



TSM Verification Summary Report

Facility Information

Name of company	Arch Resources
Name of facility	Leer South Mine
Address	RT3, Philippi, WV 26416
Country of operation	USA
Products/metals produced on site	Metallurgical Coal
Types of operations included in scope:	
Mining	<input checked="" type="checkbox"/>
Milling	<input checked="" type="checkbox"/> (preparation plant)
Smelting	<input type="checkbox"/>
Hydrometallurgical	<input type="checkbox"/>
Refining	<input type="checkbox"/>
Other (<i>please explain</i>)	
Types of infrastructure included in scope:	
Roads	<input type="checkbox"/>
Rails	<input type="checkbox"/>
Ports	<input type="checkbox"/>
Other (<i>please explain</i>)	

Verifier and Verification Information

Verification firm	Rubinoff Environmental Inc.
Confirmation that all verifiers involved in the verification are accredited TSM verifiers	Yes Dianne Rubinoff is a Verification Service Providers (VSP) certified by the Mining Association of Canada and meets the Terms of Reference for Verification Service Providers established by the Mining Association of Canada.
Date(s) of verification activities (dd/mm/yyyy – dd/mm/yyyy)	2/Sept/2024 – 11/Oct/2024
Verification period	Year ending September 2024



Summary of the verification methodology	The Verification of Leer South Mine’s 2024 Self-Assessments was completed by Dianne Rubinoff of Rubinoff Environmental Inc., in accordance with MAC’s requirements for completing TSM Verifications.
Summary of the verification activities	<p>The activities undertaken during the verification process are summarized below:</p> <ul style="list-style-type: none"> • Prior to the verification, copies of the facility’s self-assessments and supporting documentation were made available and were reviewed • An opening meeting was held including an overview presentation made by the facility, followed by a site tour. • Evidence was collected through interviews with facility and corporate personnel, review of documents and some observations. • The information collected was assessed against the criteria set out in the performance standards protocols. (Note: Leer South Mine chose to self-assess and verify to the new Safe, Healthy and Respectful Workplaces Protocol) • A representative sample of COIs were interviewed. • A debrief meeting was held daily and a closing meeting was held on the last day. • A verification report was produced.
Was a site visited conducted?	Yes

Summary of Findings

Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
Biodiversity Conservation Management		
<p>Interviews included: President, Sr VP Strategy and Public Policy, Sr VP and COO, Environmental Engineer, VP Environmental Affairs</p> <p>Documents reviewed included: Arch Corporate ESG Commitments, Arch Corporate Biodiversity Management Standard, Leer South Environmental Policy, Leer South Biodiversity Conservation Plan, STEAM Expo 2024 Overview, 2024 Leer South Annual Refresher, Arch General Environmental and Sustainability Awareness Training, Feb 2024 Leer South Environmental Newsletter, Leer South Environmental Training, Leer South CAP Meeting March 21, 2024, CREATE Community Pollinator Party Flyer, Aspect Management Plan – Biodiversity Aspect and Biodiversity Objectives, Stillhouse Run Shaft Presence/Absence Mist Netting Report for Bats, Benthic, Habitat and Water Chemistry Surveys of Biological Assessment Stations, Leer South ESG/TSM Management Review Aug 29, 2024, Arch 2023 Sustainability Report</p>		



Criterion	Rating <i>C, B, A, AA or AAA (unless otherwise indicated)</i>	Examples of Evidence Consulted
1. Corporate biodiversity conservation commitment, accountability, and communications	A	<p>The Arch Corporate ESG Commitments include a commitment to biodiversity. The ESG Commitments are supported by the Corporate Standard for Biodiversity. The commitments in these documents are consistent with MAC Biodiversity Framework and include the application of mitigation hierarchy. Commitment has been communicated to employees through the annual refresher training, to contractors as part of the Surface Orientation (Environmental Training) and to COI in the CAP meetings, community programs and through regulatory consultation processes. Responsibilities and resources have been assigned.</p>
2. Biodiversity conservation planning and implementation	A	<p>Baseline data is available as part of the permitting process. Significant biodiversity aspects have been identified on the Aspects Management Plan which also includes information on biodiversity objectives and an action plan. The Biodiversity Management Plan, approved by facility-level senior management, includes information on roles and responsibilities, planning and implementation and training. The facility monitors biodiversity including bat studies and benthic studies. The status of objectives is reported in the quarterly meetings and the annual management review.</p>
3. Biodiversity conservation reporting	A	<p>The facility reports on its biodiversity objectives in management review and in ESG Review Team meetings. Biodiversity information is presented in the Sustainability Report, CAP meetings and on the WVDEP website.</p> <p>Sustainability Report Arch ESGReport2023 Final.pdf (archrsc.com)</p>



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
Climate Change Interviews included: President, Senior Vice President Strategy and Public Policy, Senior Vice President and Chief Operating Officer, Senior Engineer, Engineering Supervisor, Vice President Environmental Affairs Documents reviewed included: Arch Corporate ESG Commitments, Arch Corporate Climate Change Management Standard, Arch Climate Strategy, Leer South GHG Emissions Inventory Information (2019-2023), Monitoring Plan, Sampling results, Corporate GHG Summary , Aspect Management Table – Climate and Climate Objectives tabs, 2023 Arch Sustainability Report, Leer South Climate Change Management Plan, Leer South CAP Presentation, 2024 Management Review, 2024 Arch Refresher Training, Surface and U/G Contractor Environmental Checklist		
1. Corporate climate change management	A	Data on inputs to Scope 1 and 2 GHG emissions are maintained. Calculation of GHG Emissions is done at Corporate. There is a corporate climate change strategy and climate-related risks and opportunities have been identified. The strategy and risks and opportunities are described in the Arch 2023 Sustainability Report.
2. Facility climate change management	A	There is an energy and GHG emissions Management System with senior management commitment with assigned roles and responsibility and management review. Sources of energy consumption and non-energy sources have also been identified, data is monitored and Corporate converts to GHG emissions. Physical climate impacts (e.g., flooding, severe weather events and drought) are identified on the aspect list. Awareness of climate change is communicated to all employees through the annual refresher training.



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
3. Facility performance targets and reporting	A	Facility has set targets for GHG reductions which are performance based (i.e., project implementation) with an action plan. Progress is tracked. There is public reporting of energy and GHG emissions and the assessment of plans through the Arch Sustainability Report. Sustainability Report Arch ESGReport2023_Final.pdf archrsc.com
<p align="center">Crisis Management and Communications Planning - CORPORATE (YES or NO)</p> <p>Interviews included: President, Senior Vice President Strategy and Public Policy, Senior Vice President and Chief Operating Officer, Vice President Environmental Affairs</p> <p>Documents Reviewed included: Arch Corporate ESG Commitments, Crisis Management Corporate Standard, Arch Corporate Crisis Management Plan, Crisis Drill with Leer South Impoundment, Crisis Drill Action Plan</p>		
1. Crisis Management and Communications Preparedness	YES	The ESG Commitments and the Corporate Crisis Management Standard show that Arch is committed to supporting crisis management readiness. The CEO has endorsed the Corporate Crisis Management Plan, which identifies potential threats, roles and responsibilities, key contacts. A crisis room is located at the Corporate office in St Louis. The SVP Strategy is the designated spokesperson and has been trained. The company uses Everbridge alert system.
2. Review	YES	The Corporate Crisis Management Plan was updated in 2024 to reflect the new COO and is reviewed regularly. Team members have been trained.
3. Training	YES	A corporate level table-top exercise was conducted in July 2024 in conjunction with a Leer South Mine tailings table-top exercise.



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
Crisis Management and Communications Planning - FACILITY (YES or NO)		
<p>Interviews included: Engineering Supervisor, Barbour County Emergency Manager, Vice President Environmental Affairs</p> <p>Documents Reviewed Included: Arch Corporate ESG Commitments, Crisis Management Corporate Standard, Leer South Mine Emergency Response and Crisis Management Plan, Everbridge Employee Alert, 2022 Little Hackers Creek Slurry Impoundment EWP Training presentation, 2022 Mock Drill video, 2022 Drill After Action Report, 2023 Leer South Preparation Plant Fire Tabletop Exercise Situation Manual and Situation Manual, 2024 Training Exercise Little Hackers Creek Impoundment presentation, notes and feedback forms</p>		
1. Crisis Management and Communications Preparedness	YES	The Leer South Mine Emergency Response and Crisis Management Plan identifies credible threats, roles and responsibilities of team members, as well as stakeholder and media lists. Facility meets regularly with local emergency response authorities.
2. Review	YES	The Leer South Mine Emergency Response and Crisis Management Plan is a controlled document. The mechanism for activating the team and communicating with employees have been tested. The plan is shared with corporate. Records indicate all crisis team members are familiarized with the plan.
3. Training	YES	A full crisis simulation (Tailings Impoundment) was conducted in August 2022. Tabletop exercises were conducted – Fire in Prep Plant in 2023 and Tailings in 2024. The 2024 exercise included corporate.
Indigenous and Community Relationships		
<p>Interviews included: President, Senior Vice President Strategy and Public Policy, Senior Vice President and Chief Operating Officer, Engineering Manager, VP Environmental Affairs, Community members, Barbour County Emergency Manager</p> <p>Documents Reviewed included: Arch Corporate ESG Commitments, COI Corporate Standard, Agenda and Meeting Notes for June 2024 COI Task Force Meeting, Leer South Community of Interest Identification, CAP Invitation Log, Bylaws of the Leer South Community Advisory</p>		



Criterion	Rating <i>C, B, A, AA or AAA (unless otherwise indicated)</i>	Examples of Evidence Consulted
Panel, Effective COI Engagement Process, CAP Invitation, Agenda, Presentation, Notes March 21, 2024, Capacity Building Topics summary, Effective Indigenous Engagement document, Feb 2021 Implementing Free, Prior and Informed Consent (FPIC), Benefit Management Plan, Leer South Action Plan, Leer South Mine Economic Impact, Pre-Subsidence Baseline Data, Arch Leer South COI Response Mechanism		
1. Community of Interest (COI) Identification	A	Communities of Interest are identified and documented on the CAP Invitation Log. The confidential log is updated after each Community Advisory Panel and as the mine expands (part of permitting process to notify impacted residents).
2. Effective COI Engagement and Dialogue	A	The facility provides dinner to ensure COI are able to participate in the Community Advisory Panel (CAP) meetings. Reporting on engagement and dialogue takes place at COI Management Team Task Force. Engagement process is outlined in the Effective COI Engagement procedure. Capacity building occurs at the CAP meetings.
3. Effective Indigenous Engagement and Dialogue	A	During the permitting process, a study was conducted to determine the presence of Indigenous groups in the area of the mine. The study determined that no Indigenous groups were present. The State of West Virginia does not recognize any Indigenous Groups. A study conducted in February 2021 reached the same conclusion. The Effective Indigenous Engagement procedure commitments are consistent with the TSM Mining and Indigenous Peoples MAC Framework.
4. Community Impact and Benefit Management	A	The Adverse Impacts Identification Plan outlines the approach. Adverse impacts have been identified with the COI and objectives and action plans have been developed. The Benefit Management Plan identifies the various ways the



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
		facility benefits the community including employment, economic impact, and community contribution.
5. COI Response Mechanism	A	The COI Response Mechanism document outlines the process to receive and respond to community concerns. Phone numbers for key site contacts are provided in the CAP meetings. Records of concerns are maintained.
Preventing of Child and Forced Labour (Indicate YES or NO) Interviewed included: HR Manager, Vice President Environmental Affairs Documents Reviewed included: Arch Corporate ESG Commitments, Child and Forced Labor Corporate Standard, Arch Human Rights Statement, Arch Code of Business Conduct, Fair Labor Standards (Federal)		
1. Preventing Forced Labour	YES	Arch's Human Rights Statement reads "We do not tolerate child labor or any form of forced labor or compulsory labor whether on behalf of Arch, its subsidiaries, vendors or suppliers." The Arch Code of Conduct also prohibits the use of forced or child labor. The commitments are also in the Arch Corporate ESG Commitments and the Child and Forced Labor Corporate Standard.
2. Preventing Child Labour	YES	Federal regulation prohibits children under the age of 18 from working in a coal mine. Arch's Human Rights Statement reads "We do not tolerate child labor or any form of forced labor or compulsory labor whether on behalf of Arch, its subsidiaries, vendors or suppliers." The commitments are also in the Arch Corporate ESG Commitments and the Child and Forced Labor Corporate Standard. Age is checked as part of the on-boarding process via the I-9 form and the E-Verify.



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
Safe, Healthy and Respectful Workplaces		
<p>Interviews included: Vice President Safety, Safety Manager, Human Resources Manager, Vice President Human Resources, Vice President Environmental Affairs</p> <p>Documents Reviewed included: Arch Corporate ESG Commitments, Arch Corporate Safety and Health Standard, Safety and Health Policy, Surface Hazard Training and Hazard Training Checklist for Underground, Part 48 Training Plan for Surface and Part 48 Training Plan for Underground, Leer South Employee Handbook, 2024 Annual Refresher, Injury Management Procedure, Operator work instructions, Maintenance Training Checklist, New Hire Tryout / Performance Review Form, Observation/Near-Miss/Risk Assessment Cards, Aspect Management Plan – Safety and Health Aspect tab, Industrial Hygiene Sampling Program, PAS EAP Pamphlet, Arch CARES flyer, Business Code of Conduct, List of MSHA Approved Instructors, Leer South Complex Monthly Safety and Compliance Summary, Compliance Audit Process, Corporate Leer South Safety Audit Report, Leer South Management Review, Arch Resources website – ESG Highlights, Arch 2023 Sustainability Report, Signage throughout facility</p>		
1. Commitments and Accountability	A	<p>The Arch Corporate ESG Commitments include Safety and Health commitments. The ESG Commitments are supported by the Corporate Standard for Safety and Health. The Corporate Standard was updated to reflect the requirements of the Safe, Healthy and Respectful Workplaces Protocol. The Safety and Health Policy is signed by the CEO and Leer South Mine General Manager. The commitments in these documents are consistent with MAC Safety and Health Framework. Form 2000-7 MSHA identifies the Mine Superintendent and the Safety Director as representatives accountable for safety and health. The commitments are communicated to employees and contractors. Responsibilities are included in the Employee Handbook.</p>
2. Safety and Health Management Systems	A	<p>A formal Safety and Health Management System is in place including objectives, risk assessments, workplace inspections, defined roles and</p>



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
		responsibilities, maintenance of records. There is an industrial hygiene program including dust and noise. There are resources for the safety and health management system.
3. Psychological Safety and Respectful Behavior	A	Policies integrate psychological safety. The Code of Business Conduct has sections on Respect in the Workplace and Harassment. Respectful behaviour is communicated to employees. Facility has programs to promote wellness including the Family Health Centre. There is a process to report and respond to incidents.
4. Training, Behaviour and Culture	A	A robust training system is in place. Training includes risk assessment tools and job observation programs. Trainees are assessed for competency and trainers are qualified. Records are maintained.
5. Monitoring and Reporting	A	Safety and health metrics are monitored and reported including leading and lagging indicators. Safety information is communicated to employees, including signage in the common area. Safety and Health data is publicly reported in the Arch Sustainability Report. Sustainability Report Arch ESGReport2023 Final.pdf (archrsc.com)
6. Physical Safety and Health Performance	A	Targets are set for leading and lagging indicators and performance is regularly reviewed and communicated. The facility is fatality-free.



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
Tailings Management		
<p>Interviews included: President, Senior Vice President Strategy and Public Policy, Senior Vice President and Chief Operating Officer, Director of Engineering and Technical Services Eastern Region, Manager of Technical Services Eastern Region, Engineering Supervisor, Vice President Environmental Affairs</p>		
<p>Documents Reviewed included: Arch Corporate ESG Commitments, Arch Corporate Tailings Management Standard, Table of Conformance, Leer South Tailings Internal Audit Plan 2024, Tailings Internal Audit Checklist, Annual Refresher Environmental Training 2024, Annual Refresher Impoundment Safety 2024, Leer South Complex Emergency Response and Crisis Management Plan, Emergency Response and Crisis Management Plant Training Exercise 2024, Leer South Tailings Management Review 2024, Leer South - Tailings OMS, Leer South Tailings Management System Manual</p>		
1. Tailings management policy and commitment	A	Arch's Eastern Engineering Group conducted an internal audit using the MAC TSM requirements as its criteria. The internal audit confirmed MAC requirements were met.
2. Assigned accountability for tailings management	A	Arch's Eastern Engineering Group conducted an internal audit using the MAC TSM requirements its criteria. The internal audit determined that the MAC requirements related to assigned accountability were met.
3. Tailings management system and emergency preparedness	A	Arch's Eastern Engineering Group conducted an internal audit using the MAC TSM requirements as its criteria. The internal audit determined the tailings management system has been developed and implemented and conforms with the MAC Guide, that the Emergency Response Plan has been developed and is in conformance with the MAC Guide and that the ERP is tested.
4. Operation, maintenance, and surveillance (OMS) Manual	A	Arch's Eastern Engineering Group conducted an internal audit using the MAC TSM requirements its criteria. The internal audit determined an OMS



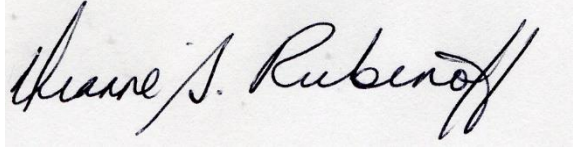
Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
		Manual has been developed and is in conformance with the MAC Guideline.
5. Annual tailings management review	A	Arch's Eastern Engineering Group conducted an internal audit using the MAC TSM requirements as its criteria. The internal audit determined that the MAC requirements related to annual tailings management review were met.
Water Stewardship Interviews included: Environmental Engineer, Vice President Environmental Affairs Documents Reviewed included: Arch Corporate ESG Commitments, Arch Corporate Water Management Standard, Leer South Water Stewardship Management Plan, Aspects Management Plan – H2O Aspects and H2O Objectives tabs, Water Discharge Permit Compliance Environmental Operational Procedure, Arch Compliance Management System - Nonconformity, Corrective and Preventive Actions procedure, 2024 Leer South Annual Refresher, CAP Meeting presentation March 2024, 2023 STEAM Expo videos, Contractor Surface and U/G Environmental Training, CAP Meeting Presentations. Water Balance (FactoryTalk), SMCRA Article 3 Water Monitoring Report, Water Management SOP, Groundwater Users Inventory Map, Benthic, Habitat and Water Chemistry Surveys, 2023 Arch Sustainability Report		
1. Water Governance	A	There is demonstrated senior management through the ESG Commitments and Corporate Water Management Standard consistent with the MAC Water Stewardship Framework. The commitment is communicated. Roles and responsibilities are defined in the corporate documents and in the Leer South Water Management Plan.
2. Operational Water Management	A	The site has identified facility-level risks related to surface water and ground water. The site has a systematic approach to operational water management described in the Leer South Water Management Plan. The facility has a site wide water balance that is reviewed regularly. Processes are established to monitor water performance for both surface water and



Criterion	Rating C, B, A, AA or AAA (unless otherwise indicated)	Examples of Evidence Consulted
		groundwater. Records of water quality and quantity are maintained. Response and contingency plans have been established for water related risks and incidents. Relevant employees and contractors have been provided with appropriate training.
3. Watershed-scale Planning	A	Arch has identified the watershed boundary and the water related users in the Groundwater Users Inventory Map. Engagement with COI on water-related issues has taken place through the CAP. An assessment of how operational water management practices contribute to the cumulative effects has been undertaken as part of the permitting process.
4. Water Reporting and Performance	A	<p>Leer South has set water performance targets which are tracked. There is public reporting in the CAP meetings, the 2023 STEAM Expo video and in the Arch Sustainability Report.</p> <p>Sustainability Report Arch ESGReport2023 Final.pdf archrsc.com)</p>



Statement of Verification

Statement of Verification	
The external verification was conducted in accordance with the <i>Terms of Reference for Verifiers</i> and, accordingly, consisted primarily of interviews, data analysis, and examination (on a sample basis) of other evidence relevant to management's assertion of conformance to the requirements of the TSM performance indicators.	<input checked="" type="checkbox"/> The external verification was conducted in accordance with the <i>TSM Verifier Terms of Reference</i> .
The scores indicated in this report are verified as being accurate based on the evidence reviewed during the external verification of this facility.	<input checked="" type="checkbox"/> The scores in this report are considered accurate based on this verification.
Limitations	Leer South Mine's goal for this year was to achieve Level A across all indicators and the scope of the verification was to assess criteria to Level A only. It is possible that many of the criteria for Level AA or Level AAA are in place, however the Verification did not assess these criteria.
Additional comments	Arch Resources and Leer South Mine demonstrated a strong commitment to the MAC TSM program. Personnel were well prepared for the verification process. The self-assessments were comprehensive. Excellent, professional support was received throughout the verification.
Has an additional assurance statement been provided by the verifier?	No
Name of lead verifier	Dianne Rubinoff, P.Eng.
Date of statement of verification	October 29, 2024
Signature of lead verifier	



Appendix 1 – TSM Responsible Sourcing Alignment Supplement

Use where applicable for verifications that incorporate other relevant standards

Check relevant boxes	Name of Standard
	International Council on Mining and Metals Mining Principles
	World Gold Council Responsible Gold Mining Principles
	Copper Mark
	Responsible Minerals Initiative Risk Readiness Assessment
	Responsible Jewelry Council
	ResponsibleSteel
	Initiative for Responsible Mining Assurance

Summary of Findings

Criterion	Rating YES/NO	Comments
Corporate Governance and Ethical Conduct		
1. Legal Compliance		
2. Code of Conduct		
3. Combating Bribery and Corruption		
4. Political Contributions		
5. Transparency of Taxes, Ownership and Transfer Pricing		
6. Accountabilities and Reporting		
7. Engagement with Corporate Communities of Interest		
Integration of Sustainable Development into Corporate Strategy and Decision Making		
8. Corporate Sustainable Development Strategy		
9. Supply Chain		
Respect for Human Rights and Labour Rights		
10. UN Guiding Principles on Business and Human Rights		
11. Conflict-Affected and High-Risk Area Due Diligence		



12. Resettlement		
13. Security and Human Rights		
14. Labour Rights		
15. Compensation for Work Related Injury, Illness & Fatality		
16. Employee Remuneration		
17. Diversity and Women in Mining		
Environmental Stewardship		
18. Environmental Risk Management		
19. Closure		
20. Pollution Prevention and Waste Management		
21. Noise and Vibration		
22. Emissions to Air		
23. Spills and Leakage		
24. Hazardous Substances		
25. Land Use and Deforestation		
26. Circular Economy		
Economic Development, Cultural Heritage and Artisanal and Small-Scale Mining		
27. Local Procurement		
28. Cultural Heritage		
29. Artisanal and Small-Scale Mining		

Appendix 2 – Finnish Mining Association TSM Mine Closure Protocol

Use when the facility is seeking ResponsibleSteel recognition

Criterion	Rating C, B, A, AA or AAA	Comments
Mine Closure		
1. Mine Closure Policy and Operational Guidelines		
2. Mine Closure Planning and Management System		