

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Richard Loar
Project: Not Indicated
Lab ID: B12121444-001
Client Sample ID Kitchen

Report Date: 12/26/12
Collection Date: 12/18/12 07:30
DateReceived: 12/18/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.8	s.u.	H	0.1		A4500-H B	12/18/12 14:03 / rjb
Conductivity @ 25 C	2000	umhos/cm		5		A2510 B	12/18/12 14:03 / rjb
Solids, Total Dissolved - Calculated	1330	mg/L		1		A1030F	12/26/12 09:11 / car
INORGANICS							
Alkalinity, Total as CaCO ₃	290	mg/L		4		A2320 B	12/24/12 16:21 / car
Bicarbonate as HCO ₃	353	mg/L		4		A2320 B	12/24/12 16:21 / car
Carbonate as CO ₃	ND	mg/L		4		A2320 B	12/24/12 16:21 / car
Chloride	30	mg/L	D	2		E300.0	12/20/12 02:38 / jrs
Sulfate	664	mg/L	D	10		E300.0	12/20/12 02:38 / jrs
Hardness as CaCO ₃	225	mg/L		1		A2340 B	12/19/12 21:36 / car
Hardness as CaCO ₃ - Grains	13.2	grains/gal		0.1		A2340 B	12/19/12 21:36 / car
Sodium Adsorption Ratio (SAR)	10.7	unitless		0.01		Calculation	12/19/12 21:36 / car
METALS, ACID-SOLUBLE							
Calcium	67	mg/L		1		E200.7	12/19/12 21:36 / rlh
Magnesium	14	mg/L		1		E200.7	12/19/12 21:36 / rlh
Potassium	4	mg/L		1		E200.7	12/20/12 16:26 / rlh
Sodium	371	mg/L		1		E200.7	12/19/12 21:36 / rlh
QUALITY CONTROL							
A/C Balance	0.66	%				Calculation	12/26/12 09:11 / car

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

Sample ID: B12121444-001

Client ID: Kitchen

Livestock Suitability

Suitable for all classes of livestock. Poultry may experience mild transient diarrhea.

Irrigation Classification

Salinity Hazard	C3	High-Salinity Water:	cannot be used on soils with restricted drainage. Even with adequate drainage, special management for salinity control may be required and plants with good salt tolerance should be selected.
Sodium (Alkali) Hazard	S3	High-Sodium Water:	may produce harmful levels of exchangeable sodium in most soils and will require special soil management - good drainage, high leaching, and organic matter additions. Gypsiferous soils may not develop harmful levels of exchangeable sodium from such waters. Chemical amendments may be required for replacement of exchangeable sodium, except that amendments may not be feasible with waters of very high salinity.

QA/QC Summary Report

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Project: Not Indicated

Work Order: B12121444

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R197312
Sample ID: MBLK	3	Method Blank				Run: MAN-TECH_121224A				12/24/12 15:20
Alkalinity, Total as CaCO ₃		1.01	mg/L	4.0						
Bicarbonate as HCO ₃		1.23	mg/L	4.0						
Carbonate as CO ₃			mg/L	4.0						
Sample ID: LCS		Laboratory Control Sample				Run: MAN-TECH_121224A				12/24/12 15:27
Alkalinity, Total as CaCO ₃		101	mg/L	4.0	100	90	110			
Sample ID: B12121348-003ADUP	3	Sample Duplicate				Run: MAN-TECH_121224A				12/24/12 15:41
Alkalinity, Total as CaCO ₃		244	mg/L	4.0				1.5	20	
Bicarbonate as HCO ₃		298	mg/L	4.0				1.5	20	
Carbonate as CO ₃		ND	mg/L	4.0					20	
Sample ID: B12121348-004AMS		Sample Matrix Spike				Run: MAN-TECH_121224A				12/24/12 15:54
Alkalinity, Total as CaCO ₃		388	mg/L	4.0	88	80	120			

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Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R196961
Sample ID: SC 2ND 1413	Laboratory Control Sample					Run: PHSC _101-B_121218A				12/18/12 08:56
Conductivity @ 25 C	1410	umhos/cm	5.0	100	90	110				
Sample ID: MBLK	Method Blank					Run: PHSC _101-B_121218A				12/18/12 13:58
Conductivity @ 25 C	ND	umhos/cm	5.0							
Sample ID: B12121444-001ADUP	Sample Duplicate					Run: PHSC _101-B_121218A				12/18/12 14:06
Conductivity @ 25 C	2000	umhos/cm	5.0					0.1	10	

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Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B							Analytical Run: PHSC _101-B_121218A			
Sample ID: pH 8		Initial Calibration Verification Standard								12/18/12 08:42
pH		7.97	s.u.	0.10	100	98	102			
Method: A4500-H B							Batch: R196961			
Sample ID: B12121444-001ADUP		Sample Duplicate		Run: PHSC _101-B_121218A				12/18/12 14:06		
pH		7.81	s.u.	0.10				0.4	3	

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Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7 Analytical Run: ICP201-B_121220A										
Sample ID: ICV	Continuing Calibration Verification Standard 12/20/12 10:59									
Potassium		23.9	mg/L	1.0	96	95	105			
Method: E200.7 Batch: R197183										
Sample ID: MB-IRISDIS121220A	Method Blank Run: ICP201-B_121220A 12/20/12 11:23									
Potassium		ND	mg/L	0.04						
Sample ID: LFB-IRISDIS121220A	Laboratory Fortified Blank Run: ICP201-B_121220A 12/20/12 11:26									
Potassium		50.8	mg/L	1.0	102	85	115			
Sample ID: B12121444-001BMS2	Sample Matrix Spike Run: ICP201-B_121220A 12/20/12 16:33									
Potassium		108	mg/L	1.0	104	70	130			
Sample ID: B12121444-001BMSD	Sample Matrix Spike Duplicate Run: ICP201-B_121220A 12/20/12 16:36									
Potassium		105	mg/L	1.0	101	70	130	2.2	20	
Method: E200.7 Analytical Run: ICP203-B_121219A										
Sample ID: ICV	3	Continuing Calibration Verification Standard 12/19/12 11:32								
Calcium		25.1	mg/L	1.0	100	95	105			
Magnesium		24.7	mg/L	1.0	99	95	105			
Sodium		24.5	mg/L	1.0	98	95	105			
Method: E200.7 Batch: R197086										
Sample ID: MB-6500DIS121219A	3	Method Blank Run: ICP203-B_121219A 12/19/12 11:35								
Calcium		ND	mg/L	0.05						
Magnesium		ND	mg/L	0.003						
Sodium		ND	mg/L	0.02						
Sample ID: LFB-6500DIS121219A	3	Laboratory Fortified Blank Run: ICP203-B_121219A 12/19/12 12:01								
Calcium		51.5	mg/L	1.0	103	85	115			
Magnesium		52.1	mg/L	1.0	104	85	115			
Sodium		51.3	mg/L	1.0	103	85	115			
Sample ID: B12121430-001AMS2	3	Sample Matrix Spike Run: ICP203-B_121219A 12/19/12 21:21								
Calcium		188	mg/L	1.0	99	70	130			
Magnesium		144	mg/L	1.0	101	70	130			
Sodium		420	mg/L	1.0	96	70	130			
Sample ID: B12121430-001AMSD	3	Sample Matrix Spike Duplicate Run: ICP203-B_121219A 12/19/12 21:32								
Calcium		187	mg/L	1.0	97	70	130	0.8	20	
Magnesium		144	mg/L	1.0	100	70	130	0.6	20	
Sodium		416	mg/L	1.0	93	70	130	0.7	20	

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Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0								Analytical Run: IC202-B_121219A		
Sample ID: ICV	2	Initial Calibration Verification Standard								12/19/12 12:13
Chloride		24.2	mg/L	1.0	97	90	110			
Sulfate		97.9	mg/L	1.0	98	90	110			
Method: E300.0								Batch: R197126		
Sample ID: ICB	2	Method Blank								12/19/12 12:28
Chloride		0.03	mg/L	0.02						
Sulfate		ND	mg/L	0.08						
Sample ID: LFB	2	Laboratory Fortified Blank								12/19/12 12:43
Chloride		23.9	mg/L	1.0	95	90	110			
Sulfate		96.1	mg/L	1.1	96	90	110			
Sample ID: B12121535-001AMS	2	Sample Matrix Spike								12/20/12 00:52
Chloride		51.7	mg/L	1.0	101	90	110			
Sulfate		407	mg/L	1.1	106	90	110			
Sample ID: B12121535-001AMSD	2	Sample Matrix Spike Duplicate								12/20/12 01:07
Chloride		52.0	mg/L	1.0	102	90	110	0.6	20	
Sulfate		408	mg/L	1.1	107	90	110	0.2	20	
Sample ID: B12121476-002AMS	2	Sample Matrix Spike								12/20/12 04:24
Chloride		8440	mg/L	53	103	90	110			
Sulfate		25000	mg/L	210	102	90	110			
Sample ID: B12121476-002AMSD	2	Sample Matrix Spike Duplicate								12/20/12 04:39
Chloride		8440	mg/L	53	103	90	110	0.1	20	
Sulfate		25000	mg/L	210	102	90	110	0.0	20	

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