Overview of the Gold King Mine Spill

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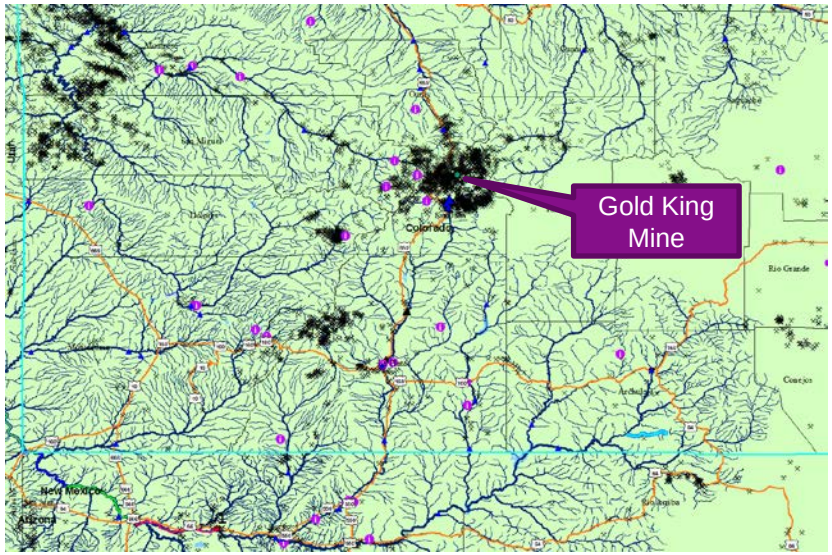
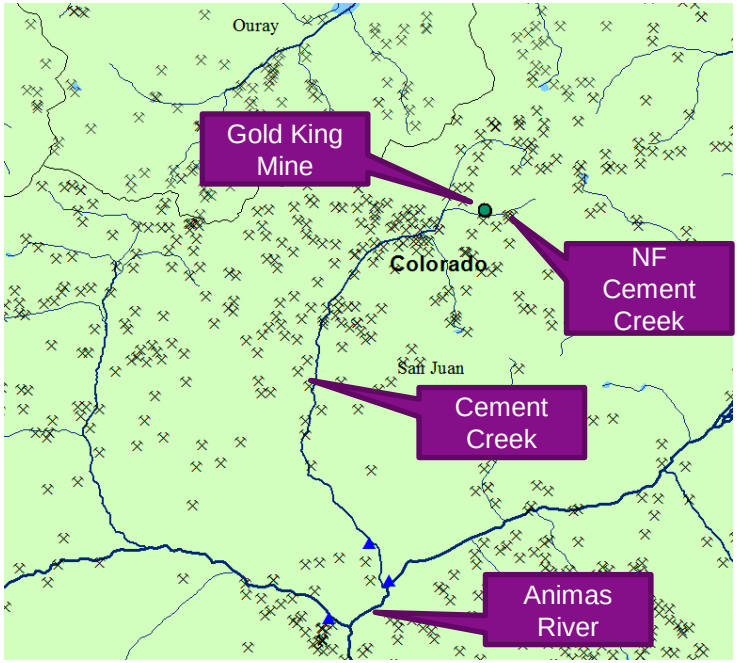
Spill Event

- On August 5, 2015, EPA was conducting an investigation of the Gold King Mine. The intent of the investigation was to create access to the mine, assess on-going water releases from the mine to treat mine water, and assess the feasibility of further mine remediation.
- The plan was to excavate the loose material that had collapsed into the cave entry back to the timbering. During the excavation, the loose material gave way, opening the adit (mine tunnel) and spilling the water stored behind the collapsed material.
- Approximately, three million gallons of acidic, metal-rich mine wastewater from the Gold King Mine spilled into Cement Creek, a tributary of the Animas River.
- The large pulse of water dissipated in about an hour.





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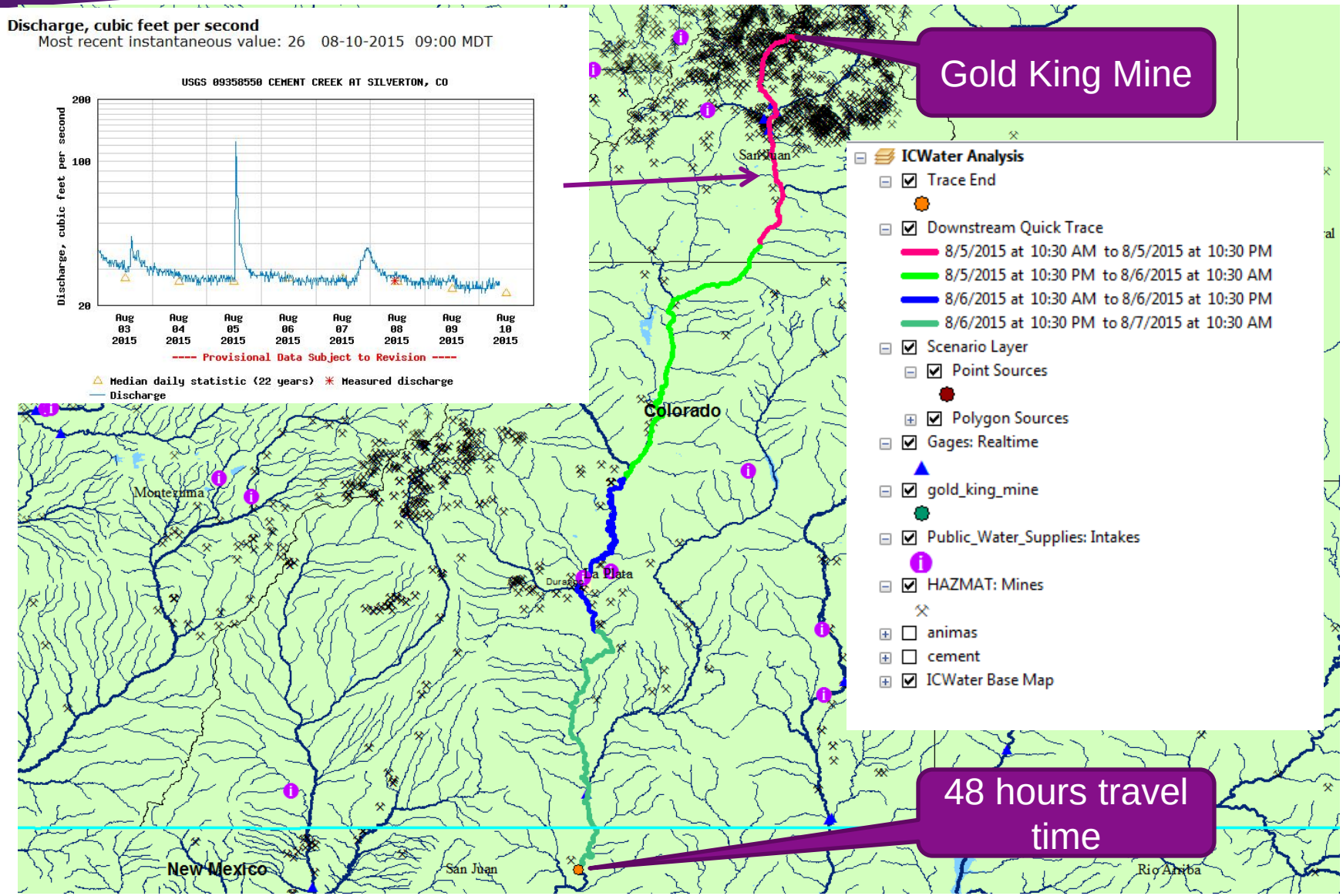
ICWater Quick Trace – 48 hours, based on flow at Cement Creek at Silverton, CO



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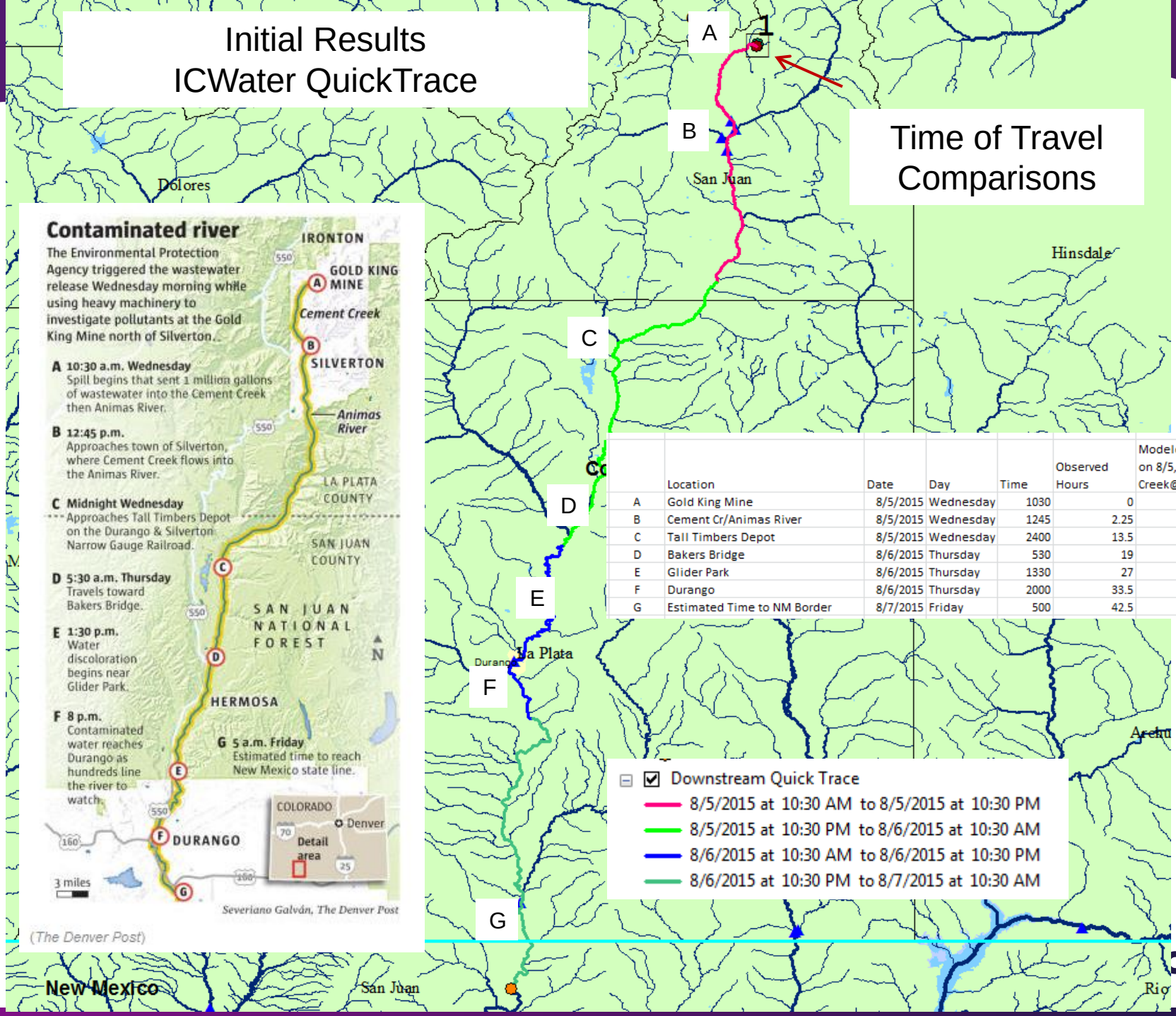
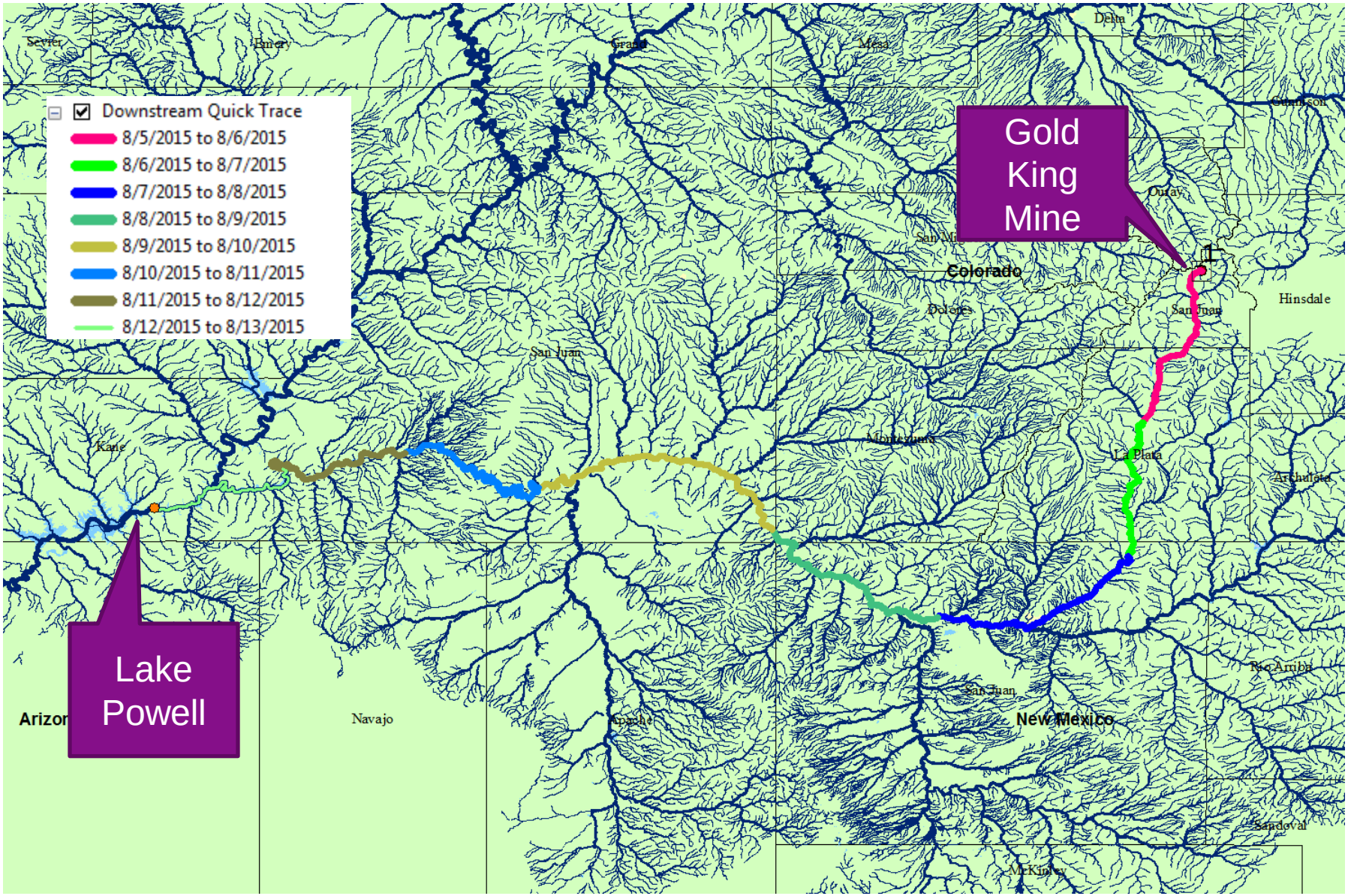
Initial Results
ICWater QuickTrace

Time of Travel Comparisons



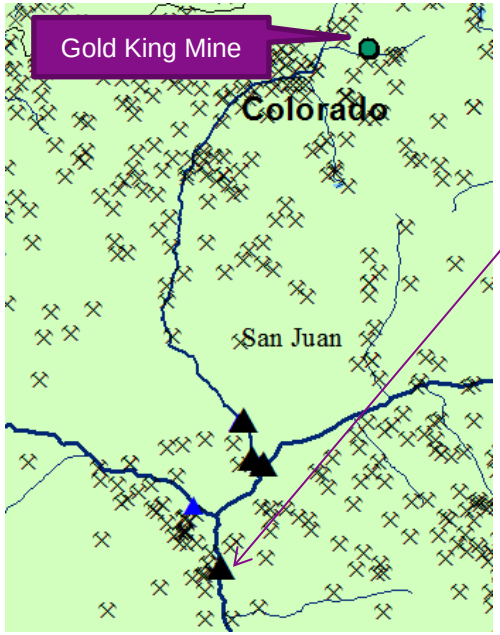
	Location	Date	Day	Time	Observed Hours	Modeled Hours (flow on 8/5, Cement Creek@Silverton)
A	Gold King Mine	8/5/2015	Wednesday	1030	0	0
B	Cement Cr/Animas River	8/5/2015	Wednesday	1245	2.25	5.7
C	Tall Timbers Depot	8/5/2015	Wednesday	2400	13.5	16.1
D	Bakers Bridge	8/6/2015	Thursday	530	19	21.1
E	Glider Park	8/6/2015	Thursday	1330	27	26.7
F	Durango	8/6/2015	Thursday	2000	33.5	33.4
G	Estimated Time to NM Border	8/7/2015	Friday	500	42.5	45.8

ICWater QuickTrace – 8 day travel time



ICWater Preliminary Results

Metal Concentrations



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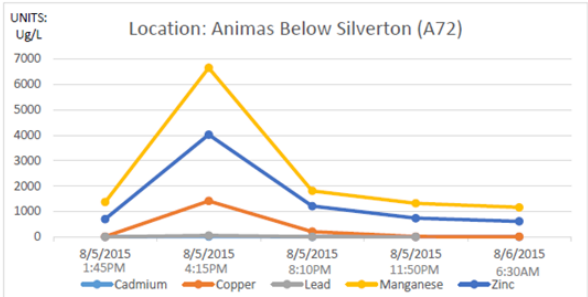
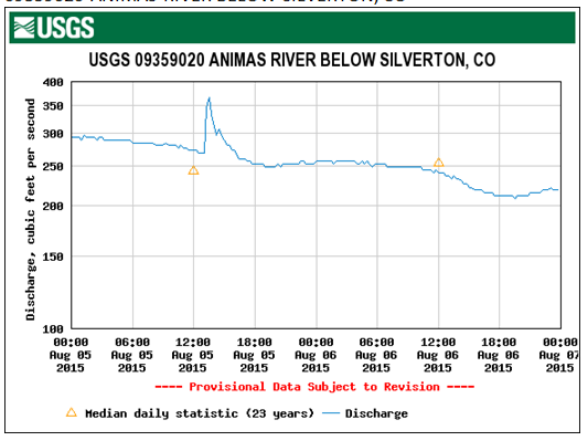
37.79027/
-107.667578



Baseline Average	Cadmium	Copper	Iron	Lead	Manganese	Zinc
	2	12	3070	4.34	1859	815

Peak = 4:15 PM 8/5/2015

09359020 ANIMAS RIVER BELOW SILVERTON, CO

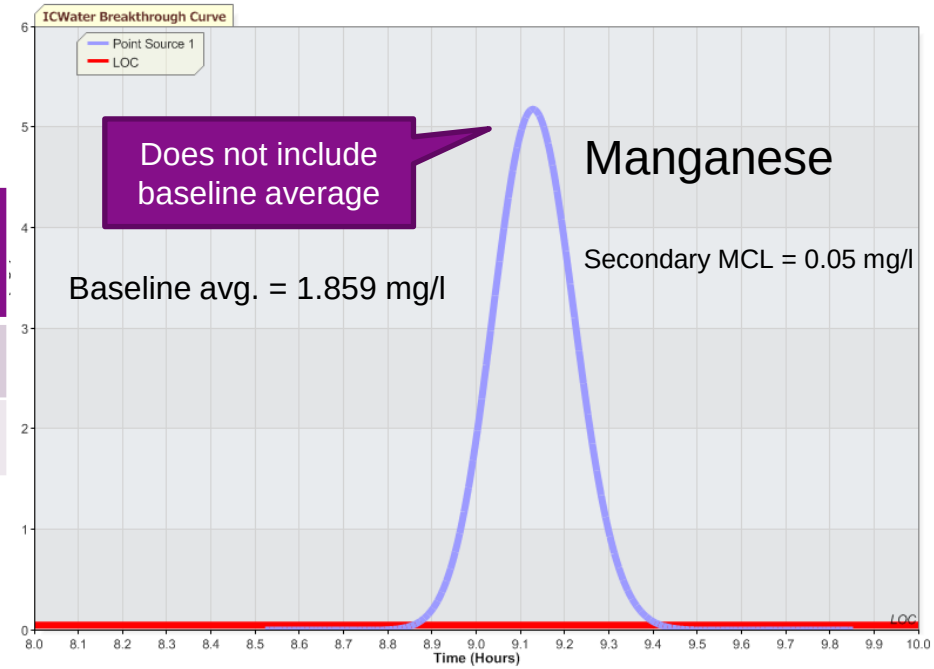


Peak 2015-08-05 @ 13:30

Summary of EPA Surface Water Sampling of Select Metals -Gold King Mine Blowout August 7, 2015

Comparison	Peak Time (hrs)[2]	Peak Conc. (mg/l)
Model[1]	9.13	7.12
Observation	5.25	6.65

[1]uncalibrated model – NHDPlus and real-time gage (09359020)
[2]time after release (10:30 AM on 8/5)



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Summary and Conclusions

- ICWater QuickTrace used to compute initial time-of-travel
  - this was followed up with concentration calculations as sampling results became available
- The model predicted an 8-day travel time to Lake Powell
  - 10 real-time gages along the spill pathway
- Hundreds of abandoned mines in the vicinity
- Improve flow-velocity relationship in ICWater

Gold King Mine Spill	Elk River Spill
~3,000,000 gallons of acidic, metal-rich mine wastewater	10,000 gallons of 4-methylcyclohexanemethanol (MCHM)
Mine breach	Tank leak
Effects on drinking water availability, irrigation, recreation	Contamination of major water supply
Downstream trace to Lake Powell: 400 miles	Downstream trace to Cincinnati: 250 miles

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