US SALT

P.O. BOX 110
3580 SALT POINT ROAD
WATKINS GLEN, NY 14891-0110
607/535-2721

November 11, 2014

US EPA Region 2
Attention: Nicole Foley Kraft, Chief
Groundwater Compliance Section
290 Broadway, 20th Floor
New York, NY 10007-1866

Re.: MITs – US Salt LLC Brinefield
Re: 11NY08104019

Dear Ms Kraft:

Our Process Engineer, David Crea, has completed MIT work on nine wells in the US Salt LLC brinefield.

Enclosed please find copies of:

1. MIT reports for wells 47, 48, 50, 51, 55, 56, 60, 61 and 62.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Frank Pastore
Plant Manager

xc: Luis Rodriguez – USEPA Region 2
Linda Collart – NYSDEC Region 8 (2)
David Crea

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October 31, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: 2014 MIT of US Salt's Well 47, API # 31-097-61203
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 47 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on October 30, 2014. Mechanical Integrity of its 8-5/8" Production Casing was demonstrated, as required in the UIC Permit.

Well 48 was used as the Reference Well. The water used for its prior MIT had been removed and it was left filled with saturated brine of 1.20 specific gravity in it, greater than the 1.1 sp. gr. minimum required.

Well 47 was loaded with 7,694 gallons fresh water, above the minimum 7,249 gallons requirement. It was temperature-equilibrated and the test period data collection was on Thursday October 30, 2014. On each well, Ashcroft Precision Digital Pressure Gauges (with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period) were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.041 psi/hr, less than the limit of 0.05 psi/hr, therefore passing the MIT.

The Well 47 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 47 Information and MIT Data Record for 10/30/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 47 Operation

Well 47 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 47 API #: 31-097-61203 Date Prepared: October 30, 2014

Prepared By: David A. Crea, P.E.

Well Construction & Status Data:

						Cementing Notes:
Date Drilled:	June 25, 1972					
Elevation:	781 ft					
Surface Casing Size:	13-3/8"	Weight:	48#	Length:	104 ft	250 sx Pozmix
Production Casing:	8-5/8"	Weight:	32#	Length:	2905 ft	2094 sx Pozmix
Prod'n Casing Liner:	none	Weight:	---	Length:	---	---
Tubing:	none	Weight:	---	Length:	---	
Top of Salt Depth:	2124 ft					
Last Top of Cavity:	2600 ft	By Log Type:	SONAR	On Date:	January 10, 2012	
Last Casing-Cut:	2605 ft	(perforated; per LSevenker's 2009 MIT report)				
Last Cavity TD:	2640 ft	By Log Type:	SONAR	On Date:	January 10, 2012	
Bottom of Salt Depth:	2930 ft					
Original Total Depth:	2939 ft					

MIT Test Specific Data: **Date of Test:** October 30, 2014

Test Well's Water-Fill: 7,694 gallons, greater than the fill to 50' from end of casing of: 7,249 gallons.

(Weak Brine Injection at Well 55)
(Gallery de-pressing due to closure of W51 with opening 56 for brine)

	Test Well	Reference Well.
	Well # 47	**Well # 48**
Fluid Specific Gravity:	1.00	1.20
Pressure Gauge SN:	1208275	1304540
Calibration Valid To:	April 1, 2015	April 20, 2015

See Note 1 re Pressure Gauges.

Time During Test:	Avg Pressure:			Avg Pressure:			Pressure Difference:		Remarks:
0700	325.4	psi	-	120.14	psi	=	205.26	psi	Start Test
0900	296.8	psi	-	91.35	psi	=	205.45	psi	
1100	279.5	psi	-	74.61	psi	=	204.89	psi	
1300	269.1	psi	-	64.08	psi	=	205.02	psi	
1500	262.6	psi	-	57.67	psi	=	204.93	psi	End Test
Average Start:	**325.4**	**psi**	-	**120.14**	**psi**	=	**205.26**	**psi**	
Average End:	**262.6**	**psi**	-	**57.67**	**psi**	=	**204.93**	**psi**	
Start => End Change:	**62.8**	**psi**	-	**62.47**	**psi**	=	**0.33**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (205.26 - 204.93) / 8.0

NPCR = 0.041 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Well 47 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-2000 psi span, 0.25% of span accuracy (+/-5.0 psi).
Well 48 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).

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October 31, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: **2014 MIT of US Salt's Well 48, API # 31-097-61204**
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 48 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on October 24, 2014. Mechanical Integrity of its current 6-5/8" x 2170' Casing Liner (new in 2009; cemented inside the original 8-5/8" Production Casing of 1972) was demonstrated, as required in the UIC Permit.

Well 55 was used as the Reference Well. It had been used until just prior to this for Weak Brine Injection and had brine of 1.112 specific gravity (57% salinity) in it, greater than the 1.1 sp. gr. minimum required.

Well 48 was loaded with 3,260 gallons fresh water, above the minimum 3,032 gallons requirement. It was temperature-equilibrated and the test period data collection was on Friday October 24, 2014. On each well, Ashcroft Precision Digital Pressure Gauges with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period, were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.016 psi/hr, less than the limit of 0.05 psi/hr, therefore passing the MIT.

The Well 48 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 48 Information and MIT Data Record for 10/24/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 48 Operation

Well 48 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 48 API #: 31-097-61204 Date Prepared: October 24, 2014

Well Construction & Status Data: Prepared By: David A. Crea, P.E.

Date Drilled:	July 29, 1972					
Elevations:	801 ft G.L.; 812 ft K.B.; 802 ft Casing Collar					Cementing Notes:
Surface Casing Size:	13-3/8"	Weight:	na	Length:	72 ft (K.B.)	2 yd3 Common Portland w/ 2% CaCl2
Production Casing:	8-5/8"	Weight:	34#/ft	Length:	2912 ft (K.B.)	2000 sx Common Portland w/ 2% CaCl2
Prod'n Casing Liner:	6-5/8"	Weight:	24#/ft	Length:	2170 ft	220 sx Class A w/ 2% CaCl2
Tubing:	none	Weight:	----	Length:	---	
Top of Salt Depth:	2140 ft					
Last Top of Cavity:	2350 ft	By Log Type:	SONAR	On Date:	November 12, 2008	
Last Casing-Cut:	2427 ft					
Last Cavity TD:	2472 ft	By Log Type:	SONAR	On Date:	November 12, 2008	
Bottom of Salt Depth:	2927 ft					
Original Total Depth:	2930 ft (K.B.)					

MIT Test Specific Data: **Date of Test:** October 24, 2014

Test Well's Water-Fill: 3,260 gallons, greater than the fill to 50' from end of casing of: 3,032 gallons.

	Well # 48	Reference Well Well # 55	
Fluid Specific Gravity:	1.00	1.112	(OK at 57% Salinity; must be >50%)
Pressure Gauge SN:	1304540	1304548	See Note 1 re Pressure Gauges.
Calibration Valid To:	April 20, 2015	April 20, 2015	

Time During Test:	Avg Pressure:			Avg Pressure:			Pressure Difference:		Remarks:
0800	269.70	psi	-	114.00	psi	=	155.70	psi	Start Test
1000	268.01	psi	-	112.30	psi	=	155.71	psi	
1200	267.09	psi	-	111.40	psi	=	155.69	psi	
1400	265.02	psi	-	109.39	psi	=	155.63	psi	
1600	263.22	psi	-	107.65	psi	=	155.57	psi	End Test
Average Start:	**269.70**	**psi**	-	**114.00**	**psi**	=	**155.70**	**psi**	
Average End:	**263.22**	**psi**	-	**107.65**	**psi**	=	**155.57**	**psi**	
Change:	**6.48**	**psi**	-	**6.35**	**psi**	=	**0.13**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (155.70 - 155.57) / 8.0

NPCR = 0.016 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Gauges are both Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, accuracy 0.05% of span (+/-0.3 psi).

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November 3, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: **2014 MIT of US Salt's Well 50, API # 31-097-61206**
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 50 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on October 31, 2014. Mechanical Integrity of its current 6-5/8" x 2,110' Casing Liner was demonstrated, as required in the UIC Permit.

Well 48 was used as the Reference Well. The water used for its prior MIT had been removed and left it filled with saturated brine of 1.20 specific gravity in it, greater than the 1.1 sp. gr. minimum required.

Well 50 was loaded with 3,025 gallons fresh water, above the minimum 2,946 gallons requirement. It was temperature-equilibrated and the test period data collection was on Sunday November 2, 2014. On each well, Ashcroft Precision Digital Pressure Gauges (with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period) were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.039 psi/hr, less than the maximum limit of 0.05 psi/hr, therefore passing the MIT.

The Well 50 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 50 Information and MIT Data Record for 11/2/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 50 Operation

Well 50 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 50 API #: 31-097-61206 Date Prepared: November 3, 2014

Prepared By: David A. Crea, P.E.

Well Construction & Status Data:

Date Drilled:	July 1972; Original Production Casing was lined in 2009.					
Elevation:	727 ft					Cementing Notes:
Surface Casing Size:	13-3/8"	Weight:	48#/ft	Length:	42 ft	50 sx Pozmix
Production Casing:	8-5/8"	Weight:	32#/ft	Length:	2852 ft	950 sx Pozmix
Prod'n Casing Liner:	6-5/8"	Weight:	24#/ft	Length:	2110 ft	Class A Cement back to surface (in 2009)
Tubing:	none	Weight:	---	Length:	---	---
Top of Salt Depth:	2060 ft					
Last Top of Cavity:	2182 ft	By Log Type:	SONAR	On Date:	November 10, 2008	
Last Casing-Cut:	2298 ft	(current end of 8-5/8" Original Production Casing)				
Last Cavity TD:	2318 ft	By Log Type:	SONAR	On Date:	November 10, 2008	
Bottom of Salt Depth:	2863 ft					
Original Total Depth:	2905 ft Measured Depth, 2530 ft Total Vertical Depth after 1992 Re-Work to Dir'tnly-Drill to Under Well 51.					

MIT Test Specific Data: **Date of Test:** November 2, 2014

Test Well's Water-Fill: 3,025 gallons, greater than the fill to 50' from end of casing of: 2,946 gallons.

	Test Well			Reference Well					
	Well # 50			Well # 48					
Fluid Specific Gravity:	1.00			1.20					
Pressure Gauge SN:	1304548			1304540		See Note 1 re Pressure Gauges.			
Calibration Valid To:	April 20, 2015			April 20, 2015			Pressure		
Time During Test:	**Avg Pressure:**			**Avg Pressure:**			**Difference:**		**Remarks:**
0700	242.49	psi	-	46.78	psi	=	195.71	psi	Start Test
0900	242.46	psi	-	46.23	psi	=	196.23	psi	
1100	242.59	psi	-	46.40	psi	=	196.19	psi	
1300	242.48	psi	-	47.02	psi	=	195.46	psi	
1500	242.13	psi	-	46.73	psi	=	195.40	psi	End Test
Average Start:	**242.49**	**psi**	-	**46.78**	**psi**	=	**195.71**	**psi**	
Average End:	**242.13**	**psi**	-	**46.73**	**psi**	=	**195.40**	**psi**	
Start => End Change:	**0.36**	**psi**	-	**0.05**	**psi**	=	**0.31**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (195.71 - 195.40) / 8.0

NPCR = 0.039 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Gauges are both Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).

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November 4, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: **2014 MIT of US Salt's Well 51, API # 31-097-61207**
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 51 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on November 3, 2014. Mechanical Integrity of its current 5-1/2" x 2,354' Casing Liner (new in 1997; cemented inside the original 8-5/8" Production Casing of 1972) was demonstrated, as required in the UIC Permit.

Well 48 was used as the Reference Well. The water used for its prior MIT had been removed and it was left filled with saturated brine of 1.20 specific gravity in it, greater than the 1.1 sp. gr. minimum required.

Well 51 was loaded with 2,423 gallons fresh water, above the minimum 2,215 gallons requirement. It was temperature-equilibrated and the test period data collection was on Monday November 3, 2014. On each well, Ashcroft Precision Digital Pressure Gauges (with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period) were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.037 psi/hr, less than the limit of 0.05 psi/hr, therefore passing the MIT.

The Well 51 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 51 Information and MIT Data Record for 10/31/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 51 Operation

Well 51 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 51 API #: 31-097-61207 Date Prepared: November 3, 2014

Well Construction & Status Data: Prepared By: David A. Crea, P.E.

Date Drilled:	September 27, 1972; Original Production Casing was lined in 1997.					
Elevation:	662' G.L.; 664 ft Csg.Collar; 673' K.B.					Cementing Notes:
Surface Casing Size:	13-3/8"	Weight:	na	Length:	70 ft K.B.	100 sx Common Portland +3% CaCl2
Production Casing:	8-5/8"	Weight:	36#/ft	Length:	2790 ft K.B.	950 sx Hal'btn 'Light'+100 sx Com'n w/ 3% CaCl2*
Prod'n Casing Liner:	5-1/2"	Weight:	15.5#/ft	Length:	2354 ft	360 sx Class A; 5 bbl return to surface (lined 1997)
Tubing:	none	Weight:	---	Length:	---	* No return to surface.
Top of Salt Depth:	1993 ft					
Last Top of Cavity:	2085 ft	By Log Type:	SONAR	On Date:	July 28, 2009	
Last Casing-Cut:	2209 ft					
Last Cavity TD:	2281 ft	By Log Type:	SONAR	On Date:	July 28, 2009	
Bottom of Salt Depth:	2798 ft					
Original Total Depth:	2815 ft					

MIT Test Specific Data: **Date of Test:** November 3, 2014

Test Well Water-Fill: 2,423 gallons, greater than the fill to 50' from end of casing of: 2,215 gallons.

	Test Well			Reference Well					
	Well # 51			**Well # 48**					
Fluid Specific Gravity:	1.00			1.20					
Pressure Gauge SN:	1208275			1304540		See Note 1 re Pressure Gauges.			
Calibration Valid To:	April 1, 2015			April 20, 2015					
Time During Test:	**Avg Pressure:**			**Avg Pressure:**			**Pressure Difference:**		**Remarks:**
1200	297.3	psi	-	48.41	psi	=	248.89	psi	Start Test
1400	297.5	psi	-	49.43	psi	=	248.07	psi	
1600	298.2	psi	-	49.80	psi	=	248.40	psi	
1800	297.2	psi	-	47.81	psi	=	249.39	psi	
2000	295.5	psi	-	46.31	psi	=	249.19	psi	End Test
Average Start:	**297.30**	**psi**	-	**48.41**	**psi**	=	**248.89**	**psi**	
Average End:	**295.50**	**psi**	-	**46.31**	**psi**	=	**249.19**	**psi**	
Start => End Change:	**1.80**	**psi**	-	**2.10**	**psi**	=	**(0.30)**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (248.89 - 249.19) / 8.0

NPCR = -0.037 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Well 51 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-2000 psi span, 0.25% of span accuracy (+/-5.0 psi).
Well 48 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).

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October 31, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: **2014 MIT of US Salt's Well 55, API # 31-097-12548**
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 55 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on October 28, 2014. Mechanical Integrity of its 8-5/8" Production Casing was demonstrated, as required in the UIC Permit.

Well 48 was used as the Reference Well. The water used for its prior MIT had been removed and it was left filled with saturated brine of 1.20 specific gravity in it, greater than the 1.1 sp. gr. minimum required.

Well 55 was loaded with 6,730 gallons fresh water, above the minimum 6,465 gallons requirement. It was temperature-equilibrated and the test period data collection was on Tuesday October 28, 2014. On each well, Ashcroft Precision Digital Pressure Gauges (with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period) were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.040 psi/hr, less than the maximum limit of 0.05 psi/hr, therefore passing the MIT.

The Well 55 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 55 Information and MIT Data Record for 10/28/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 55 Operation

Well 55 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 55 API #: 31-097-12548 Date Prepared: October 28, 2014

Prepared By: David A. Crea, P.E.

Well Construction & Status Data:

Date Drilled:	January 1977						
Elevation:	806 ft					Cementing Notes:	
Surface Casing Size:	13-3/8"	Weight:	na	Length:	40 ft	2 yd3 Portland	
Production Casing:	8-5/8"	Weight:	32#	Length:	2883 ft	1300 sx Pozmix	
Prod'n Casing Liner:	none	Weight:	---	Length:	---	---	
Tubing:	none	Weight:	---	Length:	---		
Top of Salt Depth:	2162 ft						
Last Top of Cavity:	2597 ft	By Log Type:	SONAR	On Date:	January 9, 2012		
Last Casing-Cut:	2638 ft	(perforated)					
Last Cavity TD:	2629 ft	By Log Type:	SONAR	On Date:	January 9, 2012		
Bottom of Salt Depth:	2919 ft						
Original Total Depth:	2915 ft						

MIT Test Specific Data: **Date of Test:** October 28, 2014

Test Well Water-Fill: 6,730 gallons, greater than the fill to 50' from end of casing of: 6,465 gallons.

(Weak Brine Injection at Well 56)

(Gallery Pressing Up due to Shutoff of Well 50)

	Test Well			**Reference Well**					
	Well # 55			**Well # 48**					
Fluid Specific Gravity:	1.00			1.20					
Pressure Gauge SN:	1304548			1304540		See Note 1 re Pressure Gauges.			
Calibration Valid To:	April 20, 2015			April 20, 2015					
Time During Test:	**Avg Pressure:**			**Avg Pressure:**			**Pressure Difference:**		**Remarks:**
0800	285.27	psi	-	84.93	psi	=	200.34	psi	Start Test
1000	296.08	psi	-	95.92	psi	=	200.16	psi	
1200	305.32	psi	-	105.23	psi	=	200.09	psi	
1400	314.84	psi	-	114.99	psi	=	199.85	psi	
1600	322.48	psi	-	122.46	psi	=	200.02	psi	End Test
Average Start:	**285.27**	**psi**	-	**84.93**	**psi**	=	**200.34**	**psi**	
Average End:	**322.48**	**psi**	-	**122.46**	**psi**	=	**200.02**	**psi**	
Start => End Change:	**(37.21)**	**psi**	-	**(37.53)**	**psi**	=	**0.32**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (200.34 - 200.02) / 8.0

NPCR = 0.040 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Gauges are both Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).

Filename: Well MIT Test Record Sheets as of 7-Nov-2014.xls Tab: Well 55's 2014 MIT Print Date: 11/10/2014

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October 31, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency Region 2
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: **2014 MIT of US Salt's Well 56, API # 31-097-12859**
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 56 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on October 25, 2014. Mechanical Integrity of its 8-5/8" Production Casing was demonstrated, as required in the UIC Permit.

Well 55 was used as the Reference Well. It had been used until just prior to this for Weak Brine Injection and had brine of 1.112 specific gravity (57% salinity) in it, greater than the 1.1 sp. gr. minimum required.

Well 56 was loaded with 6,407 gallons fresh water, above the minimum 6,105 gallons requirement. It was temperature-equilibrated and the test period data collection was on Saturday October 25, 2014. On each well, Ashcroft Precision Digital Pressure Gauges with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period, were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.036 psi/hr, less than the maximum limit of 0.05 psi/hr, therefore passing the MIT.

The Well 56 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 56 Information and MIT Data Record for 10/25/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 56 Operation

Well 56 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 56 API #: 31-097-12859 Date Prepared: October 25, 2014

Prepared By: David A. Crea, P.E.

Well Construction & Status Data:

						Cementing Notes:
Date Drilled:	November 1977					
Elevation:	828 ft					
Surface Casing Size:	13-3/8"	Weight:	48 #/ft	Length:	66 ft	60 sx Pozmix
Production Casing:	8-5/8"	Weight:	32#	Length:	2494 ft	1300 sx Pozmix
Prod'n Casing Liner:	none	Weight:	---	Length:	---	---
Tubing:	none	Weight:	---	Length:	---	
Top of Salt Depth:	2168 ft					
Last Top of Cavity:	2405 ft	By Log Type:	SONAR	On Date:	November 13, 2008	
Last Casing-Cut:	none					
Last Cavity TD:	2529 ft	By Log Type:	SONAR	On Date:	November 13, 2008	
Bottom of Salt Depth:	2940 ft					
Original Total Depth:	2940 ft					

MIT Test Specific Data: **Date of Test:** October 25, 2014

Test Well Water-Fill: 6,407 gallons, greater than the fill to 50' from end of casing of: 6,105 gallons.

	Test Well		Reference Well					
	Well # 56		**Well # 55**					
Fluid Specific Gravity:	1.00		1.112		(OK at 57% Salinity; must be >50%)			
Pressure Gauge SN:	1304540		1304548		See Note 1 re Pressure Gauges.			
Calibration Valid To:	April 20, 2015		April 20, 2015					
Time During Test:	**Avg Pressure:**		**Avg Pressure:**			**Pressure Difference:**		**Remarks:**
0800	277.72	psi -	113.99	psi	=	163.73	psi	Start Test
1000	278.98	psi -	115.24	psi	=	163.74	psi	
1200	278.19	psi -	114.58	psi	=	163.61	psi	
1400	275.65	psi -	112.15	psi	=	163.50	psi	
1600	272.97	psi -	109.53	psi	=	163.44	psi	End Test
Average Start:	**277.72**	**psi -**	**113.99**	**psi**	**=**	**163.73**	**psi**	
Average End:	**272.97**	**psi -**	**109.53**	**psi**	**=**	**163.44**	**psi**	
Start => End Change:	**4.75**	**psi -**	**4.46**	**psi**	**=**	**0.29**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (163.73 - 163.44) / 8.0

NPCR = 0.036 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Gauges are both Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).

US SALT

P.O. BOX 110
3580 SALT POINT ROAD
WATKINS GLEN, NY 14891-0110
607/535-2721

November 5, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: 2014 MIT of US Salt's Well 60, API # 31-097-23033
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 60 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on November 4, 2014. Mechanical Integrity of its 7" Production Casing was demonstrated, as required in the UIC Permit.

Well 62 was used as the Reference Well. It had been used as a Brine Well and had saturated brine of 1.20 specific gravity in it, greater than the 1.1 sp. gr. minimum required.

Well 60's annulus was loaded with 2,600 gallons fresh water, above the minimum 1,025 gallons requirement. It was temperature-equilibrated and the test period data collection was on Tuesday November 4, 2014. On each well, Ashcroft Precision Digital Pressure Gauges (with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period) were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.014 psi/hr, less than the limit of 0.05 psi/hr, therefore passing the MIT.

The Well 60 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 60 Information and MIT Data Record for 11/4/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 60 Operation

Well 60 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 60 API #: 31-097-23033 Date Prepared: November 4, 2014

Well Construction & Status Data: Prepared By: David A. Crea, P.E.

						Cementing Notes:
Date Drilled:	June 2003 Directional-Drilled to under Well 61 at BOS. Reworked to deepen to BOS under Well 60 in 2013.					
Elevation:	797 ft					
Surface Casing Size:	16"	Weight:	62.5#/f	Length:	172 ft	180 sx Class A
Protection Casing:	10-3/4"		40.5#/ft		2050 ft	515/318 sx Unifill/Class A
Production Casing:	7"	Weight:	23#/ft	Length:	2496 ft	135/410 sx Unifill Class A
Prod'n Casing Liner:	none	Weight:	---	Length:	---	---
Tubing:	5-1/2" FJ	Weight:	15.5#/ft	Length:	2680 ft	(hanging)
Top of Salt Depth:	2133 ft					
Last Top of Cavity:	2492 ft	By Log Type:	SONAR	On Date:	February 23, 2013	
Last Casing-Cut:	none	(Well was deepened by drilling down through this 26'-high cavity.)				
Last Cavity TD:	2518 ft	By Log Type:	SONAR	On Date:	February 23, 2013	
Original Total Depth:	2683 ft	(after 2013 Deepening Rework; did not go clear to Bottom of Salt)				
Bottom of Salt Depth:	2860 ft	(estimated from a nearby well that determined this)				

MIT Test Specific Data: **Date of Test:** November 4, 2014

Test Well Water-Fill: 2600 gallons, greater than the fill to 50' from end of casing of: 1,025 gallons.

	Test Well			**Reference Well**					
	Well # 60			**Well # 62**					
Fluid Specific Gravity:	1.00			1.20					
Pressure Gauge SN:	1304540			1208275		See Note 1 re Pressure Gauges.			
Calibration Valid To:	April 20, 2015			April 1, 2015					
Time During Test:	**Avg Pressure:**			**Avg Pressure:**			**Pressure Difference:**		**Remarks:**
0700	254.58	psi	-	42.0	psi	=	212.58	psi	Start Test
0900	254.16	psi	-	41.7	psi	=	212.46	psi	
1100	253.71	psi	-	41.3	psi	=	212.41	psi	
1300	253.22	psi	-	40.7	psi	=	212.52	psi	
1500	252.89	psi	-	40.2	psi	=	212.69	psi	End Test
Average Start:	**254.58**	**psi**	-	**42.00**	**psi**	=	**212.58**	**psi**	
Average End:	**252.89**	**psi**	-	**40.20**	**psi**	=	**212.69**	**psi**	
Start => End Change:	**1.69**	**psi**	-	**1.80**	**psi**	=	**(0.11)**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (212.58 - 212.69) / 8.0

NPCR = -0.014 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Well 60 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).
Well 62 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-2000 psi span, 0.25% of span accuracy (+/-5.0 psi).

US SALT

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3580 SALT POINT ROAD
WATKINS GLEN, NY 14891-0110
607/535-2721

November 5, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: 2014 MIT of US Salt's Well 61, API # 31-097-22770
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 61 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on November 4, 2014. Mechanical Integrity of its 7" Production Casing was demonstrated, as required in the UIC Permit.

Well 62 was used as the Reference Well. It had been used as a Brine Well and had saturated brine of 1.20 specific gravity in it, greater than the 1.1 sp. gr. minimum required.

Well 61 was loaded with 3,550 gallons fresh water, above the minimum 3,436 gallons requirement. It was temperature-equilibrated and the test period data collection was on Tuesday November 4, 2014. On each well, Ashcroft Precision Digital Pressure Gauges (with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period) were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.039 psi/hr, less than the limit of 0.05 psi/hr, therefore passing the MIT.

The Well 61 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 61 Information and MIT Data Record for 11/4/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 61 Operation

Well 61 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 61 API #: 31-097-22770 Date Prepared: November 4, 2014

Well Construction & Status Data: Prepared By: David A. Crea, P.E.

						Cementing Notes:
Date Drilled:	April 1999					
Elevation:	793 ft					
Surface Casing Size:	16"	Weight:	52#/ft	Length:	95 ft	115 sx Class A
Protection Casing:	10-3/4"		51#/ft		1970 ft	1380 sx Pozmix
Production Casing:	7"	Weight:	23#/ft	Length:	2200 ft	660 sx Pozmix
Prod'n Casing Liner:	none	Weight:	---	Length:	---	---
Tubing:	none	Weight:	---	Length:	---	
Top of Salt Depth:	2114 ft					
Last Top of Cavity:	2128 ft	By Log Type:	SONAR	On Date:	February 19, 2013	
Last Casing-Cut:	2128 ft	(pullled-apart by rock-fall, not 'cut')				
Last Cavity TD:	2665 ft	By Log Type:	SONAR	On Date:	February 19, 2013	
Bottom of Salt Depth:	2840 ft					
Original Total Depth:	2854 ft					

MIT Test Specific Data: **Date of Test:** November 4, 2014

Test Well Water-Fill: 3,550 gallons, greater than the fill to 50' from end of casing of: 3,436 gallons.

	Test Well			Reference Well					
	Well # 61			Well #62					
Fluid Specific Gravity:	1.00			1.20					
Pressure Gauge SN:	1304548			1208275		See Note 1 re Pressure Gauges.			
Calibration Valid To:	April 20, 2015			April 1, 2015					
Time During Test:	**Avg Pressure:**			**Avg Pressure:**			**Pressure Difference:**		**Remarks:**
0700	224.02	psi	-	42.0	psi	=	182.02	psi	Start Test
0900	223.67	psi	-	41.7	psi	=	181.97	psi	
1100	223.25	psi	-	41.3	psi	=	181.95	psi	
1300	222.85	psi	-	40.7	psi	=	182.15	psi	
1500	222.53	psi	-	40.2	psi	=	182.33	psi	End Test
Average Start:	**224.02**	**psi**	-	**42.00**	**psi**	=	**182.02**	**psi**	
Average End:	**222.53**	**psi**	-	**40.20**	**psi**	=	**182.33**	**psi**	
Start => End Change:	**1.49**	**psi**	-	**1.80**	**psi**	=	**(0.31)**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (182.02 - 182.33) / 8.0

NPCR = -0.039 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Well 61 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).
Well 62 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-2000 psi span, 0.25% of span accuracy (+/-5.0 psi).

US SALT

P.O. BOX 110
3580 SALT POINT ROAD
WATKINS GLEN, NY 14891-0110
607/535-2721

November 10, 2014

Nicole Foley Kraft, Chief
Ground Water Compliance Section
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: 2014 MIT of US Salt's Well 62, API # 31-097-23969
US Salt Class III UIC Permit # NYU063860

Dear Ms. Kraft:

Well 62 passed its Casing Mechanical Integrity Test (MIT) using Water-Brine Interface Method on November 7, 2014. Mechanical Integrity of its 7" Production Casing was demonstrated, as required in the UIC Permit.

Well 61 was used as the Reference Well. Water previously used for its MIT had been removed and it had brine of 1.20 specific gravity in it, greater than the 1.1 sp. gr. minimum required.

Well 62 was loaded with 7,550 gallons fresh water, above the minimum 4,356 gallons requirement. It was temperature-equilibrated and the test period data collection was on Friday November 7, 2014. On each well, Ashcroft Precision Digital Pressure Gauges (with sensitivity to at least 0.1 psi, and within their Valid Calibration-Period) were used for pressure measurement.

Absolute Value of Net Pressure Change Rate (NPCR) was 0.047 psi/hr, less than the limit of 0.05 psi/hr, therefore passing the MIT.

The Well 62 Construction and Status Information with MIT Data Record is attached.

David A. Crea, PE
Process Engineer
US Salt, LLC, Watkins Glen, NY

Attachment: Well 62 Information and MIT Data Record for 11/7/14 Test.

Cc: USEPA Region 2; Re: 11NY08104019 Attn: Luis Rodriquez
NYS DEC -- Avon; Attn: Linda Collart (2)
Brinefield File – Well 62 Operation

Well 62 Information, Data and Calculations for the Water-Brine Interface MIT Method **CONFIDENTIAL**

For Class III Salt Solution Mining Wells Operated by US Salt, LLC, Watkins Glen, NY

US Salt Well #: 62 API #: 31-097-23969 Date Prepared: November 7, 2014

Well Construction & Status Data: Prepared By: David A. Crea, P.E.

						Cementing Notes:
Date Drilled:	May 2007					
Elevation:	795 ft					
Surface Casing Size:	16"	Weight:	62.5#/f	Length:	174 ft	230 sx Class A w/ 2% gel & 3% CaCl2
Protection Casing:	10-3/4"	Weight:	40.5#/f	Length:	2105 ft	1244 sx 50/50 Pozmix
Production Casing:	7"	Weight:	23#/ft	Length:	2787 ft	615 sx 50/50 Pozmix
Prod'n Casing Liner:	none	Weight:	---	Length:	---	---
Tubing:	none	Weight:	---	Length:	---	
Top of Salt Depth:	2123 ft					
Last Top of Cavity:	2680	By Log Type:	SONAR	On Date:	February 18, 2013	
Last Casing-Cut:	2690 ft					
Last Cavity TD:	2722 ft	By Log Type:	SONAR	On Date:	February 18, 2013	
Bottom of Salt Depth:	2840 ft	(est'd from other wells)				
Original Total Depth:	2838 ft					

MIT Test Specific Data: **Date of Test:** November 7, 2014

Test Well's Water-Fill: 7,550 gallons, greater than the fill to 50' from end of casing of: 4,356 gallons.

	Test Well			Reference Well					
	Well # 62			Well # 61					
Fluid Specific Gravity:	1.00			1.20					
Pressure Gauge SN:	1208275			1304548		See Note 1 re Pressure Gauges.			
Calibration Valid To:	April 1, 2015			April 20, 2015					
Time During Test:	**Avg Pressure:**			**Avg Pressure:**			**Pressure Difference:**		**Remarks:**
1300	254.1	psi	-	35.69	psi	=	218.41	psi	Start Test
1500	253.8	psi	-	35.50	psi	=	218.30	psi	
1700	253.5	psi	-	35.41	psi	=	218.09	psi	
1900	253.3	psi	-	35.15	psi	=	218.15	psi	
2100	252.9	psi	-	34.87	psi	=	218.03	psi	End Test
Average Start:	**254.10**	**psi**	-	**35.69**	**psi**	=	**218.41**	**psi**	
Average End:	**252.90**	**psi**	-	**34.87**	**psi**	=	**218.03**	**psi**	
Start => End Change:	**1.20**	**psi**	-	**0.82**	**psi**	=	**0.38**	**psi**	

Calculation of Net Pressure Change Rate (NPCR), psi/hr = (Avg Starting dP - Avg Ending dP), psi / Test Duration, hrs

NPCR = (218.41 - 218.03) / 8.0

NPCR = 0.047 psi/hr

Is Absolute Value of NPCR < 0.05 psi/hr? YES. Therefore this well has PASSED its MIT.

Note 1: Well 61 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-600 psi span, 0.05% of span accuracy (+/-0.3 psi).
Well 62 Gauge is Ashcroft Precision Digital Test Gauge Type 2089, 0-2000 psi span, 0.25% of span accuracy (+/-5.0 psi).