

## **DEFENSE NATIONAL STOCKPILE CENTER (DNSC), New Haven, IN TRIP SUMMARY**

**Dates of Site Visit:** May 20, 2002 through May 23, 2002

**Participants:** Don Nizolek, ERS Solutions, Inc.  
Bill Till, Defense National Stockpile Center (DNSC)  
Hensley Snowden, DNSC  
Dale Arnos, DNSC  
Brian Kilpatrick, DNSC

**Purpose:** To remove remaining baddeleyite (zirconium) ore from the Former Shrink Wrap Area (Survey Unit - SU4) and the Scale Area (Survey Unit – SU3) in preparation for conducting the FINAL survey.

### **SUMMARY**

#### **Construction of Baddeleyite Ore Storage Cell**

A storage cell was constructed at the former baddeleyite ore storage pile area (7A) for the storage of the material which was removed from the Survey Units. The storage cell was constructed on the asphalt pavement within the 7A area using previously used railroad ties and 14 mil black poly as a liner. The storage cell measured 16 ft. x 32 ft. The depth of the storage cell was approximately 1 ft., equivalent to two railroad ties in height. 14 mil black poly was used to cover the storage cell bottom and was draped up over the railroad ties and secured. The east end of the storage cell was left open in order to allow access into the cell by the front-end loader.



Following removal of all the baddeleyite ore from the two survey unit locations, the east end of the storage cell was closed with railroad ties and the plastic was secured to the top of the railroad ties.



The final baddeleyite ore pile was covered with two heavy-duty tarps at the conclusion of the clean-up activities. A total of 66 cubic yards of material were removed from the two Survey Units for storage in the 7A storage cell.



**Cleanup of the Former Shrink Wrap Area (SWA) – Survey Unit SU4**

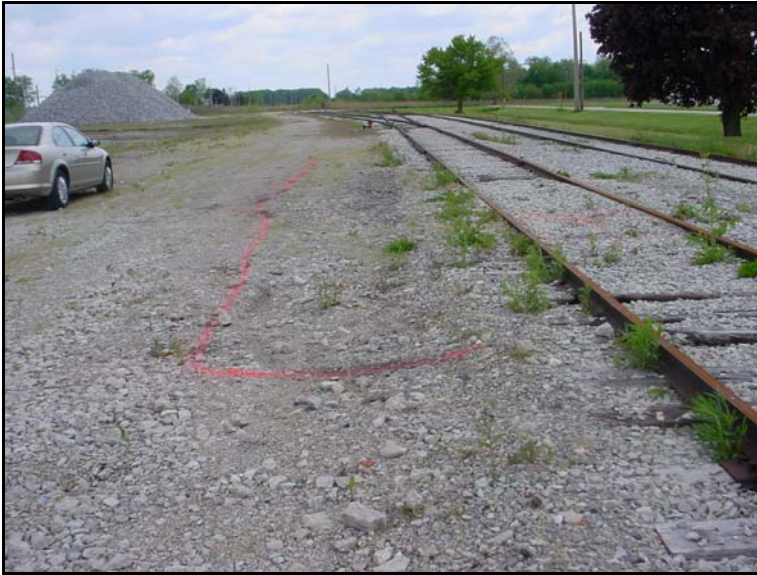
The Former Shrink Wrap Area is located south of the Administration Building (T-111). The area consists of two parallel rail lines referred to as the North Tracks and the South Tracks. Shrink wrapping of the ore loaded rail cars was performed while the rail cars were parked on the South Tracks. Based upon the Pre-cleanup survey of the Shrink Wrap Area, cleanup for this area was confined to the South Tracks and the material located north and south of the South Tracks.

Background levels for the Shrink Wrap Area were determined to be between 3,500 count per minute (cpm) and 3,700 cpm. Specifically:

- 3,000 cpm – 3,500 cpm for rock ballast material between the railroad ties, and
- 3,500 cpm – 3,700 cpm for crushed rock area south of the tracks.

Target Levels of two times the background radiation level were determined at 7,000 cpm and 7,400 cpm respectively.

The Pre-Cleanup Survey found materials ranging from 8,500 cpm through 20,000 cpm in the materials located both north and south of the South Tracks. The two areas identified for cleanup each covered approximately 7 ft. x 63 ft. The cleanup area boundaries were conspicuously marked with fluorescent paint. [See attached Pre-Cleanup Survey].



**Marking  
Areas for  
Cleanup  
Following  
Initial Survey**



**Area  
Between  
North &  
South  
Tracks to be  
Cleaned**

The rock ballast material located between the railroad ties of the South Tracks were found to be at background levels for all but two locations along the 63 ft. track area. The two locations found to be above background measured 8,000 cpm each. The two areas were marked with fluorescent paint for cleanup.

Contaminated material was removed from the designated area north of the South Tracks using a John Deere backhoe. The material was placed into the front-end loader of a CAT tractor and transported to the 7A storage area for storage. Care was taken to ensure that the material loads were lower than the lip of the front-end loader bucket in order to prevent spillage on the roadway while transporting to the 7A storage cell.



**Removing  
Material  
Between  
North &  
South Tracks**



**Equipment  
Used in SWA  
Cleanup**



**Transferring  
Material to  
Front-end  
Loader for  
Transport to  
7A storage  
Cell**



**Maintaining the Material Below the Lip of the Bucket to Prevent Spillage During Transport**

Contaminated material located between the railroad ties of the South Tracks was removed by hand with a shovel.

Contaminated material from the south side of the South Tracks was removed by scraping with the front-end loader bucket.



**Scraping Material south of South Tracks**

While contaminated material was being removed, the area was surveyed after each pass to determine if additional material needed to be removed.



**Cleanup of  
SWA  
Completed**

### **Cleanup of the Scale Area (SA) – Survey Unit SU3**

The Scale Area is located south of the Warehouse T-213. The area consists of a concrete and asphalt scale pad and two parallel rail lines also referred to as the North Tracks and the South Tracks. Baddeleyite ore was either loaded on or removed from the rail cars in order to maximize the allowable load while the rail cars were parked on the South Tracks. Based upon the Pre-Cleanup survey of the Scale Area, cleanup for this area was confined to the South Tracks and the material located north and south of the South Tracks.

Background levels for the Scale Area were determined to be between 3,000 cpm and 3,500 cpm.

Target Levels of two times the background radiation level were determined at 7,000 cpm.

The Pre-Cleanup Survey found materials ranging from 10,000 cpm through 72,000 cpm in the materials located both north and south of the South Tracks, and between the railroad ties. The total area identified for cleanup covered approximately 23 ft. x 72 ft. The cleanup area boundaries were conspicuously marked with fluorescent paint. [See attached Pre-Cleanup Survey].



**Scale Area  
Looking  
East, Prior  
to Cleanup**

Considerable contamination was found between the railroad ties of the South Tracks, as compared to the railroad ties area associated with the Shrink Wrap Area where very little contamination was found between the railroad ties. In addition, the railroad ties for the tracks at the Scale Area were covered completely with contaminated rock ballast. Removal of the large volume of rock ballast material from between the railroad ties by hand would have been a difficult process. DNSC staff were able to improvise with a smaller front-end loader which could easily scrape much of the surface gravel from the ties, and a more narrow backhoe attachment which could fit between the individual railroad ties to remove the rocks to the necessary depth.

Contaminated material was first removed from the railroad ties by scraping the ballast material to the north and south sides of the tracks. Once the top layer of material was removed from the ties by scraping, any remaining contamination was removed between the ties using the backhoe. In some instances, material was removed to a depth of 12 inches.



**Scale Area.  
Scraping  
Material  
from  
Surface of  
RR Ties**





**Scale Area.  
Removing  
Material  
from  
Between RR  
Ties**



**Scale Area.  
Material  
Removed  
from  
Between RR  
Ties**

Contaminated material was then removed from the designated area north of the South Tracks using the front-end loader. During the cleanup a dark black material resembling either virgin asphalt material of possibly pulverized coal, was found. This material appeared to have increased count rates above background. A sample of the material was taken and sent for gamma spectroscopy analysis following EPA method 901.1. The sample analysis did not indicate radionuclides in concentrations above background. Attachment 1 contains the sample data.



**Scale  
Area.  
Material  
Removed  
from  
North of  
Tracks**



**Scale  
Area.  
Material  
Removed  
from  
North of  
Tracks**

Lastly, the material from the south side of the South Tracks was scraped for a distance of 72 feet.



**Scale Area.  
All Material  
Removed**

In all cases, the material was placed into the front-end loader of a CAT tractor and transported to the 7A storage area for storage. Care was taken to ensure that the material loads were lower than the lip of the front-end loader bucket in order to prevent spillage on the roadway while transporting to the 7A storage cell.

#### **Post – Cleanup Surveys**

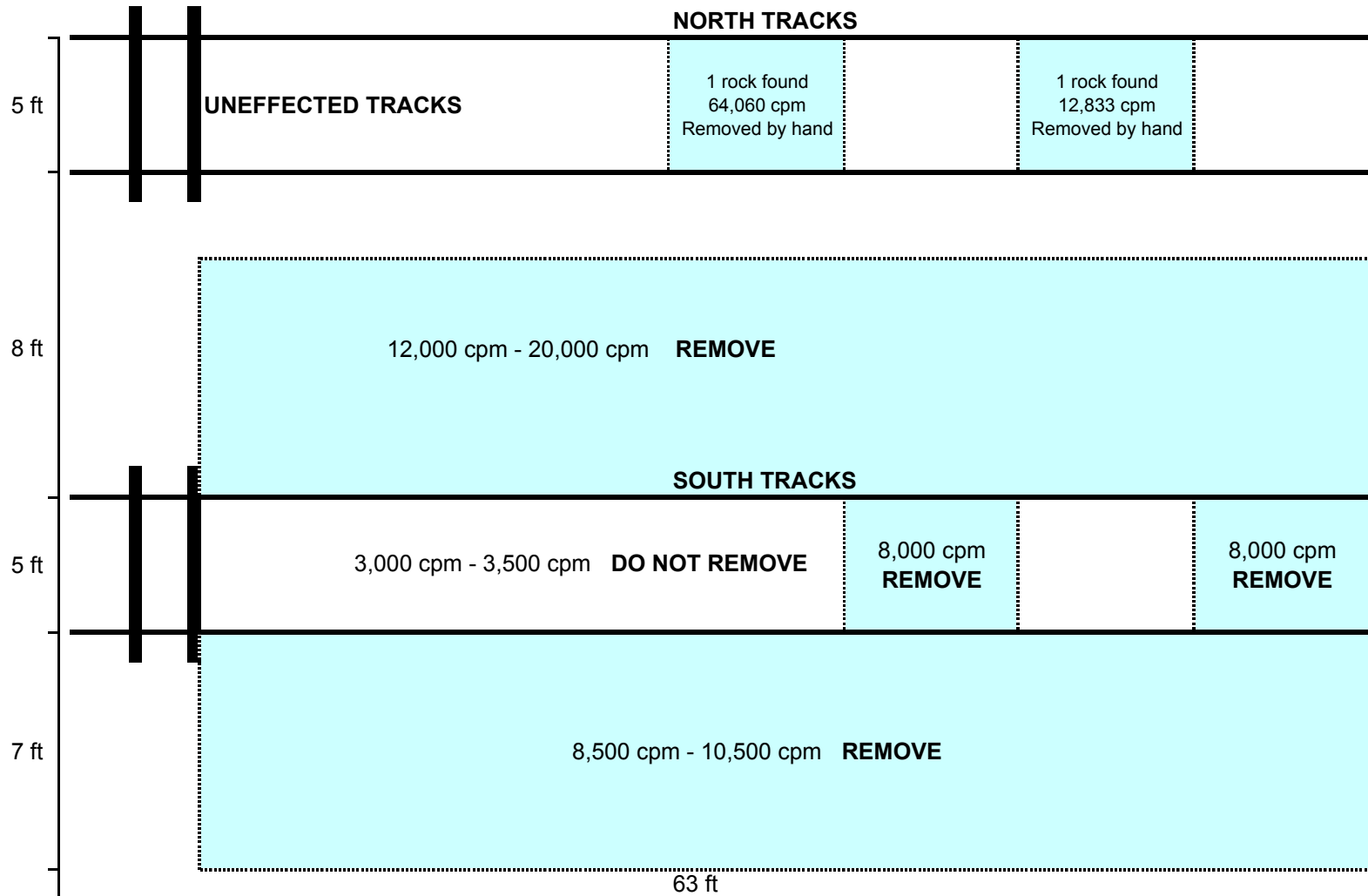
Post-Cleanup Surveys of SU3 and SU43 were performed and documented on May 23, 2002. Each of the two Survey Units were divided with 10 foot wide survey grids to facilitate accurate documentation of the survey results. The results of the Post-Cleanup surveys for SU3 and SU4 are included as attachments to this report.

Following the conclusion of all transport activities, the asphalt roadway from the 7A storage area to the Scale Area and former Shrink Wrap Area was surveyed to verify contamination had not been deposited on the roadway as a result of our cleanup activities. The roadway surface was found to be free of baddeleyite ore, however, baddeleyite ore was found at the first three rail crossings south along the roadway from the 7A storage area. The baddeleyite ore was embedded in the dirt between the steel tracks and the asphalt and had to be dug out by hand. The fact that the material was well embedded in the ground suggests that the material was deposited prior to our transport activities. The material was removed by hand and taken to the 7A storage cell. It is likely that additional baddeleyite ore may be found along the roadway until such time that the final remediation of the 7A storage area is completed.

# FORMER SHRINK WRAP AREA -- PRE - CLEANUP SURVEY

Utility Pole for Reference

Survey performed on 5/20/02 DCN



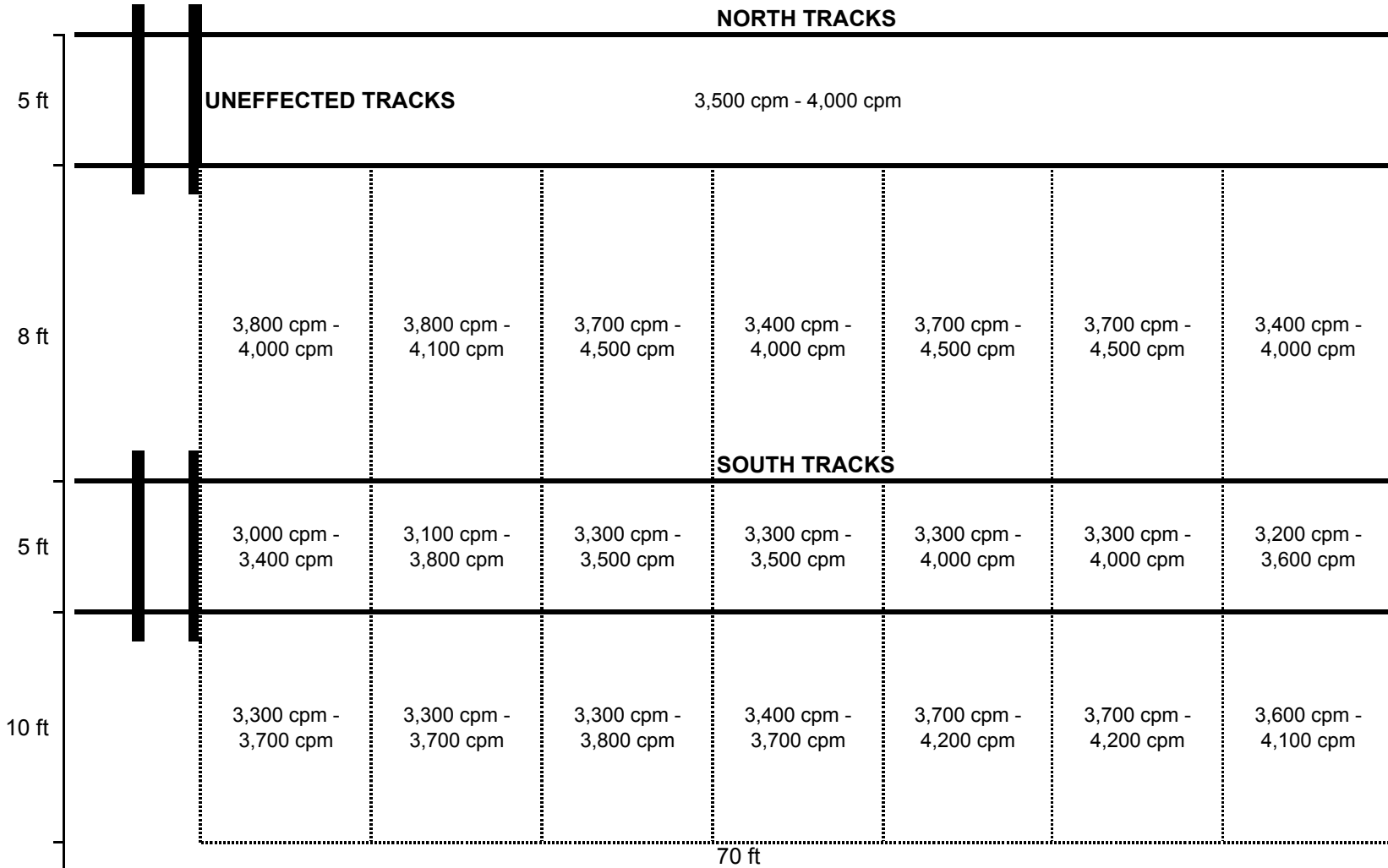
Areas to be removed

Background = 3,000 cpm - 3,500 cpm  
Target Value = 7,000 cpm

# FORMER SHRINK WRAP AREA -- POST - CLEANUP SURVEY

Utility Pole for Reference

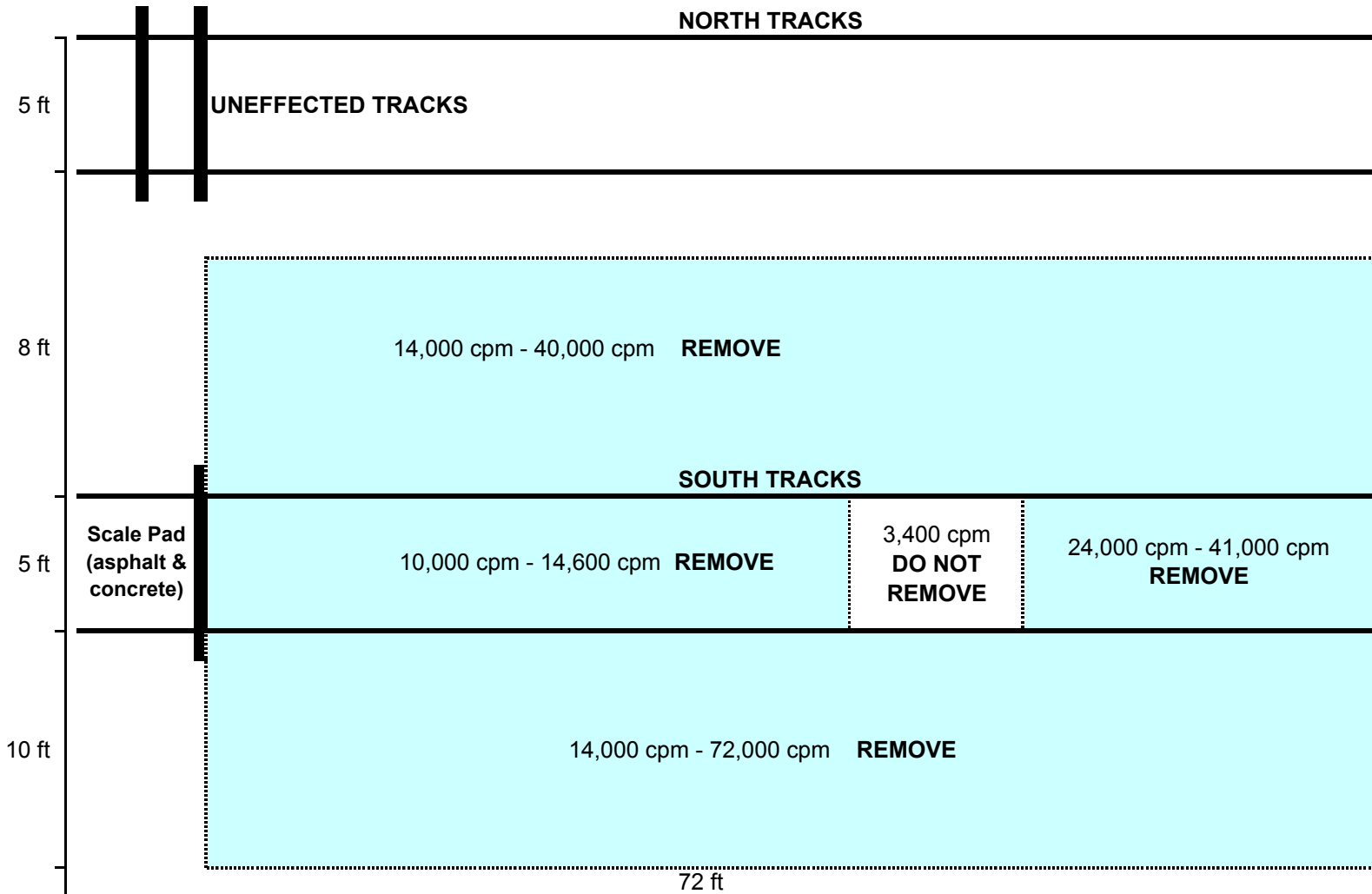
Survey performed on 5/23/02 DCN




Background = 3,300 cpm - 4,100 cpm  
 Target Value = 8,200 cpm

# SCALE AREA -- PRE - CLEANUP SURVEY

Survey performed on 5/20/02 DCN

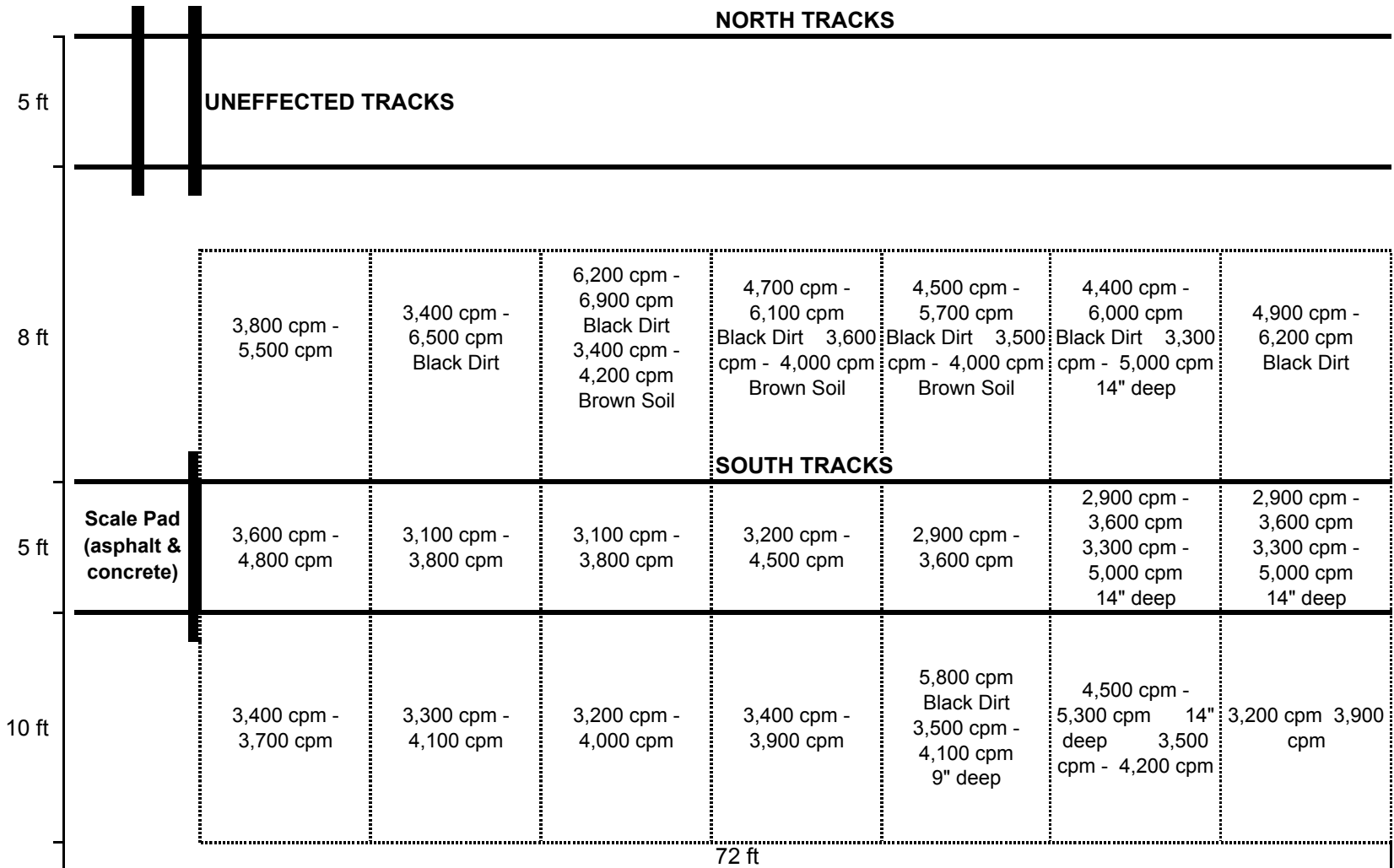


 Areas to be removed

Background = 3,000 cpm - 3,500 cpm  
Target Value = 7,000 cpm

# SCALE AREA -- POST - CLEANUP SURVEY

Survey performed on 5/23/02 DCN



Background = 2,700 cpm - 4,100 cpm  
Target Value = 8,200 cpm

## **ATTACHMENT 1**



## Soil Sample Results

Sample ID	Radionuclide	Result	Uncertainty	Qual Code	Units	MDA (pCi/g)
Soil	Bi 214	0.379	0.2	U <sup>a</sup>	pCi/g	0.384
	Cs 137	0.161	0.1	U	pCi/g	0.193
	K 40	2.94	2.4		pCi/g	1.75
	Pb 212	0.170	0.15	U	pCi/g	0.261
	Pb 214	0.562	0.26	U	pCi/g	0.359
	Ra 226	0.379	0.2	U	pCi/g	0.384
	Ra 228	.0551	0.41	U	pCi/g	0.783
	Th 228	.0354	0.28	U	pCi/g	0.523
	Th 232	.0320	0.47	U	pCi/g	0.842
	Th 234	12.5	15.0	U	pCi/g	29.6
	U 234	0.371	0.31	U	pCi/g	0.554
	U 235HP	-0.0246	0.38	U	pCi/g	0.653
	U 238DHP	1.41	2.0	U	pCi/g	3.61

<sup>a</sup> U = Result is less than the minimum detectable activity and is considered a non-detect

Sample ID	Radionuclide	Result	Uncertainty	Qual Code	Units	MDA (pCi/g)
Soil DUP	Bi 214	0.193	0.24	U <sup>a</sup>	pCi/g	0.393
	Cs 137	0.101	0.09	U	pCi/g	0.176
	K 40	1.37	1.7	U	pCi/g	1.61
	Pb 212	0.382	0.2		pCi/g	0.201
	Pb 214	0.517	0.25		pCi/g	0.263
	Ra 226	0.193	0.24	U	pCi/g	0.393
	Ra 228	0.602	0.36	U	pCi/g	0.736
	Th 228	0.264	0.26	U	pCi/g	0.484
	Th 232	0.363	0.46	U	pCi/g	0.838
	Th 234	8.77	13.0	U	pCi/g	25.4
	U 234	0.572	0.36		pCi/g	0.506
	U 235HP	0.283	0.36	U	pCi/g	0.652
	U 238DHP	1.21	4.6	U	pCi/g	7.87

<sup>a</sup> U = Result is less than the minimum detectable activity and is considered a non-detect

### NOTIFICATION OF STOCKPILE INSPECTION

1. NAME AND LOCATION OF DEPOT OR SITE New Haven Depot 15411 Dawkins Rd.; New Haven, IN 46774		2. NAME AND TYPE OF COMMODITY Radiological Readings on Radiological Waste from Yanadium Sampling		3. SERIAL NO. 1
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D A T E	A. LAST	4. TYPE OF STORAGE AND SPECIFIC DEPOT AREA Warehouse 214; Section 3
	B. THIS 15-May-03	

7. NAME AND TITLE OF PERSON RESPONSIBLE FOR MATERIAL John Olszewski; Facilities Distribution Manager	7A. TELEPHONE NO. 219-837-6383	7B. FAX NO.
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INSPECTION DATA (Check and complete. Explain negative responses.)		N/A	YES	NO
8. STORAGE	A. Storage Sites Are of the Type Prescribed in the Operations Manual. B. Storage Sites Are Maintained in accordance with established regulations and policies.			
9. MATERIAL	A. Material Is Stored in the Manner Prescribed in the Operations Manual. B. Material is Visually Free of Deterioration, Infestation, Contamination, Comingling, Migration and Erosion.			
10. RECORDS	A. Depot Manager Confirmed that all inventory entries have been posted on the DNSC 46 card. B. Depot 46 card Postings indicate Last RR No. Dated Last O3R No. Dated			
11. UNITS	Quantity indicated in Item 14 reflects depot postings and agrees with actual count.			
12. SECURITY AND FIRE PROTECTION	Security and Fire Protection are being provided in accordance with Operations Manual Requirements. All Fire Extinguishers/ Engineering Controls are properly maintained in accordance to established policies.			
13. CONTAINERS, PILES, OR OTHER UNITS	A. Material is Stored in Proper Containers (Check only if applicable) B. All containers, Piles and/or Units Are Marked as Prescribed in the Operations Manual. C. Condition of Containers (Give exact number in Class III under remarks)	(1) CLASS I %	(2) CLASS II %	(3) CLASS III %

14. DESCRIPTION OF CONTAINERS, PILES, OR OTHER UNITS										N/A	
PRIORITY	CONTAINER TYPE	MATERIAL	LEAK	DAMAGE	CLASS	WEIGHT (LBS)		TOTAL NUMBER OF UNITS		TOTAL WEIGHT	
						(1) NDS	(2) NDT	(1) NDS	(2) NDT	(1) NDS	(2) NDT
NDS										LBS	SI
NDS											
NDS											
TOTALS										0	0

15. REMARKS (Review all other appropriate questions contained in "guide for the inspection of stockpiled materials" and, if deficiencies are found, give the appropriate guide numbers and complete details in this block)

See Attached DNSC form 30 Continuation Sheet / Results

16. RECOMMENDATIONS (Not to be construed by storage depot or facility as authorization to proceed with remedial measures beyond the scope of usual authority)

None

17. DISTRIBUTION	1 DNSC-Depot's File	N. Peculiar	
	1 DNSC-Specialist's Copy		
18. NAME OF SPECIALIST William J. Till, General Supply Specialist	(Type or print)	18A. SIGNATURE /SIGNED/ <i>W. J. Till</i>	18. DATE OF SIGNATURE 15-May-03

DLAH form 30  
New Haven Depot  
Special radiological survey

Introduction:

Columbium Tantalum Reserve Samples were returned to their respective lot drums.

Note: There are 268 lots of this material.

Columbium Tantalum Batch Samples were returned to the highest radioactive lots of the batch.

Note: There are 60 batch lots of this material.

Method:

An Eberline E-600 Portable Radiation Monitor with an SHP-380A alpha probe calibrated 4-23-03 and having an effective area of 100 cm<sup>2</sup>, was used to monitor the material.

A table covered with plastic is used for surveying the waste material. A rack is used to hang cleaning wipes for surveying. The contaminated waste is surveyed in increments as indicated below. The indicated reading represents the highest reading if more than one reading was taken of one such item or area.

Results:

**Oct 14-18, 2002 ( Background = 35 dpm )**

Tyvek = 150 dpm, 160 dpm

Gloves = 120 dpm

**Oct 21-24, 2002 ( Background = 35 dpm )**

Tyvek wipe = 160 dpm, 170 dpm, 150 dpm

Gloves = 150 dpm

**Oct 28, 2002 ( Background = 30 dpm )**

Tyvek = 180 dpm

**Nov 5, 2002**

Tyvek = 180 dpm

Gloves = 150 dpm

**Nov 5 2002**

Tyvek = 175 dpm

Cleaning wipe = 165 dpm

**Nov 6, 2003 ( E-600 shows out of calibration )**

**Instrument sent in for calibration.**

The following is for cleaning of the sample containers after the sample material was returned to the lots:

An E-600 Portable Radiation Monitor with an SHP-380A alpha probe calibrated 2-19-03 and having an effective area of 100 cm<sup>2</sup> was used for this portion of the report.

The 60 batch lot samples were emptied into the most radioactive lot of the batch and the bags were reserved in two gallon cans to be surveyed for contamination (possible radioactive waste).

The 268 samples were removed from their individual cans and put into their respective lot drum. The cans were cleaned and the wipes scanned for possible radioactive waste.

**April 22, 2003 ( Background = 10 dpm )**

Cleaning Wipes = 100 dpm, 100 dpm, 75 dpm, 56, dpm, 110 dpm, 107 dpm, 91 dpm, 110 dpm, 56 dpm, 135 dpm, 91 dpm, 100 dpm, 82 dpm, 75 dpm, 75 dpm

Tyvek = 60 dpm, 191 dpm

**April 23, 2003 ( Background = 13 dpm )**

Cleaning Wipes = 135 dpm, 170 dpm, 171 dpm, 13 dpm, 127 dpm, 95 dpm, 84 dpm, 268 dpm, 286 dpm, 170 dpm, 100 dpm

Sample bag = 183 dpm

Tyvek = 127, 95 dpm, 73 dpm, 176 dpm, 187 dpm, 149 dpm

**April 24, 2003 ( Background = 35 dpm )**

Cleaning Wipes = 303 dpm, 170 dpm, 95 dpm, 127 dpm

**May 15, 2003 ( Background = 0 dpm )**

Cleaning Wipes = 111 dpm, 91 dpm, 110.4 dpm, 100.2 dpm, 110.4 dpm, 227 dpm, 303 dpm, 227 dpm, 227 dpm, 230 dpm, 227 dpm, 228 dpm, 202 dpm, 127 dpm

Tyvek = 53 dpm

**May 16, 2003 ( Background = 0 dpm )**

1 sample bag = 404 dpm

8 sample bags = 91 dpm

1 sample bag = 345 dpm

1 sample bag = 269 dpm

7 sample bags = 191 dpm

9 sample bags = 127 dpm

1 sample bags = 132 dpm

**All readings that are 200 dpm or more will be disposed of as possible radioactive waste; and this is contained in a 5 gallon plastic bucket within a 50 gallon drum marked Possible Radioactive Waste.**

**All the waste that is less than 200 dpm is in a 50 gallon drum with a plastic liner marked Possible Contaminated Waste**