

**Butte-Silver Bow Planning Department
Superfund Division**

**Butte-Silver Bow Soil Testing
& Placement, Tree and Shrub Planting**

Butte Tree Planting Project

**2016 Annual Plan
January 1, 2016 - December 31, 2016**

Prepared by
Julia Crain

12 February 2016

The Butte Tree Planting Project is an element of the Butte Area One final restoration plan. This project achieves the primary goal of restoring the vast landscape of the Butte Hill by re-establishing native species diversity in open space areas, with a primary objective of minimizing erosion and reducing sediment load to Silver Bow Creek.

In its original iteration, this objective was attempted through the placement of hundreds of mature trees and shrubs that will restore wildlife habitat and re-establish a diverse, self-sustaining vegetative cover on reclaimed areas. Throughout the course of the program, this approach has resulted in the successful placement of hundreds of Montana native species in the landscape.

In 2015, Butte Natural Resource Restoration Council commissioned an independent evaluation of BAO-related restoration projects occurring on the Butte Hill. This evaluation was not only intended to evaluate the overall success, feasibility, and cost effectiveness of these initiatives, but to provide recommendations for improvement in the methodology employed by Butte-Silver Bow and recommend potential opportunities for cost savings.

The primary finding from evaluation of Butte-Silver Bow's effort is the potential for methodology revision to provide better results. Herrera Environmental found that "work done by Butte-Silver Bow since 2012 has been very well done and the scopes of work have been followed. Material costs have been accurately accounted for and the care and maintenance of the plantings has been adequate. A high percentage of the plants installed are surviving. However, the methods employed are more geared to landscaping than to native plant restoration."

The evaluation provided the program with many recommendations, which will be incorporated into the overall scope of work for the 2016 effort. The primary recommendations are as follows:

- Utilize smaller, individual pods rather than large pods to spread out the visual impact of vegetation.
- Utilize a range of tree sizes; large trees provide visual impact, and smaller containerized trees promote a more natural appearance.
- Utilize fill dirt rather than 100% top soil.
- Place native shrubs and wildflowers which are excellent at providing erosion control and can be planted directly into and survive in the 18-inch cover soil existing on reclaimed sites.
- Development of an irrigation plan to promote longevity and survival of the plantings once irrigation is removed.

2015 Achievements

Butte-Silver Bow learned a considerable amount through the evaluation process, and the program was grateful to be included in the evaluation and given the opportunity to recalibrate to maximize program effectiveness.

Mid-way through our process, we were successfully able to reorient the planting effort to implement recommendations provided by Mr. Ballek and Herrera Environmental in the field. However, all recommendations could not be adhered to in the 2015 season. Butte-Silver Bow procured 1,500 cubic yards of top soil and began the construction of the tree pods prior to Mr. Ballek's arrival. Therefore, planting areas at the Scown Field, Caledonia Triangle, Missoula Ball Fields and 11th Street Triangle were constructed utilizing the soil source.

Montana Tech was able to successfully integrate their plantings into the locations, but Butte-Silver Bow did not succeed in installing plants late last fall. The tree stock will be installed at each location this spring. Notably, the final installation will utilize a restoration-focus rather than a landscaping focus, which will provide for a more natural looking effect and a restoration-installation methodology. We believe this will allow for a better long-term impact of the 2015 plantings.

Herrera Environmental's recommendation for a seed mix comprised of native species resonated with the crews at Butte-Silver Bow and Montana Tech. Superfund Division Staff along with Mr. Ballek and Montana Tech botanist Robert Pal developed a new seed mix that would provide similar ground cover to reclaimed areas, but would also provide a hospitable environment for the promulgation of native species planted by Montana Tech and Butte-Silver Bow. The seed mix – the 2015 Pal Mix – was approved by the EPA in the fall of 2015, and will be utilized on the Butte Hill moving forward.

Site Improvement Plans

Butte-Silver Bow has coordinated its 2016 effort with Montana Tech Native Plant Program. We have coordinated this planting to maximize efficiencies of each program and provide for overall program success.

Montana Tech and Butte-Silver Bow completed a late-fall/early-winter site visit to determine the planting locations for 2016. Nine planting locations were selected across the Butte Hill. Special effort was made to coordinate plantings with deficiencies identified through Butte-Silver Bow's Butte Reclamation Evaluation System process. The sites are as follow:

1. Alabama Street at Antimony/Lewisohn, just north of the BA&P Trail.
2. Anselmo Timber Yard Slope and BA&P Hill Trail rock outcrop.
3. BA&P Trail underpass at Montana Street and BA&P Trail underpass at Main Street.
4. Stormwater Inlet at Clark Street between Copper & Quartz streets.
5. Original Mine Yard southern edge.
6. Anselmo Mine Yard slope; Caledonia Street stormwater inlet.
7. Travona Dump.
8. Washoe Dump.
9. West Gagnon Dump community stewardship planting.

Please see the individual site improvement plans attached as Appendix A.

Through this collaborative effort, Butte-Silver Bow will provide Montana Tech Native Plant Program with prepared sites for their fall of 2016 plantings. Montana Tech has noted that their installations are most successful when the planting areas are hospitable to native plants. Butte-Silver Bow has offered to prepare those sites, plant larger species, and seed the areas with a new mix of native plant seed. The seeded sites will have an opportunity to establish over the course of the summer and Montana Tech will hand plant their species in the fall, into hospitable ecosystems.

Site Improvement Plan Budget

The overall cost for vegetation, soils and labor for the 2016 Planting Program is approximately \$24,000. In recognition of the recommendations to rely on soils currently in place, prioritize large trees only where large trees are necessary, and to maximize the effectiveness of each program. The labor costs will cover the scouring of planting sites, installation of vegetation procured by BSB to augment Montana Tech plant stock, and seeding.

Butte Hill Tree Program
2016 Project Costs

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
				\$9,023.84	0.00	\$9,023.84
		total		\$9,023.84	0.00	9,023.84
Soils						
		total		\$5,010.00	1,270.00	3,740.00
Labor						
Tree Planting & Anchoring (100% of Plant Cost)				\$9,023.84	0.00	9,023.84
		total		\$9,023.84	0.00	9,023.84
		Project Total		\$23,057.68	1,270.00	21,787.68

Watering Plan

During 2015 site visits, Mr. Ballek noted that most pods and planting areas were irrigated utilizing drip irrigation systems. The watering has sustained plantings placed on the Butte Hill, but comes with certain costs. Water is costly, as are the watering systems, and encourages plant reliance on irrigation rather than precipitation or moisture in the soil. Drip irrigation also encourages the plants to rely on irrigation rather than search for water as native plants would.

Butte-Silver Bow’s primary method for watering is by drip irrigation system. Drip irrigation typically covers the shallower portions of the planting areas, but does not occur for a duration that allows for percolation into the planting areas. The trees or shrubs in place do not typically have to work very hard to find water and therefore their roots stay shallower. However, if the watering were to occur for a longer duration, soaking more deeply into the planting areas, the trees and plants would naturally search for sources of water at greater depth. The plant’s natural process to find water at greater depth causes the plant to develop deeper roots. The depth of root anchors the plant and therefore provides greater storm water control.

Butte-Silver Bow would like to move toward a more self-sustaining program, requiring less water rather than more. Butte-Silver Bow Superfund Division staff will be assigned to develop a watering plan to promote longevity and survival of plantings once irrigation is removed. Butte-Silver Bow staff will work with Montana Tech to understand the science behind the plan, and will develop an analytical methodology for field investigation. Analysis will concentrate on the ideal length of irrigation suited for maximum/ideal saturation. Staff will then provide a watering schedule to plan for irrigation for plants from June 1 through October (summer). This watering plan will then allow for the gradual draw down from irrigation to self-sustaining. Mr. Ballek recommended a 1/3 reduction annually.

Native Plant Training

Herrera Environmental suggested Butte-Silver Bow staff participating in the Butte Hill Tree Planting program should attend training. It was suggested to attend the U.S. Forest Service Region 1 Soil Bioengineering and Native Plants Training. At this time, the 2016 training has not yet been scheduled by the USFS, but will be forthcoming. Butte-Silver Bow has set aside funding to send four members of staff.

2016 Program Budget

Butte Hill Tree Program						
2016 Project Costs						
Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Personnel						
Jon Sesso, Planning Director		20	\$ 46.50	\$ 930.00	\$ 930.00	\$ -
Julia Crain, Superfund Data Administrator		104	\$ 25.00	\$ 2,600.00	\$ -	\$ 2,600.00
Eric Hassler, Superfund Operations Manager		40	\$ 33.00	\$ 1,320.00	\$ 1,320.00	\$ -
Michele Bay, Superfund Data Manager		80	\$ 25.00	\$ 2,000.00	\$ 2,000.00	\$ -
Subtotal Salaries				\$ 6,850.00	\$ 4,250.00	\$ 2,600.00
Benefits, 14% of Wages				\$ 959.00	\$ 595.00	\$ 364.00
Total Salaries, Wages, and Benefits				\$ 7,809.00	\$ 4,845.00	\$ 2,964.00
Contracted Services						
Tree Planting (100% of Plant Cost)				\$ 9,023.84	\$ -	\$ 9,023.84
Training						
USFS Bioengineering & Native Plants Training		4	\$ 100.00	\$ 400.00	\$ -	\$ 400.00
Supplies & Materials						
Vegetation				\$ 9,023.84	\$ -	\$ 9,023.84
subtotal				\$ 9,023.84	\$ -	\$ 9,023.84
Soils				\$ 5,010.00	\$ 1,270.00	\$ 3,740.00
subtotal				\$ 5,010.00	\$ 1,270.00	\$ 3,740.00
Total				\$ 14,033.84	\$ 1,270.00	\$ 12,763.84
Subtotal				\$ 31,266.68	\$ 6,115.00	\$ 25,151.68
Indirect Costs (20% of Project Subtotal)				\$ 6,253.34	\$ 6,253.34	\$ -
Project Total				\$ 37,520.02	\$ 12,368.34	\$ 25,151.68

The 2016 budget is for the calendar year 2016. Salaries and wages are requested for the full-time project manager, who dedicates 5% of her time annually to the project. Additional Butte-Silver Bow staff time is a match to the grant as well as indirect costs, calculated at twenty percent of the project subtotal.

The calculated prices of the 2016 planting program requests \$9,023.84 for vegetation; 100% of the plant cost (9,023.84) is calculated for contractors to install plant stock. An additional \$14,033.94 is requested for soils and vegetation. Butte Siler Bow will contribute \$1,270 toward soil costs, primarily to fund the disposal of any excavated wastes at the Mine Waste Repository. Finally, \$400 is requested to fund Staff attendance of Restoration training.

Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: Alabama Street between Waukesha and Lewisohn Streets

Date: February 11, 2016

Site Location/Size:

The site is located just north and west of the intersection of Antimony and Lewisohn Streets at Alabama Street. The site will consist of three pods, two dry species sites and one wet species site. Please see attached map for precise locations.

BRES Site #/Name:

Located West of Site No. 71N, Anselmo Timber Yard Slope; South of Site No. 1503 Hornet Addition, and within Missoula Gulch Drainage.

BSB Zoning Classification(s) at Site:

The site is Zoned R2, low-density two family residential. Site contains tree pods from prior years.

Vegetative Deficiencies/Problems at this Site:

The planting targets are adjacent to several BRES sites located in the vicinity of the Anselmo Mine and Missoula Gulch. Missoula Gulch drainage system is the major conveyance structure for storm water east of Montana Street. Volumes of water are collected on either side of Missoula Gulch and are transported to Catch Basins 8 and 9 where water is retained to allow sediments to fall away from the water prior to arrival at Lower Area One Butte Treatment Lagoons. Stormwater carrying metal laden sediments are a primary source of metals loading to Silver Bow Creek.

This planting is intended to take advantage of three sites where erosion is particularly evident. Storm water flowing from the Hornet Addition (Site No. 1503) carries significant sediments which enter a drop structure on Alabama Street, however many of those sediments do not fall out and sheet flow over curbs in the area unsettling sediments on the three target sites. These sediments erode into Missoula Gulch and are carried toward Silver Bow Creek through the storm water system.

Proposed Efforts to Improve the Site:

The plantings intended for this site mitigate sediment erosion into Missoula Gulch by establishing a vegetative cover of native plants and trees. The plantings will be placed in three areas; the first planting area is a North Eastern facing slope; the second an east facing slope

Butte Area One BSB Tree Planting Site Improvement Plan

within a drainage suitable for wet-area species; the third is a rock outcrop on a south facing slope.

Site A. East facing Slope suitable for wet environment species.

In spring of 2016, Butte-Silver Bow Planning Department, Superfund Division (BSB) will assist with site preparation. The area will be scoured, interstitially seeded utilizing the Pal 2015 seed mix. The grasses will have the summer to establish.

In the fall the Montana Tech Native Plant Program (MTNPP) intends to plant 300 to 400 native shrubs, forbs and grasses. Shrubs include *Salix* species (Willow), *Prunus virginiana* (Chokecherry), *Ribes aureum* (Golden Currant), *Sorbus scopulina* (Mountain Ash), and *Shepherdia* species (Buffaloberry). Forb species include *Solidago canadensis* (Canada Goldenrod), *Geum macrophyllum* (Large-leaf Avens), *Helianthus maximillianii* (Maximillian's Sunflower), *Penstemon procerus* (Ballhead Penstemon), *Polemonium pulcherrimum* (Jacob's ladder), and *Geranium viscosissimum* (Sticky Geranium). Grass seeds in this area include *Deschampsia caespitosa* (Tufted Hairgrass), *Elymus trachycaulus* (Slender Wheatgrass), and *Festuca scabrella* (Rough Fescue).

Site B. North East facing slope suitable for dry land species.

Similar to Site A, Butte-Silver Bow will scour a 3x10m surface to accommodate the planting of 300-400 forbs and 50 shrubs. Following scouring, Butte-Silver Bow will seed with the EPA approved 2015 Pal Mix in early spring. Grasses will have the summer to establish.

In the fall of 2016, Montana Tech Native Plant Program will hand prepare the site to plant shrub species including common juniper (*Juniperus communis*) and Rocky mountain juniper (*Juniperus scopulorum*). Forb species planned include *Lewisia rediviva* (Bitterroot), *Eriogonum umbellatum* (Sulfur-flower Buckwheat), *Allium cernuum* (Nodding Onion), *Epilobium angustifolium* (Fireweed), *Geum triflorum* (Old Man's Whiskers), *Astragalus crassicaarpus* (Groundplum Milkvetch), *Arnica* species (Arnica), *Heuchera cylindrica* (Round-leaf Alumroot), *Phlox longifolia* (Long-leaf Phlox), *Agoseris glauca* (False Mountain Dandelion), *Penstemon procerus* (Ballhead Penstemon), *Polemonium pulcherrimum* (Jacob's Ladder), *Geranium viscosissimum* (Sticky Geranium). Additionally, grass seeds will augment forb species including *Linum lewisii* (Lewis' Flax), *Artemisia ludoviciana* (White Sage), *Arabis holboellii* (Holboell's Rockcross), *Antennaria microphylla* (Pussytoes), *Coreopsis tinctoria* (Plains Coreopsis), *Erigeron compositum* (Cut-leaf Daisy).

In addition to MTNPP plantings, Butte-Silver Bow will install three pod-like areas to plant Ponderosa Pine, Rocky Mountain Juniper and Choke Cherry along a user-defined trail from the Northside Neighborhood to the BA&P Trail. These plants will be installed to provide visual interest, shade, and additional sediment control in the area. This will require the excavation and creation of individual planting pods for trees with clean soils, pending sampling and analysis of existing soils in the area.

Butte Area One BSB Tree Planting Site Improvement Plan

Site C. South facing rock outcrop suitable for dry land species.

The site is a barren south facing rock outcrop with significant erosion of decomposed granite. Many rock outcrops throughout the BPSOU are home to volunteer plants finding hospitable environments for growth. This planting effort is an effort to assist in further promulgation of this type of planting strategy. Butte-Silver Bow will clear a 3x10m surface and seed the site to make way for the installation of 200 forbs and 20 shrubs in fall of 2016 by MTNPP. Species include common juniper (*Juniperus communis*), creeping juniper (*Juniperus horizontalis*), mountain mahogany (*Cercocarpus ledifolius*), and Rocky mountain juniper (*Juniperus scopulorum*). Forbs specified include *Allium cernuum* (Nodding Onion), *Epilobium angustifolium* (Fireweed), *Arenaria congesta* (Ballhead Sandwort), *Artemisia frigida* (Fringed Sage), *Aster occidentalis* (Western Mountain Aster), *Astragalus atropubescens* (Hangingpod Milkvetch), *Balsamorhiza sagittata* (Arrowleaf Balsamroot), *Oxytropis lagopus* (Rabbitsfoot Locoweed), *Eriogonum ovalifolium* (Cushion Buckwheat), *Lupinus* species (Lupine), *Grindelia squarrosa* (Curlycup Gumweed), *Heterotheca villosa* (Hairy Goldenaster), *Hymenoxys acaulis* (Stemless Four-nerve Daisy), *Lithospermum ruderales* (Puccoon), *Mentzelia laevicaulis* (Smoothstem Blazingstar), *Oenothera biennis* (Common Evening Primrose), *Penstemon eriantherus* (Fuzzytongue Penstemon), *Phlox muscoides* (Hood's Phlox), *Phacelia hastata* (Silky Phacelia), *Potentilla gracilis* (Slender Cinquefoil), *Potentilla pensylvanica* (Pennsylvania Cinquefoil), *Solidago missouriensis* (Missouri Goldenrod), *Sedum lanceolatum* (Spearleaf Stonecrop), *Geum triflorum* (Old Man's Whiskers), *Astragalus crassicaulis* (Groundplum Milkvetch), *Arnica* species (Arnica), *Heuchera cylindrica* (Roundleaf Alumroot), *Phlox longifolia* (Longleaf Phlox), *Agoseris glauca* (False Mountain Dandelion). Seed grasses and forbs include grass species such as *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Festuca scabrella* (Rough Fescue), *Linum lewisii* (Lewis' Flax), *Artemisia ludoviciana* (White Sage), *Arabis holboellii* (Holboell's Rockcress), *Antennaria microphylla* (Pussytoes), *Coreopsis tinctoria* (Plains Coreopsis), *Erigeron compositus* (Cutleaf Daisy), *Achillea millefolium* (Yarrow).

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to release Request for Quotes to procure vegetation to augment MTNPP plants.
 - B. BSB to prepare Planting Areas.
 - C. BSB to seed Planting Areas.
 - D. Butte-Silver Bow to install larger trees (April).
- Fall 2016 (September/October)
 - E. MTNPP hand preparation for installation of forbs and shrubs.
 - F. MTNPP to plant forbs and shrubs

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: January 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program
Alabama St/Antimony St Site
Tree & Shrub Plantings
2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
(Site B)						
Ponderosa Pine	5 gal.	3	65.00	195.00		195.00
Rocky Mountain Juniper	5 gal.	3	65.00	195.00		195.00
Chokecherry	5 gal.	5	65.00	325.00		325.00
PAL 2015 Seed Mix	1 lb.	1	4.60	4.60	4.60	0.00
total				719.60	4.60	715.00
Soils						
Excavation, Site Preparation & Disposal	19 cyds	1	5.00	95.00	95.00	0.00
Soil Ammendment	10 cyds	1	16.00	160.00	0	160.00
total				255.00	95.00	160.00
Labor						
Tree Planting & Anchoring/Seeding (100% of Plant Cost)				719.60	0.00	719.60
total				719.60	0.00	719.60
Project Total				1,694.20	99.60	1,594.60

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: Anselmo Timber Yard Slope & BA&P Trail

Date: January 21, 2016

Site Location/Size:

The planting targets are located at the Anselmo Timber Yard Slope, which is located north of the BA&P Trail, South of Empire Street, and West of Boardman Street. The site will consist of two planting areas; one, a rock outcrop along the trail, and another, the south west facing eastern portion of the site. Please see attached map for precise locations.

BRES Site #/Name:

Site No. 71N, Anselmo Timber Yard Slope; Site No. 2330 BA&P Trail Section A

BSB Zoning Classification(s) at Site:

Site No. 71N is OSC Open Space Conservation; Site No. 2330 is zoned OSD Open Space Developable

Vegetative Deficiencies/Problems at this Site:

The Anselmo Timber Yard Slope (Site No. 71N) was evaluated in 2014 by independent contractors. The vegetation and erosion evaluation revealed the site required significant vegetation improvement. The site had evidence of significant edge variation including presence of weeds, erosion, steep slopes, barren areas, land slumps, exposed waste, and overall poor vegetative cover. In 2015, Butte-Silver Bow O&M Crews worked diligently to correct these trigger items identified in 2014. The BSB Weed Department provided weed control, erosion protection measures were implemented, including re-grading of the site, exposed wastes were excavated and replaced with EPA-approved top soils. The site was then seeded utilizing the hydroseeder.

The site's steep slope challenges the integrity of the site generally; storm water run-off from North Jackson Street at Boardman causes significant erosion such as rills and gullies. To correct augment the BSB Crew work and further the site's vegetative integrity, Montana Tech Native Plant Program (MTNPP) and Butte-Silver Bow Butte Hill Tree Program (BSB) will collaborate on a plan that will utilize forbs and shrubs to promote diversity while holding slopes intact. In addition, to the south of this area, along the BA&P Trail, an existing rock outcrop shows significant decomposed granite eroding into the trail corridor. Strategic plantings of native forbs will hold these sediments in place and create habitat for species of plants which find this environment welcoming.

Butte Area One BSB Tree Planting Site Improvement Plan

Proposed Efforts to Improve the Site:

The plantings intended for this site mitigate sediment erosion from the Site into Missoula Gulch by establishing a vegetative cover of native plants and trees. Two planting areas are targeted; one, the eastern portion of the site to the west of Jackson Street at Boardman, and the rock outcrop along the trail.

Site A. South Facing Rock Outcrop, Site No. 2330.

This site will not be prepared by Butte-Silver Bow; rather, MTNPP intends to hand seed this area with grasses and forbs in spring of 2016 to allow the grasses and plants to establish over the course of the summer. These plants are *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Festuca scabrella* (Rough Fescue), *Linum lewisii* (Lewis' Flax), *Artemisia ludoviciana* (White Sage), *Arabis holboellii* (Holboell's Rockcress), *Antennaria microphylla* (Pussytoes), *Coreopsis tinctoria* (Plains Coreopsis), *Erigeron compositus* (Cutleaf Daisy), *Achillea millefolium* (Yarrow).

In fall of 2016, MTNPP will augment grasses and forbs with more mature plants from the greenhouse. Approximately 100 forbs and 10 shrubs will be installed. The shrub species selected for this area include common juniper (*Juniperus communis*) and mountain mahogany (*Cercocarpus ledifolius*). Forb species include *Allium cernuum* (Nodding Onion), *Epilobium angustifolium* (Fireweed), *Arenaria congesta* (Ballhead Sandwort), *Artemisia frigida* (Fringed Sage), *Aster occidentalis* (Western Mountain Aster), *Astragalus atropubescens* (Hangingpod Milkvetch), *Balsamorhiza sagittata* (Arrowleaf Balsamroot), *Oxytropis lagopus* (Rabbitsfoot Locoweed), *Eriogonum ovalifolium* (Cushion Buckwheat), *Lupinus* species (Lupine), *Grindelia squarrosa* (Curlycup Gumweed), *Heterotheca villosa* (Hairy False Goldenaster), *Hymenoxys acaulis* (Stemless Four-nerve Daisy), *Lithospermum ruderales* (Puccoon), *Mentzelia laevicaulis* (Smoothstem Blazingstar), *Oenothera biennis* (Common Evening Primrose), *Penstemon eriantherus* (Fuzzytongue Penstemon), *Phlox muscoides* (Hood's Phlox), *Phacelia hastata* (Silky Phacelia), *Potentilla gracilis* (Slender Cinquefoil), *Potentilla pensylvanica* (Pennsylvania Cinquefoil), *Solidago missouriensis* (Missouri Goldenrod), *Sedum lanceolatum* (Spearleaf Stonecrop), *Geum triflorum* (Old Man's Whiskers), *Astragalus crassicaarpus* (Goundplum Milkvetch), *Arnica* species (Arnica), *Heuchera cylindrica* (Roundleaf Alumroot), *Phlox longifolia* (Longleaf Phlox), *Agoseris glauca* (False Mountain Dandelion).

Site B. South West facing slope, eastern edge of Site No. 71N.

In the spring of 2016, Butte-Silver Bow will scrape two areas measuring approximately 3x10m, augment the bare ground with EPA-approved topsoil, and rake the soils in with the harrow. Following integration, the BSB Crews will then interstitially seed the areas utilizing a whirly-bird. The seed mix selected is the 2015 EPA-approved Pal mix of native species. In the Fall of 2016, MTNPP will selectively remove grasses and plant an additional 300 mature forbs and 100

Butte Area One BSB Tree Planting Site Improvement Plan

mature shrubs for a total of 600 forbs and 200 shrub species. Shrub species include *Juniperus communis* (Common Juniper), *Juniperus scopulorum* (Rocky Mountain Juniper), *Cercocarpus ledifolius* (Curlleaf Mountain Mahogany), *Artemisia tridentata* (Big Sagebrush), *Chrysothamnus nauseosus* (Rubber Rabbitbrush). Forb species are *Allium cernuum* (Nodding Onion), *Epilobium angustifolium* (Fireweed), *Arenaria congesta* (Ballhead Sandwort), *Artemisia frigida* (Fringed Sage), *Aster occidentalis* (Western Mountain Aster), *Astragalus atropubescens* (Hangingpod Milkvetch), *Balsamorhiza sagittata* (Arrowleaf Balsamroot), *Oxytropis lagopus* (Rabbitsfoot Locoweed), *Eriogonum ovalifolium* (Cushion Buckwheat), *Lupinus* species (Lupine), *Grindelia squarrosa* (Curlycup Gumweed), *Heterotheca villosa* (Hairy False Goldenaster), *Hymenoxys acaulis* (Stemless Four-nerve Daisy), *Lithospermum ruderale* (Puccoon), *Mentzelia laevicaulis* (Smoothstem Blazingstar), *Oenothera biennis* (Common Evening Primrose), *Penstemon eriantherus* (Fuzzytongue Penstemon), *Phlox muscoides* (Hood's Phlox), *Phacelia hastata* (Silky Phacelia), *Potentilla gracilis* (Slender Cinquefoil), *Potentilla pensylvanica* (Pennsylvania Cinquefoil), *Solidago missouriensis* (Missouri Goldenrod), *Sedum lanceolatum* (Spearleaf Stonecrop), *Geum triflorum* (Old Man's Whiskers), *Astragalus crassicaarpus* (Groundplum Milkvetch), *Arnica* species (Arnica), *Heuchera cylindrica* (Roundleaf Alumroot), *Phlox longifolia* (Longleaf Phlox), *Agoseris glauca* (False Mountain Dandelion). Additionally, grass species such as *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Festuca scabrella* (Rough Fescue), *Linum lewisii* (Lewis' Flax), *Artemisia ludoviciana* (White Sage), *Arabis holboellii* (Holboell's Rockcress), *Antennaria microphylla* (Pussytoes), *Coreopsis tinctoria* (Plains Coreopsis), *Erigeron compositus* (Cutleaf Daisy), *Achillea millefolium* (Yarrow) will be incorporated.

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to Prepare Planting Areas
 - B. BSB to Seed Planting Areas
- Fall 2016 (September/October)
 - C. MTNPP hand preparation for installation of forbs and shrubs.
 - D. MTNPP to plant forbs and shrubs

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: March or April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program
#71N - Anselmo Timber Yard Slope
Seeding & Site Preparation
2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
PAL 2015 Seed Mix	1 lb.	1	\$4.60	\$4.60	4.60	0.00
	total			\$4.60	\$4.60	\$0.00
Soils						
Excavation & Disposal	7 cu yds.	1	\$5.00	\$35.00	\$35.00	0.00
Soil Ammendment	1 cu yd.	1	\$16.00	\$16.00	\$0.00	16.00
	total			\$51.00	\$35.00	16.00
Labor						
Shrub Planting / Seeding (100% of Plant Cost)				\$4.60	0.00	4.60
	total			\$4.60	0.00	4.60
Project Total				\$60.20	\$39.60	\$20.60

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: BA&P Trail at Montana Street; BA&P Trail at Main Street

Date: February 9, 2016

Site Location/Size:

The planting targets are intended for the areas just east and west of the BA&P Trail at their passage under Montana and Main Streets. Please see attached map for precise locations.

BRES Site #/Name:

Site No. 2330 BA&P Trail Section A

BSB Zoning Classification(s) at Site:

Site No. 2330 is zoned OSD Open Space Developable

Vegetative Deficiencies/Problems at this Site:

The BA&P Trail traverses through many neighborhoods and, in the case of this proposal, under major arterials Montana Street and Main Street. In these particular locations, the BA&P Rail Line's grade is maintained despite the steep slope of the Butte Hill, and in many areas the rail line cuts directly into the landscape. The engineered grade weaves through exposed rock outcrops, which happen to be just east and west of both bridges, along the trail. The slopes in these areas are substantial, with a nearly vertical arrangement of rock outcrop or retaining walls anchoring significant volumes of decomposed granite. In the case of the underpass at Montana Street the side walls of the trail are eroding sediments onto the trail system which then convey across the trail. These sediments are carried by pedestrian activity and storm water. The sediments then migrate onto BRES sites in the vicinity. In the case of the underpasses near Main Street, sheet flow of storm water from Main Street conveys across the slopes onto the trail, bringing sediments with it and routing through the slopes causing rills.

Proposed Efforts to Improve the Site:

The plantings intended for this site are specifically designed for harsh landscapes with minimal soils, dry conditions, and rock formations. This proposal will establish vegetation cover where possible, reinforce lime rock applications in the area, preserve the fence that keeps patrons from climbing the walls. At this time, this fence is acting as a retaining wall keeping eroding sediments contained. These plantings are intended to take advantage of the harsh landscape and attempt to anchor the sediments where possible.

Butte Area One BSB Tree Planting Site Improvement Plan

Four planting areas are intended Site A is the west side of the trail crossing at Montana; Site B is the east side of the trail crossing at Montana; Site C is the west side of the trail crossing Main; and Site D is the west side of the trail crossing Main.

Site A. West side of BA&P Trail at Montana Street.

The project will occur in two phases. In the spring of 2016, Butte-Silver Bow will seed the slopes with drought-tolerant grass species including *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Koeleria cristata* (Prairie Junegrass).

In the fall, MTNPP will plant 135 plants that will augment the grass seeds planted in the spring. Shrub species intended for installation include *Juniperus communis* (Common Juniper), *Juniperus scopulorum* (Rocky Mountain Juniper), *Cercocarpus ledifolius* (Curlleaf Mountain Mahogany), *Artemisia tridentata* (Big Sagebrush), *Chrysothamnus nauseosus* (Rubber Rabbitbrush). Twenty of each forb species including *Phacelia hastata* (Silky Phacelia), *Grindelia squarrosa* (Curlycup Gumweed), *Chaenactis douglasii* (Douglas' Dustymaiden), *Cryptantha interrupta* (Miner's Candle), *Arabis holboellii* (Holboell's Rockcress), *Mentzelia laevicaulis* (Smootstem Blazingstar) will be planted.

Site B. East side of BA&P Trail at Montana Street.

The project will occur in two phases. In the spring of 2016, Butte-Silver Bow will seed the slopes with drought-tolerant grass species including *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Koeleria cristata* (Prairie Junegrass). In the fall, MTNPP will plant 135 plants that will augment the grass seeds planted in the spring. Shrub species intended for installation include *Juniperus communis* (Common Juniper), *Juniperus scopulorum* (Rocky Mountain Juniper), *Cercocarpus ledifolius* (Curlleaf Mountain Mahogany), *Artemisia tridentata* (Big Sagebrush), *Chrysothamnus nauseosus* (Rubber Rabbitbrush). Twenty of each forb species including *Phacelia hastata* (Silky Phacelia), *Grindelia squarrosa* (Curlycup Gumweed), *Chaenactis douglasii* (Douglas' Dustymaiden), *Cryptantha interrupta* (Miner's Candle), *Arabis holboellii* (Holboell's Rockcress), *Mentzelia laevicaulis* (Smootstem Blazingstar) will be planted.

Site C. West side of BA&P Trail at Main Street.

The project will occur in two phases. In the spring of 2016, Butte-Silver Bow will seed the slopes with drought-tolerant grass species including *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Koeleria cristata* (Prairie Junegrass). In the fall, MTNPP will plant 135 plants that will augment the grass seeds planted in the spring. Shrub species intended for installation include *Juniperus communis* (Common Juniper), *Juniperus scopulorum* (Rocky Mountain Juniper), *Cercocarpus ledifolius* (Curlleaf Mountain Mahogany), *Artemisia tridentata* (Big Sagebrush), *Chrysothamnus nauseosus* (Rubber Rabbitbrush). Twenty of each forb species including *Phacelia hastata* (Silky Phacelia), *Grindelia squarrosa* (Curlycup Gumweed), *Chaenactis douglasii* (Douglas' Dustymaiden), *Cryptantha interrupta* (Miner's Candle), *Arabis holboellii* (Holboell's Rockcress), *Mentzelia laevicaulis* (Smootstem Blazingstar) will be planted.

Butte Area One BSB Tree Planting Site Improvement Plan

Site D. East side of BA&P Trail at Main Street.

The project will occur in two phases. In the spring of 2016, Butte-Silver Bow will seed the slopes with drought-tolerant grass species including *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Koeleria cristata* (Prairie Junegrass). In the fall, MTNPP will plant 135 plants that will augment the grass seeds planted in the spring. Shrub species intended for installation include *Juniperus communis* (Common Juniper), *Juniperus scopulorum* (Rocky Mountain Juniper), *Cercocarpus ledifolius* (Curlleaf Mountain Mahogany), *Artemisia tridentata* (Big Sagebrush), *Chrysothamnus nauseosus* (Rubber Rabbitbrush). Twenty of each forb species including *Phacelia hastata* (Silky Phacelia), *Grindelia squarrosa* (Curlycup Gumweed), *Chaenactis douglasii* (Douglas' Dustymaiden), *Cryptantha interrupta* (Miner's Candle), *Arabis holboellii* (Holboell's Rockcress), *Mentzelia laevicaulis* (Smootstem Blazingstar) will be planted.

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to Release Request for Quotes to procure vegetation to augment MTNPP plants
 - B. BSB to Prepare Planting Areas
 - C. BSB to Hydroseed Planting Areas
- Fall 2016 (September/October)
 - D. MTNPP hand preparation for installation of forbs and shrubs.
 - E. MTNPP to plant forbs and shrubs

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: March or April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program
Butte Anaconda & Pacific Hill Trail Bridges
Seeding & Site Preparation
2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
PAL 2015 Seed Mix	4 lbs.	1	\$4.60	\$18.40	18.40	0.00
total				\$18.40	\$4.60	\$0.00
Soils						
Excavation & Disposal	1 cyds	1	\$5.00	\$5.00	\$5.00	0.00
Soil Ammendment	1 cu yd.	1	\$16.00	\$16.00	\$0.00	16.00
total				\$21.00	\$5.00	16.00
Labor						
Shrub Planting / Seeding (100% of Plant Cost)				\$18.40	0.00	4.60
total				\$18.40	0.00	4.60
Project Total				\$30.20	\$9.60	\$20.60

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: Stormwater Inlet at Clark between Copper and Quartz, south of Scown field.

Date: February 2, 2016

Site Location/Size:

The planting is located at Clark Street between Copper and Quartz Streets, directly south of Scown Field. Please see attached map for precise locations.

BRES Site #/Name:

The site is not a BRES site; it is a stormwater control structure supporting the overall stormwater management on the Butte Hill.

BSB Zoning Classification(s) at Site:

The site is a R2 zoned parcel owned by Butte-Silver Bow. This parcel includes the stormwater structure as well as the Scown Field and other Tree Pod locations. It is not buildable.

Vegetative Deficiencies/Problems at this Site:

The site located at the terminus of Clark Street at Copper (Between Copper and Quartz) was found during a field evaluation to be in need of stormwater controls.

In winter of 2015-16, Butte-Silver Bow Superfund Division regraded the slopes in this area and added rock to the slopes to minimize velocity of the run-off into the site to prevent future erosion issues. Within the site a new drop inlet was installed to catch storm water that flows North off of Clark Street along with storm water coming off of Copper Street. The remaining areas of the site that is not planned to be addressed by Butte-Silver Bow or Montana Tech Native Plant Program will be seeded with Pal 2015 Seed Mix.

The base of the site is a wet area, and is intended to be so. Butte-Silver Bow recognizes the role vegetation enhancement has in our obligations to minimize sediment erosion and entry into the stormwater system. Therefore, the site design will allow for installation of shrubs, forbs, and grasses, while providing access area for Superfund Division maintenance crews to enter the area and conduct maintenance objectives.

Butte-Silver Bow plans to plant 20 small cottonwoods and 20 small willows to take advantage of the water in the area. Montana Tech plans to install 20 mountain mahogany, 20 creeping juniper and 20 woods rose shrubs around the base of the slope. Finally, we will seed in grasses and forbs including *Festuca idahoensis*, *Poa sandbergii*, *Festuca scabrella*, *Linum lewisii*, *Artemisia ludoviciana*, *Arabis holboellii*, *Antennaria microphylla*, *Coreopsis tinctoria*, *Erigeron compositus*, *Achillea*

Butte Area One BSB Tree Planting Site Improvement Plan

millefolium.

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to Release Request for Quotes to procure vegetation to augment MTNPP plants
 - B. BSB to Prepare Planting Areas
 - C. BSB to Hydroseed Planting Areas
- Fall 2016 (September/October)
 - D. MTNPP hand preparation for installation of forbs and shrubs.
 - E. MTNPP to plant forbs and shrubs

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: March or April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program
Copper & Clark Storm Water Feature
Seeding & Site Preparation
2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
Cottonwood	1 - 5 gallon	20	\$65.00	\$1,300.00		\$1,300.00
Willows	1 - 5 gallon	20	\$65.00	\$1,300.00		\$1,300.00
PAL 2015 Seed Mix	1lbs.	1	\$4.60	\$4.60	4.60	\$0.00
	total			\$2,604.60	\$4.60	\$2,600.00
Soils						
Excavation & Disposal	1 cyds	1	\$0.00	\$0.00	\$0.00	0.00
Soil Ammendment	1 cu yd.	1	\$0.00	\$0.00	\$0.00	0.00
	total			\$0.00	\$0.00	0.00
Labor						
Shrub Planting / Seeding (100% of Plant Cost)				\$2,604.60	0.00	2,604.60
	total			\$2,604.60	0.00	2,604.60
Project Total				\$7,813.80	\$4.60	\$7,809.20

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: Site No. 78, Original Mine Yard.

Date: February 11, 2016

Site Location/Size:

The site contains two planting targets, one along the southern boundary (fence line) and the other is to the north east side of the lower access gate from Main Street. Please see attached map for more detailed information on site location.

BRES Site #/Name:

Site No. 78, Original Mine Yard.

BSB Zoning Classification(s) at Site:

The Site is zoned OSD – Open Space Developable and the site is owned by Butte-Silver Bow.

Vegetative Deficiencies/Problems at this Site:

The Original Mine Yard is unique in that its vegetative cap is a combination of sod (in the amphitheater) and remedy grasses. For the purposes of this project, the area of the site being discussed is the fence line to the south. This area is extremely susceptible to erosion due to storm water interaction; storm water flows throughout the site have caused significant erosion and subsequently sedimentation along the southern portion of the site, along the fence line. To minimize this erosion, and in particular erosion into the streets and the storm water system, we intend to establish a tree lined boundary along the southern fence line. This investment is intended to minimize impairment to the vista from the site, but retain sediments on site and minimize flows into the storm water system.

Proposed Efforts to Improve the Site:

The site contains two distinct planting areas Site A and Site B. Site A will be planted with 20 *Juniperus scopularum* (Rocky Mountain Juniper) and 20 *Pinus Ponderosa* (Ponderosa Pine) along the southern fence line. Site B will be planted with approximately 30 drought-tolerant shrubs such as *Rosa woodsii* (Wood's Rose), *Chrysothamnus viscidiflorus* (Green Rabbitbrush), and *Artemisia tridentata* (Big Sagebrush).

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to Release Request for Quotes to procure vegetation to augment MTNPP plants.
 - B. BSB to Prepare Planting Areas.

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

- C. BSB Contractors to install Ponderosa and Juniper
 - Fall 2016 (September/October)
- D. MTNPP install forbs and shrubs.

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program
#78 - Original Mine Yard Site
Tree Plantings
2/11/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
Ponderosa Pine	5 gal	20	65.00	1,300.00	0.00	2,500.00
Rocky Mountain Juniper	5 gal	20	45.00	900.00	0.00	1,500.00
	total			2,200.00	0.00	2,200.00
Soils						
Pod Excavation & Disposal	100 cu yds	1	5.00	500.00	500.00	0.00
Tree Pods	100 cu yds	1	16.00	1,600.00	0	1,600.00
	total			2,100.00	500.00	1,600.00
Labor						
Tree Planting & Anchoring (100% of Plant Cost)				2,200.00	0.00	2,200.00
	total			2,200.00	0.00	2,200.00
Project Total				6,500.00	500.00	6,000.00

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: Anselmo Mine Yard, South Slope

Date: January 21, 2016

Site Location/Size:

The planting targets are located at the Anselmo Mine Yard south slope. The site is located at Caledonia Street and Alabama Street. The site will consist of one planting area.

BRES Site #/Name:

Site No. 71, Anselmo Mine Yard.

BSB Zoning Classification(s) at Site:

Site No. 71 is OSC Open Space Conservation.

Vegetative Deficiencies/Problems at this Site:

The Anselmo Mine Yard sits atop the sub-surface Missoula Gulch drainage. The southern slope of the mine yard descends at a steep slope, which has caused significant sediment erosion from the site down gradient toward a large storm water inlet on Caledonia Street. This storm water inlet has several cubic yards of sediment accumulation, which is routinely removed, but a maintenance issue given the frequency the inlet requires sediment removal. The removal of these sediments is essential to minimizing loading to the stormwater conveyance system and ultimately sediment load to Silver Bow Creek.

Proposed Efforts to Improve the Site:

The plantings intended for this site mitigate sediment erosion from the Site into the Missoula Gulch stormwater inlet by positioning plants to slow the flow of water, contribute toward the integrity of the site remedy, and retain sediment to the greatest extent practical. The proposed planting involves the installation of creeping juniper and rocky mountain juniper both inside the mineyard and outside the mineyard fence line around the perimeter of the stormwater inlet. The total plant count is 100 1 to 5 gallon containerized creeping juniper to be installed by BSB. MTNPP will plant 50 smaller common junipers and 50 smaller creeping junipers to stabilize along the fence.

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to Release Request for Quotes to procure vegetation to augment MTNPP plant stock.

Butte Area One BSB Tree Planting Site Improvement Plan

- B. BSB to Prepare Planting Areas.
- C. BSB to Seed Planting Areas.
- Fall 2016 (September/October)
 - D. MTNPP hand preparation for installation of forbs and shrubs.
 - E. MTNPP to plant forbs and shrubs.

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program

#71 - Anselmo Site

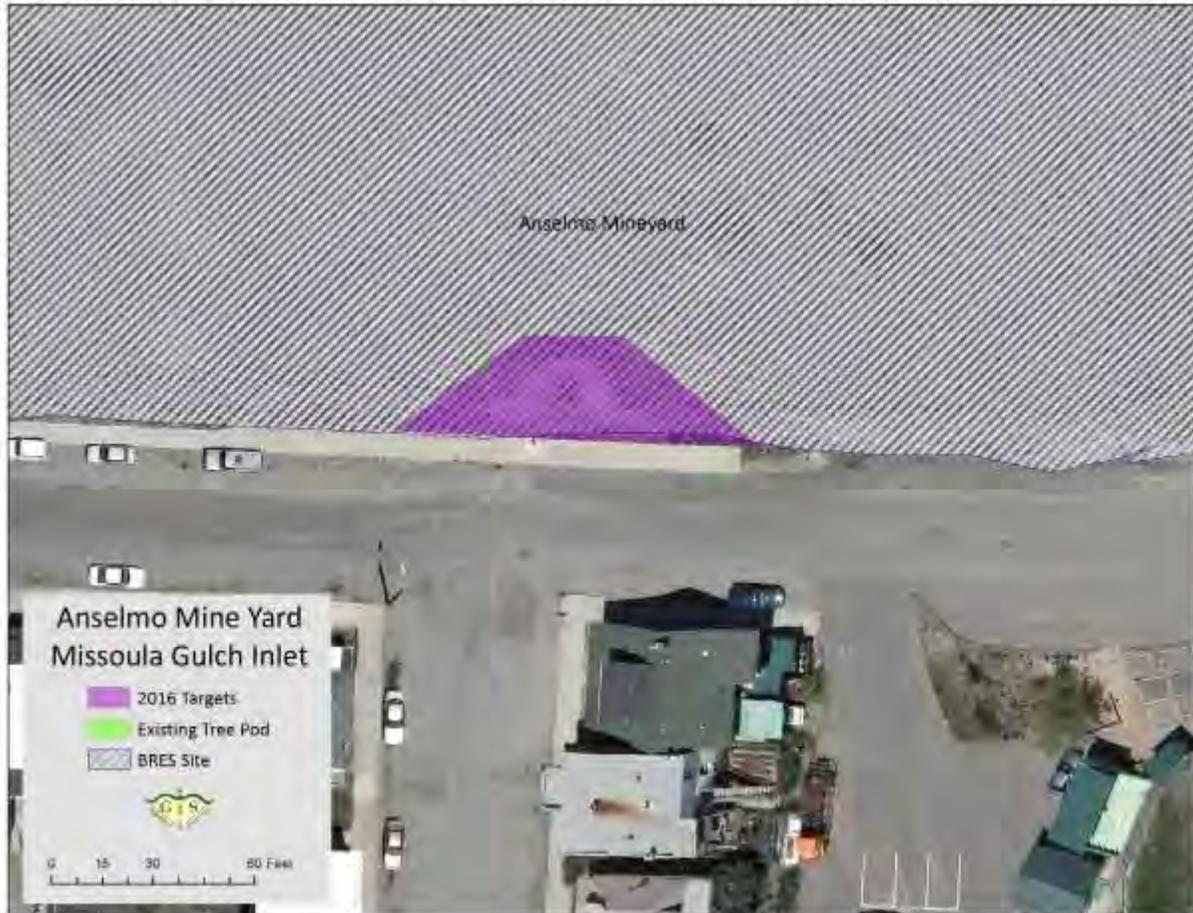
Shrub Plantings

2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
Creeping Juniper	3 gal.	100	\$30.00	\$3,000.00	0.00	3,000.00
PAL 2015 Seed Mix	1 lb.	1	\$4.60	\$4.60	4.60	0.00
total				\$3,004.60	\$4.60	\$3,000.00
Soils						
Soil Excavation & Disposal	2 cu yds.	1	5.00	\$10.00	10.00	0.00
Soil Ammendment	2 cu yds.	1	16.00	\$32.00	0.00	32.00
total				\$42.00	\$10.00	32.00
Labor						
Shrub Planting/Seeding (100% of Plant Cost)				\$3,000.00	0.00	3,000.00
total				\$3,000.00	0.00	3,000.00
Project Total				\$6,046.60	\$14.60	\$6,032.00

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: Travona Dump

Date: February 2, 2016

Site Location/Size:

The planting areas are three 3 x 10 meter planting stripes in the Travona Mineyard/Dump. Please see map.

BRES Site #/Name:

Site No. 121, Travona Dump

BSB Zoning Classification(s) at Site:

Zoned OSC – Open Space Conservation.

Vegetative Deficiencies/Problems at this Site:

The Travona Dump was evaluated in June of 2014. At that time, the site showed 45% live ground cover, but quite a bit of plant litter, pedestalling and thus erratic flow patterns and surface rock movement. The site edges have more weeds and increased erosion. Exposed waste was reported in some areas, which has been excavated, and those excavated areas have been covered with lime rock, EPA-approved soils, and seed. The evaluators noticed that the majority of erosion and exposed waste exists on the southern slopes of the site, and is typical of sites with litter and pedestalling of plants, which cannot retain sediments due to poor ground cover.

Proposed Efforts to Improve the Site:

The plantings intended for this site are specifically designed for south facing slopes. Three stripes measuring 3x10m will be created utilizing BSB's harrow. BSB will then seed the sites with the Pal 2015 seed mix in early spring. MTNPP will then plant 300 forbs and 200 shrubs per stripe. The planting sites will become demonstration areas and will take advantage of the prevailing winds to spread seeds from native plants installed on the site.

Shrub species to be installed include *Juniperus communis*, *Juniperus scopulorum*, *Cercocarpus ledifolius*, *Artemisia tridentata*, and *Chrysothamnus nauseosus*. Forb species include *Allium cernuum*, *Epilobium angustifolium*, *Arenaria congesta*, *Artemisia frigida*, *Aster occidentalis*, *Astragalus atropubescens*, *Balsamorhiza sagittata*, *Oxytropis lagopus*, *Eriogonum ovalifolium*, *Lupinus* species, *Grindelia squarrosa*, *Heterotheca villosa*, *Hymenoxys acaulis*, *Lithospermum ruderales*, *Mentzelia laevicaulis*, *Oenothera biennis*, *Penstemon eriantherus*, *Phlox muscoides*, *Phacelia hastata*, *Potentilla gracilis*, *Potentilla pensylvanica*, *Solidago missouriensis*, *Sedum*

Butte Area One BSB Tree Planting Site Improvement Plan

lanceolatum, *Geum triflorum*, *Astragalus crassicaarpus*, *Arnica*, *Heuchera cylindrica*, *Phlox longifolia*, and *Agoseris glauca*.

The project scope of work is as follows:

- Spring 2016 (March/April)
 - A. BSB to prepare Planting Areas.
 - B. BSB to seed Planting Areas.
- Fall 2016 (September/October)
 - C. MTNPP hand preparation for installation of forbs and shrubs.
 - D. MTNPP to plant forbs and shrubs

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: March or April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program
#121 - Travona Dump Site
Tree & Shrub Plantings
2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
PAL 2015 Seed Mix	1 lb.	1	\$4.60	\$4.60	0	0.00
total				\$4.60	\$4.60	\$0.00
Soils						
Excavation, Site Preparation & Disposal	18 cu yds.	1	\$5.00	\$90.00	\$0.00	0.00
total				\$90.00	\$90.00	0.00
Labor						
Seeding (100% of Plant Cost)				\$4.60		
total				\$4.60		
Project Total				\$99.20	\$0.00	\$0.00

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: Site No. 96, Washoe Dump

Date: January 22, 2016

Site Location/Size:

The planting targets is located at the South West intersection of Copper and Arizona Streets. Please see attached map for more detailed information on site location.

BRES Site #/Name:

Site No. 96 Washoe Dump

BSB Zoning Classification(s) at Site:

The Site is zoned C3 – Central Commercial owned by Butte-Silver Bow. The lot is not developable as it is within the vision clearance triangle, which is not buildable to allow for vision clearance for drivers approaching this intersection.

Vegetative Deficiencies/Problems at this Site:

The site itself has relatively good vegetation scores and erosion scores. However, the site does have some subsidence issues and is frequently inundated with sediments in storm water running toward the site from from Wyoming Street and Anaconda Road. The sediments enter the site and cause deposition and erosion. Slowing storm water is a priority.

Proposed Efforts to Improve the Site:

The site will be attended to in two phases; firstly, Butte-Silver Bow will scrape off two 3x10m stripes and seed the sites with the 2015 EPA-approved Pal mix. Additional forb species, tailored for the site will be planted by the Native Plant Program. MTNPP will plant approximately 300 forbs and 20 shrubs per stripe. After completion, BSB will install 50 creeping junipers along the street.

Shrub species: *Juniperus communis* (Common Juniper), *Juniperus scopulorum* (Rocky Mountain Juniper), *Cercocarpus ledifolius* (Curlleaf Mountain Mahogany), *Artemisia tridentata* (Big Sagebrush), *Chrysothamnus nauseosus* (Rubber Rabbitbrush).

Forb species: *Allium cernuum* (Nodding Onion), *Epilobium angustifolium* (Fireweed), *Arenaria congesta* (Ballhead Sandwort), *Artemisia frigida* (Fringed Sage), *Aster occidentalis* (Western Mountain Aster), *Astragalus atropubescens* (Hangingpod Milkvetch), *Balsamorhiza sagittata* (Arrowleaf Balsamroot), *Oxytropis lagopus* (Rabbitsfoot Locoweed), *Eriogonum ovalifolium* (Cushion Buckwheat), *Lupinus* species (Lupine), *Grindelia squarrosa* (Curlycup Gumweed), *Heterotheca villosa* (Hairy False Goldenaster), *Hymenoxys acaulis* (Stemless Four-nerve Daisy), *Lithospermum ruderae* (Puccoon), *Mentzelia laevicaulis*

Butte Area One BSB Tree Planting Site Improvement Plan

(Smoothstem Blazingstar), *Oenothera biennis* (Common Evening Primrose), *Penstemon eriantherus* (Fuzzytongue Penstemon), *Phlox muscoides* (Moss Phlox), *Phacelia hastata* (Silky Phacelia), *Potentilla gracilis* (Slender Cinquefoil), *Potentilla pensylvanica* (Pennsylvania Cinquefoil), *Solidago missouriensis* (Missouri Goldenrod), *Sedum lanceolatum* (Spearleaf stonecrop), *Geum triflorum* (Old Man's Whiskers), *Astragalus crassicaarpus* (Groundplum Milkvetch), *Arnica* species (Arnica), *Heuchera cylindrica* (Roundleaf Alumroot), *Phlox longifolia* (Longleaf Phlox), *Agoseris glauca* (False Mountain Dandelion).

Seed in of grasses and forbs. Grass species: *Festuca idahoensis* (Idaho Fescue), *Poa sandbergii* (Sandberg's Bluegrass), *Festuca scabrella* (Rough Fescue). Forb species: *Linum lewisii* (Lewis' Flax), *Artemisia ludoviciana* (White Sage), *Arabis holboellii* (Holboell's Rockcress), *Antennaria microphylla* (Pussytoes), *Coreopsis tinctoria* (Plains Coreopsis), *Erigeron compositum* (Cutleaf Daisy), *Achillea millefolium* (Yarrow).

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to Release Request for Quotes to procure vegetation to augment MTNPP plants
 - B. BSB to Prepare Planting Areas
 - C. BSB to Hydroseed Planting Areas
- Fall 2016 (September/October)
 - D. MTNPP hand preparation for installation of forbs and shrubs.
 - E. MTNPP to plant forbs and shrubs

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: March or April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program

#96 - Washoe Dump Site

Shrub Planting

2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
Creeping Junipers	3 gal.	50	\$30.00	\$1,500.00		1,500.00
PAL 2015 Seed Mix	1 lb.	1	\$4.60	\$4.60	4.60	
total				\$1,504.60	\$4.60	\$1,500.00
Soils						
Excavation & Disposal	7 cu yds.	1	\$5.00	\$35.00	\$35.00	0.00
Soil Ammendment	1 cu yd.	1	\$16.00	\$16.00	\$0.00	16.00
total				\$51.00	\$35.00	16.00
Labor						
Shrub Planting / Seeding (100% of Plant Cost)				\$1,504.60		1,504.60
total				\$1,504.60		1,504.60
Project Total				\$3,060.20	\$39.60	\$3,020.60

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Site Name: West Gagnon Dump, Site No. 74

Date: February 1, 2016

Site Location/Size:

The West Gagnon Dump is a 2.75 acre BRES site bounded by Woolman Street to the North, Washington Street to the East, and Jackson Street to the West. Please see attached map for precise location.

BRES Site #/Name:

BRES Site No. 74; West Gagnon Dump

BSB Zoning Classification(s) at Site:

The site is zoned OSC – Open Space Conservation.

Vegetative Deficiencies/Problems at this Site:

The West Gagnon Dump was evaluated in 2014 by independent contractors. Overall, the site had little evidence of active erosion; however, there are areas where site edges, land slumps, and improper excavations have compromised this healing site. The site did have low vegetation scores, and the site required seeding and fertilizing to maintain appropriate ground cover. In addition, weed control was required around the site edges.

In 2015, BSB Crews alleviated these issues where possible. However, more can be done. Poor plant cover and loose sediment leads to active erosion into the street right of way, particularly to the south and west of the site. To minimize the erosion of sediments off site, the installation of several hundred seedlings are planned in dedicated areas, along with installation of native grasses and forbs.

Proposed Efforts to Improve the Site:

This project is planned a community planting project to celebrate Arbor and Earth Days. Montana Tech Native Plant Program (MTNPP), Butte-Silver Bow (BSB), MSU Extension, and the AmeriCorps Energy Corps have partnered to bring this project to the community. The plantings intended for this site will mitigate sediment erosion from the Site into Washington and Jackson Streets by reinforcing the Site's vegetative cover with native plants, grasses and forbs.

Butte-Silver Bow Planning Department plans to augment the relatively low-nutrient soils with the scouring of four planting areas and adding fertilizer, mulch and soils where necessary.

Butte Area One BSB Tree Planting Site Improvement Plan

Upon conclusion of the planting process, the planting areas will be interstitially seeded with the EPA-approved Pal seed mix. These areas will be graded to match the topography of the site, but small depressions will be made to allow water that does flow to be captured to the benefit of the plants.

The site topography flows from its high point on the north east at Woolman and Washington to the south east near Caledonia and Jackson Streets. The site is further bisected by a pedestrian-forged trail from North Washington Street to the BA&P Trail which lies to the north of the West Gagnon. Due to the prevalence of foot traffic in this area, the trail will be further enhanced – widened with gravel - to encourage its use while minimizing the negative impact foot traffic would cause on bare ground.

The four planting areas will be planted with species deemed appropriate for the site topography and its conditions. The area to the north east will be planted with Ponderosa Pine seedlings, which will acclimate more easily to the dry soils in that area. To the south east, Choke Cherry seedlings will be installed. This particular placement is intended to provide the shrubs the opportunity to take advantage of the southeasterly flow of water over the site. Finally, six stripes of approximately 3x10m will be prepared just east and west of the pedestrian trail for the placement of Woods Rose and Buffalo Berry.

Upon completion of the community planting, MTNPP native plant program plans to then install an additional 200 shrubs on the site within these same areas. These shrubs include the following species *Sheperdia*, *Ribes americanum*, *Ribes aureum*, *Rosa woodsii*, *Purshia tridentata*, *Cercocarpus ledifolius*. The MTNPP will also seed in a seed mix of dry tolerant forbs including *Linum lewisii*, *Achillea millefolium*, *Antennaria microphylla*, *Erigeron compositus*.

The project scope of work is as follows:

- Spring 2016 (February/March/April)
 - A. BSB to procure seedlings from DNRC nursery.
 - B. Advertise the Community Planting; procure tools from BSB Parks & Recreation.
 - C. BSB to Prepare Planting Areas (scour, fertilize).
 - D. Conduct Planting Day (April 22, 2016).
- Fall 2016 (September/October)
 - E. MTNPP to plant forbs and shrubs.

Efforts to Coordinate with other Entities:

Montana Tech Native Plant Program and Butte-Silver Bow Superfund Division have partnered in this effort collaboratively. Site visits have been conducted in tandem and plans for sites have been developed to minimize duplicate expenditures and maximize investment of Butte Natural

**Butte Area One
BSB Tree Planting
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Resource Damage grant funds for both the Native Plant and Butte Hill Tree planting programs. Butte-Silver Bow has agreed to prepare sites for Montana Tech, seed the sites with the EPA approved native seed mix, and assist where necessary. Butte-Silver Bow has committed funds to procuring larger vegetation to augment MTNPP plants and maximize sediment control measures on sites.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: April 2016

Proposed Evaluation Date: Spring 2017

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

**Butte Area One
BSB Tree Planting
Site Improvement Plan**

Appendix A. Planting Area Budget

Butte Hill Tree Program
West Gagnon Dump
Community Planting Project
2/8/2016 Update

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
Ponderosa Pine West		104	1.51	\$157.04	0.00	\$157.04
Woods Rose		150	0.76	\$114.00	0.00	\$114.00
Chokecherry		50	0.92	\$46.00	0.00	\$46.00
Buffaloberry		200	0.76	\$152.00	0.00	\$152.00
		total		\$469.04	0.00	469.04
Soils						
Limerock	10 cyds.		30.00	\$300.00	0.00	300.00
Pod Excavation & Disposal	100 cyds.		5.00	\$500.00	500.00	0.00
Tree Pods	100 cyds.		16.00	\$1,600.00	0.00	1,600.00
		total		\$2,400.00	500.00	1,900.00
Labor						
Tree Planting & Anchoring (100% of Plant Cost)				\$469.04	0.00	469.04
		total		\$469.04	0.00	496.04
Project Total				\$3,338.08	500.00	2,865.08

Butte Area One BSB Tree Planting Site Improvement Plan

Appendix B. Site Map



Butte Area One BSB Tree Planting Site Improvement Plan

Appendix C. Planting Plan

