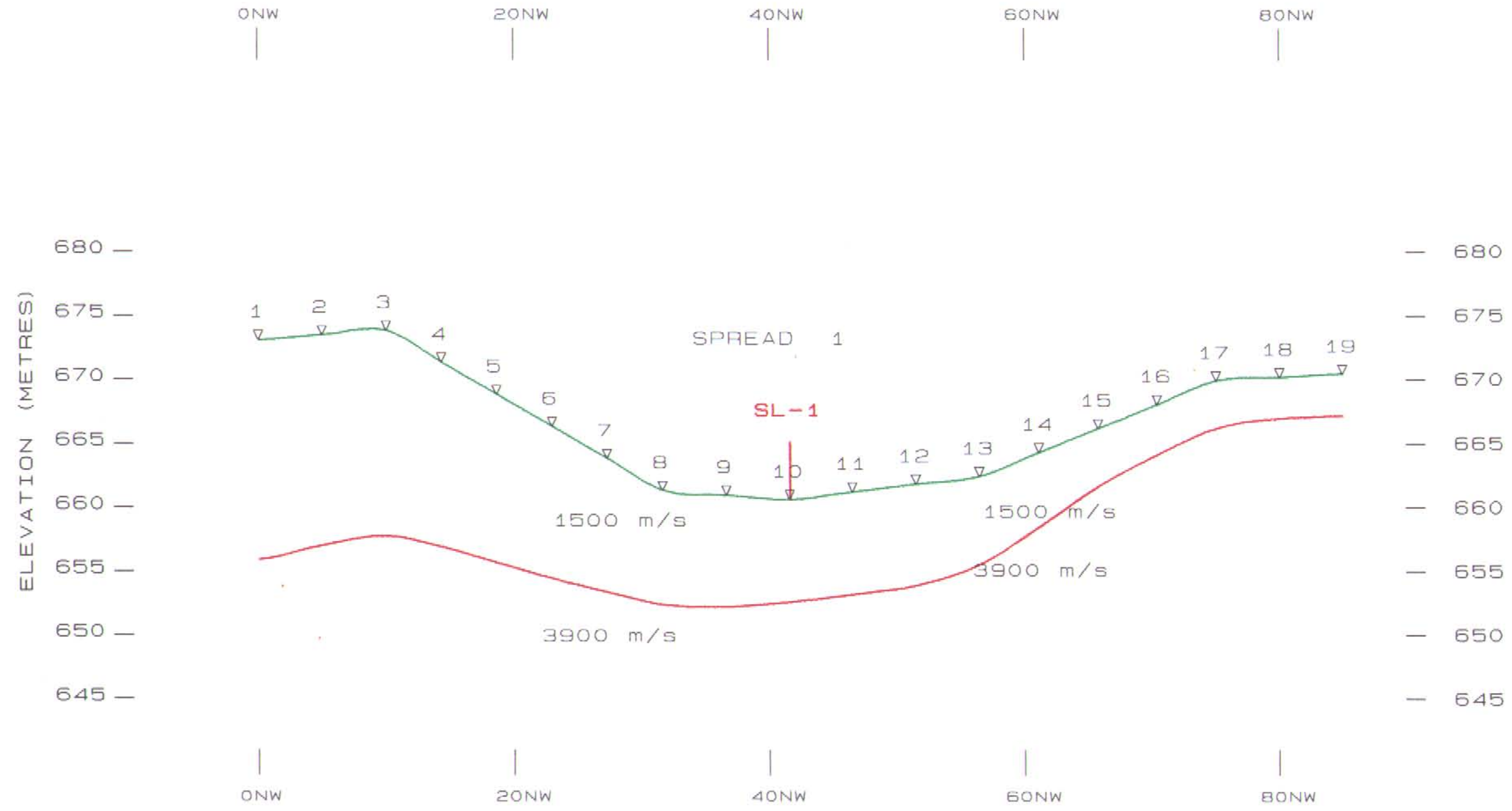

NOTES:
VERTICAL SCALE 1: 500
HORIZONTAL SCALE 1: 500
INSTRUMENT: GEOMETRICS S-24

SEISMIC LINE SL-8

AURORA MINES INC.
ANDERSON CREEK

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SEISMIC REFRACTION SURVEY

INTERPRETED DEPTH SECTION SL-8

FRONTIER GEOSCIENCES INC.

DATE: APRIL 2001		FIG. 14

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