



Huddleston-Berry
Engineering & Testing, LLC

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February 13, 2020
Project#01349-0001

Bowie Resources, LLC
43659 Bowie Road
Paonia, Colorado 81428

Attention: Mr. Basil Bear

Subject: Construction Materials Testing
4th Quarter 2019
Bowie Mine No. 2
Paonia, Colorado

Dear Mr. Bear,

At your request, a representative of Huddleston-Berry Engineering and Testing, LLC (HBET) conducted field moisture and compaction testing, and laboratory moisture testing of coal mine waste materials placed at Bowie Mine No. 2 near Paonia, Colorado. Field testing was conducted on September 23rd and November 12th, 2019. Soil compaction test reports, test location data, and laboratory optimum moisture and density (Proctor) data are attached.

We are pleased to be of service to your project. Please contact us if you have any questions or comments regarding the contents of this report.

Respectfully Submitted:
Huddleston-Berry Engineering and Testing, LLC

A handwritten signature in blue ink, reading 'Michael A. Berry', with a stylized flourish at the end.

Michael A. Berry, P.E.
Vice President of Engineering

SOIL COMPACTION TEST REPORT

Task: Gob Pile Densities

Field vs. Lab Densities

Project No.: 01349 - 0001

Tested By: Dm **Date:** 9/23/19

Project Name: Bowie Mine

Work Order No: 61890

Client Name: Bowie Resources

Authorized By: Client **Date:** 9/23/19

Placement Contractor: Bowie Resources

Reviewed By: JAL **Date:** 10/1/19

Contractor Representative: _____

No.	Point No.	Elevation	Max. Dry Density (pcf)	Optimum Moisture (%)	Wet Density (pcf)	Speedy Moisture (%)	Field Dry Density (pcf)	Relative Field Comp.(%)	Tare Weight (g)	Wet Weight (g)	Dry Weight (g)	Lab Dry Density (pcf)	Lab Moisture (%)	Relative Lab Comp.(%)	
1	447	5920.1	95.5	14.0	99.8					873.5	777.6	88.8	12.3%	93%	
2	448	5919.1	95.5	14.0	101.8	14.3				1075.2	955.2	90.4	12.6%	95%	
3	449	5905.1	95.5	14.0	104.0					617.2	545.2	91.9	13.2%	96%	
4	450	5900.7	95.5	14.0	103.1					618.7	549.6	91.6	12.6%	96%	
5	451	5895.7	95.5	14.0	101.4					869.0	774.4	90.4	12.2%	95%	
6	452	5901.1	95.5	14.0	99.9	14.0				799.2	712.3	89.0	12.2%	93%	
7	453	5892.2	95.5	14.0	100.4					779.7	695.7	89.6	12.1%	94%	
8	454	5890.2	95.5	14.0	103.3					676.4	602.1	92.0	12.3%	96%	
9	455	5887.4	95.5	14.0	102.5					783.3	699.5	91.5	12.0%	96%	
10	456	5881.4	95.5	14.0	101.9	14.5				682.4	605.2	90.4	12.8%	95%	
11	457	5882	95.5	14.0	104.0					635.7	564.5	92.4	12.6%	97%	
12	458	5882.6	95.5	14.0	103.1					733.8	654.8	92.0	12.1%	96%	

Remarks: _____

Gauge Number: 12122

Density Counts: 1519

Moisture Counts: 623

Record No. 33 S

SOIL COMPACTION TEST REPORT

Task: Gob Pile Densities

Field vs. Lab Densities

Project No.: 01349 - 0001

Tested By: MS **Date:** 11/12/19

Project Name: Bowie Mine

Work Order No.: _____

Client Name: Bowie Resources

Authorized By: Client **Date:** 11/12/19

Placement Contractor: Bowie Resources

Reviewed By: MAB **Date:** 11/20/19

Contractor Representative: _____

No.	Point No.	Elevation	Max. Dry Density (pcf)	Optimum Moisture (%)	Wet Density (pcf)	Speedy Moisture (%)	Field Dry Density (pcf)	Relative Field Comp.(%)	Tare Weight (g)	Wet Weight (g)	Dry Weight (g)	Lab Dry Density (pcf)	Lab Moisture (%)	Relative Lab Comp.(%)	
1	459	5883.3	95.5	14.0	100.1				155.6	724.7	662.5	89.2	12.3%	93%	
2	460	5884	104.0	13.5	109.1				390.6	890.8	837.4	97.5	12.0%	94%	
3	461	5885.1	95.5	14.0	101.8				393.0	1348.4	1242.5	90.5	12.5%	95%	
4	462	5898.8	95.5	14.0	100.6				388.0	1255.0	1160.7	89.7	12.2%	94%	
5	463	5895.8	95.5	14.0	102.4				390.7	1133.8	1048.3	90.6	13.0%	95%	
6	464	5892.1	104.0	13.5	106.4				389.5	912.4	857.7	95.3	11.7%	92%	
7	465	5900.3	95.5	14.0	103.7				386.7	1293.4	1195.5	92.5	12.1%	97%	
8	466	5905.6	104.0	13.5	114.0				532.9	1219.7	1140.4	100.8	13.1%	97%	
9	467	5908.7	104.0	13.5	107.8				535.8	2040.5	1874.0	95.9	12.4%	92%	
10	468	5923.5	104.0	13.5	107.1				531.9	1251.7	1177.2	96.0	11.5%	92%	
11	469	5915.5	104.0	13.5	107.4				533.4	1866.2	1725.6	96.1	11.8%	92%	
12	470	5911.8	104.0	13.5	105.4				534.2	2009.6	1853.0	94.2	11.9%	91%	
13	471	5901.28	104.0	13.5	105.2				534.7	2067.7	1908.8	94.3	11.6%	91%	

Remarks: _____

Gauge Number: _____

Density Counts: _____

Moisture Counts: _____

Record No. 34 S

Bowie Resources Gob Disposal
Location of Compaction Tests

Gob Pile # 3
September 23, 2019

Point #	North	East	Elev	Date
447	17498.90	35533.47	5920.1	Sept-23
448	17529.03	35572.52	5919.0	
449	17581.63	35647.59	5905.1	
450	17507.01	35707.70	5900.7	
451	17434.10	35768.39	5895.7	
452	17539.67	35668.74	5901.1	
453	17581.96	35745.86	5892.2	
454	17544.31	35798.08	5890.2	
455	17480.87	35846.29	5887.4	
456	17522.07	35895.60	5881.4	
457	17560.03	35848.39	5882.0	
458	17592.75	35817.51	5882.6	

Bowie Resources Gob Disposal
Location of Compaction Tests

Gob Pile # 3
12-Nov-19

Point #	North	East	Elev	Date
459	17526.12	35888.37	5883.3	12-Nov
460	17558.75	35853.59	5884	
461	17593.31	35823.98	5885.1	
462	17593.88	35717.34	5898.8	
463	17531.1	35769.62	5895.8	
464	17478.44	35828.82	5892.1	
465	17432.79	35748.89	5900.3	
466	17501.76	35690.62	5905.6	
467	17547.52	35653.48	5908.7	
468	17551.14	35546.06	5923.5	
469	17438.94	35598.75	5915.5	
470	17367.44	35581.91	5911.8	
471	17349.45	35694.97	5901.2	



Huddlestone-Berry Engineering & Testing, LLC
640 White Avenue, Unit B
Grand Junction, CO 81501
970-255-8005
970-255-6818

MOISTURE-DENSITY RELATIONSHIP

CLIENT Bowie Resources, LLC

PROJECT NAME Bowie Mine #2

PROJECT NUMBER 00489-0003

PROJECT LOCATION Paonia, CO

Sample Date: _____

14-0195

Sample No.: _____

Source of Material: _____

Gob #3 Borrow Blend

Description of Material: _____

Test Method: _____

ASTM D698C

TEST RESULTS

Maximum Dry Density

104.0 PCF

Optimum Water Content

13.5 %

GRADATION RESULTS (% PASSING)

#200

#4

3/4"

ATTERBERG LIMITS

LL

PL

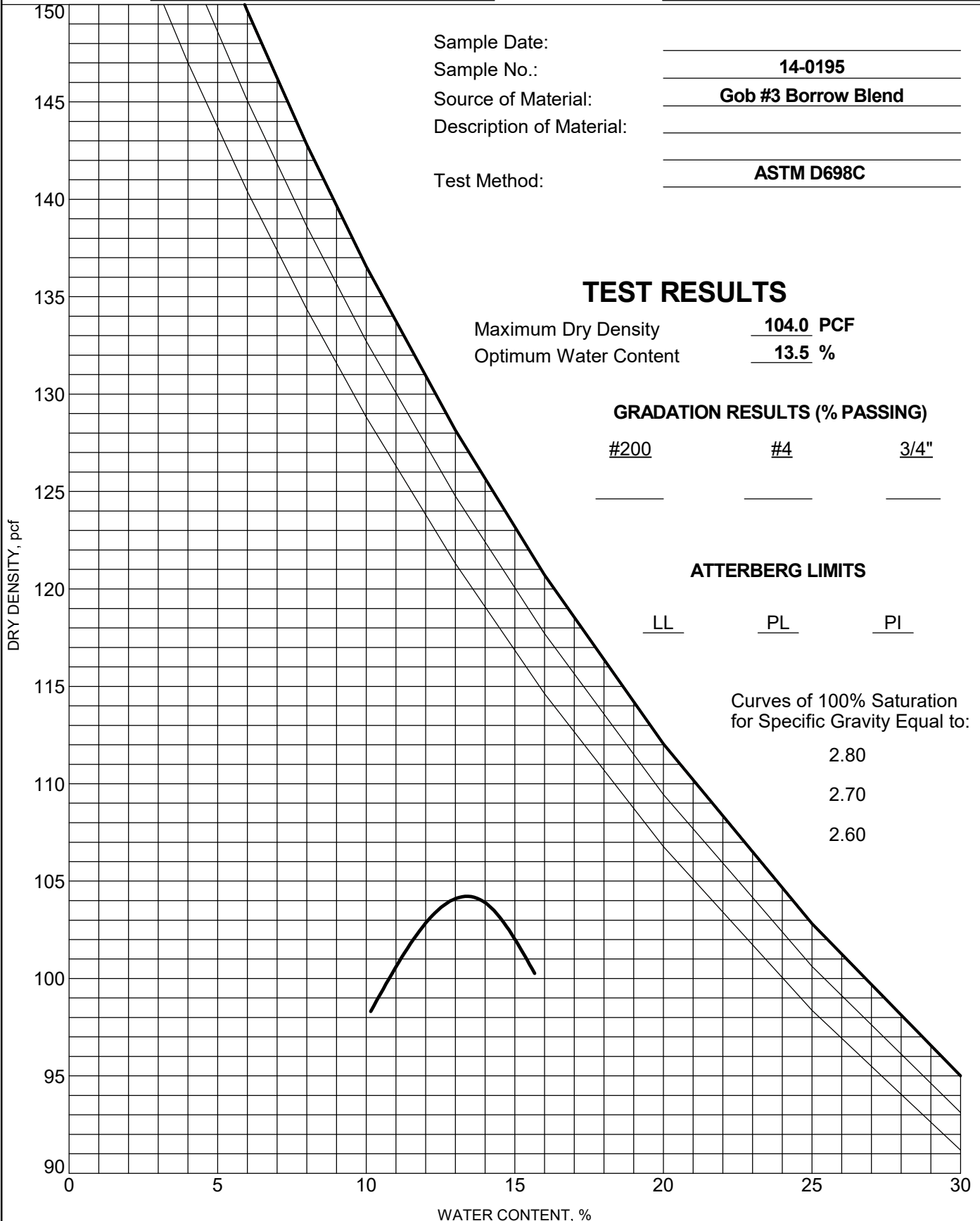
PI

Curves of 100% Saturation
for Specific Gravity Equal to:

2.80

2.70

2.60





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MOISTURE-DENSITY RELATIONSHIP

CLIENT Bowie Resources, LLC

PROJECT NAME Bowie Mine #2

PROJECT NUMBER 00489-0003

PROJECT LOCATION Paonia, CO

Sample Date: 3/28/2015
Sample No.: 15-0116
Source of Material: Gob 3 03/28/15
Description of Material: SILTY SAND with GRAVEL(SM)
Test Method: ASTM D698C

TEST RESULTS

Maximum Dry Density 95.5 PCF
Optimum Water Content 14.0 %

GRADATION RESULTS (% PASSING)

<u>#200</u>	<u>#4</u>	<u>3/4"</u>
<u>100</u>	<u>100</u>	<u>100</u>

ATTERBERG LIMITS

<u>LL</u>	<u>PL</u>	<u>PI</u>
<u>34</u>	<u>24</u>	<u>10</u>

Curves of 100% Saturation
for Specific Gravity Equal to:

2.80

2.70

2.60

