

TA-14

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**PRS 14-010**

**Former Sump Drainage Area**

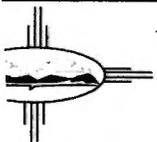
**TA-14, Q-Site**

**SRS Score = 24**

**HSWA Module**



3877

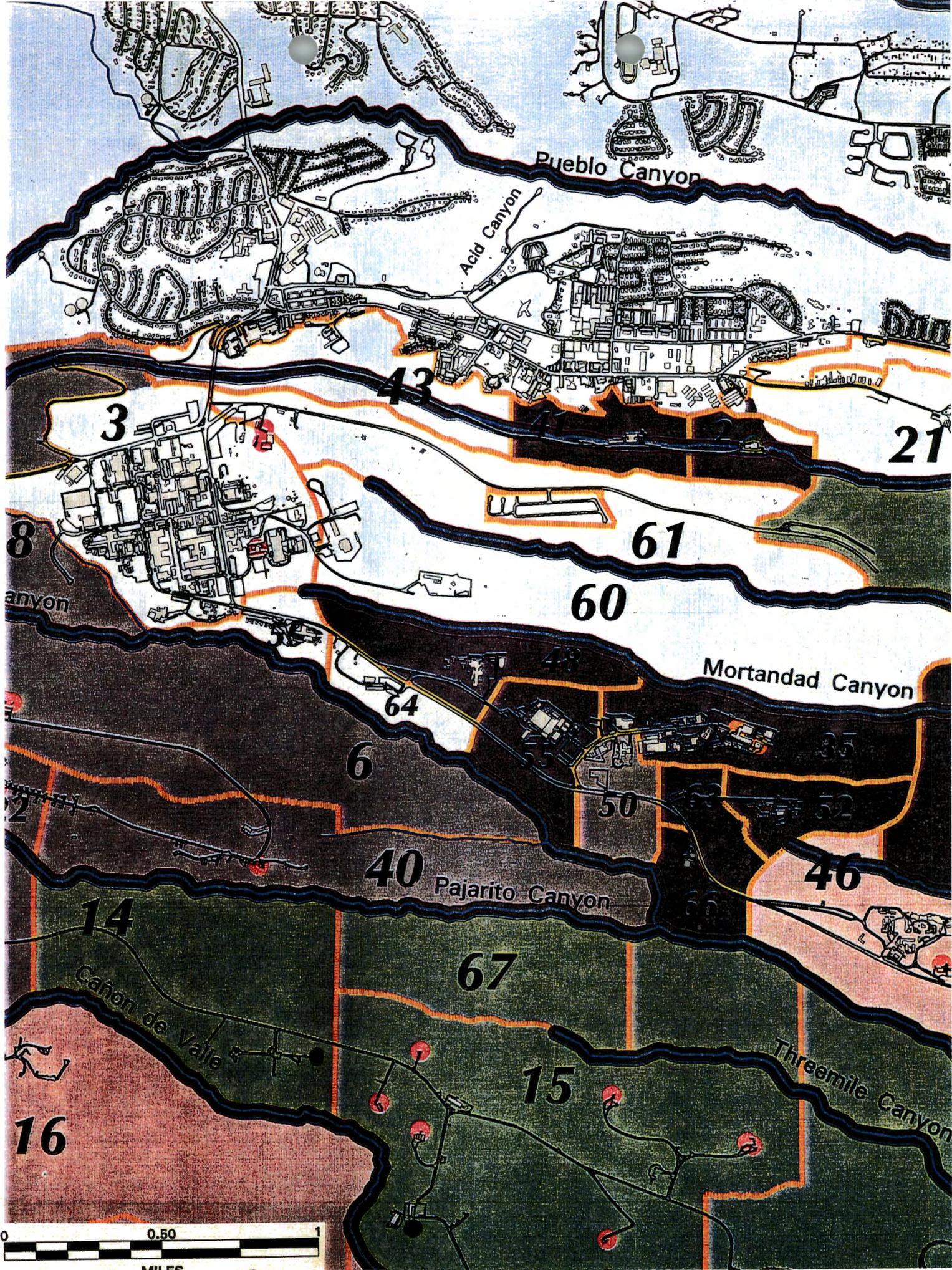


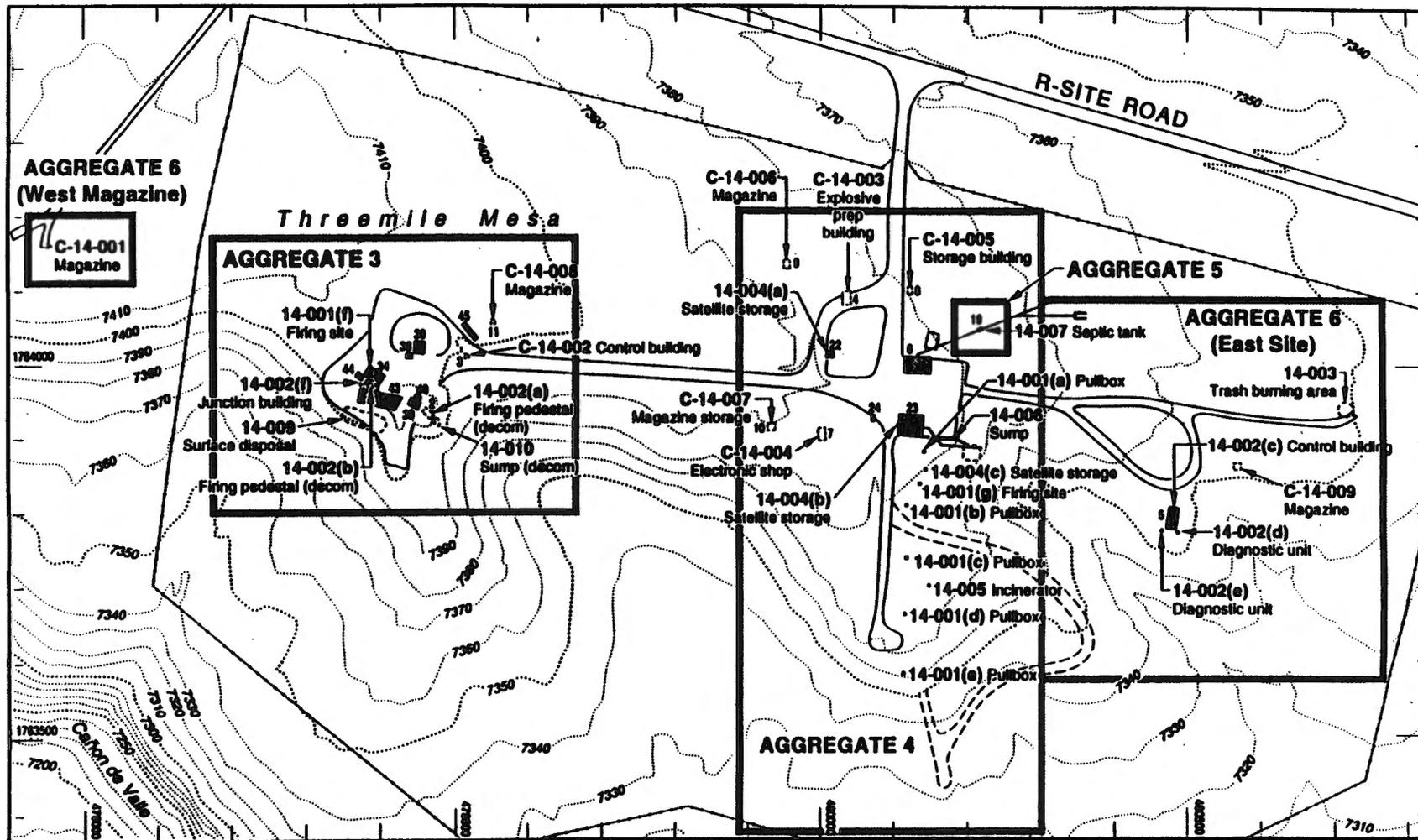
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VG-97-043 (1)

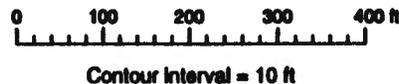
2/10/99



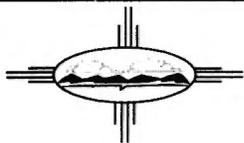


- Existing building or structure
- Former building or structure
- Paved road
- Unimproved road

- Fence
- Pipeline and leach field
- "C" Area of Concern (AOC)



Sources: FMAD 1993 G100991; LANL 1988, ENG-C45511  
Modified by: cARTography by A. Kron 5/16/94

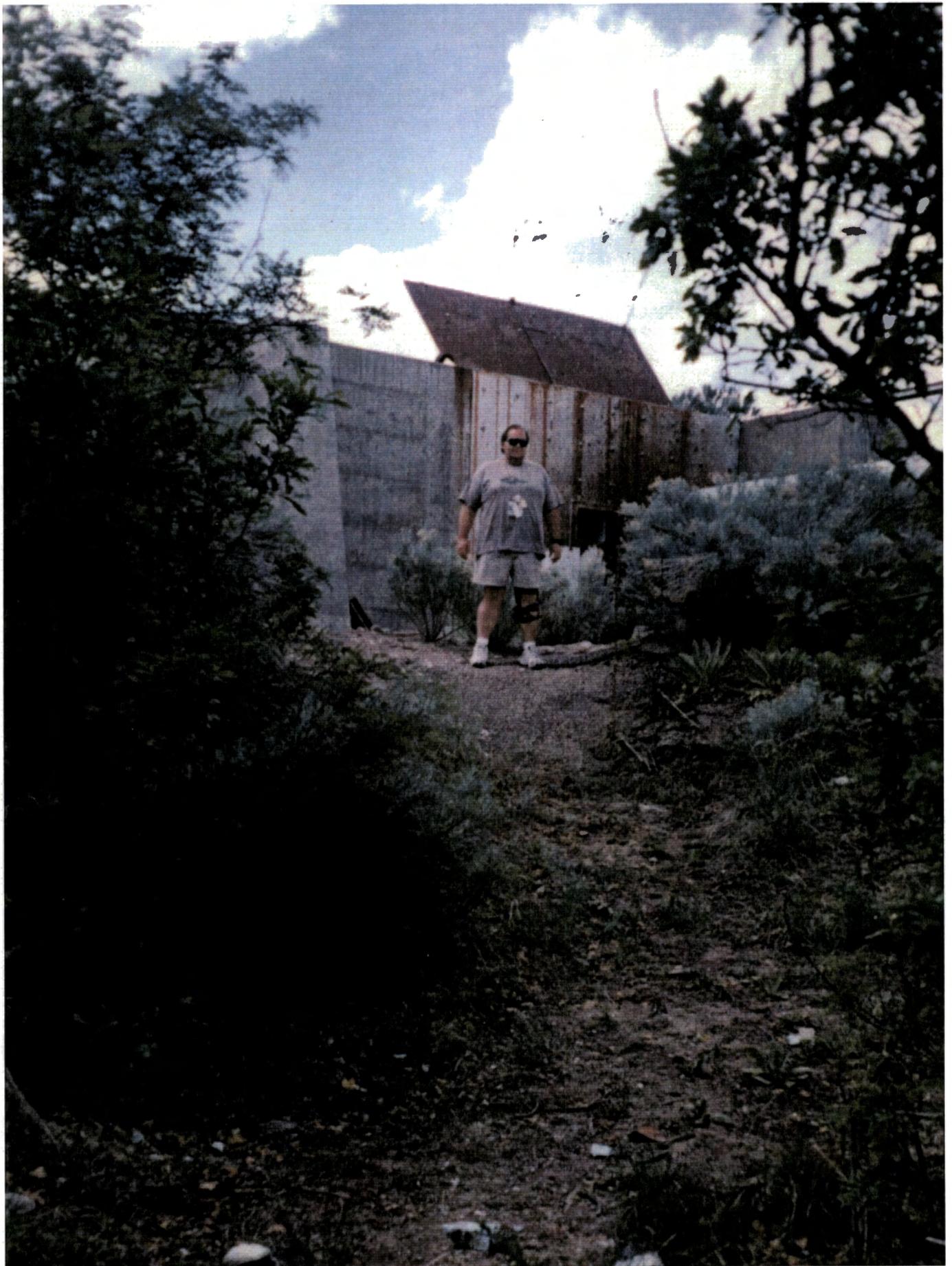


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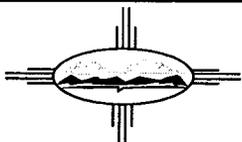




# PRS Description

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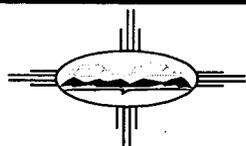
- **Explosive waste sump drainage area**
  - ◆ possible HE, radionuclides, and metals
- **Sump contents removed in early 1970s**
- **Sump and associated drainline removed in 1973**
- **Land use scenario - continued Laboratory (LANL) use (i.e., industrial)**
- **Location - within secured boundaries of TA-14**



## **PRS Description (concluded)**

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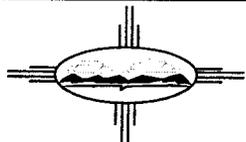
- **On list of 684 PRSs in or near water courses**
- **Nearest water course approximately 1/4 mile (Canyon de Valle)**
- **~ 30% slope of land at drainage area**
- **VCA plan dated March 1997 contains analytical results from Phase I**



# Phase I PRS Characterization

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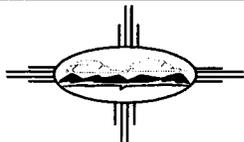
- **Electromagnetic survey confirmed removal of sump and drainline from beneath asphalt**
- **Soil screened for HE using HE spot test kit**
- **Soil screened for radioactivity (alpha, beta, and gamma)**
- **Soil screened for metals using XRF**



# Phase I PRS Characterization (concluded)

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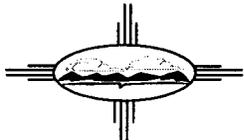
- **Five samples collected and submitted to fixed lab in accordance with approved work plan**
  - ◆ 4 samples collected from 0 to 6 in. depth
  - ◆ 1 sample collected from 14 to 20 in. depth
- **Analyzed for radionuclides, isotopic uranium, TAL metals, and HE**
- **U retained as COPC**



# Analytical Results

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- **No HE detected**
- **Ten inorganics detected above UTLs**
- **Uranium detected above background and SALs**



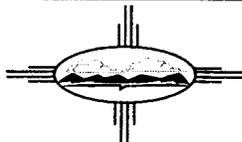
# Analytical Results (continued)

## INORGANICS WITH CONCENTRATIONS GREATER THAN BACKGROUND UTL FOR PRS 14-010

Sample ID	Depth (in.)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)
SAL	N/A	210	4600	2800	400	1500
LANL UTL	N/A	19.3	19.2	15.5	23.3	15.2
0214-95-0048	14-20	2.9	1.3	7.9	15.7	2.7
0214-95-0049	0-4	19.5	10	158	54.2	49
0214-95-0050	0-6	23.6	62.2	152	26.6	128
0214-95-0051	0-6	2.0	1.2	3.3	25.4	2.2
0214-95-0052	0-6	3.4	1.5	4.9	2.4	2.4

Sample ID	Depth (in.)	Silver (mg/kg)	Selenium (mg/kg)	Thallium (mg/kg)	Uranium (mg/kg)	Zinc (mg/kg)
SAL	N/A	380	380	5.4	230	23,000
LANL UTL	N/A	Not Available	1.7	1.0	5.45	50.8
0214-95-0048	14-20	0.5(U)	0.2(J)	0.3(J)	14.5	19.7
0214-95-0049	0-4	4.3	1.1	0.2(J)	1,370	54.8
0214-95-0050	0-6	0.3(J)	3.2	1.8	681	22.4
0214-95-0051	0-6	0.5(U)	0.2(J)	0.5(J)	8.6	20.6
0214-95-0052	0-6	0.5(U)	0.08(J)	0.1(J)	7	11.1

Notes: N/A = Not applicable  
Sample value in shaded box is greater than SAL.



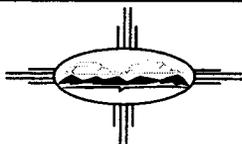
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# Analytical Results (continued)

## MULTIPLE CHEMICAL EVALUATION FOR SOIL SAMPLES FROM PRS 14-010

Chemical	Location ID	Sample ID	Maximum Sample Values	Soil SAL	Normalized Values
Noncarcinogenic Effects (m/kg)					
Chromium	14-1029	0214-95-0050	23.6	210	0.11
Cobalt	14-1029	0214-95-0050	62.2	4,600	0.01
Copper	14-1028	0214-95-0049	158	2,800	0.05
HMX	14-1029	0214-95-0048	40.8	3,300	0.01
Nickel	14-1029	0214-95-0050	128	1,500	0.09
Selenium	14-1029	0214-95-0050	3.2	380	0.01
Silver	14-1028	0214-95-0049	4.3	380	0.01
Thallium	14-1029	0214-95-0050	1.8	5.4	0.3
Zinc	14-1028	0214-95-0049	54.8	23,000	0.002
				<b>Total</b>	<b>0.6</b>



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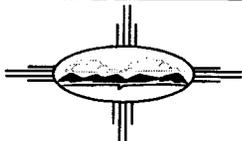


# Analytical Results (concluded)

## RADIONUCLIDES WITH CONCENTRATIONS GREATER THAN BACKGROUND UTL FOR PRS 14-010

Sample ID	Depth (in.)	Uranium (mg/kg)	Uranium-235 (pCi/g)	Uranium-238 (pCi/g)
SAL	N/A	130	10	67
LANL UTL	N/A	5.45	0.08	1.82
0214-95-0048	0-6	14.5	0.3(U)	7.5
0214-95-0049	0-6	1,370	2.7	143
0214-95-0050	0-6	681	0.63	36
0214-95-0051	0-6	8.6	0.1(U)	3.5(U)
0214-95-0052	0-6	7	0.2(U)	7.3

Notes: N/A = Not applicable  
Sample value in shaded box is greater than SAL.



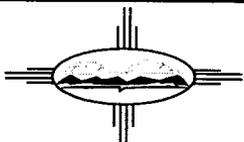
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# **Proposed Cleanup**

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- **Removal of the top 0 - 6 in. of surface soil by hand along drainage course**
- **Field screening on 5 ft grid (0 - 6 in.)**
  - ◆ **44-9 pancake probe for rad**
  - ◆ **visual inspection for DU and HE, followed by removal**
- **Confirm with fixed lab samples**
  - ◆ **2 highest rad values sent to analytical lab**
  - ◆ **4 locations downgradient sampled to determine migration**

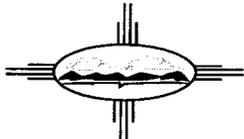


# Site-Specific Rad Cleanup Levels

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- Calculated with DOE program, RESRAD 5.61
- Basis for cleanup
  - ◆ industrial land use, based on exposure of 15 mrem/year plus ALARA
  - ◆ PRS located in drainage area
  - ◆ default exposure parameters
  - ◆ remediation will eliminate potential for migration
  - ◆ detected concentrations of uranium exceed rad cleanup level

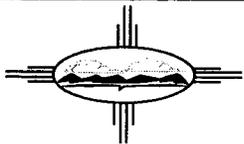
COPC	Sample Value		Rad Cleanup Level		Rational
Uranium	1,370 mg/kg	548 pCi/g	1230 mg/kg	493 pCi/g	Radionuclide (based on a dose of 15 mrem/year)



# Waste Volume Generated

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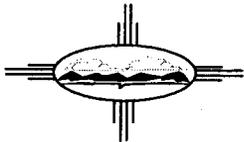
- **Total approximately 270 cu. ft. (75 ft. x 7 ft. x 6 in.) plus swell @ 25% = approximately 340 cu. ft. (~ 12 cu. yds.)**
  - ◆ **assuming ~ 6 in. depth of soil removal**
- **Sampling waste/PPE: < one 55-gallon drum**
- **Decontamination waste: < 20 gallons**



# Schedule/Cost Estimate

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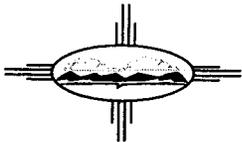
- **Timeframe - summer 1997**
- **Duration - two weeks**
  - ◆ **placement of runoff control measures (straw bales and sand bags)**
  - ◆ **mobilization**
  - ◆ **removal/field characterization**
  - ◆ **demobilization**
- **Cost estimate - \$40,000**



# Implementation

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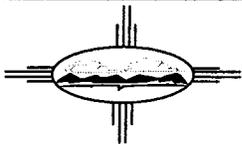
- **Storm Water Pollution Prevention Plan**
- **Runoff control measures**
  - ◆ **double row of straw bales**
  - ◆ **sand bags at top**
- **Remove surface soil of drainage area to depth of ~ 6 in.**
- **Field screening (rad and HE spot test)**
- **Remove additional material (as necessary) based on screening**



## Implementation (continued)

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- **Collect confirmatory samples**
  - ◆ for fixed analytical based on rad screening (center of channel) to verify cleanup
  - ◆ at the bottom of the channel
- **Site restoration**
  - ◆ regrade, reseed, and monitor runoff control measures until 75% regrowth of vegetation is achieved and/or control concurrence by ESH-18 is received



# Implementation (concluded)

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- **Dispose of waste**
- **Write completion report**
- **Submit NFA permit modification request**

