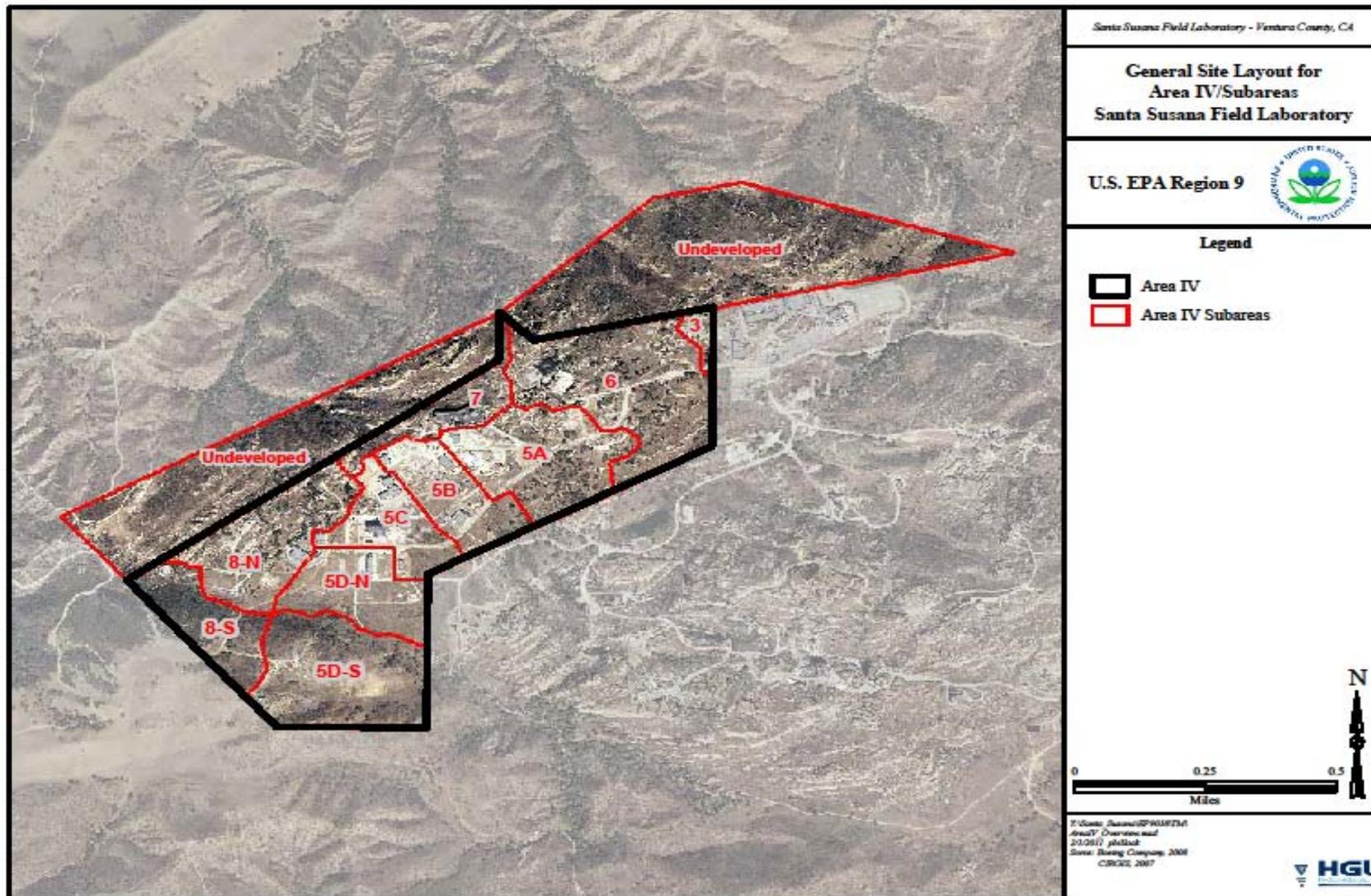


Overview of the Historical Site Assessment For Subarea 5D

April 20, 2011



EPA Project Subareas



Subarea 5D Overview

- ▣ Approximately 71.5 acres
- ▣ Drainage is generally to the east toward Area III
- ▣ Divided into 4 groups based on facility operation history
- ▣ Three key radiological use areas within Subarea 5D



Three Key Radiological Use Areas

- ▣ Building 4020, Hot Laboratory
- ▣ Building 4055, Nuclear Material Development Facility
- ▣ Building 4373, 1st SNAP (Systems for Nuclear Auxiliary Power) Critical Facility



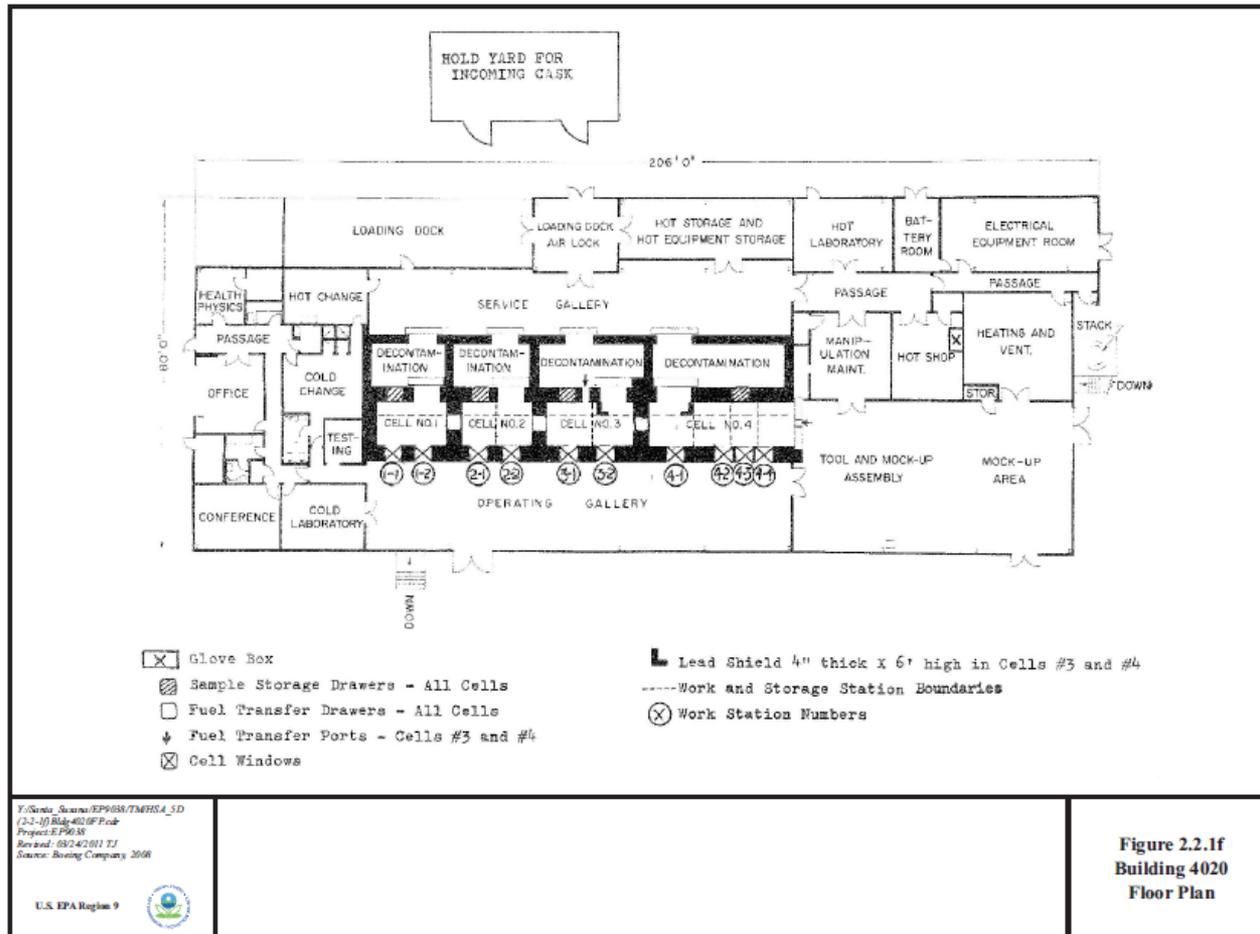
Building 4020 - Hot Lab



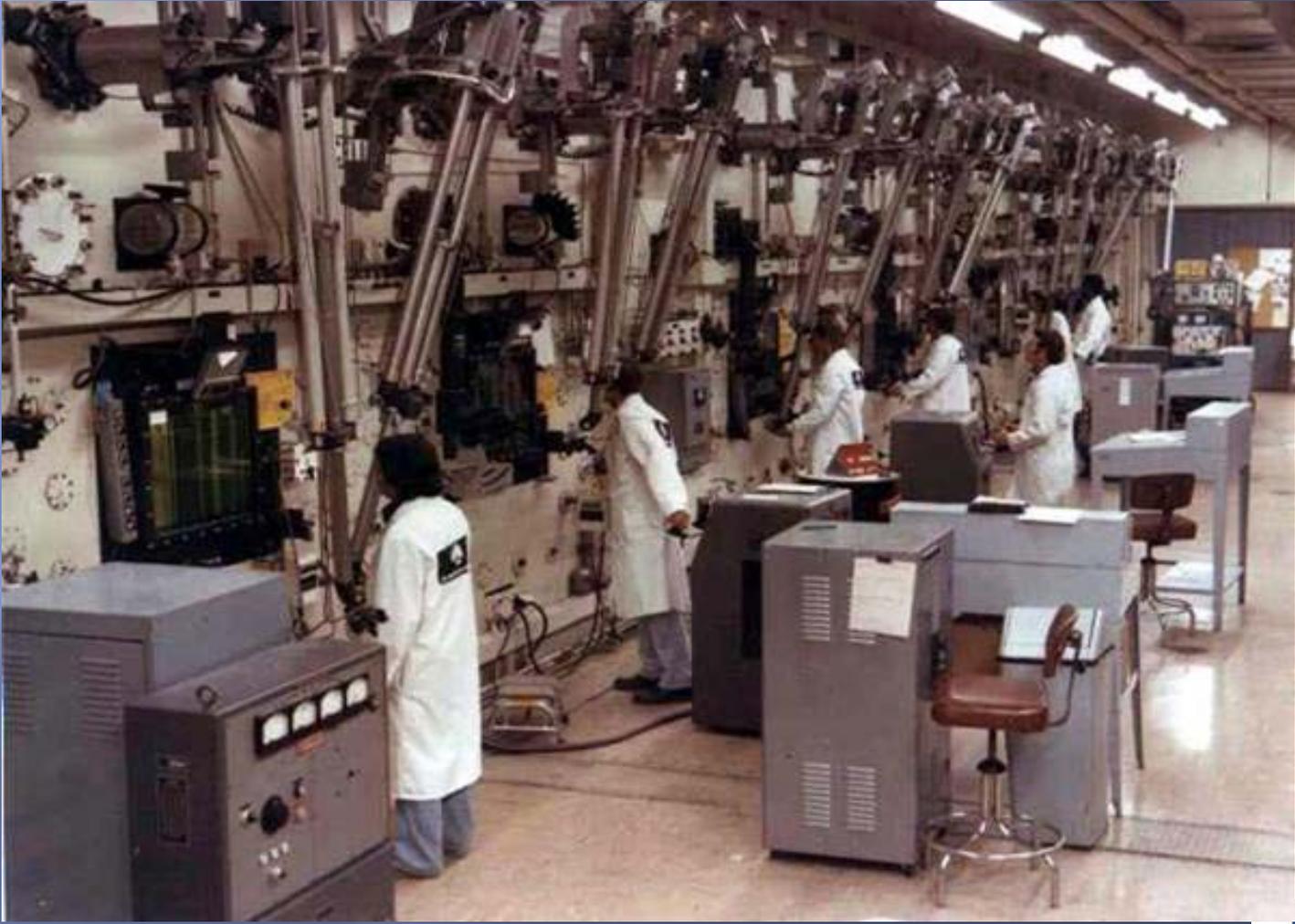
Building 4020 - Floor Plan

Santa Susana Field Laboratory
Historical Site Assessment

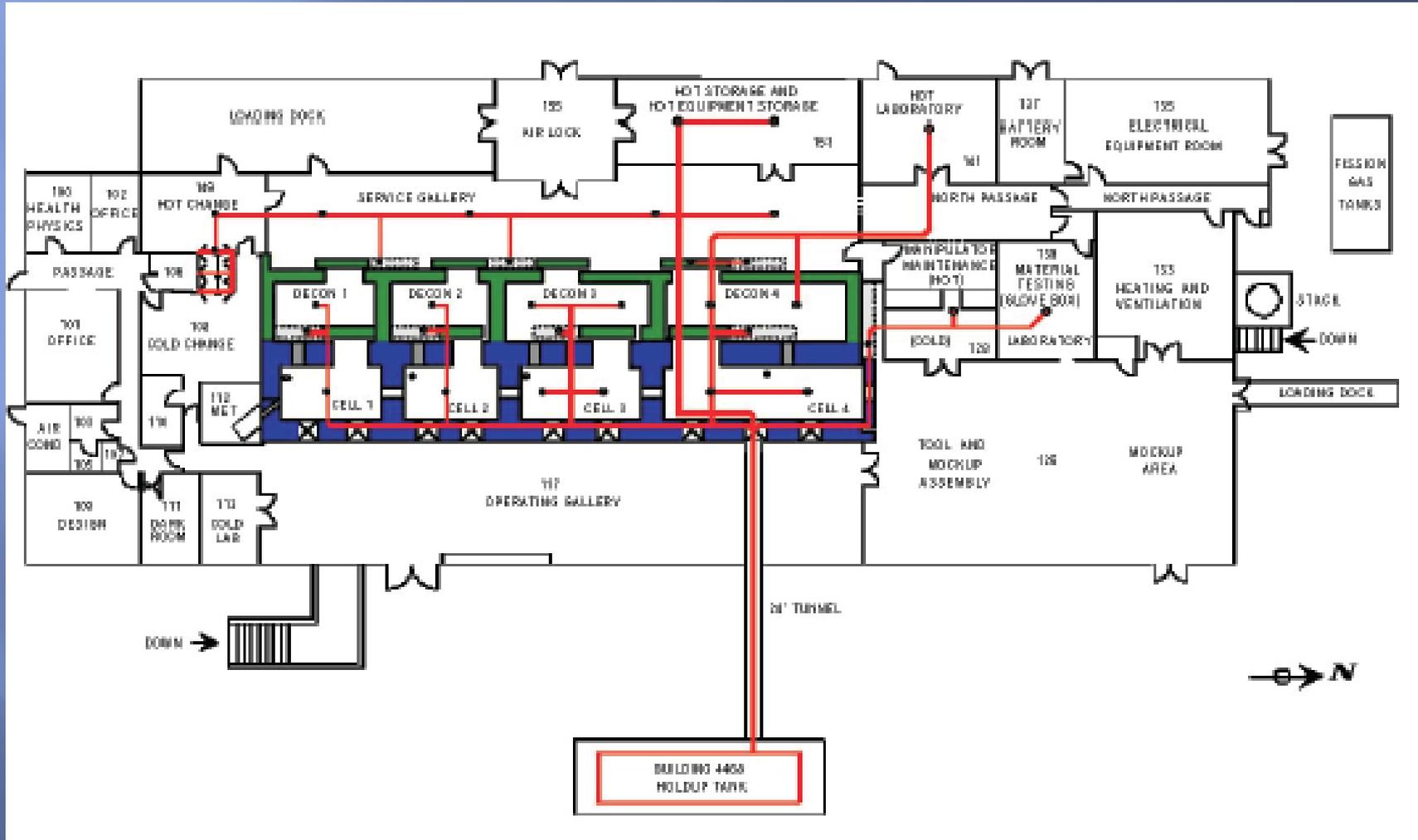
Draft Technical Memorandum - HSA-5D



Building 4020



Building 4020 - Building Drainage



Building 4468 - Liquid Waste Facility Building

Santa Susana Field Laboratory
Historical Site Assessment

Draft Technical Memorandum - HSA-5D



F:\Santa Susana\EP\HSA\TM\104_5D
12-2-2010\104668\Wdr
Project: 119638
Revised: 0524 2011 T2
Source: Howing Company, 2008

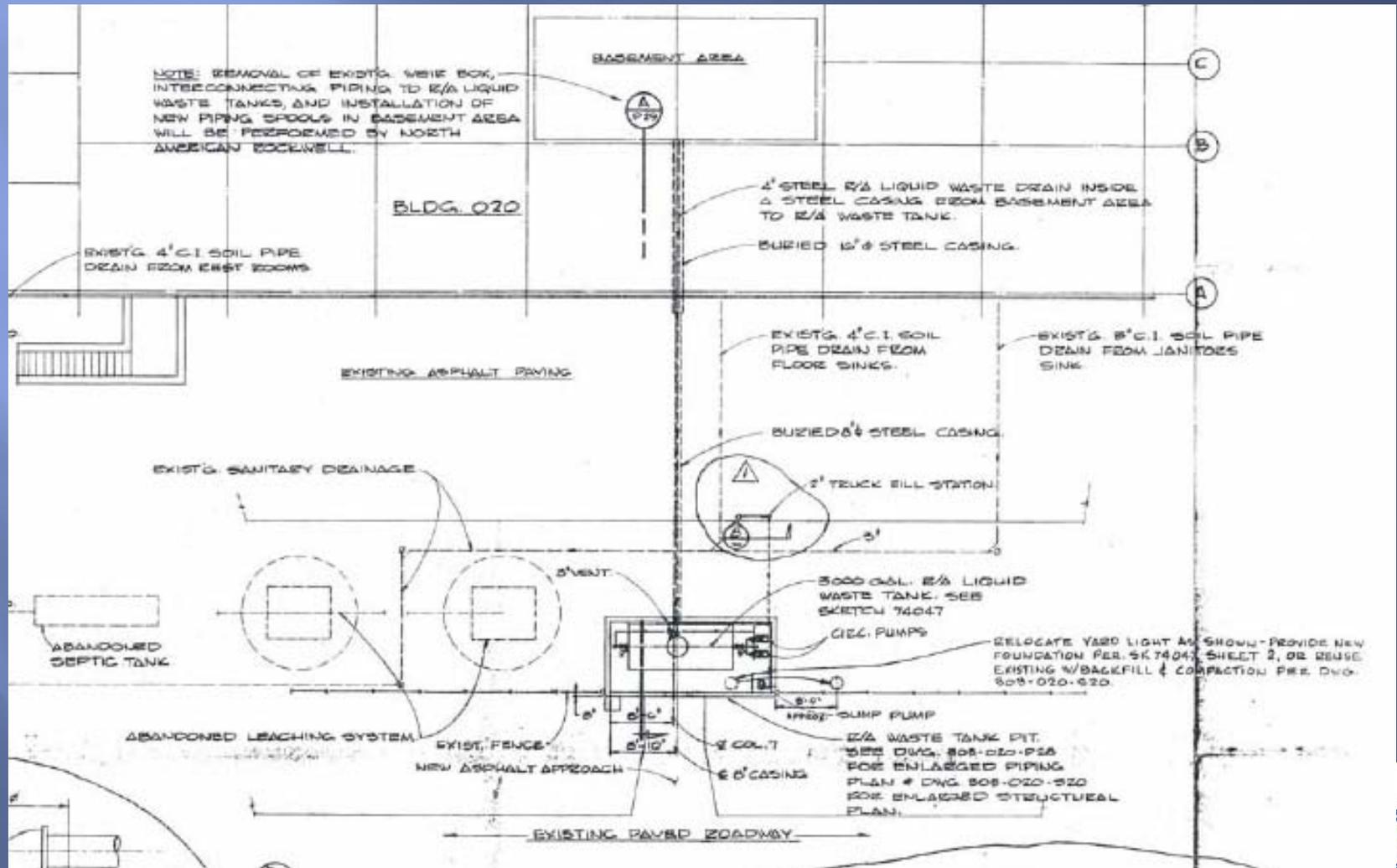
U.S. EPA Region 9



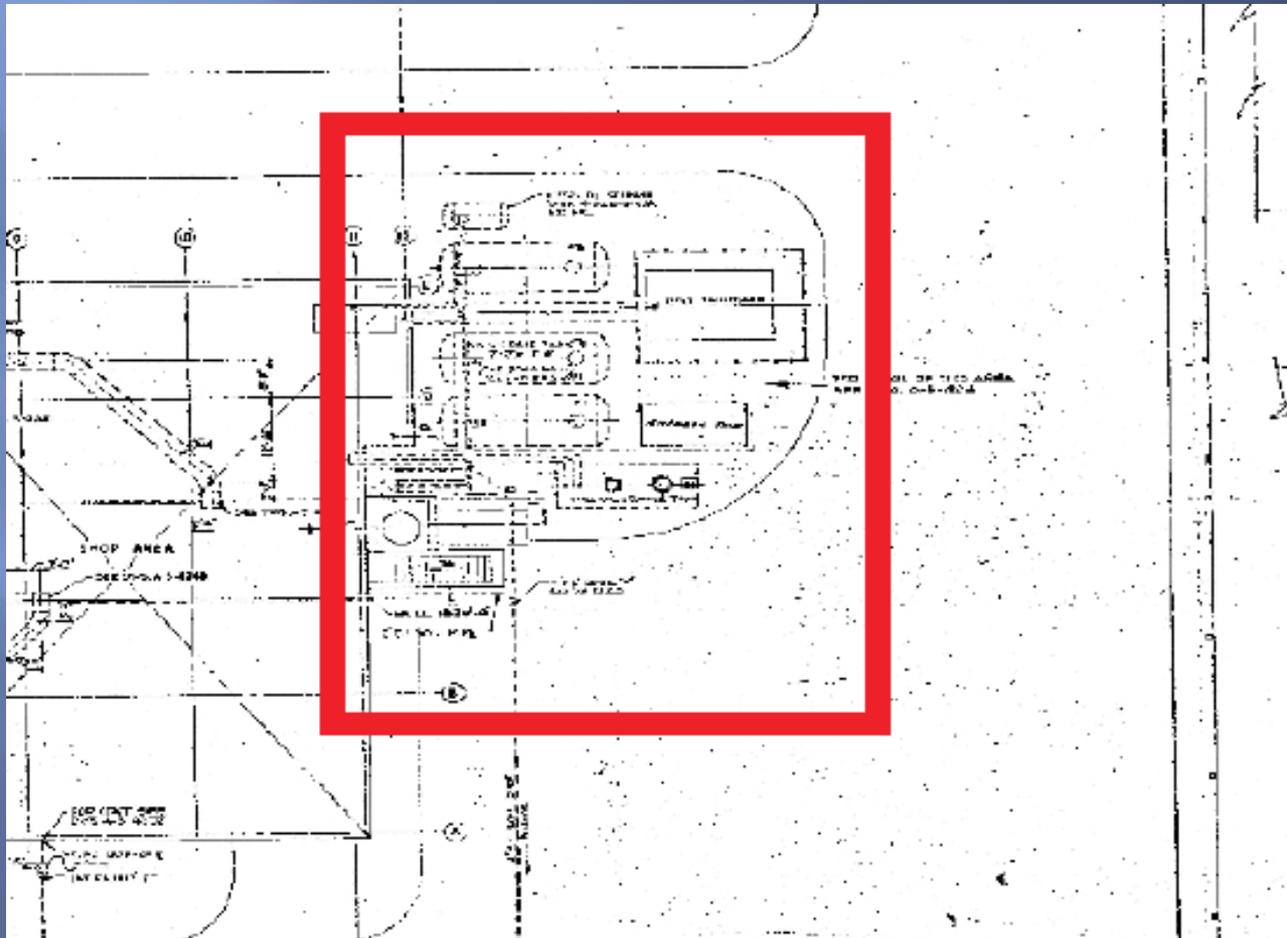
Figure 2.2.2g
Building 4468
Liquid Waste
Facility Building
1997



Building 4020 - Liquid Waste Piping Plan



Building 4020 - Underground Fission Gas Tanks



Building 4020 - Incidents Summary

Incident Type	Fire	Air Release	Basement /Other Areas	Spill at Loading Dock	Building Demo	Total # of Incidents
Release to Environment	4	2	5	4	4	19
Personnel Exposure - no evidence of release to environment						112
Total Incidents						131



Building 4020 - Migration Pathways



Building 4020 – Excavation



Building 4020

- ▣ Component Development Hot Cell and Hot Laboratory
- ▣ Operations 1959 to 1986
- ▣ Two 500-gallon radioactive holdup tanks in north end of building basement
- ▣ 3,000-gallon tank (Building 4468) replaced two 500-gallon tanks in ~1970
- ▣ 131 documented incidents with 19 involving release to environment
- ▣ Building used for remote handling and examination of highly radioactive materials
- ▣ 1990s – building demolished including foundations, pavement, and Building 4468 – depth of excavation was 18 feet below ground surface



Building 4055

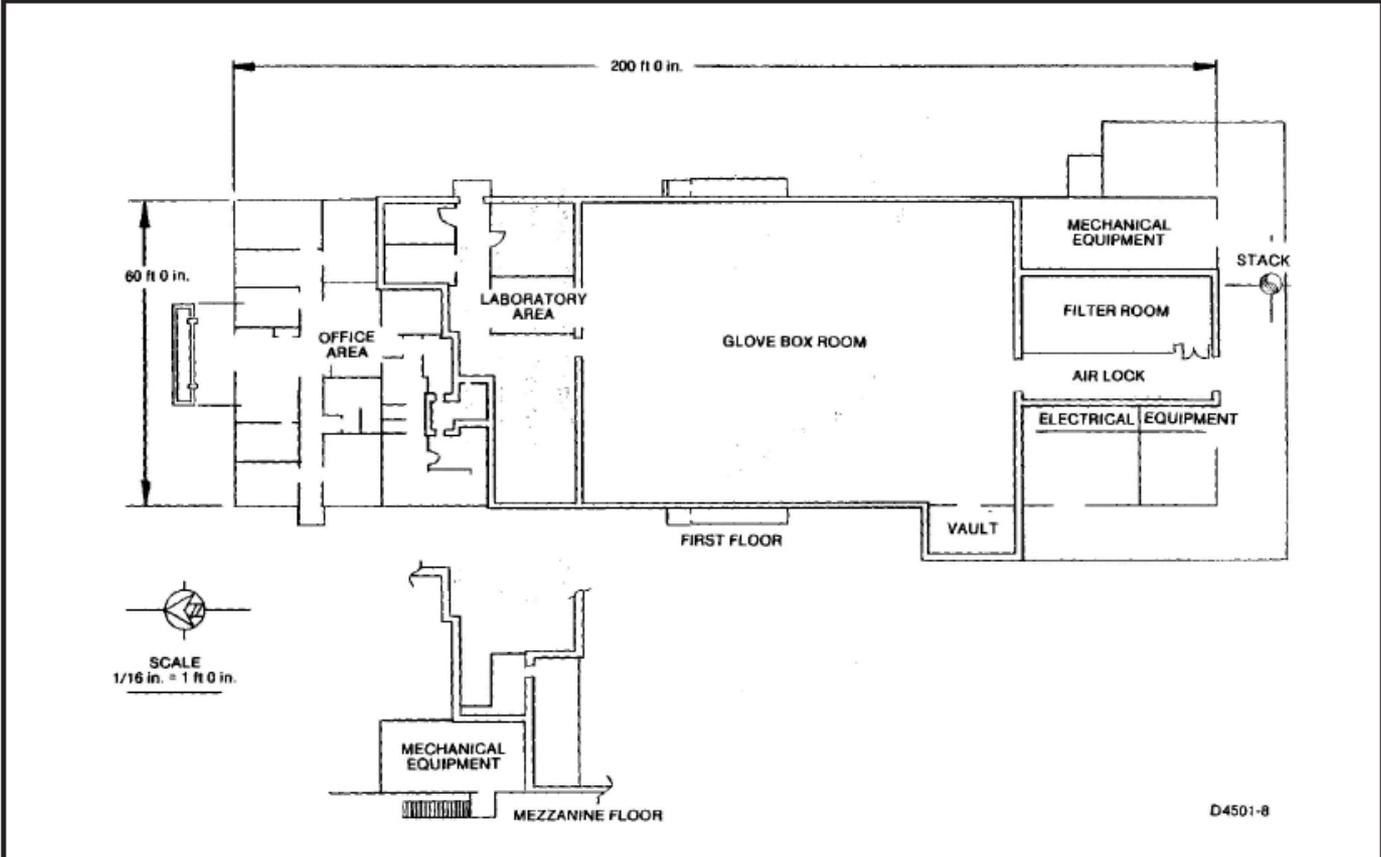


Building 4055 Looking North

Building 4055 – Floor Plan

Santa Susana Field Laboratory
Historical Site Assessment

Draft Technical Memorandum - HSA-5D



F:\Santa_Susana\EP9088\TMHSA_5D
(2-2-06)\Bldg4055\Floor
Project: EP9088
Revised: 05/22/01 T.J.
Source: Boeing Company 2008

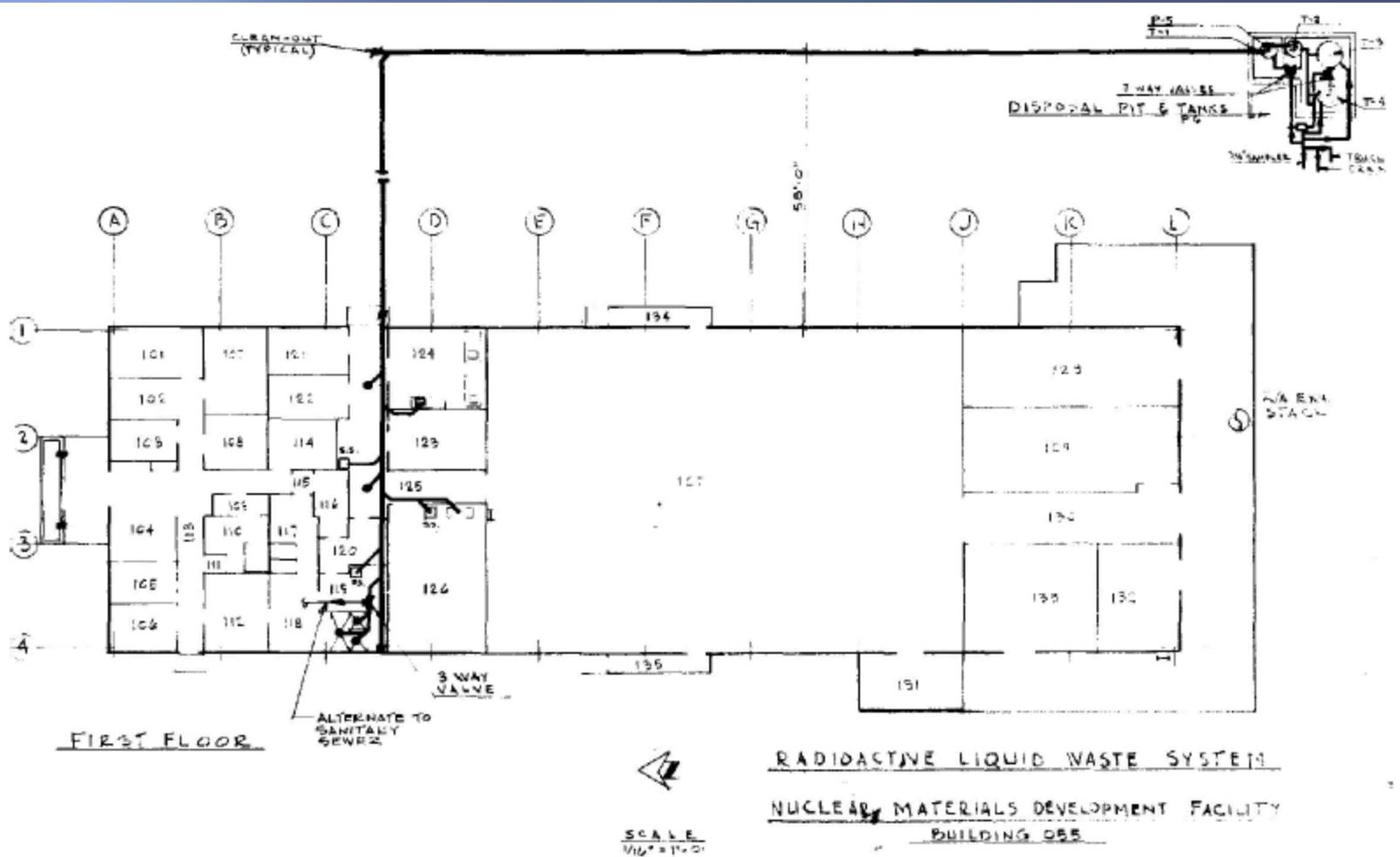
U.S. EPA Region 9



Figure 2.2.4b
Building 4055
Floor Plan



Building 4055 - Liquid Waste Holdup System



Building 4055 - Incidents Summary

Incident Type	Fire	Air Release	Waste Handling Areas	Spill at Loading Dock	Total # of Incidents
Release to Environment	0	3	1	1	5
Personnel Exposure - no evidence of release to environment					15
Total Incidents					20



Building 4055 - Migration Pathways

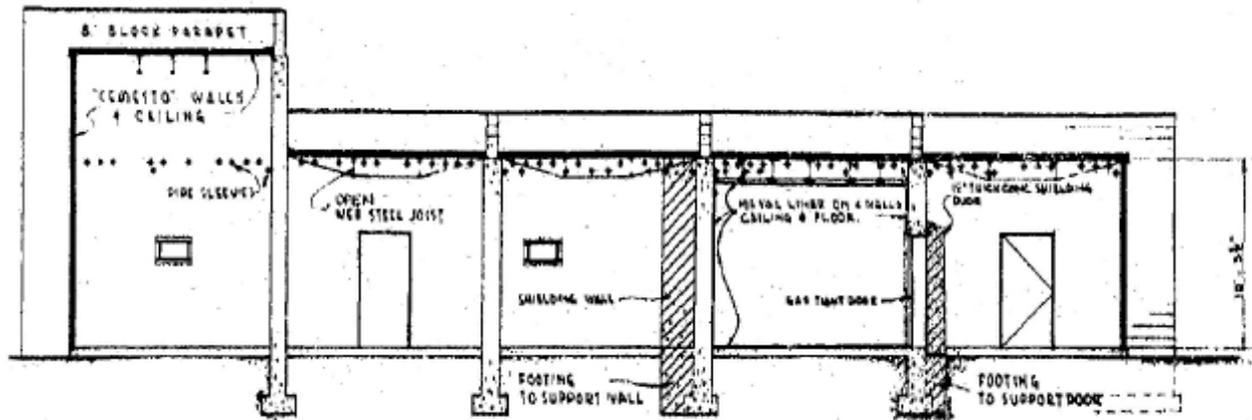


Building 4055

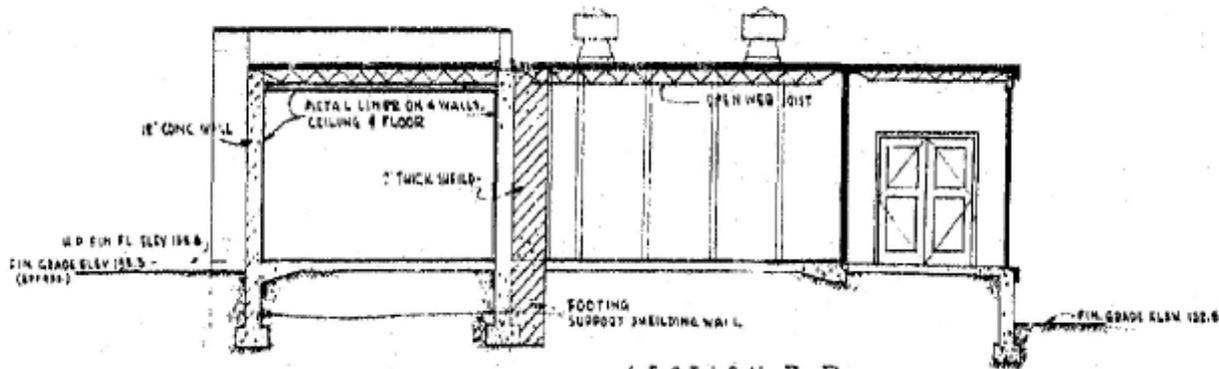
- ▣ Nuclear Material Development Facility
- ▣ Operations 1967 to Present
- ▣ Liquid waste holdup system located southeast of building
- ▣ 20 documented incidents with 5 involving potential releases to the environment
- ▣ Building used for research, development, and production of nuclear fuels and radioactive sources, including plutonium
- ▣ Decontamination of building from October 1982 to October 1986, including removal of all radioactive materials and building stripped to the walls
- ▣ Building currently occupied and operated for non-radiological laser research



Building 4373

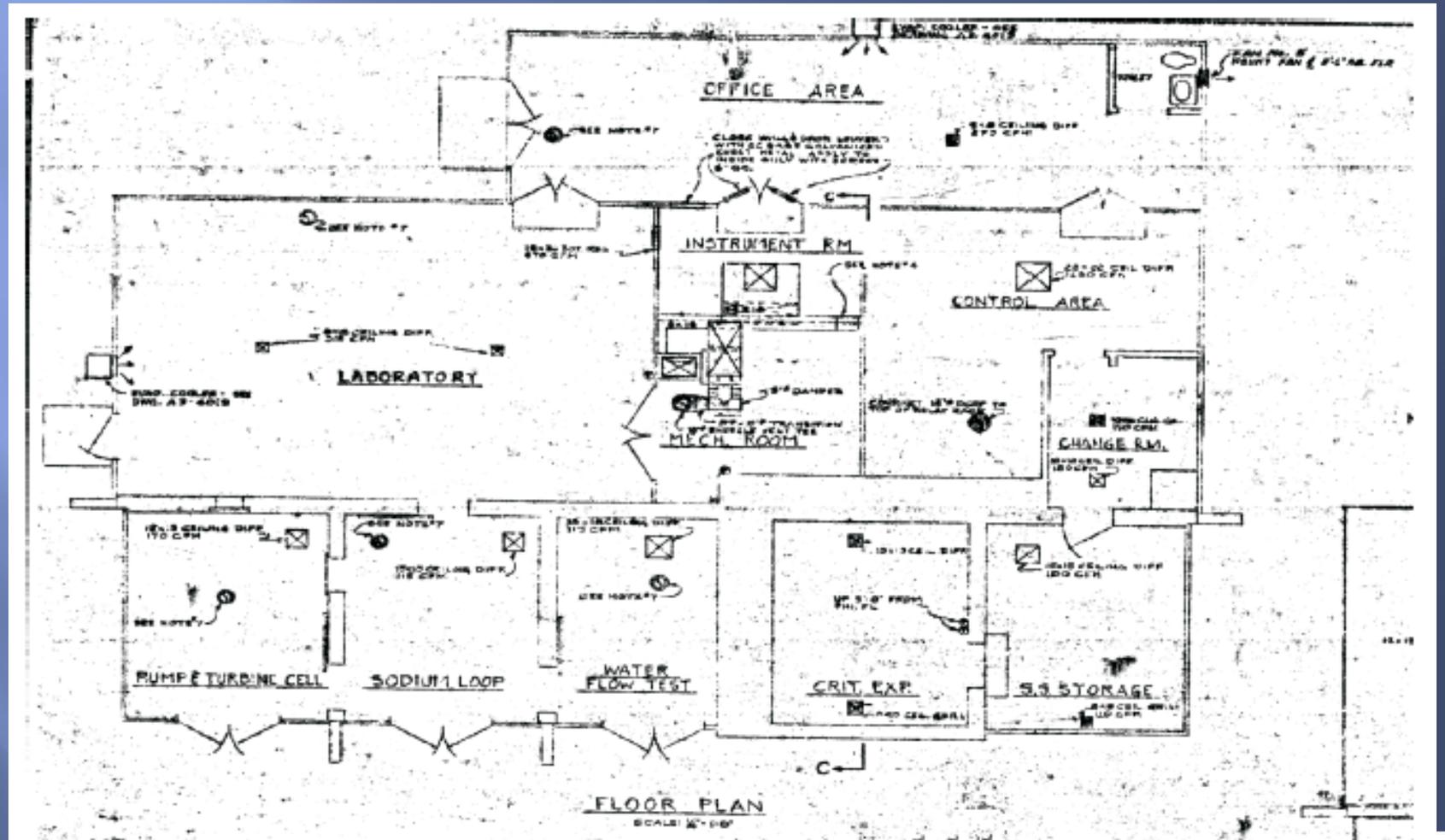


SECTION A-A



SECTION B-B

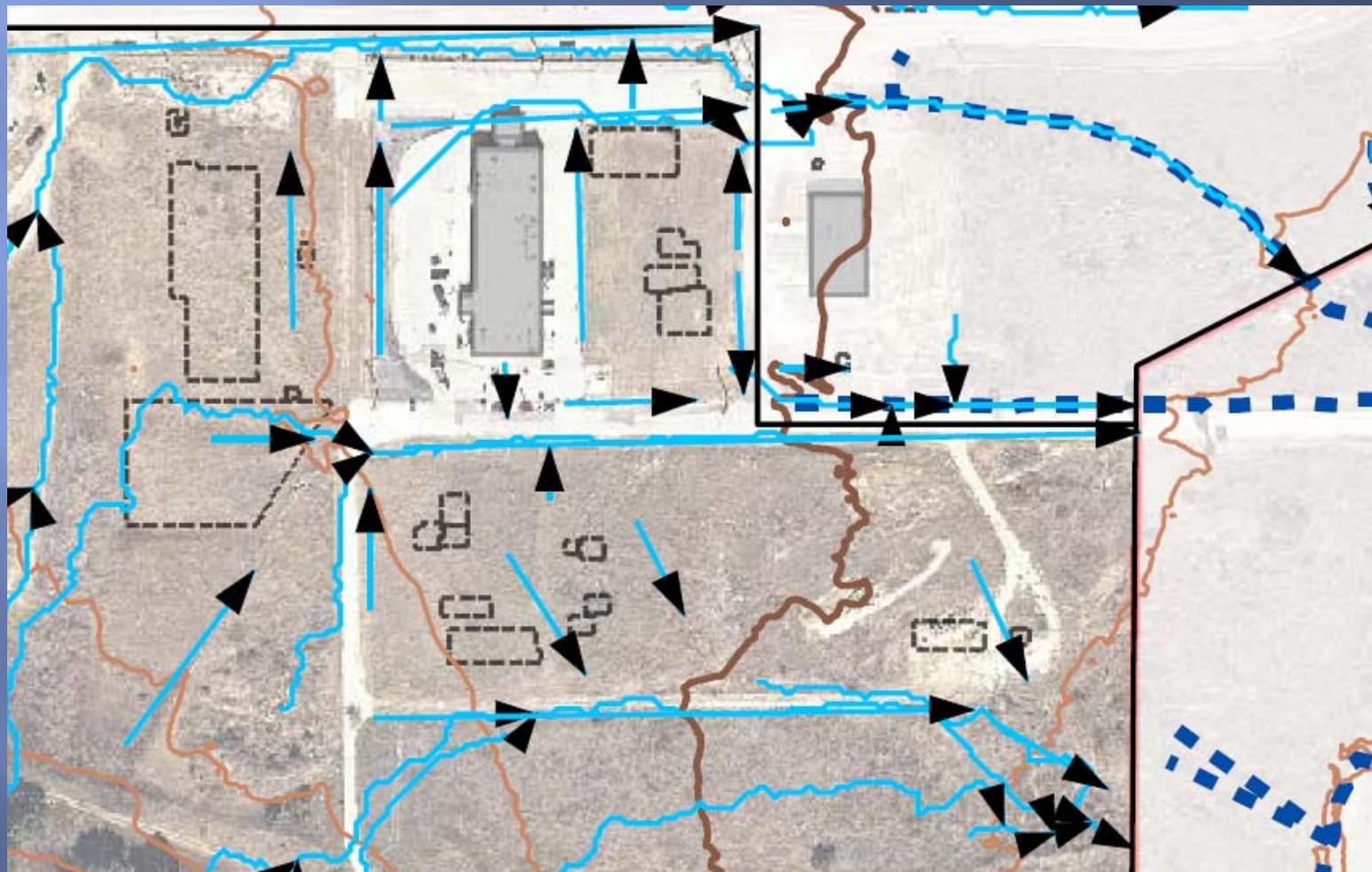
Building 4373 - Floor Plan



Building 4373 - 1999



Building 4373 - Migration Pathways



Building 4373

- ▣ SNAP Critical Facility
- ▣ Operations 1956 to 1967
- ▣ Building built for testing and handling of high explosive solid rocket fuels but used for critical assembly research in support of SNAP program
- ▣ No liquid waste holdup system
- ▣ No documented incidents – however, in 1995, contaminated radioactive prefilters found on roof of building
- ▣ 1999 Building demolished



Other HSA-5D Building Areas

- ❑ Building 4363 – Mechanical Component Development and Counting Building
- ❑ Building 4375 – Control Shelter Building
- ❑ Building 4874 – Control Rod Test Tower and Pad
- ❑ Building 4875 – Pad and Creep Loop Tower
- ❑ Building 4873 – Fuel Rod Test Tower/ Hydraulic Test Laboratory



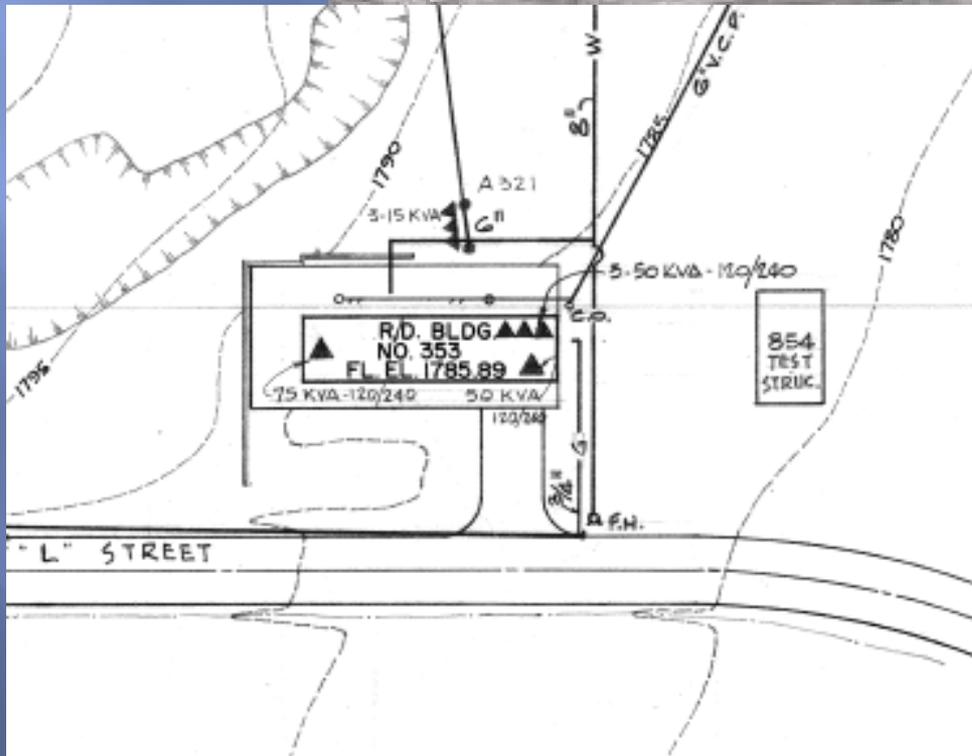
Other HSA-5D Building Areas

- ▣ Hydraulic Test Facility
 - Building 4473 - Hydraulic Test Instrumentation Building
 - Building 4863 - Hydraulic Test Loop



Other HSA-5D Building Areas

- ❑ Building 4353 – Organics Reactor Development Building
- ❑ Building 4854 – Radiation Fuel Gauge Test Structure



Other HSA-5D Building Areas

- Group 1
 - Parking Lot 4509
- Group 2
 - Parking Lot 4520
 - Building 4374 - Test Loop Enclosure
 - Building 4173(4865) - Gammagraph Building
- Group 3
 - Building 4353 - Organics Reactor Development Building
 - Parking Lot 4553
 - Building 4854 - Radiation Fuel Gauge Test Structure
 - Building 4363 - Mechanical Component Development and Counting Building
 - Building 4375 - Control Shelter Building
 - Parking Lot 4375
 - Building 4874 - Control Rod Test Tower and Pad
 - Building 4875 - Pad and Creep Loop Tower
 - Building 4473 - Hydraulic Test Instrumentation Building
 - Building 4863 - Hydraulic Test Loop
 - Building 4873 - Fuel Rod Test Tower/Hydraulic Test Laboratory
- Group 4
 - Tanks 4701 and 4702 - Water Storage Tanks



Summary of Findings

- ▣ HSA Aerial Photo Features
- ▣ Process Knowledge
- ▣ Soil Removals/Excavations



Gamma Radiation Scanning Update

April 20, 2011



Agenda

- Gamma Scanning Progress and Accomplishments
- Scanning Coverage by Subarea
- Subarea 5D North Potential GRAYs (Gamma Radiation Anomalies) and Initial Evaluation
- Follow-up of 8 North Potential GRAYs

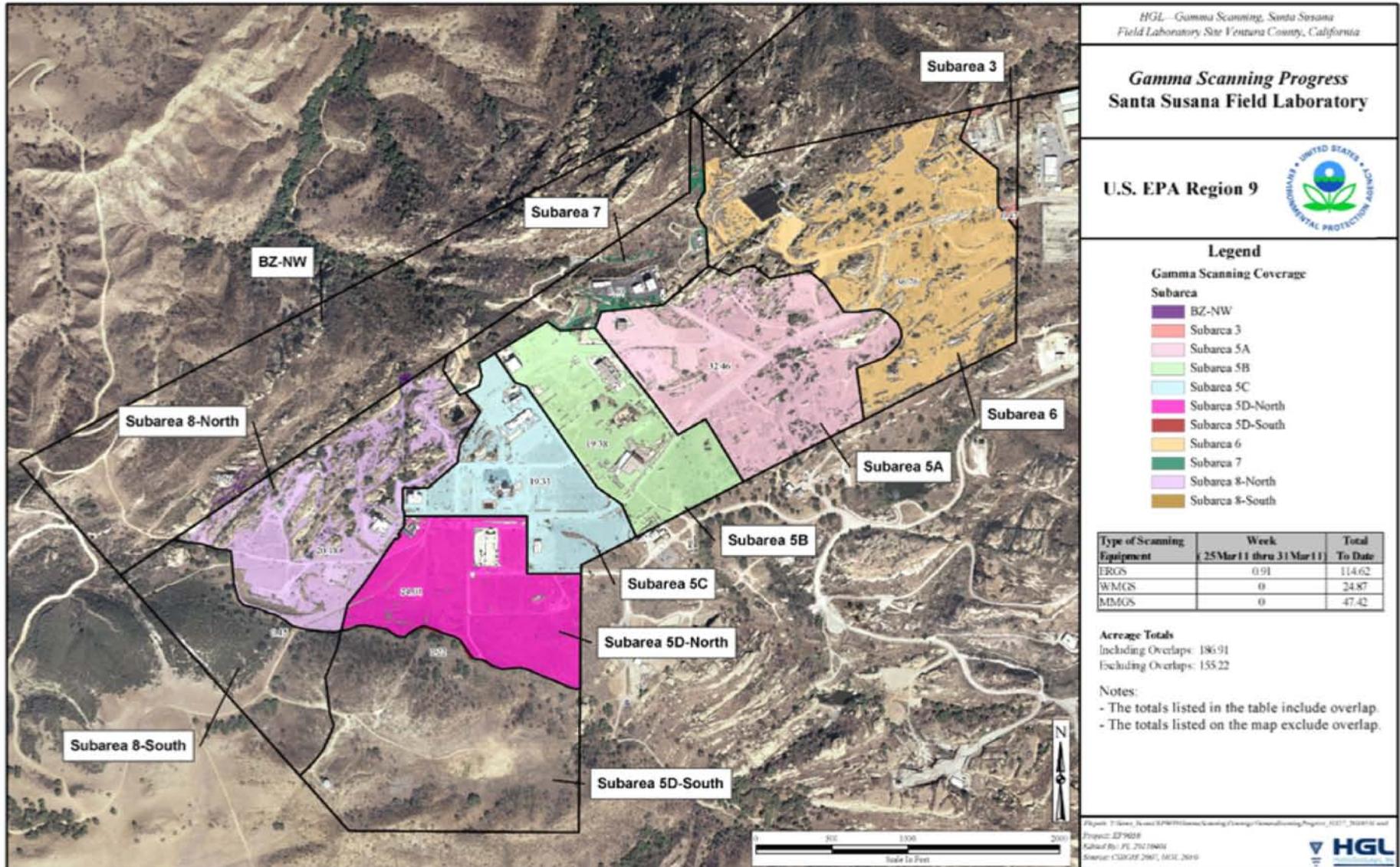


Accomplishments in Subarea 5D North

- Scanned 96% of the accessible areas
- Completed gamma data evaluation
- Identified, verified, and preliminarily evaluated 6 potential Gamma Radiation Anomalies



Gamma Scanning Progress



HGL—Gamma Scanning, Santa Susana Field Laboratory, San Ventura County, California

Gamma Scanning Progress Santa Susana Field Laboratory

U.S. EPA Region 9



Legend

Gamma Scanning Coverage

Subarea

- BZ-NW
- Subarea 3
- Subarea 5A
- Subarea 5B
- Subarea 5C
- Subarea 5D-North
- Subarea 5D-South
- Subarea 6
- Subarea 7
- Subarea 8-North
- Subarea 8-South

Type of Scanning Equipment	Week	Total
	25Mar11 thru 31Mar11	To Date
ERCS	0.91	114.62
WMCS	0	24.87
MMGS	0	47.42

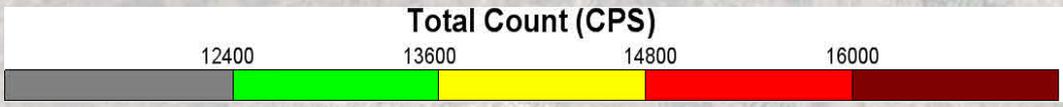
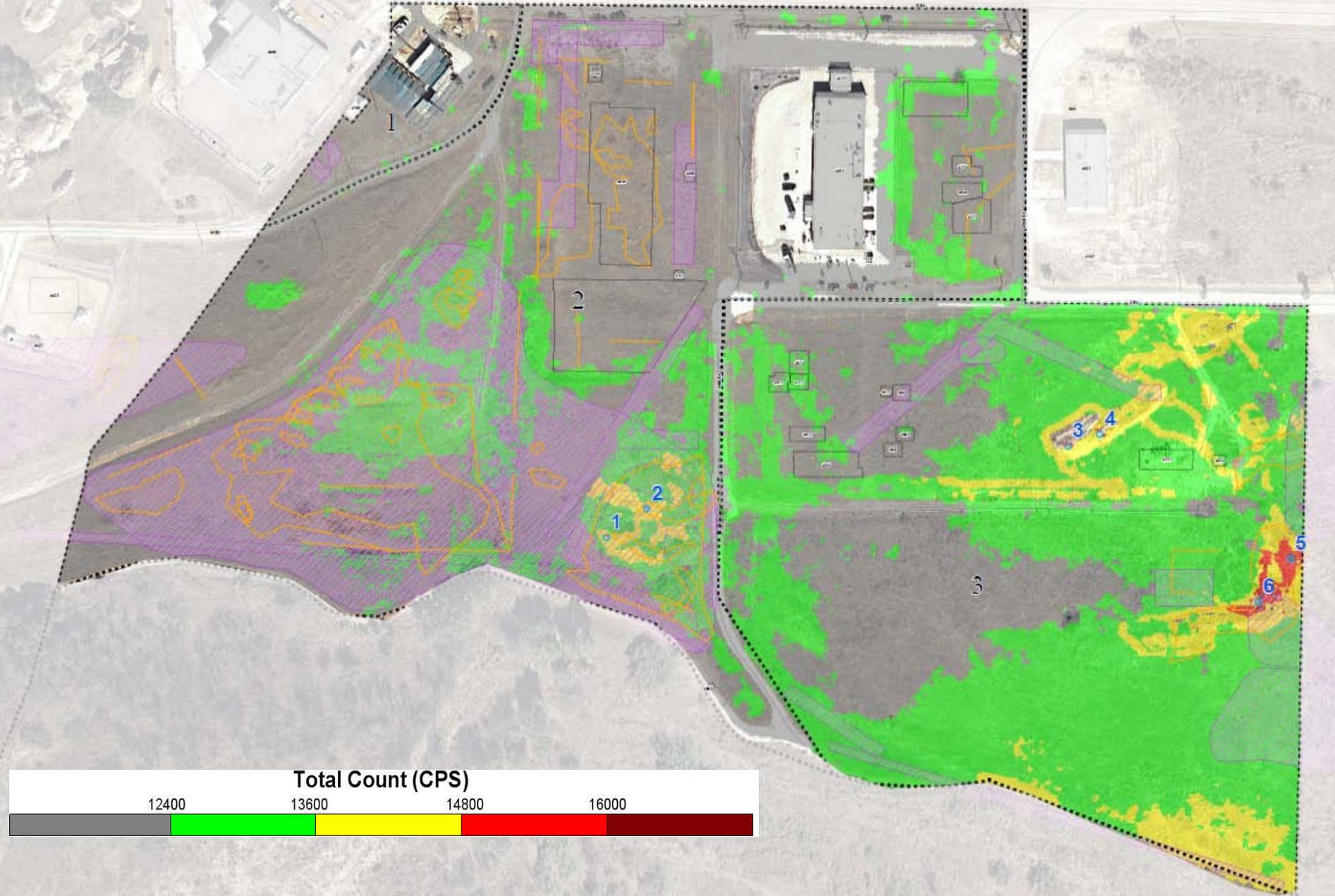
Acreege Totals

Including Overlaps: 186.91
Excluding Overlaps: 155.22

Notes:

- The totals listed in the table include overlap.
- The totals listed on the map exclude overlap.

Subarea 5D North Potential GRAYs



5D N PGRAYS 1 & 2

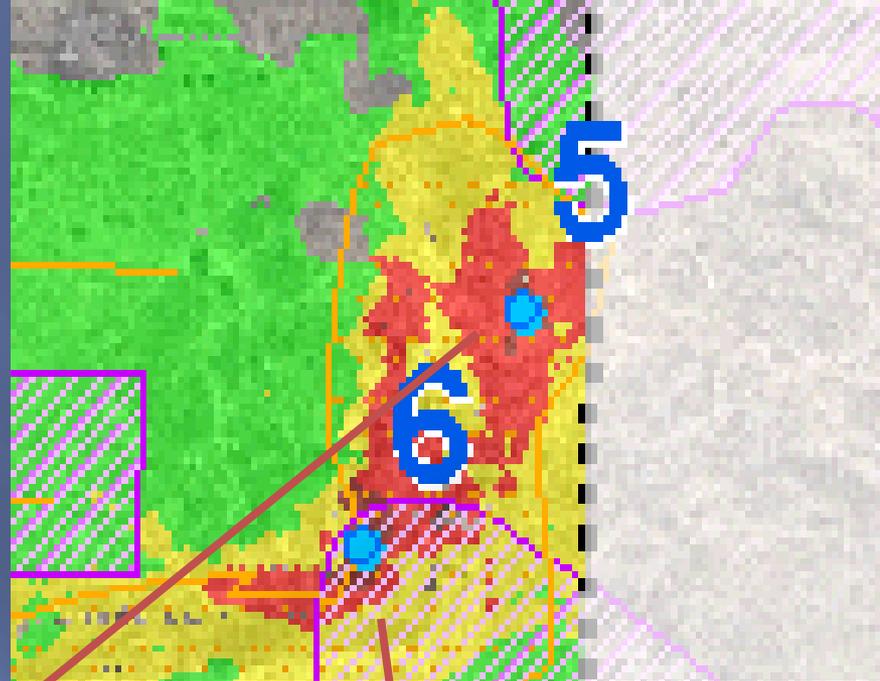


5D N PGRAYS

3 & 4



5D N PGRAYs 5 & 6



Preliminary Evaluation

5D North Potential GRAYs

Potential GRAY	Evaluation
1, 2, 5, 6	Suspect due to another line of evidence at the location
3, 4	NORM
NORM is Naturally Occurring Radioactive Materials (Uranium, Thorium, and Potassium-40)	



Follow-up of 8 North Potential GRAYs

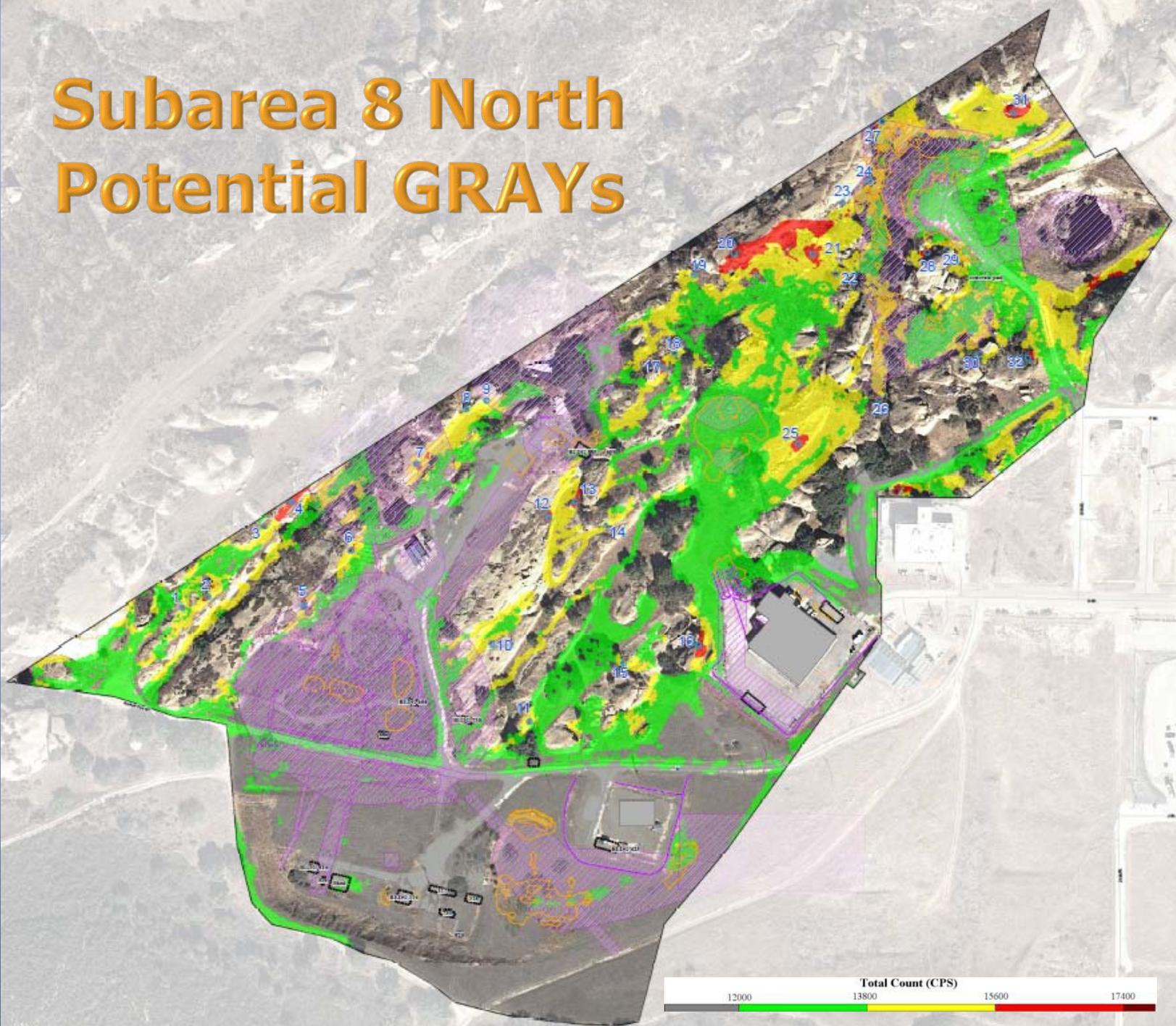
During the Subarea 8 North Stakeholder Meeting, we described 32 Potential GRAYs in Subarea 8 N and preliminarily evaluated them as:

- 27 of 32 verified with 6 suspect
- 5 too wet to perform verification counting

We have now evaluated 2 additional PGRAYs



Subarea 8 North Potential GRAYs



Subarea 8 North PGRAYs 15 & 30



Preliminary Evaluation

8 North Potential GRAYs

Potential GRAY	Evaluation
15 & 30	NORM
11, 18, 26	Sites too wet to verify
5, 7, 9, 24, 26, 27	Suspect due to another line of evidence at the location
NORM is Naturally Occurring Radioactive Materials (Uranium, Thorium, and Potassium-40)	

Questions?



Geophysical Anomalies

April 20, 2011



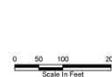


Legend

- | | |
|---|--|
| <ul style="list-style-type: none"> Subarea 5D North Group Centerline Roads Primary Roads Secondary Roads Tertiary Roads Buildings Unfinished Existing | <ul style="list-style-type: none"> Geophysical Anomalies Magnetometer Point Features Terrain Conductivity Point Features Geophysical Anomaly Linear Interrupted Drain Remnants Magnetometer Terrain Conductivity Cut and Fill Cut and Fill |
|---|--|

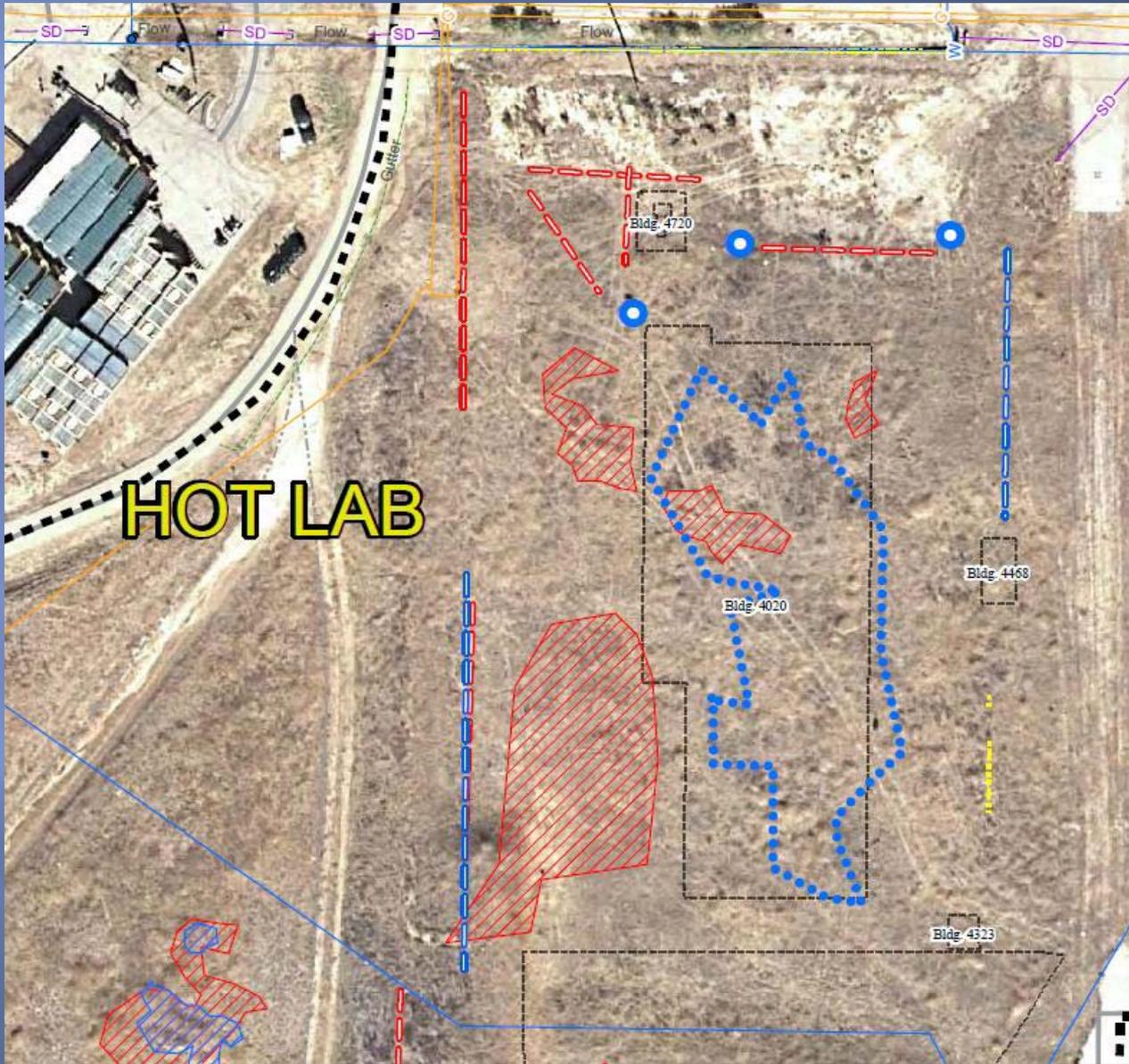
**Geophysical Anomalies
Subarea 5D North
Santa Susana Field Laboratory**

U.S. EPA Region 9

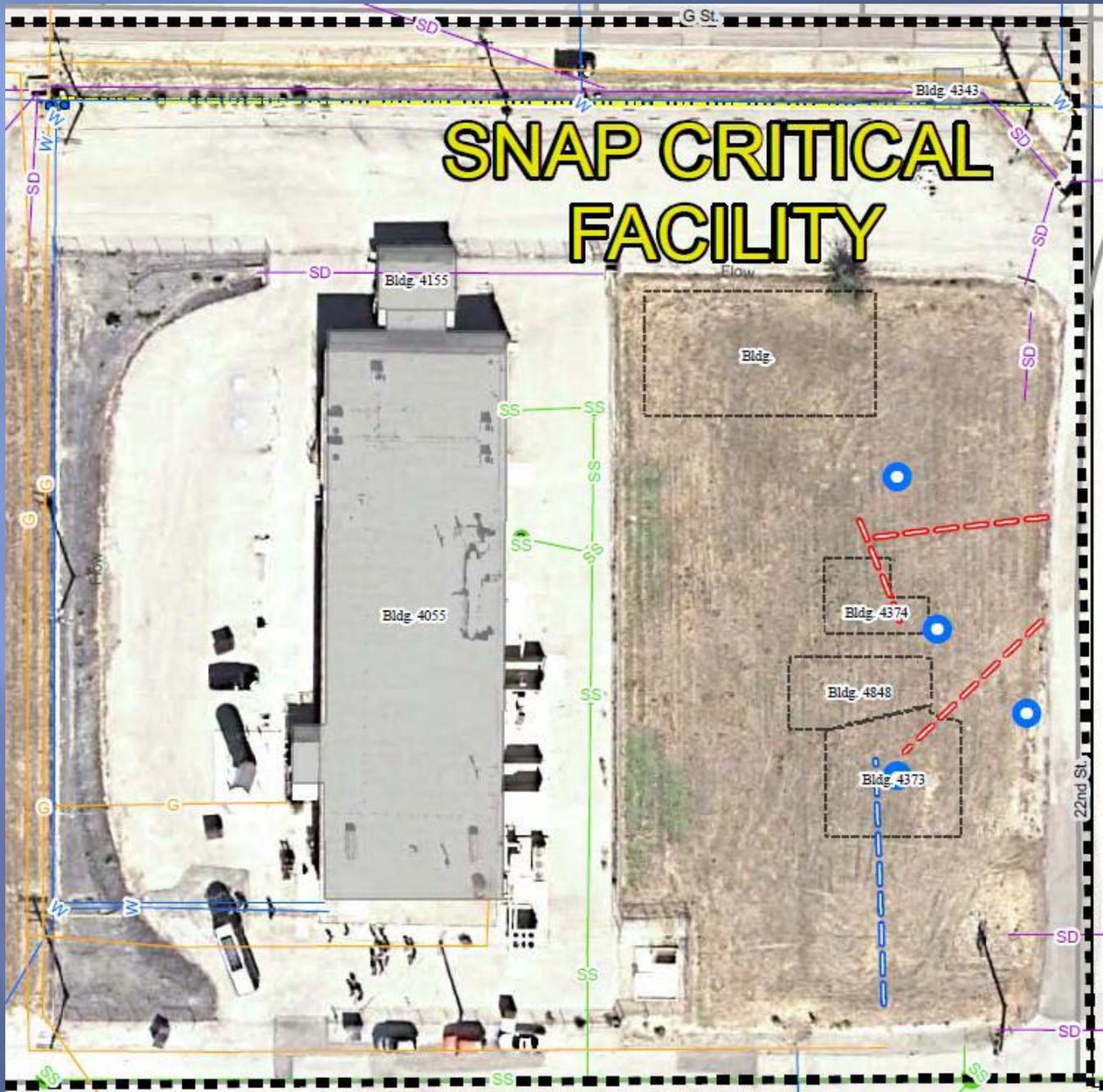


© 2010, Santa Susana Field Laboratory
Environmental Science, Inc. All Rights Reserved
Version 1.0.0, 2010-08-20 2017
Scale In Feet





SNAP CRITICAL FACILITY

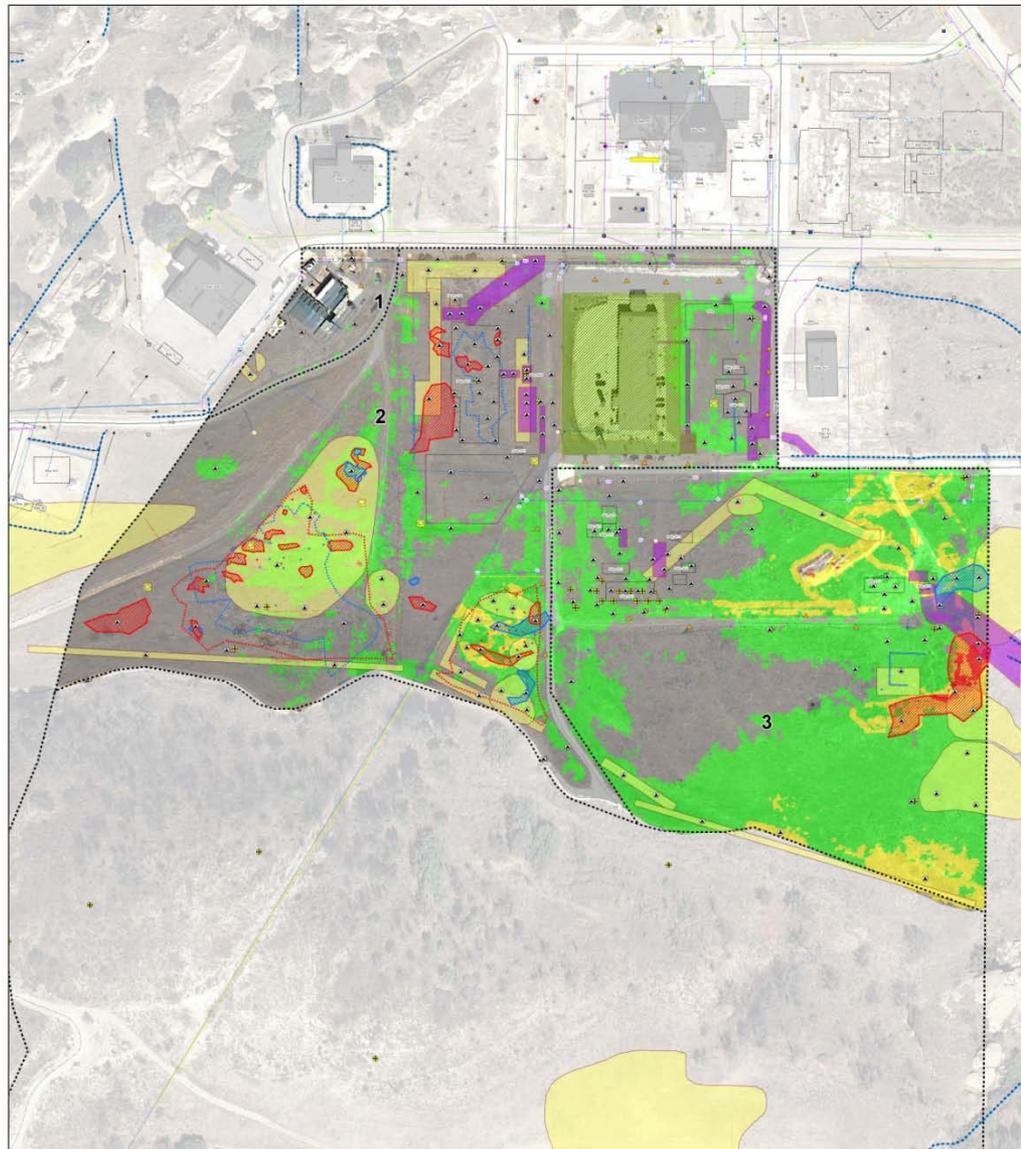






BLDG 4353





Legend			
<ul style="list-style-type: none"> Subarea 8 Groups Catalina Roads Type, narrative: <ul style="list-style-type: none"> PRIMARY, Area IV, NBZ Road Centerline SECONDARY, Area IV, NBZ Road Centerline TERTIARY, Area IV, NBZ Road Centerline Buildings <ul style="list-style-type: none"> Demolished Existing Streams <ul style="list-style-type: none"> Intermittent Stream Perennial Stream 	<ul style="list-style-type: none"> Proposed Sample Locations SDN <ul style="list-style-type: none"> Drainage Sample Subsurface Sample Surface and Subsurface Sample Likely Structural Remediation Zones Likely Chemical Remediation Zones Gamma Static Count 	<ul style="list-style-type: none"> Geophysical Anomalies <ul style="list-style-type: none"> Magnetometer Point Features Terrain Conductivity Point Features Geophysical Anomaly Linear Integrated Drain Remnants Terrain Conductivity Magnetometer Cut and Fill Cut and Fill Historical Radiological Samples 	<ul style="list-style-type: none"> HSA Findings <ul style="list-style-type: none"> Aerial Photography Features Precise Knowledge
<p>Scale in Feet: 0 50 100 200</p> <p>North Arrow</p>			<p>Historical Site Assessment Draft Technical Memorandum - TSM-5D North</p> <p>Proposed Sample Locations Subarea 5D North Santa Susana Field Laboratory</p> <p>U.S. EPA Region 9</p>  <p>HGL</p>

Sample Tracking Table

HSA Subarea	Totals and Round Summary	Allocated Samples	CURRENT STATUS		
			Soil Samples Collected		
			Surface Soil Samples	Subsurface Soil Samples	Total Soil Samples
3	Total	40	0	0	0
	Round 1	12			0
	Round 2	28			0
5A	Total	1482	143	222	365
	Round 1	444	143	222	365
	Round 2	1037			0
5B	Total	927	227	283	510
	Round 1	278	227	283	510
	Round 2	649			0
5C	Total	1207	83	122	205
	Round 1	362	83	122	205
	Round 2	845			0
5D-North	Total	1372	198	212	410
	Round 1	412	198	212	410
	Round 2	960			0
5D-South	Total	463	0	0	0
	Round 1	139			0
	Round 2	324			0
6	Total	1427	0	0	0
	Round 1	428			0
	Round 2	999			0
7	Total	985	0	0	0
	Round 1	295			0
	Round 2	689			0
8-North	Total	1088	130	124	254
	Round 1	326	130	124	254
	Round 2	762			0
8-South	Total	150	0	0	0
	Round 1	45			0
	Round 2	105			0
NBZ-E	Total	494	0	0	0
	Round 1	148			0
	Round 2	346			0
NBZ-W	Total	368	0	0	0
	Round 1	110			0
	Round 2	258			0
All Subareas	Total	10000	0	0	0
	Round 1	3000			1744
	Round 2	7000			0

The number of soil samples ultimately necessary for EPA to complete its study may be higher or lower than 10,000 samples.

April 20, 2011



Co-Located Chemical Sampling Update

Laura Rainey, DTSC
Stephie Jennings, DOE

April 20, 2011



Process for Identifying Locations for Co-Located Chemical Sampling

- Prior to EPA release of HSA, DOE and DTSC review together chemical (RFI) results for the HSA subarea
- The review identifies:
 - Locations with chemical data
 - Locations with clearly elevated chemical sampling results
 - Locations where more chemical data may be needed
- Based on the data review, areas that are clearly contaminated and likely to need remediation are identified
- Clearly contaminated area maps are provided to EPA prior to the HSA meeting with the community

Communications - Meetings

- EPA shares proposed radiological sampling locations at technical meeting with stakeholders
- DTSC/DOE reviews EPA's locations and prepares selection/de-selection proposal
- DTSC/DOE convenes meeting both face-to-face and via conference call /computer to discuss proposed chemical co-located sampling approach
 - Community meeting on HSA 5D North is planned for 10AM - Noon May 5, 2011 at DTSC Chatsworth Office, **and offered via conference call / computer link**
- After input from meeting, DOE prepares addendum to the Master Field Sampling Plan—DTSC reviews drafts
- DTSC approves addendum and sampling begins
- Addendum sent to all and posted on websites



Co-Located Chemical Sampling Status

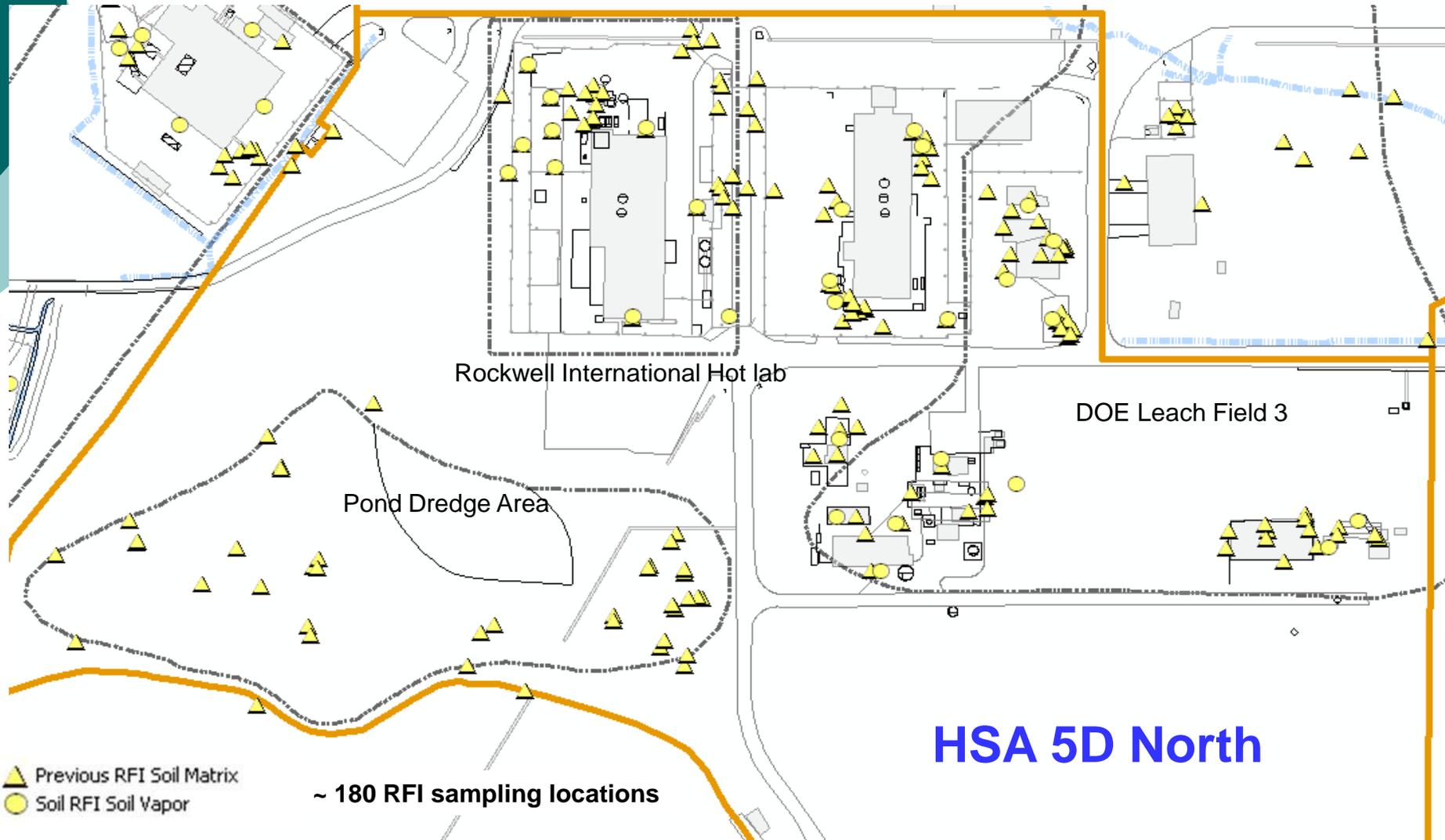
- All chemical data from HSA 5C, HSA 5B, and Sediment Sampling have been received from the lab and are undergoing review
- Initial data are coming in for HSA 5A
- Co-located chemical sampling with EPA within HSA 8 North continues



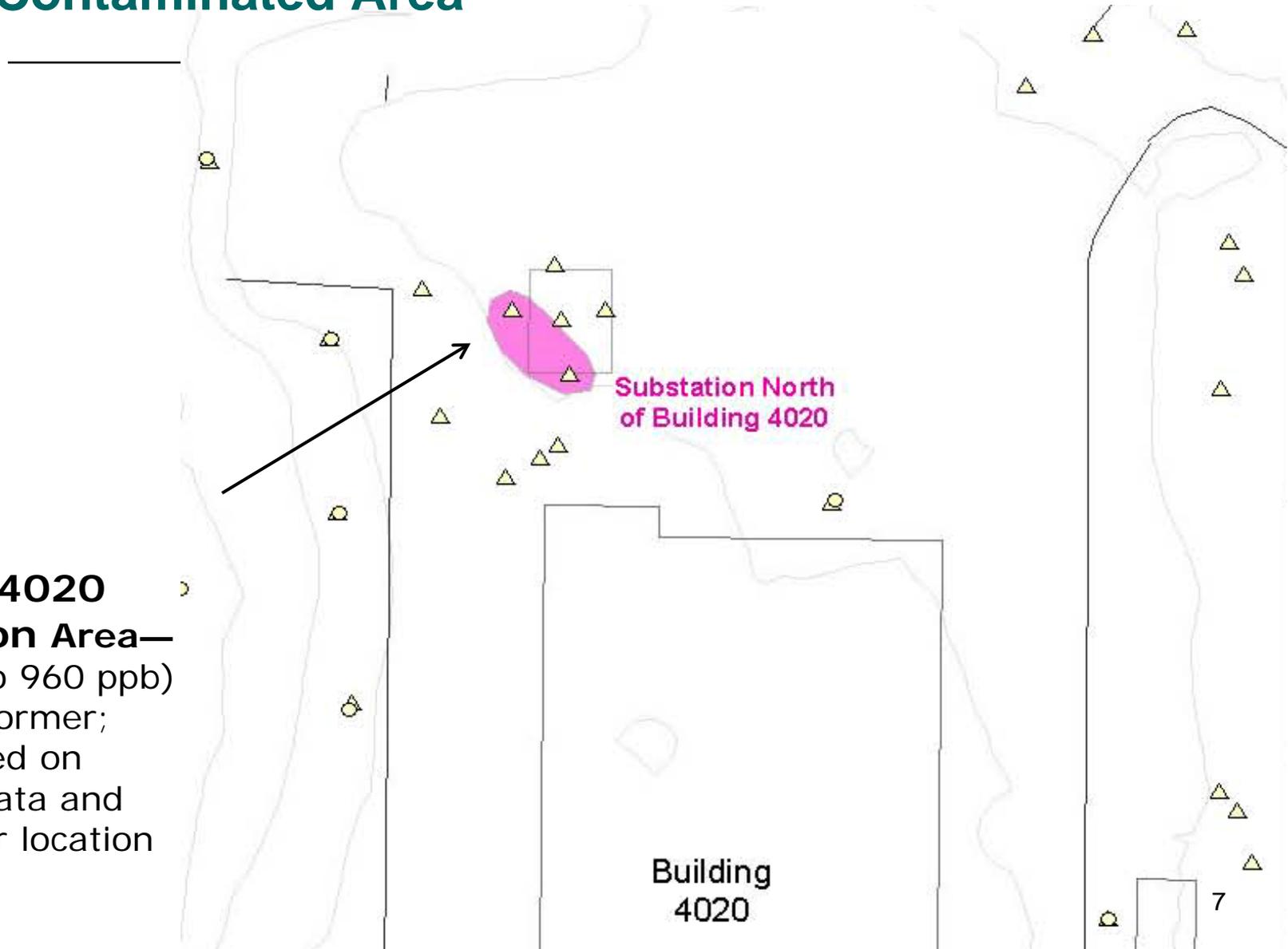
HSA 5D North Data Review

- The review of the chemical data for HSA 5D North identified one location meeting the “clearly contaminated” criteria
- Although there are several other locations with chemical contamination, the DTSC and other reviewers thought that more data are needed to identify and delineate areas of contamination

HSA 5D North Previous RFI Chemical Sampling Map



Rockwell International Hot Lab – Clearly Contaminated Area



**Building 4020
Substation Area—**
PCBs (up to 960 ppb)
near transformer;
extent based on
sampling data and
transformer location

Building
4020



HSA 5D North Next Steps

- DTSC and DOE will use the proposed radiological sample locations provided by EPA to evaluate which of the locations should be also sampled for chemicals
- DTSC and DOE will provide an addendum to the Master Field Sampling Plan that presents the rationale for chemical co-located samples
- DTSC and DOE will discuss the rationale with the community prior to finalizing the addendum and collecting samples
- Adjustments will be made based on community input

Co-Located Sampling Data Reports

- HSA 5C Data Technical Memo under development
- Technical Memo Focused on Sampling Findings
 - Overview of sampling process
 - Presentation on data quality review
 - Dot maps showing locations of samples
 - Color coding based on sample results that exceed interim criteria
 - Data tables providing all chemical results