Introduction: Ms. Suárez invited everyone at the table to introduce themselves with their affiliations. Each CAG member received the monthly folder with printed materials, which included Mr. Norris’ addition to the November meeting notes. Ms. Suárez briefly reviewed the agenda for the night’s meeting. She noted that Denver’s health agency has changed names from Denver Environmental Health (DEH) to Denver Department of Public Health and Environment (DDPHE). In response to Mr. Dugan’s email request concerning the advertisement of the CAG meetings, Ms. Chergo announced that agencies would help advertise by placing an ad in the local newspaper (the Denver YourHub section of the Denver Post) beginning with the next meeting; this effort will complement the ongoing efforts of CAG members to also advertise the meetings to community members. CAG members suggested that community members read the Thrifty Nickel. Ms. Chergo agreed to look into placing an advertisement in the Thrifty Nickel. A Spanish language translation of the advertisement will also be included to more effectively reach Spanish speaking community members. There was a general verbal consensus for this approach.

Ms. Morse asked about the documentation that Mr. Frobel agreed to provide regarding the electrical leak testing. Ms. VanDerLoop replied that Denver had not yet received these documents and agreed to follow up with Mr. Frobel. Mr. Norris’ addendum will be considered an addition to the November meeting notes. The approval of the November meeting notes will be deferred until January to allow time for review and comments regarding Mr. Norris’ submittal.

Construction update: (Ms. VanDerLoop for Ms. Luthi)

To date, 141,800 total cubic yards of solid waste material have been excavated, of which 82,000 total cubic yards have been handled as asbestos containing soils. With regards to the treated water, the most recent Pollution Report noted an exceedance in selenium levels for the effluent water. The influent water taken from the site did not test above allowable limits for selenium. Denver continues to investigate this anomalous result, and CDPHE officials have been notified. CDPHE suggested that Denver conduct more testing and investigation, but CDPHE is not alarmed by these results. Denver is implementing additional testing. Air monitoring continues; low levels of contaminants have been reported with no exceedances. With regard to the liner installation, crews are installing the footers in the subgrade that will be used for the walls to which the liner will attach. The actual liner installation has not yet begun (behind schedule). Park construction has not yet started. Wing walls, drop structure, and rip-rap installations are underway ahead of schedule.

Ms. Morse asked what actions are being taken with the effluent water? Ms. VanDerLoop explained that the effluent samples are taken during discharge to the South Platte River. The water is not held after treatment. There is potentially error in the sampling, and Denver has increased the sampling frequency
to aid investigation of this anomaly. Ms. Morse also asked for clarification regarding the increased reporting of asbestos containing soils through the project’s history. Ms. VanDerLoop replied that initial borings at the site revealed a limited amount of asbestos in the soil. The construction demo waste in the site is the source of the asbestos containing material (ACM). Generally, while excavating a historical land fill, one can expect to encounter heterogenous waste. Ms. Morse has requested that the project be halted and called for the creation of an Operable Unit 4 to address commercial properties formerly excluded from Superfund designation (OU1) within VB/I-70; she shared concerns for airborne contamination pathways. Ms. VanDerLoop responded that air monitoring efforts at GLO have consistently reported results protective of human health. Ms. Chergo replied that EPA decision makers have responded to this question (regarding commercial properties within the boundary of OU1), and their stance has not changed. There is no new data to warrant a change in decision. Mr. Aviles will respond in the January meeting and via email to this concern.

Mr. Burton called for a more extensive investigation of the existing environmental conditions, citing a larger policy issue. He stated that an engineering evaluation and cost assessment was not performed prior to initiating the time critical removal action at GLO, which has resulted, in his opinion, in an inadequate knowledge of existing environmental site conditions. Ms. VanDerLoop clarified that 39th avenue is not part of OU2. She explained that a Remedial Investigation, Feasibility Study, and Risk Assessment were completed in 2010/2011 which included soil borings, an analysis of health effects, and cost assessments. 39th Avenue, by contrast to GLO, is not in a landfill. Mr. Burton pointed out that Denver’s planned use of the land has changed since the original RI/FS, which he feels warranted additional work. He called for the creation of OU4 to enable these additional investigations.

Groundwater presentation: (Mr. Bowen)

Mr. Bowen explained that his presentation covers the basic concepts of groundwater science. He discussed the water cycle diagram, which illustrates the movement of the major forms of water in the ground, ocean, clouds, fresh water, plants, and the atmosphere. Rain, snow, and evaporation are a few mechanisms that drive this movement. A very small percentage of this water infiltrates into the ground to become groundwater. Gravity drives the movement of groundwater from high areas to lower areas, and towards rivers, frequently discharging into surface water bodies. In Denver, shallow groundwater is primarily moving through sediments, not bedrock. The water table generally follows surface feature topography. The elevation of surface water bodies like lakes and rivers will often match the elevation of the water table beneath immediately adjacent land. The water table gradually rises with topography away from the water body. In general, roughly 20% of surface water infiltrates down into groundwater. Mr. Bowen did not know specific rates of groundwater infiltration at VB/I-70 or Denver, but guessed 20% to be a good estimate at the site. Groundwater velocity is typically measured in feet per year, as groundwater generally moves very slowly. A potentiometric surface map displays the contour elevations of the groundwater table in a specified area. This map helps illustrate the direction and speed of groundwater movement. At Operable Unit 2 (OU2), water moves generally westerly in the southern part of the site, and generally northwesterly in the northern part of the site. Mr. Bowen presented an aerial site map with arrows illustrating the direction of groundwater movement at the site.

Ms. Morse asked if Mr. Bowen had been provided the prior submitted CAG questions. He replied that no he had not; his task was to present a basic overview of groundwater principles. Ms. Suárez clarified that Mr. Ross’ subsequent presentation would address the CAG outlined questions more specifically.

Mr. Norris asked about the site image. He asked if the new modeling was being conducted in response to the fact that construction dewatering volumes have approached ten times the originally predicted
volumes? Mr. Bowen replied that yes, it is. The new model reflects the higher conductivity encountered. Multiple pumping tests were performed to calibrate the original model. There is one notably highly conductive unit, situated in the southern portion of the site, largely responsible for the higher volumes of groundwater flow. Denver is compiling a report (draft phase) to document all of the modelling and investigations performed to date for the EPA; it is currently an internal document likely to be completed in the coming months.

Mr. Dutcher asked what is the elevation of the groundwater generally throughout the site. Mr. Bowen replied that 12-15 feet below ground surface is the average depth. The water gradient is steeper along the steeper river banks, because of the topographical change and the lower permeability clay rich material closer to the river.

Denver conducted pumping tests in two groundwater wells located in the northern portion of the site nearest suspected contamination to calibrate the original site model. These initial tests did not detect the highly conductive area near the southern boundary of the site, farthest from contamination, which resulted in modelling error for predicted site-wide groundwater conductivity.

Mr. Dutcher asked if the water table rises and falls with the change of seasons, and from year to year? Mr. Bowen replied that yes there are variations, but several years of measurements confirm that the changes are relatively small, on a scale of inches, not feet.

Mr. Burton asked if insufficient fieldwork resulted in error of the original groundwater modelling. Mr. Bowen replied that models are inherently uncertain; in his professional opinion an adequate number of pump tests were performed. In fact, it is unusual for EPA to conduct even a single pump test at a Superfund site. It was statistically unlikely that single point well tests would detect the anomalous, highly conductive units at the southern edge of the site.

Surface water presentation: (Mr. Ross)

Mr. Ross formerly worked for CDPHE for 17 years in several positions, including surface water and groundwater specialist, and water permit management. He now works for Denver Department of Public Health and Environment. Mr. Ross presented a Denver regional scale geologic map of alluvium to illustrate the distribution of finer grained material (river alluvium) which corresponded to historical water flow channels. Denver’s modern infrastructure has altered these patterns. There are two major basins--the Montclair and the Park Hill basins. Pre-project surface water flows moved through storm sewers to the outfalls at 38th St or Globeville Landing park and into the South Platte River. Mr. Ross presented another map outlining storm water mains (pipes) locations in the project area. Questions were raised regarding potential I-70 project effects on water movements. However, the full design for I-70 construction has not been presented to the city, so it was not possible to analyze potential project effects on water movements. Ms. VanDerLoop reiterated that this CAG’s focus is the VB/I-70 Superfund site, not the Central 70 construction project. Mr. Ross stated that, in general, groundwater will flow around impediments encountered, much like a rock in a stream, rather than take a major change in flow direction. Mr. Eppler asked about a relatively impermeable clay layer at some depth in the project area. Mr. Ross replied that he was familiar with this layer, but that project scientists have not encountered it in borings at GLO or National Western. The pre-construction storm water system outfall was designed for less than a five year flood, or 1,700 cfs; the post-construction storm water system outfall was designed for 100 year flood, or 3,750 cfs capacity. Mr. Ross explained that it is not appropriate to compare design flows for a system that can handle less than a five year flood with a design flow for a 100 year flood. Mr. Norris asked for estimates of flows from regular (smaller) rain events and dry-
weather flow events. Ms. VanDerLoop responded with a 3-5 cfs estimate for dry weather flow of surface water. Ms. VanDerLoop agreed to follow up regarding how this estimate was derived.

The South Platte is a highly regulated water body, with relatively little fluctuations. However, large storm events (on average about seven per year) create dramatic changes (flash flows) in the water flow volume. The USGS and State Engineer’s Office monitor these flows in the South Platte River; data is best accessed via the USGS website. However, there is no routine flow monitoring in the Denver storm water conveyance system, which is typical of large cities. The Storm Water Master Plan serves as a good reference document for overall storm water management in Denver.

The federal Clean Water Act and its state equivalent, the Colorado Water Quality Control Act, operate on a water quality standards framework, of which the most important standards relate to aquatic life and human health. Aquatic life standards are generally more restrictive. Storm water is also regulated. Cities must acquire permits to discharge storm water into federal waters or waters of the state. The regulatory documents aren’t very prescriptive, but are written in a more narrative fashion.

**Surface water presentation:** (Mr. Novick)

DDPHE has monitored water quality since the late 60’s, through several programs. Mr. Novick manages surface water quality sampling programs for CCoD. One current program focuses on recreational water quality; another address long-term water quality changes over time for the last 20 years. He showed a sampling map for current sampling locations, which is available on the DDPHE website. The suite of analytes measured for long-term trend monitoring include E. coli, metals, inorganics (chloride, sulfate, alkalinity, hardness) and nutrients (nitrogen and phosphorus). The southernmost sampling location, just downstream of Dartmouth, establishes a background for South Platte water quality entering Denver. The northernmost two sites are situated just south (upstream, at 38th Ave) and just north (downstream, at 46th Ave) of the GLO site. Mr. Novick then presented a graph that tracked arsenic, lead, and nitrate data over the last two years at the three sampling locations referenced. Results suggest that water entering the South Platte River from the GLO area have had no discernable impact on the water quality of the river water with respect to these contaminants—As, Pb, and nitrate. Results fall well below aquatic life standards. Nitrate levels increase in the South Platte within Denver primarily as a result of the wastewater treatment plant (Littleton/Englewood Plant) discharge just upstream of the background site. Wastewater treatment plants are known sources of nitrogen (nitrate) and phosphorus. Recommended sources of surface water quality data in the area include the National Monitoring Council, the Colorado Data Sharing Network, and Denver’s Open Data Catalog; these sources also include data for additional analytes. 2017 nitrate data from the GLO site outfall was collected via an automatic sampler at one-hour intervals. Nearly all results have fallen within standards with an exception in May, possibly due to a storm event. A new city automatic sampling program will begin next year; rain events and increased outfall discharges will trigger the samplers. They will measure contaminants common to urban runoff. The new monitoring plan should be completed in the spring, 2018, with sampling to begin in the summer. Arsenic and cadmium will be included. At Mr. Eppler’s request, Mr. Novick agreed to provide data (in graphical form) for Pb, As, and nitrate for previous years in addition to river flow data from a stream gage at 18th St. for reference.

Thornton and Aurora officials are aware of the GLO project; to Mr. Ross’ knowledge, they have no concerns for downstream water quality associated with the GLO project. They monitor incoming water for water quality parameters. Responding to a query, Mr. Ross confirmed that Adams County has shallow aquifer drinking water wells in the alluvium at the intersection of Quebec and the South Platte
River. An old Superfund site called Chemical Sales Company in Adams County is the source of some contamination associated with these wells. The area groundwater moves via the Quebec Paleochannel.

Ms. Fetter from the Cole neighborhood asked about potential federal legislation to repeal the Clean Water Act and a change in scope to regulate only navigable waters. How might this impact the GLO project? In Mr. Ross’s opinion, they will have little effect as Colorado exercises its own independent clean water act legislation which maintains stricter regulations. Any water that’s not in a pipe is considered to fall under state water regulations, with wetlands being the only exception.

Mr. Armijo asked what type of pump was used in the sampling wells at GLO? Was the sludge tested in a laboratory? He also asked about the status of two underground fuel storage tanks on 39th Avenue.

Mr. Bowen responded that it was likely an electrical submersible pump, and that no sediment was pulled out of the well. Filter packs lining the test wells blocked sediment from entering the test wells during operation. Mr. Ross replied that the underground fuel storage tanks have been located and partially excavated; there was no indication of a release, but laboratory results are still pending.

Responding to a question, Mr. Novick indicated there is flow data and analyte data for several years at the preexisting Globeville Landing outfall. Mr. Novick agreed to aggregate some of this data for Mr. Norris.

Ms. Bridget Walsh asked about water quality sampling data in Duck Lake and several other lakes in Denver. Mr. Novick agreed to provide some of this data to Ms. Walsh.

Ms. O’Connor asked if CDPHE pulled the discharge permit as a result of the elevated selenium levels in effluent?

Ms. VanDerLoop replied that no, they did not; Denver and CDPHE have been in close communication regarding this issue. It was potentially a sampling error; Denver is pursuing further investigation.

It was clarified that Mr. Jesse Aviles is the current EPA project manager for the VB/I-70 Superfund site. Ms. O’Connor pointed out the many components and complexities of the entire VB/I-70 site. She felt that there have been discrepancies in fair representation for items that are preserved in the CAG record. Ms. Suárez clarified that Mr. Norris’ written submittal would be added to the November meeting notes, on the record. Future formal written submittals would be included on the record. Ms. Walsh requested the source materials referenced by presenters, and called for a wider scope of the CAG’s purview. Ms. Walsh requested future presentations be provided prior to the meetings. Ms. VanDerLoop shared the agencies’ concern for the timeline, specifically preparing materials in time to meet the translation requirements. She stated that the agencies were unable to shorten the timeline but could provide materials prior to meetings if the meeting schedule was increased to every five or six weeks. A suggestion for lengthening the time between meetings was not met with general consent. Ms. Suárez bade everyone a good night. The next meeting was scheduled for January 9th, 2018.

January agenda discussion:

Request to open possible OU4

Discussion/Approval of Mr. Norris’ notes and November meeting notes

Q and A for the surface and groundwater topics
Dry water flow information and further water quality sampling results