COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

July 26, 2019

Aggregate Industries – WCR, Inc.
Attn: Christine Felz
1687 Cole Blvd, Suite 300
Golden, CO 80401

RE: Tucson South Resource, M-2004-044, Amendment Number 1 (AM01)
Adequacy Review No. 2

Dear Ms. Felz,

The Colorado Division of Reclamation, Mining, and Safety ("DRMS" or "Division"), received Aggregate Industries – WCR, Inc. (AI) response to the first adequacy review on July 9, 2019. The Division has reviewed the response letter and revised exhibits/information submitted. Below is a list of adequacy review issues that were identified in the Division's first adequacy review letter followed by AI's response to the adequacy review items. If an item has been resolved it has been removed from the list. If additional information or clarification for an item is needed, the Division provided a request in our response. Several additional adequacy review issues were identified based on your response, they are listed below. Please address the following items:

Rule 6.4.3, Exhibit C – Pre-mining and Mining Plan Map(s) of Affected Lands

3. Page D-5 indicates topsoil stockpiles within the floodplain will be created parallel to the South Platte River flows and will only be 300 feet in length with 100 foot spacing in-between the piles for flow. The topsoil stockpile depicted in the south area shown on the Exhibit C-4 map does not appear to comply with these requirements as a portion of it is within the 100 year floodplain and is perpendicular to the river flow. Either revise the map to configure the pile in accordance with the approved plan or provide an explanation why this pile is not configured as discussed in the narrative.
    a. **AI Response:** A hydraulic model was prepared as a part of the Floodplain Development Permit. The hydraulic model and mapping shows that there are certain areas within the proposed mine where stockpiles can be stored without impacting flood elevations. On the north side of Highway 7, the stockpile is in an area that is not anticipated to be flooded during a 100-year storm. On the south side of Highway 7, the stockpile is in an area that is considered ineffective flow area due to the contraction effects of the bridge. An ineffective flow area is an area where ponding will occur but does not convey flows further downstream and is typically found adjacent to bridges and culverts. Stockpiles placed within and ineffective flow area are not expected to contribute to increases in water surface elevation. Since stockpile placement in each of these areas is not expected to increase water surface elevations, the restrictions on length and width of the stockpile are not pertinent. Exhibit D has been revised with language describing the justification for differing stockpile dimensions.
    b. **DRMS Response:** Your response indicates the length and width of the stockpiles in the applicable "ineffective flow area" is not pertinent. The Division assumes based on this information the orientation of the stockpiles in question are also not pertinent. Please clarify?

Also, the language in Exhibit D was not revised with language describing the justification for differing stockpile dimensions, please revise Exhibit D with this information included.

Rule 6.4.4, Exhibit D – Mining Plan

9. The Table on page D-6 describes when in the mining process the disturbance could be at it's maximum. The active mining area is shown to have a near vertical face of 800 feet and the highwall with adjacent cells walls will be 1,500 feet in length. However, page D-4 indicates the mining highwall may extend no more than 4,000 feet in length. Please explain the large difference in the highwall lengths discussed on page D-6 and D-4. At what point during the mining operation would the highwall reach 4,000 feet?
    a. **AI Response:** All tables have been revised to reflect a maximum of 1500 feet of highwall at any given time during the mining and reclamation process.
    b. **DRMS Response:** The revised mine plan was not updated to clarify the discrepancy, page D-4 still indicates the highwall will be no more than 4,000 feet in length and the table of page D-6 still indicates the highwall and adjacent cell walls will be 1,500 feet in length. This issue was not addressed.
    c. **DRMS Response 2:** The revised table on page D-5, for Aspect A indicates the disturbed area will be 6215 acres. The Division assumes this is a typographical error. Please revise the table as necessary.

Rule 6.4.7, Exhibit G, Water Information

15. Similar to the adequacy item for the mining plan section about wet-mining the South Area and dewatering operations. Please clarify if any dewatering will occur at the South Area? If dewatering is planned for this Phase, an evaluation of the impacts of this activity and possible mitigation measures will need to be addressed in this Exhibit.
    a. AI Response: The south area will be dewatered as described above. Dewatering water pumped from the South Mine Area will be discharged to the downstream end of the Brighton Return Ditch (See Exhibit C-4) near the east end of the mine limit. The water will flow directly into the South Platte River via the Brighton Return Ditch.
    b. DRMS Response: Revised page G-2 indicates the South Mine Area will be dewatered and water will be discharged at the upstream end of Brighton Ditch which contradicts your response noted above. Please clarify the discrepancy.
    c. DRMS Response 2: The groundwater model conducted in 2004 does not reflect the plan to dewater the South Mine Area and AI notes there are four wells that could be impacted by the proposed dewatering operation (revised page G-2). Also, revised page G-5 indicates dewatering of the South Mine Area will likely impact wells west of the South Mine Area. AI's plan provides mitigation measures should the wells be negatively impacted. Given the proximity of these wells to the mining/dewatering operation and the shallow nature of the alluvial aquifer, it seems given that the adjacent wells will be negatively affected. Please assess and/or model the impact the dewatering operation will have on these wells and devise a plan to preemptively mitigate possible impacts to the use of these wells and/or provide a thorough demonstration the wells will not be impacted.

16. Page G-4, the Potential Mining Impacts section is confusing and hard to follow. Overall, the points made in this section are unclear. Please revise this section to clarify the statements made. The Division recommends addressing the impacts from dewatering and slurry wall installation (mounding and shadowing) by clearly indicating the possible impacts and their associated severity. If conclusions about the mining impacts are taken from the groundwater study please make this clear and cite specifically where within the report these conclusions are addressed.

a. **AI Response:** Please see the revised Exhibit G Sections 2 (b), and Potential Mining Impacts.
b. **DRMS Response:** Revised page G-5 indicates ground water will mound up to approximately six feet along the western and southern edges of the West Mine Area. According to recent monitoring data, water levels can range from eight to nine feet below the ground surface in this area. A rise of six feet after the installation of the slurry wall is significant given the current shallow depth of groundwater. Given this, the Division will require preemptive mitigation. Please provide designs and plans for an appropriate drainage system that will maintain the historic groundwater levels after the installation of the slurry wall. Please commit to installing the drainage system concurrently with slurry wall installation.

18. The applicant indicates under the second bullet on page G-5 that if a subject well has not been put to beneficial use prior to mining, then they would have no responsibility to provide mitigation for groundwater impacts. Please remove this sentence as it is incorrect.
    a. **AI Response:** The sentence has been removed as requested. An updated Exhibit G is attached for your review.
    b. **DRMS Response:** The sentence was not removed as requested (see revised page G-6). This issue remains outstanding.

20. Please update this discussion about the groundwater monitoring plan beginning on page G-5 to indicate the frequency the groundwater monitoring wells will be monitored.
    a. **AI Response:** Groundwater monitoring wells will be monitored monthly until mining commences and quarterly thereafter. This information is reflected in Exhibit G.
    b. **DRMS Response:** The quarterly water level monitoring frequency proposed after mining commences would not adequately detect impacts to the water levels on an appropriate time scale to trigger mitigation. Please revise the groundwater level monitoring plan to conduct weekly water level monitoring for the monitoring wells around the south mine area during dewatering and until groundwater levels have recovered once dewatering ends. For the wells around the East and West Mine area, monthly water monitoring would continue to be appropriate. If sufficient data is collected during the life of the mining operation, and a demonstration can be made that impacts to the groundwater system have been minimized, the Division would consider approval of a Technical Revision to revise the water level monitoring frequency at a later date.

Rule 6.4.12, Exhibit L – Reclamation Cost Estimate

29. The reclamation cost estimate submitted is based on the Applicant's projection of the maximum liability. It is discussed that this will occur at the end of mining in the East cell (Phase 3) area. The cost estimate assumes the Phase 1 area has been backfilled and the slurry wall has been installed around the Phase 2 and 3 area. It is very unlikely the point of maximum liability will occur at the time the applicant proposes. Case in point, the Division currently holds a bond for the site to cover the backfill and grading of the small 3 acre pit located in Tract M area on the north side of the East Area in the amount of $326,040.00 for this disturbance. For the proposed first phase of the operation, the Applicant proposes to mine in the south area and affect 24.3 acres in this area, at this point the pit in the north part of the East Area is still a liability that also needs to be covered under the financial warranty. During the first phase of the operation, the Division would have to have sufficient bond to cover backfilling the exposed groundwater with a minimum of two feet of material above the water table. The Division would have to either excavate enough material on-site to do this activity without exposing additional groundwater or would have to purchase material to backfill the pit. Given this, please submit a cost estimate to complete reclamation assuming the South Area (Phase 1) has been mined and has not been reclaimed.
    a. **DRMS Accepts AI's estimate**

Rule 6.4.14, Exhibit N - Source of Legal Right to Enter

32. Exhibit N contains a Special Warranty Deed documenting the City of Thornton owns Tract J, however it does not document the Applicant's source of legal right to enter and conduct operations within this tract. Please provide documentation of the applicant's legal right to enter Tract J in accordance with Rule 6.4.14.
    a. **AI Response:** Aggregate Industries is working with the City of Thornton to obtain the required documentation. We will forward the information upon receipt.
    b. **DRMS Response:** This item remains outstanding and will need to be addressed prior to the approval of AM01.

Rule 6.4.19, Exhibit S – Permanent Man-made Structures

DRMS Response: The Division has reviewed the Slope Stability Analysis adequacy response by Tetra Tech dated July 3, 2019. Enclosed is a Memorandum that summarizes the Division's review. Please address the adequacy review issued identified in the enclosed Memorandum.

Mined Land Reclamation Board Conditions of Approval

44. The Colorado Mined Land Reclamation Board ("Board") conditionally approved the original permit application for the permit number M-2004-044 for the Tucson South Resource site with five conditions. Please review and address each of the five conditions of approval. Please specifically explain how these conditions are addressed with this Amendment application. If the Applicant believes a condition is no longer applicable please explain in detail the basis for that assumption.
    a. **Condition No. 1 –** If final specifications for construction of the slurry walls differ from the draft specifications, Aggregate Industries will provide DMG a copy of the final version for review, as a technical revision;
        i. **AI Response:** The applicant will comply with the condition as stated.
        ii. **DRMS Response:** This condition will remain in effect with the approval of AM01.
    b. **Condition No. 2** – Aggregate Industries' mining operation will not intersect ground water in Phases 2,3,'and 3A until the DMG has reviewed and accepted the final slurry wall construction report, including quality assurance test results;
        i. **AI Response:** The mining cells referenced above are now the East and West mining areas. The applicant will comply with the condition as required.
        ii. **DRMS Response:** This condition will remain in effect with the approval of AM01.
    c. **Condition No. 3 –** Aggregate Industries will not expose ground water to the surface in Phases 1,2,3, or 3A until a copy of a document from the State Engineer's Office proving that it is legal to do so is provided to the DMG;
        i. **AI Response:** The applicant is in compliance with the above condition. An approved Temporary Substitute Supply Plan was submitted to the Division to address this condition.
        ii. **DRMS Response:** Based on the temporary substitute water supply plan submitted to the Division and the comment letter provided by the Colorado Division of Water Resources regarding AM01, the temporary substitute water supply plan (TSWSP) only covers the 2 acres of exposed groundwater of the pit located in Tract M. Per the DWR's December 12, 2018 comment letter, AI will need to obtain a new TSWSP and Well Permit to expose any additional water beyond the 2 acres. Given this, this condition has not been complied with and will remain in affect with the approval of AM01.
    d. **Condition No. 4 –** Aggregate Industries will not affect land within 200 feet of the Brantner Ditch, Brighton Ditch, Kerr McGee oil and gas well pipelines and appurtenances or the Union Rural

Electric overhead power line and poles until a notarized agreement between the applicant and the persons having an interest in the structure(s) that the applicant is to provide compensation for any damage to the structures) or Aggregate Industries otherwise complies with the requirements of Rule 6.4.19(b) or (c); and

i. **AI Response:** The applicant is in compliance with the condition as stated. The application as amended demonstrates that mining and reclamation activity will not take place within 200' of the Brantner Ditch. The applicant has submitted agreements the Brighton Ditch Company, Union Rural Electric (United Power) and Kerr McGee (Great Western). Aggregate Industries will not affect land within 200' of the Brighton Ditch, Union Rural Electric (United Power) and Kerr McGee facilities until an agreement between Aggregate Industries and the parties is in place or Aggregate Industries otherwise complies with the requirements of Rule 6.4.19(b) or (c). We will forward any executed agreements upon receipt.

ii. **DRMS Response:** The Division acknowledges AI will not affect land within 200 feet of the Brantner Ditch. AI will need to address the adequacy review issues identified in the enclosed Memorandum regarding the geotechnical stability analysis or provide completed structure damage agreements for the structures in question.

e. **Condition No. 5 –** Aggregate Industries shall not affect land south of and within 200 feet of the Todd Creek Farms water supply pipeline and shall not further affect land within 200 feet of the north side of the pipeline, in the Phase 2A area, except for reclamation work, until a notarized agreement between Aggregate Industries and Todd Creek farms stating that Aggregate Industries is to provide compensation to Todd Creek Farms for any damage to the pipeline, or Aggregate Industries otherwise complies with the requirements of Rule 6.4.19(b)(c).

i. **AI Response:** The Applicant is in compliance with the condition as stated. The applicant has centered into an agreement with Todd Creek Metropolitan District (formerly Todd Creek Farms). A copy of the agreement is attached.

ii. **DRMS Response:** Based on the easement deed and agreement submitted by the applicant, it does not appear a commitment was made by the Operator to compensate Todd Creek Metropolitan District for damages to their structures. AI will need to address the adequacy review issues identified in the enclosed Memorandum regarding the geotechnical stability analysis or provide a complete structure damage agreements for the structure in question.

Additional Adequacy Review Issues

1. Revised page D-3, indicates the South Mining Area will be wet mined. Please revise this page to indicate the South Mining Area will be dewatered and dry mined.

2. Please revise the F-3, Reclamation Plan Map to clearly depict where the tree and shrub plantings will occur.

3. Revised page G-3 indicates groundwater will be exposed as a result of wet mining the south cell (Phase 1). Please revise this page to reflect the propose plan to dewater this cell.

This concludes the Division's second adequacy review of the AM01 application and revised materials. The Division is required to issue a decision on the application by July 31, 2019. The adequacy issue listed above must be addressed to the Division's satisfaction prior to the decision date. If you need additional time to address these issues you must request an extension of the decision date. Please be aware that that the Division will deny the application if outstanding adequacy issues remain when the decision date arrives or inadequate time is provided for the Division to review the response to the adequacy items.

If you have any questions feel free to contact me at (303) 866-3567, extension 8120.

Sincerely,

Jared Ebert
Environmental Protection Specialist III

Enclosure: *Memorandum, Adequacy Review of Exhibit 6.5 – Geotechnical Stability Adequacy Response Aggregate Industries; Tucson South Resource; File No. M-2004-044; AM0, Dated July 25, 2019*

EC: Joel Bolduc, joel.bolduc@aggregate-us.com
Barb Brunk, Resource Conservation Partners, LLC., barbb@dgmllc.com

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, CO 80203

MEMORANDUM

Date: July 25, 2019

To: Jared Ebert; Division of Reclamation, Mining & Safety

From: Peter Hays; Division of Reclamation, Mining & Safety

Re: Adequacy Review of Exhibit 6.5 – Geotechnical Stability Adequacy Response Aggregate Industries; Tucson South Resource; File No. M-2004-044; AM-01

The Division of Reclamation, Mining and Safety (Division/DRMS) has reviewed the Slope Stability Analysis adequacy response by Tetra Tech dated July 3, 2019 for the Tucson South Resource 112c permit amendment application (AM-01). The Applicant will need to address the following adequacy items identified in the review:

In accordance with Table 1 - Recommended Factors of Safety for Slope Stability Analysis for Operations and Reclamation within Section 30.4 of the Policies of the Mined Land Reclamation Board (MLRB) effective May 16, 2018, the Division will require the Applicant to comply with the factor of safety (FOS) of 1.5 for critical structures in static conditions and 1.30 for critical structures in pseudostatic conditions since the Applicant utilized generalized strength measurements in the analysis.

The Division duplicated the Applicant's slope stability analysis using Clover Technologies Galena Slope Stability Analysis System, Version 7.10. A table of the Applicant's and the Division's analysis results are below:

Structure Name	Analysis Name	Applicant's FOS	DRMS FOS
Tucson Street – West Side	Figure A-1 – Static	1.68	1.52
Tucson Street – West Side	Figure A-1 – Static Fill	1.64	2.03
Tucson Street – West Side	Figure A-2 – Pseudostatic	1.31	1.35
Tucson Street – West Side	Figure A-2 – Pseudostatic Fill	1.34	1.57
Tucson Street – East Side	Figure B-1 – Static	2.17	1.96

Tucson Street – East Side	Figure B-1 – Static Fill	1.91	2.03
Tucson Street – East Side	Figure B-2 – Pseudostatic	1.67	1.54
Tucson Street – East Side	Figure B-2 – Pseudostatic Fill	1.49	1.61
South Platte River	Figure C-1 – Static	2.13	1.87
South Platte River	Figure C-1 – Static Fill	1.89	1.91
South Platte River	Figure C-2 – Pseudostatic	1.63	1.49
South Platte River	Figure C-2 – Pseudostatic Fill	1.46	1.53
Pipeline – North of East Cell	Figure D-1 – Static	2.09	1.94
Pipeline – North of East Cell	Figure D-1 – Static Fill	1.73	1.77
Pipeline – North of East Cell	Figure D-2 – Pseudostatic	1.65	1.55
Pipeline – North of East Cell	Figure D-2 – Pseudostatic Fill	1.37	1.42
Gas Well / Fence	Figure E-1 – Static	2.08	2.10
Gas Well / Fence	Figure E-1 – Static Fill	2.10	2.52
Gas Well / Fence	Figure E-2 – Pseudostatic	1.49	1.55
Gas Well / Fence	Figure E-2 – Pseudostatic Fill	1.52	1.88
Power Poles	Figure F-1 – Static Fill	1.89	2.27
Power Poles	Figure F-2 – Pseudostatic Fill	1.41	1.72
Brighton Ditch	Figure G-1 – Static Fill	1.93	1.85
Brighton Ditch	Figure G-2 – Pseudostatic Fill	1.53	1.48
Hwy 7 North Cell (East)	Figure H-1 – Static	2.00	1.96
Hwy 7 North Cell (East)	Figure H-1 – Static Fill	1.77	1.94
Hwy 7 North Cell (East)	Figure H-2 – Pseudostatic	1.56	1.52
Hwy 7 North Cell (East)	Figure H-2 – Pseudostatic Fill	1.38	1.51
Hwy 7 South Cell	Figure I-1 – Static	2.31	2.02
Hwy 7 South Cell	Figure I-2 – Pseudostatic	1.67	1.49
Brighton Return Ditch	Figure J-1 – Static	1.58	1.07
Brighton Return Ditch	Figure J-2 – Pseudostatic	1.32	0.89
Gravel Road / Building	Figure K-1 – Static	2.19	1.93
Gravel Road / Building	Figure K-2 – Pseudostatic	1.53	1.43
Challenger Pit	Figure L-1 – Static	2.24	2.27
Challenger Pit	Figure L-1 – Static Fill	1.97	2.37
Challenger Pit	Figure L-2 – Pseudostatic	1.75	1.78
Challenger Pit	Figure L-2 – Pseudostatic Fill	1.52	1.86
Pipeline – East Side of East Cell	Figure M-1 – Static	2.42	2.32
Pipeline – East Side of East Cell	Figure M-1 – Static Fill	2.25	2.31
Pipeline – East Side of East Cell	Figure M-2 – Pseudostatic	1.80	1.76
Pipeline – East Side of East Cell	Figure M-2 – Pseudostatic Fill	1.69	1.76
Hwy 7 from North Cells - West	Figure N-1 – Static	3.13	2.86
Hwy 7 from North Cells - West	Figure N-1 – Static Fill	3.07	3.01
Hwy 7 from North Cells - West	Figure N-2 – Pseudostatic	2.19	1.98

Hwy 7 from North Cells - West	Figure N-2 – Pseudostatic Fill	2.16	2.13
City of Aurora Waterline	Figure O-1 – Static	2.76	2.47
City of Aurora Waterline	Figure O-1 – Static Fill	2.61	2.87
City of Aurora Waterline	Figure O-2 – Pseudostatic	1.88	1.74
City of Aurora Waterline	Figure O-2 – Pseudostatic Fill	1.79	2.06

1. The Applicant modeled the Figure C analysis with a 44 feet offset from the top of bank (tob) of the South Platte River to the top of the mine slope. The Exhibit C-3 Map indicates the Applicant modeled a 42 feet offset. Please explain this discrepancy and revise the Figure C models and/or the Exhibit C-3 Map accordingly.

2. The Applicant modeled the Figure D analysis with a 35 feet offset from the pipeline easement to the top of the mine slope. The Exhibit C-3 Map indicates the Applicant modeled a 45 feet offset. Please explain this discrepancy and revise the Figure D models and/or the Exhibit C-3 Map accordingly.

3. The Applicant modeled the Figure F analysis with a 35 feet offset from the power pole easement to the top of the mine slope. The Exhibit C-3 Map indicates the Applicant modeled a 45 feet offset. Please explain this discrepancy and revise the Figure F models and/or the Exhibit C-3 Map accordingly.

4. The Applicant modeled the Figure G analysis with a 53 feet offset from the Brighton Ditch to the top of the mine slope. The Exhibit C-3 Map indicates the Applicant modeled a 35 feet offset. Please explain this discrepancy and revise the Figure G models and/or the Exhibit C-3 Map accordingly.

5. The Applicant modeled the Figure H analysis with a 75 feet offset from the edge of Highway 7 to the top of the mine slope. The Exhibit C-3 Map indicates the Applicant modeled a 106 feet offset. Please explain this discrepancy and revise the Figure H models and/or the Exhibit C-3 Map accordingly.

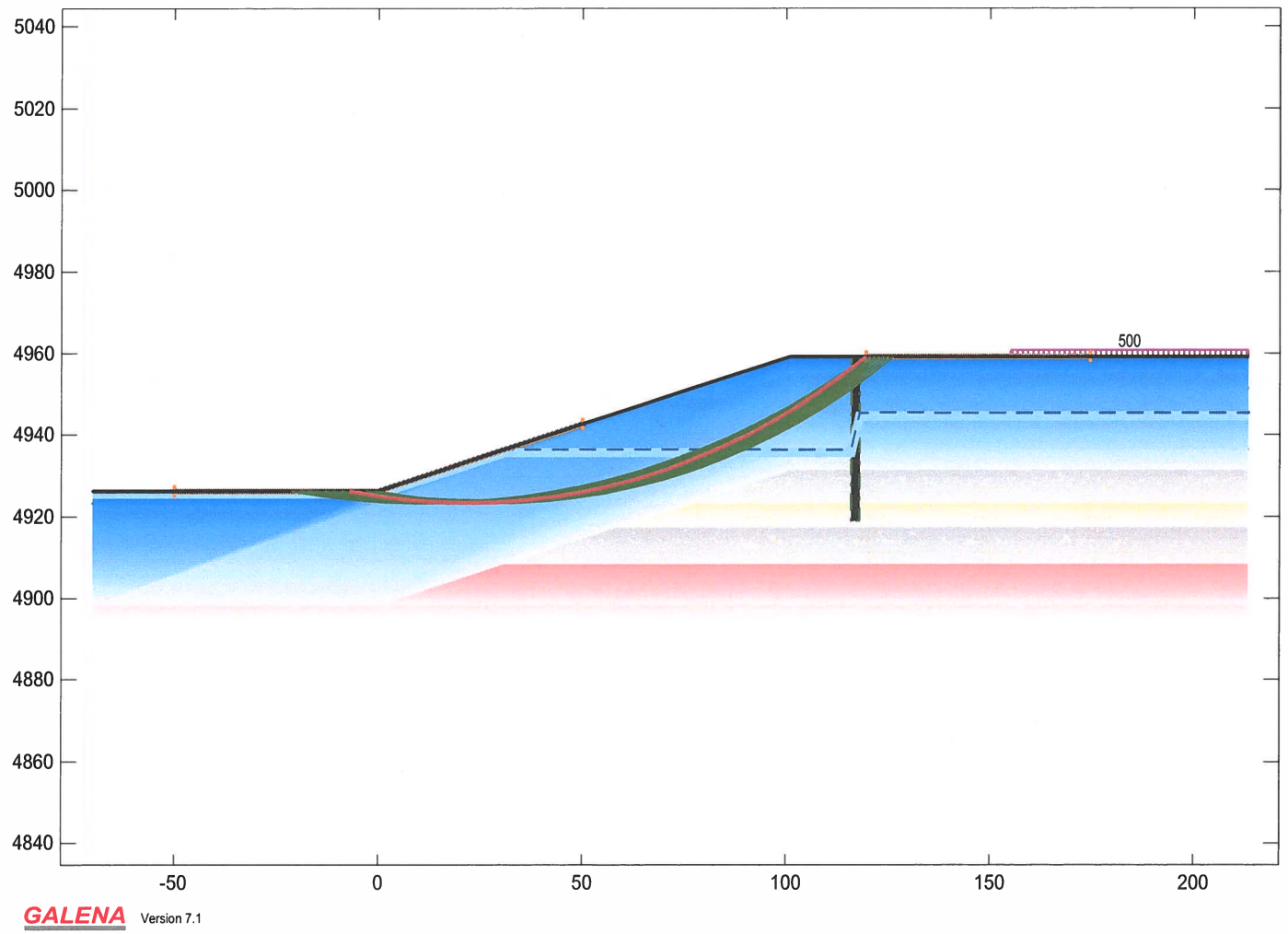
6. The Applicant modeled the Figure J analysis which produced a minimum FOS located 44 feet from the edge of the Brighton Return Ditch. The Exhibit C-3 Map indicates the Applicant modeled a 77 feet offset. Please explain this discrepancy and revise the Figure J models and/or the Exhibit C-3 Map accordingly.

   The Division duplicated the Figure J models with the 77 feet offset from the edge of the Brighton Return Ditch. The models produced factors of safety of 1.07 – Static and 0.89 – Pseudostatic, which do not meet the required FOS. Please review the Applicant's and Division's models and reevaluate the proposed offset distance from the Brighton Return Ditch to conform to the FOS requirement of the MLRB.

7. Please note there are numerous inconsistency in the geometry: offset from top of slope, offset from easements, offset from structures and offset from the slurry wall location between the Stability Analysis Models, the Figures 3 through 7 cross-sections provided in the Stability Analysis, the Mine Plan Map and the Actual Offset from the Mining Excavation Limits listed on the Structures List on the Exhibit C-2 Map. The Division will consider the enforceable offset as the offset distance listed on the "Actual Offset from Mining Excavation Limits" listed on the Structures List on the Exhibit C-2 and C-3 Map if the permit is approved and issued by the Division.

The Applicant must address the adequacy items above prior to the Division accepting the geotechnical stability analysis for the Tucson South amendment application. Copies of the Division's Galena stability analysis results are attached.

If you have any questions regarding these adequacy items, please contact me at peter.hays@state.co.us or (303) 866-3567, Ext. 8124.



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.52

Edited: 18 Jul 2019 *Processed:* 18 Jul 2019

Project Tucson South AM
A-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Mod1.gmf

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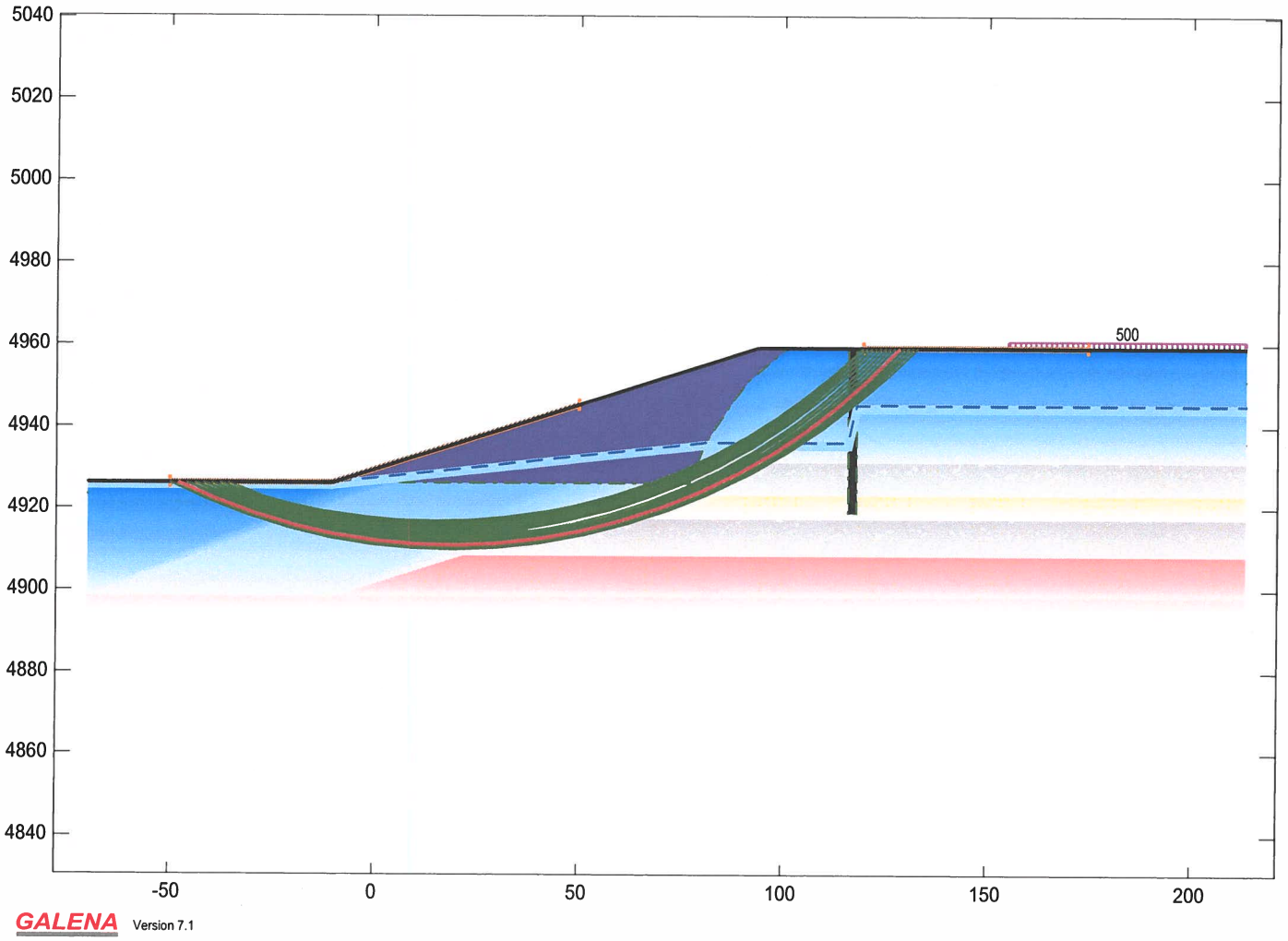

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1
Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results
Critical Factor of Safety: 2.03

Project Tucson South AM
A-1 - Static - Fill

Edited: 18 Jul 2019 *Processed:* 18 Jul 2019

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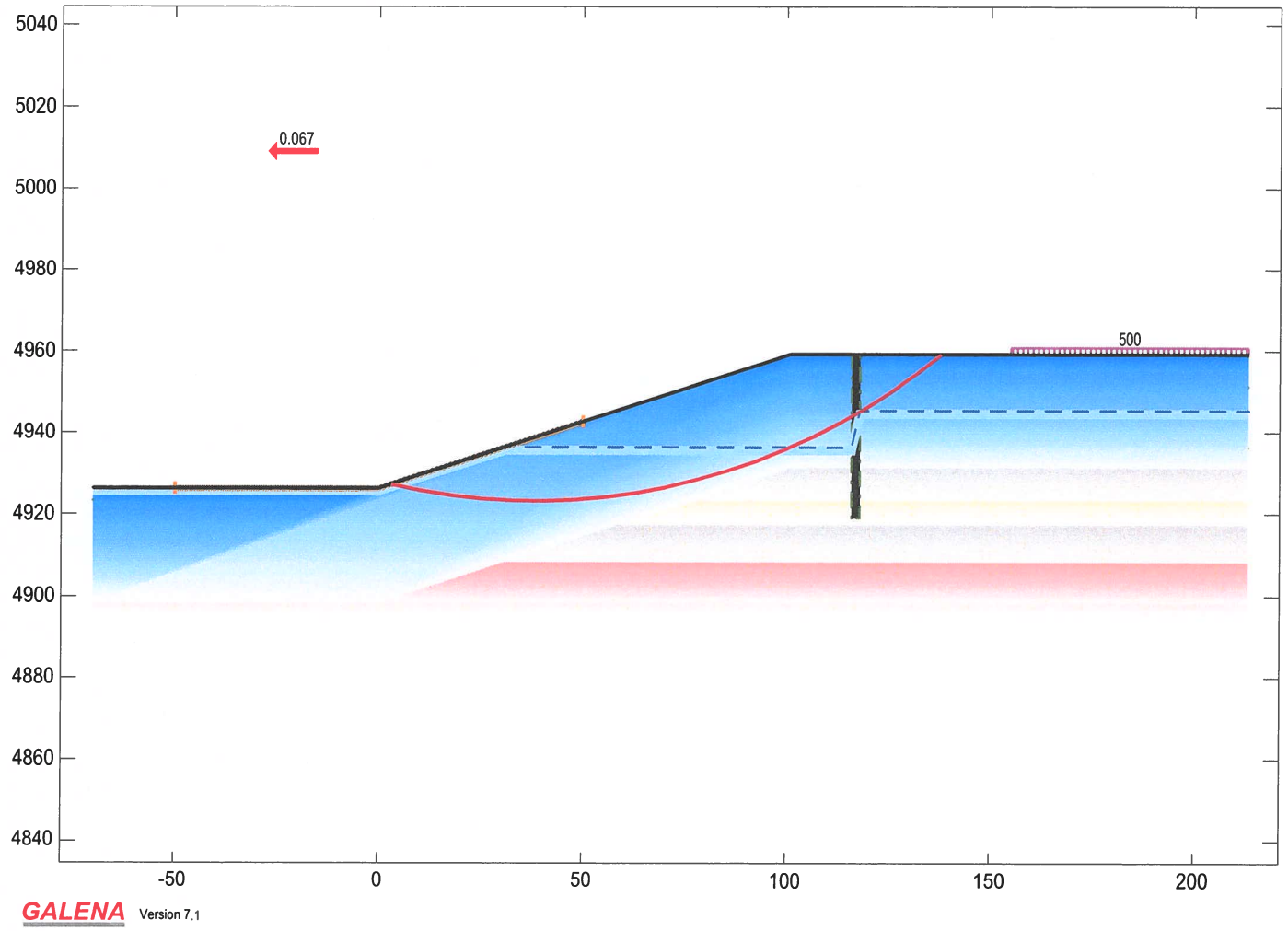

GALENA Version 7.1

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1
Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results
Critical Factor of Safety: 1.35

Edited: 25 Jul 2019 *Processed:* 25 Jul 2019

Project Tucson South AM
A-2 - Pseudostatic

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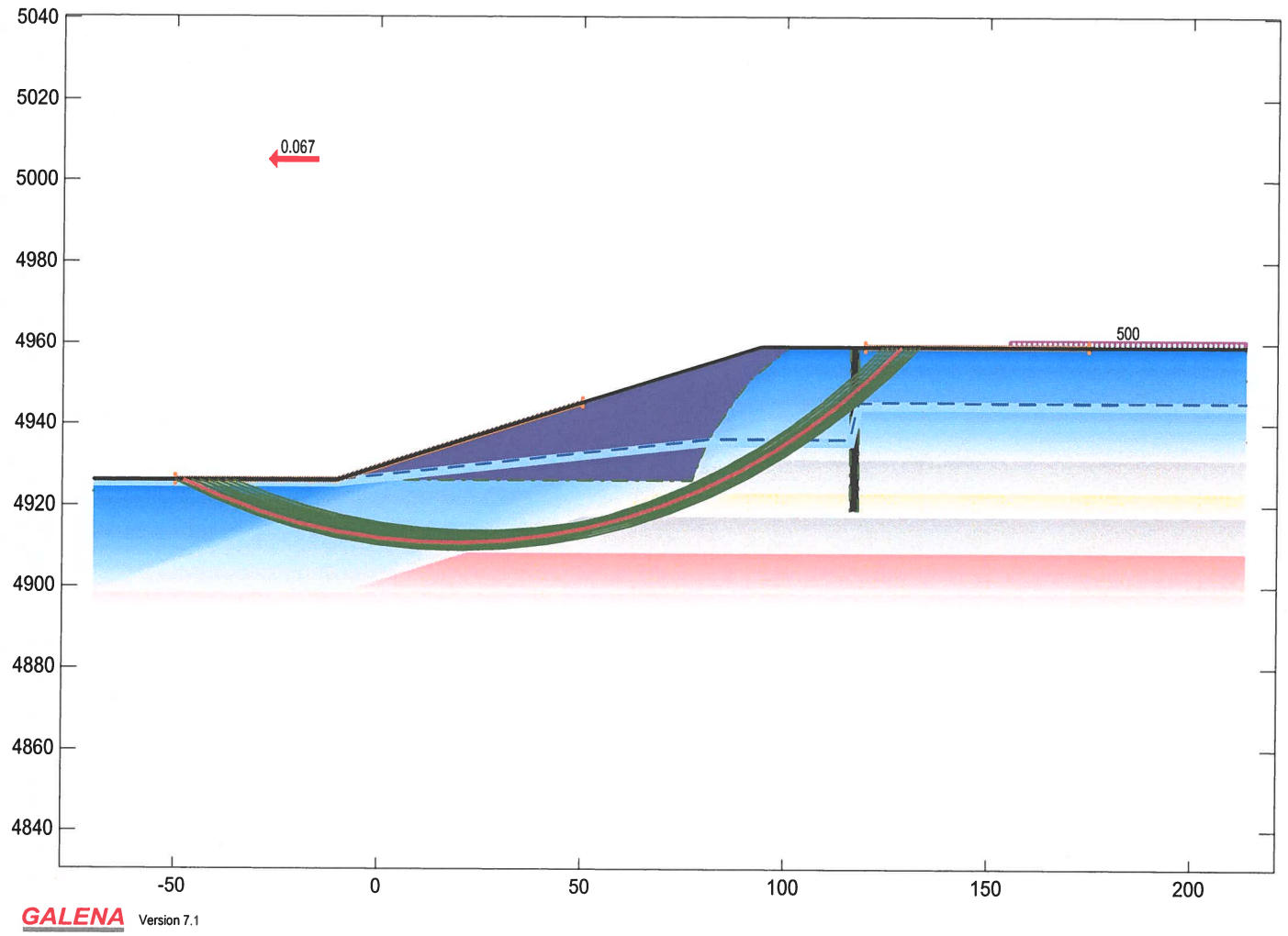

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1
Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results
Critical Factor of Safety: 1.57

Edited: 18 Jul 2019 *Processed:* 18 Jul 2019

Project Tucson South AM
A-2 - Pseudostatic - Fill

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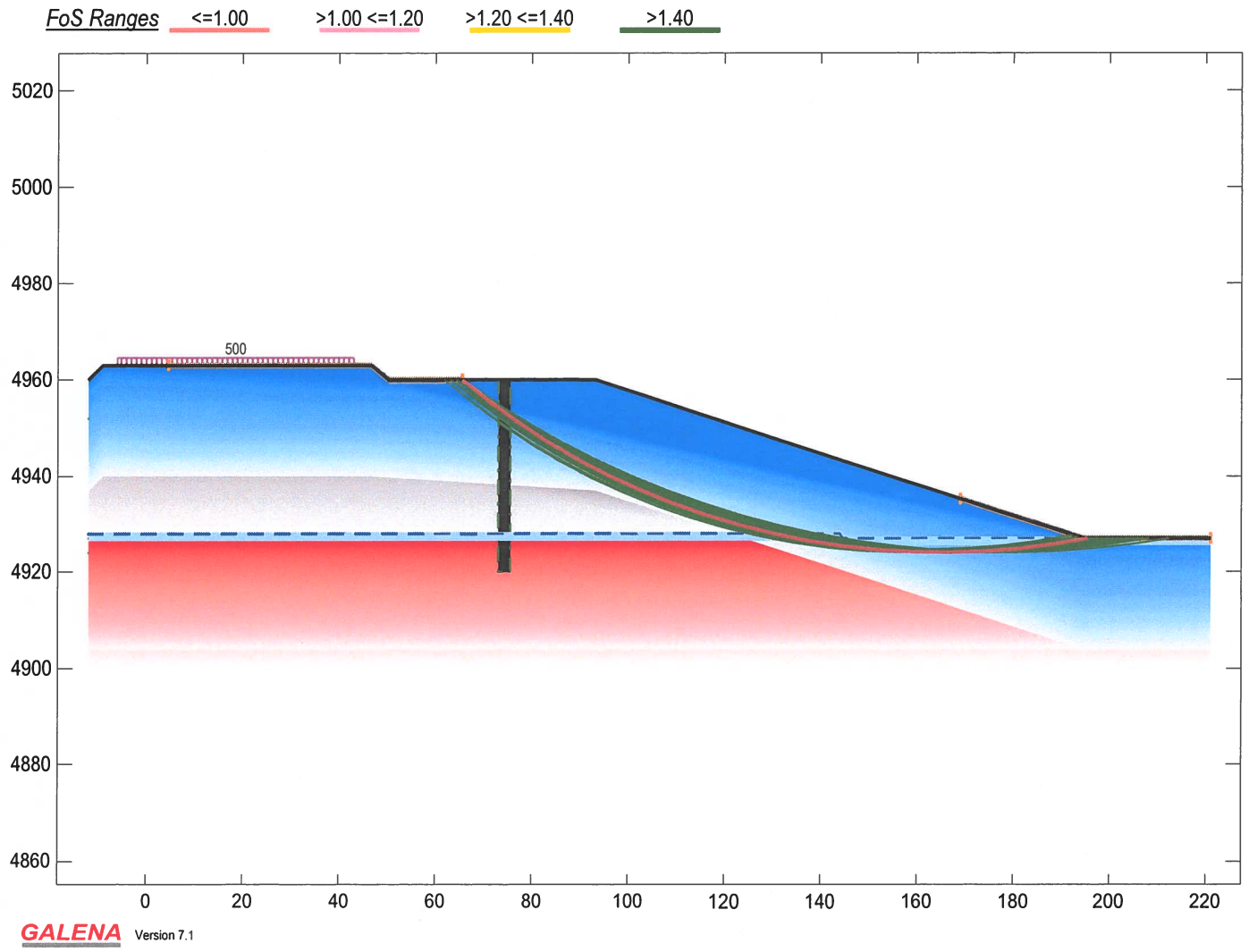

Material Keys

1: Claystone Bedrock
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.96

Project Tucson South AM
B-1 - Static

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Edited: 18 Jul 2019 *Processed:* 18 Jul 2019

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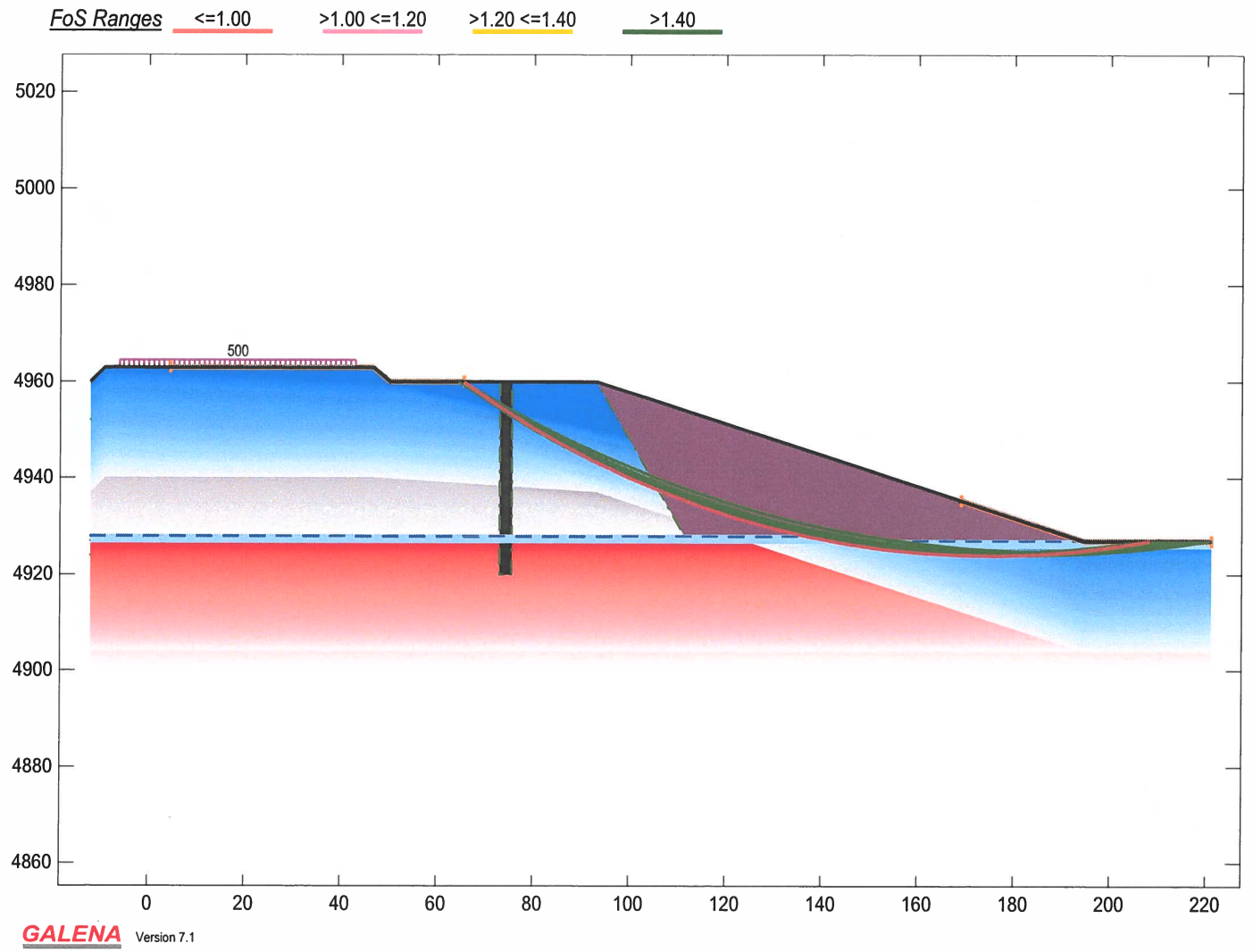


Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

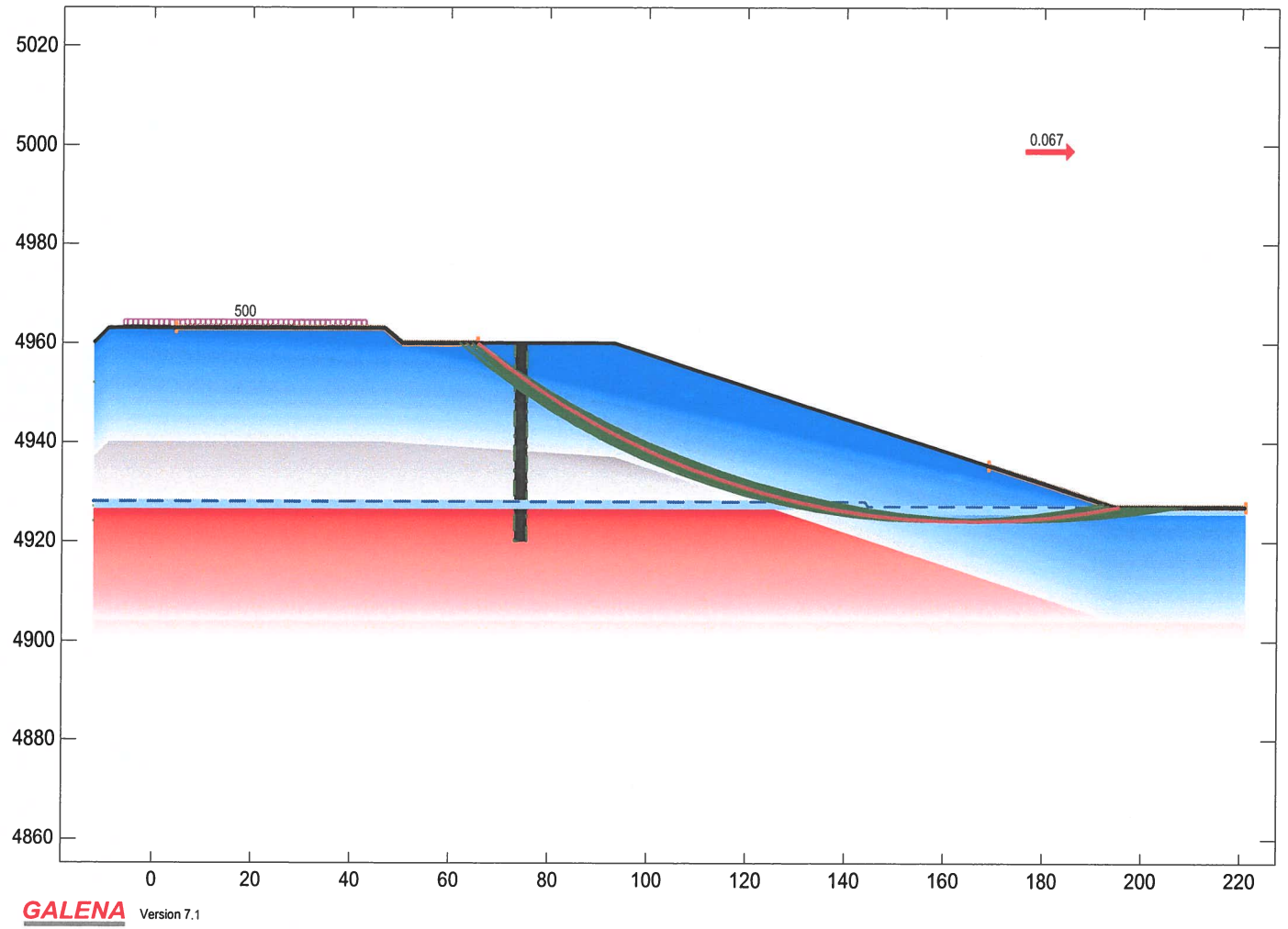
Critical Factor of Safety: 2.03

Edited: 18 Jul 2019 *Processed:* 18 Jul 2019

Project Tucson South AM
B-1 - Static - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure B-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

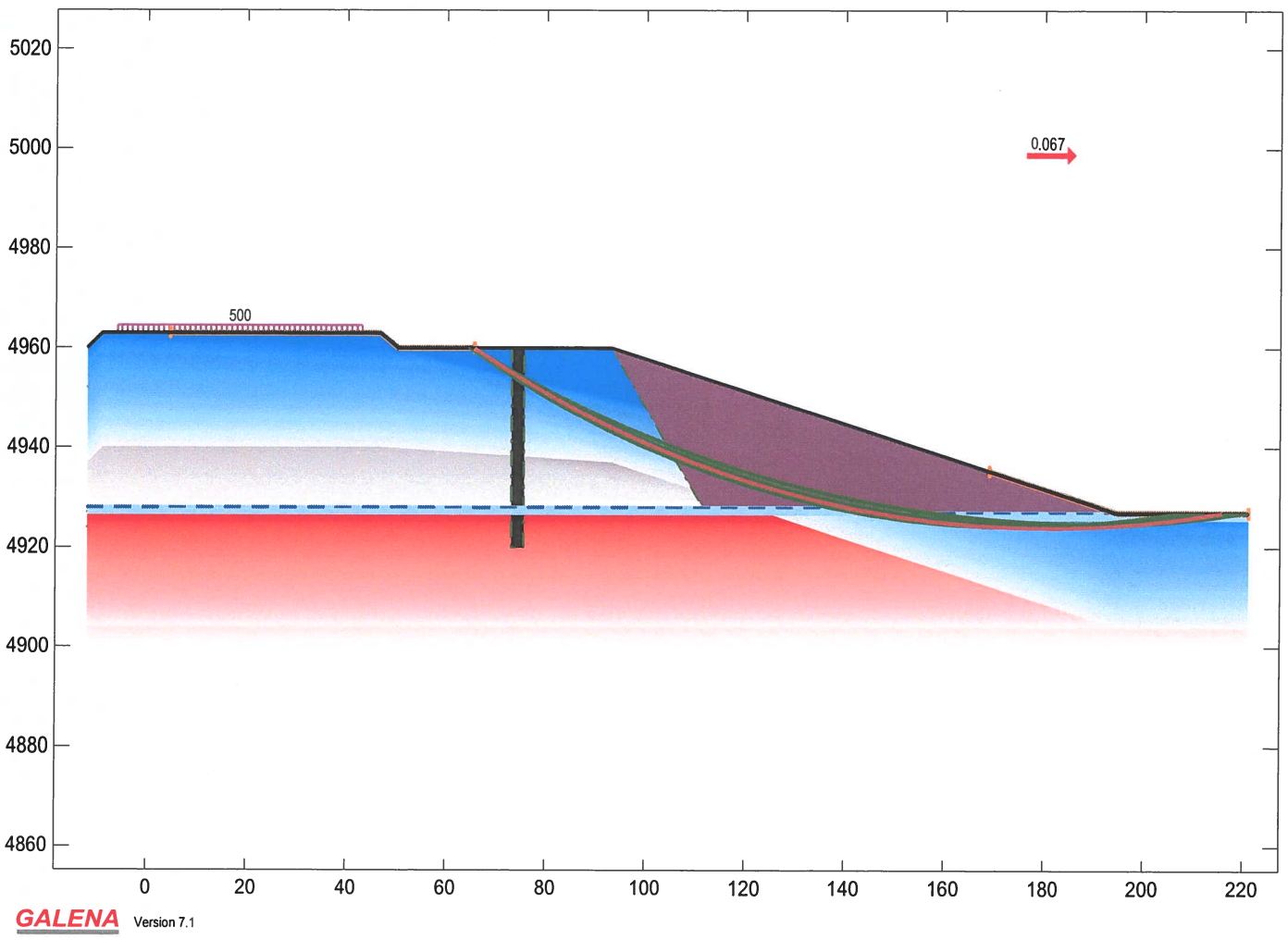
Critical Factor of Safety: 1.54

Edited: 18 Jul 2019 *Processed:* 18 Jul 2019

Project Tucson South AM
B-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure B-2 Pseudostatic.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

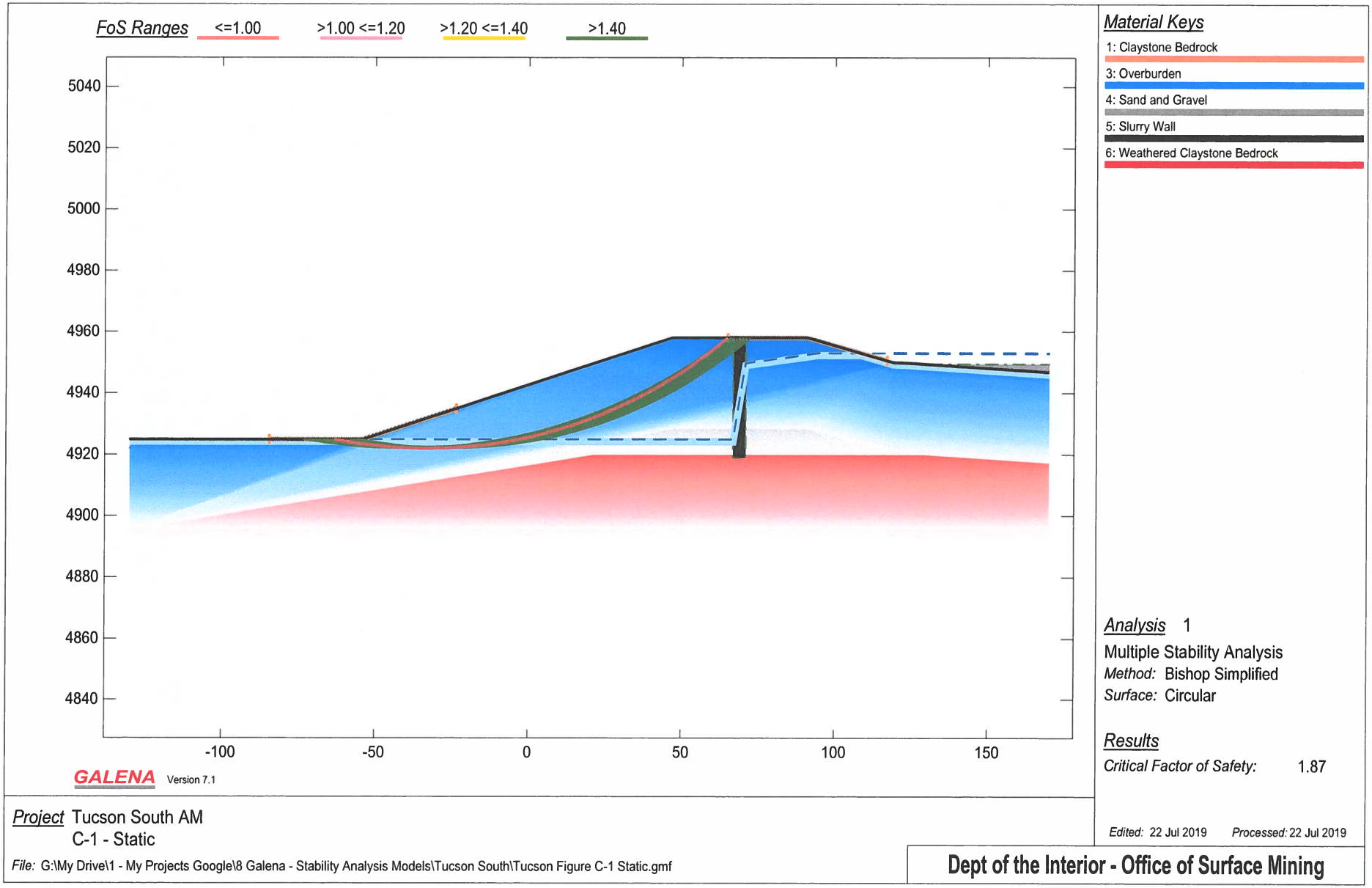
Critical Factor of Safety: 1.61

Edited: 18 Jul 2019 *Processed:* 18 Jul 2019

Project Tucson South AM
B-1 - Static - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure B-2 Pseudostatic Fill.gmf

Dept of the Interior - Office of Surface Mining


FoS Ranges
<=1.00
>1.00 <=1.20
>1.20 <=1.40
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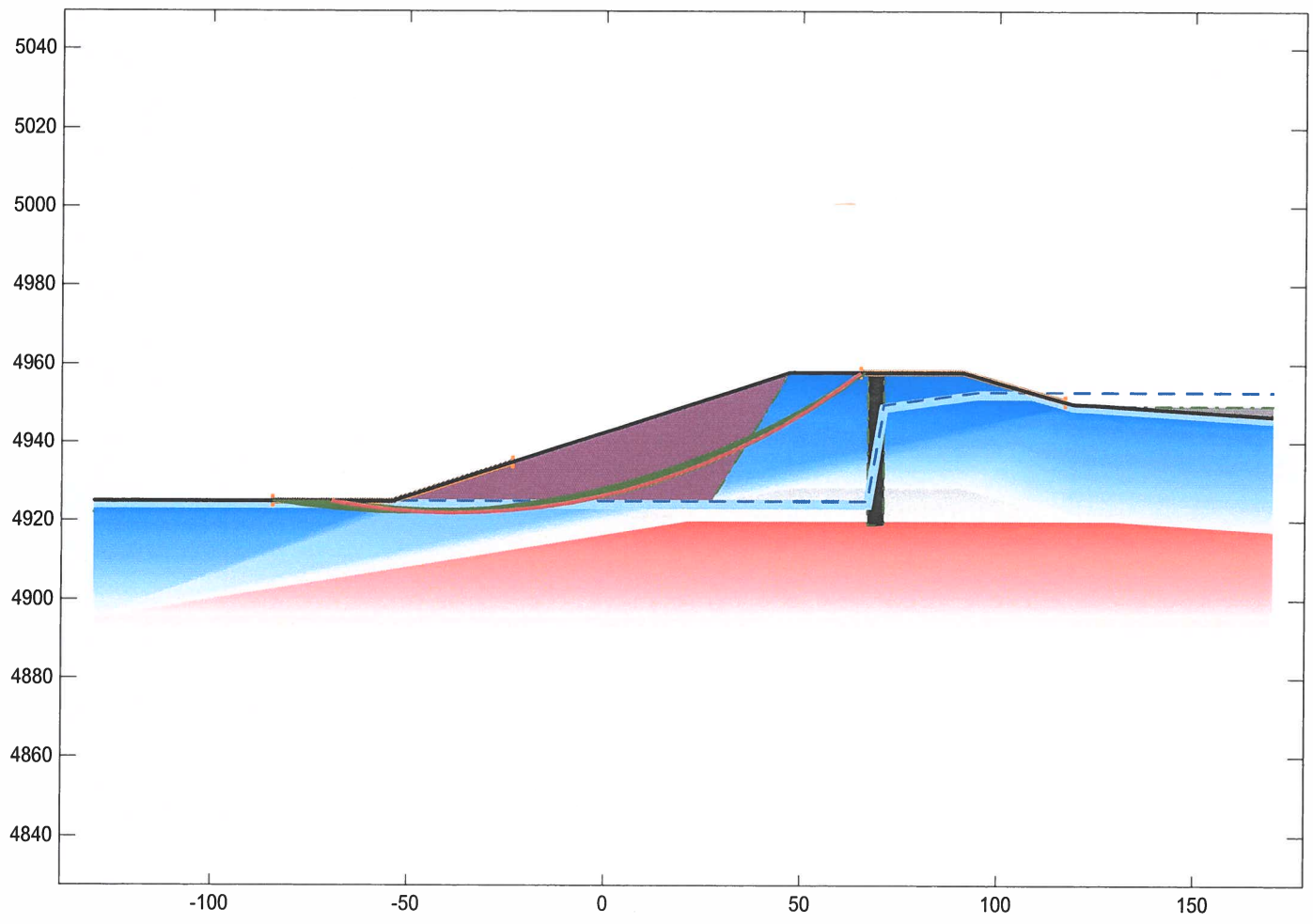
5040
5020
5000
4980
4960
4940
4920
4900
4880
4860
4840
-100
-50
0
50
100
150
GALENA
Version 7.1
Material Keys
1: Claystone Bedrock
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
Analysis 1
Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular
Results
Critical Factor of Safety: 1.87
Project Tucson South AM
C-1 - Static
File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure C-1 Static.gmf
Edited: 22 Jul 2019
Processed: 22 Jul 2019
Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

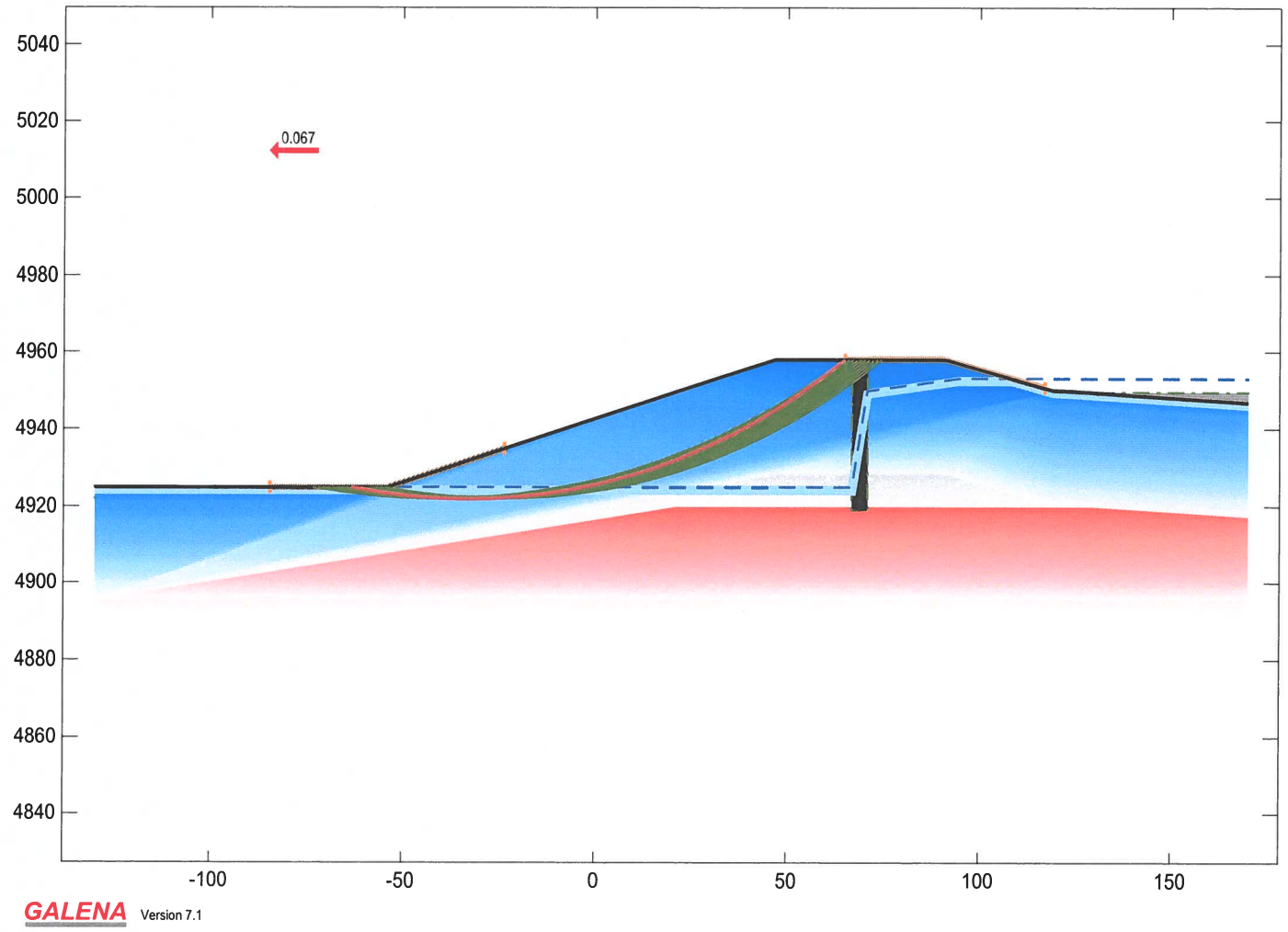
Critical Factor of Safety: 1.91

Project Tucson South AM
C-1 - Static - Fill

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure C-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 1.49

Project Tucson South AM
C-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure C-2 Pseudostatic.gmf

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

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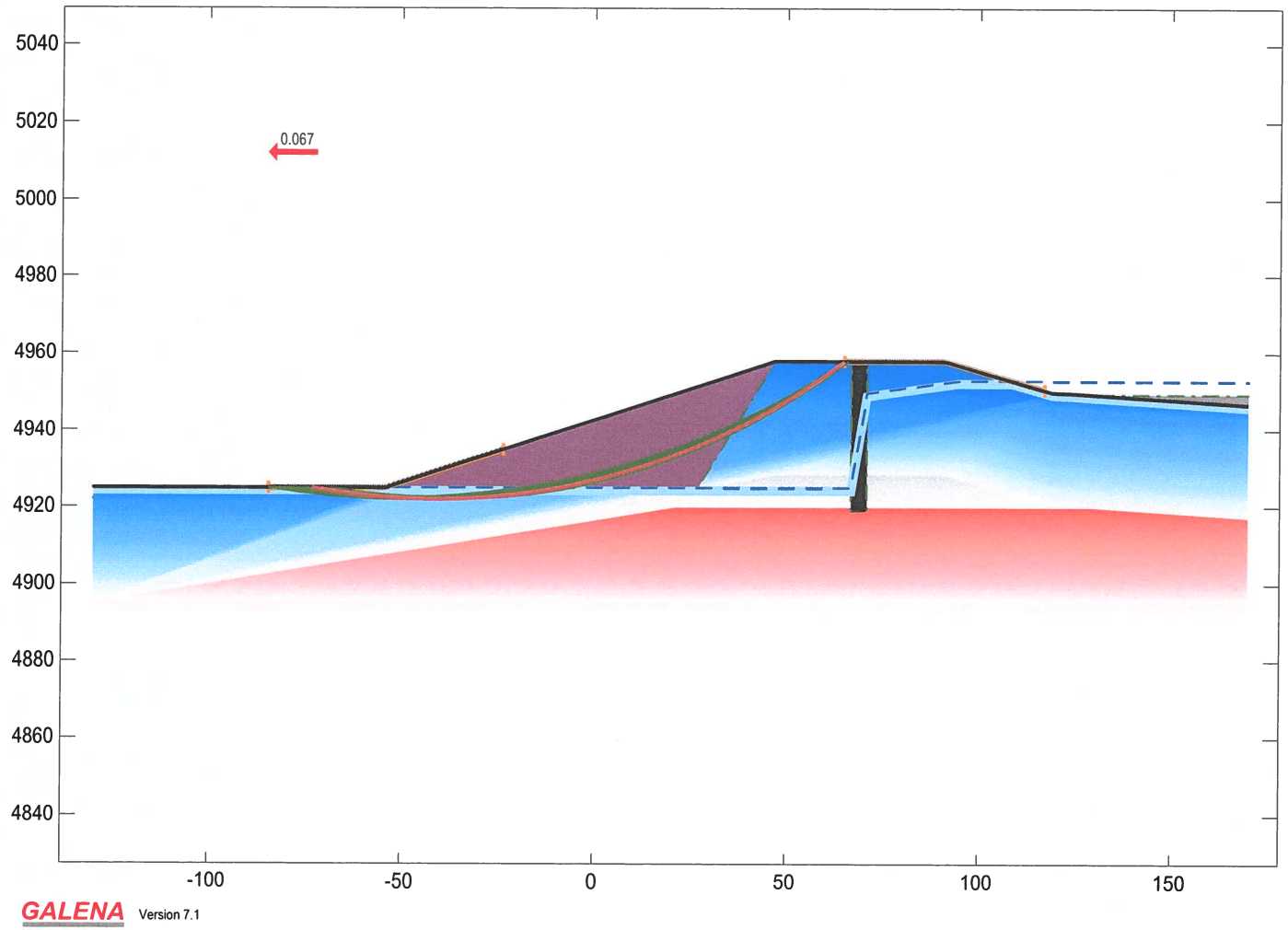


Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

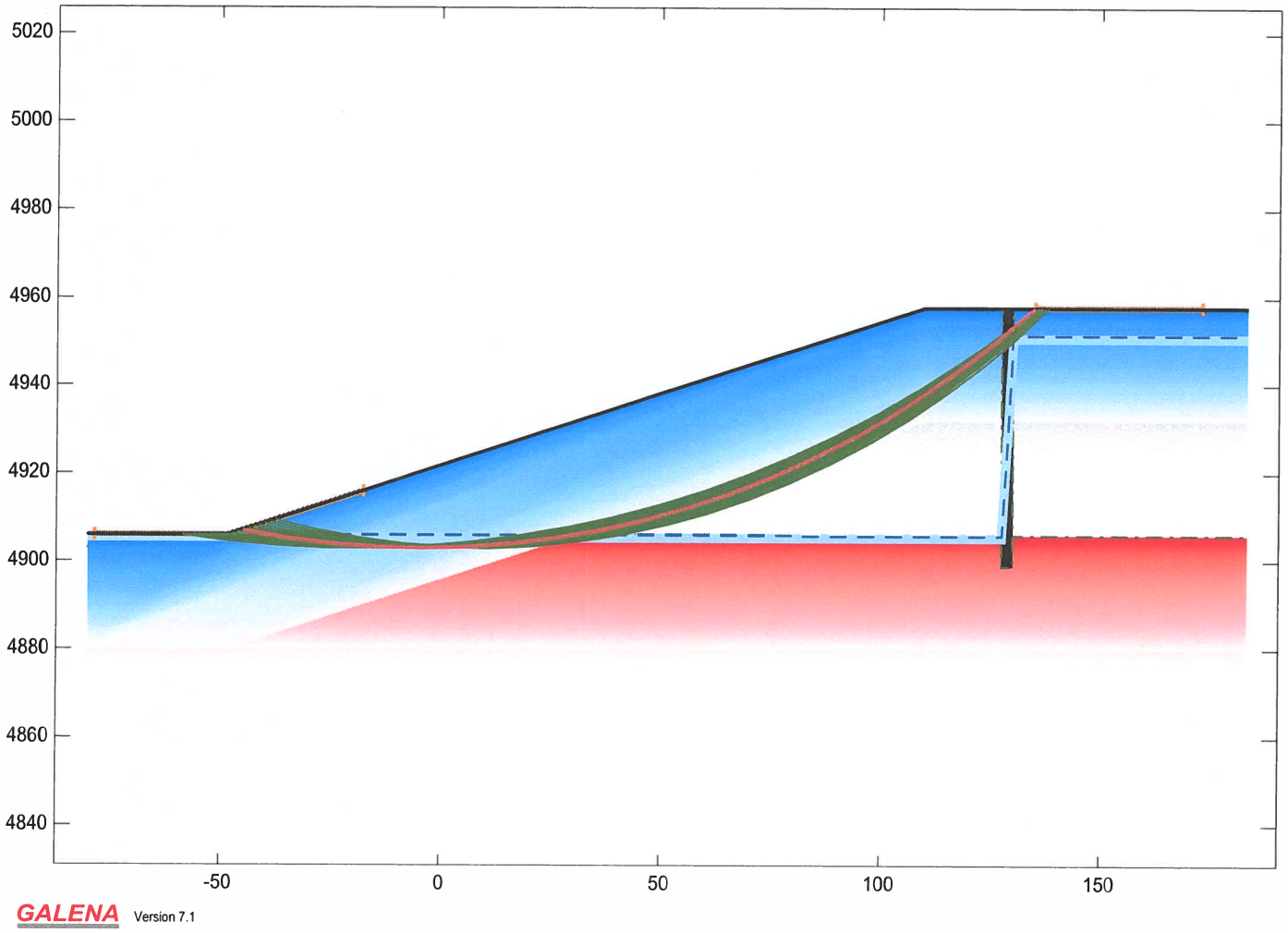
Critical Factor of Safety: 1.53

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
C-1 - Pseudostatic - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure C-1 Pseudostatic Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

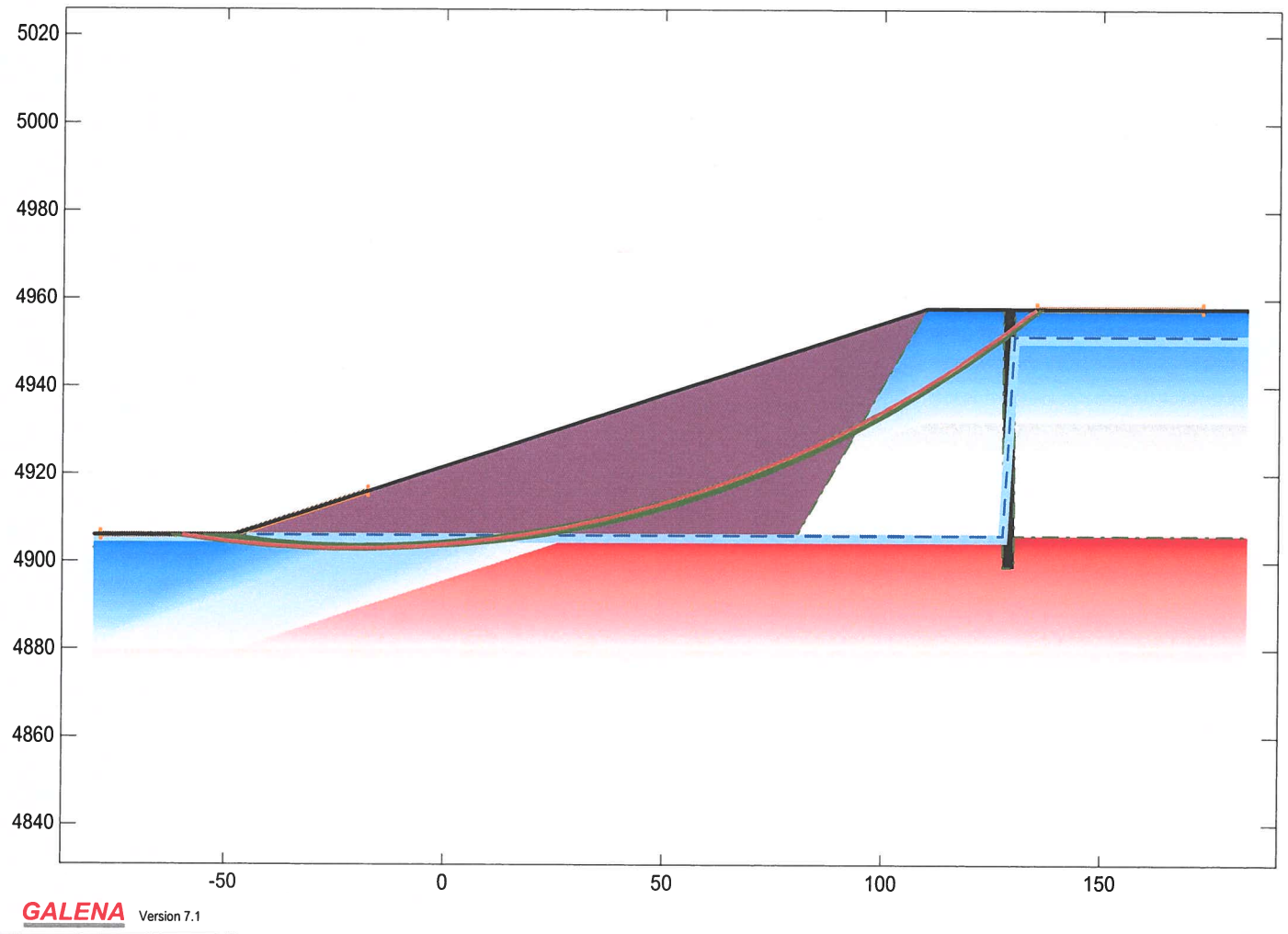
Critical Factor of Safety: 1.94

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
D-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure D-1 Static.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

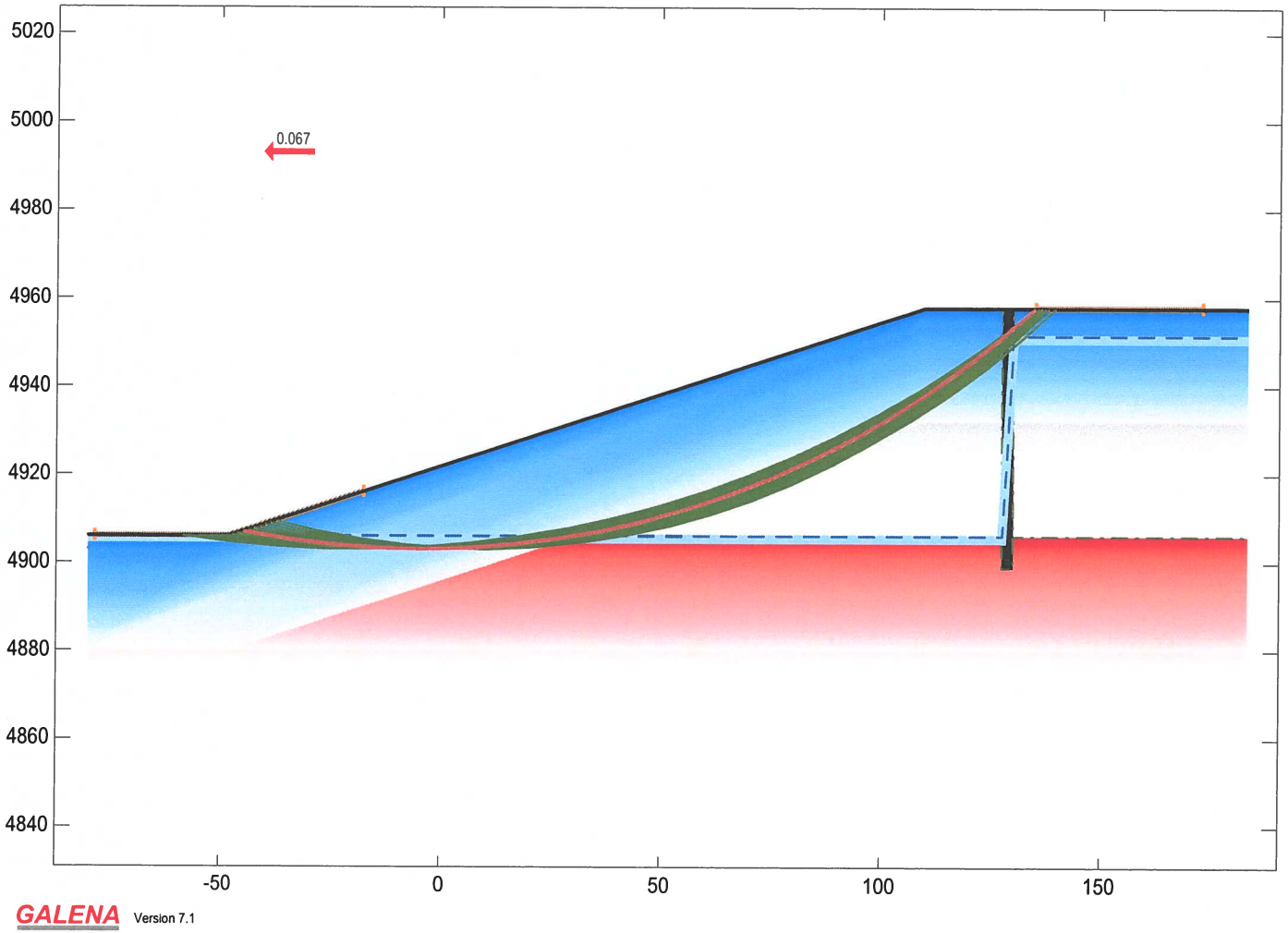
Critical Factor of Safety: 1.77

Project Tucson South AM
D-1 - Static - Fill

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure D-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

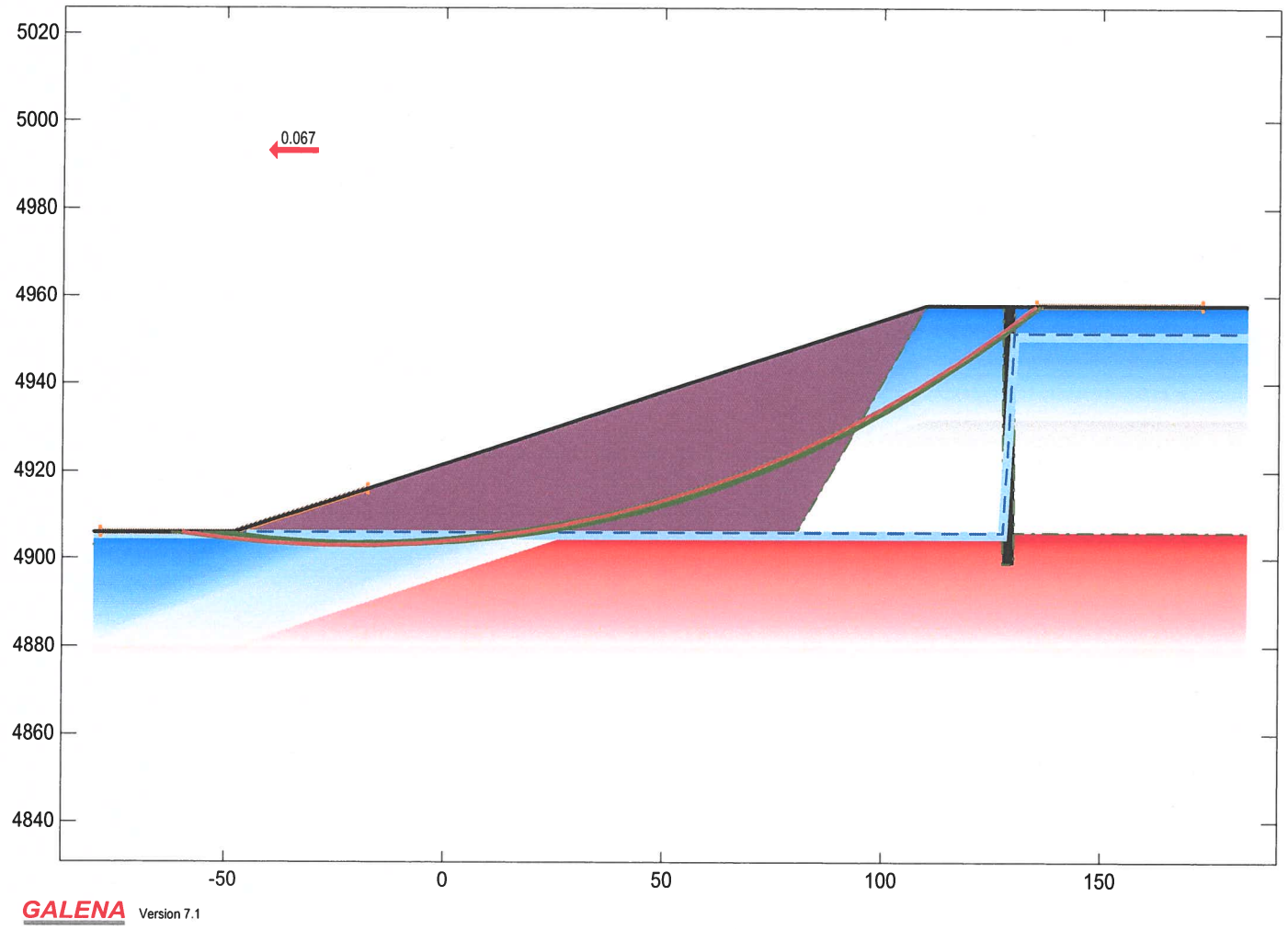
Critical Factor of Safety: 1.55

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
D-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure D-2 Pseudostatic.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

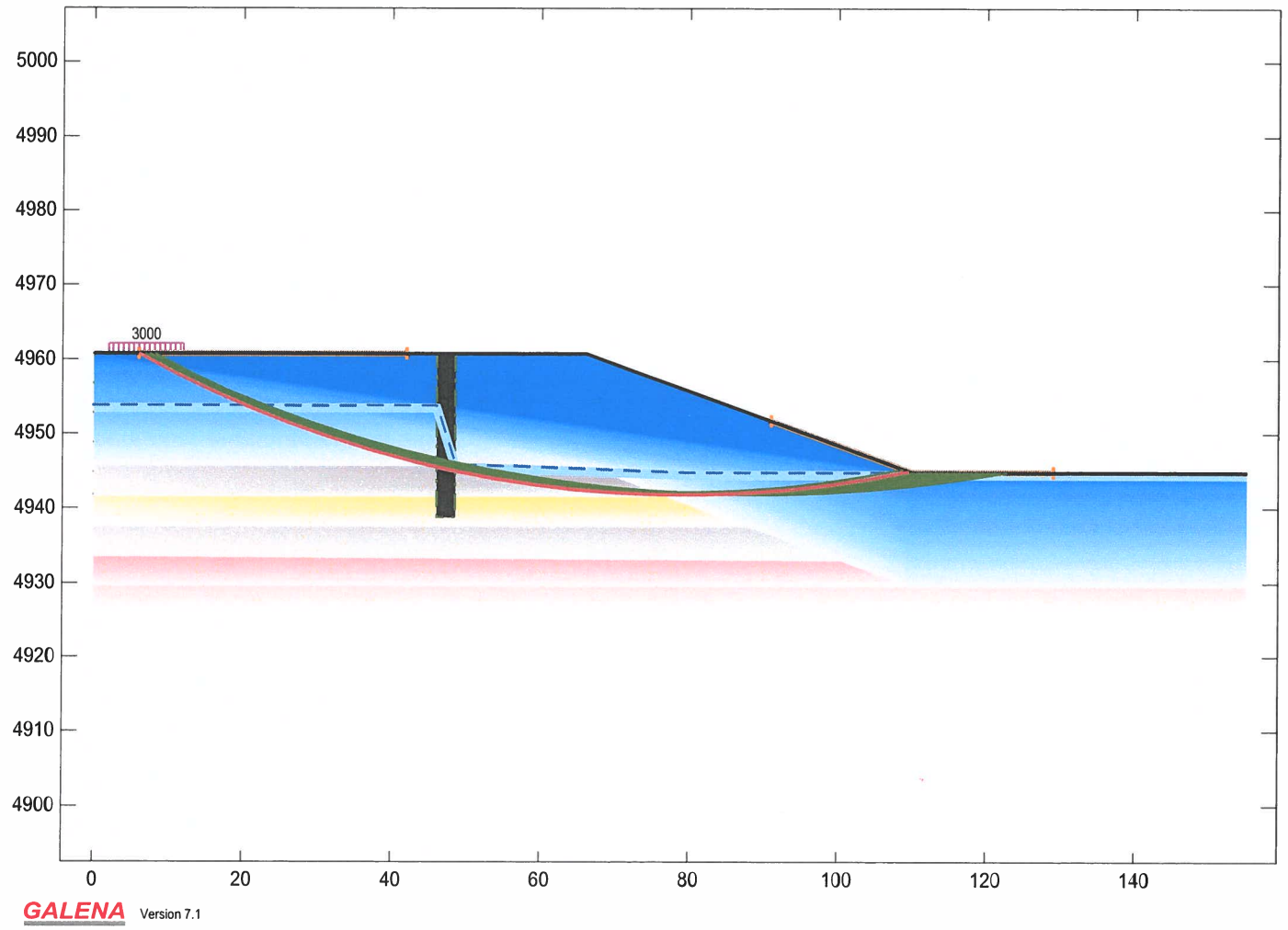
Critical Factor of Safety: 1.42

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
D-2 - Static - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure D-2 Pseudostatic Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

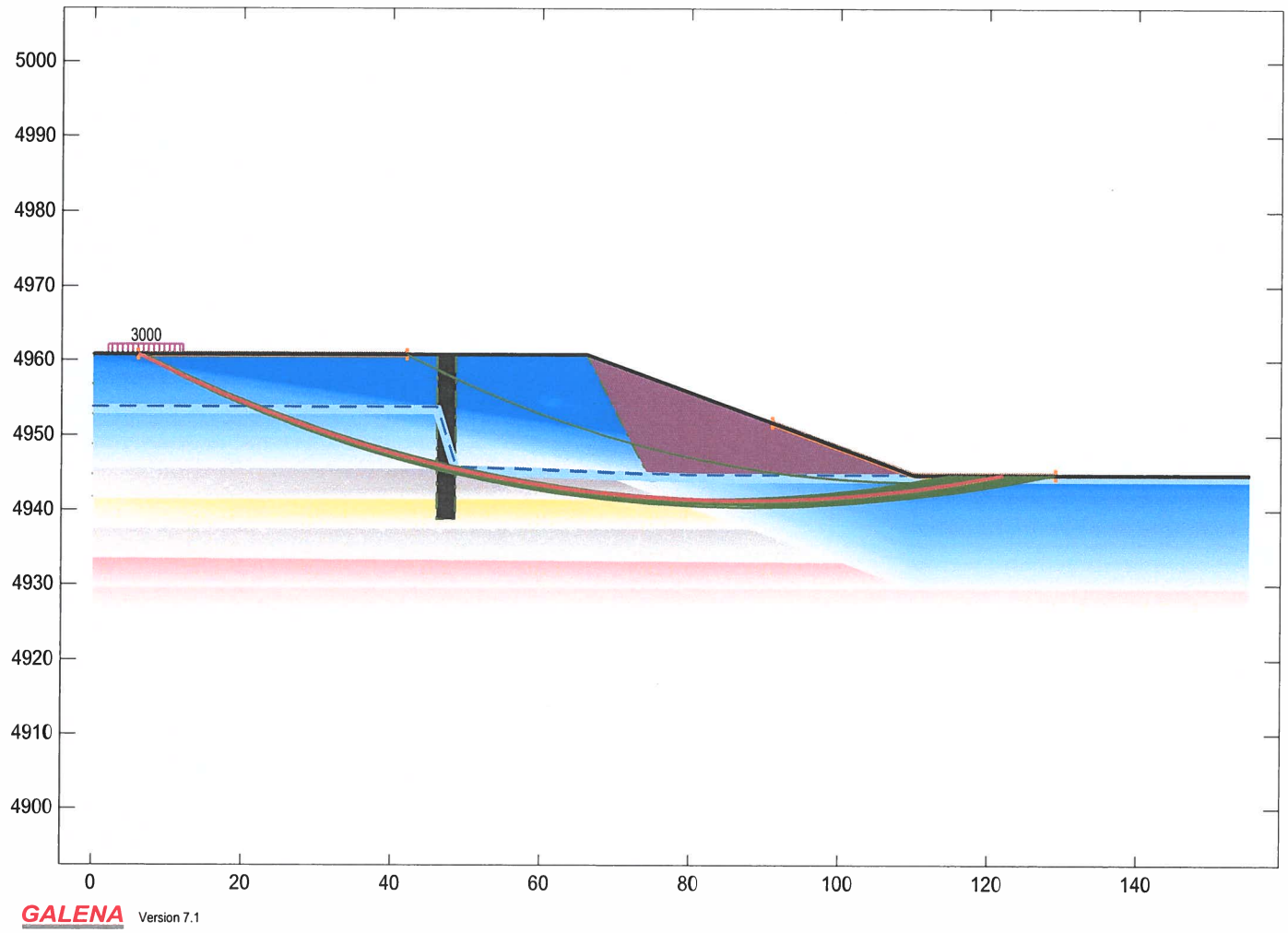
Critical Factor of Safety: 2.10

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
E-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure E-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

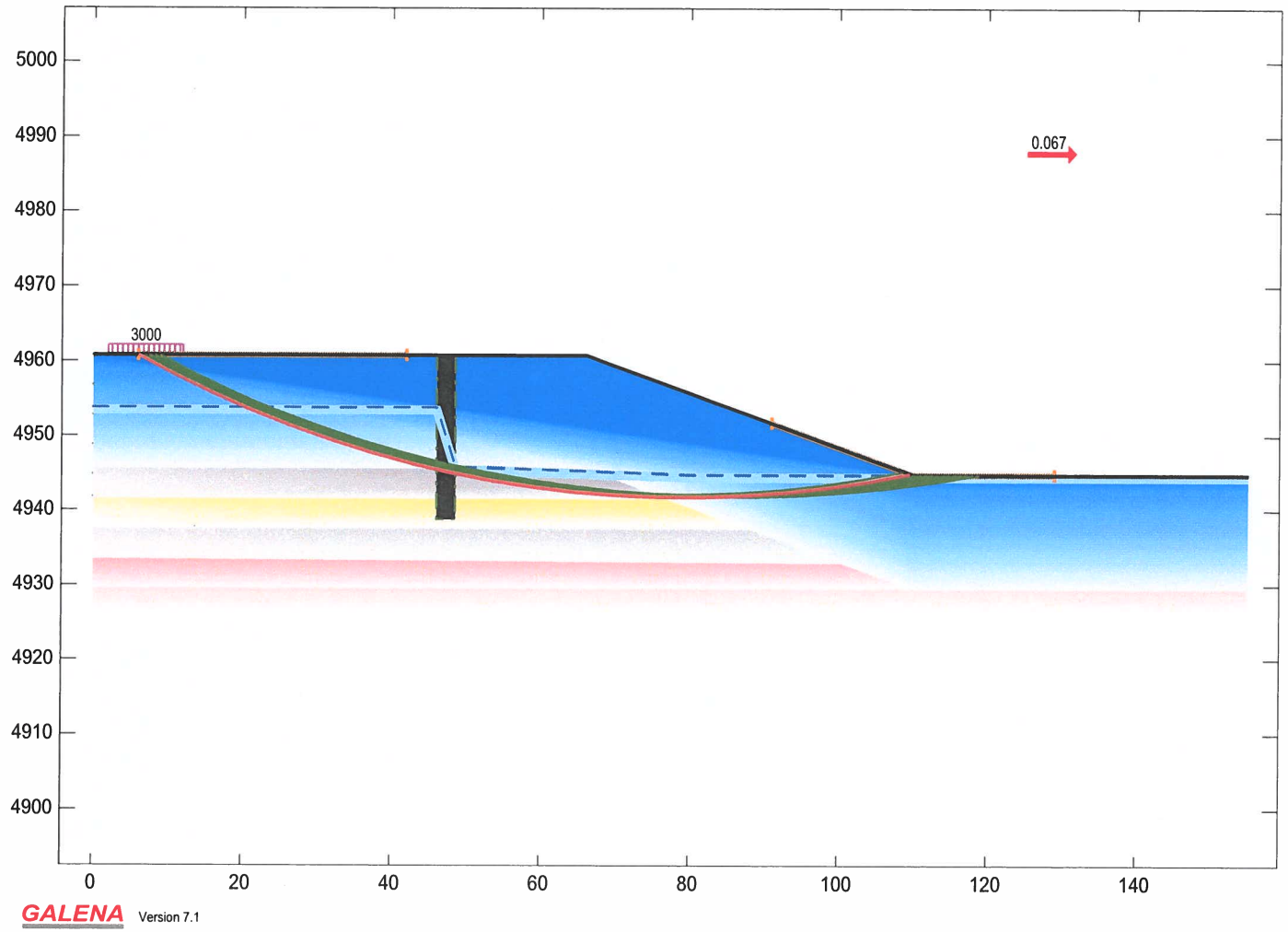
Critical Factor of Safety: 2.52

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
E-1 - Static - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure E-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

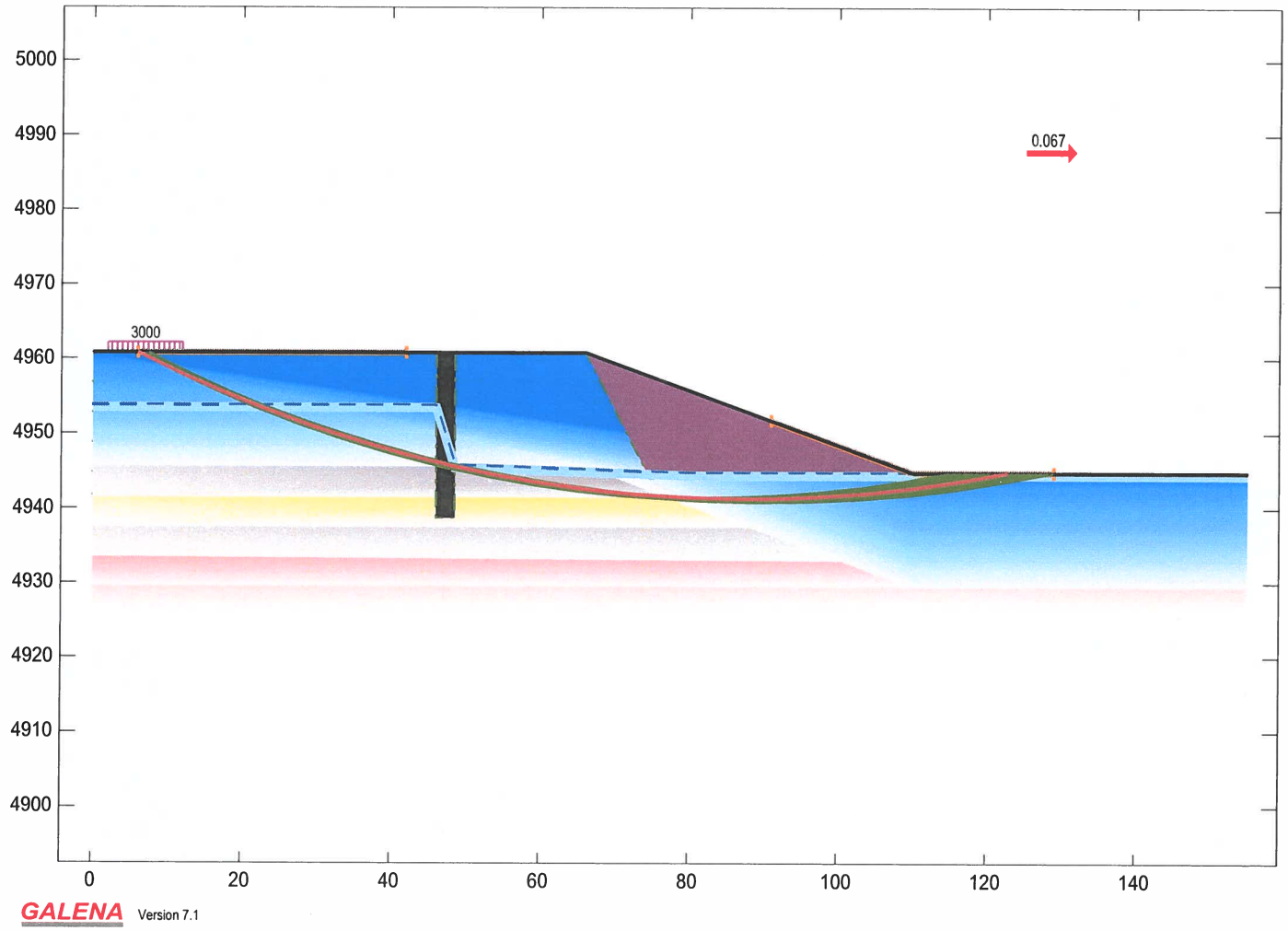
Critical Factor of Safety: 1.55

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
E-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure E-2 Pseudostatic.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

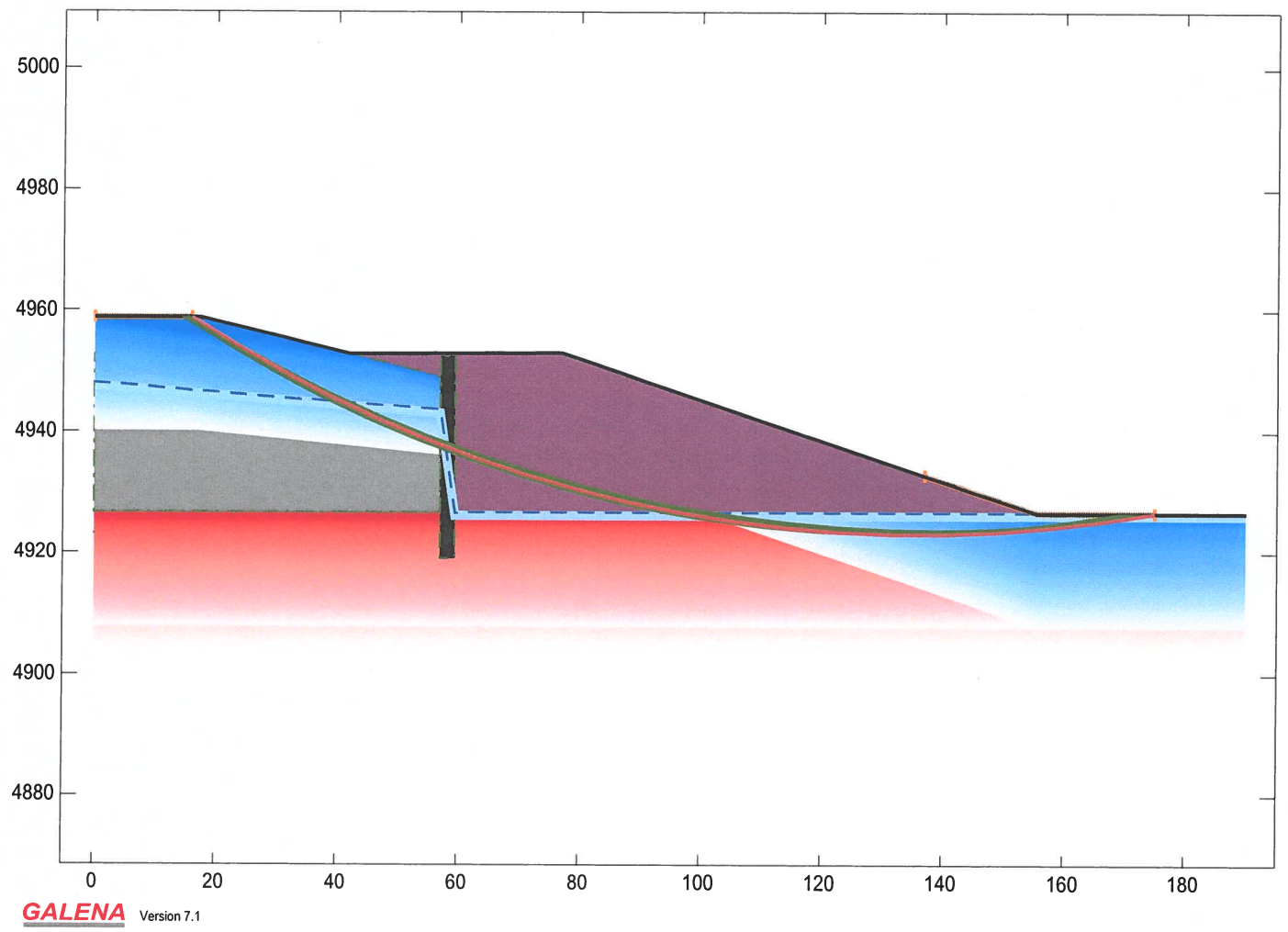
Critical Factor of Safety: 1.38

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
E-2 - Pseudostatic - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure E-2 Pseudostatic Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

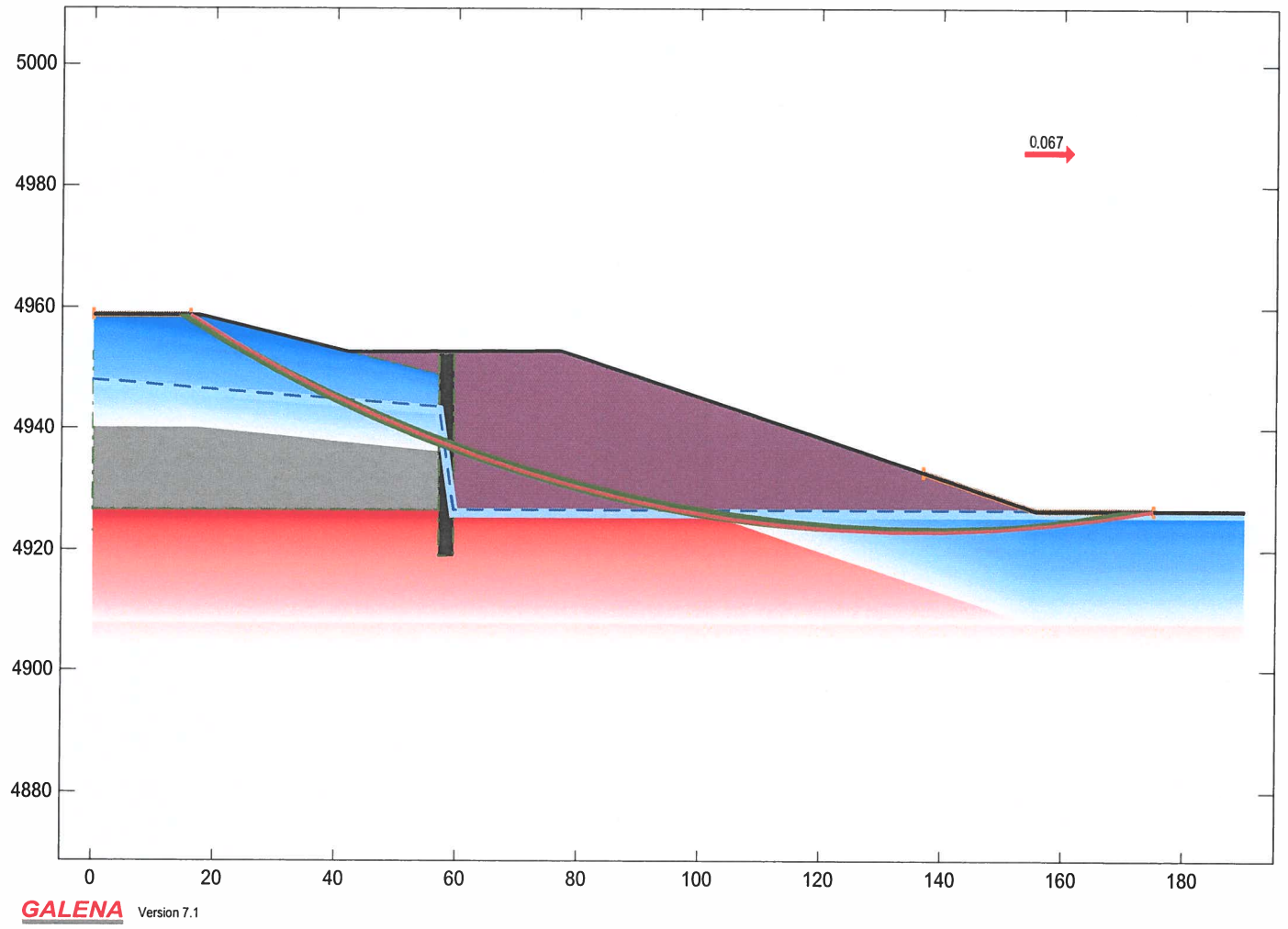
Critical Factor of Safety: 2.27

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
F-1 - Static - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure F-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

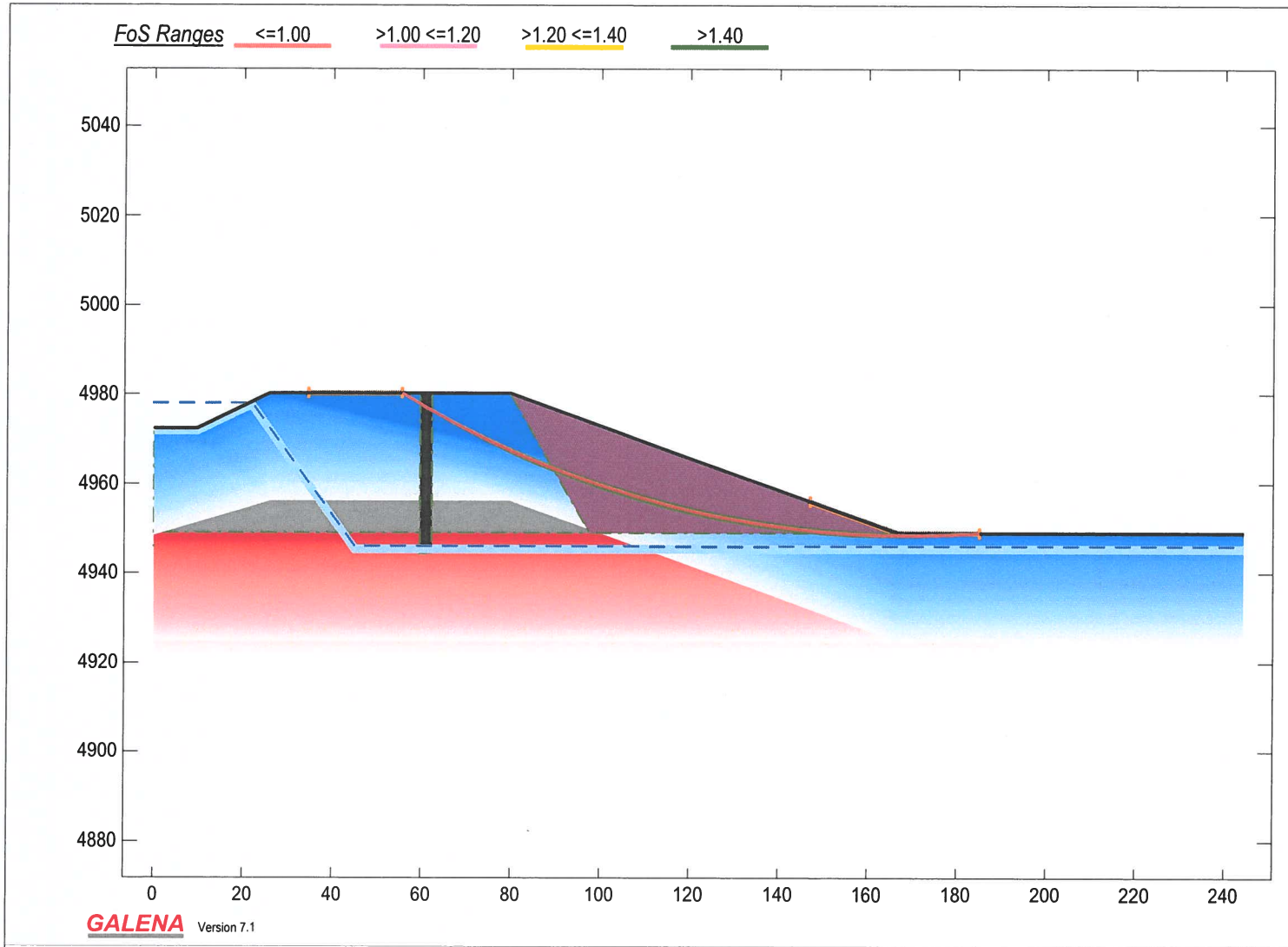
Critical Factor of Safety: 1.72

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
F-2 - Pseudostatic - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure F-2 Pseudostatic Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

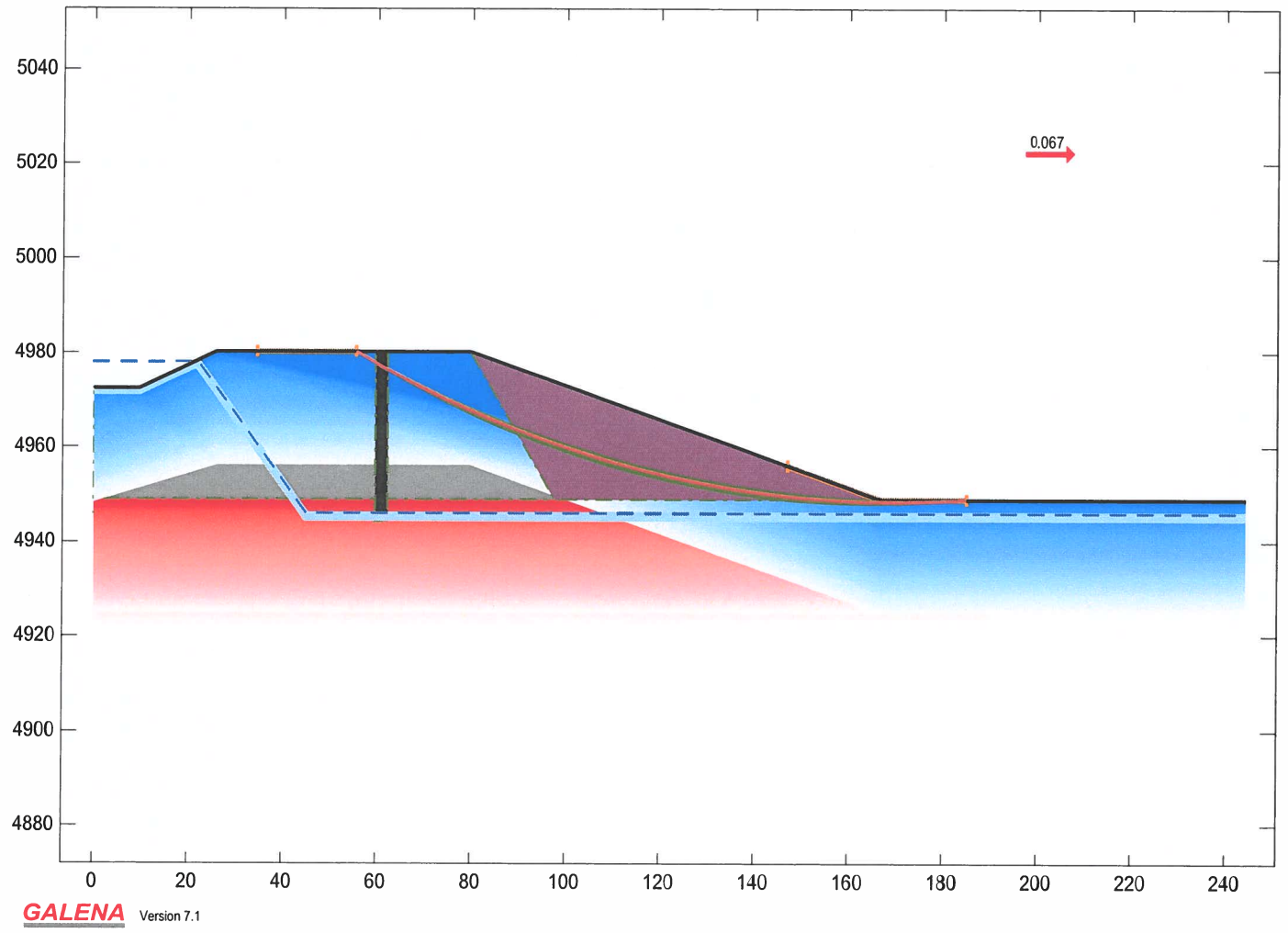
Critical Factor of Safety: 1.85

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
G-1 - Static - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure G-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

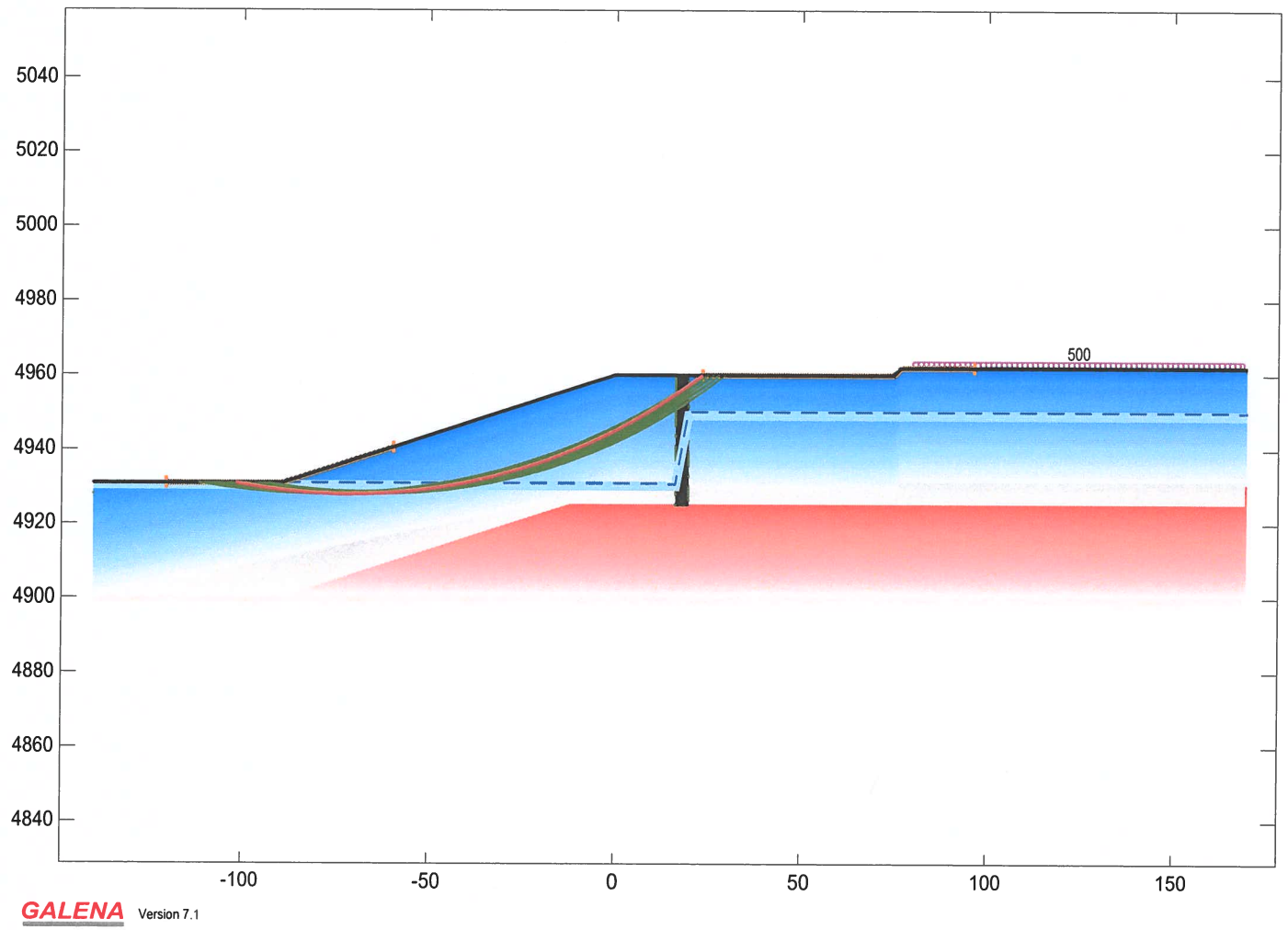
Critical Factor of Safety: 1.48

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
G-2 - Pseudostatic - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure G-2 Pseudostatic Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

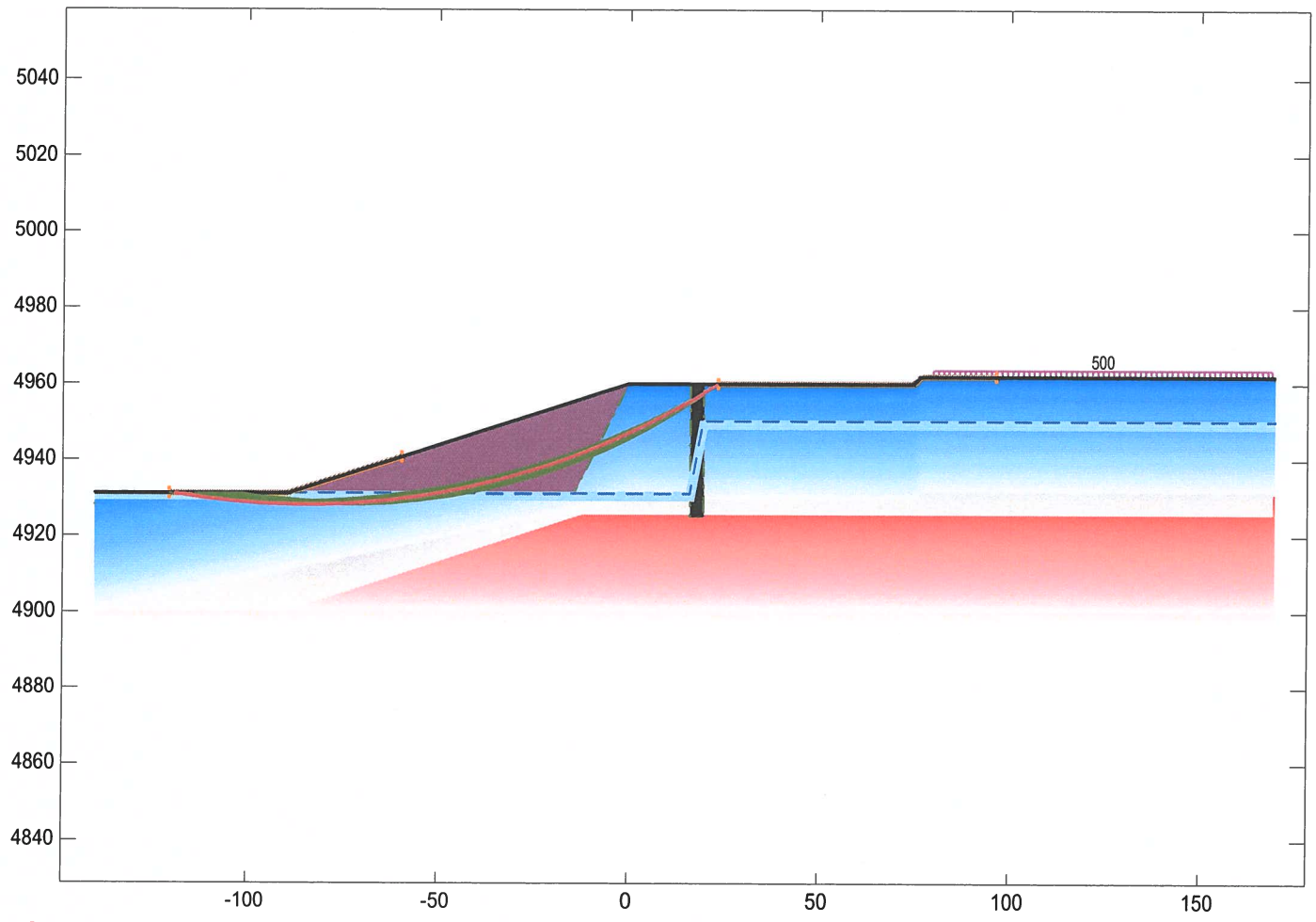
Critical Factor of Safety: 1.96

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
H-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure H-1 Static.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

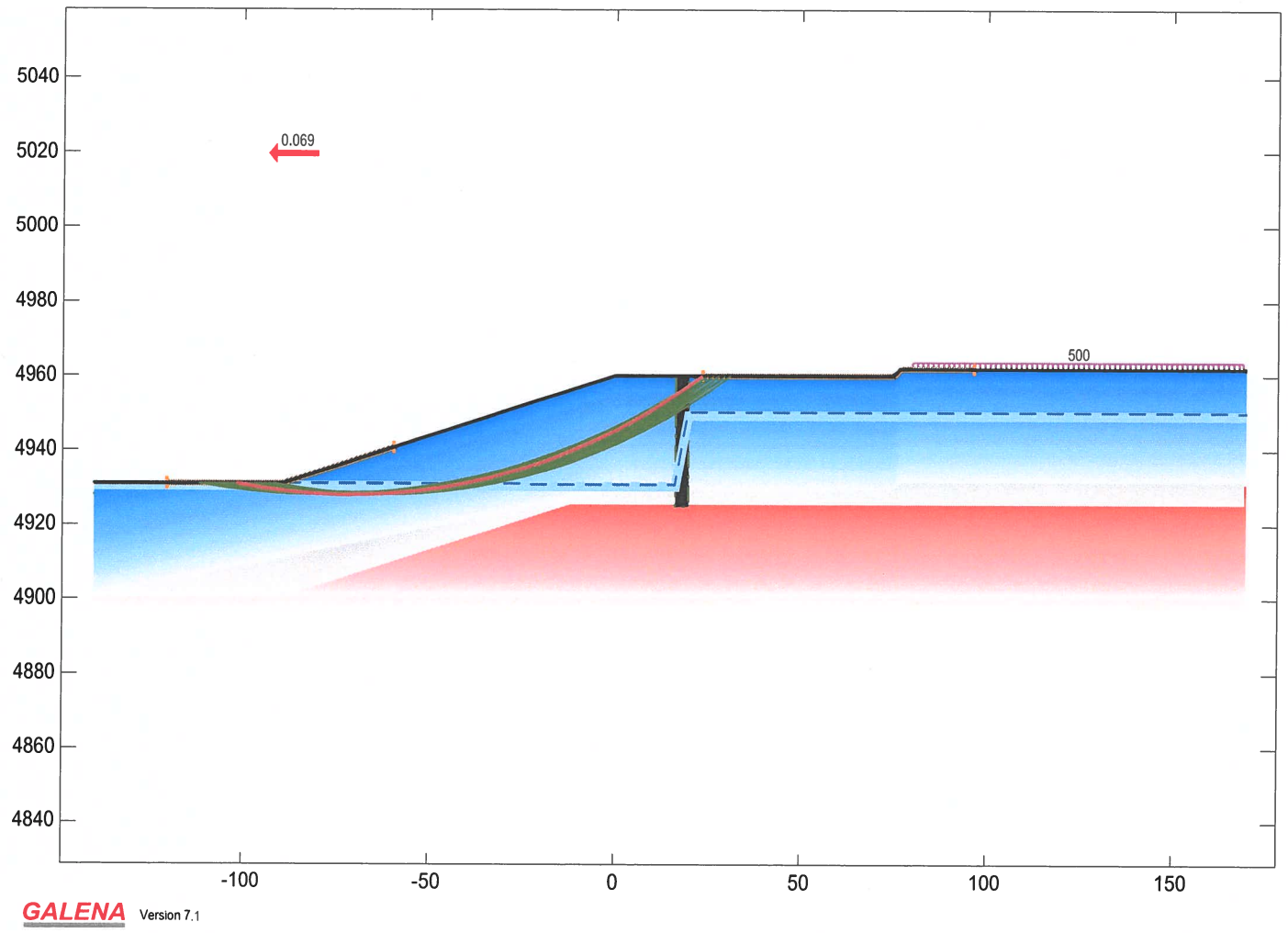
Critical Factor of Safety: 1.94

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
H-1 - Static - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure H-1 Static Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

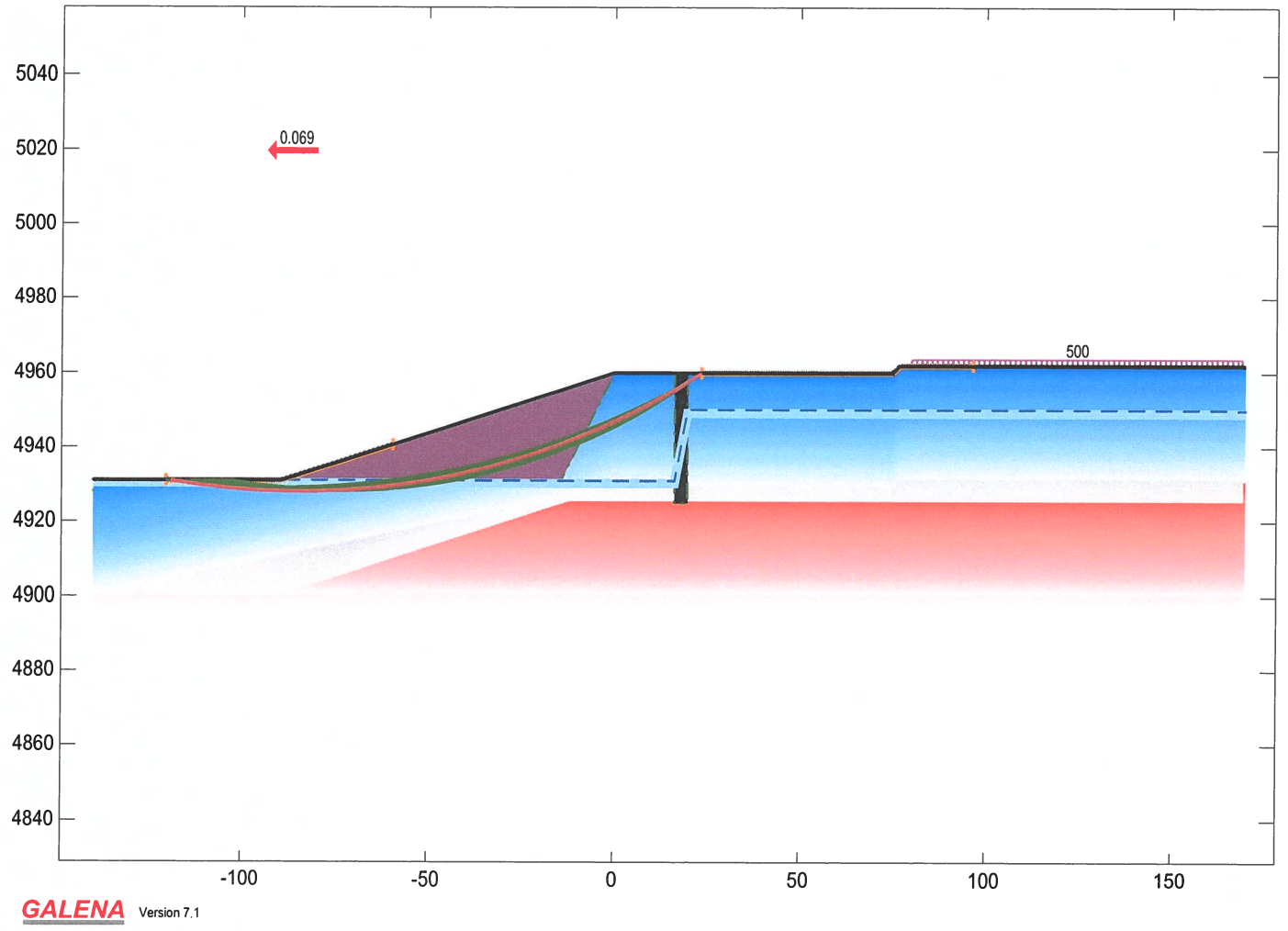
Critical Factor of Safety: 1.52

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
H-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure H-2 Pseudostatic.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

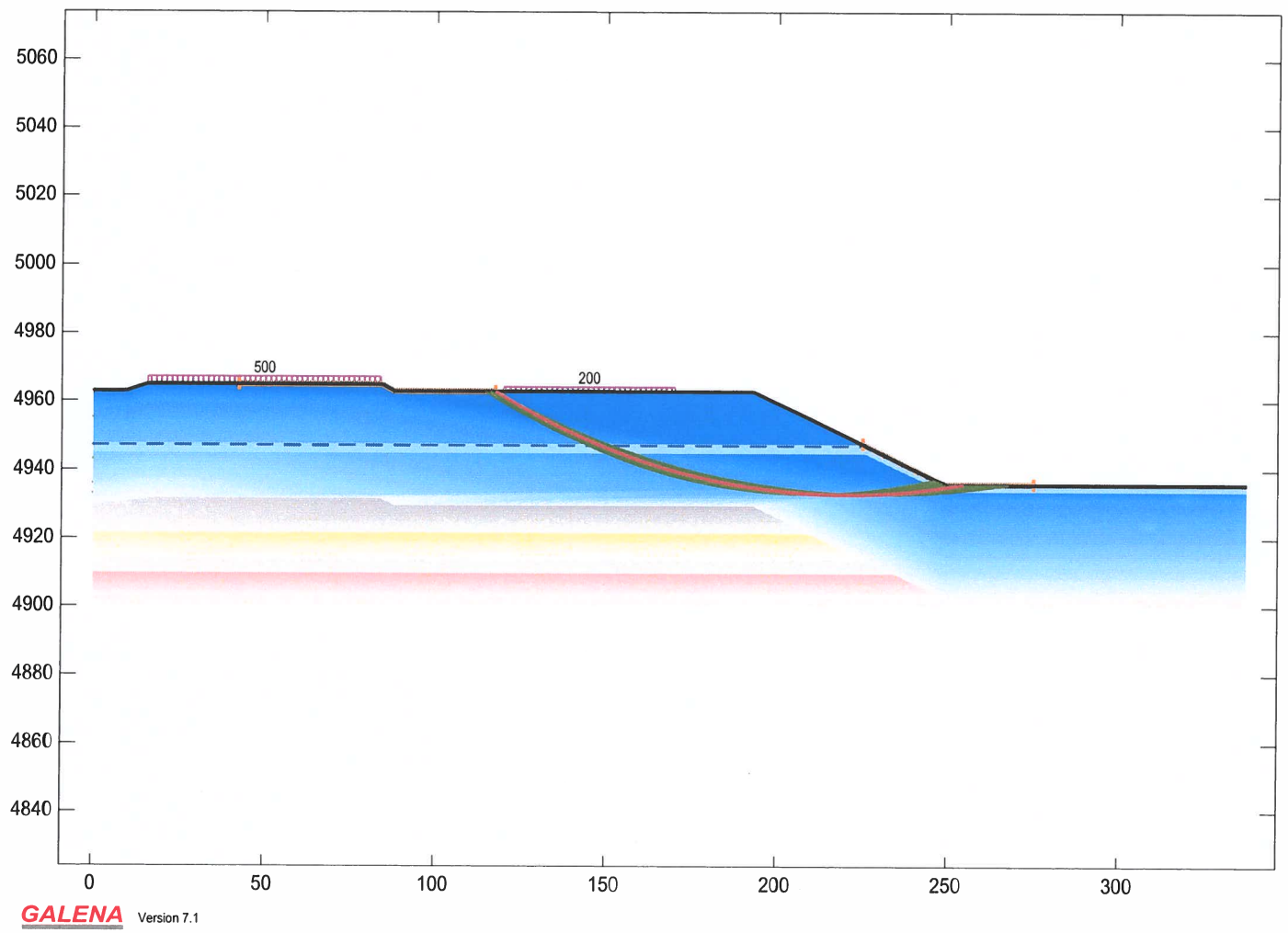
Critical Factor of Safety: 1.51

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
H-2 - Pseudostatic - Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure H-2 Pseudostatic Fill.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
6: Weathered Claystone Bedrock

Analysis 1
Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

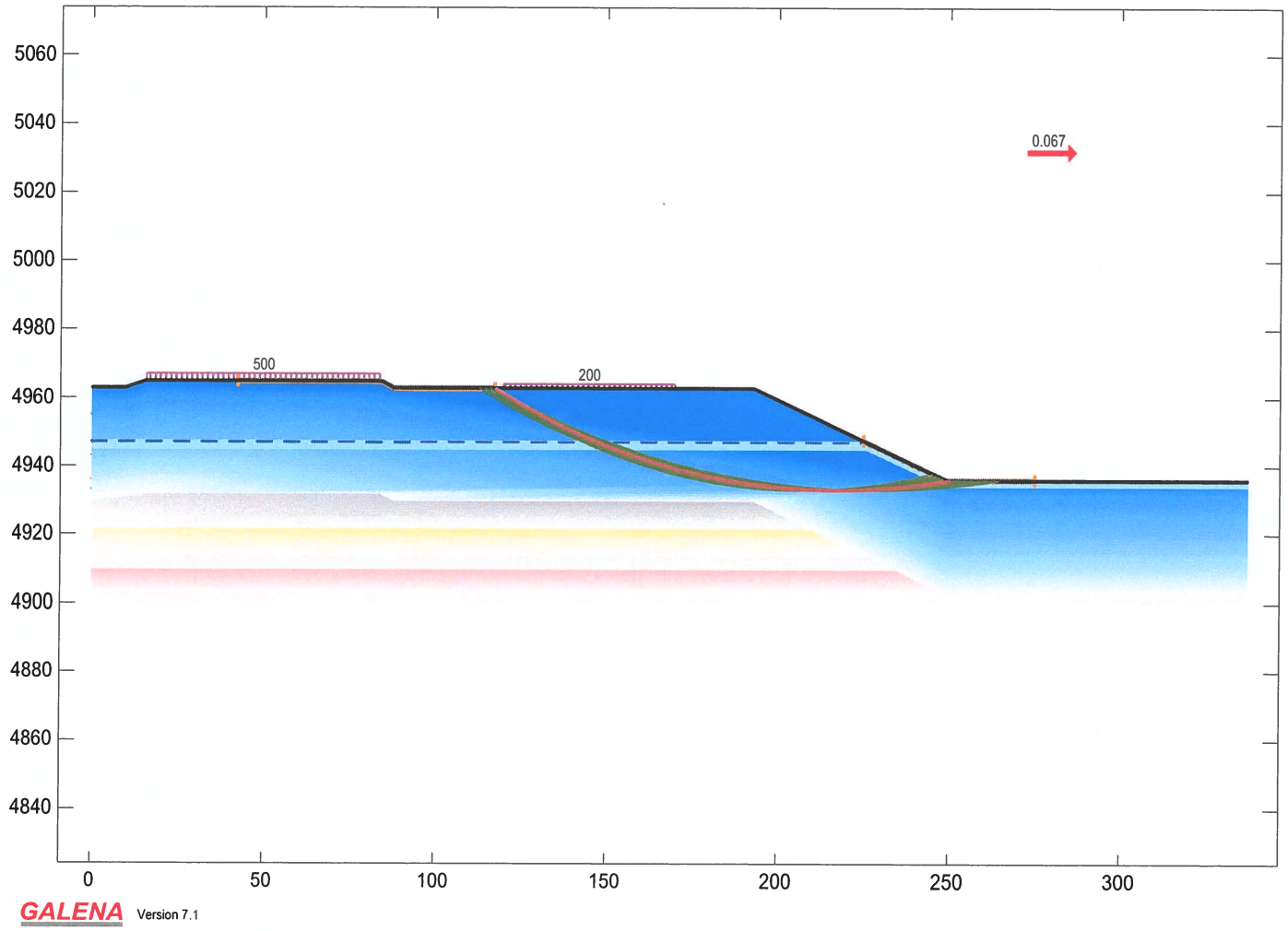
Results
Critical Factor of Safety: 2.02

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
I-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure I-1 Static.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
6: Weathered Claystone Bedrock

Analysis 1
Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

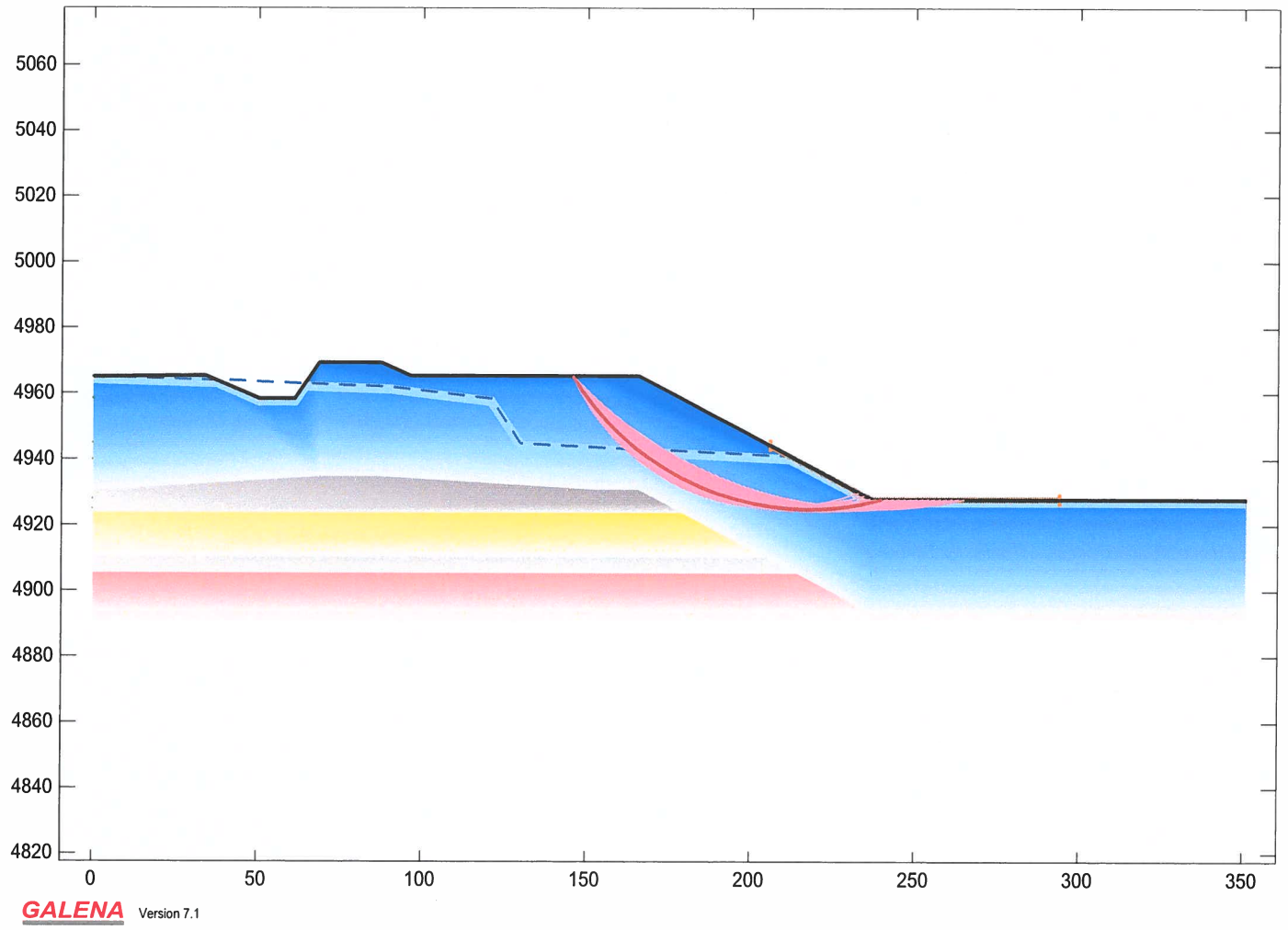
Results
Critical Factor of Safety: 1.49

Edited: 22 Jul 2019 *Processed:* 22 Jul 2019

Project Tucson South AM
I-1 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure I-1 Pseudostatic.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

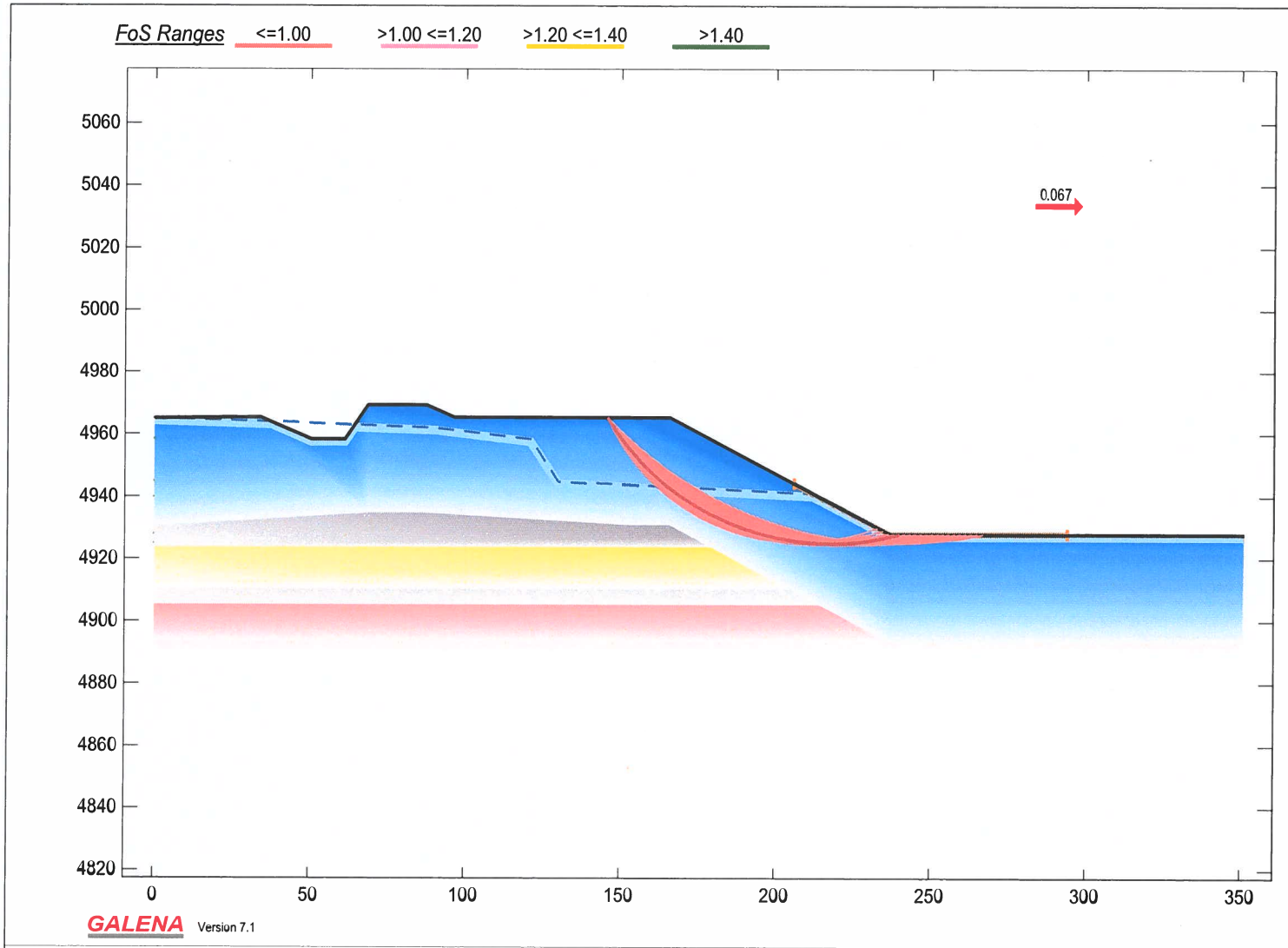
Critical Factor of Safety: 1.07

Edited: 25 Jul 2019 *Processed:* 25 Jul 2019

Project Tucson South AM
J-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure J -1 Static.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
6: Weathered Claystone Bedrock

Analysis 1
Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

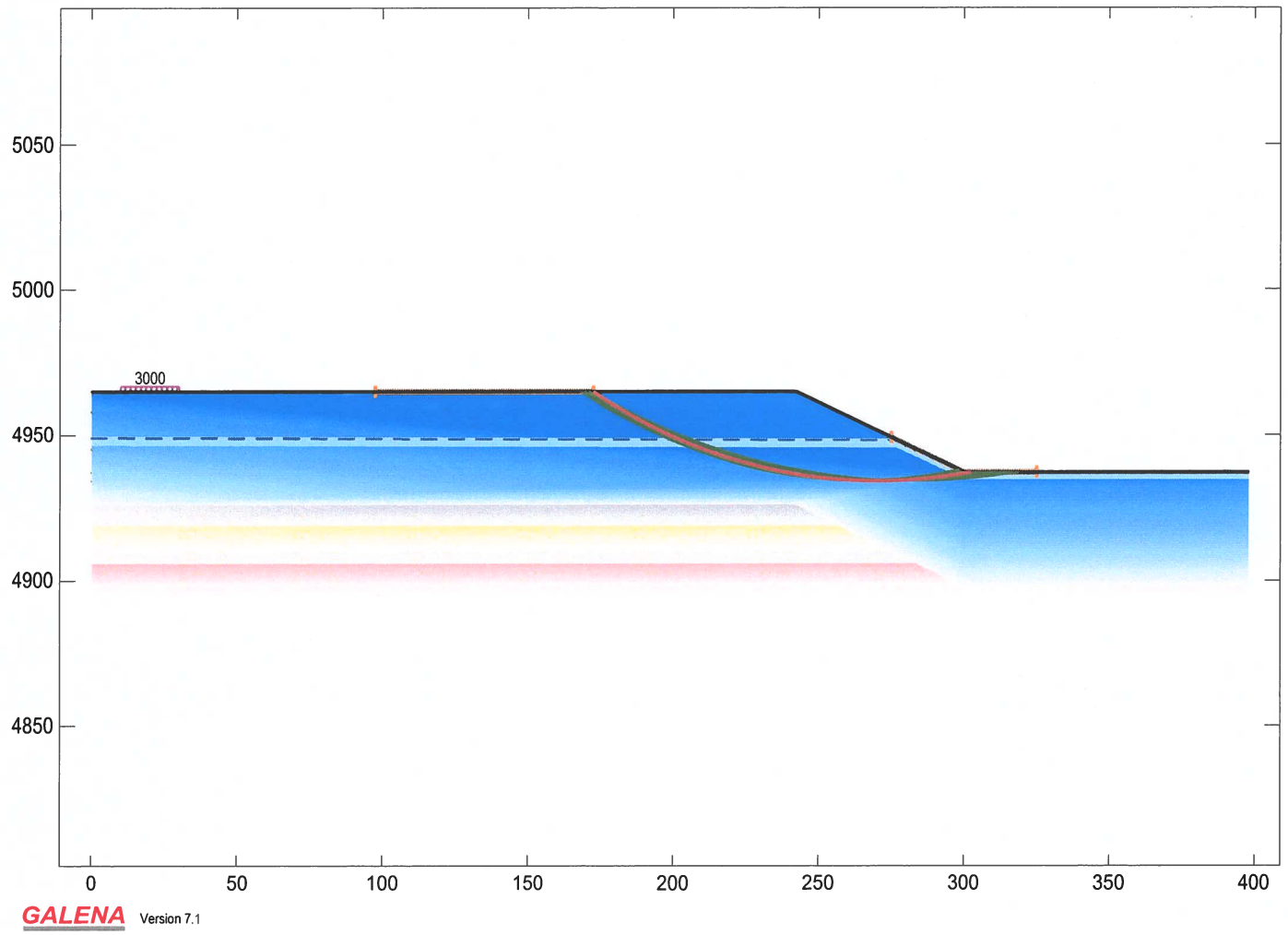
Results
Critical Factor of Safety: 0.89

Edited: 25 Jul 2019 *Processed:* 25 Jul 2019

Project Tucson South AM
J-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure J -2 Pseudostatic.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.93

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
K-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure K -1 Static.gmf

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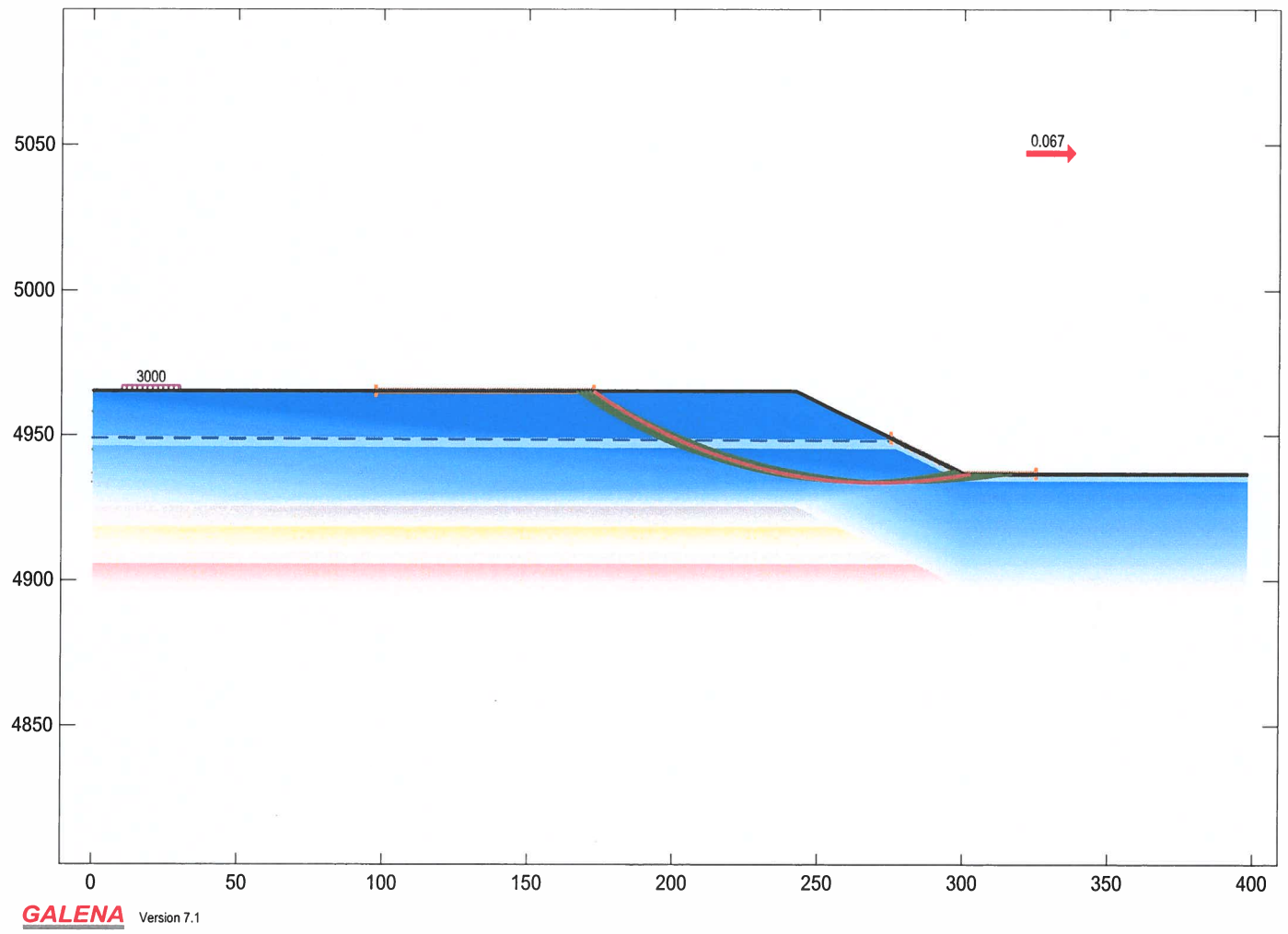


Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

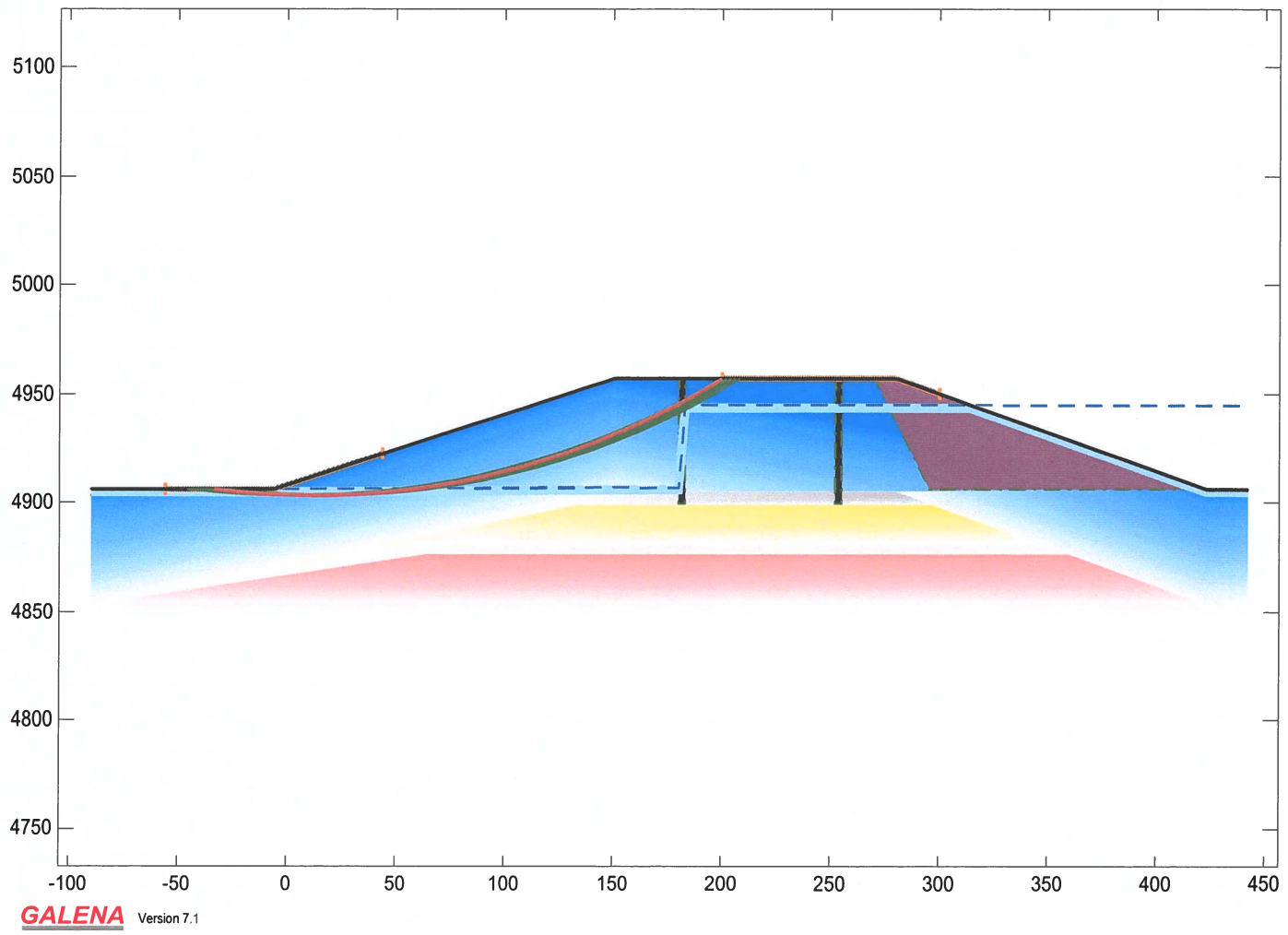
Critical Factor of Safety: 1.43

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
K-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure K -2 Pseudostatic.gmf

Dept of the Interior - Office of Surface Mining



Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 2.27

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
L-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure L-1 Static.gmf

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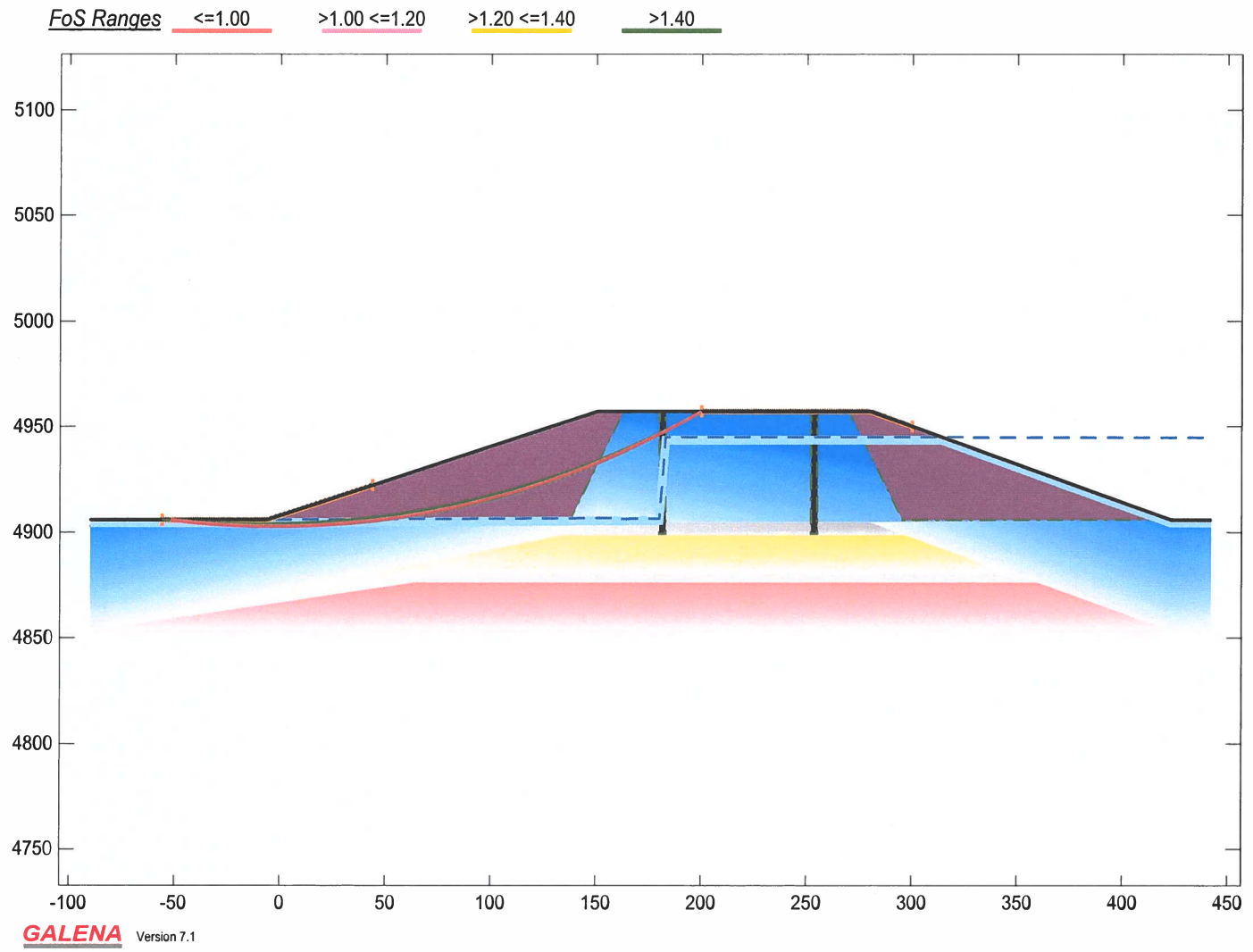

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 2.37

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
L-1 - Static Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure L-1 Static Fill.gmf

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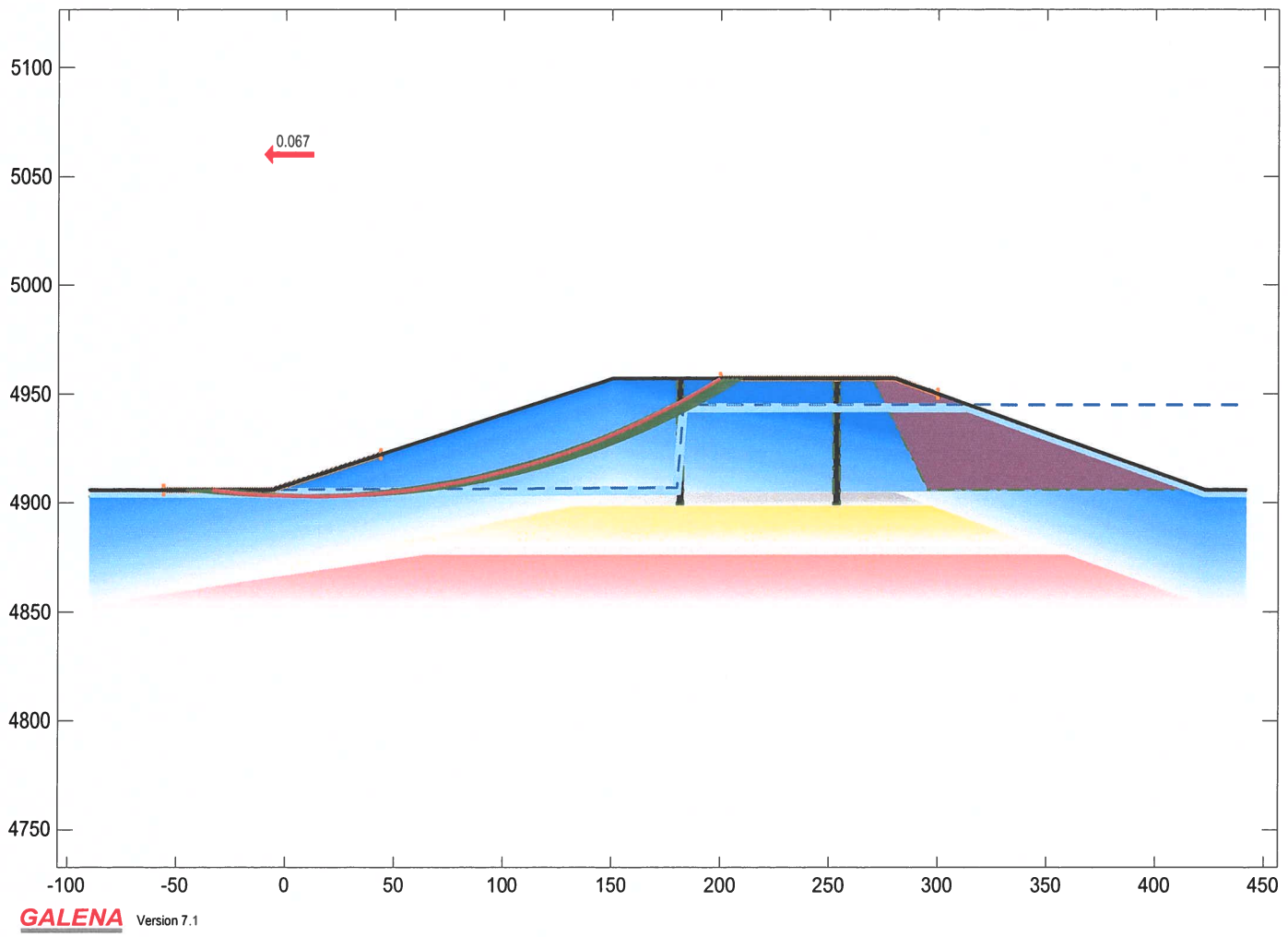

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.78

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
L-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure L-2 Pseudostatic.gmf

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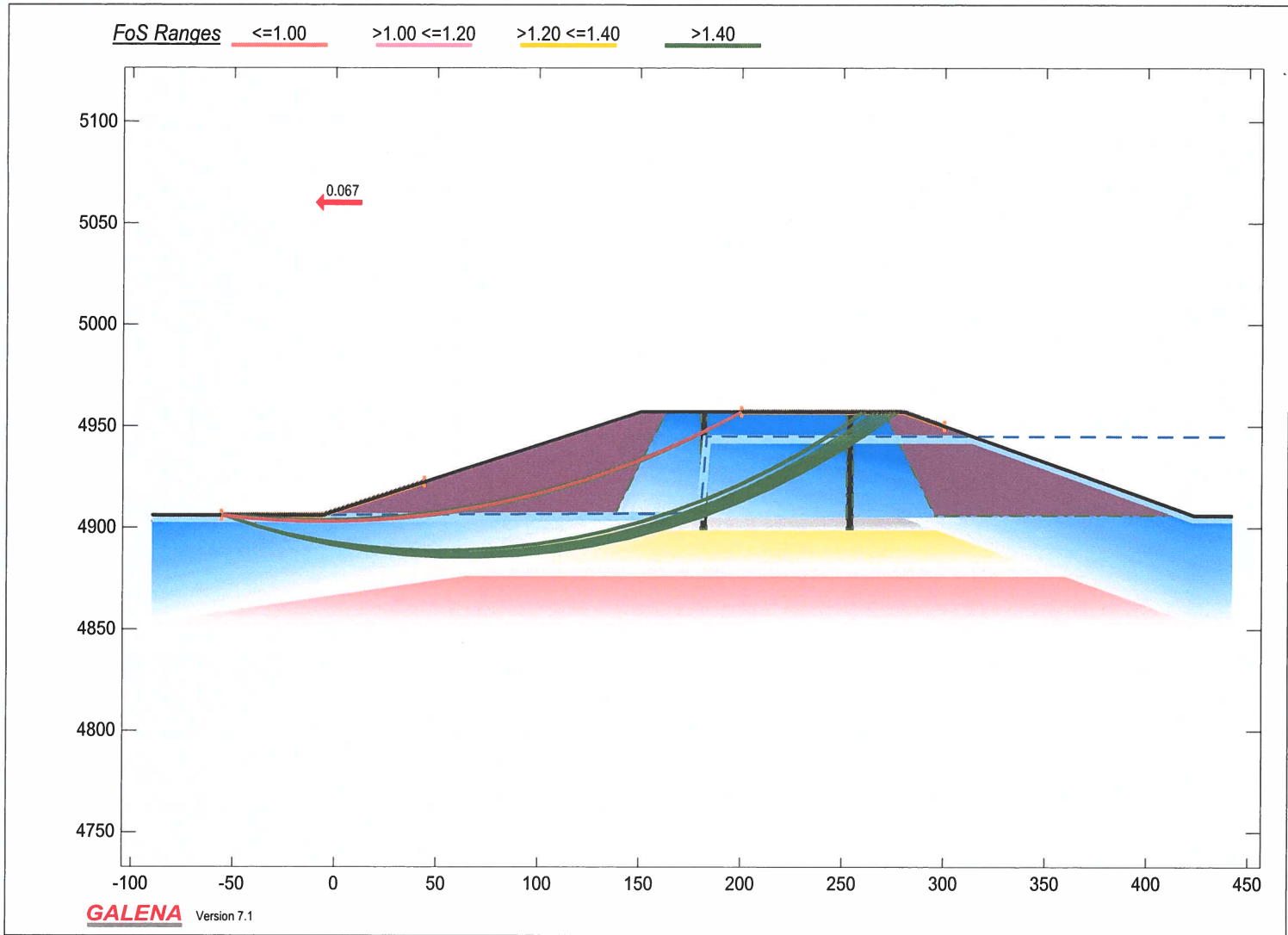

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.86

Project Tucson South AM
L-2 - Pseudostatic Fill

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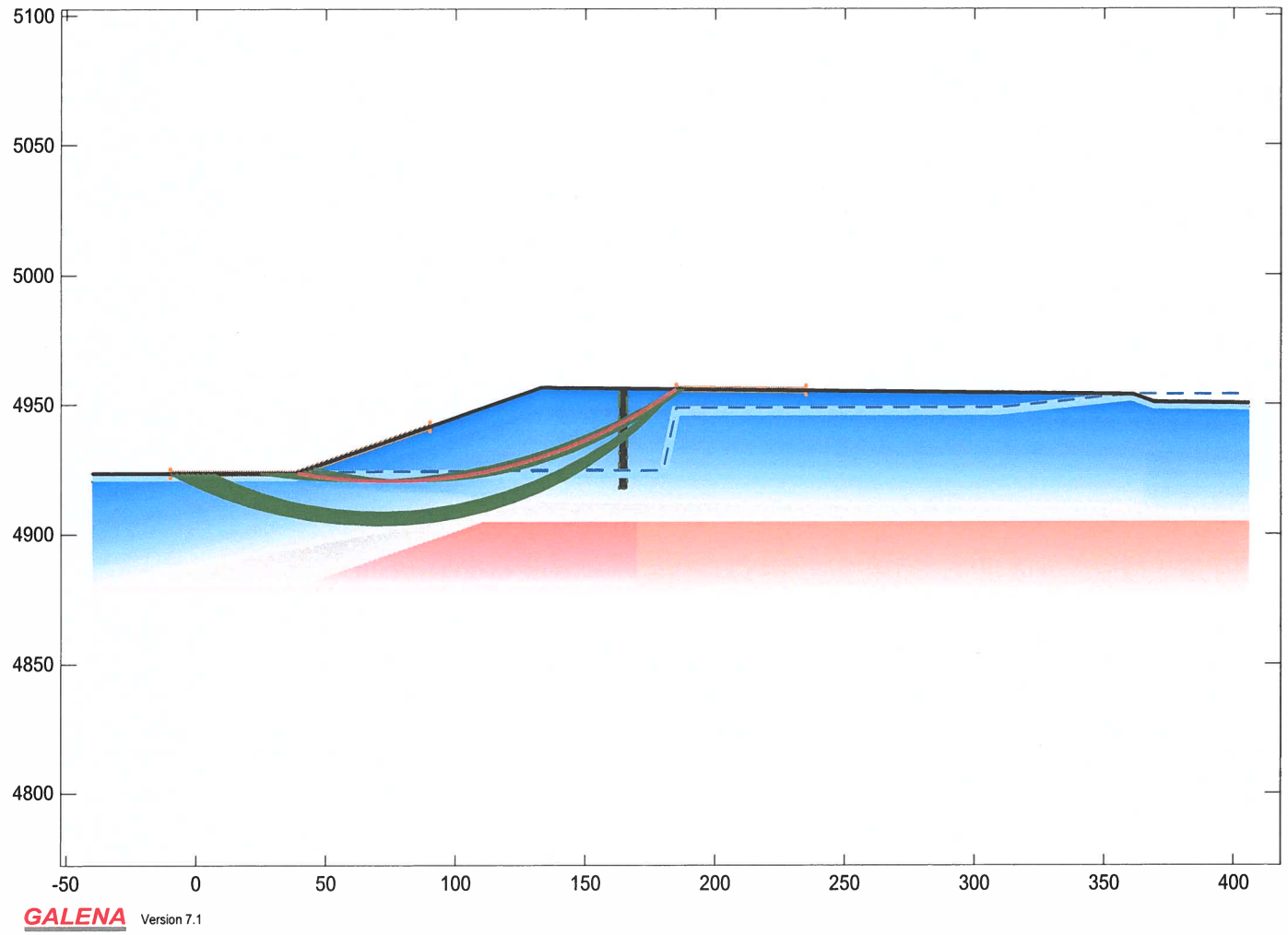

Material Keys

1: Claystone Bedrock
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 2.32

Project Tucson South AM
M-1 - Static

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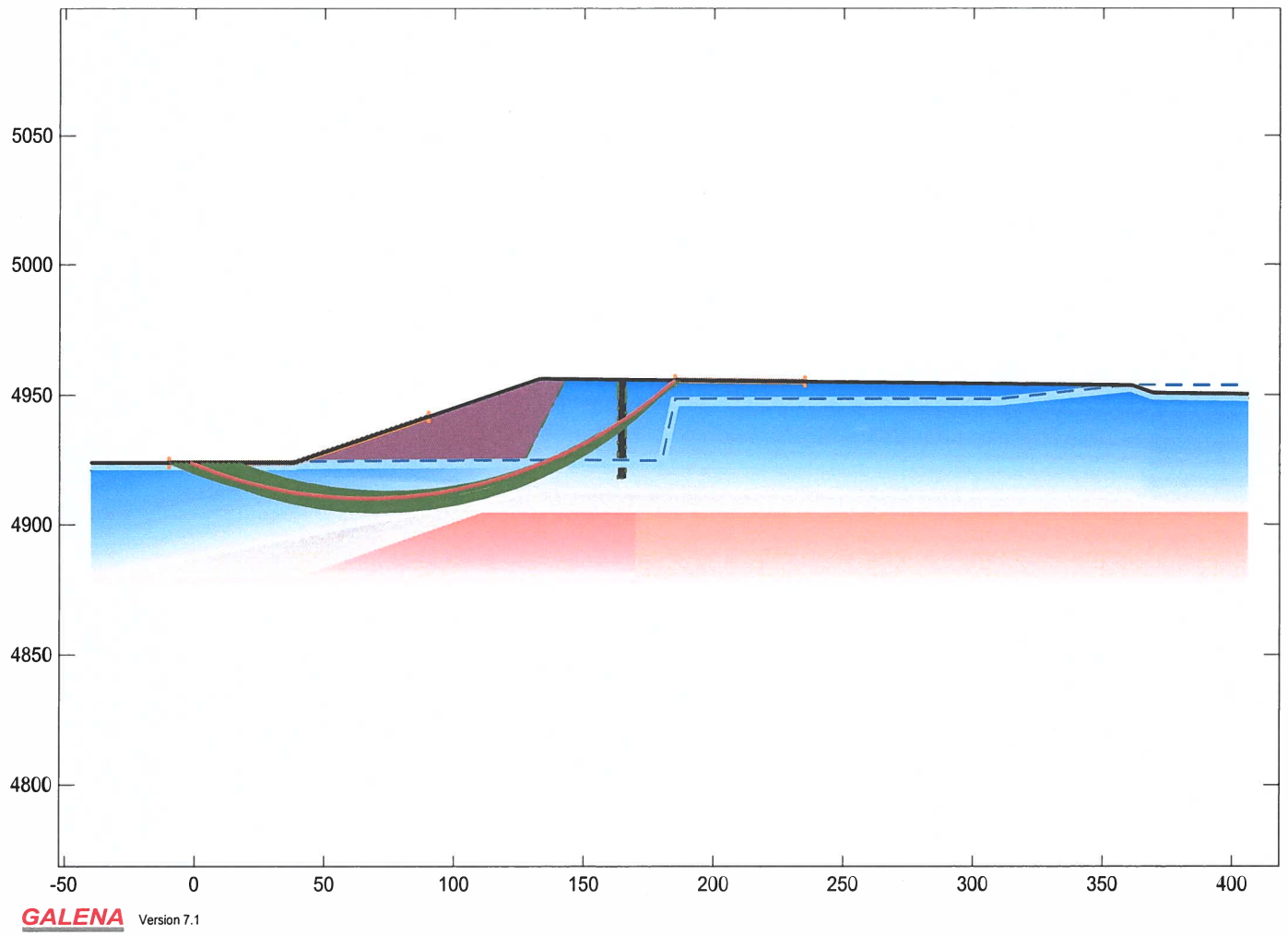

Material Keys

- 1: Claystone Bedrock
- 3: Overburden
- 4: Sand and Gravel
- 5: Slurry Wall
- 6: Weathered Claystone Bedrock
- 7: Fill

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 2.31

Project Tucson South AM
M-1 -Static Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure M-1 Static Fill.gmf

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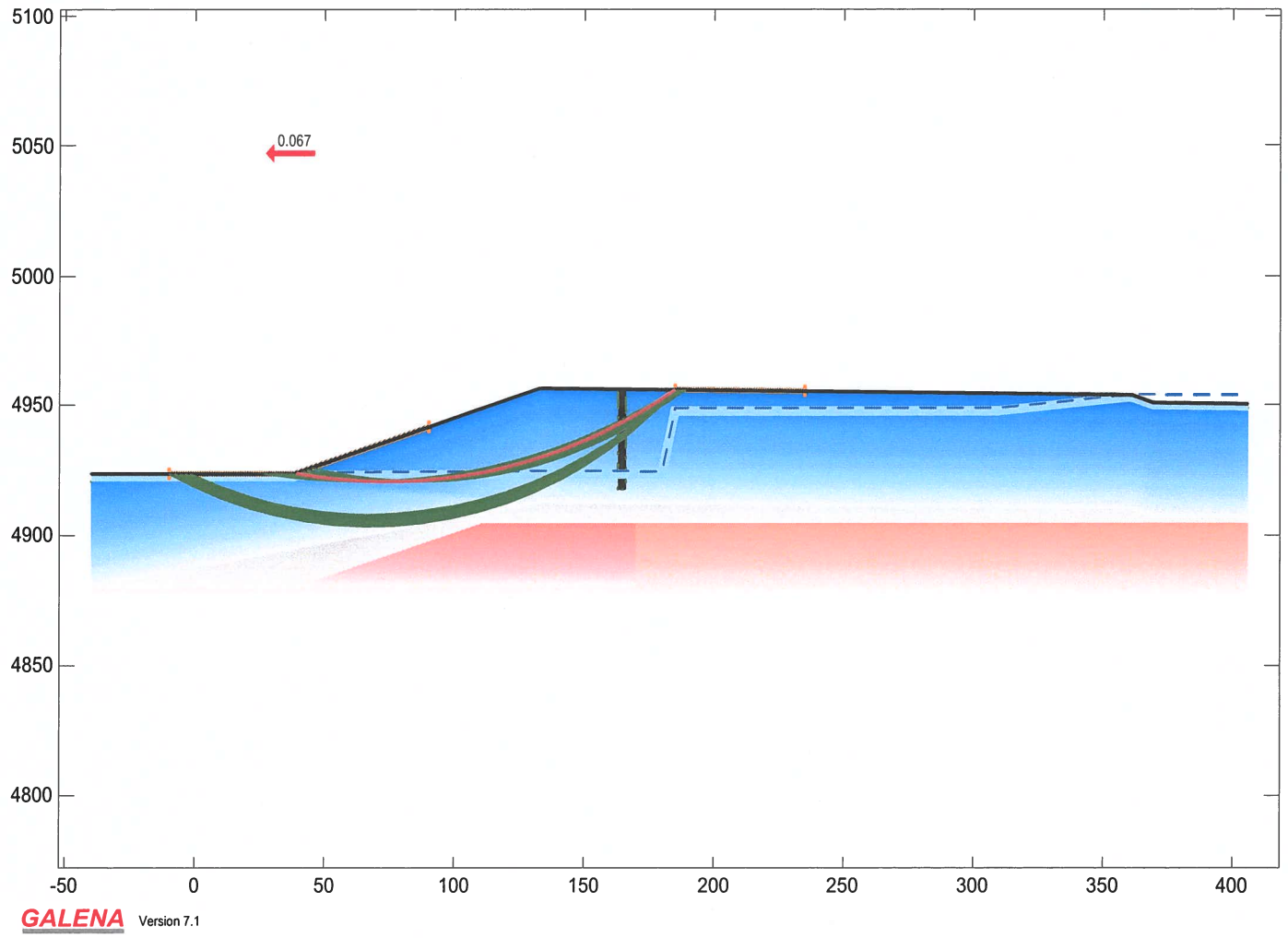

Material Keys

1: Claystone Bedrock
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 1.76

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
M-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure M-2 Pseudostatic.gmf

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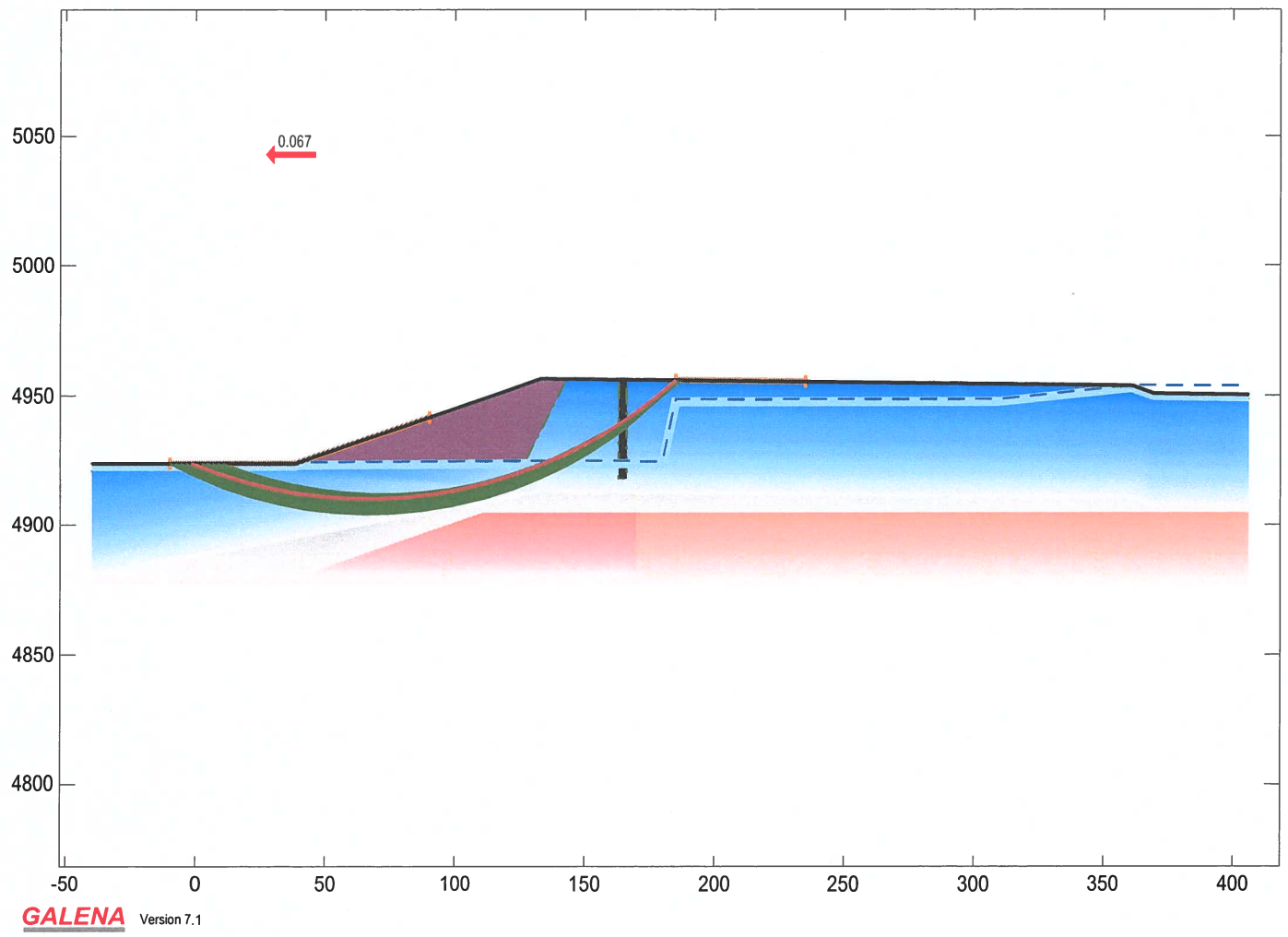

Material Keys

1: Claystone Bedrock
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.76

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
M-2 - Pseudostatic Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure M-2 Pseudostatic Fill.gmf

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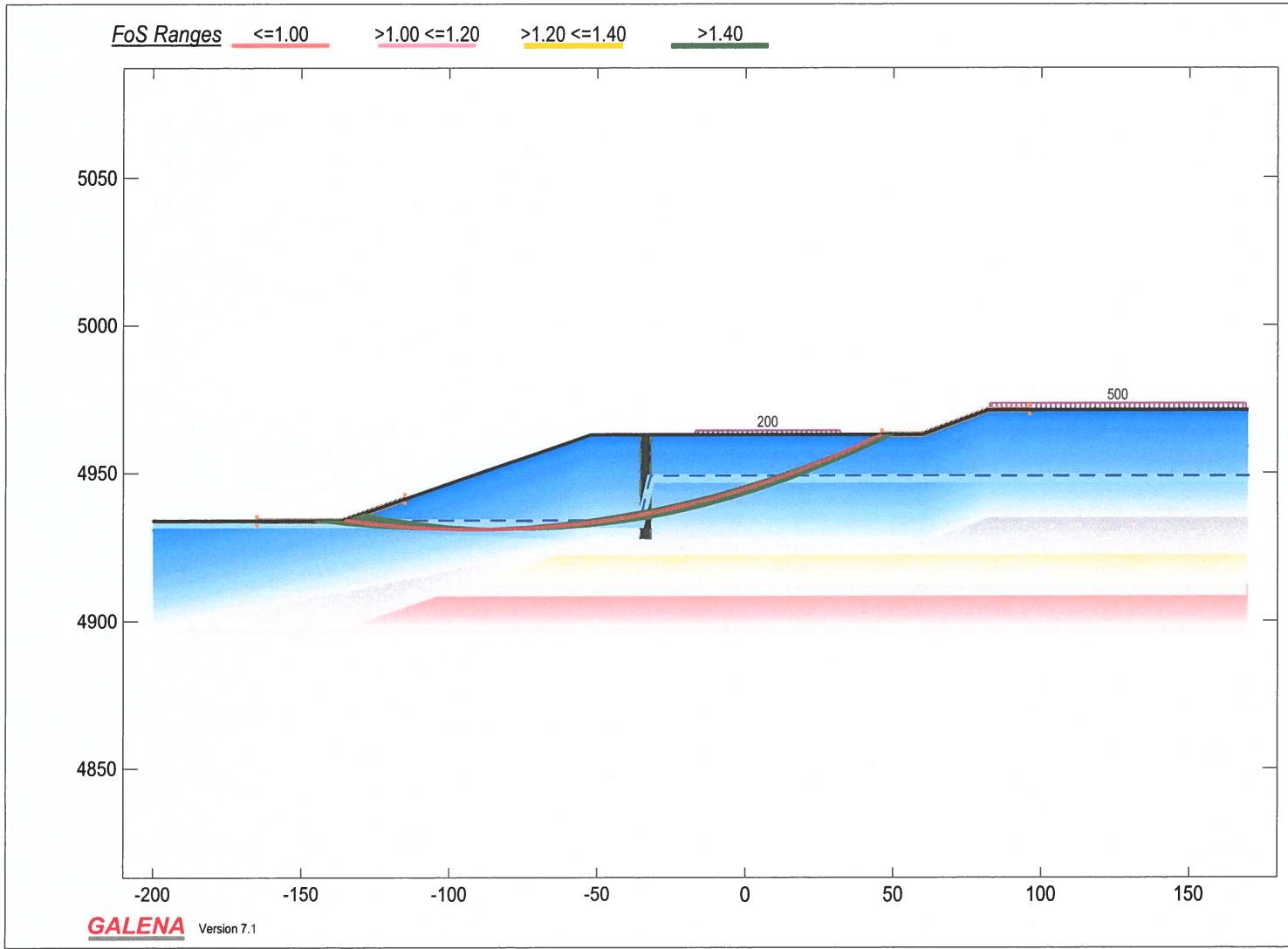

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 2.86

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
N-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure N-1 Static.gmf

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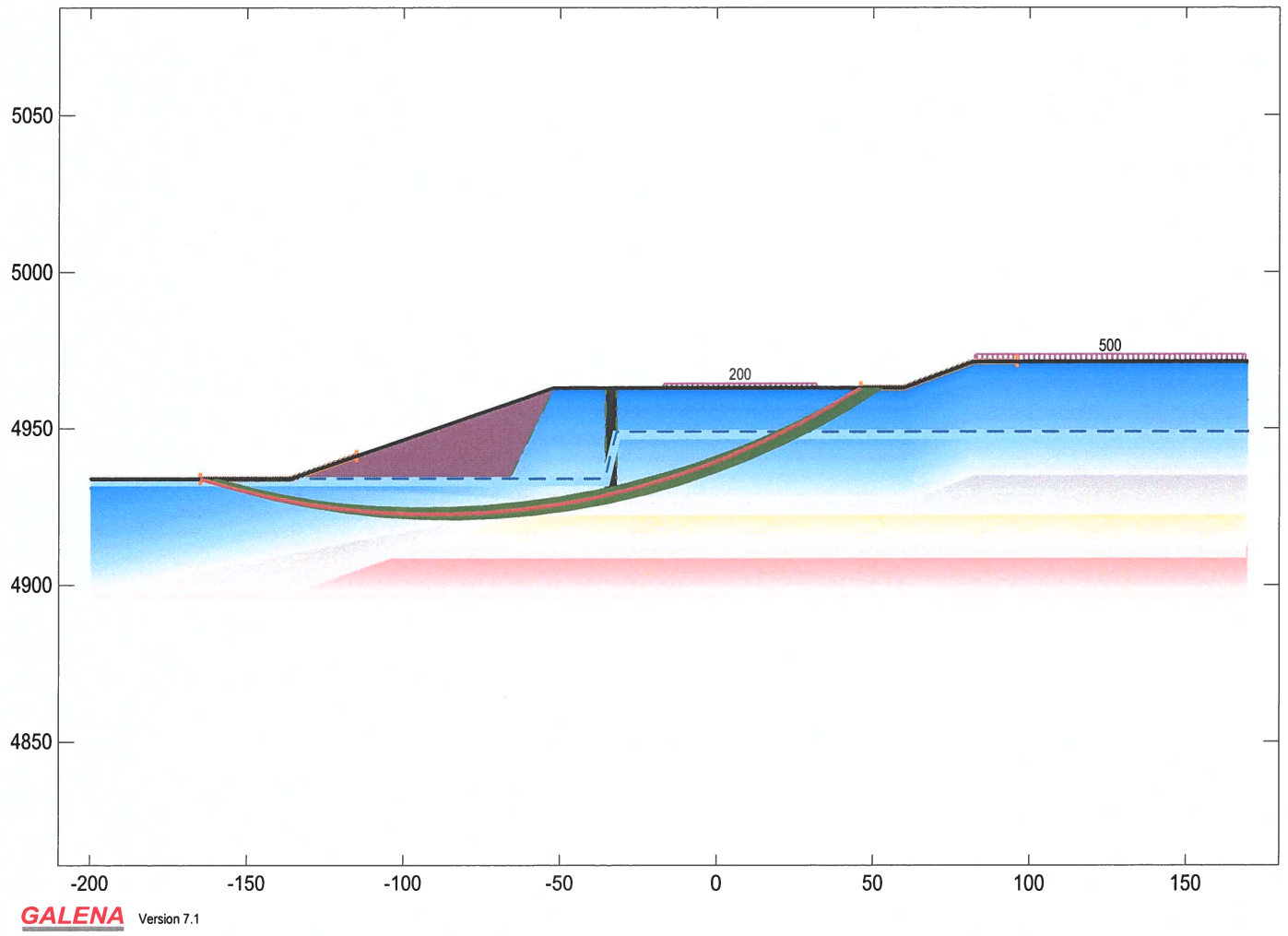

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 3.01

Project Tucson South AM
N-1 - Static Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure N-1Static Fill.gmf

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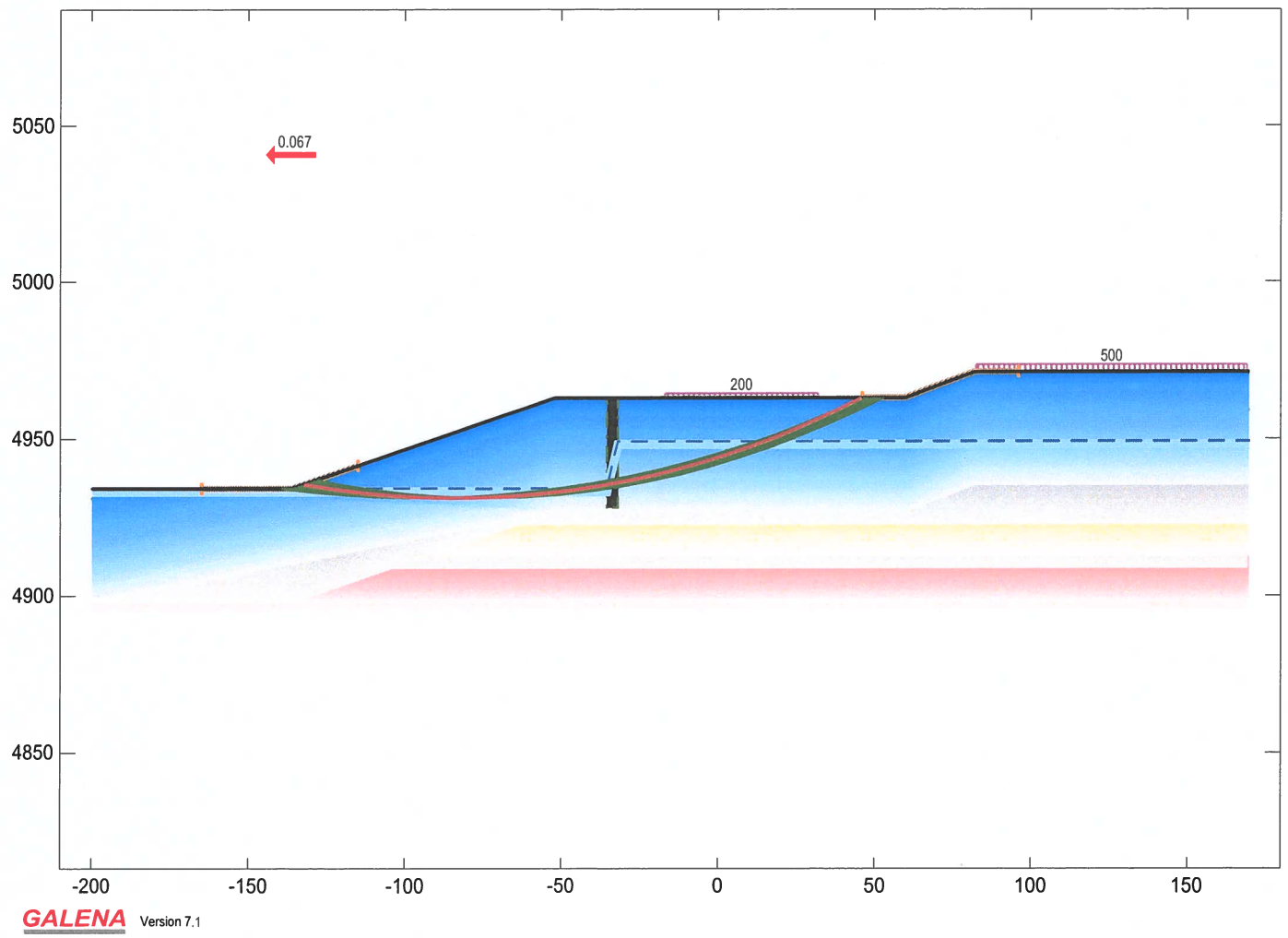

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.98

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
N-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure N-2 Pseudostatic.gmf

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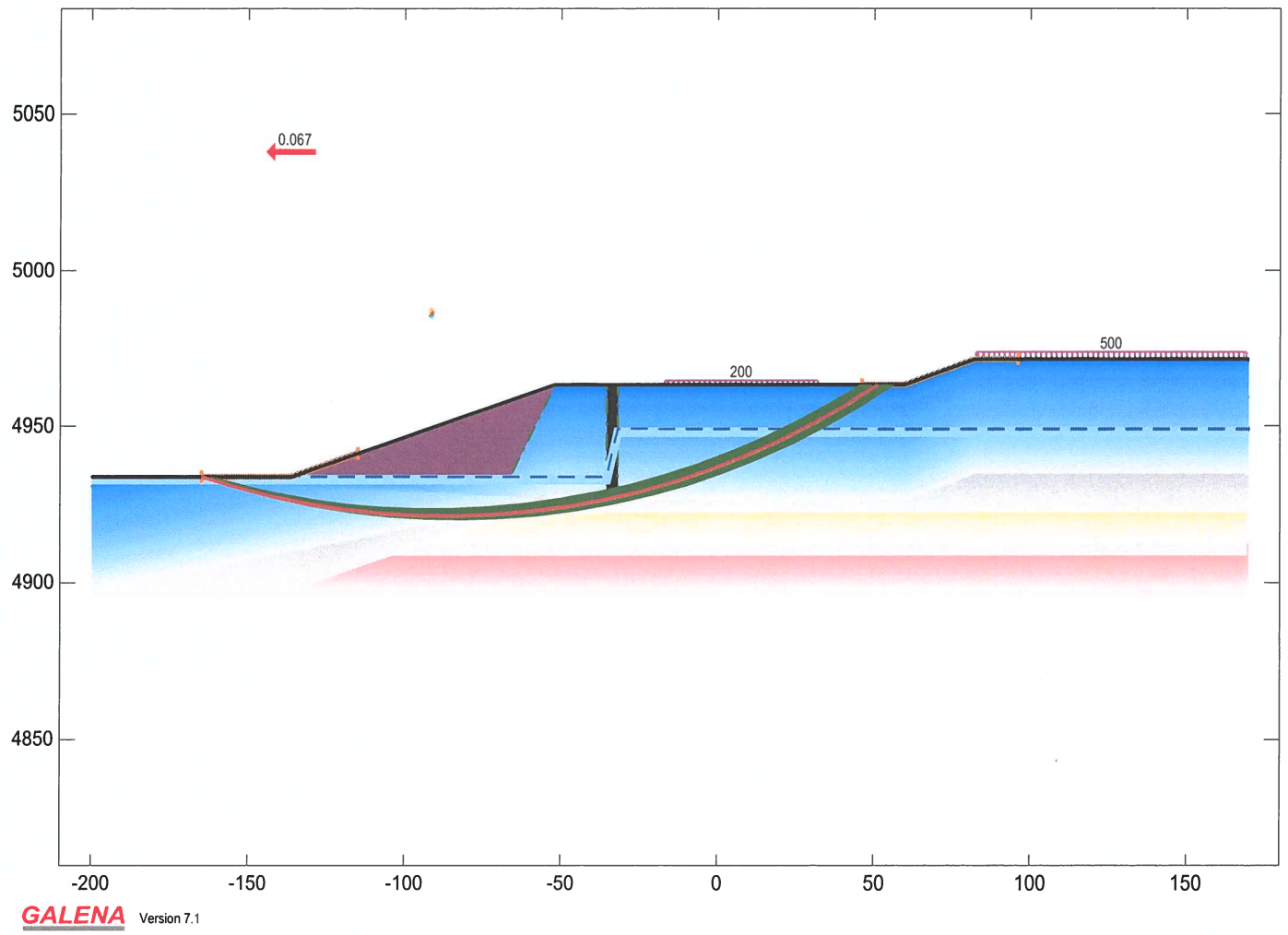

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 2.13

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
N-2 - Pseudostatic Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure N-2 Pseudostatic Fill.gmf

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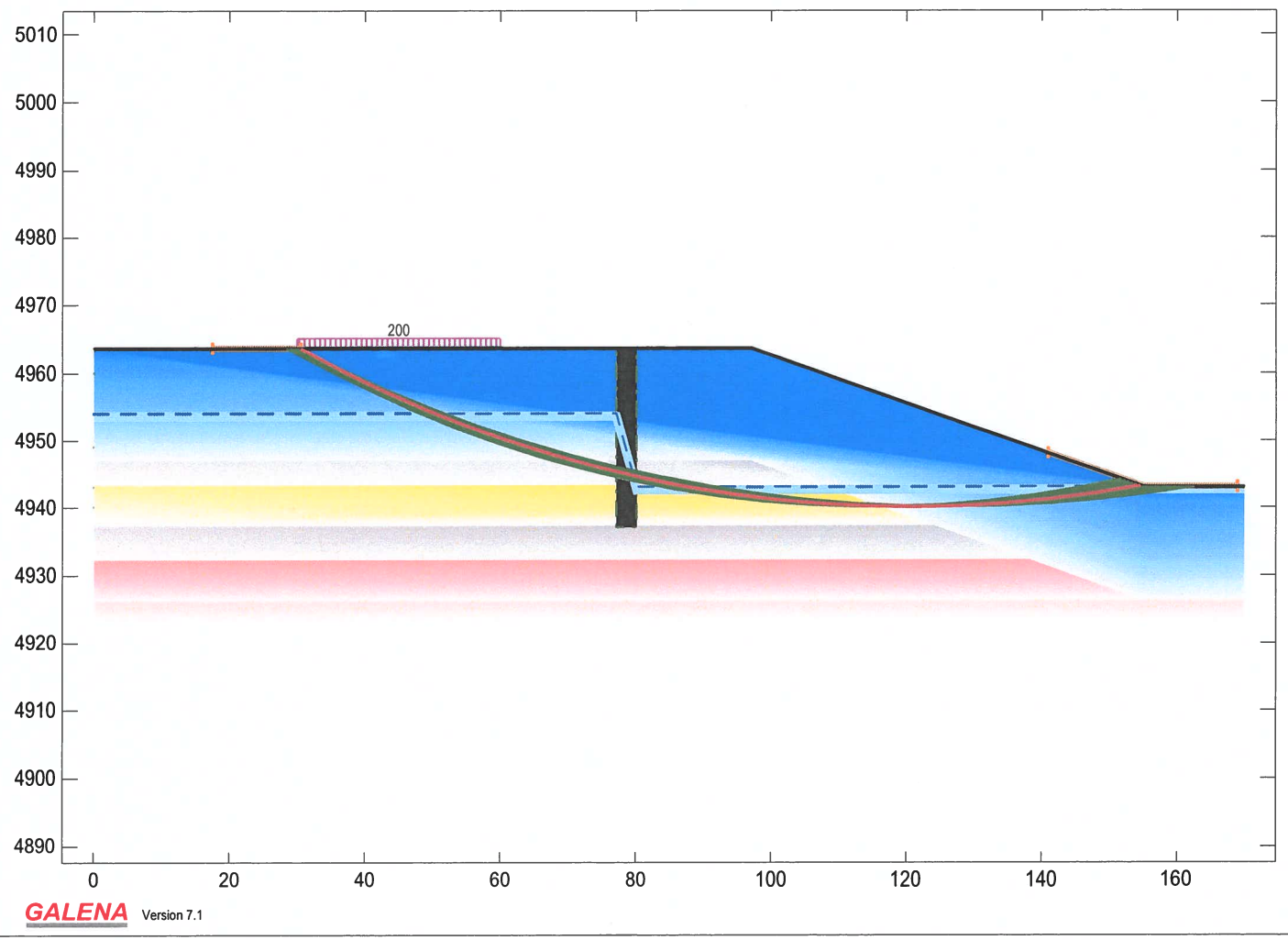

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis

Method: Bishop Simplified

Surface: Circular

Results

Critical Factor of Safety: 2.47

Project Tucson South AM
O-1 - Static

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure O-1 Static.gmf

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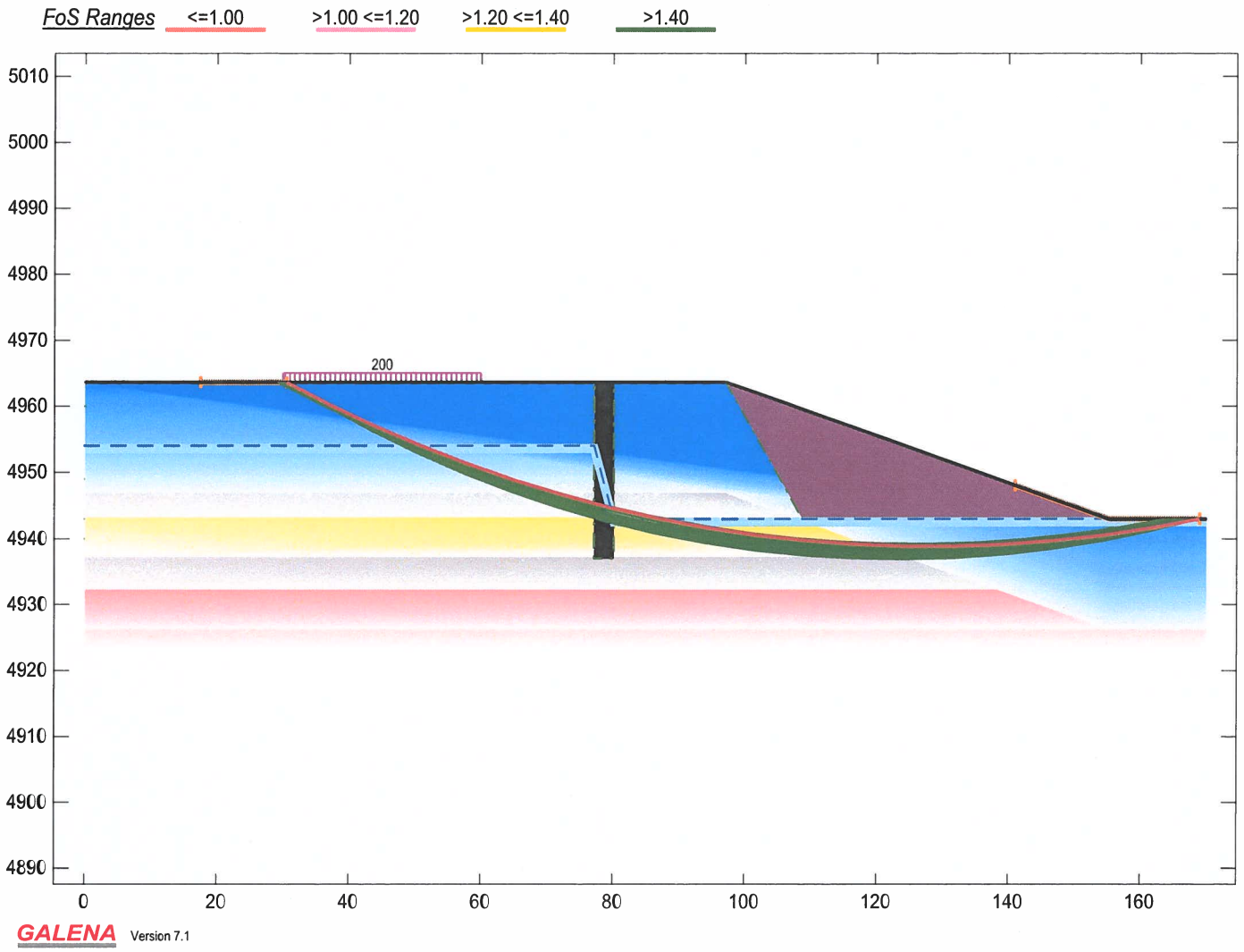

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 2.87

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
O-1 - Static Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure O-1 Static Fill.gmf

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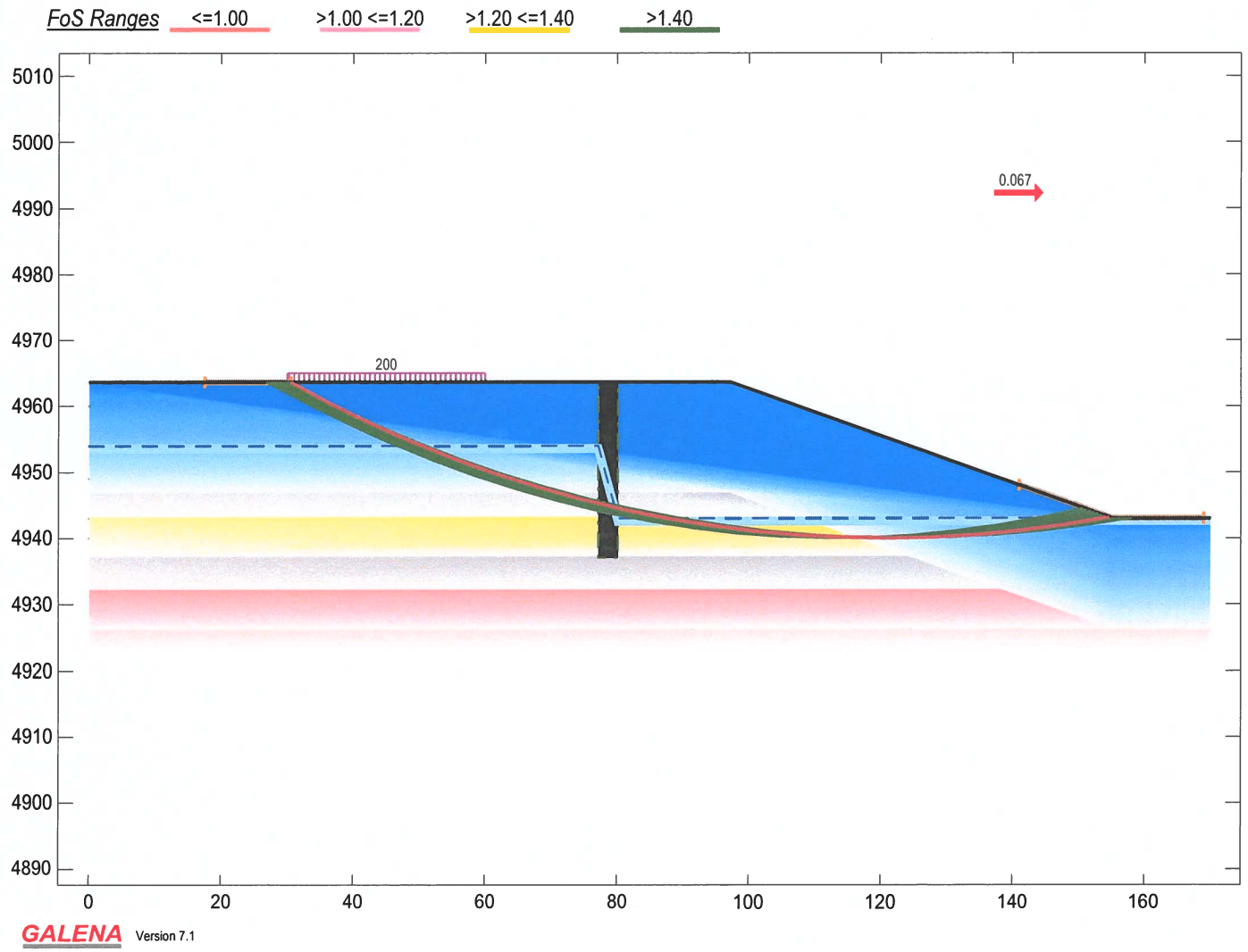

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 1.74

Edited: 24 Jul 2019 *Processed:* 24 Jul 2019

Project Tucson South AM
O-2 - Pseudostatic

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure O-2 Pseudostatic.gmf

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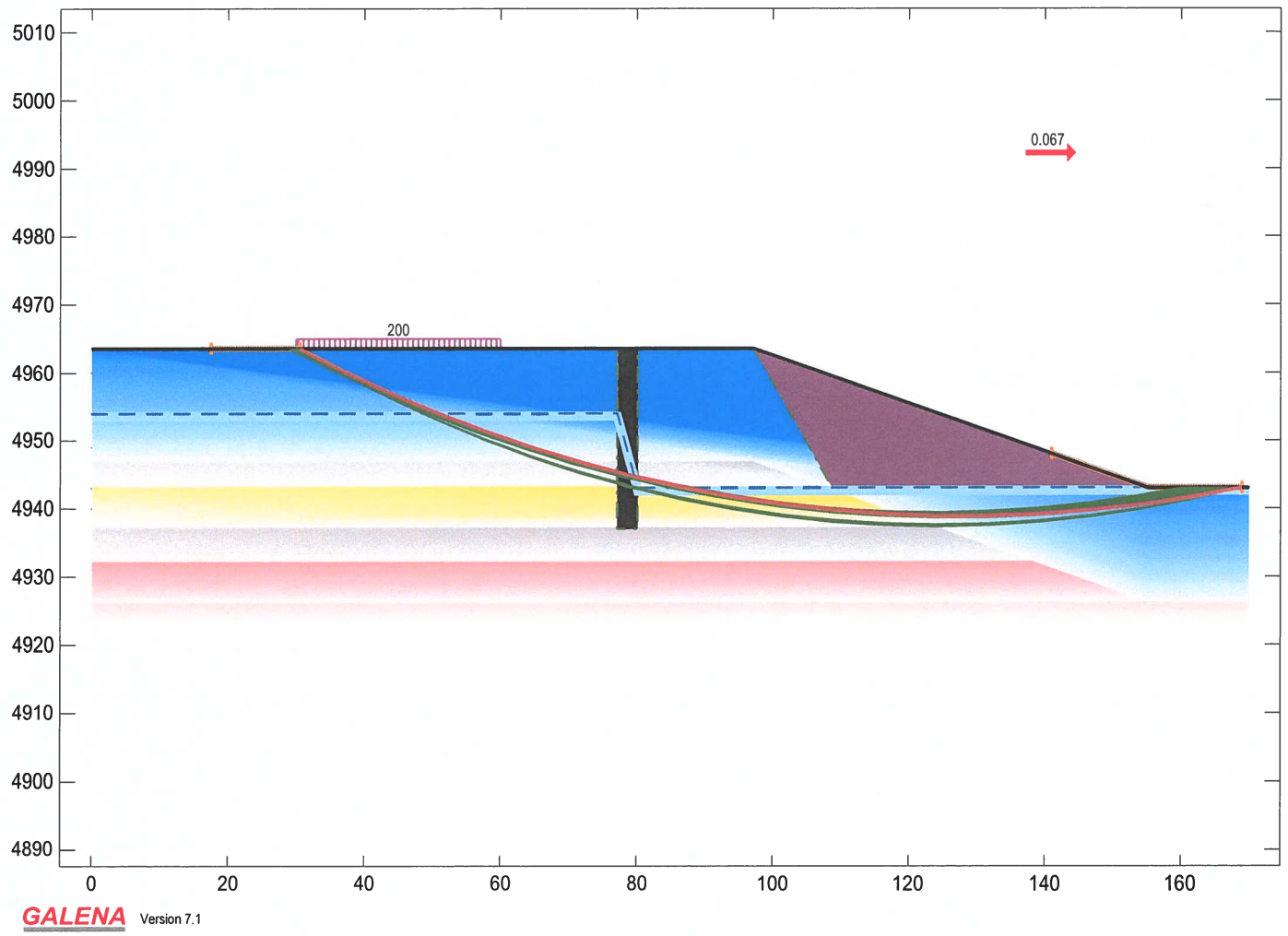

Material Keys

1: Claystone Bedrock
2: Mud Lens
3: Overburden
4: Sand and Gravel
5: Slurry Wall
6: Weathered Claystone Bedrock
7: Fill

Analysis 1

Multiple Stability Analysis
Method: Bishop Simplified
Surface: Circular

Results

Critical Factor of Safety: 2.06

Project Tucson South AM
O-2 - Pseudostatic Fill

File: G:\My Drive\1 - My Projects Google\8 Galena - Stability Analysis Models\Tucson South\Tucson Figure O-2 Pseudostatic Fill.gmf

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