



VENTILATING A DEEP MINE

THE PRACTICAL SIDE

08/11/2023





















Overview

- Best Practices
- Mine Layout and Ventilation Changes
 - Past
 - Present
 - Future



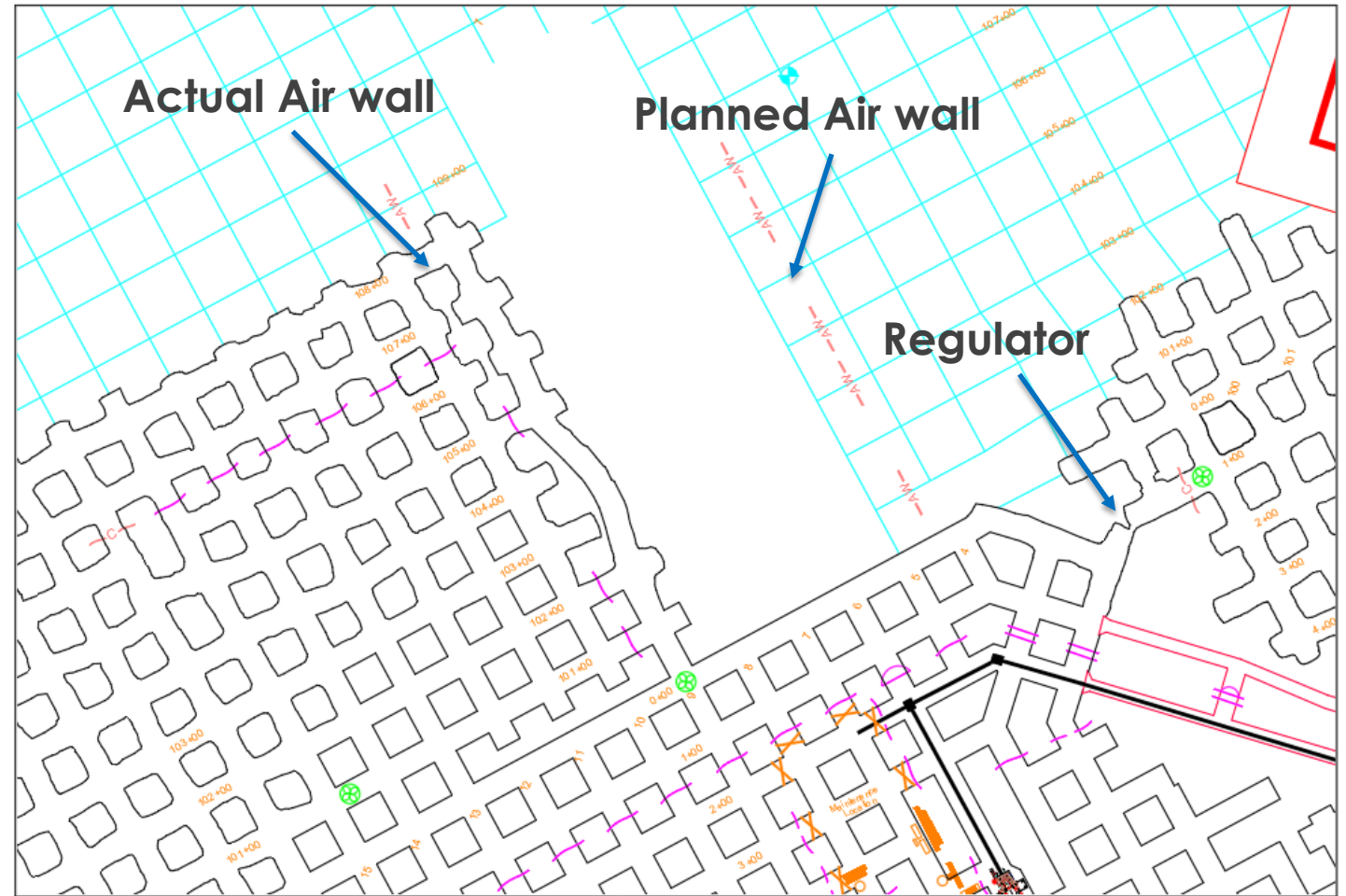
Best Practices

- Have a mine plan
 - If you know where you are going you can plan for it
- Be consistent in updating plans
- Compare plans to actuals
- Communicate the plan

 FY 22	 FY 27	 color 11	 color 161
 FY 23	 FY 28	 color 121	 color 71
 FY 24	 FY 29	 color 31	 color 181
 FY 25	 FY 30	 color 141	 color 91
 FY 26	 FY 31	 color 51	 color 201

Best Practices

- Air Walls
 - Rock walls left in place
- Maximizes ventilation
 - Does not leak
 - Does not fall down



Best Practices

- Overlapping Curtains in High Blast Impact Areas
 - Provides multiple sources of relief for the air blast
 - Still may fail at some point but should have a longer standup time



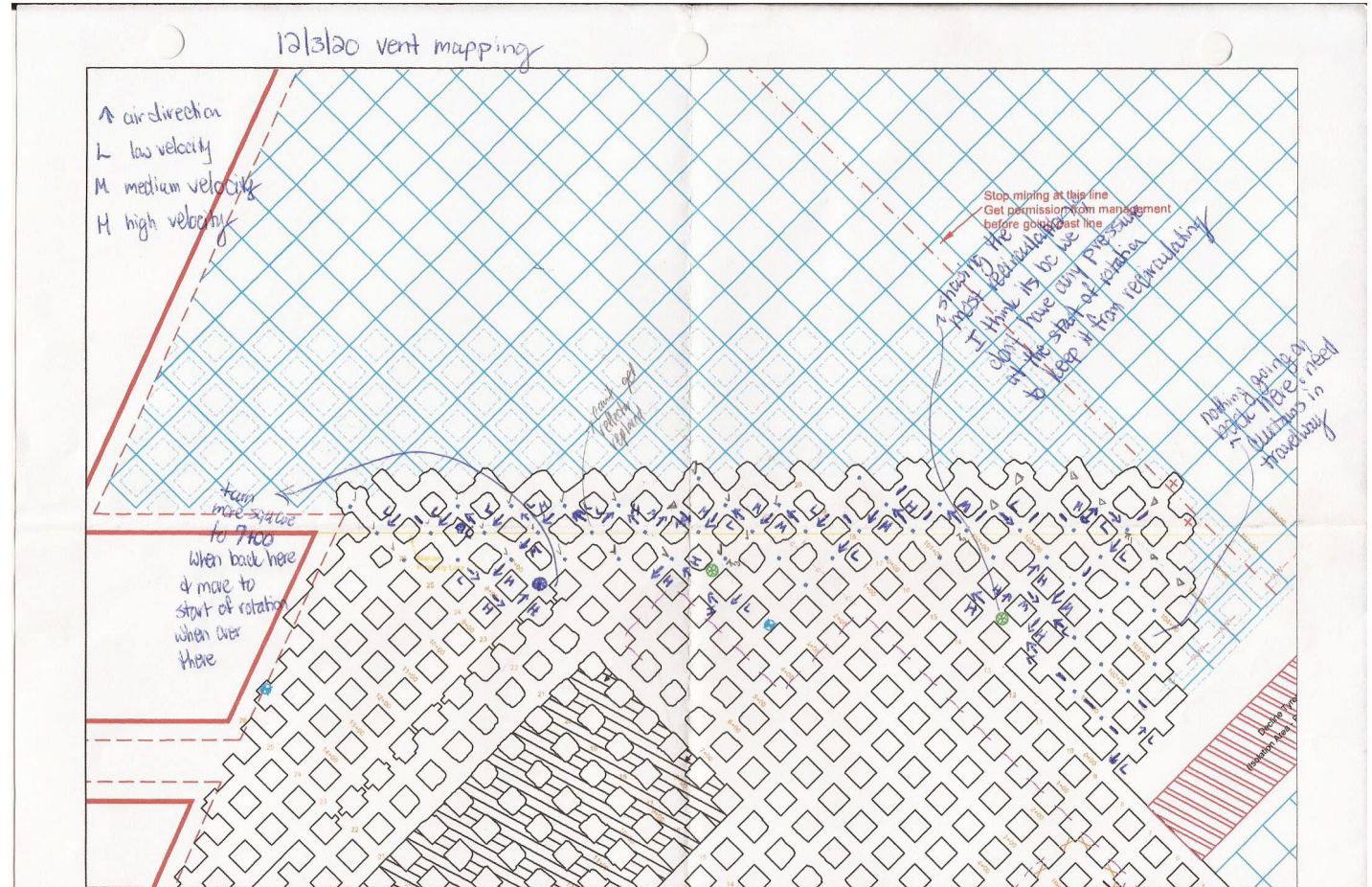
Best Practices

- Electric Fans
 - Does not generate DPM
- Elevate Fans
 - Velocity is key
 - Most gases are up high
 - In turn, portable fans on stands will improve airflow throughout the entire heading not just on the ground



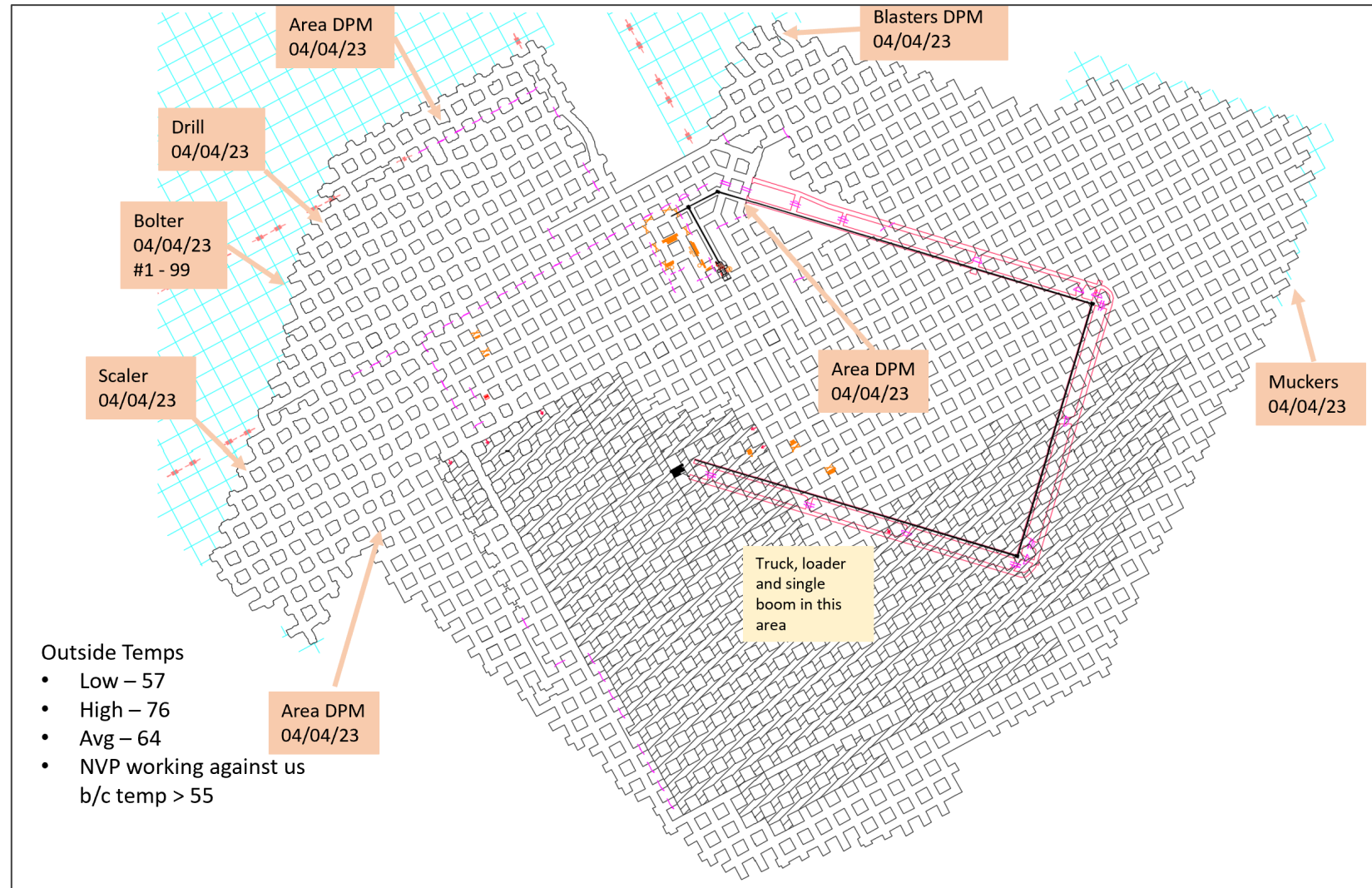
Best Practices

- Routine Vent Audits
 - Quarterly audits
- Make sure mine advancement isn't negatively impacting ventilation



Best Practices

- Routine DPM Sampling
 - Quarterly sampling
- Test employees with the highest exposure
- Make notes on equipment and personnel locations



Best Practices

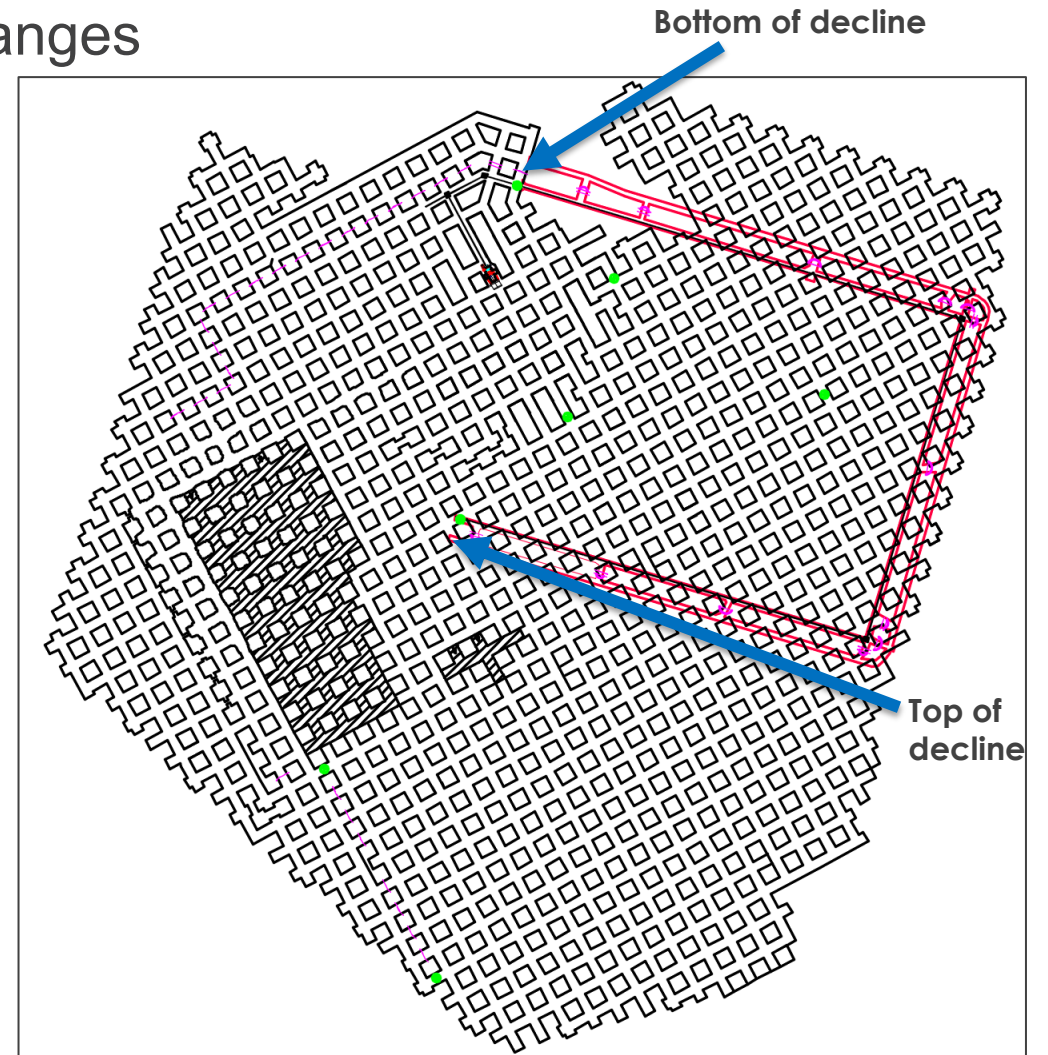
- Administrative Controls
 - Wait in fresh air when possible
 - Don't stack equipment on top of each other
 - Don't idle equipment
 - Balance the mining cycle
 - Limit number of deep headings shot during a shift
 - Have truck traffic travel in the same direction as the air flow



Mine Layout – 2019

Prior to Changes

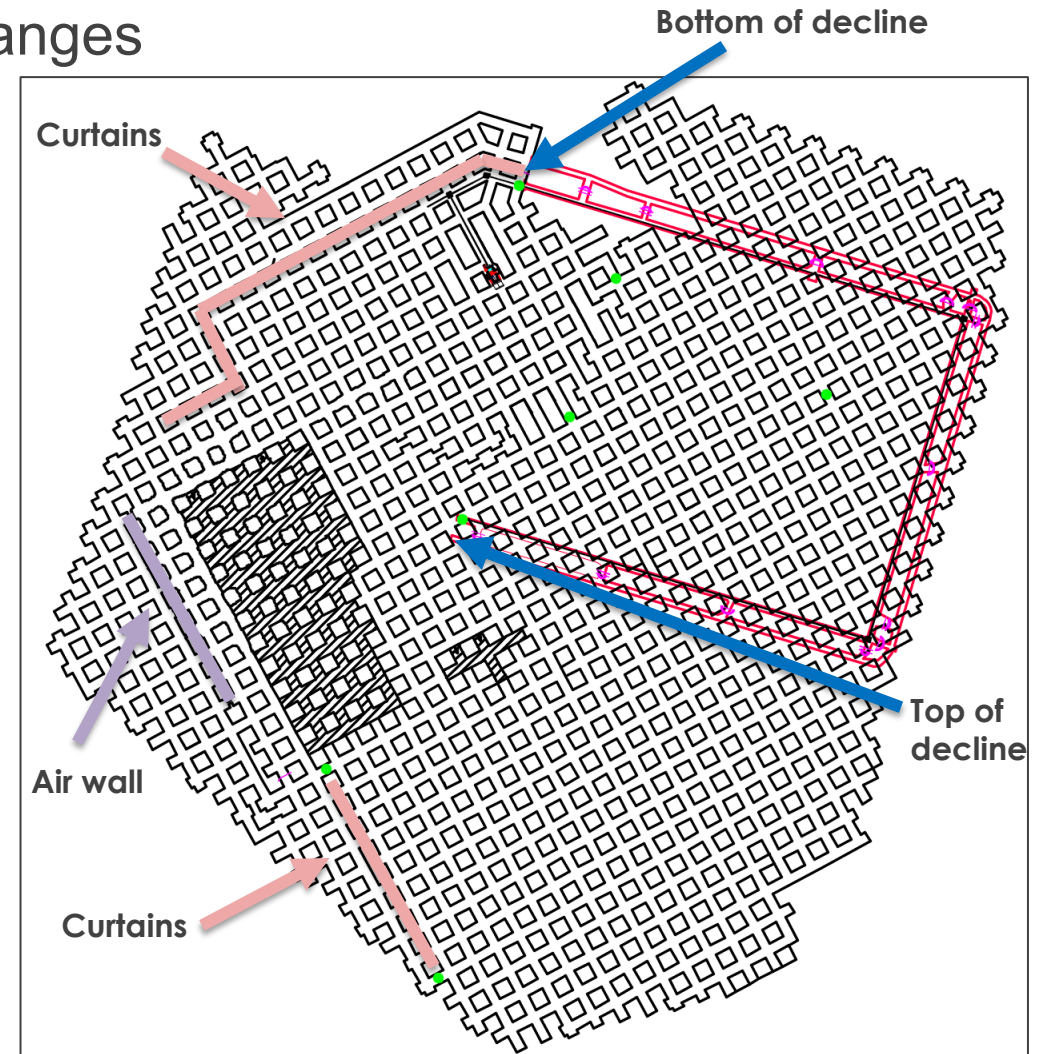
- Mine is approximately 920ft deep
- 203 acres mined
- New property acquired so the mine is expanding



Mine Layout – 2019

Prior to Changes

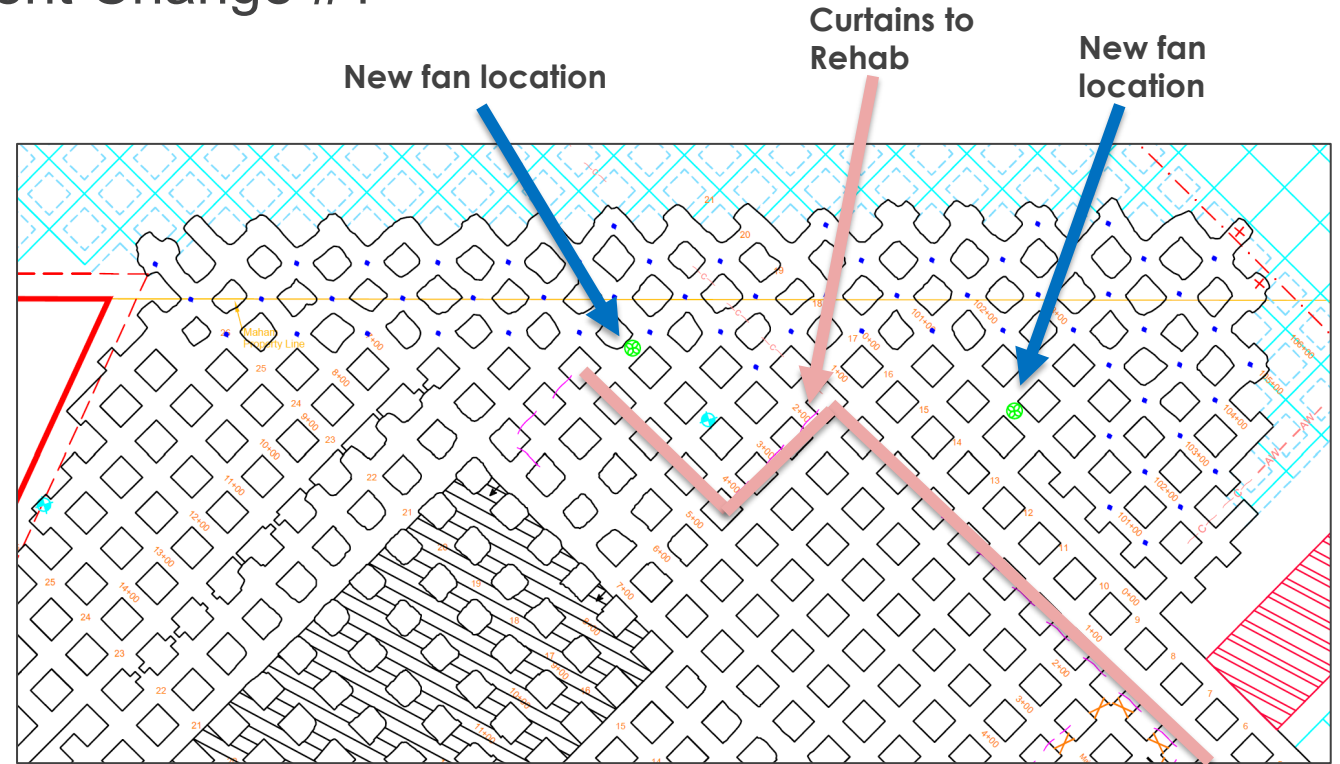
- Intake – down travelway decline
- Exhaust – up belt decline
- Counterclockwise ventilation
- Intake at the bottom of the declines
 - 250,000 cfm – winter
 - 200,000 cfm – summer
- Ventilation controls
 - Curtains
 - Fans
 - Air Wall



Mine Layout – 2020

Vent Change #1

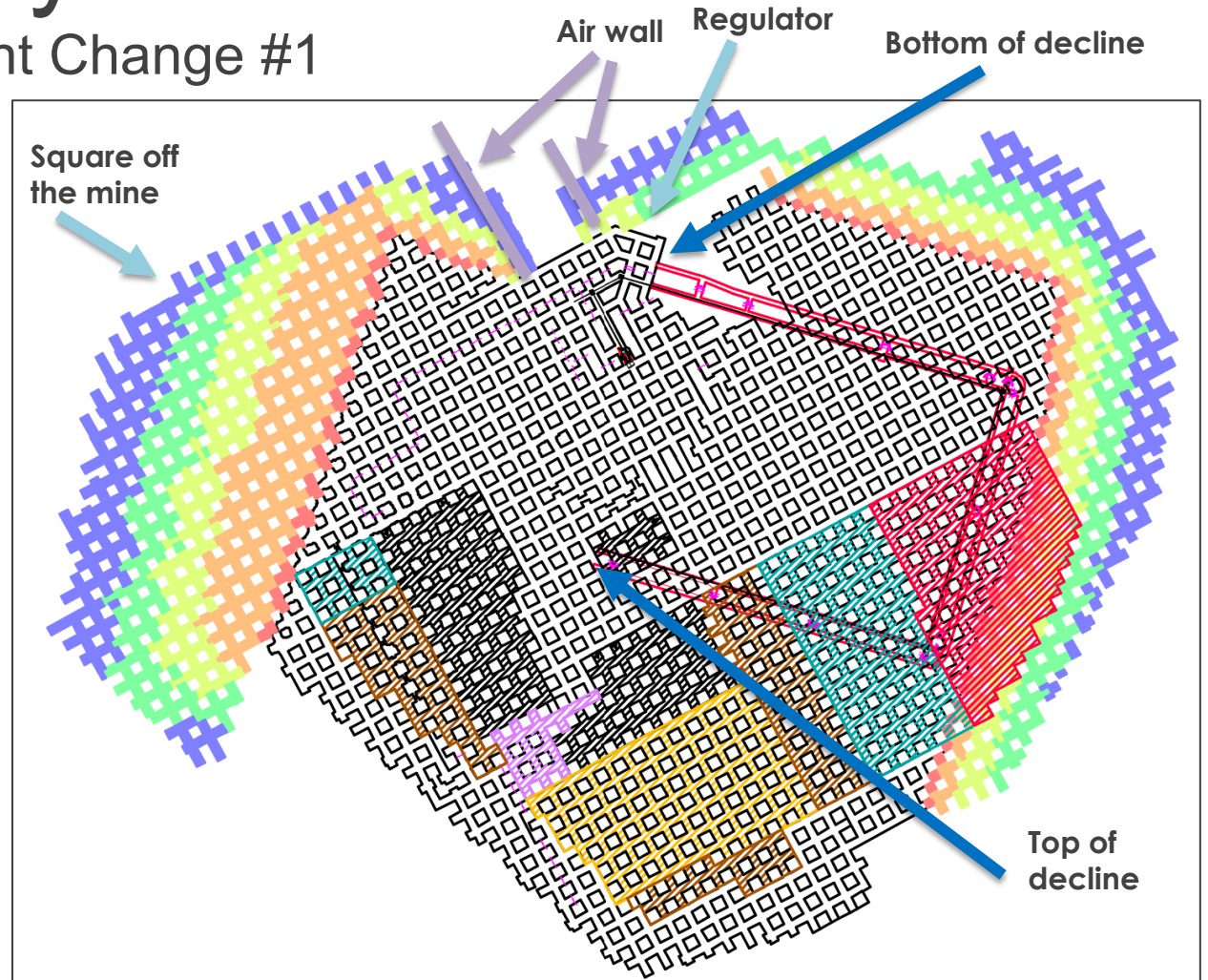
- Mining increases on new property
- Move fans closer to the working face
- Redo damaged curtains near bottom of declines



Mine Layout – 2020

Vent Change #1

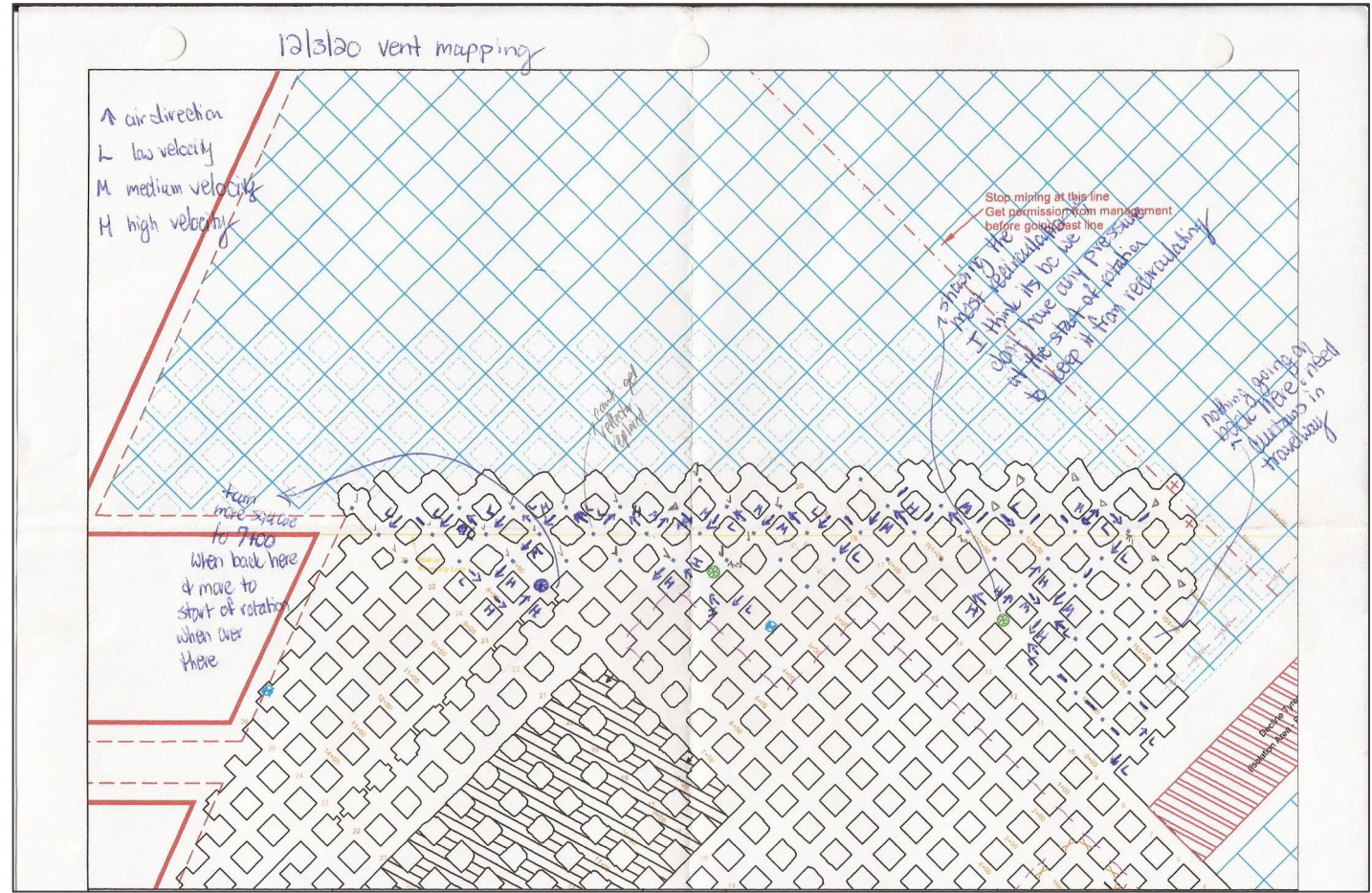
- Create a mine plan
 - Develop an air wall plan
- Develop a way to ventilate the backside of the mine



Mine Layout – 2020

Vent Change #1

- Results
 - Helped the distribution of air to the north
 - Did not improve volume into the mine
 - Created a mine plan for years to come



Mine Layout – 2021

Vent Change #2

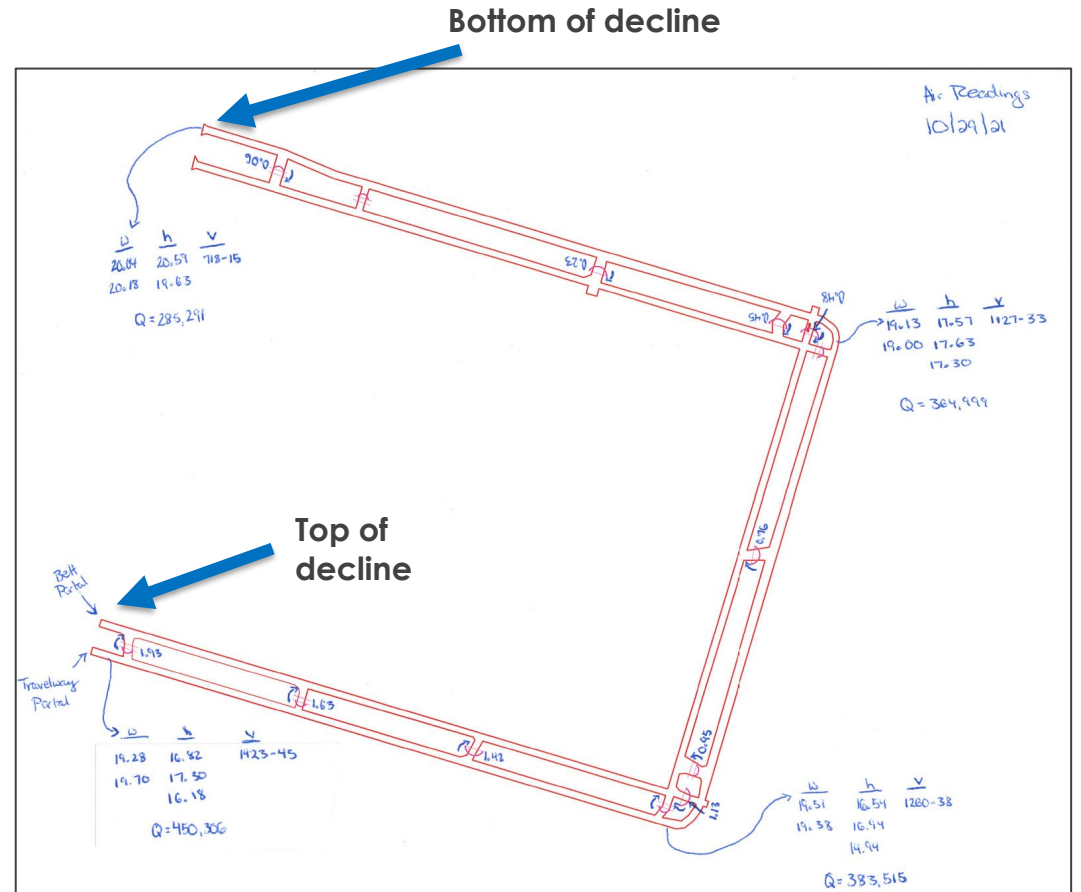
- Install new main mine fans
- Redo walls and doors on the declines



Mine Layout – 2021

Vent Change #2

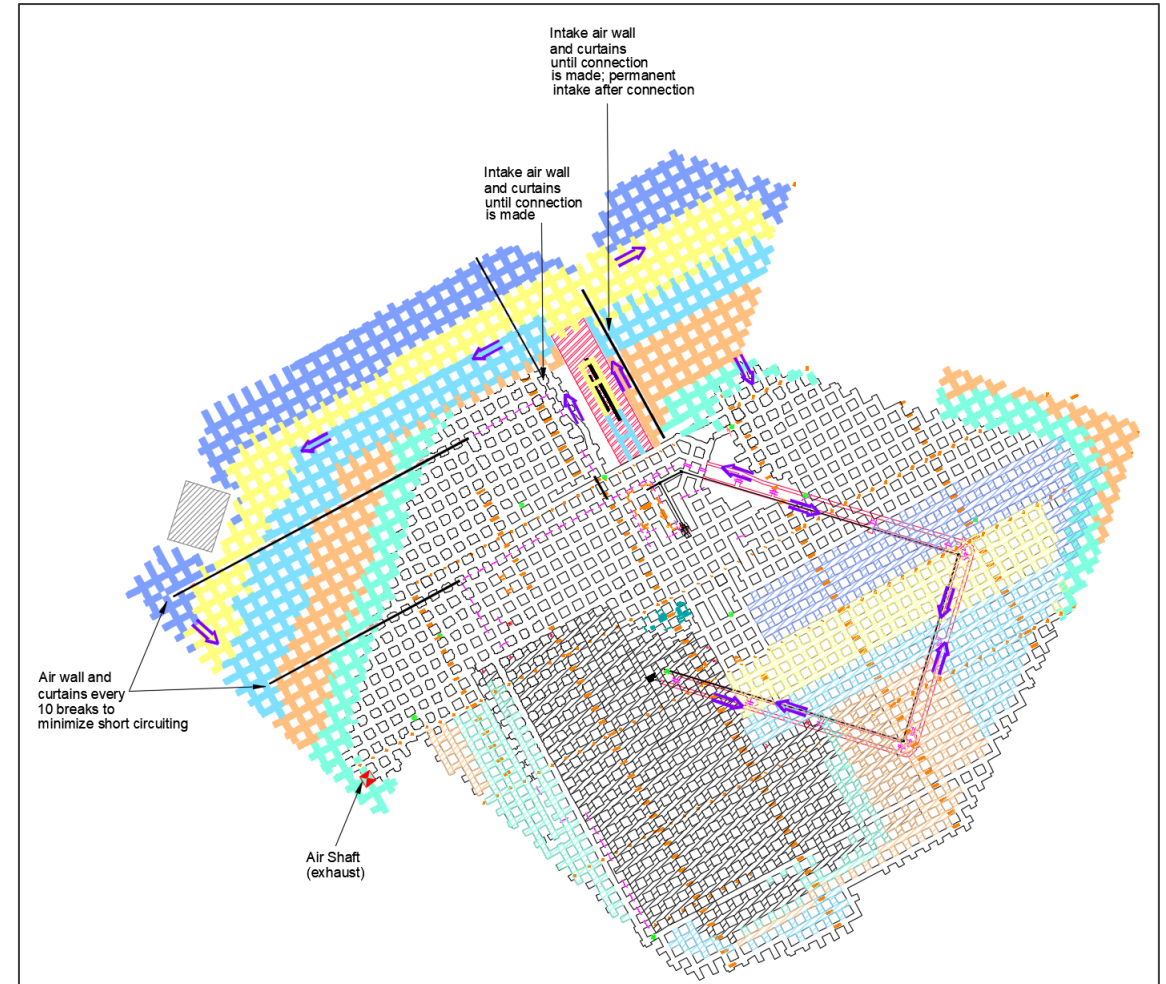
- Results
 - Increased volume at the bottom of the declines about 75,000 cfm
 - Increased pressure on the decline doors



Mine Layout

Vent Change #3

- Install an air shaft
- Stick to the mine plan





**ROGERS
GROUP** INC.

THANK YOU