

APPENDIX E

STORM WATER MANAGEMENT PLAN

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1.0 INTRODUCTION

The Storm Water Management Plan (SWMP) discusses sediment and erosion control measures to be used during implementation of the reclamation work plan at Golden Butte and Easy Junior. The purpose of these measures are to prevent pollution of the waters of the State of Nevada by sediments mobilized during construction activities and to prevent damage caused by erosion.

2.0 SITE DESCRIPTION

Golden Butte and Easy Junior are inactive heap leach gold mines located on public lands administered by the Bureau of Land Management (BLM). Reclamation activities are taking place as part of the Restoration of Abandoned Mine Sites (RAMS) program. The purpose of the reclamation activities is to stabilize and close site facilities. Additional information about these sites the planned reclamation activities are presented in the 2004/2005 Reclamation Work Plan.

2.1 GOLDEN BUTTE

Major reclamation elements at Golden Butte Mine Site are listed below. Figure E-1, *Sediment Control Structures*, shows the site layout of the work elements, the approximate boundaries of areas to be disturbed during reclamation activities and the location of control measures.

- Regrade and cover heap leach pads
- Excavation of borrow material from BS-01 and BS-04
- Excavation of soils potentially impacted by petroleum products
- Convert site process ponds to evaporation basins
- Install infiltration field
- Demolition and disposal of site facilities
- Closure of on-site construction and site debris landfill

2.2 EASY JUNIOR

Major reclamation elements at the Easy Junior Mine Site are listed below. Figure E-2, *Easy Junior Sediment Control Structures*, shows the site layout of the work elements, the approximate boundaries of areas to be disturbed during reclamation activities and the location of control structures.

- Regrade and cover heap leach pad
- Excavation of borrow material from top soil stockpile
- Demolition and disposal of site facilities
- Closure of site process ponds
- Closure of on-site construction and site debris landfill

3.0 DESCRIPTION OF CONTROLS

Control measures to be implemented at each site are shown in Figures E-1 and E-2. Details for proper installation of the control measures are shown in Figure E-3, *Sediment Control Details*. Control measures will be installed prior to disturbance of soils upgradient of the structure.

3.1 GOLDEN BUTTE

Control measures to be used at Golden Butte are shown in Figure E-1 and listed below. Structures to be used include silt fencing and sediment traps. Sediment traps may be constructed by excavation, construction of an embankment or excavation in combination with an embankment.

- Heap leach pads – Silt fencing will be placed where the regraded and covered piles extend beyond the edge of the containment basin. Silt fencing is not required in areas where the regraded and covered pile remains within the containment basin.
- Infiltration field – Silt fencing will be placed on the down gradient edge of the area disturbed for the installation of the infiltration field.
- Freshwater pond – Silt fencing will be placed down gradient of runoff from the closed and covered freshwater pond.
- Borrow areas – Sediment traps will be constructed at the discharge point from the utilized borrow areas. Borrow areas will be excavated in a manner to ensure that all runoff will report to the sediment trap.
- Fuel tank pad – Silt fencing will be placed down gradient of areas where soils potentially impacted by petroleum products are removed.
- Process ponds – Sediment controls are not anticipated in the area around the process ponds. All construction materials used in the conversion of the site process ponds to evaporation ponds will be contained within the ponds.
- Site debris – Silt fencing and sediment traps will be installed as necessary in areas where removal of site debris results in soil disturbance that could result in erosion of the soils.

3.2 EASY JUNIOR

Control measures to be used at Golden Butte are shown in Figure E-2 and listed below. Structures to be used include silt fencing and sediment traps. Sediment traps may be constructed by excavation, construction of an embankment or excavation in combination with an embankment.

- Heap leach pads – Silt fencing will be placed where the regraded and covered piles extend beyond the edge of the containment basin. Silt fencing is not required in areas where the regraded and covered pile remains within the containment basin.
- Borrow areas – Sediment traps will be constructed at the discharge point from the utilized borrow areas. Borrow areas will be excavated in a manner to ensure that all runoff will report to the sediment trap.
- Fuel tank pad – Silt fencing will be placed down gradient of areas where soils potentially impacted by petroleum products are removed.

- Process ponds – Sediment controls are not anticipated in the area around the process ponds. All construction materials used in the conversion of the site process ponds to evaporation ponds will be contained within the ponds.
- Site debris – Silt fencing and sediment traps will be installed as necessary in areas where removal of site debris results in soil disturbance that could result in erosion of the soils.

3.3 INSPECTION AND MAINTENANCE

All control measures will be inspected by a qualified person at least once every seven days and within 24 hours of any precipitation event of 0.5 inches or greater. During prolonged rain events, control structures will be checked on a daily basis. Inspection records will be recorded in the inspectors field book and will be noted on the daily work log. At a minimum, the inspection records will include the information listed below.

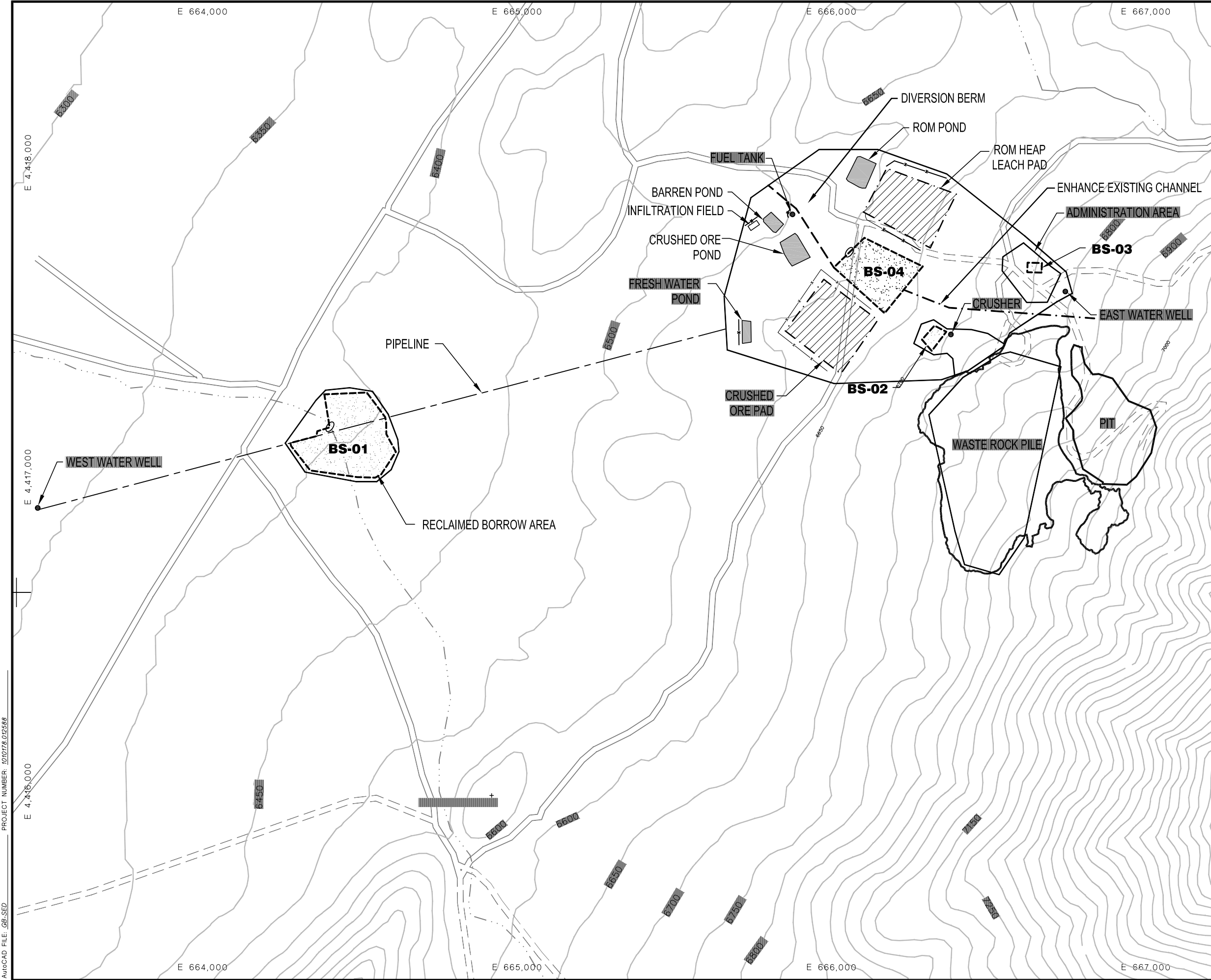
- Inspectors name
- Date of inspection
- Areas disturbed
- Areas stabilized
- Condition of all installed control measures
- Depth of sediment behind control structures
- Maintenance required
- Changes required to the SWMP

Any damage to control structures noted during the inspection will be repaired immediately. Sediment will be removed from silt fencing when it reaches one-third the height of the filter fence. Sediment will be removed from sediment traps when sediment has filled one-third the capacity of the trap.

3.4 CHANGES TO THE STORM WATER MANAGEMENT PLAN

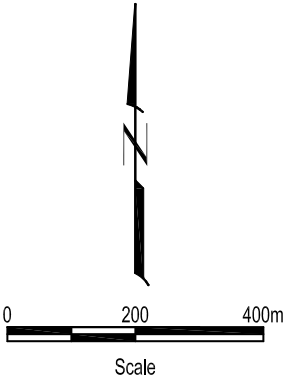
Changes may be required to the SWMP to address maintenance issues or as a result of changes to the construction plan. Changes may include relocation, redesign or installation of additional control measures.

All modifications will be approved by the site engineer or other qualified person as approved by the Project Manager. A written notification of any changes to the plan will be provided to the Project Manager within 24 hours of the change being made. The notification will include the change that was made and the reason for the change.

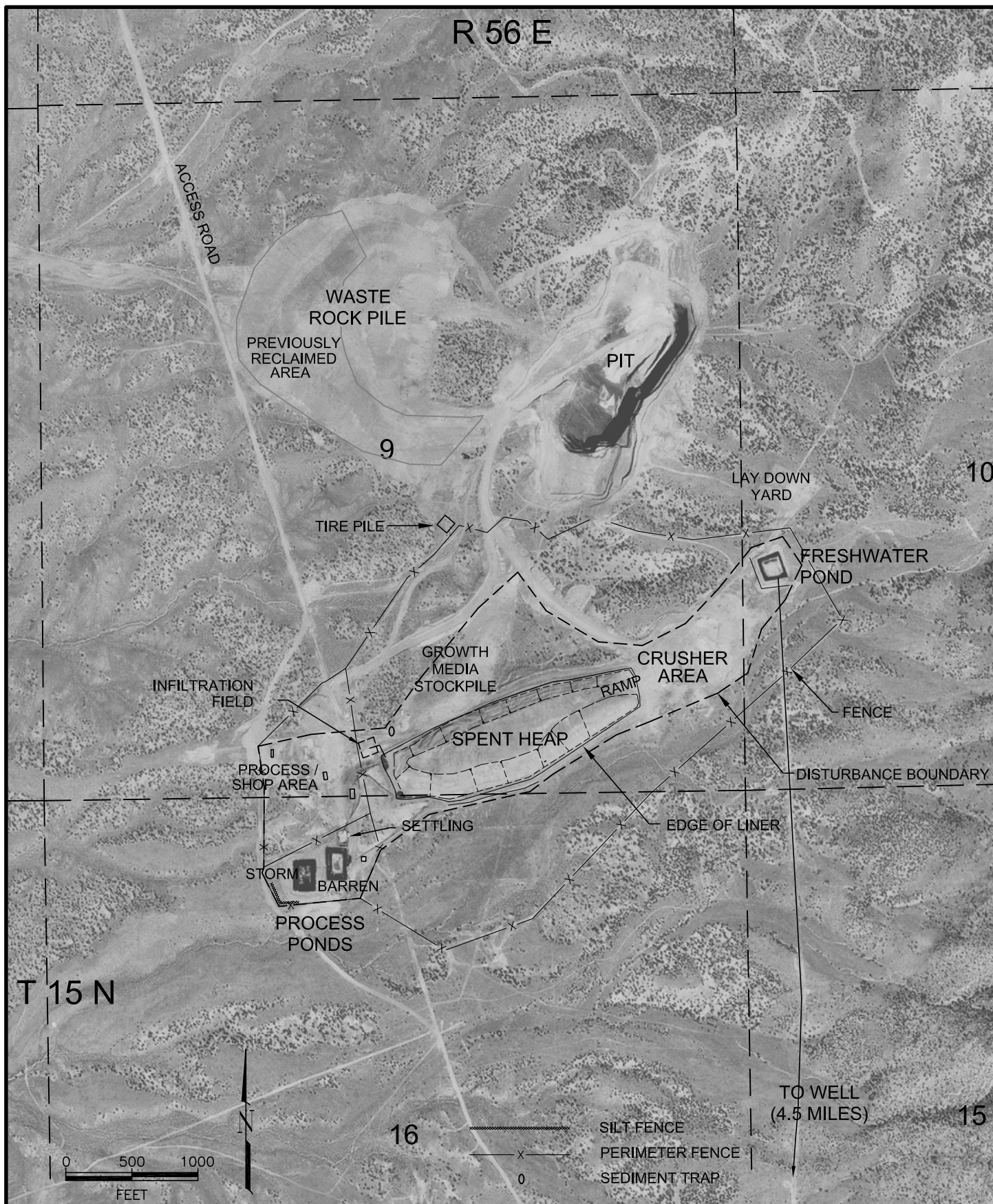


LEGEND

- WASTE DUMP OR PIT
- ACCESS ROAD
- HEAP LEACH PAD
- POND
- BORROW SOURCE AREA
- BORROW SOURCE SAMPLE LOCATION
- DISTURBANCE BOUNDARY
- SILT FENCE
- DIVERSION BERM
- DIVERSION CHANNEL
- SEDIMENT TRAP



0	Issued for Report	08/04	J.Thompson	K.Conrath	J.Pennington	
REV. No.	REVISIONS	DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY	
US ARMY CORPS OF ENGINEERS						
PROJECT: PHASE 2 DESIGN						
DRAWING TITLE: SEDIMENT CONTROL STRUCTURES						
MWH				Sheet 1 Of 1 Sheets		
SCALE: As Shown				DRAWING No. E-1		



0	Phase 2 Design	8/04	J.Thompson	K.Conrath	J.Pennington
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PROJECT No.: 1010178.012588			AutoCAD FILE: EJ_Sed.dwg		
SCALE: As Shown			FIGURE No: E-2		

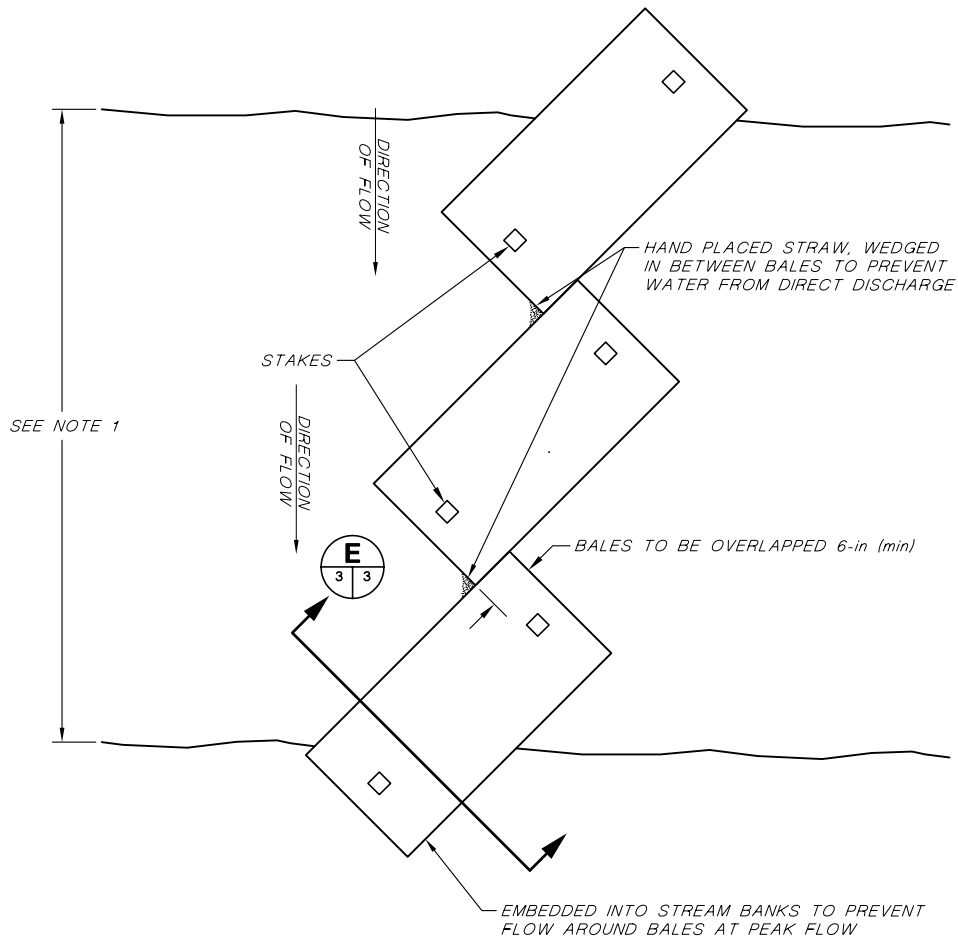


MWH

**US ARMY CORPS OF ENGINEERS
RAMS Program**

**EASY JUNIOR
SEDIMENT CONTROL STRUCTURES**

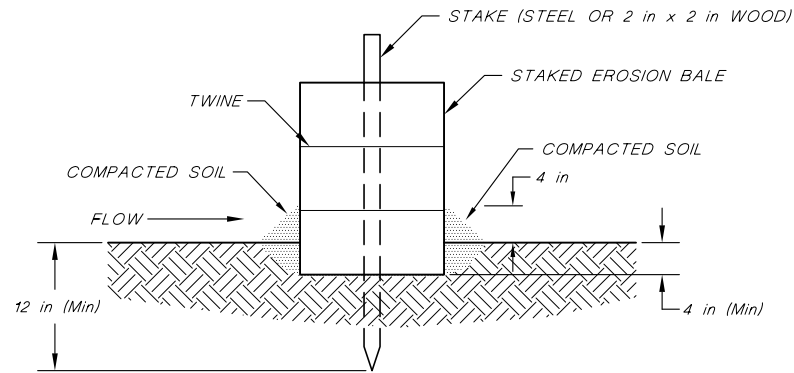
AutoCAD FILE: SED-DET PROJECT NUMBER: 1010178.02688



BALE SEDIMENT CONTROL STRUCTURE
PLAN VIEW

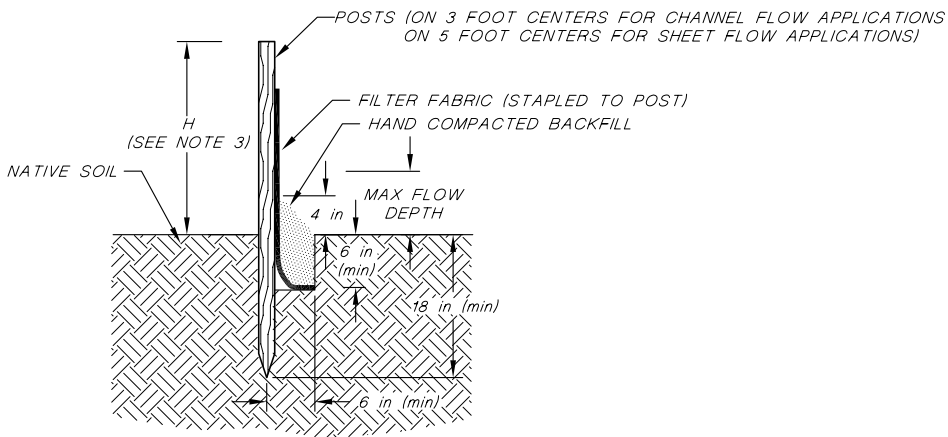
Not To Scale

NOTE 1:
THE BARRIER SHALL EXTEND TO SUCH A LENGTH THAT THE BOTTOMS OF THE END BALES ARE HIGHER IN ELEVATION THAN THE TOP OF THE LOWEST MIDDLE BALE TO ASSURE THAT SEDIMENT-LADEN RUNOFF WILL FLOW THROUGH OR OVER THE BARRIER BUT NOT AROUND IT.



BALE SEDIMENT CONTROL STRUCTURE
TYPICAL CROSS SECTION

Not To Scale



SILT FENCE STRUCTURE

Not To Scale

- NOTES:
- 1) FOR INSTALLATION ACROSS DITCH LINE OR SWALE, THE BARRIER SHALL BE OF SUFFICIENT LENGTH TO ELIMINATE FLOW AROUND THE ENDS OF THE BARRIER. THE CONFIGURATION SHALL RESEMBLE AN ARC OR HORSE SHOE WITH THE ENDS ORIENTED UPSLOPE.
 - 2) WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP AND SECURELY SEALED.
 - 3) FOR SHEET FLOW APPLICATIONS, HEIGHT (H) SHALL BE A MINIMUM OF 22 INCHES AND SHALL NOT EXCEED 36 INCHES. FOR CHANNEL FLOW APPLICATIONS, HEIGHT (H) SHALL BE A MINIMUM OF 15 INCHES AND SHALL NOT EXCEED 18 INCHES.

DRAWING No. WHERE
DETAIL/SECTION
IS REFERENCED

DETAIL/SECTION
NUMBER

DRAWING No. WHERE
DETAIL/SECTION
IS SHOWN

0	PHASE 2 DESIGN	8/04	J.Thompson	K.Conrath	J.Pennington
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PROJECT: PHASE 2 DESIGN					
DRAWING TITLE: SEDIMENT CONTROL DETAILS					
MWH				Sheet 1 Of 1 Sheets	
SCALE: Not To Scale				DRAWING No. E-3	