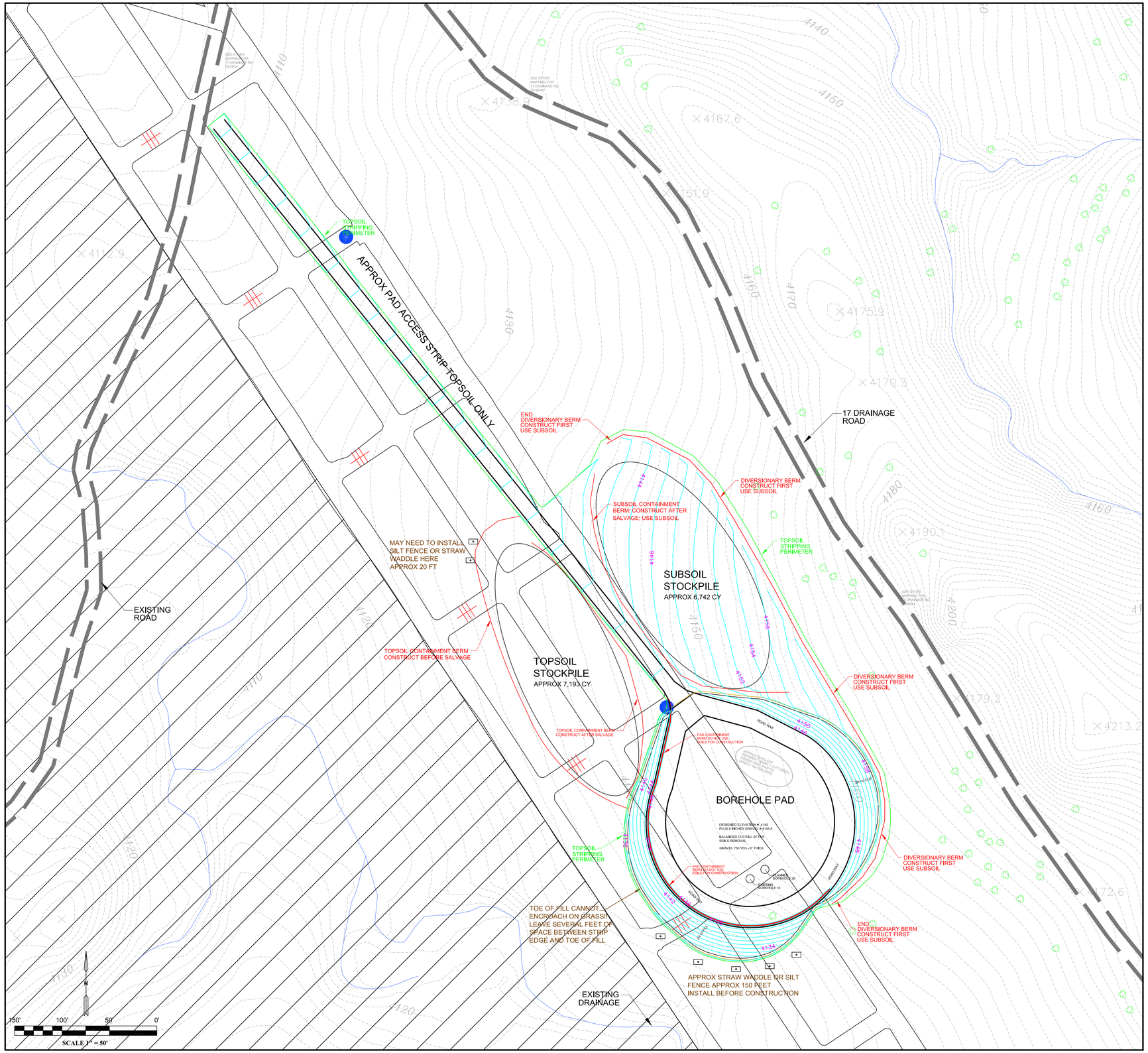


**T6NR27E SW¼ OF SECTION 20**

**TOPSOIL SALVAGE**
Volumes by Triangulation (Prisms) Tue Jan 11 14:12:07 2011

Initial Surface: C:\PERMIT\MINOR REVISIONS\MR 11-17-01\SURFACES\ORIG GROUND FUGRO.tin
Final Surface: C:\PERMIT\MINOR REVISIONS\MR 11-17-01\SURFACES\ORIG GROUND FUGRO MINUS 1.tin

Cut volume: 118,520.2 C.F., **4,389.64 C.Y.**
Fill volume: 0.0 C.F., 0.00 C.Y.
Area in Cut : 118,520.2 S.F., 2.72 Acres
Area in Fill: 0.0 S.F., 0.00 Acres
Total inclusion area: 118,520.2 S.F., 2.72 Acres
Average Cut Depth: 1.00 feet
Export Volume: 4,389.6 C.Y.
Elevation Change To Reach Balance: 1.000
Volume Change Per .1 ft: 439.0 C.Y.

**SUBSOIL SALVAGE**
Volumes by Triangulation (Prisms) Tue Jan 11 14:06:56 2011

Initial Surface: C:\PERMIT\MINOR REVISIONS\MR 11-17-01\SURFACES\ORIG GROUND FUGRO MINUS 1.tin
Final Surface: C:\PERMIT\MINOR REVISIONS\MR 11-17-01\SURFACES\ORIG GROUND FUGRO MINUS 3.tin

Cut volume: 113,810.2 C.F., 4,215.19 C.Y.
Fill volume: 0.0 C.F., 0.00 C.Y.
Area in Cut : 56,905.1 S.F., 1.31 Acres
Area in Fill: 0.0 S.F., 0.00 Acres
Total inclusion area: 56,905.1 S.F., 1.31 Acres
Average Cut Depth: 2.00 feet
Export Volume: 4,215.2 C.Y.
Elevation Change To Reach Balance: 2.000
Volume Change Per .1 ft: 210.8 C.Y.

**DIRTWORK AFTER SOILS SALVAGE**
Volumes by Triangulation (Prisms) Tue Jan 11 13:43:32 2011

Initial Surface: C:\PERMIT\MINOR REVISIONS\MR 11-17-01\SURFACES\ORIG GROUND FUGRO MINUS 3.tin
Final Surface: C:\PERMIT\MINOR REVISIONS\MR 11-17-01\SURFACES\PAD DESIGN.tin

Cut volume: 124,287.8 C.F., **4,603.25 C.Y.**
Fill volume: 125,433.6 C.F., 4,645.69 C.Y.
Area in Cut : 27,116.7 S.F., 0.62 Acres
Area in Fill: 28,123.2 S.F., 0.65 Acres
Total inclusion area: 55,240.0 S.F., 1.27 Acres
Average Cut Depth: 4.58 feet
Average Fill Depth: 4.46 feet
Cut to Fill ratio: 0.99
Import Volume: 42.4 C.Y.
Elevation Change To Reach Balance: -0.021
Volume Change Per .1 ft: 204.6 C.Y.

# DIRTWORK VOLUMES

NOTES:

1. See MAP 308-4 for general location of pad and locations where road grading will be necessary to access this site.
2. Most of the sediment control features need to be installed prior to construction.
3. Do not begin any pad construction until soils excavation has been validated.
4. Strip all available topsoil up to a maximum of 1 foot deep.
5. Strip all available subsoil up to a maximum of 2 feet deep.
6. Ensure existing Borehole #16 is protected during pad construction.
7. DO NOT disturb anything outside the topsoil stripping perimeter shown.
8. Existing contours from June 2009 Fugro Horizons.

## LEGEND

- 4158 — 2' Design Contour
- 10' Existing Contour
- 2' Existing Contour
- Approximate Berm
- Approximate Sediment Control
- Tree

| REV. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| 1 | 9/6/12 | S.T.E | MR150 SUBMITTAL FOR APPROVAL |
| 0 | 10/31/11 | D.R.W. | PREPARED FOR PERMIT SUBMITTAL |

*CERTIFICATION PURSUANT TO §17.24.321(3)*

*I, THE UNDERSIGNED, HEREBY CERTIFY THAT THE PLANS AND DRAWINGS FOR EACH HAUL ROAD, ACCESS ROAD, CONVEYOR, RAILROAD LOOP, AND LOW-WATER CROSSING OF PERENNIAL AND INTERMITTENT STREAMS REQUIRED UNDER (1) AND (2) ARE PREPARED BY, OR UNDER THE DIRECTION OF, AND CERTIFIED BY ME, A QUALIFIED LICENSED PROFESSIONAL ENGINEER WITH EXPERIENCED IN THE DESIGN AND CONSTRUCTION OF SUCH FACILITIES AND THAT THE DESIGNS MEET THE PERFORMANCE STANDARDS OF ARM 17.24.601, 17.24.602, 17.24.603, 17.24.605, AND CURRENT PRUDENT ENGINEERING PRACTICES.*

MONTANA LEONARD KYLE WRIGHT WREN III No. 17686 PE LICENSED PROFESSIONAL ENGINEER

# BULL MOUNTAINS MINE NO. 1
## Permit C1993017

**MUSSELSHELL AND YELLOWSTONE COUNTIES**
**September 6, 2012**

## MAP 308-7
**PUMPABLE CRIB PAD 1 & ACCESS DESIGN**