charles river

July 10, 2020

Mr. Frank P.D. Tran
Health Physicist
NRC Region III Material Licensing Branch
Mail Control 618689
2443 Warrenville Road, Suite 210
Lisle, IL 60532

RE: Response to your request for additional information for materials license 21-11315-02 for removing room # S6 (walk-in freezer).

Dear Mr. Tran:

This is in response to your email dated July 9,2020; request for more information on the room S6 (walk-in freezer).

1. To the best of my knowledge, there was no history of disposing licensed material via the sink or floor drain.

2. Calibration data and efficiency verification are attached.

3. The maximum activity by radionuclide was C-14: 17.3 mCi and H-3: 27.6 mCi. The final close-out shipment of radioactive material from back in 2014 is attached. Material was not stored in this freezer after that date.

4. Alexander Hamm and Aura Kozminske performed the final survey.

Please contact me at 269-668-3336 extension 2136 if you have any questions, or if further information is required.

Best Regards,

Aura Kozminske

Aura Kozminske
Senior Manager Radiation, EHS | Charles River
54943 North Main Street · Mattawan, MI 49071
P:.269.668.3336 x2136 | M: 269-598-8010
Aura.Kozminske@crl.com · www.criver.com
LinkedIn | Twitter | Facebook | Eureka

Calibration Information
Software Version IC: 2.12
Software Version EC: 2.03
Instrument Model: Tri-Carb 2900TR
Instrument Serial Number: 432366
3H Chi Square: 16.08 Date Processed: 3/5/2020 9:04:39 PM
14C Chi Square: 18.31 Date Processed: 3/5/2020 9:04:39 PM
3H E^2/B (1-18.6 keV): 302.01 Date Processed: 3/5/2020 9:04:39 PM
14C E^2/B (4-156 keV): 580.64 Date Processed: 3/5/2020 9:04:39 PM
3H Efficiency (0-18.6 keV): 62.36 Date Processed: 3/5/2020 9:04:39 PM
14C Efficiency (0-156 keV): 95.31 Date Processed: 3/5/2020 9:04:39 PM
IPA Background Date Processed: 3/5/2020 9:04:39 PM
3H Background CPM (0-18.6 keV): 12.85 Date Processed: 3/5/2020 9:04:39 PM
14C Background CPM (0-156 keV): 19.38 Date Processed: 3/5/2020 9:04:39 PM
3H Calibration DPM: 213200
3H Reference Date: 10/8/2018
14C Calibration DPM: 101000

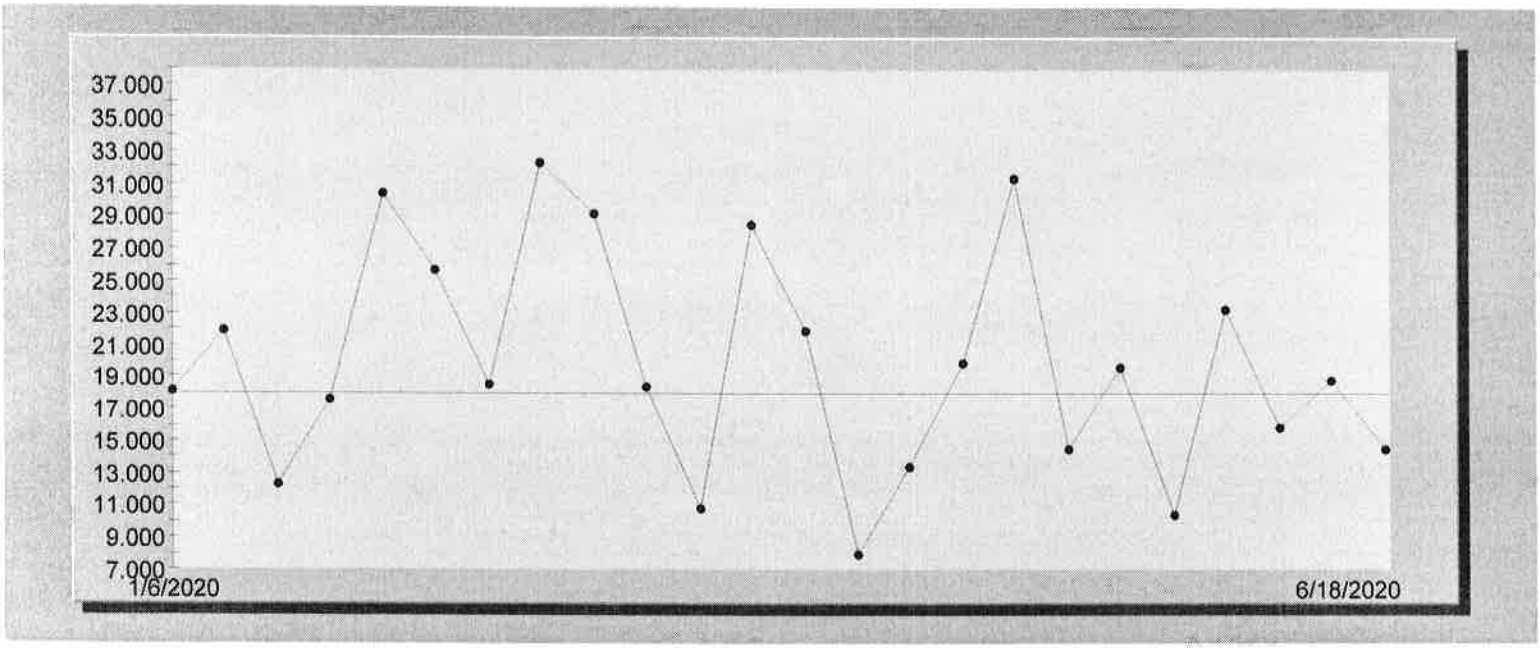
SNC Protocol

Calibration Information
Software Version IC: 2.12
Software Version EC: 2.03
Instrument Model: Tri-Carb 2900TR
Instrument Serial Number: 432366
3H Chi Square: 10.14 Date Processed: 3/31/2020 3:25:14 PM
14C Chi Square: 21.90 Date Processed: 3/31/2020 3:25:14 PM
3H E^2/B (1-18.6 keV): 300.42 Date Processed: 3/31/2020 3:25:14 PM
14C E^2/B (4-156 keV): 576.76 Date Processed: 3/31/2020 3:25:14 PM
3H Efficiency (0-18.6 keV): 62.06 Date Processed: 3/31/2020 3:25:14 PM
14C Efficiency (0-156 keV): 95.44 Date Processed: 3/31/2020 3:25:14 PM
IPA Background Date Processed: 3/31/2020 3:25:14 PM
3H Background CPM (0-18.6 keV): 12.83 Date Processed: 3/31/2020 3:25:14 PM
14C Background CPM (0-156 keV): 19.35 Date Processed: 3/31/2020 3:25:14 PM
3H Calibration DPM: 213200
3H Reference Date: 10/8/2018
14C Calibration DPM: 101000

14C Chi Square
Total # pts : 1769
Valid # pts : 24
Mean : 19.77
SD : 6.97

Date	Value	Valid Pt
Jan 06, 2020	18.10	X
Jan 21, 2020	21.89	X
Jan 24, 2020	12.27	X
Jan 28, 2020	17.53	X
Feb 14, 2020	30.42	X
Feb 24, 2020	25.68	X
Feb 25, 2020	18.50	X
Feb 27, 2020	32.32	X
Mar 03, 2020	29.20	X
Mar 05, 2020	18.31	X
Mar 09, 2020	10.80	X
Mar 16, 2020	28.46	X
Mar 31, 2020	21.90	X
Apr 27, 2020	7.92	X
Apr 29, 2020	13.31	X
Apr 30, 2020	19.91	X
May 05, 2020	31.34	X
May 11, 2020	14.44	X
May 12, 2020	19.63	X
May 13, 2020	10.40	X
May 15, 2020	23.25	X
Jun 08, 2020	15.75	X
Jun 15, 2020	18.78	X
Jun 18, 2020	14.45	X

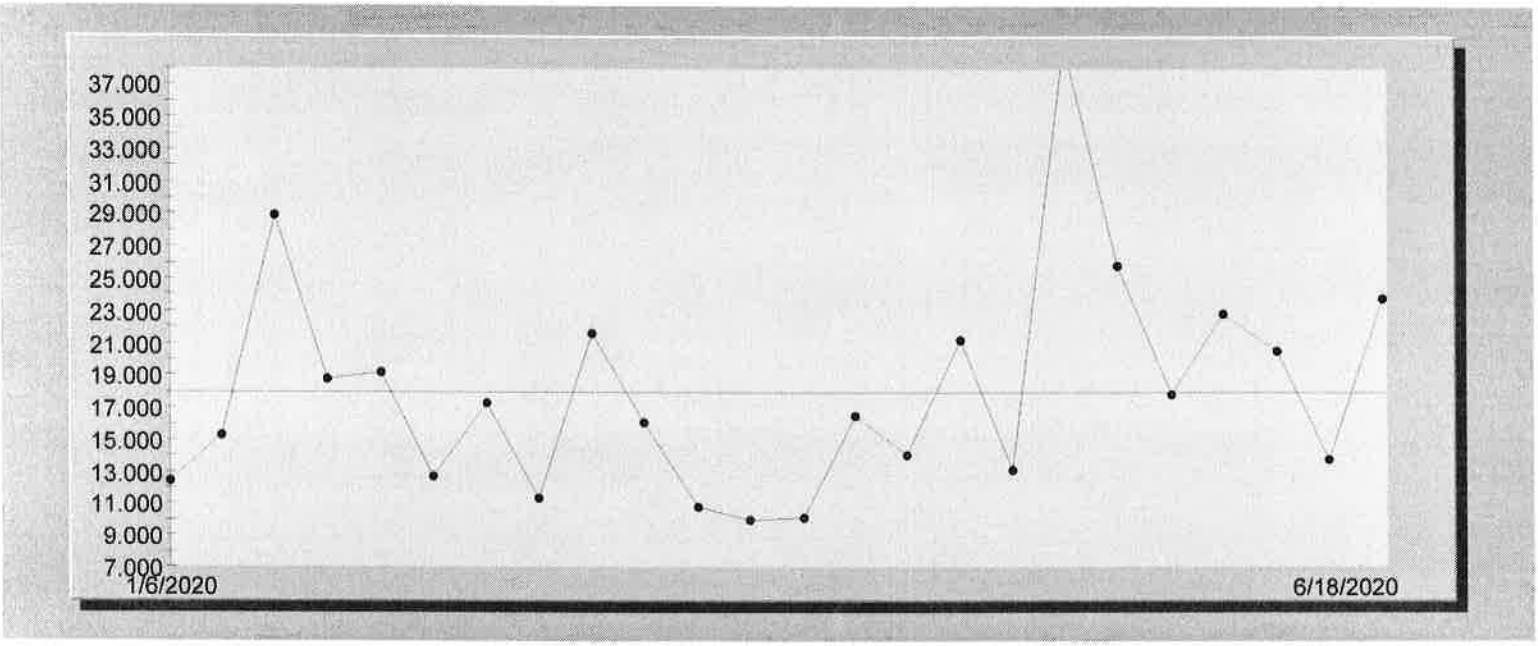
14C Chi Square
Total # pts : 1769
Valid # pts : 24
Mean : 19.77
SD : 6.97



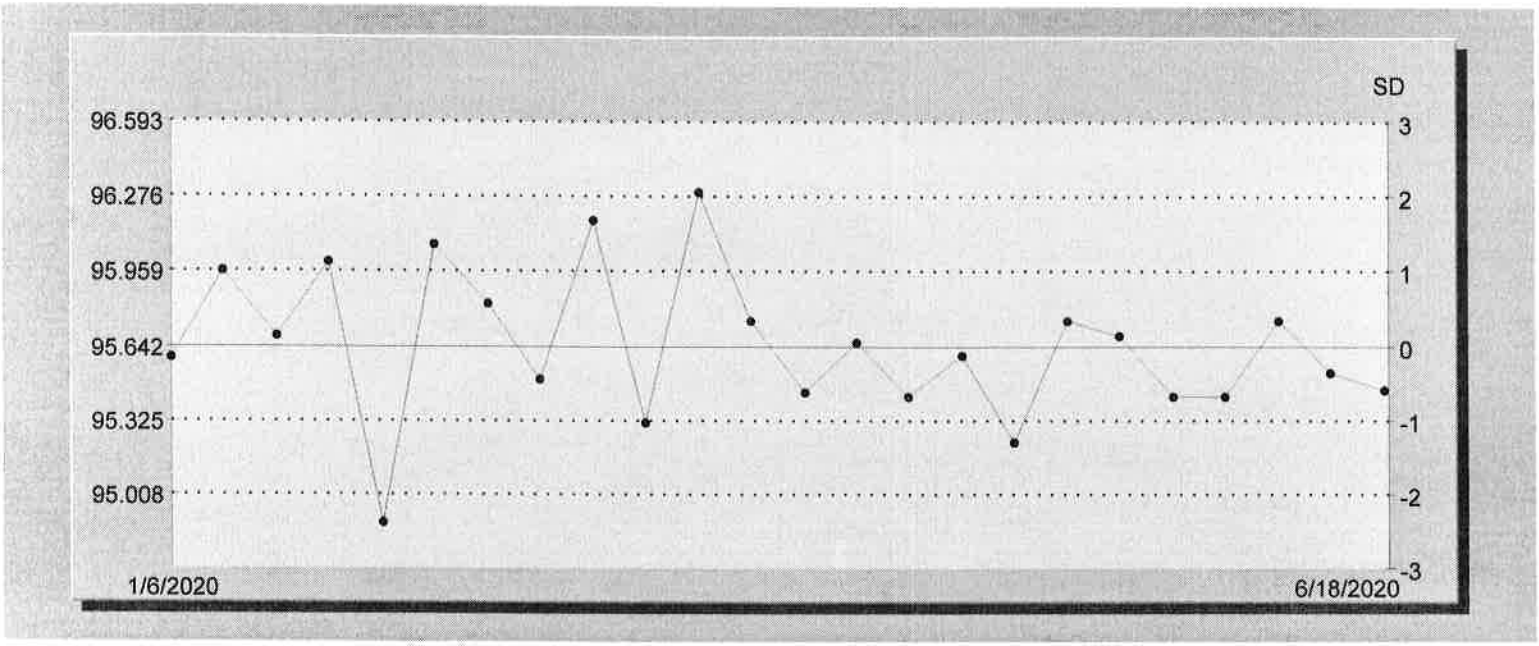
3H Chi Square
Total # pts : 1750
Valid # pts : 24
Mean : 18.06
SD : 6.86

Date	Value	Valid Pt
Jan 06, 2020	12.36	X
Jan 21, 2020	15.31	X
Jan 24, 2020	28.97	X
Jan 28, 2020	18.74	X
Feb 14, 2020	19.25	X
Feb 24, 2020	12.73	X
Feb 25, 2020	17.30	X
Feb 27, 2020	11.35	X
Mar 03, 2020	21.66	X
Mar 05, 2020	16.08	X
Mar 09, 2020	10.79	X
Mar 16, 2020	9.93	X
Mar 31, 2020	10.14	X
Apr 27, 2020	16.51	X
Apr 29, 2020	14.10	X
Apr 30, 2020	21.15	X
May 05, 2020	13.07	X
May 11, 2020	39.43	X
May 12, 2020	25.80	X
May 13, 2020	17.88	X
May 15, 2020	22.83	X
Jun 08, 2020	20.51	X
Jun 15, 2020	13.77	X
Jun 18, 2020	23.74	X

3H Chi Square
Total # pts : 1750
Valid # pts : 24
Mean : 18.06
SD : 6.86



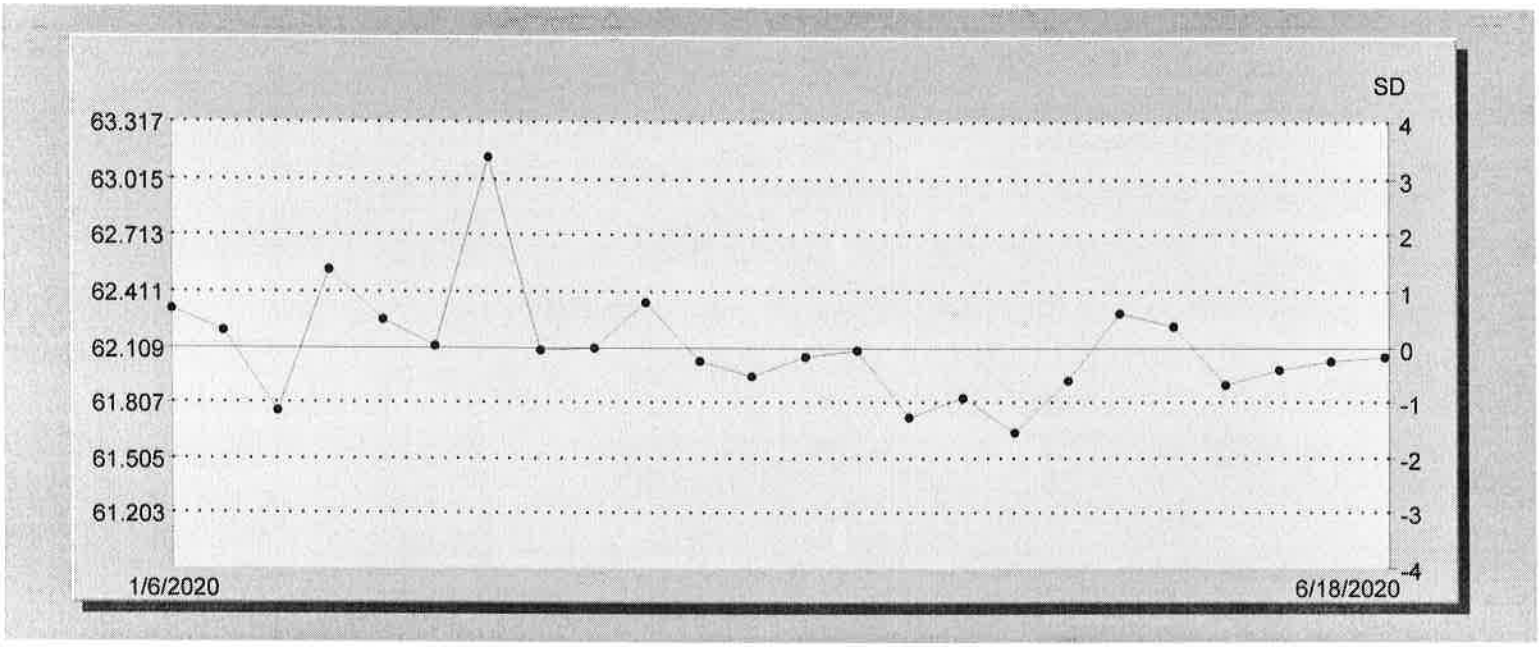
14C Efficiency
Total # pts : 2024
Valid # pts : 24
Mean : 95.64
SD : 0.32



14C Efficiency
Total # pts : 2024
Valid # pts : 24
Mean : 95.64
SD : 0.32

Date	Value	Valid Pt
Jan 06, 2020	95.59	X
Jan 21, 2020	95.97	X
Jan 24, 2020	95.68	X
Jan 28, 2020	96.00	X
Feb 14, 2020	94.89	X
Feb 24, 2020	96.08	X
Feb 25, 2020	95.83	X
Feb 27, 2020	95.50	X
Mar 03, 2020	96.17	X
Mar 05, 2020	95.31	X
Mar 09, 2020	96.30	X
Mar 16, 2020	95.75	X
Mar 31, 2020	95.44	X
Apr 27, 2020	95.66	X
Apr 29, 2020	95.43	X
Apr 30, 2020	95.60	X
May 05, 2020	95.23	X
May 11, 2020	95.75	X
May 12, 2020	95.68	X
May 13, 2020	95.42	X
May 15, 2020	95.42	X
Jun 08, 2020	95.75	X
Jun 15, 2020	95.53	X
Jun 18, 2020	95.45	X

3H Efficiency
Total # pts : 1979
Valid # pts : 24
Mean : 62.11
SD : 0.30



3H Efficiency
Total # pts : 1979
Valid # pts : 24
Mean : 62.11
SD : 0.30

Date	Value	Valid Pt
Jan 06, 2020	62.32	X
Jan 21, 2020	62.20	X
Jan 24, 2020	61.76	X
Jan 28, 2020	62.53	X
Feb 14, 2020	62.26	X
Feb 24, 2020	62.12	X
Feb 25, 2020	63.13	X
Feb 27, 2020	62.10	X
Mar 03, 2020	62.10	X
Mar 05, 2020	62.36	X
Mar 09, 2020	62.03	X
Mar 16, 2020	61.95	X
Mar 31, 2020	62.06	X
Apr 27, 2020	62.09	X
Apr 29, 2020	61.73	X
Apr 30, 2020	61.83	X
May 05, 2020	61.64	X
May 11, 2020	61.93	X
May 12, 2020	62.30	X
May 13, 2020	62.22	X
May 15, 2020	61.91	X
Jun 08, 2020	61.99	X
Jun 15, 2020	62.04	X
Jun 18, 2020	62.06	X

Offsite Disposal Log

Log #	Storage Date	Isotope	Study No.	Material	Container	Storage Area	Initial/ Date	Shipping Date	Comments (if applicable)	Initial/ Date
OS-14-YY 01	1/14/14	3H/14C	NA	Lab Trash 2	Cubic Yard #2	Rad Bld	1/16/14 ACK	2/20/14	Energy Solutions	ACK 2/20/14
OS-14-YY 02	1/6/14	3H/14C	NA	Lab Trash 3	Cubic Yard #3	Rad Bld.	1/6/14 ACK	2/20/14	Energy solutions	ACK 2/20/14
OS-14-YY 03	1/6/14	3H/14C	NA	Lab Trash 4	Cubic Yard #4	Rad Bld	1/6/14 ACK	2/20/14	Energy solutions	ACK 2/20/14
OS-14-YY 04	10/9/13	I-125	1881-075	Dog Carcass and PPE	55 Gallon plastic Drum #1 TAG 1656	FRZ-26	ACK 2/12/14	2/20/14		ACK 2/20/14
OS-14-YY 05	11/21/13	I-125	1881-075	Dog Tissues & PPE	55 Gallon Drum #2 TAG 1655	FRZ-26	ACK 2/12/14	2/20/14		ACK 2/20/14
OS-14-YY 06	11/26/13	I-125	1881-075	Dog Tissues & PPE	55 Gallon plastic #3 Drum TAG 1657	FRZ-26	ACK 2/12/14	2/20/14		ACK 2/20/14
OS-14-YY 07	11/27/13	I-125	1881-075	Dog Tissue PPE	55 Gallon Drum #4 TAG 1562	FRZ-26	ACK 2/12/14	2/20/14		ACK 2/20/14

OS = Off-site YY = Year (2 digits)

Offsite Disposal Log

Log #	Storage Date	Isotope	Study No.	Material	Container	Storage Area	Initial/ Date	Shipping Date	Comments (if applicable)	Initial/ Date
OS-14-YY 08	11/27/13	I125	1881-075	Dog Carcass ADE	55 Gallon plastic drum #5 TAG 1525	FRZ-26	ACK 2/12/14	2/20/14		ACK 2/20/14
OS-14-YY 09	10/17/13	I125	1881-075	Room Trash	55 Gallon plastic drum #4 TAG 1610	FRZ-26	ACK 2/12/14	2/20/14		ACK 2/20/14
OS-14-YY 10	1/30/14	3H, 14C	NA Lab Trash	Lab TRASH	Cubic Yard #5	old Tmc Area	ACK 2/13/14	2/20/14		ACK 2/20/14
OS-14-YY 11	1/30/14	3H, 14C	NA	Lab TRASH	Cubic yard #6	old Tmc AREA	ACK 2/13/14	2/20/14		ACK 2/20/14
OS-14-YY 12	1/30/14	3H, 14C	NA	Lab TRASH	Cubic Yard #7	old Tmc AREA	ACK 2/13/14	2/20/14		ACK 2/20/14
OS-14-YY 13	1/30/14	3H, 14C	NA	Lab TRASH	Cubic Yard #8	old Tmc AREA	ACK 2/13/14	2/20/14		ACK 2/20/14
OS-14-YY 14	1/27/14	3H, 14C	NA	Carcass	(2) ~~Cubic Yard~~ Bio Bot #9 115165	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14

OS = Off-site YY = Year (2 digits)

(1) Entry error ACK 2/13/14

(2) should read Bio Bot #1 ACK 2/20/14

Offsite Disposal Log

Log #	Storage Date	Isotope	Study No.	Material	Container	Storage Area	Initial/ Date	Shipping Date	Comments (if applicable)	Initial/ Date
OS-14-15 (YY)	1/22/14	3H, 14C	NA	Carcass	Bio Bot #2 74 lbs	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-16 (YY)	1/22/14	~~3H~~ ① 14C	NA	Carcass	Bio Bot #3 129 lbs	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-17 (YY)	1/22/14	3H, 14C	NA	Carcass	Bio Bot #4 153 lbs	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-18 (YY)	1/22/14	3H, 14C	NA	Carcass	Bio Bot #5 110-lbs	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-19 (YY)	1/22/14	14C	NA	Carcass	Bio Bot #6 78 lbs	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-20 (YY)	9/5/13	14C	NA	DMSO 100%	mix waste #2 overpack 30/55	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-21 (YY)	1/29/14	14C, 3H	NA	NAOH KOH Methanol	mix waste #3 overpack 30/55	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14

OS = Off-site YY = Year (2 digits)

① correction ACK 2/20/14

Offsite Disposal Log

Log #	Storage Date	Isotope	Study No.	Material	Container	Storage Area	Initial/ Date	Shipping Date	Comments (if applicable)	Initial/ Date
OS-14-22	12/17/09	14C	1668-018	Carcass Solubilized in NaOH Sol.	Over pack 10/30 mix waste # 4	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-23	12/17/09	14C	1668-018	Carcass Solubilized in NaOH Sol.	Over pack 10/30 mix waste # 5	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-24	12/17/09	14C	1668-018	Carcass Solubilized in NaOH Sol.	Over pack 10/30 mix waste # 4	S-6 Freezer	ACK 2/20/14	2/20/14		ACK 2/20/14
OS-14-25	2-28-14	14C	NA	Lab Trash	Cubic Yard 1	Rad. Bldg.	ACK 2/28/14	9/9/14		ACK 9/9/14
OS-14-26	2-28-14	3H/14C	NA	Lab Trash	Cubic Yard 2	Rad Bldg	ACK 2/28/14	9/9/14		ACK 9/9/14
OS-14-27	5/7/14	3H/14C	NA	Lab Trash	Cubic yard 3	Rad Bldg	ACK 5/7/14	9/9/14		ACK 9/9/14
OS-14-28	5/7/14	3H/14C	NA	Lab TRASH	Cubic yard 4	Rad Bldg	ACK 5/7/14	9/9/14		ACK 9/9/14

OS = Off-site YY = Year (2 digits)

Offsite Disposal Log

Log #	Storage Date	Isotope	Study No.	Material	Container	Storage Area	Initial/ Date	Shipping Date	Comments (if applicable)	Initial/ Date
OS-14-29 (YY)	7/30/14	14C/3H	N/A	Lab waste	Cubic yard # 5	Rad bldg.	ACK 7/30/14	9/9/14		ACK 9/9/14
OS-14-30 (YY)	7/30/14	14C/3H	N/A	Lab waste	Cubic yard # 6	Rad Bldg	ACK 7/30/14	9/9/14		ACK 9/9/14
OS-14-31 (YY)	7/30/14	① ~~Tritium~~ 3H/14C	N/A	Mix waste	Metal Drum 30/55 overpack	#74 Flammable Cabinet	ACK 7/30/14	3/17/15	NSSI Recovery Service	ACK 3/17/15
OS-14-32 (YY)	8/30/14	14C/3H	N/A	Lab waste	Cubic yard # 1	Rad Bld	ACK 8/30/14	3/17/15	Energy Sol.	ACK 3/17/15
OS-14-33 (YY)	8/30/14	14C/3H	N/A	Lab Waste	Cubic yard # 2	Rad Bld	ACK 8/30/14	3/17/15		ACK 3/17/15
OS-14-34 (YY)	8/30/14	14C/3H	N/A	Mix Waste Flexible	Metal Drum 30/55 overpack	H-74 Flammable Cabinet	ACK 8/30/14	4/19/16	NSSI / Recovery Services, Inc.	ACK 4/19/16
OS-14-35 (YY) @	12/15/14	14C/3H	N/A	Lab Waste	Cubic Yard #3	Rad Bldg.	12/15/14	3/17/15		ACK 3/17/15

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① Correction ACK 7/30/14

@Should read 35 ACK 12/15/14

FORM-SHE-19-2

General Survey Map

Date/Time: **2/20/14@5:50** Location: **S-6 Walk in freezer** Reason: **Empty out the S-6 Freezer**

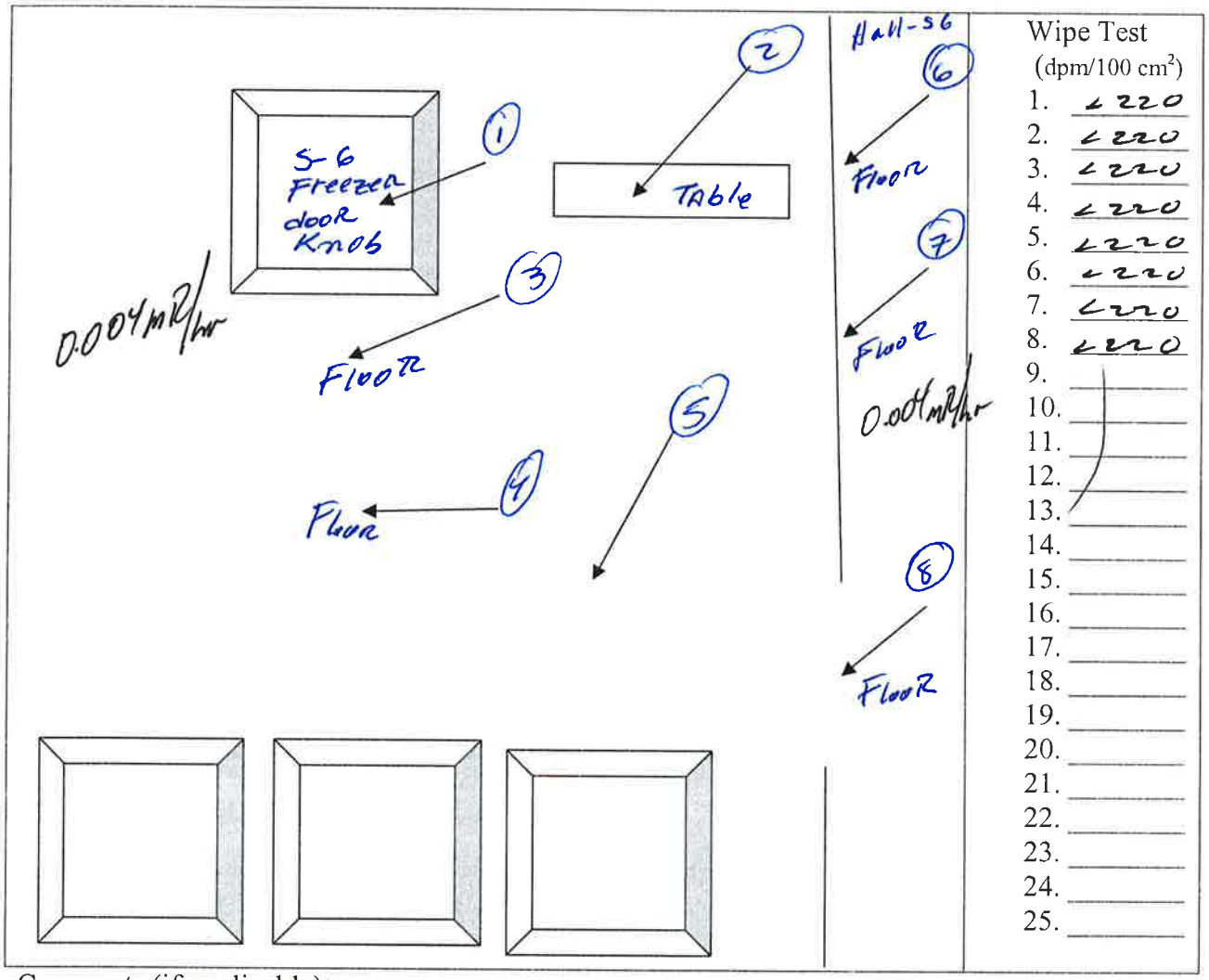
☒ Radiation ☒ Contamination Isotopes Expected: ~~NONE~~ 3H, 14C

Model/ID/Cal Due: **9DP/MTR-182/1-28-15** ☐ Beta pancake ☐ Gamma ☐ Low energy gamma ☒ Radiation survey

Model/ID/Cal Due _____ ☐ Beta pancake ☐ Gamma ☐ Low energy gamma ☐ Radiation survey

Background: **0.004mR/Hr** Surveyed By/Date: ACK 2/20/14

☒ All radiation levels < 0.02 mR/hr



Wipe Test (dpm/100 cm²)

1. <220
2. <220
3. <220
4. <220
5. <220
6. <220
7. <220
8. <220
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____

Comments (if applicable):

① Enter in error ACK 2/21/14

RJG 2/21/14

ID:SMEARS 21 FEB 2014 13:12

USER: 5 COMMENT:H-3 PLUS C-14 SMEARS

PRESET TIME : 2.00

DATA CALC :	DL DPM	H# :YES	SAMPLE REPEATS:	1	PRINTER	: STD
COUNT BLANK :	YES	IC# : NO	REPLICATES :	1	RS232	: OFF
TWO PHASE :	YES	AQC :YES	CYCLE REPEATS :	1		
SCINTILLATOR:	LIQUID	LUMEX: NO	LOW SAMPLE REJ:	0		
LOW LEVEL :	NO	HALF LIFE CORRECTION DATE:		none		

ISOTOPE 1:	3H	%ERROR: 0.20	FACTOR: 1.000000	BKG. SUB:	0
ISOTOPE 2:	14C	%ERROR: 0.20	FACTOR: 1.000000	BKG. SUB:	0
WIDE OPEN WINDOW		%ERROR: 0.00	FACTOR: 1.000000	BKG. SUB:	0

BACKGROUND QUENCH CURVE: Off COLOR QUENCH CORRECTION: Off

Quench Limits Low:39.083 High:392.91

Survey
Walk in
Freezer S-6
after empty The
Freezer S-6.
ACK 2/21/14

SAM NO	POS	TIME MIN	H#	ISO	CORRECTED CPM	%ERROR	DPM	EFF-1	EFF-2	RATIO	LUMEX %	ELAPSED 2P TIME	
B1	**-1	2.00	57.1	3H	18.50	32.88	30.89	44.34	0.50	1.219	0.86	2.49	
				14C	19.00	32.44	25.33	18.97	74.40				
				WIDE	55.50	18.98							
		Blank Average		DPM for	3H :		30.89 COEF. OF VAR:		0.000				
		Blank Average		DPM for	14C :		25.33 COEF. OF VAR:		0.000				
1	**-3	2.00	70.4	3H	16.50	34.82	0.55	40.52	0.51	-0.106	0.70	5.07	S-6 Freezer door knob
				14C	15.00	36.51	-5.18	18.66	73.65				
				WIDE	68.50	17.09							
2	**-4	2.00	68.2	3H	22.50	29.81	13.80	41.11	0.51	-4.224	0.46	7.63	Table
				14C	16.50	34.82	-3.27	18.70	73.76				
				WIDE	69.50	16.96							
3	**-5	2.00	114.9	3H	21.00	30.86	18.10	30.61	0.56	2.321	2.58	10.23 2P	Floor in front the freezer
				14C	24.00	28.87	7.80	18.12	71.62				
				WIDE	73.00	16.55							
4	**-6	2.00	81.8	3H	16.00	35.36	0.31	37.64	0.52	-0.136	1.66	12.81	Floor near Freezer
				14C	17.00	34.30	-2.28	18.47	73.07				
				WIDE	63.50	17.75							
5	**-7	2.00	97.2	3H	17.50	33.81	7.16	34.17	0.53	-9.713	3.88	15.38	Floor near the exit door
				14C	18.00	33.33	-0.74	18.29	72.37				
				WIDE	66.00	17.41							

6	**-8	2.00	75.7	3H	15.00	36.51	-3.79	39.14	0.51	2.272	1.38	17.96	Floor. on the hall
				14C	17.50	33.81	-1.67	18.57	73.37				
				WIDE	65.50	17.47							
7	**-9	2.00	80.1	3H	15.50	35.92	0.66	38.05	0.51	-0.102	1.78	20.54	Floor on the hall
				14C	14.00	37.80	-6.41	18.50	73.15				
				WIDE	57.00	18.73							
8	**-10	2.00	81.6	3H	19.50	32.03	5.89	37.68	0.52	1.133	1.78	23.13	Floor on the hall
				14C	22.50	29.81	5.20	18.47	73.08				
				WIDE	68.50	17.09							

ACK 2/21/14

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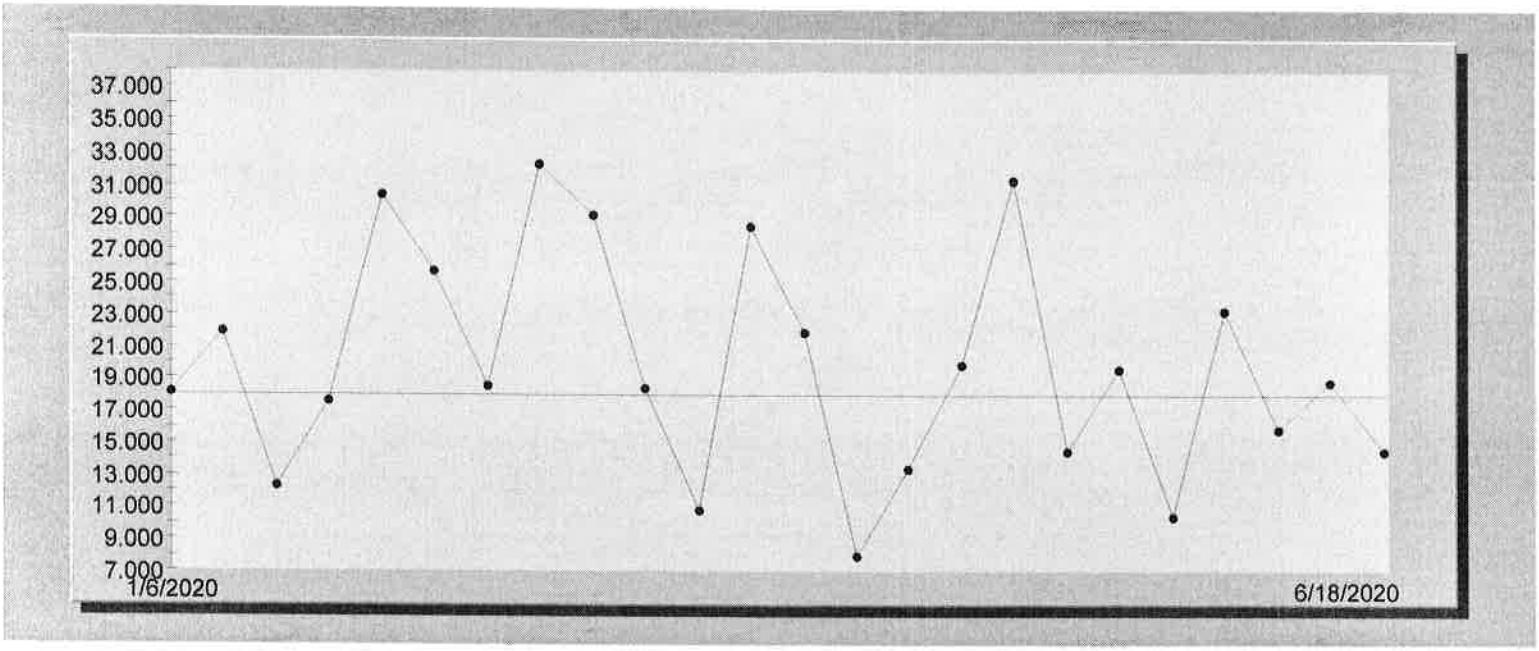
3H Efficiency (0-18.6 keV): 62.06 Date Processed: 3/31/2020 3:25:14 PM
14C Efficiency (0-156 keV): 95.44 Date Processed: 3/31/2020 3:25:14 PM
IPA Background Date Processed: 3/31/2020 3:25:14 PM
3H Background CPM (0-18.6 keV): 12.83 Date Processed: 3/31/2020 3:25:14 PM
14C Background CPM (0-156 keV): 19.35 Date Processed: 3/31/2020 3:25:14 PM
3H Calibration DPM: 213200
3H Reference Date: 10/8/2018
14C Calibration DPM: 101000

14C Chi Square
Total # pts : 1769
Valid # pts : 24
Mean : 19.77
SD : 6.97

Date	Value	Valid Pt
Jan 06, 2020	18.10	X
Jan 21, 2020	21.89	X
Jan 24, 2020	12.27	X
Jan 28, 2020	17.53	X
Feb 14, 2020	30.42	X
Feb 24, 2020	25.68	X
Feb 25, 2020	18.50	X
Feb 27, 2020	32.32	X
Mar 03, 2020	29.20	X
Mar 05, 2020	18.31	X
Mar 09, 2020	10.80	X
Mar 16, 2020	28.46	X
Mar 31, 2020	21.90	X
Apr 27, 2020	7.92	X
Apr 29, 2020	13.31	X
Apr 30, 2020	19.91	X
May 05, 2020	31.34	X
May 11, 2020	14.44	X
May 12, 2020	19.63	X
May 13, 2020	10.40	X
May 15, 2020	23.25	X
Jun 08, 2020	15.75	X
Jun 15, 2020	18.78	X
Jun 18, 2020	14.45	X

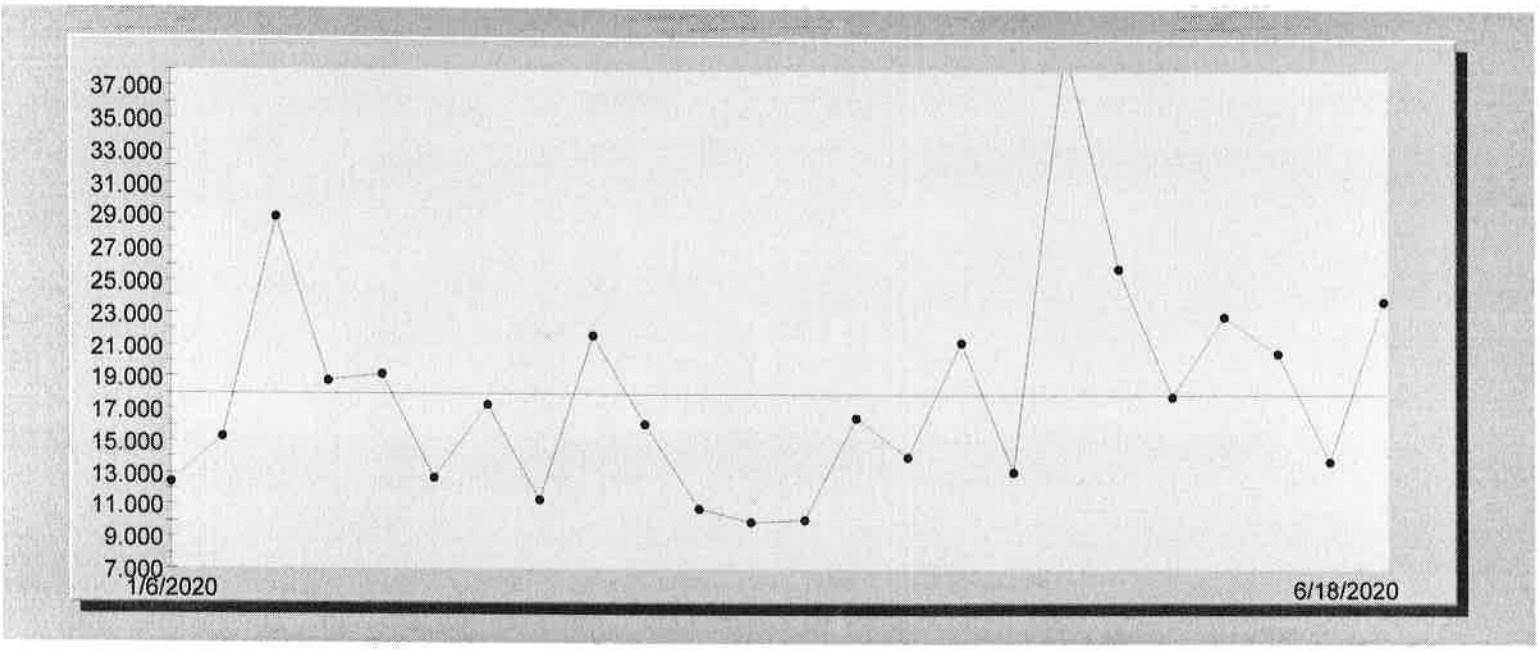
14C Chi Square
Total # pts : 1769
Valid # pts : 24
Mean : 19.77
SD : 6.97



3H Chi Square
Total # pts : 1750
Valid # pts : 24
Mean : 18.06
SD : 6.86

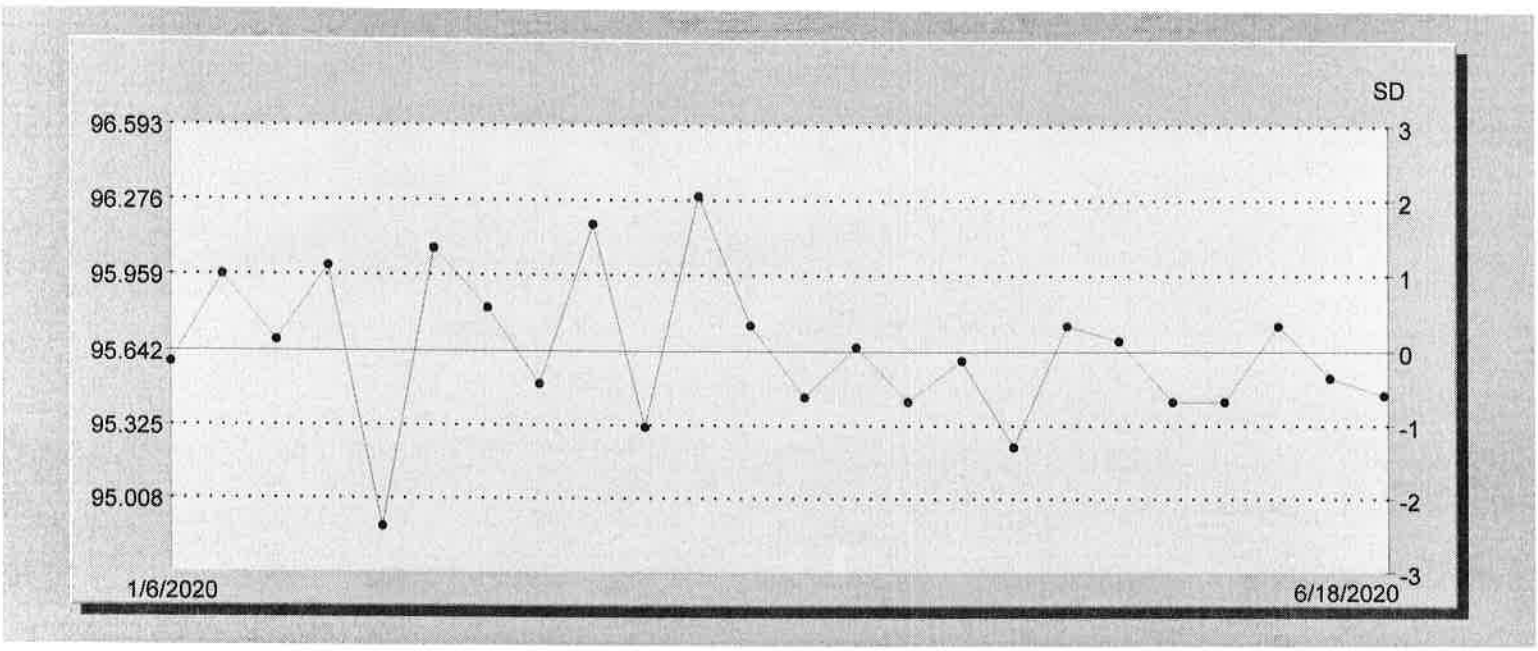
Date	Value	Valid Pt
Jan 06, 2020	12.36	X
Jan 21, 2020	15.31	X
Jan 24, 2020	28.97	X
Jan 28, 2020	18.74	X
Feb 14, 2020	19.25	X
Feb 24, 2020	12.73	X
Feb 25, 2020	17.30	X
Feb 27, 2020	11.35	X
Mar 03, 2020	21.66	X
Mar 05, 2020	16.08	X
Mar 09, 2020	10.79	X
Mar 16, 2020	9.93	X
Mar 31, 2020	10.14	X
Apr 27, 2020	16.51	X
Apr 29, 2020	14.10	X
Apr 30, 2020	21.15	X
May 05, 2020	13.07	X
May 11, 2020	39.43	X
May 12, 2020	25.80	X
May 13, 2020	17.88	X
May 15, 2020	22.83	X
Jun 08, 2020	20.51	X
Jun 15, 2020	13.77	X
Jun 18, 2020	23.74	X

3H Chi Square
Total # pts : 1750
Valid # pts : 24
Mean : 18.06
SD : 6.86



14C Efficiency

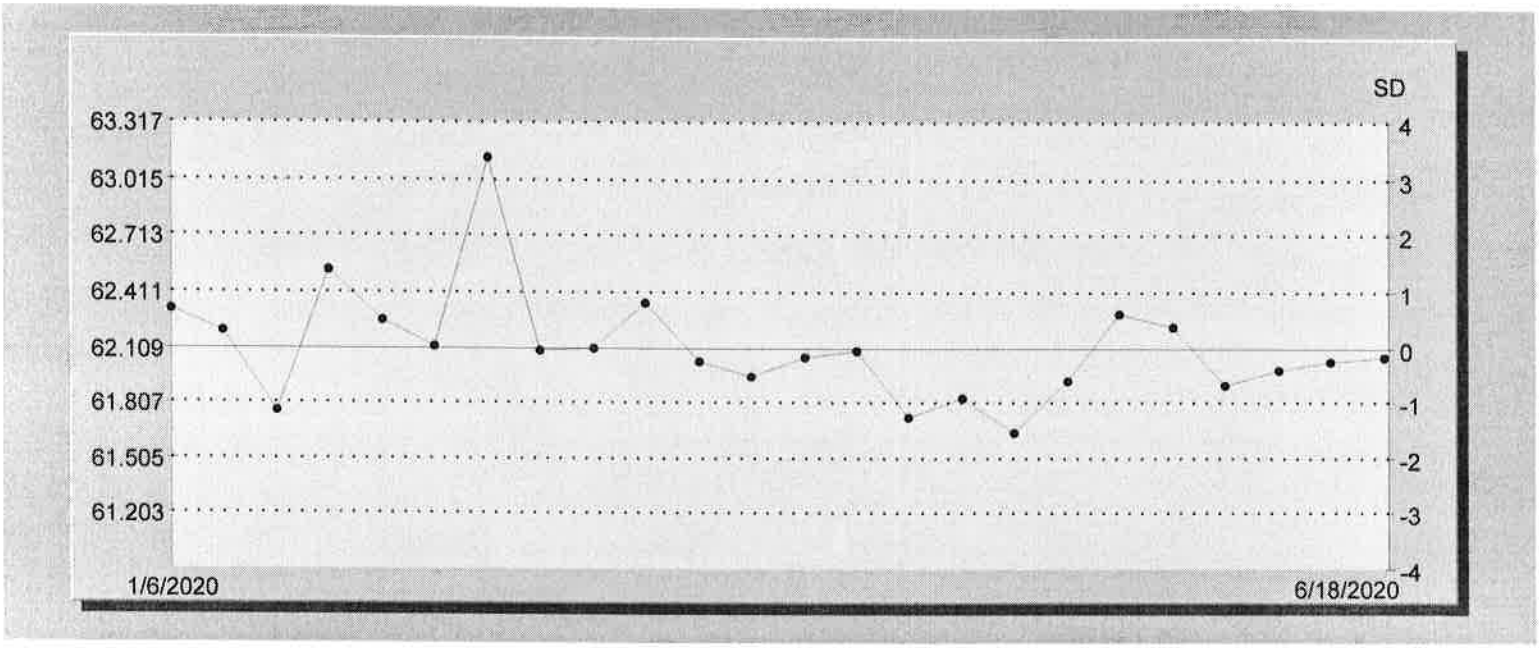
Total # pts	: 2024
Valid # pts	: 24
Mean	: 95.64
SD	: 0.32



14C Efficiency
Total # pts : 2024
Valid # pts : 24
Mean : 95.64
SD : 0.32

Date	Value	Valid Pt
Jan 06, 2020	95.59	X
Jan 21, 2020	95.97	X
Jan 24, 2020	95.68	X
Jan 28, 2020	96.00	X
Feb 14, 2020	94.89	X
Feb 24, 2020	96.08	X
Feb 25, 2020	95.83	X
Feb 27, 2020	95.50	X
Mar 03, 2020	96.17	X
Mar 05, 2020	95.31	X
Mar 09, 2020	96.30	X
Mar 16, 2020	95.75	X
Mar 31, 2020	95.44	X
Apr 27, 2020	95.66	X
Apr 29, 2020	95.43	X
Apr 30, 2020	95.60	X
May 05, 2020	95.23	X
May 11, 2020	95.75	X
May 12, 2020	95.68	X
May 13, 2020	95.42	X
May 15, 2020	95.42	X
Jun 08, 2020	95.75	X
Jun 15, 2020	95.53	X
Jun 18, 2020	95.45	X

3H Efficiency
Total # pts : 1979
Valid # pts : 24
Mean : 62.11
SD : 0.30



3H Efficiency
Total # pts : 1979
Valid # pts : 24
Mean : 62.11
SD : 0.30

Date	Value	Valid Pt
Jan 06, 2020	62.32	X
Jan 21, 2020	62.20	X
Jan 24, 2020	61.76	X
Jan 28, 2020	62.53	X
Feb 14, 2020	62.26	X
Feb 24, 2020	62.12	X
Feb 25, 2020	63.13	X
Feb 27, 2020	62.10	X
Mar 03, 2020	62.10	X
Mar 05, 2020	62.36	X
Mar 09, 2020	62.03	X
Mar 16, 2020	61.95	X
Mar 31, 2020	62.06	X
Apr 27, 2020	62.09	X
Apr 29, 2020	61.73	X
Apr 30, 2020	61.83	X
May 05, 2020	61.64	X
May 11, 2020	61.93	X
May 12, 2020	62.30	X
May 13, 2020	62.22	X
May 15, 2020	61.91	X
Jun 08, 2020	61.99	X
Jun 15, 2020	62.04	X
Jun 18, 2020	62.06	X

Diversified Scientific Services, Inc.

657 Gallaher Road Kingston, TN 37763

March 25, 2014

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071-9399

Attention: Richard Granberg

Subject: Certificate of Management - Diversified Scientific Services, Inc.
Manifest Number: 009785688JJK
Shipment Number: DSSI-13-121

Please find enclosed, Certificate(s) of Management for your waste which has been in storage at DSSI. Each certificate lists the manifest number under which the waste was shipped to DSSI and the date treatment of the waste was completed. The Hazardous Waste Manifest identifies the specific management method codes utilized for waste treatment. This certificate is verification that treatment has been made in full compliance with all applicable regulations.

DSSI appreciates the opportunity to serve your mixed waste treatment needs. If you have any questions or comments, please contact Dawn Garrett at 865-376-8747.

Sincerely,

Dawn Garrett
Waste Tracking & Shipping

EPA ID # TND 98-210-9142
TENNESSEE PERMIT #TNHW-102

DIVERSIFIED SCIENTIFIC SERVICES, INC.

Certificate No. 2014035

Certificate of Management

Diversified Scientific Services, Inc. of Kingston, Tennessee has managed waste(s) received from MPI Research, Inc.
EPA ID Number MID048989891 as identified in Hazardous Waste Manifest Number 009785688JJK and hereby certifies such management as of 3/24/2014 in accordance with applicable Federal and State regulations.

Shipment Number: DSSI-13-121

Generator: MPI Research, Inc.
Address: 54943 North Main Street
Mattawan MI 49071-9399

By: Dawn Garrett
Title: Waste Tracking & Shipping

Signature: Dawn Garrett

Contact: Richard Granberg
Mattawan MI 49071-9399

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO BOX #1
Gross Wgt.: 52.16 kg (115 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000335

1

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO BOX #2
Gross Wgt.: 33.57 kg (74 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000336

2

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO BOX #3
Gross Wgt.: 58.51 kg (129 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000337

3

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO BOX #4
Gross Wgt.: 69.4 kg (153 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000338

4

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO BOX #5
Gross Wgt.: 49.89 kg (110 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000339

5

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO BOX #6
Gross Wgt.: 35.38 kg (78 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000340

6

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO DRUM #1
Gross Wgt.: 22.68 kg (50 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000341

7

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO DRUM #2
Gross Wgt.: 31.75 kg (70 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000342

8

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO DRUM #3
Gross Wgt.: 36.29 kg (80 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000343

9

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO DRUM #4
Gross Wgt.: 43.09 kg (95 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000344

10

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO DRUM #5
Gross Wgt.: 34.47 kg (76 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000345

11

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: BIO DRUM #6
Gross Wgt.: 29.48 kg (65 lbs)

GTSD/BCO

Contents: ANIMAL CARCASSES

14-000346

12

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #1
Gross Wgt.: 63.05 kg (139 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000327

13

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #2
Gross Wgt.: 81.65 kg (180 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000328

14

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #3
Gross Wgt.: 98.88 kg (218 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000329

15

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #4
Gross Wgt.: 92.53 kg (204 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000330

16

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #5
Gross Wgt.: 78.92 kg (174 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000331

17

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #6
Gross Wgt.: 85.73 kg (189 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000332

18

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #7
Gross Wgt.: 83.91 kg (185 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000333

19

MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071
Gen. Package ID: CY #8
Gross Wgt.: 81.65 kg (180 lbs)

GTSD/BCO

Contents: DAW/THERMAL

14-000334

20

FORM 540 — **EnergySolutions, Bear Creek Processing Operations**

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
855-347-8197

ORGANIZATION
3E Company

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT?
[ ] YES
[X] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ==========> 20

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes", provide Manifest Number ==>

EPA MANIFEST NUMBER
N/A

5. SHIPPER - NAME AND FACILITY
ESI @ MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071

USER PERMIT NUMBER
T-MD004-G14

SHIPMENT NUMBER
0035-022014EN

CONTACT
Richard Granberg

6. CARRIER - Name and Address
Ecology Services, Inc.
9135 Guilford Road, Suite 200
Columbia, MD 21046

Truck #:

Trailer #:

CONTACT
Greg Keck

SIGNATURE - Authorized carrier acknowledging waste receipt

SHIPMENT ID NUMBER
0035-022014EN

[X] **COLLECTOR**
[ ] **PROCESSOR**
[ ] **GENERATOR TYPE (Specify)**

TELEPHONE NUMBER (Include Area Code)
(269) 668-3336 x2050

EPA I.D. NUMBER
MDR000524712

SHIPPING DATE
02/20/2014

TELEPHONE NUMBER (Include Area Code)
301-362-6700

DATE

7. FORM 540 AND 540A PAGE 1 OF 3 PAGE(S)
FORM 541 AND 541A 5 PAGE(S)
FORM 542 AND 542A 1 PAGE(S)
ADDITIONAL INFORMATION NONE PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages)
0035-022014EN

9. CONSIGNEE - Name and Facility Address
EnergySolutions, Bear Creek Processing Operations
Operated By EnergySolutions
1560 Bear Creek Road
Oak Ridge, TN 37830

CONTACT
Brad Melton

TELEPHONE NUMBER (Include Area Code)
(865) 481-0222

SIGNATURE - Authorized consignee acknowledging waste receipt

DATE

10. CERTIFICATION

This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and in proper condition for transportation and disposal in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulation.

AUTHORIZED SIGNATURE | **TITLE** | **DATE**

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE ACTIVITY MBq	mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.5900E-01	(7.0000E-03)	NA	27.00 ft³ 139.00000 lb	CY #1 (14-000327)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.9600E-01	(8.0000E-03)	NA	27.00 ft³ 180.00000 lb	CY #2 (14-000328)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	3.3300E-01	(9.0000E-03)	NA	27.00 ft³ 218.00000 lb	CY #3 (14-000329)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.5900E-01	(7.0000E-03)	NA	27.00 ft³ 204.00000 lb	CY #4 (14-000330)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.2200E-01	(6.0000E-03)	NA	27.00 ft³ 174.00000 lb	CY #5 (14-000331)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.2200E-01	(6.0000E-03)	NA	27.00 ft³ 189.00000 lb	CY #6 (14-000332)

FOR CONSIGNEE USE ONLY

Tennessee "License For Delivery" No. _____

South Carolina Transport Permit No. _____

US Ecology Generator No. _____

US Ecology Permit No. _____

20. Generator Certification Statement

A) Radioactive Materials. Certification is hereby made that this shipment of low-level radioactive waste has been prepared in accordance with a radioactive waste management program which has been approved by the Nuclear Regulatory Commission or an Agreement State regulatory agency and with the current revision of the site Material Acceptance Criteria.
B) Hazardous Materials. Generator hereby certifies that this material ___ does (or) ___ does not contain a hazardous waste as defined in 40 CFR 261.
C) Data. Generator hereby represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and site Radioactive Material Licenses.
D) INFECTIOUS SUBSTANCE: Generator hereby certifies that this material does not contain an infectious substance as defined in 49CFR 173.134

_____ Print Name _____ Signature _____ Date

Form 540 (10-96)

Modified Date: 02/20/2014 15:55

FORM 540A

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER (CONTINUATION)

EnergySolutions, Bear Creek Processing Operations

8. MANIFEST NUMBER (Use this number on all continuation pages)
0035-022014EN

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE ACTIVITY MBq	16. TOTAL PACKAGE ACTIVITY mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.2200E-01	(6.0000E-03)	NA	27.00 ft³ 185.00000 lb	CY #7 (14-000333)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.9600E-01	(8.0000E-03)	NA	27.00 ft³ 180.00000 lb	CY #8 (14-000334)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 51 GAL FIBER DRUM	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.1294E+02	(5.7550E+00)	NA	6.88 ft³ 115.00000 lb	BIO BOX #1 (14-000335)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 51 GAL FIBER DRUM	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.7202E+02	(7.3520E+00)	NA	6.88 ft³ 74.00000 lb	BIO BOX #2 (14-000336)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 51 GAL FIBER DRUM	NA	NA	SOLID/METAL OXIDES	C-14	1.7416E+02	(4.7070E+00)	NA	6.88 ft³ 129.00000 lb	BIO BOX #3 (14-000337)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 51 GAL FIBER DRUM	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.4609E+02	(6.6510E+00)	NA	6.88 ft³ 153.00000 lb	BIO BOX #4 (14-000338)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 51 GAL FIBER DRUM	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	4.6383E+02	(1.2536E+01)	NA	6.88 ft³ 110.00000 lb	BIO BOX #5 (14-000339)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 51 GAL FIBER DRUM	NA	NA	SOLID/METAL OXIDES	C-14	8.8060E+01	(2.3800E+00)	NA	6.88 ft³ 78.00000 lb	BIO BOX #6 (14-000340)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 55 GAL POLY DRUM	NA	NA	SOLID/METAL OXIDES	I-125	5.5500E-01	(1.5000E-02)	NA	7.50 ft³ 50.00000 lb	BIO DRUM #1 (14-000341)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 55 GAL POLY DRUM	NA	NA	SOLID/METAL OXIDES	I-125	2.2200E+00	(6.0000E-02)	NA	7.50 ft³ 70.00000 lb	BIO DRUM #2 (14-000342)

FORM 540A

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER (CONTINUATION)

EnergySolutions, Bear Creek Processing Operations

8. MANIFEST NUMBER (Use this number on all continuation pages)
0035-022014EN

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE ACTIVITY MBq	16. TOTAL PACKAGE ACTIVITY mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 55 GAL POLY DRUM	NA	NA	SOLID/METAL OXIDES	I-125	3.3300E+00	(9.0000E-02)	NA	7.50 ft^3 80.00000 lb	BIO DRUM #3 (14-000343)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 55 GAL POLY DRUM	NA	NA	SOLID/METAL OXIDES	I-125	3.3300E+00	(9.0000E-02)	NA	7.50 ft^3 85.00000 lb	BIO DRUM #4 (14-000344)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 55 GAL POLY DRUM	NA	NA	SOLID/METAL OXIDES	I-125	2.2200E+00	(6.0000E-02)	NA	7.50 ft^3 76.00000 lb	BIO DRUM #5 (14-000345)
Non-Radioactive per DOT ANIMAL CARCASSES 1 - 55 GAL POLY DRUM	NA	NA	SOLID/METAL OXIDES	I-125	3.7000E-02	(1.0000E-03)	NA	7.50 ft^3 65.00000 lb	BIO DRUM #6 (14-000346)

FORM 541 **EnergySolutions, Bear Creek Processing Operations**

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste

1. MANIFEST TOTALS

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME	NET WASTE WEIGHT	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	Pu	TOTAL
20	m^3 8.55976 / ft^3 302.26000	kg 1048.70011 / lb 2312.00000	NP	NP	NP	NP

ACTIVITY (MBq/mCi) (LLD UNITS IN uCi/cc)	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE
MBq	1.4705E+03	5.6873E+02	8.9048E+02	NP	NP	NP
mCi	3.9754E+01	1.5371E+01	2.4067E+01	NP	NP	NP

2. MANIFEST NUMBER 0035-022014EN

3. PAGE 1 OF 5 PAGE(S)

4. SHIPPER NAME ESI @ MPI Research, Inc.

SHIPMENT ID NUMBER 0035-022014EN

DISPOSAL CONTAINER DESCRIPTION / **WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER**

5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR NUMBER (* - Innerpack Container)	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME m^3 / ft^3	8. WASTE AND CONTAINER WEIGHT kg / lb	9. SURFACE RADIATION LEVEL mSv/hr / mrem/hr	10. SURFACE CONTAMINATION MBq/100 cm² / dpm/100 cm² ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER m^3 / ft^3	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	14. CHEMICAL DESCRIPTION CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	15. RADIOLOGICAL DESCRIPTION INDIVIDUAL RADIONUCLIDES AND ACTIVITY AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT			16. WASTE CLASSIFICATION AS - Class A Stable AU - Class A Unstable B - Class B C - Class C
												RADIONUCLIDES	MBq	mCi	
14-000327 (CY #1) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 / 27.00000	63.04901 / 139.00000	< 2.0000E-04 / < 2.0000E-02	< 3.6740E-06 / < 2.2000E+02	< 3.6740E-05 / < 2.2000E+03	40	0.76457 / 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.4800E-01 1.1100E-01	4.0000E-03 3.0000E-03	AU
												Sub Total	2.5900E-01	7.0000E-03	
												Package Total	2.5900E-01	7.0000E-03	
14-000328 (CY #2) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 / 27.00000	81.64621 / 180.00000	< 2.0000E-04 / < 2.0000E-02	< 3.6740E-06 / < 2.2000E+02	< 3.6740E-05 / < 2.2000E+03	40	0.76457 / 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.4800E-01 1.4800E-01	4.0000E-03 4.0000E-03	AU
												Sub Total	2.9600E-01	8.0000E-03	
												Package Total	2.9600E-01	8.0000E-03	
14-000329 (CY #3) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 / 27.00000	98.88263 / 218.00000	< 2.0000E-04 / < 2.0000E-02	< 3.6740E-06 / < 2.2000E+02	< 3.6740E-05 / < 2.2000E+03	40	0.76457 / 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.4800E-01 1.8500E-01	4.0000E-03 5.0000E-03	AU
												Sub Total	3.3300E-01	9.0000E-03	
												Package Total	3.3300E-01	9.0000E-03	
14-000330 (CY #4) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 / 27.00000	92.53237 / 204.00000	< 2.0000E-04 / < 2.0000E-02	< 3.6740E-06 / < 2.2000E+02	< 3.6740E-05 / < 2.2000E+03	40	0.76457 / 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.4800E-01 1.1100E-01	4.0000E-03 3.0000E-03	AU
												Sub Total	2.5900E-01	7.0000E-03	
												Package Total	2.5900E-01	7.0000E-03	

NOTE 1: Container Description Codes. For containers/waste requiring disposal in approved structural overpacks, the numerical code must be followed by "-OP."

1. Wooden Box or Crate
2. Metal Box
3. Plastic Drum or Pail
4. Metal Drum or Pail
5. Metal Tank or Liner
6. Concrete Tank or Liner
7. Polyethylene Tank or Liner
8. Fiberglass Tank or Liner
9. Demineralizer
10. Gas Cylinder
11. Bulk, Unpacked Waste
12. Unpackaged Components
13. High Integrity Container
19. Other. Describe in item 6, or additional page

NOTE 1A: Process Requested

C. Compaction
SR. Steam Reforming
DI. Direct Incineration
SI. Sort & Incinerate
D. Decon
G. Grean is Clean
M. Metal Melt
T. Trans-Ship
LI. Liquid for Incineration
OI. Oil for Incineration
O. Other (describe)

NOTE 2: Waste Descriptor Codes. (Choose up to three which predominate by volume.)

20. Charcoal
21. Incinerator Ash
22. Soil
23. Gas
24. Oil
25. Aqueous Liquid
26. Filter Media
27. Mechanical Filter
28. EPA or State Hazardous
29. Demolition Rubble
30. Cation Ion-exchange Media
31. Anion Ion-exchange Media
32. Mixed Bed Ion-exchange Media
33. Contaminated Equipment
34. Organic Liquid (except oil)
35. Glassware or Labware
36. Sealed Source/Device
37. Paint or Plating
38. Evaporator Bottoms/Sludges/ Concentrates
39. Compactible Trash
40. Noncompactible Trash
41. Animal Carcass
42. Biological Material (except animal carcass)
43. Activated Material
59. Other. Describe in item 11, or additional page

NOTE 2A: Burial/Disposition Site

B Barnwell Waste Management Facility
E Envirocare
R Richland, WA
PR Process and Return
O Other

NOTE 3: Solidification and Stabilization Media Codes. (Choose up to three which predominate by volume.) For media meeting disposal site structral stability requirements, the numerical code must be followed by "-S" and the media vendor and brand name must also be identified in item 13. Code 100=None Required

Solidification

90. Cement
91. Concrete (encapsulation)
92. Bitumen
93. Vinyl Chloride
94. Vinyl Ester Styrene
99. Other. Describe in item 13, or additional page
100. None Required

 * - Indicates Cross Contamination

FORM 541A

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

EnergySolutions, Bear Creek Processing Operations

2. MANIFEST NUMBER: 0035-022014EN

3. PAGE 2 OF 5 PAGE(S)

DISPOSAL CONTAINER DESCRIPTION							WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER							
							PHYSICAL DESCRIPTION			14. CHEMICAL DESCRIPTION		15. RADIOLOGICAL DESCRIPTION		
5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR NUMBER * - Interpack Container	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME m^3 ft^3	8. WASTE AND CONTAINER WEIGHT kg lb	9. SURFACE RADIATION LEVEL mSv/hr mrem/hr	10. SURFACE CONTAMINATION MBq/100 cm² dpm/100 cm² ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER m^3 ft^3	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	INDIVIDUAL RADIONUCLIDES AND ACTIVITY AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT RADIONUCLIDES	MBq	mCi	16. WASTE CLASSIFICATION AS - Class A Stable AU - Class A Unstable B - Class B C - Class C
14-000331 (CY #5) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 27.00000	78.92457 174.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	40	0.76457 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.1100E-01 1.1100E-01	3.0000E-03 3.0000E-03	AU
												Sub Total	2.2200E-01	6.0000E-03	
												Package Total	2.2200E-01	6.0000E-03	
14-000332 (CY #6) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 27.00000	85.72852 189.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	40	0.76457 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.1100E-01 1.1100E-01	3.0000E-03 3.0000E-03	AU
												Sub Total	2.2200E-01	6.0000E-03	
												Package Total	2.2200E-01	6.0000E-03	
14-000333 (CY #7) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 27.00000	83.91416 185.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	40	0.76457 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.1100E-01 1.1100E-01	3.0000E-03 3.0000E-03	AU
												Sub Total	2.2200E-01	6.0000E-03	
												Package Total	2.2200E-01	6.0000E-03	
14-000334 (CY #8) 35	19 Other (Fiber Box) O - INCINERATION O	0.76457 27.00000	81.64621 180.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	40	0.76457 27.00000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.4800E-01 1.4800E-01	4.0000E-03 4.0000E-03	AU
												Sub Total	2.9600E-01	8.0000E-03	
												Package Total	2.9600E-01	8.0000E-03	
14-000335 (BIO BOX #1) 35	51 GAL FIBER DRUM O - INCINERATION O	0.19482 6.88000	52.16285 115.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.19482 6.88000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.7246E+02 4.0478E+01	4.6610E+00 1.0940E+00	AU
												Sub Total	2.1294E+02	5.7550E+00	
												Package Total	2.1294E+02	5.7550E+00	

* - Indicates Cross Contamination

FORM 541A

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

EnergySolutions, Bear Creek Processing Operations

2. MANIFEST NUMBER: 0035-022014EN

3. PAGE 3 OF 5 PAGE(S)

DISPOSAL CONTAINER DESCRIPTION							WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER							
							PHYSICAL DESCRIPTION			14. CHEMICAL DESCRIPTION		15. RADIOLOGICAL DESCRIPTION		
5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR NUMBER # - Innerpack Container	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME m^3 / ft^3	8. WASTE AND CONTAINER WEIGHT kg / lb	9. SURFACE RADIATION LEVEL mSv/hr / mrem/hr	10. SURFACE CONTAMINATION MBq/100 cm² / dpm/100 cm² ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER m^3 / ft^3	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	INDIVIDUAL RADIONUCLIDES AND ACTIVITY AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT RADIONUCLIDES	MBq	mCi	16. WASTE CLASSIFICATION AS - Class A Stable AU - Class A Unstable B - Class B C - Class C
14-000336 (BIO BOX #2) 35	51 GAL FIBER DRUM O - INCINERATION O	0.19482 6.88000	33.56566 74.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.19482 6.88000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.4038E+02 1.3165E+02	3.7940E+00 3.5580E+00	AU
												Sub Total	2.7202E+02	7.3520E+00	
												Package Total	2.7202E+02	7.3520E+00	
14-000337 (BIO BOX #3) 35	51 GAL FIBER DRUM O - INCINERATION O	0.19482 6.88000	58.61311 129.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.19482 6.88000	100	SOLID METAL OXIDES / NP	NP	C-14	1.7416E+02	4.7070E+00	AU
												Sub Total	1.7416E+02	4.7070E+00	
												Package Total	1.7416E+02	4.7070E+00	
14-000338 (BIO BOX #4) 35	51 GAL FIBER DRUM O - INCINERATION O	0.19482 6.88000	69.39927 153.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.19482 6.88000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.1577E+02 1.3031E+02	3.1290E+00 3.5220E+00	AU
												Sub Total	2.4609E+02	6.6510E+00	
												Package Total	2.4609E+02	6.6510E+00	
14-000339 (BIO BOX #5) 35	51 GAL FIBER DRUM O - INCINERATION O	0.19482 6.88000	49.89490 110.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.19482 6.88000	100	SOLID METAL OXIDES / NP	NP	C-14 H-3	1.9858E+02 2.6525E+02	5.3670E+00 7.1690E+00	AU
												Sub Total	4.6383E+02	1.2536E+01	
												Package Total	4.6383E+02	1.2536E+01	
14-000340 (BIO BOX #6) 35	51 GAL FIBER DRUM O - INCINERATION O	0.19482 6.88000	35.38002 78.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.19482 6.88000	100	SOLID METAL OXIDES / NP	NP	C-14	8.8060E+01	2.3800E+00	AU
												Sub Total	8.8060E+01	2.3800E+00	
												Package Total	8.8060E+01	2.3800E+00	

* - Indicates Cross Contamination

FORM 541A

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

EnergySolutions, Bear Creek Processing Operations

2. MANIFEST NUMBER: 0035-022014EN

3. PAGE 4 OF 5 PAGE(S)

DISPOSAL CONTAINER DESCRIPTION							WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER							
							PHYSICAL DESCRIPTION			14. CHEMICAL DESCRIPTION		15. RADIOLOGICAL DESCRIPTION		
5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR NUMBER # - Innerpack Container	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME m^3 / ft^3	8. WASTE AND CONTAINER WEIGHT kg / lb	9. SURFACE RADIATION LEVEL mSv/hr / mrem/hr	10. SURFACE CONTAMINATION MBq/100 cm² / dpm/100 cm² ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER m^3 / ft^3	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	INDIVIDUAL RADIONUCLIDES AND ACTIVITY AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT RADIONUCLIDES	MBq	mCi	16. WASTE CLASSIFICATION AS - Class A Stable AU - Class A Unstable B - Class B C - Class C
14-000341 (BIO DRUM #1) 35	3 O - INCINERATION O	0.21238 7.50000	22.67950 50.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.21238 7.50000	100	SOLID METAL OXIDES / NP	NP	I-125	5.5500E-01	1.5000E-02	AU
												Sub Total	5.5500E-01	1.5000E-02	
												Package Total	5.5500E-01	1.5000E-02	
14-000342 (BIO DRUM #2) 35	3 O - INCINERATION O	0.21238 7.50000	31.75130 70.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.21238 7.50000	100	SOLID METAL OXIDES / NP	NP	I-125	2.2200E+00	6.0000E-02	AU
												Sub Total	2.2200E+00	6.0000E-02	
												Package Total	2.2200E+00	6.0000E-02	
14-000343 (BIO DRUM #3) 35	3 O - INCINERATION O	0.21238 7.50000	36.28720 80.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.21238 7.50000	100	SOLID METAL OXIDES / NP	NP	I-125	3.3300E+00	9.0000E-02	AU
												Sub Total	3.3300E+00	9.0000E-02	
												Package Total	3.3300E+00	9.0000E-02	
14-000344 (BIO DRUM #4) 35	3 O - INCINERATION O	0.21238 7.50000	43.09105 95.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.21238 7.50000	100	SOLID METAL OXIDES / NP	NP	I-125	3.3300E+00	9.0000E-02	AU
												Sub Total	3.3300E+00	9.0000E-02	
												Package Total	3.3300E+00	9.0000E-02	
14-000345 (BIO DRUM #5) 35	3 O - INCINERATION O	0.21238 7.50000	34.47284 76.00000	< 2.0000E-04 < 2.0000E-02	< 3.6740E-06 < 2.2000E+02	< 3.6740E-05 < 2.2000E+03	41	0.21238 7.50000	100	SOLID METAL OXIDES / NP	NP	I-125	2.2200E+00	6.0000E-02	AU
												Sub Total	2.2200E+00	6.0000E-02	
												Package Total	2.2200E+00	6.0000E-02	

FORM 541A

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION (CONTINUATION)

EnergySolutions, Bear Creek Processing Operations

2. MANIFEST NUMBER: 0035-022014EN

3. PAGE 5 OF 5 PAGE(S)

DISPOSAL CONTAINER DESCRIPTION							WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER							
							PHYSICAL DESCRIPTION			14. CHEMICAL DESCRIPTION		15. RADIOLOGICAL DESCRIPTION		
5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR NUMBER # - Innerpack Container	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME m³ / ft³	8. WASTE AND CONTAINER WEIGHT kg / lb	9. SURFACE RADIATION LEVEL mSv/hr / mrem/hr	10. SURFACE CONTAMINATION MBq/100 cm² / dpm/100 cm² ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER m³ / ft³	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	INDIVIDUAL RADIONUCLIDES AND ACTIVITY AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT RADIONUCLIDES	MBq	mCi	16. WASTE CLASSIFICATION AS - Class A Stable AU - Class A Unstable B - Class B C - Class C
14-000346 (BIO DRUM #6)	3	0.21238	29.48335	< 2.0000E-04	< 3.6740E-06	< 3.6740E-05	41	0.21238	100	SOLID METAL OXIDES / NP	NP	I-125	3.7000E-02	1.0000E-03	AU
35	O - INCINERATION	7.50000	65.00000	< 2.0000E-02	< 2.2000E+02	< 2.2000E+03		7.50000							
	O											Sub Total	3.7000E-02	1.0000E-03	
												Package Total	3.7000E-02	1.0000E-03	
Shipment Total		8.55976	1163.00483										1.4709E+03	3.9754E+01	
		302.28000	2564.00000												

Form 541A (10-96) * - Indicates Cross Contamination

NRC FORM 542 (7-2001)

EnergySolutions, Bear Creek Processing Operations

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

MANIFEST INDEX AND REGIONAL COMPACT TABULATION

List all original "PROCESSED WASTE" generators (if any) before "COLLECTED WASTE" generators

1. WASTE COLLECTOR/PROCESSOR

NAME: ESI @ MPI Research, Inc.

IDENTIFICATION NUMBER: 35

SHIPPER USE ONLY

SHIPPING DATE: 02/20/2014

2. MANIFEST NUMBER: 0035-022014EN

3. PAGE 1 OF 1 PAGE(S)

4. GENERATOR IDENTIFICATION NUMBER	5. GENERATOR NAME PERMIT NUMBER (IF APPLICABLE), AND TELEPHONE NUMBER	6. GENERATOR FACILITY ADDRESS	7. PREPROCESSED WASTE (OR MATERIAL) VOLUME m^3	8. MANIFEST NUMBER(S) UNDER WHICH WASTE (OR MATERIAL) RECEIVED AND DATE OF RECEIPT	9. WASTE CODE P=PROCESSED C=COLLECTED	10. ORIGINATING COMPACT REGION OR STATE	11. AS PROCESSED/COLLECTED TOTAL A. SOURCE MATERIAL (kg)	B. SNM (g)	C. ACTIVITY MBq	D. VOLUME m^3
35	MPI Research, Inc. EPA #: MID048989891 (269) 668-3336 x2050	54943 North Main Street Mattawan, MI 49071	8.55976	Onsite Generation 02/19/2014	C	MI	NP	NP	1.4709E+03	8.55976
						TOTALS OF ALL PAGES (FORMS 542 AND 542A)	NP	NP	1.4709E+03	8.55976

ECOLOGY SERVICES, INC.

10427 Hickory Path Way
Knoxville, TN 37922
Phone (865) 766-5873
Fax (865) 766-5908

October 16, 2015

Richard Granberg
MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071

Re: Certificate of Destruction / Disposal

Dear Richard:

The following manifest has been closed out:

Manifest No. 0035-022014EN

The radioactive materials specified on the above referenced manifest were closed out on September 9, 2015 in accordance with all applicable federal, state, and local laws and regulations.

Sincerely,

David R. DeLaCruz
Logistics Manager
Ecology Services, Inc.

ECOLOGY SERVICES, INC.

10427 Hickory Path Way
Knoxville, TN 37922
Phone (865) 766-5873
Fax (865) 766-5908

August 28, 2014

Richard Granberg
MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071

Re: Receipt Acknowledgement

Dear Richard:

The following manifest has been received at the designated processing/disposal facility:

Manifest No. 0035-022014EN

The radioactive materials specified on above referenced manifest were shipped from your facility on February 20, 2014. In accordance with the requirements of 10 CFR Part 20, Appendix G, the attached signed copy of the NRC Uniform Low-Level Radioactive Waste Manifest is your notice of receipt and acceptance of the materials at Energy*Solutions* (Duratek). This is acknowledgment of receipt only and does not certify destruction or final disposal of material.

Sincerely,

David R. DeLaCruz
Logistics Manager
Ecology Services, Inc.

Attachment: Signed NRC Manifest

FORM 540 EnergySolutions, Bear Creek Processing Operations

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
865-347-8197

ORGANIZATION
3E Company

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT?
[ ] YES
[X] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ⟹ 20

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes", provide Manifest Number ⟹ N/A

EPA MANIFEST NUMBER

5. SHIPPER - NAME AND FACILITY
ESI @ MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071

USER PERMIT NUMBER T-MD004-G14
SHIPMENT NUMBER 0035-022014EN

CONTACT
Richard Granberg

6. CARRIER - Name and Address Truck #: Trailer #:
Ecology Services, Inc.
9135 Guilford Road, Suite 200
Columbia, MD 21046

CONTACT
Greg Keck

SIGNATURE - Authorized Carrier acknowledging waste receipt
Dear Jan

DATE 2-20-14

SHIPMENT ID NUMBER 0035-022014EN
[X] COLLECTOR
PROCESSOR
GENERATOR TYPE (Specify)
TELEPHONE NUMBER (Include Area Code) (269) 668-3336 x2050
EPA I.D. NUMBER MDR000524712
SHIPPING DATE 02/20/2014
TELEPHONE NUMBER (Include Area Code) 301-362-6700

7. FORM 540 AND 540A PAGE 1 OF 3 PAGE(S)
FORM 541 AND 541A 6 PAGE(S)
FORM 542 AND 542A 1 PAGE(S)
ADDITIONAL INFORMATION NONE PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages)
0035-022014EN

9. CONSIGNEE - Name and Facility Address
EnergySolutions, Bear Creek Processing Operations
Operated By EnergySolutions
1560 Bear Creek Road
Oak Ridge, TN 37830

CONTACT
Brad Mellon

TELEPHONE NUMBER (Include Area Code)
(865) 481-0222

SIGNATURE - Authorized Consignee acknowledging waste receipt

DATE 08/21/14

#1282 #1432146

10. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and in proper condition for transportation and disposal in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulation

AUTHORIZED SIGNATURE Dear Jan
TITLE EST
DATE 2-20-14

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE ACTIVITY MBq | mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.5900E-01 | (7.0000E-03)	NA	27.00 ft³ 139.00000 lb	CY #1 (14-000327)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.9600E-01 | (8.0000E-03)	NA	27.00 ft³ 180.00000 lb	CY #2 (14-000328)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	3.3300E-01 | (9.0000E-03)	NA	27.00 ft³ 216.00000 lb	CY #3 (14-000329)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.5900E-01 | (7.0000E-03)	NA	27.00 ft³ 204.00000 lb	CY #4 (14-000330)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.2200E-01 | (6.0000E-03)	NA	27.00 ft³ 174.00000 lb	CY #5 (14-000331)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	2.2200E-01 | (6.0000E-03)	NA	27.00 ft³ 189.00000 lb	CY #6 (14-000332)

FOR CONSIGNEE USE ONLY

Tennessee "Licensa For Delivery" No. _____

South Carolina Transport Permit No. _____

US Ecology Generator No. _____

US Ecology Permit No. _____

20. Generator Certification Statement

A) Radioactive Materials. Certification is hereby made that this shipment of low-level radioactive waste has been prepared in accordance with a radioactive waste management program which has been approved by the Nuclear Regulatory Commission or an Agreement State regulatory agency and with the correct number of the site Material Acceptance Criteria.

B) Hazardous Materials. Generator hereby certifies that this material ___ does (or) ___ does not contain a hazardous waste as defined in 40 CFR 261.

C) Data. Generator hereby represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and site Radioactive Material Licenses.

D) HAZARDOUS SUBSTANCES: Generator hereby certifies that this material does not contain an infectious substance as defined by 49CFR 173.134

RICHARD GRANBERG — Print Name

Signature

1/20/14 — Date

Modified Date: 02/20/2014 15:55

ECOLOGY SERVICES, INC.

10427 Hickory Path Way
Knoxville, TN 37922
Phone (865) 766-5873
Fax (865) 766-5908

July 18, 2014

Richard Granberg
MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071

Re: Certificate of Destruction / Disposal

Dear Richard:

The following manifest has been closed out:

Manifest No. 0035-062413EN

The radioactive materials specified on the above referenced manifest were closed out on June 16, 2014 in accordance with all applicable federal, state, and local laws and regulations.

Sincerely,

David R. DeLaCruz
Logistics Manager
Ecology Services, Inc.

ECOLOGY SERVICES, INC.

10427 Hickory Path Way
Knoxville, TN 37922
Phone (865) 766-5873
Fax (865) 766-5908

May 21, 2014

Richard Granberg
MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071

Re: Receipt Acknowledgement

Dear Richard:

The following manifest has been received at the designated processing/disposal facility:

Manifest No. 0035-082913EN

The radioactive materials specified on above referenced manifest were shipped from your facility on September 4, 2013. In accordance with the requirements of 10 CFR Part 20, Appendix G, the attached signed copy of the NRC Uniform Low-Level Radioactive Waste Manifest is your notice of receipt and acceptance of the materials at Energy*Solutions* (Duratek). This is acknowledgment of receipt only and does not certify destruction or final disposal of material.

Sincerely,

David R DeLaCruz

David R. DeLaCruz
Logistics Manager
Ecology Services, Inc.

Attachments: Signed NRC Manifest

FORM 540 EnergySolutions, Bear Creek Processing Operations

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
855-347-8197

ORGANIZATION
3E Company

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT?
[ ] YES
[X] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ==========> 10

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes", provide Manifest Number ==>

EPA MANIFEST NUMBER
N/A

5. SHIPPER - NAME AND FACILITY
ESI @ MPI Research, Inc.
54943 North Main Street
Mattawan, MI 49071

USER PERMIT NUMBER
T-MD004-L13

SHIPMENT NUMBER
0035-082913EN

CONTACT
Richard Granberg

TELEPHONE NUMBER (Include Area Code)
(269) 668-3336 x2050

6. CARRIER - Name and Address
Ecology Services, Inc.
9135 Guilford Road, Suite 200
Columbia, MD 21046

Truck #:

Trailer #:

CONTACT
Greg Keck

TELEPHONE NUMBER (Include Area Code)
301-362-6700

SIGNATURE - Authorized carrier acknowledging waste receipt
Dawn Lewis

DATE
9-4-13

SHIPMENT ID NUMBER
0035-082913EN

X **COLLECTOR**
PROCESSOR
GENERATOR TYPE (Specify)

EPA I.D. NUMBER
MDR000524712

SHIPPING DATE
08/29/2013

7. FORM 540 AND 540A PAGE 1 OF 2 PAGE(S)
FORM 541 AND 541A 3 PAGE(S)
FORM 542 AND 542A 1 PAGE(S)
ADDITIONAL INFORMATION NONE PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages)
0035-082913EN

9. CONSIGNEE - Name and Facility Address
EnergySolutions, Bear Creek Processing Operations
Operated By EnergySolutions
1560 Bear Creek Road
Oak Ridge, TN 37830

CONTACT
Brad Melton

TELEPHONE NUMBER (Include Area Code)
(865) 481-0222

SIGNATURE - Authorized consignee acknowledging waste receipt

DATE
5/19/14

1282 T141988

10. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and in proper condition for transportation and disposal in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulation

AUTHORIZED SIGNATURE

TITLE
SR. SAFETY S.

DATE
5/4/13

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE ACTIVITY MBq : mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14	1.8500E-01 : (5.0000E-03)	NA	27.00 ft³ 195.00000 lb	MPI CY #1 (13-001936)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	3.3300E-01 : (9.0000E-03)	NA	27.00 ft³ 260.00000 lb	MPI CY #2 (13-001937)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	3.3300E-01 : (9.0000E-03)	NA	27.00 ft³ 193.00000 lb	MPI CY #3 (13-001938)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14 ; H-3	4.4400E-01 : (1.2000E-02)	NA	27.00 ft³ 159.00000 lb	MPI CY #4 (13-001939)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14	2.9600E-01 : (8.0000E-03)	NA	27.00 ft³ 154.00000 lb	MPI CY #5 (13-001940)
Non-Radioactive per DOT DAW/THERMAL 1 - CUBIC YARD FIBER BOX	NA	NA	SOLID/METAL OXIDES	C-14	1.1100E-01 : (3.0000E-03)	NA	27.00 ft³ 122.00000 lb	MPI CY #6 (13-001941)
					:			

FOR CONSIGNEE USE ONLY

Tennessee "License For Delivery" No. _____

South Carolina Transport Permit No. _____

US Ecology Generator No. _____

US Ecology Permit No. _____

20. Generator Certification Statement

A) Radioactive Materials. Certification is hereby made that this shipment of low-level radioactive waste has been prepared in accordance with a radioactive waste management program which has been approved by the Nuclear Regulatory Commission or an Agreement State regulatory agency and with the current revision of the site Material Acceptance Criteria

B) Hazardous Materials. Generator hereby certifies that this material __ does (x) __ does not contain a hazardous waste as defined in 40 CFR 261

C) Data. Generator hereby represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and also radioactive material Licenses.

D) INFECTIOUS SUBSTANCE: Generator hereby certifies that this material does not contain an infectious substance as defined in 49CFR 173.134

RICHARD GRANBERG — Print Name

Signature

5/4/13 — Date

Form 540 (10-96)

Modified Date: 08/26/2013 15:42