

# Various GPS-Gamma Applications

Mark L. Miller

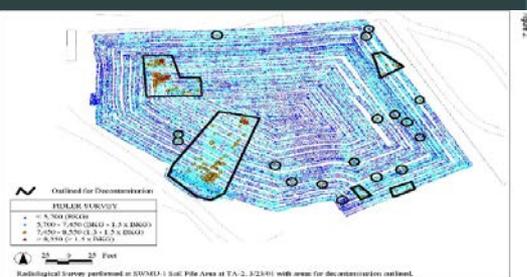
Sandia National Laboratories, Albuquerque, NM

SAND Number: 2012-0630P

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# Cleanups at Various Ra-226 Sites

- El Toro
- KAFB
- Aberdeen
- Denver 1985
- Mare Island
- NYC Radium Dial & Radium Dial Paint, Ottawa, IL
- Johnston Island
- Aircraft Component Site, Detroit, MI
- Norton AFB
- Surplus Radioactive Materials Management Guide (Brooks)
- Barksdale AFB

# *Precision Differential Global Positioning System (PDGPS)*

*3 detectors*

*Used on Treasure Island & Johnston Island*



# 9 Detectors Used at Mare Island and El Toro





# *UltraSonic Ranging and Data System (USRADS®)*



# ***USRADS<sup>®</sup> FEATURES***

- **Ultrasonics** – fixes location of survey
- **Radio Frequency (RF)** – data & telemetry
- **Computer** – collect & analyze data
- **Data & location recorded every second**
- **3600 readings per detector per hour of survey time**
- **Works around Physical Obstructions**
- **Laser Ranging is Future Direction**

# GPS/Gamma at Johnston Island



# Baby Stroller GPS/gamma



# Backpack GPS/gamma



# Example of Data Manipulation

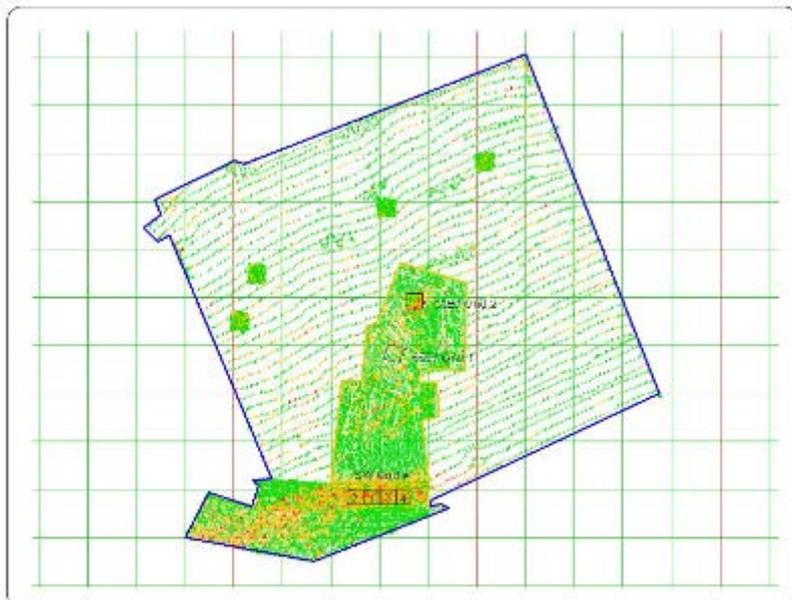
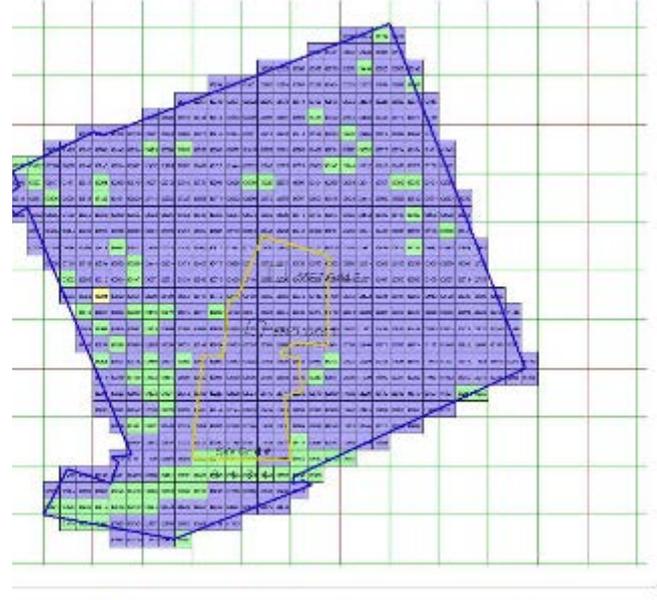


Figure 2.4.5-2  
SINMU - 55  
Red Tower



ERG  
Environmental Resources Group, Inc.  
12000 10th Ave. SW  
Burien, WA 98148  
206.835.4444

- 2017 SA Boundary
- Survey Boundary

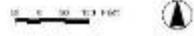
| Point Description |           |
|-------------------|-----------|
|                   | 2151760.2 |
|                   | 2151760.2 |
|                   | 2151760.2 |



- 2017 SA Boundary
- Survey Boundary

| 2017 SA Point Description |           |
|---------------------------|-----------|
|                           | 2151760.2 |
|                           | 2151760.2 |
|                           | 2151760.2 |

Gamma Survey  
Surveyed 02-21-06 & 7/6/06



# GPS/gamma Before & After

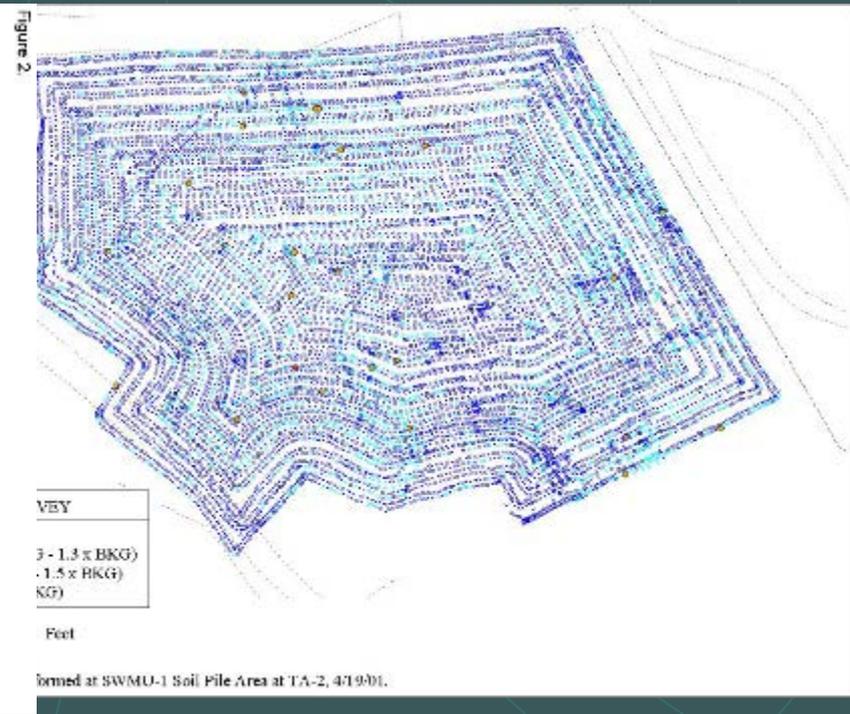
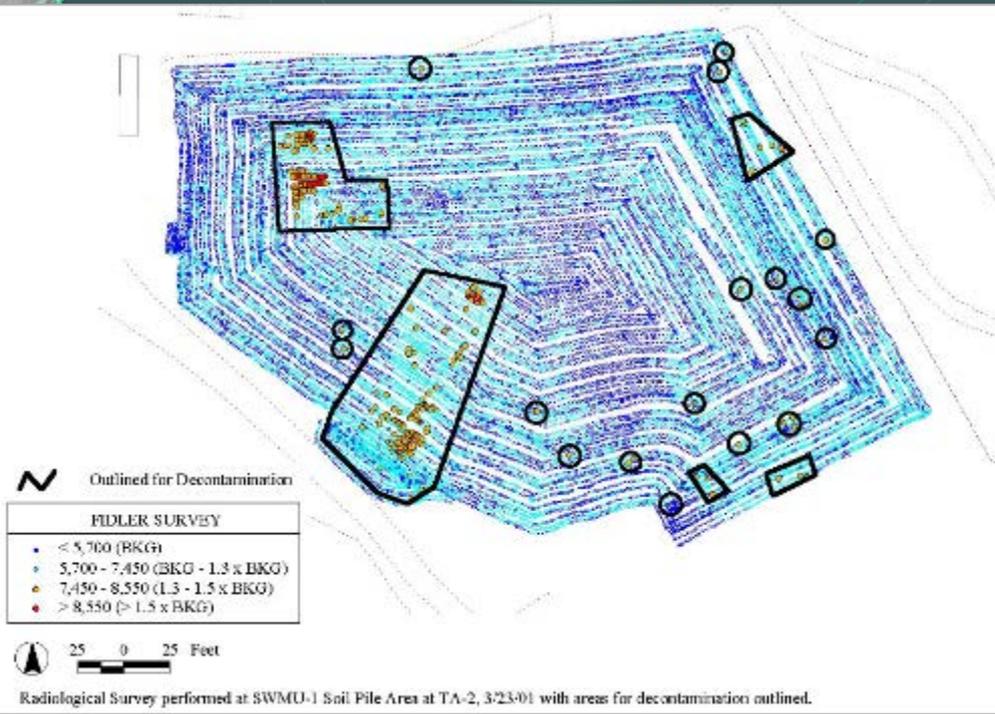
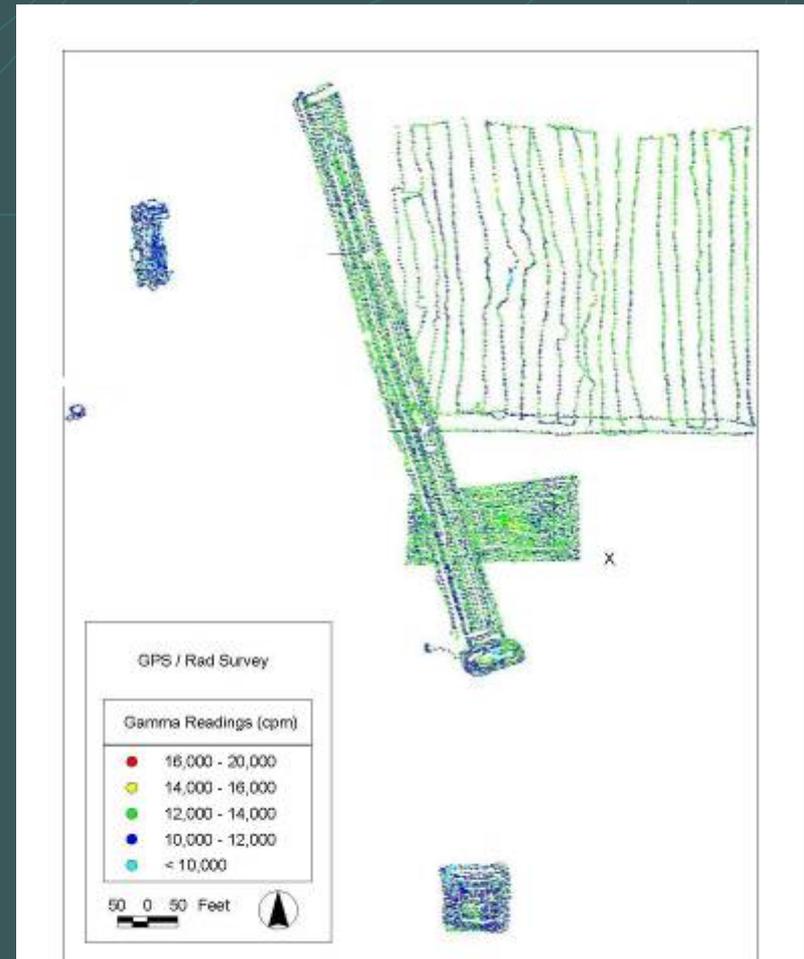
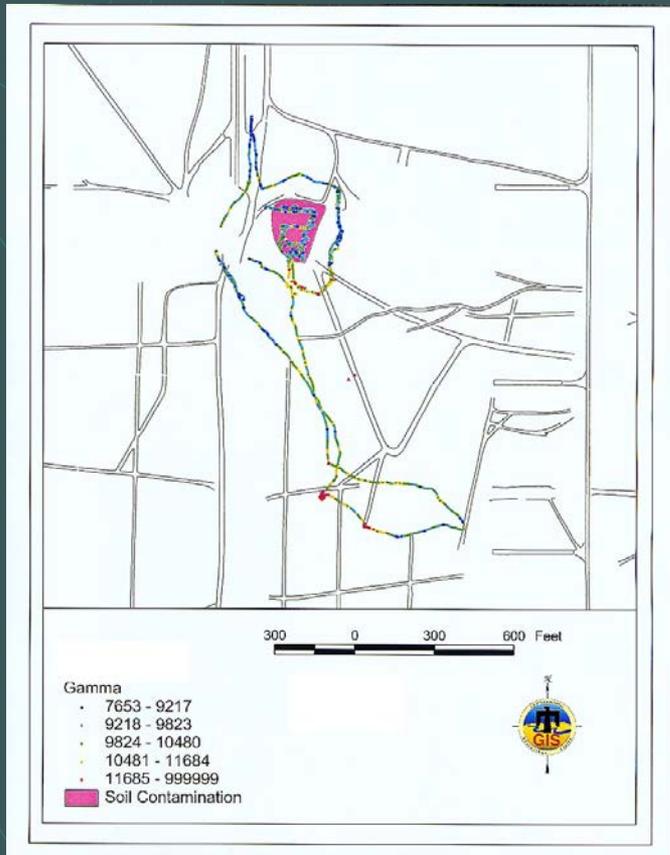
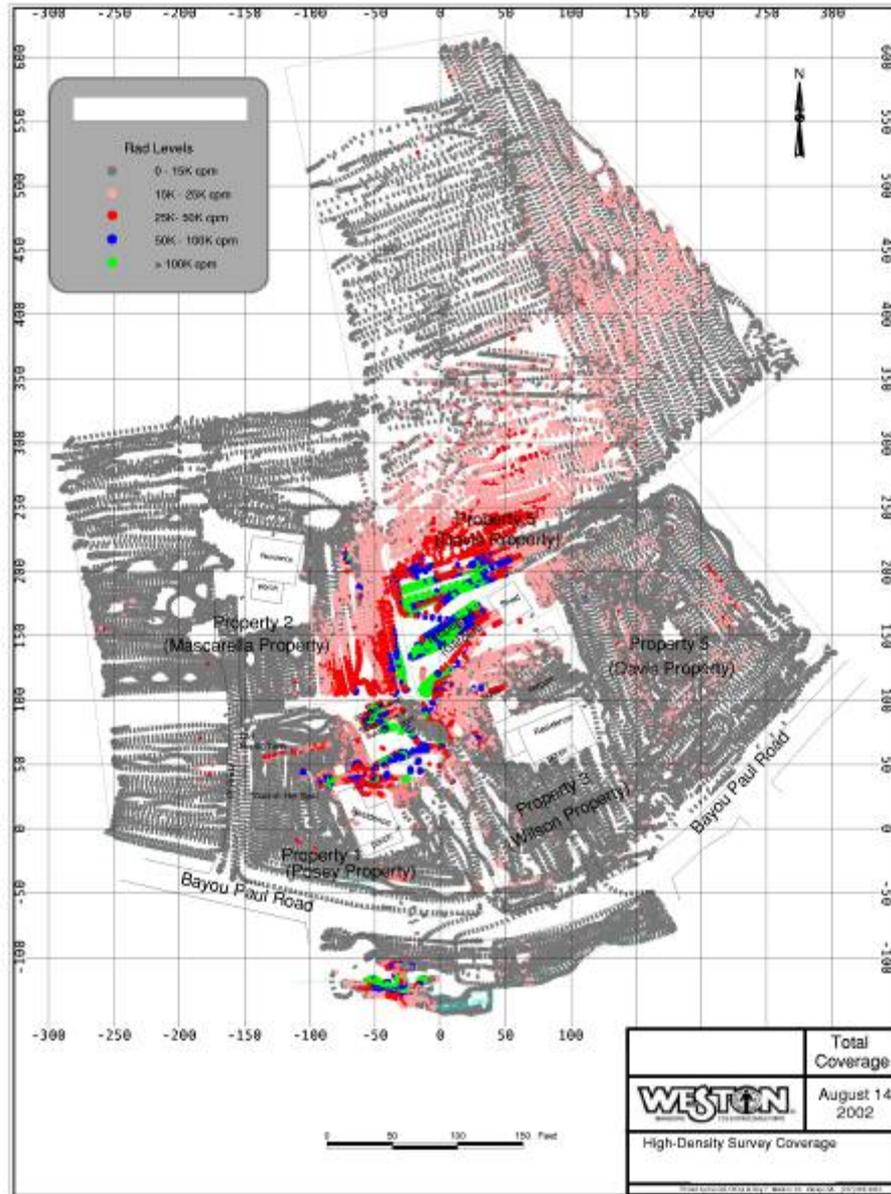


Figure 3.

# GPS/gamma shows where you went and logs 100's more data points!

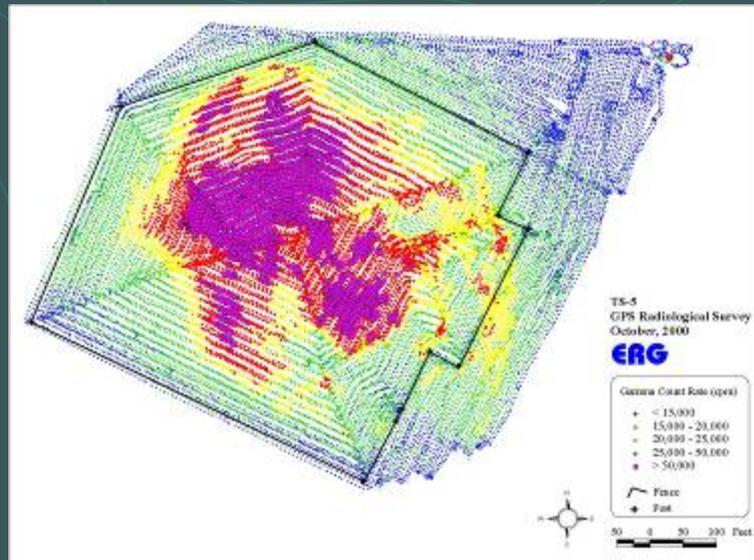


# Sample Survey

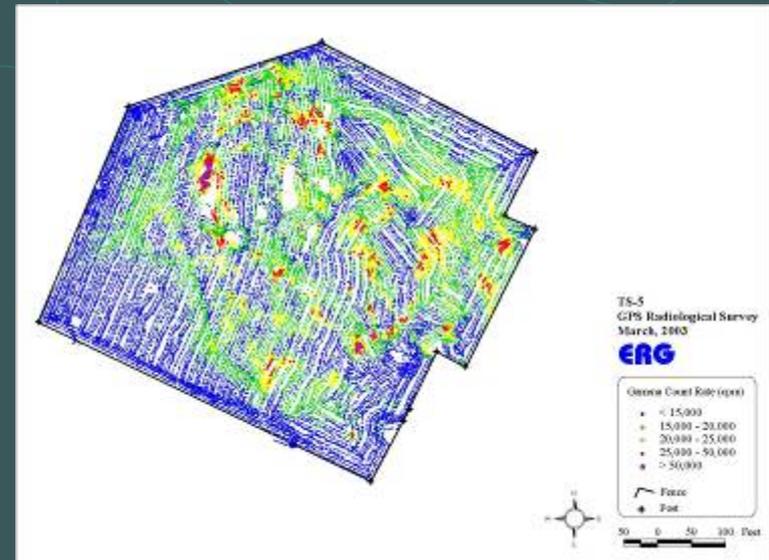


# Kirtland AFB TS-5

## Before Cleanup



## During Cleanup



# Segmented Gate System and Screen Plant

