Rosebud Power Plant
Annual Engineer's Inspection Report

Prepared for Rosebud Operating Services, Inc.
by Allied Engineering Services, Inc.
2017 Report
Posted: January 19, 2018

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INTRODUCTION

This annual engineer's report presents Allied Engineering's inspection of the CCR landfill and assessment of the landfill operations for the Rosebud Power Plant *in Rosebud County, Montana* in order to fulfill the requirements of the CCR rule as published in the Federal Register on April 17, 2015 and July 2, 2015 and its effective date of October 19, 2015. The applicable rule section is 40 CFR Parts 257 and 261. The landfill in this report holds inert hydrated fly ash, which is solid and nearly impermeable to water, similar to concrete. This report follows the same format as the previous Engineer's Annual Inspection Reports.

The project site is located approximately seven miles north of the town of Colstrip, Montana in the southwest quarter of Section 29 and the northwest quarter of Section 32 Township 3 North, Range 41 East (Latitude 45.978859°, Longitude -106.663772° (WGS 84)). Vicinity maps are included on Sheet C0-3 & CO-4 in Appendix A. The landfill serves an on-site Power Plant owned by Colstrip Energy Limited Partnership (CELP). The Power Plant and the landfill are operated by Rosebud Operating Services, Inc.

The landfill area covered by this report is an active landfill located on the subject property. There is also a closed landfill, last used in October, 2005, that has since been reclaimed in general accordance with permits and regulations at the time. This closed landfill is not subject to regulation by the above referenced rules and is not the subject of this report. The active landfill includes Phase I and Phase II of a contiguous landfill permitted in 1996 and placed in service in October, 2005. This active landfill is subject to regulation by the above referenced CCR rules.

The information contained herein is based on an investigation and analysis of the property's topographical and subsurface conditions, a review of existing permits, regulatory requirements, maps and literature for the project area as related to the landfilling operations of combusted coal residuals (CCR), more familiarly referred to as fly ash. The purpose of this report is to assess existing conditions, fulfill the Engineer's Annual Inspection requirements of the CCR rule, and provide recommendations for the ongoing landfilling operations.

BACKGROUND

Rosebud Power Plant is a waste coal burning facility using a fluidized bed reactor. During the burning process of the coal, fly ash or combusted coal residuals (CCR) are produced. The CCR are either sold for commercial/industrial purposes or landfilled on-site near the power plant. The active landfill, consisting of two phases, is located northwest of the power plant. Construction of Phase 1 was completed and began receiving ash when the now retired landfill was closed. Construction of Phase 2 was initiated in the first week of September, 2015, completed in December, 2015, and has been receiving Ash since the spring of 2016. Ash has continued to be deposited in both phases, but is currently placed primarily in Phase 2. Once the ash surface in Phase 2 reaches the ash surface elevation of Phase 1, the two phases will be operated as one continuous surface.

In 1996, Chandler Geotechnical, Inc. (a predecessor to Allied Engineering Services, Inc.) was hired as a sub-consultant to JSM, Inc. to provide engineering analysis and design of the current active landfill (Phases 1 and 2). During the initial construction of Phase 1, the planned landfill footprint/area was reduced. Over the course of operations at the plant, fly ash was sold in certain years; thus, the amount of fly ash placed in the Phase 1 area was less than anticipated with the original design and has not yet reached its maximum storage capacity. These changes resulted in the need for minor modifications of

the original design of the landfill area. Phase 2 modifications began in September of 2015 and were completed in December of 2015. Construction was completed for Phase 2 of the active landfill in general conformance with the original 1996 design with modifications undertaken during construction under the direction of Allied Engineering Services, Inc. The active landfill modifications were designed to store the rest of the expected volume of 635,897 CY (at the time of the redesign, late 2015/early 2016) for the remainder of the anticipated lifetime of the power plant. This volume assumed that no fly ash will be sold and was considered a conservative value. This volume is also less than the originally designed and permitted ash quantity. The original design had a final storage volume of approximately 2,200,000 CY and the revised design will have a total storage volume of approximately 1,300,000 CY.

REGULATORY SETTING

As of April 17, 2015, new rules for coal combustion residuals (CCR) were published in the Federal Register Volume 80, Number 74, dated Friday April 17, 2015. The applicable sections include 40 CFR Parts 257 and 261. These rules spell out the conditions for existing operating CCR landfills such as the active landfill at the Rosebud Power Plant. The rules provide location restrictions, structural stability assessment requirements, groundwater monitoring requirements, surface water protection, design and operating criteria, along with inspection requirements.

The power plant is currently operating under several permits that include protection criteria for air, surface water, and groundwater quality. Permits include:

- Montana Ground Water Pollution Control System (MGWPCS) Permit No. MTX000052
- Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity. Permit No. MTR000058
- Air Quality Permit No. #2035-06

The applicable requirements of the current CCR rule cover active CCR landfills and exclude closed landfills.

EXISTING CONDITIONS

This third annual inspection report details the operation efforts of ash placement, landfill construction and maintenance, monitoring of the drainage piping system and groundwater. Over the course of 2017, an additional CCR document was produced to satisfy the following regulations:

1. 40 CFR § 257.90-§ 257.98 Groundwater Monitoring and Action Plan

In 2017, the power plant experienced an operational failure that caused a shutdown from July 23, 2017 to December 5, 2017. During this period, no ash was produced or sold. During 2017 when the plant was running, approximately 2,244 tons (~2131 CY) of fly ash was sold and not placed in the Phase 2 Landfill.

EXISTING CONDITIONS AND ANNUAL ENGINEER'S INSPECTION REPORT

The following section quotes the requirements of the EPA CCR rule with the findings from the Engineer's Annual Inspection written as a response to each. The EPA CCR rule excerpts are listed in *italics.* Responses are provided in **bold.**

§257.64 Unstable Areas

a) An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.

As demonstrated in the 2015 Annual Engineer's Inspection Report, this CCR landfill is not located in an unstable area.

b) The owner or operator must consider all of the following factors, at a minimum, when determining whether an area is unstable.

1) On-site or local soil conditions that may result in significant differential settling;

Differential settlement within the landfill was not observed. The design and construction included the removal of topsoil and 5-feet of subsoil prior to placement of fly ash. The construction sequencing with haul truck traffic provided a compaction effort of the subsoil. The base of the Phase 2 area of the active landfill was compacted by a vibratory roller before ash placement. Pozzolanic characteristics of hydrated fly ash provide a relatively strong mass of material that distributes the load evenly across the landfill footprint. Point load tests of hydrated ash core samples were completed by Ray Womack in 1992 on the retired CCR landfill. The results of the testing indicated compressive strength values comparable to a weak rock or concrete. The shear stresses exerted at depth by the weight of the ash landfill are proportional to the steepness and the height of the finished slope, and to the unit weight of the landfill materials. Due to the gentle overall finished side slopes of 3H:1V (considering the 10' wide benches) and the low density of the ash (about 80 pounds per cubic foot), the ash landfill will exert considerably less stress on the foundation materials than many of the natural slopes in the immediate vicinity of the landfill.

2) On-site or local geologic or geomorphologic features

The landfill is located in the mapped Lebo member of the Fort Union Formation. As mentioned previously, the relative low-density characteristics of the fly ash distributed over a large area should not exert significant force to the underlying geology. There are no observed or mapped faults in the immediate vicinity of the active landfill. In addition, there is no indication of settlement in the closed landfill located approximately 1,300 feet southeast of the active landfill.

The landfill is characterized as a cross valley fill across two ephemeral swales. The design includes water conveyance under the landfill by way of piping systems with bypass spillways designed to divert water around the perimeter in order to limit oversaturation of vicinity soil. To assure long term drainage stability, the final configuration for closure includes perimeter conveyance of water and

abandonment of the piping system under the landfill (See 2016 Annual Engineer's Inspection Report for perimeter conveyance plans).

3) *On-site or local human-made features or events (both surface and subsurface).*

The design of the landfill accounted for appropriate side-slopes to limit the likelihood of instabilities. The original design as well as the 2015 design update utilized 3H:1V side slopes for the man-made berms surrounding the landfill area. This side slope is a common and conservative reclamation slope throughout the country, and specifically in the local Colstrip area which includes extensive coal mines.

The active landfill is located across two ephemeral drainages. The original design called for three pipes that convey the natural drainage of the active landfill site. The main drainage covers an area of 103 acres with a secondary drainage covering an area of 16 acres. The original design utilized a HDPE dual wall corrugated pipe. The reason for the selection of this pipe was for its flexibility which would cause bridging of the soil in a deep bury situation. The 2015 design update continued the use of an HDPE pipe, but selected a steel-reinforced HDPE pipe for added stability. The storm water conveyance pipes themselves are likely the most vulnerable element in the landfill system in terms of long term stability (in the event of a pipe failure). As stated previously, a surface conveyance system will replace the current piping system.

c) *The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the demonstration meets the requirements of paragraph (a) of this section.*

The landfill area was designed by a professional engineer. Additionally, this report serves as Allied Engineering Services, Inc.'s certification that the landfill is not situated in an unstable area.

d) *The owner or operator of the CCR unit must complete the demonstration required by paragraph (a) of this section by the date specified in either paragraph (d)(1) or (2) of this section.*

1) *For an existing CCR landfill or existing CCR surface impoundment, the owner or operator must complete the demonstration no later than October 17, 2018.*

This requirement was met prior to the first annual Engineer's Inspection Report (dated January 19, 2016) which was before the deadline, and was provided to the facility for placement in their operating record.

2) *For a new CCR landfill, new CCR surface impoundment, or any lateral expansion of a CCR unit, the owner or operator must complete the demonstration no later than the date of initial receipt of CCR in the CCR unit.*

Not applicable, the active CCR landfill area has been in use prior to the regulatory timeframe of October 19, 2015.

3) *The owner or operator has completed the demonstration required by paragraph (a) of this section when the demonstration is placed in the facility's operating record as required by § 257.105(e)*

Reporting requirements as outlined in § 257.105(e) will be followed. CELP maintains operational requirements on their webpage (http://www.celpccr.com)

4) *An owner or operator of an existing CCR surface impoundment or existing CCR landfill who fails to demonstrate compliance with the requirements of paragraph (a) of this section by the date specified in paragraph (d)(1) of this section is subject to the requirements of § 257.101(b)(1) or (d)(1), respectively.*

Acknowledged.

5) *An owner or operator of a new CCR landfill, new CCR surface impoundment, or any lateral expansion of a CCR unit who fails to make the demonstration showing compliance with the requirements of paragraph (a) of this section is prohibited from placing CCR in the CCR unit.*

Not applicable to existing landfills and the requirements of paragraph (a) were met with the first annual Engineer's Inspection Report (dated January 19, 2016).

e) *The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(e), the notification requirements specified in § 257.106(e), and the Internet requirements specified in § 257.107(e)*

Acknowledged.

§257.84 Inspection requirements for CCR Landfills

b) *Annual inspections by a qualified professional engineer.*

1) *Existing and new CCR landfills and any lateral expansion of a CCR landfill must be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:*

i. *A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., the results of inspections by a qualified person, and results of previous annual inspections); and*

Weekly inspections have been undertaken by facility personnel during the calendar year of 2017. A review of the weekly inspection reports reveals no significant issues with the existing CCR landfill. A few of the highlights of 2017 are:

5/12/17 Phase I ash surface was sprayed with a surfactant solution to reduce dust.
5/26/17 Work was done on surface erosion on Phase I embankments, east end.
7/23/17 Rosebud Power Plant Shut Down
9/8/17 16 loads of coal where placed on Phase II ash surface for storage.
10/13/17 Ash surface heaves were flattened with grader and watered.

The ash was recorded to have surface cracks and heaves after drying. It is believed these issues are caused by contraction and expansion associated with the nature of the ash and its hydration process. These areas were remixed by re-grading of the affected areas back to a flat surface and re-watering. By addressing these heaving and cracking areas when they arise on the surface (during normal operation) it will better mix the ash and help even out hydration of the ash layer. Copies of the weekly inspection reports are provided in Appendix C. The landfill continues to be operated in general conformance with the original design. No new ash has been placed on Phase 1 in 2017 and has only been graded flat for vehicle storage. The Phase 2 area has received all the ash for 2017. Soil containment berms will not be needed until the ash reaches an elevation of about 3150 FT (Current elevation is about 3137 FT). At this elevation, containment berms will be constructed on the perimeter of the ash as the landfill elevation continues upward.

ii. A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

Personnel from Allied Engineering Services, Inc. have visited the site on multiple occasions. Recent site visit dates are as follows:

- **October 23, 2017 (Groundwater Monitoring Site Visit)**
- **November 14, 2016***

The date indicated with the * was the primary inspection of the landfill area and existing piping and was most applicable to the 'Annual Engineers Inspection'. The other site visit included some inspection in support of the Engineers Report but also focused on the existing landfill and groundwater monitoring requirements.

During the primary inspection, test holes were dug to measure the soil cover on the Closed and Phase 1 landfills. These results are shown in Appendix B. The test holes were dug to investigate the existing soil cover and investigate erosion issues

2) Inspection report. The qualified professional engineer must prepare a report following each inspection that addresses the following:
i. Any changes in geometry of the structure since the previous annual inspection;
ii. The approximate volume of CCR contained in the unit at the time of the inspection;
iii. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit; and
iv. Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.

The geometry of the landfill is actively changing as CCR is placed in lifts and hydrated. The attached as-built survey sheets depict the topography of the ash surface as of November 14, 2017. The elevation of the ash placed in Phase 2 has changed an average of 8.34-ft since the last as-built survey on November 9, 2016. The general shape of Phase 2 is concave which captures precipitation within the ash footprint. Currently, coal is temporarily being stored in the Phase 2 footprint as the coal plant is being worked on and was not measured as part of this report. The average elevation of Phase 1 and 2 is now 3160-FT and 3137-FT respectively. A total of 108,560 CY of ash was placed in both Phases 1 & 2 during the time between as-built surveys.

Routine cleaning and maintenance in the installed piping under the landfill has been observed. All piping installed in 2015, along with the previously existing piping is functioning as designed with in-place trash racks and rock riprap.

Landfill Volumes Table

Description	Volume
Ash Placed in Phase 1	344,310 CY
Ash Placed in Phase 2	124,470 CY
Closed Landfill Ash Placed	836,000 CY
Stockpile 1 – Top Soil	6,000 CY
Stockpile 2 – Sub Soil	82,460 CY
Stockpile 3 – Sub Soil	5,090 CY
Stockpile 4 – Sub Soil	27,430 CY
***Soil volumes are approximate and estimated from topographic data taken on 11/14/2017. Stockpiles may have been changed since this survey date.**	

CONCLUSION

The landfill inspection at the Rosebud Power Plant revealed that there is currently no significant or damaging active settlement or significant stability issues related to landfilling of CCR. As mentioned previously, additional soil cover should be provided on the existing embankments. All existing piping is functioning as designed, and all disturbed areas have been hydro-seeded.

3) *Timeframes for conducting the initial inspection -*
   i. *Existing CCR landfills. The owner or operator of the CCR unit must complete the initial inspection required by paragraphs (b)(1) and (2) of this section no later than January 18, 2016.*

The first Annual Inspection report was completed prior to the stated deadline and has therefore addressed this requirement.

   ii. *New CCR landfills and any lateral expansion of a CCR landfill. The owner or operator of the CCR unit must complete the initial annual inspection required by paragraphs (b)(1) and (2) of this*

section no later than 14 months following the date of initial receipt of CCR in the CCR unit.

Not applicable to the existing landfill.

4) *Frequency of inspections. The owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by § 257.105(g)(9).*

The Engineer's Inspection Report will be completed annually with the potential to complete them more frequently if a deficiency or release is identified in the facility weekly inspections.

5) *If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.*

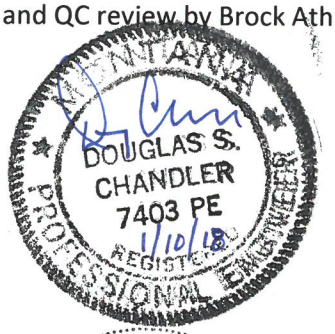
Acknowledged.

CERTIFICATION

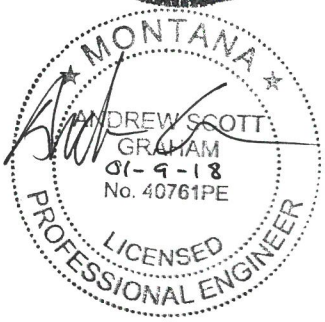
This report was prepared by Allied Engineering Services, Inc., under the direction of Douglas S. Chandler, PhD, PE, with assistance from Andrew Graham, PE, and QC review by Brock Athman, PE.

ALLIED ENGINEERING SERVICES, INC

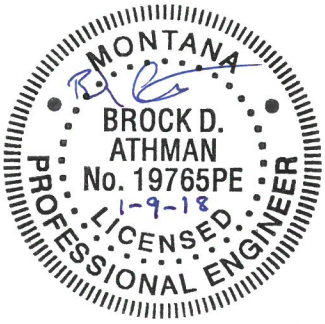
Douglas S. Chandler, PhD, PE



Andrew S. Graham, PE



QC Approval: Brock D. Athman, PE



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3. Montana Bureau of Mines and Geology, 2007. Geologic Map of the Lame Deer 30' x 60' quadrangle, eastern Montana. Vuke, S.M., Heffern, E.L., Bergantino, R.N., and Colton, R.B. Accessed via the USGS National Geologic Map Database Map View. Accessed 12/23/15 http://ngmdb.usgs.gov/maps/mapview/
4. Montana Bureau of Mines and Geology, Groundwater Information Center, Well log data website, http://mbmggwic.mtech.edu/sqlserver/v11/menus/menuData.asp. Accessed 1/6/15
5. Natural Resource Conservation Service, Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm Accessed 12/23/15.
6. Rosebud Power Plant Ash Disposal Site Engineering Design and Construction Specifications by Chandler Geotechnical. Chandler, D.S. dated July 16, 1996.

Appendix A: Plan Set – Fly Ash Landfill Post-Closure Design - Dated September 15, 2016

ROSEBUD EXISTING LANDFILL

EXISTING LANDFILL CLOSURE PLAN

PROJECT LOCATION: 6.5 MILES NORTH OF COLSTRIP, MT ON HIGHWAY 39

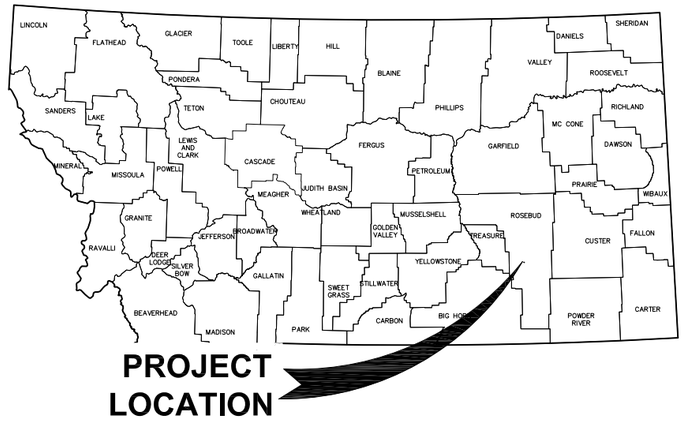
LEGAL DESCRIPTION: NW $\frac{1}{4}$, SECTION 32, TOWNSHIP 3N, RANGE 41E, P.M.M., ROSEBUD COUNTY, MT

OWNER: COLSTRIP ENERGY LIMITED PARTNERSHIP (CELP)
1087 W. RIVER STREET, SUITE 200
BOISE, ID 83702

CLIENT: ROSEBUD OPERATING SERVICES, INC.
1087 W. RIVER STREET, SUITE 200
BOISE, ID 83702

AUGUST 2, 2017

SET NO. _____



PRINCIPAL-IN-CHARGE: DOUG CHANDLER, PE, Ph.D

PROJECT ENGINEER: ANDREW S. GRAHAM, PE

QC REVIEW: BROCK D. ATHMAN, PE

PROJECT SURVEYOR: KYLE THOMPSON, PLS
GREG FINCK, PLS

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

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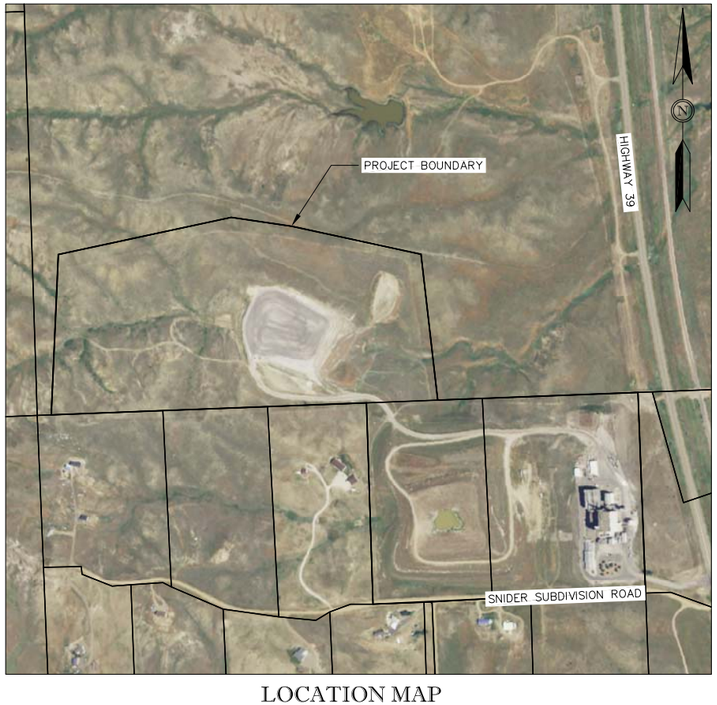
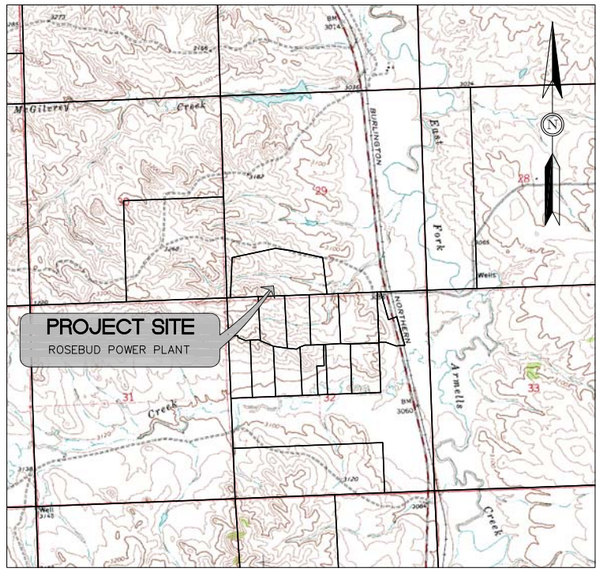


LOCATION MAP

0 200 400 600

SCALE (FEET)



VICINITY MAP

0 2000 4000 6000

SCALE (FEET)

ROSEBUD EXISTING LANDFILL
ROSEBUD COUNTY, MONTANA

NO.	REVISIONS	DATE

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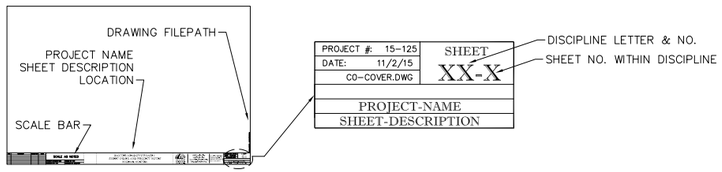
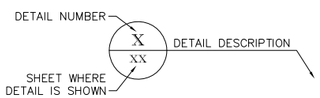
ROSEBUD EXISTING LANDFILL
CO-1 COVER SHEET

SHEET INDEX

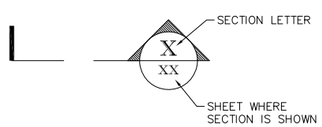
AESI STANDARD BORDER FORMAT



PLAN SHEET DETAIL CALLOUTS



PLAN SHEET SECTION CALLOUTS



GENERAL NOTES:

1. THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALLIED ENGINEERING'S PLAN SET; ALONG WITH THE MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS (MPWSS), SIXTH EDITION.

LEGEND

- 4770 — MAJOR CONTOUR – FG
- 4771 — MINOR CONTOUR – FG
- 4770 — MAJOR CONTOUR – EG
- 4771 — MINOR CONTOUR – EG
- FOUND MONUMENT AS NOTED
- SET MONUMENT
- CONTROL POINT
- X — X — FENCE – EXISTING
- OHP — OVERHEAD POWER – EXISTING
- G — G — UTILITY GAS – EXISTING
- TEL — UTILITY PHONE – EXISTING
- E — E — UTILITY ELECTRIC – EXISTING
- UTILITY POWER POLE – EXISTING
- LIGHT POLE – EXISTING
- E — ELECTRICAL PEDESTAL – EXISTING
- EM — ELECTRICAL METER – EXISTING
- TEL — TELEPHONE PEDESTAL – EXISTING
- GM — GAS METER – EXISTING
- GAS VALVE – EXISTING
- GUY ANCHOR – EXISTING
- EASEMENT LINE
- BOUNDARY/ LOT LINE
- ROAD CENTERLINE
- ROAD – CURB
- CONCRETE SIDEWALK
- STREET SIGN
- S — SEWER MAIN
- S — SEWER MAIN – EXISTING
- SEWER SERVICE
- (S) — SANITARY SEWER MANHOLE
- CO — SEWER CLEANOUT
- W — WATER MAIN
- W — WATER MAIN – EXISTING
- WATER SERVICE
- FIRE HYDRANT
- BO — BLOW-OFF HYDRANT
- WV — WATER VALVE
- W — WELL
- MW — MONITORING WELL
- SD — STORM MAIN
- CULVERT – EXISTING
- DITCH-CENTERLINE – EXISTING
- (D) — STORM MAIN JOINT,BEND, OR STRUCTURE

CIVIL ABBREVIATIONS:

AESI	ALLIED ENGINEERING SERVICES, INC.
AC	ACRE
AVE	AVENUE
BLDG	BUILDING
BM	BENCHMARK
BOG	BACK OF GRATE (GUTTER)
CI	CAST IRON
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
COB	CITY OF BOZEMAN
CONC	CONCRETE
CY	CUBIC YARD
DI	DUCTILE IRON
DIA	DIAMETER
DWG	DRAWING
E	EAST
EA	EACH
EG	EXISTING GRADE
ELEV	ELEVATION
EOG	EDGE OF GRAVEL
EOP	EDGE OF PAVEMENT
EX	EXISTING
FETS	FLARED END TERMINAL SECTION
FG	FINISHED GRADE
FHYD	FIRE HYDRANT
FL	FLANGE
FL	FLOWLINE
FM	SEWER FORCE MAIN
FT	FEET
GPM	GALLONS PER MINUTE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HORZ	HORIZONTAL
HP	HIGH POINT
HWY	HIGHWAY
IE	INVERT ELEVATION
IN	INCH
INV	INVERT
LF	LINEAR FEET
LP	LOW POINT
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MP	MID POINT
MPWSS	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS
MSU	MONTANA STATE UNIVERSITY
N	NORTH
PC	POINT OF CURVATURE
PE	PLAIN END
PE	POLYETHYLENE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
RP	RADIUS POINT
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT-OF-WAY
RT	RIGHT
S	SOUTH
SCH	SCHEDULE
SD	STORM DRAIN
SECT	SECTION
SG	SUBGRADE
S	SANITARY SEWER MAIN
SS	SANITARY SEWER SERVICE
ST	STREET
STA	STATION
STD	STANDARD
SY	SQUARE YARD
TBM	TEMPORARY BENCH MARK
TBC	TOP BACK OF CURB
TDH	TOTAL DYNAMIC HEAD
TYP	TYPICAL
UG	UNDERGROUND
VC	VITRIFIED CLAY
VERT	VERTICAL
W	WATER MAIN
W	WEST
W/	WITH
W/O	WITHOUT
WS	WATER SERVICE

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NO.	REVISIONS	DRAWN BY	DATE

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG, BDA	REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL
SHEET INDEX, LEGEND, & GENERAL NOTES
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
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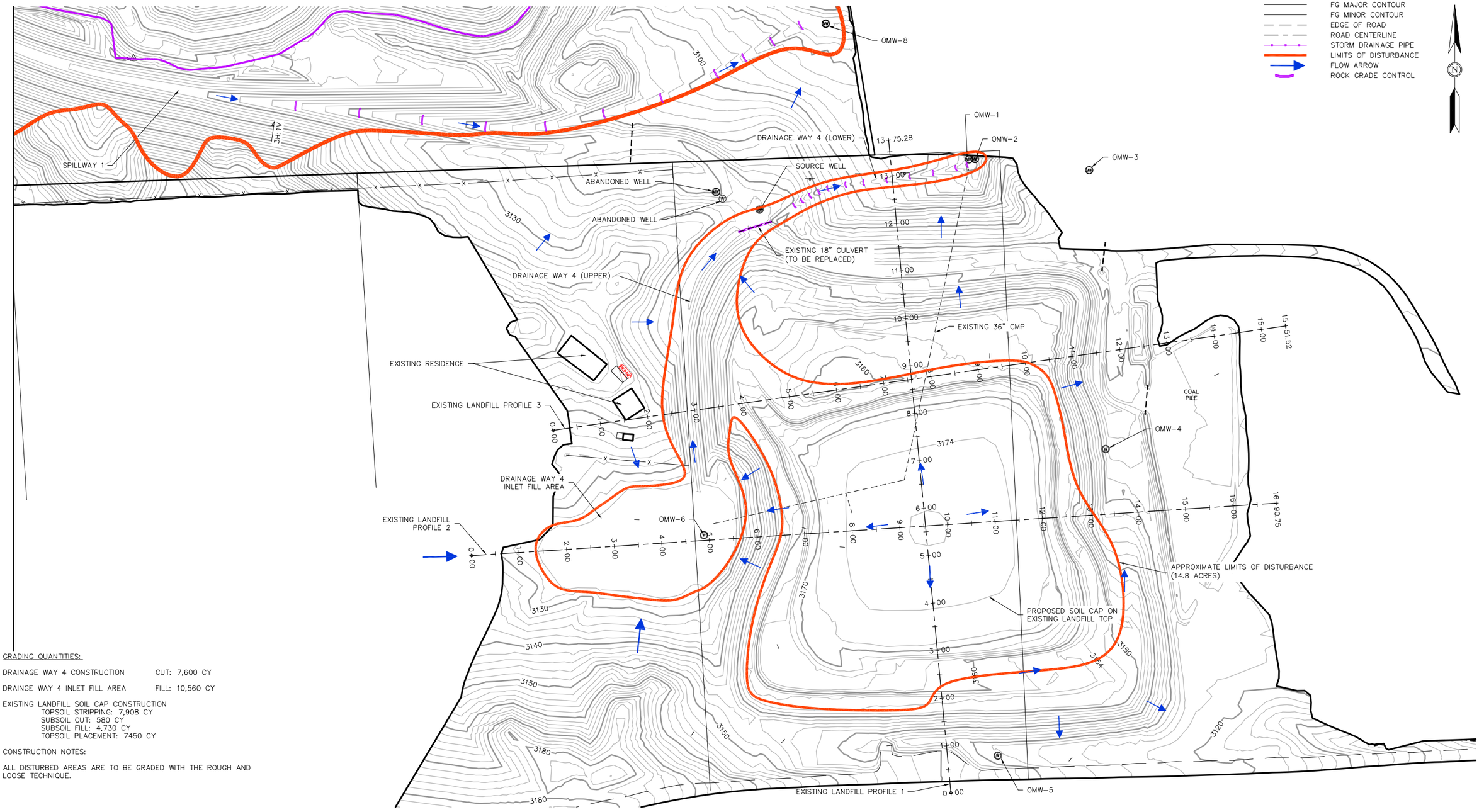
PROJECT #: 15-125	SHEET
DATE: 08/02/2017	C0-2
	INDEX, LEGEND, & NOTES

LEGEND

- EG MAJOR CONTOUR
- EG MINOR CONTOUR
- FG MAJOR CONTOUR
- FG MINOR CONTOUR
- EDGE OF ROAD
- ROAD CENTERLINE
- STORM DRAINAGE PIPE
- LIMITS OF DISTURBANCE
- FLOW ARROW
- ROCK GRADE CONTROL



GRADING QUANTITIES:

DRAINAGE WAY 4 CONSTRUCTION — CUT: 7,600 CY

DRAINGE WAY 4 INLET FILL AREA — FILL: 10,560 CY

EXISTING LANDFILL SOIL CAP CONSTRUCTION
- TOPSOIL STRIPPING: 7,908 CY
- SUBSOIL CUT: 580 CY
- SUBSOIL FILL: 4,730 CY
- TOPSOIL PLACEMENT: 7450 CY

CONSTRUCTION NOTES:

ALL DISTURBED AREAS ARE TO BE GRADED WITH THE ROUGH AND LOOSE TECHNIQUE.

P:\2015\15-125 Rosebud Power Plant Ash Disposal Site\09 CAD Data\Existing Landfill Top\DESIGN PLAN- EXISTING LANDFILL.dwg

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL
DESIGN PLAN - EXISTING LANDFILL
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
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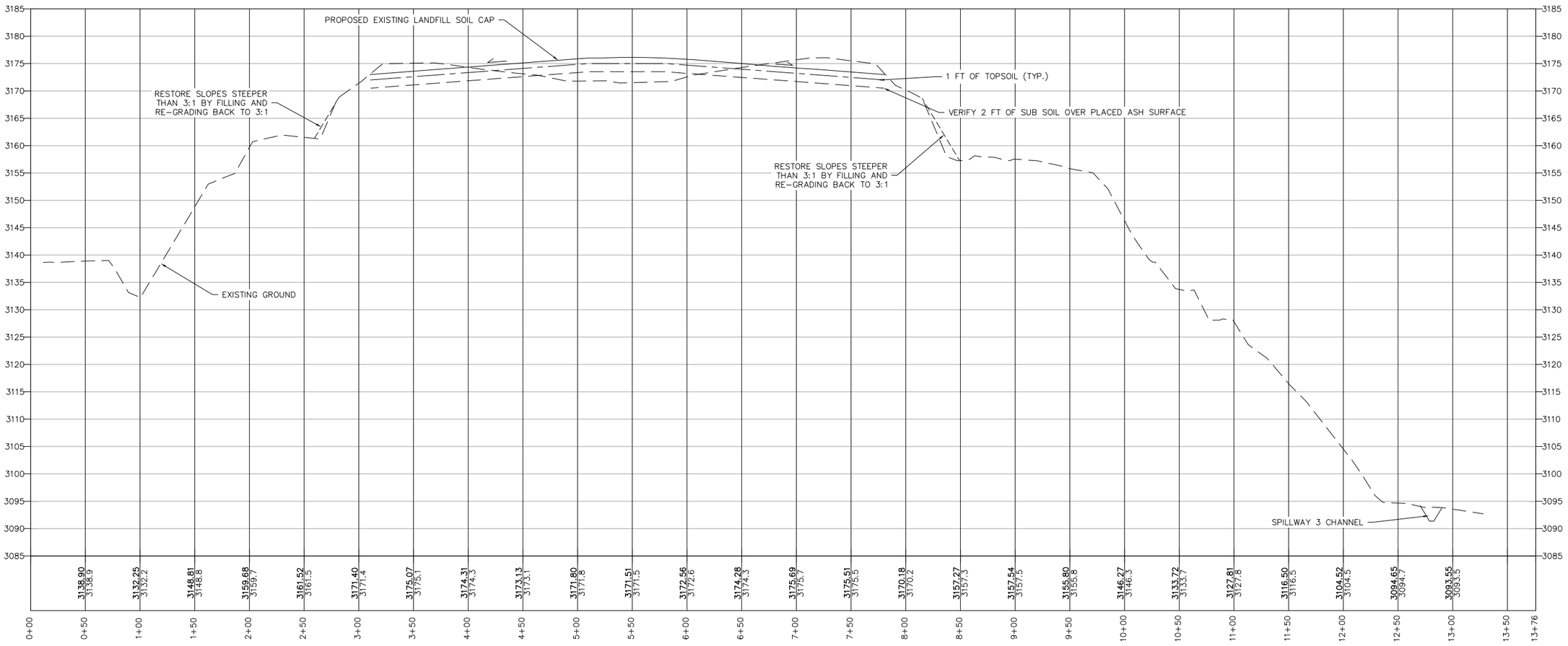
PROJECT #: 15-125	SHEET
DATE: 08/01/2017	C1-1
	DESIGN PLAN - EXISTING

PLAN VIEW - EXISTING LANDFILL PROFILE 1



PROFILE VIEW - EXISTING LANDFILL PROFILE 1

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET 0 50 100 VERTICAL SCALE FEET 0 10 20

PROJECT ENGINEER:	DRAWN BY:
DESIGNED BY:	REVIEWED BY:

ROSEBUD EXISTING LANDFILL
PLAN & PROFILE - EXISTING LANDFILL PROFILE 1
ROSEBUD COUNTY, MT

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BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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PROJECT #: 15-125	SHEET
DATE: 08/01/2017	C1-2

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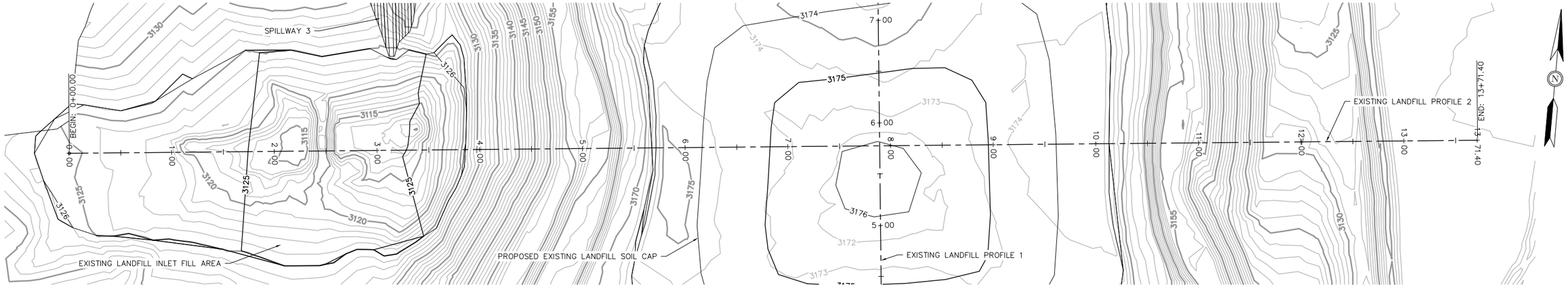
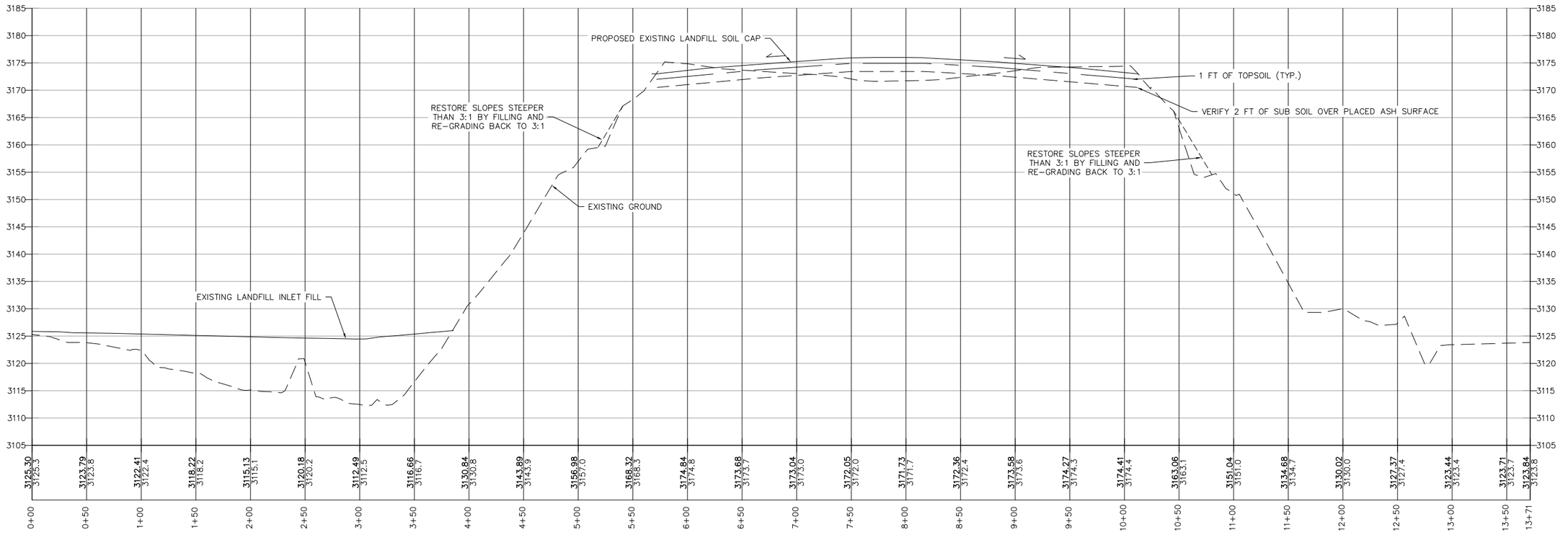


PLAN VIEW - EXISTING LANDFILL PROFILE 2



PROFILE VIEW - EXISTING LANDFILL PROFILE 2

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET: 0 50 100
VERTICAL SCALE FEET: 0 10 20

PROJECT ENGINEER:	DRAWN BY:
DESIGNED BY:	REVIEWED BY:

ROSEBUD EXISTING LANDFILL
PLAN & PROFILE - EXISTING LANDFILL PROFILE 2
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
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PROJECT #: 15-125
DATE: 08/01/2017

SHEET
C1-3

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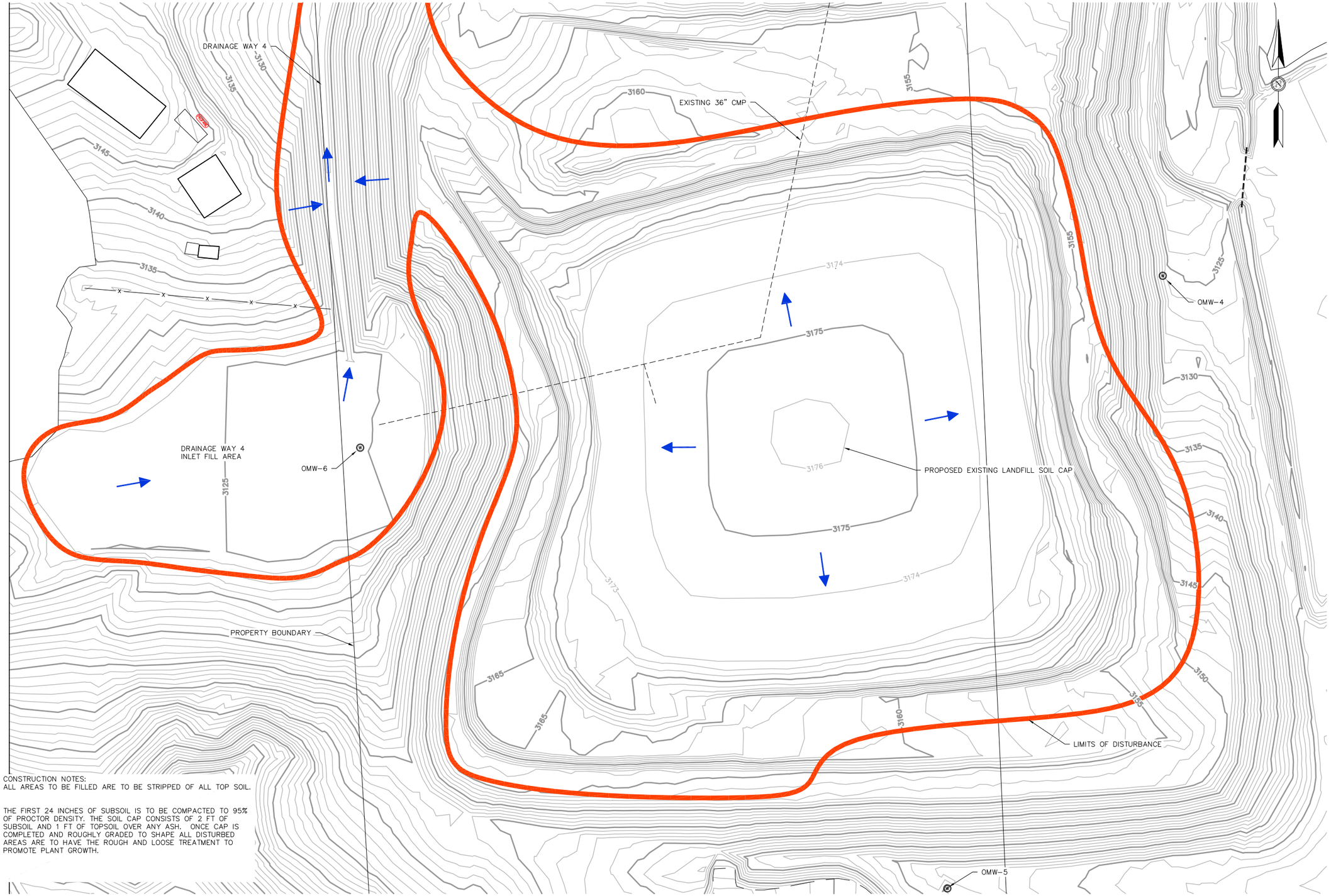

CONSTRUCTION NOTES:
ALL AREAS TO BE FILLED ARE TO BE STRIPPED OF ALL TOP SOIL.

THE FIRST 24 INCHES OF SUBSOIL IS TO BE COMPACTED TO 95% OF PROCTOR DENSITY. THE SOIL CAP CONSISTS OF 2 FT OF SUBSOIL AND 1 FT OF TOPSOIL OVER ANY ASH. ONCE CAP IS COMPLETED AND ROUGHLY GRADED TO SHAPE ALL DISTURBED AREAS ARE TO HAVE THE ROUGH AND LOOSE TREATMENT TO PROMOTE PLANT GROWTH.

NO.	REVISIONS	DRAWN BY	DATE

0 50 100 150
SCALE (FEET)

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL
DESIGN PLAN - EXISTING LANDFILL DRAINAGE CAP
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
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FAX (406) 582-5770
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PROJECT #: 15-125	SHEET
DATE: 08/01/2017	C2-1
	DESIGN PLAN - EXISTING

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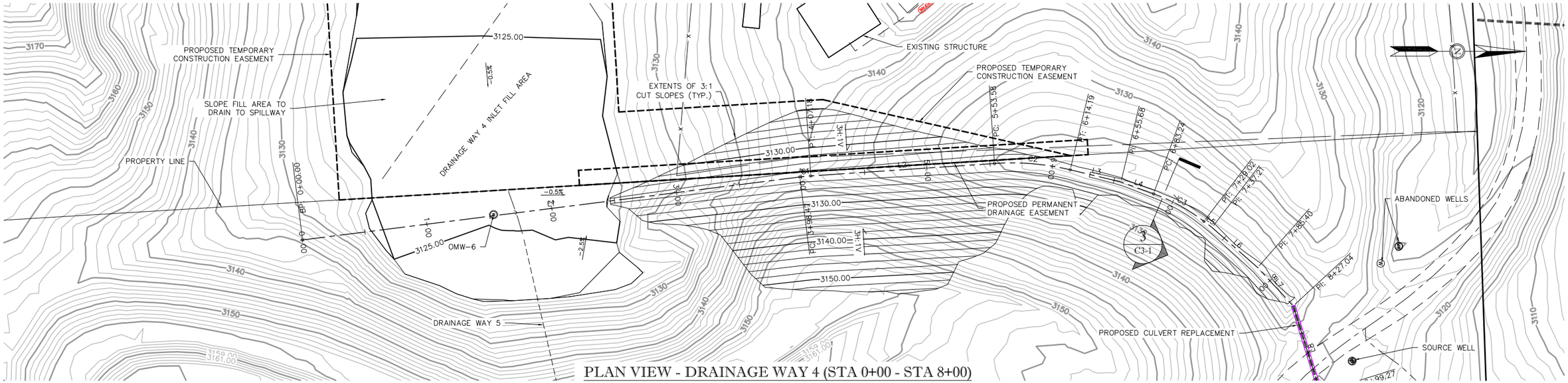
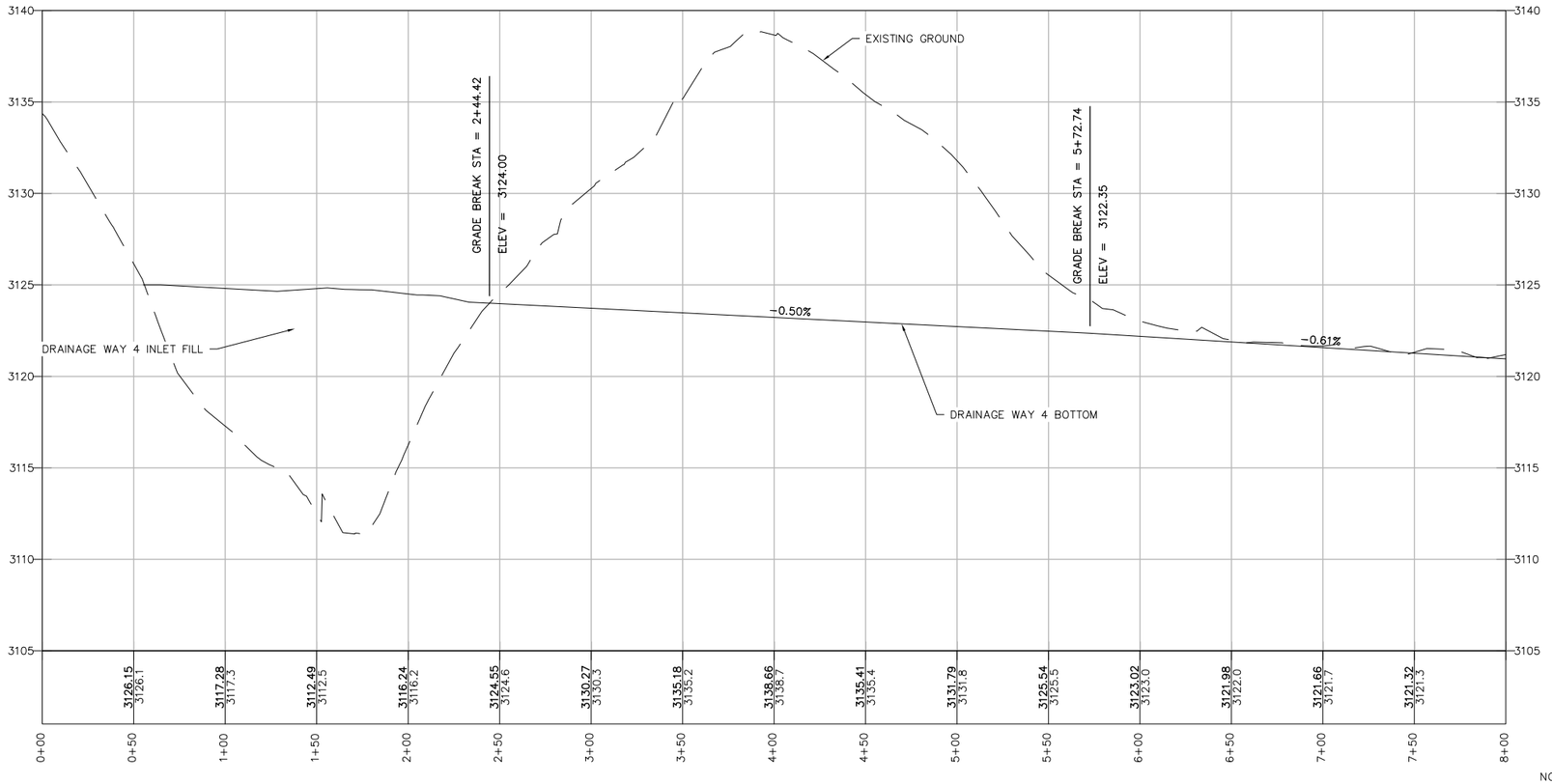


PLAN VIEW - DRAINAGE WAY 4 (STA 0+00 - STA 8+00)



PROFILE VIEW - DRAINAGE WAY 4 (STA 0+00 - STA 8+00)

NOTE:
SEE SHEET DETAILS FOR ALIGNMENT TABLE.

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET 0 40 80
VERTICAL SCALE FEET 0 4 8

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL
PLAN & PROFILE - DRAINAGE WAY 4
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
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PROJECT #: 15-125
DATE: 08/01/2017

SHEET
C2-2

P & P - DRAINAGE WAY 4

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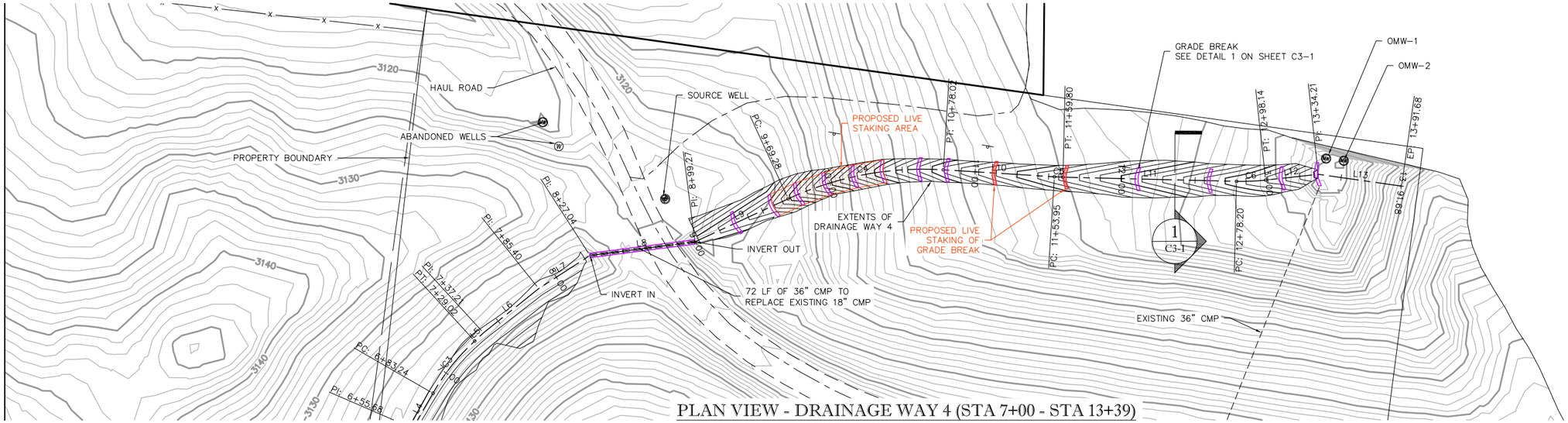
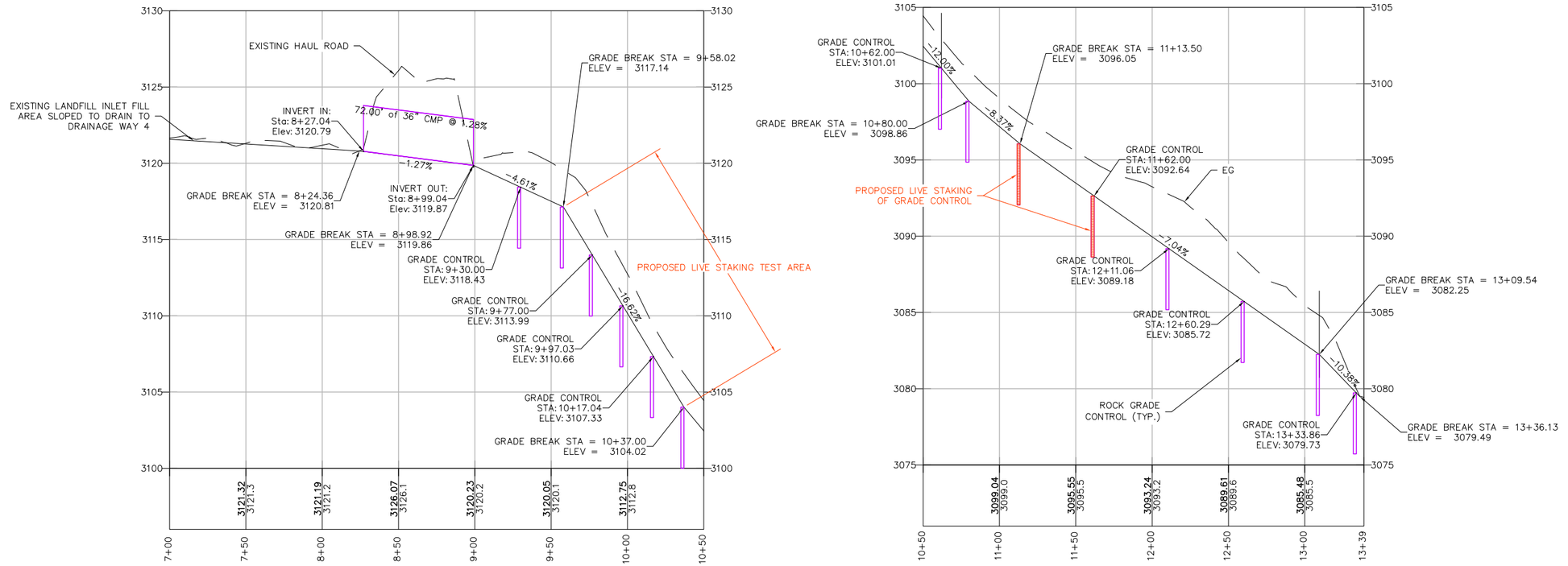


PLAN VIEW - DRAINAGE WAY 4 (STA 7+00 - STA 13+39)



PROFILE VIEW - DRAINAGE WAY 4 (STA 7+00 - STA 13+39)

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET 0 40 80
VERTICAL SCALE FEET 0 4 8

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL
PLAN & PROFILE - DRAINAGE WAY 4
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
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FAX (406) 582-5770
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PROJECT #: 15-125	SHEET C2-3
DATE: 09/14/2017	

P & P - DRAINAGE WAY 4

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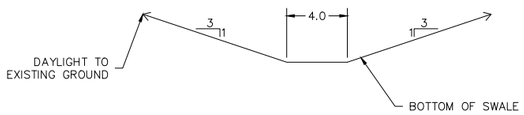
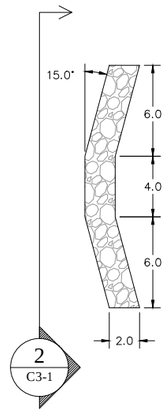
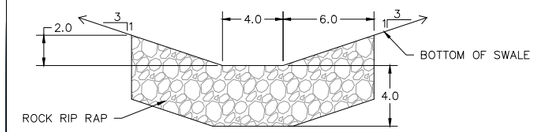


1 / C3-1 **SECTION**
4' DRAINAGE SWALE
1" = 5'

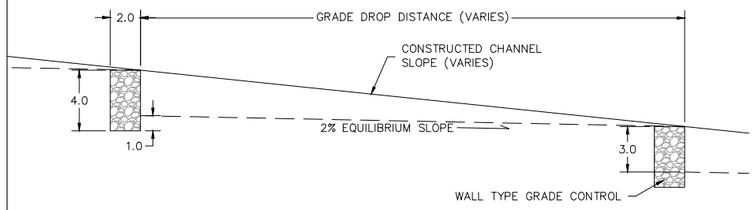


1 / C3-1 **DETAIL**
DRAINAGE WAY 4 GRADE CONTROL - PLAN VIEW
1 ' = 5'



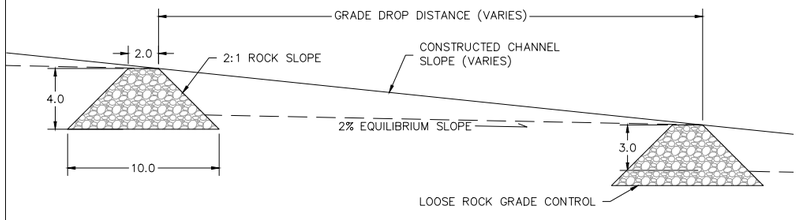
NOTES:
1. ROCK RIPRAP IS TO BE ANGULAR ROCK WITH A D50 OF 8 INCHES.

2 / C3-1 **SECTION**
DRAINAGE WAY 4 GRADE CONTROL
1" = 5'



NOTES:
1. WALL GRADE BREAKS WILL CONSIST OF COHESIVE MATERIAL OR STRUCTURE SUCH AS REINFORCED CONCRETE, GROUTED ROCK, OR GABION WALL.
2. DISTANCE BETWEEN GRADE DROPS IS SHOWN ON PLANS. IT VARIES WITH CHANNEL SLOPE.
3. EQUILIBRIUM SLOPE WAS DETERMINED BY COMPARISON OF EXISTING SLOPES.

2 / C3-1 **DETAIL**
TYPICAL WALL GRADE CONTROL PROFILE
1 ' = 5'



NOTES:
1. ROCK RIPRAP IS TO BE ANGULAR ROCK WITH A D50 OF 8 INCHES.
2. DISTANCE BETWEEN GRADE DROPS IS SHOWN ON PLANS. IT VARIES WITH CHANNEL SLOPE.
3. EQUILIBRIUM SLOPE WAS DETERMINED BY COMPARISON OF EXISTING SLOPES.

3 / C3-1 **DETAIL**
TYPICAL LOOSE ROCK GRADE CONTROL PROFILE
1 ' = 5'

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NO.	REVISIONS	DRAWN BY	DATE

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL
DETAILS - SWALE SECTIONS
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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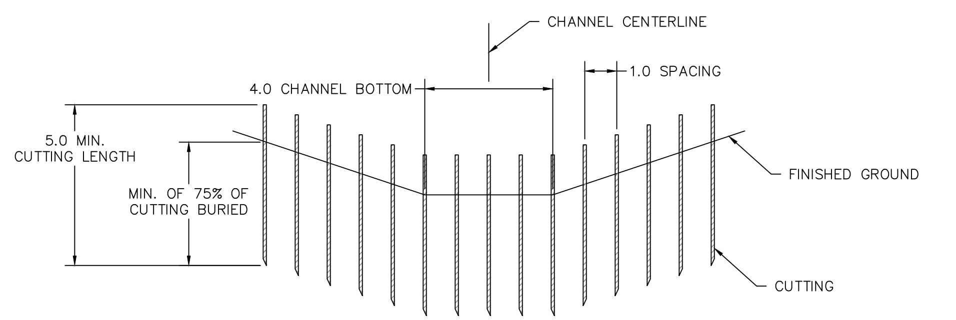
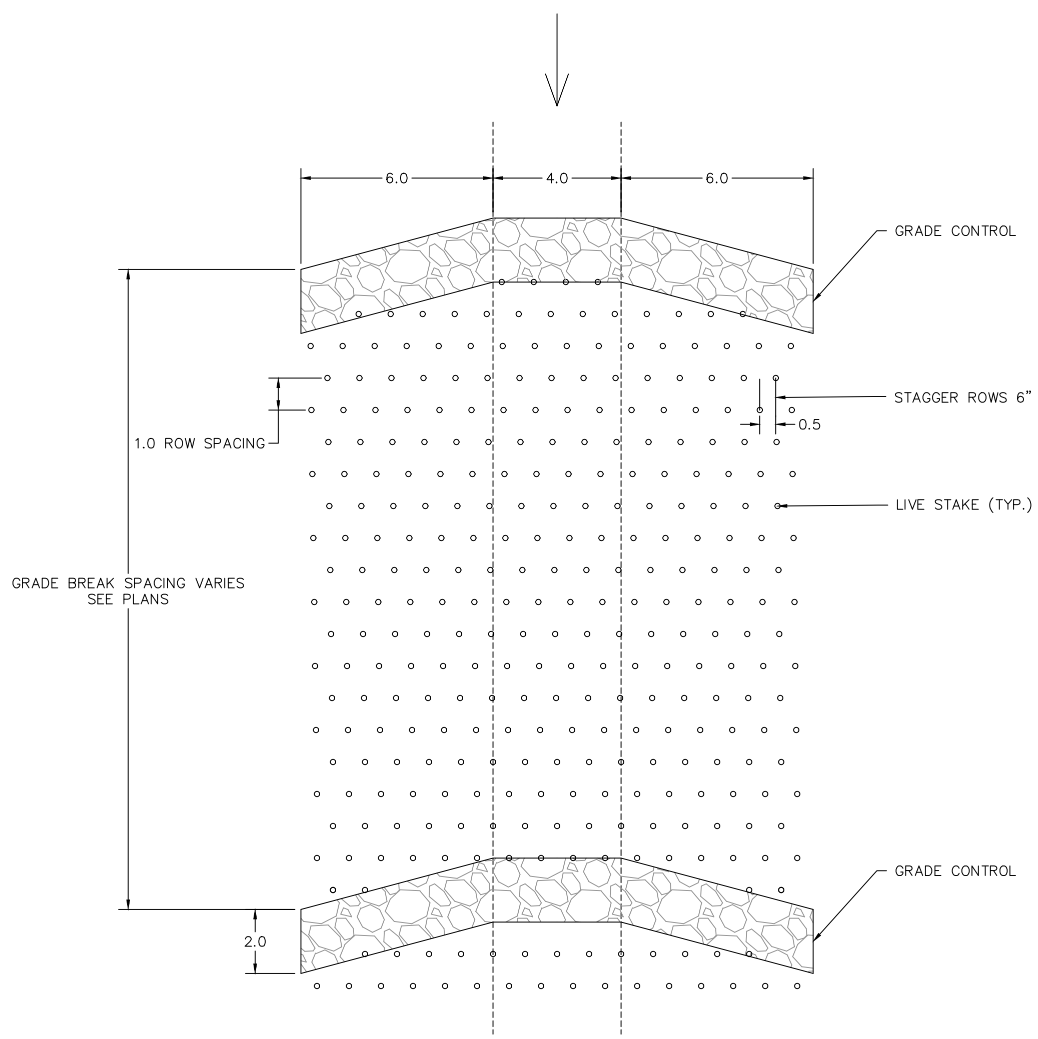
PROJECT #: 15-125
DATE: 09/14/2017

SHEET
C3-1

DETAILS - SWALE SECTIONS

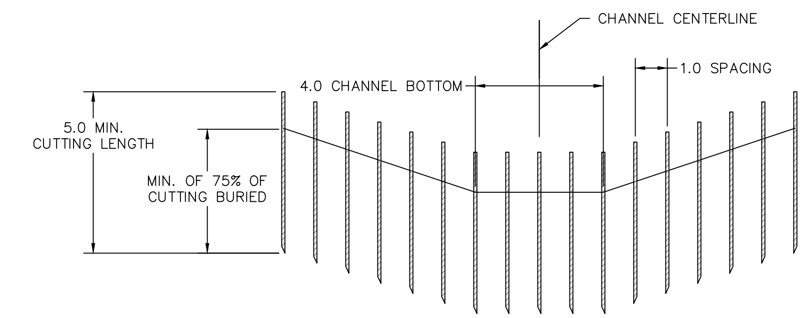


SECTION VIEW - TYPICAL FULL CHANNEL LIVE STAKING

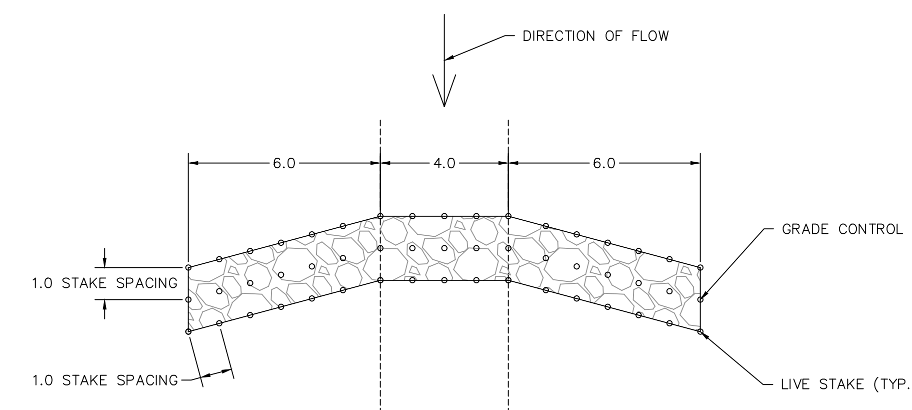


PLAN VIEW - TYPICAL FULL CHANNEL LIVE STAKING

1 DETAIL
C3-2 DRAINAGE WAY 4 - TOTAL CHANNEL LIVE STAKING DETAIL
1 ' = 5'



SECTION VIEW - TYPICAL GRADE BREAK LIVE STAKING



PLAN VIEW - TYPICAL GRADE BREAK LIVE STAKING

2 DETAIL
C3-2 DRAINAGE WAY 4 - TOTAL CHANNEL LIVE STAKING DETAIL
1 ' = 5'

LIVE STAKING SPECIFICATIONS:

1. CUTTINGS USED IN STAKING MUST BE A MINIMUM LENGTH OF 5 FT WITH A MINIMUM DIAMETER OF 1".
2. LARGER DIAMETER AND LENGTH CUTTINGS SHOULD BE USED WHEN PLACED IN ROCK (3–5" DIAMETER, 5–10' LENGTH).
3. CUTTINGS ARE TO BE BURIED A MINIMUM OF ¾ IN THE GROUND.
4. PREFERED SPECIES OF CUTTINGS ARE: PLAINS COTTONWOOD (Populous deltiods), AND BLACK COTTONWOOD (Populous trichocarpa).
5. CUTTINGS ARE BEST HARVESTED FROM LIVE DORMANT TREES, 2–7 YEARS OLD.
6. PREFERRED TIMING OF PLANTING IS LATE SPRING AFTER PEAK RUN–OFF.
7. IT IS RECOMMENDED TO SOAK CUTTINGS FOR A MINIMUM OF 24 HOURS BEFORE PLANTING.
8. ADDITIONAL PLANTING INFORMATION CAN BE FOUND IN THE USDA, NRCS TECHNICAL NOTE PLANT MATERIALS NO. 23 – HOW TO PLANT WILLOWS AND COTTONWOODS FOR RIPARIAN RESTORATION.

NO.	REVISIONS	DRAWN BY	DATE

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL
DETAILS - LIVE STAKING
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
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FAX (406) 582-5770
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PROJECT #: 15-125
DATE: 09/14/2017

SHEET C3-2

DETAILS - LIVE STAKING

DRAINAGE WAY 4 ALIGNMENT						
Number	Radius	Length	Line/Chord Direction	Start Station	End Station	Start Northing, Easting
L1		398.47	N7° 12' 41.64"W	0+00.00	3+98.47	641989.0819, 2689783.7761
C1	150.00	8.71	N5° 32' 52.52"W	3+98.47	4+07.18	642384.3984, 2689733.7549
L2		146.40	N3° 53' 03.40"W	4+07.18	5+53.58	642393.0672, 2689732.9129
C2	200.00	60.61	N4° 47' 51.97"E	5+53.58	6+14.19	642539.1338, 2689722.9953
L3		41.48	N13° 28' 47.34"E	6+14.19	6+55.68	642599.3026, 2689728.0455
L4		27.57	N19° 55' 02.83"E	6+55.68	6+83.24	642639.6409, 2689737.7148
C3	150.00	45.78	N28° 39' 40.33"E	6+83.24	7+29.02	642665.5578, 2689747.1055
L5		8.19	N37° 24' 17.83"E	7+29.02	7+37.21	642705.5746, 2689768.9789
L6		48.18	N41° 16' 43.16"E	7+37.21	7+85.40	642712.0804, 2689773.9539
L7		41.65	N47° 12' 05.16"E	7+85.40	8+27.04	642748.2914, 2689805.7420
L8		72.23	N72° 35' 03.58"E	8+27.04	8+99.27	642776.5860, 2689836.2990
L9		70.01	N55° 15' 38.42"E	8+99.27	9+69.28	642798.2050, 2689905.2192
C4	219.87	108.74	N69° 25' 41.66"E	9+69.28	10+78.02	642838.0991, 2689962.7492
L10		75.94	N83° 35' 44.90"E	10+78.02	11+53.95	642875.9183, 2690063.5164
C5	150.00	5.84	N82° 28' 49.16"E	11+53.95	11+59.80	642884.3884, 2690138.9792
L11		118.41	N81° 21' 53.41"E	11+59.80	12+78.20	642885.1527, 2690144.7693
C6	150.00	19.94	N77° 33' 23.89"E	12+78.20	12+98.14	642902.9304, 2690261.8327
L12		36.07	N73° 44' 54.38"E	12+98.14	13+34.21	642907.2237, 2690281.2896
L13		57.47	N88° 02' 50.21"E	13+34.21	13+91.68	642917.3186, 2690315.9202

NATIVE VEGETATION DESCRIPTION – BIG SAGEBRUSH STEPPE

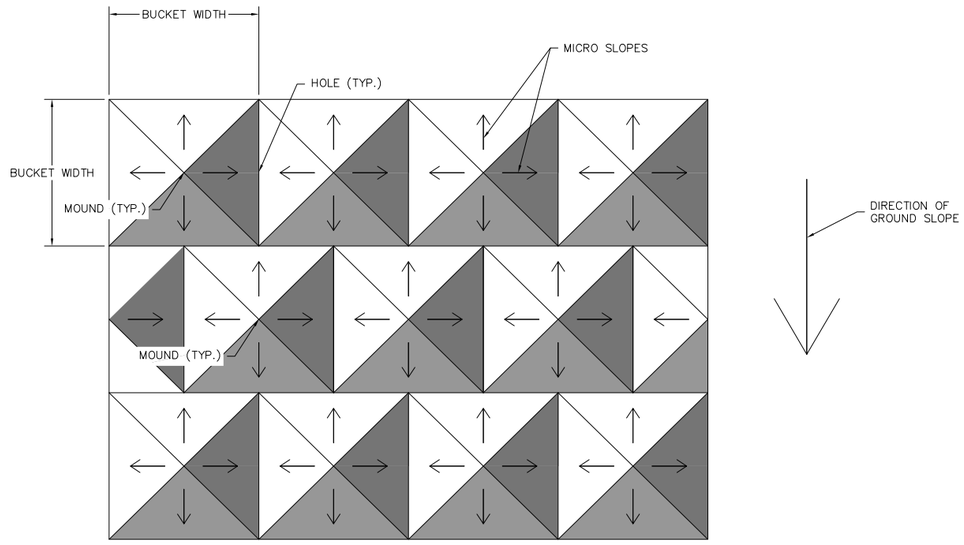
In Montana, this system is dominated by Wyoming big sagebrush (Artemisia tridentata ssp. wyomingensis). Other shrubs present may include basin big sagebrush (Artemisia tridentata ssp. tridentata), silver sagebrush (Artemisia cana), greasewood (Sarcobatus vermiculatus), saltbush (Atriplex species), rubber rabbitbrush (Ericameria nauseosa), green rabbitbrush (Chrysothamnus viscidiflorus), common snowberry (Symphoricarpos albus) and antelope bitterbrush (Purshia tridentata). Overall shrub cover is less than 10 percent.

Perennial herbaceous components typically contribute greater than 25% vegetative cover and consist mostly of rhizomatous and bunch–form graminoids, with a diversity of perennial forbs. In Montana, the dominant graminoid in this system is western wheatgrass (Pascopyrum smithii). Other species include Indian ricegrass (Achnatherum hymenoides), blue grama (Bouteloua gracilis),Sandberg's bluegrass (Poa secunda), or bluebunch wheatgrass (Pseudoroegneria spicata). Dryland rhizomatous sedges such as threadleaf sedge (Carex filifolia) and needleleaf sedge (Carex duriuscula) are very common and important in the eastern distribution of this system in Montana and Wyoming.

Common forbs include Hood's phlox (Phlox hoodii), sandwort (Arenaria species), prickly pear (Opuntia species), scarlet globemallow (Sphaeralcea coccinea), purple prairie clover (Dalea purpurea), gayfeather (Liatris punctata), and milkvetch (Astragalus species). Within this system, cheatgrass (Bromus tectorum), Japanese brome (Bromus japonicus) and other invasive weeds can be abundant where there is frequent disturbance.

INFORMATION CITATION:

Big Sagebrush Steppe —Inter–Mountain Basins Big Sagebrush Steppe. Montana Field Guide. Montana Natural Heritage Program Retrieved on August 1, 2017, from http://FieldGuide.mt.gov/displayES_Detail.aspx?ES=5454



TREATMENT NOTES:

CONSTRUCTION OF A ROUGH AND LOOSE SURFACE INVOLVES AN EXCAVATOR AND A SIMPLE PATTERN TO CREATE A ROUGH SURFACE OF MOUNDS AND HOLES. THE EXCAVATOR DIGS A BUCKET OF SOIL THEN PLACES THE SOIL TO THE LEFT OF THE HOLE JUST OPENED, HALF A BUCKET WIDTH FROM THE HOLE SO IT IS HALF IN AND HALF OUT OF THE HOLE. A SECOND HOLE IS THEN EXCAVATED HALF A BUCKET WIDTH TO THE RIGHT OF THE FIRST HOLE. MATERIAL FROM THIS HOLE IS THEN PLACED BETWEEN THE FIRST AND SECOND HOLES. A THIRD HOLE IS NOW OPENED HALF A BUCKET WIDTH TO THE RIGHT OF THE SECOND HOLE, WITH THE EXCAVATED SOIL BEING PLACED BETWEEN THE SECOND AND THIRD HOLES. CARE SHOULD BE TAKEN WHEN EXCAVATING THE HOLES TO SHATTER THE MATERIAL BETWEEN THE HOLES AS DIGGING PROGRESSES. THE PROCESS OF MAKING HOLES AND DUMPING SOIL IS CONTINUED UNTIL THE REASONABLE OPERATING SWING OF THE EXCAVATOR IS REACHED. THE EXCAVATOR THEN BACKS UP THE WIDTH OF THE HOLE AND REPEATS THE PROCESS, BEING SURE TO LINE UP THE HOLES IN THE NEW ROW WITH THE SPACE BETWEEN THE HOLES (MOUNDS) ON THE PREVIOUS ROW.

ONCE AREA IS ROUGH AND LOOSE, SEVERAL OPTIONS FOR ADDITIONAL TREATMENTS ARE AVAILABLE:

1. WOODY RESIDUE CAN BE SPREAD OVER THE SURFACE TO PROVIDE ADDITIONAL EROSION PROTECTION, NUTRIENTS, AND SHADING FOR PLANT GROWTH. METHODS FOR WOODY RESIDUE TREATMENTS ARE LOPPING AND SCATTERING, CHIPPING, CRUSHING, AND SHREDDING. THE MINIMUM TREATMENT PER NRCS IS THAT RESIDUE (SLASH) WILL NOT EXCEED 18 INCHES IN HEIGHT IN TREATMENT AREA. ALL SLASH OVER 3 INCHES IN DIAMETER WILL BE CUT INTO 3–5 FOOT LENGTHS. DO NOT OVERLY COVER AREAS WITH RESIDUE AS TO COVER MORE THAN 60% OF THE GROUND. (SEE NRCS SPECIFICATION MT384–1 FOR ADDITIONAL INFORMATION)

2. SEED AREA WITH A NATIVE PLANT MIX. ADDITIONAL PLANTINGS OF LOCAL TREES, SHRUBS AND BUSHES CAN BE TRANSPLANTED TO AREA TO SPEED STABILIZATION. IF PLANTINGS OR LIVE PLANTS ARE TO BE USED, PLACE THEM IN THE HOLES CREATED BY THE ROUGH AND LOOSE TECHNIQUE. SEE THE VEGETATION DESCRIPTION AND SPECIFIC SPECIES NAMES FOR THIS ECOSYSTEM (THIS SHEET).

1 / C3-2 DETAIL
ROUGH AND LOOSE TREATMENT
NTS

P:\2015\15-125 Rosebud Power Plant Ash Disposal Site\09 CAD Data\Existing Landfill Top\DETAILS Existing.dwg

NO.	REVISIONS	DRAWN BY	DATE

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL DETAILS
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
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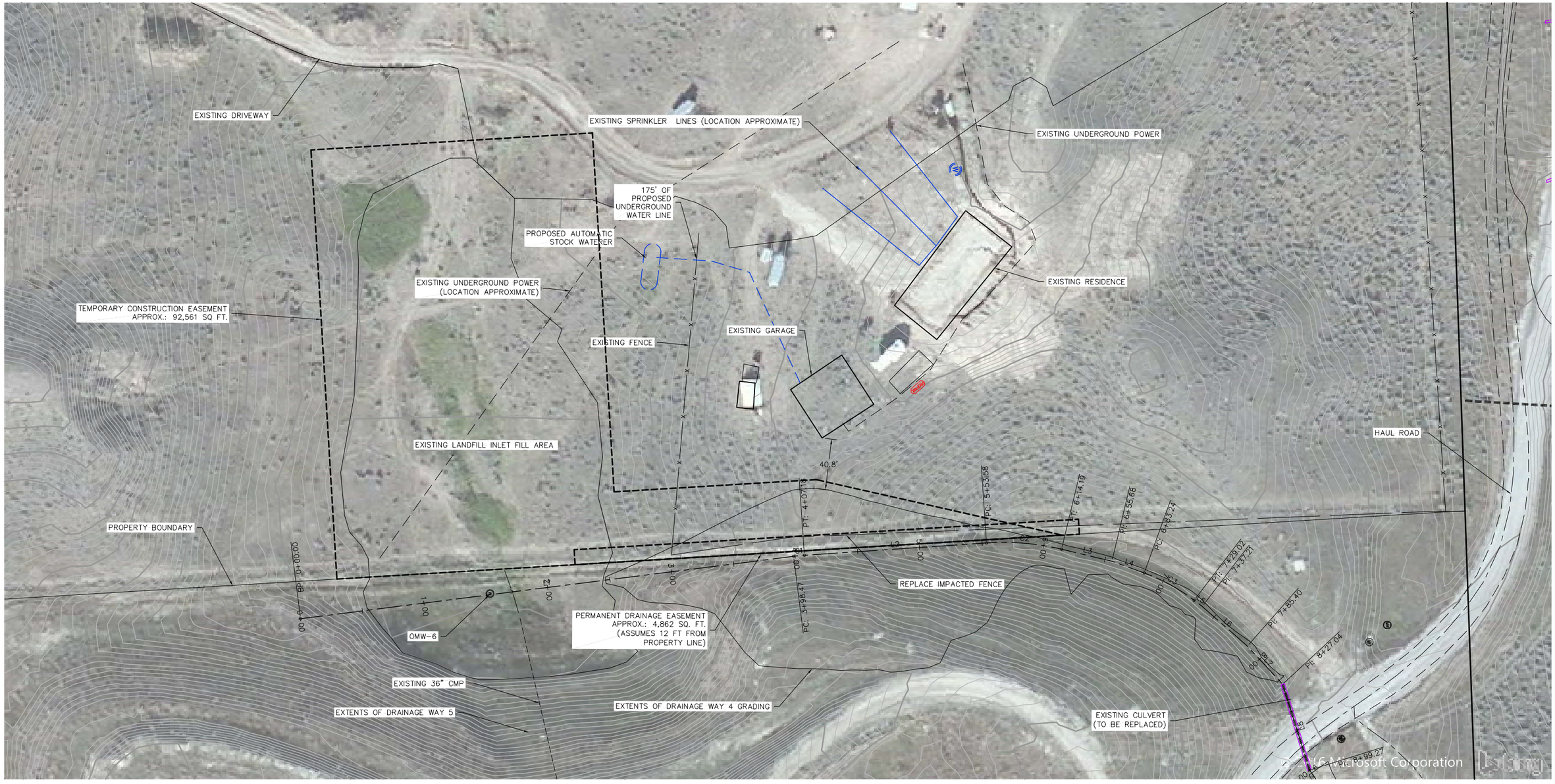
Land Surveying

ALLIED ENGINEERING SERVICES, INC. Diverse Projects

PROJECT #: 15–125
DATE: 09/14/2017
SHEET C3-3
DETAILS



NO.	REVISIONS	DRAWN BY	DATE

0 40 80 120
SCALE (FEET)

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD EXISTING LANDFILL EASEMENTS - DRAINAGE WAY 4

ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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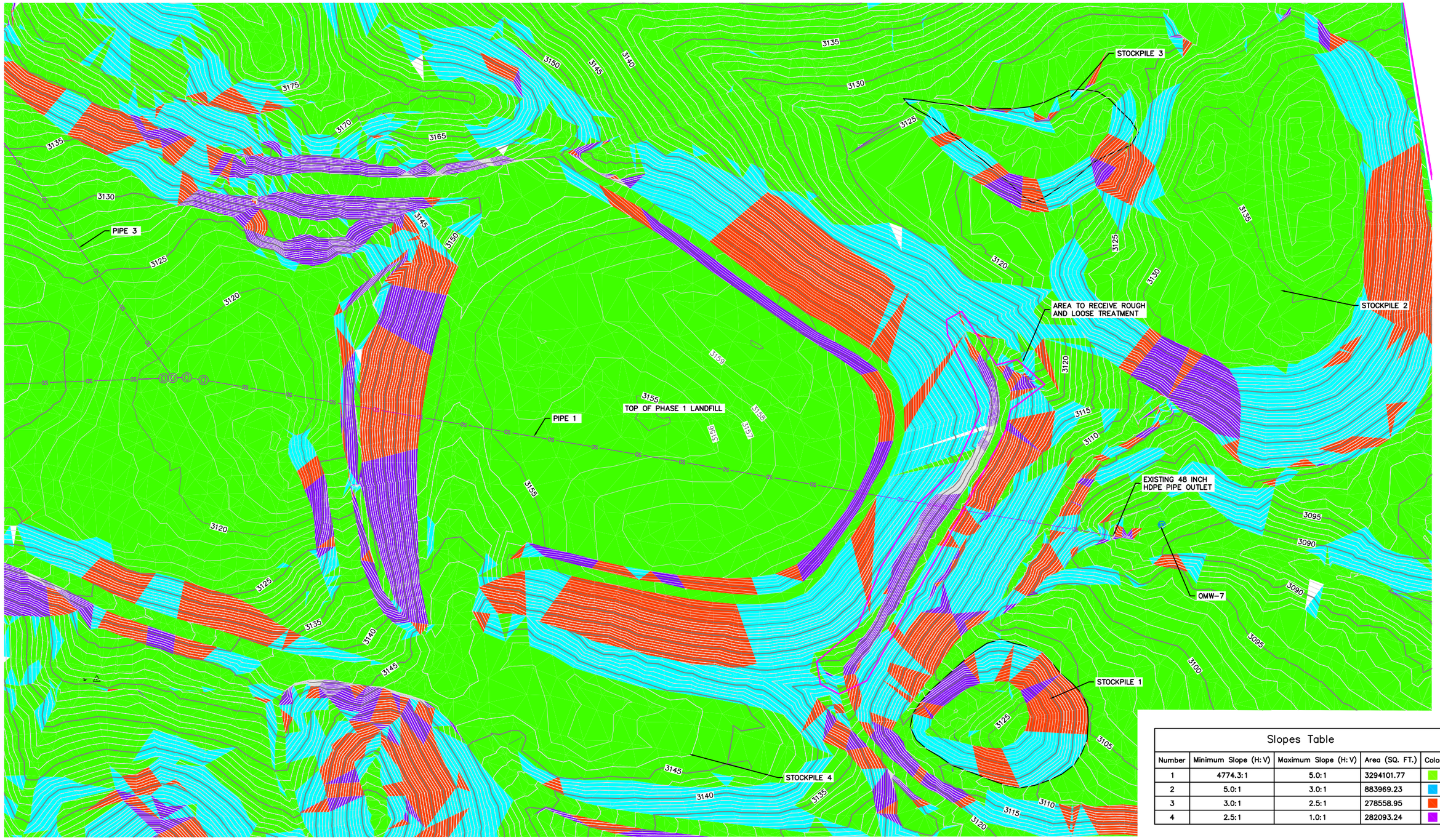
PROJECT #: 15-125
DATE: 08/01/2017

SHEET
E-1

EASEMENTS - DW 4

P:\2015\15-125 Rosebud Power Plant Ash Disposal Site\09 CAD Data\Existing Landfill Toe\DRAINAGE WAY 4 Existing.dwg



Slopes Table				
Number	Minimum Slope (H:V)	Maximum Slope (H:V)	Area (SQ. FT.)	Color
1	4774.3:1	5.0:1	3294101.77	
2	5.0:1	3.0:1	883969.23	
3	3.0:1	2.5:1	278558.95	
4	2.5:1	1.0:1	282093.24	

P:\2015\15-125 Rosebud Power Plant Ash Disposal Site\09 CAD Data\Existing Landfill Top\SLOPE FIGURE Existing.dwg

NO.	REVISIONS	DRAWN BY	DATE

0 50 100 150
SCALE (FEET)

PROJECT ENGINEER: **DSC**	DRAWN BY: **ASG**
DESIGNED BY: **ASG**	REVIEWED BY: **DSC, BDA**

ROSEBUD EXISITNG LANDFILL
PHASE 1 LANDFILL SLOPES
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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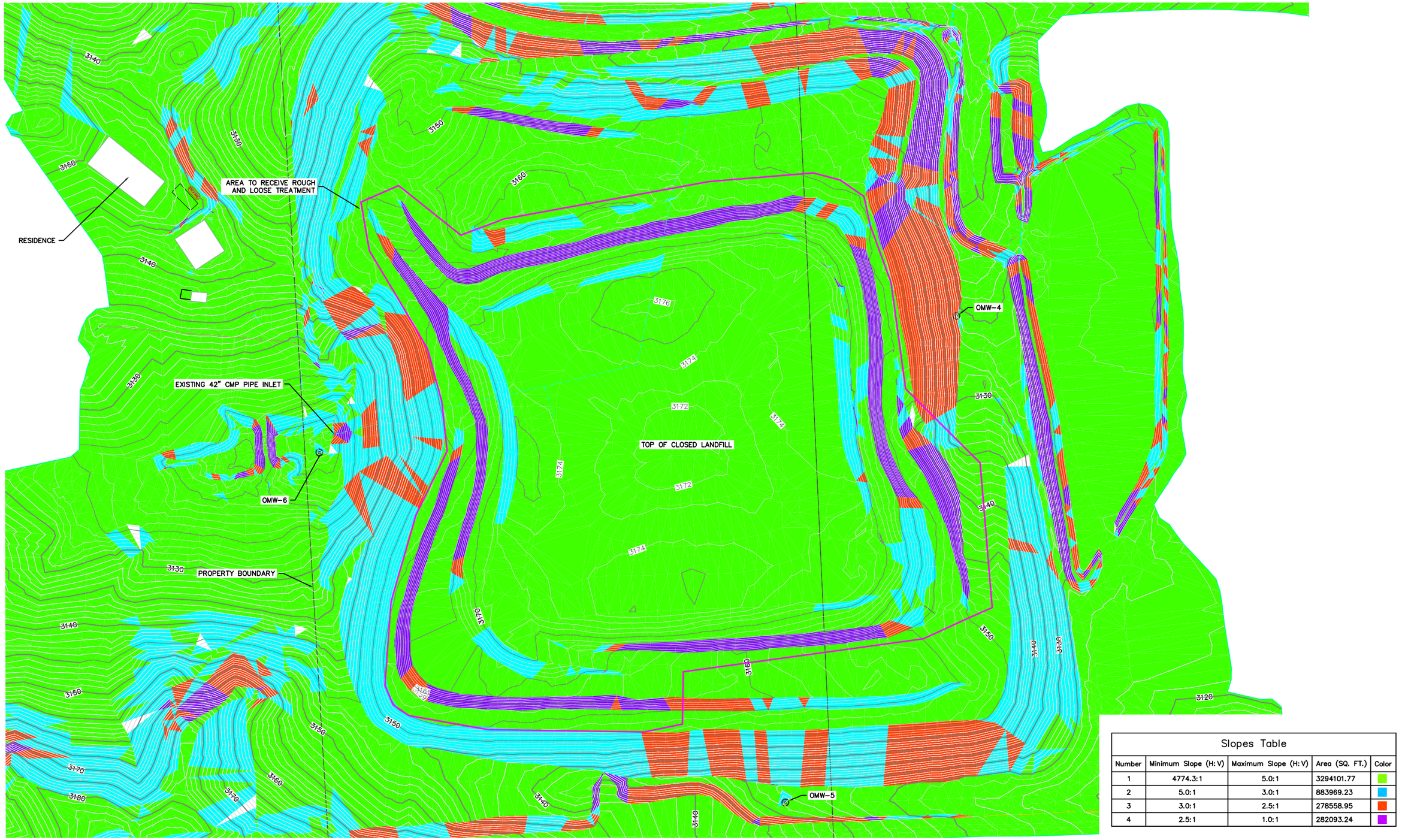
Diverse Projects

PROJECT #: **15-125**	SHEET
DATE: **08/02/2017**	**S-1**



Slopes Table				
Number	Minimum Slope (H:V)	Maximum Slope (H:V)	Area (SQ. FT.)	Color
1	4774.3:1	5.0:1	3294101.77	
2	5.0:1	3.0:1	883969.23	
3	3.0:1	2.5:1	278558.95	
4	2.5:1	1.0:1	282093.24	

NO.	REVISIONS	DRAWN BY	DATE

0 60 120 180
SCALE (FEET)

PROJECT ENGINEER: **DSC** | DRAWN BY: **ASG**
DESIGNED BY: **ASG** | REVIEWED BY: **DSC, BDA**

ROSEBUD EXISTING LANDFILL
EXISTING CLOSED LANDFILL SLOPES
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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Geotechnical Engineering
Land Surveying

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Diverse Projects

PROJECT #: **15-125**
DATE: **08/02/2017**
SHEET **S-2**

P:\2015\15-125 Rosebud Power Plant Ash Disposal Site\09 CAD Data\Existing Landfill Top\SLOPE FIGURE Existing.dwg

Appendix B: Existing Conditions Survey Figure & Soil Cover Inspection Sheets

SURVEY OF PHASE 1 & 2 LANDFILL AND SURROUNDING AREA BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI
11/9/16 BY ANDREW GRAHAM OF AES
11/14/17 BY ANDREW GRAHAM OF AESI

N

INLET ROCK RIPRAP
STOCKPILE 3
ELEVATION BASE POINT
ELEV: 3157.51
STOCKPILE 2
APPROXIMATE BOUNDARY
OF ASH PLACEMENT
ROCK RIP-RAP STORAGE
PIPE 3
TP #1.3
18" TO ASH
TP #1.2
20" TO ASH
TP #1.1
12" TO ASH
PHASE 2 AVERAGE ELEV: 3136.74
PHASE 1 AVERAGE ELEV: 3159.98
INLET ROCK RIPRAP
MONITORING WELL OMW-10
PIPE 2
TP #1.4
14" TO ASH
TP #1.6
15" TO ASH
MONITORING WELL OMW-7
MONITORING WELL OMW-9
EXISTING 48 DUAL WALL HDPE
LENGTH: 989FT
SLOPE: 1.89%
TP #1.5
15" TO ASH
BOREHOLE BH-11
TP #1.7
15" TO ASH
MONITORING WELL OMW-8
TP #1.8
7" TO ASH
TP #1.9
17" TO ASH
BOREHOLE BH-12
SURVEY BASE POINT
ELEV: 3149.40
TRACT A
COS No. 75926
MONITORING WELL OMW-2
MONITORING WELL OMW-1
ABANDONED DEEP WELL
DEEP SOURCE WELL
36" CMP
INVERT OUT: 3078.23
STOCKPILE 1
ABANDONED SHALLOW WELL
PROPERTY BOUNDARY
STOCKPILE 4
RESIDENCE
HAUL ROAD 1
TP #2.1
30"+ TO ASH

BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 314940
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

C:\Jessi_w\Designs\2015\15-125 Rosebud Power Plant Ash Disposal Site\29 CAD-Production\Grading\EXISTING CONDITIONS.dwg

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD SURVEY FIGURE
2017 ACTIVE LANDFILL (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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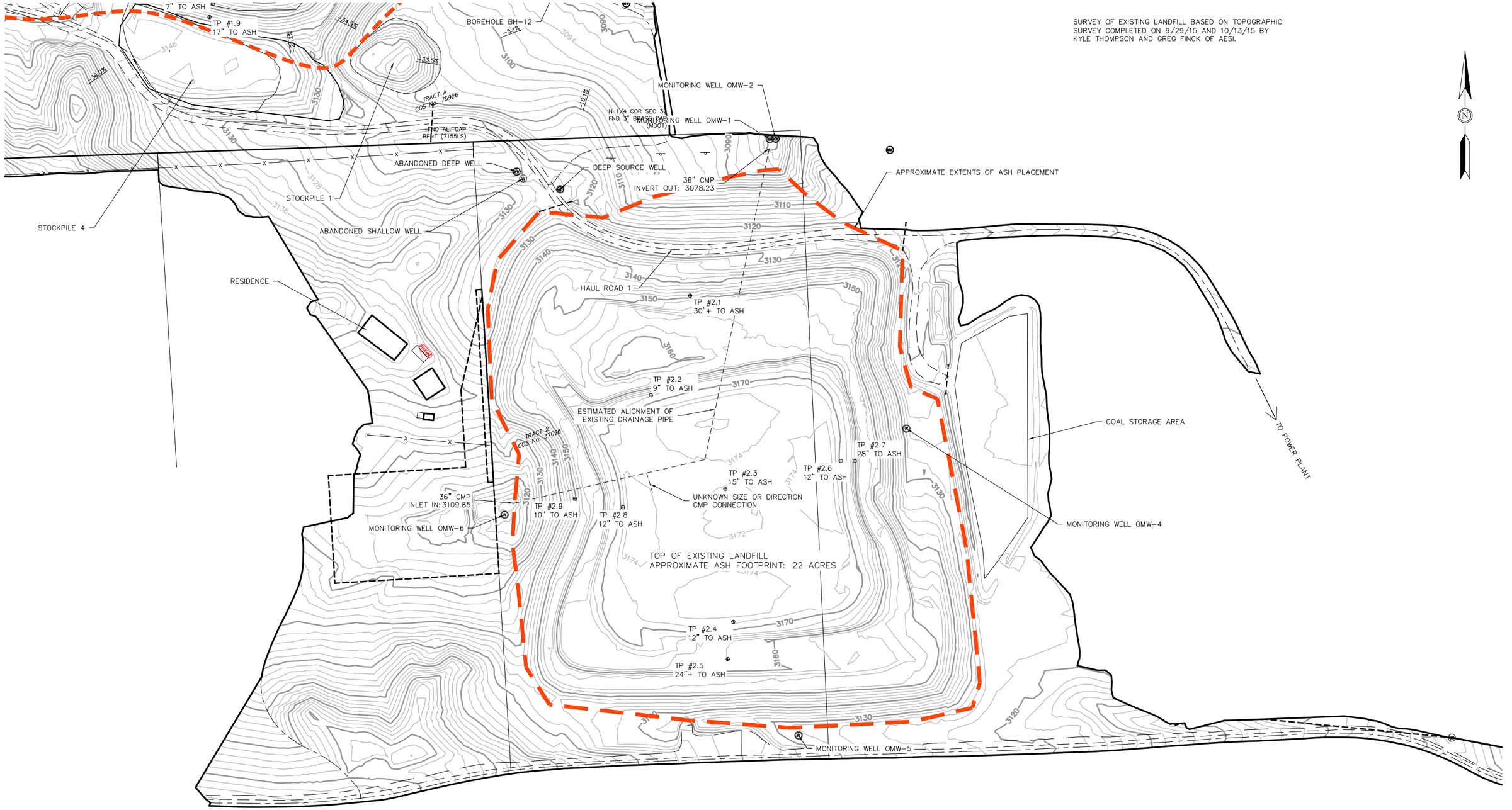
PROJECT #: 15-125	SHEET 1
DATE: 11/16/2017	

AS-BUILT FIGURE



C:\aesi_w\Designs\2015\15-125 Rosebud Power Plant Ash Disposal Site\29 CAD-Production\Grading\EXISTING CONDITIONS.dwg

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD SURVEY FIGURE
EXISTING LANDFILL
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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Diverse Professional Services

PROJECT #: 15-125	SHEET 2
DATE: 11/16/2017	
EXISTING LANDFILL	

Appendix C: Rosebud Power Plant Inspection Reports – Dated 1/13/17 thru 12/29/17

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 221 1/13/17
WEATHER (temperature, wind, precipitation): 24° Clear Sunny
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2-3 ft below beam

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10 ft / estimate

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here: _____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		–	
(3) Any cracking?		–	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓	Okay	
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow Covered

C. Areas without Vegetation due to erosion (describe location and size of area)

None - Snow Covered

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

None Snow Covered

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

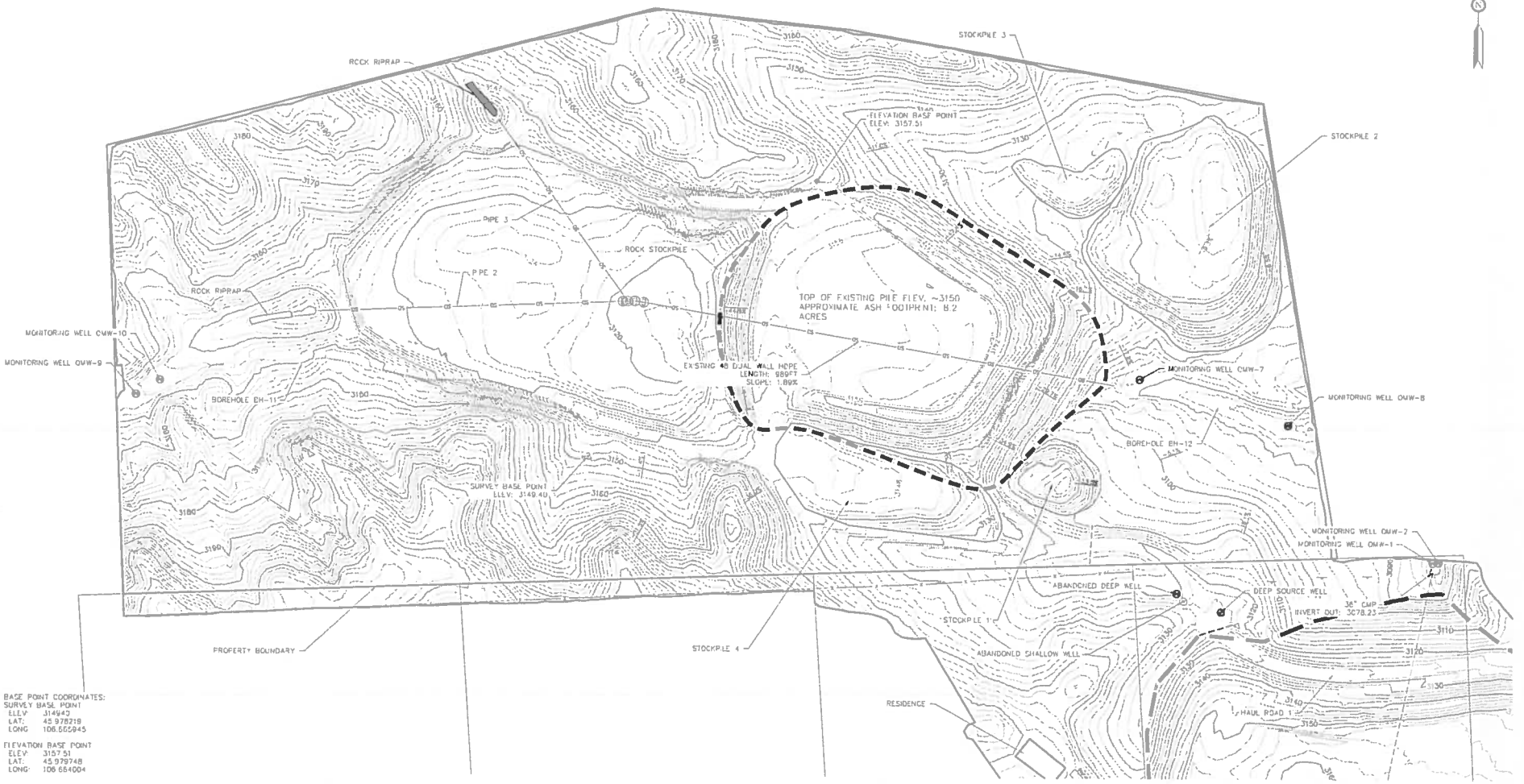
No

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date:

1/13/17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978218
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-6770
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Geotechnical Engineering
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ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services, INC
INSPECTOR: Joel Timmerman
DATE & TIME INSPECTED: 0726 hrs. 1/20/17
WEATHER (temperature, wind, precipitation): 40-43°F, Slight West Wind, Rain earlier today
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3 ft below berm - No Activity in phase 1

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		Good - phase I & II

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?			
(12) Any visible water/runoff spill points?			Snow melt in all areas
(13) Pipe Condition?	✓		
(14) Water flowing from pipe?		✓	None at Inlet Visible None at Outlet
(15) Any pooling or poding at pipe inlet or outlet?		✓	Inlet & Outlet Snow Covered
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	" " " " "
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow Covered - bare in spots due to melting

C. Areas without Vegetation due to erosion (describe location and size of area)

No - Snow melting - no erosion

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

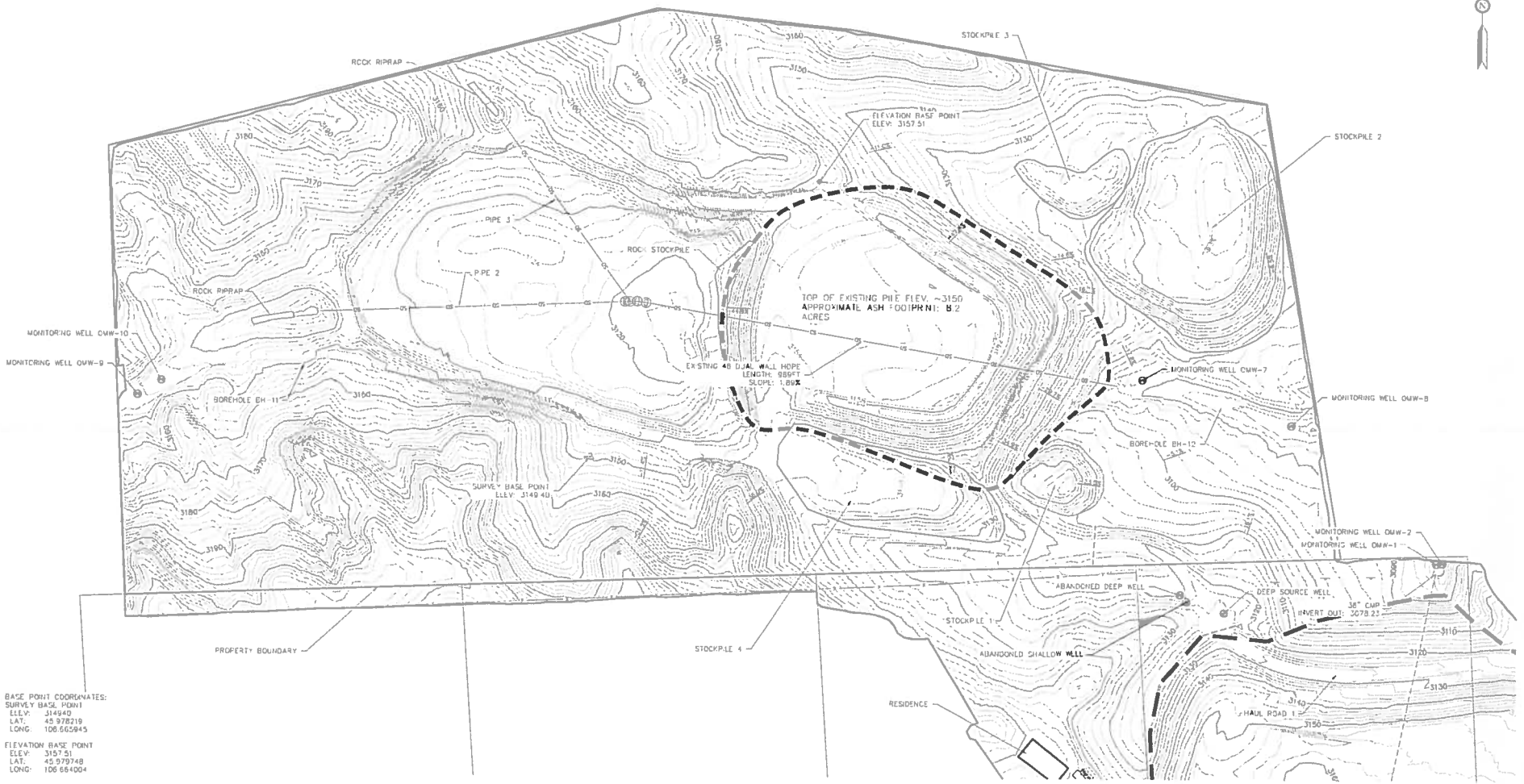
NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

No New Erosion Noticed due to snow melt

This inspection was performed by: Joel Grimmer Signature and Date: 11/20/17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT. 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT. 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 2:30 1/27/17
WEATHER (temperature, wind, precipitation): 35° @ 10-15 mph - Clear sky
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2-3 ft below berm No activity in Phase I

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

8-10' below berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		Good Both Phase I + II

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?			Snow melting in areas
(13) Pipe Condition?	✓		okay
(14) Water flowing from pipe?		✓	Still frozen inlet & outlet
(15) Any pooling or poding at pipe inlet or outlet?		✓	" " "
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	" " "
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow Covered

C. Areas without Vegetation due to erosion (describe location and size of area)

No - Snow Covered

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

No

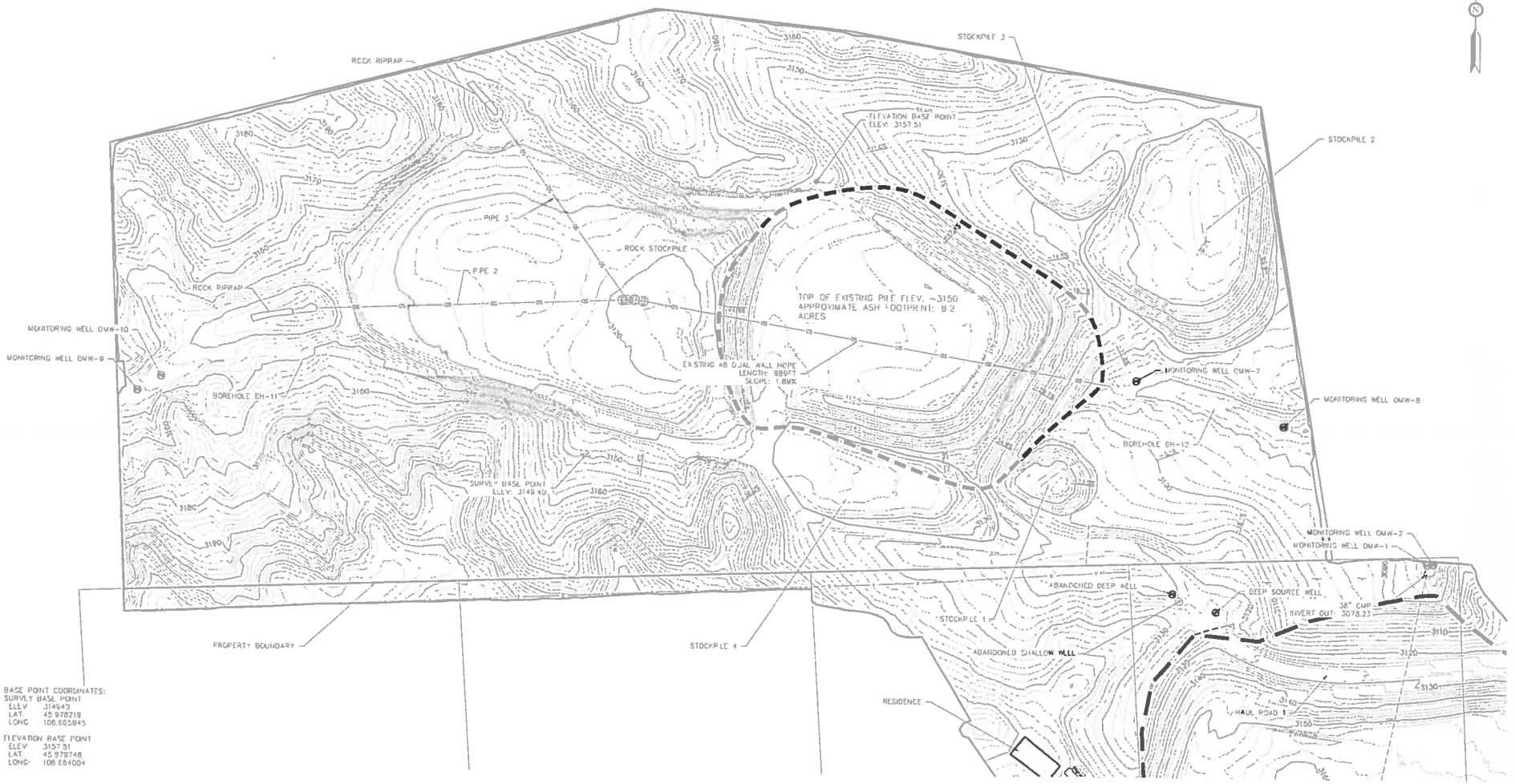
3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

No Erosion from Snow melt at this time.

This inspection was performed by: Tom McFall 1/27/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665845

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.684004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0277
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 2/5/17 1516
WEATHER (temperature, wind, precipitation): Clear - 37°F
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3 ft below berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
8-10' below berm Adding Daily

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		Okay
(7) Height of Berm above Ash Surface (ft)	✓		Good Both Phases I + II

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?		✓	
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	Snow Covered
(13) Pipe Condition?			Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow Covered

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

Still Snow Covered

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: [signature] 2/5/17 Signature and Date:

BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROSE
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 2-13-17 0847
WEATHER (temperature, wind, precipitation): 29°F - NW wind - 10-15 mph
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3 feet below berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
8' to 10' below west berm - Adding daily

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2-3' phase I - phase II Good

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	~~Water~~ Water has been running Through Pipe - froze again Now
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		Good
(14) Water flowing from pipe?		No	- Frozen Now
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Partial Snow Cover - Melting this week

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

No

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: Joel Zimmerman 2-13-17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI

BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3145.43
LAT: 45.978219
LONG: 106.565845

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.564004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC	DRAWN BY: ASG
DESIGNED BY: ASG	REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59715
PHONE (406) 582-0221
FAX (406) 582-5778
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROSI
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 2-17-17
WEATHER (temperature, wind, precipitation): 35°F - Clear 17 MPH wind
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3 foot below berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
3'-10' below west berm - Adding daily

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2-3' phase I - phase II OK

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		OK
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Most Snow Gone - No major erosion

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date: 2-17-17

BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Ken McFarland Rosebud Operating Services
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 2/24/17 901
WEATHER (temperature, wind, precipitation): 26° 11 mph East
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2' 4'

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' plus

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		Okay
(7) Height of Berm above Ash Surface (ft)	✓		2'-4'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	Frozen ground
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow covered

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

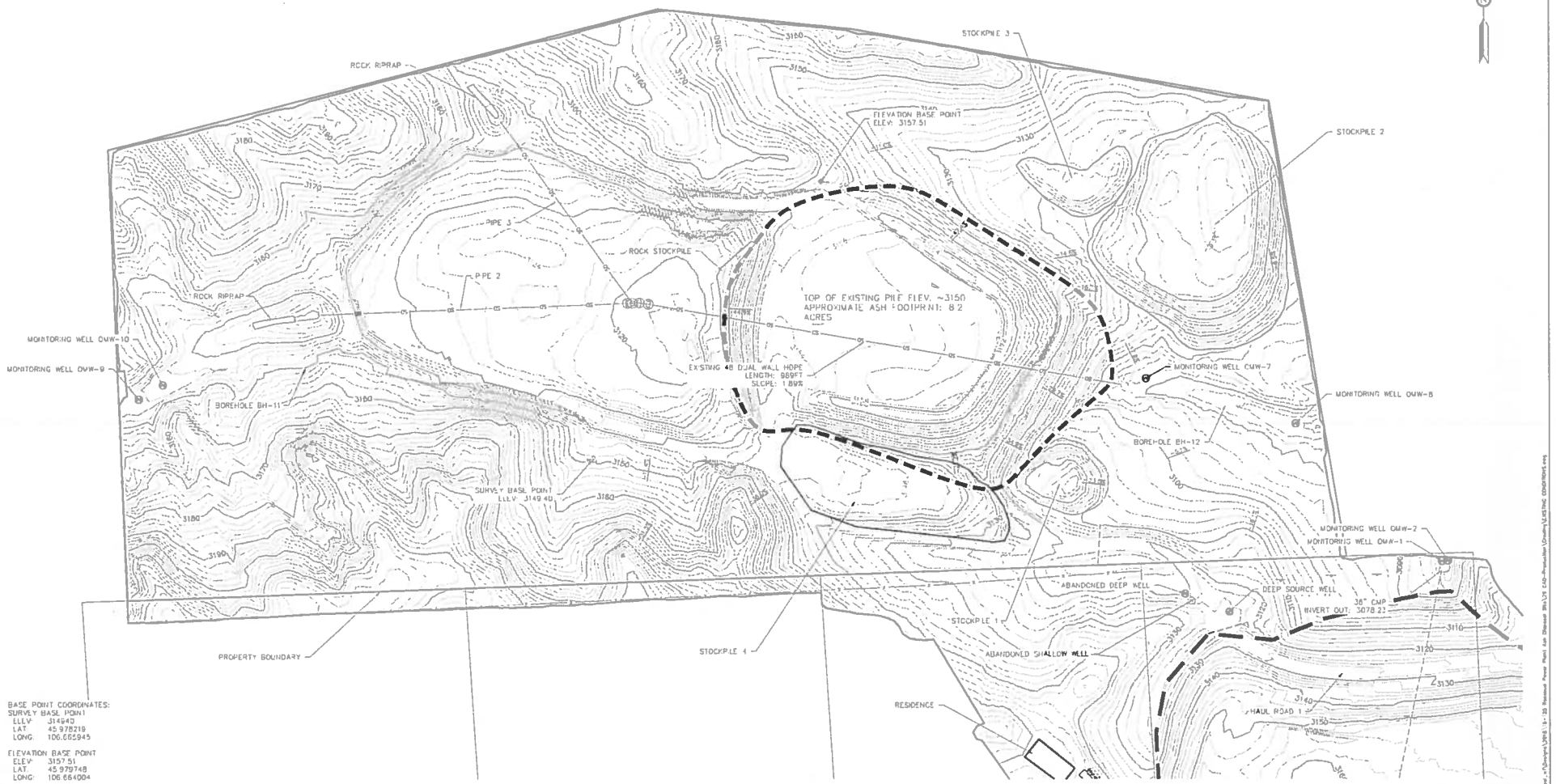
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

NO

This inspection was performed by: _____ Signature and Date: 2/24/17



NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ~~TAMMY Fa~~ ROST
INSPECTOR: Lanny Fulton
DATE & TIME INSPECTED: 3/10/17 1330
WEATHER (temperature, wind, precipitation): Cloudy 39
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
3' to 4'

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' Phase

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		OK
(7) Height of Berm above Ash Surface (ft)	✓		0' 4'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Good
(14) Water flowing from pipe?		✓	Snow
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow Covered

C. Areas without Vegetation due to erosion (describe location and size of area)

Snow Covered

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

Snow Covered

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date: 3/10/17

NO	REVISIONS	DRAWN BY	DATE

SCALE (FEET) 0 100 200 300

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 3/17/17
WEATHER (temperature, wind, precipitation): 40° Scattered Clouds. 0-5 mph wind
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-4' Berms

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
20' Berms

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		okay
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?		✓	okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

No new growth yet.

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

Snows melting - wet

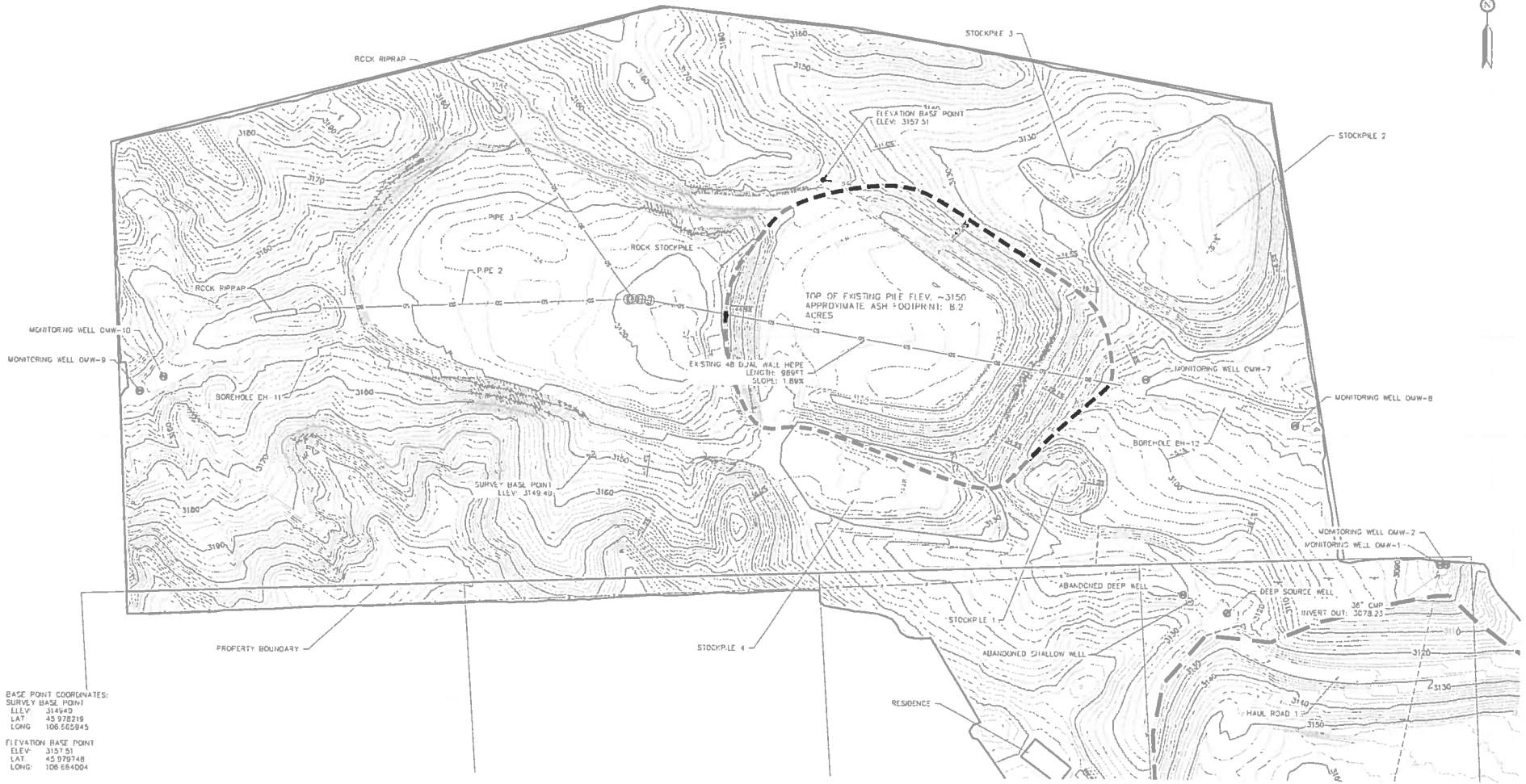
3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

okay

This inspection was performed by: [signature] 3/17/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.565945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.564004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5778
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE: 9/15/2016
SHEET C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Tim McFarland
DATE & TIME INSPECTED: 3/25/17 1285 pm
WEATHER (temperature, wind, precipitation): 70° no wind
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-4'

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
16'-20'

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	Bladed leaves down & watered
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?			okay
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?			
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Seeded last Fall - Some grass growing on Berms & Stock Piles.

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

No

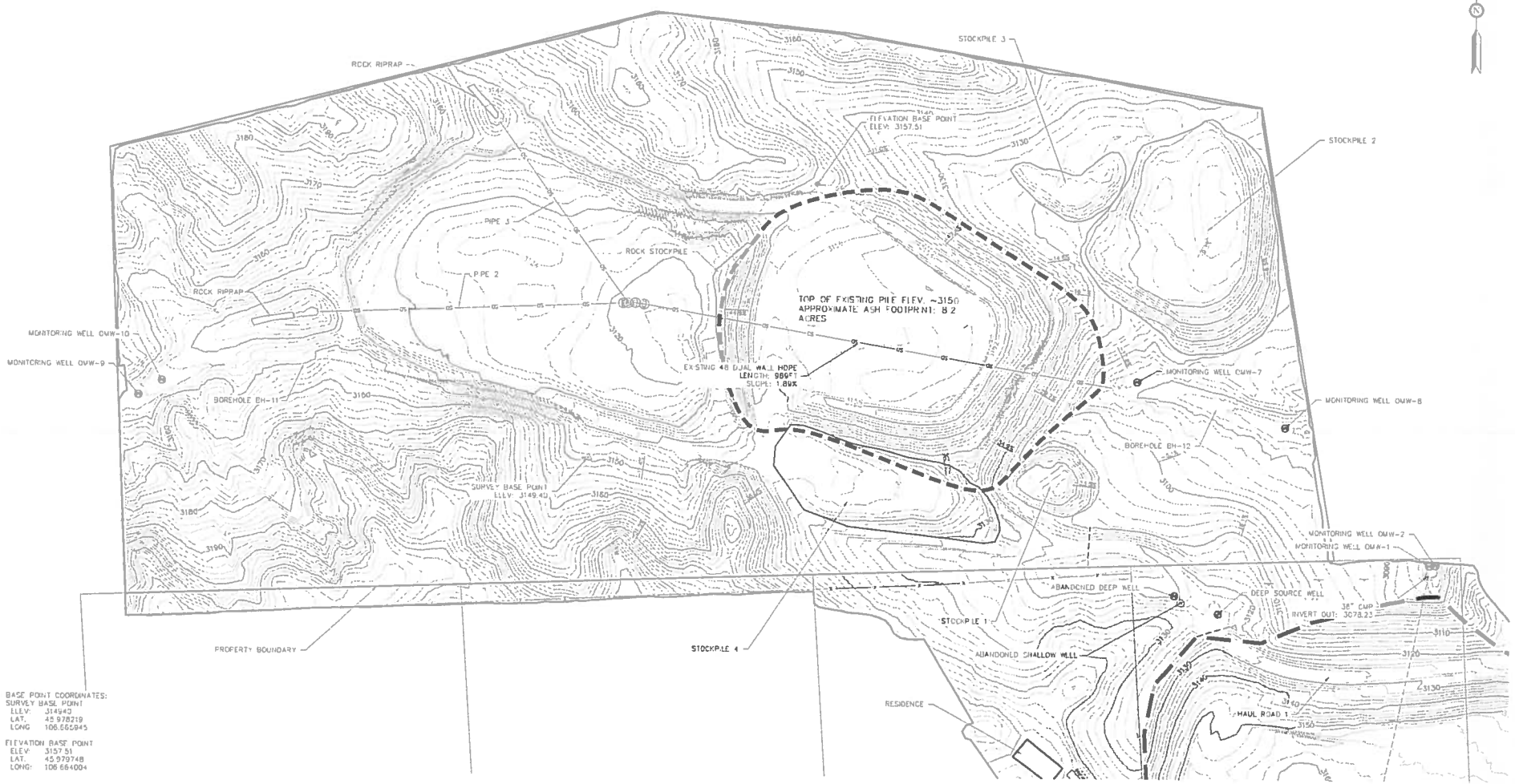
3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

good

This inspection was performed by: Ken McFall 3/25/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT. 45.978219
LONG 106.665845

ELEVATION BASE POINT
ELEV: 3157.51
LAT. 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services
INSPECTOR: John Bibles
DATE & TIME INSPECTED: 2:49 3-31-17
WEATHER (temperature, wind, precipitation): 50 5-10 from NW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-4' Visual

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10-15 feet Visual

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO:
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		good

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		—	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Spoty Vegetation from lost Soil seeding

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

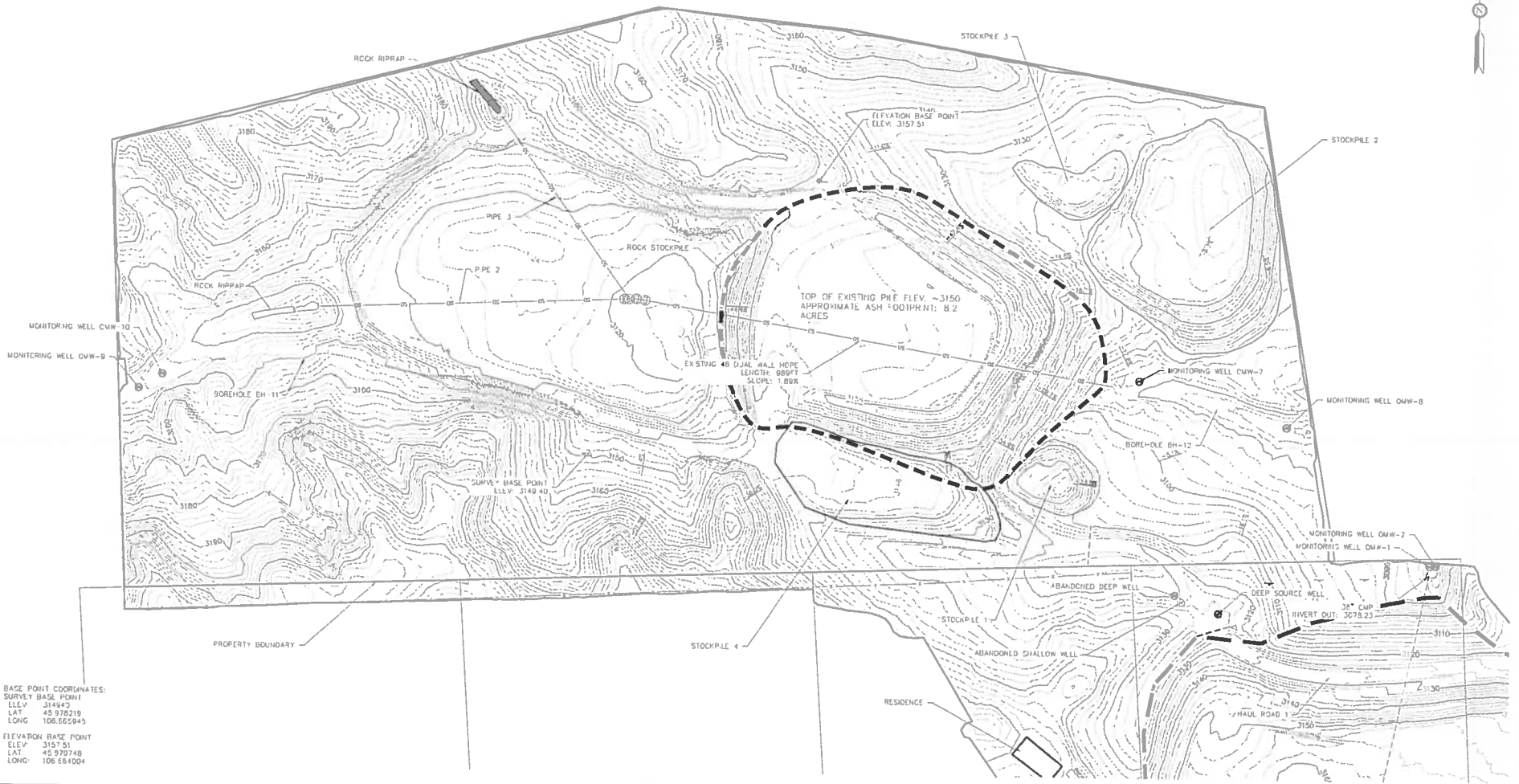
NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

good

This inspection was performed by: _____ 3-31-17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.565845

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.564004

NO	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59715
PHONE (406) 582-0221
FAX (406) 582-5710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROST
INSPECTOR: Aaron Fulton
DATE & TIME INSPECTED: 11-6-17 10:42
WEATHER (temperature, wind, precipitation): calm 19°
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'to 4'

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10-20'

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		ok
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Seeded Last Fall

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

Good

This inspection was performed by: [signature] 4/6/17 Signature and Date:

NO.	REVISIONS	DRAWN BY	DATE

SCALE (FEET) 0 100 200 300

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET C0-3

EXISTING CONDITIONS

635
3397

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: KOST
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 4/17/17 0903 hrs
WEATHER (temperature, wind, precipitation): 45°F, Cloudy, 13 MPH ESE wind - No Rain
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3 ft below top of berms - visual

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10-15 ft below top of berms - visual

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		2-3 ft

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		—	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Vegetation starting – spotty

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

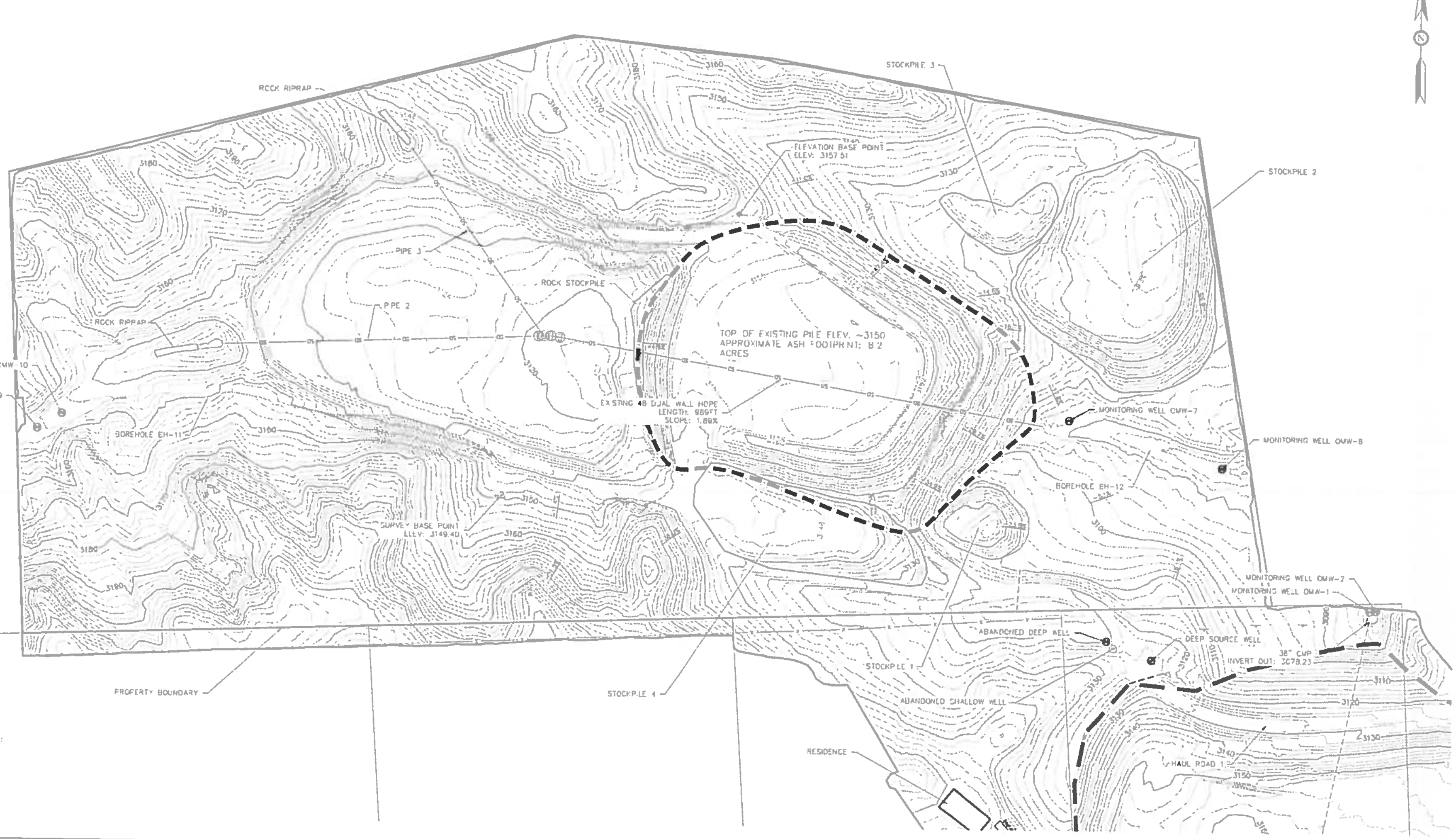
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

No

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: Jeff Jimmerson 4-17-17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 314940
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

SCALE (FEET): 0 100 200 300

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying
ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 4/21/17 1500
WEATHER (temperature, wind, precipitation): 56°F Partly Sunny Wind 3 mph.
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' below top berms

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' below top berms

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		–	
(11) Any visible water pooling or ponding?		–	
(12) Any visible water/runoff spill points?		–	
(13) Pipe Condition?	✓		
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Some Vegatation Showing

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date: 4/21/17


SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI
ROCK RIPRAP
STOCKPILE 3
ELEVATION BASE POINT
ELEV: 3157.51
STOCKPILE 2
PIPE 3
ROCK STOCKPILE
PIPE 2
ROCK RIPRAP
TOP OF EXISTING PIF ELEV =3150
APPROXIMATE ASH FOOTPRINT: 8.2
ACRES
MONITORING WELL CMW-10
MONITORING WELL CMW-9
EXISTING 48 DUAL WALL HDPE
LENGTH: 955FT
SLOPE: 1.8%
MONITORING WELL CMW-7
MONITORING WELL CMW-8
BOREHOLE EH-11
BOREHOLE EH-12
SURVEY BASE POINT
ELEV: 3149.43
MONITORING WELL CMW-2
MONITORING WELL CMW-1
ABANDONED DEEP WELL
DEEP SOURCE WELL
INVERT OUT: 3079.25
36" CMP
STOCKPILE 1
ABANDONED SHALLOW WELL
PROPERTY BOUNDARY
STOCKPILE 4
RESIDENCE
HAUL ROAD 1
BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3145.43
LAT: 45.978219
LONG: 106.662945
ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004
NO.
REVISIONS
DRAWN BY
DATE
0 100 200 300
SCALE (FEET)
PROJECT ENGINEER: DSC
DRAWN BY: ASC
DESIGNED BY: ASC
REVIEWED BY: DSC, BDA
ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT
32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5778
www.alliedengineering.com
Civil Engineering
Geotechnical Engineering
Land Surveying
ALLIED ENGINEERING SERVICES, INC.
PROJECT #: 15-125
DATE: 9/15/2016
SHEET
C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ~~E~~ ROSI
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 5-12-17
WEATHER (temperature, wind, precipitation): 61°F - 5MPH South Wind - dry
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2' to 3' below top of berms

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' to 15' below top of berms

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO:
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		OK - 2' to 3' above

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Vegetation is Sparse on main berm, but still coming in

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

No

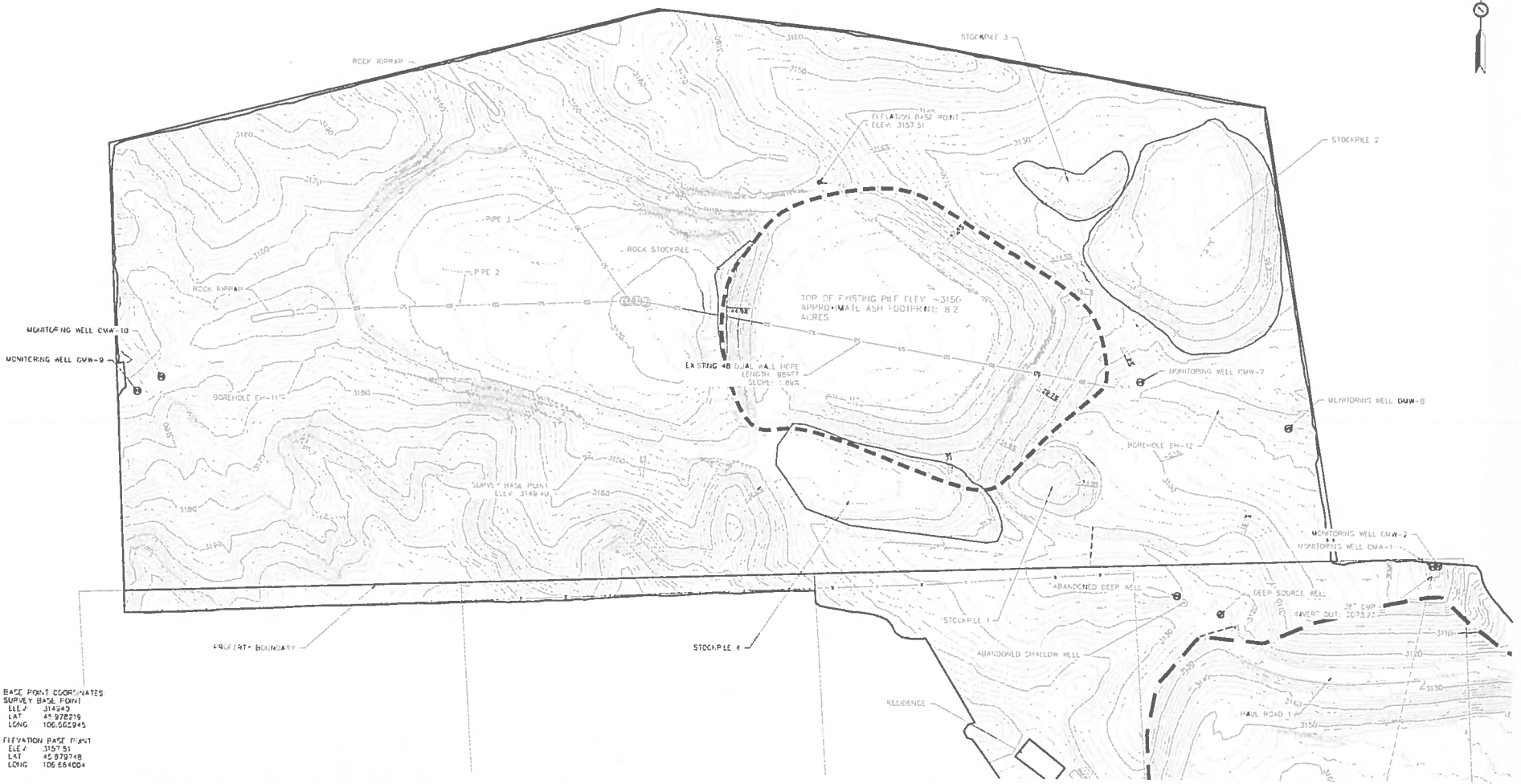
3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

having phase I capped with water/"Soap" solution on ~~exposed~~ open ash surface

This inspection was performed by: [signature] Signature and Date: 5-12-17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES
SURVEY BASE POINT
ELEV 3149.40
LAT 45.978219
LONG 106.561945

ELEVATION BASE POINT
ELEV 3157.51
LAT 45.979748
LONG 106.564004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC DRAWN BY: ASG
DESIGNED BY: ASG REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5776
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-325
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 843pm 9/19/17 36° 8 mph NE
WEATHER (temperature, wind, precipitation): _____
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Below Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' Below top of Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? None :
If so, note here: _____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		Okay

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Some Vegetation growing

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: [signature] 5/19/17 Signature and Date:

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC DRAWN BY: ASS
DESIGNED BY: ASS REVIEWED BY: DSC, EDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-4221
FAX (406) 582-5710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 5/26/17 820
WEATHER (temperature, wind, precipitation): 49° Partly Cloudy WNW 9mph
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Below berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' Below Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? None :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

Worked on Erosion area East end pit phase I

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		okay

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

growth is showing

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

Okay

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

Work on Erosion area Phase I

This inspection was performed by: _____ 5/6/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI

BASE POINT COORDINATES
SURVEY BASE POINT
ELEV. 3149.40
LAT. 45.978219
LONG. 106.565945

ELEVATION BASE POINT
ELEV. 3157.51
LAT. 45.979748
LONG. 106.564004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC DRAWN BY: ASC
DESIGNED BY: ASC REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: NOSI
INSPECTOR: LARRY Factor
DATE & TIME INSPECTED: 6-02-17 13:32
WEATHER (temperature, wind, precipitation): 74° ~~Calm~~ South 9mph
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Below Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' Below Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		OK
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

good Vegetation Growth

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

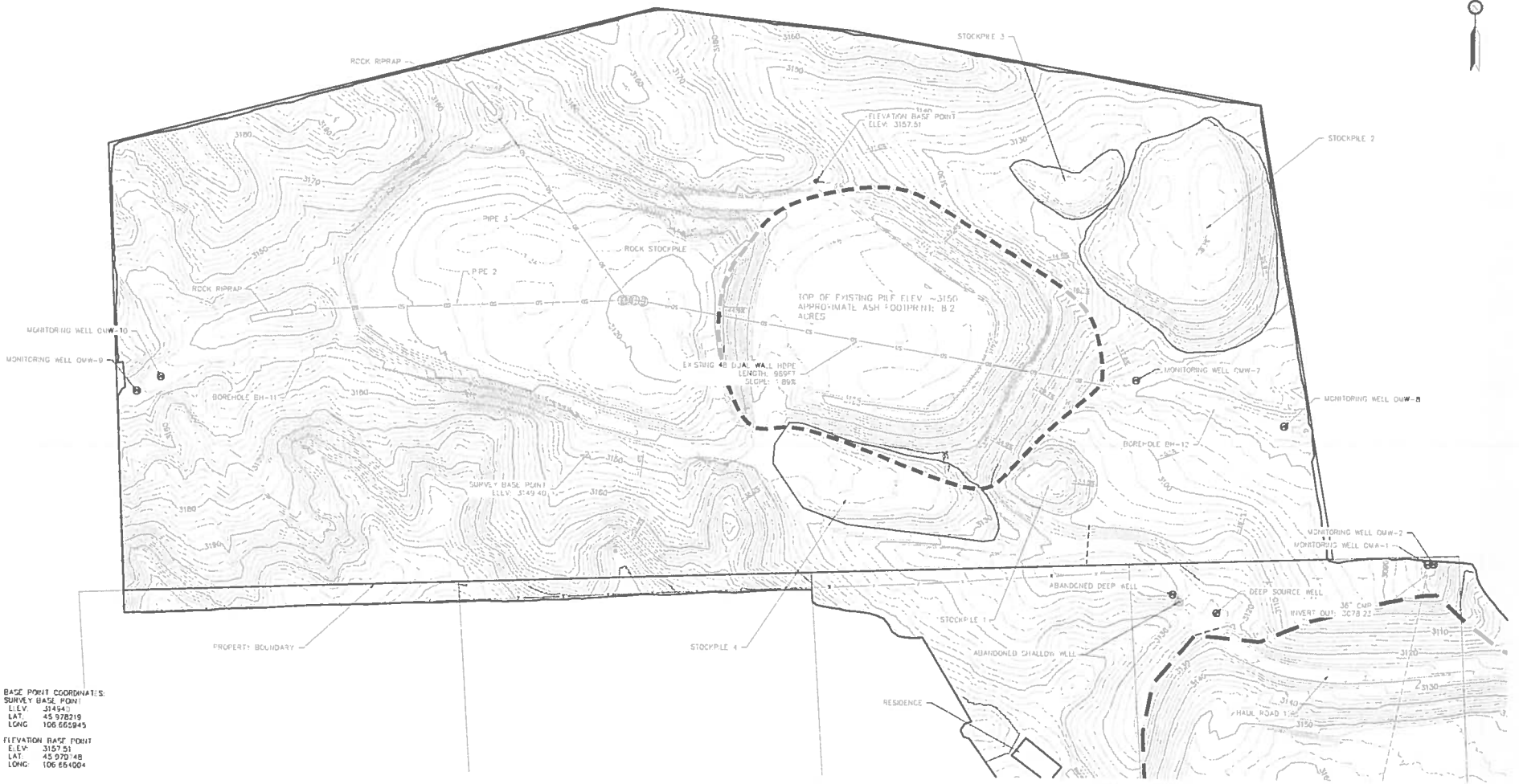
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date:

SURVEY OF PHASE I LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.970748
LONG: 106.664004

NO	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125 I
DATE: 9/15/2016
SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 6/14/17 1035
WEATHER (temperature, wind, precipitation): 68°
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2-3ft below Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10-15ft below Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? None:
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			okay 2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Growing nicely

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ 6/16/17 Signature and Date:

BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

SCALE (FEET): 0 100 200 300

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosi
INSPECTOR: John Bayles
DATE & TIME INSPECTED: 6-21-17
WEATHER (temperature, wind, precipitation): 2:36 PM Dry - 80°F
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2' -3' below

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10+ below berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NONE :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			3'-4'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

gross weed mix

C. Areas without Vegetation due to erosion (describe location and size of area)

no

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

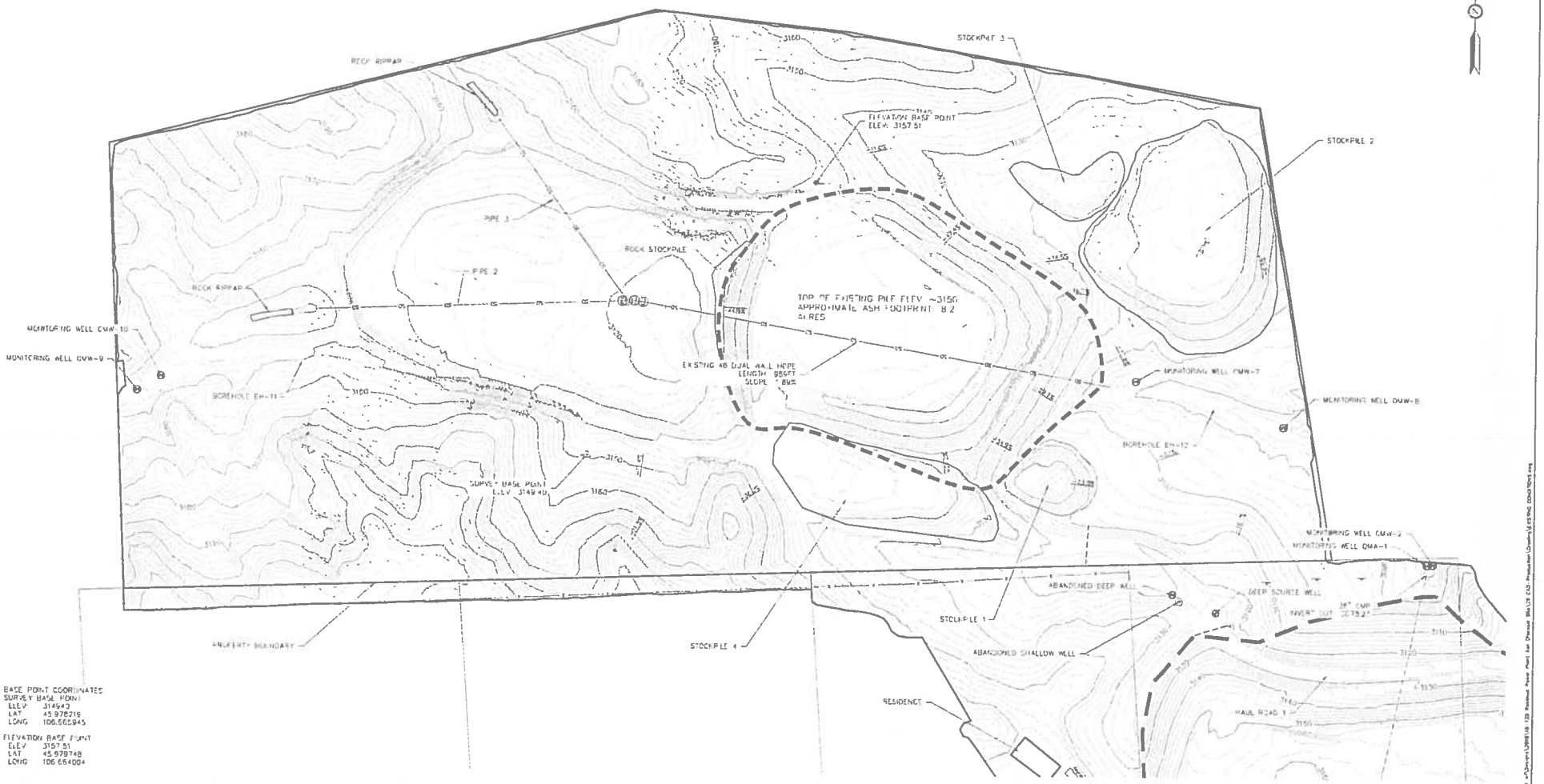
no

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ 6-21-17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED BY:
9/14/15 BY GREG FINCK OF AESI
7/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES
SURVEY BASE POINT
ELEV 3149.40
LAT 45.978219
LONG 106.665845

ELEVATION BASE POINT
ELEV 3157.51
LAT 45.979748
LONG 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: BSC DRAWN BY: ASG
DESIGNED BY: ASG REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5711
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROSE
INSPECTOR: LARRY FULTON
DATE & TIME INSPECTED: 6/30/17
WEATHER (temperature, wind, precipitation): 98°
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2 to 3' Below Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
16' + Below Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		2' to 3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Good Vegetion

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

None

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

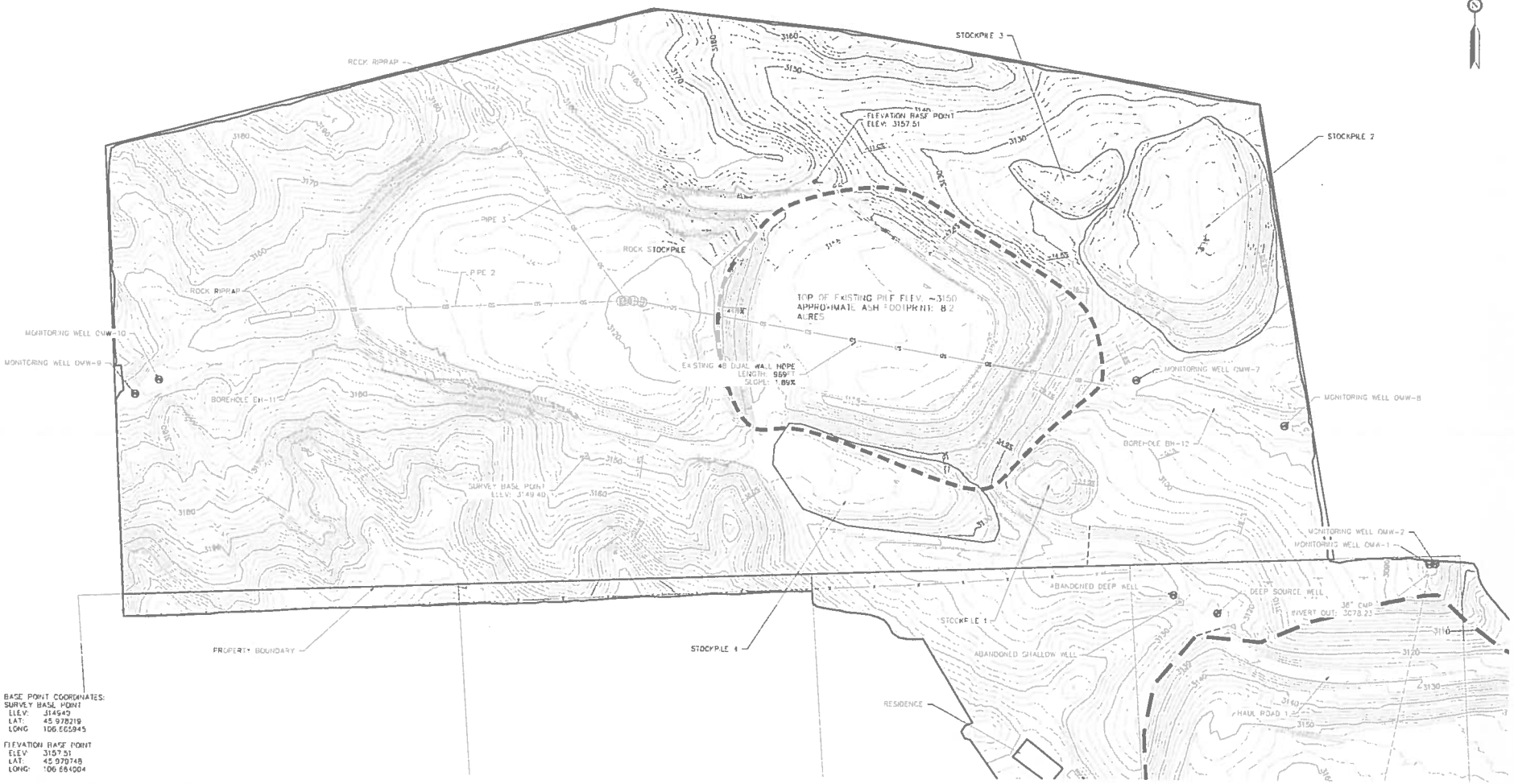
No

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

None

This inspection was performed by: _____ Signature and Date: 6-30-17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.978748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services, Inc
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 7-7-17 0809
WEATHER (temperature, wind, precipitation): 73° ENE - 7 MPH
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2-3' below berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10+ feet below shortest berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		2-3 ft

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Good vegetation

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

None

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

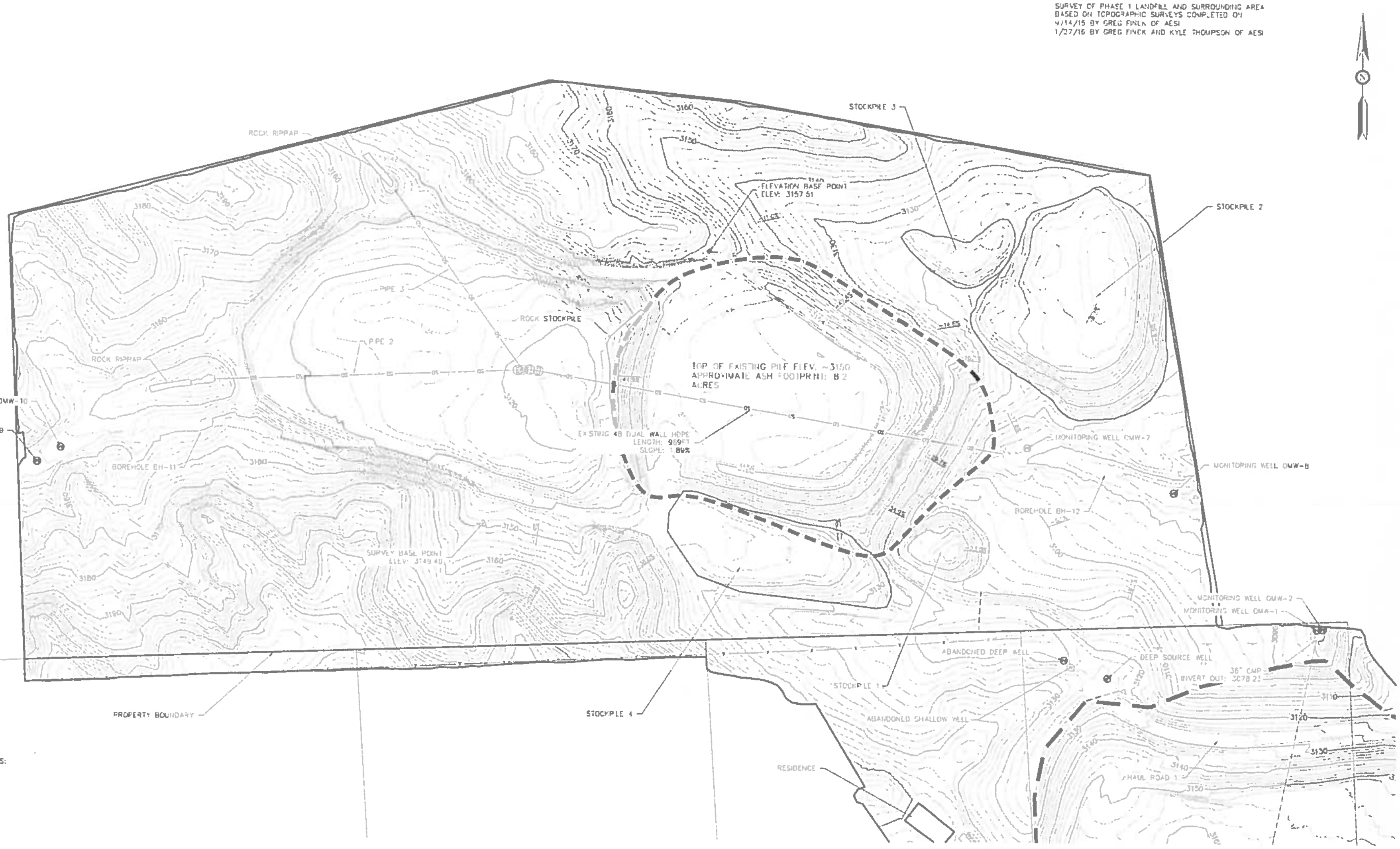
No

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

None

This inspection was performed by: _____ Signature and Date: 7-7-17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV 3149.40
LAT 45.978219
LONG 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT 45.979748
LONG 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET
C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 7/14/17
WEATHER (temperature, wind, precipitation): 85° 7 mph WNW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3' below berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10-15' below berm Adding daily

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NONE :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		OKAY
(7) Height of Berm above Ash Surface (ft)			OKAY 2-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		o Kay
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			o Kay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Vegation grassing

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

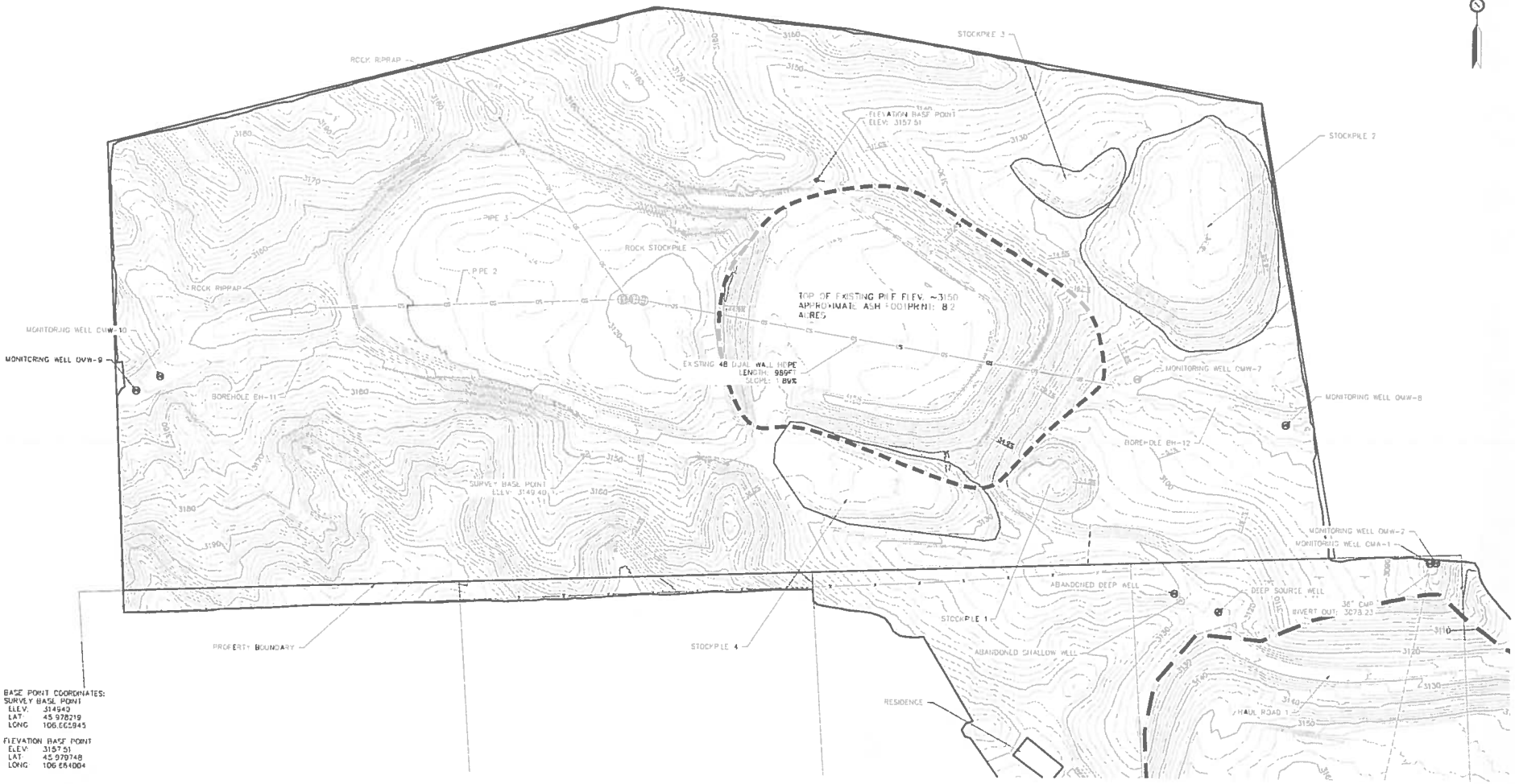
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NONE

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ 7/14/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.979219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Kara McFarland
DATE & TIME INSPECTED: 7/21/17 800
WEATHER (temperature, wind, precipitation): 72° F 12mph NNW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2'-3' below top of berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10'-15 below berm Adding ash daily

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)			Okay
(7) Height of Berm above Ash Surface (ft)	✓		2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Dry Brown Vegetation No Rain

C. Areas without Vegetation due to erosion (describe location and size of area)

Okay

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

No

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

Dry Conditions

This inspection was performed by: _____ 7/21/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI

BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV. 3149.40
LAT. 45.978219
LONG. 106.662945

ELEVATION BASE POINT
ELEV. 3157.51
LAT. 45.979748
LONG. 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0778
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 16-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services LLC.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 7/28/17 805
WEATHER (temperature, wind, precipitation): 72°F 7mph West
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Below the Top Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' Below Top of Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)			OKay
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		–	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	–		
(10) Any exposed ash on exterior slope?		–	
(11) Any visible water pooling or ponding?		–	
(12) Any visible water/runoff spill points?		–	
(13) Pipe Condition?			okay
(14) Water flowing from pipe?		–	
(15) Any pooling or poding at pipe inlet or outlet?		–	
(16) Any erosion/undermining of pipe at inlet or outlet?		–	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Dry & Brown No Rain

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date: 7/28/17

NO.	REVISIONS	DRAWN BY	DATE

PROJECT ENGINEER: DSC — DRAWN BY: ASG
DESIGNED BY: ASG — REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROSI
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 8-5-17 10 AM
WEATHER (temperature, wind, precipitation): 32°F - Calm dry
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3' below top of Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10-15' below top of berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO **:**
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		2' to 3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		OK
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Dry - No Rain - Weeds on top of phase I berm

C. Areas without Vegetation due to erosion (describe location and size of area)

NA

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NA

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: [signature] 8/5/17 Signature and Date:

NO.	REVISIONS	DRAWN BY	DATE

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE 9/15/2016
SHEET C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 8/10/17
WEATHER (temperature, wind, precipitation): 69° No wind
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' to Top Ash Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' to Top Ash Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? WD :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		Okay
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?		✓	Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Brown. Some green showing yet

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ 8/10/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON 9/14/15 BY GREG FINCK OF AESI 1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI

BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.970748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

SCALE (FEET): 0 100 200 300

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ka McFall
DATE & TIME INSPECTED: 8/18/17 10 AM
WEATHER (temperature, wind, precipitation): 80° 3 mph
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2'-3' from Top Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10-15 from Top of Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)			okay
(6) Interior Side Slopes (1.5H:1V design)			okay
(7) Height of Berm above Ash Surface (ft)			2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?		✓	
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Dry No Rain

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

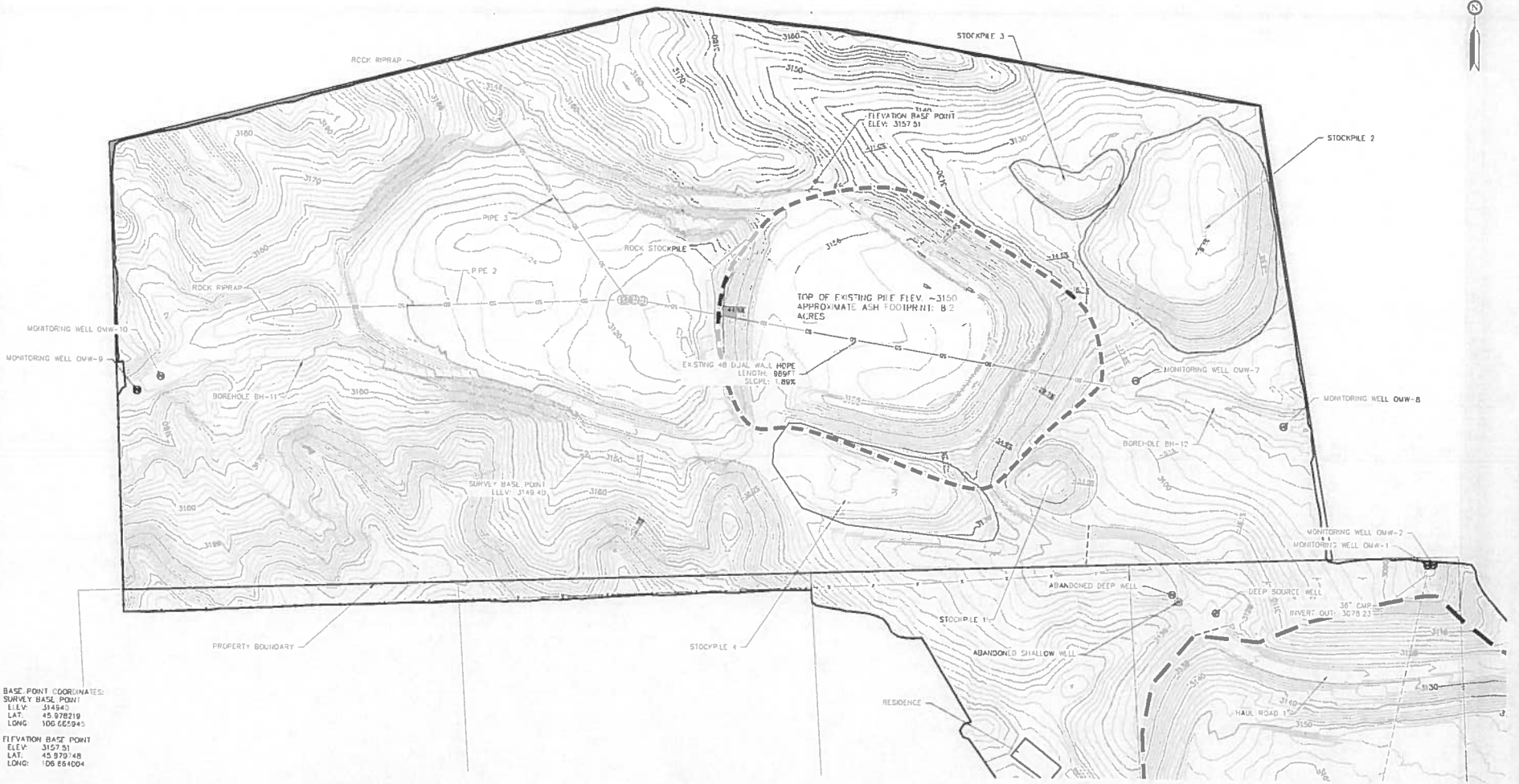
No

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

No Ash being added in Phase II Plant is down

This inspection was performed by: _____ 8/18/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT. 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT. 45.970748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0713
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud ~~Power Plant~~ Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 8/25/17 2pm
WEATHER (temperature, wind, precipitation): 83° F N 14 mph
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' from Top Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' from Top of Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		Okay
(7) Height of Berm above Ash Surface (ft)			2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		—	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	—		
(10) Any exposed ash on exterior slope?		—	
(11) Any visible water pooling or ponding?		/	
(12) Any visible water/runoff spill points?		—	
(13) Pipe Condition?		—	
(14) Water flowing from pipe?		/	
(15) Any pooling or poding at pipe inlet or outlet?		—	
(16) Any erosion/undermining of pipe at inlet or outlet?		—	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Dry No Rain

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

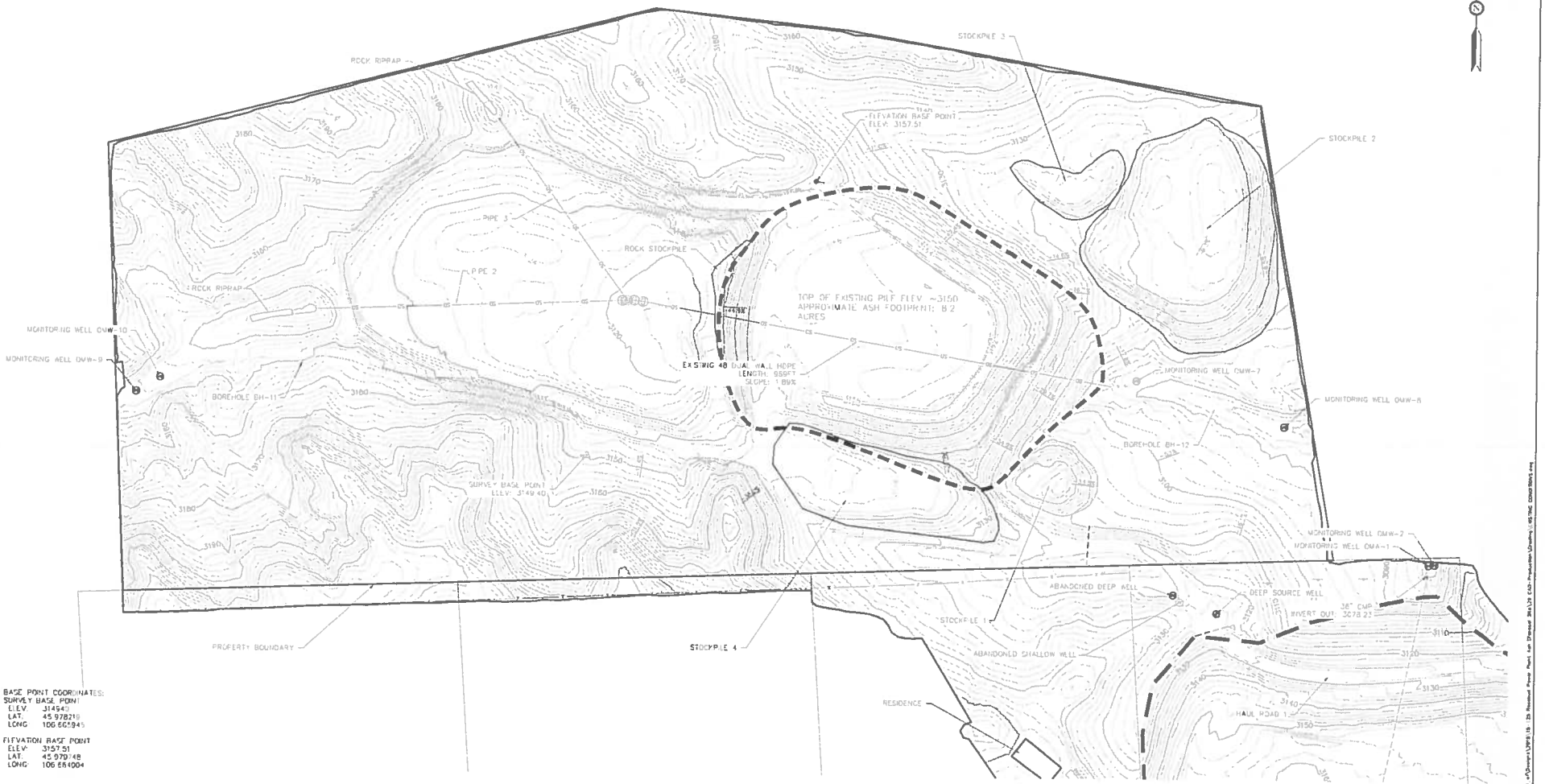
3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

No Ash being added to Pit Phase II Plant down

This inspection was performed by: [signature] 8/25/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.664945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.970148
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 9/1/17 915am
WEATHER (temperature, wind, precipitation): 69° 12mph NW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill, MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Top Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' Top Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? None :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?		✓	O/Kay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Grass Dry No Rain

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No No Rain

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

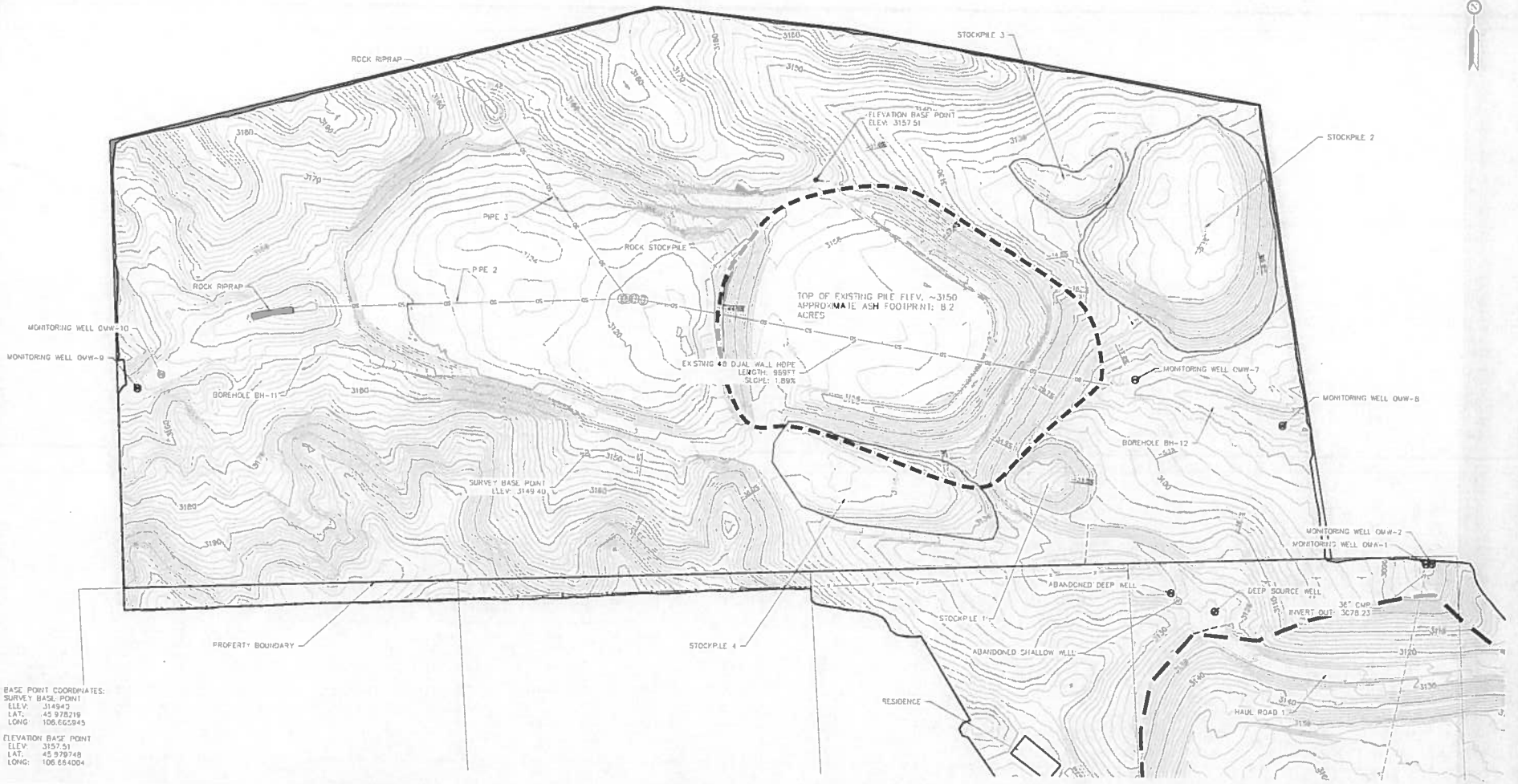
None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

Watching for Fire Dangers

This inspection was performed by: _____ Signature and Date: 9/1/17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.662945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.654004

NO	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 9/8/17 1215
WEATHER (temperature, wind, precipitation): 78° 8 mph ESE
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3' Below top Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' From top Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NONE:
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		@ 2-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Grass Dry No Rain

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

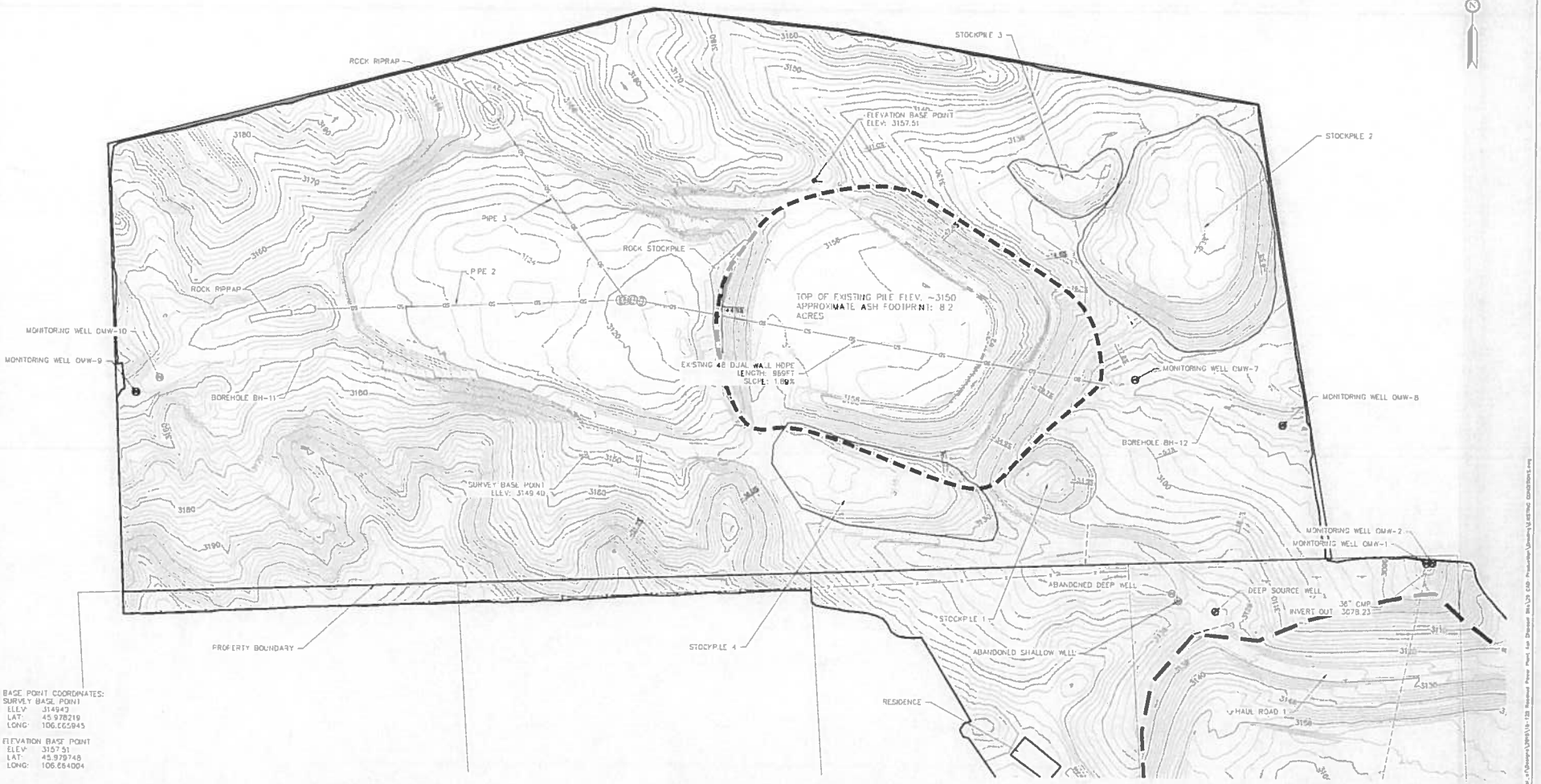
(Use additional pages, if necessary, include pictures as needed)

NO Ash being dumped - Plant is Down.

Dumped 16 loads Coal - Dump Tank - Phase II

This inspection was performed by: _____ Signature and Date: 9/8/17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665845

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59715
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE: 9/15/2016
SHEET C0-3
EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ben Metzl
DATE & TIME INSPECTED: 9/15/17 1143
WEATHER (temperature, wind, precipitation): 48°F 16mph NNE
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Below Berm Top

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' Below Berm Top

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NONE:
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓	✓	
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Okay

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NONE

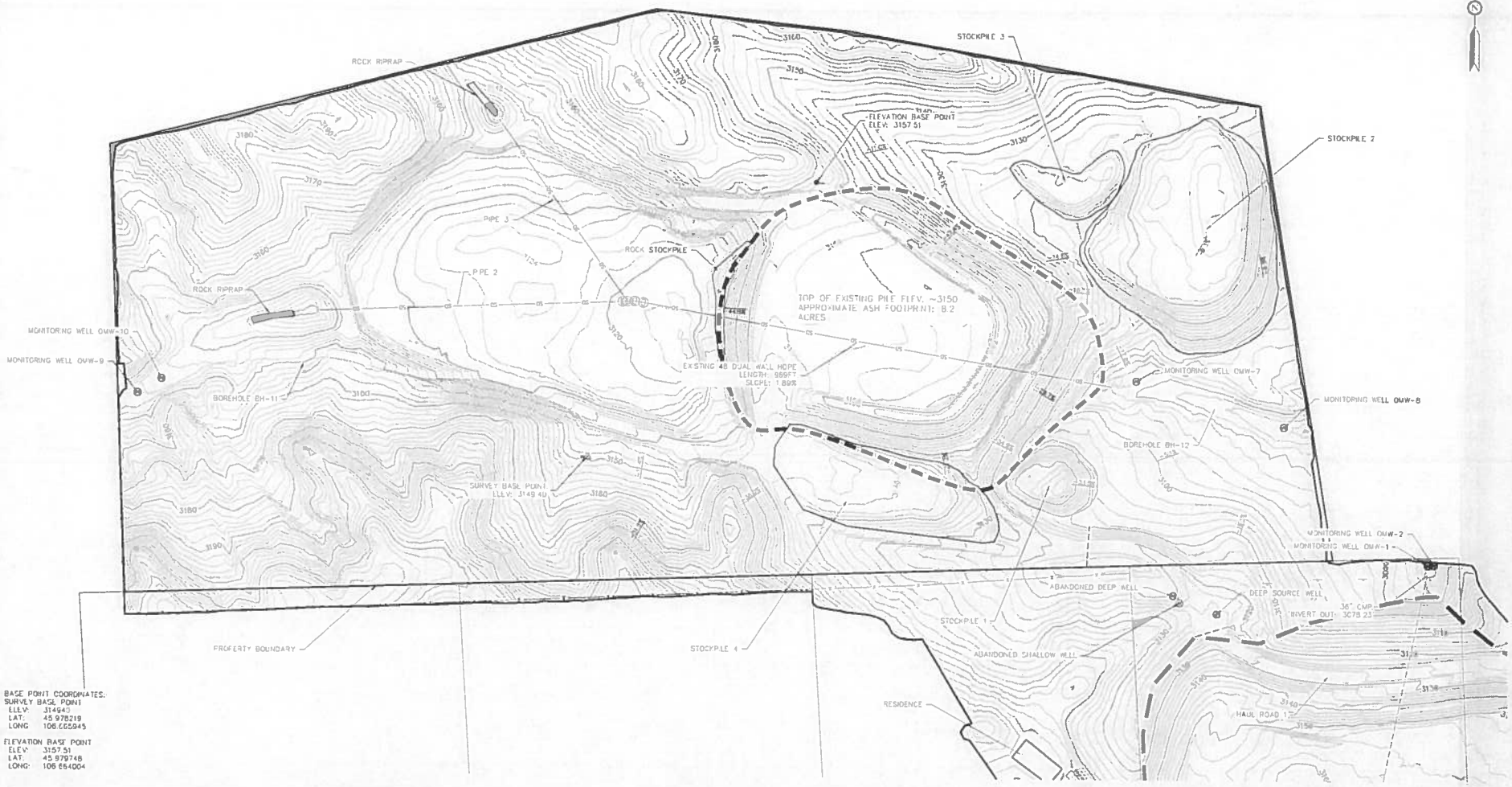
3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

Raining today

This inspection was performed by: _____ 9/15/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-6779
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 9/22/17 3:14
WEATHER (temperature, wind, precipitation): 45° Cloudy - NE / Light Occasional Rain
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3' from top berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-15' from Top of Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here: _____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		okay
(7) Height of Berm above Ash Surface (ft)			2-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Okay

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

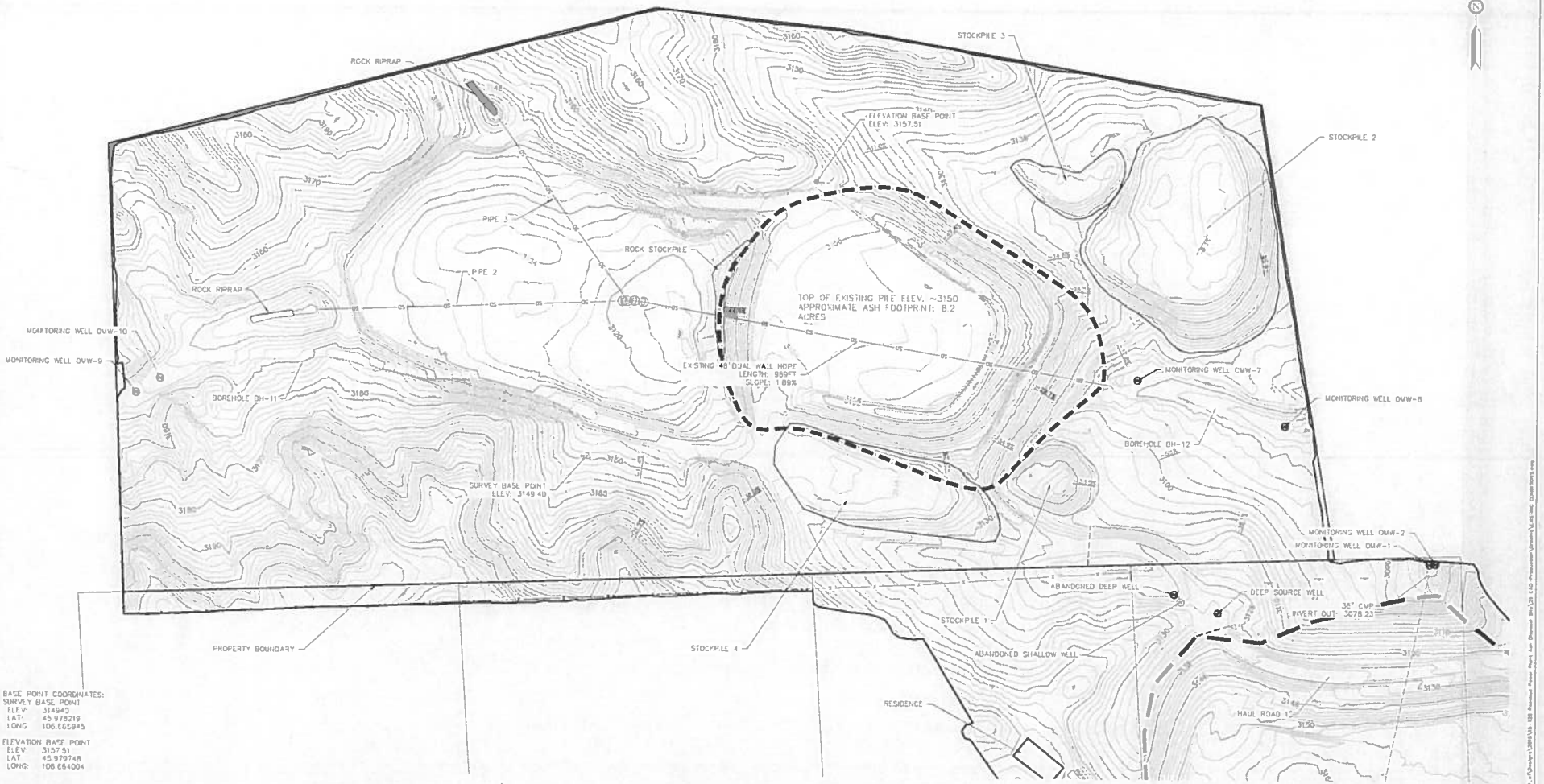
None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

Chance for Rain today + Thru weekend

This inspection was performed by: [signature] 9/22/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.654004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE: (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Kurt McFarland
DATE & TIME INSPECTED: 9/29/17 2255
WEATHER (temperature, wind, precipitation): 68° 13 mph South Part Cloudy
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

2'-3' top of berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10'-15' from top of berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		-	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	-		
(10) Any exposed ash on exterior slope?		-	
(11) Any visible water pooling or ponding?		-	
(12) Any visible water/runoff spill points?		-	
(13) Pipe Condition?			okay
(14) Water flowing from pipe?		-	
(15) Any pooling or poding at pipe inlet or outlet?		-	
(16) Any erosion/undermining of pipe at inlet or outlet?		-	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

okay

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

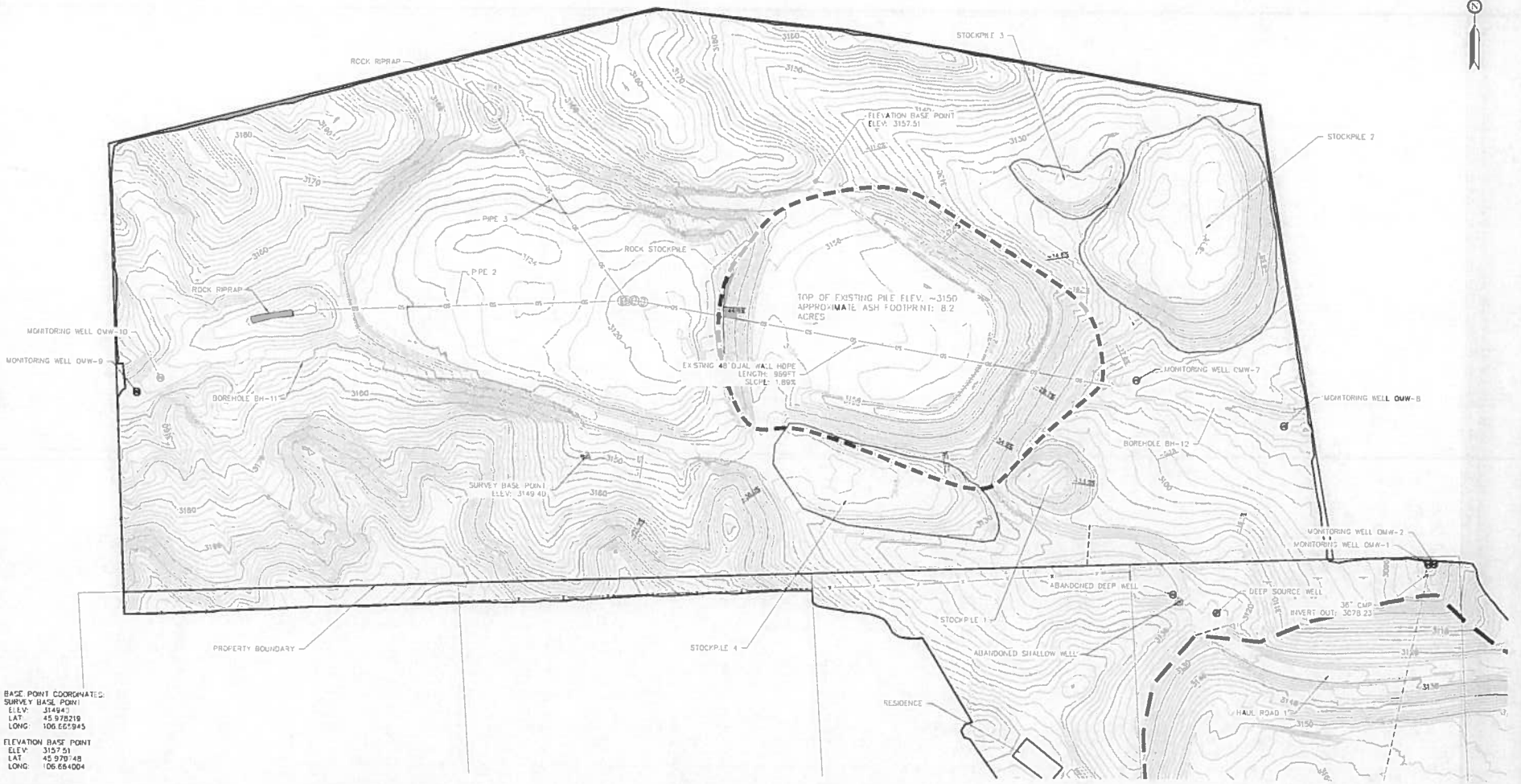
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: [signature] 9/29/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.978148
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services, INC
INSPECTOR: Larry Felton
DATE & TIME INSPECTED: 10/6/17 14:07
WEATHER (temperature, wind, precipitation): 64° 12mph WSW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Below Top of Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10 To 15 FT Below top of Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			OK
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

OK

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

None

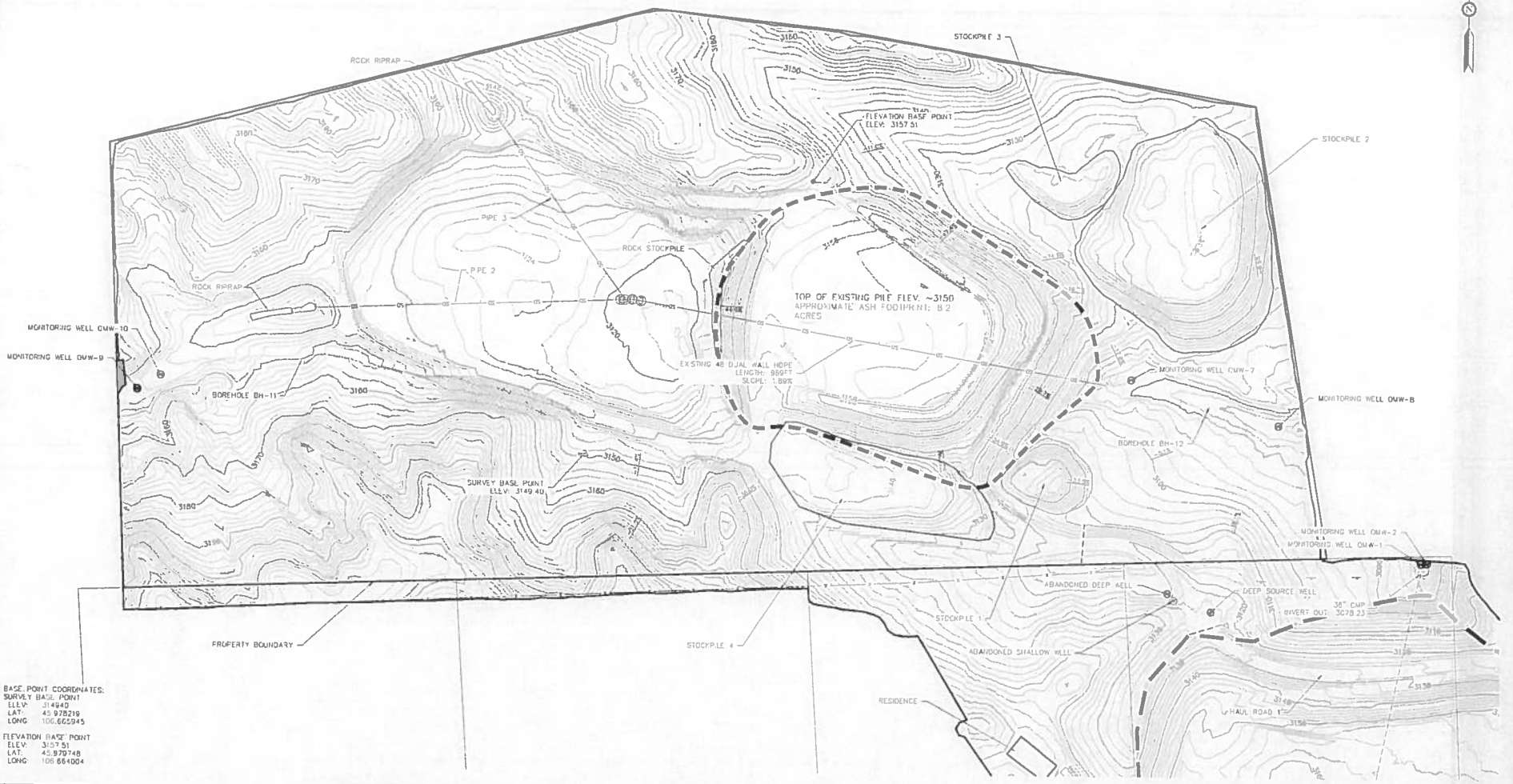
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date: 10/6/17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET: C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 10/13/17 750
WEATHER (temperature, wind, precipitation): 32° 4 mph SW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2 - 3' from Top Berm.

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' - 15' from Top Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	Heaving Andy Bladed Inside
(4) Any traffic or animal damage?		✓	~~Water~~ Spray water
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		Okay
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2'-3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Okay

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

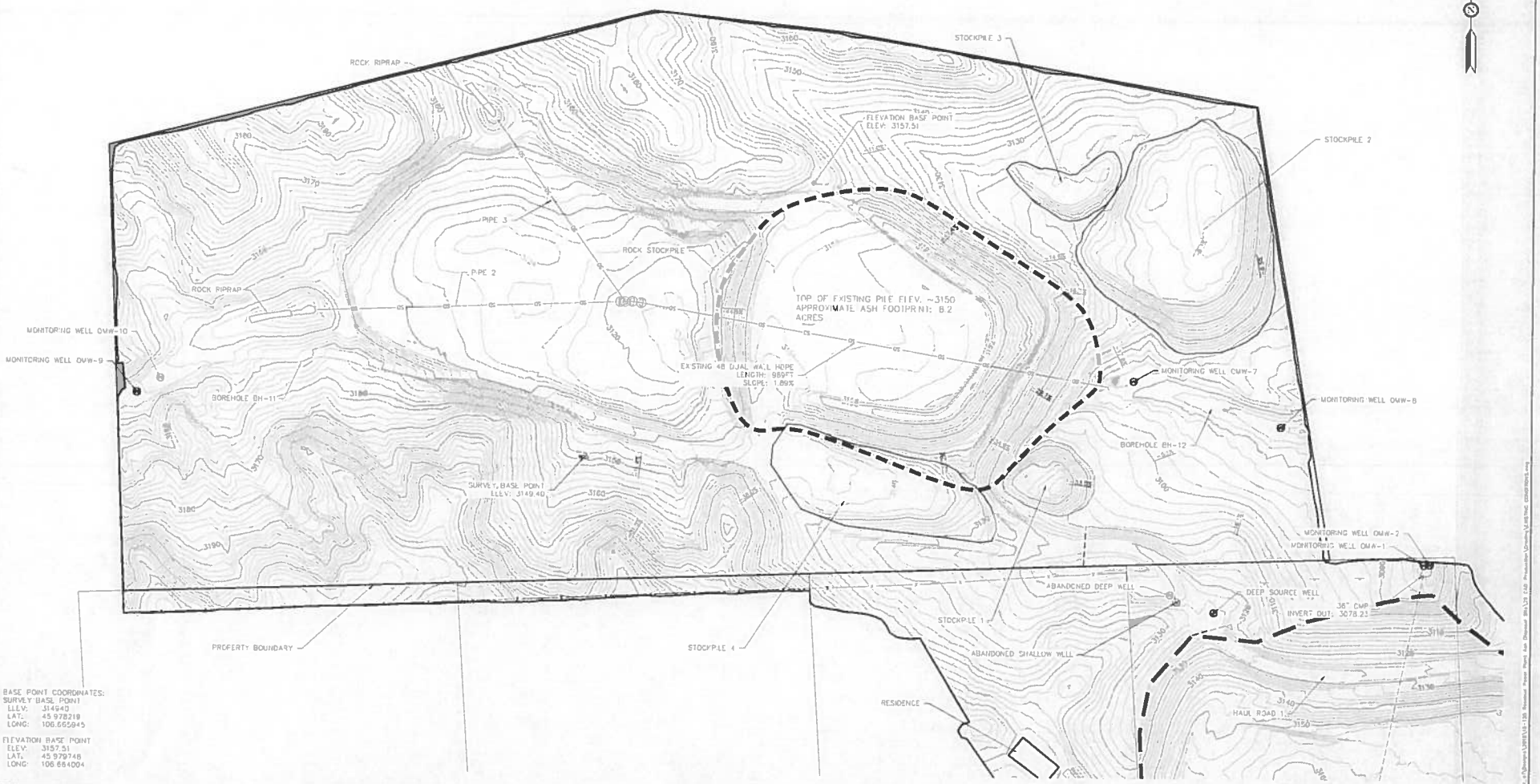
No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ 10/13/17 Signature and Date:



NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE: (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROSI
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 10/23/17 - 0913 hrs
WEATHER (temperature, wind, precipitation): 44°F - 17 West wind - Dry
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3' below top of berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10-15' from tops of berms

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		2' to 3'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?	✓		Good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Okay -

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

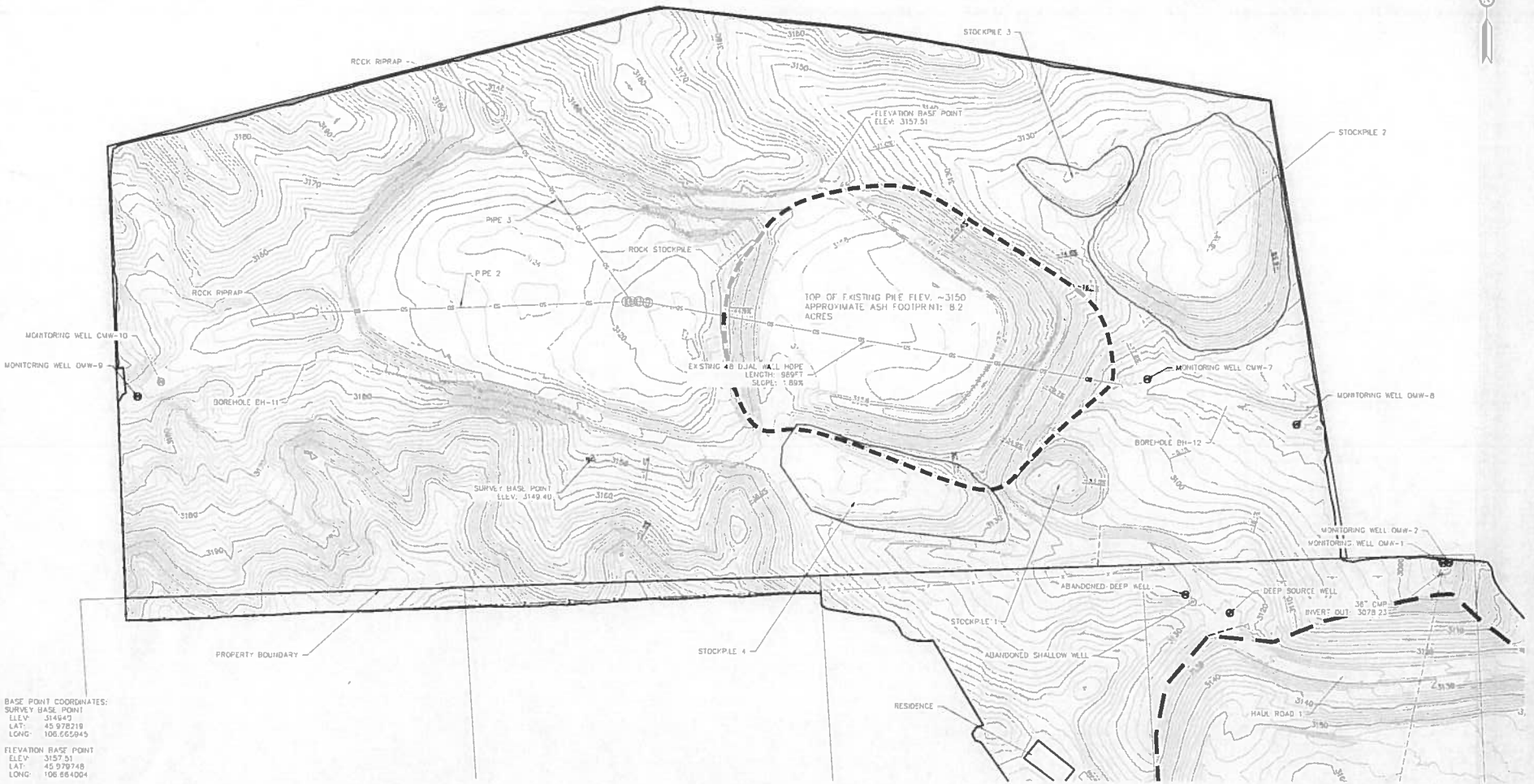
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ 10/23/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978218
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASC
DESIGNED BY: ASC | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Ilea McFarland
DATE & TIME INSPECTED: 10/30/17 0925 hrs
WEATHER (temperature, wind, precipitation): 27°F 15mph NW Cloudy
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2'-3' Below Top of the Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'-19' Below Top of the Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		okay
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2-3' Top of Berm

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓	✓	
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?		-	OKay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

OKay

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

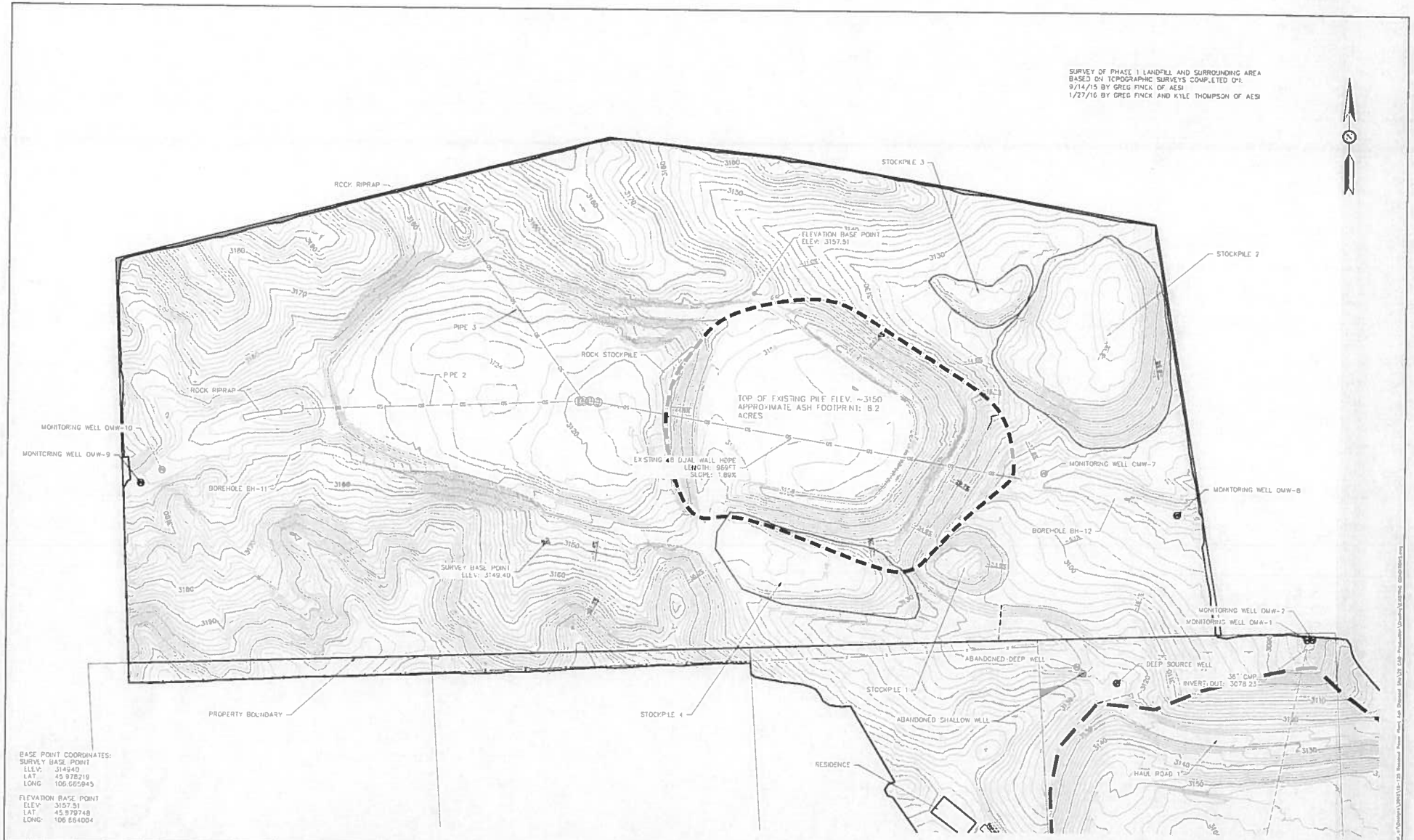
NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ 10/30/17 Signature and Date:



NO.	REVISIONS	DRAWN BY	DATE

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 11/3/17 940am
WEATHER (temperature, wind, precipitation): 31°F 8 mph West Cloudy / Snow
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
2-3' ft from top of berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10 - 19' ft from top of berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? None :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		o Kay
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			2-3' to Top Berm

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		-	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	-		o Key
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

o Key

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

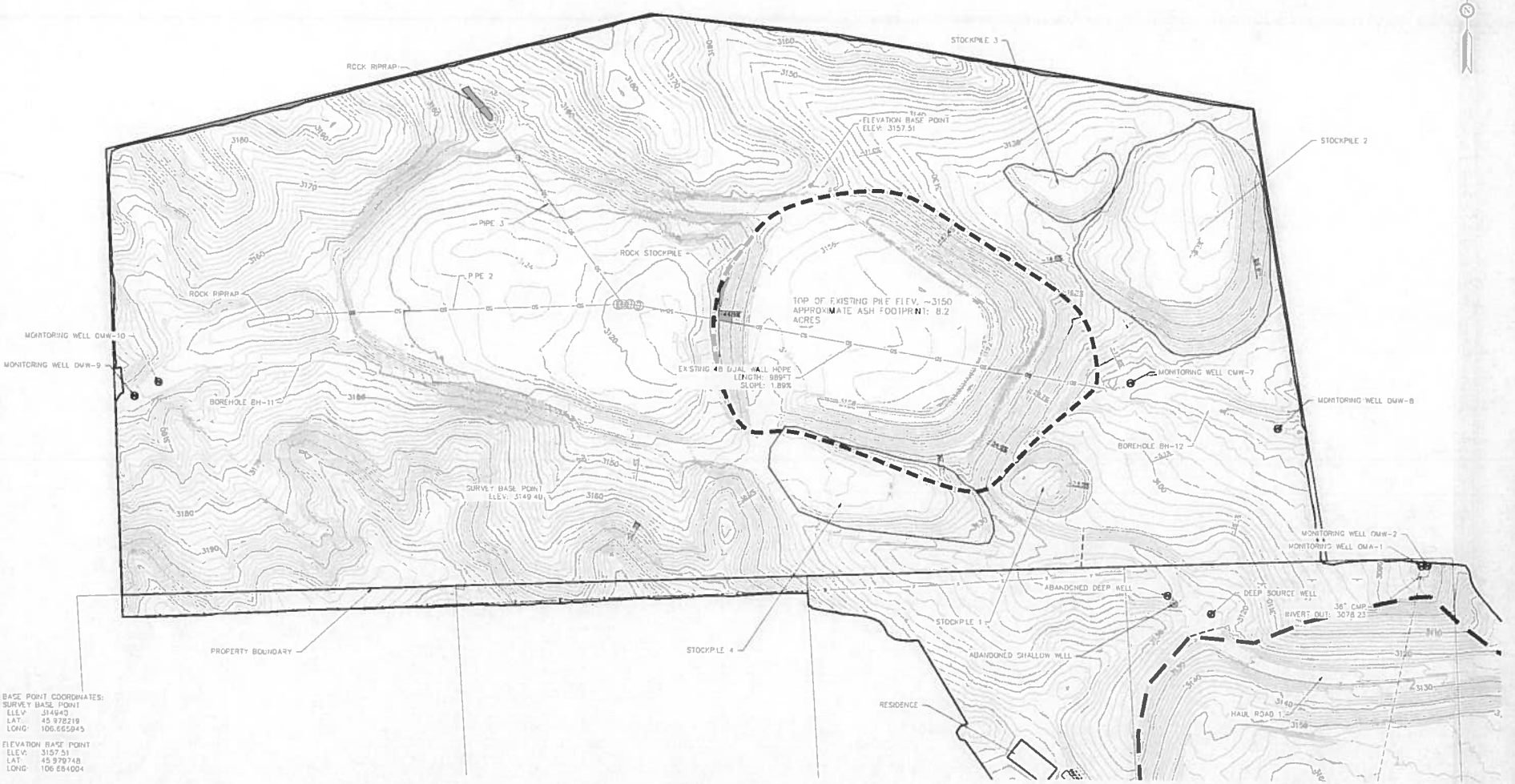
None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

Blanket of Snow Last night

This inspection was performed by: Ken McFarland 11/3/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665845

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.684004

NO.	REVISIONS	DRAWN BY	DATE

SCALE (FEET): 0 100 200 300

PROJECT ENGINEER: DSC | DRAWN BY: ASC
DESIGNED BY: ASC | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET: C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Ken McFarland
DATE & TIME INSPECTED: 11/10/17
WEATHER (temperature, wind, precipitation): 36°F 35W
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

1-2' from Top Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

10'-19' from Top Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? N/O **:**
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

2-3" Snow fall since last inspection

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)			okay
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		1-2' from Top Berm

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓	✓	
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Okay Snow Covered

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

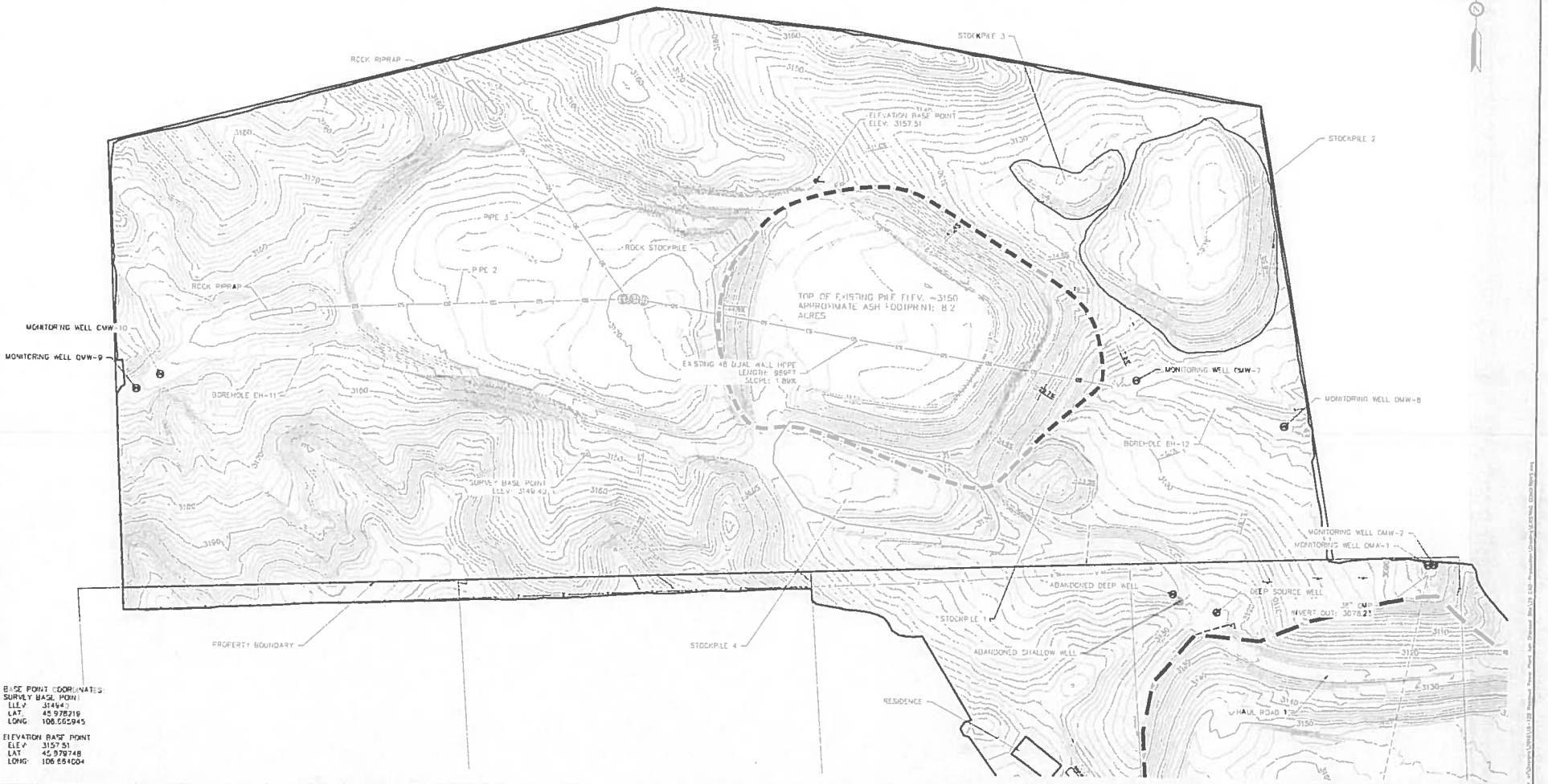
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: [signature] 11/10/17 Signature and Date:

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON:
9/14/15 BY GREG FINCK OF AES
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AES



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.42
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.978748
LONG: 106.664604

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59715
PHONE (406) 522-4221
FAX (406) 582-8770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016
SHEET: C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROST
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 11-17-17
WEATHER (temperature, wind, precipitation): 35°F - 5mph west wind
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
1'-2' from top of Berm
Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'± below top of Berms
This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No **:** - Allied here this week for Annual Insp.
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.
Rain this week - top surface wet - NO standing water.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		1'-2' from top of Berm in phase 1 of Active Pit

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			No

B. Amount and Type of Vegetation on the Embankment & Bench Areas

OK

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

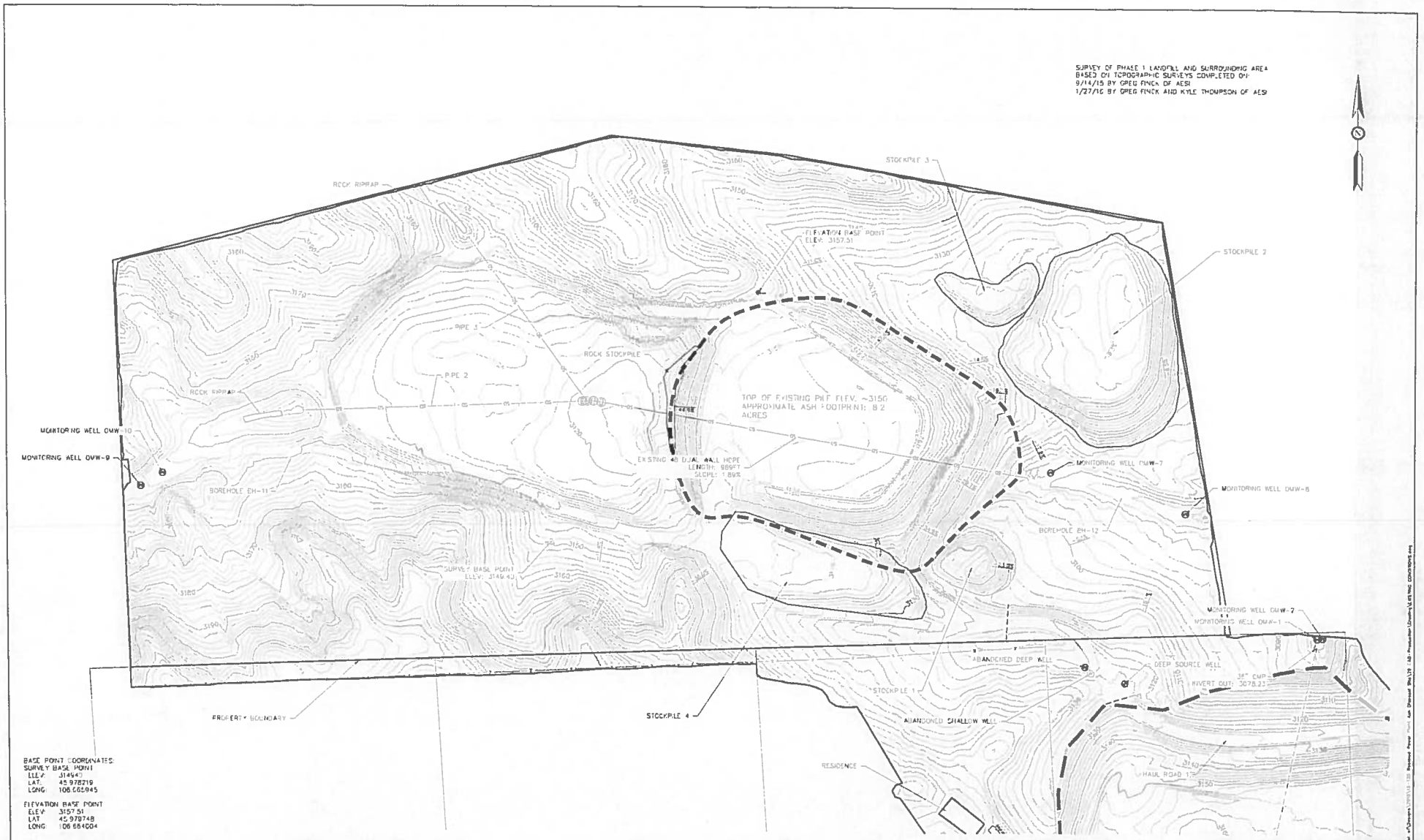
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

No

This inspection was performed by: _____ Signature and Date: 11/17/17



NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC DRAWN BY: ASG
DESIGNED BY: ASG REVIEWED BY: DSC, BOA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-4221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Ken Mehlhoff
DATE & TIME INSPECTED: 11/27/17 810
WEATHER (temperature, wind, precipitation): 51° W 9 mph
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
1'-2' from Top of Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10'+ below top of Berms

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		1'-2' from top berm

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?		✓	Good
(14) Water flowing from pipe?		✓	6.
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			None

B. Amount and Type of Vegetation on the Embankment & Bench Areas

OK

C. Areas without Vegetation due to erosion (describe location and size of area)

NO

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

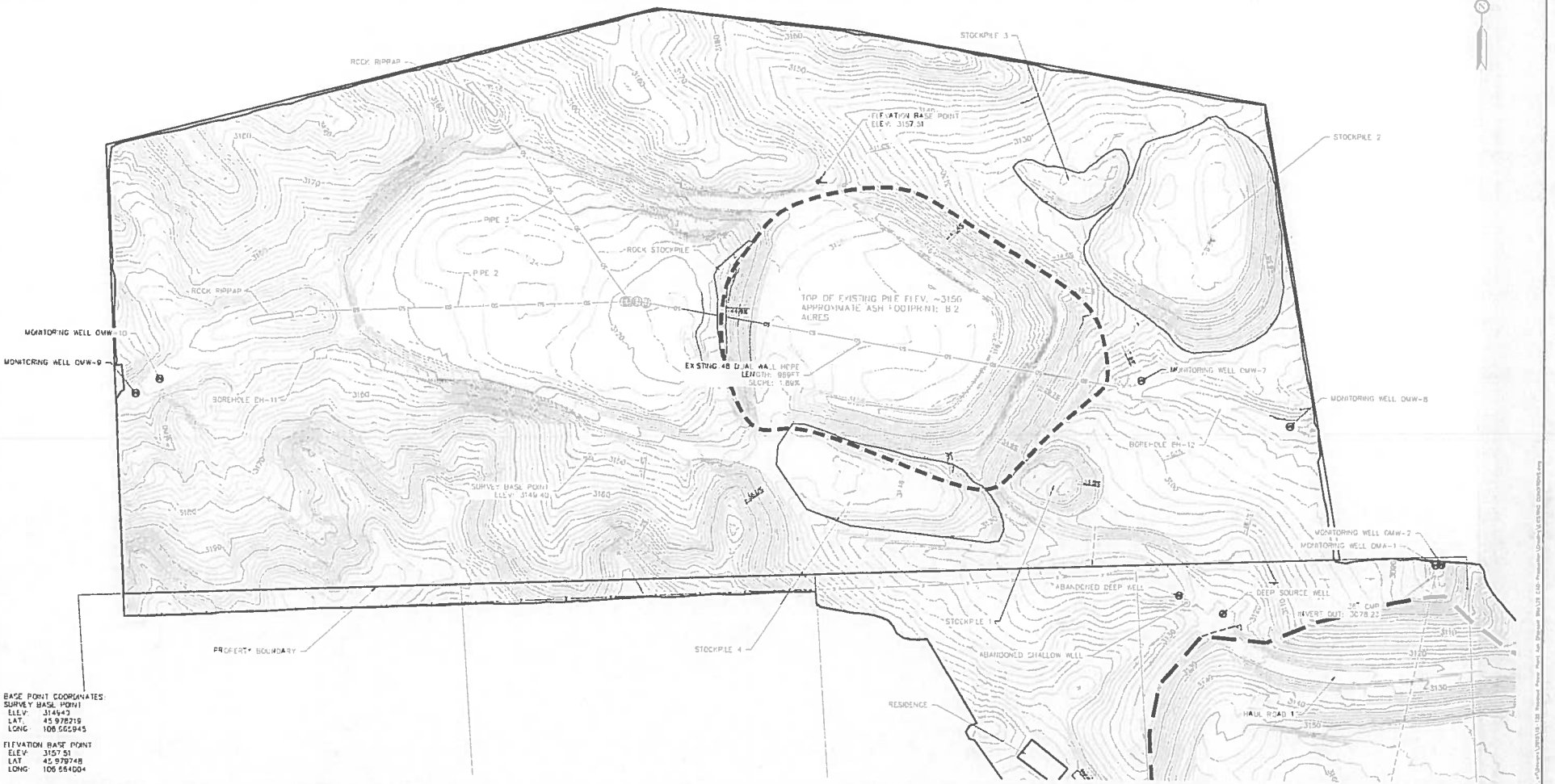
None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

Haulroad Blocked

This inspection was performed by: _____ Signature and Date: 11/27/17

SURVEY OF PHASE 1 LANDFILL AND SURROUNDING AREA
BASED ON TOPOGRAPHIC SURVEYS COMPLETED ON
9/14/15 BY GREG FINCK OF AESI
1/27/16 BY GREG FINCK AND KYLE THOMPSON OF AESI



BASE POINT COORDINATES:
SURVEY BASE POINT
ELEV: 3149.40
LAT: 45.978219
LONG: 106.665945

ELEVATION BASE POINT
ELEV: 3157.51
LAT: 45.979748
LONG: 106.664004

NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC DRAWN BY: ASG
DESIGNED BY: ASG REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN MT 59715
PHONE (406) 582-0221
FAX (406) 582-6770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Ken M. Fayland
DATE & TIME INSPECTED: 12/4/17 731
WEATHER (temperature, wind, precipitation): 18°F 18 mph WSW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
1'- 2' From Top Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' plus From Top of Berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? N/O :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		~~12~~
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		1'-2'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓	✓	
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

okay

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

NO

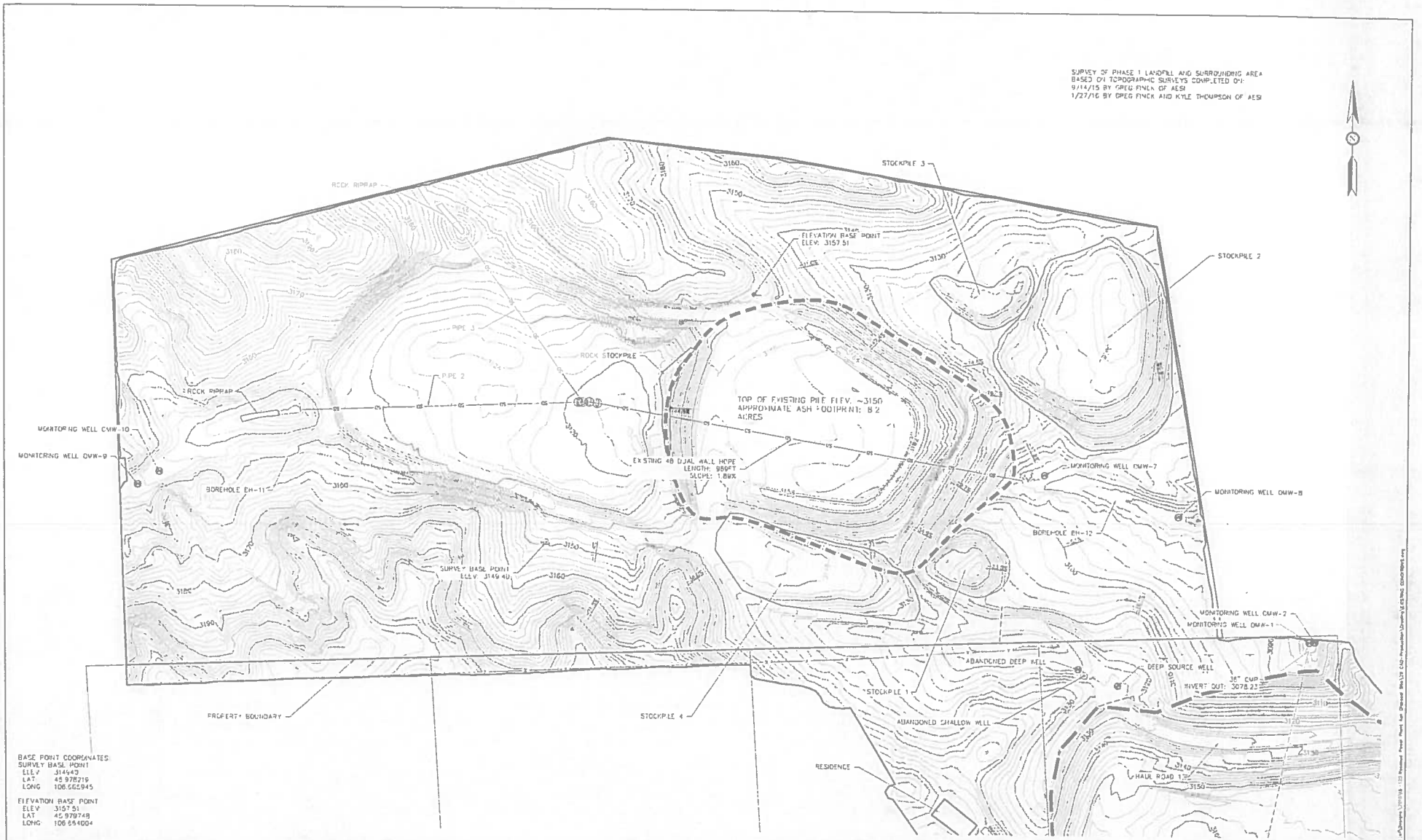
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

Light Snow last night

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

None

This inspection was performed ~~by:~~ R McAfee 12/4/17 Signature and Date:



NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC DRAWN BY: ASG
DESIGNED BY: ASG REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59715
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc.
INSPECTOR: Ken McPerland
DATE & TIME INSPECTED: 12/8/17 940
WEATHER (temperature, wind, precipitation): 35°F partly Sunny WSW 12 14 mph Gust
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
1'-2' from Top of berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' plus from Top of berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		good
(6) Interior Side Slopes (1.5H:1V design)	✓		OKay
(7) Height of Berm above Ash Surface (ft)			1-2' Top Berm

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

okay

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

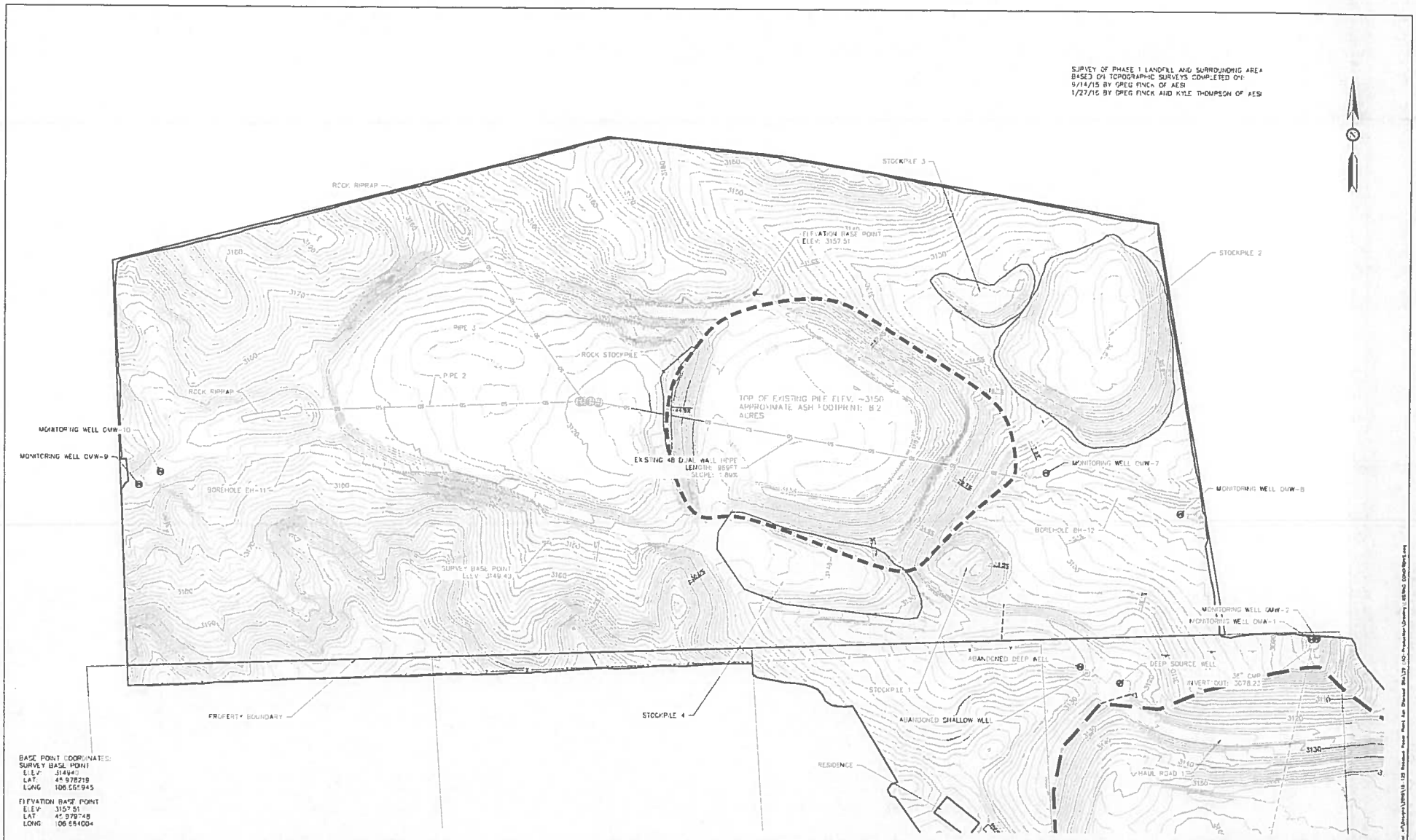
None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS

(Use additional pages, if necessary, include pictures as needed)

Plant running again Dumping Ash again Phase II

This inspection was performed by: [signature] 12/8/17 Signature and Date:



NO	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC DRAWN BY: ASC
DESIGNED BY: ASC REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN MT 59715
PHONE (406) 582-0221
FAX (406) 580-6770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT # 15-125
DATE: 9/15/2015

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: ROSI
INSPECTOR: LARRY Fultz
DATE & TIME INSPECTED: 12/15/17 08:00
WEATHER (temperature, wind, precipitation): 38° 10 MPH SW (OVERCAST)
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
1' to 3' From Top of Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' +

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? NO :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)			1-2 FT

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

OK

C. Areas without Vegetation due to erosion (describe location and size of area)

NONE

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

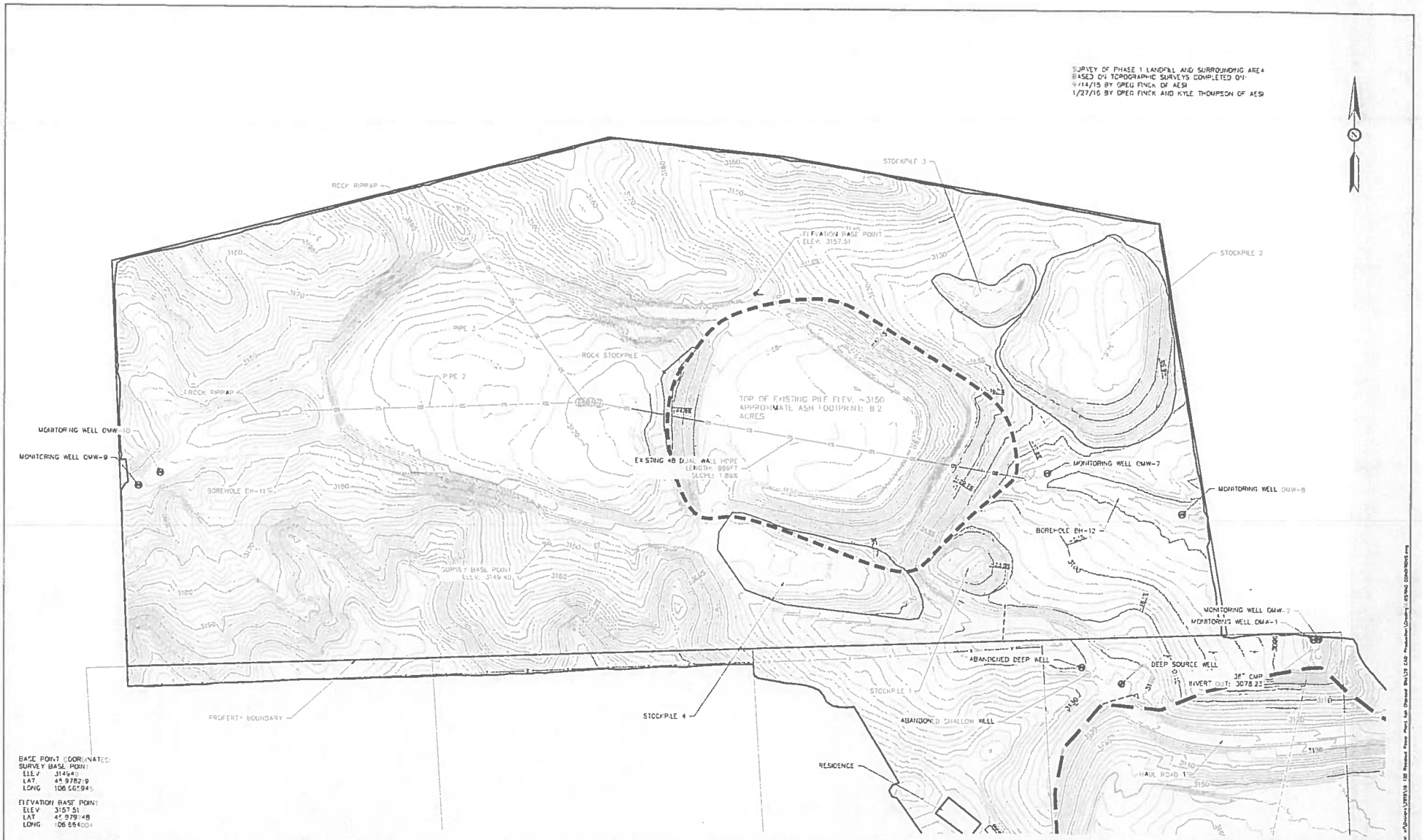
NO

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NONE

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: _____ Signature and Date: 12/15/17



NO	REVISIONS	DRAWN B	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59715
PHONE (406) 582-0221
FAX (406) 582-5770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud Operating Services Inc
INSPECTOR: Ian McFarland
DATE & TIME INSPECTED: 12/26/17 1030 am
WEATHER (temperature, wind, precipitation): -4° partly Cloudy - NE 2 mph
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):
1-2' from top berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):
10' plus from top of the berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE
A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)		✓	1-2'

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?		.	okay
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?			

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow Covered

C. Areas without Vegetation due to erosion (describe location and size of area)

None

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

No

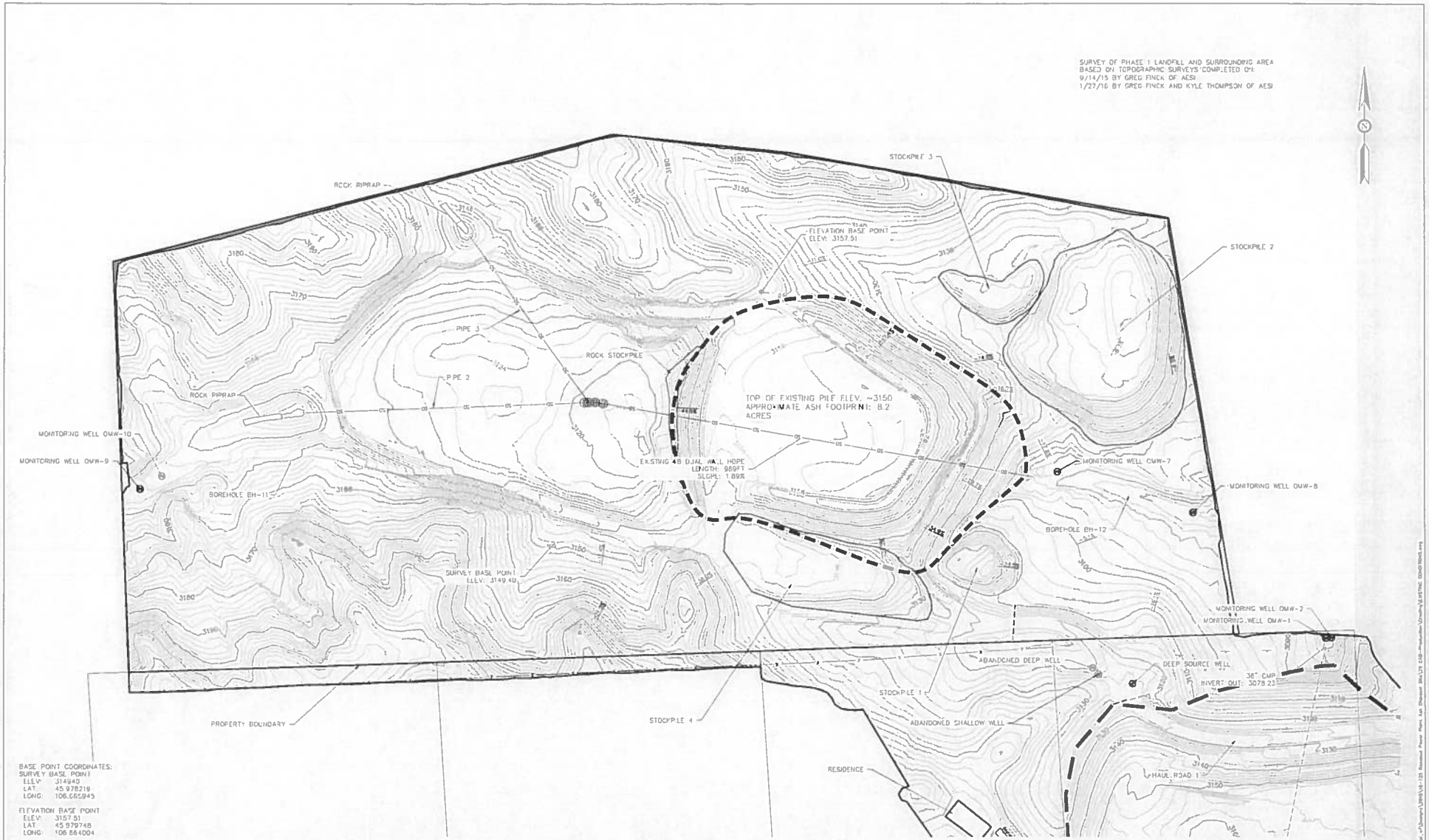
2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

None

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

Snowed & Cold

This inspection was performed by: [signature] 12/26/17 Signature and Date:



NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASG
DESIGNED BY: ASG | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5710
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT #: 15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS

ROSEBUD POWER PLANT
CCR LANDFILL INSPECTION REPORT

OWNER: Colstrip Energy Limited Partnership (CELP)
OPERATOR: Rosebud operating Services, Inc
INSPECTOR: Joel Zimmerman
DATE & TIME INSPECTED: 12/29/17
WEATHER (temperature, wind, precipitation): 1°F - Snow - Wind 13 MPH NW
FLYASH STORAGE SITE INSPECTED: Phase 1 and 2 of Rosebud Power Plant CCR Landfill,
MDEQ Groundwater Permit # MTX000052, MDEQ Stormwater Discharge Permit #MTR000058, SWPPP # PEP-9

Flyash Storage Site Status

Approximate FlyAsh Surface Elevation Phase 1 (feet, describe method of measurement):

1-2 ft below top of Berm

Approximate FlyAsh Surface Elevation Phase 2 (feet, describe method of measurement):

about 10' ft below top of berm

This Form Should be Attached to Reference Map, list date of inspection on map along with notations relating to locations of comments/picture indicated below. (Allied Provide insp. Map)

Any Issues From Previous Week/Inspection? No :
If so, note here:_____

General Instructions: Inspect for the general criteria below. Indicate locations of findings on an inspection map, take pictures (include date stamp), and indicate location of pictures on the inspection map.

1. EMBANKMENT & PIPE

A. Berm (Exterior, Top, Interior, Benches) & Pipe

ITEM	YES	NO	REMARKS/LOCATION
(1) Any visual settlement, sloughing, slumps, depressions or bulges?		✓	
(2) Any misalignments?		✓	
(3) Any cracking?		✓	
(4) Any traffic or animal damage?		✓	
(5) Top Width (10-ft design) except at prescribed exterior bench locations (see map)	✓		
(6) Interior Side Slopes (1.5H:1V design)	✓		
(7) Height of Berm above Ash Surface (ft)	✓		1-2 ft below

ITEM	YES	NO	REMARKS/LOCATION
(8) Any Debris, Erosion, or Cracking?		✓	
(9) Side Slopes meet minimums (3:1 exterior, 1.5:1 interior)?	✓		
(10) Any exposed ash on exterior slope?		✓	
(11) Any visible water pooling or ponding?		✓	
(12) Any visible water/runoff spill points?		✓	
(13) Pipe Condition?			Good
(14) Water flowing from pipe?		✓	
(15) Any pooling or poding at pipe inlet or outlet?		✓	Snow
(16) Any erosion/undermining of pipe at inlet or outlet?		✓	
(17) Other?		✓	

B. Amount and Type of Vegetation on the Embankment & Bench Areas

Snow Covered Vegetation

C. Areas without Vegetation due to erosion (describe location and size of area)

No

D. Areas without Vegetation due to lack of topsoil cover (describe location and size of area)

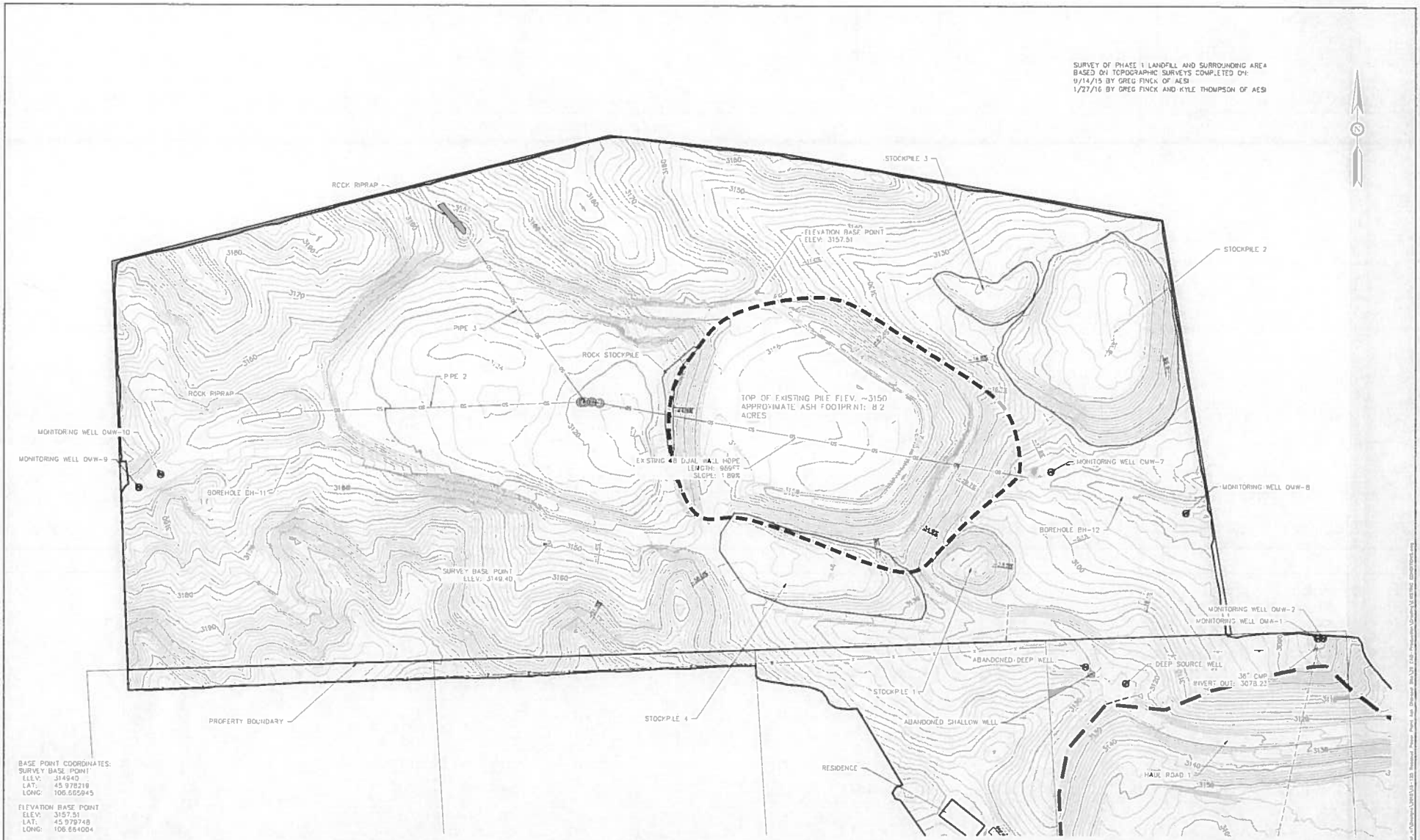
No

2. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

NO

3. GENERAL INSPECTION COMMENTS / ADDITIONAL COMMENTS AND RECOMMENDATIONS
(Use additional pages, if necessary, include pictures as needed)

This inspection was performed by: Joel Jimmerson 12-29-17 Signature and Date:



NO.	REVISIONS	DRAWN BY	DATE

0 100 200 300
SCALE (FEET)

PROJECT ENGINEER: DSC | DRAWN BY: ASC
DESIGNED BY: ASC | REVIEWED BY: DSC, BDA

ROSEBUD POST-CLOSURE DESIGN
EXISTING CONDITIONS (AS-BUILT)
ROSEBUD COUNTY, MT

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-0770
www.alliedengineering.com

Civil Engineering
Geotechnical Engineering
Land Surveying

ALLIED ENGINEERING SERVICES, INC.

PROJECT: [illegible]15-125
DATE: 9/15/2016

SHEET
C0-3

EXISTING CONDITIONS