	New Mexico Environmental Department (NMED)	U.S. EPA	CDPHE Position and Inclusion into a Draft Monitoring Plan
List of Monitoring Elements	*Long-Term Monitoring Plan - Evaluating the Effects of the Gold King Mine Wastewater Spill in Northern New Mexico*	*Post-Gold King Mine Release Incident: Conceptual Monitoring Plan for Surface Water, Sediments, and Biology*	
Public Drinking Water Systems	**Goals**: Determine if the GKM spill will have any impact on the water sources used by public water supply systems **Actions**: • Develop a regional Source Water Protection Plan • Monitor sources of public water supply • Establish real time monitoring of the Animas River for indicator parameters • Increase sampling frequency in response to detection of increased heavy metal concentrations in source waters • Monitor sedimentation basin sludge for evidence of heavy metal buildup • Explore interest among public water systems in Colorado, and with the State of Colorado, in collaborating on the regional Source Water Protection Plan	No equivalent plan	CDPHE sees zero similarity between the plans for public drinking water systems by both NM and EPA. CDPHE already has a state Source Water Protection Plan in place, so a regional approach may not be necessary. But while the two agencies plan differ, CDPHE believes that there exists a middle ground which could be best pursued with 106 funds and monitoring collaboration with stakeholders and local health agencies in Silverton and Durango.
Surface Water Quality	**Goals**: Determine if surface-water quality has changed as a result of the GKM spill, and evaluate any changes with regulatory standards and criteria **Actions**: • Surface water quality sampling • Seasonal base flow • Storm events and snowmelt • Collect other parameters of concern	**Goals**: Determine if surface water quality has changed as a result of the GKM spill or if conditions are comparable to historical conditions **Actions**: • Surface water quality sampling • Seasonal base flow • Storm events and snowmelt	While the field and analytical parameters may vary slightly, both NMED and USEPA plans are in basic agreement in terms of what and when to sample. The "where" may vary. NMED is considering adding other "parameters of concern" related to their state standards because they will be conveniently at these monitoring sites.

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	that are known to be out of compliance with state water quality standards		CDPHE would oppose collecting data that doesn't answer an immediate question related to GKM and related water quality concerns.
Sediment	**Goals**: Determine if elevated heavy metal concentrations presently occur in stream and irrigation ditch sediment, and in soil that has been irrigated with water diverted from the Animas River **Actions**: • Sampling, especially after runoff/storm events, of surface water sediment and irrigated soils for heavy metals and evidence of increasing concentrations • Facilitate coordination between ditch associations and public water systems	**Goals**: Determine if total recoverable metals presently occur in stream sediment. **Actions**: • Sample 3 events – 1 in fall 2015, 1 in spring 2016 pre-snow melt, and 1 in fall 2016	NMED has reasonable goals and actions. CDPHE understands that EPA's plan is only draft and that some comments from stakeholders asked EPA to include sampling of sediments after runoff/storm events, too, but was restricted to surface water sediment, not irrigated soils. If EPA were to include sediment sampling after runoff/storm events then the NMED and EPA plans would be comparable, with the only difference being facilitation of coordination between ditch assoc. and public water systems
Solids Characterization	**Goals**: Determine specific form of contaminants in GKM spill solids and assess likely release and re-release pathways **Actions**: • Review solid characterization data for GKM site and surrounding mines and mine waters to establish likely initial forms of solid contaminants • Directly characterize solids and associated metals from water and sediment along the flow path • Model the likely transformation and release of mixed metals in GKM spill solids in different depositional environments	No equivalent plan	EPA does not have this in their draft conceptual monitoring plan; however it appears that EPA ORD is studying fate and transport as indicated in the report draft below. So modeling is already in progress. See *"Draft Analysis of Fate & Transport of Metals in the Animas & San Juan Rivers"* (EPA Feb 2016) CDPHE would defer to EPA's final report upon completion of the peer review process.

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Aquifer-River Interactions	**Goals**: Define hydraulic and geochemical interactions between river water, hyporheic zone pore fluid, and shallow alluvial groundwater **Actions**: • Sample surface water, near-river wells, stream sediment, rock coatings, and hyporheic zone sediment and pore fluid at twenty sites from Cement Creek, CO, through N.M., and into Bluff, UT for general chemistry and trace metals.	No equivalent plan	CDPHE is uncertain what question this type of analysis will answer. It is unclear based on the defined goals and actions. CDPHE would oppose regional efforts to define the hydraulic and geochemical interactions unless there was a meaningful end goal for this monitoring & analysis.
Regional Ground and Surface Water Hydraulics	**Goals**: Map the regional water table on a seasonal basis and define hydraulic relationships between groundwater and surface water **Actions**: • Measure water levels in surface water (both rivers and irrigation ditches) and in up to 80 wells seasonally for two years • Prepare potentiometric maps for each measurement event	No equivalent plan	CDPHE is uncertain what question this type of analysis will answer. It is unclear based on the defined goals and actions. This would be a costly venture.
Groundwater Quality	**Goals**: Determine if groundwater quality has been impacted by the GKM spill **Actions**: • Map and evaluate water quality data collected by the EPA in August 2015 from private domestic wells that were self-identified by residents and sampled for laboratory analysis • Identify additional private water	No equivalent plan	CDPHE sees zero similarity between the plans for public drinking water systems by both NM and EPA. But while the two agencies plan differ, CDPHE believes that there exists a middle ground which could be best pursued with 106 funds and monitoring collaboration with stakeholders and local health agencies in Silverton and Durango.

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	supply wells that may be influenced by recharge from irrigation ditches • Identify indicator parameters that can be used to monitor groundwater for possible impacts from the spill • Identify private domestic wells that are at risk of being inundated by floodwater that may contain mine waste		
Ongoing and Potential Future Discharges in the Mining Area	**Goals**: Identify and characterize ongoing and potential future discharges of mine waste into the Animas watershed **Actions**: • Identify locations, volumes and chemical quality of water impounded in mine workings in the upper Animas watershed • Identify and chemically characterize ongoing mine water seeps and gauge flow rates • Identify locations of waste rock and mill tailings piles that have the potential to discharge into surface water	No equivalent plan	Should the mining complex near Silverton be listed as a Superfund site, it is likely that these goals and actions will be pursued and conducted by EPA. However, in the event that a decision is made not to list as a Superfund site, CDPHE would defer these types of assessments to EPA Region 8 or the Colorado Division of Reclamation and Mining Safety.
Airborne Dust	**Goals**: Determine if the GKM spill has created potentially unhealthy contaminant concentrations in airborne dust **Actions**: • After the first year of monitoring data for sediment is available, the Long-Term Impact Review Team will review	No equivalent plan	CDPHE will not initially pursue this type of monitoring but be interested to see what NMED learns and then make a decision whether to pursue it as a long-term monitoring goal.

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	the data and make a decision on what monitoring, if any, is necessary for airborne dust		
Plants and Animals	**Goals**: Determine if GKM spill contaminants have adversely affected benthic organisms or are being accumulated by plants and animals **Actions**: • Will Monitor or may sample: • Benthic microbes or macroinvertebrates • Riparian invertebrates • Fish • Amphibians and reptiles • Terrestrial wildlife • Birds • Livestock • Crops	**Goals**: Determine if GKM spill contaminants have adversely affected aquatic organisms **Actions**: • Will Sample: • Benthos and fish tissue in fall 2016 • Macroinvertebrates and fish in falls 2015 and 2016 • Add physical habitat at each site	Fairly comparable in terms of the aquatic organisms but NMED has interest in terrestrial flora and fauna, as well. EPA has no plans to sample beyond the channel although they will include a riparian evaluation via physical habitat survey when macros. NMED's goals are far reaching and will include a large price tag. CDPHE would lean towards EPA actions, but believes that there exists a middle ground which could be best pursued with 106 funds and contracts to evaluate "near channel fauna" such as riparian invertebrates and amphibians & reptiles.
Biomonitoring	**Goals**: NMED will continue its biomonitoring work through the Four Corners States Biomonitoring Consortium **Actions**: • Farmington-area residents will be recruited to assess levels of heavy metals in their private well water and urine	No equivalent plan	The Four Corners States Biomonitoring Consortium is a public health agency collective, including Colorado that focuses on the collection of biological samples (biomonitoring) from humans such as skin cells, blood, hair, saliva, urine, etc.) This may be an area where CDPHE can support local health agencies financially via 106 funds. Or, if declared a Superfund site, perhaps EPA would implement this type of human-scale biomonitoring.

Green font = where NMED and US EPA align on monitoring