Located in southwest Montana in Deer Lodge Valley at the foot of the Anaconda Range (locally known as the Pintler's), Anaconda is a small town, spanning just 737 square miles. Presently, she is home to about 9,100 residents, a large town by Montana standards. Anaconda is rich in history, culture and personality, and is surrounded by beautiful natural areas like Mount Haggin Wildlife Management Area and the Anaconda-Pintler Wilderness area.

The town of Anaconda was founded by Marcus Daly in 1883, making her 136 years old this year. Marcus Daly, infamously known as one of the "copper kings," founded the town for his employees to work at the Washoe Smelter, refining the copper ore extracted from Daly's Anaconda Mine in Butte. In the mid-1890s, Daly unsuccessfully campaigned to have Anaconda designated as Montana's state capital, losing out to William A. Clark, another copper king, who pushed to keep Helena as the state capital.

The origin of the name of Anaconda is credited to Michael Hickey who is thought to have influenced Daly to name the town, Anaconda. Hickey, a young veteran Union soldier of the Civil War, was inspired by Horace Greeley, who said, "go west, young man." And westward Hickey headed, bringing with him another Greeley quote concerning the Civil War. Greeley stated that Union armies would "encircle Lee's forces and crush them like a giant anaconda." The image of this awesome snake stayed with Hickey as he traveled west to Butte. When he was buying mine claims in 1875, Hickey named one of his mines, the Anaconda Mine.

Continued on Back (Pg. 16)
The rivulet between Butte and Anaconda runs deep. Perhaps our rivulet has been rooted in family and is good-natured overall. Everyone knows that the rule of the day is, I can pick on my cousin, but once someone else tries, we are all in this together. This rule is pretty much how things have been through our storied history. Together, Butte and Anaconda are rivals until another city or town wants to take one of us on, then we are one.

Throughout our history, Butte shipped its ore to be refined and smelted in Anaconda, using the late 1880’s until when Atlantic Richfield Company closed the Washouogt Reduction Works. Many old-time miners reflect on the fact that much of the Berkeley Pit now resides as slag in Anaconda. Butte is left with a hole in the ground and Anaconda is left with a pile of waste. Sister cities indeed, both in history and in our present-day challenges.

Within the Clark Fork Superfund Complex, the Anaconda sites are some of the most challenging to address. The sheer volume of wastes that have been left in place within the city boundaries, the proximity of the wastes to homes and water supplies, and the extensive areas that were damaged in the uplands by nearly a century of smelter smoke ensure long-term challenges. The uplands, the solutions proposed, and current projects underway for economic development.

This issue, we highlight the hopes that the citizens of Anaconda have for their community. We illuminate some of the beautiful history of the city that Marcus Daly wanted to name Copperopolis. We attempt to educate and inform all of us about the complex issues that Anaconda faces, the solutions proposed, and current projects underway for economic development. Butte and Anaconda have much to learn from one another and can certainly help each other create a positive future.

The Montana Steward: Anaconda Edition

The Director’s Letter

Baylorly Brandl

The rivulet between Butte and Anaconda runs deep. Perhaps our rivulet has been rooted in family and is good-natured overall. Everyone knows that the rule of the day is, I can pick on my cousin, but once someone else tries, we are all in this together. This rule is pretty much how things have been through our storied history. Together, Butte and Anaconda are rivals until another city or town wants to take one of us on, then we are one.

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The Director’s Letter

Baylorly Brandl
Understanding Superfund Acronyms

Abby Peltonan

Superfund acronyms are confusing. Often the persons involved in Superfund sound as if they are speaking their own language. We provide this lexicon as a brief orientation to the language of Superfund. We hope Superfund acronyms are confusing. Often the persons involved in Superfund remediation projects over the past several years.

Ankora Residential Soils

The Anthora Residential Soils Program has sampled 1,380 acres since 2015. From 2016 to 2018, 700 yards were sampled. Many crews have worked during the summer to sample and remove clean-up design documents. Partial deletions are proposed for the Clean Water Act. The TMDL is intended to be protective of water quality and meet both aquatic life and human health standards.

UCFRF

Upper Clark Fork River Basin

UCFRF Advisory Council

The Upper Clark Fork River Basin advisory council is appointed by the Governor of Montana to facilitate public dialogue, promote public understanding, and advise the Governor on remediation and restoration projects. This value is removed to the fullest extent possible. All other metals in the water. It works with pressure to push pure water through a membrane where it is then collected for use while the contaminants are washed away as wastewater. To date, 50 wells have been successfully treated with this process. If you wish to have your well tested, please contact the county Superfund Program.

Ankora Remediation and Restoration Update

Abby Peltonan

The Ankora area has seen many remediation and restoration projects over the past several years.

Consent Decree (CD) Negotiation

Currently a final CD is being negotiated with all parties by the end of this calendar year (2019). The parties involved are the Ankora-Deer Lodge County, Environmental Protection Agency (EPA), State of Montana, and Atlantic Richfield Company (ARC). They are working to settle responsibility and funding for Old Works Golf Course, modify some of the existing Records of Decisions (ROD MOD), and to complete all of the remaining clean-up design documents. Partial deletions are proposed for the Clean Water Act. The TMDL is intended to be protective of water quality and meet both aquatic life and human health standards.

Groundwater Contamination

Groundwater in Ankora is generally found in shallower groundwater. Domestic wells that test above the arsenic drinking water standard require reverse osmosis treatment. Reverse osmosis is effective at removing arsenic and other metals in the water. It works with pressure to push pure water through a membrane where it is then collected for use while the contaminants are washed away as wastewater. To date, 50 wells have been successfully treated with this process. If you wish to have your well tested, please contact the county Superfund Program.

Groundwater

The Montana Steward: Anaconda Edition

This program was established in 1990 to prepare for the state’s lawsuit against Atlantic Richfield Company (ARCO). NRDP is operated by the Montana Department of Justice and includes a team of litigation specialists, scientists, and engineers who manage all superfund lawsuits that take place in the State of Montana. In the Clark Fork Watershed, NRDP currently manages the settlement dollars and restoration activities through its two local councils, the Upper Clark Fork River Basin Advisory Council and the Butte Natural Resource Damage Council.

OU

Operable Unit

Large acreage superfund sites, such as our site, are often broken into smaller management segments, or operable units. The operable units typically are divided by geographic constraints and/or the nature of the remedial action needed. Ankora has nine OUs.

OW EAU

Old Works-East Anaconda Development Area

This OU is broken into seven sub-areas or RDUs:
- The Old Works Golf Course
- The Industrial Area
- Red Sands
- East Anaconda Yards
- The Drag Strip
- The Mill Creek Addition
- Aspen Hills

PRP

Potentially Responsible Party

This term is defined in CERCLA or Superfund Law as the company and/or individual owners who are potentially responsible for contamination at a superfund site.

RA

Risk Assessment of Risk/Health Assessment

The EPA assesses each site for risk from contaminants. Human health is the first priority for protection. An evaluation of human health risk as a priority in the case of the Milltown Dam. Arsenic contamination of personal drinking water wells in the town of Millston from the sediments in the creek was considered priority for clean-up. The removal of the dam prior to sediments being removed upstream was considered imperative due to the human health risks from arsenic contamination. In addition to human health concerns, most sites also require an ecological risk assessment to understand the impacts on the animal and plant life in the area.

RDA

Remedial Design Unit

These are sub-areas of an Operable Unit. In Ankora, the Anaconda Regional Water, Waste and Soil (ARWWS) Operable Unit is so large and complex that it was divided into 15 RDUs.
Anaconda Company Smelter NPL Operable Units
Abby Peltona

The Anaconda Company Smelter Site is 300 square-miles with Records of Decision (RODs) at five active operable units (OUs). Some of the OUs have been broken down into smaller remedial design units (RDU). This site was listed on the NPL in 1983 and has been over 30 years of clean-up. Eighty percent of the work is complete. Half of the upland relocation and open space has been completed with 12,000 acres reclaimed and 10,000 more to go. Ongoing经济技术 achievements and commercial properties have been cleaned up to date with three or four years left to go. The final Consent Decree for this site is slated to be signed at the end of this calendar year and deletion of the site by 2025. The following are the operable units at this site. Some have been completed and are currently being maintained while others are still ongoing. One or more RDU's are anticipated to be completed this year.

Active OUs

OU 15 - Mill Creek Operable Unit
The remedy was selected in 1987 and in 1988, accidental discharges released at Mill Creek. Demolition debris was removed and contaminated soils were stabilized. Construction of the remedy was finished in late 1988. Contaminated soils were subsequently removed under other OUs. Monitoring and maintenance of the vegetation is ongoing. Portions of this area are currently being redeveloped. The site will be managed for reuse.

OU 14 - Fluoride Operable Unit
The remedy was selected in 1991 and included stabilization of about 600,000 cubic yards of fluoride. A by-product of the smelting process, fluoride is the finely divided metal or metallic deposit of amalgam covered with the fine gases of a smelter or metallurgical furnace. Fluoride dust contains high concentrations of metals such as copper, arsenic, cadmium, and lead. The remedial approach utilized an engineered system, which was required to include a liner, a leachate capture and collection system, groundwater monitoring wells, and surface water treatment and maintenance monitoring and construction of the remedial system were ongoing. Construction of the remedial system is currently in progress.

OU 07 - Old Works East Anaconda Development Area Operable Unit
Remedial action was selected in 1994 and included placement of engineered covers over waste and contaminated soils and replacement or repairs to bridges, institutional controls, long-term monitoring and preservation of historic features. OU7 consists of six sub-areas. They are: the Old Works Golf Course, the Industrial Area, Red Sands, East Anaconda Yards, the Drag Strip, the Mill Creek Addition, and Aspen Hills. Construction is complete at five of the six areas. Construction at the sixth area, the Industrial Area, is nearly complete. The site is currently maintained in perpetuity and managed for reuse.

OU 16 - Community Soils Operable Unit
The remedy for residential soils was selected in 1990. The remediation approach included placement of engineered covers. Construction of the remedy was finished in 2010. Operation and maintenance activities are ongoing. The 2018 modification to the Community Soils remedy included cleanup of lead-contaminated residential soils, expanding the controls program, and development of an interior dust abatement program. Implementation of this remedy began in 2015 and is ongoing. In 2017, the EPA addressed primary sources of interior dust contamination through sampling and cleanup. It called for removal of lead-contaminated soils and yards. This OU is currently in progress.

OU 03 - Anaconda Additional Water and Waste Operable Unit
Remedial action was selected in 1998 and was modified in 2011. The work included consolidation of miscellaneous waste materials, construction of covers over waste management areas, treatment of contaminated soils, storm water controls and institutional controls, including the monitoring and regulation of domestic wells in groundwater areas. A Technical Improvement was for arsenic in groundwater systems. An intensive groundwater monitoring system, groundwater monitoring wells, and UPLs on at least the wastewater treatment plant. Remedial action is ongoing at most of these areas. Over 10,000 acres have been remediated to date. Construction is expected to be completed over the next 10 years. This OU is currently in development.

The Anaconda Regional Waste, Water and Soil Operable Unit (OU) has been divided into 15 Remedial Action Units (RU) due to their complexity. This follows a brief summary of each RU. A map of these RUDs can be found on pages 8-9. More information can be found on the Arrowhead Foundation’s website at anacondaprudem.org.

RU 1 – Stucky Ridge Uplands
This RU includes approximately 400 acres of arsenic contaminated soils. Remedial action is required on 2,500 acres and will include soil treatment, steep slope reclamation and construction of stormwater controls. Work has been completed on a third of this RU.

RU 2 – Lost Creek Uplands
This RU includes approximately 2,000 acres of arsenic contaminated soils adjacent to Lost Creek. Remedial action is required on 4,000 acres and will include soil treatment, steep slope reclamation and storm water controls. Work has not started on this RU.

RU 3 – Smelter Hill Uplands
This RU is over 5,000 acres and includes a high arsenic area adjacent to the smelter facility. Remedial action is required on approximately 10,000 acres and will include soil treatment, steep slope reclamation and storm water controls. This RU is complete.

RU 4 – Rarus Rail line from Durant to Milltown
This RU includes approximately 25,000 tons of copper concentrate removed from the Smelter Hill RDU area. Removal started in 1992 and was completed in 1996. This OU is considered final under OU4.

RU 5 – Arbiter Railroad
This RU includes the approximately 1000 acre rail line from Durant to the West Rail Yard in Anaconda. Remedial work required the removal of waste materials that could impact ground surface water and surface water. It also requires the placement of rock material on the ground to provide biowatch to waste material to reduce human contact and further erosion. Waste has been removed from the Blue Lagoon area as well as several other concentrate spill areas. Work also included removal of waste materials along a stretch of Mill Creek, a reclamation stabilization of the stream banks. Work will be completed in this RU.

RU 10 – Warm Springs Creek
This RU includes approximately 4,000 acres of arsenic-contaminated soils impacted by fluvial deposits from the Old Works. Remedial work required the removal of waste from two areas and the rehabilitation of two slag ponds. Work in this RU is complete.

RU 11 – Cashman Concentrate
This RU addresses approximately 1,000 acres of Old Works Fluvial deposits adjacent to Warm Springs Creek. Remedial work required the stripping and removal of the fluvial deposits, and treatment of remaining soils. Work has been completed on this RU.

RU 12 – Opportunity Ponds/ARCO Ponds
This RU includes approximately 7,500 acres of the Opportunity Ponds tailings impoundment and adjacent soils. Remedial work required the capping of the tailings with various cover designs and then re-vegetated. The tailings impoundment was divided into 20-acre units with the cover pitted to reduce the ponding and infiltration of water into the tailings. Several million cubic yards of waste from Milltown, the Historic Smelting Site, Silver Bow Creek, and the Clark Fork River have been deposited into the Opportunity Ponds. Soils adjacent to the ponds were used in the cover design. The opportunity ponds were subsequently reclaimed to create nearly 1,000 acres of new wetlands which are populated by wildlife. The adjacent areas are also utilized to build, restore and maintain the smelter facility. With up to 1,000 cubic feet of water in each section of the ponds, these form a ground and surface water passive treatment system, effectively treat water that feeds a portion of the wetland system. This system will be maintained with a purpose investment in recreational and wildlife management, being is performed under the Ground Water Management Plan.

RU 13 – Smelter Hill
This RU includes approximately 1,500 acres of the former Operations, Reflections, Works Complex. Remedial work requires that 1,000 acres of the waste management areas be capped with a soil cover, adjacent soils treated, and the construction of storm water controls. Work at this RU will be completed this year.

RU 15 – Mt. Haggin Uplands
This RU includes approximately 5,000 acres of arsenic-contaminated soil within the State MT, Haggins Wildlife Management Area. This RU is divided into three sub-areas. They are the East and West Rail Yards, main line through Anaconda and portions of the main line to Durant Canyon, have been covered with rock. Remaining work at this RU is complete. It includes the replacement of two railroad trestles at Mill and Willow Creeks and removal of adjacent waste material.

RU 6 – South Opportunity
This RU is approximately 1,000 acres of arsenic contaminated soils and primarily requires soil treatment to effectively reduce soil erosion and runoff. Work in this RU is complete.

RU 7 – North Opportunity
This RU includes approximately 1,000 acres of Old Works Fluvial deposits adjacent to Warm Springs Creek. Remedial work required the stripping and removal of the fluvial deposits, and treatment of remaining soils. Work has been completed on this RU.

RU 8 – Opportunity Ponds/ARCO Ponds
This RU includes approximately 7,500 acres of the Opportunity Ponds tailings impoundment and adjacent soils. Remedial work required the capping of the tailings with various cover designs and then re-vegetated. The tailings impoundment was divided into 20-acre units with the cover pitted to reduce the ponding and infiltration of water into the tailings. Several million cubic yards of waste from Milltown, the Historic Smelting Site, Silver Bow Creek, and the Clark Fork River have been deposited into the Opportunity Ponds. Soils adjacent to the ponds were used in the cover design. The opportunity ponds were subsequently reclaimed to create nearly 1,000 acres of new wetlands which are populated by wildlife. The adjacent areas are also utilized to build, restore and maintain the smelter facility. With up to 1,000 cubic feet of water in each section of the ponds, these form a ground and surface water passive treatment system, effectively treat water that feeds a portion of the wetland system. This system will be maintained with a purpose investment in recreational and wildlife management, being is performed under the Ground Water Management Plan.

RU 16 – Old Works
This RU addresses groundwater under the Old Works which requires monitoring of the groundwater cadmium plume with a provision that if the plume migrates beyond the established points of compliance, Monitoring and Control will be maintained in perpetuity. Monitoring is being performed under the Ground Water Management Plan.

RU 17 – SMH
This RU includes approximately 1,500 acres of the former Operations, Reflections, Works Complex. Remedial work requires that 1,000 acres of the waste management areas be capped with a soil cover, adjacent soils treated, and the construction of storm water controls. Work at this RU will be completed this year.

West Galen Expansion Area
This area includes approximately 4,500 acres of low-density contaminated soils. Remedial work requires soil treatment for about 4,500 acres. Work in this area is completed.

Dutch Elm Expansion Area
This area includes approximately 3,000 acres of well-vegetated high density and residential land. One of the largest contiguous wetland in the upper Clark Fork River Basin. This RU includes use and access controls to reduce human exposures, and minimizing the degradation of vegetation to reduce soil erosion and runoff. Work is complete in the low-density areas and includes on the map on pages 8-9.

Anaconda and Opportunity Remedial Design Units (RDU's) within the Anaconda Regional Water, Waste and Soils Operable Unit

- Active Railroad
- Stucky Ridge Uplands
- Lost Creek Uplands
- West Galen Expansion Area
- Old Works Groundwater
- North Opportunity
- Warm Springs Creek
- Opportunity Ponds/BP-ARCO Repository
- Slag
- Anaconda Ponds
- Smelter Hill Facility
- Smelter Hill Uplands
- Mt. Haggin Uplands
- South Opportunity Ponds
- Fluvial Tailings
Mounta Haggin Waste Management Area
Pedro Marquez

Somewhere between an opportunity and wisdom, there is a place for innovation to spark and for transformative projects to take root. In one quiet corner of Southwest Montana, along the highway between Opportunity and Wisdom, 120 years separates two such transformative projects. This is the story of the degradation and restoration of the headwaters tributaries of the Mount Haggin Wildlife Management Area.

In 1864 the first gold in the Big Hole watershed was hit in French Gulch. A cold, wet, headwater tributary of French Creek/Deep Creek, due north of the apex of the Big Hole River's long U-turn between the southern Pintler (Anaconda) and northern Pioneer ranges. Gold panning and sluicing for the easiest available gold, which yielded as much as $5.95 (in 1860s dollars), was completely exhausted by 1877, at which point more intensive hydraulic mining began. Large dredges were later brought to the French Gulch mining claims in 1895. Typical of mining towns of the era, the town of French Gulch was built, boomed and busted in less than 40 years. Streams and floodplains targeted by mining operations were completely uprooted, materials sifted through, channels relocated, and massive piles of cobbles left behind. Streams were often left in strengthened, incised channels.

Around 1904, with placer mining waning, W. R. Allen, who was born in French Gulch in 1871 and later became Lieutenant Governor of Montana, had purchased much of the local claims and his namesake company established large-scale logging activities for the booming towns of Anaconda and Butte. Timber became the new resource of interest on Mount Haggin. From 1906 to 1959, a massive sale removed 70 million board feet of timber. The productivity of the landscape and the totality of its extraction cannot be understated.

This sale included construction of the famous log flume which conveyed logs from Mount Haggin over the Continental Divide and into the Clark Fork Valley. While the mining, logging and extraction of natural resources from the area was devastating to ecological systems, equally imperative and admirable was the ingenuity and tenacity of the teams of people who came together to build and maintain the infrastructure that achieved such large-scale land transformation every day. Vegetation that survived the massive logging enterprise had no chance of surviving the log flume. With nothing holding soils in place, particularly where soils were formed from white, volcanic welded tuff, the snow, rain and wind easily carried topsoil and sediment downhill.

Fast-forward to 2012. Many areas of the upstroke slopes of Sugarloaf Mountain on both sides of the Continental Divide have lost 18 to 24 inches of soil. This is easily observed by noticing the exposed lateral and tap roots of Hedged tree stumps across the landscape which have not decomposed because of the harsh summers, freezing winters and constant wind.

Log Butte which conveyed logs from Mount Haggin over the Continental Divide and into the Clark Fork Valley and then came the smoke. The Wishee Smelter, the “lungs” of the massive Butte-Anaconda enterprise that produced enough copper to drive the electrification of the United States, also produced a staggering amount of airborne pollution, which concentrated on the higher elevations of the Continental Divide between Mount Haggin and Sugarloaf Mountain. Records from the day estimate up to 60 pounds of airborne arsenic, copper, lead, cadmium and zinc, as well as toxic sulfide compounds, landed on the hillsides for miles.

The mountains of sediment that gushed downhill over 100 years, exacerbated by leaky log flumes that regularly spilled over, created countless gullies. These gullies are up to 40 feet deep and can transport water and sediment downhill at maximum velocity. During high-flow events, nearly every tributary in the area spills for one or more of the five contaminants of concern. The landscape is effectively a network of a few channels and gullies. Lahontan cutthroat trout on the Big Hole River downstream of sugar loaf mountain report that the streams run white after storms.

Beyond the reach of the toxic stack and sediment plumes in the French Creek/Deep Creek drainage, most streams are listed by the Department of Environmental Quality (DEQ) for sediment and habitat impairments. Placer mining left streams and floodplains upslope, with minimal fine sediments or spawning gravels, instead covered by the large, cobble alluvium that used to lie underground. Saguache and lodgepole pine floodplains indicate substantially drier systems than what was there before gold mining.

Restoring the Damage

By 2014, three state agencies, driven by their own mandates and resource concerns had begun to focus primary attention on the Mount Haggin Wildlife Management Area (WMA). The Natural Resource Damage Program was developing restoration plans for the Mt. Haggin Uplands Injury Area, a 5,000-acre area around Sugarloaf Mountain on both sides of the Continental Divide. Montana Fish Wildlife and Parks was scouring the plan to install a fish barrier in lower French Creek to create a native fish stronghold across over 40 miles of headwater tributaries, and the Department of Transportation had begun moving the roadway, MT 365, out of the willow bottoms of French Creek and onto the dirt bench.

Seizing the opportunity, the Big Hole Watershed Committee began to stitch together these different restoration pieces into a coherent vision, and became the glue that has become a fast-moving advent of restoration projects supported by a dozen funders. We hired staff with restoration expertise in 2016 and 2018, and currently manage a portfolio of projects in the WMA valued at nearly $1.2 million. These projects include: the drainages of Joyner Gulch, Muddy Gulch and upper Willow Creek to the north, and California Creek, French Creek, Oregon Creek and French Gulch to the Big Hole River's south.

Across these projects, we have fostered a cooperative spirit with our agency partners by understanding their resource objectives and fitting our on-the-ground solutions to advance those goals. Coupled with highly-talented design engineers, we’ve been able to design projects to remove the primary impairments to fish systems and give these complex systems the kick-start they need to heal on their own.

We have consistently found that controlling the movement of sediment by water is key. Reference sites across the WMA are dominated by beaver ponds and stream systems that regularly overflow their banks and create floodplains. When we increase the landscape’s ability to capture and hold sediment by getting perennial channels up and out of their banks, multiple resource objectives come together.

• Floodplain soils get charged up with water. Moving water through soil leads to nutrient loss, forces the system to stay cooler, so there is more cold soil water available later in the season.

• Fine sediments move out of surface waters and stay out of spawning gravels, improving future fish habitat.

• More water on the floodplain encourages more riparian plants like willows and aspen. Once local beaver have enough of this food, they will settle down and ramp up their ponding and wetland creation. As a Keystone species, the beaver’s benefit to all other species is well documented.

Across the WMA, we’ve sought to mimic natural recovery processes in order to achieve what are predominantly sediment-related impairments.

Beaver Mimicry

Across our projects, the diked up floodplains of former beaver pond meadows are great for growing lodgepole pine. And lodgepole pine make great material for installing leaky dam legends known as beaver mimicry structures or beaver dam analogues (BDAs). We have installed over 2,500 BDAs in the Beaver Injured Area of the Superfund site along California Creek and Muddy Gulch, small tributaries that drain from groundwater seeps along the Continental Divide. This structure builds up sediments and raises the height of the stream bed. Now, during high water events, instead of rushing downstream, these streams spill out onto the floodplain and saturate previously bone-dry soils. With the long-term focus of the beaver analogue projects, we’ve been able to install three generations of these structures in some locations. We are using drone surveys to estimate the amount of sediment we are catching with each structure. In 2016, we measured that about half a ton (500 pounds) of sediments were captured by each structure. After the third generation, we estimate that between 3 to 10 tons of sediment are captured behind each structure. More important, we’re seeing upland grasses converging to sedges and rushes, and willow and aspen groves thriving nearby.

Floodplain connection

In French Gulch and Moose Creek, where placer piles covered most functional floodplains and the stream was relegated to a straight, narrow chute, we removed 30,000 cubic yards of material. We also designed a new stream channel to regularly spill out of its banks, creating 17 acres of new wetlands along 3 miles of channel in the process. We estimated that after one year, we are reducing 448 tons of sediment/year from that system.

More important, we’ve set the conditions for natural processes to develop the wet willow bottoms that are found in our reference areas (unimpacted areas).

Slope and gully erosion control

In the highly-eroded uplands of the Mt. Haggin Injured Area, we cleared through investigations and small-scale demonstration projects that the bare soils are not toxic to plants, unlike the dirt (silticis) terriers in the riparian corridors of the Clark Fork River. On those bare slopes, the addition of slow-release vegetation and vegetation growth. With each new clump of grass or forbs, we make it harder for sediment to find its way downhill.

In large gullies, we locally available lodgepole to create gully plugs to capture sediment and create locations for the local seed bank to germinate, further slowing erosion. Over six years we have installed hundreds of clump structures of all shapes and sizes. In 2018, we punished a temporary road east of the Continental Divide, and using heavy equipment installed over 2,500 dozer basins across the slopes and installed gull ditches and check structures – enough to capture nearly 3,000 tons of sediment.

Together these projects are having a transformative impact in the Mt. Haggin WMA and all our partners are using resource benefits. More important, by setting the stage for nature to heal itself, our projects are decreasing the long-term ecological maintenance needs of the area, setting the stage for the successful reintroduction of the second largest native fish project in Montana, and greatly improving the quality of the landscape for the communities that enjoy this spectacle public land of ours.
Voices of the Watershed: What Do You Want for the Future of Anaconda?

Fred Moodry 6th Grade Students

I would like to see recycling bins on the streets because many people don’t have them, and don’t feel like driving to the place where they break the garbage down. Also if plastic gets in streams that go to the ocean, animals could die.

I want Anaconda to get rid of the slag.

As a kid living in Anaconda, I like to take my dogs for walks, but whenever I do, I can’t ever find any doggie bag dispensers. I would also like to see a dog park put into the town. My dogs would be glad to have a big place to run around without being in danger of being hit by a car.

I would like to see the streets and sidewalks plowed. I would also want to see people helping the older people with cleaning their driveways and sidewalks for free.

I want Anaconda to have a water park.

In the future, I would like to have more recycling happen in Anaconda.

I would like to have bike trails all around town and I would like more cross walks in certain places.

What I want to see in Anaconda is a great place to live, however there are a few problems. For example there have been many times my friends and I have needed something to do. I know there has been talk of a rec center and I think that would be a great idea. Another idea is an arcade with classic games and snacks and music. An idea one of my peers had was a roller rink. I cannot even tell you how many times I wished we had somewhere to rollerblade/skate. I think this would make a tremendous change in our community.

I want Anaconda to have an Anaconda Fair for 4-H.

I would like to see the town and surrounding areas become more filled with plants to help stop the weathering away of top soil. There are some areas I notice that seem sandy and do not have proper nutrients or care to be able to sustain vegetation and keep the dirt from washing away with snow, rains, and wind.

My community should remove the slag pile that sits near the smelter, not only is it toxic but its also very dangerous to the wild life and nature around it.

I want Anaconda to make it so that there is no slag pile and so there are more trees near the pile.

What I want to see in Anaconda is a larger variety of books in the public library. I also would like to see an indoor water park. I would like a new museum. I also think we should get an organic food center so it will encourage people to eat healthy. Plus, a new animal shelter.

I would like my future Anaconda to have more cross walks in certain places.

I want my community to start picking up more garbage. I also think the community should start recycling because there are tons of paper and water bottles that go to waste.

I think that if we picked up a lot more and quit littering as much as we do, our community would be a lot nicer.

I want Anaconda to have a water park.

In the future, I would like to see Anaconda remain a great place to live, however there are a few problems. I think something very important is a rec center and I think that would be a great idea. Another idea is an arcade with classic games and snacks and music. An idea one of my peers had was a roller rink. I cannot even tell you how many times I wished we had somewhere to rollerblade/skate. I think this would make a tremendous change in our community.

I want Anaconda’s great smoke stack to be preserved. I would also like to see some things passed in Anaconda for kids to have the best education possible.

I would like to see recycling happen in Anaconda. An actual water park close to us for play is wonderful to think about. I live in between Butte and Anaconda but, it would be wonderful to have an excuse to stay in Anaconda.

I would like to have a water park in Anaconda. An actual water park close to us for play is wonderful to think about. I live in between Butte and Anaconda but, it would be wonderful to have an excuse to stay in Anaconda.

My community should remove the slag pile that sits near the smelter, not only is it toxic but its also very dangerous to the wild life and nature around it.

I want Anaconda to make it so that there is no slag pile and so there are more trees near the pile.

What I want to see in Anaconda is a larger variety of books in the public library. I also would like to see an indoor water park. I would like a new museum. I also think we should get an organic food center so it will encourage people to eat healthy. Plus, a new animal shelter.

I would like to have more recycling happen in Anaconda.

I want Anaconda to get rid of the slag.

I would like to see people not litter and clean up parks, playgrounds, our school. I would also like to see recycling.

I would like to see the streets and sidewalks plowed. I would also want to see people helping the older people with cleaning their driveways and sidewalks for free.

I would like to see the town and surrounding areas become more filled with plants to help stop the weathering away of top soil. There are some areas I notice that seem sandy and do not have proper nutrients or care to be able to sustain vegetation and keep the dirt from washing away with snow, rains, and wind.

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I want Anaconda to have a water park.

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Teacher Feature: Bob Orrino
Abby Peltsman
Editor’s Note: Bob began with CFWEP about 15 years ago and has since expanded on CFWEP programming in his own classroom to even more possible. This is about Anaconda past to Montana’s several trout species in our watershed. Bob not only extended his curriculum on these topics, but impressed the knowledge of his students as well. He is always working to connect students learning to their surroundings. The students of Anaconda are fortunate to have Bob working in their class. All of our best teachers are invaluable partners in CFWEP in creating a legacy of stewardship for our state’s natural resources.

What has kept you interested and working with the CFWEP program?
First of all, it is the people especially. Abby and Dr. A. They bring so much passion to the students as well as myself.
CFWEP brings so many opportunities to the students. The fish derby lets the students get to see the students aware and involved in our watershed.

What do you want for the future of Anaconda?
I want Anaconda to keep celebrating its history. Last year we had the 100-year celebration for the smoke stack and talk about the history of smelting. We need to record our history for future generations growing up in Anaconda so they know this history.

What do you think is the most important thing for Anaconda going forward?
First and foremost we need to hold the EPA (Environmental Protection Agency) accountable for the restoration and remediation of our watershed. The Butte, Anaconda and Clark Fork River Superfund cleanup is the largest superfund cleanup in the nation. People don’t realize what that really means to the watershed, as well as the land that was affected by the mining process.

Residents of the Clark Fork watershed must be educated about the risks of living in a superfund site and teach future generations how to care for our cities as well as our lands.

What do you want your community to be like in the future?
I am all about jobs. I fully support mining and logging, but going forward we need to learn from our mistakes and help from local industries and the support of a strong, local sportsmen’s club. The manager of the Anaconda smelter was also a member of the Montana Fish and Game Commission and obtained support from the legislature to fund the hatchery’s construction.

The current mission of the Washoe Park Trout Hatchery is to maintain Montana’s westslope cutthroat trout conservation brood stock, known as the M012. Brood stock are adult fish that are raised and maintained at the hatchery for the purpose of breeding. The hatchery maintains the health and genetic integrity of the M012 brood stock and supplies eyed-eggs (eggs with developing embryo fish) to other hatcheries in the state. The progeny (offspring) of the M012 are used for multiple hatchery purposes, including population management, urban fisheries, native species restoration and research. A second facet of the hatchery’s mission is to provide public outreach and education. This mission is accomplished by various means including the maintenance of an exceptional interpretive center, classroom education, and hatchery tours.

CFWEP Fly Fishing Campers Tour the Washoe Park Trout Hatchery

Ed. Note: The Washoe Trout Hatchery has been a partner of CFWEP since our inception. Without their commitment to our program, we would not be able to deliver this engaging curriculum across the Clark Fork Watershed. They provide trout for our Trout in the Classroom Education programs, and provide tours for school groups and our annual Fly Fishing-Slam competition. We are currently working with hatchery scientists to brainstorm additional opportunities for partnering in trout research projects.

The Washoe Park Trout Hatchery was established in 1908 and was the first state-run hatchery in Montana. The Butte, Anaconda and Pacific Railroad donated the four acres of land for the hatchery facility, and the water rights were granted by the Anaconda Copper Company. The Washoe Park Trout Hatchery (WPTH) was built adjacent to historic Washoe Park in Anaconda, Montana, at the height of copper mining activity in the area. The project was initiated with help from local industries and the support of a strong, local sportsmen’s club. The manager of the Washoe Park Trout Hatchery is Angela Smith, Hatchery Manager. Washoe Park Trout Hatchery Montana Fish, Wildlife & Parks

Sticky Ridge Update
Greg Mullan
In a 2008 settlement, The Atlantic Richfield Company (ARCO) agreed to do remedy and restoration on the state lands of Sticky Ridge and Mount Haggin. These upland areas were heavily impacted by historic smelting and looked very different from today. Both areas were virtually absent of vegetation, other than noxious weeds. Erosion on the site was rampant. Many gullies had opened up over the sites, carrying low pH (acidic) materials to the areas below. The pH of soils was as low as 3.5 in some places. Following the settlement, planning and sampling began in 2009 and 2010. In 2011, work began in earnest to address the grade and slope of the area, repair the major gullies, add a lime amendment, and cover with native plants seed mix and fertilizers. The lime amendment (using sugar beet lime) was used at about 22 tons per acre over the 110 acres that were restored. The pH of soils today ranges from 7.2 to 7.5 (neutral levels) and maintains a healthy population of native plants. Noxious weeds have been reduced by 95% on the site.

These state lands have been restored through the efforts of the Natural Resource Damage Program (NRDP) and ARCO working together to problemsolve and create healthy uplands. Uplands are connected to the riparian areas of the Clark Fork Watershed. If left unscheduled, unhealthy soils and historic wastes could have continued into streams below these sites. The Sticky Ridge site is completed and now is moving into the monitoring stage.

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Sticky Ridge after grading. Photo NRDP.

Anaconda Community Soils Operable Unit: Have You Had Your Yard Tested?
The communities of Anaconda, Opportunity, Crackerville, Fairmont, Galen, and Wann Springs all exist within the Community Soils Operable Unit. They are eligible for free yard testing for elevated levels of contaminants (such as arsenic and lead) from historic smelting operations. EPA and Atlantic Richfield are making some changes to the testing process to ensure that yards are remediated effectively. Previously, residential soils exceeding an average arsenic concentration of 250 parts per million (ppm) were remediated. The new update removes the averaging of test results. Any part of a residential area that exceeds the 250 ppm limit, will be remediated. Properties that had the previous testing and the average did not initiate action will receive information in the mail if action will be taken.

The map below shows all of the yards (in green) that have been scheduled for testing, sampled for testing or remediated.

Residents that want to request yard testing can contact Water Environmental Technologies (WET) at (406) 563-7476.

This map shows soil testing, soil sampling, and completed work within the city of Anaconda, which is located within the Community Soils Operable Unit.
Later in 1881 when Daly bought the Anaconda Mine from Hickey, Daly kept the name. It was here in the Anaconda Mine that Daly first came to realize how rich Butte’s ores were in copper. The copper that came out of the Butte hill eventually resulted in the United States becoming the world’s leading copper producer, bringing a very bright spotlight to southwest Montana’s Upper Clark Fork watershed. For Daly, it was this discovery, and the need to process tons of ore and to house the workers, that eventually led him to found the town of Anaconda. By 1919, the Washoe Reduction Works with its 585 foot smokestack, the Anaconda Smelter Stack, was the world’s largest non-ferrous processing plant and the stack was the world’s tallest masonry structure.

After 100 years of the smelter serving as Anaconda’s largest employer, the smelter closed in 1980 leaving about a quarter of the town’s workforce out of a job. Such huge job losses have killed many towns, turning them into ghost towns for tourists to visit. But not Anaconda – she persists. In the 1930’s, considered Anaconda’s heyday, the population was estimated at about 12,500, which is about 3,000 less than the 9,100 people who still call Anaconda home. The hard-working, loyal townsfolk that remain are the best of the best. To me, Anaconda is like a jewel covered in the dust of her notable history. Every wipe of cloth to clean her reveals more of her bright treasures. Whether you are interested in home-cooking or fine dining, interested in shopping unique boutiques or hunting for treasures in thrift stores, interested in visiting Montana’s only cutthroat trout hatchery or playing a few rounds on the Old Works Golf Course (designed by Jack Nicklaus), there is something for everyone in Anaconda.

There are not that many books written about Anaconda, yet most who take the time to get to know her agree there should be plenty more. If you are interested in learning more, check out these fine books:

- Smoke Wars: Anaconda Copper, Montana Air Pollution, and the Courts, 1890-1924 by Donald MacMillan;
- Anaconda, Montana: Goosetown and West of Main by J. Ray Haffey;
- Anaconda Montana: Copper Smelting Boomtown on the Western Frontier by Patrick F. Morris;
- Anaconda: Labor, Community, and Culture in Montana’s Smelter City by Laurie Mercier.

The Clark Fork Watershed Education Program (CFWEP) has served Anaconda Montana students and teachers since 2005.