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March 10, 2015

Mail Control No. 585630
License No. 07-30728-01
Docket No. 030-35986

Licensing Assistance Team
U.S. Nuclear Regulatory Commission Region I
2100 Renaissance Blvd
King of Prussia, PA 19406-2713

Subject: Mail Control No. 585630 - Amendment to License No. 07-30728-01

Dear Mr. Dennis Lawyer,

Please find attached the Incyte Corporation revised Decommissioning report 3-10-15 for the Experimental Station location.

If you require additional information please contact Mark Czerwinski at 302-498-6827 or by e-mail at mczerwinski@incyte.com.

Sincerely,

Mark Czerwinski
Director, EHS & RSO
Incyte Corporation
1801 Augustine Cut-off
Wilmington, Delaware 19803

INCYTE CORPORATION

X-STATION
BUILDINGS 336 AND 400
RADIOLOGICAL
FINAL SURVEY REPORT

Incyte Corporation
Wilmington, DE

Prepared For:

Incyte Corporation

December 2014
Revised: March 10, 2015

Prepared By:
RSO, Inc.
Laurel, MD

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1.0 INTRODUCTION AND RADIOLOGICAL DECOMMISSIONING ACTIONS

1.1 Introduction

Incyte Corporation maintains a Nuclear Regulatory Commission issued byproduct material license of limited scope (07-30728-01). The use of licensed material at the Dupont Experimental Station, Building E336 and E400 in Wilmington, DE has ended and radiological final survey was needed to support removal of this location as an authorized place of use.

1.2 Background-Historical Site Assessment

Incyte began using radioactive material in buildings E336 and E400 in 2003 with regular use continuing through until November 2014. The radionuclides authorized for use are listed in Table 1. H-3 and C-14 have been used; however, of the radioactive materials with half-lives of less than 120 days only P-33 was used in the last 4 years. This use was with non-volatile forms in processes that did not create airborne radioactivity.

Table 1. List of radionuclides listed on license (with data) and recent use.

Authorized Radionuclides	Half Life	Principle Emission	Energy	Use within 4 years of the on-site survey
H-3	12.3 yrs	beta	18.6 keV (max)	Yes
C-14	5730 yrs	beta	156 keV (max)	Yes
P-32	14.29 days	beta	1.7 MeV (max)	No[1]
P-33	28 days	beta	249 keV (max)	Yes
S-35	87.3 days	beta	167 keV (max)	Yes[3]
I-125	60.1 days	photons	27.5-36 keV (144%)	No[2]

Note 1 last use was 10/6/2005, elapsed time is 3313 days, effectively 100% radioactive decay
Note 2 last use was 9/10/2009, elapsed time is 1878 days, effectively 100% radioactive decay
Note 3 1 use (ie: benchtop assay) since 11/03/09 and that was on 3/12/13 in E336/Lab 238, elapsed time is 609 days, effectively 99.2% radioactive decay

The license applications and amendments to this license identified multiple rooms and areas where radioactive materials were to be used or stored.

The laboratory rooms shown in Table 4 were identified as areas authorized for the use or storage of licensed material.

Routine contamination surveys were performed by the licensee during this period of use. No large spills were known to have occurred. Small spills that occurred were cleaned by Incyte personnel.

1.3 Radiological Decommissioning

The use of radioactive material has ended, radiological decommissioning actions taken/completed, and a Radiological Final Survey was performed to allow the release of the building for unrestricted use.

Prior to the final survey all remaining radioactive material was either transferred to Incyte's other authorized location of use, or disposed of as radioactive waste.

2.0 RADIOLOGICAL SURVEY APPROACH

2.1 Survey Design Basis

This radiological survey was designed in consideration of the guidance provided by the Nuclear Regulatory Commission (NRC) regarding Final Radiological Surveys. In particular the guidance provided by the NRC in NUREG 1757 for what is termed Group 2 facilities (see following excerpt) was used. Group 2 includes facilities that "would not have contaminated work areas at the levels above the decommissioning screening criteria".

From NUREG 1757 v1 Chapter 7:

> Group 2 facilities may have residual radiological contamination present in building surfaces and soils. However, licensees are able to demonstrate that their facilities meet the provisions of 10 CFR 20.1402 ("Radiological Criteria for Unrestricted Use") by applying the screening approach dose analysis described in Chapter 6.
>
> Additionally, licensees in Group 2 typically possess historical records of material receipt, use, and disposal, such that quantifying past radiological material possession and use may be developed with a high degree of confidence. Furthermore, these licensees have radiological survey records that characterize the residual radiological contamination levels present within the facilities and at their sites. That is, they are able to demonstrate residual radiological contamination levels without more sophisticated survey procedures (greater than those used for operational surveys) or dose modeling. These licensees do not need to use site-specific parameters or establish site-specific DCGLs in order to demonstrate acceptability for release of their sites."

Derived Concentration Guideline Levels (DCGLs) are radionuclide-specific concentration limits used by the licensee during decommissioning to achieve the regulatory dose standard that permits the release of the property and termination of the license. The DCGL applicable to the average concentration over a survey unit is called the $DCGL_W$. The DCGL applicable to limited areas of elevated concentrations within a survey unit is called the $DCGL_{EMC}$.

2.2 Decommissioning Criteria

The Radiological Criteria for Unrestricted Use - NRC (10 CFR Part 20)

> "A (The) site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem per year, including that from ground water sources of drinking water, and that the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA)."

2.3 Potential Radionuclide Contaminates and Screening Values

At the time of the survey, the facility was licensed for use of relatively long half-life radionuclides, H-3 ($T_{1/2}$ = 12.3 y) and C-14 ($T_{1/2}$ = 5730 y) and relatively short half-life ($T_{1/2}$ of less than 120 days) radionuclides, S-35, P-33, P-32 and I-125.

Based on the Historical Site Assessment, H-3 and C-14 and P-33 ($T_{1/2}$ = 28 d) were identified as the potential radionuclide contaminates.

The NRC has established Screening Values derived using scenarios and default values for assumptions that result in a Derived Concentration Guideline Limit (DCGL). These values have been derived for common beta-gamma emitting radionuclides for building surface contamination as published in the Federal Register (63 FR 64132, November 18, 1998)

and also shown in Appendix B Table B.1 of NUREG 1757 and by definition is the $DCGL_W$. These are values, which can also be derived using the default parameters and the computer code DandD, for the concentration (dpm/100 cm^2) equivalent to 25 mrem/y.

For beta-gamma emitters the $DCGL_W$ is typically higher than the facility operational contamination limits. The $DCGL_W$ for the potential radionuclides are shown in Table 2.

Table 2. $DCGL_W$ for potential contaminates.

Radionuclide	Surface Contamination (dpm/100 cm^2)
H-3	*1.2 x 10^8
C-14	*3.7 x 10^6
S-35	*1.3 x 10^7
P-33	**4.09 x 10^7

* from NUREG 1757
** calculated used DandD Ver. 2.1.0

2.4 Performance of Radiological Surveys

The radiological surveys were conducted using guidance provided by the NRC in NUREG-1575, EPA 402-R-97-016, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM): Revision 1, August 2000.2.5 Survey Design: Area Classification

Impacted Areas

- Impacted areas are areas that may have residual radioactivity from the licensed activities.
- Non-impacted areas are areas without residual radioactivity from licensed activities.
- NRC guidance provides that Final Status Survey (FSS) radiation surveys do not need to be conducted in non-impacted areas.

The impacted area for this license was considered to be the identified laboratory rooms where radioactive material was authorized for use, the radioactive waste storage area, and the connecting corridors.

Classes

Impacted areas can be classified into one of the three classes, listed below, based on expected levels of residual radioactivity.

- Class 1 Areas are impacted areas that, prior to remediation, are expected to have concentrations of residual radioactivity that exceed the $DCGL_W$ ($DCGL_W$ is defined in Section 2.2 of MARSSIM);
- Class 2 Areas are impacted areas that, prior to remediation, are not likely to have concentrations of residual radioactivity that exceed the $DCGL_W$.;
- Class 3 Areas are impacted areas that have a low probability of containing residual radioactivity.

All areas were treated as Class 3 with no or very limited areas of residual contamination expected.

2.6 Decommissioning Guideline Levels

The decommissioning guideline levels used for the surveys in are shown in Table 3.

Table 3. Surface contamination guidelines for license termination used for the Final Survey.

Radionuclide	Maximum DCGL (dpm/100 cm^2)	Operational Limit Removable (dry wipe method) (dpm/100 cm^2)	Operational Limit Total (scan with survey meter)
H-3	1.2×10^8	200	N/A Not detectable
C-14	3.7×10^6	200	3 x bkg (estimated to be about 2500 dpm)
S-35	1.3×10^7	200	3 x bkg (estimated to be about 2500 dpm)
P-33	4.09×10^7	200	3 x bkg (estimated to be about 2500 dpm)

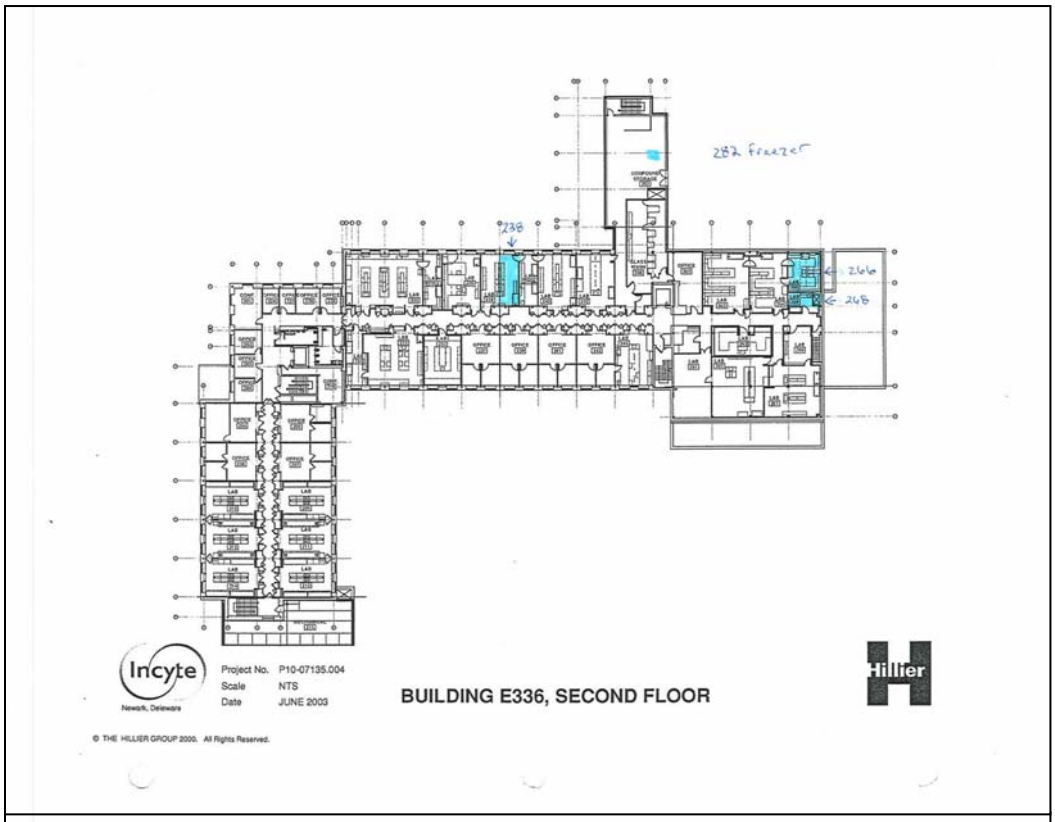
2.7 Survey Units (Areas)

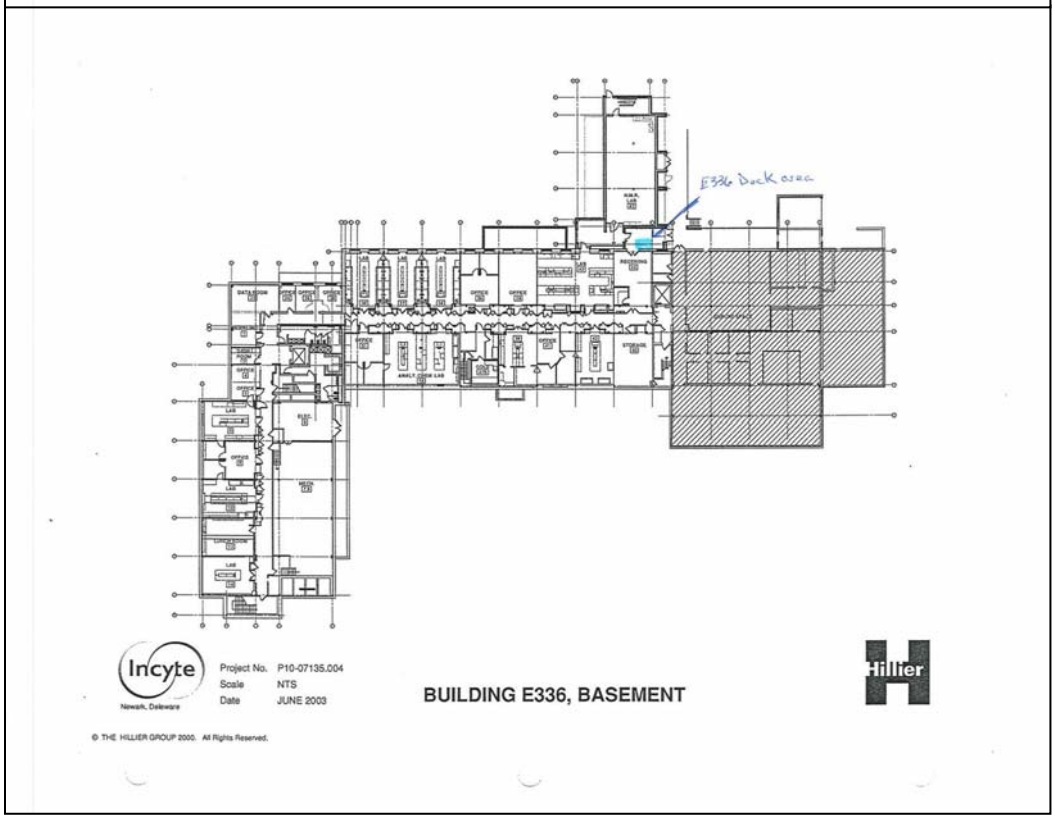
Table 4. lists laboratory rooms or areas where radioactive material was authorized for use (or storage), lab area and the radionuclide(s) used. If the radionuclide used has a $T_{1/2}$ of less than 120 days, “use” is defined as within the 4 years prior to the Final Survey.

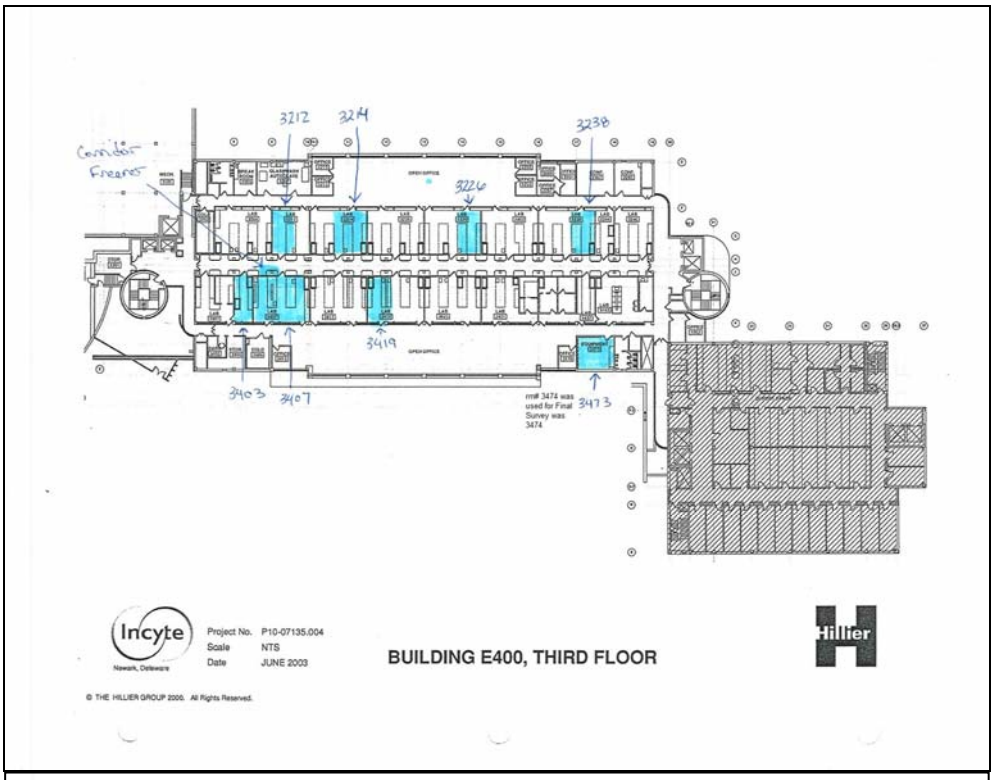
Table 4. List of radionuclides listed on license (with data) and use.

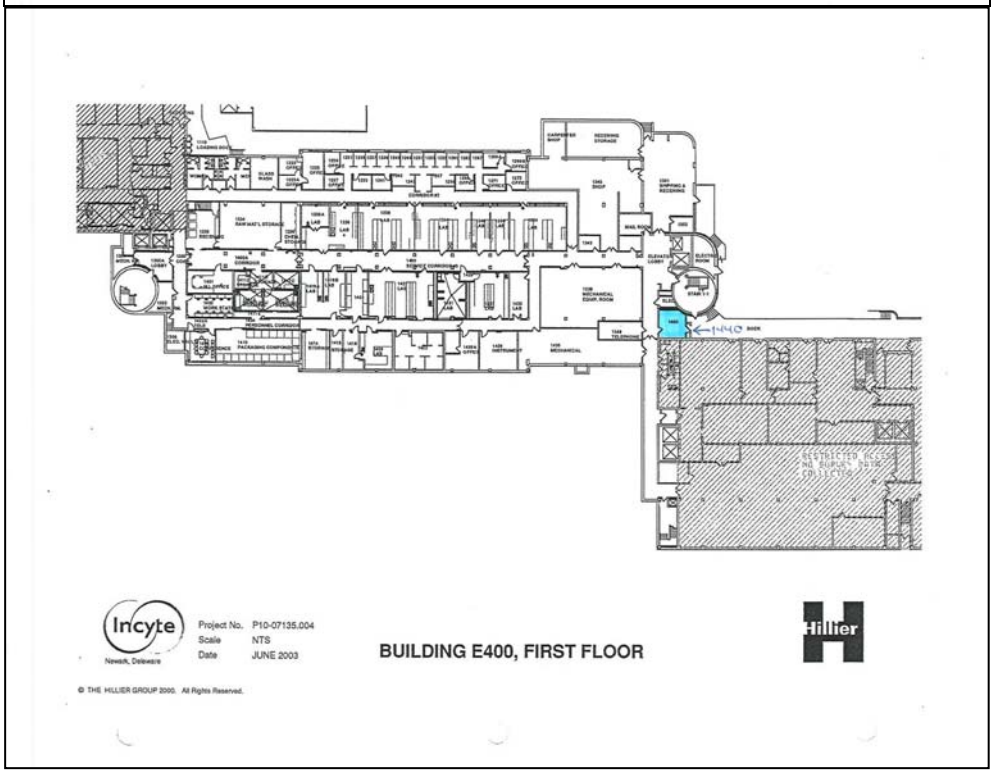
	Building	Laboratory or location	Lab area in sq. ft.	C-14	H-3	I-125	P-32	P-33	S-35
1	E336	238	476.1	x	x			x	x
2	E336	266	299.72	x	x			x	
3	E336	268	126.81	x	x				
4	E336	Dock Cabinet	25	x	x			x	
5	E336	282 Freezer Farm	25	x	x				
6	E400	3212	469	x	x				
7	E400	3214	705	x	x				
8	E400	3226	705	x	x				
9	E400	3238	705	x	x				
10	E400	3403	225	x	x				
11	E400	3407	705	x	x				
12	E400	3419	705	x	x				
13	E400	3474	~600	x	x				
14	E400	3rd Floor Corridor freezer	25	x	x				
15	E400	1440		x	x			x	

Floor plans of each building showing the locations of the laboratory rooms/areas are shown below:


282 freezer
238
266
268
Incyte
Newark, Delaware
Project No. P10-07135.004
Scale NTS
Date JUNE 2003
BUILDING E336, SECOND FLOOR
Hillier
© THE HILLIER GROUP 2000. All Rights Reserved.


E336 Dock area
Incyte
Newark, Delaware
Project No. P10-07135.004
Scale NTS
Date JUNE 2003
BUILDING E336, BASEMENT
Hillier
© THE HILLIER GROUP 2000. All Rights Reserved.


3212
324
3238
3226
3419
3403
3407
rm# 3474 was used for Final Survey was 3474
3473
Incyte
Newark, Delaware
Project No. P10-07135.004
Scale NTS
Date JUNE 2003
BUILDING E400, THIRD FLOOR
Hillier
© THE HILLIER GROUP 2003. All Rights Reserved.


1440
Incyte
Newark, Delaware
Project No. P10-07135.004
Scale NTS
Date JUNE 2003
BUILDING E400, FIRST FLOOR
Hillier
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2.8 Survey Number of Samples

Using MARSSIM's guidance for determination of the number of samples needed for a survey unit when the DCGL is large (as is the case for this survey), the relative shift is also large (>2.5), and using equal values of 0.05 for Type I and Type II errors, results in a number of data points needed of 12.

A minimum of 12 samples were collected (per survey unit) using an informal rectangular grid, with a random start point, and additional sample locations selected by the survey team. A scan (floor monitor or hand-held survey meter), direct (static) measurement, and wipe test was performed at each survey location except where noted. Additional sample locations were chosen by the discretion of the surveyor in each survey area including floors, bench tops, cabinets, doors, and sinks to provide additional survey data.

2.9 Survey Methods

The survey methods for each potential radionuclide

Radionuclide	Static/Direct	Scan	Wipe Test for Removable Contamination
H-3	Not practical with survey meters	Not practical with survey meters	Yes liquid scintillation Analysis
C-14/S-35	Yes – thin window proportional detector	Yes – thin window proportional detector	Yes liquid scintillation Analysis
P-33	Yes – thin window proportional detector	Yes – thin window proportional detector	Yes liquid scintillation Analysis

Beta Scan Survey

Surface scanning speeds were 2 detector widths per second. To optimize detection of elevated radiation levels (1.5 to 3 times background) during scanning, audible speakers were used in addition to noting the fluctuations in the analog meter reading. Floor scans were performed using a Ludlum Floor Monitor Model 2221 survey meter coupled to a Ludlum 43-37 gas flow proportional detector (thin window coated mylar of 0.8 mg/cm^2 with an area of 584 cm^2). Scans of other surfaces were performed using a Ludlum Model 2221 with a Ludlum 43-68 probe (gas proportional detector, thin window of 0.8 mg/cm^2 with an area of 126 cm^2). Scan survey were conducted on 5 to 10% of the walls and 50 to 90% of the bench tops and floor areas.

Static (Direct) Measurements of Surfaces

Static radiation measurements for beta/gamma surface contamination were performed at random (informal square grid with a random start) and biased (sinks, floor drains) locations using a Ludlum Model 2221 with a Ludlum 43-68 detector (gas flow proportional, thin window of 0.8 mg/cm^2 with an area of 126 cm^2). Measurements were conducted by integrating a 1-minute count time with the probe in direct contact with the surface.

Removable Contamination

A wipe test for removable contamination was performed at each survey location. The wipe test consisted of wiping a minimum of 100 cm^2 of the surface with a dry paper, using moderate pressure and measuring the amount of radioactive material on the test material using liquid scintillation counting (RSO, Inc. Packard TriCarb 3100).

Quality Assurance

Survey meters used to perform the Final Survey had been calibrated within 12 months of their use using radioactive standards traceable to NIST. Also, performance checks were completed on each survey meter at the beginning of the survey.

The laboratory instruments used by RSO, Inc. to analyze the wipe tests were maintained under RSO's laboratory quality assurance program which includes a service agreement with the manufacturer, daily quality control performance charts and background and standard samples counted with every sample batch.

Personnel Qualifications

All personnel had levels of training and experience commensurate with their assigned tasks. For those individuals involved in taking radiological measurements and samples, special instruction was provided when necessary on equipment, special techniques, and practices relating to survey activities.

Laboratory Services

Wipes or swabs were screened for gross gamma activity and further were analyzed for gross beta/gamma activity. All wipes for the final survey were analyzed by RSO, Inc. personnel.

2.10 Data Quality Objectives (MARSSIM)

The survey planning used the *Data Quality Objectives (DQO) Process* to ensure that the survey results are of sufficient quality and quantity to support the final decision. The use of the DQO Process assures that the type, quantity, and quality of environmental data used in decision making will be appropriate for the intended application. The DQO Process consists of seven steps, as shown below. The output from each step influences the choices that will be made later in the Process.

1. State the problem: Radioactive materials (H-3, C-14, S-35 and P-33) primarily in the form of liquids was used in this facility. The use of these materials was strictly limited to work benches and chemical fume hoods in the impacted rooms. It is unlikely that the use of radioactive materials caused residual contamination at levels exceeding the activity DCGL (Derived Concentration Guideline) for H-3, C-14, S-35 and/or P-33. The amounts of radioactivity used at any 1 time was relatively small (millicurie or sub-millicurie amounts) and there were no spills or incidents resulting in widespread contamination..
2. Identify the decision: Determine if residual radioactivity on structure surfaces of the laboratories and other areas where H-3, C-14, S-35 and P-33 were used with site-specific surface activity DCGLs derived as unrestricted release criteria to comply with dose limits prescribed in 10 *CFR* 20, Subpart E.
3. Identify inputs to the decision: Radiological survey data was collected for impacted structure surfaces.
4. Define the study boundaries: Historical analysis had identified in Table 4 as the impacted use areas.
5. Develop a decision rule: Given that sufficient data has been collected, if the mean concentration in the facility is less than the DCGL, then the facility is determined to be in compliance with the release criterion. Compliance with applicable DCGLs is demonstrated using the Sign and/or Wilcoxon Rank Sum (WRS) Tests to disprove the null hypothesis that the survey unit being evaluated exhibits contamination at concentrations exceeding the applicable DCGL.

6. Specify limits on decision errors: MARSSIM's guidance for determination of the number of samples needed for a survey unit when the DCGL is large, the relative shift is large (>2.5), using equal values of 0.05 for Type I and Type II errors, results in a number of data points needed of 12.
7. Optimize the design for collecting data: H-3, C-14, S-35 are low energy beta emitters and P-33 is a "medium" energy beta emitter. Survey equipment and sampling techniques were chosen that were appropriate and sensitive for the detection of the potential contaminates.

3.0 SURVEY INSTRUMENTATION

3.1 Description of Field and Laboratory Instrumentation and Sensitivity (also see Survey Data Sheets)

Field Instrument Used –

Ludlum Floor Monitor: consists of a cart mounted
Ludlum Model 2221 with a Ludlum 43-37 probe (gas proportional detector, thin window of 0.8 mg/cm^2 with an area of 583 cm^2)

Ludlum Model 2221 with a Ludlum 43-68 probe (gas proportional detector, thin window of 0.8 mg/cm^2 with an area of 126 cm^2).

Laboratory Instrument Used –

Packard Tricarb Liquid Scintillation Counter for analysis of wipe tests.

3.2 Description of Instrumentation

Table 5. Survey meters used to conduct radiological surveys.

Survey Meter	Detector Model	Detector Type	Probe Area/Size	Use
Floor Monitor Ludlum Model 2221 Scaler/Rate meter	Ludlum 43-37	Gas Flow Proportional Detector	584 cm^2	Scans of Floors
Ludlum Model 2221 Scaler/Rate meter	Ludlum 43-68	Gas Flow Proportional Detector	126 cm^2	Scans of Surfaces Direct/Static Measurements

3.3 Instrument Calibration and Efficiency Data

The calibration and efficiency data for the survey meters that were used during the Final Survey FS are summarized in Table 6.

Table 6. Survey meter/instrument calibration and efficiency data.

Meter w/ Probe	Detector Model	Radionuclide	Efficiency (4π)
Ludlum Model 2221 Scaler/Ratemeter	Ludlum 43-68	C-14/S-35/P-33	21% cpm per dpm
Ludlum Model 2221 Scaler/Ratemeter	Ludlum 43-37	C-14/S-35/P-33	18% cpm per dpm

Packard Liquid Scintillation Counter	LS	3H 14C 32P	~50% cpm per dpm ~85% cpm per dpm ~95% cpm per dpm

4.3 Minimum Detectable Concentration for Scanning Technique

Beta Scans:

The minimum detectable concentration for the beta scans was calculated using the suggested method in NUREG-1507 and in Abelquist 2001 (See Equation 9.11).

Equation 1

$$\text{Scan MDC} = \frac{MDCR(Gross) - Background\,(cpm)}{\sqrt{p} * E_i * E_s * A}$$

Where:

Scan MDC = estimated minimum activity (dpm/100 cm^2) that can be detected during a scan,

MDCR = Minimum detectable count rate, as defined in MARSSIM and on the attached example calculation.

p = surveyor efficiency considered to be 0.5

E_i = 2π efficiency (c/d) (4π * 2)

E_s = source efficiency (low energy β)

i = 0.5 for the scanning interval

A = (Probe Area cm^2) / 100 cm^2

Note: E_i estimated assuming the 2π efficiency was approximately 2 times the 4π efficiency

Note: E_s assumed to be 0.25

Table 7. Example of calculation of the MDC for Scanning (scan MDC).

Survey Meter	Detector or Probe	Probe Area/ Size	Contaminate	2π Eff. (cpm per dpm)	Background (counts/ 10min)	MDCR Gross (cpm)	Estimated scan MDC (dpm/100 cm^2)
Ludlum 2221 Ratemeter Scaler/Ratemeter	Ludlum 43-68	126 cm^2	C-14/S-35/P-33	0.21*	2066	514	3285
Ludlum 2221 Ratemeter Scaler/Ratemeter	Ludlum 43-37	584 cm^2	C-14/S-35/P-33	0.18*	8729	1505	1700

*The C-14 instrument efficiency was used for the MDA and activity calculations as S-35 is considered to be the same as that of C-14 given the beta energies are nearly equal and the instrument efficiency for P-33 is greater, given the higher beta energy and as demonstrated by the efficiency for Tc-99 (beta energy of 294 keV) shown on the instrument calibration certificates.

4.4 Static Measurement Data Reduction

Determinations of the total surface activity were based on static measurements with the detector in direct contact with the surface. For each analysis gross counts were converted into area activity concentration using the following method of data reduction:

Equation 2

$$A = \frac{\left(\frac{C}{T}\right) - R_B}{E * \left(\frac{a}{100 \text{ cm}^2}\right)}$$

Where:

A = total activity (dpm/100 cm^2),
C = integrated gross counts (counts),
T = count time (min),
R_B = background count rate (cpm),
E = total efficiency (c/d) * source efficiency
a = detector area (normalized to 100 cm^2).

4.5 Minimum Detectable Concentration for Static Measurements

Using the equation shown below the minimum detectable activity for the static measurements was calculated using the following equation for instances in which the background and sample are counted for the same time intervals:

Equation 3

$$\text{Static MDC} = \frac{3 + 4.65\sqrt{R_B}}{K * \left(\frac{\text{detector area}}{100cm^2}\right) * T_{S+B}}$$

Using the equation shown below the minimum detectable activity for the static measurements was calculated using the following equation for instances in which the background and sample are counted for different time intervals:

Equation 4

$$\text{Static MDC} = \frac{3 + 3.29\sqrt{R_B * T_{S+B}(1 + {T_{S+B}}/{T_B})}}{K * \left(\frac{\text{detector area}}{100cm^2}\right) * T_{S+B}}$$

Where:

Static MDC = activity (dpm/100 cm^2),
C = integrated gross counts (counts),

T_{S+B} = sample count time
T_B = background count time
R_B = background count rate (cpm)
K = proportionality constants e.g.: total efficiency

Table 8. Example of calculation of the MDC for Static Measurements.

Survey Meter	Detector Model	Probe Area/Size	4π Eff. (cpm per dpm)	Background Count Rate (cpm)	Background and Sample Count Time	Static MDC (dpm/100 cm^2)
Ludlum 2221 Scaler/ Ratemeter	Ludlum 43-68	126 cm^2	0.21	207	1 minute (bkg) 1 minute (sample	528
Ludlum 2221 Scaler/ Ratemeter	Ludlum 43-37	584 cm^2	0.18	873	1 minute (bkg) 1 minute (sample)	267

Note: Calculation uses equal count times of 1 minute for background and sample.

3.3 Laboratory Instrumentation Sensitivity

Laboratory Instrument Used – Packard Tricarb 3100 liquid scintillation counter.

The minimum detectable activity for H-3 on a wipe test was estimated to be less than 40 dpm for a 1-minute count time, 1-minute background count time, efficiency of 0.4 cpm/dpm and a background count-rate of 6 cpm.

The minimum detectable activity for C-14 on a wipe test was estimated to be less than 30 dpm for a 1-minute count time, 1-minute background count time, efficiency of 0.8 cpm/dpm and a background count-rate of <15 cpm.

The minimum detectable activity for P-33 on a wipe test was estimated to be less than 30 dpm for a 1-minute count time, 1-minute background count time, efficiency of 0.8 cpm/dpm and a background count-rate of 10 cpm.

4.0 SURVEY RESULTS

The radiological final survey showed residual contamination was less the DCGLs for the survey. Also all measurement results were less than the detection limits for the survey method except for several small areas of contamination. The licensee performed decontamination of these areas and they were resurveyed to complete the Final Survey.

4.1 Survey Results

Attachment A contains the survey results by survey unit. Results include: survey unit drawing annotated with survey locations for wipe tests and direct measurements, and instrument scan results (raw data shown).

Attachment B contains the LSC analysis data print-outs reports.

Attachment C contains the survey meter calibration reports.

4.2 Beta Scans and Direct Measurements-Summary

Final Survey: Small areas (<0.5 m^2) of contamination were found during the beta scans. The levels of contamination found were small fractions of the $DCGL_W$ for C-14. Incyte personnel performed decontamination of these areas.

Decontamination included scrubbing with a professional grade cleaner and as needed stripping down the surface material. As observed in Table 9., the techniques applied for removing the contamination significantly reduced the concentration levels in many of the locations. In Table 9., the first column shows the initial sample number before decontamination, followed by the resulting measurements. The 5th column shows the corresponding sample number assigned after decontamination had been performed. Sample numbers 263/478, 257/476, 258/477, 393/479,394/480 were re-surveyed and wipe tested. It was determined that the five floor tiles had embedded contamination and were removed. Table 10. lists the pre and post concentration levels for these locations.

Table 9. Decontamination Attempts

Sample#	Area Description	DPM/100 cm^2 (C-14)	Sample #	Post Decon DPM/100 cm^2 (C-14)
257	Lab 3214, Floor, Tile over concrete	5488	476	1244
258	Lab 3214, Floor, Tile over concrete	2223	477	979
263	Lab 3214, Floor, Tile over Concrete	4150	478	3601
393	Corridor, Floor, Tile over Concrete	26107	479	3226
394	Corridor, Floor, Tile over Concrete	7808	480	871
181	Lab 3419, Shelf,Laminate	3933	481	1984
211	Lab 3419,Benchtop,Laminate	3964	482	1349
210	Lab 3419,Fume Hood,Metal	2339	483	639
134	Lab 3407,Floor,Tile over Concrete	15241	484	165

Table 10. Post Tile Removal

Sample #	Area Description	DPM/100 cm^2 (C-14)	Sample #	Post Tile Removal DPM/100 cm^2 (C-14)
1	Lab 3214, Floor,Tile over Concrete	21996	31	560
6	Lab 3214,Floor,Tile over Concrete	2986	36	492
11	Lab 3214, Floor,Tile over Concrete	3584	41	764
16	Corridor, Floor,Tile over Concrete	5223	46	734
21	Corridor, Floor,Tile over Concrete	3515	51	379

4.4 Removable Contamination-Summary

Over 500 wipe tests were collected and were analyzed using liquid scintillation counting. None of the wipe test samples showed any removable activity above 200 dpm.

5.0 CONCLUSIONS

The Radiological Final Survey of the affected areas demonstrates that the surfaces were less than the $DCGL_W$ (25 mrem) for surface contamination and no contamination was detected that was greater than the facility operational limits for contamination.

The subject rooms/areas appear to meet the requirements for unrestricted use.

6.0 REFERENCES

6.1 USNRC, Regulatory Guide 1.86., Termination of Operating Licenses for Nuclear Reactors, June 1974.

6.2 USNRC, “Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unaffected Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material”, May 1987.

6.3 NUREG 1757, USNRC, “Decommissioning Process for Materials Licensees”, Final September 2003.

6.4 NUREG-1575, EPA 402-R-97-016, and Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM): Final, August 2000.

6.5 10CFR Part 20 § 20.1402 Radiological criteria for unrestricted use.

6.6 Abelquist, Decommissioning Health Physics, A Handbook for MARSSIM Users, IOP Publishing Ltd 2001, Philadelphia PA.

7.0 ATTACHMENTS

Attachment A	Radiological Survey Results
Attachment B	Wipe Test LSC Analysis Report Print-Out
Attachment C	Survey Meter Calibration Reports

RADIOLOGICAL SURVEY RESULTS

Survey Meter Information

Site: Incyte Building: Building 336 Lab/Room: 238 ,266

	Meter 1		Meter 2	Meter 3		Meter 4	Meter 5	
Date:	11/10/2014		Not In Service	11/10/2014		Not In Service	Not In Service	
Make:	Ludlum			Ludlum				
Model:	2221			2221				
SN:	161591			89650				
Probe Make:	Ludlum			Ludlum				
Probe Model:	43-68			43-37				
Probe SN:	118227			148928				
Probe Area (cm^2):	126			584				
Next Cal. Date:	11/7/2015			6/14/2015				
Background Surface Material	Laminate			Tile over Concrete				
Background(c) - Time(Min)):	2066	10		8729	10			µRem/hr
CS Isotope - Activity(µCi):	C-14	0.159		C-14	0.159			
CS Source(cpm)	8443			8770				
L_c, L_d (Counts)	33	70		69	140		NA	NA
Direct MDC, Scan MDC ($dpm/100cm^2$)	528	3285		267	1700		NA	NA
MDCR(gross) , MDC (gross) Count Rate	514	262		1505	897		NA	NA
Total Efficiency, Isotope:	10.5%	C-14		9.0%	C-14			
Source Efficiency	0.25			0.25			NA	

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

Direct MDC= $\frac{3+4.65*SQRT(B)}{T*\varepsilon_t*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*\varepsilon_t*\varepsilon_s*A*C}$

MDCR= $s_i * (60/i)$

B = Background Counts
T = Counting Time In Minutes
ε_t = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Example of Survey Meter Calculations of MDCR, Scan MDC, and Direct MDC

	Meter 1	
Date:	11/10/2014	
Make:	Ludlum	
Model:	2221	
SN:	161591	
Probe Make:	Ludlum	
Probe Model:	43-68	
Probe SN:	118227	
Probe Area (cm^2):	126	
Next Cal. Date:	11/7/2015	
Background Surface Material	Laminate	
Background(c) - Time(Min)):	2066	10
CS Isotope - Activity(mCi):	C-14	0.159
CS Source(cpm)	8443	
L_c, L_d (Counts)	33	70
Direct MDC, Scan MDC ($dpm/100cm^2$)	528	3285
MDCR (gross) , MDC (gross) Count Rate	514	262
Total Efficiency, Isotope:	10.5%	C-14
Source Efficiency	0.25	

Scanning Sensitivity			
MARSSIM	**Value**	**Description**	
MDCR Calculation			
d'	1.38	detectability value associated with the desired performance	
i	0.5	interval	
b_i	3.443	bi=background counts in interval=B*(1/60)	
s_i	2.56	si=d'*SQRT(bi)	
MDCR (net)	307	MDCR(net)=Si*(60/i)	
MDCR (gross)	514	MDCR(gross)=Si*(60/i)+B	
Scan MDC Calculation			
p	0.5	Surveyor Efficiency (Ehf or Efficiency human factor)	
Source Efficiency	0.25		
Meter efficiency from Cal	0.18		
e_i	0.105	Meter Efficiency from Cal * 2(2Pi factor) * Source Efficiency	
e_s	1	Surface Efficiency (decreases for porous surfaces)	
Scan MDC	3285	Scan MDC=	$\frac{MDCR(net)}{SQRT(E_{hf})*e_i*e_s*A*C}$
Direct MDC Calculation			
B	207	B = Background Counts	
T	1	T = Counting Time In Minutes	
Direct MDC	528	Direct MDC=	$\frac{3+4.65*SQRT(B)}{T*e_t*A*C}$

Site: Incyte

Building: 336 Lab 238

Start Date: 11/10/14

Finish Date: 11/10/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
1	Floor Tile Over Concrete	<200	<200	<200	*1*	274	509	*3*	1250	1030	299
2	Floor Tile Over Concrete	<200	<200	<200	*1*	213	48	*3*	1250	1030	299
3	Floor Tile Over Concrete	<200	<200	<200	*1*	222	116	*3*	1250	1030	299
4	Floor Tile Over Concrete	<200	<200	<200	*1*	259	396	*3*	1250	1030	299
5	Floor Tile Over Concrete	<200	<200	<200	*1*	256	373	*3*	1250	1030	299
6	Floor Tile Over Concrete	<200	<200	<200	*1*	223	124	*3*	1250	1030	299
7	Floor Tile Over Concrete	<200	<200	<200	*1*	202	-35	*3*	1250	1030	299
8	Floor Tile Over Concrete	<200	<200	<200	*1*	243	275	*3*	1250	1030	299
9	Floor Tile Over Concrete	<200	<200	<200	*1*	269	472	*3*	1250	1030	299
10	Floor Tile Over Concrete	<200	<200	<200	*1*	225	139	*3*	1250	1030	299
11	Door Metal	<200	<200	<200	*1*	166	-307	*1*	204	160	-352
12	Bench Top Laminate	<200	<200	<200	*1*	213	48	*1*	209	180	-201
13	Bench Top Laminate	<200	<200	<200	*1*	203	-27	*1*	209	180	-201
14	Bench Top Laminate	<200	<200	<200	*1*	177	-224	*1*	227	180	-201
15	Shelf Laminate	<200	<200	<200	*1*	200	-50	*1*	227	180	-201
16	Bench Top Laminate	<200	<200	<200	*1*	195	-88	*1*	227	180	-201
17	Bench Top Laminate	<200	<200	<200	*1*	194	-95	*1*	227	180	-201
18	Bench Top Laminate	<200	<200	<200	*1*	194	-95	*1*	227	180	-201
19	Bench Top Laminate	<200	<200	<200	*1*	178	-216	*1*	227	180	-201
20	Bench Top Laminate	<200	<200	<200	*1*	223	124	*1*	227	180	-201
21	Shelf Laminate	<200	<200	<200	*1*	196	-80	*1*	227	180	-201
22	Cabinet Below Hood Metal	<200	<200	<200	*1*	231	184	*1*	227	180	-201
23	Sink Drain Metal	<200	<200	<200	*1*	215	63	*1*	227	180	-201
24	Sink Basin Metal	<200	<200	<200	*1*	188	-141	*1*	227	180	-201
25	Cabinet Under Sink Metal	<200	<200	<200	*1*	174	-246	*1*	227	180	-201
26	Cup Sink Laminate	<200	<200	<200	*1*	186	-156	*1*	227	180	-201
27	Hood Base Right Metal	<200	<200	<200	*1*	211	33	*1*	227	180	-201
28	Hood Base Left Metal	<200	<200	<200	*1*	205	-12	*1*	227	180	-201
29	Hood Left Wall Metal	<200	<200	<200	*1*	165	-314	*1*	227	180	-201

Site: Incyte

Building: 336 Lab 238

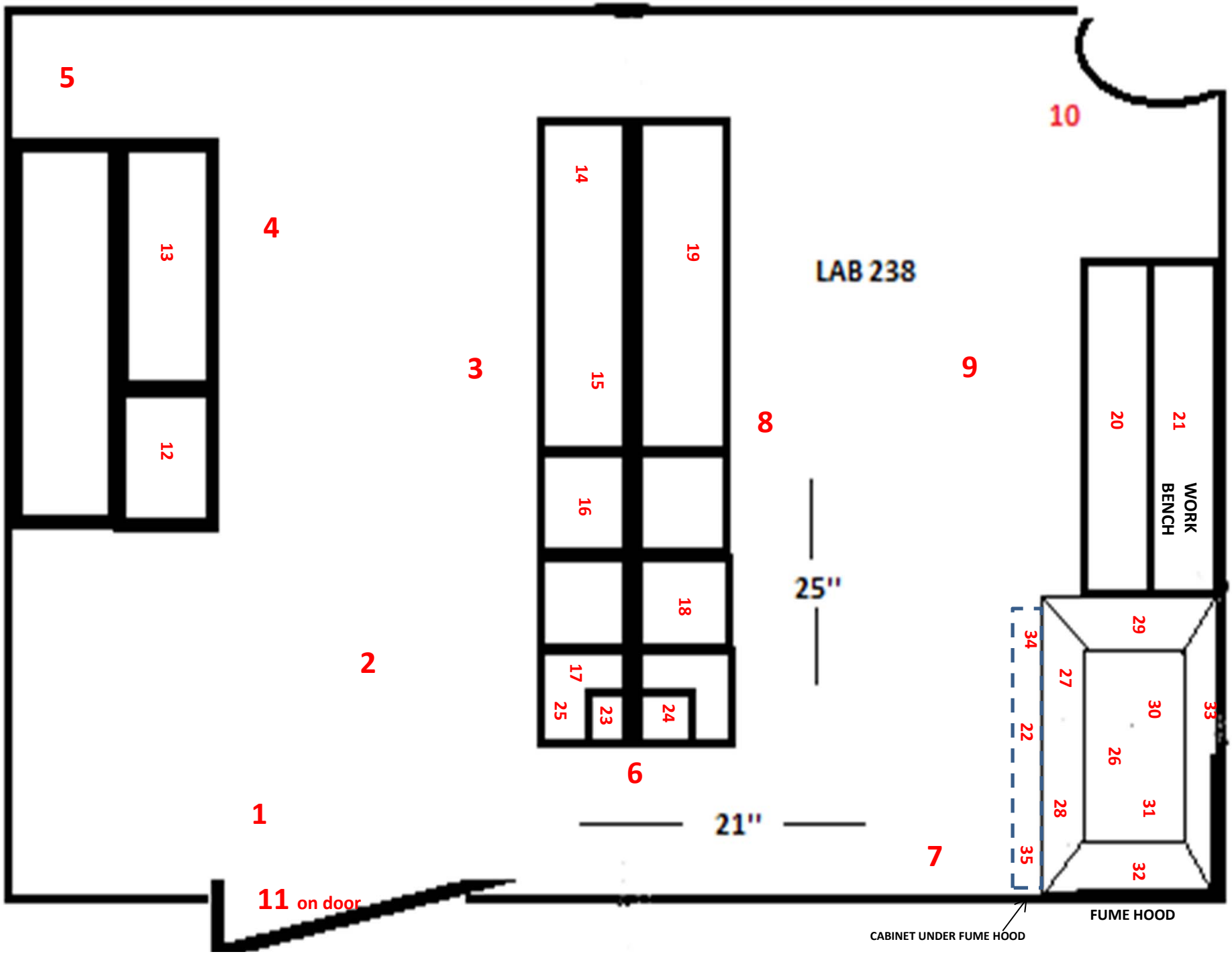
Start Date: 11/10/14

Finish Date: 11/10/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
30	Hood Back Wall Metal	<200	<200	<200	*1*	165	-314	*1*	227	180	-201
31	Hood Back Wall Metal	<200	<200	<200	*1*	164	-322	*1*	227	180	-201
32	Hood Right Wall Laminate	<200	<200	<200	*1*	169	-284	*1*	227	180	-201
33	Hood Cover Metal	<200	<200	<200	*1*	156	-382	*1*	227	180	-201
34	Hood Front Lip Metal	<200	<200	<200	*1*	172	-262	*1*	227	180	-201
35	Hood Front Lip Metal	<200	<200	<200	*1*	183	-178	*1*	227	180	-201


5
10
4
13
14
19
LAB 238
3
15
9
8
20
21
WORK BENCH
12
16
25"
18
29
34
2
17
27
30
33
25
23
24
22
26
6
28
31
1
21"
7
35
32
11 on door
FUME HOOD
CABINET UNDER FUME HOOD

Site: Incyte

Building: 336 Lab 266

Start Date: 11/10/14

Finish Date: 11/10/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
36	Floor Tile Over Concrete	<200	<200	<200	*1*	217	79	*3*	1000	1200	622
37	Floor Tile Over Concrete	<200	<200	<200	*1*	247	305	*3*	1000	1200	622
38	Floor Tile Over Concrete	<200	<200	<200	*1*	225	139	*3*	1000	1200	622
39	Floor Tile Over Concrete	<200	<200	<200	*1*	229	169	*3*	1000	1200	622
40	Floor Tile Over Concrete	<200	<200	<200	*1*	211	33	*3*	1000	1200	622
41	Floor Tile Over Concrete	<200	<200	<200	*1*	228	162	*3*	1000	1200	622
42	Floor Tile Over Concrete	<200	<200	<200	*1*	227	154	*3*	1000	1200	622
43	Floor Tile Over Concrete	<200	<200	<200	*1*	206	-5	*3*	1000	1200	622
44	Floor Tile Over Concrete	<200	<200	<200	*1*	248	313	*3*	1000	1200	622
45	Floor Tile Over Concrete	<200	<200	<200	*1*	206	-5	*3*	1000	1200	622
46	Door Metal	<200	<200	<200	*1*	180	-201	*1*	160	209	18
47	Bench Top Laminate	<200	<200	<200	*1*	191	-118	*1*	160	209	18
48	Shelf Laminate	<200	<200	<200	*1*	215	63	*1*	160	209	18
49	Shelf Laminate	<200	<200	<200	*1*	160	-352	*1*	160	209	18
50	Bench Top Laminate	<200	<200	<200	*1*	195	-88	*1*	160	209	18
51	Door Metal	<200	<200	<200	*1*	180	-201	*1*	160	209	18
52	Bench Top Laminate	<200	<200	<200	*1*	181	-193	*1*	160	209	18
53	Shelf Laminate	<200	<200	<200	*1*	192	-110	*1*	160	209	18
54	Bench Top Laminate	<200	<200	<200	*1*	211	33	*1*	160	209	18
55	Bench Top Laminate	<200	<200	<200	*1*	204	-20	*1*	160	209	18
56	Drawer Metal	<200	<200	<200	*1*	209	18	*1*	160	209	18
57	Cabinet Under Hood Metal	<200	<200	<200	*1*	215	63	*1*	160	209	18
58	Sink Laminate	<200	<200	<200	*1*	189	-133	*1*	160	209	18
59	Sink Laminate	<200	<200	<200	*1*	188	-141	*1*	160	209	18
60	Sink Drain Metal	<200	<200	<200	*1*	180	-201	*1*	160	209	18
61	Fume Hood Laminate	<200	<200	<200	*1*	221	109	*1*	160	238	237
62	Fume Hood Laminate	<200	<200	<200	*1*	190	-125	*1*	160	238	237
63	Fume Hood Laminate	<200	<200	<200	*1*	234	207	*1*	160	238	237
64	Fume Hood Laminate	<200	<200	<200	*1*	178	-216	*1*	160	238	237

Site: Incyte

Building: 336 Lab 266

Start Date: 11/10/14

Finish Date: 11/10/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
65	Fume Hood Right Wall Laminate	<200	<200	<200	*1*	206	-5	*1*	160	238	237
66	Fume Hood Left Wall Laminate	<200	<200	<200	*1*	203	-27	*1*	160	238	237
67	Fume Hood Back Wall Laminate	<200	<200	<200	*1*	170	-277	*1*	160	238	237
68	Fume Hood Cover Laminate	<200	<200	<200	*1*	210	26	*1*	160	238	237
69	Fume Hood Lip Laminate	<200	<200	<200	*1*	198	-65	*1*	160	238	237
70	Fume Hood Lip Laminate	<200	<200	<200	*1*	246	298	*1*	160	238	237


68
FUME HOOD
64
65
66
WORK BENCH
54
62
63
61
CABINET UNDER HOOD
69
70
57
44
51 on door
43
42
52
53
55
56 drawer
41
40
60
59
SINK
58
50
49
39
48
LAB 266
46 on door
36
19''
38
37
47
18''

Survey Meter Information

Site: Incyte Building: 336,400 Lab/Room: 268,282,Dock,3407

	Meter 1		Meter 2	Meter 3		Meter 4	Meter 5	
Date:	11/11/2014		Not In Service	11/11/2014		Not In Service	Not In Service	
Make:	Ludlum			Ludlum				
Model:	2221			2221				
SN:	161591			89650				
Probe Make:	Ludlum			Ludlum				
Probe Model:	43-68			43-37				
Probe SN:	118227			89350				
Probe Area (cm^2):	126			584				
Next Cal. Date:	11/7/2015			6/14/2015				
Background Surface Material	Laminate			Tile over Concrete				
Background(c) - Time(Min)):	1906	10		8349	10			µRem/hr
CS Isotope - Activity(µCi):	C-14	0.159		C-14	0.159			
CS Source(cpm)	7949			6194				
L_c, L_d (Counts)	32	67		67	137		NA	NA
Direct MDC, Scan MDC ($dpm/100cm^2$)	508	3155		261	1662		NA	NA
MDCR , MDC Count Rate	486	244		1453	858		NA	NA
Total Efficiency, Isotope:	10.5%	C-14		9.0%	C-14			
Source Efficiency	0.25			0.25			NA	

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

Direct MDC= $\frac{3+4.65*SQRT(B)}{T*\varepsilon_t*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*\varepsilon_t*\varepsilon_s*A*C}$

MDCR= $s_i * (60/i)$

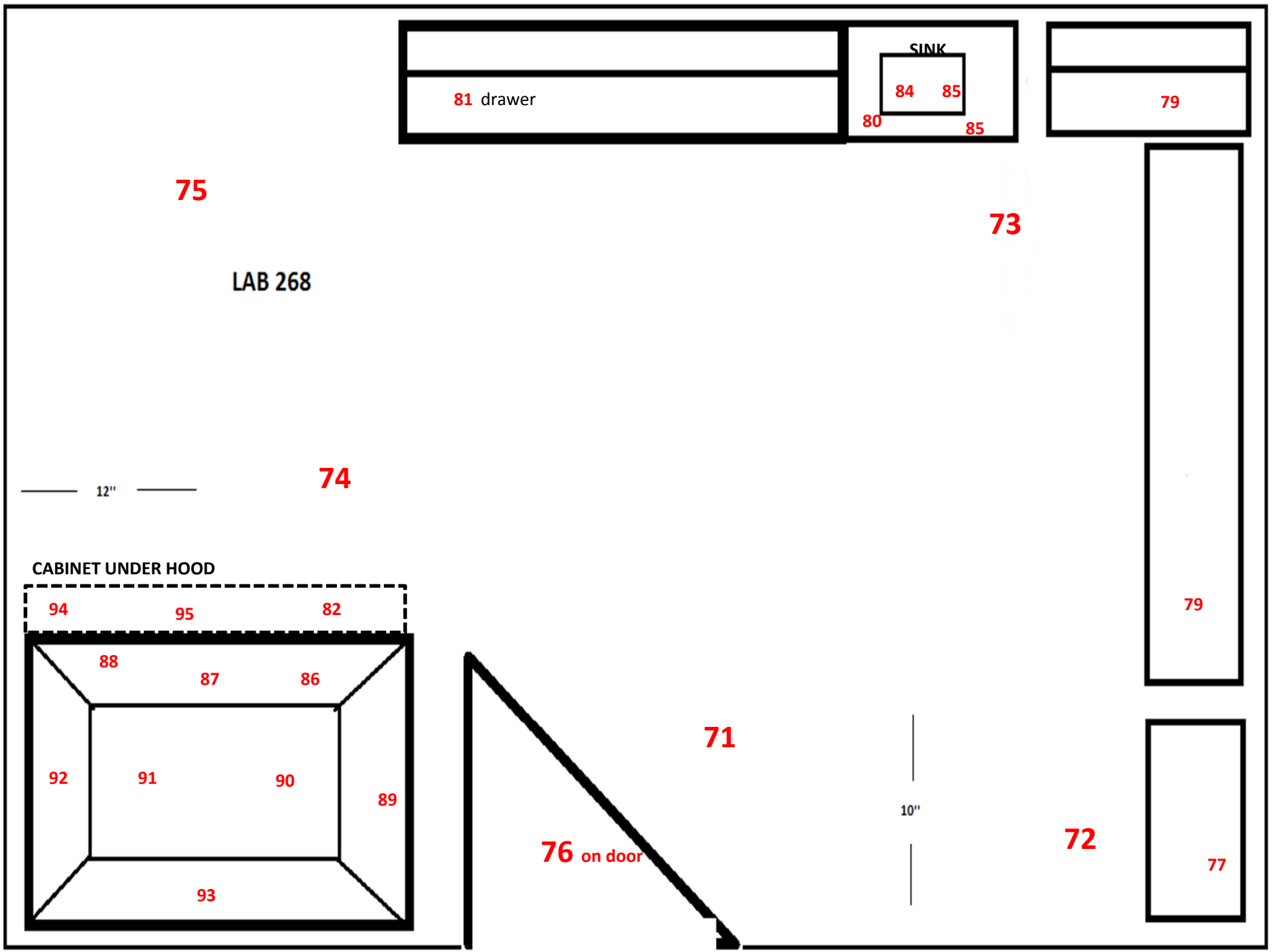
B = Background Counts
T = Counting Time In Minutes
ε_t = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Site: Incyte | Building: 336 | Lab/Room: 268

Start Date: 11/11/14 | Finish Date: 11/11/14

Surveyor: Korreesa Williams | Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
71	Floor Tile Over Concrete	<200	<200	<200	*1*	216	192	*3*	1125	925	171
72	Floor Tile Over Concrete	<200	<200	<200	*1*	223	245	*3*	1125	925	171
73	Floor Tile Over Concrete	<200	<200	<200	*1*	220	222	*3*	1125	925	171
74	Floor Tile Over Concrete	<200	<200	<200	*1*	208	132	*3*	1125	925	171
75	Floor Tile Over Concrete	<200	<200	<200	*1*	209	139	*3*	1125	925	171
76	Door Metal	<200	<200	<200	*1*	185	-42	*1*	227	190	-5
77	Shelf Laminate	<200	<200	<200	*1*	180	-80	*1*	227	190	-5
78	Shelf Laminate	<200	<200	<200	*1*	180	-80	*1*	227	190	-5
79	Shelf Laminate	<200	<200	<200	*1*	192	11	*1*	227	190	-5
80	Bench Top Laminate	<200	<200	<200	*1*	184	-50	*1*	227	190	-5
81	Drawer Metal	<200	<200	<200	*1*	164	-201	*1*	227	190	-5
82	Bsc Cabinet Metal	<200	<200	<200	*1*	165	-193	*1*	227	190	-5
83	Sink Drain Metal	<200	<200	<200	*1*	201	79	*1*	227	190	-5
84	Sink Basin Metal	<200	<200	<200	*1*	164	-201	*1*	227	190	-5
85	Cabinet Below Sink Metal	<200	<200	<200	*1*	228	283	*1*	227	190	-5
86	Fume Hood Base Metal	<200	<200	<200	*1*	193	18	*1*	206	170	-156
87	Fume Hood Base Metal	<200	<200	<200	*1*	177	-103	*1*	206	170	-156
88	Fume Hood Base Metal	<200	<200	<200	*1*	170	-156	*1*	206	170	-156
89	Fume Hood Left Wall Metal	<200	<200	<200	*1*	185	-42	*1*	206	170	-156
90	Fume Hood Back Wall Metal	<200	<200	<200	*1*	185	-42	*1*	206	170	-156
91	Fume Hood Back Wall Metal	<200	<200	<200	*1*	152	-292	*1*	206	170	-156
92	Fume Hood Right Wall Metal	<200	<200	<200	*1*	165	-193	*1*	206	170	-156
93	Fume Hood Cover Laminate	<200	<200	<200	*1*	165	-193	*1*	206	170	-156
94	Fume Hood Lip Metal	<200	<200	<200	*1*	204	101	*1*	206	170	-156
95	Fume Hood Lip Metal	<200	<200	<200	*1*	220	222	*1*	206	170	-156


81 drawer
SINK
84
85
80
85
79
75
73
LAB 268
74
12"
CABINET UNDER HOOD
94
95
82
88
87
86
92
91
90
89
93
71
10"
72
76 on door
79
77

Site: Incyte

Building: 336 Lab/Room: 282

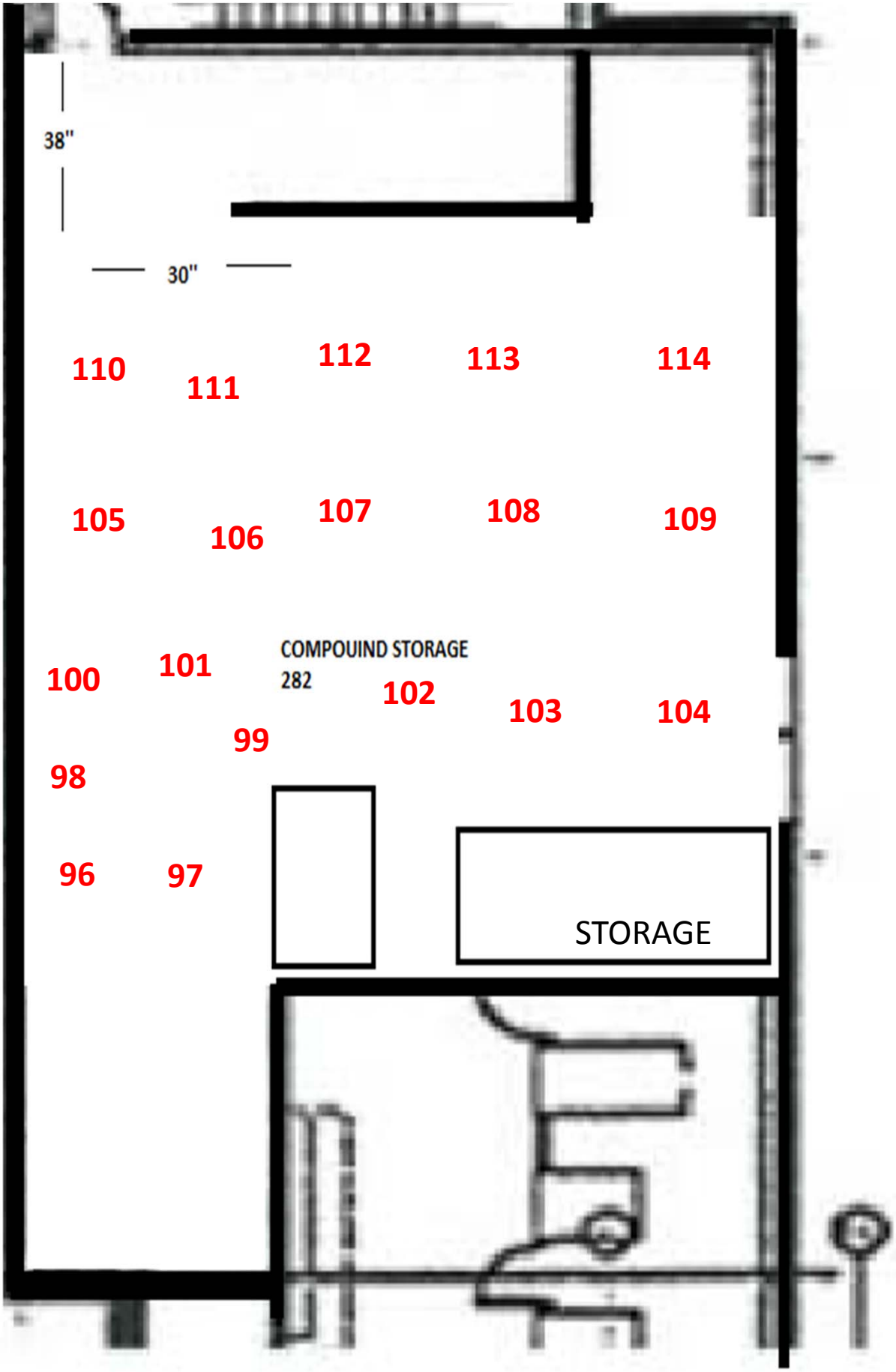
Start Date: 11/11/14

Finish Date: 11/11/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
96	Floor Tile Over Concrete	<200	<200	<200	*1*	201	79	*3*	1125	925	171
97	Floor Tile Over Concrete	<200	<200	<200	*1*	224	252	*3*	1125	925	171
98	Floor Tile Over Concrete	<200	<200	<200	*1*	234	328	*3*	1125	925	171
99	Floor Tile Over Concrete	<200	<200	<200	*1*	221	230	*3*	1125	925	171
100	Floor Tile Over Concrete	<200	<200	<200	*1*	230	298	*3*	1125	925	171
101	Floor Tile Over Concrete	<200	<200	<200	*1*	217	200	*3*	1125	925	171
102	Floor Tile Over Concrete	<200	<200	<200	*1*	209	139	*3*	1125	925	171
103	Floor Tile Over Concrete	<200	<200	<200	*1*	215	184	*3*	1125	925	171
104	Floor Tile Over Concrete	<200	<200	<200	*1*	229	290	*3*	1125	925	171
105	Floor Tile Over Concrete	<200	<200	<200	*1*	205	109	*3*	1125	925	171
106	Floor Tile Over Concrete	<200	<200	<200	*1*	204	101	*3*	1125	925	171
107	Floor Tile Over Concrete	<200	<200	<200	*1*	197	48	*3*	1125	925	171
108	Floor Tile Over Concrete	<200	<200	<200	*1*	231	305	*3*	1125	925	171
109	Floor Tile Over Concrete	<200	<200	<200	*1*	200	71	*3*	1125	925	171
110	Floor Tile Over Concrete	<200	<200	<200	*1*	207	124	*3*	1125	925	171
111	Floor Tile Over Concrete	<200	<200	<200	*1*	231	305	*3*	1125	925	171
112	Floor Tile Over Concrete	<200	<200	<200	*1*	209	139	*3*	1125	925	171
113	Floor Tile Over Concrete	<200	<200	<200	*1*	237	351	*3*	1125	925	171
114	Floor Tile Over Concrete	<200	<200	<200	*1*	206	116	*3*	1125	925	171
115	Door Metal	<200	<200	<200	*1*	188	-20	*1*	206	170	-156


38"
30"
110
111
112
113
114
105
106
107
108
109
COMPOUIND STORAGE
282
100
101
102
103
104
99
98
96
97
STORAGE

Site: Incyte

Building: 336 Lab/Room: Dock

Start Date: 11/11/14

Finish Date: 11/11/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
116	Floor Concrete	<200	<200	<200	*1*	261	532	*3*	1400	1250	790
117	Floor Concrete	<200	<200	<200	*1*	283	698	*3*	1400	1250	790
118	Floor Concrete	<200	<200	<200	*1*	296	797	*3*	1400	1250	790
119	Floor Concrete	<200	<200	<200	*1*	230	298	*3*	1400	1250	790
120	Floor Concrete	<200	<200	<200	*1*	260	525	*3*	1400	1250	790
121	Door Metal	<200	<200	<200	*1*	201	79	*1*	295	140	-382
122	Door Metal	<200	<200	<200	*1*	170	-156	*1*	295	140	-382
123	Door Metal	<200	<200	<200	*1*	182	-65	*1*	295	140	-382
124	Cabinet Metal	<200	<200	<200	*1*	275	638	*1*	296	250	449
125	Cabinet Shelf Metal	<200	<200	<200	*1*	288	736	*1*	296	250	449
126	Cabinet Shelf Metal	<200	<200	<200	*1*	290	751	*1*	296	250	449
127	Cabinet Shelf Metal	<200	<200	<200	*1*	252	464	*1*	296	250	449
128	Cabinet Shelf Metal	<200	<200	<200	*1*	261	532	*1*	296	250	449
129	Cabinet Wall Metal	<200	<200	<200	*1*	272	615	*1*	296	250	449
130	Cabinet Door Metal	<200	<200	<200	*1*	246	419	*1*	296	250	449


336
121 on door
116
123 on door
120
118
119
117
RADIOACTIVE MATERIALS
STORAGE CABINET
124
125
126
127
128
129
130
FLAMMABLE STORAGE
CABINET
122 on door

Site: Incyte

Building: 400 Lab/Room: 3407

Start Date: 11/11/14

Finish Date: 11/11/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
131	Floor Tile Over Concrete	<200	<200	<200	*1*	179	-88	*3*	850	735	-190
132	Floor Tile Over Concrete	<200	<200	<200	*1*	167	-178	*3*	850	735	-190
133	Floor Tile Over Concrete	<200	<200	<200	*1*	156	-262	*3*	850	735	-190
134	Floor Tile Over Concrete	<200	<200	<200	*1*	2207	15241	*3*	1400	1220	733
135	Floor Tile Over Concrete	<200	<200	<200	*1*	147	-330	*3*	850	775	-114
136	Floor Tile Over Concrete	<200	<200	<200	*1*	171	-148	*3*	850	775	-114
137	Floor Tile Over Concrete	<200	<200	<200	*1*	124	-503	*3*	850	775	-114
138	Floor Tile Over Concrete	<200	<200	<200	*1*	176	-110	*3*	850	775	-114
139	Floor Tile Over Concrete	<200	<200	<200	*1*	149	-314	*3*	850	775	-114
140	Floor Tile Over Concrete	<200	<200	<200	*1*	151	-299	*3*	850	775	-114
141	Door Metal	<200	<200	<200	*1*	168	-171	*1*	240	140	-382
142	Vacuum Filter Metal	<200	<200	<200	*1*	144	-352	*1*	240	140	-382
143	Bench Top Laminate	<200	<200	<200	*1*	150	-307	*1*	240	140	-382
144	Bench Top Laminate	<200	<200	<200	*1*	189	-12	*1*	240	140	-382
145	Bench Top Laminate	<200	<200	<200	*1*	148	-322	*1*	240	140	-382
146	Bench Top Laminate	<200	<200	<200	*1*	157	-254	*1*	240	140	-382
147	Bench Top Laminate	<200	<200	<200	*1*	132	-443	*1*	240	140	-382
148	Bench Top Laminate	<200	<200	<200	*1*	173	-133	*1*	240	140	-382
149	Bench Top Laminate	<200	<200	<200	*1*	139	-390	*1*	240	140	-382
150	Sink Drain Metal	<200	<200	<200	*1*	160	-231	*1*	224	150	-307
151	Sink Metal	<200	<200	<200	*1*	122	-519	*1*	224	150	-307
152	Under Sink Metal	<200	<200	<200	*1*	144	-352	*1*	224	150	-307
153	Sink Drain Metal	<200	<200	<200	*1*	159	-239	*1*	224	150	-307
154	Sink Basin Metal	<200	<200	<200	*1*	149	-314	*1*	224	150	-307
155	Under Sink Metal	<200	<200	<200	*1*	171	-148	*1*	224	150	-307
156	Sink Drain Metal	<200	<200	<200	*1*	139	-390	*1*	224	150	-307
157	Sink Basin Metal	<200	<200	<200	*1*	173	-133	*1*	224	150	-307
158	Under Sink Metal	<200	<200	<200	*1*	151	-299	*1*	224	150	-307
159	Under Fume Hood Metal	<200	<200	<200	*1*	156	-262	*1*	224	150	-307

Site: Incyte

Building: 400 Lab/Room: 3407

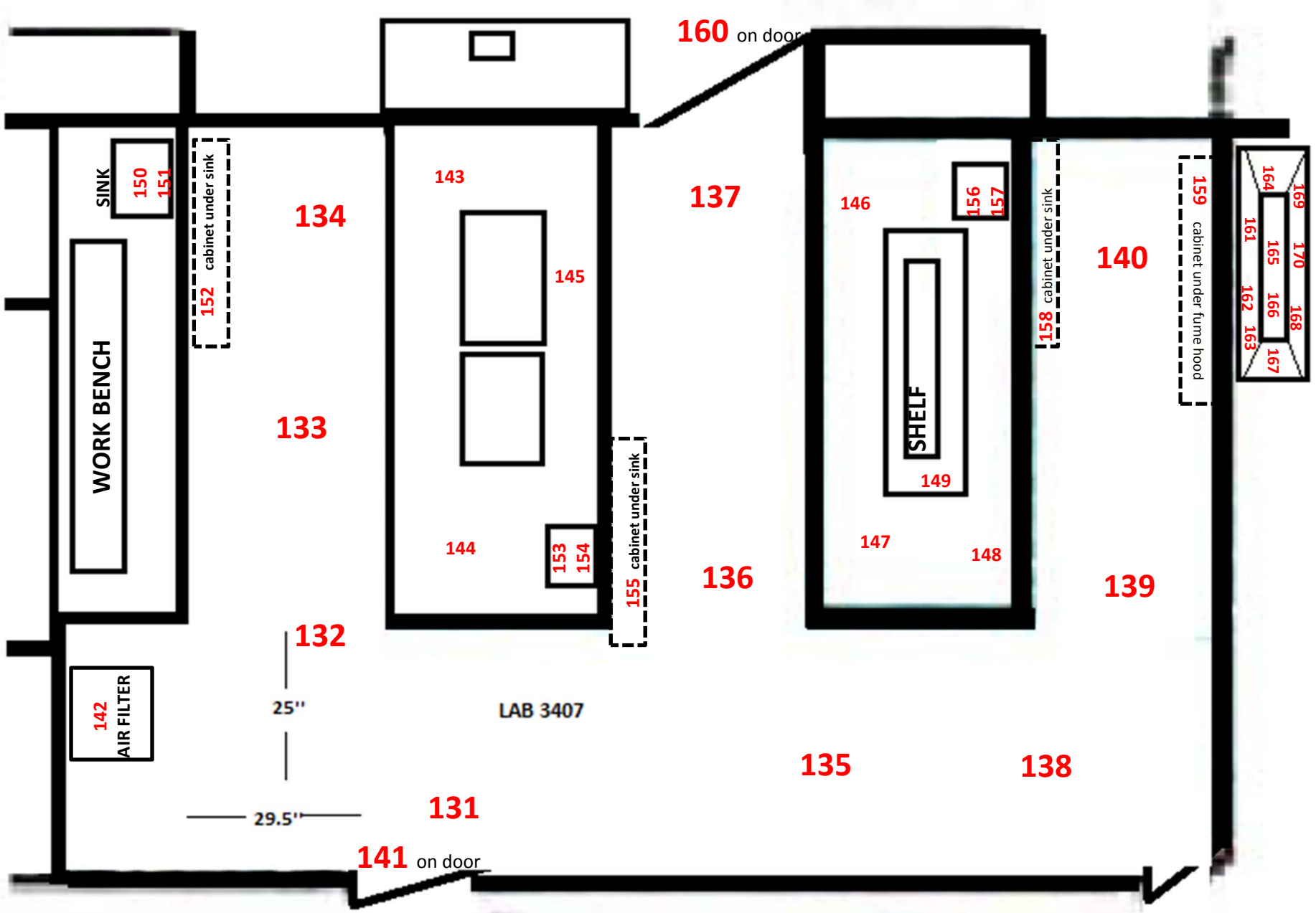
Start Date: 11/11/14

Finish Date: 11/11/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
160	Door Metal	<200	<200	<200	*1*	110	-609	*1*	170	90	-760
161	Fume Hood Base Metal	<200	<200	<200	*1*	124	-503	*1*	205	116	-564
162	Fume Hood Base Metal	<200	<200	<200	*1*	152	-292	*1*	205	116	-564
163	Fume Hood Base Metal	<200	<200	<200	*1*	138	-398	*1*	205	116	-564
164	Fume Hood Wall Metal	<200	<200	<200	*1*	162	-216	*1*	205	116	-564
165	Fume Hood Back Wall Metal	<200	<200	<200	*1*	158	-246	*1*	205	116	-564
166	Fume Hood Back Wall Metal	<200	<200	<200	*1*	142	-367	*1*	205	116	-564
167	Fume Hood Right Wall Metal	<200	<200	<200	*1*	162	-216	*1*	205	116	-564
168	Fume Hood Cover Metal	<200	<200	<200	*1*	156	-262	*1*	205	116	-564
169	Fume Hood Lip Metal	<200	<200	<200	*1*	158	-246	*1*	205	116	-564
170	Fume Hood Lip Metal	<200	<200	<200	*1*	161	-224	*1*	205	116	-564


160 on door
SINK
150
151
152 cabinet under sink
134
143
145
137
146
156
157
159 cabinet under fume hood
158 cabinet under sink
140
164
169
161
165
170
162
166
168
163
167
WORK BENCH
133
SHELF
149
155 cabinet under sink
144
153
154
147
148
136
139
132
142
AIR FILTER
25''
LAB 3407
135
138
29.5''
131
141 on door

Site: Incyte

Building: 400 Lab/Room: 3419

Start Date: 11/11/14

Finish Date: 11/11/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

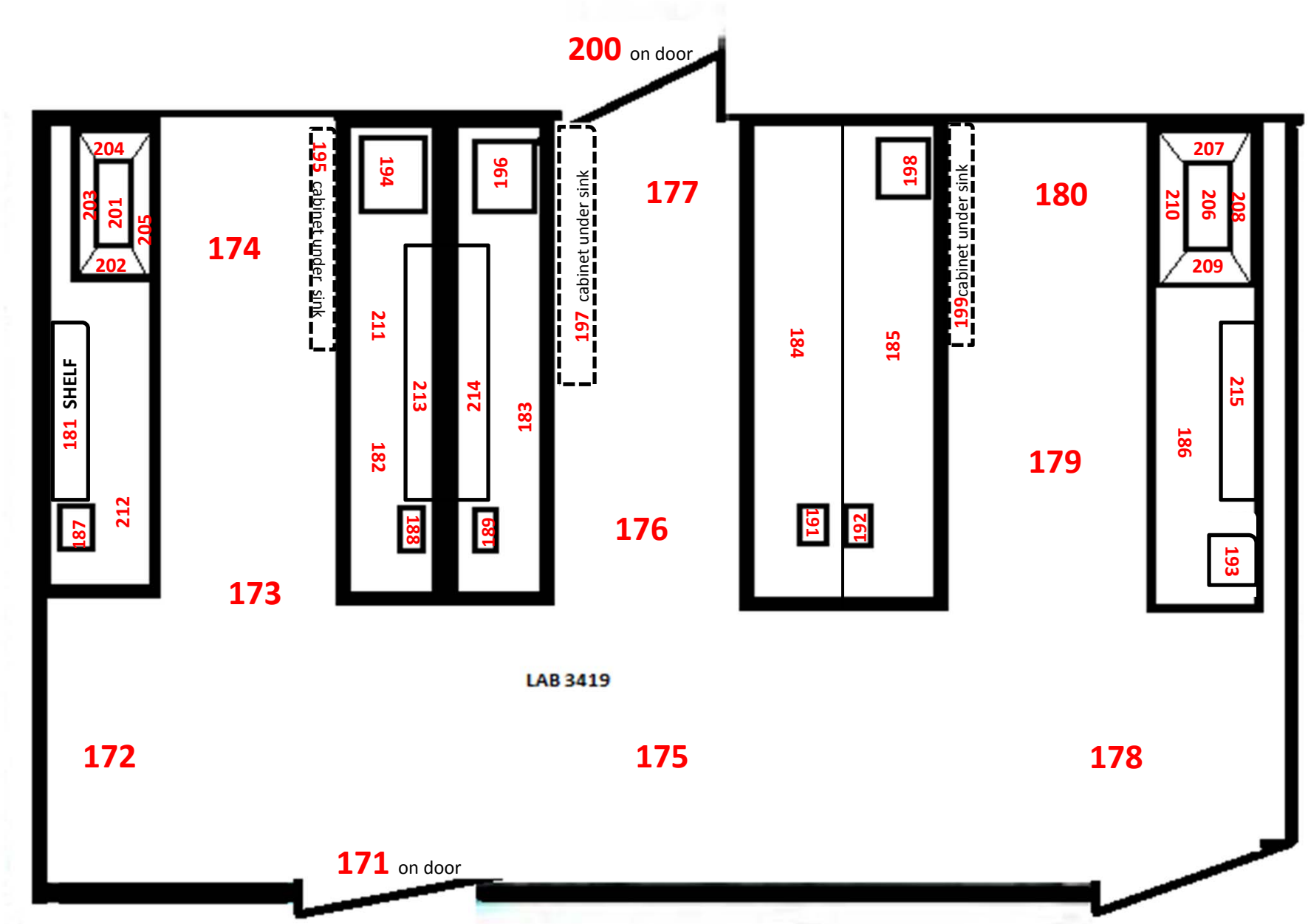
Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
171	Floor Tile Over Concrete	<200	<200	<200	*1*	152	-292	*3*	830	735	-190
172	Floor Tile Over Concrete	<200	<200	<200	*1*	140	-382	*3*	830	735	-190
173	Floor Tile Over Concrete	<200	<200	<200	*1*	140	-382	*3*	830	735	-190
174	Floor Tile Over Concrete	<200	<200	<200	*1*	139	-390	*3*	830	735	-190
175	Floor Tile Over Concrete	<200	<200	<200	*1*	146	-337	*3*	830	735	-190
176	Floor Tile Over Concrete	<200	<200	<200	*1*	152	-292	*3*	830	735	-190
177	Floor Tile Over Concrete	<200	<200	<200	*1*	151	-299	*3*	830	735	-190
178	Floor Tile Over Concrete	<200	<200	<200	*1*	165	-193	*3*	830	735	-190
179	Floor Tile Over Concrete	<200	<200	<200	*1*	156	-262	*3*	830	735	-190
180	Floor Tile Over Concrete	<200	<200	<200	*1*	149	-314	*3*	830	735	-190
181	Shelf-Post Decon Laminate	<200	<200	<200	*1*	711	3933	*3*	815	715	-228
182	Bench Top Laminate	<200	<200	<200	*1*	129	-466	*1*	166	140	-382
183	Bench Top Laminate	<200	<200	<200	*1*	210	147	*1*	166	140	-382
184	Bench Top Laminate	<200	<200	<200	*1*	184	-50	*1*	166	140	-382
185	Bench Top Laminate	<200	<200	<200	*1*	142	-367	*1*	166	140	-382
186	Bench Top Laminate	<200	<200	<200	*1*	150	-307	*1*	166	140	-382
187	Cup Sink Laminate	<200	<200	<200	*1*	181	-73	*1*	517	400	1583
188	Cup Sink Laminate	<200	<200	<200	*1*	144	-352	*1*	166	140	-382
189	Cup Sink Laminate	<200	<200	<200	*1*	158	-246	*1*	166	140	-382
190	Cup Sink Laminate	<200	<200	<200	*1*	157	-254	*1*	166	140	-382
191	Cup Sink Laminate	<200	<200	<200	*1*	153	-284	*1*	166	140	-382
192	Cup Sink Laminate	<200	<200	<200	*1*	127	-481	*1*	166	140	-382
193	Cup Sink Laminate	<200	<200	<200	*1*	140	-382	*1*	166	140	-382
194	Sink Drain Metal	<200	<200	<200	*1*	150	-307	*1*	166	140	-382
195	Cabinet Under Sink Metal	<200	<200	<200	*1*	148	-322	*1*	166	140	-382
196	Sink Drain Metal	<200	<200	<200	*1*	125	-496	*1*	166	140	-382
197	Cabinet Under Sink Metal	<200	<200	<200	*1*	138	-398	*1*	166	140	-382
198	Sink Metal	<200	<200	<200	*1*	116	-564	*1*	166	140	-382
199	Cabinet Under Sink Metal	<200	<200	<200	*1*	142	-367	*1*	166	140	-382

Site: Incyte Building: 400 Lab/Room: 3419

Start Date: 11/11/14 Finish Date: 11/11/14

Surveyor: Korreesa Williams Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
200	Door Metal	<200	<200	<200	*1*	142	-367	*1*	166	140	-382
201	Fume Hood Base Metal	<200	<200	<200	*1*	137	-405	*1*	145	101	-677
202	Fume Hood Right Wall Metal	<200	<200	<200	*1*	104	-655	*1*	145	101	-677
203	Fume Hood Left Wall Metal	<200	<200	<200	*1*	128	-473	*1*	145	101	-677
204	Fume Hood Back Wall Metal	<200	<200	<200	*1*	105	-647	*1*	145	101	-677
205	Fume Hood Lip Metal	<200	<200	<200	*1*	147	-330	*1*	145	101	-677
206	Bsc Bottom Metal	<200	<200	<200	*1*	122	-519	*1*	145	101	-677
207	Bsc Left Wall Metal	<200	<200	<200	*1*	120	-534	*1*	145	101	-677
208	Bsc Back Wall Metal	<200	<200	<200	*1*	93	-738	*1*	145	101	-677
209	Bsc Right Wall Metal	<200	<200	<200	*1*	118	-549	*1*	145	101	-677
210	Bsc Front Lip Metal	<200	<200	<200	*1*	500	2339	*1*	600	475	2150
211	Bench Top Laminate	<200	<200	<200	*1*	715	3964	*1*	808	400	1583
212	Bench Top Metal	<200	<200	<200	*1*	570	2868	*1*	506	430	1810
213	Shelf Metal	<200	<200	<200	*1*	144	-352	*1*	151	129	-466
214	Shelf Metal	<200	<200	<200	*1*	146	-337	*1*	192	170	-156
215	Shelf Metal	<200	<200	<200	*1*	189	-12	*1*	131	115	-571


200 on door
204
203
201
205
202
174
195 cabinet under sink
194
196
177
197 cabinet under sink
198
180
199 cabinet under sink
207
210
206
208
209
181 SHELF
211
213
214
183
184
185
215
186
182
212
187
188
189
176
191
192
179
193
LAB 3419
173
172
175
178
171 on door

Survey Meter Information

Site: Incyte Building: 400 Lab/Room: 3212, 3214, 3226, 3400

	Meter 1		Meter 2	Meter 3		Meter 4	Meter 5	
Date:	11/12/2014		Not In Service	11/12/2014		Not In Service	Not In Service	
Make:	Ludlum			Ludlum				
Model:	2221			2221				
SN:	161591			89650				
Probe Make:	Ludlum			Ludlum				
Probe Model:	43-68			43-37				
Probe SN:	118227			148928				
Probe Area (cm^2):	126			584				
Next Cal. Date:	11/7/2015			6/14/2015				
Background Surface Material	Laminate			Tile over Concrete				
Background(c) - Time(Min)):	1430	10		6446	10			µRem/hr
CS Isotope - Activity(µCi):	C-14	0.159		C-14	0.159			
CS Source(cpm)	8453			5935				
L_c, L_d (Counts)	28	59		59	121		NA	NA
Direct MDC, Scan MDC ($dpm/100cm^2$)	443	2733		230	1460		NA	NA
MDCR , MDC Count Rate	399	190		1187	665		NA	NA
Total Efficiency, Isotope:	10.5%	C-14		9.0%	C-14			
Source Efficiency	0.25			0.25			NA	

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

Direct MDC= $\frac{3+4.65*SQRT(B)}{T*\varepsilon_t*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*\varepsilon_t*\varepsilon_s*A*C}$

MDCR= $s_i * (60/i)$

B = Background Counts
T = Counting Time In Minutes
ε_t = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Site: Incyte Building: 400 Lab/Room: 3212

Start Date: 11/12/15 Finish Date: 11/12/15

Surveyor: Korreesa Williams Surveyor: Matthew Mueller

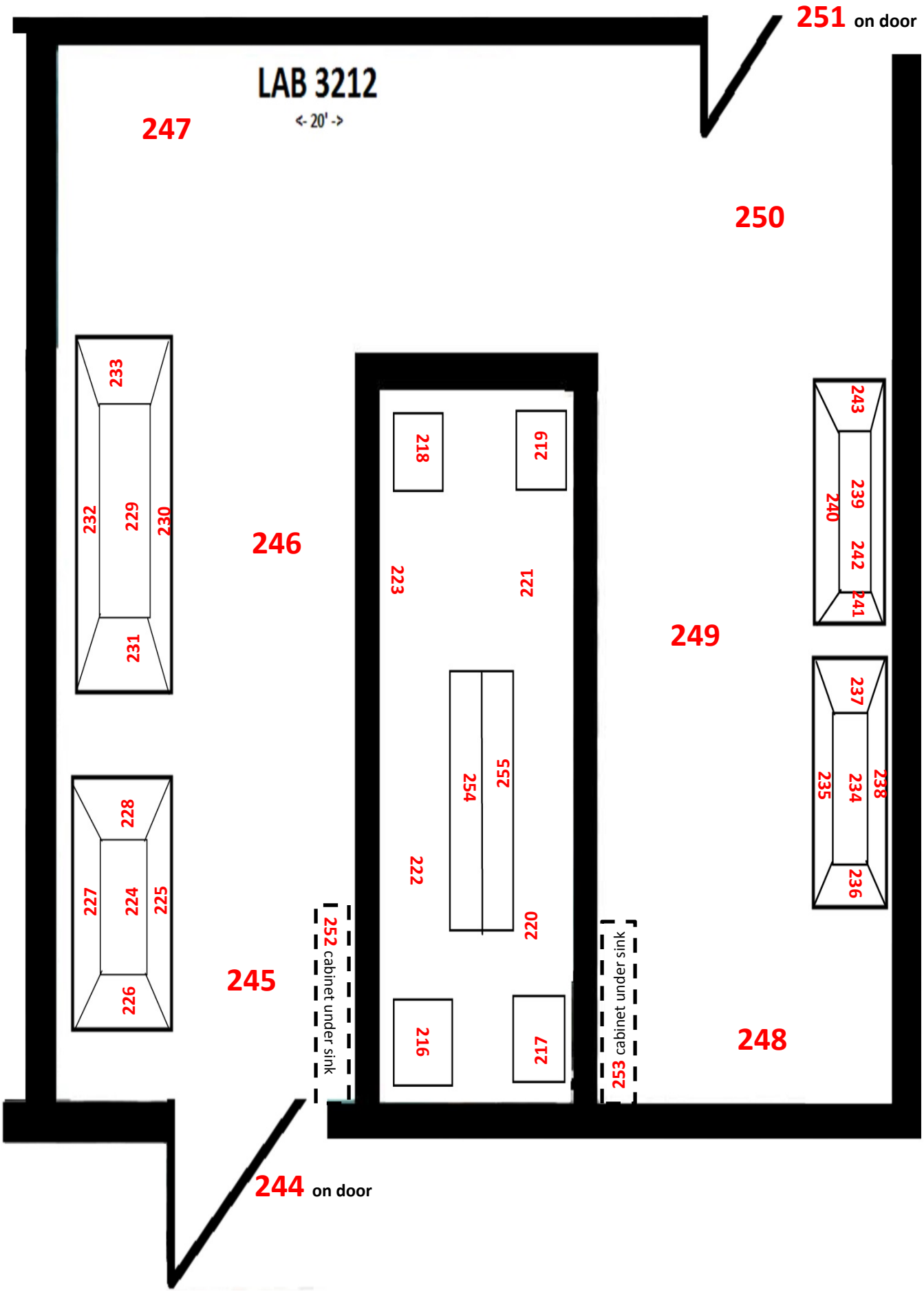
Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
216	Sink Drain Metal	<200	<200	<200	*1*	153	76	*1*	170	130	-98
217	Sink Drain Metal	<200	<200	<200	*1*	158	113	*1*	170	130	-98
218	Cup Sink Laminate	<200	<200	<200	*1*	168	189	*1*	170	130	-98
219	Cup Sink Laminate	<200	<200	<200	*1*	146	23	*1*	170	130	-98
220	Bench Top Laminate	<200	<200	<200	*1*	131	-91	*1*	170	130	-98
221	Bench Top Laminate	<200	<200	<200	*1*	138	-38	*1*	170	130	-98
222	Bench Top Laminate	<200	<200	<200	*1*	129	-106	*1*	170	130	-98
223	Bench Top Laminate	<200	<200	<200	*1*	149	45	*1*	170	130	-98
224	Fume Hood Base Metal	<200	<200	<200	*1*	154	83	*1*	170	130	-98
225	Fume Hood Lip Metal	<200	<200	<200	*1*	158	113	*1*	170	130	-98
226	Fume Hood Right Wall Metal	<200	<200	<200	*1*	120	-174	*1*	170	130	-98
227	Fume Hood Left Wall Metal	<200	<200	<200	*1*	132	-83	*1*	170	130	-98
228	Fume Hood Back Wall Metal	<200	<200	<200	*1*	86	-431	*1*	170	130	-98
229	Fume Hood Base Metal	<200	<200	<200	*1*	154	83	*1*	170	130	-98
230	Fume Hood Lip Metal	<200	<200	<200	*1*	152	68	*1*	170	130	-98
231	Fume Hood Right Wall Metal	<200	<200	<200	*1*	106	-280	*1*	170	130	-98
232	Fume Hood Left Wall Metal	<200	<200	<200	*1*	110	-249	*1*	170	130	-98
233	Fume Hood Back Wall Metal	<200	<200	<200	*1*	102	-310	*1*	170	130	-98
234	Fume Hood Base Metal	<200	<200	<200	*1*	134	-68	*1*	170	130	-98
235	Fume Hood Lip Metal	<200	<200	<200	*1*	150	53	*1*	170	130	-98
236	Fume Hood Right Wall Metal	<200	<200	<200	*1*	125	-136	*1*	170	130	-98
237	Fume Hood Left Wall Metal	<200	<200	<200	*1*	125	-136	*1*	170	130	-98
238	Fume Hood Back Wall Metal	<200	<200	<200	*1*	83	-454	*1*	170	130	-98
239	Fume Hood Base Metal	<200	<200	<200	*1*	157	106	*1*	170	130	-98
240	Fume Hood Lip Metal	<200	<200	<200	*1*	136	-53	*1*	170	130	-98
241	Fume Hood Back Wall Metal	<200	<200	<200	*1*	133	-76	*1*	170	130	-98
242	Fume Hood Right Wall Metal	<200	<200	<200	*1*	124	-144	*1*	170	130	-98
243	Fume Hood Left Wall Metal	<200	<200	<200	*1*	126	-128	*1*	170	130	-98
244	Door Metal	<200	<200	<200	*1*	120	-174	*1*	170	130	-98

Site: Incyte Building: 400 Lab/Room: 3212

Start Date: 11/12/15 Finish Date: 11/12/15

Surveyor: Korreesa Williams Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
245	Floor Tile Over Concrete	<200	<200	<200	*1*	189	348	*3*	830	735	172
246	Floor Tile Over Concrete	<200	<200	<200	*1*	174	234	*3*	830	735	172
247	Floor Tile Over Concrete	<200	<200	<200	*1*	162	144	*3*	830	735	172
248	Floor Tile Over Concrete	<200	<200	<200	*1*	140	-23	*3*	830	735	172
249	Floor Tile Over Concrete	<200	<200	<200	*1*	160	128	*3*	830	735	172
250	Floor Tile Over Concrete	<200	<200	<200	*1*	162	144	*3*	830	735	172
251	Door Tile Over Concrete	<200	<200	<200	*1*	102	-310	*1*	170	130	-98
252	Cabinet Under Hood Metal	<200	<200	<200	*1*	154	83	*1*	170	130	-98
253	Cabinet Under Hood Metal	<200	<200	<200	*1*	146	23	*1*	170	130	-98
254	Shelf Laminate	<200	<200	<200	*1*	143	0	*1*	170	130	-98
255	Shelf Laminate	<200	<200	<200	*1*	133	-76	*1*	170	130	-98


LAB 3212
<- 20' ->
247
251 on door
250
246
249
245
248
244 on door
218
219
223
221
254
255
222
220
216
217
252 cabinet under sink
253 cabinet under sink
233
232
229
230
231
228
227
224
225
226
243
239
240
242
241
237
235
234
238
236

Site: Incyte

Building: 400 Lab/Room: 3214

Start Date: 11/12/14

Finish Date: 11/12/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

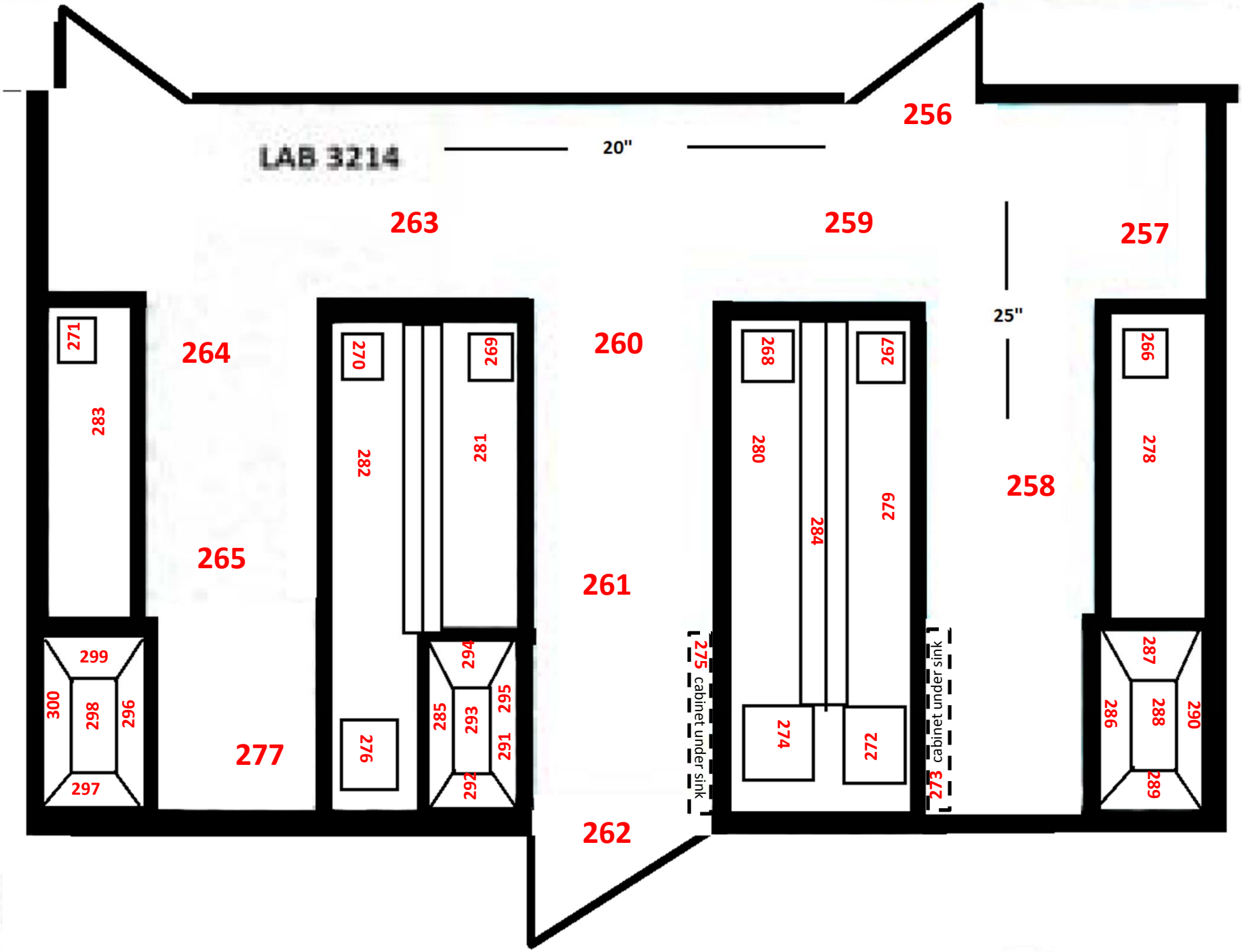
Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
256	Floor Tile Over Concrete	<200	<200	<200	*1*	204	461	*3*	830	735	172
257	Floor Tile Over Concrete	<200	<200	<200	*1*	869	5488	*3*	1800	1500	1627
258	Floor Tile Over Concrete	<200	<200	<200	*3*	1813	2223	*3*	2200	1800	2198
259	Floor Tile Over Concrete	<200	<200	<200	*1*	150	53	*3*	2200	1800	2198
260	Floor Tile Over Concrete	<200	<200	<200	*1*	158	113	*3*	2200	1800	2198
261	Floor Tile Over Concrete	<200	<200	<200	*1*	162	144	*3*	2200	1800	2198
262	Floor Tile Over Concrete	<200	<200	<200	*1*	164	159	*3*	2200	1800	2198
263	Floor Tile Over Concrete	<200	<200	<200	*3*	2826	4150	*3*	3000	2000	2579
264	Floor Tile Over Concrete	<200	<200	<200	*1*	160	128	*3*	830	735	172
265	Floor Tile Over Concrete	<200	<200	<200	*1*	158	113	*3*	830	735	172
266	Cup Sink Laminate	<200	<200	<200	*1*	180	280	*1*	230	180	280
267	Cup Sink Laminate	<200	<200	<200	*1*	144	8	*1*	230	180	280
268	Cup Sink Laminate	<200	<200	<200	*1*	198	416	*1*	230	180	280
269	Cup Sink Laminate	<200	<200	<200	*1*	136	-53	*1*	230	180	280
270	Cup Sink Laminate	<200	<200	<200	*1*	160	128	*1*	230	180	280
271	Cup Sink Metal	<200	<200	<200	*1*	136	-53	*1*	230	180	280
272	Sink Drain Metal	<200	<200	<200	*1*	142	-8	*1*	230	180	280
273	Under Sink Metal	<200	<200	<200	*1*	178	265	*1*	230	180	280
274	Sink Drain Metal	<200	<200	<200	*1*	146	23	*1*	230	180	280
275	Under Sink Metal	<200	<200	<200	*1*	152	68	*1*	230	180	280
276	Sink Drain Metal	<200	<200	<200	*1*	151	60	*1*	230	180	280
277	Under Sink Metal	<200	<200	<200	*1*	168	189	*1*	230	180	280
278	Bench Top Laminate	<200	<200	<200	*1*	272	975	*1*	230	180	280
279	Bench Top Laminate	<200	<200	<200	*1*	142	-8	*1*	230	180	280
280	Bench Top Laminate	<200	<200	<200	*1*	197	408	*1*	230	180	280
281	Bench Top Laminate	<200	<200	<200	*1*	132	-83	*1*	230	180	280
282	Bench Top Laminate	<200	<200	<200	*1*	146	23	*1*	230	180	280
283	Bench Top Laminate	<200	<200	<200	*1*	160	128	*1*	230	180	280
284	Shelf Laminate	<200	<200	<200	*1*	126	-128	*1*	230	180	280

Site: Incyte | Building: 400 | Lab/Room: 3214

Start Date: 11/12/14 | Finish Date: 11/12/14

Surveyor: Korreesa Williams | Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
285	Cabinet Under Hood Metal	<200	<200	<200	*1*	230	658	*1*	230	180	280
286	Fume Hood Base Metal	<200	<200	<200	*1*	128	-113	*1*	230	180	280
287	Fume Hood Right Wall Metal	<200	<200	<200	*1*	114	-219	*1*	230	180	280
288	Fume Hood Left Wall Metal	<200	<200	<200	*1*	156	98	*1*	230	180	280
289	Fume Hood Back Wall Metal	<200	<200	<200	*1*	130	-98	*1*	230	180	280
290	Fume Hood Lip Metal	<200	<200	<200	*1*	172	219	*1*	230	180	280
291	Fume Hood Base Metal	<200	<200	<200	*1*	176	249	*1*	230	180	280
292	Fume Hood Right Wall Metal	<200	<200	<200	*1*	246	779	*1*	230	180	280
293	Fume Hood Left Wall Metal	<200	<200	<200	*1*	254	839	*1*	230	180	280
294	Fume Hood Back Wall Metal	<200	<200	<200	*1*	202	446	*1*	230	180	280
295	Fume Hood Lip Metal	<200	<200	<200	*1*	142	-8	*1*	230	180	280
296	Fume Hood Base Metal	<200	<200	<200	*1*	150	53	*1*	230	180	280
297	Fume Hood Right Wall Metal	<200	<200	<200	*1*	90	-401	*1*	230	180	280
298	Fume Hod Left Wall Metal	<200	<200	<200	*1*	146	23	*1*	230	180	280
299	Fume Hood Back Wall Metal	<200	<200	<200	*1*	136	-53	*1*	230	180	280
300	Fume Hood Lip Metal	<200	<200	<200	*1*	164	159	*1*	230	180	280


LAB 3214
20"
25"
256
263
259
257
264
260
265
261
277
262
258
271
283
270
269
282
281
268
267
280
284
279
266
278
299
300
298
296
297
276
294
285
293
295
291
292
275 cabinet under sink
274
272
273 cabinet under sink
287
286
288
290
289

Site: Incyte Building: 400 Lab/Room: 3226

Start Date: 11/12/14 Finish Date: 11/12/14

Surveyor: Korreesa Williams Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
301	Floor Tile Over Concrete	<200	<200	<200	*1*	163	151	*3*	835	735	172
302	Floor Tile Over Concrete	<200	<200	<200	*1*	164	159	*3*	835	735	172
303	Floor Tile Over Concrete	<200	<200	<200	*1*	168	189	*3*	835	735	172
304	Floor Tile Over Concrete	<200	<200	<200	*1*	152	68	*3*	835	735	172
305	Floor Tile Over Concrete	<200	<200	<200	*1*	164	159	*3*	835	735	172
306	Floor Tile Over Concrete	<200	<200	<200	*1*	182	295	*3*	835	735	172
307	Floor Tile Over Concrete	<200	<200	<200	*1*	172	219	*3*	835	735	172
308	Floor Tile Over Concrete	<200	<200	<200	*1*	172	219	*3*	835	735	172
309	Floor Tile Over Concrete	<200	<200	<200	*1*	128	-113	*3*	835	735	172
310	Floor Tile Over Concrete	<200	<200	<200	*1*	162	144	*3*	835	735	172
311	Cup Sink Laminate	<200	<200	<200	*1*	136	-53	*1*	198	160	128
312	Cup Sink Laminate	<200	<200	<200	*1*	180	280	*1*	198	160	128
313	Cup Sink Laminate	<200	<200	<200	*1*	164	159	*1*	198	160	128
314	Cup Sink Laminate	<200	<200	<200	*1*	158	113	*1*	198	160	128
315	Cup Sink Laminate	<200	<200	<200	*1*	184	310	*1*	198	160	128
316	Cup Sink Laminate	<200	<200	<200	*1*	186	325	*1*	198	160	128
317	Sink Drain Metal	<200	<200	<200	*1*	178	265	*1*	160	140	-23
318	Under Sink Metal	<200	<200	<200	*1*	144	8	*1*	160	140	-23
319	Sink Drain Metal	<200	<200	<200	*1*	150	53	*1*	171	130	-98
320	Under Sink Metal	<200	<200	<200	*1*	165	166	*1*	171	130	-98
321	Sink Drain Metal	<200	<200	<200	*1*	122	-159	*1*	198	160	128
322	Under Sink Metal	<200	<200	<200	*1*	166	174	*1*	198	160	128
323	Cabinet Metal	<200	<200	<200	*1*	200	431	*1*	198	160	128
324	Shelf Metal	<200	<200	<200	*1*	172	219	*1*	198	160	128
325	Cabinet Under Hood Metal	<200	<200	<200	*1*	182	295	*1*	198	160	128
326	Fume Hood Base Metal	<200	<200	<200	*1*	152	68	*1*	198	160	128
327	Fume Hood Right Wall Metal	<200	<200	<200	*1*	164	159	*1*	198	160	128
328	Fume Hood Left Wall Metal	<200	<200	<200	*1*	180	280	*1*	198	160	128
329	Fume Hood Back Wall Metal	<200	<200	<200	*1*	172	219	*1*	198	160	128

Site: Incyte

Building: 400 Lab/Room: 3226

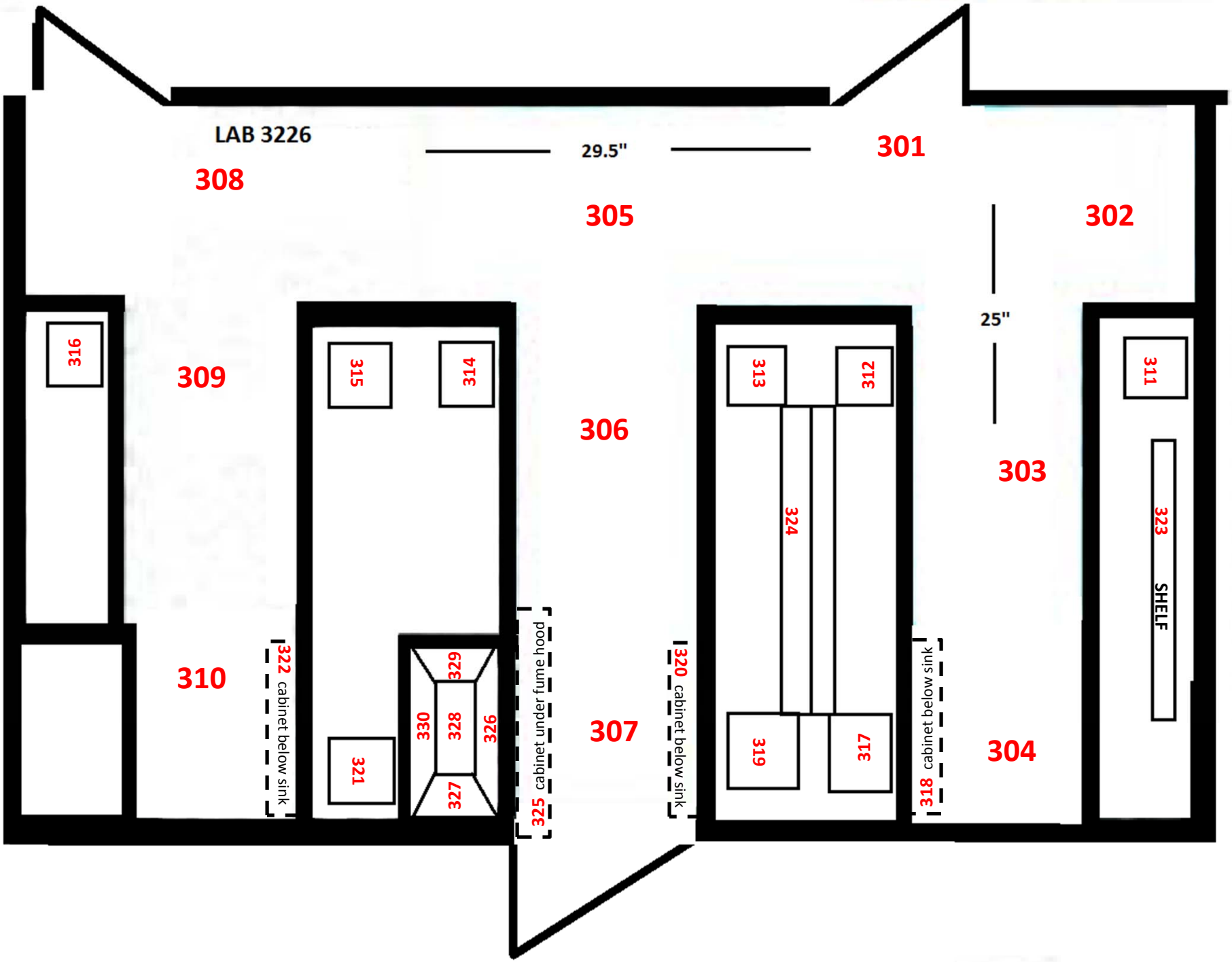
Start Date: 11/12/14

Finish Date: 11/12/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
330	Fume Hood Lip Tile Over Concrete	<200	<200	<200	*1*	128	-113	*1*	198	160	128


LAB 3226
29.5"
301
308
305
302
25"
316
309
315
314
313
312
311
306
303
324
323
SHELF
322 cabinet below sink
329
330
328
326
325 cabinet under fume hood
320 cabinet below sink
310
321
307
319
317
304
318 cabinet below sink
327

Site: Incyte

Building: 400 Lab/Room: 3403

Start Date: 11/12/14

Finish Date: 11/12/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
331	Floor Tile Over Concrete	<200	<200	<200	*1*	158	113	*3*	830	735	172
332	Floor Tile Over Concrete	<200	<200	<200	*1*	140	-23	*3*	830	735	172
333	Floor Tile Over Concrete	<200	<200	<200	*1*	104	-295	*3*	830	735	172
334	Floor Tile Over Concrete	<200	<200	<200	*1*	135	-60	*3*	830	735	172
335	Floor Tile Over Concrete	<200	<200	<200	*1*	168	189	*3*	830	735	172
336	Cup Sink Laminate	<200	<200	<200	*1*	142	-8	*1*	215	130	-98
337	Sink Drain Metal	<200	<200	<200	*1*	160	128	*1*	160	130	-98
338	Under Sink Metal	<200	<200	<200	*1*	164	159	*1*	190	160	128
339	Cabinet Under Hood Metal	<200	<200	<200	*1*	252	824	*1*	190	160	128
340	Benchtop Laminate	<200	<200	<200	*1*	174	234	*1*	250	170	204
341	Benchtop Laminate	<200	<200	<200	*1*	120	-174	*1*	190	160	128
342	Benchtop Laminate	<200	<200	<200	*1*	156	98	*1*	190	160	128
343	Benchtop Laminate	<200	<200	<200	*1*	164	159	*1*	190	160	128
344	Vacuum Filter Metal	<200	<200	<200	*1*	390	1867	*1*	251	170	204
345	Cabinet Metal	<200	<200	<200	*1*	172	219	*1*	251	170	204
346	Cabinet Metal	<200	<200	<200	*1*	136	-53	*1*	215	160	128
347	Cabinet Metal	<200	<200	<200	*1*	158	113	*1*	215	160	128
348	Benchtop Laminate	<200	<200	<200	*1*	142	-8	*1*	215	160	128
349	Door Metal	<200	<200	<200	*1*	128	-113	*1*	160	140	-23
350	Door Metal	<200	<200	<200	*1*	130	-98	*1*	160	140	-23
351	Fume Hood Base Metal	<200	<200	<200	*1*	166	174	*1*	250	170	204
352	Fume Hood Right Wall Metal	<200	<200	<200	*1*	164	159	*1*	250	170	204
353	Fume Hood Left Wall Metal	<200	<200	<200	*1*	180	280	*1*	250	170	204
354	Fume Hood Back Wall Metal	<200	<200	<200	*1*	146	23	*1*	250	170	204
355	Fume Hood Lip Metal	<200	<200	<200	*1*	164	159	*1*	250	170	204
356	Fume Hood Base Metal	<200	<200	<200	*1*	148	38	*1*	250	170	204
357	Fume Hood Right Wall Metal	<200	<200	<200	*1*	118	-189	*1*	250	170	204
358	Fume Hood Left Wall Metal	<200	<200	<200	*1*	98	-340	*1*	250	170	204
359	Funme Hood Back Wall Metal	<200	<200	<200	*1*	104	-295	*1*	250	170	204

Site: Incyte

Building: 400 Lab/Room: 3403

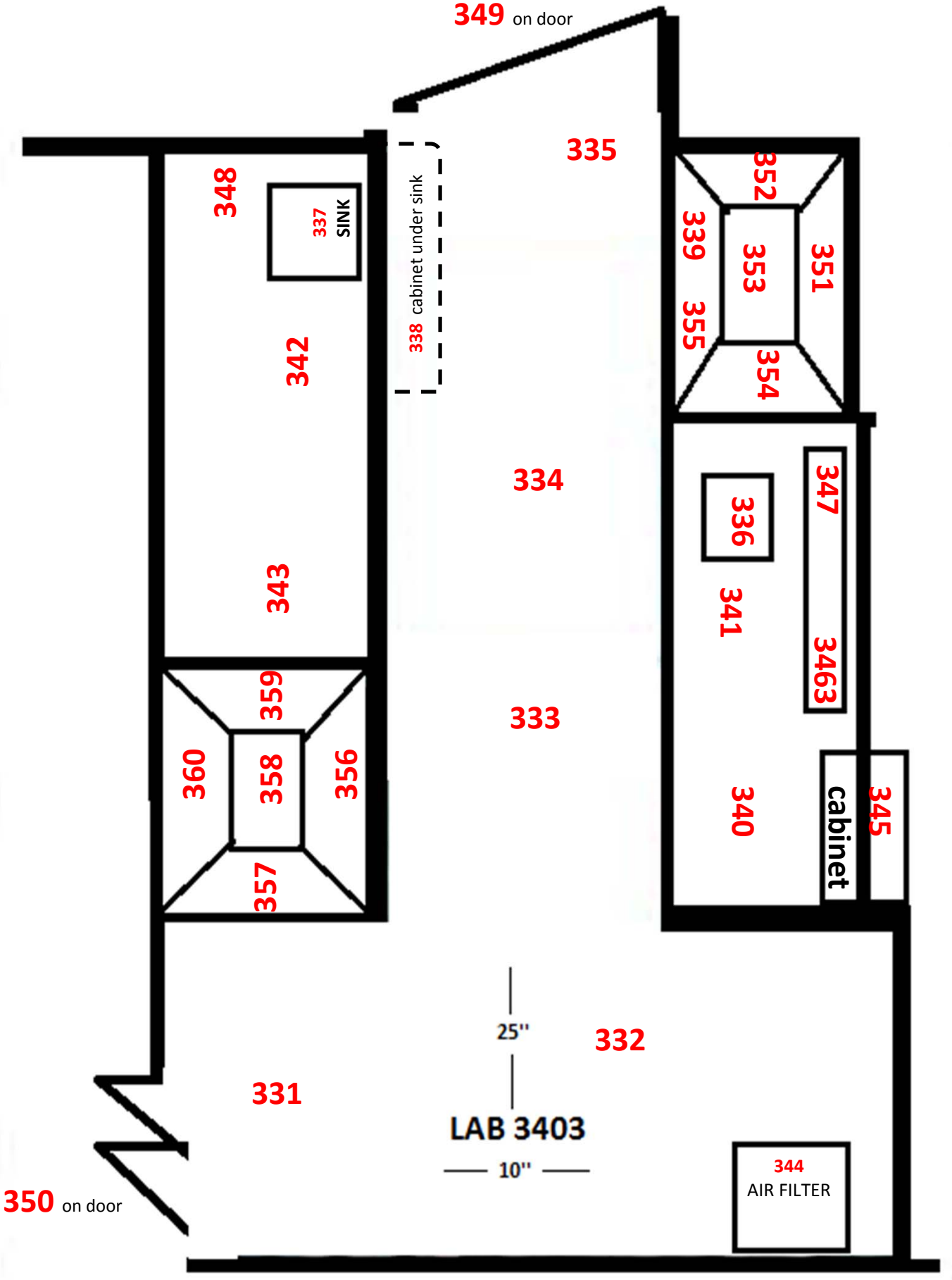
Start Date: 11/12/14

Finish Date: 11/12/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
360	Fume Hood Lip Metal	<200	<200	<200	*1*	162	144	*1*	250	170	204


349 on door
335
348
337 SINK
338 cabinet under sink
342
352
339
353
351
355
354
334
347
336
343
341
3463
359
333
360
358
356
340
cabinet
345
357
25''
332
331
LAB 3403
10''
344
AIR FILTER
350 on door

Survey Meter Information

Site: Incyte Building: 400 Lab/Room: 3474,Corridor,3238

	Meter 1		Meter 2	Meter 3		Meter 4	Meter 5	
Date:	11/13/2014		Not In Service	11/13/2014		Not In Service	Not In Service	
Make:	Ludlum			Ludlum				
Model:	2221			2221				
SN:	161591			89650				
Probe Make:	Ludlum			Ludlum				
Probe Model:	43-68			43-37				
Probe SN:	118227			148928				
Probe Area (cm^2):	126			584				
Next Cal. Date:	11/7/2015			6/14/2015				
Background Surface Material	Laminate			Tile over Concrete				
Background(c) - Time(Min)):	1450	10		5866	10			µRem/hr
CS Isotope - Activity(µCi):	C-14	0.159		C-14	0.159			
CS Source(cpm)	8298			4899				
L_c, L_d (Counts)	28	59		56	116		NA	NA
Direct MDC, Scan MDC ($dpm/100cm^2$)	446	2752		220	1393		NA	NA
MDCR , MDC Count Rate	402	192		1104	606		NA	NA
Total Efficiency, Isotope:	10.5%	C-14		9.0%	C-14			
Source Efficiency	0.25			0.25			NA	

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

Direct MDC= $\frac{3+4.65*SQRT(B)}{T*\varepsilon_t*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*\varepsilon_t*\varepsilon_s*A*C}$

MDCR= $s_i * (60/i)$

B = Background Counts
T = Counting Time In Minutes
ε_t = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Site: Incyte

Building: 400 Lab/Room: 3474

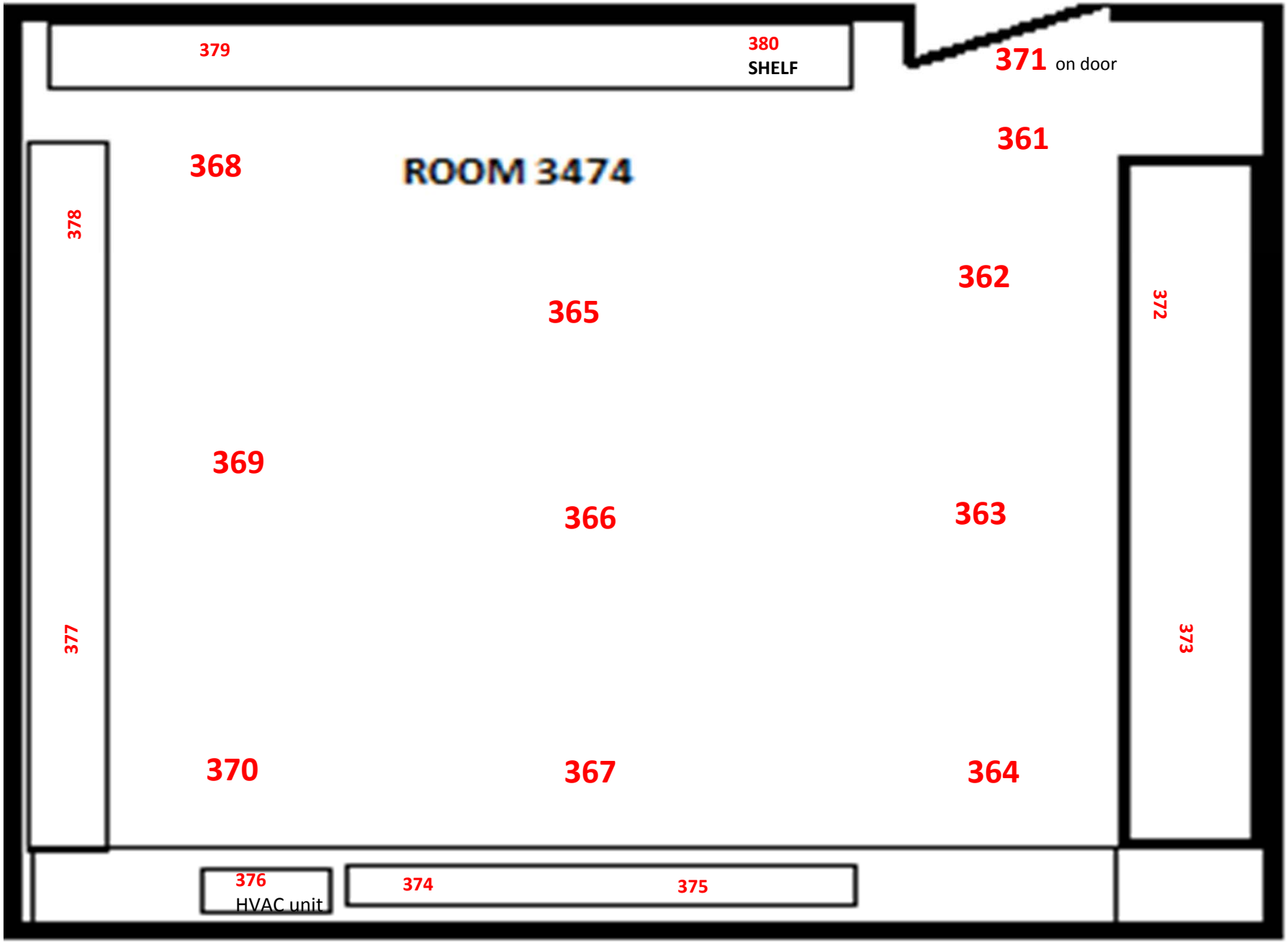
Start Date: 11/13/14

Finish Date: 11/13/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
361	Floor Tile Over Concrete	<200	<200	<200	*1*	192	355	*3*	830	735	282
362	Floor Tile Over Concrete	<200	<200	<200	*1*	183	287	*3*	830	735	282
363	Floor Tile Over Concrete	<200	<200	<200	*1*	179	257	*3*	830	735	282
364	Floor Tile Over Concrete	<200	<200	<200	*1*	209	484	*3*	830	735	282
365	Floor Tile Over Concrete	<200	<200	<200	*1*	177	242	*3*	830	735	282
366	Floor Tile Over Concrete	<200	<200	<200	*1*	192	355	*3*	830	735	282
367	Floor Tile Over Concrete	<200	<200	<200	*1*	196	385	*3*	830	735	282
368	Floor Tile Over Concrete	<200	<200	<200	*1*	169	181	*3*	830	735	282
369	Floor Tile Over Concrete	<200	<200	<200	*1*	193	363	*3*	830	735	282
370	Floor Tile Over Concrete	<200	<200	<200	*1*	190	340	*3*	830	735	282
371	Door Metal	<200	<200	<200	*1*	140	-38	*1*	160	135	-76
372	Bench Top Laminate	<200	<200	<200	*1*	155	76	*1*	220	140	-38
373	Bench Top Laminate	<200	<200	<200	*1*	151	45	*1*	220	140	-38
374	Shelf Laminate	<200	<200	<200	*1*	204	446	*1*	220	140	-38
375	Shelf Laminate	<200	<200	<200	*1*	204	446	*1*	220	140	-38
376	Hvac Unit Metal	<200	<200	<200	*1*	218	552	*1*	220	140	-38
377	Bench Top Laminate	<200	<200	<200	*1*	176	234	*1*	220	140	-38
378	Bench Top Laminate	<200	<200	<200	*1*	142	-23	*1*	220	140	-38
379	Bench Top Laminate	<200	<200	<200	*1*	141	-30	*1*	220	140	-38
380	Bench Top Laminate	<200	<200	<200	*1*	135	-76	*1*	220	140	-38


379
380
SHELF
371 on door
361
368
ROOM 3474
378
362
372
365
369
366
363
377
373
370
367
364
376
HVAC unit
374
375

Site: Incyte

Building: 400 Lab/Room: Corridor

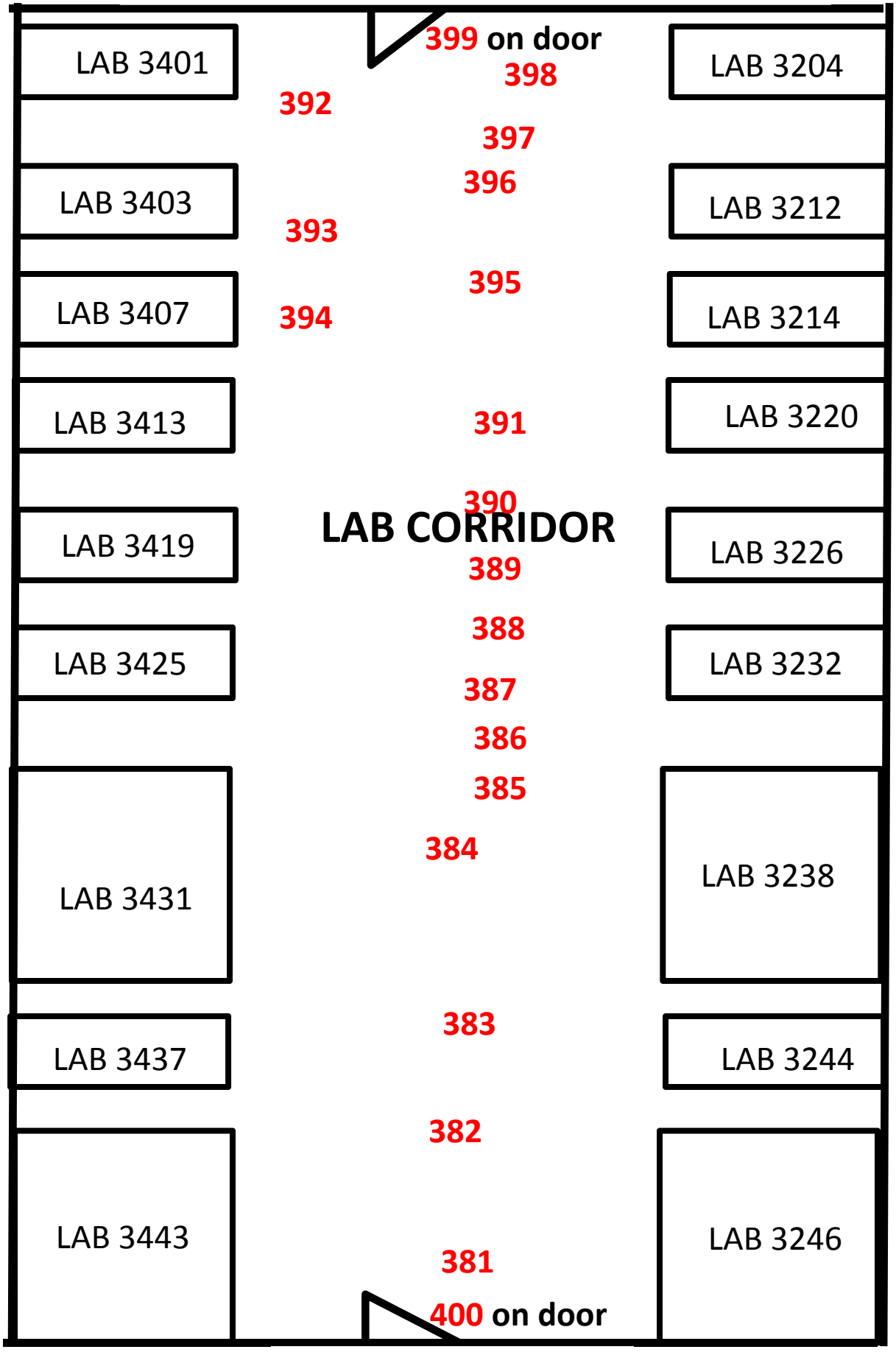
Start Date: 11/13/14

Finish Date: 11/13/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
381	Floor Tile Over Concrete	<200	<200	<200	*1*	179	257	*3*	830	735	282
382	Floor Tile Over Concrete	<200	<200	<200	*1*	170	189	*3*	830	735	282
383	Floor Tile Over Concrete	<200	<200	<200	*1*	178	249	*3*	830	735	282
384	Floor Tile Over Concrete	<200	<200	<200	*1*	170	189	*3*	830	735	282
385	Floor Tile Over Concrete	<200	<200	<200	*1*	161	121	*3*	830	735	282
386	Floor Tile Over Concrete	<200	<200	<200	*1*	187	317	*3*	830	735	282
387	Floor Tile Over Concrete	<200	<200	<200	*1*	169	181	*3*	830	735	282
388	Floor Tile Over Concrete	<200	<200	<200	*1*	171	197	*3*	830	735	282
389	Floor Tile Over Concrete	<200	<200	<200	*1*	164	144	*3*	830	735	282
390	Floor Tile Over Concrete	<200	<200	<200	*1*	183	287	*3*	830	735	282
391	Floor Tile Over Concrete	<200	<200	<200	*1*	174	219	*3*	830	735	282
392	Floor Tile Over Concrete	<200	<200	<200	*1*	171	197	*3*	830	735	282
393	Floor Tile Over Concrete	<200	<200	<200	*1*	3599	26107	*3*	3550	3300	5162
394	Floor Tile Over Concrete	<200	<200	<200	*1*	1178	7808	*3*	1850	1700	2118
395	Floor Tile Over Concrete	<200	<200	<200	*1*	179	257	*3*	830	735	282
396	Floor Tile Over Concrete	<200	<200	<200	*1*	187	317	*3*	830	735	282
397	Floor Tile Over Concrete	<200	<200	<200	*1*	200	416	*3*	830	735	282
398	Floor Tile Over Concrete	<200	<200	<200	*1*	192	355	*3*	830	735	282
399	Door Metal	<200	<200	<200	*1*	132	-98	*1*	160	135	-76
400	Door Metal	<200	<200	<200	*1*	128	-128	*1*	160	135	-76


LAB 3401
399 on door
398
LAB 3204
392
397
LAB 3403
396
LAB 3212
393
395
LAB 3407
394
LAB 3214
LAB 3413
391
LAB 3220
390
LAB CORRIDOR
LAB 3419
LAB 3226
389
388
LAB 3425
LAB 3232
387
386
385
LAB 3431
384
LAB 3238
383
LAB 3437
LAB 3244
382
LAB 3443
LAB 3246
381
400 on door

Site: Incyte Building: 400 Lab/Room: 3238

Start Date: 11/13/14 Finish Date: 11/13/14

Surveyor: Korreesa Williams Surveyor: Matthew Mueller

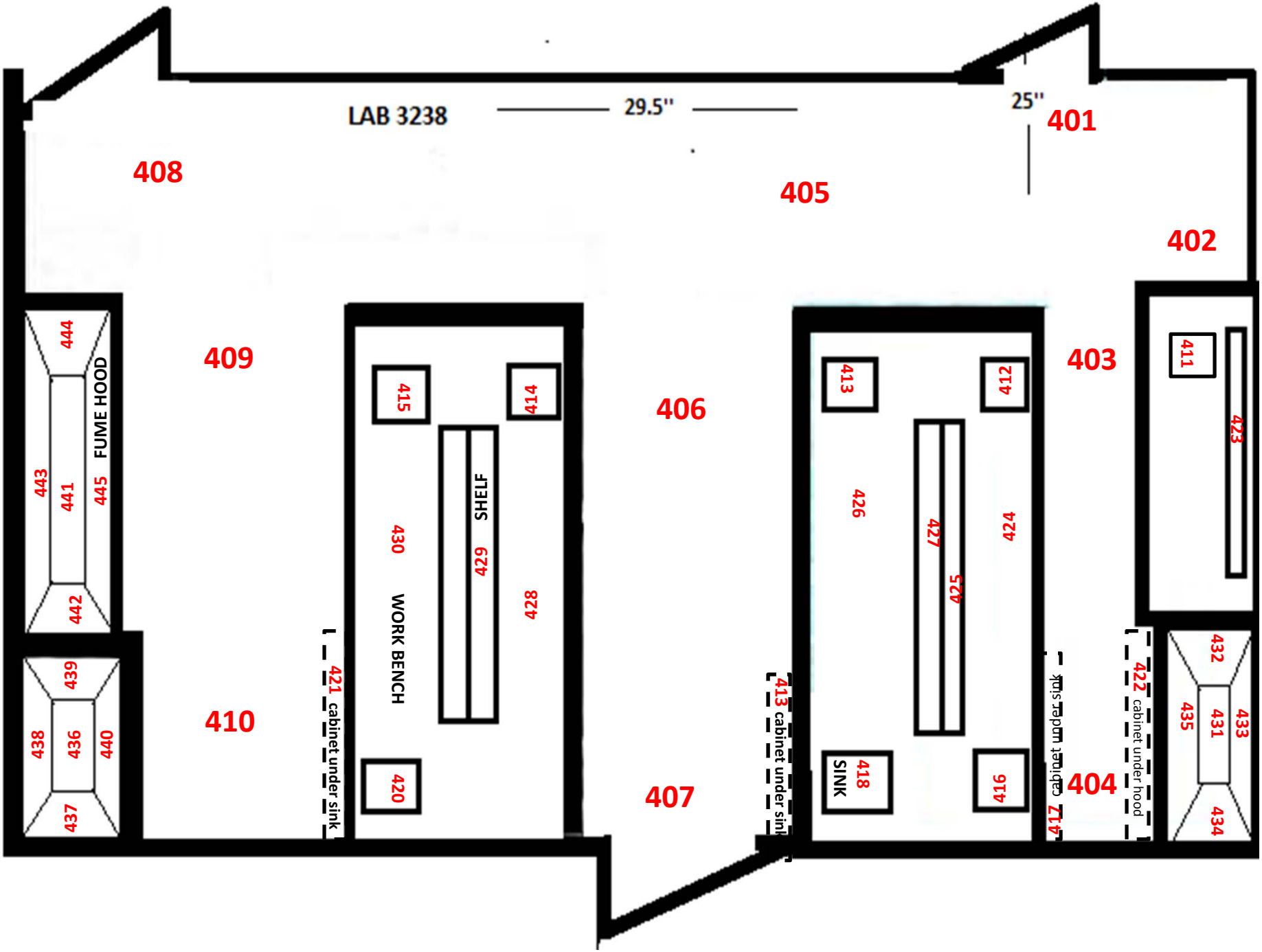
Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
401	Floor Tile Over Concrete	<200	<200	<200	*1*	156	83	*3*	830	735	282
402	Floor Tile Over Concrete	<200	<200	<200	*1*	160	113	*3*	830	735	282
403	Floor Tile Over Concrete	<200	<200	<200	*1*	178	249	*3*	830	735	282
404	Floor Tile Over Concrete	<200	<200	<200	*1*	150	38	*3*	830	735	282
405	Floor Tile Over Concrete	<200	<200	<200	*1*	152	53	*3*	830	735	282
406	Floor Tile Over Concrete	<200	<200	<200	*1*	156	83	*3*	830	735	282
407	Floor Tile Over Concrete	<200	<200	<200	*1*	130	-113	*3*	830	735	282
408	Floor Tile Over Concrete	<200	<200	<200	*1*	148	23	*3*	830	735	282
409	Floor Tile Over Concrete	<200	<200	<200	*1*	148	23	*3*	830	735	282
410	Floor Tile Over Concrete	<200	<200	<200	*1*	168	174	*3*	830	735	282
411	Cup Sink Laminate	<200	<200	<200	*1*	144	-8	*1*	170	130	-113
412	Cup Sink Laminate	<200	<200	<200	*1*	132	-98	*1*	180	160	113
413	Cup Sink Laminate	<200	<200	<200	*1*	152	53	*1*	180	160	113
414	Cup Sink Laminate	<200	<200	<200	*1*	172	204	*1*	180	160	113
415	Cup Sink Laminate	<200	<200	<200	*1*	132	-98	*1*	180	160	113
416	Sink Drain Metal	<200	<200	<200	*1*	156	83	*1*	180	160	113
417	Cabinet Under Sink Metal	<200	<200	<200	*1*	182	280	*1*	180	160	113
418	Sink Drain Metal	<200	<200	<200	*1*	172	204	*1*	127	90	-416
419	Cabinet Under Sink Metal	<200	<200	<200	*1*	184	295	*1*	127	90	-416
420	Sink Drain Metal	<200	<200	<200	*1*	164	144	*1*	180	150	38
421	Cabinet Under Sink Metal	<200	<200	<200	*1*	152	53	*1*	180	150	38
422	Cabinet Under Hood Metal	<200	<200	<200	*1*	156	83	*1*	184	150	38
423	Cabinet Laminate	<200	<200	<200	*1*	140	-38	*1*	184	150	38
424	Benchtop Laminate	<200	<200	<200	*1*	198	401	*1*	184	130	-113
425	Shelf Laminate	<200	<200	<200	*1*	162	128	*1*	168	130	-113
426	Bench Top Laminate	<200	<200	<200	*1*	162	128	*1*	168	130	-113
427	Shelf Laminate	<200	<200	<200	*1*	152	53	*1*	168	130	-113
428	Bench Top Laminate	<200	<200	<200	*1*	168	174	*1*	168	130	-113
429	Shelf Laminate	<200	<200	<200	*1*	144	-8	*1*	168	130	-113

Site: Incyte | Building: 400 | Lab/Room: 3238

Start Date: 11/13/14 | Finish Date: 11/13/14

Surveyor: Korreesa Williams | Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
430	Bench Top Metal	<200	<200	<200	*1*	180	265	*1*	180	140	-38
431	Fume Hood Base Metal	<200	<200	<200	*1*	160	113	*1*	184	150	38
432	Fume Hood Wall Metal	<200	<200	<200	*1*	160	113	*1*	184	150	38
433	Fume Hood Wall Metal	<200	<200	<200	*1*	184	295	*1*	184	150	38
434	Fume Hood Wall Metal	<200	<200	<200	*1*	204	446	*1*	184	150	38
435	Fume Hood Lip Metal	<200	<200	<200	*1*	130	-113	*1*	184	150	38
436	Fume Hood Base Metal	<200	<200	<200	*1*	152	53	*1*	213	130	-113
437	Fume Hood Wall Metal	<200	<200	<200	*1*	110	-265	*1*	213	130	-113
438	Fume Hood Wall Metal	<200	<200	<200	*1*	122	-174	*1*	213	130	-113
439	Fume Hood Wall Metal	<200	<200	<200	*1*	120	-189	*1*	213	130	-113
440	Fume Hood Lip Metal	<200	<200	<200	*1*	174	219	*1*	213	130	-113
441	Fume Hood Base Metal	<200	<200	<200	*1*	162	128	*1*	181	130	-113
442	Fume Hood Wall Metal	<200	<200	<200	*1*	112	-249	*1*	181	130	-113
443	Fume Hood Wall Metal	<200	<200	<200	*1*	124	-159	*1*	181	130	-113
444	Fume Hood Wall Metal	<200	<200	<200	*1*	130	-113	*1*	181	130	-113
445	Fume Hood Lip Metal	<200	<200	<200	*1*	172	204	*1*	181	130	-113


LAB 3238
29.5"
25"
401
408
405
402
409
406
403
410
407
404
FUME HOOD
WORK BENCH
SHELF
SINK
cabinet under sink
cabinet under hood
411
412
413
414
415
418
420
421
422
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424
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Survey Meter Information

Site: Incyte Building: 400 Lab/Room: 1440 Basement Storage

	Meter 1		Meter 2	Meter 3		Meter 4	Meter 5	
Date:	11/14/2014		Not In Service	11/14/2014		Not In Service	Not In Service	
Make:	Ludlum			Ludlum				
Model:	2221			2221				
SN:	161591			89650				
Probe Make:	Ludlum			Ludlum				
Probe Model:	43-68			43-37				
Probe SN:	118227			148928				
Probe Area (cm^2):	126			584				
Next Cal. Date:	11/7/2015			6/14/2015				
Background Surface Material	Metal			Concrete				
Background(c) - Time(Min)):	2300	10		10950	10			μRem/hr
CS Isotope - Activity(μCi):	C-14	0.159		C-14	0.159			
CS Source(cpm)	8426			4950				
L_c, L_d (Counts)	35	74		77	157		NA	NA
Direct MDC, Scan MDC ($dpm/100cm^2$)	556	3466		298	3807		NA	NA
MDCR , MDC Count Rate	554	288		1802	1122		NA	NA
Total Efficiency, Isotope:	10.5%	C-14		9.0%	C-14			
Source Efficiency	0.25			0.25			NA	

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

Direct MDC= $\frac{3+4.65*SQRT(B)}{T*\varepsilon_t*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*\varepsilon_t*\varepsilon_s*A*C}$

MDCR= $s_i * (60/i)$

B = Background Counts
T = Counting Time In Minutes
ε_t = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Site: Incyte

Building: 400 Lab/Room: 1440

Start Date: 11/14/14

Finish Date: 11/14/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
446	Floor Tile Over Concrete	<200	<200	<200	*1*	262	242	*3*	1400	1150	105
447	Floor Tile Over Concrete	<200	<200	<200	*1*	290	454	*3*	1400	1150	105
448	Floor Tile Over Concrete	<200	<200	<200	*1*	260	227	*3*	1400	1150	105
449	Floor Tile Over Concrete	<200	<200	<200	*1*	244	106	*3*	1400	1150	105
450	Floor Tile Over Concrete	<200	<200	<200	*1*	280	378	*3*	1400	1150	105
451	Floor Tile Over Concrete	<200	<200	<200	*1*	328	741	*3*	1400	1150	105
452	Floor Tile Over Concrete	<200	<200	<200	*1*	264	257	*3*	1400	1150	105
453	Floor Tile Over Concrete	<200	<200	<200	*1*	282	393	*3*	1400	1150	105
454	Floor Tile Over Concrete	<200	<200	<200	*1*	284	408	*3*	1400	1150	105
455	Floor Tile Over Concrete	<200	<200	<200	*1*	276	348	*3*	1400	1150	105
456	Shelf Metal	<200	<200	<200	*1*	276	348	*1*	298	190	-302
457	Shelf Metal	<200	<200	<200	*1*	220	-76	*1*	298	190	-302
458	Shelf Metal	<200	<200	<200	*1*	202	-212	*1*	298	190	-302
459	Shelf Metal	<200	<200	<200	*1*	228	-15	*1*	298	190	-302
460	Shelf Metal	<200	<200	<200	*1*	236	45	*1*	298	190	-302
461	Shelf Metal	<200	<200	<200	*1*	238	60	*1*	298	190	-302
462	Shelf Metal	<200	<200	<200	*1*	300	529	*1*	298	190	-302
463	Shelf Metal	<200	<200	<200	*1*	248	136	*1*	298	190	-302
464	Shelf Metal	<200	<200	<200	*1*	224	-45	*1*	298	190	-302
465	Shelf Metal	<200	<200	<200	*1*	214	-121	*1*	298	190	-302
466	Shelf Metal	<200	<200	<200	*1*	220	-76	*1*	298	190	-302
467	Shelf Metal	<200	<200	<200	*1*	220	-76	*1*	298	190	-302
468	Shelf Metal	<200	<200	<200	*1*	200	-227	*1*	298	190	-302
469	Shelf Metal	<200	<200	<200	*1*	194	-272	*1*	298	190	-302
470	Shelf Metal	<200	<200	<200	*1*	164	-499	*1*	231	160	-529
471	Shelf Metal	<200	<200	<200	*1*	164	-499	*1*	231	160	-529
472	Shelf Metal	<200	<200	<200	*1*	406	1330	*1*	231	160	-529
473	Wall Metal	<200	<200	<200	*1*	294	484	*1*	311	280	378
474	Door Metal	<200	<200	<200	*1*	194	-272	*1*	230	190	-302

Site: Incyte

Building: 400 Lab/Room: 1440

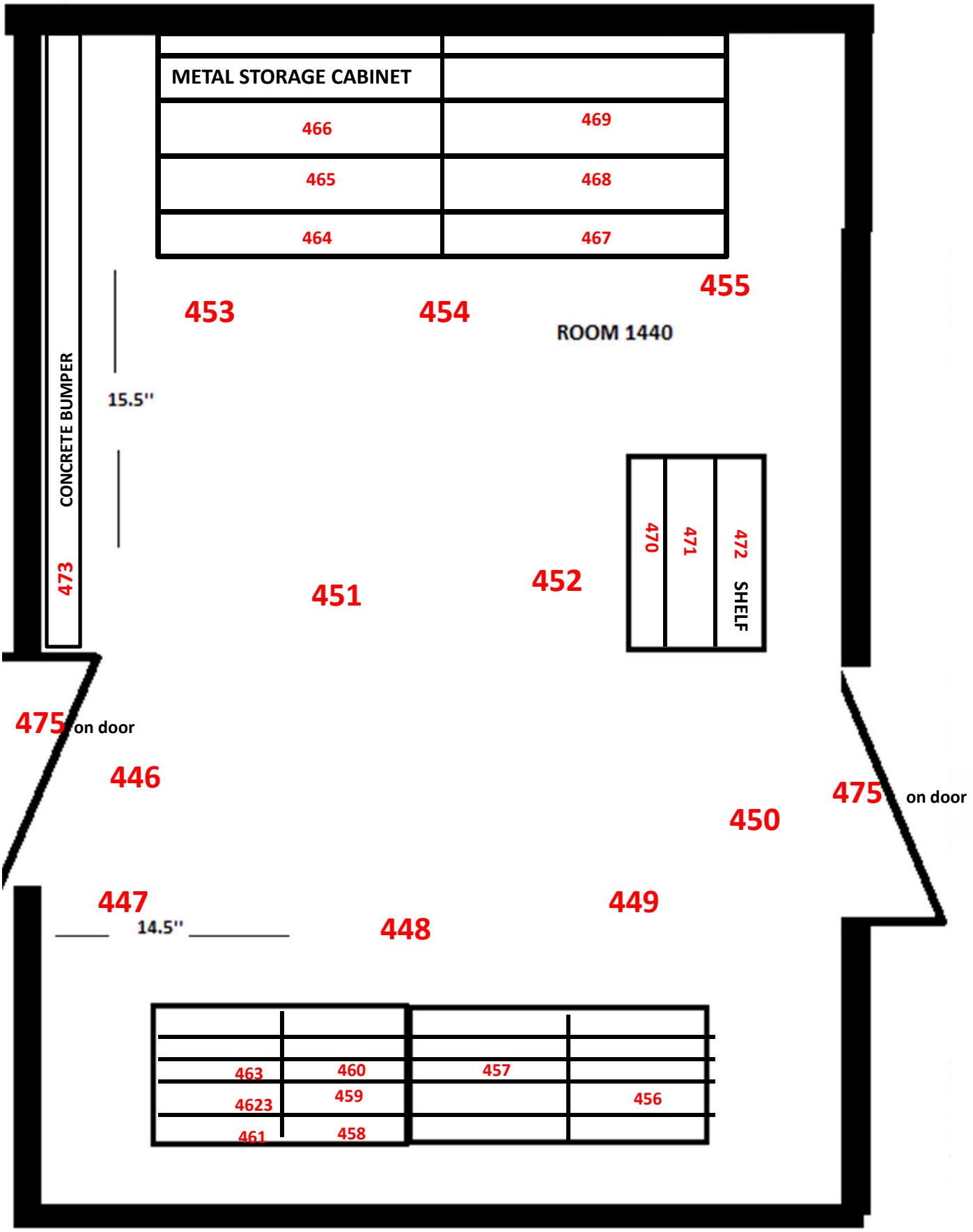
Start Date: 11/14/14

Finish Date: 11/14/14

Surveyor: Korreesa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
475	Door Metal	<200	<200	<200	*1*	198	-242	*1*	230	190	-302


METAL STORAGE CABINET
466
469
465
468
464
467
455
453
454
ROOM 1440
15.5''
CONCRETE BUMPER
473
470
471
472
SHELF
451
452
475
on door
446
475
on door
450
447
449
14.5''
448
463
460
457
4623
459
456
461
458

Survey Meter Information

Site: Incyte Building: 400 Locations Post Phase 1 Decon

	Meter 1		Meter 2	Meter 3		Meter 4	Meter 5	
Date:	11/14/2014		Not In Service	11/14/2014		Not In Service	Not In Service	
Make:	Ludlum			Ludlum				
Model:	2221			2221				
SN:	161591			89650				
Probe Make:	Ludlum			Ludlum				
Probe Model:	43-68			43-37				
Probe SN:	118227			148928				
Probe Area (cm^2):	126			584				
Next Cal. Date:	11/7/2015			6/14/2015				
Background Surface Material	Laminate			Concrete				
Background(c) - Time(Min)):	1535	10		5964	10			µRem/hr
CS Isotope - Activity(µCi):	C-14	0.159		C-14	0.159			
CS Source(cpm)	8426			4950				
L_c, L_d (Counts)	29	61		57	117		NA	NA
Direct MDC, Scan MDC (dpm/100cm^2)	458	2831		222	2810		NA	NA
MDCR , MDC Count Rate	418	202		1118	616		NA	NA
Total Efficiency, Isotope:	10.5%	C-14		9.0%	C-14			
Source Efficiency	0.25			0.25			NA	

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

Direct MDC= $\frac{3+4.65*SQRT(B)}{T*\varepsilon_t*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*\varepsilon_t*\varepsilon_s*A*C}$

MDCR= $s_i * (60/i)$

B = Background Counts
T = Counting Time In Minutes
ε_t = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Site: Incyte

Building: 400

Start Date: 11/14/14

Various Location Post Phase 1 Decon

Finish Date: 11/14/14

Surveyor: Korressa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
476	Floor Location 257-Post Decon Tile Over Concrete	<200	<200	<200	*3*	1250	1244	*3*	1600	1300	1339
477	Floor Location 258-Post Decon Tile Over Concrete	<200	<200	<200	*3*	1111	979	*3*	1300	1100	958
478	Floor Location 263-Post Decon Tile Over Concrete	<200	<200	<200	*3*	2489	3601	*3*	3000	2450	3527
479	Floor Location 393- Post Decon Tile Over Concrete	<200	<200	<200	*3*	2292	3226	*3*	2850	2300	3241
480	Floor Location 394- Post Decon Tile Over Concrete	<200	<200	<200	*3*	1054	871	*3*	1400	1050	863
481	Shelf Location 181-Post Decon Laminate	<200	<200	<200	*1*	416	1984	*1*	423	360	1561
482	Shelf Location 211- Post Decon Laminate	<200	<200	<200	*1*	332	1349	*1*	400	300	1107
483	Cabinet Location 210-Post Decon Laminate	<200	<200	<200	*1*	238	639	*1*	400	300	1107
484	Floor Location 134- Post Decon Tile Over Concrete	<200	<200	<200	*3*	683	165	*3*	838	735	264

Survey Meter Information

Site: Incyte Building: 400 Locations Post Phase 2 Decon

	Meter 1		Meter 2	Meter 3		Meter 4	Meter 5	
Date:	11/25/2014		Not In Service	11/25/2014		Not In Service	Not In Service	
Make:	Ludlum			Ludlum				
Model:	2221			2221				
SN:	161591			89650				
Probe Make:	Ludlum			Ludlum				
Probe Model:	43-68			43-37				
Probe SN:	118227			148928				
Probe Area (cm^2):	126			584				
Next Cal. Date:	11/7/2015			6/14/2015				
Background Surface Material	Tile over Concrete			Tile over Concrete				
Background(c) - Time(Min)):	1419	10		6501	10			µRem/hr
CS Isotope - Activity(µCi):	C-14	0.159		C-14	0.159			
CS Source(cpm)	8636			6199				
L_c, L_d (Counts)	28	58		59	122		NA	NA
Direct MDC, Scan MDC (dpm/100cm^2)	441	2722		231	1467		NA	NA
MDCR , MDC Count Rate	397	188		1195	671		NA	NA
Total Efficiency, Isotope:	10.5%	C-14		9.0%	C-14			
Source Efficiency	0.25			0.25			NA	

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

Direct MDC= $\frac{3+4.65*SQRT(B)}{T*\varepsilon_t*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*\varepsilon_t*\varepsilon_s*A*C}$

MDCR= $s_i * (60/i)$

B = Background Counts
T = Counting Time In Minutes
ε_t = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Site: Incyte

Building: 400

Start Date: 11/14/14

Various Location Post Phase 2 Decon

Finish Date: 11/14/14

Surveyor: Korressa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
1	Lab 3414 Location 263/478 Tile Over Concrete	<200	<200	<200	*1*	3052	21996	*3*	1315	850	380
6	Lab 3414 Location 257/476 Laminate	<200	<200	<200	*1*	537	2986	*3*	1502	1000	666
11	Lab 3414 Location 258/477 Tile Over Concrete	<200	<200	<200	*1*	616	3584	*3*	1716	1200	1046
16	Freezer Corridor Location 393/479 Tile Over Concrete	<200	<200	<200	*1*	833	5224	*3*	1500	1200	1046
21	Freezer Corridor Location 394/480 Tile Over Concrete	<200	<200	<200	*1*	607	3515	*3*	1300	800	285
26	Lab 3419 Location 181/481 Tile Over Concrete	<200	<200	<200	*1*	234	696	*1*	300	215	553

Site: Incyte

Building: 400

Start Date: 11/14/14

Various Location Post Phase 2 Decon Tile Removal

Finish Date: 11/14/14

Surveyor: Korressa Williams

Surveyor: Matthew Mueller

Area Survey Results		Wipe Tests			Direct Measurements			β Scan Measurements			
Wipe Number	Description	β (dpm/100 cm^2) H-3	β (dpm/100 cm^2) C-14	β (dpm/100 cm^2) High E	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)
31	Lab 3414 Location 263/478Tile Over Concrete	<200	<200	<200	*1*	216	560	*3*	900	825	333
36	Lab 3414 Location 257/476Laminate	<200	<200	<200	*1*	207	492	*3*	900	825	333
41	Lab 3414 Location 258/477Tile Over Concrete	<200	<200	<200	*1*	243	764	*3*	900	825	333
46	Freezer Corridor Location 393/479Tile Over Concrete	<200	<200	<200	*1*	239	734	*3*	1000	950	571
51	Freezer Corridor Location 394/480Tile Over Concrete	<200	<200	<200	*1*	192	379	*3*	925	900	475

WIPE TEST LSC RESULTS

LSC Results

Assay Definition-

Assay Description:
INCYTE CORPORATION

Assay Type: DPM (Triple)
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\Default\Triple Lable DPM
Raw Results Path: C:\Packard\Tricarb\Results\Default\Triple Lable DPM\20141118_0854.results
Comma-Delimited File Name: C:\Packard\Tricarb\Results\Default\Triple Lable DPM\1410.csv
Assay File Name: C:\Packard\TriCarb\Assays\Triple Lable DPM.lsa

Count Conditions-

Nuclide: Triple Label
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Sets:
Low Energy: 3H-UG-08252014
Mid Energy: 14C-UG-020614
High Energy: 32P-UG-02-28-05
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	Bkg Subtract	2Sigma % Terminator
A	0.0	12.0	1st Vial	0.00
B	12.0	156.0	1st Vial	0.00
C	156.0	2000.0	1st Vial	0.00

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

S# 1= Background

Cycle 1 Results

S#	Time	CPMA	CPMB	CPMC	DPM1	DPM2	DPM3	tSIE	LUM
1	10.00	4	12	6	0	0	0	575	1
2	2.00	0	-3	-2	2	-3	-2	573	0
3	2.00	-0	-1	-1	-0	-1	-1	612	0
4	2.00	-1	-3	1	-1	-4	1	578	4
5	2.00	1	-0	-1	3	-0	-1	610	0
6	2.00	1	-1	-4	2	-0	-4	623	0
7	2.00	-0	-4	-2	1	-5	-3	548	0

Rm 238- (2-36)

8	2.00	1	-5	-1	4	-6	-1	639	0
9	2.00	-0	0	-1	-0	1	-1	622	3
10	2.00	4	1	0	8	1	0	648	2
11	2.00	-2	-5	1	-2	-5	1	618	5
12	2.00	1	-3	-3	3	-3	-3	590	0
13	2.00	-1	-1	-3	-2	0	-3	622	7
14	2.00	2	-7	-1	6	-8	-1	644	0
15	2.00	1	-2	-0	4	-3	-0	645	3
16	2.00	-2	-6	-0	-2	-6	-0	655	0
17	2.00	2	-1	-3	6	-1	-3	636	0
18	2.00	1	-2	-2	2	-2	-3	587	0
19	2.00	3	1	-0	6	1	-0	603	0
20	2.00	0	-3	3	2	-4	4	598	4
21	2.00	2	-3	-2	6	-4	-2	605	3
22	2.00	1	-1	0	3	-2	0	609	3
23	2.00	-1	-3	-0	-2	-3	-0	508	4
24	2.00	-0	-3	-2	-0	-3	-3	423	4
25	2.00	-1	-2	-1	-1	-2	-1	593	4
26	2.00	-1	-2	0	-2	-3	0	579	4
27	2.00	-1	-3	-2	-2	-3	-2	549	0
28	2.00	-1	-4	1	-0	-5	1	616	4
29	2.00	-1	-4	-2	-1	-4	-3	599	4
30	2.00	1	-3	-2	3	-3	-2	619	0
31	2.00	1	-3	0	2	-4	0	616	4
32	2.00	4	-7	-0	12	-9	-0	650	0
33	2.00	0	-2	-0	1	-3	-0	654	0
34	2.00	2	-3	0	6	-4	0	662	3
35	2.00	0	-4	2	2	-5	3	661	0
36	2.00	0	-5	-1	2	-5	-1	654	4
37	2.00	1	-3	-4	4	-2	-4	633	3
38	2.00	2	-7	-1	7	-8	-1	653	4
39	2.00	1	-5	-2	4	-5	-2	600	4
40	2.00	0	-6	-0	3	-7	-0	629	5
41	2.00	-1	-5	-2	0	-6	-2	621	0
42	2.00	-0	1	1	-1	1	1	581	3
43	2.00	1	-5	0	3	-6	0	598	4
44	2.00	0	-4	2	2	-5	2	614	0
45	2.00	1	-4	1	3	-5	1	620	0
46	2.00	-2	-1	-0	-5	-0	-0	553	4
47	2.00	0	-5	1	2	-6	2	645	0
48	2.00	-1	-5	-2	-1	-5	-3	656	0
49	2.00	4	-1	-3	10	-1	-4	658	3
50	2.00	1	-5	1	4	-6	2	669	0
51	2.00	-1	-1	-2	-1	-0	-3	659	3
52	2.00	-2	-4	-2	-2	-4	-3	660	0
53	2.00	-1	1	-2	-3	2	-2	660	3
54	2.00	3	-6	-2	9	-7	-2	669	4
55	2.00	0	-2	-1	1	-3	-1	667	4
56	2.00	2	-3	1	5	-4	1	657	3
57	2.00	0	-4	-1	2	-5	-1	655	4
58	2.00	2	-2	-4	5	-2	-4	613	3
59	2.00	1	-3	0	5	-4	0	469	3
60	2.00	2	-2	2	5	-3	2	693	0
61	2.00	-3	-2	-1	-5	-2	-1	609	4
62	2.00	-2	-6	-2	-3	-6	-2	385	6
63	2.00	-2	-4	-3	-2	-4	-3	614	0
64	2.00	-1	-4	-1	-1	-5	-1	666	9
65	2.00	2	-5	-1	7	-6	-1	668	4
66	2.00	2	-6	0	6	-8	0	662	0
67	2.00	4	-4	0	10	-5	0	659	3
68	2.00	0	-6	-3	3	-7	-3	646	5
69	2.00	3	-6	-3	9	-7	-4	630	7

Rm 266-(37-71

70	2.00	1	-3	1	3	-4	2	631	0
71	2.00	4	-2	-3	9	-2	-3	642	3
72	2.00	-1	-5	0	0	-6	0	479	5
73	2.00	0	-1	-2	1	-0	-2	497	0
74	2.00	1	-2	1	4	-3	2	560	0
75	2.00	-2	-3	1	-3	-3	2	463	4
76	2.00	-1	-4	2	-1	-5	2	500	5
77	2.00	0	-4	-1	2	-4	-1	612	0
78	2.00	-2	-2	-0	-3	-2	-0	582	4
79	2.00	1	-2	-2	4	-2	-3	628	3
80	2.00	-1	-5	-2	-2	-6	-2	563	5
81	2.00	-0	-4	-1	1	-4	-1	628	4
82	2.00	-1	-4	-0	-0	-5	-0	637	4
83	2.00	0	-5	1	2	-6	1	604	0
84	2.00	1	-4	-0	4	-5	-0	378	4
85	2.00	-1	2	-0	-3	3	-0	347	3
86	2.00	-2	-0	1	-4	-0	2	539	3
87	2.00	0	-5	0	2	-6	0	582	0
88	2.00	2	-4	1	6	-5	1	576	0
89	2.00	-1	-5	-3	-1	-5	-3	584	5
90	2.00	2	-5	0	7	-6	0	639	4
91	2.00	-0	0	-1	-0	1	-1	573	3
92	2.00	7	-2	-0	16	-3	-0	616	2
93	2.00	-2	-3	-1	-4	-3	-1	582	4
94	2.00	1	-4	-3	4	-4	-3	576	4
95	2.00	-1	-4	-2	-0	-4	-3	599	4
96	2.00	3	-4	1	7	-5	2	629	3
97	2.00	1	-3	1	3	-3	2	584	0
98	2.00	1	-3	2	4	-4	3	589	3
99	2.00	1	-4	-4	4	-4	-4	503	8
100	2.00	1	-1	-0	3	-1	-0	495	3
101	2.00	1	-4	-1	5	-4	-1	490	4
102	2.00	-2	-0	-3	-5	1	-3	523	7
103	2.00	2	-2	-4	4	-1	-4	550	6
104	2.00	-2	-5	0	-2	-5	0	598	5
105	2.00	-1	-4	2	-0	-5	2	620	8
106	2.00	-1	-5	0	-0	-6	0	524	5
107	2.00	2	3	-2	3	4	-3	532	2
108	2.00	3	-1	1	7	-2	1	575	6
109	2.00	1	-7	-1	5	-8	-1	611	9
110	2.00	-0	-3	-0	1	-4	-0	550	4
111	2.00	-1	0	-0	-2	1	-0	536	6
112	2.00	-0	-2	-3	0	-2	-4	518	7
113	2.00	-1	-0	-1	-2	0	-1	537	3
114	2.00	1	-2	-2	3	-2	-2	588	6
115	2.00	2	-3	0	5	-4	0	525	7
116	2.00	1	-5	-2	3	-5	-3	575	8
117	2.00	-0	-3	-1	1	-3	-1	508	7
118	2.00	-1	-2	-2	-3	-2	-2	468	8
119	2.00	3	-1	-0	8	-1	-0	553	5
120	2.00	-0	-5	-1	1	-5	-1	505	4
121	2.00	2	-1	0	5	-2	0	603	8
122	2.00	-0	1	-2	-1	1	-3	514	3
123	2.00	2	-1	-5	6	-1	-6	572	6
124	2.00	-2	-5	-4	-2	-5	-5	560	11
125	2.00	0	-5	0	2	-6	0	558	8
126	2.00	-2	-0	-0	-5	0	-0	490	7
127	2.00	3	-2	-0	7	-3	-0	605	3
128	2.00	-1	-6	0	-1	-7	0	487	5
129	2.00	0	-2	-2	2	-2	-2	490	7
130	2.00	-1	-3	-2	-2	-3	-2	524	8
131	2.00	-1	-2	-0	-2	-2	-0	492	10

Rm 268- (72-96)

Rm 282-(97-116)

Dock Area of bldg. 336 (117-131)

Rm 3407- (132-171)

132	2.00	3	-4	-2	10	-5	-2	510	6
133	2.00	2	-2	-1	5	-3	-1	617	6
134	2.00	-1	-3	-2	-1	-3	-2	594	8
135	2.00	12	9	-3	27	10	-4	521	3
136	2.00	-1	-5	-2	-0	-5	-3	531	9
137	2.00	1	-5	-2	3	-6	-3	566	9
138	2.00	2	-7	-4	6	-7	-5	547	9
139	2.00	3	-5	-3	9	-7	-3	530	10
140	2.00	1	-5	-1	3	-6	-1	563	8
141	2.00	2	-6	-3	7	-7	-3	540	8
142	2.00	3	-2	-4	7	-2	-4	599	6
143	2.00	0	-8	3	4	-11	3	427	13
144	2.00	-1	-2	-2	-2	-2	-2	576	4
145	2.00	1	-4	2	3	-6	2	565	8
146	2.00	1	-4	-0	4	-5	-0	557	7
147	2.00	2	-5	-2	7	-6	-3	583	10
148	2.00	2	-4	2	6	-6	2	601	7
149	2.00	3	-2	-2	8	-2	-3	592	6
150	2.00	1	-6	-4	4	-6	-4	593	4
151	2.00	-1	-0	0	-2	-0	0	405	3
152	2.00	-0	-6	1	2	-8	1	534	5
153	2.00	4	-2	-1	11	-2	-1	463	3
154	2.00	0	1	1	0	2	1	538	6
155	2.00	2	-1	-0	5	-2	-0	545	6
156	2.00	-2	-7	-3	-6	-7	-3	277	7
157	2.00	0	2	0	-0	3	0	516	3
158	2.00	1	-2	-1	3	-2	-1	534	7
159	2.00	-1	1	-3	-2	2	-3	516	6
160	2.00	-1	-1	2	-2	-1	2	550	3
161	2.00	-1	-7	-0	1	-8	-0	583	12
162	2.00	2	-6	1	6	-8	2	570	8
163	2.00	-0	-1	-3	-0	-1	-3	525	3
164	2.00	0	-2	-0	1	-2	-0	549	3
165	2.00	3	-4	-0	8	-6	-0	604	7
166	2.00	1	-2	-2	3	-2	-3	566	3
167	2.00	5	-2	-0	12	-3	-0	664	0
168	2.00	-2	-2	3	-3	-2	3	659	0
169	2.00	3	-2	-3	6	-2	-3	673	6
170	2.00	-0	-3	-3	0	-3	-4	661	0
171	2.00	0	-3	-1	2	-3	-1	657	0
172	2.00	2	-5	-2	5	-5	-2	664	0
173	2.00	2	-3	1	5	-4	1	659	0
174	2.00	-1	-4	-4	-0	-4	-4	662	0
175	2.00	-0	-5	-1	1	-5	-1	654	0
176	2.00	0	-6	-0	2	-7	-0	664	0
177	2.00	2	-4	-1	5	-5	-1	658	4
178	2.00	2	-5	-0	5	-6	-0	662	0
179	2.00	-0	-6	-1	1	-7	-1	664	0
180	2.00	0	-6	-4	2	-7	-4	653	0
181	2.00	3	-3	-3	7	-3	-4	655	0
182	2.00	18	29	-0	30	32	-0	652	0
183	2.00	3	-4	0	7	-5	0	655	0
184	2.00	1	-4	-2	4	-4	-2	634	0
185	2.00	-2	-3	-2	-3	-3	-3	653	0
186	2.00	3	-3	-2	8	-4	-3	674	0
187	2.00	3	-4	-3	7	-5	-4	655	0
188	2.00	1	0	-2	2	1	-3	460	0
189	2.00	-2	-6	3	-2	-8	3	562	0
190	2.00	-2	-4	0	-3	-5	0	451	5
191	2.00	-1	-8	0	0	-10	0	465	0
192	2.00	-0	-1	-3	-0	-0	-3	411	0
193	2.00	2	-8	-3	6	-9	-3	708	5

Rm 3419 - (172-216)

194	2.00	-1	1	3	-4	1	3	356	0
195	2.00	0	-4	-0	2	-4	-0	494	0
196	2.00	2	-4	-4	5	-4	-5	571	0
197	2.00	1	5	2	2	6	2	495	0
198	2.00	2	-4	-1	6	-5	-1	556	0
199	2.00	-0	-1	-2	-1	-1	-2	377	0
200	2.00	0	-0	-0	1	-0	-0	634	0
201	2.00	0	-1	1	1	-2	2	654	3
202	2.00	-0	-2	-1	0	-2	-1	615	4
203	2.00	-2	-3	-2	-3	-3	-2	644	5
204	2.00	-1	-0	0	-2	0	0	595	3
205	2.00	-0	-1	-1	0	-1	-1	584	7
206	2.00	1	-2	2	4	-3	3	568	3
207	2.00	-1	-3	-0	-2	-3	-0	626	0
208	2.00	1	-5	-2	3	-5	-2	582	4
209	2.00	-0	-1	-3	0	-1	-3	547	3
210	2.00	0	-6	-1	3	-7	-1	567	5
211	2.00	-0	4	-1	-2	5	-1	656	3
212	2.00	3	13	-2	4	16	-2	587	0
213	2.00	3	13	-3	3	15	-4	552	5
214	2.00	-1	-5	0	-1	-5	0	647	5
215	2.00	4	-0	-1	11	-1	-1	533	5
216	2.00	4	-1	-2	9	-2	-3	571	3
217	2.00	-1	-2	3	-3	-3	3	392	4
218	2.00	-0	-4	-0	1	-4	-0	491	4
219	2.00	-2	0	-1	-5	1	-1	372	3
220	2.00	-2	-2	1	-5	-2	1	421	0
221	2.00	2	-4	-0	6	-5	-0	543	0
222	2.00	0	-3	-1	2	-3	-1	563	4
223	2.00	-0	-4	-0	1	-4	-0	645	4
224	2.00	0	-4	-2	1	-5	-2	603	4
225	2.00	-1	3	-3	-2	5	-4	649	3
226	2.00	0	-3	2	2	-4	3	552	4
227	2.00	-1	-4	0	-0	-5	0	583	4
228	2.00	1	-5	-1	3	-6	-1	635	4
229	2.00	1	-4	-2	4	-4	-2	590	7
230	2.00	2	-7	-2	7	-8	-2	558	4
231	2.00	1	-1	-3	2	-1	-4	633	0
232	2.00	-1	-6	-1	-1	-7	-1	588	0
233	2.00	9	-3	-1	21	-5	-1	575	2
234	2.00	0	-5	-2	2	-5	-2	586	4
235	2.00	0	-4	-3	2	-4	-3	577	8
236	2.00	3	-1	0	7	-2	0	542	6
237	2.00	1	-3	-2	3	-3	-2	584	7
238	2.00	-1	-2	0	-2	-2	0	574	7
239	2.00	2	-1	-2	4	-2	-2	652	6
240	2.00	1	0	-1	2	1	-1	581	6
241	2.00	-0	-3	-0	0	-3	-0	632	10
242	2.00	-0	-5	-1	1	-5	-1	576	9
243	2.00	2	-2	2	6	-4	3	625	6
244	2.00	1	-2	-1	3	-2	-1	584	7
245	2.00	-0	-7	-0	2	-8	-0	570	11
246	2.00	-1	-5	-1	0	-6	-1	548	10
247	2.00	-1	-1	0	-3	-1	0	552	7
248	2.00	1	-4	-2	4	-5	-2	566	4
249	2.00	3	-6	-3	10	-8	-4	521	8
250	2.00	-2	-3	-1	-3	-3	-1	530	4
251	2.00	3	-4	-4	8	-4	-5	552	7
252	2.00	2	-3	0	6	-4	0	631	6
253	2.00	3	-4	-3	8	-4	-4	581	6
254	2.00	-2	-1	-1	-4	-1	-1	536	10
255	2.00	3	-5	-1	9	-6	-1	617	3

Rm 3212-
(217-256)

256	2.00	0	-5	1	2	-6	2	605	4
257	2.00	3	-1	-1	6	-1	-1	554	6
258	2.00	-1	-3	0	-1	-3	0	649	11
259	2.00	0	-3	-3	1	-3	-4	650	8
260	2.00	3	-2	2	8	-3	3	641	6
261	2.00	3	-3	3	7	-5	4	649	3
262	2.00	-1	-3	-0	-0	-4	-0	637	4
263	2.00	1	-4	-2	3	-5	-3	616	8
264	2.00	2	-3	-0	6	-4	-0	554	0
265	2.00	1	-0	-2	2	0	-3	604	3
266	2.00	2	3	1	4	3	1	615	2
267	2.00	-0	-2	2	1	-3	2	452	0
268	2.00	-1	1	1	-2	2	1	471	3
269	2.00	-1	1	-0	-3	2	-0	336	0
270	2.00	1	-0	0	4	-0	0	472	3
271	2.00	-1	-4	-2	-2	-5	-2	395	5
272	2.00	-1	-3	-0	-2	-4	-0	393	4
273	2.00	-1	-5	-1	-0	-5	-1	540	0
274	2.00	2	-5	-4	7	-6	-4	633	0
275	2.00	2	-4	-1	6	-5	-1	515	0
276	2.00	-1	-4	-2	-0	-4	-2	625	0
277	2.00	-3	-4	-3	-7	-3	-3	373	5
278	2.00	2	-7	-4	6	-7	-4	628	4
279	2.00	4	-4	-2	9	-5	-3	665	0
280	2.00	1	-2	-5	2	-2	-6	652	3
281	2.00	0	3	-2	-1	4	-2	652	3
282	2.00	-0	2	-2	-1	3	-3	654	3
283	2.00	0	-3	-2	2	-3	-2	649	4
284	2.00	-1	-5	1	0	-6	1	638	5
285	2.00	-1	-6	-0	-1	-7	-0	611	0
286	2.00	0	-5	-1	2	-6	-1	615	0
287	2.00	3	-4	-0	7	-5	-0	659	0
288	2.00	2	-4	-0	6	-5	-0	665	10
289	2.00	-0	-2	0	0	-2	0	659	3
290	2.00	0	-4	-2	2	-4	-2	664	4
291	2.00	1	-2	-4	3	-1	-4	624	0
292	2.00	2	-3	-2	6	-4	-3	610	3
293	2.00	1	0	-2	3	1	-2	644	0
294	2.00	1	-2	-4	4	-2	-4	633	3
295	2.00	2	-0	-1	5	-0	-1	650	6
296	2.00	-0	-5	-2	1	-6	-3	632	5
297	2.00	-1	-1	-2	-2	-0	-3	645	7
298	2.00	2	-0	3	4	-1	4	635	0
299	2.00	3	-4	-3	8	-4	-3	655	3
300	2.00	1	-1	-4	3	-1	-5	635	6
301	2.00	1	-1	0	3	-2	0	648	0
302	2.00	-1	-2	1	-2	-3	1	619	4
303	2.00	-1	-3	-1	-1	-3	-1	626	4
304	2.00	0	-3	-1	2	-3	-1	581	0
305	2.00	2	-2	-2	6	-2	-2	580	6
306	2.00	0	-2	0	1	-2	0	635	3
307	2.00	2	-8	-1	6	-9	-1	649	10
308	2.00	2	-4	-2	6	-5	-2	646	7
309	2.00	3	-2	0	7	-2	0	653	8
310	2.00	-0	-5	-1	1	-5	-1	629	12
311	2.00	1	-5	-1	3	-6	-1	637	4
312	2.00	-1	-6	-2	-1	-6	-3	456	11
313	2.00	-1	-1	0	-3	-1	0	416	7
314	2.00	1	11	1	-1	13	2	436	0
315	2.00	-2	-1	-2	-5	-1	-2	455	0
316	2.00	1	-4	-3	3	-5	-3	414	8
317	2.00	1	-4	-0	7	-5	-0	331	7

Rm 3214- (257-301)

Rm. 3226 - (302-331)

318	2.00	11	-5	-1	30	-7	-1	519	2
319	2.00	2	-4	-2	7	-5	-2	564	16
320	2.00	-1	1	1	-3	2	1	452	0
321	2.00	2	-1	-1	6	-1	-1	623	0
322	2.00	-1	-2	-4	-2	-1	-4	544	0
323	2.00	-0	-2	-3	0	-2	-4	622	4
324	2.00	5	-3	-3	13	-4	-4	576	3
325	2.00	1	-3	-1	3	-4	-1	570	0
326	2.00	2	-3	1	6	-4	1	643	3
327	2.00	-0	-7	3	2	-9	3	615	6
328	2.00	-0	-0	-0	-0	-0	-0	577	0
329	2.00	-1	-3	-2	-0	-3	-3	630	0
330	2.00	-0	-2	1	0	-3	1	654	0
331	2.00	4	-1	-2	9	-2	-2	651	3
332	2.00	1	-5	-2	4	-5	-2	668	0
333	2.00	0	-4	-2	2	-4	-3	658	0
334	2.00	1	-5	-2	3	-5	-3	659	0
335	2.00	-2	-4	-1	-2	-4	-1	668	0
336	2.00	1	-0	-1	3	-0	-1	654	0
337	2.00	-3	-1	-3	-7	-0	-4	443	0
338	2.00	-0	-4	0	1	-5	0	447	0
339	2.00	-0	-3	-0	1	-4	-0	645	0
340	2.00	-0	-2	1	-0	-2	2	659	0
341	2.00	3	-3	1	8	-4	2	656	0
342	2.00	2	-0	-1	5	-1	-1	652	0
343	2.00	1	-3	1	3	-4	1	664	0
344	2.00	3	-2	-0	6	-3	-0	659	0
345	2.00	-3	-1	0	-8	-1	0	394	0
346	2.00	2	-6	0	5	-8	0	649	0
347	2.00	-1	3	-2	-3	4	-3	660	0
348	2.00	1	-7	-4	5	-8	-5	661	0
349	2.00	0	-5	-1	2	-6	-1	664	0
350	2.00	-2	-3	1	-3	-4	2	663	0
351	2.00	-1	0	-2	-1	1	-3	661	0
352	2.00	2	-2	0	6	-2	0	649	0
353	2.00	1	-3	-4	2	-3	-4	667	0
354	2.00	1	-4	-1	4	-5	-1	668	4
355	2.00	0	-3	-3	2	-2	-4	663	4
356	2.00	1	-2	1	2	-3	1	663	0
357	2.00	2	-6	-0	6	-7	-0	669	8
358	2.00	1	-5	-1	4	-6	-1	664	4
359	2.00	-0	-0	-2	-1	-0	-2	662	0
360	2.00	-1	-5	1	-1	-5	1	663	5
361	2.00	1	-3	-0	4	-4	-0	665	0
362	2.00	-0	-3	-3	0	-3	-3	619	4
363	2.00	1	-7	-2	5	-9	-2	625	5
364	2.00	0	-3	-3	2	-3	-3	625	4
365	2.00	3	-6	0	8	-8	0	608	4
366	2.00	-0	-5	-3	1	-5	-4	614	0
367	2.00	0	-3	-3	2	-3	-3	626	4
368	2.00	-3	-2	-3	-5	-1	-3	591	0
369	2.00	3	-1	-1	7	-1	-1	613	0
370	2.00	-1	-2	2	-1	-2	3	629	4
371	2.00	-1	0	-0	-3	1	-0	593	0
372	2.00	2	-3	-2	6	-3	-3	641	3
373	2.00	-1	-3	-1	-1	-3	-1	606	4
374	2.00	1	1	-1	2	1	-1	636	0
375	2.00	0	-4	0	2	-4	0	552	4
376	2.00	0	-2	1	1	-2	1	600	3
377	2.00	0	-3	1	2	-4	1	616	4
378	2.00	-2	-5	-1	-4	-5	-1	643	6
379	2.00	2	-8	-2	7	-10	-2	657	5

Rm. 3403- (332-361)

Rm 3474- (362-381)

380	2.00	2	0	-1	3	0	-1	640	0
381	2.00	-1	-5	0	0	-6	0	638	0
382	2.00	1	-8	-4	6	-9	-4	456	0
383	2.00	1	-2	-0	3	-3	-0	540	0
384	2.00	4	-5	-1	10	-7	-1	620	0
385	2.00	1	2	-1	2	3	-1	575	3
386	2.00	-1	-6	-0	-1	-6	-0	607	0
387	2.00	5	-2	-3	11	-2	-4	614	3
388	2.00	1	-4	-1	4	-5	-1	572	0
389	2.00	-1	-7	0	0	-8	0	478	6
390	2.00	2	-1	1	6	-2	2	564	3
391	2.00	-0	-4	-3	1	-4	-3	518	4
392	2.00	1	-4	0	4	-6	0	499	0
393	2.00	2	-4	-1	7	-5	-1	513	4
394	2.00	1	7	-2	-0	9	-3	440	0
395	2.00	4	14	1	6	17	2	459	0
396	2.00	-0	-6	0	2	-8	0	498	0
397	2.00	1	-4	-1	3	-5	-1	551	0
398	2.00	1	-4	1	5	-5	1	591	4
399	2.00	2	-4	-1	5	-5	-1	545	0
400	2.00	-0	-3	-4	0	-2	-4	537	0
401	2.00	2	-3	-4	8	-3	-4	407	3
402	2.00	-0	-2	-4	1	-2	-4	595	0
403	2.00	1	-6	-1	4	-8	-1	573	5
404	2.00	4	-2	2	9	-3	3	606	0
405	2.00	24	-4	4	57	-9	5	582	0
406	2.00	1	-5	-1	4	-6	-1	606	4
407	2.00	-2	-6	-3	-2	-6	-3	545	6
408	2.00	2	-6	-2	6	-7	-2	555	4
409	2.00	-0	-5	-1	1	-5	-1	592	0
410	2.00	2	1	-3	4	2	-4	583	0
411	2.00	2	-3	-0	6	-4	-0	630	0
412	2.00	-1	-6	-3	-0	-7	-3	298	0
413	2.00	-2	-5	-1	-3	-6	-1	357	0
414	2.00	0	-3	0	1	-4	0	374	4
415	2.00	2	-1	4	7	-3	5	386	0
416	2.00	-1	-5	-1	-2	-5	-1	420	0
417	2.00	31	1	0	87	-5	0	448	1
418	2.00	-1	-5	-4	-0	-5	-4	641	0
419	2.00	-2	-4	0	-4	-4	0	436	5
420	2.00	0	-5	0	2	-6	0	568	0
421	2.00	1	-5	-1	5	-6	-1	547	0
422	2.00	-1	-5	-1	0	-6	-1	572	0
423	2.00	2	-6	-1	7	-7	-1	619	4
424	2.00	-0	-4	-0	1	-4	-0	633	4
425	2.00	1	-5	-2	4	-6	-2	555	0
426	2.00	-1	-5	2	-1	-6	2	605	5
427	2.00	1	-2	-0	3	-3	-0	573	0
428	2.00	-0	-4	-4	1	-4	-5	612	0
429	2.00	-1	-7	2	1	-8	3	608	0
430	2.00	-0	-0	-2	-0	0	-3	580	0
431	2.00	3	-3	-0	7	-4	-0	622	0
432	2.00	1	-3	1	3	-4	2	574	0
433	2.00	1	-5	-3	5	-6	-3	613	0
434	2.00	2	-5	1	7	-7	2	660	0
435	2.00	16	-5	2	35	-9	3	658	0
436	2.00	3	-1	-2	7	-2	-3	625	0
437	2.00	-2	-2	-3	-3	-2	-3	577	0
438	2.00	1	-5	2	4	-6	2	618	0
439	2.00	0	-3	-0	2	-4	-0	634	0
440	2.00	2	-3	-1	6	-3	-1	595	0
441	2.00	1	0	-3	3	1	-3	576	0

Lab Corridor bldg 400 (382-401)

Rm 3238- (402-446)

442	2.00	1	-3	1	4	-4	1	634	0
443	2.00	1	-3	4	4	-5	5	582	0
444	2.00	2	-3	-1	6	-4	-1	613	0
445	2.00	0	-2	-1	1	-3	-1	605	0
446	2.00	2	-0	4	4	-1	5	648	0
447	2.00	0	-2	-1	1	-2	-1	610	0
448	2.00	1	-5	1	3	-6	2	608	0
449	2.00	2	-3	-2	6	-4	-2	638	0
450	2.00	-1	-3	-1	-1	-3	-1	655	0
451	2.00	1	-4	-1	3	-4	-1	599	0
452	2.00	0	-0	-2	0	0	-3	617	0
453	2.00	1	-2	-0	4	-3	-0	625	3
454	2.00	-3	-3	-1	-5	-3	-1	629	0
455	2.00	-1	-1	-4	-1	0	-4	650	0
456	2.00	-0	-7	1	2	-9	1	637	0
457	2.00	0	-4	-0	2	-4	-0	639	0
458	2.00	1	2	2	2	2	2	487	0
459	2.00	2	-0	-3	5	0	-3	656	0
460	2.00	-2	7	-2	-7	9	-3	651	0
461	2.00	2	-3	-1	6	-4	-1	643	0
462	2.00	3	-2	-0	7	-2	-0	650	3
463	2.00	3	2	-2	5	2	-3	653	0
464	2.00	0	-2	-1	1	-2	-1	654	0
465	2.00	0	-1	-1	1	-1	-1	629	0
466	2.00	1	0	-4	1	1	-5	627	0
467	2.00	1	-3	0	3	-3	0	623	0
468	2.00	1	1	1	3	1	1	643	0
469	2.00	4	0	-3	8	0	-3	654	0
470	2.00	-2	-4	1	-2	-5	1	647	0
471	2.00	3	1	-1	5	1	-1	650	0
472	2.00	2	-7	0	7	-8	1	653	0
473	2.00	4	3	-2	7	4	-2	644	0
474	2.00	3	-1	-1	6	-1	-1	640	0
475	2.00	0	-6	4	3	-8	5	649	0
476	2.00	2	-1	-1	5	-1	-1	642	0
477	2.00	-1	1	-4	-2	2	-4	661	0
478	2.00	7	-0	-0	16	-1	-0	657	0
479	2.00	3	3	2	6	3	3	653	0
480	2.00	1	-3	-2	3	-3	-2	666	0
481	2.00	2	-3	-3	6	-4	-3	664	3
482	2.00	3	2	-3	5	3	-3	660	0
483	2.00	6	2	-3	12	2	-3	659	0
484	2.00	4	-2	-1	10	-2	-1	663	0
485	2.00	0	-3	2	2	-4	2	653	0
Missing vial 486.									
487	2.00	129164	12815	6	211288	-2097	23	981	0
488	2.00	14040	101010	656	962	119489	-312	980	0
489	2.00	1281	22370	72355	-1699	10445	86087	509	0
490	2.00	49	118	101768	3126	-23085	121233	526	3

Rm 1440- (447-476)

Post Decon in Bldg. 400 (477-484)

Secondary Decontamination LSC Results

Assay Definition-

Assay Description:
INCYTE

Assay Type: DPM (Triple)
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\RSO INC\Triple Lable DPM
Raw Results Path: C:\Packard\Tricarb\Results\RSO INC\Triple Lable DPM\20141125_1712.results
Comma-Delimited File Name: C:\Packard\Tricarb\Results\RSO INC\Triple Lable DPM\1410.csv
Assay File Name: C:\Packard\TriCarb\Assays\Triple Lable DPM.lsa

Count Conditions-

Nuclide: Triple Label
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Sets:
Low Energy: 3H-UG-08252014
Mid Energy: 14C-UG-020614
High Energy: 32P-UG-02-28-05
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	Bkg Subtract	2Sigma % Terminator
A	0.0	12.0	1st Vial	0.00
B	12.0	156.0	1st Vial	0.00
C	156.0	2000.0	1st Vial	0.00

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

S#1= Background

Cycle 1 Results

S#	Time	CPMA	CPMB	CPMC	DPM1	DPM2	DPM3	tSIE	LUM
1	10.00	5	7	6	0	0	0	566	2
2	2.00	4	14	-1	4	16	-2	610	0
3	2.00	3	12	-3	3	15	-4	560	0
4	2.00	0	2	-1	1	2	-1	610	0
5	2.00	3	2	-2	5	3	-2	642	0
6	2.00	2	-1	1	6	-2	1	597	0
7	2.00	2	-1	-1	6	-1	-1	639	0

Room 3414
Floor Tile
#263/478
(S# 2-6)

8	2.00	0	1	2	1	1	2	655	0
9	2.00	2	-0	-0	4	-1	-0	660	0
10	2.00	1	0	2	3	-0	2	662	0
11	2.00	4	1	0	9	1	0	643	0
12	2.00	1	-1	0	3	-2	0	654	0
13	2.00	0	-2	-0	2	-2	-0	624	0
14	2.00	-4	-1	-1	-7	-0	-2	668	7
15	2.00	3	-1	1	8	-2	1	670	0
16	2.00	-0	-4	-1	1	-5	-2	668	0
17	2.00	0	6	-1	-1	7	-1	592	0
18	2.00	1	6	3	2	6	3	622	0
19	2.00	8	19	0	11	21	-0	653	0
20	2.00	2	3	2	2	3	2	681	3
21	2.00	-2	2	2	-5	2	2	668	0
22	2.00	2	-1	-1	5	-1	-2	587	0
23	2.00	-0	0	4	-0	-1	4	573	0
24	2.00	1	3	-1	2	3	-2	565	3
25	2.00	3	1	-0	6	0	-0	552	0
26	2.00	3	10	-1	4	11	-2	553	0
27	2.00	6	14	0	10	15	0	648	0
28	2.00	2	7	-1	3	9	-1	612	0
29	2.00	-2	4	3	-4	4	3	621	0
30	2.00	8	20	-2	13	23	-3	589	1
31	2.00	1	1	-0	2	1	-0	656	0
32	2.00	2	2	1	5	2	1	565	0
33	2.00	-2	3	-1	-5	4	-1	658	0
34	2.00	-2	2	2	-4	2	2	572	4
35	2.00	-1	-1	-1	-1	-1	-1	601	0
36	2.00	1	3	1	2	3	1	486	0
37	2.00	1	1	-1	2	2	-1	611	0
38	2.00	1	2	2	1	2	2	610	0
39	2.00	-1	1	-1	-2	2	-2	547	0
40	2.00	-1	-1	-1	-2	-1	-1	563	0
41	2.00	2	3	-1	5	3	-1	551	0
42	2.00	3	2	-3	5	2	-4	593	0
43	2.00	1	3	1	0	4	1	598	0
44	2.00	-2	4	0	-6	5	0	639	4
45	2.00	-1	-0	-3	-2	0	-3	568	0
46	2.00	0	5	-3	-0	6	-3	500	3
47	2.00	5	3	-1	9	3	-2	644	0
48	2.00	2	7	1	3	7	1	634	0
49	2.00	1	15	1	-2	18	1	641	0
50	2.00	-1	2	-3	-2	3	-4	570	0
51	2.00	4	1	-1	8	1	-1	650	0
52	2.00	-1	1	-3	-3	2	-4	663	0
53	2.00	-1	-1	1	-2	-1	1	618	0
54	2.00	-1	1	-2	-3	2	-2	613	0
55	2.00	1	6	-1	0	7	-1	622	0
56	2.00	-2	2	-2	-5	3	-2	631	0

Room 3414 Floor Tile #257/476 (S# 7-11)

Room 3414 Floor Tile #258/477 (S#12-16)

Lab Corridor Floor Tile #393/479 (S# 17-21)

Lab Corridor Floor Tile #394/480 (S#22-27)

Room 3419 Location #181/481 (S#28-31)

Post Tile Removal

Room 3414 Floor Tile #263/478 (S# 32-36)

Room 3414 Floor Tile #257/476 (S# 37-41)

Room 3414 Flor TIle #258/477 (S# 42-46)

Lab Corridot Floor Tile #393/479 (S#47-51)

Lab Corridor Floor Tile #394/480 (S# 52-56)

SURVEY METER CALIBRATION REPORTS

RSO, Inc.
P.O. Box 1450
Laurel, MD 20725
(301) 953-2482

RSO Job No. R11154

Certificate of Calibration

ISSUED TO: RSO, Inc.
5204 Minnick Road
Laurel, MD 20707

CONTACT: Dave Wellner
PHONE: (301) 953-2482

PO NO: RSO 299

INSTRUMENT: LUDLUM
MODEL: 2221
TYPE: RATEMETER
SN: 161591

RSO, Inc. certifies that on 11/07/2014 the above described instrument was calibrated using a radioactive source to determine the efficiency for a specific radionuclide(s) and using electronically generated pulse for the linearity. Pulsed using Ludlum 500-2, S/N 159110.

The results are tabulated below. Calibration is traceable to NIST.

Calibration Data

	RANGE	EXPECTED	OBSERVED		C.F.	NOTE
ANALOG	DATA	100	100	cpm	1.00	
		400	395	cpm	1.01	
		1000	1000	cpm	1.00	
		4000	4010	cpm	1.00	
		10000	9050	cpm	1.10	
		40000	39000	cpm	1.03	
		100000	100000	cpm	1.00	
		400000	390000	cpm	1.03	
SCALER	DATA	100	101	cpm	0.99	
		400	395	cpm	1.01	
		1000	1000	cpm	1.00	
		4000	4010	cpm	1.00	
		10000	10040	cpm	1.00	
		40000	39930	cpm	1.00	
		100000	100340	cpm	1.00	
		400000	399841	cpm	1.00	
				C.F. AVERAGE	1.01	

Notes

Probe type(s) **Probe1:** PROPORTIONAL **Probe2:** **Probe3:**

MODEL	SER#	WINDOW	GEOMETRY	VOLT	ISOTOPE 1	EFF.(%)	ISOTOPE 2	EFF.(%)	ISOTOPE 3	EFF.(%)	ISOTOPE 4	EFF.(%)
43-68	PR118227	FIXED	CONTACT	1699	C14	21	Tc99	22	Th230	27		

Threshold set to 35; Window set to OUT.

Note: "As Found" condition +/- 10% of Expected values unless indicated.

INSTRUMENT CHECKS

BATTERY CHECK: NORMAL
CHECK SOURCE 1: C14 READING: 8642 cpm
CHECK SOURCE 2: N/A READING:

ENVIRONMENTAL

TEMP: 24°C
PRESS: 760 mmHg
HUMID: 32 %

THE SUGGESTED RECALIBRATION DATE FOR THIS INSTRUMENT IS **11/07/2015**

Calibrated By: Dorsey Austin Reviewed By: Cal Date: 11/07/2014

Maryland License MD-33-021-01

16004

RSO, Inc.
P.O. Box 1450
Laurel, MD 20725
(301) 953-2482

RSO Job No. **R10942**

Certificate of Calibration

ISSUED TO: RSO, Inc.
5204 Minnick Road
Laurel, MD 20707

CONTACT: Dave Wellner
PHONE: (301) 953-2482

PO NO: RSO 299

INSTRUMENT: LUDLUM
MODEL: 2221
TYPE: RATEMETER
SN: 89650

RSO, Inc. certifies that on 06/11/2014 the above described instrument was calibrated using a radioactive source to determine the efficiency for a specific radionuclide(s) and using electronically generated pulse for the linearity. Pulsed using Ludlum 500-2, S/N 159110.

The results are tabulated below. Calibration is traceable to NIST.

Calibration Data

	RANGE	EXPECTED	OBSERVED		C.F.	NOTE
ANALOG	DATA	100	100	cpm	1.00	
		400	400	cpm	1.00	
		1000	1000	cpm	1.00	
		4000	4000	cpm	1.00	
		10000	10000	cpm	1.00	
		40000	40000	cpm	1.00	
		100000	100000	cpm	1.00	
		400000	400000	cpm	1.00	
SCALER	DATA	100	103	cpm	0.97	
		400	402	cpm	1.00	
		1000	1004	cpm	1.00	
		4000	4003	cpm	1.00	
		10000	10000	cpm	1.00	
		40000	40001	cpm	1.00	
		100000	100000	cpm	1.00	
		400000	400001	cpm	1.00	
				C.F. AVERAGE	1.00	

Notes

Probe type(s) **Probe1:** PROPORTIONAL **Probe2:** **Probe3:**

MODEL	SER#	WINDOW	GEOMETRY	VOLT	ISOTOPE 1	EFF.(%)	ISOTOPE 2	EFF.(%)	ISOTOPE 3	EFF.(%)	ISOTOPE 4	EFF.(%)
43-37	PR148928	FIXED	CONTACT	1850	C14	18	Sr90	22	Tc99	18	Ni63	6

Threshold set to 60D; Window set to"OUT".

Note: "As Found" condition +/- 10% of Expected values unless indicated.

INSTRUMENT CHECKS

BATTERY CHECK: NORMAL
CHECK SOURCE 1: N/A READING:
CHECK SOURCE 2: N/A READING:

ENVIRONMENTAL

TEMP: 25°C
PRESS: 737 mmHg
HUMID: 44 %

THE SUGGESTED RECALIBRATION DATE FOR THIS INSTRUMENT IS **06/11/2015**

Calibrated By: Dorsey Austin Reviewed By: Cal Date: 06/11/2014

Maryland License MD-33-021-01

15361

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