April 4, 2024 Rob Zuber DRMS

RE: Soil sample data for the Technical Revision for M1986004

We are submitting a map of the pit showing numbered locations that correspond to the numbers on the attached photos. Soil sample test data is also attached that correspond to the map numbers as follows: Sample M2 was taken at photo site 2. Sample M3 was taken at photo site 3. Sample M6 taken at photo site 6 and Sample M7 at photo site 7. Sample M comp is a composite sample of sites 2,3,6 and 7, all taken inside the pit. Sample M 1+4+5 is a composite of photo sites 1, 4 and 5 which are in undisturbed areas outside the pit. In my opinion, there is as much or more vegetation within the reclaimed pit as there is in the undisturbed areas adjacent to the pit. The resources required to establish more vegetation in this soil would be detrimental to the general agricultural operation of the ranch.

Thank you for your assistance.

Michael Ripp MVR Resources, Inc.



Soil, Water and Plant Testing Laboratory 4780 National Western Drive Denver, CO 80216

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Michael Ripp

Lab ID: 2024 Sample ID: M2	S430						Date Receive Date Reporte	ed: ed:	23-Feb-2024 15-Mar-2024
Soil Analysi	s Units	Results				Test Rat	ing*		
			Strongly Acid	Moderately Acid	Slightly Acid	Neutral	Slightly Alkaline	Moderately Alkaline	Strongly Alkaline
1:1 Soil pH		7.7	<5.4	5.4-5.7	5.8-6.4	6.5-7.2	7.3-7.6	7.7-7.9	>7.9
			Very Low	Low	Moderate	Moderately High	High	Very High	
1:1 Soluble Salts (EC)	mmho/cm	3.2	<0.2	0.2-0.7	0.8-1.2	1.3-2.5	2.6-5.0	>5.0	
Excess Lime		HIGH							
			Very Low	Low	Medium	High	Very High		
Organic Matter LOI	%	1	<0.5	0.5-1.5	1.6-3.0	3.1-5.0	>5.0		
		6"	Very Low	Low	Medium	High	Very High	lb/ac	Recommendation Ib/ac
KCI Nitrate-N	ppm	1	<5	5-10	11-25	26-50	>50	2.0	54
Olsen Bicarbonate			Very Low	Low	Medium	Optimum	High	Very High	Recommendation Ib/ac
Phosphorus (P)	ppm	9	0-3	4-6	7-10	11-15	16-20	>20	30 P2O5
Ammoniur	m Acetate		I						
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Potassium (K)	ppm	191	<60	60-120	121-160	161-220	221-280	>280	0
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Calcium (Ca)	ppm	14380	<100	100-200	201-300	301-2500	>2500	>5000	0
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Magnesium (Mg)	ppm	229	<25	25-50	51-75	76-100	101-200	>200	Ib/ac 0
Sodium (Na)	ppm	564							
Cation Exchange Capacity	(CEC)		Sand	Loam	Silt Loams	Clay & Clay Loam	Organic Soils		
or Sum of Cations	meq/100g	77	3-5	10-15	15-25	20-50	50-100		
Base Saturation	%	100.0	н 0.0	к 1.0	Ca 94.0	Mg 2.0	Na 3.0		

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Michael Ripp

P.O. Box 54 Delta, CO 81416

Lab ID: 20245430 23-Feb-2024 Date Received: M2 15-Mar-2024 Sample ID: Date Reported: Soil Analysis Units Results **Test Rating*** Mehlich-3 Recommendation Very High Very Low Low Medium Optimum High lb/ac Sulfate-S ppm 3332 <2 2-5 6-10 11-15 >15 0 DTPA Recommendation Verv Low Low Medium Optimum High Very High lb/ac Zinc (Zn) ppm 0.3 <0.3 0.3-0.5 0.6-0.8 0.9-1.2 1.3-2.0 >2.0 0 Recommendatio Very Low Medium Optimum High Very High Low lb/ac Iron (Fe) 2.2 <1.0 1.0-2.5 2.6-5.0 5.1-15.0 15.1-30 >30 ppm 0 Recommendation Verv Low Low Medium Optimum High Very High lb/ac Manganese (Mn) ppm 1.9 <0.5 0.5-1.0 1.1-3.0 3.1-6.0 6.1-10.0 >10 0 Recommendation Very Low Medium Optimum High Very High Low lb/ac Copper (Cu) 0.1-0.2 0.3-0.4 0.5-0.8 ppm 0.4 < 0.1 0.9-1.5 >1.5 0 **Hot Water Extraction** Recommendation Very Low Medium Optimum High Very High Low lb/ac Boron (B) 1.6-2.5 <0.2 0.2-0.5 0.6-0.8 0.9-1.5 >2.5 ppm 3.1 0 **Calcium Nitrate** Chloride (Cl) ppm Soil Texture % Sand % % Silt % % Clay % Texture by Hydrometer Heavy Metals Arsenic (As) ppm Cadmium (Cd) ppm Chromium (Cr) ppm Lead (Pb) ppm Molybdenum (Mo) ppm Selenium (Se) ppm Sodium Absorption Ratio SAR

*Test ratings are provided for general crop production. The ranges may be different for individual crops or for specific situations.

Comments:

Fertilizer recommendations are based on 2 ton/ac production. Apply 54 Ib N and 30 Ib P2O5 per acre early in the spring, There have been no confirmed deficiencies of zinc, manganese, iron, copper, iron, and boron in Colorado rangelands. Applying these nutrients my not improve range production and have return on investment.



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Michael Ripp

Lab ID: 2024S431 Sample ID: M3							Date Receive Date Report	ed:	23-Feb-2024 15-Mar-2024
p									
Soil Analysis	Units	Results				Test Rat	ing*		
			Strongly Acid	Moderately Acid	Slightly Acid	Neutral	Slightly Alkaline	Moderately Alkaline	Strongly Alkaline
1:1 Soil pH		7.3	<5.4	5.4-5.7	5.8-6.4	6.5-7.2	7.3-7.6	7.7-7.9	>7.9
			Very Low	Low	Moderate	Moderately High	High	Very High	
1:1 Soluble Salts (EC)	mmho/cm	2.8	<0.2	0.2-0.7	0.8-1.2	1.3-2.5	2.6-5.0	>5.0	
Excess Lime		HIGH							
Organic Matter LOI	%	0.9	Very Low <0.5	Low 0.5-1.5	Medium 1.6-3.0	High 3.1-5.0	Very High >5.0		
		6"	Very Low	Low	Medium	High	Very High	lb/ac	Recommendation
KCl Nitrate-N	ppm	1	<5	5-10	11-25	26-50	>50	2.0	54
Olsen Bicarbonate			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Phosphorus (P)	ppm	9	0-3	4-6	7-10	11-15	16-20	>20	30 P2O5
Ammonium Aceta	ate								
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Potassium (K)	ppm	173	<60	60-120	121-160	161-220	221-280	>280	0
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Calcium (Ca)	ppm	15890	<100	100-200	201-300	301-2500	>2500	>5000	0
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Magnesium (Mg)	ppm	208	<25	25-50	51-75	76-100	101-200	>200	ів/ас 0
Sodium (Na)	ppm	177							
Cation Exchange Capacity (CEC)			Sand	Loam	Silt Loams	Clay & Clay Loam	Organic Soils		
or Sum of Cations	meq/100g	82	3-5	10-15	15-25	20-50	50-100		
	~~~~		н	К	Ca	Mg	Na	_	
Base Saturation	%	100.0	0.0	1.0	96.0	2.0	1.0		



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Lab ID: Sample ID:	2024S431 M3							Date Received: Date Reported:		23-Feb-2024 15-Mar-2024
Soil A	Analysis	Units	Results				Test Rat	ing*		
	Mehlich-3									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Sulfate-S		ppm	3209	<2	2-5	6-10		11-15	>15	lb/ac 0
	DTPA									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Zinc (Zn)		ppm	0.3	<0.3	0.3-0.5	0.6-0.8	0.9-1.2	1.3-2.0	>2.0	ib/ac 0
				Very Low	low	Medium	Ontimum	High	Very High	Recommendation
Iron (Fe)		ppm	2.4	<1.0	1.0-2.5	2.6-5.0	5.1-15.0	15.1-30	>30	lb/ac 0
				Versileur	Law	Madium	Ontinum	Uiah	Vorselligh	Recommendation
Manganese (Mi	n)	ppm	1	<0.5	0.5-1.0	1.1-3.0	3.1-6.0	6.1-10.0	>10	lb/ac 0
										Recommendation
Conner (Cu)			0.5	Very Low	Low	Medium	Optimum	High	Very High	lb/ac
copper (cu)		ppin	0.5	<0.1	0.1=0.2	0.3-0.4	0.5-0.8	0.9-1.5	>1.5	0
Но	t Water Extract	ion								
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation Ib/ac
Boron (B)		ppm	1.3	<0.2	0.2-0.5	0.6-0.8	0.9-1.5	1.6-2.5	>2.5	0
	Calcium Nitrate	!								
Chloride (Cl)		ppm								
	Soil Texture									
% Sand		%								
% Silt		%								
% Clay		%								
Texture by Hyd	rometer			-						
	Heavy Metals									
Arsenic (As)		ppm								
Cadmium (Cd)		ppm								
Chromium (Cr)		ppm		1						
Lead (Pb)		ppm		1						
Molybdenum (I	Mo)	ppm		1						
Selenium (Se)		ppm								
Sodi	um Absorption	Katio								
SAR										

2

*Test ratings are provided for general crop production. The ranges may be different for individual crops or for specific situations.

Comments:

Fertilizer recommendations are based on 2 ton/ac production. Apply 54 lb N and 30 lb P2O5 per acre early in the spring, There have been no confirmed deficiencies of zinc, manganese, iron, copper, iron, and boron in Colorado rangelands. Applying these nutrients my not improve range production and have return on investment.



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Michael Ripp

Lab ID: 2024S432 Sample ID: M6						Date Received: Date Reported:				
Sample ID. Wo							Date Report	eu.	15-10181-2024	
Soil Analysis	Units	Results				Test Rat	ing*			
			Strongly Acid	Moderately Acid	Slightly Acid	Neutral	Slightly Alkaline	Moderately Alkaline	Strongly Alkaline	
1:1 Soil pH		8.2	<5.4	5.4-5.7	5.8-6.4	6.5-7.2	7.3-7.6	7.7-7.9	>7.9	
			Very Low	Low	Moderate	Moderately High	High	Very High		
1:1 Soluble Salts (EC)	mmho/cm	0.7	<0.2	0.2-0.7	0.8-1.2	1.3-2.5	2.6-5.0	>5.0		
Excess Lime		LOW								
Organic Matter LOI	%	7.2	Very Low <0.5	<b>Low</b> 0.5-1.5	<b>Medium</b> 1.6-3.0	<b>High</b> 3.1-5.0	Very High >5.0			
		6"	Very Low	Low	Medium	High	Very High	lb/ac	Recommendation	
KCl Nitrate-N	ppm	7	<5	5-10	11-25	26-50	>50	14.0	40	
Olsen Bicarbonate			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac	
Phosphorus (P)	ppm	97	0-3	4-6	7-10	11-15	16-20	>20	0	
Ammonium Aceta	ate									
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac	
Potassium (K)	ppm	1175	<60	60-120	121-160	161-220	221-280	>280	0	
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation	
Calcium (Ca)	ppm	2871	<100	100-200	201-300	301-2500	>2500	>5000	0	
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation	
Magnesium (Mg)	ppm	541	<25	25-50	51-75	76-100	101-200	>200		
Sodium (Na)	ppm	148								
Cation Exchange Capacity (CEC)			Sand	Loam	Silt Loams	Clay & Clay Loam	Organic Soils			
or Sum of Cations	meq/100g	23	3-5	10-15	15-25	20-50	50-100			
Base Saturation	%	100.0	Н 0.0	<b>к</b> 13.0	<b>Ca</b> 64.0	<b>Mg</b> 20.0	<b>Na</b> 3.0			

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Lab ID: Sample ID:	2024S432 M6							Date Received: Date Reported:		23-Feb-2024 15-Mar-2024
Soil A	Analysis	Units	Results				Test Rat	ing*		
	Mehlich-3									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Sulfate-S		ppm	31.6	<2	2-5	6-10		11-15	>15	0
	DTPA							_		
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Zinc (Zn)		ppm	7.3	<0.3	0.3-0.5	0.6-0.8	0.9-1.2	1.3-2.0	>2.0	<b>Ib/ac</b>
				Very Low	Low	Medium	Optimum	High	Very High	lb/ac
Iron (Fe)		ppm	12.3	<1.0	1.0-2.5	2.6-5.0	5.1-15.0	15.1-30	>30	0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Manganese (M	n)	ppm	2.1	<0.5	0.5-1.0	1.1-3.0	3.1-6.0	6.1-10.0	>10	<b>Ib/ac</b> 0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Copper (Cu)		ppm	0.7	<0.1	0.1-0.2	0.3-0.4	0.5-0.8	0.9-1.5	>1.5	0
Но	ot Water Extracti	on								
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Boron (B)		ppm	1.4	<0.2	0.2-0.5	0.6-0.8	0.9-1.5	1.6-2.5	>2.5	0
	Calcium Nitrate									
Chloride (Cl)		ppm								
	Soil Texture									
% Sand		%								
% Silt		%								
% Clay		%								
lexture by Hyd	Heavy Metals									
Areania (As)	neary metals									
Arsenic (As) Cadmium (Cd)		ppm								
Chromium (Cr)		ppm								
Lead (Ph)		ppin								
Molyhdenum (	Mo)	ppin		1						
Selenium (Se)		ppin								
Sodi	um Absorption F	Ratio								
			1							

SAR

*Test ratings are provided for general crop production. The ranges may be different for individual crops or for specific situations.

Comments:

Fertilizer recommendations are based on 2 ton/ac production. Apply 40 lb N per acre early in the spring, There have been no confirmed deficiencies of zinc, manganese, iron, copper, iron, and boron in Colorado rangelands. Applying these nutrients my not improve range production and have return on investment.



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Michael Ripp

Lab ID: 2024S433 Sample ID: M7						ed: ed:	23-Feb-2024 15-Mar-2024		
Soil Analysis	Units	Results				Test Rat	ing*		
			Strongly Acid	Moderately Acid	Slightly Acid	Neutral	Slightly Alkaline	Moderately Alkaline	Strongly Alkaline
1:1 Soil pH		8.9	<5.4	5.4-5.7	5.8-6.4	6.5-7.2	7.3-7.6	7.7-7.9	>7.9
			Very Low	low	Moderate	Moderately	High	Very High	
1:1 Soluble Salts (FC)	mmho/cm	24.6	<0.2	0.2-0.7	0.8-1.2	High	26-50	>5 0	
	mmoyem	24.0	<b>~0.2</b>	0.2-0.7	0.8-1.2	1.5-2.5	2.0-5.0	>3.0	
Excess Lime		HIGH							
			Very Low	Low	Medium	High	Very High		
Organic Matter LOI	%	0.9	<0.5	0.5-1.5	1.6-3.0	3.1-5.0	>5.0		
		6"	Very Low	Low	Medium	High	Very High	lb/ac	Recommendation
KCl Nitrate-N	ppm	1	<5	5-10	11-25	26-50	>50	2.0	lb/ac 54
	••								
Olsen Bicarbonate			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Phosphorus (P)	ppm	8	0-3	4-6	7-10	11-15	16-20	>20	30 P2O5
Ammonium Aceta	ate		1						
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Potassium (K)	ppm	223	<60	60-120	121-160	161-220	221-280	>280	0
									Recommendation
			Very Low	Low	Medium	Optimum	High	Very High	lb/ac
Calcium (Ca)	ppm	13010	<100	100-200	201-300	301-2500	>2500	>5000	0
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Magnesium (Mg)	ppm	668	<25	25-50	51-75	76-100	101-200	>200	lb/ac 0
	••								
Sodium (Na)	ppm	9345							
Cation Exchange Capacity (CEC)			Sand	Loam	Silt Loams	Clay & Clay Loam	Organic Soils		
or Sum of Cations	meq/100g	112	3-5	10-15	15-25	20-50	50-100		
			н	к	Ca	Mg	Na		
Base Saturation	%	100.0	0.0	1.0	58.0	5.0	36.0		

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Michael Ripp

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Lab ID: Sample ID:	20245433 M7							Date Received: Date Reported:		23-Feb-2024 15-Mar-2024
Soil /	Analysis	Units	Results				Test Rat	ing*		
	Mehlich-3									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Sulfate-S		ppm	6508	<2	2-5	6-10		11-15	>15	0
	DTPA									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Zinc (Zn)		ppm	0.2	<0.3	0.3-0.5	0.6-0.8	0.9-1.2	1.3-2.0	>2.0	lb/ac 0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Iron (Fe)		ppm	3.6	<1.0	1.0-2.5	2.6-5.0	5.1-15.0	15.1-30	>30	0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Manganese (M	n)	ppm	3	<0.5	0.5-1.0	1.1-3.0	3.1-6.0	6.1-10.0	>10	0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Copper (Cu)		ppm	0.4	<0.1	0.1-0.2	0.3-0.4	0.5-0.8	0.9-1.5	>1.5	0
Но	ot Water Extract	ion								
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Boron (B)		ppm	29.4	<0.2	0.2-0.5	0.6-0.8	0.9-1.5	1.6-2.5	>2.5	0
	Calcium Nitrate									
Chloride (Cl)		ppm								
	Soil Texture									
% Sand		%								
% Silt		%								
% Clay		%								
Texture by Hyd	Heavy Metals									
Arsenic (As)										
Cadmium (Cd)		ppm								
Chromium (Cr)		ppm								
Lead (Pb)		ppm								
Molybdenum (	Mo)	ppm								
Selenium (Se)		ppm								
Sodi	ium Absorption	Ratio								

SAR

*Test ratings are provided for general crop production. The ranges may be different for individual crops or for specific situations.

Comments:

Fertilizer recommendations are based on 2 ton/ac production. Apply 54 lb N and 30 lb P2O5 per acre early in the spring, There have been no confirmed deficiencies of zinc, manganese, iron, copper, and boron in Colorado rangeland. Applying these nutrients my not improve range production and have return on investment.



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Michael Ripp

Lab ID: Sample ID:	2024S434 M comp		Date Received: Date Reported:					23-Feb-2024 15-Mar-2024		
Soil A	nalysis	Units	Results				Test Rat	ing*		
				Strongly Acid	Moderately Acid	Slightly Acid	Neutral	Slightly Alkaline	Moderately Alkaline	Strongly Alkaline
1:1 Soil pH			8.4	<5.4	5.4-5.7	5.8-6.4	6.5-7.2	7.3-7.6	7.7-7.9	>7.9
				Very Low	Low	Moderate	Moderately High	High	Very High	
1:1 Soluble Salts	(EC)	mmho/cm	9.5	<0.2	0.2-0.7	0.8-1.2	1.3-2.5	2.6-5.0	>5.0	
Excess Lime			HIGH							
Organic Matter L	01	%	0.8	Very Low <0.5	<b>Low</b> 0.5-1.5	Medium 1.6-3.0	High 3.1-5.0	Very High >5.0		
			6"	Very Low	Low	Medium	High	Very High	lb/ac	Recommendation lb/ac
KCl Nitrate-N		ppm	1	<5	5-10	11-25	26-50	>50	2.0	50
Olsen Bicarbonat	e			Very Low	Low	Medium	Optimum	High	Very High	Recommendation Ib/ac
Phosphorus (P)		ppm	8	0-3	4-6	7-10	11-15	16-20	>20	30 P2O5
Am	monium Aceta	ate								
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Potassium (K)		ppm	189	<60	60-120	121-160	161-220	221-280	>280	0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Calcium (Ca)		ppm	15170	<100	100-200	201-300	301-2500	>2500	>5000	0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Magnesium (Mg)		ppm	383	<25	25-50	51-75	76-100	101-200	>200	0
Sodium (Na)		ppm	4504							
Cation Exchange	Canacity (CEC)			Sand	Loam	Silt Loams	Clay & Clay	Organic		
or Sum of Cations	s	meq/100g	99	3-5	10-15	15-25	20-50	50-100		
Base Saturation		%	100.0	н 0.0	<b>к</b> 0.0	<b>Ca</b> 77.0	<b>Mg</b> 3.0	<b>Na</b> 20.0		

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Michael Ripp

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Lab ID:	20245434							Date Received:		23-Feb-2024
Sample ID:	wicomp							Date Reported:		15-Mar-2024
Soil	Analysis	Units	Results				Test Rat	ting*		
	Mehlich-3									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Sulfate-S		ppm	3755	<2	2-5	6-10		11-15	>15	0
	DTPA									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Zinc (Zn)		ppm	0.3	<0.3	0.3-0.5	0.6-0.8	0.9-1.2	1.3-2.0	>2.0	lb/ac 0
				Very Low	Low	Medium	Ontimum	High	Very High	Recommendation
lron (Fe)		ppm	2.7	<1.0	1.0-2.5	2.6-5.0	5.1-15.0	15.1-30	>30	lb/ac 0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Manganese (M	ln)	ppm	2.2	<0.5	0.5-1.0	1.1-3.0	3.1-6.0	6.1-10.0	>10	0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Copper (Cu)		ppm	0.4	<0.1	0.1-0.2	0.3-0.4	0.5-0.8	0.9-1.5	>1.5	0
Но	ot Water Extracti	on								
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Boron (B)		ppm	12.9	<0.2	0.2-0.5	0.6-0.8	0.9-1.5	1.6-2.5	>2.5	lb/ac 0
	Calcium Nitrate									_
Chloride (Cl)		ppm								
	Soil Texture									
% Sand		%								
% Silt		%								
% Clay		%								
Texture by Hyd	Irometer									
	Heavy Metals									
Arsenic (As)		ppm								
Cadmium (Cd)		ppm								
Load (Pb)	1	ppm								
Molyhdenum (	(Mo)	ppm								
Selenium (Sc)		ppm								
Sodi	ium Absorption F	Ratio								
SAR										
<b>3</b> 74				1						

*Test ratings are provided for general crop production. The ranges may be different for individual crops or for specific situations.

Comments:

Fertilizer recommendations are based on 2 ton/ac production. Apply 54 lb N and 30 lb P2O5 per acre early in the spring, There have been no confirmed deficiencies of zinc, manganese, iron, copper, and boron in Colorado rangelands. Applying these nutrients my not improve range production and have return on investment.



Tel: (970) 491-5061 Email: soiltestinglab@colostate.edu

Michael Ripp

Lab ID: 2024S435 Sample ID: M 1+4+5							Date Receive Date Report	ed: ed:	23-Feb-2024 15-Mar-2024
Soil Analysis	Units	Results				Test Rat	ing*		
			Strongly Acid	Moderately Acid	Slightly Acid	Neutral	Slightly Alkaline	Moderately Alkaline	Strongly Alkaline
1:1 Soil pH		7.5	<5.4	5.4-5.7	5.8-6.4	6.5-7.2	7.3-7.6	7.7-7.9	>7.9
			Very Low	Low	Moderate	Moderately High	High	Very High	
1:1 Soluble Salts (EC)	mmho/cm	2.7	<0.2	0.2-0.7	0.8-1.2	1.3-2.5	2.6-5.0	>5.0	
Excess Lime		HIGH							
Organic Matter LOI	%	1.3	Very Low <0.5	<b>Low</b> 0.5-1.5	<b>Medium</b> 1.6-3.0	High 3.1-5.0	Very High >5.0		
		6"	Very Low	Low	Medium	High	Very High	lb/ac	Recommendation lb/ac
KCl Nitrate-N	ppm	1	<5	5-10	11-25	26-50	>50	2.0	54
Olsen Bicarbonate			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Phosphorus (P)	ppm	14	0-3	4-6	7-10	11-15	16-20	>20	0
Ammonium A	cetate								
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Potassium (K)	ppm	507	<60	60-120	121-160	161-220	221-280	>280	0
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Calcium (Ca)	ppm	17250	<100	100-200	201-300	301-2500	>2500	>5000	0
			Very Low	Low	Medium	Optimum	High	Very High	Recommendation lb/ac
Magnesium (Mg)	ppm	130	<25	25-50	51-75	76-100	101-200	>200	
Sodium (Na)	ppm	153							
Cation Exchange Capacity (CE	C)		Sand	Loam	Silt Loams	Clay & Clay Loam	Organic Soils		
or Sum of Cations	meq/100g	89	3-5	10-15	15-25	20-50	50-100		
Base Saturation	%	100.0	H 0.0	<b>К</b> 1.0	<b>Ca</b> 97.0	<b>Mg</b>	<b>Na</b> 1.0		
	<i>,</i> ,	100.0	0.0	1.0	57.0	1.0	1.0		

Soil, Water and Plant Testing Laboratory 4780 National Western Drive Denver, CO 80216

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Michael Ripp

P.O. Box 54 Delta, CO 81416

Lab ID: Sample ID:	2024S435 M 1+4+5							Date Received: Date Reported:		23-Feb-2024 15-Mar-2024
Soil	Analysis	Units	Results				Test Rat	ing*		
	Mehlich-3									
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Sulfate-S		ppm	5416	<2	2-5	6-10		11-15	>15	0
	DTPA									
				Very Low	Low	Medium	Optimum	High	Verv High	Recommendation
Zinc (Zn)		ppm	0.4	<0.3	0.3-0.5	0.6-0.8	0.9-1.2	1.3-2.0	>2.0	lb/ac 0
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Iron (Fe)		ppm	2.1	<1.0	1.0-2.5	2.6-5.0	5.1-15.0	15.1-30	>30	lb/ac O
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Manganese (M	ſn)	ppm	3.8	<0.5	0.5-1.0	1.1-3.0	3.1-6.0	6.1-10.0	>10	lb/ac O
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation
Copper (Cu)		ppm	0.4	<0.1	0.1-0.2	0.3-0.4	0.5-0.8	0.9-1.5	>1.5	0
Н	ot Water Extraction	on								
				Very Low	Low	Medium	Optimum	High	Very High	Recommendation Ib/ac
Boron (B)		ppm	1.2	<0.2	0.2-0.5	0.6-0.8	0.9-1.5	1.6-2.5	>2.5	0
	Calcium Nitrate									
Chloride (Cl)		ppm								
	Soil Texture									
% Sand		%								
% Silt		%								
% Clay	4	%								
Texture by Hyd	Heavy Metals									
Arconic (Ac)	neavy wietais									
Arsenic (AS)		ppm								
Chromium (Cr)	1	ppin								
Lead (Pb)	1	ppm								
Molyhdenum (	(Mo)	ppm								
Selenium (Se)	(	nnm								
Sod	ium Absorption R	atio								

SAR

*Test ratings are provided for general crop production. The ranges may be different for individual crops or for specific situations.

Comments:

Fertilizer recommendations are based on 2 ton/ac production. Apply 54 lb N per acre early in the spring, There have been no confirmed deficiencies of zinc, manganese, iron, copper, and boron in Colorado rangeland. Applying these nutrients my not improve range production and have return on investment.







![](_page_17_Picture_0.jpeg)

![](_page_18_Picture_0.jpeg)

![](_page_19_Picture_0.jpeg)

![](_page_20_Picture_0.jpeg)

![](_page_21_Picture_0.jpeg)

![](_page_22_Picture_0.jpeg)

![](_page_23_Picture_0.jpeg)

![](_page_24_Picture_0.jpeg)