GUNNISON COUNTY BOARD OF COMMISSIONERS
WORK SESSION MEETING AGENDA

DATE: **Tuesday, January 28, 2025**
PLACE: **Board of County Commissioners' Meeting Room at the Gunnison County Courthouse (REMOTE OPTION BELOW)**

8:30 am

- Pitch Mine Reclamation Project Update
- Adjourn

Please Note: Packet materials for the above discussions will be available on the Gunnison County website at http://www.gunnisoncounty.org/meetings prior to the meeting.

ZOOM MEETING DETAILS:
Join Zoom Meeting: https://gunnisoncounty-org.zoom.us/j/89798905619
One tap mobile
+12532158782,,82753657556#,,,,*471302# US (Tacoma)
+13462487799,,82753657556#,,,,*471302# US (Houston)

*NOTE: This agenda is subject to change, including the addition of items up to 24 hours in advance or the deletion of items at any time. All times are approximate. The County Manager and Deputy County Manager's reports may include administrative items not listed. Regular Meetings, Public Hearings, and Special Meetings are recorded and **ACTION MAY BE TAKEN ON ANY ITEM.** Work Sessions are not recorded and formal action cannot be taken. For further information, contact the County Administration office at 641-0248. If special accommodations are necessary per ADA, contact 641-0248 or TTY 641-3061 prior to the meeting.*

AGENDA ITEM or FINAL CONTRACT REVIEW SUBMITTAL FORM

Agenda Item: Pitch Mine Reclamation Project Update

Action Requested: Discussion

Parties to the Agreement:

Term Begins: **Term Ends:** **Grant Contract #:**

Summary:

Pitch Mine Reclamation Project Update

Fiscal Impact:

Submitted by: Holly Perry **Submitter's Email Address:** hperry@gunnisoncounty.org

Finance Review: ○ Required ◉ Not Required

Comments:

Reviewed by: Discharge Date:

County Attorney Review: ○ Required ◉ Not Required

Comments:

Reveiwed by: Discharge Date: Certificate of Insurance Required

Yes ○ No ○

County Manager Review:

Comments:

Reveiwed by: GUNCOUNTY1\mbirnie Discharge Date: 1/23/2025

○ Consent Agenda ○ Regular Agenda ○ Worksession Time Allotted: 60 minutes

Agenda Date: 1/28/2025

Revised April 2015

Pitch Mine

HOMESTAKE

Reclamation Project

Project Update
January 2025

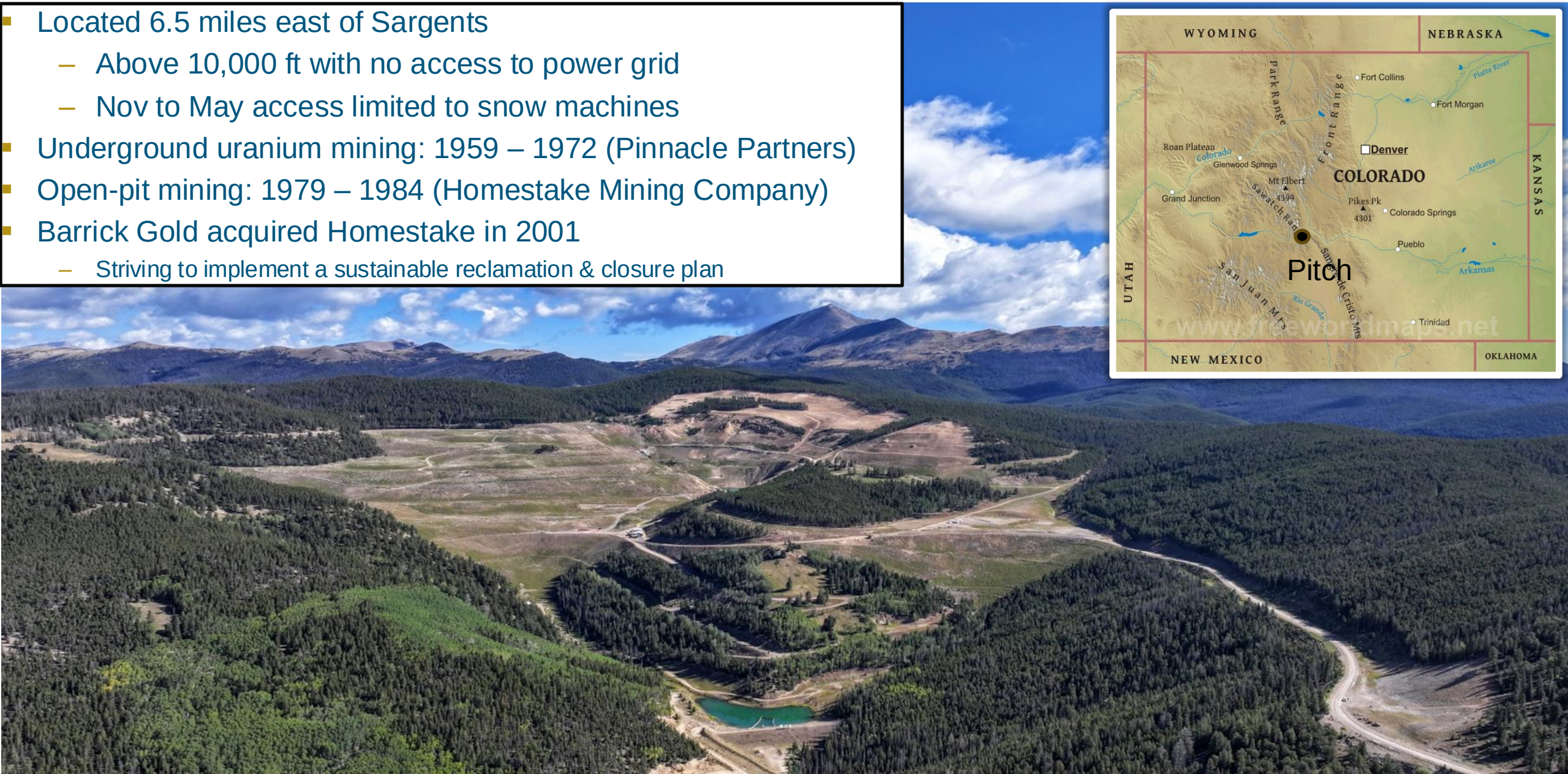
BARRICK

Pitch Mine Reclamation Project

- Introductions
  - Dave Wykoff – Pitch Closure Manager
  - Clark Burton – Director, Closure Operations
- Purpose
  - Site overview & history
  - Water quality and standards
  - Current activities & studies
  - DSV update
  - Human Health & Ecological Risk Assessment

Site Orientation

- Located 6.5 miles east of Sargents
  - Above 10,000 ft with no access to power grid
  - Nov to May access limited to snow machines
- Underground uranium mining: 1959 – 1972 (Pinnacle Partners)
- Open-pit mining: 1979 – 1984 (Homestake Mining Company)
- Barrick Gold acquired Homestake in 2001
  - Striving to implement a sustainable reclamation & closure plan



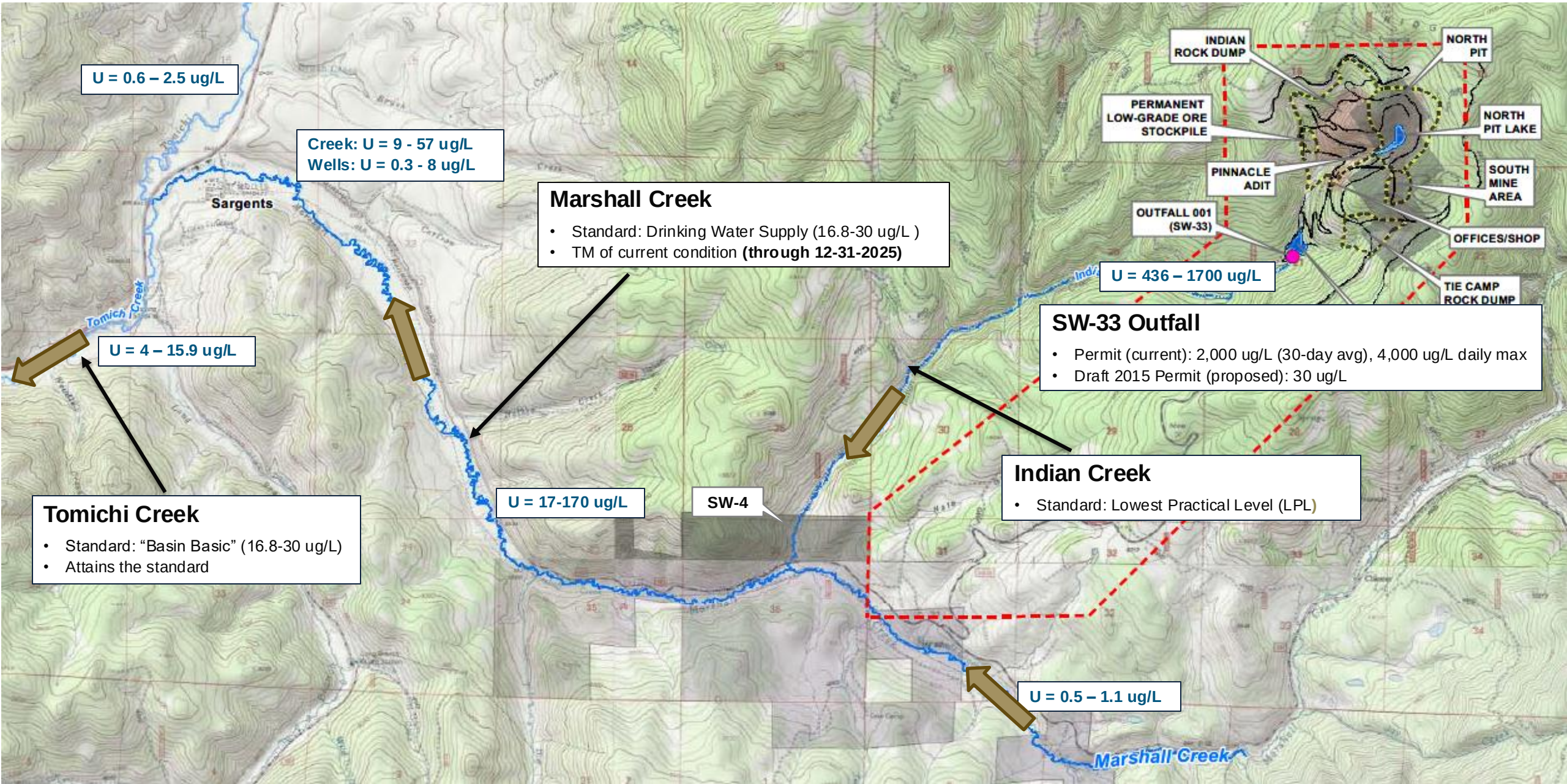
Site Overview

- In 2015: 30 ug/L uranium standard proposed for Pitch to align with drinking water designation on Marshall Creek
- Temporary modification in place on Marshall Creek through December 2025
- Barrick's closure philosophy: Engineer and implement sustainable solutions that address source of issues

Engineering solutions to address the source

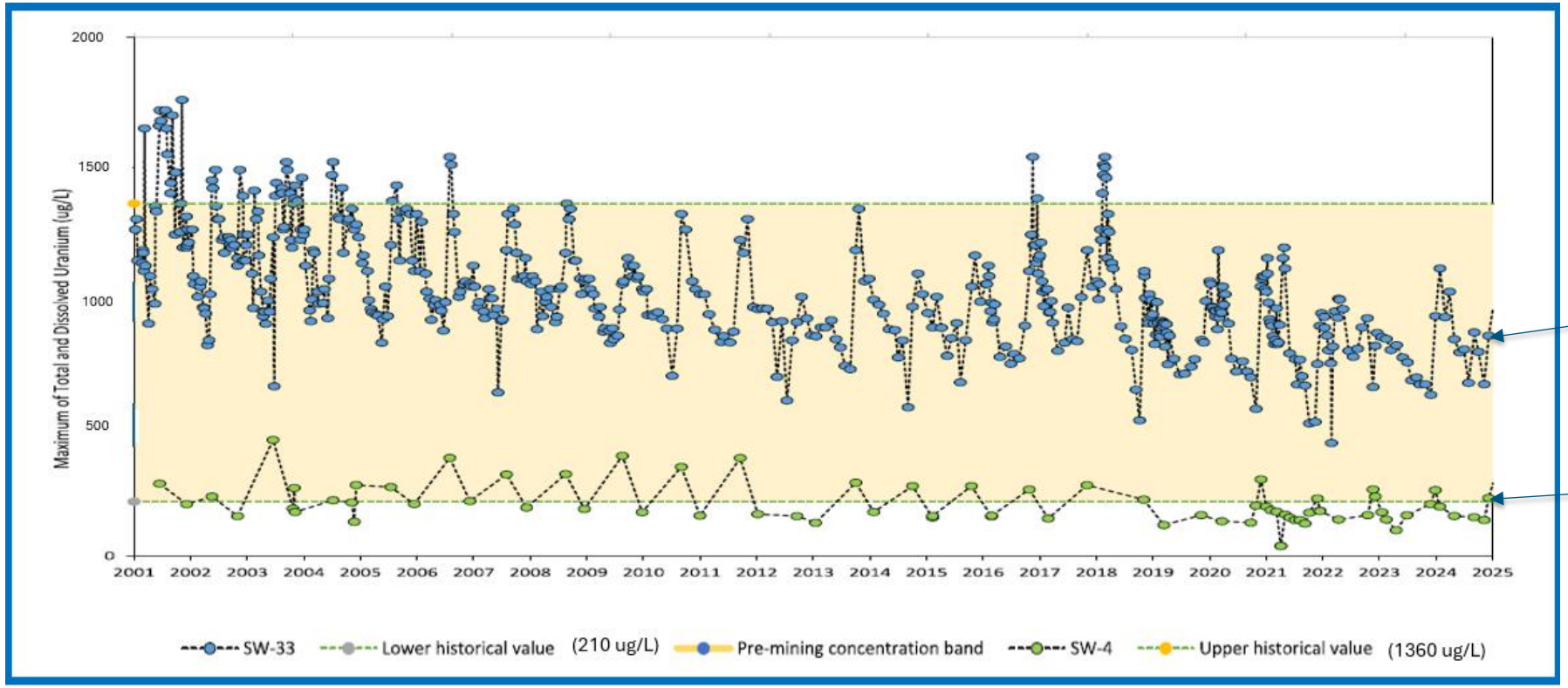
- Regrading of waste rock to prevent ponding/infiltration
- Capping of residual low-grade ore stockpiles
- Plugging underground Pinnacle Portal to address radium and reduce mobilization of Uranium
- Uranium passivation (phosphate injection program 2017-2020)
- Diversions implemented to minimize infiltration into mineralized fault zone (2021-2023)

Water Quality & Standards



Pre-Mining Water Quality

- Internal Pinnacle memo (1970) indicates Indian Creek uranium concentrations were elevated prior to mining activity
- Data from Atomic Energy Commission (AEC) on Indian Creek: Uranium concentrations between 210 and 1,360 ug/L as U
- Pre-mining water quality (prior to 1959) was similar to current conditions



SW-33 = Surface water permitted outfall

SW-4 = Farthest downgradient monitoring point on Indian Creek

Water Quality Studies Completed

Numerous studies and projects have been completed over the last 8 years to improve water quality and identify additional feasible WQ improvements:

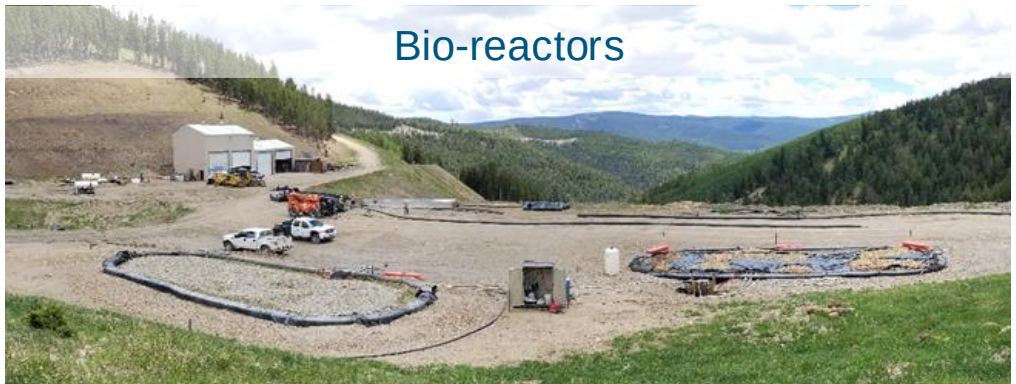
- ✓ Water balance model
- ✓ Tracer studies to define flow paths
- ✓ Conceptual site model to define sources
- ✓ Phosphorus injections to immobilize uranium Surface-water / infiltration management
- ✓ Semi-active treatment pilot programs
  - Ion Exchange
  - Bio-chemical reactor
- ✓ Alternatives Analysis submitted on Dec 23, 2022
- ✓ Alternatives Analysis updated to address CDPHE comments and resubmitted Oct 2024

Phosphorus injection

Ion Exchange

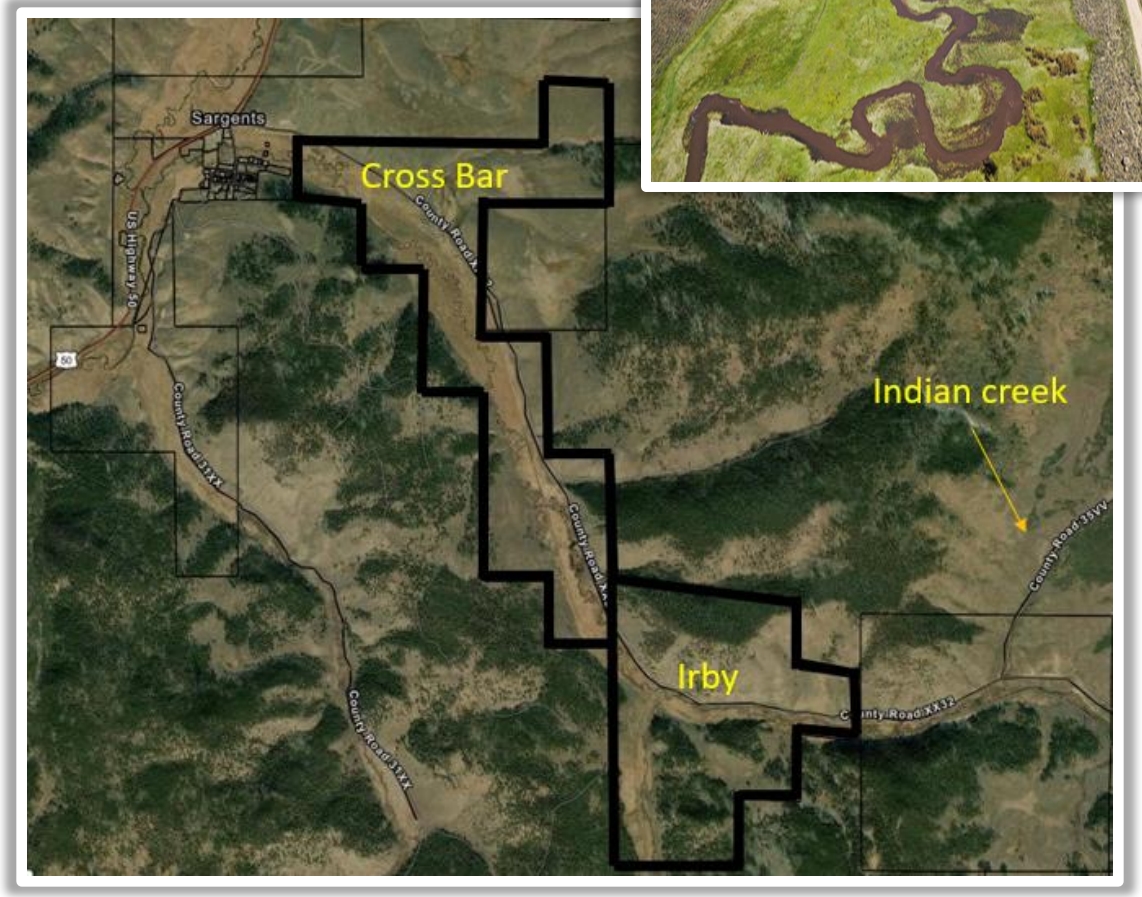
Surface water management

Bio-reactors



Marshall Creek / Sargents Studies

- Hydrologic studies indicate Marshall Creek has negligible influence on wells in Sargents and the wells currently meet drinking water standards
- Additional measures to protect uses:
  - Saguache County adopted ordinance restricting drilling of wells in alluvium
  - Redrill alluvial wells, extending wells into bedrock aquifer (ongoing)
  - Established conservation easement on Irby Ranch
  - Saguache County Commissioners reviewed feasibility of community water and sewage treatment systems Sargents well sampling (ongoing)
- In-stream water quality sampling (ongoing)



Sargents Well Update

- Sargents Domestic Wells:
  - Generally poor water quality in shallow alluvium
  - 32 shallow wells identified for replacement
  - Primary goals:
    - Protect current and future uses
    - Provide residents with cleaner water
- Redrilling Status
  - Contracted with local Colorado drillers
  - 17 wells drilled in 2024 with no safety incidents
  - Daily engagement with community
  - Remaining 15 wells to be drilled in 2025
  - Pump installation and tie-in to follow
  - Existing alluvial wells to be plugged

DSV and Alternatives Analysis

- Discharger Specific Variance (DSV)
  - Regulatory pathway if underlying water quality standards cannot be met.
  - Utilized to determine an alternate effluent limit and define discharge permit limit
  - Indian Creek Lowest Practical Limit (LPL) to be determined following Alternate effluent limit determination on Marshall Creek
- Alternatives Analysis
  - Alternatives developed in support of DSV
  - Alternatives evaluated for uranium load reduction
  - Alternate effluent limit will be based on implementation of feasible alternatives
  - Draft AA submitted to CDPHE/EPA in Dec. 2022
  - Updated AA submitted Oct 2024 to address comments
  - DSV is reviewed/renewed at interval TBD (typically 5 -10yrs)

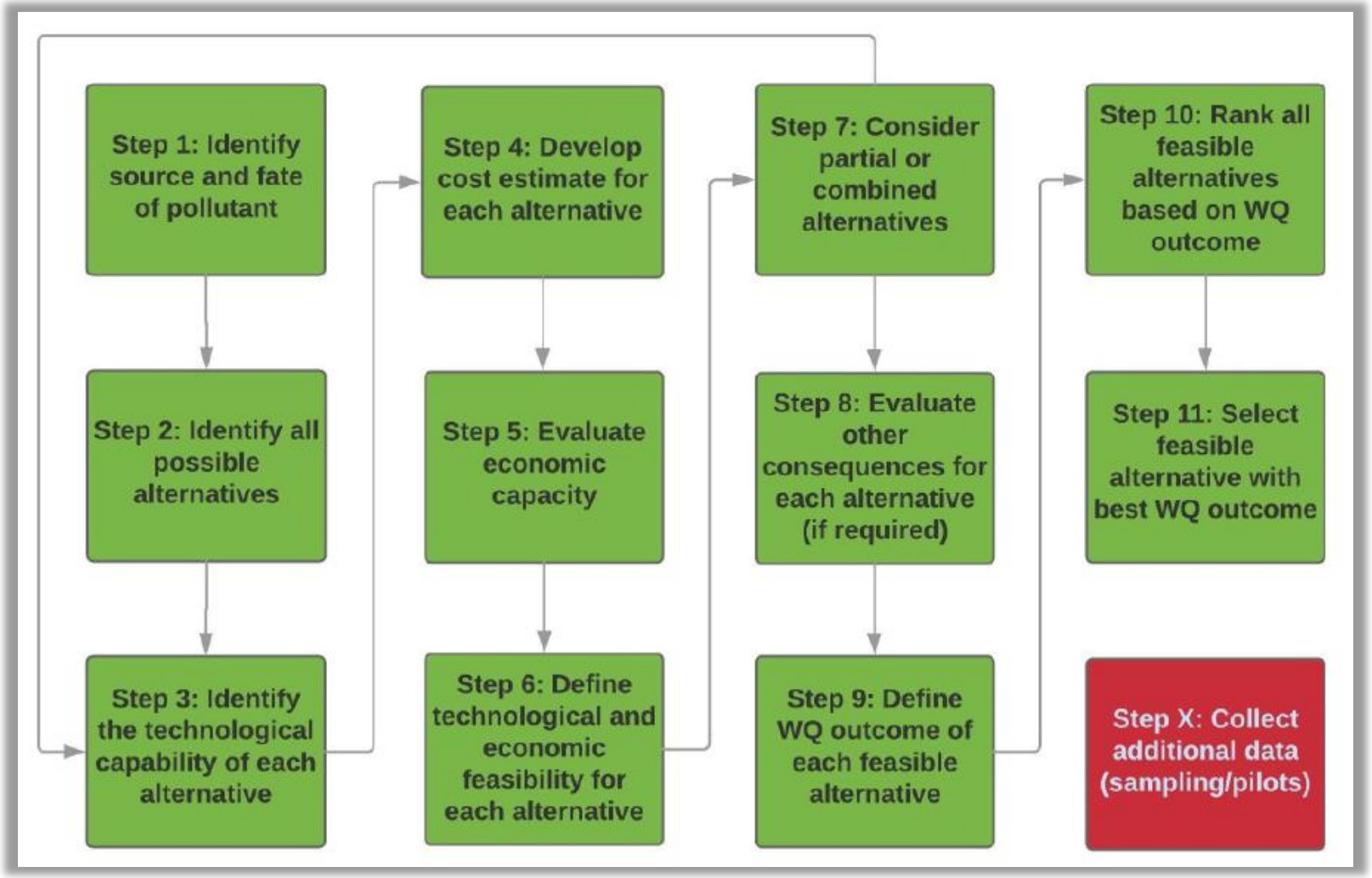
Initial DSV Schedule:

Timeline	Activity
June 2022 – Dec 2022	Develop Alternatives Analysis – **submitted Dec 2023**
Jan 2023 – Mar 2023	Meet with stakeholders to discuss AA and feasibility of alternatives
June 2023 – Sept 2023 June 2024 – Sept 2024	Complete additional pilot studies or investigation, **if needed**
June 2023 – June 2025	Engage with stakeholders on AA to develop DSV proposal, and set proposed AELs
July 2025 – Dec 2025	Finalize DSV proposal
Jan 2026 – June 2026	Rulemaking Hearing Process w/ WQCC

- Alternatives Analysis updated and resubmitted Oct 2024
- WQCC rulemaking hearing postponed until June 2026 to allow time for regulatory review

DSV Alternatives Analysis Process

- CDPHE feedback on the Draft AA (December 2022):
  - Not comprehensive of alternatives
  - Deviated from DSV guidance
- Report has been revised to align with the DSV process guidance:
  - Comprehensive list of alternatives
  - Alternatives outside of Homestake's control removed
  - Applied Limits of Technology Test
  - Applied Economics Test
  - Considered partial or combined alternatives
  - Applied Other Consequences Test using a risk-based approach



Limits of Technology Test

- Limits of Technology Test applied to all alternatives within our control, using DSV guidance

- DSV Guidance (Section V.A.2):

> Evaluation of technological limitations to determine infeasibility with respect to implementing new or existing technologies will be site-specific, depending on numerous factors unique to each facility, including, but not limited to: the facility's size, influent quality, existing and potential design, retention time, existing and potential new treatment processes, history of full-scale applications in the field, the facility's age and remaining useful life, flow regimes, seasonal or variable influent quantity and quality, availability of land for any necessary expansion, topography, climate, access, zoning codes and local land use concerns, and differences in sludge/biosolids generation and associated dewatering and disposal/beneficial reuse options. For example, certain constituents can interfere with treatment technologies such as ion exchange and absorptive media, making them technologically incapable of treating influent containing high levels of such constituents.

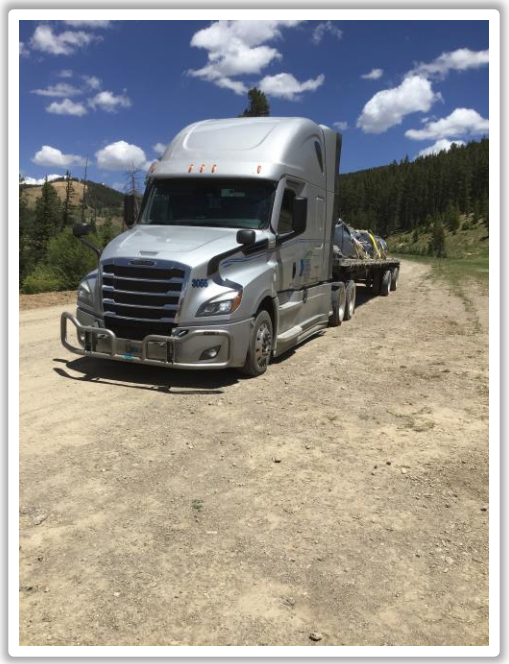
Economics Test

- A high-level cost estimate was developed for the remaining alternatives
- Economic feasibility test assess whether alternative results in:
  - **Substantial impacts**: take into account impacts to profit, liquidity, and solvency
  - **Widespread Impacts**: adverse impacts on the community, surrounding area, or economic impacts at the State level
- All alternatives passed the Economics Test.
  - Costs may be disproportionate to the environmental and human health benefits.

Other Consequences Test

Do the consequences of an alternative outweigh the benefits?

- Risks associated with treatment byproducts
- Generation, transport, disposal, and long-term management of concentrated radiological waste
- Resource consumption, greenhouse gas and other air emissions
- Safety risks associated with implementing alternatives
- Ecological factors, including land use and long-term habitat restoration



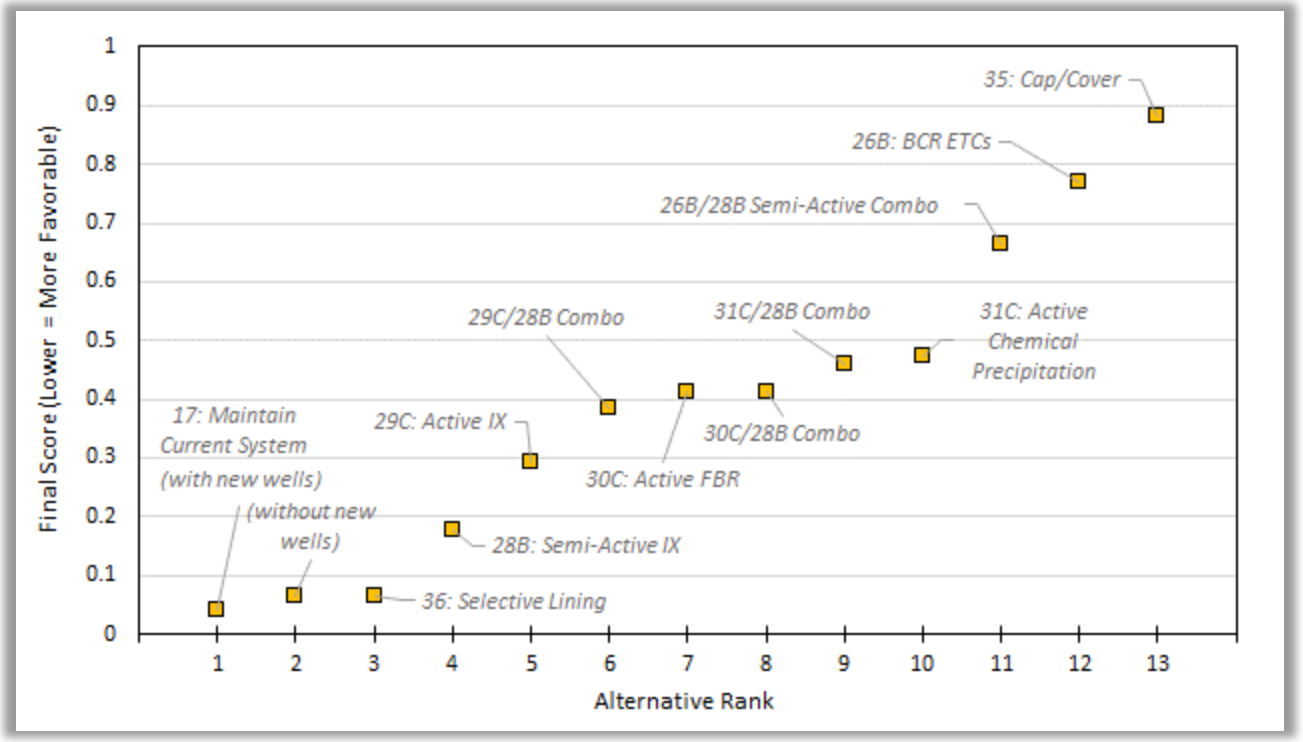
Human Health Risk Assessment Results

- Drilling replacement wells in Sargents results in minor decrease in risk
- Implementation of U reducing alternatives do not materially change risk, resulting in other consequences outweighing benefits

ID	Alternative	Location	Uranium Load Reduction at SW-33 (%) (Average June - November) (Per Table 1)[1]	Non-Cancer Hazard Index	Annualized Excess Lifetime Cancer Risk (ELCR)	Estimated Number of People Exposed[2]	Average Annual Incidents per Medium[3]	Total Average Annual Incidents[4]
Maintain Current System								
Baseline	Maintain Current System without Well Replacements	Surface Water	0%	0.0009	4E-09	15	5.52E-08	2.23E-04
		Sargents Shallow Well[5]	0%	0.3	3E-06	45	1.47E-04	
		Sargents Deep Well	0%	0.1	3E-06	20	5.79E-05	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
1	Maintain Current System with Well Replacements1	Surface Water	0%	0.0009	4E-09	15	5.52E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
Infiltration Management								
2a	Full Cap/Cover	Surface Water	28%	0.0007	3E-09	15	4.01E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
2b	Selective Lining	Surface Water	7%	0.0009	3E-09	15	5.14E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
Semi-Active Water Treatment								
3a	Semi-Active IX for NPL	Surface Water	22%	0.0007	3E-09	15	4.33E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
3b	Semi-Active BCR	Surface Water	27%	0.0007	3E-09	15	4.07E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
3c	Semi-Active BCR/IX Combination	Surface Water	34%	0.0006	2E-09	15	3.69E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
Active Water Treatment - SW-33 Full-Scale Implementation								
4a	Active IX Treatment	Surface Water	65%	0.0003	1E-09	15	2.02E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
4b	Active Chemical Precipitation	Surface Water	60%	0.0004	2E-09	15	2.29E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
4c	Active Biochemical FBR	Surface Water	60%	0.0004	7E-08	15	2.29E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
Active Water Treatment - Rock Dump Partial Implementation/NPL IX Combination								
5a	Active/Semi-Active IX Combination	Surface Water	45%	0.0004	2E-09	15	3.10E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
5b	Precipitation and NPL IX Combination	Surface Water	43%	0.0004	2E-09	15	3.20E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	
5c	FBR and NPL IX Combination	Surface Water	43%	0.0004	2E-09	15	3.20E-08	2.07E-04
		Sargents Deep Well	0%	0.1	3E-06	65	1.88E-04	
		Tomichi Creek Deep Well	0%	0.0009	1E-08	1600	1.86E-05	

Other Consequences Test

- Human health and ecological risk assessment completed for each alternative
- Alternatives ranked by total overall risk
- Treatment alternatives result in other consequences outweighing benefits (environmental impacts outweigh water quality benefits from treatment)
- Maintain current systems w/ Sargents well redrilling = Lowest Risk Score



Next Steps

- Complete Sargents drilling in 2025
- Updated Alternatives Analysis (AA) submitted Oct 2024
- AA review and feedback
- Address comments in preparation for WQCC hearing
- June 2026 WQCC Hearing
- Next update – Q4 2025

- Reminder: There is an open invitation to schedule a site visit

  Dave Wykoff dwykoff@barrick.com

  Clark Burton cburton@barrick.com

Questions?