United States Environmental Protection Agency

EPA Completes Risk Review of Proposed Stormwater Basins

The proposed plan for amendment of the cleanup at the Butte Priority Soils Operable Unit will include removal and disposal of tailings, mining wastes, and contaminated soils deposited by past mining operations in certain areas near Silver Bow Creek. Stormwater basins would be created in excavated areas **to capture runoff and allow contaminants to settle out** before discharging to Silver Bow Creek. The basins will reduce the amount of contaminated stormwater and sediments reaching Silver Bow Creek. Four proposed stormwater basins have been considered–Buffalo Gulch, Diggings East, Northside Tailings, and Grove Gulch.

At the request of the community, EPA evaluated potential human health and ecological risk associated with exposure to stormwater and sediment within these basins. EPA evaluated data from sampling of stormwater runoff and concluded that **stormwater basins would result in no unacceptable risk to human health or pets**. This fact sheet is a summary of a comprehensive tech memo (available on EPA's website).

Human Health Risk

Children (6 to 16 years) playing in or near the stormwater basins are the most likely to explore the shoreline of the basins, resulting in a greater chance of exposure. **Focus was placed on young children (6 to 10 years, for example)** because younger children can be more vulnerable to pollutants. Risks were evaluated for both lead and non-lead contaminants of concern.

Exposures evaluated were **acute** and are typical of children who would be **occasionally** exposed to stormwater and sediments while playing (recreational).

Non-Lead Risk

EPA computed a daily intake and compared it to the Minimal Risk Levels[1], resulting in a *risk ratio* for each contaminant evaluated. Risk ratios for the stormwater basins planned for Butte were **less than one for all non-lead contaminants of concern**, which indicates estimated concentrations of contaminants in sediment and surface water in the basins **are below levels that could result in adverse effects**.

Lead Risk

Short-term exposure risks for lead were evaluated using the All Ages Lead Model. The model evaluated a one-day "pulse" (short-term) exposure for a 6-year-old due to incidental ingestion of sediment and surface water in a stormwater basin. The maximum predicted blood lead levels were 3 micrograms per deciliter for acute exposure. **This is six times less than the accepted threshold**, which indicates **future recreational exposure to lead in surface water and sediment within the stormwater basins is not a potential health concern.**

[1] Minimal Risk Levels are developed by the Agency for Toxic Substances and Disease Registry and used to quantify short-term (acute) exposures for non-lead contaminants of concern.

Ecological Risk

Ecological receptors could include household pets (dogs), migrating waterfowl, and resident wildlife (birds and mammals found in urban areas—like coyotes, rabbits, racoons, robins, geese, starlings). The screening level ecological risk evaluation focused on **ingestion of surface water and sediment**.

Unlike people, some wildlife may live very near the stormwater ponds and may have **daily contact**. So, ingestion exposures were evaluated based on both **long-term (chronic)** and **short-term (acute)** exposure scenarios.

The results indicate:

- **Pets.** Short- and long-term exposures are unlikely to adversely affect local pets.

- **Wildlife.** Short-term exposures are unlikely to adversely affect most wildlife, but small semi-aquatic mammals (such as mink) *may* be impacted. Long-term exposure effects are limited to potential adverse effects to perching birds who might live or reproduce in the basin areas. Once the ponds are built, long-term monitoring will determine if the concerns noted for certain wildlife are present and EPA will take steps to mitigate them, if needed.

A note about pH. Unlike the Berkeley Pit, water in the stormwater ponds will not be acidic and the **pH should not impact birds or mammals drinking from the water**. The deaths of snow geese in 1995 and 2016 at the Berkeley Pit have been attributed primarily to ingestion of acidic water with pH levels as low as 2.5, which is 10,000 to 100,000 more acidic than pure water. **Stormwater runoff in Butte is typically the same or less acidic (6.5 to 9) than pure water**.

Physical Hazards

Stormwater basins are commonly used engineered structures used to protect the environment in Butte and worldwide. They handle sudden inflows of water from storms and other events. P**hysical hazards posed by the basins are manageable.**

Basins are not meant for recreation, and signs will be posted to educate the public. Safety hazards for trespassers include:

- Water temperature that is colder than expected, even in warm weather
- Hidden debris or underwater hazards that may cause injury
- Plants that could entangle people entering the water
- Potential for drowning if basins are used for swimming

The proposed stormwater basins at the BPSOU will not pose an unacceptable risk to human health or pets and will reduce the concentrations of contaminants entering Silver Bow Creek from the Butte Hill.

Once the ponds are built, long-term monitoring will determine if the concerns noted for certain wildlife are present and EPA will take steps to mitigate them, if needed.

The stormwater risk tech memo is posted on EPA's website for Butte: www.epa.gov/superfund/silver-bow-butte