STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY
Department of Natural Resources

1313 Sherman St., Room 215
Denver, Colorado 80203
Phone: (303) 866-3567
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COLORADO DIVISION OF RECLAMATION MINING & SAFETY

John W. Hickenlooper
Governor

Mike King
Executive Director

Loretta E. Piñeda
Director

October 12, 2012

Mr. Rory Williams
Star Mine Operations LLC
1675 Larimer Street, Suite 820
Denver, CO 80202

Re: Revenue Mine, File No. M-2012-032, 112d-1 Application, Preliminary Adequacy Review.

Dear Mr. Williams,

The Division has been reviewing the above-named permit application for technical adequacy, and has the following comments and questions that must be addressed. Several members of the Division's Minerals program have participated in the review, and have provided input for applicant to respond to. Their review comments are enclosed herewith.

Please also respond to the following items.

1. Has Star Mine Operations received any discharge permit water quality levels yet from WQCD-CDPHE? Please provide copies of that when it is received, as it may affect aspects of your DRMS-permitted operation.

2. Has it been determined whether the mine's openings constitute bat habitat, or whether there is a bat population? If a survey is required, or there are operational considerations, please contact the Colorado Division of Parks and Wildlife, and provide copies to DRMS of all replies received.

3. Please provide copies to DRMS of any operational restrictions, wetland determinations, etc., that are received from the US Army Corps of Engineers, as that may affect your DRMS permit.

4. The mill diagrams are extensive, and clearly explain the circuits for the various sulfide minerals potentially contained in the ore to be processed. However, the diagrams do leave out details of the vats and vessels, pipes and valves, that are considered for use there. Wherever applicable, please provide information as to the volumes of the circuits, types of vessels and conveyances, and materials to be used in construction of the mill facility.

The application review team is still preparing comments regarding the stormwater management onsite, and water quality monitoring, among other topics. Those will be forwarded to your office promptly.

The Division's decision date is still set for December 14, 2012. I must ask you to please provide all responses to me at least one week prior to that date, to allow time for our review and reply.

Please provide two complete sets of all response materials. Responses should be directed to me at the Durango address below. Please be reminded that all application-related correspondence and adequacy materials must be filed for public review with the Ouray County Clerk and Recorder, and the filing receipt(s) obtained from them must be submitted to me. Materials to be filed must include review letters from the Division, as well as all responses from you.

I will be preparing an inspection report of my last visit there, to be sent under separate cover. As always, the Division thanks you and your mine personnel for their time at the site. If you have any questions, I may be reached at the Division's Durango Field Office: 691 CR 233, Room A-2, Durango, CO 81301.

Sincerely,

Bob Oswald
Environmental Protection Specialist

Enclosures: Application review memoranda from DRMS review team

EC: Russ Means, DRMS Grand Junction
Ben Langenfeld, Greg Lewicki and Associates, PLLC
John Trujillo, Star Mine Operations LLC, Ouray

(c:\12-10 docs\Revenue 112d par/rco)

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COLORADO DIVISION OF RECLAMATION MINING & SAFETY

MEMORANDUM

From: Wait, TC
Sent: Tuesday, September 25, 2012 10:31 AM
To: Oswald, Robert
Cc: Kaldenbach, Tom; Waldron, Tony
Subject: Revenue Mine review team (M-2012-032)

Here are my initial thoughts on the geologic hazards and stability aspects of the permit for Revenue Mine:

Global Geologic Hazards for the Area:
Geologic hazards for this site include Floodplain, Erosion, Debris Flow, Unstable Slopes (including rockfall), and Avalanche. This assessment is stemming largely from the HB 1041 hazards maps done in the 1970s for the Ironton and Telluride Geologic Quadrangles. (I have not been to the site to do any sort of ground assessment at a site-specific scale.)

The proposed tailings piles do encroach onto the physiographic flood plain for Sneffels Creek. I see they have shown the 100-year flood plain in the Exhibit C maps near the ponds, but do not extend that boundary through the entire site. My concerns for the flood plain are: 1) erosion of the tailings pile, which could destabilize the piles, and 2) elevated water possibly coming in contact with waste rock that may be contaminated.

There are a number of debris flow fans in this valley area, and Ouray County is known for its destructive debris flow potential. One of the mapped fans includes the lower parts of the Atlas drainage south of the existing pond. Another is slightly down-valley and crosses the road, shedding from the slopes on the north side of the county road, and there is potential for the entire Sneffels Creek to have a debris flow run. Debris flows are very unpredictable, and can rapidly jump from one drainage channel to another on these fans. Although the proposed locations for the facilities relating to the mine are not on the fans, if the fan by the Atlas drainage drains toward the east or the fan by the county road drains to the west, they could impact mine structures.

There are a number of avalanche chutes in the area, including the one shown on the exhibit C maps. I have concerns about the slopes on the north side of the county road also – they appear to run frequently based on air photos. The mine structures are below a slope that is less worrisome due to the presence of mature trees, and a lower total slope elevation. It is wise to avoid having personnel at the mine during the winter months. In addition, it may be prudent to add avalanche-resistant design to critical structures that may have offices or workers. Avalanche-resistant designs will also be helpful for other hazards like debris flow and rockfall. There is no information regarding the proposed Avalanche Protection Berm shown in exhibit C. For more information on the avalanche hazards for this site, I would recommend talking with Ethan Greene of the Colorado Avalanche Information Center (303-499-9650).

Hazards with less potential impact to the mine operations would be slope creep, landslides, and talus or rockfall.

Waste Piles

There will be two waste rock piles as part of the permit: The Atlas pile (to the west) and the Revenue Combined pile (to the east). The permit states the average height of the Revenue pile to be 55 ft. There will be diversion ditches built on the uphill sides of the piles to "permanently" convey runoff water around the piles.

The permit states that a stability analysis was not performed on the waste piles because of the apparent stability of the existing waste material. The proposed slopes for the waste piles will be 3:1, and as stated above, water will be diverted away from the piles.

Shaft Locations

The permit indicates that three new shafts are proposed and that three existing shafts will also be used for the mine. These shaft locations are shown in exhibit C-5. The shafts will be up to 6 feet in diameter. The permit mentions that any topsoil stripped from the location of the shafts will be used to create a berm around the shaft to reduce water runoff inflow into the shafts. In addition, the shafts should be evaluated for and protected from avalanches, debris flows, and rockfall. The existing shafts should also be evaluated and make sure there is some sort of diversion berm.

Geotechnical Stability Exhibit

The permit included a stability analysis for the waste piles and for the regraded disturbed areas (not a global stability analysis) for the Revenue mine. Specific details for waste rock embankment placement are given to ensure structural integrity. Based on the analysis, the embankment and regraded areas do not appear to be at risk for failure under design conditions.

However, I do have concerns about long-term design and maintenance. If a flood or debris flow event on Sneffels Creek occurs, erosion of the waste rock piles could occur and decrease the stability of the waste rock. Additionally, should the drainage diversion ditches around the waste rock piles become compromised, water may encroach into the waste rock and destabilize the piles.

Also important to note is that the stability analysis is not looking at global conditions. As stated above, the entire site is in an area that has been mapped as a high risk for slope movement (landslide, slope creep, talus/rockfall). While I do not feel that the locations of the proposed structures are in areas of exceptionally elevated risk, the entire site is prone for stability problems related to the underlying geologic conditions, regardless of the mining contributions.

Summary, Recommendations and Questions:

1) Generally well thought-out from a geologic hazards stance. I think the proposed locations of the mine-related structures are likely in the best possible locations, however that does not mean they are risk-free. I don't think there really is a risk-free location at this site. Reducing exposure by only mining in the summer is a good strategy, but won't help with flooding or debris-flow events.
2) The stability evaluation is adequate for ideal conditions for the mine-related portions of the site. It does not address global conditions, and assumes proper site drainage and maintenance.
3) There should be a maintenance plan developed to monitor and maintain the diversion ditches around the waste piles and the toe of the waste pile embankments to ensure proper function.

4) The shaft locations should be evaluated and protected for possible geologic hazards.
5) There is no information regarding the design of the Avalanche Protection Berm shown in Exhibit C. This information would be helpful in determining what facilities the structure should be protecting, and if it is of adequate design to do so. With design forethought, this berm may also double as a debris flow berm.

Please let me know if you need further input or clarification on any of this. I can get you maps if you would like to include them in your review.

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MEMORANDUM

COLORADO DIVISION OF RECLAMATION MINING & SAFETY

From: Czapla, Dustin
Sent: Wednesday, September 12, 2012 1:56 PM
To: Oswald, Robert
Cc: Means, Russ
Subject: Revenue Mine review team (M-2012-032)

Hello Bob,

I've looked through some of the application materials and identified several issues that may need to be addressed. Let me know if you have any questions for me regarding any of these items. Thanks.

Regarding stability:

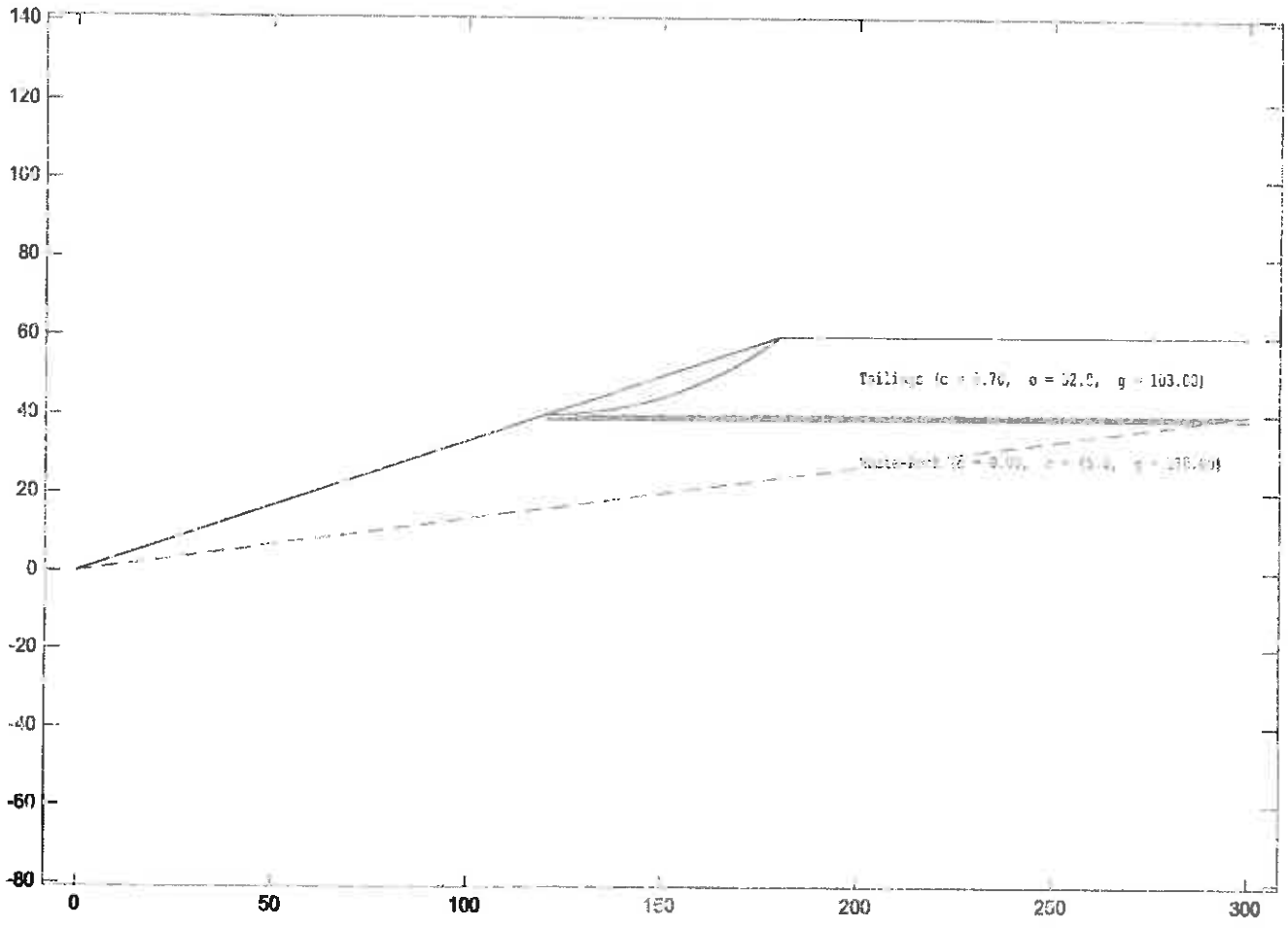
1. In Exhibit U - Geotechnical stability, the applicant has adequately demonstrated that the final reclaimed slopes for the Revenue waste rock/tailings pile should be stable. However, the applicant has not provided an analysis for the Atlas waste rock/tailings pile. Stability of the Atlas pile should be separately addressed. Attached are the Division's Slope Stability analysis of the Revenue pile, which considered several different scenarios presented by the Applicant, to show that the slopes should be stable if constructed as proposed.
2. The estimated stability of the tailings piles relies on compaction of the tailings to 94% of maximum dry density. The applicant has committed to performing field density tests for every 2,000 tons of tailings that are placed in the piles. In order to ensure that these tests occur as proposed, results of the tests should be provided to the Division annually.
3. On page D-19, the applicant states that an existing bridge crossing Sneffels Creek, installed by the property owner, is adequate for the mine operation. The applicant should provide construction details of this bridge and include information regarding the weight of equipment anticipated to use the bridge in order to demonstrate that it is adequate for the mine operation. The applicant also proposes to construct a similar bridge at the west end of the permit area. Proposed construction details for this bridge should also be provided.

Regarding water quality:

4. In several places (pp. D-2, G-2, T-11) the Applicant describes the wall rock surrounding the ore veins as "...andesite, which is a very fine granite, consisting of quartz, feldspar, amphiboles, biotite and muscovite mica". There seems to be some confusion here, as andesite and granite are two different rock types. Andesite is a volcanic rock in which quartz is typically absent or only present in minor amounts, while granite is a plutonic rock in which quartz is generally a primary constituent. Since the Applicant claims that the waste rock (wall rock) will be inert, I feel that it is important to accurately identify the waste rock and its components.
5. The ore material has significant potential to generate acid mine drainage. It is anticipated that 99% of the sulfides will be removed through the milling process, thus reducing the potential for acid generation. In order to ensure that the sulfides are removed in sufficient

quantities, the applicant should periodically test the tailings material. On page D-15, the applicant has committed to quarterly SPLP testing of the tailings material during the first year of operation, with no further testing proposed if the material is shown to be inert. On pages T-13 and T-38, the applicant states that additional SPLP tests will be conducted annually on the tailings on an ongoing basis. To ensure the continued effectiveness of the milling process at removing sulfides, and that acid generating materials are not placed in the waste piles, the applicant should continue to test the tailings material at least quarterly over the life of the mine. An ideal sample location would be at the tailings loadout facility, prior to placement into the waste piles. If materials with acid generating potential are noted in any of the tests, more frequent testing may be required.

Dustin Czapla
Environmental Protection Specialist
Department of Natural Resources
Division of Reclamation, Mining and Safety
101 South 3rd, Suite 301
Grand Junction, CO 81501
Phone: (970) 243-6299
Fax: (970) 241-1516



GALENA Version 5.02

Waste Rock

Tailings

Analysis: 1

Single Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Factor of Safety: 1.97

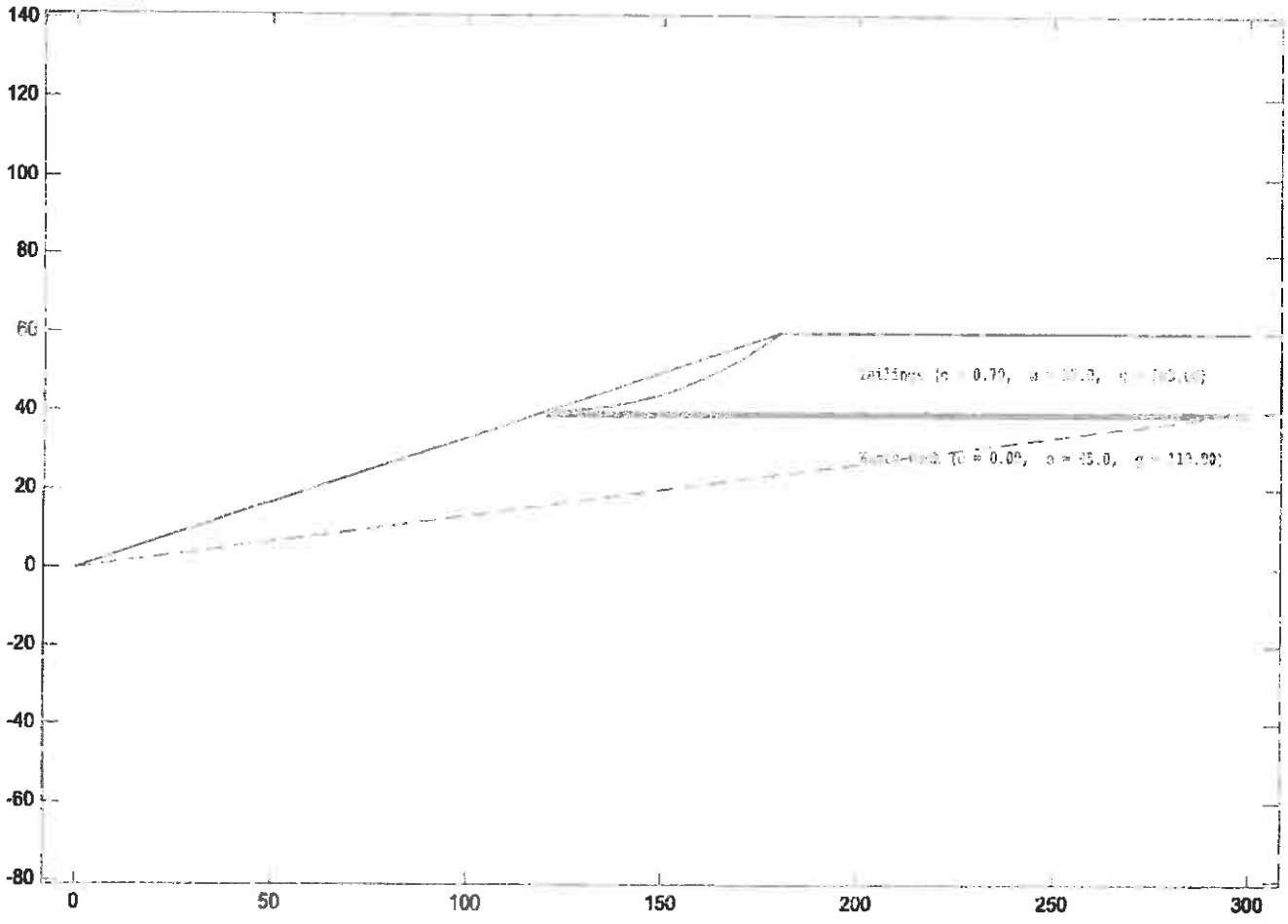
Edited: 11 Sep 2012 *Processed:* 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 1

Office of Surface Mining



GALENA Version 5.02

Waste Rock

Tailings

Analysis: 1

Single Stability Analysis

Method: Spencer-Wright

Surface: Circular

Results

Factor of Safety: 1.97

Final Angle of Interslice Forces: 18.0°

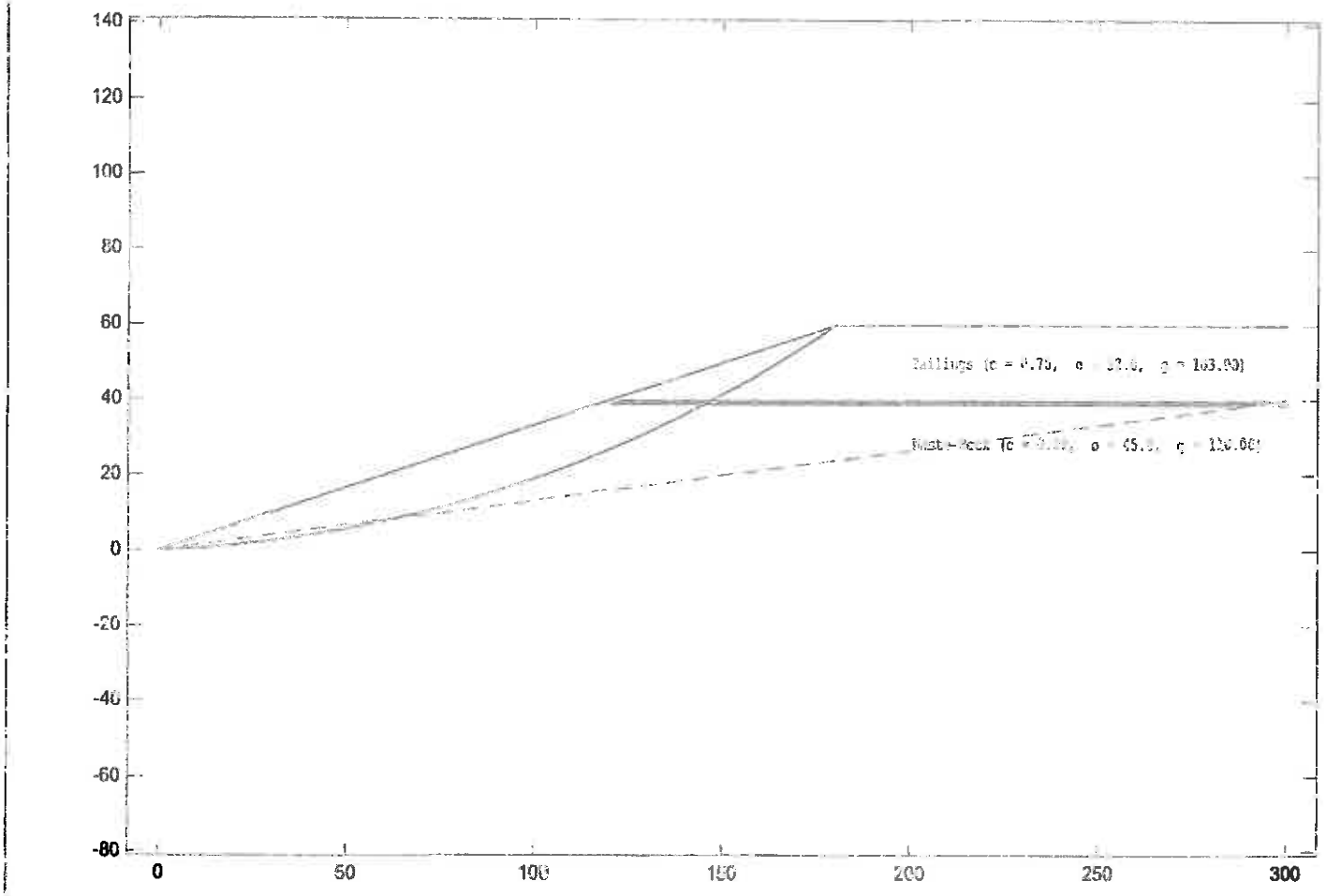
Edited: 11 Sep 2012 *Processed:* 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 2

Office of Surface Mining



GALENA Version 5.02

Waste Rock

Tailings

Analysis: 1

Single Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Factor of Safety: 3.01

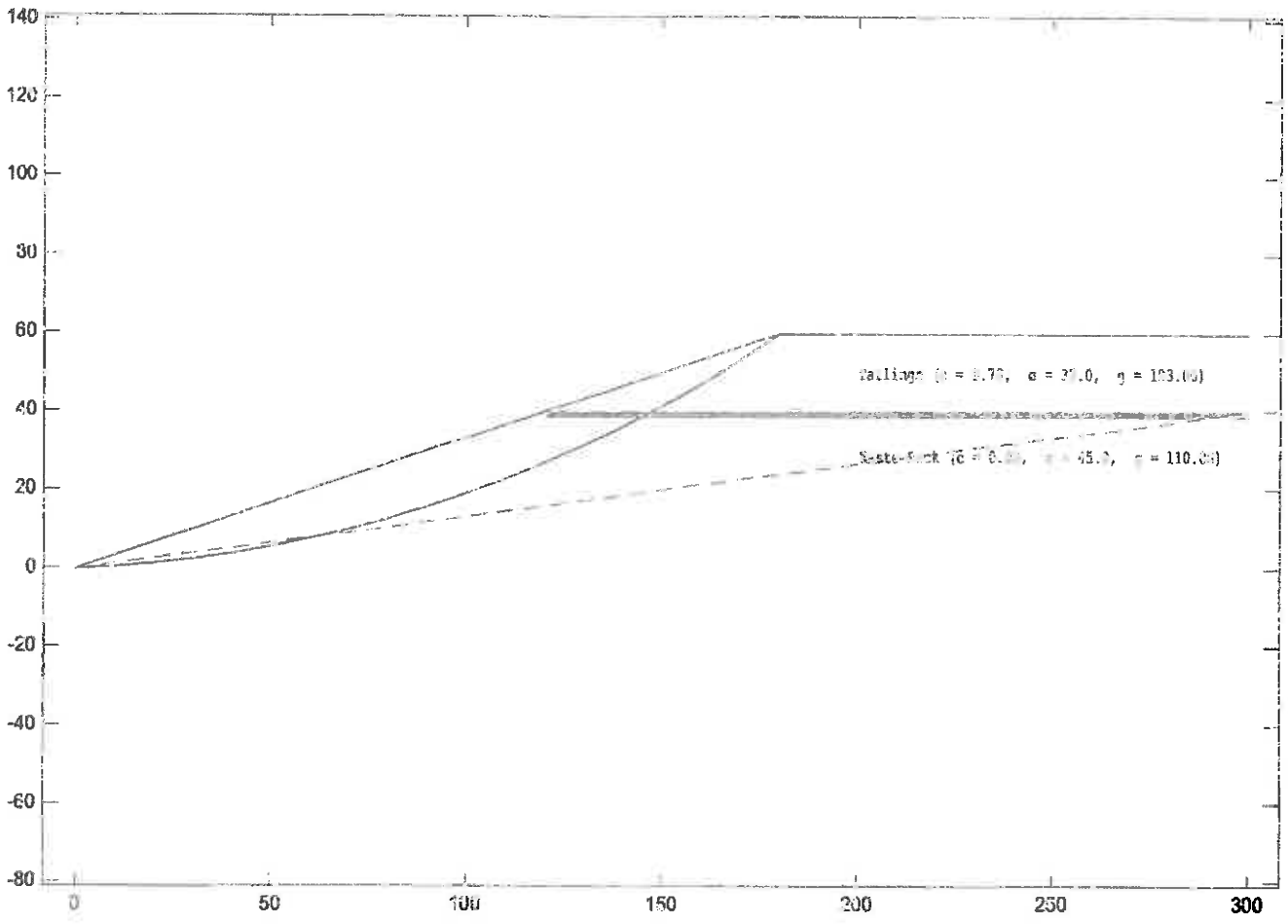
Edited: 11 Sep 2012 *Processed:* 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 3

Office of Surface Mining



GALENA Version 7.02

Waste Rock

Tailings

Analysis: 1

Single Stability Analysis

Method: Spencer-Wright

Surface: Circular

Results

Factor of Safety: 3.02

Final Angle of Interslice Forces: 18.5°

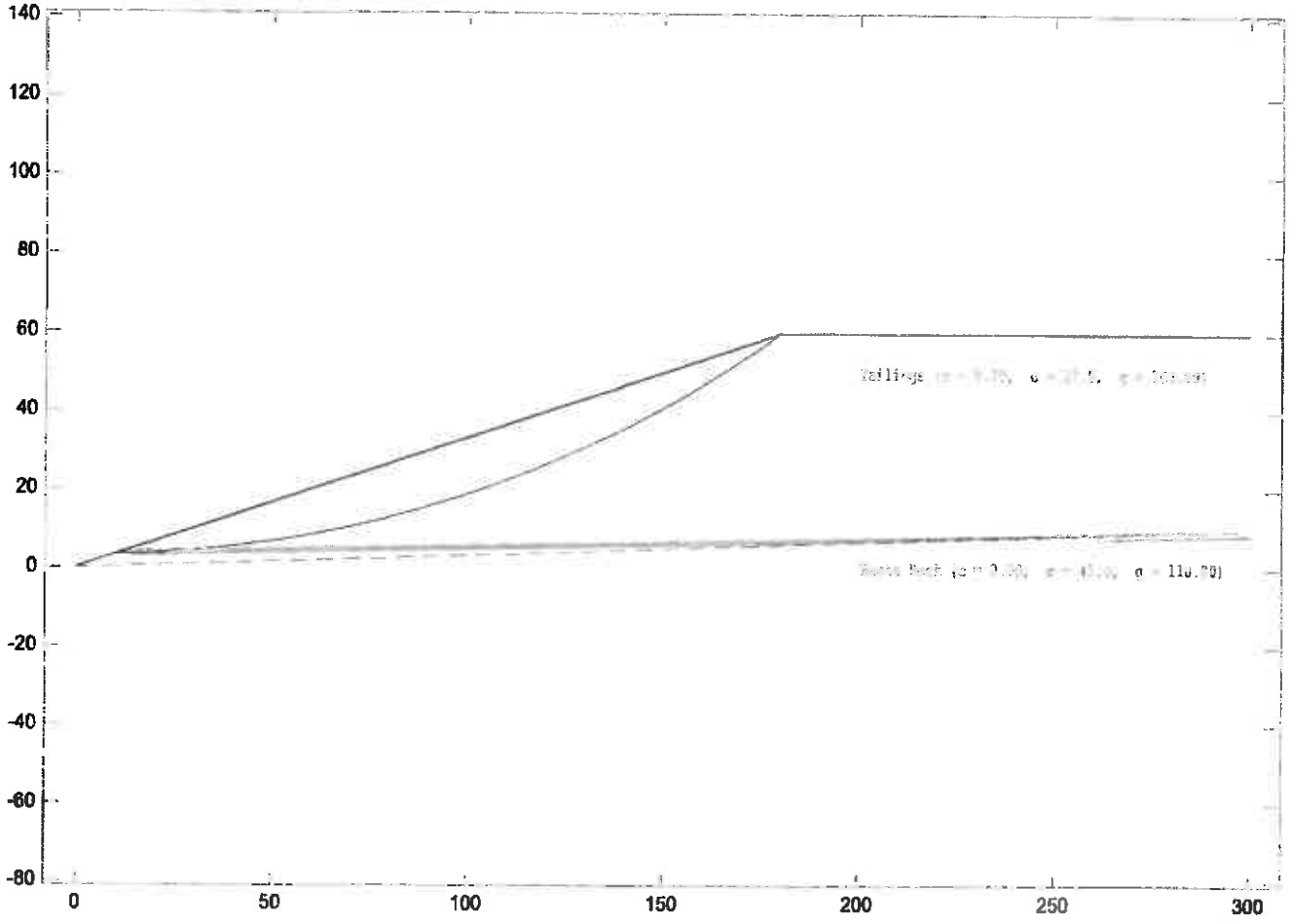
Edited: 11 Sep 2012 *Processed:* 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 4

Office of Surface Mining



GALENA Version 5.02

Waste Rock

Tailings

Analysis: 1

Single Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Factor of Safety: 2.01

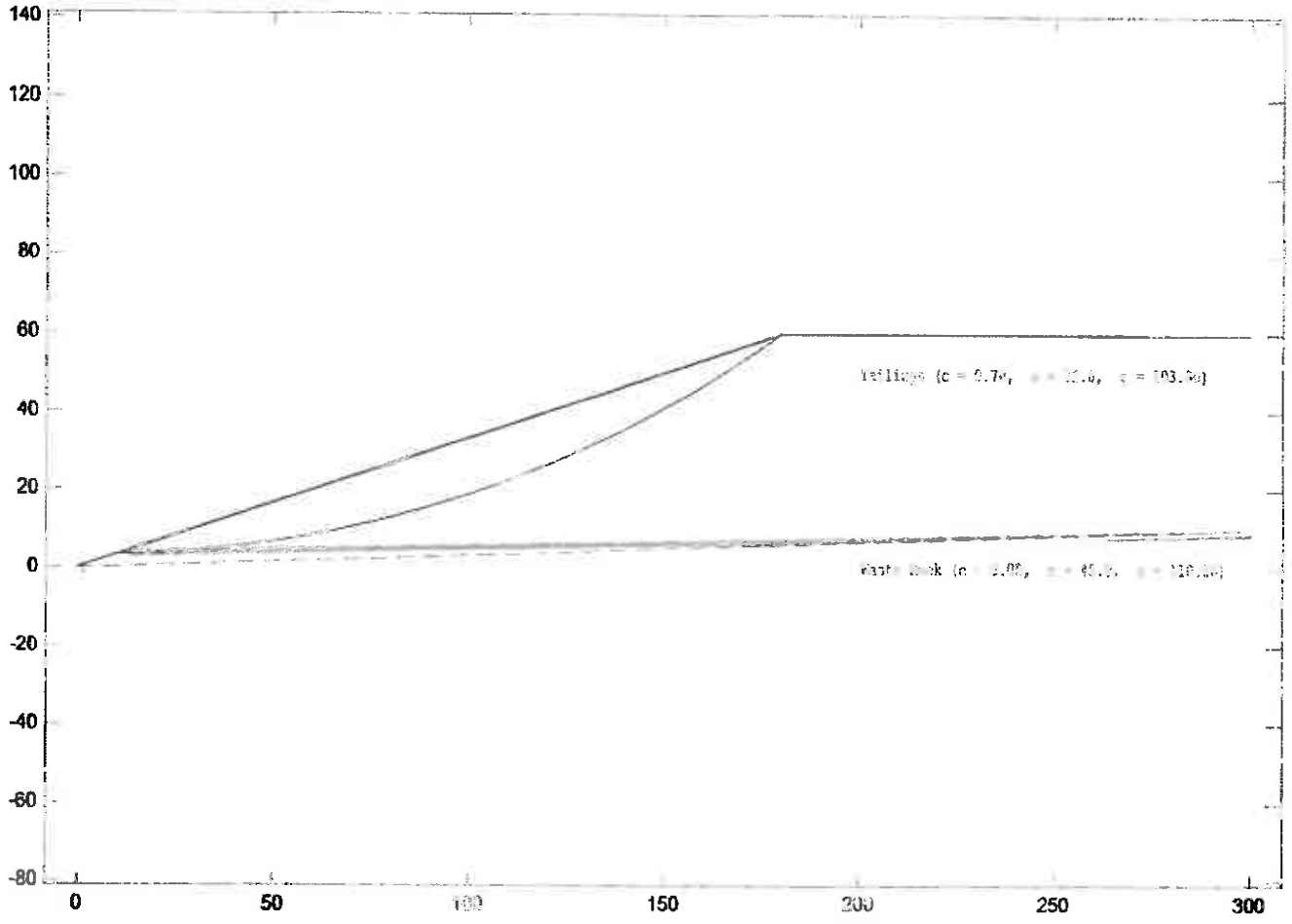
Edited: 11 Sep 2012 *Processed:* 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 5

Office of Surface Mining



GALENA Version 5.02

Waste Rock

Tailings

Analysis: 1
Single Stability Analysis
Method: Spencer-Wright
Surface: Circular

Results

Factor of Safety:	2.02
Final Angle of Interslice Forces:	17.4°

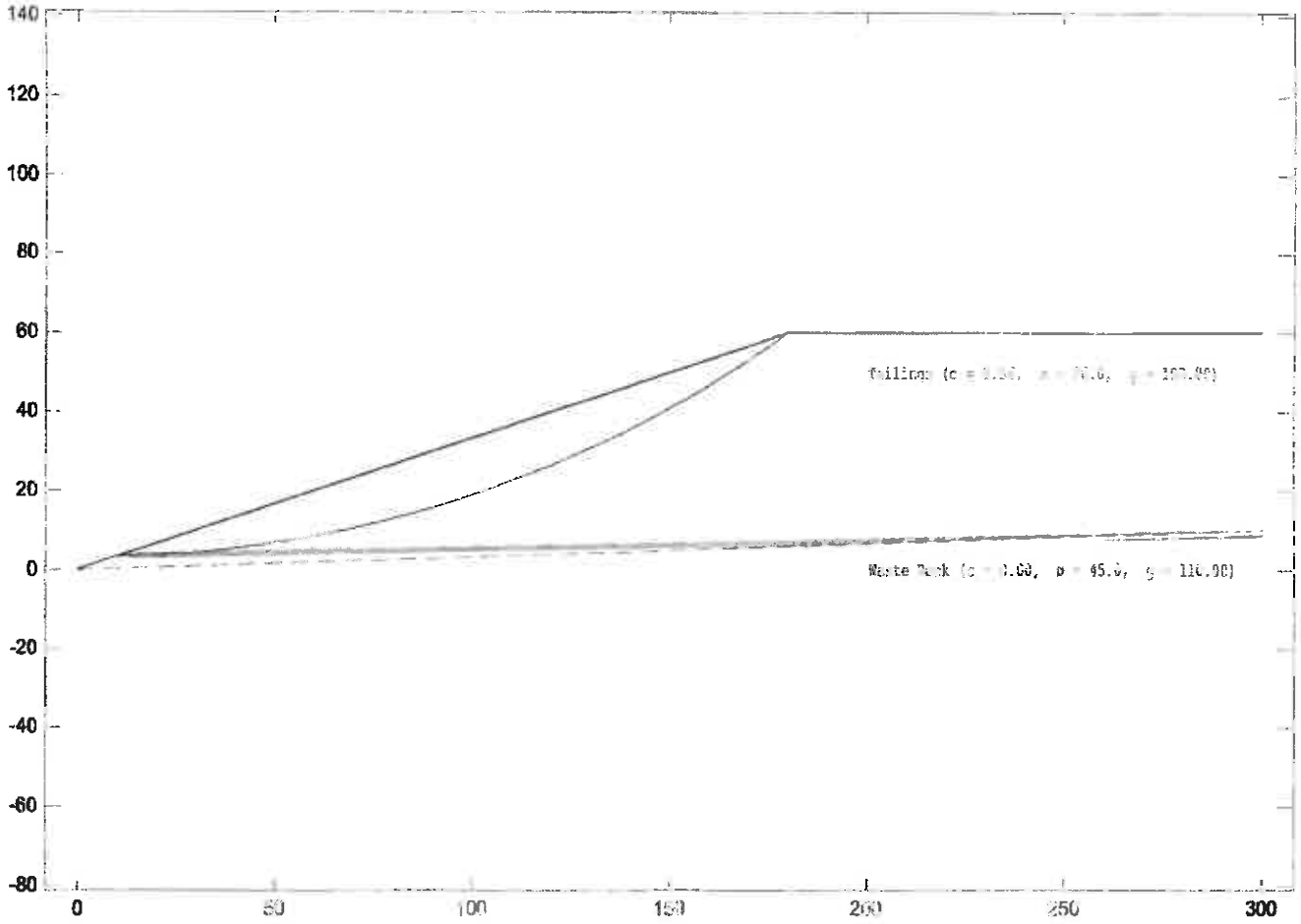
Edited: 11 Sep 2012 *Processed:* 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 6

Office of Surface Mining



GALENA Version 5.02

Waste Rock

Tailings

Analysis: 1

Single Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Factor of Safety: 1.61

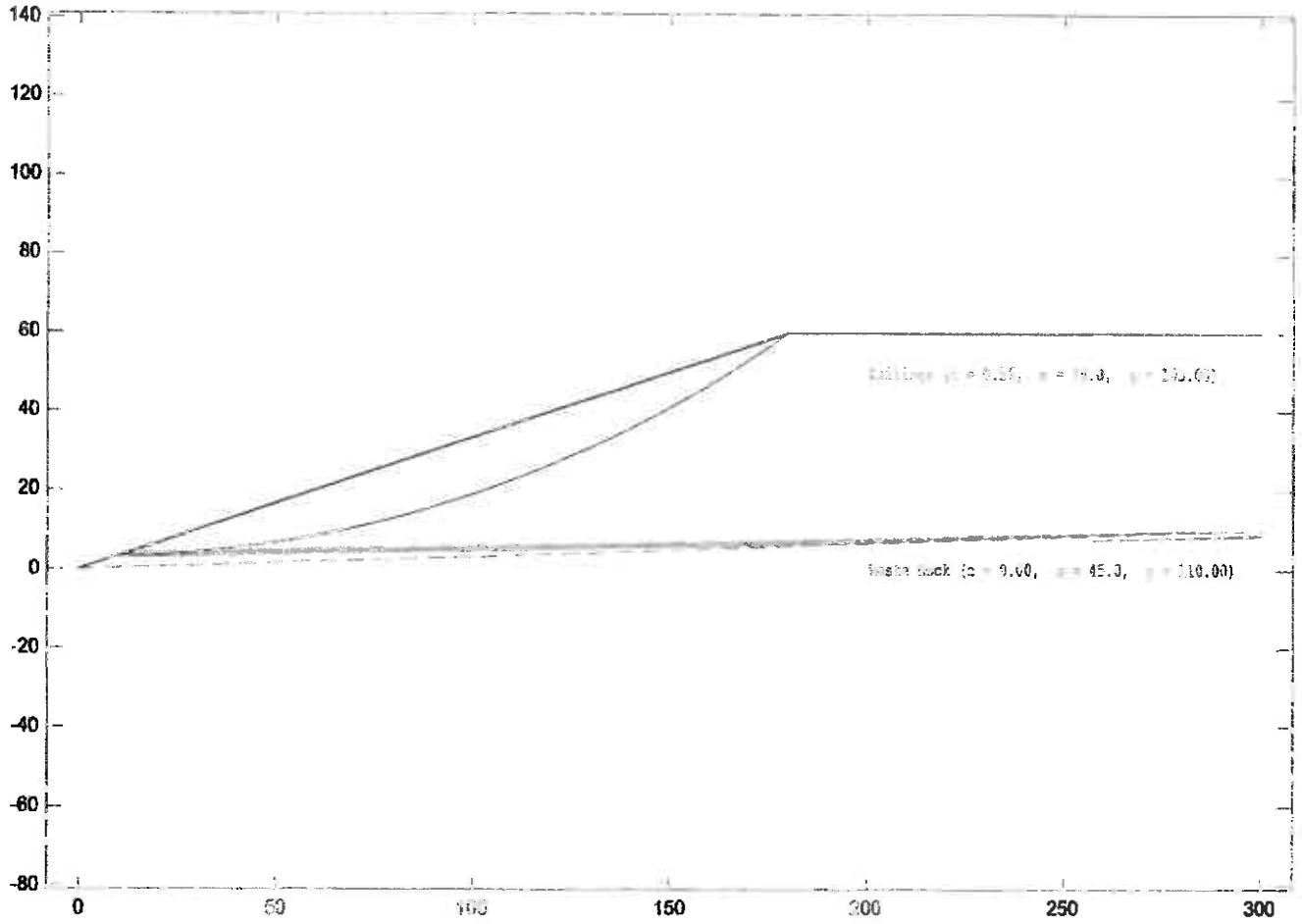
Edited: 11 Sep 2012 ***Processed:*** 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 7

Office of Surface Mining



GALENA Version 5.02

Waste Rock

Tailings

Analysis: 1

Single Stability Analysis

Method: Spencer-Wright

Surface: Circular

Results

Factor of Safety: 1.62

Final Angle of Interslice Forces: 17.1°

Edited: 11 Sep 2012 *Processed:* 11 Sep 2012

Project: Revenue Waste Rock/Tailings Pile

File: C:\DOCUME~1\dmc\MYDOCU~1\Permits\M-DD9A~1\Galena\Revenue.gmf

Figure 8

Office of Surface Mining