NV5

November 29, 2022
DCN: 444322-1095000.00-ABQ22TS0001

Mr. Skyler Wildenstein
Empire Trust
P.O. Box 90638
Albuquerque, NM 87199

Subject: **Section 12 Mine Drum Resin Remediation**
Section 12 Mine
Ambrosia Lake, New Mexico

Dear Mr. Wildenstein,

This report documents the remediation and radiological survey activities that were conducted on the abandoned uranium-contaminated resin drums located in the hoist house at Section 12 Mine. This work was conducted in accordance with Final Reclamation Plan, Section 12 Mine. Included in this package is one bound copy for your files.

If you have any questions regarding this report, please contact the undersigned at your convenience at 505-280-1079.

Sincerely,
NV5, Inc.

Barbara Everett
Senior Project Manager

Section 12 Mine Drum Resin Remediation

November 2022

Prepared For:

EMPIRE TRUST
Skyler Wildenstein
P.O. Box 90638
Albuquerque, NM 87199

505-344-2244

NV5

4374 Alexander Blvd. NE
Suite K
Albuquerque, NM 87107

DCN:444322-1095000.00-ABQ22RPT01_REV.0

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1.0 INTRODUCTION

The Section 12 Mine (Mine) is located at 35° 27' 17"N, 107° 51' 01"W in T14N, R10W, SW 1/4 of Section 12, McKinley County, New Mexico (Figure 1). This underground uranium mine was developed by Cobb Resources, and it operated intermittently in 1959 and 1962, and then from approximately 1974 to early 1982. The mine is currently inactive and owned by Southwest Resources Inc. (SRI). The financial interests of SRI, including reclamation of the Section 12 Mine, are being managed by Empire Trust, Inc. (Empire Trust).

Sometime in the past, an unknown entity disposed of 15 drums of uranium-contaminated resin in the hoist house at the Mine. Over time, a few of the drums corroded and a few were opened, spilling resin on the floor of the hoist house. As part of the mine reclamation plan, the removal and proper disposal of these drums is the responsibility of SRI. Reclamation activities are being conducted according to the approved Final Reclamation Plan Section 12 Mine (AKA, 2020).

Empire Trust contracted NV5, Inc. (NV5) to oversee the removal and cleanup of uranium-contaminated resin stored in drums and spilled on the floor located in the east half of the hoist house of the Section 12 Mine. Cash Properties, LLC (Cash) was contracted to do the actual cleanup of the resin and any material contaminated by the resin within the east half of the hoist house. Lucas Engineering was contracted to identify a licensed disposal facility or recycler, negotiate the acceptance of the drums and oversee, and certify that the drums were shipped off-site to a recycler or appropriate, licensed disposal facility. Both Cash and Lucas Engineering were contracted by Empire Trust.

2.0 PRELIMINARY ACTIVITIES

Preliminary activities included identifying appropriate disposal facilities and uranium recycling facilities. NV5 identified the need for a certified waste shipper for the project. Mike Nolan, Lucas Engineering, a certified radioactive waste shipper, was contracted to assist with the drum disposal. White Mesa Mill was contacted and it agreed to accept the drums for recycling and processing. Once negotiations between White Mesa Mill and Empire Trust concluded, the project proceeded. Hammond Trucking was contracted to transport the drums from the Mine to White Mesa Mill.

Both Lucas Engineering and NV5 Dade Moeller were required to apply for and receive reciprocal recognition of radioactive material licenses. Reciprocal recognition allows the licensee to work on sites within New Mexico that are not under exclusive federal jurisdiction. Once the reciprocity agreements were approved by New Mexico Environment Department (NMED), preparations were made to proceed with the project. NV5 held a teleconference "kick-off" meeting with Lucas Engineering and Cash to discuss logistics prior to mobilizing to the field.

3.0 SUMMARY OF FIELD EVENTS

Field events were conducted in two separate mobilizations. The first event was to identify the condition of the drums and conduct hazardous waste sampling and radiation screening. This information was needed to confirm the proper disposal options and comply with low-level radioactive waste transportation and disposal regulations.

The second mobilization focused on the transport of the drums for recycling at the White Mesa Mill and radiation screening to confirm that all radioactive resin had been removed from the east half of the hoist house.

September 19-20, 2022

NV5 personnel Barbara Everett and Sharon Chavez met with Mike Nolan of Lucas Engineering and Kory Cash, Kendall Cash, and Brandon Martin of Cash. A site safety and project kick-off meeting was held. During the walk thru an abundant amount of rodent droppings were observed; therefore, the east half of the hoist house (area housing the drums) was sprayed down with Clorox solution as a precaution against hantavirus. Once the radiological screening instruments were calibrated, they were used to conduct preliminary screenings to assess the level of personal protection equipment needed and overall radiation levels of the resin and drums.

As the floor of the rooms included rodent waste, the floors were sprayed with a ten percent chlorine bleach solution and allowed to sit for a minimum of five minutes prior to collecting the rodent waste with a HEPA vacuum. PPE required for the work included Tyvek coveralls, booties, nitrile gloves, and KN-95 respirators.

The Cash crew used vacuums with HEPA filters to cleanup resin around the drums. Resin was collected and put into an open drum. The drums were surveyed for radiation levels to support characterization. Because the drums were closed-top and had been cut open, it was decided to overpack each drum. To do this, the lid of the overpack was inverted and placed on the floor. Each resin drum was placed on a lid, the drum body was inverted over the resin drum, and the lid was tightened down. The drum was flipped over, the drum ring tightened, and each drum was numbered, and the mass was recorded and marked on the drum. This process was repeated until all 15 drums were overpacked.

Drums were weighed and put in overpack drums. Lucas Engineering conducted radiological screening and sampling. Radiological surveys were conducted after the overpacking was complete.

Each drum was subsequently surveyed and the dose rate, in µRem/hour, was recorded on a survey map and on each drum. Contamination surveys were taken on the bottom ring of each drum. No radiological contamination was measured in the rooms or on the drums. The radiological survey data collected during the activities of September 19 and 20, 2022 are documented in the Lucas Engineering Report. Once the drums were surveyed, they were moved to the front room of the hoist house for shipment.

Photo documentation of the activities are shown on Figures 2 through 23. Additional pictures of the drum overpacks and staging are contained in the NV5 Dade Moller report in Appendix A.

The radiological survey data collected during the activities of September 19 and 20, as well as analytical data collected from laboratory sampling, were used to complete drum characterization to support shipping on October 4, 2022. Shipping papers were completed, in advance of shipment. Details of the data collected and sampling results are contained in Lucas Engineering's report included in Appendix B.

October 3-5, 2022

Barbara Everett and Sharon Chavez of NV5, Brittney Massey of NV5-Dade Moeller, and Mike Nolan of Lucas Engineering met at the Mine to complete pre-shipping documentation and radiological surveys. A safety meeting and plan of the day meeting for the shipping of the drums was held. NV5-Dade Moeller personnel calibrated instruments and conducted an initial radiological survey.

The drums were marked RADIOACTIVE, and UN-2910 (Radioactive material, limited quantity of material), as required by Department of Transportation regulation 49 CFR 173.421 for shipment to White Mesa Mill, located in southeastern Utah. Contamination surveys of each drum was completed for verification of compliance with 49CFR 173.443. No contamination was measured. See Figure 23 for labeled drums ready for shipping.

On October 4, 2022 Brittney Massey, NV5-Dade Moeller; Mike Nolan, Lucas Engineering; and the Cash crew arrived at the Mine to complete the transfer of the drums to White Mesa Mill and conduct final radiological surveys. Due to adverse weather that occurred on October 3, Cash loaded the overpacked drums into a flatbed trailer moved them to the road for easy access for the transporter. Once Hammond Trucking, the waste transporter, arrived, the drums were loaded into a trailer. The drums were blocked and braced as required by DOT requirements. The driver was given instructions for compliant transport and given two copies of shipping documents and was released for shipment. See Figures 24, 29, 30, and 31 for loaded drums ready for transport. Hammond Trucking departed for White Mesa Mill. Later that afternoon, the driver notified Lucas Engineering and NV5 Dade Moller that the shipment had been received and accepted for processing by White Mesa Mill.

After the drums were shipped offsite, the Cash crew sprayed a ten-percent Clorox solution on the rodent droppings in the front and middle rooms of the Hoist House, prior to any vacuuming activity. Cash used a HEPA-filtered vacuum to collect any potential remaining resin and dirt from the floor. Figures 27, 28, 32 through 36 document the pre- and post-cleaning activity. NV5 completed the radiological surveys, and vacuum equipment and debris were disposed of down the shaft in accordance with the Final Reclamation Plan (AKA, 2020). NV5 noticed that Micro R meter was out of calibration and ordered a replacement.

On October 5, 2022, NV5 Dade Moeller returned to the Mine to perform an exposure rate survey with a valid Micro R meter and completed the survey and documentation. A detailed summary of the surveys, instrumentation used in the surveys and photo documentation is included in Appendix A.

3.0 SUMMARY

The 15 drums of uranium-contaminated resin were successfully transferred to White Mesa Uranium Mill for recycling and processing.

In the east half of the Mine hoist house, six surveys were conducted between October 3-5, 2022, using Large Area Wipes (LAWs) followed by tech smears of floors and debris. A pancake GM detector was used for surveys one (1) and two (2), the removable surface contamination was indistinguishable from background.

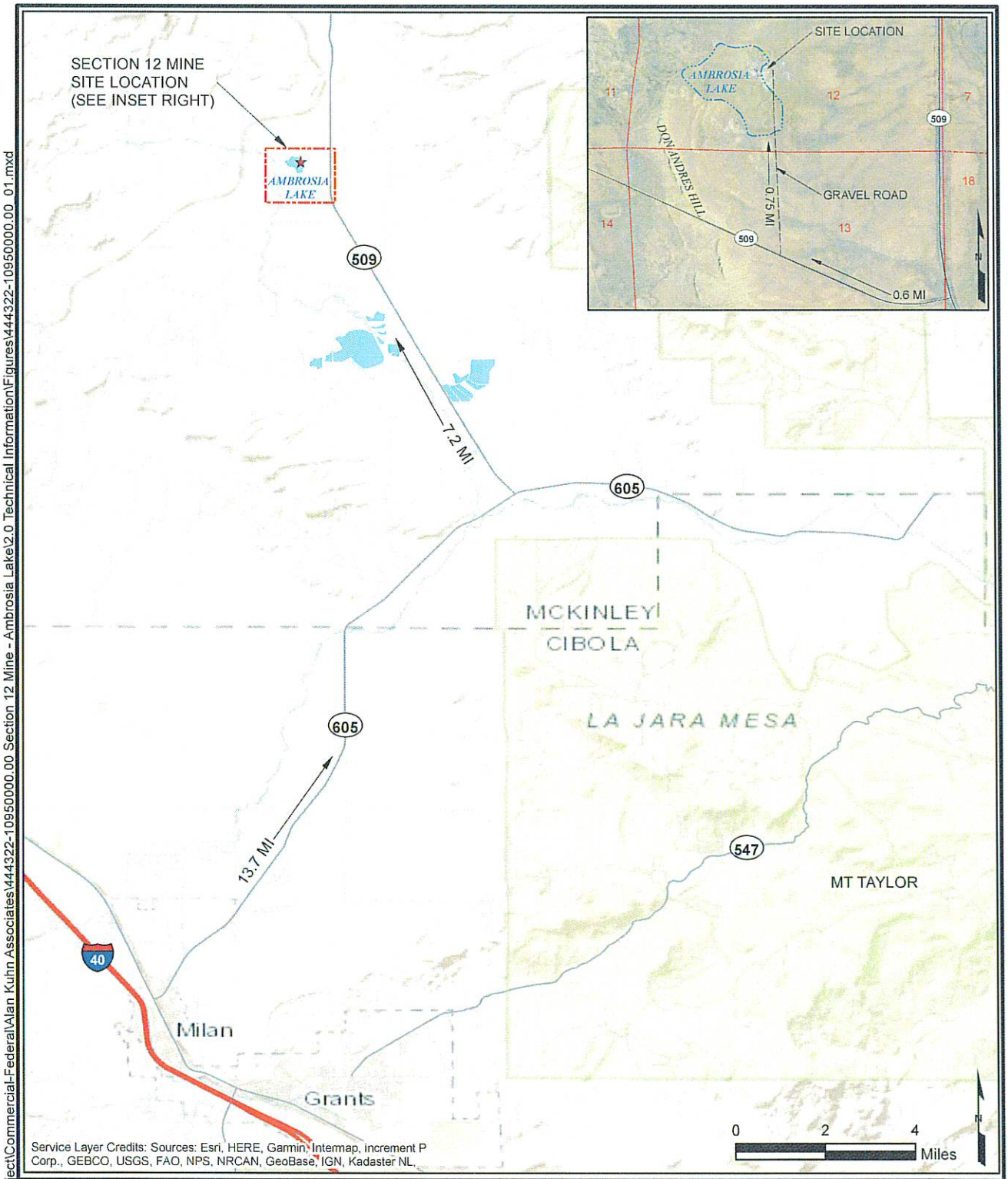
The Ludlum 43-93 was used for surveys three (3) to six (6), again removable surface contamination was indistinguishable from background. A microrem meter was used to collect dose rate measurements. All results for removable contamination were indistinguishable from background.

Debris and cleanup equipment from the hoist house were disposed of down the mine shaft upon completion of clean up activities.

4.0 REFERENCES

Alan Kuhn Associates (AKA), 2020. Final Reclamation Plan, Section 12 Mine, McKinley County, New Mexico, Rev. 0, Southwest Resources Inc., July, 2020.

LIST OF FIGURES



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NV5

www.NV5.com

PROJECT NO.	444322-1095000.00
DRAWN:	10/20/22
DRAWN BY:	PD
CHECKED BY:	BE
FILE NAME:	444322-10950000.00_01.mxd

SITE LOCATION MAP

SOUTHWEST RESOURCES, INC.
SECTION 12 MINE
AMBROSIA LAKE, NEW MEXICO

FIGURE

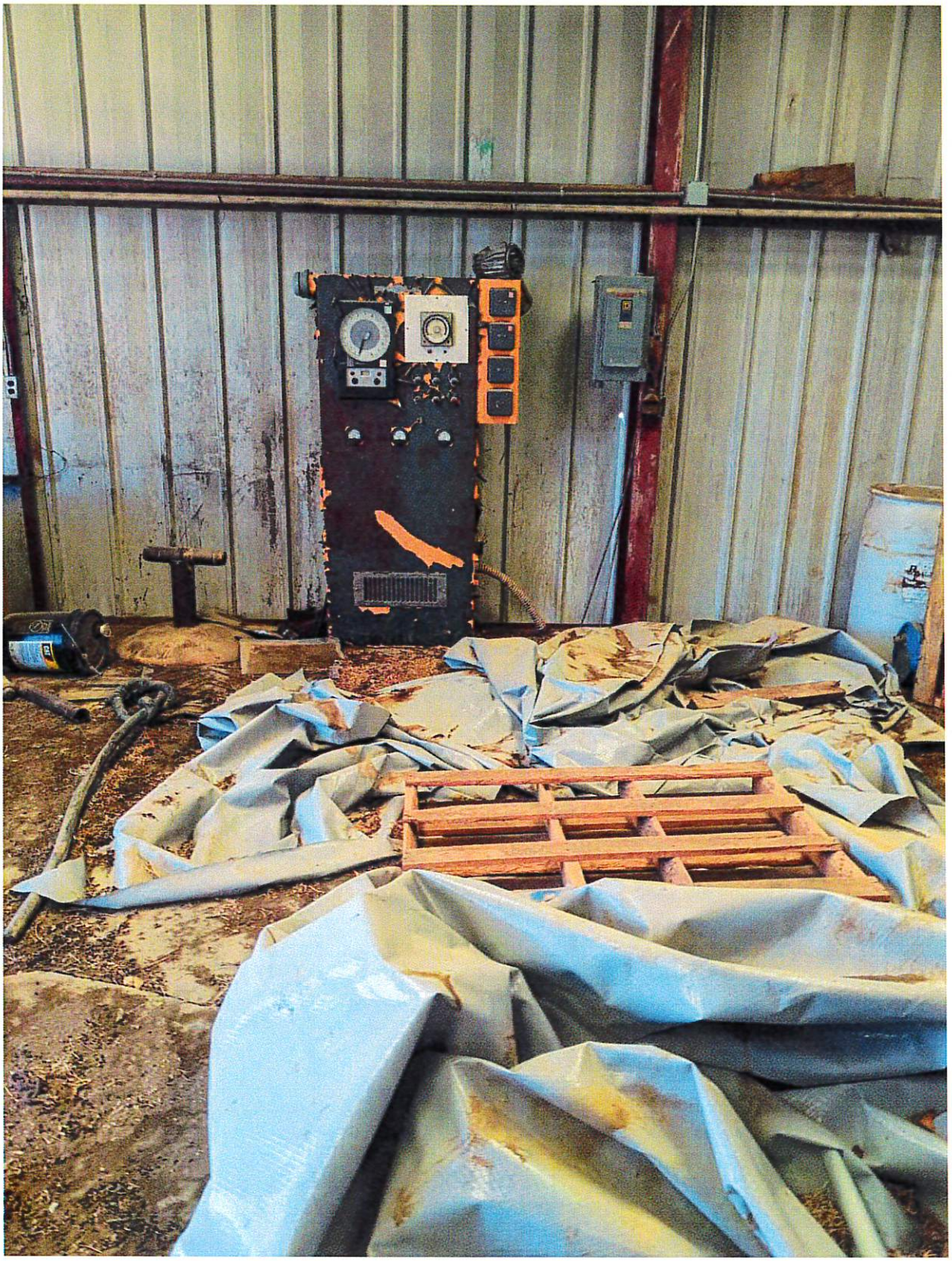
1

16 drums being surveyed .jpg

Figure 2

16 drums being surveyed 2 .jpg

Figure 3

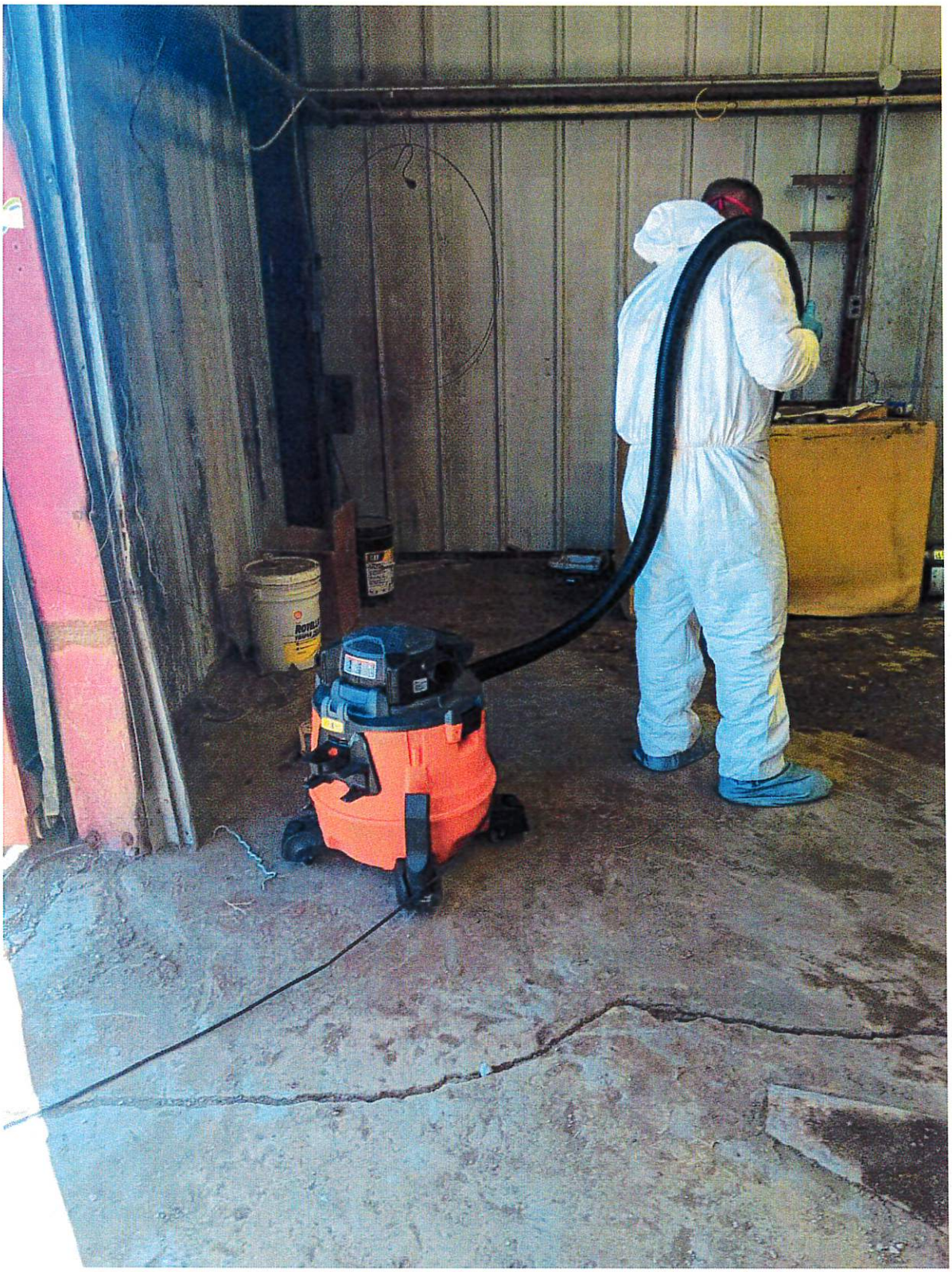


Hoist House front room.jpg

Figure 4

Hoist House.jpg

Figure 5



Vacuuming resin.jpg

Figure 6

Figure 7

Figure 8

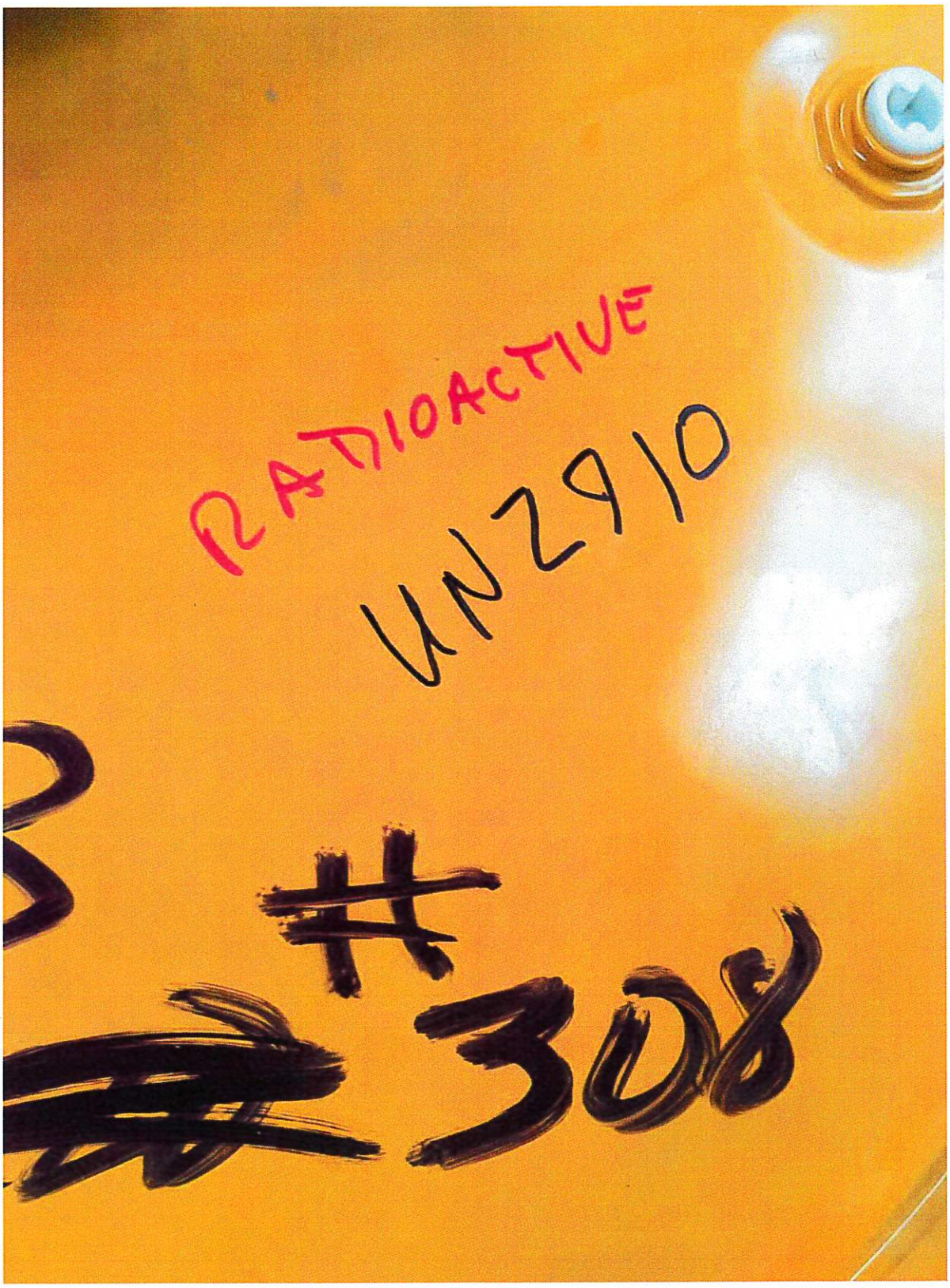


Figure 9

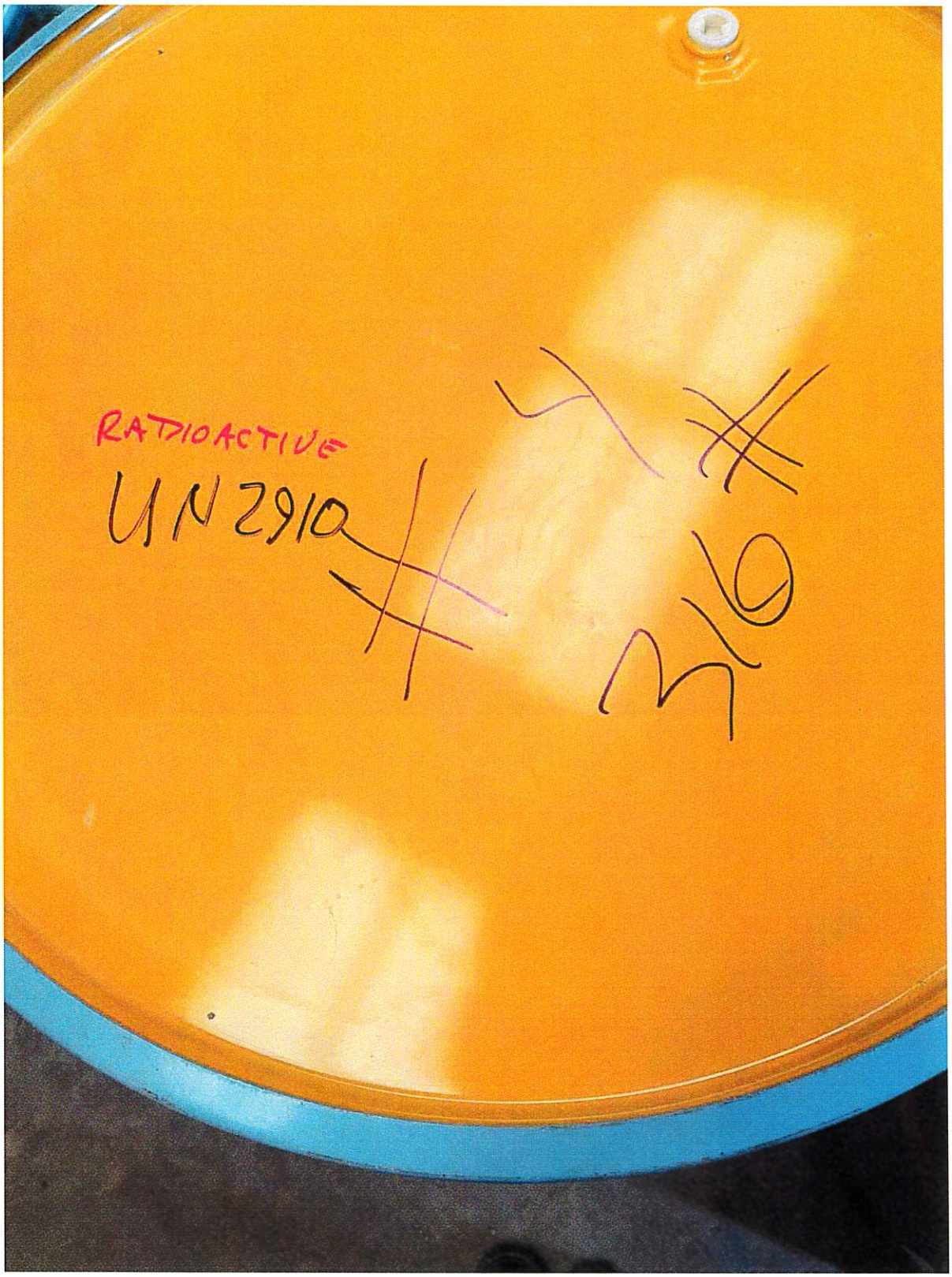


Figure 10

Figure 11

Figure 12

Figure 13

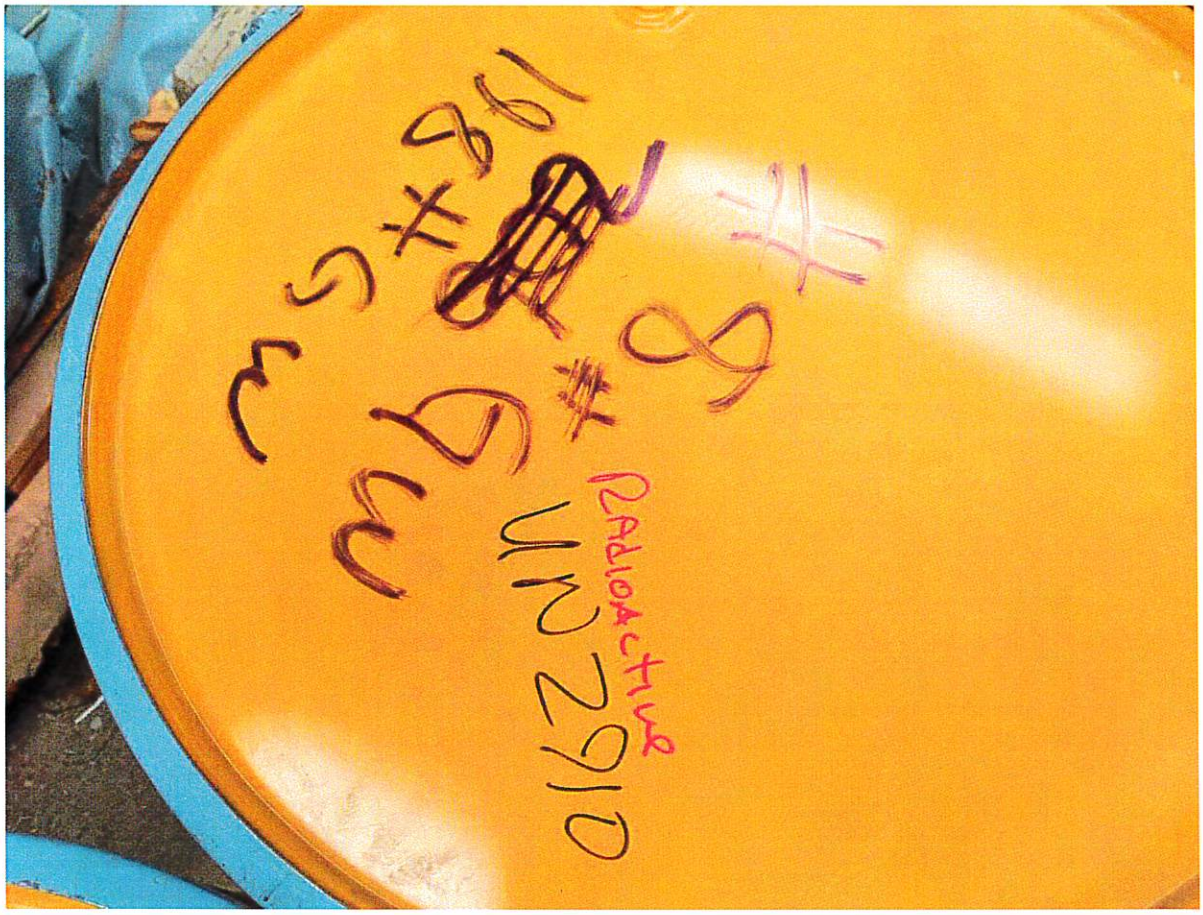


Figure 14

Figure 15

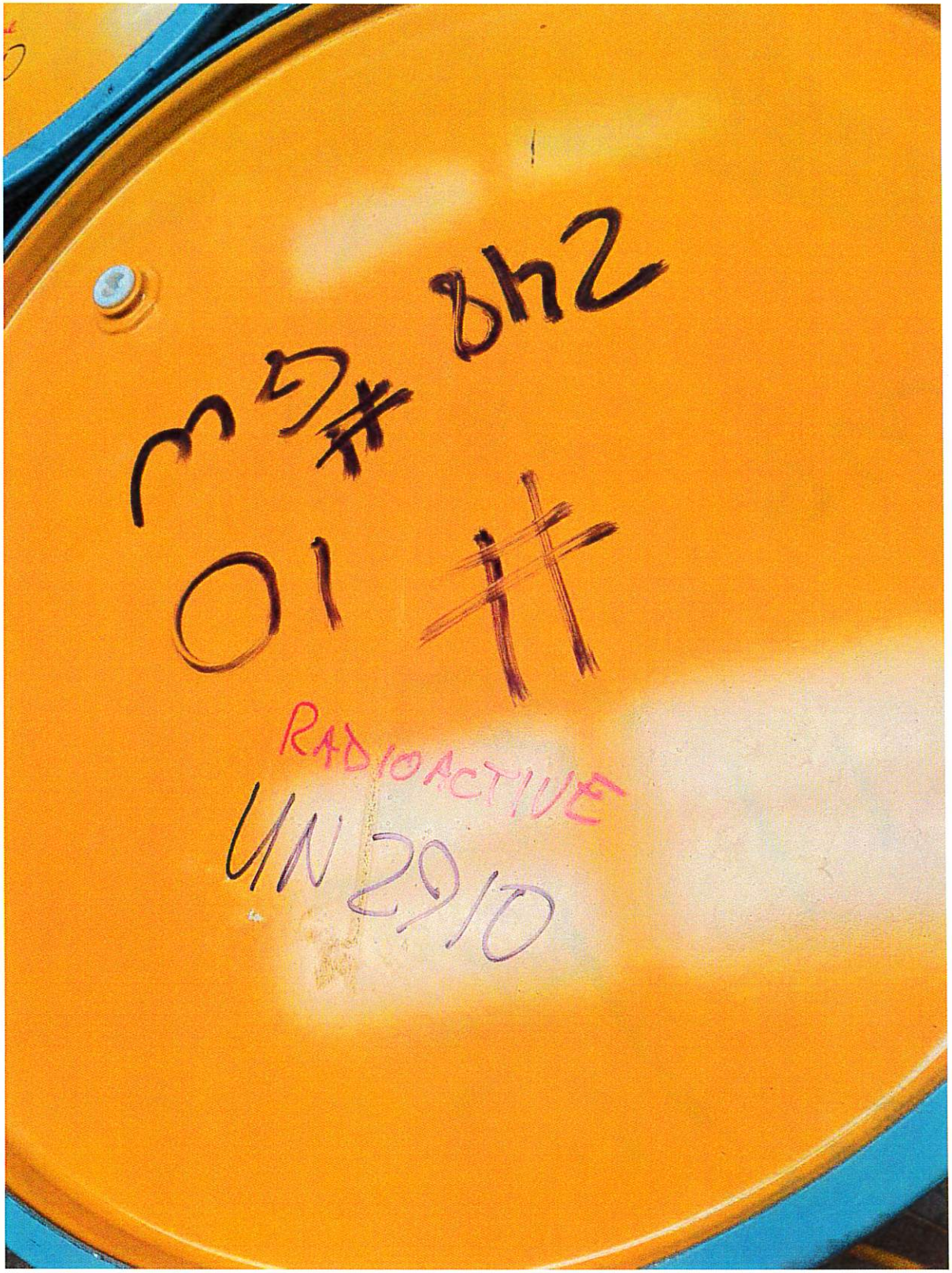


Figure 16

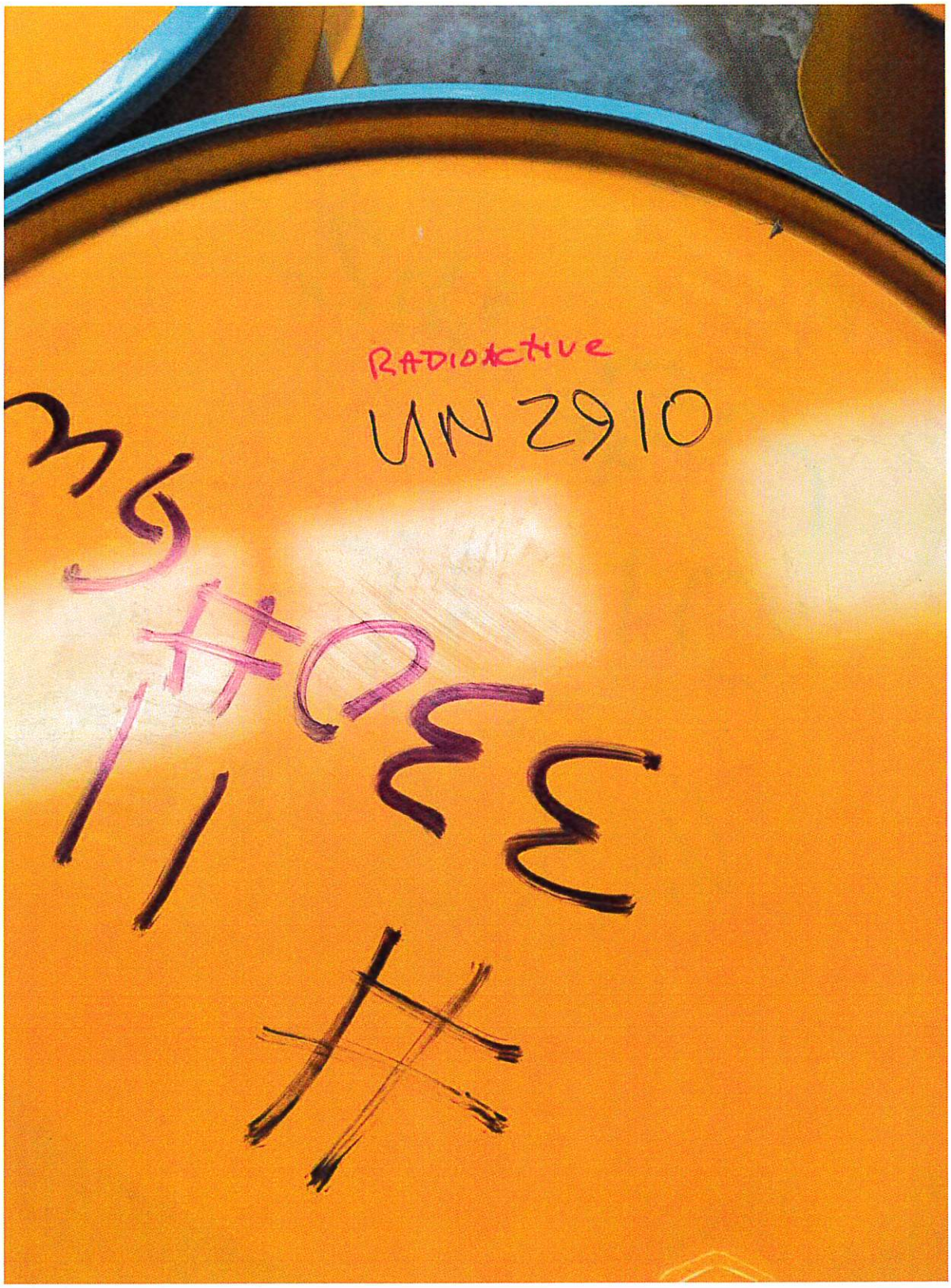


Figure 17

Figure 18

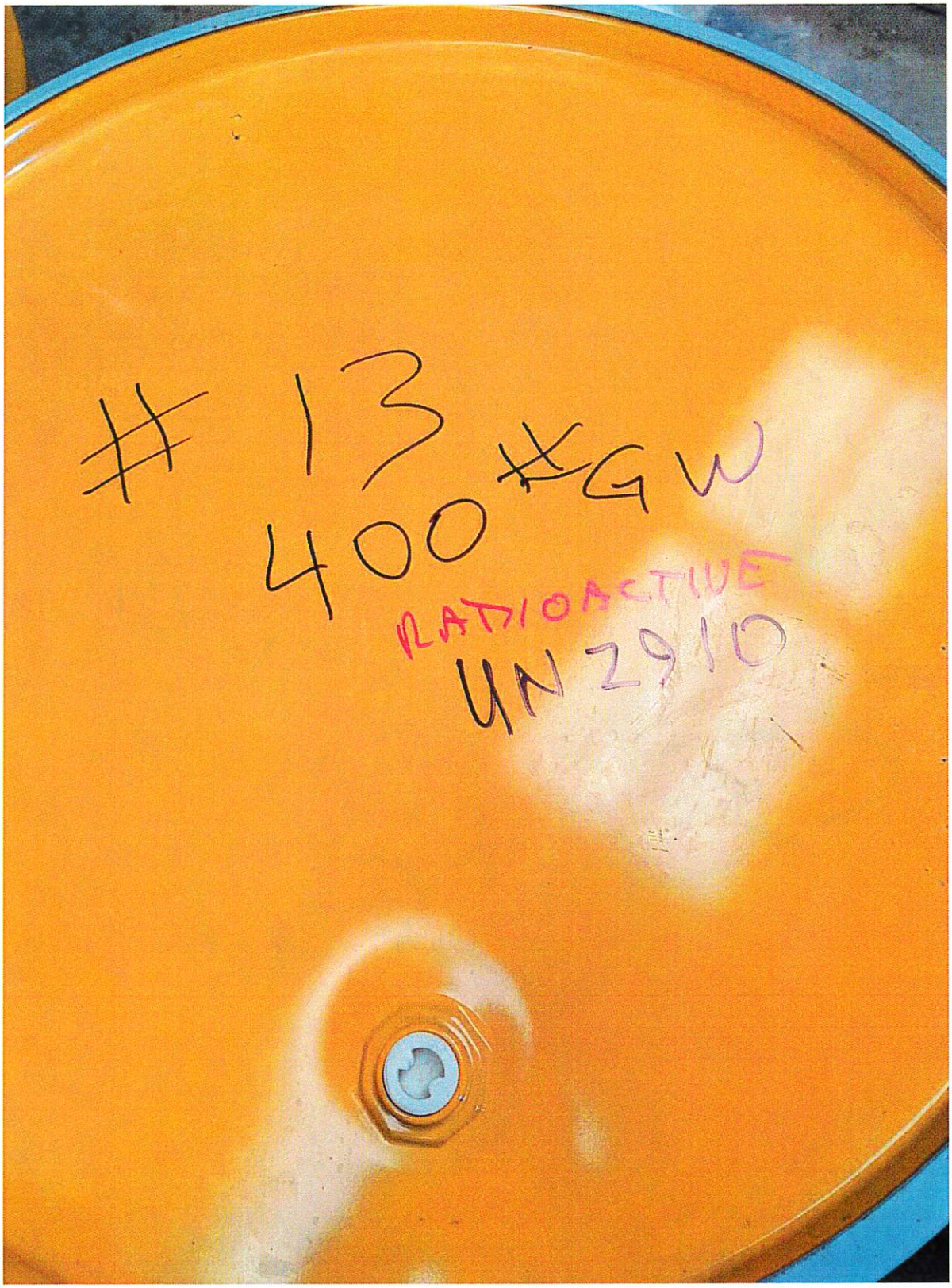


Figure 19

Figure 20

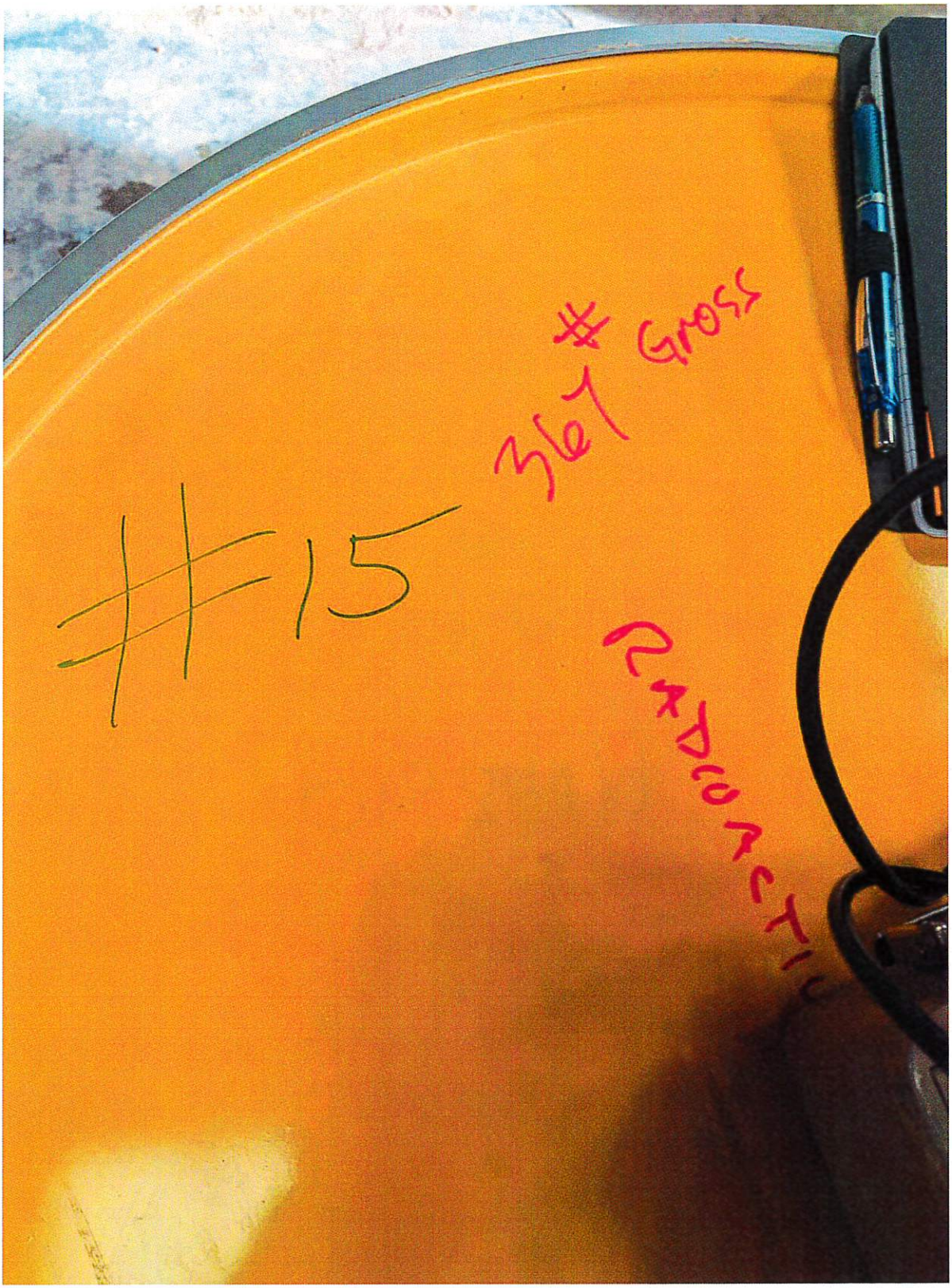


Figure 21

15 contained drums of resin Pt.2 .jpg

Figure 22

15 contained drums of resin.jpg

Figure 23

All 15 drums loaded into livestock trailer .jpg

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Back rooms of Hoist House pt2.jpg

Figure 25

Back rooms of Hoist House.jpg

Figure 26

Cash team spraying Clorox and vacuuming resin.jpg

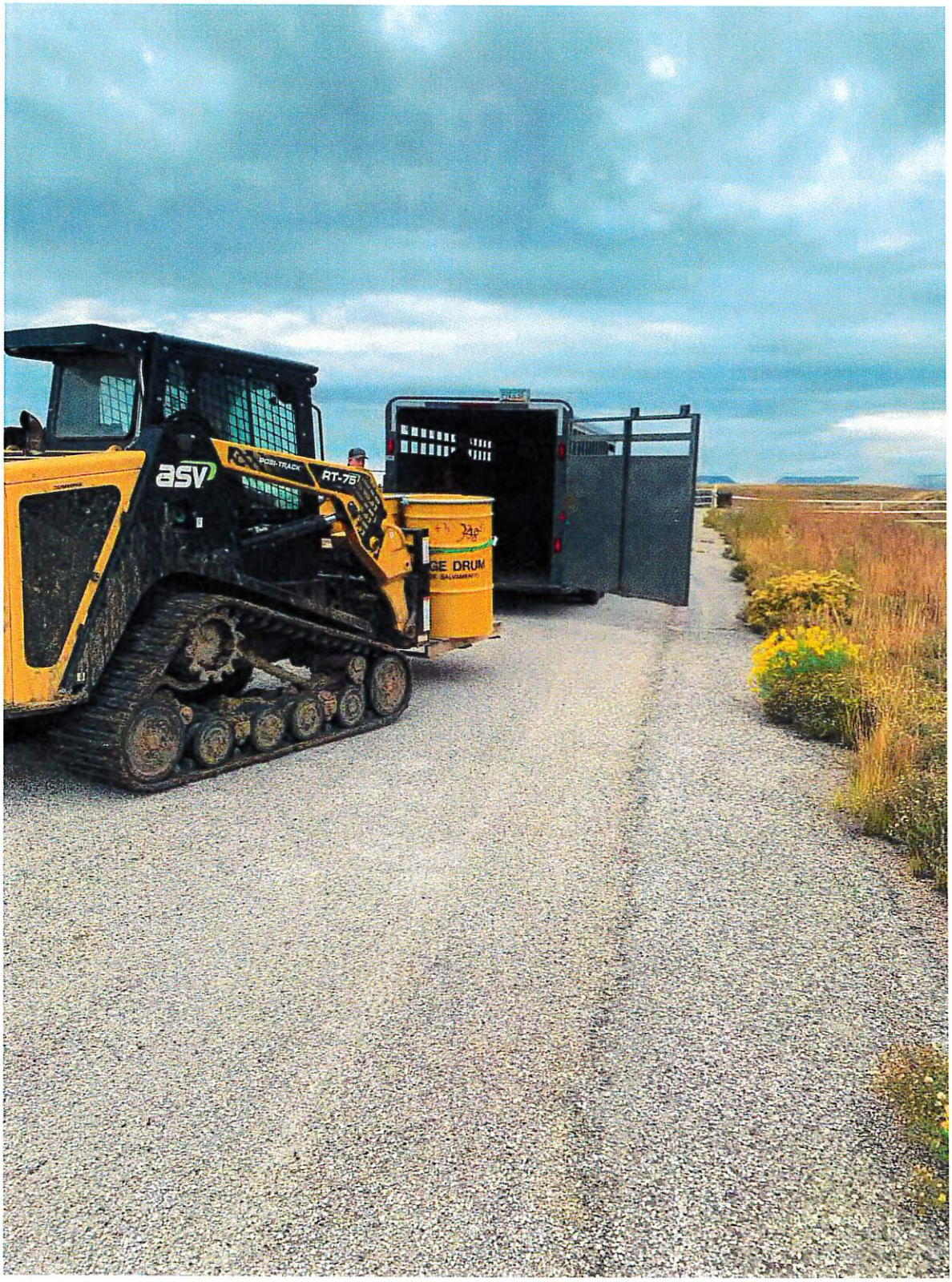
Figure 27

Debris in front room of HH after drum removal.jpg

Figure 28

Debris in front room of HH before drum removal.jpg

Figure 29



Drums being loaded into transporters livestock trailer.jpg

Figure 30

Drums loaded onto Cash Properties, LLC flatbed trailer.jpg

Figure 31

Fenced storage area in front room of Hoist House.jpg

Figure 32

Front room of Hoist House.jpg

Figure 33

APPENDIX A

NV5-DADE MOLLER RADIATION SCREENING REPORT

Dade Moeller, an NV5 company, was utilized to support cleanup of any uranium contaminated resin, to ship the barrels of resin off of the site, and to establish the radiologic condition of the floor surface following cleanup. The resin was handled in accordance with the statement of work and was transported off site. We performed surveys of the area where the resin was stored, of the barrels themselves, and of the transportation vehicle to ensure all applicable Department of Transportation and New Mexico radiation limits were met for the transportation of the material off site. We then performed surveys to establish the surface contamination levels and dose rates are on the slab.

Release limits for facilities that have radiological contamination in most regulatory areas, including New Mexico, are based on limiting exposure to a member of the public to 25 mrem/year or less. There are two different types of contamination that can result in doses to the public: surface contamination and volumetric contamination. Surface contamination is radioactive contamination on an otherwise non-radioactive surface, like on the surface of a table or on a concrete slab. Volumetric contamination is radioactive material that has mixed with non-radioactive material like contamination mixed into the soil, or in some cases material that is partially made of radioactive material such as some minerals or rocks. Those two limits are separate, with different units usually dpm/100 cm^2 for surface contamination and pCi/g for volumetric contamination.

The State of New Mexico has documented in *State of New Mexico Radiation Cleanup Criteria* in Section 2 of the *Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico* (MMD/NMED, 2016), concentration limits considered acceptable for soil after remediation, based on the 25 mrem/year to the public and based on the Ra-226 activity, of 5 pCi/g in addition to natural radioactivity. The Post-Reclamation Radiation Level (PRRL) for the Section 12 Mine is 5 plus 1.41, or 6.41 pCi/g Ra-226 with a gamma radiation rate of approximately 24,520 counts per minutes (cpm) and a predicted exposure rate of 22.1 µR/h.

The NRC issued Regulatory Guide 1.86 with limits calculated for surface contamination that would not exceed the 25 mrem/year to the public. Those limits are presented in Table I, which includes natural Uranium with limits of 1000 dpm/100 cm^2 alpha for removable contamination and 5000 dpm/100 cm^2 alpha for fixed contamination. The same values are found in the DOE regulations, 10 CFR 835 Appendix D. These would be the values applicable to surface contamination at the mine site to meet the 25 mrem/year to a member of the public.

In addition to comparing any surface contamination levels found to these limits, we also need to ensure the instrumentation and methods used are adequate to detect that level of contamination. The minimum detectable count rated (MDCR) is commonly used for this, and can be calculated using the average background count rate of the instrument/method. The Stapleton equation is then used for less than 100 cpm data (5.41 + 4.65* sqroot(background cpm)) and the Poisson equation used for values greater than 100 cpm (2.71 * 4.66 * sqroot(background cpm)). This value must be below the applicable limit, ideally a fraction of the limit. Any observed readings that are below the MDCR are considered indistinguishable from background.

Survey 1, performed on October 3rd, shows that the accessible floor area in the front room of the hoist building has removable surface contamination levels that are indistinguishable from background as seen by beta activity. Beta activity was monitored for this initial survey by a pancake GM detector. This detector responds to alpha, beta, and gamma emissions. This increases the likelihood of finding any appreciable contamination. Swipes are characterizations of removable surface contamination over 100 cm^2 and are designated by circles with numbers on the survey. The notation LAW means large area wipe, which is a swipe of an area much larger than 100 cm^2 that is only semi-quantitative and is used to detect lower levels of contamination on a large area. The background is shown on the report as 60 cpm which would lead to a MDCR of 39 cpm above background. Since all results are below the MDCR, all the results would be considered indistinguishable from background.

Survey 2, performed on October 3rd, shows the accessible floor area in the middle room of the hoist building. This survey also shows a background of 60 cpm which would lead to a MDCR of 39 cpm above background. The removable surface contamination levels are indistinguishable from background except for Location 12. This area contained resin that was then cleaned up.

Survey 3 was performed on October 4th, after the resin drums were removed from the building. The Ludlum 43-93, an alpha/beta dual phosphor detector was used. This detector is sensitive to alpha and beta radiation and can separate the two giving quantifiable results for each type of radiation. The alpha readings, in dpm/100cm^2, are the values that are used to compare to the allowable limits. The background listed on the report is 2 cpm alpha and 375 dpm beta, which correlate to a MDCR of 12 cpm above background for alpha and 93 cpm above background for beta. Since all results are below the MDCR, all of the results are indistinguishable from background. This survey was for removable contamination only.

Survey 4 was performed on October 4th and documents the direct beta reading from the 43-93 and dose rates from the microrem meter in the front room of the hoist building. It was discovered when documenting the survey that the microRem instrument was past the one-year calibration date, so the instrument was returned to the rental company, a replacement instrument was obtained, and the dose rate survey was performed on October 5th using the valid meter. The final survey reported on the form is for the 10/4 beta readings and 10/5 dose rate measurements. The background listed for beta is 375 cpm and the background listed on the form for the dose rate instrument in 40 µR/hr, with a note that it was taken outside of the building and was lower inside.

Survey 5 was performed on October 4th and documents the removable surface contamination found in the middle room of the hoist building. The background listed on the report is 2 cpm alpha and 375 dpm beta, which correlate to a MDCR of 12 cpm above background for alpha and 93 cpm above background for beta. Since all results are below the MDCR, all of the results are indistinguishable from background. This survey was for removable contamination only.

Survey 6 was performed on October 4th and documents the direct beta reading from the 43-93 and dose rates from the microrem meter in the middle room of the hoist building. It was discovered when documenting the survey that the microrem instrument was past the one-year calibration date, so the instrument was returned to the rental company, a replacement instrument was obtained, and this survey was redone on October 5th using the valid meter. The final survey reported on the form is for the 10/4 direct measurements and the 10/5 dose rate measurements. The background listed on the form for beta is 375 cpm and the background listed for the dose rate instrument is 40 µR/hr, with a note that it was taken outside of the building and was lower inside.

The six surveys are included as Appendix A.

The calibration forms for the instruments are found in the Cal Certs Oct22.pdf file for all instruments except for the dose rate instrument used on October 5th. The certificate for the dose rate instrument is found as the cal cert dose rate.pdf file. These forms are included as Appendix B.

Daily field reports are found in the files with the names NV5_Daily_Field_Report_10x22 with the x replaced with the day. Daily tailgate safety meeting sign in sheets are found in the files with the names 10xx22.jpg with the xx replace with the two-digit day. The daily field reports and daily tailgate safety meetings are included as Appendix C.

Additionally, there are photos that document the before, during, and after the surveys. These photos are included in Appendix D.

Appendix A

NV5
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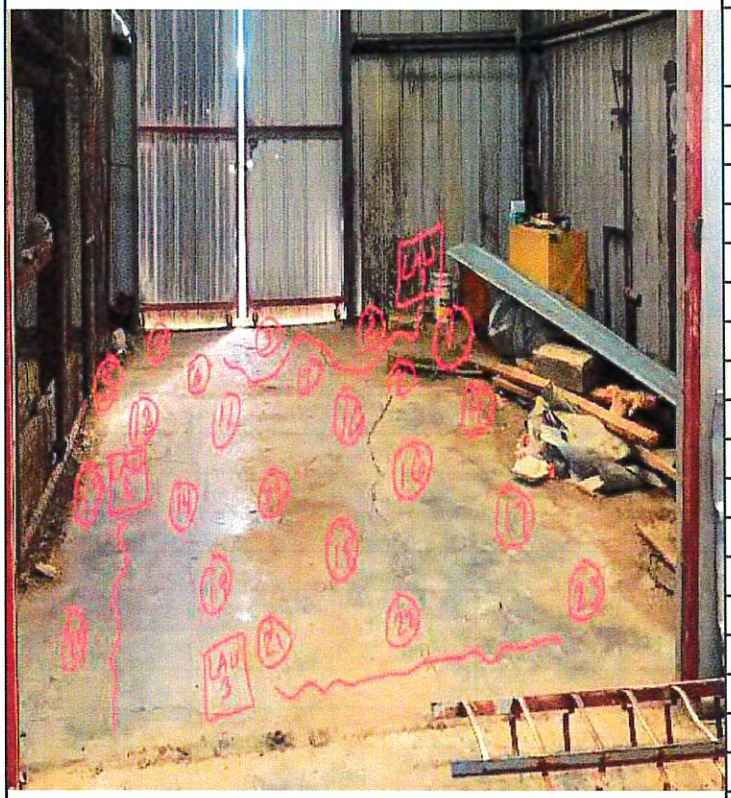
Radiological Survey Report

Area Description: Section 12 Front Room of Hoist Building	Date	10/3/2022
Purpose of Survey: Initial Survey	Performed by	
	Print:	Brittney Massey

Sketch of Area:



Survey Results - Instrument 1

Location Number	Alpha cpm	Beta cpm	Alpha dpm/100cm²	Beta dpm/100cm²
1	N/A	64	N/A	0
2	N/A	60	N/A	0
3	N/A	60	N/A	0
4	N/A	84	N/A	2
5	N/A	80	N/A	2
6	N/A	86	N/A	3
7	N/A	80	N/A	2
8	N/A	86	N/A	2
9	N/A	64	N/A	0
10	N/A	82	N/A	2
11	N/A	88	N/A	3
12	N/A	60	N/A	0
13	N/A	66	N/A	1
14	N/A	88	N/A	3
15	N/A	86	N/A	3
16	N/A	82	N/A	2
17	N/A	82	N/A	2
18	N/A	60	N/A	0
19	N/A	84	N/A	2
20	N/A	66	N/A	1
21	N/A	64	N/A	0
22	N/A	60	N/A	0
23	N/A	86	N/A	3
LAW 1	N/A	80	N/A	2
Law 2	N/A	68	N/A	1
Law 3	N/A	66	N/A	1

Legend: # - General Area Dose Rate #- Contact Dose Rate
(#) - Smear/Direct Location

Indicate LAW and scanning using lines representing area covered.

Instrumentation

Model	Serial	α eff	β eff.	α bkg	β bkg	size cm²
12/44-9	125264/PR 134191	N/A	10.3	N/A	60	100
3/44-2	137288/PR341172	N/A		N/A	1	

Source Check (pre/post)

Isotope	reading	unit
CO-60	110,00/108,000	CPM
CO-60	2,000/2,000CPM	

Comments:Front Room of Section 12 Hoist Building. LAWs followed by tech smears of floor and debris. Ref:20.3.10 NMAC; 20.3.4.426 NMAC. NRC Reference Guide 1.86. *Note background was taken outside of building.

Performed by (Signature): Brittney Massey — **10/3/2022**

Reviewed by (Signataure): [signature], CHP, CSP — **Date:** 10/10/2022

NV5
DADE MOELLER

Radiological Survey Report

Area Description: Section 12 Middle Room of Hoist Building	Date	10/3/2022
Purpose of Survey: Initial Survey	Performed by	
	Print:	Brittney Massey

Legend: # - General Area Dose Rate # - Contact Dose Rate
(#) - Smear/Direct Location

Indicate LAW and scanning using lines representing area covered.

Survey Results - Instrument 1

Location Number	Alpha cpm	Beta cpm	Alpha dpm/100cm^2	Beta dpm/100cm^2
1	N/A	60	N/A	0
2	N/A	82	N/A	2
3	N/A	86	N/A	3
4	N/A	64	N/A	0
5	N/A	60	N/A	0
6	N/A	86	N/A	3
7	N/A	80	N/A	0
8	N/A	84	N/A	0
9	N/A	66	N/A	1
10	N/A	60	N/A	0
11	N/A	62	N/A	0
12	N/A	2000	N/A	188
LAW 1		88		3
LAW 2		80		2

Instrumentation

Model	Serial	α eff	β eff.	α bkg	β bkg	size cm^2
12/44-9	125264/PR 134191	N/A	10.3	N/A	60	100
3/44-2	137288/PR341172	N/A		N/A	1	

Source Check (pre/post)

Isotope	reading	unit
CO-60	110,00/110,000	CPM
CO-60	2,000/2,000	CPM

Comments:Middle Room of Section 12 Hoist Building. LAWs followed by tech smears of floor and debris. Ref:20.3.10 NMAC; 20.3.4.426 NMAC. NRC Reference Guide 1.86. *Note Background was taken outside of building. Tech Smear #12 was where remaining resin was found during initial survey and inspection.

Performed by (Signature): **Brittney Massey** **10/3/2022**

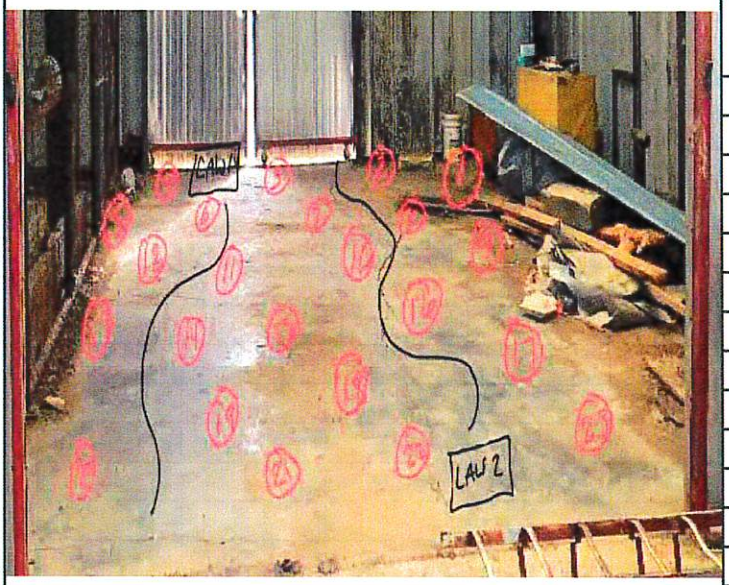
Reviewed by (Signataure): CHP, CSP **Date:** 10/10/2022

NV5
DADE MOELLER

Radiological Survey Report

Area Description: Section 12 Front Room of Hoist Building	Date	10/4/2022
Post survey of Resin Drum Removal and Vacuum.	Performed by	
	Print:	Brittney Massey

Sketch of Area:



Survey Results - Instrument 1

Location Number	Alpha cpm	Beta cpm	Alpha dpm/100cm²	Beta dpm/100cm²
	1	64	0	-28
2	1	60	0	-29
3	1	60	0	-29
4	1	72	0	-28
5	1	46	0	-30
6	1	62	0	-28
7	1	58	0	-30
8	1	67	0	-30
9	1	73	0	-27
10	1	56	0	-29
11	1	65	0	-28
12	1	60	0	-29
13	1	64	0	-28
14	1	61	0	-29
15	1	65	0	-28
16	1	73	0	-27
17	1	70	0	-28
18	1	66	0	-28
19	1	63	0	-28
20	1	72	0	-28
21	1	60	0	-29
22	1	71	0	-28
23	1	70	0	-28
LAW 1	2	65	0	-28
Law 2	2	79	0	-27

Legend: # - General Area Dose Rate #̲ - Contact Dose Rate
Ⓢ - Smear/Direct Location

Indicate LAW and scanning using lines representing area covered.

Instrumentation

Model	Serial	α eff	β eff.	α bkg	β bkg	size cm²
2360	202403	18.3	11	2	375	100
43-93	PR385932	N/A		N/A	1	

Source Check (pre/post)

Isotope	reading	unit
SR-90	56,643/57,283	CPM
CO-60	72,389/69,473	CPM

Comments:Front Room of Section 12 Hoist Building. LAWs followed by tech smears of floor and debris. Ref:20.3.10 NMAC; 20.3.4.426 NMAC. NRC Reference Guide 1.86. *Note Backgrounds were taken outside of building.

Performed by (Signature): Brittney Massey — **10/4/2022**

Reviewed by (Signataure): [signature], CHP, CSP — **Date:** 10/10/22

NV5
DADE MOELLER

Radiological Survey Report

Area Description: Section 12 Front Room of Hoist Building	Date	10/4/2022			
Purpose of Survey: Post Resin Drum Removal and Vacuum.	Performed by				
	Print:	Brittney Massey			

Sketch of Area:

Legend: # - General Area Dose Rate; #̲ - Contact Dose Rate; (#) - Smear/Direct Location

Indicate LAW and scanning using lines representing area covered.

Survey Results - Instrument 1

Location Number	Alpha cpm	Beta cpm	Alpha $dpm/100cm^2$	Beta $dpm/100cm^2$

Instrumentation							Source Check (pre/post)		
Model	Serial	α eff	β eff.	α bkg	β bkg	size cm^2	Isotope	reading	unit
2360	202403	18.3	11	2	375	100	SR-90	56,643/57,283	CPM
43-93	PR 385932	N/A		N/A	1		CO-60	72,389/69,473	CPM
TEC	B541N	N/A	N/A		40		Co-60	5,000/5,000	µR/Hr

Comments:Front Room of Section 12 Hoist Building. Post Resin Drume Removal and Vacuum. Directs followed by exposure rates. Ref:20.3.10 NMAC; 20.3.4.426 NMAC. NRC Reference Guide 1.86. *Note background was taken outside of building.

Performed by (Signature):Brittney Massey **10/4/2022**

Reviewed by (Signataure): **Date:**

NV5
DADE MOELLER

Radiological Survey Report

Area Description: Section 12 Front Room of Hoist Building

Purpose of Survey: Post Drum Removal and vacuum

Date: 10/4/2022

Performed by

Print: Brittney Massey

Survey Results - Instrument 1

Location Number	Alpha cpm	Beta cpm	Alpha dpm/100cm²	Beta dpm/100cm²
1	1	63	0	-28
2	1	67	0	-28
3	1	70	0	-28
4	1	53	0	-29
5	1	67	0	-28
6	1	61	0	-29
7	1	55	0	-28
8	1	64	0	-28
9	1	69	0	-28
10	1	79	0	-27
11	1	66	0	-28
12	1	81	0	-27
13	1	73	0	-27
14	1	69	0	-28
15	1	64	0	-28
16	1	63	0	-28
17	1	80	0	-27
18	1	79	0	-27
LAW 1	N/A	80	N/A	-27
Law 2	N/A	68	N/A	-28

Legend: # - General Area Dose Rate #̲ - Contact Dose Rate

Ⓗ - Smear/Direct Location

Indicate LAW and scanning using lines representing area covered.

Instrumentation

Model	Serial	α eff	β eff.	α bkg	β bkg	size cm²
2360	202403	18.3	11	2	375	100
43-93	PR38593	N/A		N/A	N/A	

Source Check (pre/post)

Isotope	reading	unit
Sr-90	56,643/57,283	CPM
CO-60	72,389/69,473	CPM

Comments: Front Room of Section 12 Hoist Building. LAWs followed by tech smears of floor and debris. Ref:20.3.10 NMAC; 20.3.4.426 NMAC. NRC Reference Guide 1.86. * Note background were taken outside of building.

Performed by (Signature): Brittney Massey **Date:10/4/22**

Reviewed by (Signataure): CHP, CSP **Date:** 10/10/2022

NV5
DADE MOELLER

Radiological Survey Report

Area Description: Section 12 Front Room of Hoist Building	Date	10/4/2022
Purpose of Survey: Post Resin Drum Removal and Vacuum	Performed by	
	Print:	Brittney Massey

Legend: # - General Area Dose Rate #- Contact Dose Rate
(#) - Smear/Direct Location

Indicate LAW and scanning using lines representing area covered.

Survey Results - Instrument 1

Location Number	Alpha cpm	Beta cpm	Alpha dpm/100cm^2	Beta dpm/100cm^2

Instrumentation

Model	Serial	α eff	β eff.	α bkg	β bkg	size cm^2
2360	202403	18.3	11	2	375	100
43-93	PR 385932	N/A		N/A	1	
TEC	B541N	N/A	N/A		40	

Source Check (pre/post)

Isotope	reading	unit
SR-90	56,643/57,283	CPM
CO-60	72,389/69,473	CPM
Co-60	5,000/5,000	µR/Hr

Comments:Front Room of Section 12 Hoist Building. LAWs followed by tech smears of floor and debris. Ref:20.3.10 NMAC; 20.3.4.426 NMAC. NRC Reference Guide 1.86. * Note backgrounds were taken outside of building

Performed by (Signature): Brittney Massey **10/4/2022**

Reviewed by (Signataure): CHP, CSP **Date:** 10/10/2022

NV5

Appendix B

Environmental Restoration Group, Inc.
8809 Washington NE, Suite #150
Albuquerque, NM 87113

office: (505) 298-4224
fax: (505) 797-1404
web: www.ERGOffice.com

EQUIPMENT PACKING SLIP

Company Name: NV5/Dade Moller
Contact Name:
Contact Telephone:

Order Number: 5196
P.O. or Reference Number: 444322-1095000.00

Date Ordered: 9/29/2022
Date Shipped: 9/30/2022
Date of Delivery: 9/30/2022

Shipping Method: n/a
Shipping Number: 4374-3886-2

Ship To Information:

NV5/Dade Moller

Billing Address:

nv5/Dade Moller - ABQ
Accounts Payable
4374 Alexander Boulevard NE
Ste K
Albuquerque, NM 87107

Equipment Enclosed:

Instrument	*Serial Number*	*Tested*
Ludlum 12	125264	☑
Ludlum 2360	202403	☐
Ludlum 3 & 44-2	137288 & PR341712	☐
Ludlum 43-93	PR385932	☐
Ludlum 44-9	PR134191	☑
Bicron Micro REM	1535	☐

Special Instructions:

(1) box of smears

Note:
(a) By accepting and using ERG rental equipment, the Renter indemnifies and holds harmless ERG against any and all claims, actions, proceedings, costs, expenses, damages, and liabilities (including attorney's fees and costs) arising out of Renter's use of equipment.

of
Scientific and Industrial
Instruments

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A

ACCREDITED
CERT # 4084.01

CERTIFICATE OF CALIBRATION

Customer ENVIRONMENTAL RESTORATION GROUP ORDER NO. 20407614/513808

Mfg. TEC Model MICRO REM Serial No. 1535

Mfg. _____ Model _____ Serial No. _____

Cal. Date 22-Sep-21 Cal Due Date 22-Sep-22 Cal. Interval 1 Year Meterface 200

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 74 °F RH 38 % Alt 698.0 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck.	☑ Meter Zeroed	☐ Background Subtract	☐ Input Sens. Linearity
☐ F/S Resp. ck	☐ Reset ck.	☐ Window Operation	☐ Geotropism
☐ Audio ck.	☐ Alarm Setting ck.	☐ Batt. ck.	

☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set _____ V Input Sens. _____ mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☐ HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

Multimeter uncertainty within 1.3% of reading. Gamma uncertainty within 5.0% of reading. Neutron uncertainty within 7.0% of reading. Count rate uncertainty within 5.4% of reading.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
X 1000	150 mR/hr	140 µRem/h	150 µRem/h
X 1000	50 mR/hr	45	50
X 100	15 mR/hr	150	150
X 100	5 mR/hr	45	45
X 10	1,500 µR/hr	155	155
X 10	500 µR/hr	50	50
X 1	150 µR/hr	150	150
X 1	100 µR/hr	100	100
X 0.1	15 µR/hr	150	150
X 0.1			

Range(s) Calibrated Electronically

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. ISO/IEC 17025:2017(E)
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors. State of Texas Calibration License No. LO-1963
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521 ☑ G' 12 ☑ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982
☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N _____ ☐ Beta S/N _____ ☑ Other Cs-137 201 µCi

☐ m 500 S/N _____ ☐ Oscilloscope S/N _____ ☐ Multimeter S/N _____

Calibrator Donnie Miekos /s/ Donnie Miekos Title Calibrator Date 22-Sep-21

QC'd By _____ Title Final QC Date 24-Sep-21

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Te ☐ Failed: _____

Designer and Manufacturer of Scientific and Industrial Instruments

www.ludlums.com

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ilac-MRA ACCREDITED CERT # 4084.01

Customer ENVIRONMENTAL RESTORATION GROUP ORDER NO. 20408870/514644

Mfg. Ludlum Measurements, Inc. Model 3 Serial No. 137288

Mfg. Ludlum Measurements, Inc. Model 44-2 Serial No. PR341712

Cal. Date 5-Oct-21 Cal Due Date 5-Oct-22 Cal. Interval 1 Year Meterface 202-666

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 74 °F RH 37 % Alt 707.8 mm Hg

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☑ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck.
☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 650 V Input Sens. 35 mV Det. Oper. 650 V at 35 mV Threshold Dial Ratio = mV

☐ HV Readout (2 points) Ref./Inst. / V Ref./Inst. / V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
X 100	4000 µR/hr	38 µR/hr	40 µR/hr
X 100	1000 µR/hr	8	10
X10	400 µR/hr = 6360 cpm	39	40
X10	100 µR/hr	9	10
X 1	6360 cpm	38	40
X 1	1590 cpm	8	10
X 0.1	636 cpm	38	40
X 0.1	159 cpm	8	10

X 1, 0.1 Range(s) Calibrated Electronically

Digital Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. ISO/IEC 17025:2017(E)
All pass/fail determinations are based on the manufacturer's specification without considering uncertainty factors. State of Texas Calibration License No. LO-1963
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171GP ☐ 2261GP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916GP ☐ 2324/2521 ☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73610 ☐ 8582 ☐ G112 ☑ 2168GP ☐ S-894 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ 1-304 Ra-226 ☐ Y982 ☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N ☐ Beta S/N ☐ Other

☑ m 500 S/N 189509 ☐ Oscilloscope S/N ☑ Multimeter S/N 82970215

Calibrator Adrienne Aguilar Title Calibrator Date 05 OCT 21

QC'd By Title Final QC Date 5-Oct-21

AC Insl. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

www.ludlums.com

Designer and Manufacturer
of
Scientific and Industrial
Instruments

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

Bench Test Data For Detector

Detector 44-2 Serial No. PR341712

Customer ENVIRONMENTAL RESTORATION GROUP ORDER NO. 20408870/514644

Counter AA ~~-3~~ 2200 Serial No. 311404 Counter Input Sensitivity 35 mV

Count Time 6 Second Distance Source to Detector Surface

Other

High Voltage	Background	Isotope Am241 Size ≈0.83uCi	Isotope ____ Size ____	Isotope ____ Size ____	Isotope ____ Size ____
500	94	916			
550	124	9260			
600	112	10921			
650	135	10894			
700	121	10978			
750	169	11245			
800	348	12005			

Signature Adrienne Aguilar Adrienne Aguilar Date 05 OCT 21

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite #150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter:	Manufacturer:	Ludlum	Model Number:	2360	Serial Number:	202403
Detector:	Manufacturer:	Ludlum	Model Number:	43-93	Serial Number:	PR385932

☑ Mechanical Check ☑ THR/WIN Operation HV Check (+/- 2.5%): ☑ 500 V ☑ 1000 V ☑ 1500 V
☐ F/S Response Check ☑ Reset Check Cable Length: ☑ 39-inch ☐ 60-inch ☐ Other:
☑ Geotropism ☑ Audio Check
☑ Meter Zeroed ☑ Battery Check Alpha Threshold: 120 mV Barometric Pressure: 24.43 inches Hg
Source Distance: ☑ Contact ☐ 6 inches ☐ Other: Beta Threshold: 4 Temperature: 72 °F
Source Geometry: ☐ Side ☑ Below ☐ Other: Beta Window: 30 mV Relative Humidity 20 %
Instrument found within tolerance: ☑ Yes ☐ No

Pulser: Ludlum 500-1 sn 201932 Multimeter: Fluke 110 PLUS

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count α	Integrated 1-Min. Count β
x 1000	400 Kcpm	400	400	400062	400105
x 1000	100 Kcpm	100	100		
x 100	40 Kcpm	400	400	40014	40012
x 100	10 Kcpm	100	100		
x 10	4 Kcpm	400	400	4000	4001
x 10	1 Kcpm	100	100		
x 1	400 cpm	400	400	401	400
x 1	100 cpm	100	100		

Count Time (min) 1.0

High Voltage	Pot. Setting	Background Counts α	Background Counts β	Alpha Source Counts Gross α	Alpha Source Counts Gross β	Alpha Source Counts Net α	Alpha Source Counts Net β	Beta Source Counts Gross α	Beta Source Counts Gross β	Beta Source Counts Net α	Beta Source Counts Net β	Other Source Counts Gross α	Other Source Counts Gross β	Other Source Counts Net α	Other Source Counts Net β
625		2	81	2792	327	2790	246	5	942	3	861				
650		2	130	3218	354	3216	224	2	1523	0	1393				
675		2	227	3426	392	3424	165	7	2079	5	1852				
700		3	295	3747	533	3744	238	7	2612	4	2317				
725		3	356	3755	708	3752	352	4	2964	1	2608				

Recommended HV (VDC) 675 Pot. Setting

Additional Comments:

Alpha Source: Th-230 sn:U9-059 18,759dpm/9,474cpm (4/8/22) 47mm disk Total Efficiency: 0.090 4π Efficiency: 0.183
Beta Source: Tc-99 sn:U9-060 16,817dpm/9,250cpm (4/11/22) 47mm disk Total Efficiency: 0.050 4π Efficiency: 0.110
Other Source: Total Efficiency: n/a 4π Efficiency: n/a

NOTE: The total efficiency provided is calculated per ISO-7503/NUREG 1575 (MARSSIM): Total Efficiency = Instrument Efficiency × Source Efficiency; where Instrument Efficiency is calculated as net counts ÷ source 2π emission rate. The 4π efficiency is calculated as net counts ÷ source 4π activity. The provided efficiencies are radionuclide specific and are calculated using source counts and background counts at the recommended operating HV. The provided efficiencies are for general information purposes only and are not intended to replace user efficiency calculation method or results.

Calibrated By: Ryan Pengra Calibration Date: 8/3/22 Calibration Due: 8/3/23

Reviewed By: Date: 8/4/22

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997

Certificate of Calibration

Calibration Form

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite #150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter:	Manufacturer:	Ludlum	Model Number:	12	Serial Number:	125264
Detector:	Manufacturer:	Ludlum	Model Number:	44-9	Serial Number:	PR134191

☑ Mechanical Check ☑ THR/WIN Operation HV Check (+/- 2.5%): ☑ 500 V ☑ 1000 V ☑ 1500 V
☑ P/S Response Check ☑ Reset Check Cable Length: ☑ 39-inch ☐ 72-inch ☐ Other:
☑ Geotropism ☑ Audio Check
☑ Meter Zeroed ☑ Battery Check Barometric Pressure: 24.43 inches Hg

Source Distance: ☑ Contact ☐ 6 inches ☐ Other: Threshold: 40 mV Temperature: 73 °F
Source Geometry: ☐ Side ☑ Below ☐ Other: Window: Relative Humidity: 20 %

Pulser: Ludlum 500-1 sn 201932 Multimeter: n/a Instrument found within tolerance: ☑ Yes ☐ No

Range/Multiplier	Reference Setting	"As Found Reading"		Meter Reading		Integrated 1-Min. Count	Log Scale Count	
x 1000	400	400	kcpm	400	kcpm			kcpm
x 1000	100	100	kcpm	100	kcpm			kcpm
x 100	400	400	kcpm	400	kcpm			kcpm
x 100	100	100	kcpm	100	kcpm			kcpm
x 10	400	400	kcpm	400	kcpm			kcpm
x 10	100	100	kcpm	100	kcpm			kcpm
x 1	400	400	cpm	400	cpm			cpm
x 1	100	100	cpm	100	cpm			cpm

Count Time (min): 1.0 Background Counts: 60

Operating HV: 900 VDC Gross Source 1 Counts: 1800 Gross Source 2 Counts:

Net Source 1 Counts: 1740 Net Source 2 Counts:

Additional Comments:

Source 1: Tc-99 sn:U9-060 16,817dpm/9,230cpm (4/11/22) 47mm disk Total Efficiency: 0.047 4π Efficiency: 0.103

Source 2 Total Efficiency: n/a 4π Efficiency: n/a

NOTE: The total efficiency provided is calculated per ISO-7503/NUREG 1575 (MARSSIM): Total Efficiency = Instrument Efficiency × Source Efficiency; where Instrument Efficiency is calculated as net counts ÷ source 2π emission rate. The 4π efficiency is calculated as net counts ÷ source 4π activity. The provided efficiencies are radionuclide specific and are calculated using source counts and background counts at the recommended operating HV. The provided efficiencies are for general information purposes only and are not intended to replace user efficiency calculation method or results.

Calibrated By: Ryan Pumphrey Calibration Date: 9/13/22 Calibration Due: 9/13/23

Reviewed By: [signature] Date: 9/13/22

Environmental Conditions		
Temperature (°C): 22.0	Relative Humidity (%): 39.0	Barometric P

Calibration Data

Preliminaries:

5 VDC +/- .5 VDC: Yes -4.5 VDC +/- .25 VDC: Yes 1 mV

Mechanical Zero: Yes Geotropism: Yes

Isotopic Linearity:

Range	*Test Point (mR/h)*	*Tolerance (µrem/h)*	*As Found (µrem/h)*	*AF I*
X1000	160	144000 - 176000	176000	
X1000	40	36000 - 44000	38000	
X100	16	14400 - 17600	17600	
X100	4	3600 - 4400	3800	
X10	1.6	1440 - 1760	1760	
X10	.4	360 - 440	400	
X1	.16	144 - 176	160	

Pulser Linearity:

Range	*Test Point (CPM)*	*Tolerance (µrem/h)*	*As Found (µrem/h)*	*AF*
X1	16000	Pulser Ref = 160	160	
X1	4000	36 - 44	40	
X.1	1600	14.4 - 17.6	16	
X.1	400	3.6 - 4.4	3	

Electronic Technician	Lawrence Bay TEST 27 Lawrence Bay	Administrator

NV5

Appendix C

SAFETY BRIEFING ATTENDANCE SHEET

Site Name: **Section 12 Mine**
Location: **McKinnley County**
Lead Company: **NV5/Lucas**
Supporting Company: **Cash**

Project No.: **444322-109500.00**
Date: 9/19/2022
Document Originator:

Briefing Subject: Drum/Resin Cleanup, Hantavirus Prevention, Snakes

ESH Issues of Concern: Radioactivity of drum & resin;
Inhalation of rat/mice droppings & dust
Snakes, Spiders

Briefing Summary: Reviewed the H&S plan. Reviewed the first aid incase of emergency & policy to do.

Training Materials Provided or Used: H&S plan

ATTENDEES

Print Name / ID Number	Signature
Sharon Chavez	Sharon Chavez
Brandon Martin	BM
Kendal Cash	KC
Barbara Everett	Barbara Everett
Kory Cash	

Tailgate Safety Meeting Documentation

Topic(s) Hantavirus
Stuck in the mud.

Date 10/3/22 Presenter B Everett

Name	Organization
Mike Nolan	Lucas Engineering
Britney Massey	NVS

Tailgate Safety Meeting Documentation

Topic(s) Pinch points with Drum Movings

Date 10/4/22 Presenter Brittney Massey

Name	Organization
Barbara Everett	NV5
Kody Cash	North 80
Brandon Martin	North 80
Lance Whitman	North 80

Tailgate Safety Meeting Documentation

Topic(s) Slips/Trips/Falls

Date 10/5/22 Presenter Brittney Massey

Name	Organization
Brittney Massey	NV5

DAILY FIELD REPORT

NV5

Date: 9/19/2022 DFR ID: _____

Project No.: 444322-109500.00 Project Name: Section 12 Mine Drum Resin Cleaning

Location: Ambrosia Lake, NM Activity: _____

Subcontractor: Cash Properties NV5 Field Rep: B. Everett, S. Chavez, M. Nolan

Time Arrive At Site: _____ Time Left Site: _____ Total Hours On Site: _____

Weather: Sunny, 75°F

Equipment Utilized: Shovels, scale, forklift

Subcontractor Items for Payment:

Total Operation Hours: _____ (breakdown hours below)

Standby Hrs.: < 1 hr Comment: Cash forgot bleach, need add'l HEPA filter

H&S Cleaning ~~Drilling~~ Hrs.: 1 hr Comment: Spraying rat/mouse droppings for Hantavirus protection

Mob/Demob Hrs.: _____ Comment: _____

Other Hrs.: _____ Comment: _____

Drilling Footage: Air Rotary: _____ Mud Rotary: _____ HSA: _____ Other: _____

Sampling: _____

Other Payable: _____

Samples (Handling, Storage, Transportation):

Visitors:

Lost Time (Time/Cause):

Instructions, Decisions, Deviations/Variances from Work Plans, Action Needed:

Cash needs to bring portapotty after Oct 3 – 7, 2022

Air monitoring equipment needs new fuse – Add'l $

DAILY FIELD REPORT

NV5

Date: 9/19/22 DFR ID: _____

Summary of Events:

Arrived on site at 8:30am. Met up with Cash crew. Reviewed SOW, H&S Plan, Emergency Scenario M. Nolan outlined the work to be done today. Calibrated radiological survey equipment and air monitoring.

Signatures:

Field Representative: _____ _____ Date: _____

(Print Name / Employee No.) (Signature)

Reviewed By: Date:

(Print Name / Employee No.) (Signature)

DAILY FIELD REPORT

NV5

Date: 10/3/22 DFR ID:

Project No.: Project Name: Section 12 Mine

Location: Grants, NM Activity: Initial Radiological Survey

Subcontractor: NV5 Field Rep:

Time Arrive At Site: 0810 Time Left Site: 1041 Total Hours On Site: 2hrs 21 min.

Weather: Cloudy with partial sun

Equipment Utilized:
Radiological Survey instruments and equipment

Subcontractor Items for Payment:

Total Operation Hours: (breakdown hours below)

Standby Hrs.: .30 Comment: Missing Keys

Drilling Hrs.: Comment:

Mob/Demob Hrs.: Comment:

Other Hrs.: 1.9 Comment: Source Checking and Surveying

Drilling Footage: Air Rotary: Mud Rotary: HSA: Other:

Sampling:

Other Payable:

Samples (Handling, Storage, Transportation):

Visitors:

Lost Time (Time/Cause):

Instructions, Decisions, Deviations/Variances from Work Plans, Action Needed:
Instructed to do initial radiological survey. Delay of work due to CASH not having employee on site for disposal of debris.

DAILY FIELD REPORT

Date: 10/3/22 DFR ID: _____

Summary of Events:
Arrived to site with Mike Nolan, Barbara, and Sharon. Keys were missing to unlock roll-up door. Looked for alternate entry point, received entry access. Instruments were sourced checked by Brittney. Initial survey preformed by Brittney of front and middle rooms. Front room contains various debris and the 15 over packed resin drums stagged to be shipped. Middle room contains various debris. No labor workers were on site to dispose of debris. Visual survey for personal OS&H found many trip hazards and mouse droppings. Once initial radiological survey was completed. Mike and Brittney left site.

Signatures:

Field Representative: Brittney Massey (Print Name / Employee No.) (Signature) Date: 10/3/22

Reviewed By: Clark Barton, CHP, CSP (Print Name / Employee No.) (Signature) Date: 10/10/2022

DAILY FIELD REPORT

NV5

Date: 10/4/22 DFR ID:

Project No.: Project Name: Section 12 Mine

Location: Grants, NM Activity: Post Drum Removal Radiological Survey

Subcontractor: NV5 Field Rep:

Time Arrive At Site: 0800 Time Left Site: 1140 Total Hours On Site: 3hrs 40 min.

Weather: Cloudy with partial sun

Equipment Utilized:
Radiological Survey instruments and equipment

Subcontractor Items for Payment:

Total Operation Hours: 9hrs (breakdown hours below)

Standby Hrs.: .30 Comment: Waiting for truck driver for resin drums

Drilling Hrs.: Comment:

Mob/Demob Hrs.: Comment:

Other Hrs.: 8.5 Comment: Source Checking and Surveying/documentation/driving to get new instrument.

Drilling Footage: Air Rotary: Mud Rotary: HSA: Other:

Sampling:

Other Payable:

Samples (Handling, Storage, Transportation):

Visitors:

Lost Time (Time/Cause):

Instructions, Decisions, Deviations/Variances from Work Plans, Action Needed:
Instructed to do initial radiological survey. While performing documentation, noticed Micro R meter was out of calibration. Called ERG to swap instrumentation.

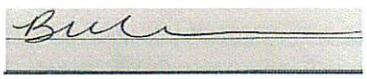
DAILY FIELD REPORT

Date: 10/4/22 DFR ID: _____

Summary of Events:

Arrived to site with Mike Nolan, and the Cash Team. The Cash team loaded up drums on a flatbed trailer drove to main entrance gate. The transporter arrived around 0830. Drums were loaded into a livestock trailer and the transporter left around 0915. Mike and Brittney proceeded to hoist building to direct Cash team where remaining resin was left. Before removing resin Cash sprayed the front and middle room with a bleach solution due to rat feces. After waiting 15 mins for bleach solution to dry, proceeded to vacuum up remaining resin that was in the middle room located in the gap in the floor and then swept all small debris in both room towards south side of the building. Radiological surveys performed by Brittney were then conducted with no elevated dose rates above background nor were there any contaminations levels found above 1,000dmp beta/gamma 20 dpm alpha. Radiological surveys performed: exposure rates, removeable and fixed. Left site around 1140 to complete documentation. Noticed Micro R meter was out of calibration. Called ERG, Scott met me at the Route 66 Casino to swap out instruments.

Signatures:

Field Representative: Brittney Massey  Date: 10/4/2022

(Print Name / Employee No.) (Signature)

Reviewed By: Clark Barton, CHP, CSP Date: 10/10/2022

(Print Name / Employee No.) (Signature)

DAILY FIELD REPORT

Date: 10/5/22 DFR ID:

Project No.: Project Name: Section 12 Mine

Location: Grants, NM Activity: Post Drum Removal Radiological Survey

Subcontractor: NV5 Field Rep:

Time Arrive At Site: 0800 Time Left Site: 0930 Total Hours On Site: 1hrs 30 min.

Weather: Cloudy with partial sun

Equipment Utilized:
Radiological Survey instruments and equipment

Subcontractor Items for Payment:

Total Operation Hours: 1hrs 30 mins (breakdown hours below)

Standby Hrs.: 1.0 Comment: Hiking to site

Drilling Hrs.: Comment:

Mob/Demob Hrs.: Comment:

Other Hrs.: .30 Comment: Source Checking and Surveying

Drilling Footage: Air Rotary: Mud Rotary: HSA: Other:

Sampling:

Other Payable:

Samples (Handling, Storage, Transportation):

Visitors:

Lost Time (Time/Cause):

Instructions, Decisions, Deviations/Variances from Work Plans, Action Needed:
Exposure Rate survey.

DAILY FIELD REPORT

Date: 10/5/22 DFR ID:

Summary of Events:
Arrived to site at 0800, opened gate and parked car on pavement on other side of gate. Hiked to job site, performed exposure rate survey and hiked back to car. Headed back to town for documentation.

Signatures:

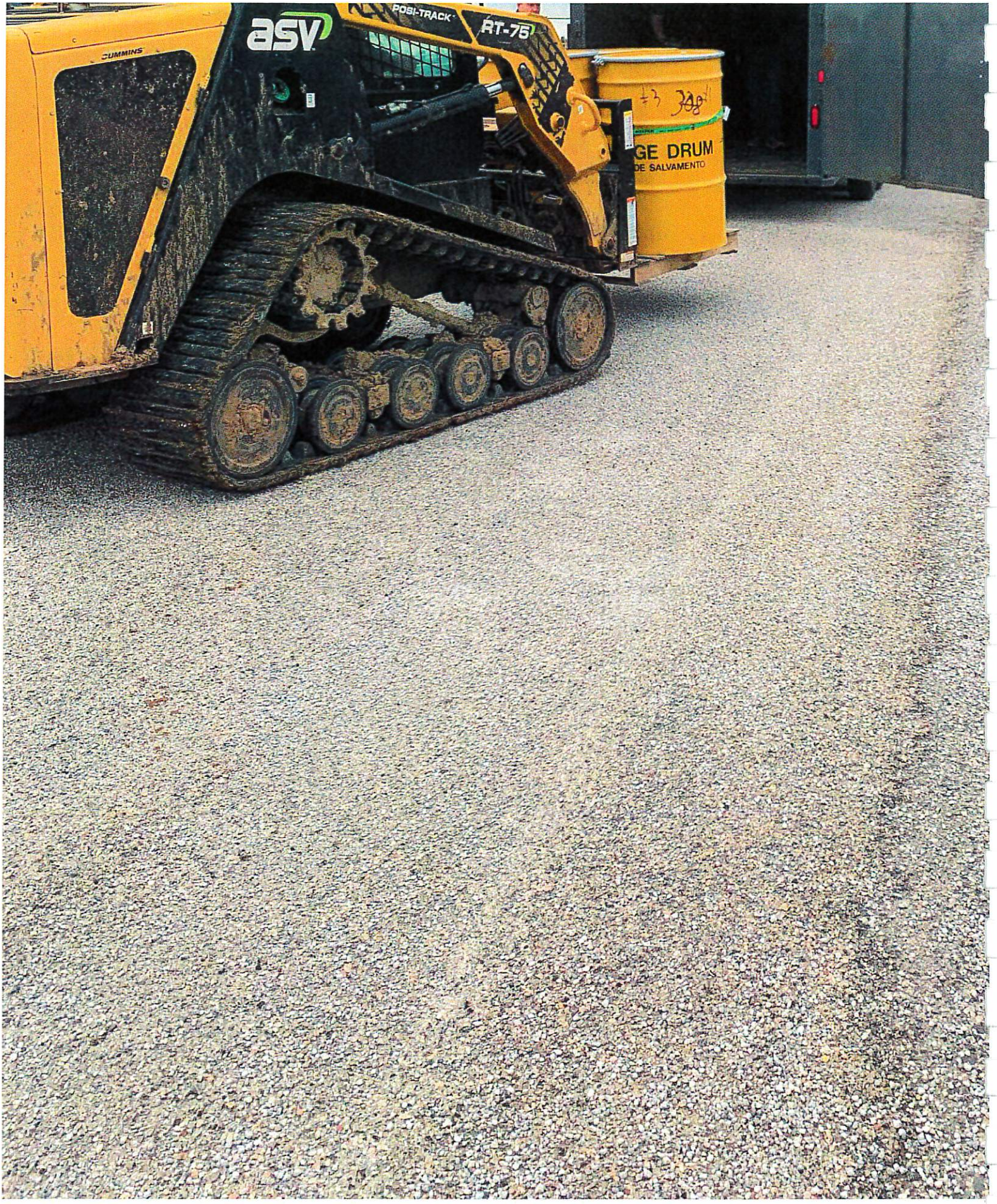
Field Representative: Brittney Massey (Print Name / Employee No.) (Signature) Date: 10/5/2022

Reviewed By: Clark Barton, CHP, CSP (Print Name / Employee No.) (Signature) Date: 10/10/2022

NV5

Appendix D


206 Gal
SALVAGE DRUM
BARRILS DE SALVAMENTO


asv
POSI-TRACK
RT-75
CUMMINS
GE DRUM
DE SALVAMENTO


1337
S175

APPENDIX B

LUCAS ENGINEERING

FINAL REPORT FOR MANAGING THE DRUMS AT SECTION 12 MINE NEAR GRANTS, NM

Final Report for Managing the Drums at Section 12 Mine near Grants, NM

Lucas Engineering & Management Services

Mike Nolan, Project Radiation Safety Officer

Final Report for Managing the Drums at Section 12 Mine near Grants, NM

Mike Nolan, Project Radiation Safety Officer, Lucas Engineering & Management Services

Purpose – The purpose of this paper is to describe the actions taken to clean up the resin found on the floor of the Hoist Building, including spraying the floor and other areas where rodent debris was found, with a ten percent chlorine solution, which is adequate to remove the contaminants and guard against hantavirus.

Project Summary

Once the reciprocity agreement was approved by New Mexico Environment Department (NMED), preparations were made to proceed with the project. NV5 was kept informed of progress prior to activities at the mine.

Initially, an inspection of mine site and hoist house, including the rooms where the drums were located was conducted by project personnel on 9/19/22. Project personnel included Barbara Everett and Sharon Chavez from NV5, Kory Cash and three laborers from Cash and Mike Nolan, Lucas Engineering & Management Services.

A radiological survey was conducted; radiological instrumentation was rented from ERG, an Albuquerque company. The result of the survey is included in Appendix A. The survey results were used to determine the radiological personnel protective equipment that would be required (minimum of booties and gloves). As the floor of the rooms included rodent waste, the floors were sprayed with a ten percent chlorine bleach solution and allowed to sit for a minimum of five minutes prior to collecting the rodent waste with a HEPA vacuum. PPE required for the work included Tyvek coveralls and KN-95 respirators.

Resin was collected and the drums were surveyed for radiation levels to support characterization. Because the drums were closed-top and had been cut open, it was decided to overpack each drum. To do this, the lid of the overpack was inverted and placed on the floor. Each resin drum was placed on a lid, the drum body was inverted over the resin drum, and the lid was tightened down. The drum was flipped over, the drum ring tightened, and each drum was numbered, and the mass was recorded and marked on the drum. This process was repeated until all 15 drums were overpacked. Each drum was subsequently surveyed and the dose rate, in µRem/hour, was recorded on a survey map and on each drum. Contamination surveys were taken on the bottom ring of each drum. No contamination was measured in the rooms or on the drums. Once the drums were surveyed, they were moved to the hoist room for shipment.

The data collected during the activities of September 19 and 20, as well as analytical data collected from laboratory sampling were used to complete drum characterization to support shipping on October 4, 2022. Shipping papers were completed, in advance of shipment.

On October 3, the drums were marked RADIOACTIVE, and UN-2910 (Radioactive material, limited quantity of material), as required by Department of Transportation regulation 49 CFR 173.421 for shipment to White Mesa Mill. Contamination surveys of each drum was completed for verification of compliance with 49CFR 173.443. No contamination was measured.

On October 4, due to adverse weather on 10/3, Cash construction placed the overpacked drums onto pallets and moved the drums to the access road. This eliminated the potential for getting the trucking company's vehicle stuck due to the wet road and clay roadbed. The trucking company arrived, the drums were loaded, blocked, and braced as required by DOT requirements. The driver was given instructions for compliant transport and given two copies of shipping documents and was released for shipment at 0920. The driver contacted the project RSO at 1330, informing him that the shipment had arrived and was accepted for processing.

Radiological instrumentation was rented from ERG, an Albuquerque company. Personnel on site on 9/19/22 included Barbara Everett and Sharon Chavez from NV5, Kory Cash and three laborers from Cash and myself. The following chronology, in bullet form, provides details of activities conducted:

September 19, 2022

- 0730 – Met with Barbara Everett and Sharon Chavez from NV5. We discussed the NV5 and Cash construction scope of work. Departed for the mine at 0745.
- 0815 – Arrived at the mine with all personnel listed above present. Walked down the building, including the mine shaft area to identify the drums, areas where rodent waste was found and viewed the drums, which were to be surveyed and overpacked.
- 0830 – Discussed the health and safety plan, including hantavirus and other hazards, e.g., spiders, snakes, tripping hazards, radiological hazards; primarily spilled resin and informed workers to identify those hazards. The mine discussion was important as material, which was not associated with resin on the floor, will be lowered into the mine shaft. This action is approved by New Mexico Environment Department (NMED).
- 0915 – Radiological instrumentation was delivered and inspected for use.
- 0930 - Started source checking instruments. Finished at about 1000.
- 1030 – Mixed up the ten percent chlorine solution. Dressed out one of the laborers with Tyvek suit and KN-95 mask. He continued to spray the rodent debris areas, focusing on resin areas, until all the areas were well soaked to prevent Hantavirus issues and allowed to remain undisturbed for a minimum of five minutes; it was allowed to sit for over 15 minutes.
- 1100 - Conducted initial dose rate surveys of the resin drums. Survey results ranged from 70 µRem/hour to 300 µRem/hour. The variation in dose rates is primarily due to the amount of resin in each drum. One other factor is the smaller five fiberboard drums. Two of the drums contained activated carbon and resin mix; therefore, lower dose rates. These drums were handled very carefully due to potential integrity issues near the bottom of four of the drums.
- 1100 – While surveys of the drums were completed, two of the laborers dressed out in Tyvek and KN-95 masks begin vacuuming the rodent debris and resin into a vacuum, which had a HEPA filter installed. As vacuum cleaner bags of resin and debris were filled, the filter bags were removed from the vacuum and placed into larger bags for placement into the mine for disposal.
- 1:00 - Started placing the resin drums into 85-gallon overpack drums to support shipment. Because of the condition of the drums (closed-top drums opened with a tool that cuts the top of the drum most of the way off) and the condition of fiberboard drums, it was determined to be safer to place to drum onto the underside of the overpack drum's lid, install the lid onto the overpack, close the body of the overpack onto the lid, tighten the drum lid and flip the drum over. In addition, each of the drums were weighed prior to overpacking, with exception of the fiberboard drums, which were not weighed until after closure into an overpack drum. The net weight of these drums was calculated by subtracting 66 pounds, which is the weight of an empty overpack drum. Twelve of the drums were overpacked.

Activities completed on September 20:

- Inform NMED one hour prior to traveling to the mine, as required.
- Response checked instruments
- Overpack the last three drums
- Conducted radiological surveys of the last three overpacked drums (dose rate and contamination along the bottom ring of each drum). No contamination was measured.

- Completed contamination surveys of the floor where resin was observed. No decontamination was required as no contamination was measured.
- The overpacked drums were staged in the non-contaminated area inside the building, awaiting shipment on 10/4/2022.
- Inform NMED that all planned activities are completed until October 3, 2022. Instrumentation was returned to ERG
- Verified that the transportation company would support the project and be at the mine at 0830 on October 4 for shipment.

October 3 through 4, 2022

Activities completed on October 3, 2022:

A new NV5 RP Technician, Brittany Massey, arrived and attended the morning safety briefing. She proceeded to source check instruments.

Two non-project individuals arrived at the mine to start taking down portions of the hoist building and subsequently remove the hoist. They were instructed to stay out of the areas where the resin drums had been stored and where the overpack drums are currently staged for shipment.

M Nolan briefed Brittany on surveys taken to date. She completed confirmatory contamination surveys of the drums and floor where drums had been stored. She noted a few very small areas of resin in the trench in the floor of the drum storage area. No contamination was measured, aside from the visible resin in the trench area and on a piece of metal siding. Cash personnel were to bring a HEPA-vacuum to collect the remaining resin. We departed the site at about 1130.

Activities completed on October 4, 2022:

At 0800, all project personnel (three Cash workers, Brittany Massey, and myself) arrived and attended the morning safety briefing. Cash had pallets loaded with the 15 drums and moved them outside of the gate in preparation for shipment.

- Shipment of the overpacked drums to White Mesa Mill

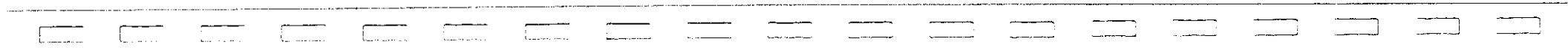
  The truck driver had been instructed to be at the mine road at 0830 for loading. He arrived on time. Shipping papers were completed and ready for shipment. Drums were loaded by Cash personnel into the trailer. Drums were subsequently blocked and braced into the trailer using straps and an intermediate door. The driver was briefed on the shipment, signed shipping papers and related documentation, and released for shipping. The driver arrived at White Mesa Mill at 1330. I was contacted by Garrin Palmer, White Mesa Radiation Safety Officer that the shipment had been received and accepted for processing.

At 1000, after the drums had been released, Brittany and I conducted a detailed contamination and radiation survey of the floor of both areas (hoist room and drum storage room). All contamination survey results were at or below background. Radiation survey results indicated micro-rem/hr readings were at or below background.

We departed the site at approximately 1100.

APPENDIX A

RADIOLOGICAL SURVEY AND SAMPLING RESULTS



APPENDIX A

Drum Number	Mass					Dose Rate (µr/hr)		Microcuries				
	Gross kg	As found kg	gm	Gross lb	As found lb	As found DR	Overpacked DR	U-233	U-234	U-235	U^{NAT} Total	
1	140	110	1.40E+05	308	242	300	140	5.10E+02	2.98E+01	3.63E+02	9.02E+02	
2	152	122	1.52E+05	334	268	150	160	5.53E+02	3.24E+01	3.94E+02	9.79E+02	
3	140	110	1.40E+05	308	242	170	170	5.10E+02	2.98E+01	3.63E+02	9.02E+02	
4	144	114	1.44E+05	316	250	220	140	5.24E+02	3.07E+01	3.73E+02	9.28E+02	
5	55	85	5.50E+04	187	121	180	50	2.00E+02	1.17E+01	1.42E+02	3.54E+02	
6	53	83	5.30E+04	183	117	160	60	1.93E+02	1.13E+01	1.37E+02	3.41E+02	
7	64	94	6.40E+04	206	140	200	170	2.33E+02	1.36E+01	1.66E+02	4.12E+02	
8	60	90	6.00E+04	198	132	220	60	2.18E+02	1.28E+01	1.55E+02	3.87E+02	
9	92	122	9.20E+04	268	202	300	160	3.35E+02	1.96E+01	2.38E+02	5.93E+02	
10	83	113	8.30E+04	248	182	300	170	3.02E+02	1.77E+01	2.15E+02	5.35E+02	
11	120	150	1.20E+05	330	264	280	170	4.37E+02	2.56E+01	3.11E+02	7.73E+02	
12	78	108	7.80E+04	238	172	200	180	2.84E+02	1.66E+01	2.02E+02	5.03E+02	
13	152	182	1.52E+05	400	334	200	170	5.53E+02	3.24E+01	3.94E+02	9.79E+02	
14	155	185	1.55E+05	407	341	250	170	5.64E+02	3.30E+01	4.01E+02	9.99E+02	
15	137	167	1.37E+05	367	301	200	130	4.99E+02	2.92E+01	3.55E+02	8.83E+02	
								5.92E+03	3.46E+02	4.21E+03	1.05E+04	uCi
								5.92E+00	3.46E-01	4.21E+00	1.05E+01	mCi

Notes: "As found" mass is the mass of the drums prior to overpacking
"As found" dose rates are similarly documented

Lab Sample Results

	(pCi/gm)			(µci/gm		
	U-234	U-235	U-238	U-234	U-235	U-238
1	3.64E+03	2.13E+02	2.59E+03	3.64E-03	2.13E-04	2.59E-03
2	1.51E+04	8.50E+02	1.10E+04	1.51E-02	8.50E-04	1.10E-02
3	1.50E+04	8.80E+02	1.12E+04	1.50E-02	8.80E-04	1.12E-02
4	1.64E+04	9.46E+02	1.84E+04	1.64E-02	9.46E-04	1.84E-02
5	9.74E+03	5.84E+02	6.83E+03	9.74E-03	5.84E-04	6.83E-03
6	1.95E+04	1.15E+03	1.43E+04	1.95E-02	1.15E-03	1.43E-02
	7.93E+04	4.62E+03	6.44E+04	7.93E-02	4.62E-03	6.44E-02
Avg (pCi/gm)	1.32E+04	7.70E+02	1.07E+04			
Avg (µCi/gm)				1.32E-02	7.70E-04	1.07E-02

Date: 9/19/22	Radiological Survey Record

DATE: 9/19/22	TIME: 11:00	INSTRUMENT USED				
Survey Number: 1		Model	S/N	% Eff.	Cal. Due	Bkg
Location: Drum Room		TEC	1535		9/22/22	10
Surveyor: Mike Nolan						
Health Physicist:						

Description of Survey: Contact Dose RATES on the 15 Drums prior to overpacking 9/19/22

Smear location circled; Dose Rates – mRem/hr

Drum #	DR mR/hr
1	300
2	150
3	170
4	220
5	180
6	160
7	200
8	220
9	300
10	300
11	280
12	200
13	200
14	250
15	200

Drum Locations

9/19/22

Location and Smear Results
Results = DPM/100 cm² unless noted

Item	β/γ	α

Comments: 5 Drums are 30 gal Fiberboard drums, two are open-top 55gal Drums and the remaining eight are closed top drums that were cut open. Drums will be weighed and overpacked.

Conducted By (Print/Sign): Mike Nolan / Mike Nolan Date: 9/19/22

Reviewed By (Print/Sign): D.H Stephan / D.H Stephan Date: 9/27/22

Radiological Survey Record

Date: 9/19/22

DATE: 9/19/22	TIME: 14:00	INSTRUMENT USED				
Survey Number: 2		Model	S/N	% Eff.	Cal. Due	Bkg
Location: Hoist Room		TEC R/hr	1535		9/22/22	10
Surveyor: Mike Nolan						
Health Physicist:						

Description of Survey: Resin/4 part Drums after overpacking. 9/19/22

Smear location circled; Dose Rates – mRem/hr

Drum #	Gross Kg	Net Kg	Gross #	Dose Rate R/hr
1	140	110	308	140
2	152	122	334	160
3	140	110	308	170
4	144	114	316	140
5	55	85	187	50
6	53	83	183	60
7	64	94	206	170
8	60	90	198	60
9	92	122	268	160
10	83	113	248	170
11	120	150	330	170
12	78	108	238	180
13	152	182	400	170
14	155	185	407	170
15	137	167	367	130

Location and Smear Results
Results = DPM/100 cm^2 unless noted

Item	β/γ	α

Comments:
Dose Rate is highest Dose Rate on outside of 4's found Drum Room drums after overpacking

Conducted By (Print/Sign): Mike Nolan Date: 9/19/22

Reviewed By (Print/Sign): C.H. Stephen Date: 9/29/22

NV5

Delivering Solutions
Improving Lives