HUNTERS POINT SHIPYARD
PARCEL A
HEALTH and SAFETY SURVEY

Update for Office of Community Investment and Infrastructure
OCII

August 6, 2019

Photo: hunterspointcrane.com

Topics Outline

I. Parcel A-1 Survey

II. Low Energy Peak Re-Survey

III. Parcel A-2 Survey

IV. Residential Dust Survey

Parcel A-1 Survey
Purpose/Goal/Objectives of the Survey

Purpose: Determine if residents and the public are exposed to unsafe level of man-made radiation

Goal and objectives: Perform a radiological survey to address the health and safety of the public of Parcel A-1

- Survey all outdoor accessible and safe areas, including common and private areas, soil stockpile and slopes
- Investigate any radioactive anomalies detected

Project began in May 2018; Fieldwork began in July

Communication

- Resident/HOA meetings
- Work Plan, Work Summary Fact Sheet, and FAQs posted on RHB web site
- Established an Email for residents' input
  - RHBHuntersPointParcelAScan@cdph.ca.gov
- Weekly Progress Updates (posted)
- Information Table (on-site)

A-1 Survey Methodology

Conduct:

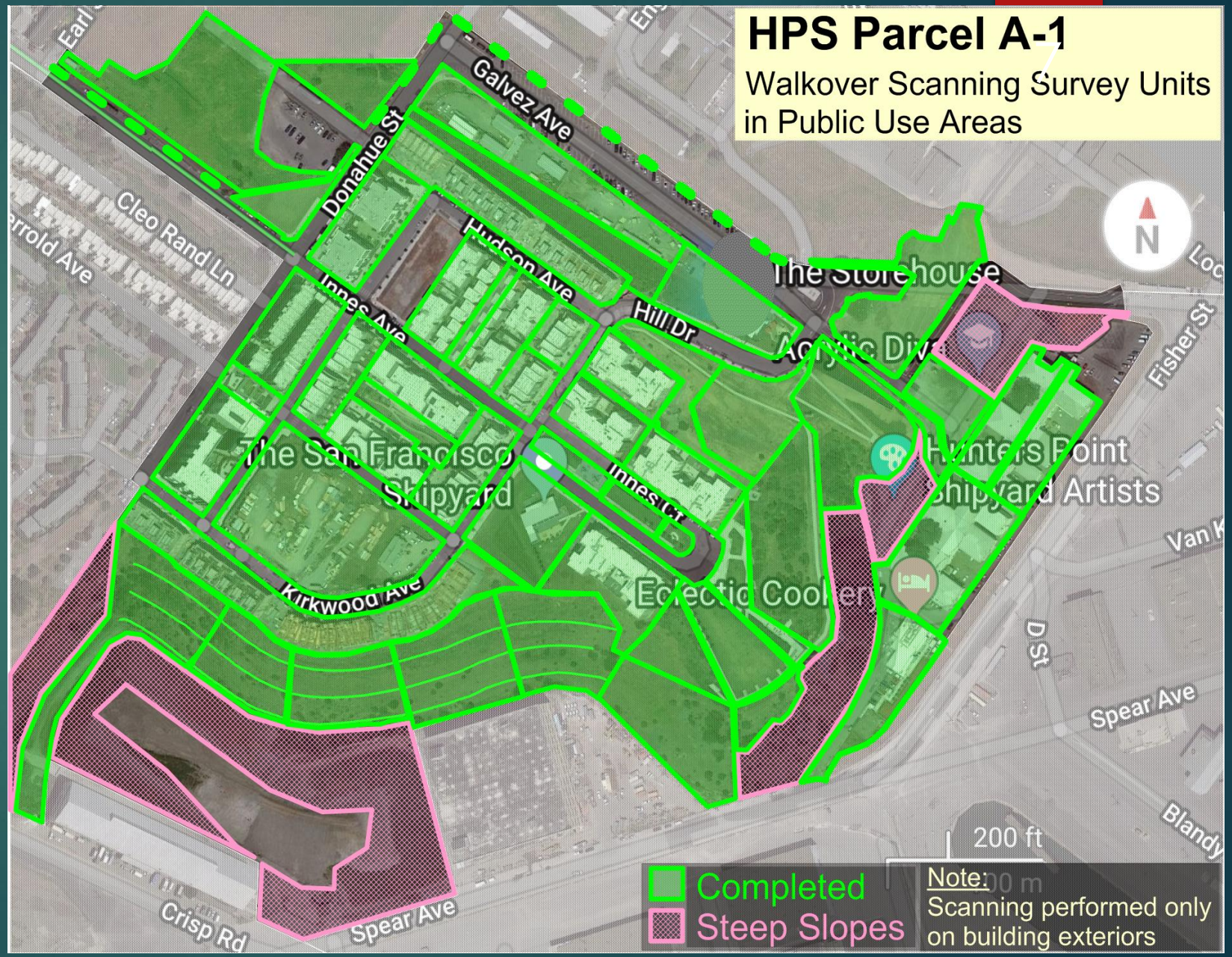
1. Walkover Scanning Survey
2. Towed Array Scanning
3. Anomalous Measurement Confirmation/ Supplemental Measurements

A-1 Methodology (cont.)

- 80 Major Survey Units
- Units composed of wide variety of material such as clay, woodchip, degrees of vegetation and variation of rocks such as granite and serpentine
- Slow pace walkover scans, highly sensitive detectors
- Performed one minute static counts at 4,301 distinct locations distributed across the parcel

Walkover Survey

- Team of two surveyors performed walkover scans of outdoor areas
- Included one minute static counts every 50 feet
- Total of 4,301 static counts taken over entire site

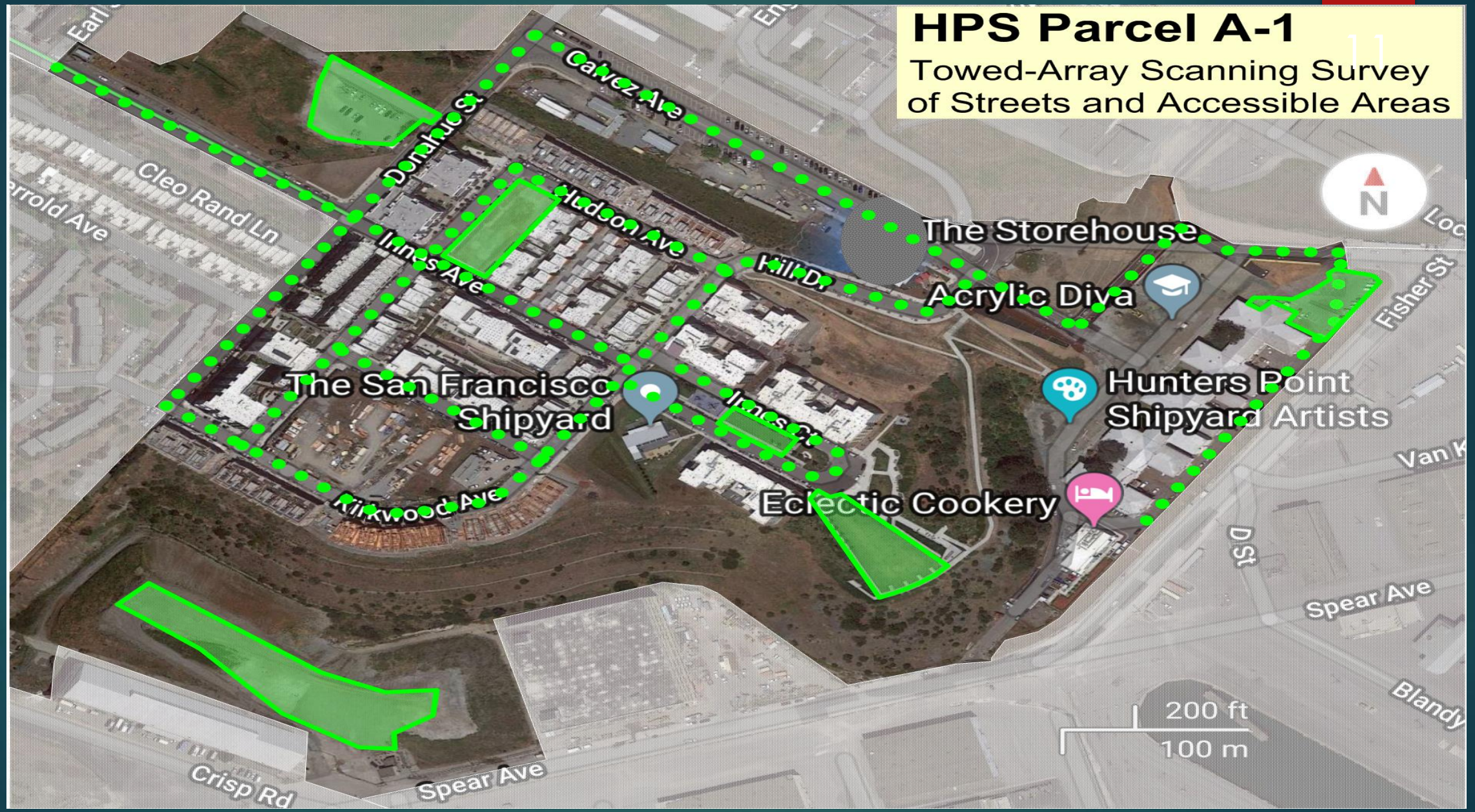



0
DETECTOR
OFF
POWER
100
AUDIO
DIVIDE
BAT
HV
THR
WIN
ON
LAMP
IN
RESP
ZERO
COUNT
HOLD
CONT 10
MINUTES
SCALER
RATE
DIGITAL CONTROL
LUDLUM
MODEL 2221
SCALER RATEMETER
CALIBRATION


MODEL 19
MICRO R METER
LUDLUM MEASUREMENTS INC
SWEETWATER, TEXAS

Towed Array Scanning Survey

- Towed Array detectors collect one data point per second all along its path
- All streets and large flat open areas across the parcel


HPS Parcel A-1
Towed-Array Scanning Survey
of Streets and Accessible Areas
Cavez Ave
Donahue St
Hudson Ave
Innes Ave
Hill Dr
The Storehouse
Acrylic Diva
Fisher St
Cleo Rand Ln
The San Francisco
Shipyard
Hunters Point
Shipyard Artists
Innes Ct
Kirkwood Ave
Eclectic Cookery
D St
Spear Ave
Van K
Blandy
Crisp Rd
Spear Ave
200 ft
100 m
N

Anomalous Measurement Confirmations/ Supplemental Measurements

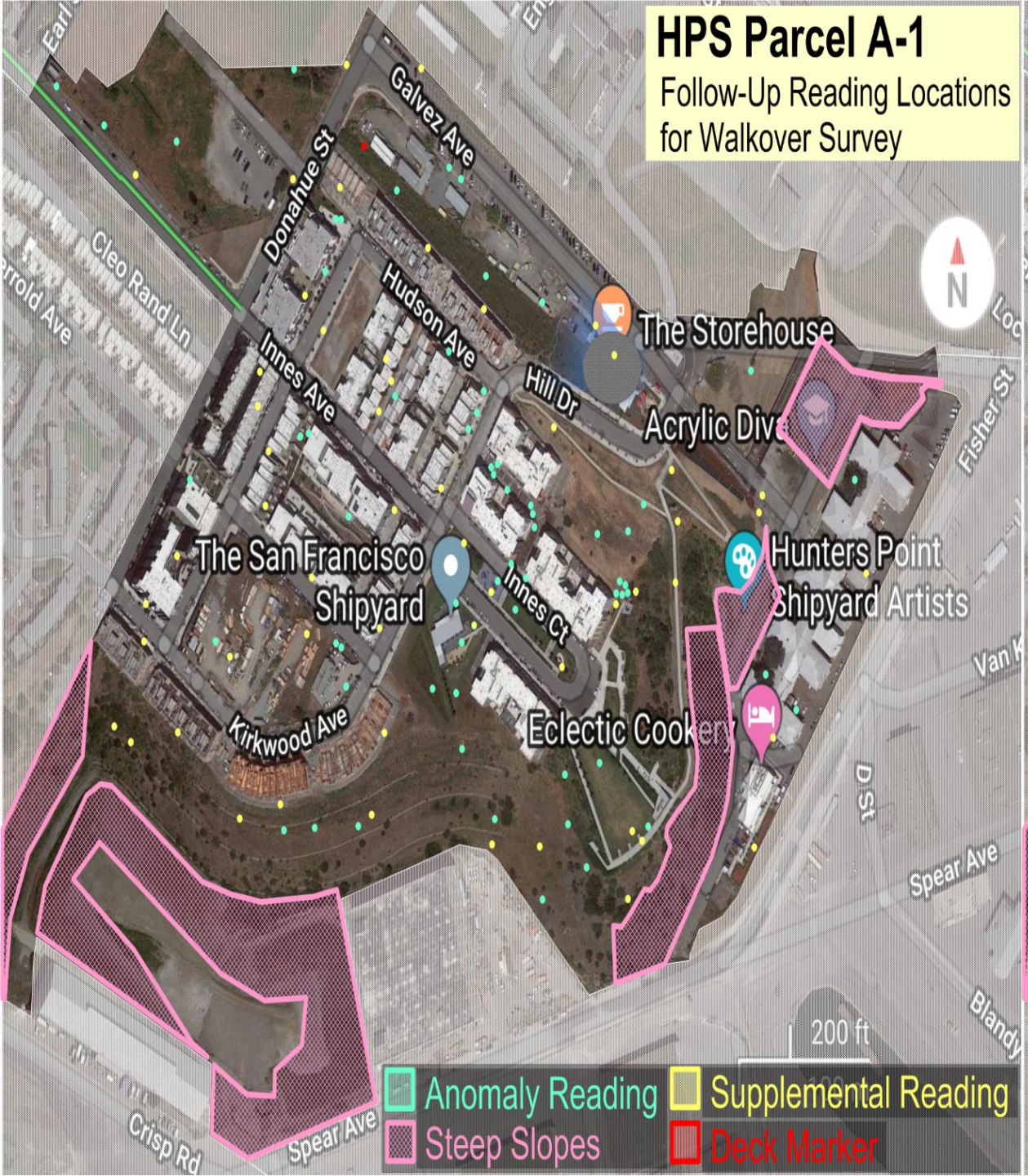
- Anomalies investigated with static one-minute counts at 4 inch, 12 inch heights centered on highest count rate point using 2"x 2" scintillation detector
- Performed 30 minute measurement using the Canberra Inspector 1000 for radionuclide identification
- These radionuclide identifiers distinguish between natural and man-made radiation such as radium, cesium and cobalt

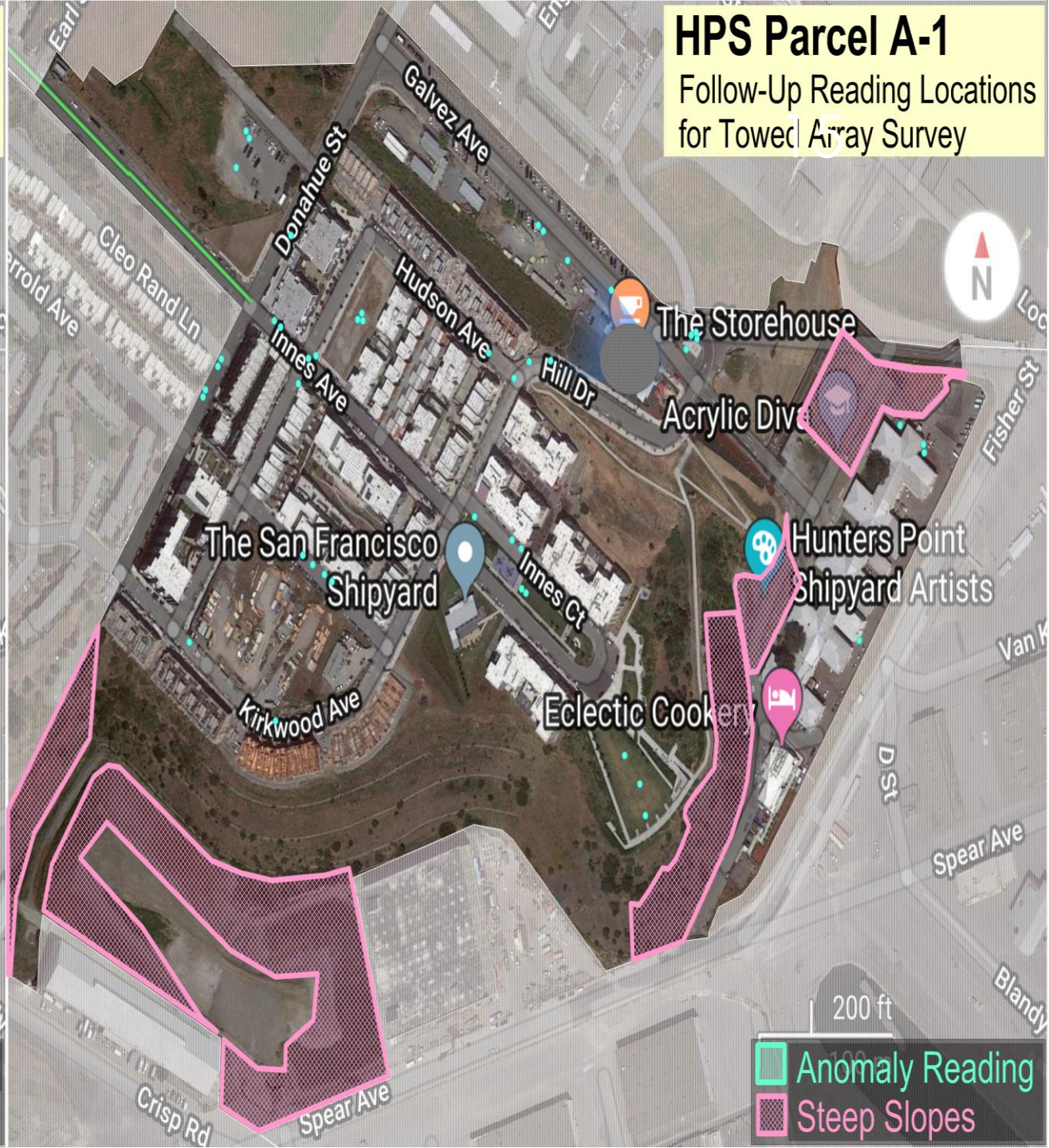
Anomalous Measurement Confirmations/ Supplemental Measurements (cont.)

- Overall RHB performed 110 anomaly Inspector 1000 shots
- Another 55 supplemental shots performed in survey units where no anomalies were detected (at highest reading in survey unit)
- One Falcon 5000 shot was taken for the deck marker

Findings

- Walkover survey found 64 anomalies
  - All followed up with Inspector 1000 radionuclide identifier
- Towed array gamma detection system located 46 anomalies
- Performed 55 supplemental measurements in survey units where no anomalies were found
  - No additional anomalies found
- Total 110 anomalies
  - 108 naturally occurring potassium-40
  - Navy radium-containing deck marker
  - Low energy peak discovered during data quality review


HPS Parcel A-1
Follow-Up Reading Locations
for Walkover Survey
Galvez Ave
Donahue St
Cleo Rand Ln
Hudson Ave
Innes Ave
Hill Dr
The Storehouse
Acrylic Dive
Fisher St
The San Francisco
Shipyard
Innes Ct
Hunters Point
Shipyard Artists
Kirkwood Ave
Eclectic Cookery
D St
Spear Ave
Crisp Rd
200 ft
Anomaly Reading
Supplemental Reading
Steep Slopes
Deck Marker


HPS Parcel A-1
Follow-Up Reading Locations
for Towed Array Survey
Galvez Ave
Donahue St
Cleo Rand Ln
Hudson Ave
Innes Ave
Hill Dr
The Storehouse
Acrylic Dive
Fisher St
The San Francisco
Shipyard
Innes Ct
Hunters Point
Shipyard Artists
Kirkwood Ave
Eclectic Cookery
D St
Spear Ave
Crisp Rd
200 ft
Anomaly Reading
Steep Slopes

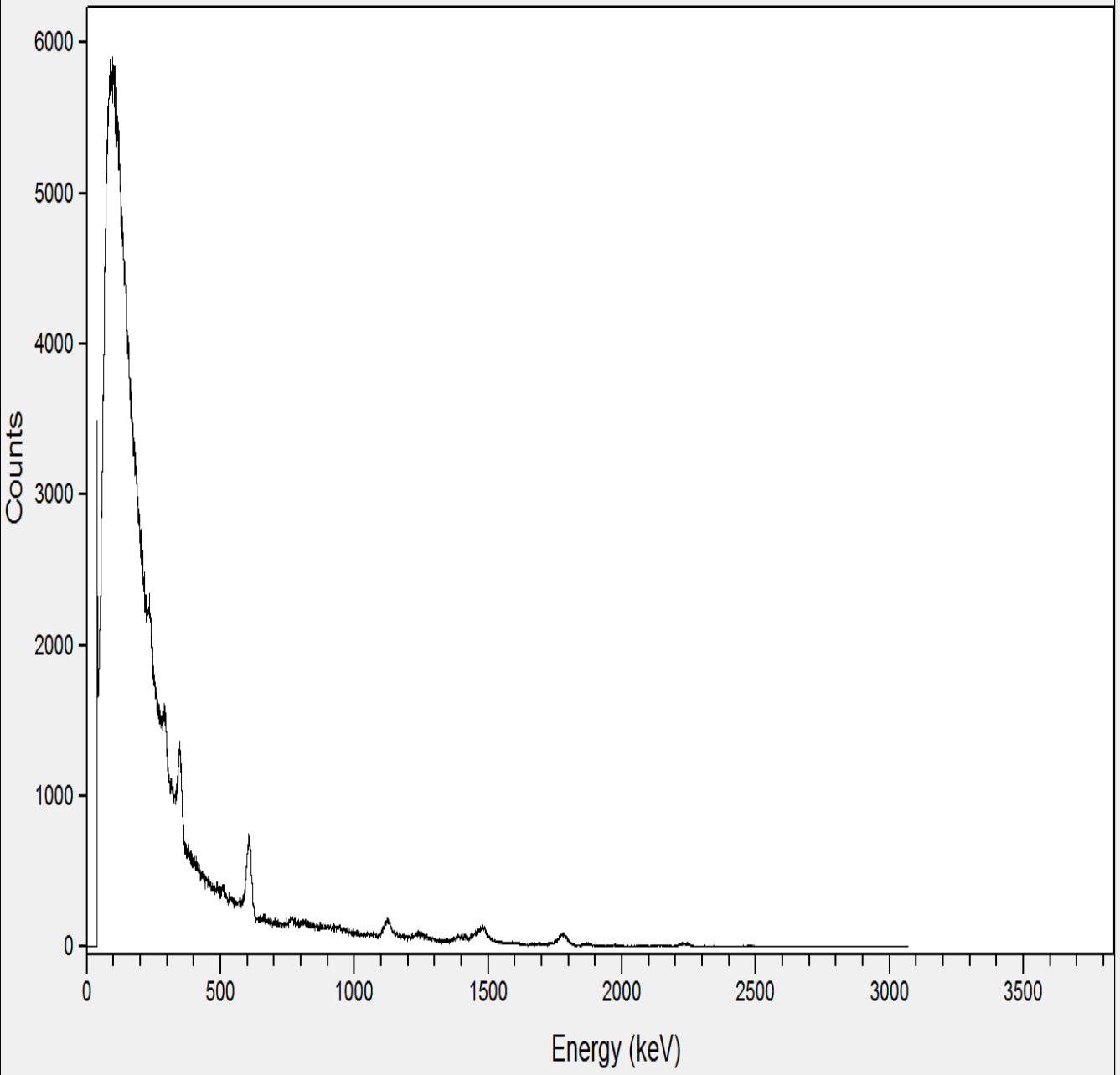

STANLEY

Findings: Navy Deck Marker

- Approximately 10 inches underground, bottom of hill near parcel boundary
- Measured 0.09 mRem/hr. at ground surface
- Measured 0.08 mRem/hr. two inches above the ground
- Measure 0.02 mRem/hr. 12 inches above the ground
- Unearthed object measured 3.4 mrem/hr. on contact and 0.03 mRem/hr. 36 inches above the object
- Dental x-ray averages 1.5 mRem (~16.67 hrs. on buried marker location)
- LA to NY (5 hr. flight ~3 mRem (0.6 mRem/hr.)
- Removed by Navy contractor; No residual contamination

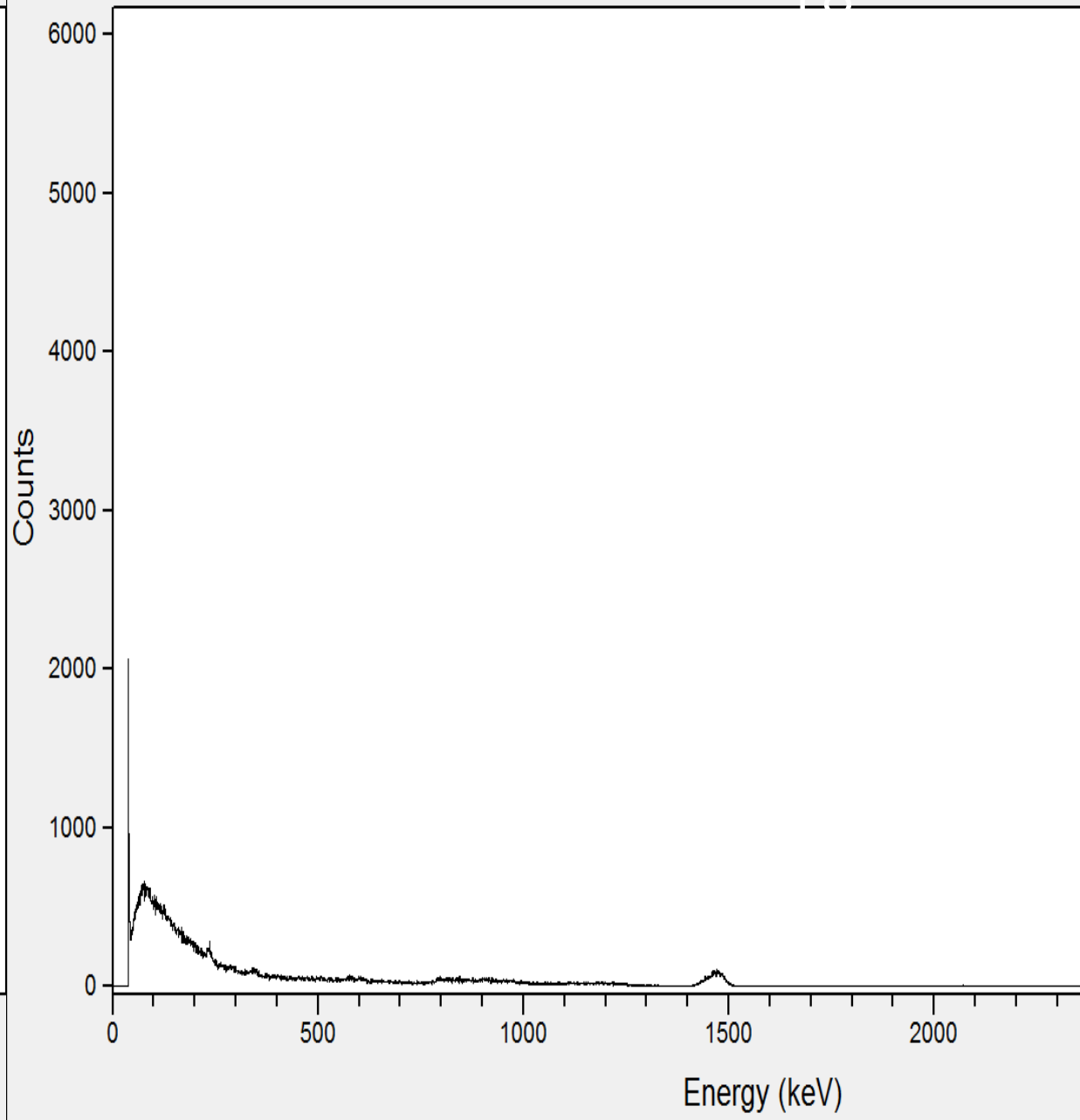
PeakEasy Ver. 4.98.ld 20180906131059 Deck Marker - Contact, Ground Before Removal.cnf

Livetime: 1800.0 sec Deadtime: 0.61 % Neutrons: NA



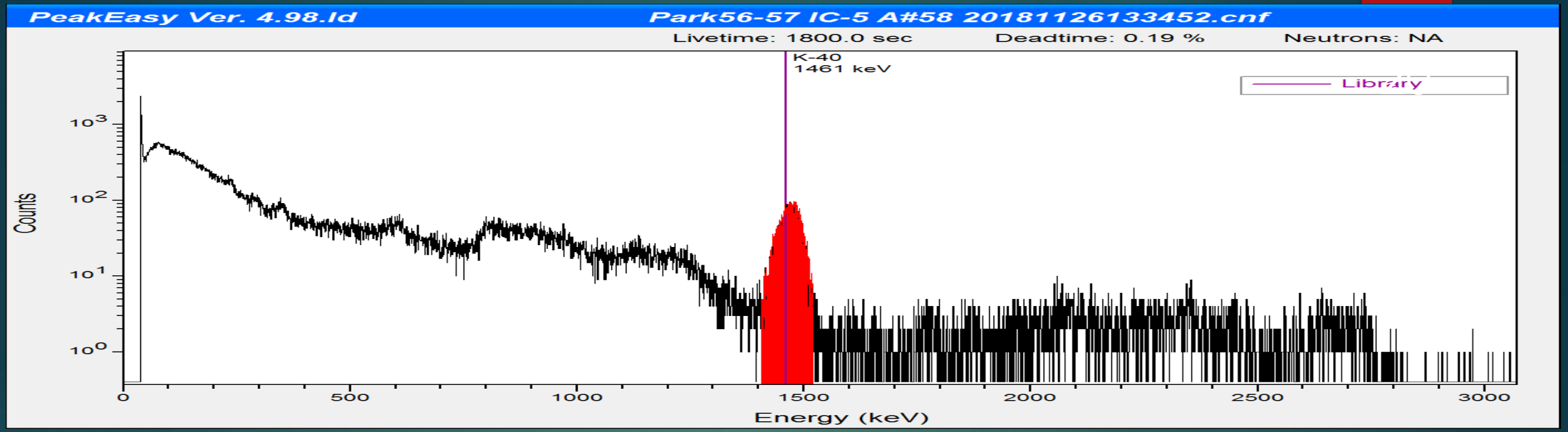
PeakEasy Ver. 4.98.ld 20180911154548 Deck Marker - Contact, Ground

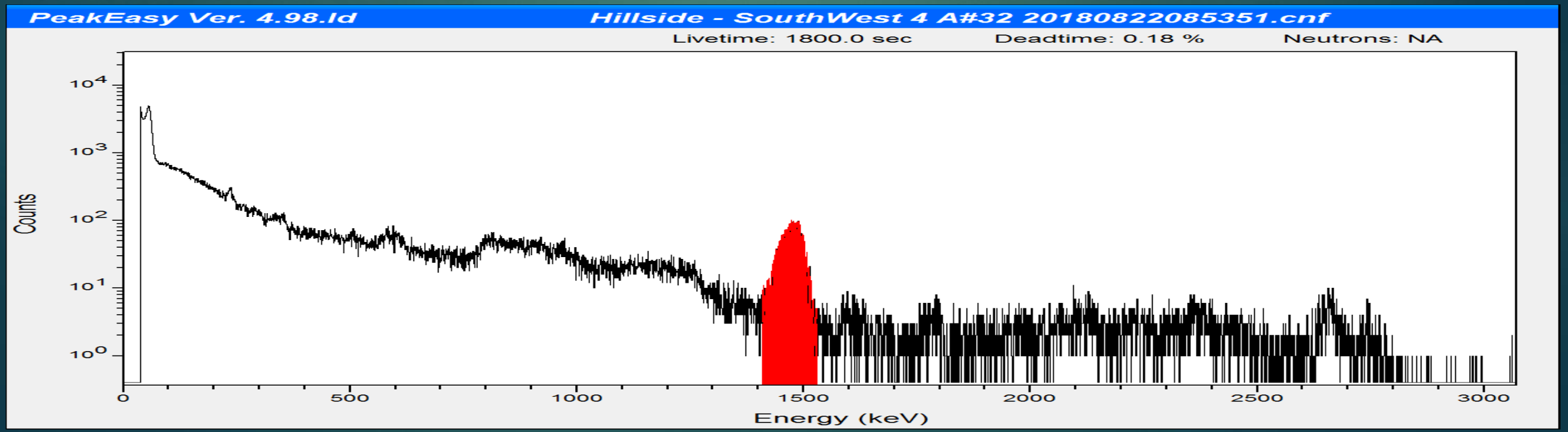
Livetime: 1800.0 sec Deadtime: 0.19 %



Findings: Low Energy Peak

- Unusual low energy spectrum on southwest hillside below the welcome center, noted during data quality review
- Radiation reading was 0.008 mRem/hr., barely detectable above the average survey unit background of 0.006 to 0.007 mRem/hr.
- Readings were about 10 times lower than the deck marker radiation readings
- RHB revisited the site on December 3 and took additional readings but could not replicate them, indicating there is no radiation anomaly at this time
- RHB rescanned the location once the soil had dried sufficiently to try to replicate the original anomaly;


PeakEasy Ver. 4.98.ld
Park56-57 IC-5 A#58 20181126133452.cnf
Livetime: 1800.0 sec
Deadtime: 0.19 %
Neutrons: NA
K-40
1461 keV
Library
Counts
Energy (keV)


PeakEasy Ver. 4.98.ld
Hillside - SouthWest 4 A#32 20180822085351.cnf
Livetime: 1800.0 sec
Deadtime: 0.18 %
Neutrons: NA
Counts
Energy (keV)

Conclusions

1. Given the site history, voluminous soil excavation, new infrastructure, streets, sidewalks, soil and landscaping, the original site condition from shipyard operations no longer exists

2. However, during excavation, some of the original soil was pushed to the A-1 boundary to stabilize the slopes and embankment – CDPH scanned the slopes and did not find any man-made radiation sources

Conclusions (cont.)

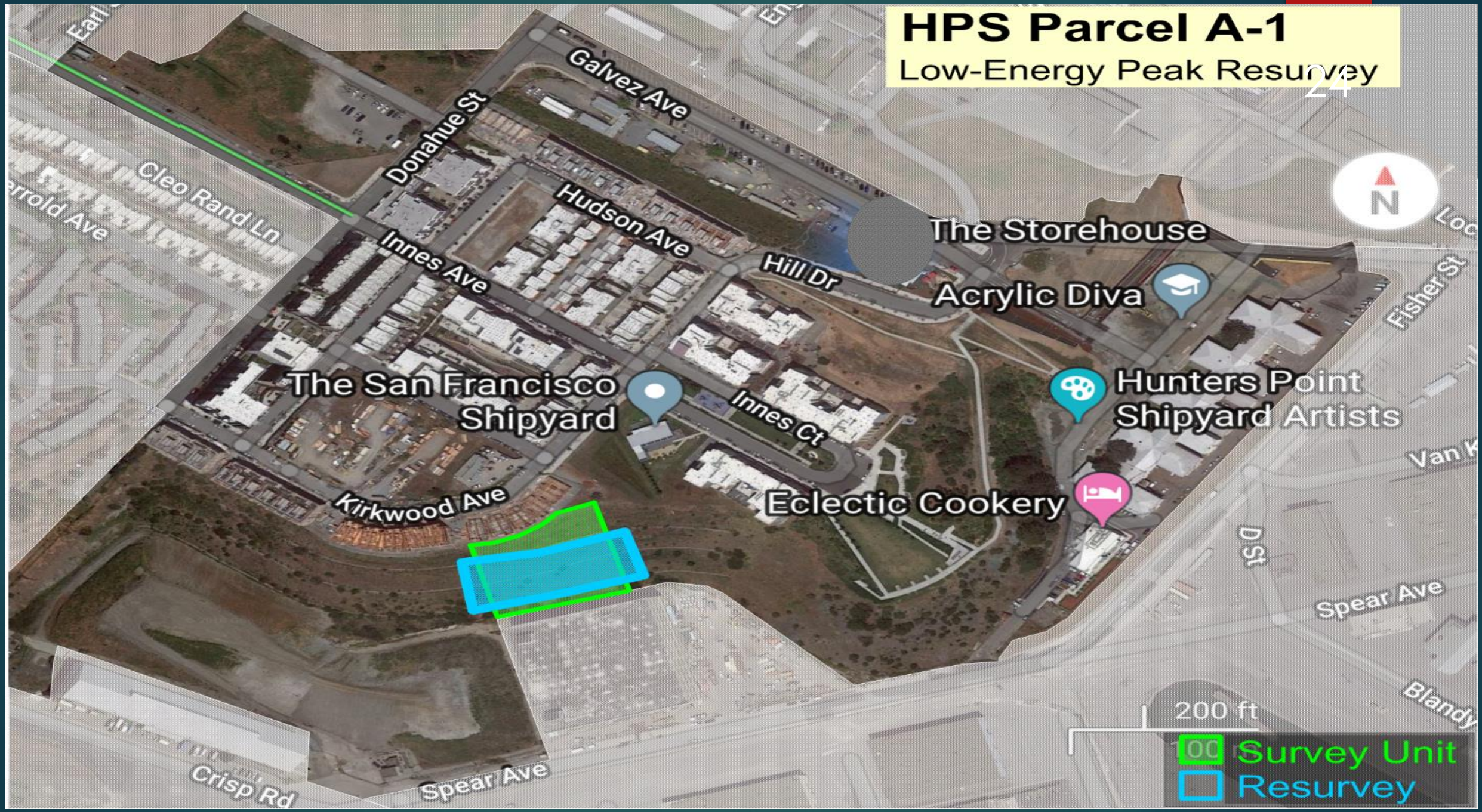
3. Survey of all outdoor areas found numerous natural potassium-40 anomalies, one navy deck marker near A-1 site boundary and one unidentified low energy peak on steep slope (not replicated)

4. No other man-made radioactive materials were found at the site, either discrete or loose gamma materials such as cesium-137 (fission product)

No radiological health and safety hazards to the residents of Parcel A-1

Low Energy Peak Re-Survey

1. Returned to site to resurvey on May 28 to May 30
2. Re-calibrated Ludlum survey instruments to only report measurements between 55 Kev and 65 Kev
3. Scanned an area approximately 250 feet wide (lateral to the anomaly) and 100 feet long (downhill from the anomaly).
4. An Inspector 1000 reading was collected at the original anomaly location. All readings with the Ludlum instruments and the Inspector 1000 failed to replicate the anomaly.


HPS Parcel A-1
Low-Energy Peak Resurvey
Galvez Ave
Donahue St
Cleo Rand Ln
Hudson Ave
Innes Ave
Hill Dr
The Storehouse
Acrylic Diva
Fisher St
The San Francisco Shipyard
Innes Ct
Hunters Point Shipyard Artists
Kirkwood Ave
Eclectic Cookery
D St
Spear Ave
Crisp Rd
Spear Ave
200 ft
Survey Unit
Resurvey

Parcel A-2 Survey
Purpose/Goal/Objectives of the Survey

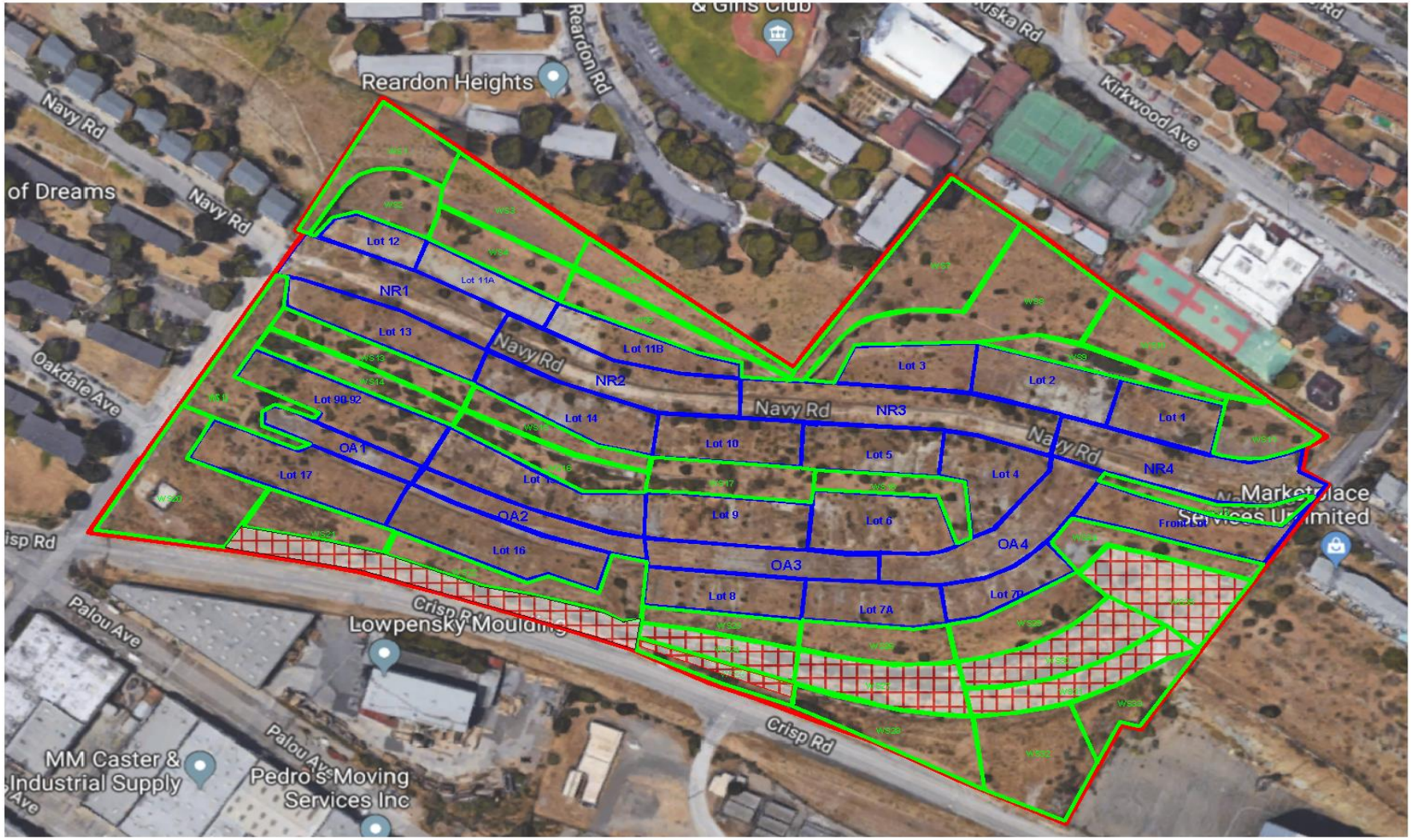
Purpose: Determine if residents and the public are exposed to unsafe levels of man-made radiation

Goal and objectives: Perform a radiological survey to address the health and safety of the public of Parcel A-2

- Survey all accessible and safe areas,
- Investigate any radioactive anomalies detected

Project began in October 22, 2018; Fieldwork completed November 28

Hunter's Point Parcel A-2
Master Survey Units Map



Legend:
Property Line
Gamma Walkover Survey Units
RS 700 Survey Units

Area not accessible

Methodology

Conduct:

1. Walkover Scanning Survey
2. Towed Array Scanning
3. Anomalous Measurement Confirmation/ Supplemental Measurements

Methodology (cont.)

- 66 Major Survey Units
- Units composed of wide variety of material such as clay, degrees of vegetation and variation of rocks such as granite and serpentine
- Slow pace walkover scans, highly sensitive detectors
- Performed one-minute static counts at 1205 distinct locations distributed across the parcel

Methodology (Cont.)

WALKOVER SURVEY

- Performed Walkover Scans of Outdoor Areas Included One Minute Static Counts Every 50 Feet
- Team of Two
- Total of 1205 Static Counts Taken Over Entire Site


0
DETECTOR
OFF
POWER
100
AUDIO
DIVIDE
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HV
THR
WIN
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LAMP
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RESP
ZERO
COUNT
HOLD
CONT 10
MINUTES
SCALER
RATE
DIGITAL CONTROL
LUDLUM
MODEL 2221
SCALER RATEMETER
CALIBRATION


MODEL 19
MICRO R METER
LUDLUM MEASUREMENTS INC
SWEETWATER, TEXAS

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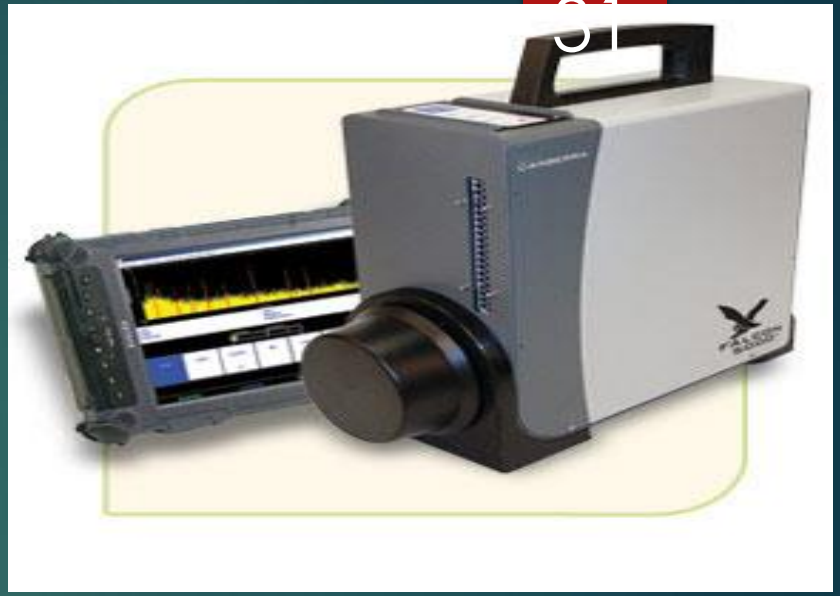


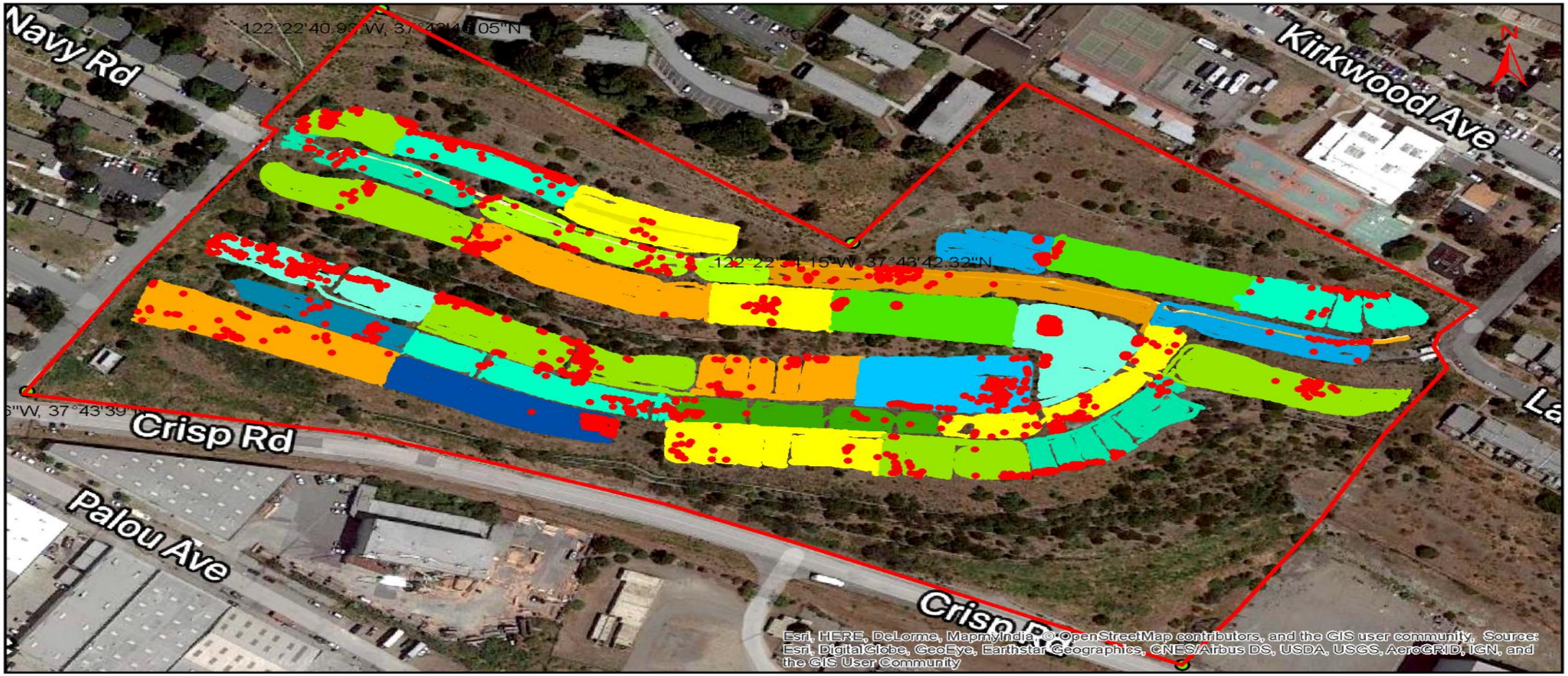
Towed Array Scanning Survey

- Towed Array detectors collect one data point per second all along its path
- All large flat open areas across the parcel

Hunter's Point Parcel A2
RS - 700 Gamma Scan Survey Units

-

RS-700 Anomalous Area
Insp. 1000 shot locations



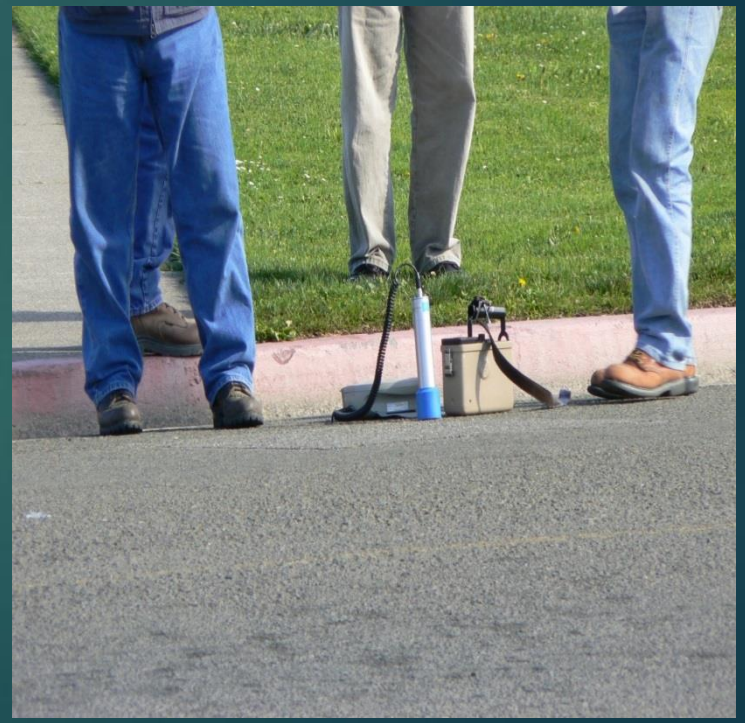
Hunter's Point Parcel A-2
Gamma Walkover Survey Units Map

Legend:
Property Line
Gamma Walkover Survey Units

Area not accessible

Findings

- Walkover Survey Revealed:
  - 11 anomalies
  - Performed another 26 supplemental shots in survey units where no anomalies were detected (at highest reading in survey unit)
- Towed Array Survey revealed 102 anomalies
- Total 139 Inspector Shots with 113 anomalies and 26 Supplemental
  - All naturally occurring potassium-40



Conclusions

1. As part of the redevelopment, a large amount of the original A-1 soil was transferred to parcel A-2 (would have been mixed during the transfer process). Results of the A-2 scan found no man-made radiation sources.

2. Survey of all outdoor areas found numerous natural potassium-40 anomalies

3. No man-made radioactive materials were found at the site, either discrete or loose gamma materials such as cesium-137 (fission product)

No radiological health and safety hazards found on Parcel A-2

Hunters Point Shipyard Parcel A-1

DUST WIPE PROCEDURE

Dust Wipe Procedure

- Sound scientific procedure with input from USEPA
- Response to residents' request about indoor dust
- Able to detect plutonium and strontium
- Appointment sign-up
- Test schedule
- Brief explanation of Sampling Protocol

Dust Wipe Procedure (cont.)

- Ludlum 3030P alpha/beta counter
- Very high sensitivity
  - Fully integrated alpha beta sample counter
  - Simultaneous alpha and beta counting
  - Data logging with USB connectivity
  - Includes pc software

Dust Wipe Procedure (cont.)

- Daily QA checks
- Each swipe counted for 10 minutes
- Swipes generally taken on window sills. Some residents asked for other locations such as kitchen, air vent or bedroom.

Dust Wipe Procedure (cont.)

- Calculated instrument Minimum Detectable Activity (MDA), which is used as trigger level
- Performed cancer risk analysis calculations using *The Federal EPA Guidance Report Number 13*
- Compared To EPA Federal EPA OSWER 9285.6-20 (1×10^{-6})
- Minimum Alpha Contamination Calculated As 40 DPM
- Minimum Beta Contamination Calculated As 5208 DPM

Dust Wipe Results

- 77 total units surveyed
  - 46 residences and 31 artist studios
- 229 total dust swipes were taken
- No dust swipe results were above the trigger level (MDA) for either alpha or beta radiation
- Letters have been mailed to each individual unit or artist resident

No health and safety risk (NHSR) was found in any home or artist studio

Questions