

## CERTIFICATE OF ANALYSIS

**CLIENT****Sears Ecological Applications Company, LLC**1914 Black River Blvd.  
Rome, NY  
13440TEL 1-8888-4-SEACO  
FAX (315) 337-0117**ATTENTION****David N. Wood****DATE RECEIVED**

Mar-20-09

**WORK ORDER #**

R903207

**DATE REPORTED**

Apr-09-09

**PROJECT FILE**

Analysis of Anti-Icer

**PROJECT NAME**

[none]

**General Comments:**

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; and protocols published by the British Columbia Ministry of Environment (BCMOE).

Methods not described in these publications are conducted according to procedures accepted by appropriate regulatory agencies, and/or are done in accordance with recognized professional standards using accepted testing methodologies and quality control efforts except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. CARO Analytical Services is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

- All solids results are reported on a dry weight basis unless otherwise noted
- Units: mg/kg = milligrams per kilogram, equivalent to parts per million (ppm)  
mg/L = milligrams per Litre, equivalent to parts per million (ppm)  
ug/L = micrograms per Litre, equivalent to parts per billion (ppb)  
ug/g = micrograms per gram, equivalent to parts per million (ppm)
- "RDL" = reported detection limit
- "<" = less than reported detection limit
- "-" = not analyzed

**CARO Analytical Services****Patrick Novak, B.Sc.**

Business Manager

Final Review Per:

**SAMPLE DATA**



**WORK ORDER #** R903207

**DATE REPORTED**

Apr-09-09

**Client ID :** IceB' Gone II  
**Sampled:** Mar-19-09  
**Lab Number:** R903207-01

**Pacific Northwest  
 Snowfighters  
 Specifications (2006)**

Analyte	RDL	Units	Result	Value	Notes
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**Freeze Testing, as per PNS**

Solids Passing Through #10 Sieve	1.0	%	100	> 99.0	
Solids, Total Settleable	1.0	"	1.5	1.0	

**General Parameters**

BOD, 5-day	10	mg/kg	89000	n/a	
Chemical Oxygen Demand	2000	"	210000	n/a	
Chloride	0.01	% Weight	20.3	n/a	
Cyanide (total)	0.1	mg/kg	< 0.1	0.2	
Nitrogen, Ammonia as N	2	"	240	n/a	
Nitrogen, Nitrate+Nitrite as N	1	"	9	n/a	
Nitrogen, Total Kjeldahl	5	"	2220	n/a	
pH (1:4 Solution)	0.1	pH	4.6	n/a	
Phosphorus, Total	1	mg/kg	130	2500	
Specific Gravity	0.001	g/mL	1.327	n/a	

**Total Metals, as per PNS**

Arsenic	0.3	mg/kg	2.0	5	
Barium	1.0	"	1.2	100	
Cadmium	0.01	"	< 0.01	0.2	
Calcium	20	"	1750	n/a	
Chromium	0.1	"	1.0	1	
Copper	0.2	"	1.6	1	
Lead	0.1	"	0.3	1	
Magnesium	100	"	58700	n/a	
Mercury	0.03	"	< 0.03	0.05	
Potassium	10	"	7130	n/a	
Selenium	1.0	"	< 1.0	5	
Sodium	10	"	1290	n/a	
Zinc	0.5	"	3.0	10	

**SAMPLE DATA**



**WORK ORDER #** R903207

**DATE REPORTED**

Apr-09-09

**Client ID :** 3% IceB'Gone II  
Sampled: Mar-19-09  
Lab Number: R903207-02

**Pacific Northwest  
Snowfighters  
Specifications (2006)**

Analyte	RDL	Units	Result	Value	Notes
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**Corrosion Rate Testing as per PNS**

Effectiveness	-40.0	%	9.9	30	
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**QUALITY CONTROL DATA**



**WORK ORDER #** R903207

**DATE REPORTED**

Apr-09-09

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	Rel % Diff(RPD)	RPD Limit	Notes
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**General Parameters , Batch R900716**

<b>Method Blank (R900716-BLK1)</b>				Prepared: Mar-21-09 Analyzed: Mar-24-09						
Chloride	<	0.01	% Weight							
<b>Blank Spike (R900716-BS1)</b>				Prepared: Mar-21-09 Analyzed: Mar-24-09						
Chloride	0.96	0.01	% Weight	1.00		96	90-110			
<b>Duplicate (R900716-DUP1)</b>				<b>Source: R903207-01</b> Prepared: Mar-21-09 Analyzed: Mar-24-09						
Chloride	20.9	0.01	% Weight		20.3			3	20	

**General Parameters , Batch R900746**

<b>Duplicate (R900746-DUP1)</b>				<b>Source: R903207-01</b> Prepared & Analyzed: Mar-24-09						
Specific Gravity	1.323	0.001	g/mL		1.327			0.3	20	

**General Parameters , Batch R900766**

<b>Method Blank (R900766-BLK1)</b>				Prepared: Mar-25-09 Analyzed: Mar-30-09						
BOD, 5-day	<	10	mg/kg							
<b>Blank Spike (R900766-BS1)</b>				Prepared: Mar-25-09 Analyzed: Mar-30-09						
BOD, 5-day	190	10	mg/kg	198		96	80-120			
<b>Duplicate (R900766-DUP1)</b>				<b>Source: R903207-01</b> Prepared: Mar-25-09 Analyzed: Mar-30-09						
BOD, 5-day	101000	10	mg/kg		89500			12	20	
<b>Reference (R900766-SRM1)</b>				Prepared: Mar-25-09 Analyzed: Mar-30-09						
BOD, 5-day	213	10	mg/kg	198		108	80-120			

**General Parameters , Batch R900767**

<b>Method Blank (R900767-BLK1)</b>				Prepared & Analyzed: Mar-25-09						
Chemical Oxygen Demand	<	2000	mg/kg							
<b>Blank Spike (R900767-BS1)</b>				Prepared & Analyzed: Mar-25-09						
Chemical Oxygen Demand	<	2000	mg/kg	500		104	80-120			
<b>Duplicate (R900767-DUP1)</b>				<b>Source: R903207-01</b> Prepared & Analyzed: Mar-25-09						
Chemical Oxygen Demand	209000	2000	mg/kg		209000			0	20	

**Total Metals, as per PNS , Batch R900813**

<b>Method Blank (R900813-BLK1)</b>				Prepared: Mar-31-09 Analyzed: Apr-01-09						
Arsenic	<	0.3	mg/kg							
Barium	<	1.0	"							
Cadmium	<	0.01	"							
Calcium	<	20	"							
Chromium	<	0.1	"							
Copper	<	0.2	"							
Lead	<	0.1	"							
Magnesium	<	10	"							
Mercury	<	0.03	"							
Potassium	<	10	"							
Selenium	<	1.0	"							
Sodium	<	10	"							
Zinc	<	0.5	"							
<b>Duplicate (R900813-DUP1)</b>				<b>Source: R903207-01</b> Prepared: Mar-31-09 Analyzed: Apr-01-09						
Arsenic	2.0	0.3	mg/kg		2.0			2	20	
Barium	1.5	1.0	"		1.2				20	

**QUALITY CONTROL DATA**



**WORK ORDER #** R903207

**DATE REPORTED**

Apr-09-09

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	Rel % Diff(RPD)	RPD Limit	Notes
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**Total Metals, as per PNS , Batch R900813 (Continued)**

<b>Duplicate (R900813-DUP1)</b>		<b>Source: R903207-01</b>			Prepared: Mar-31-09 Analyzed: Apr-01-09					
Cadmium	<	0.01	mg/kg	<					20	
Calcium	1790	20	"	1750			2		20	
Chromium	1.0	0.1	"	1.0			6		20	
Copper	1.5	0.2	"	1.6			0.7		20	
Lead	0.3	0.1	"	0.3					20	
Magnesium	55900	100	"	58700			5		20	
Mercury	<	0.03	"	<					20	
Potassium	7170	10	"	7130			0.6		20	
Selenium	<	1.0	"	<					20	
Sodium	1310	10	"	1290			2		20	
Zinc	3.4	0.5	"	3.0			11		20	

**General Parameters , Batch K900977**

<b>Method Blank (K900977-BLK1)</b>		Prepared: Mar-24-09 Analyzed: Mar-27-09								
Nitrogen, Total Kjeldahl	<	5	mg/kg							

<b>Duplicate (K900977-DUP1)</b>		<b>Source: R903207-01</b>			Prepared: Mar-24-09 Analyzed: Mar-27-09					
Nitrogen, Total Kjeldahl	2210	5	mg/kg	2220			0.8		20	

**General Parameters , Batch K900982**

<b>Method Blank (K900982-BLK1)</b>		Prepared: Mar-24-09 Analyzed: Mar-27-09								
Phosphorus, Total	<	1	mg/kg							

<b>Duplicate (K900982-DUP1)</b>		<b>Source: R903207-01</b>			Prepared: Mar-24-09 Analyzed: Mar-27-09					
Phosphorus, Total	130	1	mg/kg	130			2		20	

**General Parameters , Batch K900999**

<b>Method Blank (K900999-BLK1)</b>		Prepared: Mar-25-09 Analyzed: Mar-30-09								
Nitrogen, Ammonia as N	<	2	mg/kg							

<b>Duplicate (K900999-DUP1)</b>		<b>Source: R903207-01</b>			Prepared: Mar-25-09 Analyzed: Mar-30-09					
Nitrogen, Ammonia as N	250	2	mg/kg	240			2		20	

**General Parameters , Batch K901001**

<b>Method Blank (K901001-BLK1)</b>		Prepared: Mar-25-09 Analyzed: Mar-30-09								
Nitrogen, Nitrate+Nitrite as N	<	1	mg/kg							

<b>Duplicate (K901001-DUP1)</b>		<b>Source: R903207-01</b>			Prepared: Mar-25-09 Analyzed: Mar-30-09					
Nitrogen, Nitrate+Nitrite as N	8	1	mg/kg	9			6		20	

**General Parameters , Batch K901162**

<b>Method Blank (K901162-BLK1)</b>		Prepared & Analyzed: Apr-06-09								
Cyanide (total)	<	0.1	mg/kg							

<b>Blank Spike (K901162-BS1)</b>		Prepared & Analyzed: Apr-06-09								
Cyanide (total)	<	25.0	mg/kg	10.0	90	80-120				

<b>Duplicate (K901162-DUP1)</b>		<b>Source: R903207-01</b>			Prepared & Analyzed: Apr-06-09					
Cyanide (total)	<	0.1	mg/kg	<					20	

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Rome, NY  
13440TEL 1-8888-4-SEACO  
FAX (315) 337-0117**ATTENTION****David N. Wood****DATE RECEIVED**

Jul-15-09

**WORK ORDER #**

R907147

**DATE REPORTED**

Jul-31-09

**PROJECT FILE**

Analysis of Anti-Icer

**PROJECT NAME**

IBG

**General Comments:**

CARO Analytical Services employs methods which are based on those found in "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, published by the American Public Health Association (APHA); US EPA protocols found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846", 3rd Edition; and protocols published by the British Columbia Ministry of Environment (BCMOE).

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**CARO Analytical Services**

Final Review Per:

**Patrick Novak, B.Sc.**

Business Manager

**SAMPLE DATA**



**WORK ORDER #** R907147

**DATE REPORTED** Jul-31-09

**Corrosion Rate Testing as per PNS**

Analyte	RDL	Units	Result	PNS Specification (2006)	Notes
<b>20% Concentrate IBG II (3% Solution) (R907147-15) Matrix: Brine</b>					
Effectiveness	-40.0	%	48.2	30	

**SAMPLE DATA**



**WORK ORDER #**

R907147

**DATE REPORTED**

Jul-31-09

**General Parameters**

Analyte	RDL	Units	Result	PNS Specification (2006)	Notes
<b>IBG II (100%) (R907147-01) Matrix: Brine</b>					
Freezing Point	-42	°C	< -45 -42	n/a	
pH (1:4 Solution)	0.1	pH	4.8	6.0 - 10.0	
<b>IBG II (92%) (R907147-02) Matrix: Brine</b>					
Freezing Point	-42	°C	< -45 -42	n/a	
pH (1:4 Solution)	0.1	pH	4.9	6.0 - 10.0	
<b>IBG II (84%) (R907147-03) Matrix: Brine</b>					
Freezing Point	-42	°C	< -45 -42	n/a	
pH (1:4 Solution)	0.1	pH	4.9	6.0 - 10.0	
<b>IBG II (76%) (R907147-04) Matrix: Brine</b>					
Freezing Point	-42	°C	-41	n/a	
pH (1:4 Solution)	0.1	pH	5.0	6.0 - 10.0	
<b>IBG II (68%) (R907147-05) Matrix: Brine</b>					
Freezing Point	-42	°C	-39	n/a	
pH (1:4 Solution)	0.1	pH	5.0	6.0 - 10.0	
<b>IBG II (60%) (R907147-06) Matrix: Brine</b>					
Freezing Point	-42	°C	-30	n/a	
pH (1:4 Solution)	0.1	pH	5.1	6.0 - 10.0	
<b>IBG II (52%) (R907147-07) Matrix: Brine</b>					
Freezing Point	-42	°C	-25	n/a	
pH (1:4 Solution)	0.1	pH	5.1	6.0 - 10.0	
<b>IBG II (44%) (R907147-08) Matrix: Brine</b>					
Freezing Point	-42	°C	-17	n/a	
pH (1:4 Solution)	0.1	pH	5.1	6.0 - 10.0	
<b>IBG II (36%) (R907147-09) Matrix: Brine</b>					
Freezing Point	-42	°C	-14	n/a	
pH (1:4 Solution)	0.1	pH	5.2	6.0 - 10.0	
<b>IBG II (28%) (R907147-10) Matrix: Brine</b>					
Freezing Point	-42	°C	-9	n/a	
pH (1:4 Solution)	0.1	pH	5.3	6.0 - 10.0	
<b>IBG II (20%) (R907147-11) Matrix: Brine</b>					
Freezing Point	-42	°C	-7	n/a	
pH (1:4 Solution)	0.1	pH	5.3	6.0 - 10.0	
<b>IBG II (12%) (R907147-12) Matrix: Brine</b>					
Freezing Point	-42	°C	-5	n/a	



**SAMPLE DATA**



**WORK ORDER #** R907147

**DATE REPORTED**

Jul-31-09

**General Parameters**

Analyte	RDL	Units	Result	PNS Specification (2006)	Notes
<b>IBG II (12%) (R907147-12) Matrix: Brine</b>					
pH (1:4 Solution)	0.1	pH	5.5	6.0 - 10.0	
<b>IBG II (4%) (R907147-13) Matrix: Brine</b>					
Freezing Point	-42	°C	-3	n/a	
pH (1:4 Solution)	0.1	pH	5.6	6.0 - 10.0	
<b>20% Concentrate IBG II (R907147-14) Matrix: Brine</b>					
Freezing Point	-42	°C	-24	n/a	

**QUALITY CONTROL DATA**



**WORK ORDER #** R907147

**DATE REPORTED** Jul-31-09

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	Rel % Diff(RPD)	RPD Limit	Notes
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**General Parameters , Batch R901897**

<b>Duplicate (R901897-DUP1)</b>	<b>Source: R907147-04</b>			Prepared: Jul-15-09 Analyzed: Jul-16-09		
pH (1:4 Solution)	5.6	0.1	pH	5.0	11	20
<b>Duplicate (R901897-DUP2)</b>	<b>Source: R907147-11</b>			Prepared: Jul-15-09 Analyzed: Jul-16-09		
pH (1:4 Solution)	5.3	0.1	pH	5.3	0	20