# Sibanye Stillwater

July 2023

Por

## Nye Tailings Storage Facility (TSF)

## **DETAILS OF TAILINGS STORAGE FACILITY**

Tailings Storage Facility (TSF) Name	NyeTSF	
Operation	Stillwater Mine	
Operational Status	Active Closure (2017)	
Operating Segment	United State Platinum Group Metals	
Location	Nye, Montana USA	
Latitude, Longitude (decimals)	45.39, -109.88	
Ore Source	Underground	
Type of Storage Facility	Impoundment (Lined Downstream dam)	
Deposition Methodology	Perimeter Drops	
Year of Commissioning	1986	
Consequence Classification (GISTM, 2020)	Very High	
Operating Contractor	Sibanye Stillwater	
Engineer of Record (EoR)	Knight Piesold	
Current Maximum Height (m)	35	
Final Maximum Height (m)	35	
Maximum Storage Capacity (total tonnes)	3,500,000	
Life of TSF (year)	Non-operational (2002)	





## **TECHNICAL ASPECTS:**

Adopted Factor of Safety (FoS)	Montana Metal Mine Reclamation Act (MCA) 82-5-376) (2015)
Stability Assessment and Mitigation Measures (if applicable)	An updated stability assessment was conducted in 2021.
Dam Breach Assessment	A Dam Breach Assessment was completed in 2015.
	One breach location was evaluated at Nye TSF along the north-eastern face. The breach location was selected to maximize the consequences of the breach event, in terms of maximum tailings release volume and downstream impacts.
Area of Inundation	A failure scenario was analyzed where the TSF pond was at the crest and river flows were at average peak spring flows and can be seen in Figures 4 to 6.
Summary of Human Exposure	There are two towns, Absarokee and Columbus, along multiple permanent homes and ranches in the 64km (40 mile) long inundation zone from the mine to the confluence of the Stillwater and Yellowstone Rivers.
	Public infrastructure along the Stillwater River will be affected by flooding including bridges, and potentially water supplies and sewage systems.
	For addition impact facts please refer to Figure 7 Stillwater County Vulnerability Analysis.





#### **DOCUMENTATION:**

Site Specific OMS Manual

Dam Safety Review (DSR)

Design Basis Report (DBR)

Environmental Management Programme (EMPr)

In place. Updated annually-latest version 2022

Carried out by an independent third party in 2020 with no material findings. Next DSR scheduled for 2025.

In place. Updated as needed – latest version 2023.

In place. (Locally named the Environmental Management System.)

#### SURVEILLANCE:

Surveillance Frequency

Ongoing via telemetry network.

Exceptions reviewed daily by the Staff. Engineering Staff review data weekly and report exceptions as needed to the EoR. EoR reviews and reports on instrument data quarterly.

Surveillance Technology/System

Deformation Monitoring – Crest & Foundation

Phreatic Surface Levels & Pore Pressure Measurements NavStar GeoExplorer for instrument data network and K2Fly Decipher.

Automated GPS Monuments & Automated In-place Inclinometers both via telemetric network.

Automated Vibrating Wire Piezometers (VWP's) via telemetric network.





#### RISK MANAGEMENT / EMERGENCY PREPAREDNESS:

**Risk Assessment** 

**Risk Management** 

2023 Annual Risk Assessment (Failure Mode Effect Analysis) completed with no untoward risks identified

The TSF is considered Low Risk.

Site specific Operations, Surveillance, and Maintenance (OMS) Manual is in place Site specific Trigger Action Response Plans (TARPs) are in place. Critical controls have been established and implemented.

Site Specific Emergency Preparedness & Response Plans (EPRP)

2021 version available

Annual emergency mock drill for a catastrophic TSF failure – undertaken in 2021 with SSW employees, Local Communities Administration, and Local Emergency First Responders.

In place - Report has been prepared by Knight Piesold.

Reclamation bond of USD \$57M in place for Stillwater Mine (includes Hertzler TSF). Bond estimate prepared by KC Harvey in cooperation with DEQ/US Forest Service.

### **CLOSURE & POST CLOSURE:**

**Closure Planning** 

**Closure Costing** 

Asset Insurance Cover

Yes, with third party liability cover.

#### **INDEPENDENT REVIEWERS:**

Independent Tailings Review Board (ITRB)

ITRB inspection was completed in June 2023 with no material concerns identified.

Future ITRB Review

Summer 2024

Performance Reviews

Annual (Sept 2022) and quarterly reports with inspections completed by EoR.





Figure 1: Layout of Nye Mine Complex



Figure 2: US Tailings Management Governance Structure





Figure 3: Breach Location





Figure 4: Consolidated view of failure scenario inundation boundaries (1 of 3)





Figure 5: Consolidated view failure scenario inundation boundaries (2 of 3).





Figure 6: Consolidated view failure scenario inundation boundaries (3 of 3).



#### Stillwater County Vulnerability Analysis; Dam Failure

Category	Stillwater Co. (balance)	Columbus (City)
Residential Property Exposure \$	\$123,393,808	\$3,702,475
# Residences at Risk	693	29
Commercial, Industrial & Agricultural Property Exposure \$	\$26,172,823	\$4,830,190
# Commercial, Industrial & Agricultural Properties at Risk	113	6
Critical Facilities Exposure Risk \$	\$21,488,541	\$4,923,539
# Critical Facilities at Risk	17	6
Bridge Exposure \$	\$11,931,252	\$0
# Bridges at Risk	19	0
Persons at Risk	1,690	65
Persons Under 18 at Risk	353	14
Persons Over 65 at Risk	398	15

**Figure 7:** Summary of Human Exposure (source: Tetra Tech October 2021 Multi-Hazard Mitigation Plan Stillwater County MT)

