FINAL PHASE I GROUND WATER INVESTIGATION REPORT

San Mateo Creek Basin Uranium Legacy Site

Management Update

August 24, 2016

9881842

Charge to
San Mateo Creek Basin
A6K6 T Fund

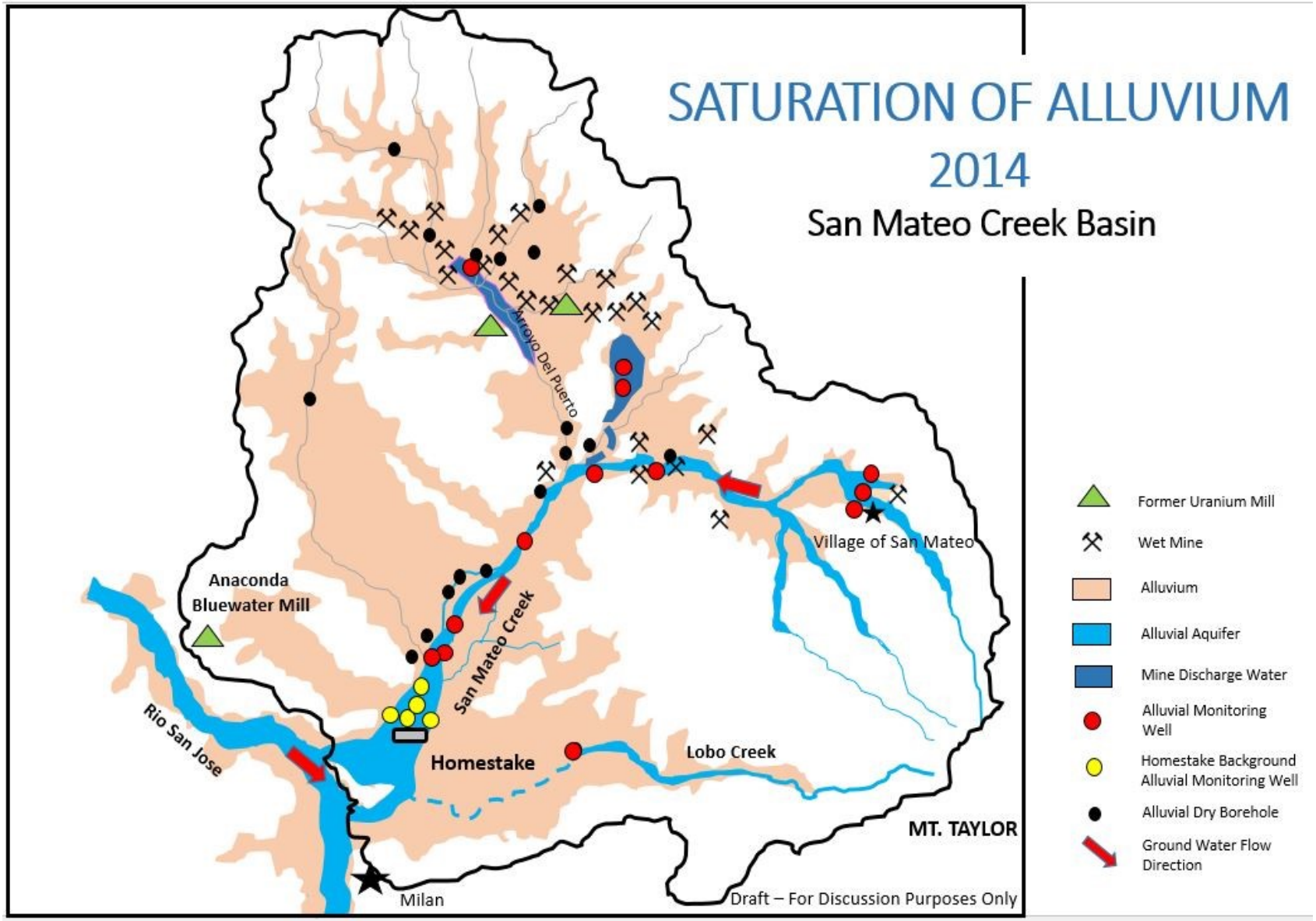
SUMMARY OF CONCLUSIONS

Alluvial Aquifer

- Attempt to Characterize Background had Mixed Results
  - Lack of Natural Saturation in Many Areas Investigated
- Water Quality Varies Across Basin
  - Good quality upgradient of mines and mills
    - Meets standards
  - Poor quality downgradient of mines and mills
    - Exceeds standards
    - Similar to mine discharge water quality
- Mine Discharge Water Draining Through and Out of Alluvium

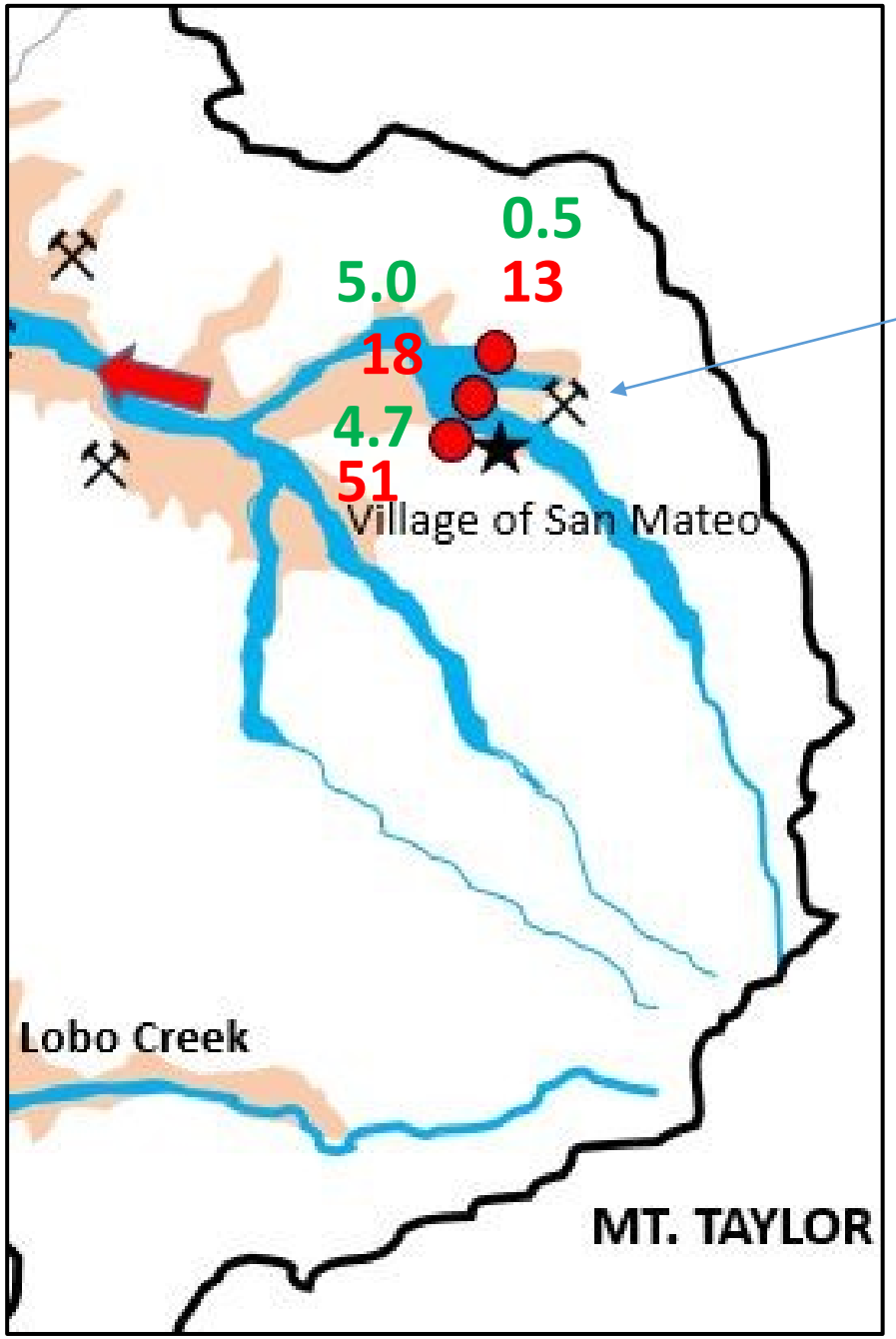
Conclusion No. 1

Limited Saturation in Alluvium



Conclusion No. 2

- **Significant saturation near village of San Mateo**
- **Ground water quality below standards, except for Gross Alpha**
- **Radium 226 elevated, but below standard**



Chevron
Mount Taylor Mine

51.0 Gross Alpha

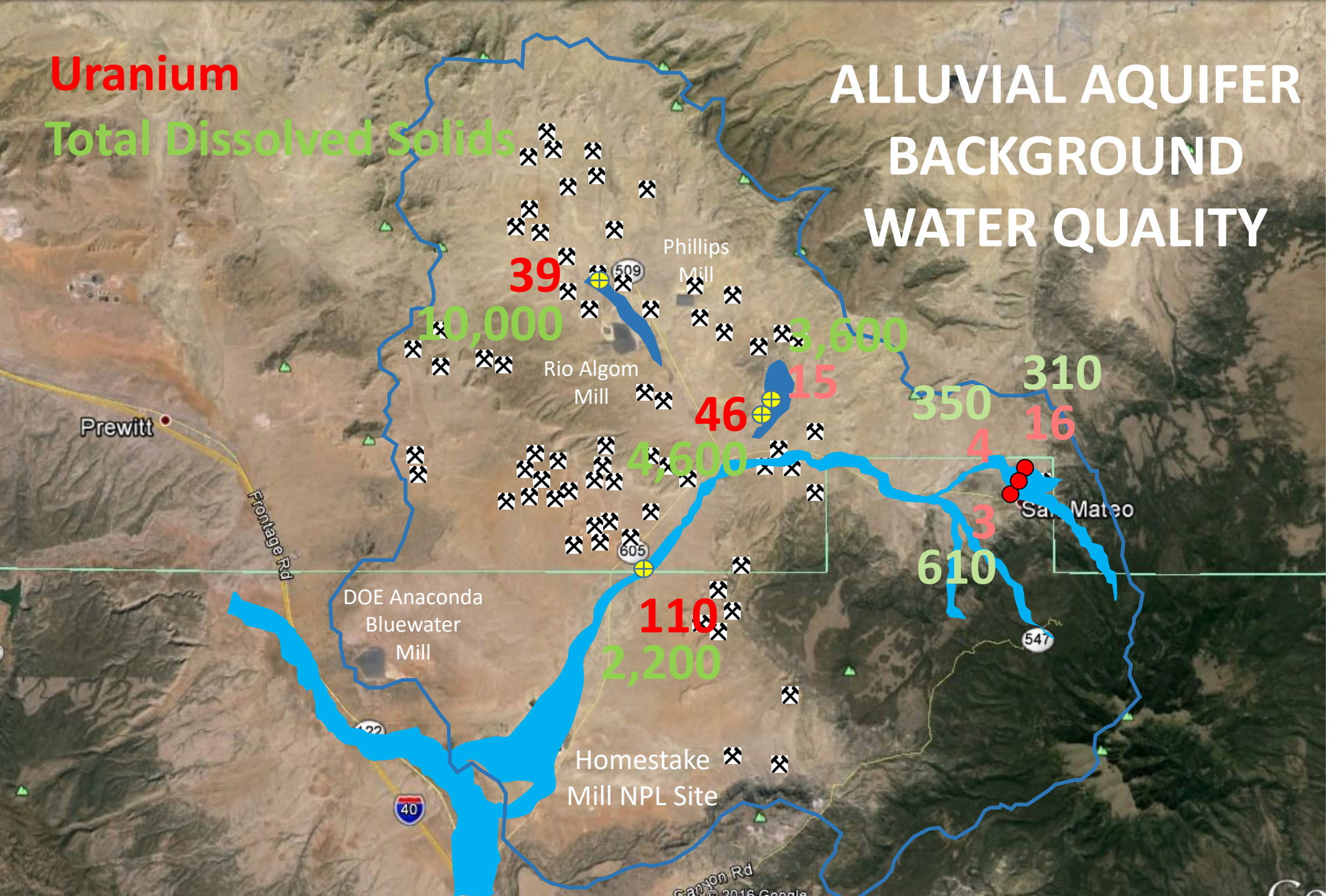
5.0 Radium 226

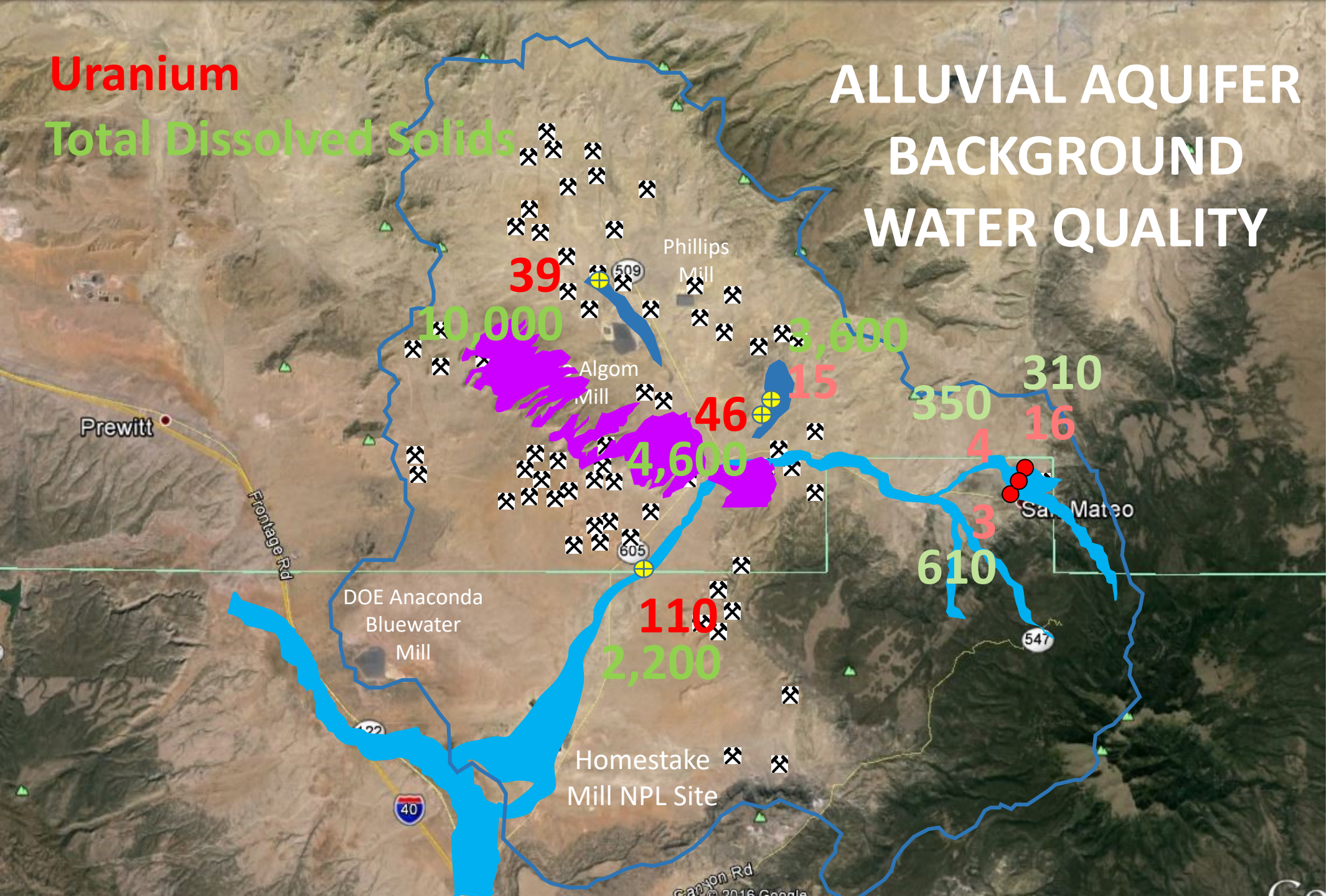
Conclusion No. 3

- Alluvial ground water downgradient of legacy mines exceed standards
- In comparison to background wells:
  - Greater than 3 times background
    - Uranium
    - Selenium
    - Total Dissolved Solids
    - Sulfate

Conclusions No. 4 & 6

- Alluvial water downgradient of Rio Algom Mill and Sec 35/Cliffside Mines of poorest quality
- May be mine discharge water
- Draining into bedrock formations


Uranium
Total Dissolved Solids
ALLUVIAL AQUIFER BACKGROUND WATER QUALITY
Phillips Mill
39
10,000
3,600
Rio Algom Mill
15
46
350
310
16
4
4,600
Prewitt
Frontage Rd
San Mateo
3
610
DOE Anaconda Bluewater Mill
110
2,200
Homestake Mill NPL Site
509
605
547
40
EPA Background Well
Well Downgradient to Legacy Mines
16 Uranium (ppb)
16 Total Dissolved Solids (ppm)
Alluvial Water
Mine Discharge Water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San Mateo
Prewitt
Frontage Rd
DOE Anaconda Bluewater Mill
110
2,200
Homestake Mill NPL Site
509
605
547
40
Dakota Sandstone Outcrop
EPA Background Well
Well Downgradient to Legacy Mines
16 Uranium (ppb)
16 Total Dissolved Solids (ppm)
Alluvial Water
Mine Discharge Water

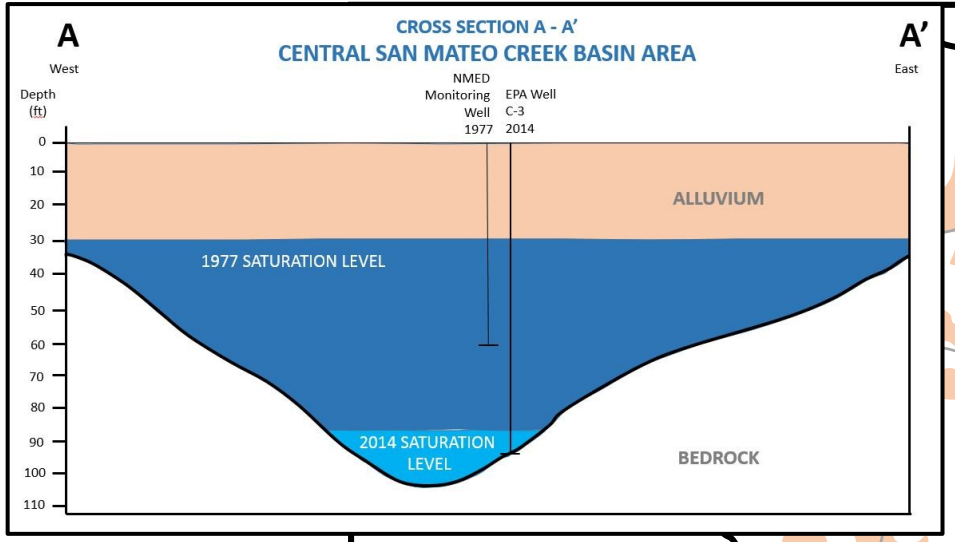
Conclusion No. 5

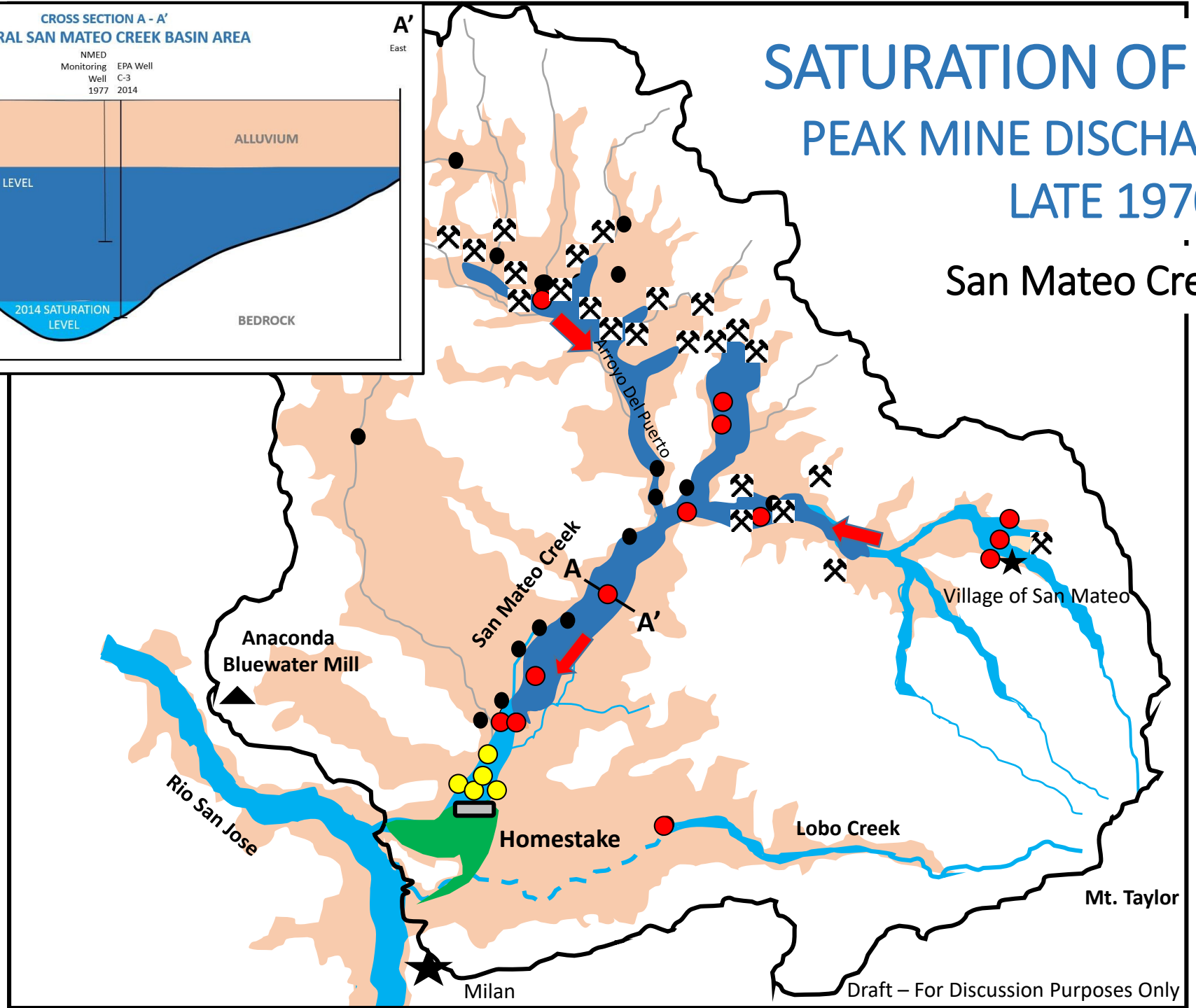
- Mine water discharges resulted in saturation and desaturation of Alluvium on massive scale
- Water levels in central part of basin raised and dropped over 50 feet
- Drain down not observed at Homestake

SATURATION OF ALLUVIUM

PEAK MINE DISCHARGE PERIOD

LATE 1970S

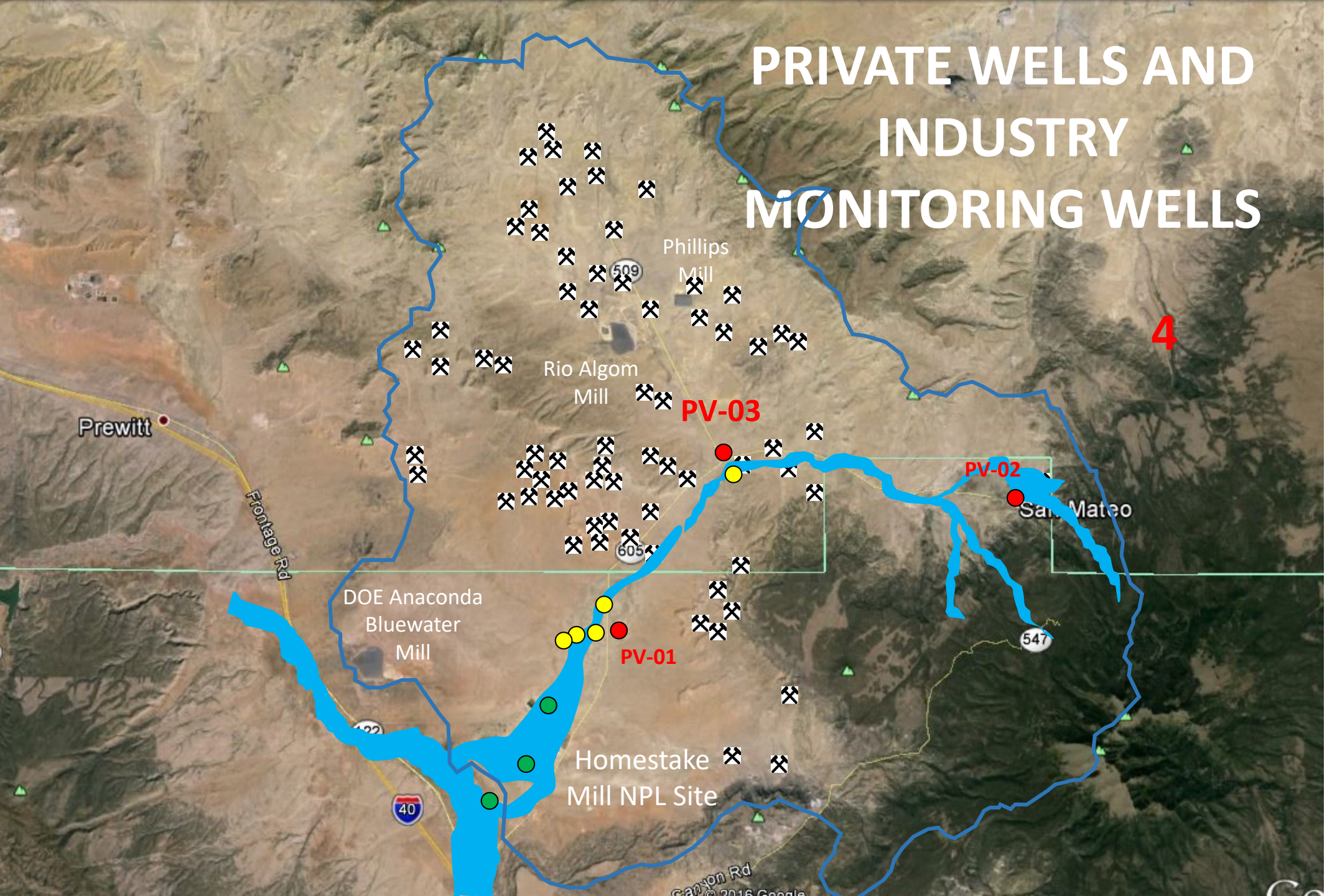




Conclusion No. 7

- 12 private wells and other industry monitoring wells exceeded standards
- Only 3 of 12 wells used for drinking water supply
- Only 1 of the 3 exceeded EPA MCLs or NM drinking water standards (PV-03)
- Point of Use Treatment Systems installed by Removal at home for PV-03

PRIVATE WELLS AND INDUSTRY MONITORING WELLS



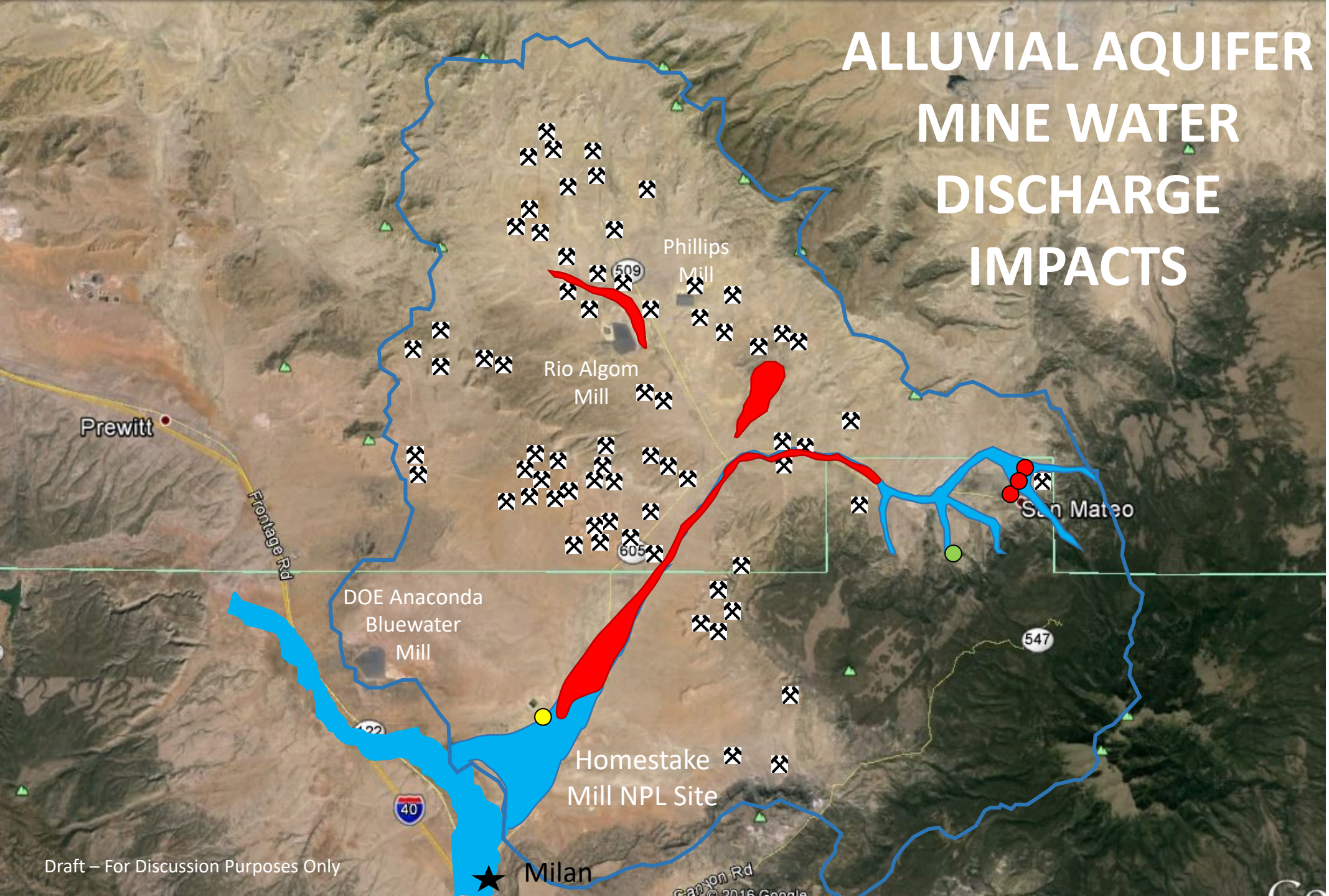
- Private Well
- Other Private Well (Livestock Watering or industry Monitoring Well
- Other industry Monitoring Well San Andres/Glorieta

Phase I Report Roll-Out

- August 25 – Brief SF Director
- By September 1 – Send to Federal Partners (R9, NMED, MMD, DOE, NRC, BLM, DOI, USFS, USGS)
- September 16 – Public Release
  - Website
  - Tribal Contacts
  - DVDs as Requested
- October 19/20 – Tronox Quarterly Presentation (Navajo, R9, State)
- Week of November 14 – Public Meetings

Other Slides

ALLUVIAL AQUIFER MINE WATER DISCHARGE IMPACTS



- EPA Background Well
- NM Background Wells (Historical 1978-80)
- Homestake Background Well
- Alluvial Aquifer
- Mine Water Discharge Impacts

Draft – For Discussion Purposes Only