ISOLATION BREAK STABILITY EVALUATION

NORTH FACE OF CELL 5

PREPARED FOR:

REPUBLIC SERVICES OF OHIO II

Prepared by

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Introduction

The stability of the northern face of Cells 4 and 5 adjacent to Cell 7 of the Countywide Regional Disposal Facility that will be formed when the Isolation Break is constructed, as shown in the attached Drawings and Figures was evaluated to document that it will remain stable under a conditions that are anticipated as well as those, while unanticipated, may develop in the event the ongoing reactions in the areas to the south and east of the excavation extend into the waste mass under the proposed slope.

Analysis

Analysis Section

A single cross section located at station 4+60 was selected for analysis. This location represents the longest slope at 3H:1V in the direction of Cell 5. The baseliner slopes away from the Cell 5-7 divide at a uniform 3:1 slope along the entire Isolation Break alignment. Therefore, the location of the highest waste elevation on the proposed 3:1 uniform slope represents the critical cross section. The chosen cross section is the one depicted in the cross section figures of the main report.

Analysis Methods

The stability analyses were performed using the SlopeW module within Geostudio 2007 version 7.03 software by Geoslope International. The existing geometry was used along with historical liner and waste elevations to construct a simplified model. Waste strengths, densities and piezometric heads were modeled based on site observations and experience. In addition, given that some of the conditions that may develop are in the slope are unknown, the sensitivity of the solution waste strength was identified using the built in sensitivity analysis options in the software. Details of each analysis and the material properties used are presented in the graphic and text outputs attached.

Assigned Piezometric Heads

Piezometric heads were assigned using a reduced unit of weight water table for the soils/wastes. A unit weight of 29 pounds per cubic foot (lb/ft^3) was utilized. The use of this unit weight is only meant to simulate a generalized downward gradient or rate of rise of pore pressure with depth that is less than hydrostatic. Heads were not assigned to the geocomposite/baseliner system, reflecting there generally free draining condition. The pore pressures on the critical failure surface are presented in graphical form for each of the analyses.

Results

The attached figures show the proposed slopes possess a factor of safety of nearly 1.5 for with reasonable assumptions of waste strength and the elevated pore pressures assigned. Further, the analyses also demonstrate that the slope possesses a factor of safety of 1.3 even if the frictional component of the waste strength is significantly degraded (ϕ'=24°).

It can be concluded that the proposed excavation slopes are stable. Further, if conditions considerably more adverse than those assume were to develop, the placement of additional fill on the bench that would buttress the slope from the north would allow the area to be stabilized. The need to construct a buttress will become evident if significant down slope movement is observed. It is recommended that, in the event that temperatures in the gas wells in the south slope exceed 170 degrees, that surface monitoring points should be established similar to that on the west slope and readings be taken. Movement, if occurring, will be evident in these readings and a stabilizing berm of soils can be constructed if required.

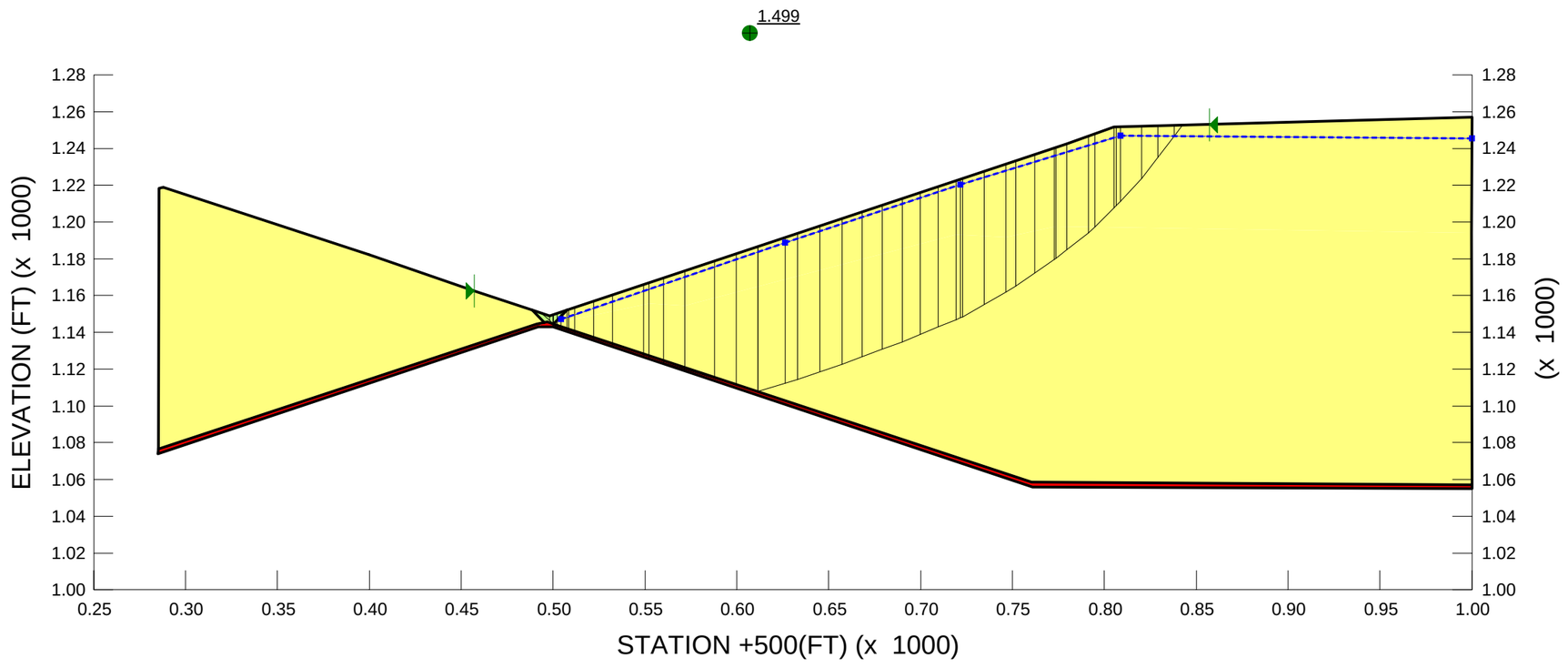
Description: Cell 5-7 Isolation Cut
Comments:
Name: Base Analysis - Auto Search
File Name: N:\Countywide\F&O Confidential\IB\IB-1_rev1.gsz
Last Saved Date: 10/26/2007
Analysis Method: Morgenstern-Price
Optimization: Yes
Horz Seismic Load: {SlopeItems.Seismic.Horizontal.Value}
Ignore seismic load in strength: No
PWP Conditions Source: Piezometric Line

Unit Weight of Water: 29 pcf
Simulating a downward gradient of .54, heads not applied to liner

Sensitivity to Waste Strenght

phi waste	Factor of Safety
20.0000	1.1874052
21.0000	1.2159148
22.0000	1.2448292
23.0000	1.2779417
24.0000	1.3079169
25.0000	1.3383734
26.0000	1.3693408
27.0000	1.4008507
28.0000	1.4329363
29.0000	1.4656330
30.0000	1.4989781

Name: SOLID WASTE Model: Mohr-Coulomb Unit Weight: 70 pcf Cohesion: 400 psf Phi: Multiple Trial: 30 ° Phi-B: 0 ° C-Phi Correlation Coef.: 0 Anisotropic Strength Fn: (none) Piezometric Line: 1
Name: FB Soil Model: Mohr-Coulomb Unit Weight: 130 pcf Cohesion: 0 psf Phi: 30 ° Phi-B: 0 ° C-Phi Correlation Coef.: 0 Anisotropic Strength Fn: (none) Piezometric Line: 1
Name: Interface Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 12 ° Phi-B: 0 ° C-Phi Correlation Coef.: 0 Anisotropic Strength Fn: (none)



PERFORMED BY
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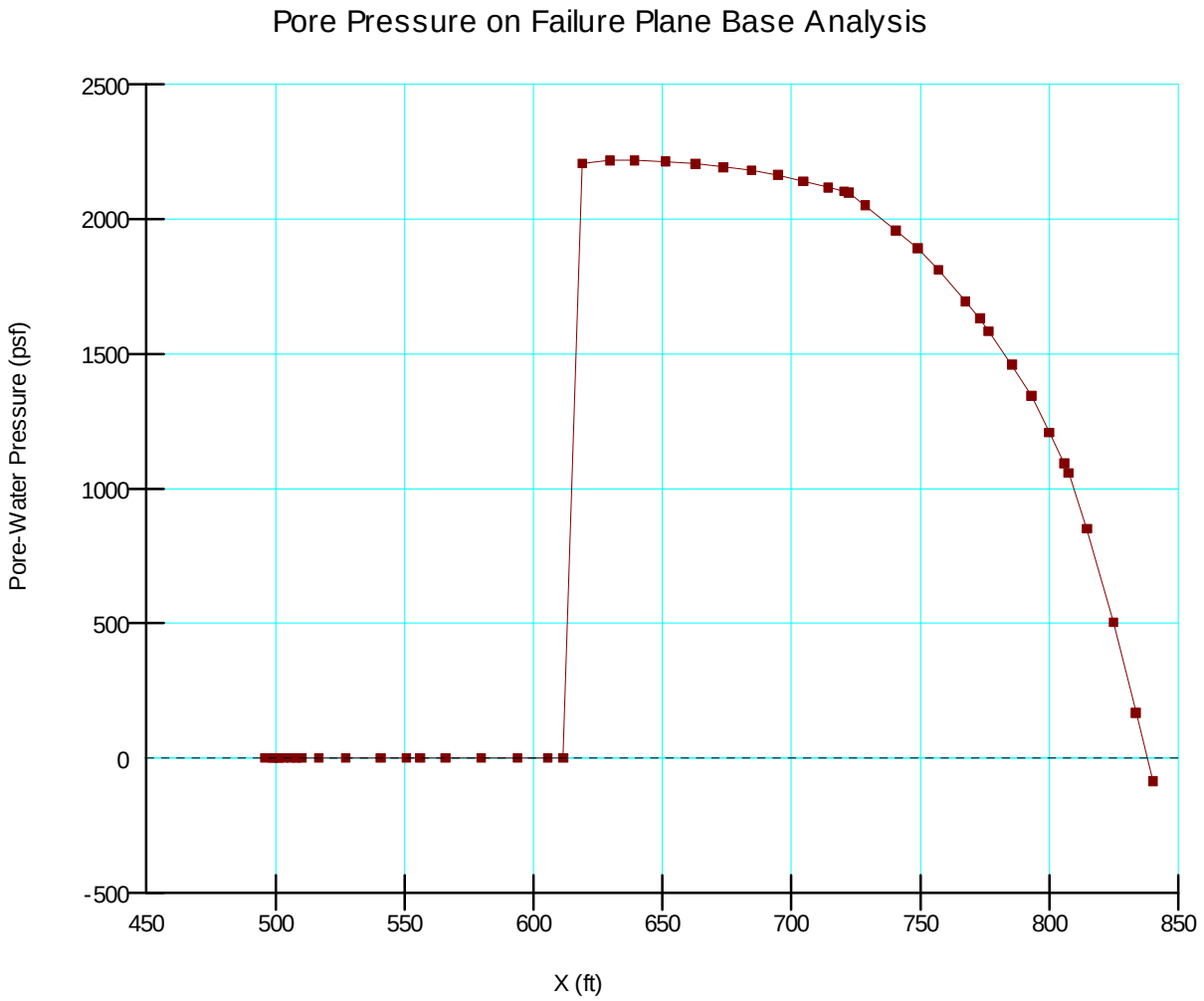
PORE PRESSURES ON THE FAILURE PLANE – FOR STABILITY ANALYSIS



Note pore pressure at x=625 corresponds to Station 125 in C Section and is approximately 37 ft of head of water.