

Technical Review Comments on
Permit Revision Application for Expansion of the Little Rock Mine
New Mexico Mining and Minerals Division Public Hearing
Silver City, NM June 3, 2021

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On behalf of
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Presentation Overview

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- Little Rock Expansion Summary
- Time Frame
- Site Assessment
- Impacts to Groundwater
- Impacts to Surrounding Landowners and Residences
 - Groundwater Impacts
 - Noise and Blasting
 - Lights and Visual
 - Dust Mitigation and Monitoring

Presenter background

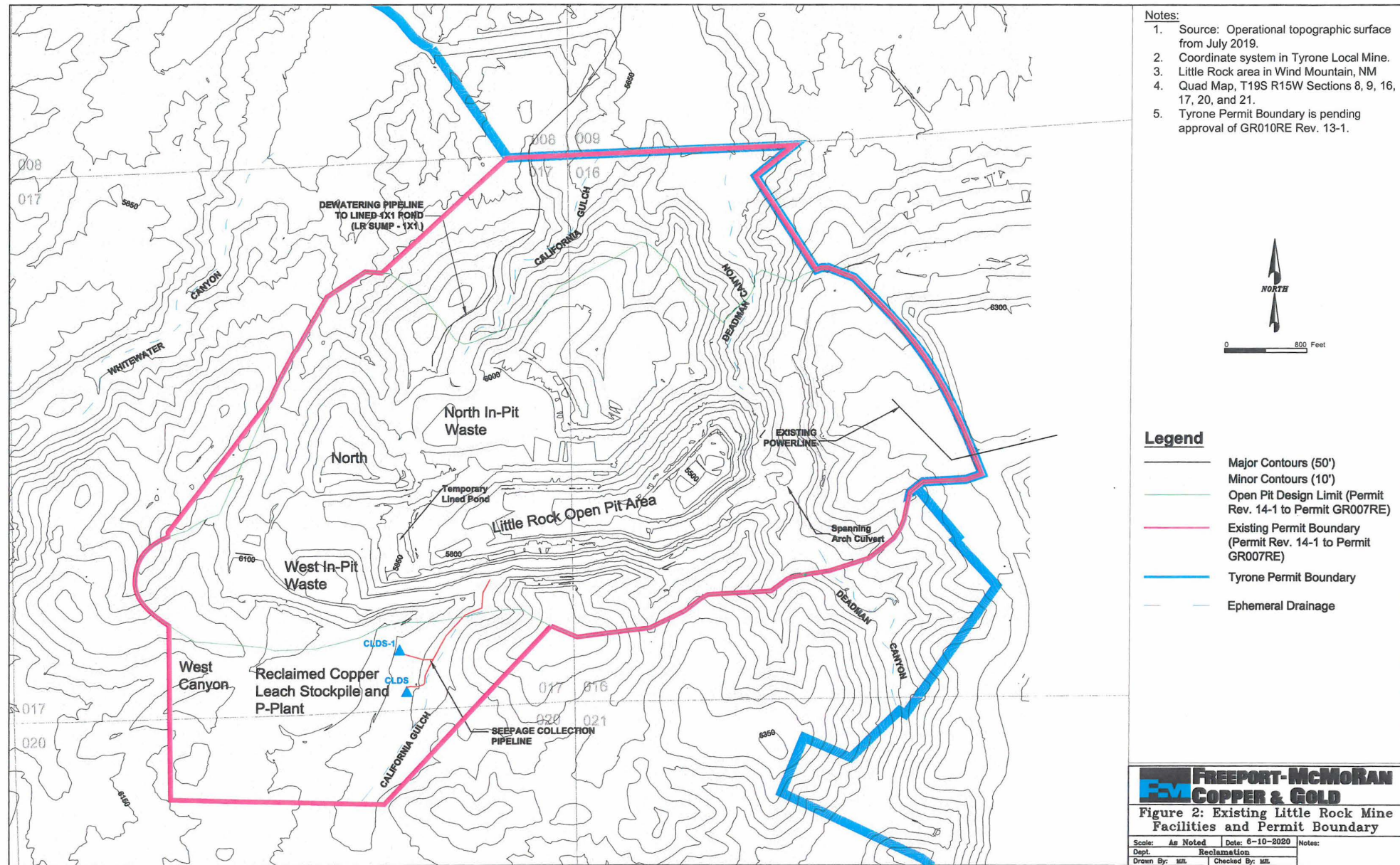
- Miner, Mineral Process Engineer (1983 MT School of Mines), Mill Supt., Mine Manager, Consulting Engineer
- Kuipers & Associates (1996)
 - Primary clients NGOs, Tribes and First Nations, federal, state and local government.
- Expertise includes Tailings Storage Facilities, Reclamation and Closure, Water Management and Treatment, Financial Assurance.
- Involvement in New Mexico since 1998.

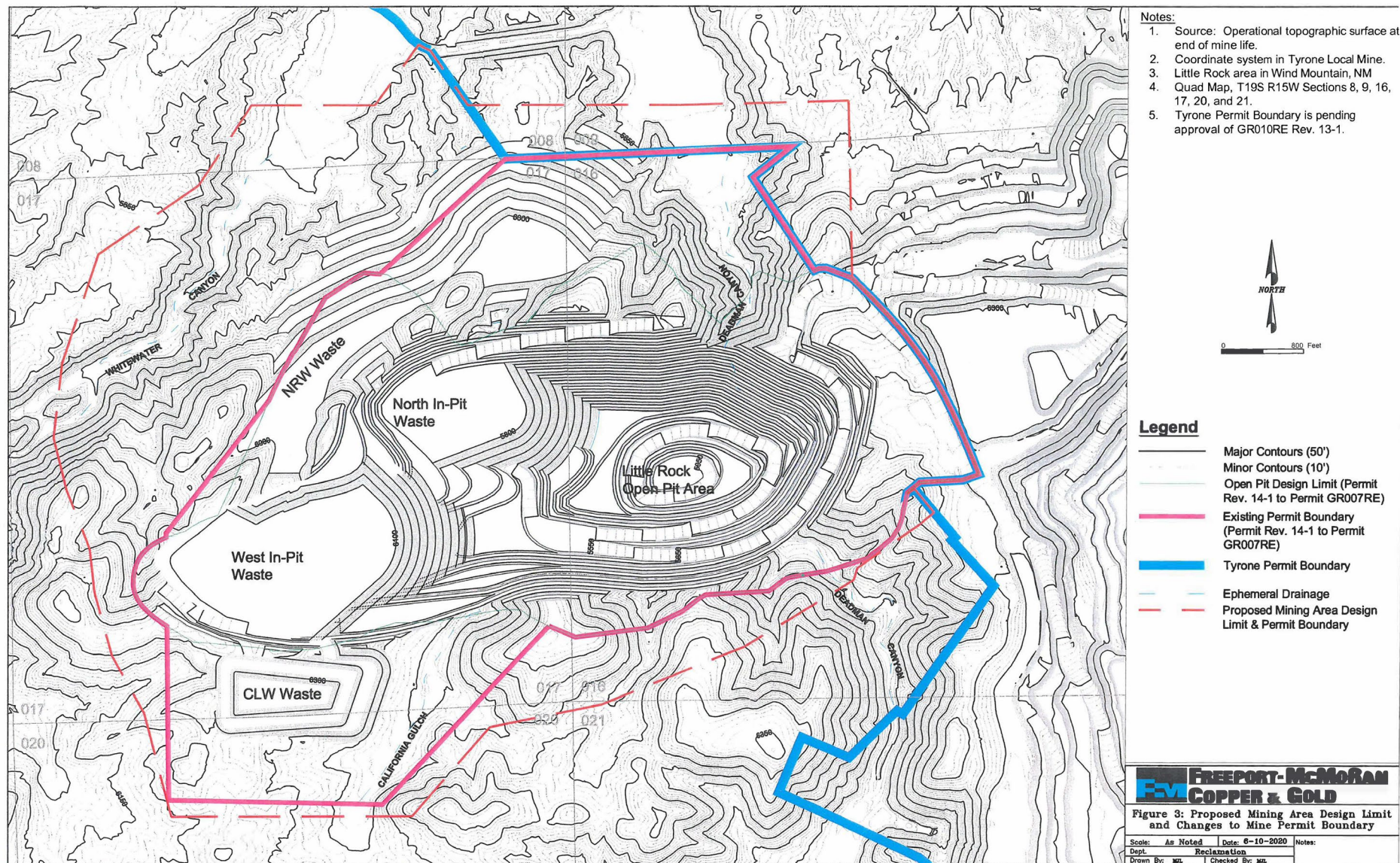
Little Rock Mine Expansion - Summary

- Expansion of the open pit mine
- Expansion of existing waste rock stockpiles
 - North In-Pit Waste Rock Stockpile
 - West In-Pit Waste Rock Stockpile
- New waste rock stockpiles
 - East In-Pit Waste Rock Stockpile
 - CLW Waste Rock Stockpile
 - NRW Waste Rock Stockpile
- Infrastructure and other miscellaneous facilities, and haul roads
- Modify the timing of construction of Deadman Canyon Diversion
- Removal of the Reclaimed Copper Leach Stockpile
- Access to facilities and components

Little Rock Mine Expansion – Time Frame

- Part of 10-year plan for the Tyrone Mine
- Includes two different phases of mining at the Little Rock Mine
 - Little Rock 6 (year 1-5)
 - Little Rock 9 (year 6-10)
- Permit Application is for expanded mine limit for 10-year plan
- Supporting information for expansion – 2020 Closure Closeout Plan (CCP)
 - Only addresses Little Rock 6 – year 1-5
 - Does not include additional disturbance, and impacts are not identified, for Little Rock 9





Little Rock Mine Expansion – Time Frame

CCP Figure 1-3 (2020-2024 Mine Plan) as compared to Application Figure 3:

- The new East In-Pit Waste Rock Stockpile constructed 2020-2024 would be removed to facilitate a deeper and expanded open pit mine as part of the design limit expansion.
- The open pit mine would be deepened and expanded in extent from a depth of 5,500 ft in 2024 according to the CCP, and further expanded to a depth of 5,050 ft as part of the design limit expansion.
- The amount of waste rock contained in the North In-Pit, West In-Pit, and NRW Waste Rock Stockpiles would all increase significantly as a result of the design limit expansion.

Little Rock Mine Expansion – Site Assessment

NMAC 19.10.5.502.D. (4) The site assessment previously submitted pursuant to Section 69-36-5 of the Act shall be considered part of the application. If information in the site assessment requires updates to provide information necessary for evaluation of the permit or if the site-specific conditions at the time of the assessment significantly deviate from conditions at the time of submittal of the permit application, such updated information or deviations must be described in the application. (underline added)

Little Rock Mine Expansion – Site Assessment

69-36-5.B of the Act:

The mining operation site assessment shall include:

- (1) identification of a proposed permit area for the mining operation;
- (2) a description of the location and quality of surface and ground water at or adjacent to the mining operation and an analysis of the mining operation's impact on that surface and ground water;
- (3) a description of the geologic regime beneath and adjacent to the mining operation;
- (4) a description of the piles and other accumulations of waste, tailings and other materials and an analysis of their impact on the hydrologic balance, drainages and air quality;
- (5) an analysis of the mining operation's impact on local communities;
- (6) a description of wildlife and wildlife habitat at and surrounding the mining operation and an analysis of the mining operation's impact on that wildlife and wildlife habitat; and
- (7) for existing mining operations, a description of the design limits for each unit, including waste units, impoundments and stockpiles and leach piles.

Little Rock Mine Expansion – Time Frame and Site Assessment

Recommendations

1. The revision application needs to identify the time-frame (10 yrs), subject to change, for the proposed revision.
2. To permit the revision, the associated environmental impacts for all future mining activities to be pursued under the revision need to be addressed by the state and federal regulatory agencies.
 - NM MMD Site Assessment and Environmental Evaluation
 - BLM and FS NEPA (EA or EIS)

Little Rock Mine Expansion – Operational Impacts to Ground Water

Recommendations

1. As part of the site assessment FMTI should provide a map identifying all existing residential or other private wells within two miles of the perimeter of the predicted area of influence (e.g. drawdown cone) of the dewatered open pit during the entire proposed mine life related to the revised mining design limit (e.g. maximum draw down level for life of mine and not for 5-year period of CCP).
2. In addition, x-sections should be provided showing the drawdown cone and all wells within two miles of the perimeter of the drawdown cone, and demonstrate how the various faults to the north of the Little Rock Mine might be anticipated to affect the ground water hydrology during mining operations and after closure.

Little Rock Mine Expansion – Operational Impacts to Ground Water

Recommendations

3. This should portray existing conditions, conditions at the end of the next 5-year period of the CCP, design limit expansion conditions, and post-expansion pit lake conditions until the pit lake level reaches equilibrium.
4. It should provide the expected average and annual groundwater dewatering rates anticipated to occur during those years that pumping would take place, and show the direction of groundwater flow once the pit is no longer being pumped and as the pit lake forms.

Little Rock Mine Expansion – Operational Impacts to Ground Water

Recommendations

5. FMTI should provide mitigation for the concerns of domestic well owners/users by voluntarily agreeing to provide water level monitoring to any private or other well owner within 2 miles of the perimeter of predicted area of influence as previously described, and, if impacts do occur that could be attributed to mine dewatering, voluntarily agreeing to address those impacts including by supplementing or replacing the water source if necessary.
6. FMI should seek to involve in particular owners of wells in locations that might demonstrate impacts if they were to occur, such as in higher water elevation wells located between the mine and Oak Grove Subdivision.

Little Rock Mine Expansion – Operational Impacts to Surrounding Landowners and Residences

NMAC 19.10.5.508.A. Most Appropriate Technology and Best Management Practices requires that:

“The mining operation and the reclamation plan shall be designed and operated using the most appropriate technology and the best management practices.”

Primary examples of the most appropriate technology and best management practices as they apply to operational impacts to surrounding landowners and residences

- **The International Council on Mining and Metals (ICMM)**
- **Initiative for Responsible Mining Assurance (IRMA)**

Little Rock Mine Expansion – Best Management Practices - Ground Water Impacts

ICMMs Water Stewardship Framework

- Proactive and inclusive engagement with other water users to understand their needs and priorities, share plans and collaborate on managing risks.
- Transparent public reporting on water usage, material water risks and performance.
- Collaborating with other water users to mitigate shared water risks and support equitable access.
- Increasing efficiencies in the use of water (e.g. by maximizing water recycling and reuse within mining operations).

Little Rock Mine Expansion – Best Management Practices - Ground Water Impacts

IRMA Standard Water Management Requirements

4.2.1.1. The operating company shall identify water users, water rights holders and other stakeholders that may potentially affect or be affected by its mine water management practices.

4.2.1.2. The operating company shall conduct its own research and collaborate with relevant stakeholders to identify current and potential future uses of water at the local and regional level that may be affected by the mine's water management practices.

4.2.1.3. The operating company shall conduct its own research and collaborate with relevant stakeholders to identify and address shared water challenges and opportunities at the local and regional levels, and shall take steps to contribute positively to local and regional water stewardship outcomes.

Little Rock Mine Expansion – Best Management Practices – Noise and Blasting

IRMA Standard Chapter 4.4 Noise and Vibration

Intended to provide measures to preserve the health and well-being of nearby noise receptors and the amenity of properties and community values, and to protect offsite structures from vibration impacts. It includes the following Noise and Vibration Requirements:

- 4.4.1. Noise and Vibration Screening

- 4.4.2. Management and Mitigation of Impacts on Human Receptors

- 4.4.3. Reporting

Blasting Impacts Analysis on local community/residences

Blasting Plan that addresses public concerns

Little Rock Mine Expansion – Best Management Practices – Lights and Visual Impacts

Donaldson

- Siting measures for visual mitigation
- Design measures for visual mitigation
- Measures for special circumstances entail various techniques that may be applied in unique situations or limited areas to avoid, minimize, or offset visual impacts

Analysis of light and other visual impacts on the local community

Mitigation Plan for lighting and other viewshed issues for the proposed operations that is robust, detailed and complete and consistent with current best practice for energy scale projects and similar industries

Little Rock Mine Expansion – Best Management Practices – Dust Mitigation and Monitoring

Centre for Excellence in Mining Innovation's Fugitive Dust Best Practices Manual control measures to reduce fugitive dust emissions must take into account:

- a) identification and classification of fugitive dust emission sources;
- b) identification of the sources of fugitive dust emissions;
- c) fugitive dust characterization;
- d) development and implementation of the BMP plan; plus training and inspection/ maintenance.

Little Rock Mine Expansion – Best Management Practices – Dust Mitigation and Monitoring

IRMA Standard Chapter 4 Air Quality Requirements

- 4.3.1. Air Quality Screening and Impact Assessment
- 4.3.2. Air Quality Management Plan
- 4.3.3. Air Quality Monitoring
- 4.3.4. Protection of Air Quality
- 4.3.5. Reporting

Specific to fugitive dust IRMA requires the following:

4.3.4.3. Dust deposition from mining-related activities shall not exceed 350 mg/m²/day, measured as an annual average. An exception to 4.3.4.3 may be made if demonstrating compliance is not reasonably possible through ordinary monitoring methods. In such cases the operating company shall utilize best available practices to minimize dust contamination.

Little Rock Mine Expansion – Best Management Practices – Dust Mitigation and Monitoring

Recommendations

- Improve communications with local community
- Analysis of dust impacts on the local community
- Dust Mitigation and Monitoring Plan utilizing best practices
- Install portable air monitors in areas where the public lives in close proximity to the mine site

Little Rock Mine Expansion – CCP Financial Assurance

Comments

- Financial Assurance estimate \$7.0M
- \$5.4M direct cost estimate methodology consistent with Tyrone, Chino, Continental and meets accepted standard of practice for FA calculations
- \$1.6M Indirect costs estimated at 30% of direct costs – previous precedent
- Post-reclamation
 - No long-term monitoring or maintenance
 - Assumes 12 years revegetation/post-mining land use
 - Assumes 30 years ground water quality
- FA estimate preliminary and not based on final CCP and conditions