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2023 REVISED OPERATION AND MAINTENANCE PLAN Railroad Stormwater Best Management Practices within Butte Priority Soils Operable Unit for BNSF Railway Company and Union Pacific Railroad

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for
BNSF Railway Company and Union Pacific Railroad

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Section 1: Introduction

Stormwater collection and management systems include components (herein termed best management practices or BMPs). Proper operation and maintenance (O&M) is required for the BMPs to function as designed. Within BNSF Railway Company (BNSF) and/or Union Pacific Railroad Company (Union Pacific) railroad right-of-way and railroad properties located within the Butte Priority Soils Operable Unit (BPSOU), structural stormwater BMPs consist of ditches, inlets, manholes, conveyance pipes, sediment basins, and other structures that collect, convey, or control the flow of stormwater. These structures convey stormwater away from infrastructure to control flooding. Proper maintenance of these structures is needed so that:

- Storm sewer systems operate as they were designed.
- Sediment is removed, or reduced, prior to runoff entering the storm sewer system.
- Sediment that accumulates within the storm sewer system is removed to reduce the sediment impact on downstream infrastructure and surface waters.
- Intended infrastructure function is maintained or restored.
- Flooding is controlled.

Stormwater system BMPs are inspected to evaluate performance and identify needed maintenance. Stormwater collection and management BMPs will be inspected on a regular basis, with the inspection frequency depending on function of the structure (conveyance vs. sediment capture), weather (dry vs. wet years), and manpower requirements. Inspection frequency can be varied to accommodate infrastructure type or specific locations with greater maintenance requirements, but minimum frequencies are maintained to identify deterioration, structural deficiencies, sediment accumulation, and overgrown vegetation.

This O&M Plan (plan) pertains to specific stormwater BMPs within BPSOU that provide erosion and sediment control benefits for facilities owned or maintained by BNSF and/or Union Pacific, jointly referred to herein as the Railroads.[1] This plan addresses and is limited to 86 Union Pacific and/or BNSF Railroad Stormwater BMPs[2] located in the railroad areas Middle Yard (36 of 86 BMPs), Lower Yard (38 of 86 BMPs), and Mainline East (12 of 86 BMPs). These specific stormwater BMPs will be referred to herein as Railroad Stormwater BMPs and their locations are shown on Figure 1. In most cases, two or more such BMPs are within close proximity to one another and work in conjunction to manage drainage for a common area. Twenty-three of these Railroad Stormwater BMPs were previously inspected as individual Butte Reclamation Evaluation System (BRES) sites or polygons of a BRES site and are herein transferred to the

[1] This plan, including the defined term “Railroads” used herein, does not include or address the multiple railroad lines or property areas owned or operated by others historically or currently within BPSOU which are the responsibility of others for stormwater BMPs and other purposes.
[2] This total number of BMPs includes existing BMPs, partially constructed BMPs from fall 2014, and BMPs to be constructed in spring 2015.

stormwater O&M inspection plan, as shown in Table 1. Details and locations of the 86 Railroad Stormwater BMPs for each of the railroad areas are provided as follows:

- For Middle Yard: Table 2 and Figure 2
- For Lower Yard: Table 3 and Figure 3
- For Mainline East: Table 4 and Figure 4

Some stormwater sewer infrastructure owned by Butte-Silver Bow (BSB) is located within railroad areas and is shown on Figures 2 through 4 if connected to but separate from the Railroad Stormwater BMPs listed in this plan. Though BSB infrastructure is related or connected to the railroads and shown in the Figures, the part that BSB owns is not included as "Railroad stormwater BMPs" and that BSB has responsibility for O&M for its infrastructure. If additional stormwater BMPs are constructed, or as they are modified, the associated Tables and Figures of this plan will be updated.

Railroad Stormwater BMPs will be inspected and maintained by the Railroads and their contractors as detailed in Section 1.7. The funding mechanism will be through an internal BNSF/Union Pacific cost share allocation.

1.1 Stormwater BMP GIS Coding

Railroad Stormwater BMPs are identified as indicated in Tables 2 through 4 and Figures 2 through 4. This identification system will be followed when completing documentation of inspection or maintenance activities. If questions arise regarding the identification and/or location of a Railroad Stormwater BMP, contact the BNSF or Union Pacific Remediation Project Managers or their designated consultant for assistance.

Railroad Stormwater BMP identification is by common name [some from Time-Critical Removal Action (TCRA) record drawings and others are newly named], as shown in Tables 2 through 4. Additionally, unique three-part alphanumeric codes accompany the common name for the parent BMP (e.g., a facility, such as a ditch) and the sub-component BMPs (e.g., culverts, riprap aprons). The unique Railroad Stormwater BMP alphanumeric codes consist of 1) a location code (e.g., the railroad area), 2) a BMP code (PND = Pond), and 3) a sequential identification number. For example, Middle Yard Retention Pond 2 (common name) is a sediment basin located in the Middle Yard railroad area and has the code MY-PND-02. The following BMP codes are used:

- PND = Pond
- D = Ditches
- I = Inlet
- M = Manhole

- C = Combination manhole and inlet
- O = Outfall/spillway
- CMP, RCP, HDPE, CIP, CLAY, WOOD, etc. = type of pipe/culvert material
- RA = riprap apron

The code formula is similar to the Geographical Information System (GIS) naming system developed for BSB's *Municipal Storm Water Improvements* Plan (March 2009). Other components related to BMPs like trash racks, gates, and fences will not be named or coded. These will be inspected and maintained under the associated BMP inspection sheets, and BMPs will be in a separate GIS layer maintained in coordination with BSB.

1.2 Property Rights and Accessibility

Railroad Stormwater BMPs and access points are primarily located on BNSF and/or Union Pacific railroad right-of-way or property. The following BMPs are maintained by the Railroads on property owned or leased by others:

- Middle Yard:
  - MY-RA-01
  - MY-C-03
  - MY-HDPE-05

- MLE:
  - MLE-RA-02

Locations of the above-listed four BMPs and the Railroads' current understanding of property rights concerning these BMPs are generally shown on Figure 5. During construction of these BMPs, the Railroads and others having applicable property rights agreed that the Railroads would maintain these BMPs.

1.3 Health, Safety, and Environment

The Railroads and contractor will follow safety policies, including preparation of, and compliance with, appropriate Health and Safety Plans.

1.4 Inspection and Maintenance Procedures

Each stormwater structure will have a specified inspection protocol and frequency based on the type, size, and location of each structure. Detailed information on the required maintenance procedures for each type of structure is included in Section 2.0.

1.5 Sediment Reuse and Disposal

Sediment collected and removed from the Railroad Stormwater BMPs will typically be handled in one of three ways:

1. reuse for minor regrading and cover with rock at time of maintenance;
2. haul to Lower Yard for placement at the beneficial stockpile for future reuse; or
3. transport to approved sediment disposal sites.

To evaluate if sediment is suitable for reuse, sediment will be screened for possible mining-related staining, other possible chemical staining, and chemical odors. Screening for mining-related materials will include visual screening and use of the U.S. Department of Agriculture Handbook No. 60, *pH Readings of Saturated Soil Paste* (pH Paste Method; provided in Appendix A)[3]. If sediment appears to consist of mining-related materials, it may be capped in accordance with *Butte Reclamation Evaluation System (BRES)* (CDM 2006) with EPA approval or it may be contained at the Middle Yard Repository. If other chemical staining or odors are noted, a headspace analysis of the soil may be conducted using a photoionization detector (PID). Sediment with notable volatile organic compound (VOC) PID readings and suspicious odors will be disposed of at an approved facility after disposal characterization and profiling acceptable to the approved facility. Two facilities EPA previously approved disposal of BPSOU sediment/soil with impacts unrelated to mining materials in 2015 include the High Plains Landfill in Great Falls, Montana and the Gascoyne Materials Handling & Recycling LLC Landfill located in North Dakota other facilities maybe evaluated in the future.

1.6 Coordination with other Departments

A successful Railroad Stormwater BMP maintenance program will require coordination between contractors and BNSF and/or Union Pacific staff. Inspection crews may include BNSF staff and its contractors. Contractors will be required to have current railroad contractor orientation training. BNSF's Contractor Safety Orientation is available via the Internet at www.bnsfcontractor.com. Contractors must specifically agree that all personnel working on BNSF property will carry a current valid "contractor safety orientation course" completion certification card on their person. Contractors working within 50 feet of a railroad track must receive On-Track safety training required by the Federal Railroad Administration (FRA). An On-Track safety training is available through www.railroadeducation.com. Contractors must also complete a personnel background screening and compliance awareness testing through e-Verifile (www.e-railsafe.com). Contractor employees must carry proof of training on their person while on the project site. Qualified BNSF staff will provide track protection for inspection crews.

Weed Control – Coordination with District Weed Board. The objective of the District Weed Board is to control, contain, and, in some cases, eradicate noxious weeds, and to maintain vigilance for new and potential invasions of noxious weeds into the county. Excessive growth of vegetation, including weeds, can impair the proper functioning of stormwater facilities. The Railroads will

[3] This pH paste field testing method was approved for use by EPA's representative for visible tailings removal work during fall 2014/spring 2015 for work related to the Anaconda Smelter Superfund Site.

perform inspections to identify and control noxious and non-noxious weeds associated with stormwater facilities. Maintenance procedures for vegetation and weed control are provided for each type of stormwater component in this plan.

1.7 Schedule, Reporting, and Data Management

The Railroads will conduct annual inspections of stormwater BMPs and needed maintenance of BMPs, as defined in this plan. The proposed schedule for annual inspections will be in the summer (July – September) of each year. The first routine annual inspection was in summer 2015. Major rainfall events may necessitate an inspection separate from the annual inspection. The BNSF and/or Union Pacific sediment basins have not been observed to have met or exceeded their design holding capacities nor do overflow structures suggest evidence of a release. Observations of sediment pond capacity are communicated by local BNSF forces to the BNSF remediation project manager, and observations of basins nearing capacity trigger additional inspections.

The Railroads will compile inspection and maintenance information into an annual maintenance report for the system, which will be submitted to the EPA and Montana Department of Environmental Quality (DEQ) for review. The annual report will identify the effectiveness of existing maintenance and inspection protocol; identify significant repairs, deviations, or changes from the specified O&M activities; include copies of inspection forms; and include recommended changes to the plan, if necessary.

Field documentation for inspection and maintenance is required. Operations and Maintenance procedures are outlined in the BMPs provided in Appendix B. The procedures guide the annual inspections. The annual inspection documentation will consist of checklist tables in Appendix C. Additionally, photographs will be taken at locations where maintenance is required. If maintenance can be completed at time of inspection (not requiring a contractor), the maintenance portion of the Appendix C forms will be completed, and a photograph of post-maintenance conditions will be collected. Inspection and at-time-of-inspection maintenance information will be presented in an annual stormwater BMPs inspection report and maintenance work plan to EPA and DEQ. The work plan component of the report will communicate maintenance proposals for those BMPs where maintenance could not be completed at time of inspection.

Documentation of maintenance conducted following approval of the work plan will consist of completed maintenance record information (Appendix C inspection/maintenance forms will be used), post-maintenance photographs, and revisions to record drawings where reconstruction or new construction is implemented. The information will be reported in an addendum to the annual stormwater BMPs inspection report and maintenance work plan. If maintenance consists of reconstruction/new construction, a stand-alone brief summary report may be provided separately.

Separate from maintenance needs identified during the annual inspection: if basic maintenance needs are observed between annual inspection cycles, EPA will be notified of the need to conduct maintenance, and the maintenance record information will be submitted with the monthly status report or as agreed upon by EPA and the Railroads.

The Railroads maintain an asset management database for Railroad Stormwater BMPs (and BRES sites). There is also a BRES inspection database. An overall data management plan for the Railroads' Stormwater BMPs and BRES sites has been requested by EPA and was submitted to EPA in draft in 2016 and as revised in 2023, which communicates how this plan, the BRES program, and the data bases function collectively.

1.8 Staffing Requirements

Inspections will be conducted by the Railroads' consultant and maintenance will be conducted by the Railroads' personnel, consultant, or private contractors. Staff conducting O&M work will be appropriately trained in inspection and maintenance procedures and will have current 40-hour hazwoper[4] and BNSF/Union Pacific-specific railroad safety training[5]. As stated in Section 1.6, workers conducting activities within 25 feet of active tracks will have FRA-mandated On-Track Safety Training certification.

1.9 Contingency Plan

During the implementation of this O&M schedule, the Railroads realize an unanticipated event or condition may occur that is outside the scope of this plan that may result in damage or failure of a stormwater BMP. Such events may include, but are not limited to, a flood event (or other natural disaster), vandalism, illegal dumping, or structural failure.

The contingency plan will consist of the following actions:

1.9.1 Response

Upon notification of an incident that requires activation of the contingency plan, the Railroads will:

- Conduct a preliminary assessment of the damaged Railroad Stormwater BMPs. The assessment will identify the following information: date of inspection, name of inspector, name of the structure(s), type of damage associated with the structure(s), reason for failure/impact, areas affected, and entities for internal and external notification.

- Notify identified entity to assist in addressing the problem, as necessary:
  - <u>Internal Notification</u>
    - Flooding/Natural Disaster: BSB Emergency Management Agency – 406-497-6295
    - Vandalism: BSB Police Department – 406-497-1120 or 911
    - Fire: BSB Fire Department – 406-497-6481 or 911
    - Illegal Dumping: BSB Health Department, Dan Powers – 406-497-5020
  - <u>External Notification</u>
    - EPA: Nikia Greene – 406-457-5019
    - DEQ: Daryl Reed – 406-444-6433
    - Other potential large property owners located upstream or downstream

[4] OSHA 1910.120
[5] BNSF Contractor, Railroad Education, and e-Railsafe depending on location and work type.

- BSB Public Works Operations Manager, Rick Larson – 406-497-6518
- BP/ARCO: Lindy Hanson – 406-782-9964

1.9.2 Replacement/Restoration

Effort needed to replace and restore Railroad Stormwater BMPs and surrounding damaged area, if any, will be allocated according to established agreements or addressed by affiliated or responsible entities. Once the immediate threat or damage has been addressed by the appropriate entity(ies), the Railroads will develop a corrective action plan to make necessary additional repairs. The corrective action plan will also detail actions taken to attempt to avoid similar future damage to the stormwater BMP. The corrective action plan will be submitted to EPA, DEQ, and affiliated entities for review prior to implementation. Repair work will be conducted and supervised by the Railroads' consultant. Depending on the BMP, the affiliated entities might include, but are not limited to, BNSF, Union Pacific, BSB, Atlantic Richfield Company, EPA, DEQ, and private property owners or lessees.

Section 2: Stormwater System Components

This section presents the typical Railroad Stormwater BMPs types and components, their function, and inspection procedures. Appendix B – Railroad Stormwater BMP O&M Procedure summary provides supplementary details. Appendix C includes 1) inspection checklists for Middle Yard (Table C-1), Lower Yard (Table C-2), and Mainline East (Table C-3) to be used during the annual inspection and 2) inspection/maintenance forms for the different stormwater BMPs to be used where maintenance appears necessary.

2.1 Sediment Basin

Railroad Stormwater BMPs include EPA-approved drainage pond sediment basins. There are two sediment basins in Middle Yard, two sediment basins in Lower Yard, and three designed sediment basins along Mainline East. A stormwater sediment basin is an open basin built by excavating below existing ground or by constructing aboveground berms (embankments). Sediment basins are designed to store stormwater volume up to a specified storm event. The two Middle Yard sediment basins were designed to store a volume of stormwater greater than the 100-year, 24-hour storm event, and the Lower Yard and Mainline East sediment basins were designed for the 25-year, 24-hour storm event. The high-density polyethylene (HDPE)-lined Lower Yard sediment basin (LY-PND-01) is designed to retain two back-to-back 25-year, 24-hour storm events. Sediment basins contain an emergency overflow structure or route for the safe conveyance of water from a storm event greater than the design event. Pond accessibility varies access to some is controlled by fencing; others are located along railroad tracks in the form of a shallow depression without access limitations.

Facility components that are typically associated with a sediment basin include:

- access road or easement,
- fence and gate,
- control structure/flow restrictor,
- debris barrier (e.g., trash rack),
- energy dissipaters (e.g., riprap pads/aprons),
- conveyance stormwater pipe.

2.1.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

2.1.2 Documentation

Identification: Follow alpha-numeric identification guidance in Section 1.1.

Inspection/Maintenance Form: Use the Pond Maintenance Inspection Form to document O&M activities performed on sediment basins. Site-specific pond inspections forms are tailored to each site and will be used for annual inspections by the Railroads' consultant. A more detailed evaluation of the ponds will be completed by an engineer approximately once every 5 years. Inspection personnel will document the common name and GIS identification number, if applicable, of associated structures inspected during the pond inspection. Inspection forms are included in Appendix C.

Location: There are sediment basins in three railroad areas: two in Middle Yard, two in Lower Yard, and three along Mainline East. The sediment basin locations are shown on Figures 2, 3, and 4.

An overview of inspection and maintenance procedures for sediment basins is included below. Refer to Table B-1 in Appendix B for a detailed listing of structural features, potential defects, conditions requiring maintenance, and the results expected when the system is functioning properly following maintenance.

2.1.3 Inspection

Sediment basins will be inspected annually during the summer when feasible. Some BMPs are susceptible to debris blockage; therefore, additional inspections may occur more frequently after smaller storm events. In the event an inspection is required for specific structures after smaller storm events, this plan will be revised accordingly.

BMPs will be inspected for the potential presence of:

- accumulated sediments, litter, debris, oil or chemicals of concern, dead vegetation, or presence of noxious weeds, shrubs, or trees,
- upstream stormwater sources contributing mining-related materials or other chemicals of concern to the pond,
- rodent holes with the potential to degrade the integrity of embankments,
- embankment settlement or sinkholes,
- sand boils or seepage water surfacing downstream of embankments.

Some ponds may be lined with HDPE or similar materials. Liner integrity will be inspected for seam separation, tears, and punctures. Emergency spillways will be inspected to confirm they are covered with a minimum of 12 inches of riprap or have adequate vegetation for erosion protection.

An inspection form documenting the date and time of the inspection, the inspector, the condition of the infrastructure, corrective actions taken (if any), and other pertinent information will be completed during the inspection procedure.

2.1.4 Maintenance Procedures

The following maintenance activities will be performed at BMPs as needed:

- Remove sediment from sediment basins as considered necessary to maintain pond design capacity and functionality. Sediment removal will be focused on engineered areas where maintenance equipment has adequate access. Removed sediments will be handled in accordance with Section 1.5 of this plan.
- Sediment removal will be conducted during the drier summer months when feasible.
- Sediment basins and outflow control structures will not be altered from the original approved design.
- Remove accumulated litter.
- Remove non-aqueous phase liquids with volumes greater than a surface sheen.
- Remove debris/obstructions from control structures.
- Remove noxious weeds, shrubs, or trees that are growing within the pond, on side slopes, berms, or within the emergency overflow area. Trees and shrubs can block flows or lead to berm failure and should not be allowed to grow in the pond or on berms. Trees and shrubbery may be allowed to grow around the perimeter of the pond unless that growth interferes with the facility's proper function or maintenance activities.
- Use mechanical methods to control weeds. Pesticides, herbicides, and fertilizers should not be used in stormwater control facilities.
- Repair eroded slopes when rills form.
- Reseed bare areas with vegetation suitable for the site or maintain rock covers where appropriate.
- Where applicable, repair pond liners if tears, punctures, or seam separations are visible.

2.1.5 Maintenance Goals

Maintenance goals include:

- Control or reduce discharges of sediment and possible chemicals of concern from the area.
- Maintain or restore the intended infrastructure function. Reduce scour damage to downstream conveyance pipes.
- Control flooding to protect infrastructure and/or structures.

2.1.6 Notes

Following proper maintenance procedures for sediment basins improves performance, provides design storage and/or infiltration capacities, and controls the transport of sediments and possible chemicals of concern downstream.

2.2 Drainage Ditches

Drainage ditches are open channels, often manmade, that carry stormwater. The Railroads' drainage ditches are vegetated, rock-lined, riprap-lined, or lined with riprap set in concrete and were typically designed for the 25-year, 24-hour storm event per TCRA documents. Ditches are maintained to control flooding and avoid undermining of adjacent infrastructure (e.g., railroad tracks) during storm events.

Facility features that are typically associated with drainage ditches include:

- access road or easement,
- fence and gate,
- energy dissipaters,
- debris barrier (e.g., trash rack),
- catch basins.

2.2.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

2.2.2 Documentation

Identification: Follow alpha-numeric identification guidance in Section 1.1.

Inspection/Maintenance Form: Use the Ditch Inspection and Maintenance Form to document O&M activities performed on channels/ditches. Site-specific ditch inspection forms will be used for annual inspections by the Railroads' consultant. A more detailed evaluation of the ditches will be completed by an engineer approximately once every 5 years. Document the identification number, if applicable, of associated structures included with the inspection of the ditch. Inspection forms are included in Appendix C.

Location: There are drainage ditches in three railroad areas: five in Middle Yard, three in Lower Yard, and two along Mainline East. Drainage ditch locations are shown on Figures 2, 3, and 4.

An overview of inspection and maintenance procedures for drainage ditches is included below. Refer to Table B-2 in Appendix B for a detailed listing of structural features, potential defects,

conditions requiring maintenance, and the results expected when the system is functioning properly and/or following maintenance.

2.2.3 Inspection

Drainage ditches will be inspected annually during the summer when feasible. Inspections will look for areas of soil erosion, concrete deterioration, and areas of sediment, trash, or debris accumulations. If areas with significant sediment accumulations are identified, the source area for the sediment will be identified if possible. An inspection form documenting the date and time of the inspection, the inspector, the condition of the infrastructure, corrective actions taken (if any), and other pertinent information will be completed during the inspection procedure.

2.2.4 Maintenance Procedures

Ditches (general)

- Remove sediment accumulations greater than 6 inches in depth or that significantly reduce the designed or historical hydraulic capacity.
- For rock or riprap lined ditches, note barren locations along channel and cover with rock or riprap material.
- For rock or riprap lined ditches, redistribute rocks and riprap, as needed, to maintain channel centerline flow path and to remove blockages of upstream or downstream inlets and outlets.
- Collect sediments that are generated by the maintenance activities. Use sediment-collecting BMPs at the lower end of each excavated area.
- Dispose of removed vegetation and sediments offsite. Removed sediments will be handled in accordance with Section 1.5 of this plan.

Specific to Vegetated Ditches

- For vegetated ditches, perform maintenance during the growing season when vegetation is easy to reestablish.
- A typical application is to install strategic concrete or alternative hard-surfaced sediment traps within the vegetated channels that can be cleaned periodically without disturbing established vegetation. If present, remove sediment accumulations that significantly reduce the designed hydraulic capacity.
- Clean vegetated ditches in sections, leaving undisturbed areas to filter sediments between cleaned areas.
- Remove overgrown vegetation or weeds only when it reduces the hydraulic capacity of the ditch by 20% or more of the design capacity. Retain sufficient vegetation to filter sediment and protect the channel bed from erosion.

- Collect sediments that are generated by the maintenance activities.
- Dispose of removed vegetation and sediments offsite. Removed sediments will be handled in accordance with Section 1.5 of this plan.

2.2.5 Maintenance Goals

- Control sediment and possible chemical of concern discharges from the area.
- Maintain roads, parking areas, and drainage systems to avoid release of mining-related materials or other possible chemicals of concern.
- Maintain or restore the intended infrastructure function.
- Avoid or reduce vegetation removal.
- Control flooding to protect infrastructure and/or structures.
- Protect infrastructure.

2.2.6 Notes

For vegetated ditches, reseed bare soils and install temporary erosion control BMPs after removing accumulated sediments to reduce sediment transport from disturbed areas.

Trees and shrubbery should not be allowed to grow within drainage ditches.

A debris barrier is a bar grate over the open end of a culvert or stormwater conveyance pipe. Debris barriers restrict large materials from entering a closed pipe system. Debris barriers are typically located on the control structure outlet pipe. If a debris barrier is not located on the entrance to the outlet pipe, one should be installed to avoid plugging of the control structure and possible flooding.

Facility objects that are often associated with a trash rack include:

- Access road or easement
- Fence and gate
- Energy dissipaters.

2.3 Trash Rack (Debris Barrier)

2.3.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have

current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

2.3.2 Documentation

Identification: Trash racks are not given dedicated identification numbers. Identify the trash rack according to the associated major structure, e.g., culvert, drainage ditch, sediment basin, etc.

Inspection/Maintenance Form: Depending on the type of stormwater BMP, trash rack inspection details may be included on the major structure inspection form. If necessary, use the Trash Rack Inspection and Maintenance Form to document O&M activities performed. Document the identification number of the major structure associated with the inspection of the rack. Inspection forms are included in Appendix C.

Location: Trash racks are located on the outlet control structures of the two Middle Yard sediment basins, the northern-most Lower Yard sediment basin, and the western-most Mainline East sediment basin (see Figures 2, 3, and 4).

An overview of inspection and maintenance procedures for trash racks is included below. Refer to Table B-3 in Appendix B for a detailed listing of structural features, potential defects, conditions requiring maintenance, and results expected when the structure is functioning properly and/or following maintenance.

2.3.3 Inspection

Trash racks will be inspected annually during the summer when feasible. Additional inspections may be needed after significant rainfall events. Trash racks will be inspected for accumulations of debris, trash, or sediments and for damaged or missing racks and bars. An inspection form documenting the date and time of the inspection, the inspector, the condition of the infrastructure, corrective actions taken (if any), and other pertinent information will be completed during the inspection procedure.

2.3.4 Maintenance Procedures

- Remove debris, trash, and sediments when openings are obstructed and impacting ability of stormwater to pass through.
- Straighten bent bars back into position.
- Replace bars that have rusted to the point where they may be easily removed.
- Replace missing racks or bars.

2.3.5 Maintenance Goals

- Control discharges of sediment and possible chemicals of concern from the area.
- Maintain or restore the intended infrastructure function.

- Control flooding to protect infrastructure.

2.3.6 Notes

Control structures with trash racks are often considered confined spaces. Missing trash racks could result in unintended human or animal entry, which is a health and safety concern. Missing trash racks will be replaced urgently after discovery.

2.4 Conveyance Pipes and Culverts

Inlet and outlet stormwater pipes and culverts convey stormwater. Pipes are manufactured from several different materials and are sometimes perforated to allow stormwater to infiltrate into the ground. Stormwater pipes are cleaned to remove sediment or blockages when identified. Stormwater pipes will be maintained clear of obstructions and breaks to avoid localized flooding. Stormwater pipes will be maintained to allow stormwater flow and avoid unintended release of stormwater.

Visual inspections and maintenance may be conducted at time of initial inspection on shorter culverts (i.e., less than or equal to 30 feet) and accessible sections of conveyance pipe connected to major stormwater structures, such as inlets, manholes, ditches, etc. The inlet and outlets of longer culverts and pipes (i.e., greater than 30 feet) exterior and interiors will be inspected using a flashlight to check for blockages and damage. If observations indicate the pipe may not be functioning adequately and per design, or the pipe may be damaged, an inspection using remote video equipment may be performed to inspect the pipe condition and evaluate maintenance/repair if needed.

Facility features that are often associated with conveyance pipes include:

- Inlets and manholes
- Trash racks
- Energy dissipaters.

2.4.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

2.4.2 Documentation

Identification: Follow alpha-numeric identification guidance in Section 1.1.

Inspection/Maintenance Form: Use the Stormwater Conveyance Pipe/Culvert Inspection and Maintenance Form in Appendix C. Document the identification number of the major structure and identify connecting conveyance pipes.

Location: Conveyance pipes and culverts are shown on maps provided on Figures 2, 3, and 4.

An overview of inspection and maintenance procedures for conveyance pipes and culverts is included below. Refer to Table B-4 in Appendix B for a detailed listing of structural features, potential defects, conditions requiring maintenance, and results expected when the structure is functioning properly and/or following maintenance.

2.4.3 Inspection

Perform visual inspections of conveyance pipes during the performance of O&M for associated structures. For example, inspect pipes connected to an inlet or manhole during cleaning or minor repairs. Culverts will be inspected during O&M for associated structures, such as during the inspection of a ditch leading to a culvert. Perform video inspections when evidence, such as recurring blockages or excessive sediment accumulation, suggests damage to the pipe that cannot be observed through simple visual inspection and/or a blockage cannot be removed manually with an appropriate implement (e.g., pole).

Inspect pipes and culverts for obstructions, such as roots, debris, and sedimentation. Inspect pipes for dents, cracks, breaks, or deterioration from rust (if applicable). Inspect associated structures, such as trash racks, for missing racks or bars. Inspect pipes for obstructions, collapsed or caved in sections, pipe deterioration, and broken lateral connections.

2.4.4 Maintenance Procedures

Clean pipes when sediment depth is greater than 20% of pipe diameter. When cleaning a pipe, control sediment and debris discharges from pipes to the storm sewer. Install downstream debris traps (where applicable) before cleaning and then remove accumulated material. A vacuum truck may be used to remove sediment accumulated during jetting.

The condition of the pipe will be evaluated before considering the use of mechanical methods to remove roots or other obstructions. Do not put root-dissolving chemicals in stormwater collection systems. Where roots or vegetation affect stormwater pipes, remove the vegetation.

2.4.5 Maintenance Goals

- Avoid or reduce sediment and possible chemical of concern discharges from the work area.
- Maintain parking areas, roads, drainage systems, and drainage facilities to avoid release of mining-related materials or other possible chemicals of concern.
- Maintain or restore the intended infrastructure function.
- Control flooding.
- Protect infrastructure.

2.4.6 Notes

Dispose of removed vegetation and sediments offsite. Removed sediments will be handled in accordance with Section 1.5 of this plan. Repair or replace pipes when a dent or break closes more than 20% of the pipe diameter. Repair or replace pipes damaged by rust or deterioration.

2.5 Drop Inlets, Catch Basins, and Manholes

Drop inlets are vertical risers connected to an underground culvert or piping system. They are designed to collect stormwater off roads and other surfaces during storm events and convey it to the storm drain piping/culverts. Typical drop inlets are fitted with metal grates.

A catch basin is a receptacle located at a drop inlet that is designed to retain sediment, debris, trash, oils, and other obstructions that would normally enter the storm sewer system. Typical catch basins have inlet grates and a small storage volume (sump) to collect sediment and debris. The terms drop inlet and catch basin are often used interchangeably; however, storage capacity must be present for a structure to be considered a catch basin.

Manholes are typically placed at locations where storm sewer pipes join or have abrupt changes in direction. They are included in a piping system to assist with flow routing and to allow for maintenance access. Manholes may have steps mounted on the side of the structure to allow access and may be fitted with an inlet to collect runoff.

Drop inlets, catch basins, and manholes will be inspected and cleaned to remove accumulated sediments, debris, and trash. The most common tool for cleaning these structures is a truck with a tank and vacuum hose (vactor truck) to remove sediment and debris from the sump.

2.5.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

Drop inlets and manholes are generally considered confined spaces and should not be entered unless maintenance personnel have Occupational Safety and Health Administration (OSHA)-approved training and equipment. Manholes and drop inlets may be oxygen-deficient or contain dangerous gasses that can cause injury or death if safety precautions are not followed.

2.5.2 Documentation

Identification: Follow alpha-numeric identification guidance in Section 1.1.

Inspection/Maintenance Form: Use the Inlets, Manholes, and Combination Manhole/Inlets Inspection and Maintenance Form to document O&M activities performed. Identify associated structures, such as conveyance pipes, by noting the pipe identification number (see Appendix C).

Location: Locations of drop inlets, catch basins, and manholes are shown on Figures 2, 3, and 4.

An overview of inspection and maintenance procedures for drop inlets, catch basins, and manholes is included below. Refer to Table B-5 in Appendix B for a detailed listing of structural features, potential defects, conditions requiring maintenance, and the results expected when the structure is functioning properly and/or following maintenance.

2.5.3 Inspection

Inlets, catch basins, and manholes will be inspected annually during the summer when feasible. Inlets will be inspected for accumulated sediments, debris, and trash that may reduce the inlet's efficiency to collect and convey stormwater. Inlets will also be inspected for structural damage that inhibits the inlet from functioning as designed.

Manhole, drop inlet, and catch basin frames and lids will be inspected for cracks, wear, or other structural damage. Metal grates and the invert/sump of the structure will be inspected for sediment accumulation, debris, trash, or other blockages that restrict flow from entering the downstream conveyance pipe or ditch. If sediment accumulation restricts the conveyance to the downstream pipe or ditch or reduces storage capacity, the sediment will be removed.

If stormwater structures exhibit higher than normal volumes of collected materials or oily residues, the vicinity around the inlet, catch basin, or manhole will be evaluated for contributing source areas.

2.5.4 Maintenance Procedures

- Clean grates to remove debris and litter.
- Clean inlets to remove captured materials that may be transported into conveyance pipes or to downstream waters.
- Clean catch basins when they become one-third full to maintain sediment-trapping capacities.
- Clean manholes where sediments, debris, or trash have accumulated, or blockages restrict stormwater from freely flowing into the downstream conveyance pipe.
- Repair structural damage.
- Replace inlets, catch basins, or manholes with structural damage that is not repairable.

2.5.5 Maintenance Goals

- Control sediment and possible chemical of concern discharges from the area.
- Maintain roads, parking areas, and drainage systems to avoid discharge of mining-related materials or other possible chemicals of concern.
- Maintain or restore the intended infrastructure function.
- Reduce scour damage to conveyance pipes.

- Control flooding to protect infrastructure.

2.5.6 Notes

Cleaning will be performed in a manner that controls sediment and cleaning water and avoids discharge back into the storm sewer system. Removed sediments will be handled in accordance with Section 1.5 of this plan.

2.6 Energy Dissipaters (riprap aprons, outfall protection, and emergency overflow)

Energy dissipaters are placed at storm drain outfalls, manholes, or locations of high velocity and control erosion and the flow of water as it enters ditches or ponds. There are several designs for energy dissipaters, including riprap aprons/rock splash pads, wire gabion baskets, and trenches.

2.6.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

2.6.2 Documentation

Identification: Follow alpha-numeric identification guidance in Section 1.1.

Inspection/Maintenance Form: If the energy dissipater is part of a sediment basin or ditch, use the energy dissipater portion of the Sediment Basin or Ditch Inspection and Maintenance Forms. If there are stand-alone drainage aprons, use the Apron-Energy Dissipater Inspection and Maintenance Form (see Appendix C).

Location: Energy Dissipaters (e.g., riprap aprons) are shown on Figures 2, 3, and 4.

An overview of inspection and maintenance procedures for energy dissipaters is included below. Refer to Table B-6 in Appendix B for a detailed listing of structural features, potential defects, conditions requiring maintenance, and the results expected when the structure is functioning properly and/or following maintenance.

2.6.3 Inspection

Storm sewer outfalls will be inspected annually in the summer when feasible. Outfalls that do not have energy dissipaters will be noted. Outfalls will be inspected for signs of oily residues, erosion, and/or sediment deposition. Significant erosion around outfalls is an indicator that the energy dissipater may need to be modified for higher stormwater flow rates and velocities. An inspection form documenting the date and time of the inspection, the inspector, the condition of the infrastructure, corrective actions taken (if any), and other pertinent information will be completed during the inspection procedure.

2.6.4 Maintenance Procedures

- Remove accumulated sediments, debris, or trash.
- Replace missing or removed rocks from rock splash pads or riprap aprons to cover exposed soil.
- Replace concrete energy dissipaters when the structure deteriorates significantly, such that the structure no longer functions as designed, becomes structurally unsound, or the downstream channel shows signs of significant erosion.

2.6.5 Maintenance Goals

- Control discharges of sediment and possible chemicals of concern from the area.
- Limit erosion and vegetation loss from downstream infrastructure.
- Maintain or restore the intended infrastructure function.
- Control flooding to protect infrastructure.

2.6.6 Notes

Proper maintenance of energy dissipaters reduces the potential sediment impact on downstream facilities or surface waters. Removed sediments will be handled in accordance with Section 1.5 of this plan. Reseed bare soils or reinstall riprap/rock covers, as appropriate, after removing accumulated sediments to reduce sediment transport from disturbed areas.

2.7 Stormwater Control Berms

Stormwater control berms are sometimes found downstream and parallel to ditches, along railroad property boundaries, or surrounding a sediment basin. Some stormwater control berms are rock covered, and some are barren having originally been vegetated. The berm cross sectional width is typically approximately 8 feet, and the height is typically greater than 1.5 feet. The intent of stormwater control berms is to provide additional drainage controls to retain drainage in a ditch, on railroad property, or in sediment basins.

2.7.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

2.7.2 Documentation

Identification: Follow alpha-numeric identification guidance in Section 1.1 of this plan.

Inspection/Maintenance Form: Use the Berm Inspection and Maintenance Form in Appendix C.

Location: Berm locations are shown on maps provided on Figures 2, 3, and 4.

An overview of inspection and maintenance procedures for berms is included below. Refer to Table B-7 in Appendix B for a detailed listing of structural features, potential defects, conditions requiring maintenance, and results expected when the structure is functioning properly and/or following maintenance.

2.7.3 Inspection

Berms will be inspected annually in the summer when feasible. Berms will be inspected for signs of displaced surface cover (if applicable), erosion, and evidence of potential breaching of drainage over the berm to downstream locations. Identify rodent holes with the potential to degrade berm integrity. An inspection form documenting the date and time of the inspection, the inspector, the condition of the berm, corrective actions taken (if any), and other pertinent information will be completed during the inspection procedure.

2.7.4 Maintenance Procedures

- Remove accumulated sediments, debris, or trash.
- Replace displaced surface cover (if applicable).
- Repair and reconstruct when the berms deteriorate significantly, such that the berm no longer functions as designed.

2.7.5 Maintenance Goals

- Control sediment and possible chemical of concern discharges, if any, from the area.
- Control erosion of berm.
- Maintain or restore intended berm function.

2.7.6 Notes

Proper maintenance of berms helps to retain drainage on the railyard property or within drainage BMPs (ditches and sediment basins) as intended. Removed sediments will be handled in accordance with Section 1.5.

2.8 Fence and/or Gate

Stormwater facilities, such as sediment basins or drainage ditches, often have fences to protect them from damage and restrict access to ponds or hazardous areas.

2.8.1 Health and Safety

The Railroads' contractors will prepare and follow their own health and safety plans and always follow applicable railroad-required safety action plans. Contractors will be required to have current railroad contractor orientation training. Workers will also have FRA-mandated On-Track Safety Training certification to work within 25 feet of active railroad tracks.

2.8.2 Documentation

Identification: Fences and gates are not considered separate structures.

Inspection/Maintenance Form: Information related to fences and/or gates will be included on site-specific forms, as appropriate.

Location: Fences and gates are not specifically identified. Information related to these features will be included on site-specific forms, as appropriate.

An overview of inspection and maintenance procedures is included below. Maintenance of fences and gates will be conducted as part of the associated stormwater BMP inspections.

2.8.3 Inspection

Inspect fences and gates during routine inspections of associated facilities and structures and note conditions requiring attention on the inspection form for the major structure or facility.

2.8.4 Maintenance Procedures

- Replace missing gates and locks, if applicable.
- Repair breaks in fences or openings under fences that may allow entry by people or animals.

Tables

TABLE 1

BRES SITES OR POLYGONS TRANSFERED TO STORMWATER BMPS

Railroad Area	Stormwater Polygons		Common Name	Stormwater BMP Type	Abbreviated IDs	Media or Material Type
	BRES Site ID	Polygon				
Middle Yard	992175	A, B, D	Middle Yard Ditch 1 (Tributary to MY-PND-01)	D = ditch	MY-D-01	Vegetated ditch with riprap aprons at inlets, outlets, and bends
	992161	A, B, C	Middle Yard Ditch 2 (Tributary to MY-PND-01)	D = ditch	MY-D-02	Type 3 Rock-lined ditch with riprap placed at culvert inlets/outlets
	992200; 992195	A,B,C	Middle Yard Ditch 3 (Tributary to MY-PND-02)	D = ditch	MY-D-03	Riprap-lined ditch
	992155	B, D	Repository North & West Ditches	D = ditch	MY-D-04	Vegetated ditch with riprap aprons at inlets, outlets, and bends
	992155	C, D	Repository East Ditch	D = ditch	MY-D-05	Vegetated ditch with riprap aprons at inlets, outlets, and bends
	992166	B	Sediment Basin 1	PND = pond/sediment basin	MY-PND-01	Unlined basin
	992166	A	Sediment Basin 1	O = outfall/spillway	MY-O-01, MY-O-02, MY-O-03	Outfalls with riprap aprons
	992184	C (part of)		O = outfall/spillway	MY-O-04	Outfall with 15-foot by 23-foot riprap apron
	992195	B	Sediment Basin 2	PND=pond/sediment basin	MY-PND-02	Unlined basin
	992165	A (part of)	Roof Drain Erosion Protection	RA = riprap apron	MY-RA-01	Riprap pad/apron under construction
Lower Yard	992265	A	Ditch Berm	B = berm	LY-B-02	Vegetated earthen stormwater control berm along southern side of LY-D-01.
	992265	B	Lower Yard Ditch 2 (Tributary to LY-PND-01)	D = ditch	LY-D-01	Four riprap ditches in series that drain to LY-PND-01
	992265	C		Former check dams & culvert protection	N/A; now part of ditch	Riprap aprons; now part of contiguous riprap ditch LY-D-02
	992274	B		O = outfall/spillway	LY-O-01	Outfall with riprap aprons; outlet end of LY-CMP-01; part of Ditch 1, but tagged as BRES 992274
	992274	B	Lower Yard Sediment Basin 1	O = outfall/spillway	LY-O-02	Riprap-lined emergency spillway
	992274	C		PND = pond/sediment basin	LY-PND-01	HDPE-lined basin
	992277	A, B	Lower Yard Ditch 2 (Tributary to LY-PND-01)	D = ditch	LY-D-02	Ditch from track to LY-PND-01. Riprap-lined.
	992275	B	New Berm (Tied to Ditch 2)	B = berm	LY-B-03	Currently barren berm. BRES site 992276 located to south.
	992275	C	Lower Yard Sediment Basin 2	PND = pond/sediment basin	LY-PND-02	Unlined basin
Mainline East	992207	D	Sediment Basin	PND = pond/sediment basin	MLE-PND-01	Type 3 Rock-lined
	992224	C	Sediment Basin	PND = pond/sediment basin	MLE-PND-03	Unlined basin with overflow manhole
	992211	A (part of)	MLE Ditch 2 (Tributary to MY-PND-03)	D = ditch	MLE-D-02	Riprap-lined
	992211	B	MLE Ditch 1 (Tributary to MY-PND-02)	D = ditch	MLE-D-01	Type 3 Rock-lined
	992211	B	MLE Berm 2 (Tributary to MY-PND-02)	B = berm	MLE-B-02	Type 3 Rock-covered
	992211	C	Sediment Basin	PND = pond/sediment basin	MLE-PND-02	Unlined basin
	992212	C	Berm 1	B = berm	MLE-B-01	Partially Type 3 Rock-covered; partially barren

Notes:

Acronyms

BRES = Butte Reclamation Evaluation System.
BMPs = best management practices.
HDPE = high-density polyethylene.

As changes to railroad stormwater BMPs occur, tables will be updated and appended to this stormwater operation and maintenance (O&M) plan.

TABLE 2

MIDDLE YARD STORMWATER BMP DETAILS

Common Name	Stormwater BMP Type	Abbreviated IDs	Stormwater Polygons		Media or Material Type	Current Record Drawing	Construction Drawing (if no record drawing or reconstructed)
			Site ID	Polygon			
Middle Yard Ditch 1	C=combination manhole and inlet	MY-C-03	--	--	Size/structure type unknown; pre-existing structure	UM-20R	--
	HDPE = pipe/culvert	MY-HDPE-05	--	--	12-inch-diameter HDPE (74 LF)	UM-20R	--
	D = ditch	MY-D-01	992175	A, B, D	Vegetated ditch (483 LF total) with riprap aprons at inlets, outlets, and bends	UM-20R	2007 Stormwater Improvements, P-2A
	HDPE = pipe/culvert	MY-HDPE-04	--	--	18-inch-diameter HDPE culvert (260 LF)	--	2007 Stormwater Improvements, P-2A
	RCP = pipe/culvert	MY-RCP-01	--	--	18-inch-diameter RCP culvert (163 LF)	UM-20R	--
Middle Yard Ditch 2	D = ditch	MY-D-02	992161	A, B, C	Type 3 Rock-lined ditch (933 LF total) with riprap placed at culvert inlets/outlets	UM-22R	2008 markup of UM-22R
	HDPE = pipe/culvert	MY-HDPE-01	--	--	12-inch-diameter HDPE (52 LF)	UM-22R	--
	HDPE = pipe/culvert	MY-HDPE-02	--	--	18-inch-diameter HDPE (41 LF)	UM22R	--
Middle Yard Ditch 3	D = ditch	MY-D-03	992200; 992195	A,B,C	Riprap-lined ditch (394 LF)	UM-23R; Third Cycle BMP, C-4.1R	BRES Corrective Action, Figure B-13
	HDPE = pipe/culvert	MY-HDPE-03	--	--	18-inch-diameter (82 LF)	UM-23R	--
Repository North & West Ditches	D = ditch	MY-D-04	992155	B, D	Vegetated ditch (716 LF total) with riprap aprons at inlets, outlets, and bends	UM-32R, UM-33R	--
Repository East Ditch	C=combination manhole and inlet	MY-C-04	--	--		UM-2R	--
	HDPE = pipe/culvert	MY-HDPE-06	--	--	12-inch-diameter HDPE (140 LF)	UM-2R	--
	D = ditch	MY-D-05	992155	C, D	Vegetated ditch (289 LF total) with riprap aprons at inlets, outlets, and bends	UM-32R, UM-33R	MY Repository Paving, Sheet 2& 4
	RCP = pipe/culvert	MY-RCP-04	--	--	22-inch-diameter RCP pipe/culvert (est. 50 LF)	Not shown on UM-32R	MY Repository Paving, Sheet 2& 4
	RCP = pipe/culvert	MY-RCP-02	--	--	18-inch-diameter RCP (45 LF)	UM-32R	--
Sediment Basin 1	PND = pond/sediment basin	MY-PND-01	992166	B	Unlined basin (4.21 acre-feet storage capacity, greater than 100-year, 24-hour storm event)	UM-21R (constructed before)	--
	O = outfall/spillway	MY-O-01, MY-O-02, MY-O-03	992166	A	Outfalls with riprap aprons	UM-21R (constructed before)	--
	C=combination manhole and inlet	MY-C-01	--	--	48-inch-diameter concrete manhole w/inlet cover	UM-21R	--
	MY-CLAY-01	MY-CLAY-01	--	--	30-inch-diameter tile (clay) pipe (old; est. 140 LF)	UM-21R (constructed before; tied into)	--
	M = manhole	MY-M-01	--	--	60-inch-diameter concrete manhole; solid lid	UM-21R	--
	RCP = pipe/culvert	MY-RCP-03	--	--	30-inch-diameter RCP pipe (134 LF)	UM-21R	--
	O = outfall/spillway	MY-O-04	992184	C (part of)	Outfall with 15 feet x 23 feet riprap apron	UM-21R	--
Sediment Basin 2	PND=pond/sediment basin	MY-PND-02	992195	B	Unlined basin (3.02 acre-feet storage capacity; greater than 100-year, 24-hour storm event)	UM-23R (constructed before)	--
	C=combination manhole and inlet	MY-C-02	--	--	Concrete manhole w/inlet cover	Not shown on UM-23R; seen in aerial	--
Repository Parking Lot Surface Drainage Outlets	O = outfall/spillway	MY-O-05	--	--	Parking lot concrete drainage aprons draining to MY-D-04	Not shown on UM-32R	MY Repository Paving, Sheet 2
		MY-O-06	--	--	Parking lot concrete drainage aprons draining to MY-D-04	Not shown on UM-32R	MY Repository Paving, Sheet 2
		MY-O-07	--	--	Parking lot concrete drainage aprons draining to MY-D-04	Not shown on UM-32R	MY Repository Paving, Sheet 2
		MY-O-08	--	--	Parking lot concrete drainage aprons draining to MY-D-04	Not shown on UM-32R	MY Repository Paving, Sheet 2
		MY-O-09	--	--	Parking lot concrete drainage aprons draining to MY-D-04	Not shown on UM-32R	MY Repository Paving, Sheet 2
Roof Drain Erosion Protection	RA = riprap apron	MY-RA-01	992165	A (part of)	Riprap apron/pad set in concrete	Third Cycle BMP, C-4.1R	--
Middle Yard Cover 1	CVR = cover	MY-CVR-01	--	--	Type 3 rock cap/cover	C-1R	--
Middle Yard Berm 1	B = Berm	MY-B-01	--	--	Type 3 rock berm	C-1R	--
Middle Yard Cover 2	CVR = cover	MY-CVR-02	--	--	Type 3 rock cap/cover	C-1R	--

Notes:

Acronyms

BMPs = best management practices.
HDPE = high-density polyethylene.
LF = linear feet.
RCP = reinforced concrete pipe.

As changes to railroad stormwater BMPs occur, tables will be updated and appended to this stormwater operation and maintenance (O&M) plan.

TABLE 3

LOWER YARD STORMWATER BMP DETAILS

Common Name	Stormwater BMP Type	Abbreviated IDs	Stormwater Polygons		Media or Material Type	Current Record Drawings	Construction Drawing (if no record drawing or reconstructed)
			Site ID	Polygon			
Lower Yard Ditch 1 and Berm	D = ditch	LY-D-01	992265	B	Riprap ditches in series (778 LF, total)	LY-6R; Third Cycle BMP, C-3.2R	--
	Former check dams & culvert protection	N/A; now part of ditch	992265	C	Riprap pads; now part of contiguous riprap ditch	LY-6R	--
	HDPE = pipe/culvert CMP = pipe/culvert	LY-HDPE-01, LY-HDPE-02, LY-CMP-01	--	--	Two 18-inch-diameter HDPE culverts (65 LF and 82 LF) and 18-inch CMP culvert (70 LF)	LY-6R	--
	B = berm	LY-B-02	992265	A	Vegetated stormwater control berm (628 LF)	LY-6R	--
Lower Yard Sediment Basin 1	O = outfall/spillway	LY-O-01/LY-RA-02	992274	B	Riprap-lined spillway	LY-8R	--
	PND = pond/sediment basin	LY-PND-01	992274	C	HDPE-lined [8.44 acre-feet storage capacity, supporting the 25-year, 24-hour storm event (minimum)]	LY-8R	--
	CMP = pipe/culvert	LY-CMP-02, LY-CMP-03	--	--	20-inch- and 28-inch-diameter CMP-arch culverts (42LF) beneath Casey	LY-8R	--
	B = berm	LY-B-01	--	--	Riprap berm keyed into surrounding grade (579 LF)	Third Cycle BMP, C-3.1R	--
Lower Yard Ditch 2 (Tributary to LY-PND-01)	D = ditch	LY-D-02	992277	A, B	Ditch from track to LY-PND-01 (222 LF). Originally riprap to vegetated ditch; conversion in 2015 to 100% riprap	LY-7R; Third Cycle BMP, C-3.1R	--
Lower Yard Sediment Basin 1 Access Road Ditches	D = ditch	LY-D-03	--	--	Two riprap ditches (212 LF) along access road; to be installed in 2015	Third Cycle BMP, C-3.1R	--
Lower Yard Drainage Inlet to Lower Yard Sediment Basin 1	I = inlet	LY-I-01	--	--	3-foot by 3-foot by 3-foot (minimum) catch basin; H-20 loading grate; to be installed 2015	Third Cycle BMP, C-3.1R	--
	CPP = pipe/culvert	LY-CPP-01	--	--	12-inch-diameter N12 pipe (est. 40 LF), corrugated polyethylene pipe (CPP); to be installed 2015	Third Cycle BMP, C-3.1R	--
Lower Yard Property Access Road Drainage Improvements	D = ditch	LY-D-04	--	--	Unlined ditch along east side of access road (204 LF). Drains to LY-HDPE-03.	Third Cycle BMP, C-3.1R; LY-9R	--
	RA = riprap apron	LY-RA-01	--	--	Riprap aprons at inlet and outlet of LY-HDPE-03.	Third Cycle BMP, C-3.1R	--
	HDPE = pipe/culvert	LY-HDPE-03	--	--	12-inch-diameter culvert (30 LF) beneath access road at Casey	LY-8R; Third Cycle BMP, C-3.1R	--
Cross-Track Interceptor Drain (CTID)	I = inlet; M = manhole (solid lid)	LY-I-02, LY-I-03, LY-M-01	--	--	Two Type II inlet grates on catch basins; one 48-inch diameter manhole with solid lid	PP-1R (part of A1 report addendum)	--
	HDPE = pipe/culvert	LY-HDPE-04	--	--	18-inch-diameter corrugated HDPE drain pipe (123.6 LF)	PP-1R (part of A1 report addendum)	--
		LY-HDPE-05	--	--	18-inch-diameter corrugated HDPE drain pipe (42.4 LF)	PP-1R (part of A1 report addendum)	--
	O = outfall/spillway	LY-O-04	--	--	Outlet end of LY-HDPE-04 to LY-D-02	PP-1R (part of A1 report addendum)	--
Lower Yard Sediment Basin 2	PND = pond/sediment basin	LY-PND-02	992275	C	Unlined basin [approximately 0.4 acre-feet design storage capacity; survey to be completed; design capacity supportive of the 25-year, 24-hour storm event (minimum)])	--	LY SW Improvements. 2008, Areas 2 and 3, P-3
	B = berm	LY-B-03	992275	A	Earthern stormwater control berm (formerly vegetated; 758 LF)	LY-2R	--
	C = combination manhole and inlet	LY-C-01	--	--	60-inch-diameter, riser outlet structure	--	P-4
	M = manhole	LY-M-02, LY-M-03, LY-M-04	--	--	Three 48-inch-diameter manholes with solid lids in series from LY-PND-02	--	P-4
	HDPE = pipe/culvert	LY-HDPE-06	--	--	18-inch-diameter HDPE pipe (27 LF)	--	P-4
		LY-HDPE-07	--	--	18-inch-diameter HDPE pipe (229.5 LF)	--	P-4
		LY-HDPE-08	--	--	18-inch-diameter HDPE pipe (249.2 LF)	--	P-4
		LY-HDPE-09	--	--	18-inch-diameter HDPE pipe (207.2 LF)	--	P-4
Downstream Catch Basins	I = inlet	LY-I-04, LY-I-05, LY-I-06	--	--	Three catch basins in series at western edge of RR property with drain inlet covers; construction date unknown	pre-TCRA	--
	CSP= culvert	LY-CSP-01	--	--	24-inch-diameter CSP pipe (est. 20 LF)	pre-TCRA	--
		LY-CSP-02	--	--	24-inch-diameter CSP pipe (est. 20 LF)	pre-TCRA	--

Notes:

Acronyms

BMPs = best management practices.

HDPE = high-density polyethylene.

LF = linear feet.

CMP = corrugated metal pipe.

CPP = corrugated polyethylene pipe.

RR = railroad.

CSP = corrugated steel pipe.

As changes to railroad stormwater BMPs occur, tables will be updated and appended to this stormwater operation and maintenance (O&M) plan.

TABLE 4

MAINLINE EAST STORMWATER BMP DETAILS

Common Name	Stormwater BMP Type	Abbreviated IDs	Stormwater Polygons		Media or Material Type	Current Record Drawings	Construction Drawing (if no record drawing or reconstructed)
			Site ID	Polygon			
Sediment Basin	PND = pond/sediment basin	MLE-PND-01	992207	D	Type 3 Rock-lined basin [0.25 acre-feet storage capacity, supporting the 25-year, 24-hour storm event (minimum)]	ME-3R	2007 Stormwater Improvements, P-1
Sediment Basin Outlet Structure	O = outlet/spillway	MLE-O-01	--	--	Concrete	ME-3R	2007 Stormwater Improvements, P-1 & P-2
Riprap Outlet Protection	RA = riprap apron	MLE-RA-02	--	--	Riprap	ME-3R	--
Sediment Basin	PND = pond/sediment basin	MLE-PND-02	992211	C	Unlined basin (0.051 acre-feet storage capacity)	ME-2R	--
	B = berm	MLE-B-02	992211	B	Type 3 Rock-Covered (437 LF)	ME-2R; Third Cycle BMP, C-2.1R	--
Sediment Basin	PND = pond/sediment basin	MLE-PND-03	992224	C	Unlined basin [0.092 acre-feet storage capacity, supporting the 25-year, 24-hour storm event (minimum)]	ME-1R	--
	C = combination manhole with inlet	MLE-C-01	--	--	BSB manhole; grate missing	ME-1R (shows riser addition)	--
MLE Ditch 1	D = ditch	MLE-D-01	992211	B	Type 3 Rock-lined ditch (350 LF)	ME-2R; Third Cycle BMP, C-2.1R	--
MLE Ditch 2	D = ditch	MLE-D-02	992211	part of A	Riprap-lined ditch (112 LF)	ME-2R; Third Cycle BMP, C-2.1R	--
Berm	B = berm	MLE-B-01	992212	C	Partially Type 3 Rock-covered; partially barren; total 1,275 LF	ME-1R and ME-2R; Third Cycle BMP, C-2.1R	--
Riprap Inlet Protection	RA = riprap apron	MLE-RA-01	--	--	Riprap mixed w/concrete	Third Cycle BMP, C-2.1R	--
Rock Lined Depression	D = ditch	MLE-PND-04		D	Type 3 Tock cover	ME-1R and ME-2R; Third Cycle BMP, C-2.1R	--

Notes:

Acronyms

BMPs = best management practices.

LF = linear feet.

As changes to railroad stormwater BMPs occur, tables will be updated and appended to this stormwater O&M plan.

Figures

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Middle Yard
See Figure 2

Mainline East
See Figure 4

Lower Yard
See Figure 3

Legend

- Figure 2: Middle Yard
- Figure 3: Lower Yard
- Figure 4: Mainline East
- BPSOU

N

0 0.25 0.5
Miles

Kennedy Jenks

Butte Priority Soils Operable Unit
Butte, MT

Project Location Overview

BNSF/Union Pacific
2299019*01

Figure 1

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

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MY-C-04
MY-HDPE-06
MY-D-04
MY-RCP-04
MY-D-05
MY-HDPE-01
MY-D-02
MY-CVR-02
MY-O-09
MY-RCP-02
MY-O-08
MY-O-03
Non-Railroad Sewers
MY-O-07
MY-HDPE-02
MY-O-06
MY-O-05
MY-D-02
MY-B-01
MY-C-03
MY-O-02
MY-O-01
MY-HDPE-04
MY-PND-01
MY-CVR-01
MY-RCP-03
MY-HDPE-05
MY-RCP-01
MY-C-01
MY-O-04
MY-RA-01
MY-D-01
MY-CLAY-01
MY-M-01
Abandoned Non-Railroad Sewer
MY-PND-02
MY-C-02
MY-HDPE-03
MY-D-03

0 250 500 Feet

Legend

- Barren Berm or Ditch
- Riprap Ditch, Apron, or Berm
- Grass Cap or Berm
- Grass Ditch
- Rock cap, Cover, Ditch, Berm, or Depression
- Sediment Basin
- Approximate Footprint of Middle Yard Repository with Overlying Parking Lot
- Concrete Apron
- Non-Railroad Drainage Structure
- Railroad Drainage Structure
- Railroad Drainage Pipes/Culverts
- Railroad Track Culverts
- Flow Path
- Non-Railroad Drainage Pipes/Culverts

LY-I-07 Assigned GIS Code

Code Key:
PND = pond
D = ditch
I = inlet
M = manhole
C = combination manhole and inlet
O = outfall/spillway
CMP, RCP, HDPE, CIP, CLAY, WOOD, ect. = type of pipe/culvert material
B = Berm

Notes:
1. Rock caps and grass caps are BRES sites. Ditches, riprap aprons, stormwater control berms, drainage inlet/control structures, culverts/pipes, and ponds are stormwater BMPs.
2. Figures will be updated and appended to this stormwater operation and maintenance plan as changes to railroad stormwater BMPs occur.

INTERIM FINAL DRAFT

Kennedy Jenks

Butte Priority Soils Operable Unit
Butte, MT

N

Middle Yard Stormwater BMPs and Remaining BRES Sites

BNSF/Union Pacific
2299019*01

Figure 2

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

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Legend

- Barren Berm or Ditch
- Riprap Ditch, Apron, or Berm
- Grass Cap or Berm
- Grass Ditch
- Rock cap, Cover, Ditch, Berm, or Depression
- Sediment Basin
- Concrete Apron
- Non-Railroad Drainage Structure
- Railroad Drainage Structure
- Railroad Drainage Pipes/Culverts
- Railroad Track Culverts
- Flow Path
- Non-Railroad Drainage Pipes/Culverts

LY-I-07 Assigned GIS Code

Code Key:
PND = pond
D = ditch
I = inlet
M = manhole
C = combination manhole and inlet
O = outfall/spillway
CMP, RCP, HDPE, CIP, CLAY, WOOD, ect. = type of pipe/culvert material
B = Berm

Notes:
1. Rock caps and grass caps are BRES sites. Ditches, riprap aprons, stormwater control berms, drainage inlet/control structures, culverts/pipes, and ponds are stormwater BMPs.
2. Figures will be updated and appended to this stormwater operation and maintenance plan as changes to railroad stormwater BMPs occur.

INTERIM FINAL DRAFT

Kennedy Jenks

Butte Priority Soils Operable Unit
Butte, MT

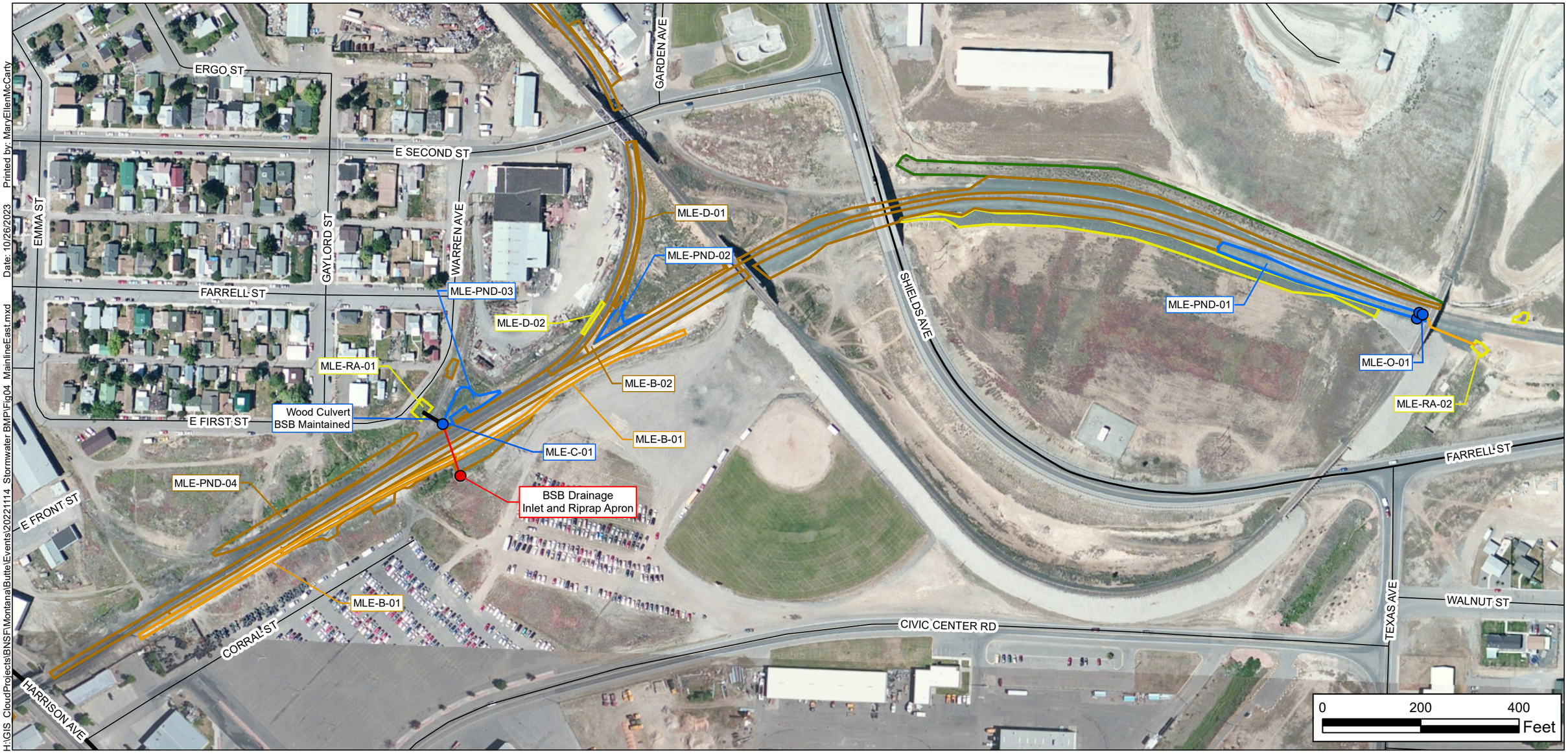
N

Lower Yard Stormwater BMPs and Remaining BRES Sites

BNSF/Union Pacific
2299019*01

Figure 3

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community



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Date: 10/26/2023
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Legend

- Barren Berm or Ditch
- Riprap Ditch, Apron, or Berm
- Grass Cap or Berm
- Grass Ditch
- Rock cap, Cover, Ditch, Berm, or Depression
- Sediment Basin
- Concrete Apron
- Non-Railroad Drainage Structure
- Railroad Drainage Structure
- Railroad Drainage Pipes/Culverts
- Railroad Track Culverts
- Flow Path
- Non-Railroad Drainage Pipes/Culverts

LY-I-07 Assigned GIS Code

Code Key:
PND = pond
D = ditch
I = inlet
M = manhole
C = combination manhole and inlet
O = outfall/spillway
CMP, RCP, HDPE, CIP, CLAY, WOOD, ect. = type of pipe/culvert material
B = Berm

Notes:
1. Rock caps and grass caps/berms are BRES sites. Ditches, riprap aprons, stormwater control berms, drainage inlet/control structures, culverts/pipes,and ponds are stormwater BMPs.
2. Figures will be updated and appended to this stormwater operation and maintenance plan as changes to railroad stormwater BMPs occur.

INTERIM FINAL DRAFT

Kennedy Jenks

Butte Priority Soils Operable Unit
Butte, MT

N

Mainline East Stormwater BMPs and Remaining BRES Sites

BNSF/Union Pacific
2299019*01

Figure 4

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Legend

- Middle Yard
- Mainline East

MY-C-03 Assigned GIS Code

OWNER Parcel owner name from Montana Cadastral database

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Butte Priority Soils Operable Unit
Butte, MT

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Railroad Stormwater BMPs Located off Railroad Property/Right-of Way

BNSF/Union Pacific
2299019*01

Figure 5

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Appendix A

pH Paste Method

EcoSense®

Soil Sample Analysis for pH:
Methods to Determine Soil pH with the EcoSense pH100

Method 3 is the BPSOU pH Paste Method.

Overview

The choice of a proper method to measure pH in soils is a contentious issue. Discussions abound concerning large variations in readings, depending upon the method, while others claim the errors are negligible. Regardless, it is widely accepted that there are three recognized methods of analysis:

Method 1

pH of Soil Suspension Using 1:1 Soil to Water Ratio-Soil Survey Manual (U.S. Department of Agriculture Handbook No. 18).

- For routine work, add 5 grams of soil and 5 mL of distilled water to a 50 mL beaker and stir vigorously. Allow mixture to stand without agitation for 30 minutes. Stir well immediately before immersing electrodes and measure pH.
- For organic soils, a soil water ratio of 1:5 is recommended with a standing time of 2 hours.

Method 2

pH of Soil Suspension Using a 1:1 Soil to $CaCl_2$ Salt Methods of Soil Analysis Part 2, 2nd Edition (American Society of Agronomy, Inc., Soil Science Society of America, Inc.).

- Add 5 grams of soil and 5 mL of distilled water to a 50 mL beaker and mix thoroughly. Let stand 10 minutes and stir again before measuring the pH in water suspension.
- Add one drop of 1 M $CaCl_2$ solution and stir intermittently for 30 minutes.
- Immerse the electrodes and record the soil pH in 0.01 M $CaCl_2$, which is called pHs.
- Lime requirement may be performed directly on this preparation of soil.

YSI pH100 instrument and 112-1 flat tipped electrode.

Method 3

pH readings of Saturated Soil Paste (U.S. Department of Agriculture Handbook No. 60).

- Prepare a saturated soil paste by adding distilled water to a sample of soil while stirring with a spatula. The soil-water mixture is consolidated from time to time during the stirring process by tapping the container on the workbench. At saturation, the soil paste glistens as it reflects light, flows slightly when the container is tipped, and slides freely and cleanly off the spatula for all soils except those with a high clay content. After mixing, the sample should be allowed to stand for an hour or more, at which time the criteria for saturation should be rechecked. Free water should not collect on the soil surface nor should the paste stiffen markedly or lose its glistening appearance on standing. If the paste does stiffen or lose its glisten, remix with more water. If the paste is too wet, additional soil may be added.
- Insert the electrodes into the paste and raise and lower repeatedly until a reproducible pH reading is obtained.

All three of these methods give repeatable results but each method may give slightly different values for the same soil sample. Due to this difference, the method used should be described when reporting soil pH values.

The YSI pH100 instrument with optional 112-1 flat tipped pH electrode with extremely reliable double-junction electrode is ideal for pH soil analysis. The flat tipped electrode does not become clogged by soil particles and is easily wiped clean.

Y S I Environmental 800 897-4151 937 767-7241 Fax 937 767-9353 www.YSIEcosense.com

0606 T620

Appendix B

Railroad Stormwater BMPs O&M Procedures

APPENDIX B

Operations and Maintenance Procedures

Table B-1: Sediment Basin

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually (Summer)	General	Trash and Debris	Any trash and debris that exceed 5 cubic feet per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size garbage can). In general, there should be no visual evidence of dumping. If less than threshold, trash and debris will be removed as part of next scheduled maintenance.	Trash and debris cleared from site.
		Poisonous Vegetation and noxious weeds	Poisonous or nuisance vegetation that constitute a hazard to maintenance personnel or the public. Evidence of noxious weeds as defined by state or local regulations. (Apply requirements of adopted Butte-Silver Bow (BSB) policies for the use of herbicides.)	No danger of poisonous vegetation where maintenance personnel or the public might normally be. (Coordinate with BSB Weed Management department.) Complete eradication of noxious weeds may not be possible. Compliance with state or BSB eradication policies required.
		Contaminants and Pollution	Evidence of oil, gasoline, contaminants, or other pollutants in quantities greater than a surface sheen. (Coordinate removal/cleanup with local water quality response agency.)	No contaminants or pollutants present.
		Rodent Holes	Evidence of rodent holes if facility is acting as a dam or berm or if evidence of water piping through dam or berm via rodent holes.	Rodents destroyed and dam or berm repaired. (Coordinate with BSB Maintenance and Operations department; coordinate with Dam Safety Office if pond exceeds 10 acre-feet.)
		Insects	When insects, such as wasps and hornets, interfere with maintenance activities.	Insects destroyed or removed from site. Apply insecticides in compliance with adopted BSB Maintenance and Operations policies.
	Side Slopes of Pond	Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Erosion observed on a compacted berm embankment.	

APPENDIX B

Operations and Maintenance Procedures

Table B-1: Sediment Basin

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually (Summer)	Storage Area	Sediment	Accumulated sediment that affects inletting or outletting condition of the facility.	Sediment cleaned out to designed pond shape and depth, if necessary, to control erosion.
		Liner (if applicable)	Liner is visible and has more than three 1/4-inch holes in it due to seam separation, punctures, or tears.	Liner repaired or replaced. Liner is fully covered.
	Pond Berms (Dikes)	Settlements	Part of berm that has settled 4 inches lower than the design elevation. If settlement is apparent, measure berm to determine amount of settlement. Settling can be an indication of more severe problems with berm or outlet works. A licensed civil engineer should be consulted to determine the source of the settlement.	Dike is built back to the design elevation.
		Piping	Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue. (Recommend a geotechnical engineer be called to inspect and evaluate condition and recommend repair of condition.)	Piping eliminated. Erosion potential resolved.
	Emergency Overflow/Spillway and Berms Over 4 Feet in Height.	Piping	Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue. (Recommend a geotechnical engineer be called to inspect and evaluate condition and recommend repair of condition.)	Piping eliminated. Erosion potential resolved.
	Emergency Overflow/Spillway	Rock Missing	Less than 12 inches of riprap exists above native soil in area 5 square feet or larger or any exposure of native soil at the top of outflow path of spillway. (Riprap on inside slopes need not be replaced.)	Rocks and pad depth are restored to design standards.
		Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted berm embankment.	Slopes should be stabilized using appropriate erosion control measure(s) (e.g., rock reinforcement, planting of grass, compaction). If erosion is occurring on compacted berms, a licensed civil engineer should be consulted to resolve source of erosion.

Notes:

Confined space entry may apply at associated manholes/inlets. See site health and safety plan.

APPENDIX B

Operations and Maintenance Procedures

Table B-2: Ditch

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually (Summer)	General	Sediment Accumulation	Remove sediment accumulations greater than 6 inches or that significantly reduce the designed or historical hydraulic capacity.	Sediment cleaned out to designed ditch shape and depth; ditch reseeded, if necessary, to control erosion.
		Trash and Debris	Trash and debris that exceed 5 cubic feet per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size garbage can). In general, there should be no visual evidence of dumping. If less than threshold, trash and debris will be removed as part of next scheduled maintenance.	Trash and debris cleared from site.
		Poisonous Vegetation and Noxious Weeds	Poisonous or nuisance vegetation that may constitute a hazard to maintenance personnel or the public. Any evidence of noxious weeds as defined by state or local regulations. (Apply requirements of adopted Butte-Silver Bow (BSB) policies for the use of herbicides.)	No danger of poisonous vegetation where maintenance personnel or the public might normally be. (Coordinate with BSB Weed Management department.) Complete eradication of noxious weeds may not be possible. Compliance with state or BSB eradication policies required.
		Contaminants and Pollution	Evidence of oil, gasoline, contaminants, or other pollutants in quantities greater than a surface sheen. (Coordinate removal/cleanup with local water quality response agency.)	No contaminants or pollutants present.
		Tree Growth and Hazard Trees	Tree and shrub growth within the ditch channel should be removed in order to maintain flow during a storm event.	Vegetation growth does not hinder flow during a storm event.
		Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted berm embankment.	Slopes should be stabilized using appropriate erosion control measure(s) (e.g., rock reinforcement, planting of grass, compaction). If discharge pipes are causing erosion, a spreader may be warranted.
		Concrete Deterioration	Spalling or cracked concrete may be a sign of concrete in need of replacement. Assess if concrete should be replaced.	Concrete ditch conveys water during storm events with minimal obstruction. Note condition of concrete and replace, as necessary.
		Riprap Voids	Scour marks and erosion near riprap are an indication that rock depth is inadequate or rock diameter is undersized.	Rocks are restored to design standard to eliminate soil erosion.

APPENDIX B

Operations and Maintenance Procedures

Table B-3: Trash Rack

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually (Summer)	General	Trash and Debris	Trash and debris will be removed from the bars or racks.	Trash and debris cleared from site.
		Bars or Racks damaged or missing	Trash, debris, and sediment may not be detained if the bars or racks are damaged or missing.	Repair bars and racks. Replace, as necessary.

APPENDIX B

Operations and Maintenance Procedures

Table B-4: Stormwater Conveyance Pipes and Culverts

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually for culverts associated with a ditch. As needed, upon manhole/inlet/catch basin inspection.	General	Sediment	A vacuum truck can be used to remove sediment once sediment accumulation is greater than 20% of the conveyance pipe diameter.	Sediment does not hinder flow during a storm event.
		Roots	Use mechanic cutter or remove vegetation from the surface if roots are present.	Vegetation growth does not hinder flow during a storm event.

Note:

Confined space entry may apply. See site health and safety plan.

APPENDIX B

Operations and Maintenance Procedures

Table B-5: Inlets, Manholes, and Combination Manhole/Inlets

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually (Summer)	General	Sediment Accumulation	Clean inlets to prevent captured materials from being transported into conveyance pipes or to downstream waters. Clean catch basins when they become one third full to maintain sediment-trapping capacities. Clean manholes where sediments, debris, or trash have accumulated or blockages prevent storm water from freely flowing into the downstream conveyance pipe.	Maintains or restores infrastructure function.
		Trash and Debris	Trash, sediment and/or debris that plugs grated lid or plugs invert on inlet and outlet piping that decrease the efficiency of the storm sewer network. Evidence of oil, gasoline, contaminants, or other pollutants (sanitary) will be noted and investigated.	Remove sediment and trash from the grated cover. A vacuum truck can be used to remove sediment or debris from the catch basin sump or pipe inverts
		Lid/Cover is Cracked or Structurally Damaged	A cracked or damaged lid may cause a safety concern for vehicle traffic or for capturing stormwater. An ill-fitting lid may also pose a safety concern and warrants replacement.	Replace lid or cover, as needed.
		Pipe Inverts Plugged More than 30%	A vacuum truck can be used to clean manhole and piping inverts.	Minimal sediment present and inverts clear for stormwater conveyance.
		Manhole Rungs, Ingress/Egress Obstruction, Manhole Covers Secure	Loose or damaged manhole rungs or vehicular or personnel concerns for ingress/egress should be addressed in the diversion structure and manhole.	Replace missing manhole rungs and remove obstructions to ingress/egress ports.
		Vertical Structure Damaged	Concrete cracks, spalling, or voids; bricks loose and falling into the sump; and loose rungs pose a safety concern for personnel entry and for potential pipe blockages. Severe conditions will be repaired or vertical structure will be replaced.	Vertical structure material is intact.

Table B-6: Aprons-Energy Dissipater

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually (Summer)	General	Accumulated Sediment, Debris or Trash	Trash, sediment, and/or debris has the potential impact to surface water as carried in a storm event. Evidence of oily residues will be noted and investigated.	Trash and debris cleared from site.
		Rocks Missing; Scour or Erosion Present	Replace rocks, as needed. If scour or erosion present and rocks are not held in place; rock diameter may be too small. Contact an engineering firm to calculate predicted velocity from outlet and replace rock structure.	Rocks cover outlet to reduce or eliminate sediment erosion and to reduce velocity.
		Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted berm embankment.	Slopes will be stabilized using appropriate erosion control measure(s) (e.g., rock reinforcement, planting of grass, compaction). If erosion is occurring on compacted berms, a licensed civil engineer will be consulted to resolve source of erosion.

Table B-7: Stormwater Control Berms

Inspection Frequency	Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed Or Not Needed
Annually (Summer)	General	Accumulated Sediment, Debris or Trash	Trash, sediment, and/or debris has the potential impact to surface water as carried in a storm event. Any evidence of oily residues should be noted and investigated.	Trash and debris cleared from site.
		Surface Cover Missing	Surface cover thickness (if applicable) has thinned to extent underlying soil portion of berm may erode.	Surface cover prevents erosion of underlying soil portion of berm; no active or likely scouring or erosion.
		Erosion/Scour	Erosion of soil portion of berm impairing berm design and/or causing downstream soil deposition.	Onsite drainage retained onsite. Berm restored to meet design intent.

Appendix C

Railroad Stormwater BMPs Inspection and Maintenance Checklists and Forms

TABLE C-1

MIDDLE YARD
Butte Priority Soils Operable Unit Stormwater BMP Maintenance Inspections Checklist
Butte, Montana

SW BMP ID(a)	SW Feature Type	BMP Inspected (Y or N)	General Condition (G, F, or P)[b]	Needs Maintenance (Y or N)[c]	Maintenance Completed at Time of Inspection (Y or N)[d]	Maintenance to be Completed After Inspection (Y or N)	Comments/Notes
MY-C-01	C=combination manhole/inlet						
MY-C-02	C=combination manhole/inlet						
MY-C-03	C=combination manhole/inlet						
MY-C-04	C=combination manhole/inlet						
MY-D-01	D = ditch						
MY-D-02	D = ditch						
MY-D-03	D = ditch						
MY-D-04	D = ditch						
MY-D-05	D = ditch						
MY-HDPE-01	HDPE = pipe/culvert						
MY-HDPE-02	HDPE = pipe/culvert						
MY-HDPE-03	HDPE = pipe/culvert						
MY-HDPE-04	HDPE = pipe/culvert						
MY-HDPE-05	HDPE = pipe/culvert						
MY-HDPE-06	HDPE = pipe/culvert						
MY-M-01	M = manhole						
MY-CLAY-01	CLAY = tile/clay						
MY-O-01	O = outfall/spillway						
MY-O-02	O = outfall/spillway						
MY-O-03	O = outfall/spillway						
MY-O-04	O = outfall/spillway						
MY-O-05	O = outfall/spillway						
MY-O-06	O = outfall/spillway						
MY-O-07	O = outfall/spillway						
MY-O-08	O = outfall/spillway						
MY-O-09	O = outfall/spillway						
MY-PND-01	PND = retention pond/sediment basin						
MY-PND-02	PND=retention pond/sediment basin						
MY-RA-01	RA = riprap apron						
MY-RCP-01	RCP = pipe/culvert						
MY-RCP-02	RCP = pipe/culvert						
MY-RCP-03	RCP = pipe/culvert						
MY-RCP-04	RCP = pipe/culvert						
MY-CVR-01	CVR = Cover						
MY-CVR-02	CVR = cover						
MY-B-01	B = Berm						

Notes:

(a) Stormwater best management practice (BMP) IDs presented in greater detail in Interim Final: Operation and Maintenance Plan Stormwater Best Management Practices within the Butte Priority Soils Operable Unit, dated October 2023.

(b) G = Good; F = Fair; P = Poor.

(c) If maintenance is needed, take photo and complete inspection portion of inspections/maintenance form specific to the SW BMP feature type.

(d) If maintenance is completed at time of inspection, complete "maintenance" portion of inspection/maintenance form.

SW = stormwater.

HDPE = high-density polyethylene.

RCP = reinforced concrete pipe.

TABLE C-2

LOWER YARD
Butte Priority Soils Operable Unit Stormwater BMP Maintenance Inspections Checklist
Butte, Montana

SW BMP ID[a]	SW Feature Type	BMP Inspected (Y or N)	General Condition (G, F, or P)[b]	Needs Maintenance (Y or N)[c]	Maintenance Completed at Time of Inspection (Y or N)[d]	Maintenance to be Completed After Inspection (Y or N)	Comments/Notes
LY-B-01	B = berm						
LY-B-02	B = berm						
LY-B-03	B = berm						
LY-C-01	C = combination manhole/inlet						
LY-CMP-01	CMP = pipe/culvert						
LY-CMP-02, LY-CMP-03	CMP = pipe/culvert						
LY-CPP-01	CPP = pipe/culvert						
LY-CSP-01	CSP= pipe/culvert						
LY-CSP-02	CSP= pipe/culvert						
LY-D-01	D = ditch						
LY-D-02	D = ditch						
LY-D-03	D = ditch						
LY-D-04	D = ditch						
LY-HDPE-01	HDPE = pipe/culvert						
LY-HDPE-02	HDPE = pipe/culvert						
LY-HDPE-03	HDPE = pipe/culvert						
LY-HDPE-04	HDPE = pipe/culvert						
LY-HDPE-05	HDPE = pipe/culvert						
LY-HDPE-06	HDPE = pipe/culvert						
LY-HDPE-07	HDPE = pipe/culvert						
LY-HDPE-08	HDPE = pipe/culvert						
LY-HDPE-09	HDPE = pipe/culvert						
LY-I-01	I = inlet						
LY-I-02	I = inlet						
LY-I-03	I = inlet						
LY-I-04	I = inlet						
LY-I-05	I = inlet						
LY-I-06	I = inlet						
LY-M-01	M = manhole (solid lid)						
LY-M-02	M = manhole						
LY-M-03	M = manhole						
LY-M-04	M = manhole						
LY-O-01/LY-RA-02	O = outfall/spillway						
LY-O-04	O = outfall/spillway						
LY-PND-01	PND = retention pond/sediment basin						
LY-PND-02	PND = retention pond/sediment basin						
LY-RA-01	RA = riprap apron						

Notes:

(a) Stormwater best management practice (BMP) IDs presented in greater detail in Interim Final: Operation and Maintenance Plan Stormwater Best Management Practices within the Butte Priority Soils Operable Unit, dated October 2023.

(b) G = Good; F = Fair; P = Poor.

(c) If maintenance is needed, take photo and complete inspection portion of inspections/maintenance form specific to the SW BMP feature type.

(d) If maintenance is completed at time of inspection, complete "maintenance" portion of inspection/maintenance form.

SW = stormwater.
CSP = corrugated steel pipe.
HDPE = high-density polyethylene.

TABLE C-3

MAINLINE EAST
Butte Priority Soils Operable Unit Stormwater BMP Maintenance Inspections Checklist
Butte, Montana

SW BMP ID[a]	SW Feature Type	BMP Inspected (Y or N)	General Condition (G, F, or P)[b]	Needs Maintenance (Y or N)[c]	Maintenance Completed at Time of Inspection (Y or N)[d]	Maintenance to be Completed After Inspection (Y or N)	Comments/Notes
MLE-B-01	B = berm						
MLE-B-02	B = berm						
MLE-C-01	C = combination manhole/inlet						
MLE-D-01	D = ditch						
MLE-D-02	D = ditch						
MLE-O-01	O = outlet/spillway						
MLE-PND-01	PND = retention pond/sediment basin						
MLE-PND-02	PND = retention pond/sediment basin						
MLE-PND-03	PND = retention pond/sediment basin						
MLE-PND-04	PND = retention pond/sediment basin						
MLE-RA-01	RA = riprap apron						
MLE-RA-02	RA = riprap apron						

Notes:

(a) Stormwater best management practice (BMP) IDs presented in greater detail in Interim Final: Operation and Maintenance Plan Stormwater Best Management Practices within the Butte Priority Soils Operable Unit, dated January 2023.

(b) G = Good; F = Fair; P = Poor.

(c) If maintenance is needed, take photograph and complete inspection portion of inspections/maintenance form specific to the SW BMP feature type.

(d) If maintenance is completed at time of inspection, complete "maintenance" portion of inspection/maintenance form.

SW = stormwater.