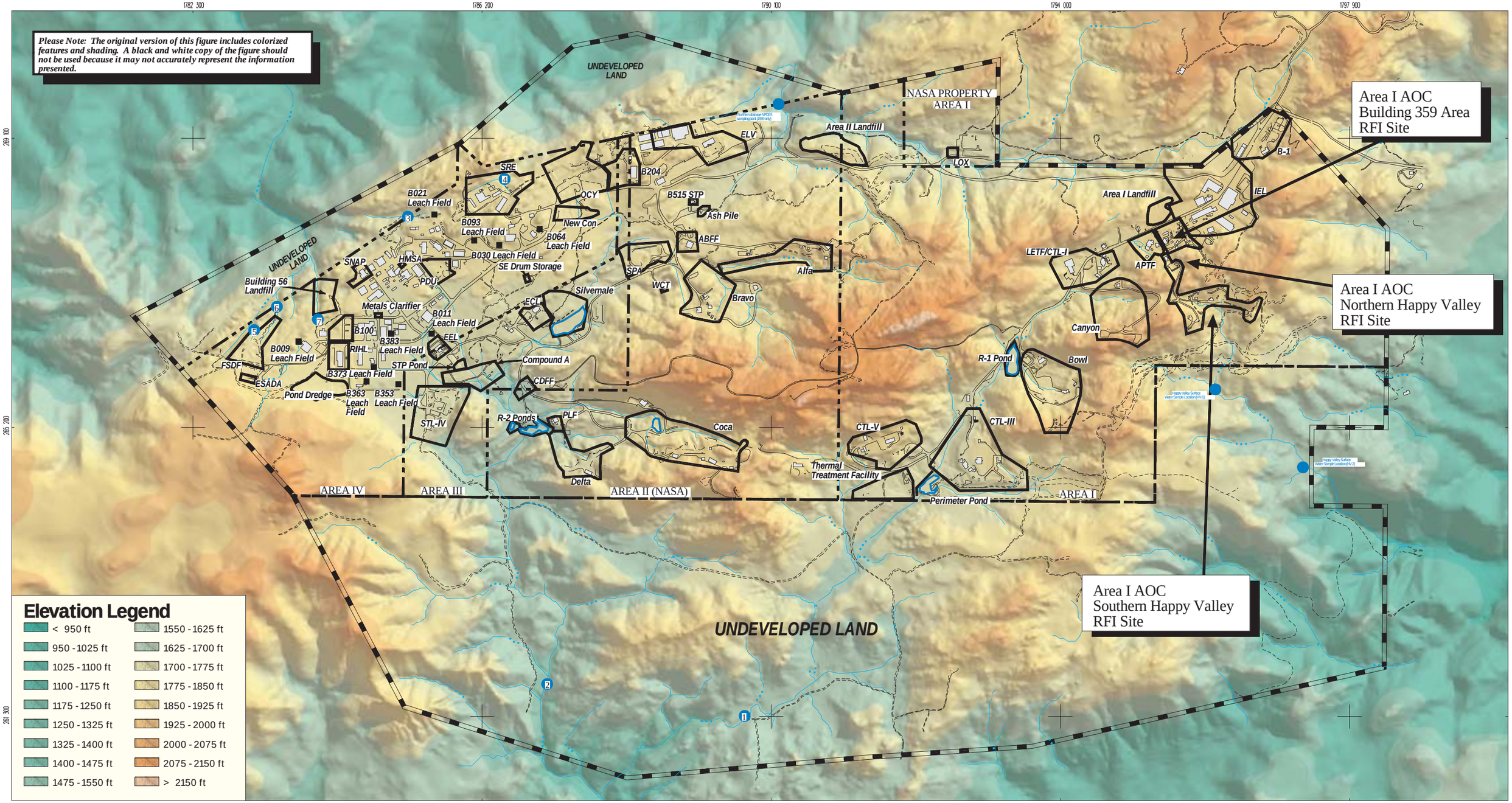


N

0 1300
FEET

MAP COORDINATES IN STATEPLANE, NAD 27, ZONE V.

RFI SITES

AREA I
- SWMU 4.1 - B-1 Area
- SWMU 4.2 - Area I Landfill
- SWMUs 4.3, 4.4 and AOC - Instrument and Equipment Laboratories (IEL)
- SWMU 4.5,4.6 - LOX Plant Former Sump/Clarifier and Drum Disposal Area
- SWMU 4.7 - Component Test Laboratory III (CTL-III) Area
- SWMU 4.8 - Thermal Treatment Facility (TTF) RCRA Permitted Unit
- SWMU 4.9, AOC - Advanced Propulsion Test Facility (APTF) Area
- SWMU 4.12 - Laser Engineering Test Facility (LETF)/Component Test Lab I (CTL-I) Area
- SWMU 4.14 - Canyon Area
- SWMU 4.15 and AOC - Bowl Area and Building 901 Leachfield
- SWMU 4.16 - Area I Reservoir (R-1 Pond)
- SWMU 4.17 - Perimeter Pond

AREA I (cont)
- AOC - Building 359 Sump
- AOC - Happy Valley Area
- AOC - Component Test Laboratory V (CTL-V)

AREA II
- SWMU 5.1 - Area II Landfill
- SWMU 5.2 - ELV Final Assembly, Building 206
- SWMU 5.5 and AOC - Building 204 Area
- SWMU 5.6 - Former Incinerator Ash Pile
- SWMU 5.7 - Hazardous Waste Storage Area Waste Coolant Tank (WCT)
- SWMUs 5.9, 5.10, 5.11 - Alfa Area
- SWMUs 5.12, 5.13, 5.14, 5.15 - Alfa/Bravo Skim Pond and Bravo Area
- SWMUs 5.18, 5.19 - Coca Area
- SWMUs 5.20, 5.21, 5.22 - Propellant Load Facility (PLF)
- SWMU 5.23 - Delta Area

AREA II (cont)
- SWMU 5.26 - R-2A and R-2B Ponds
- AOC - Building 515 Sewage Treatment Plant
- AOC - Storable Propellant Area (SPA)
- AOC - Alfa/Bravo Fuel Farm
- AOC - Coca/Delta Fuel Farm

AREA III
- SWMUs 6.1, 6.3, AOC - Engineering Chemistry Laboratory (ECL) Area
- SWMU 6.4 - Compound A Facility
- SWMU 6.5 - Systems Test Laboratory IV (STL-IV) Area
- SWMU 6.8 - Silvernale Reservoir
- SWMU 6.9 - Environmental Effects Laboratory (EEL)
- AOC - Sewage Treatment Plant (STP) Pond Area

AREA IV
- SWMU 7.1 - Building 56 Landfill
- SWMU 7.3 - Former Sodium Disposal Facility (FSDF)
- SWMU 7.4 - Old Conservation Yard (OCY)
- SWMU 7.5 - Building 100 Trench
- SWMU 7.7 - Rockwell International Hot Laboratory (RIHL)
- SWMU 7.8 - New Conservation Yard (New Con)
- SWMU 7.9 - ESADA Chemical Storage Area
- SWMU 7.10 - Former Coal Gasification PDU
- AOC - Former Hazardous Materials Storage Area (HMSA)
- AOC - Chemistry Laboratory Metals Clarifier
- AOC - Pond Dredge Area
- AOC - Sodium Reactor Experiment (SRE) Area
- AOC - SE Drum Storage Yard
- AOC - SNAP Facility

Basemap Legend

- Buildings
- SSFL Property Boundary
- Administrative Area Boundary
- RFI Site Boundary
- Drainages
- Ponds
- Contours
- Dirt Roads
- Roads
- Leach Fields
- NPDES Location

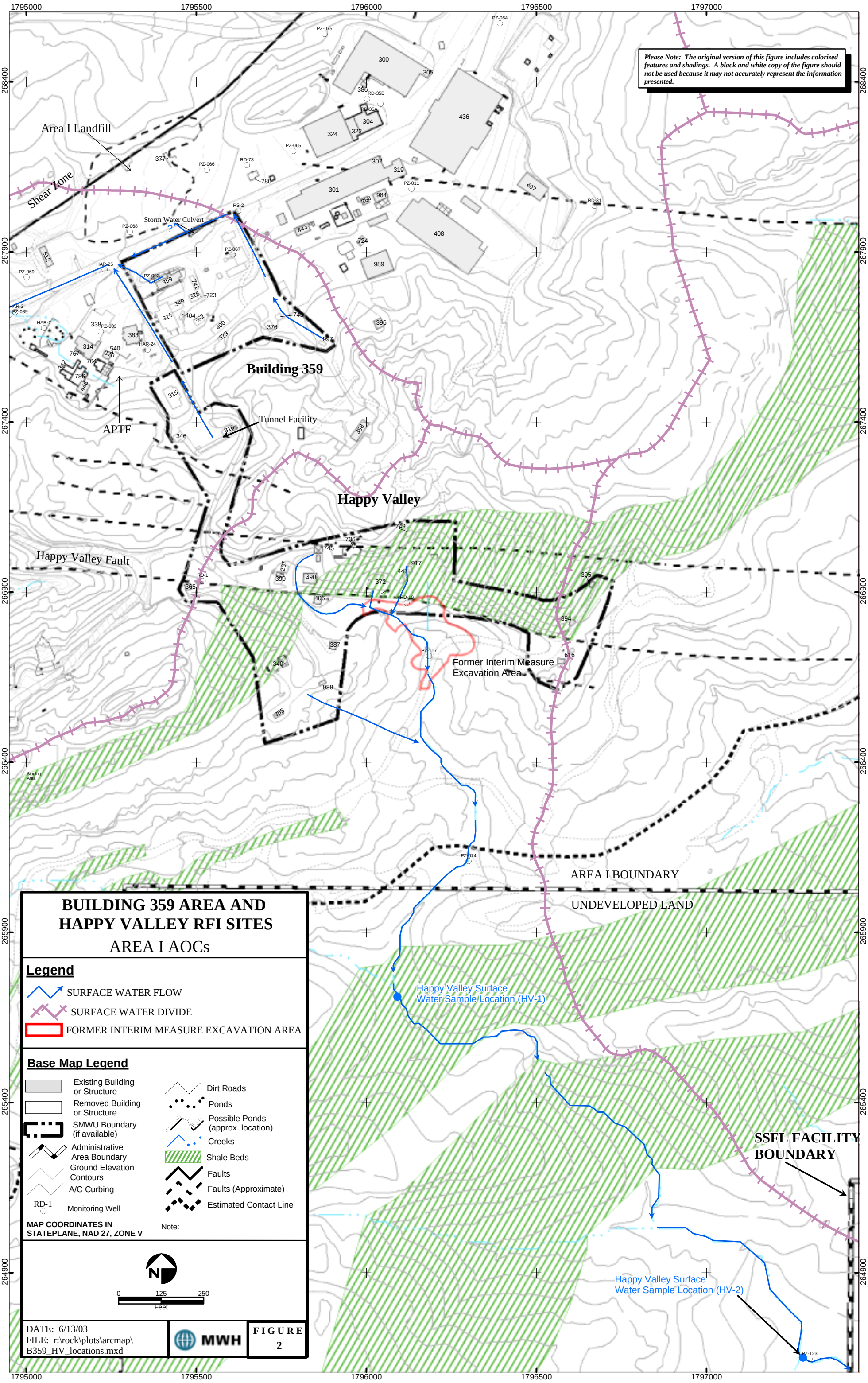
Building 359 Area and Happy Valley RFI Sites Location Map

SANTA SUSANA FIELD LABORATORY

DATE: 06/12/03
FILE: rock/plots/figures/rfi_location.aml

MWH

FIGURE 1


Please Note: The original version of this figure includes colorized features and shadings. A black and white copy of the figure should not be used because it may not accurately represent the information presented.
Area I Landfill
Shear Zone
Storm Water Culvert
Building 359
Tunnel Facility
APTF
Happy Valley
Happy Valley Fault
Former Interim Measure Excavation Area
AREA I BOUNDARY
UNDEVELOPED LAND
Happy Valley Surface Water Sample Location (HV-1)
Happy Valley Surface Water Sample Location (HV-2)
SSFL FACILITY BOUNDARY
BUILDING 359 AREA AND HAPPY VALLEY RFI SITES
AREA I AOCs
Legend
SURFACE WATER FLOW
SURFACE WATER DIVIDE
FORMER INTERIM MEASURE EXCAVATION AREA
Base Map Legend
Existing Building or Structure
Removed Building or Structure
SMWU Boundary (if available)
Administrative Area Boundary
Ground Elevation Contours
A/C Curbing
Monitoring Well
Dirt Roads
Ponds
Possible Ponds (approx. location)
Creeks
Shale Beds
Faults
Faults (Approximate)
Estimated Contact Line
MAP COORDINATES IN STATEPLANE, NAD 27, ZONE V
Note:
0 125 250
Feet
DATE: 6/13/03
FILE: r:\rock\plots\arcmap\B359_HV_locations.mxd
MWH
FIGURE 2

Santa Susana Field Laboratory

FIGURE 3

MWH

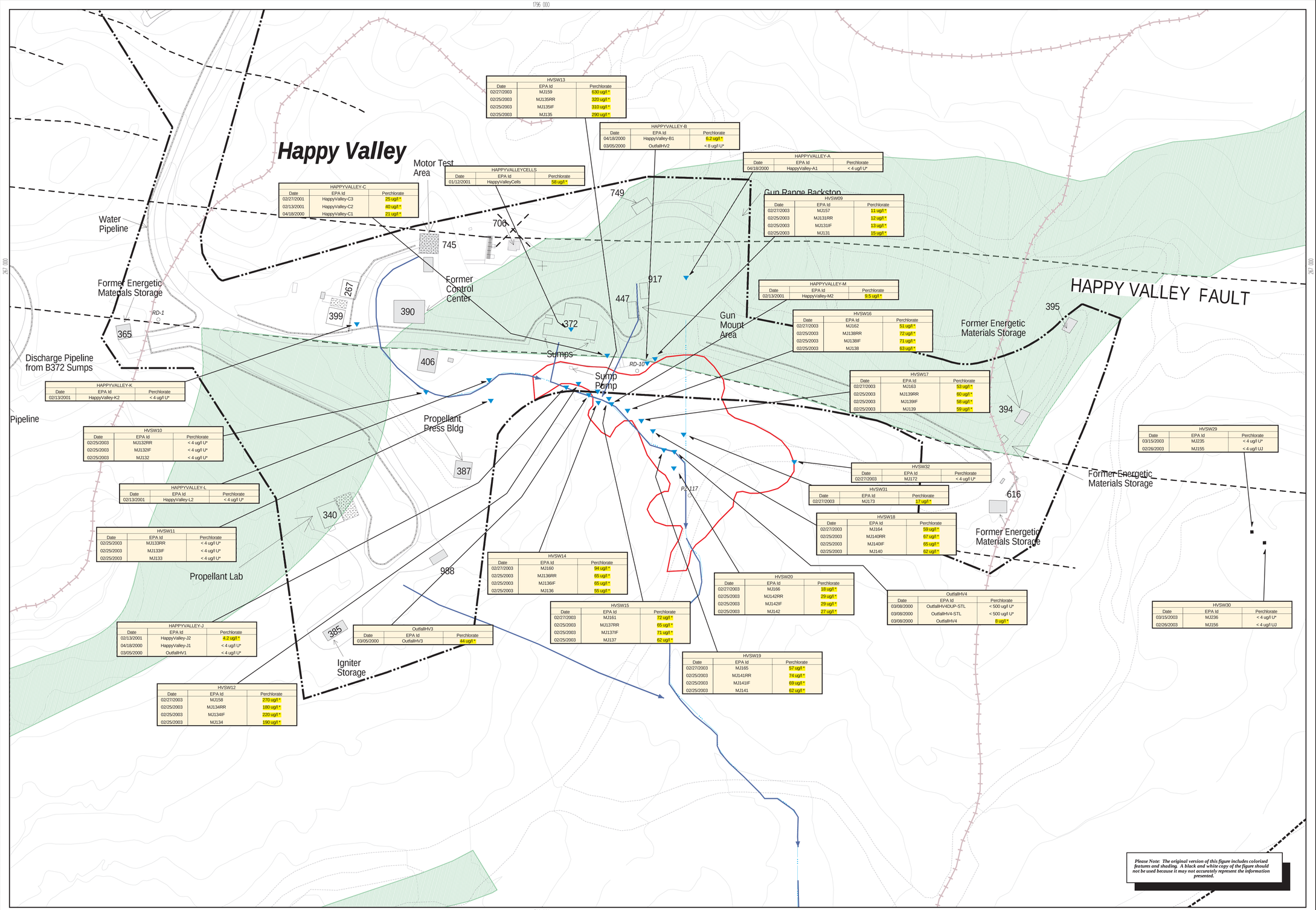
PERCHLORATE SURFACE WATER SAMPLING RESULTS
SOURCE AND UPPER DRAINAGE AREAS
SOUTHERN HAPPY VALLEY RFI SITE

LEGEND

- SURFACE WATER SAMPLE LOCATION
- SURFACE WATER SAMPLE (DTSC & MWH)
- SURFACE WATER FLOW (FROM SITES OF INTEREST FOR THIS REPORT)
- SURFACE WATER DIVIDE (APPROXIMATE)
- FORMER INTERIM MEASURE EXCAVATION AREA

HVSW09	Sample Location ID (Ogden ID)
S01,S02,etc	Sample Number
D01,D02,etc	Duplicate Number
D##.#	Depth In Feet
R####	Laboratory Reporting Code (EPA ID)
ug/l	Micrograms Per Liter (ppb)
U	Analyte Not Detected; Associated Numerical Value Is The Detection Limit
UJ	Analyte Not Detected; Associated Numerical Value Is Considered Estimated
*	Data Validation Not Performed

Notes:
1. Where data boxes show more than one perchlorate result for the same date, field split or field duplicate samples were collected and analyzed, or multiple aloquots were obtained from each sample and analyzed.
2. Building 372 and its foundation were removed in November 2002.



HVSW13

Date	EPA Id	Perchlorate
02/27/2003	MJ159	630 ug/l *
02/25/2003	MJ135RR	320 ug/l *
02/25/2003	MJ135IF	310 ug/l *
02/25/2003	MJ135	290 ug/l *

HAPPYVALLEY-B

Date	EPA Id	Perchlorate
04/18/2000	HappyValley-B1	6.2 ug/l *
03/05/2000	OuttallHV2	< 8 ug/l U*

HAPPYVALLEYCELLS

Date	EPA Id	Perchlorate
01/12/2001	HappyValleyCells	58 ug/l *

HAPPYVALLEY-C

Date	EPA Id	Perchlorate
02/27/2001	HappyValley-C3	25 ug/l *
02/13/2001	HappyValley-C2	40 ug/l *
04/18/2000	HappyValley-C1	21 ug/l *

HAPPYVALLEY-A

Date	EPA Id	Perchlorate
04/18/2000	HappyValley-A1	< 4 ug/l U*

HVSW09

Date	EPA Id	Perchlorate
02/27/2003	MJ157	11 ug/l *
02/25/2003	MJ131RR	12 ug/l *
02/25/2003	MJ131IF	13 ug/l *
02/25/2003	MJ131	15 ug/l *

HAPPYVALLEY-M

Date	EPA Id	Perchlorate
02/13/2001	HappyValley-M2	9.5 ug/l *

HVSW16

Date	EPA Id	Perchlorate
02/27/2003	MJ162	51 ug/l *
02/25/2003	MJ138RR	72 ug/l *
02/25/2003	MJ138IF	71 ug/l *
02/25/2003	MJ138	63 ug/l *

HAPPYVALLEY-K

Date	EPA Id	Perchlorate
02/13/2001	HappyValley-K2	< 4 ug/l U*

HVSW17

Date	EPA Id	Perchlorate
02/27/2003	MJ163	53 ug/l *
02/25/2003	MJ139RR	60 ug/l *
02/25/2003	MJ139IF	58 ug/l *
02/25/2003	MJ139	59 ug/l *

HVSW29

Date	EPA Id	Perchlorate
03/15/2003	MJ235	< 4 ug/l U*
02/26/2003	MJ155	< 4 ug/l UJ

HVSW10

Date	EPA Id	Perchlorate
02/25/2003	MJ132RR	< 4 ug/l U*
02/25/2003	MJ132IF	< 4 ug/l U*
02/25/2003	MJ132	< 4 ug/l U*

HVSW32

Date	EPA Id	Perchlorate
02/27/2003	MJ172	< 4 ug/l U*

HVSW31

Date	EPA Id	Perchlorate
02/27/2003	MJ173	17 ug/l *

HAPPYVALLEY-L

Date	EPA Id	Perchlorate
02/13/2001	HappyValley-L2	< 4 ug/l U*

HVSW18

Date	EPA Id	Perchlorate
02/27/2003	MJ164	59 ug/l *
02/25/2003	MJ140RR	67 ug/l *
02/25/2003	MJ140IF	65 ug/l *
02/25/2003	MJ140	62 ug/l *

HVSW11

Date	EPA Id	Perchlorate
02/25/2003	MJ133RR	< 4 ug/l U*
02/25/2003	MJ133IF	< 4 ug/l U*
02/25/2003	MJ133	< 4 ug/l U*

HVSW14

Date	EPA Id	Perchlorate
02/27/2003	MJ160	94 ug/l *
02/25/2003	MJ136RR	65 ug/l *
02/25/2003	MJ136IF	65 ug/l *
02/25/2003	MJ136	55 ug/l *

HVSW20

Date	EPA Id	Perchlorate
02/27/2003	MJ166	18 ug/l *
02/25/2003	MJ142RR	29 ug/l *
02/25/2003	MJ142IF	29 ug/l *
02/25/2003	MJ142	27 ug/l *

OuttallHV4

Date	EPA Id	Perchlorate
03/08/2000	OuttallHV4DUP-STL	< 500 ug/l U*
03/08/2000	OuttallHV4-STL	< 500 ug/l U*
03/08/2000	OuttallHV4	8 ug/l *

HVSW30

Date	EPA Id	Perchlorate
03/15/2003	MJ236	< 4 ug/l U*
02/26/2003	MJ156	< 4 ug/l UJ

HVSW15

Date	EPA Id	Perchlorate
02/27/2003	MJ161	72 ug/l *
02/25/2003	MJ137RR	65 ug/l *
02/25/2003	MJ137IF	71 ug/l *
02/25/2003	MJ137	62 ug/l *

HAPPYVALLEY-J

Date	EPA Id	Perchlorate
02/13/2001	HappyValley-J2	4.2 ug/l *
04/18/2000	HappyValley-J1	< 4 ug/l U*
03/05/2000	OuttallHV1	< 4 ug/l U*

OuttallHV3

Date	EPA Id	Perchlorate
03/05/2000	OuttallHV3	44 ug/l *

HVSW19

Date	EPA Id	Perchlorate
02/27/2003	MJ165	57 ug/l *
02/25/2003	MJ141RR	74 ug/l *
02/25/2003	MJ141IF	69 ug/l *
02/25/2003	MJ141	62 ug/l *

HVSW12

Date	EPA Id	Perchlorate
02/27/2003	MJ158	270 ug/l *
02/25/2003	MJ134RR	180 ug/l *
02/25/2003	MJ134IF	220 ug/l *
02/25/2003	MJ134	190 ug/l *

Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Base Map Legend

- Existing Building or Structure
- Removed Building or Structure
- Solvent Tanks, R Indicates Removed
- Petroleum Fuel/Oil Tanks, R Indicates Removed
- Hydrazine (MMH,UDMH,HZ) Tanks, R Indicates Removed
- Other Tanks, R Indicates Removed
- Awnings
- SWMU Boundary (if available)
- RD-1 Monitoring Well
- Administrative Area Boundary
- Ground Elevation Contours
- A/C Curbing
- Dirt Road
- Possible Ponds (approx. location)
- Ponds
- Creeks
- Shale Units
- Faults
- Faults (Approximate)
- Estimated Contact Line

File:/yap/rock/maps/figures/zn900902, Task 101

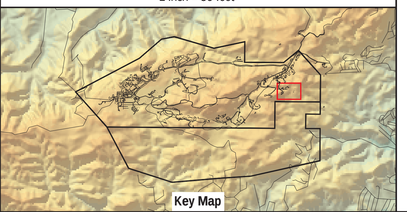
Date: 06/13/03

N

FEET

0 25 50 100 150 200

1 inch = 50 feet



Key Map

Santa Susana Field Laboratory

FIGURE 4

MWH

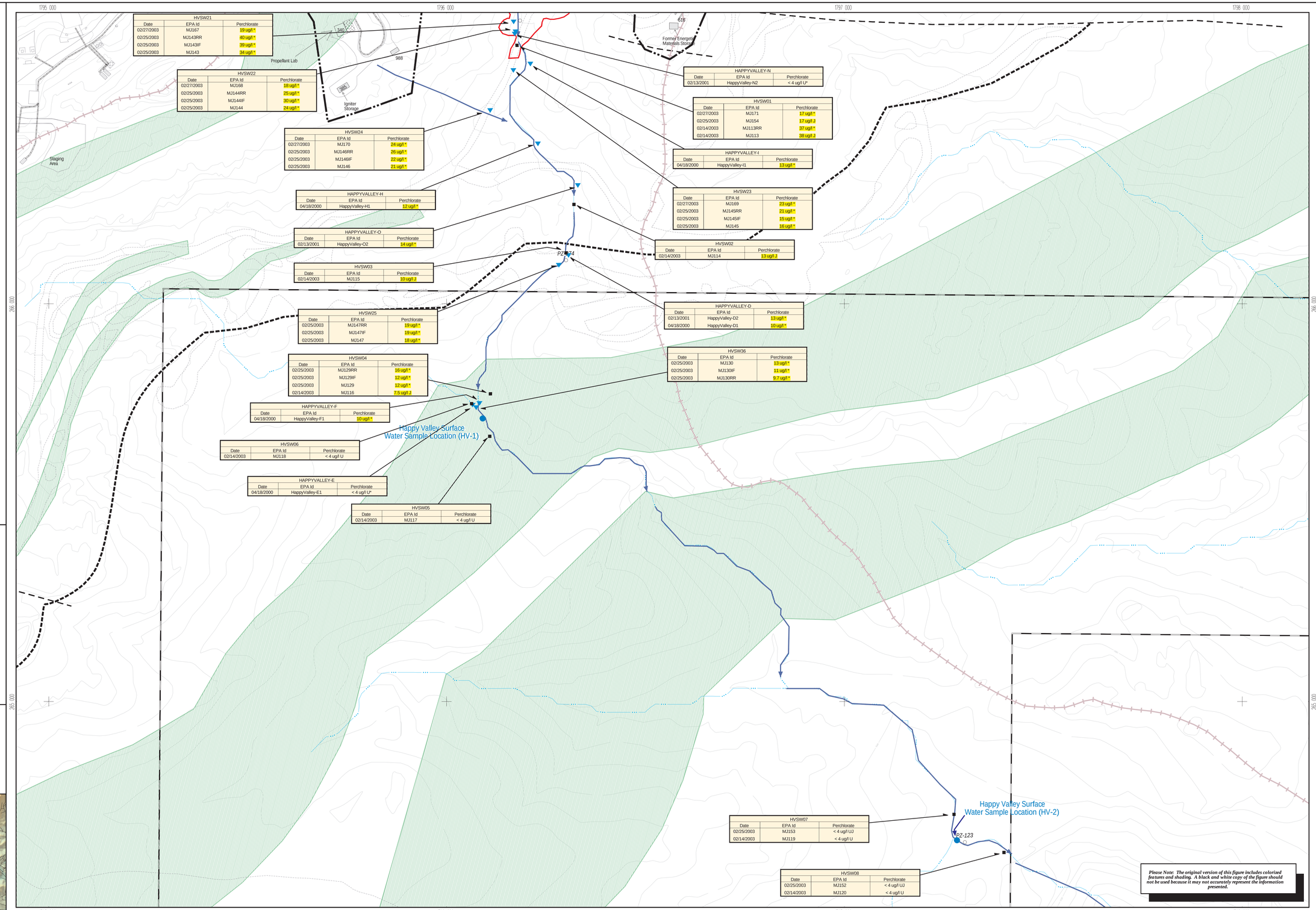
PERCHLORATE SURFACE WATER SAMPLING RESULTS
LOWER DRAINAGE AREA
SOUTHERN HAPPY VALLEY RFI SITE

LEGEND

- SURFACE WATER SAMPLE LOCATION
- SURFACE WATER SAMPLE (DTSC & MWH)
- SURFACE WATER FLOW (FROM SITES OF INTEREST FOR THIS REPORT)
- NPDES LOCATION
- SURFACE WATER DIVIDE (APPROXIMATE)
- FORMER INTERIM MEASURE EXCAVATION AREA

HVSW01	Sample Location ID (Ogden ID)
S01,S02,etc	Sample Number
D01,D02,etc	Duplicate Number
D##.#	Depth In Feet
R####	Laboratory Reporting Code (EPA ID)
ug/l	Micrograms Per Liter (ppb)
J	Analyte Positively Identified; Associated Numerical Value Is Considered Estimated
U	Analyte Not Detected; Associated Numerical Value Is The Detection Limit
UJ	Analyte Not Detected; Associated Numerical Value Is Considered Estimated
*	Data Validation Not Performed

Notes:
1. Where data boxes show more than one perchlorate result for the same date, field split or field duplicate samples were collected and analyzed, or multiple aloquots were obtained from each sample and analyzed.
2. NPDES surface water monitoring sampling results for the Happy Valley drainage provided in Table 1.



HVSW21		
Date	EPA Id	Perchlorate
02/27/2003	MJ167	19 ug/l *
02/25/2003	MJ143RR	40 ug/l *
02/25/2003	MJ143IF	39 ug/l *
02/25/2003	MJ143	34 ug/l *

HVSW22		
Date	EPA Id	Perchlorate
02/27/2003	MJ168	18 ug/l *
02/25/2003	MJ144RR	25 ug/l *
02/25/2003	MJ144IF	30 ug/l *
02/25/2003	MJ144	24 ug/l *

HVSW24		
Date	EPA Id	Perchlorate
02/27/2003	MJ170	24 ug/l *
02/25/2003	MJ146RR	26 ug/l *
02/25/2003	MJ146IF	22 ug/l *
02/25/2003	MJ146	21 ug/l *

HAPPYVALLEY-H		
Date	EPA Id	Perchlorate
04/18/2000	HappyValley-H1	12 ug/l *

HAPPYVALLEY-O		
Date	EPA Id	Perchlorate
02/13/2001	HappyValley-O2	14 ug/l *

HVSW03		
Date	EPA Id	Perchlorate
02/14/2003	MJ115	10 ug/l J

HVSW25		
Date	EPA Id	Perchlorate
02/25/2003	MJ147RR	19 ug/l *
02/25/2003	MJ147IF	19 ug/l *
02/25/2003	MJ147	18 ug/l *

HVSW04		
Date	EPA Id	Perchlorate
02/25/2003	MJ129RR	16 ug/l *
02/25/2003	MJ129IF	12 ug/l *
02/25/2003	MJ129	12 ug/l *
02/14/2003	MJ116	7.5 ug/l J

HAPPYVALLEY-F		
Date	EPA Id	Perchlorate
04/18/2000	HappyValley-F1	10 ug/l *

HVSW06		
Date	EPA Id	Perchlorate
02/14/2003	MJ118	< 4 ug/l U

HAPPYVALLEY-E		
Date	EPA Id	Perchlorate
04/18/2000	HappyValley-E1	< 4 ug/l U*

HVSW05		
Date	EPA Id	Perchlorate
02/14/2003	MJ117	< 4 ug/l U

HAPPYVALLEY-N		
Date	EPA Id	Perchlorate
02/13/2001	HappyValley-N2	< 4 ug/l U*

HVSW01		
Date	EPA Id	Perchlorate
02/27/2003	MJ171	17 ug/l *
02/25/2003	MJ154	17 ug/l J
02/14/2003	MJ113RR	37 ug/l *
02/14/2003	MJ113	38 ug/l J

HAPPYVALLEY-I		
Date	EPA Id	Perchlorate
04/18/2000	HappyValley-I1	13 ug/l *

HVSW23		
Date	EPA Id	Perchlorate
02/27/2003	MJ169	23 ug/l *
02/25/2003	MJ145RR	21 ug/l *
02/25/2003	MJ145IF	15 ug/l *
02/25/2003	MJ145	16 ug/l *

HVSW02		
Date	EPA Id	Perchlorate
02/14/2003	MJ114	13 ug/l J

HAPPYVALLEY-D		
Date	EPA Id	Perchlorate
02/13/2001	HappyValley-D2	13 ug/l *
04/18/2000	HappyValley-D1	10 ug/l *

HVSW36		
Date	EPA Id	Perchlorate
02/25/2003	MJ130	13 ug/l *
02/25/2003	MJ130IF	11 ug/l *
02/25/2003	MJ130RR	9.7 ug/l *

HVSW07		
Date	EPA Id	Perchlorate
02/25/2003	MJ153	< 4 ug/l UJ
02/14/2003	MJ119	< 4 ug/l U

HVSW08		
Date	EPA Id	Perchlorate
02/25/2003	MJ152	< 4 ug/l UJ
02/14/2003	MJ120	< 4 ug/l U

Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Base Map Legend

- Existing Building or Structure
- Removed Building or Structure
- Solvent Tanks, R Indicates Removed
- Petroleum Fuel/Oil Tanks, R Indicates Removed
- Hydrazine (MMH,UDMH,HZ) Tanks, R Indicates Removed
- Other Tanks, R Indicates Removed
- Awnings
- SWMU Boundary (If available)
- Monitoring Well
- Administrative Area Boundary
- Ground Elevation Contours
- A/C Curbing
- Dirt Road
- Possible Ponds (approx. location)
- Ponds
- Creeks
- Shale Units
- Faults
- Faults (Approximate)
- Estimated Contact Line

File:/yap/rock/maps/figures/zn900903, Task 101

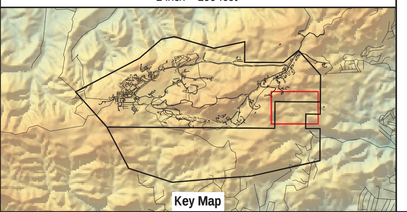
Date: 06/13/03

N

FEET

0 50 100 200 300 400

1 inch = 100 feet



Key Map

Santa Susana Field Laboratory

FIGURE 5

MWH

PERCHLORATE SOIL/SOIL LEACHATE RESULTS
SOURCE AND UPPER DRAINAGE AREAS
SOUTHERN HAPPY VALLEY RFI SITE

LEGEND

- RFI SOIL MATRIX SAMPLE LOCATION
- RFI CONTAINED UNIT SEDIMENT SAMPLE LOCATION
- RFI VERTICAL SOIL LEACHATE
- RFI LATERAL COMPOSITE SOIL LEACHATE SAMPLE AREA
- RFI ARTIFICAL SURFACE WATER SAMPLE AREA
- SURFACE WATER FLOW (FROM SITES OF INTEREST FOR THIS REPORT)
- SURFACE WATER DIVIDE (APPROXIMATE)
- FORMER INTERIM MEASURE EXCAVATION AREA

HVLS21	Sample Location ID
S01,S02,etc	Sample Number
D01,D02,etc	Duplicate Number
D##.#	Depth In Feet
R####	Laboratory Reporting Code (EPA ID)
ug/l ug/kg	Micrograms Per Liter (ppb) Micrograms Per Kilogram (ppb)
J	Analyte Positively Identified; Associated Numerical Value Is Considered Estimated
U	Analyte Not Detected; Associated Numerical Value Is The Detection Limit
UJ	Analyte Not Detected; Associated Numerical Value Is Considered Estimated
*	Data Validation Not Performed

Notes:

1. Where data boxes show more than one perchlorate result for the same date, field split or field duplicate samples were collected and analyzed, or multiple aloquots were obtained from each sample and analyzed.
2. Surface water samples collected by inducing artificial "rain" from a fire hose shown in blue boxes.
3. Samples HVAW03, HVAW05, HVAW06, and HVBS46 are not depicted on this figure. The concrete and soil that was sampled was removed during the demolition of Building 372 in November 2002.

Base Map Legend

- Existing Building or Structure
- Removed Building or Structure
- Solvent Tanks, R Indicates Removed
- Petroleum Fuel/Oil Tanks, R Indicates Removed
- Hydrazine (MMH,UDMH,HZ) Tanks, R Indicates Removed
- Other Tanks, R Indicates Removed
- Awnings
- SWMU Boundary (if available)
- RD-1 Monitoring Well
- Administrative Area Boundary
- Ground Elevation Contours
- A/C Curbing
- Dirt Road
- Possible Ponds (approx. location)
- Ponds
- Creeks
- Shale Units
- Faults
- Faults (Approximate)
- Estimated Contact Line

File:/yap/rock/maps/figures/zn900907, Task 101

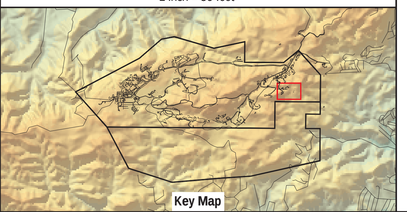
Date: 06/13/03

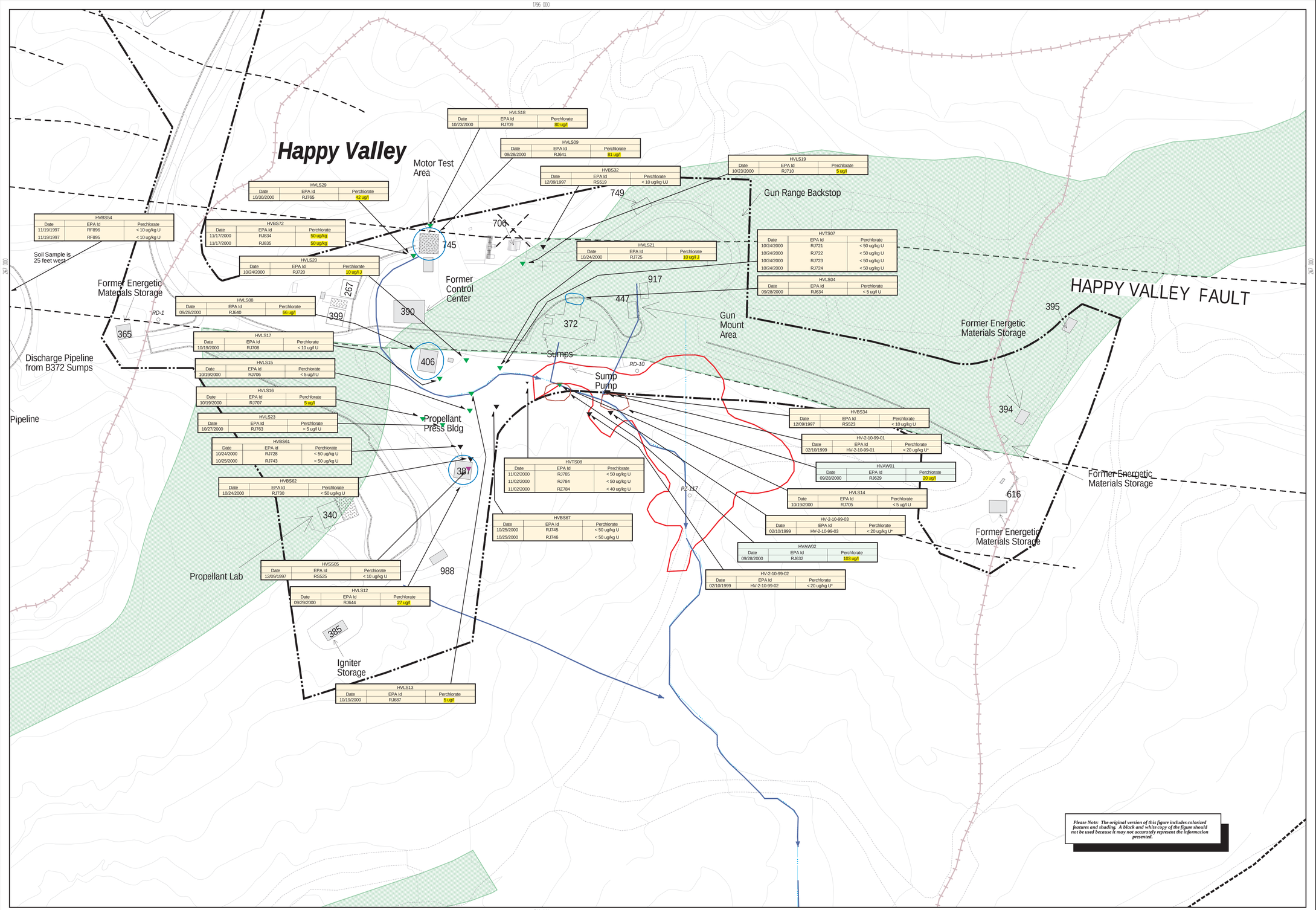
N

FEET

0 25 50 100 150 200

1 inch = 50 feet





Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Santa Susana Field Laboratory

FIGURE 6

MWH

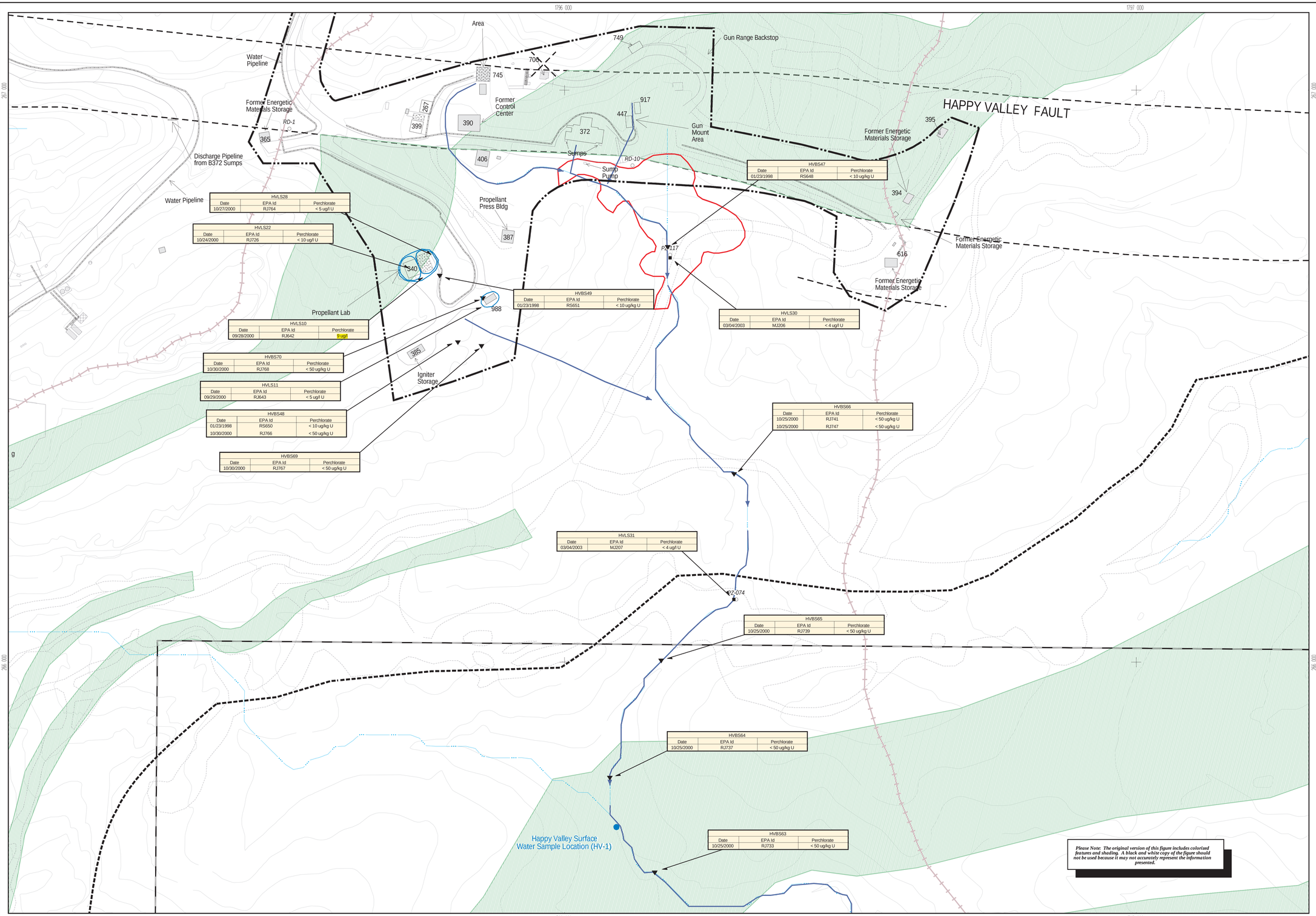
PERCHLORATE SOIL/SOIL LEACHATE RESULTS
LOWER DRAINAGE AREA
SOUTHERN HAPPY VALLEY RFI SITE

LEGEND

- RFI SOIL MATRIX SAMPLE LOCATION
- RFI CONTAINED UNIT SEDIMENT SAMPLE LOCATION
- RFI VERTICAL SOIL LEACHATE (DTSC & MWH)
- RFI LATERAL COMPOSITE SOIL LEACHATE SAMPLE AREA
- SURFACE WATER FLOW (FROM SITES OF INTEREST FOR THIS REPORT)
- NPDES LOCATION
- SURFACE WATER DIVIDE (APPROXIMATE)
- FORMER INTERIM MEASURE EXCAVATION AREA

HVLS10	Sample Location ID
S01,S02,etc	Sample Number
D01,D02,etc	Duplicate Number
D##.#	Depth In Feet
R####	Laboratory Reporting Code (EPA ID)
ug/l ug/kg	Micrograms Per Liter (ppb) Micrograms Per Kilogram (ppb)
U	Analyte Not Detected; Associated Numerical Value Is The Detection Limit

Notes:
1. Where data boxes show more than one perchlorate result for the same date, field split or field duplicate samples were collected and analyzed, or multiple aloquots were obtained from each sample and analyzed.
2. Building 372 and its foundation were removed in November 2002.



HVLS28		
Date	EPA Id	Perchlorate
10/27/2000	RJ764	< 5 ug/l U

HVLS22		
Date	EPA Id	Perchlorate
10/24/2000	RJ726	< 10 ug/l U

HVLS10		
Date	EPA Id	Perchlorate
09/28/2000	RJ642	9 ug/l

HVBS70		
Date	EPA Id	Perchlorate
10/30/2000	RJ768	< 50 ug/kg U

HVLS11		
Date	EPA Id	Perchlorate
09/29/2000	RJ643	< 5 ug/l U

HVBS48		
Date	EPA Id	Perchlorate
01/23/1998	RS650	< 10 ug/kg U
10/30/2000	RJ766	< 50 ug/kg U

HVBS69		
Date	EPA Id	Perchlorate
10/30/2000	RJ767	< 50 ug/kg U

HVBS49		
Date	EPA Id	Perchlorate
01/23/1998	RS651	< 10 ug/kg U

HVBS47		
Date	EPA Id	Perchlorate
01/23/1998	RS648	< 10 ug/kg U

HVLS30		
Date	EPA Id	Perchlorate
03/04/2003	MJ206	< 4 ug/l U

HVBS66		
Date	EPA Id	Perchlorate
10/25/2000	RJ741	< 50 ug/kg U
10/25/2000	RJ747	< 50 ug/kg U

HVLS31		
Date	EPA Id	Perchlorate
03/04/2003	MJ207	< 4 ug/l U

HVBS65		
Date	EPA Id	Perchlorate
10/25/2000	RJ739	< 50 ug/kg U

HVBS64		
Date	EPA Id	Perchlorate
10/25/2000	RJ737	< 50 ug/kg U

HVBS63		
Date	EPA Id	Perchlorate
10/25/2000	RJ733	< 50 ug/kg U

Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

Base Map Legend

- Existing Building or Structure
- Removed Building or Structure
- Solvent Tanks, R Indicates Removed
- Petroleum Fuel/Oil Tanks, R Indicates Removed
- Hydrazine (MMH,UDMH,HZ) Tanks, R Indicates Removed
- Other Tanks, R Indicates Removed
- Awnings
- SWMU Boundary (if available)
- RD-1 Monitoring Well
- Administrative Area Boundary
- Ground Elevation Contours
- A/C Curbing
- Dirt Road
- Possible Ponds (approx. location)
- Ponds
- Creeks
- Shale Units
- Faults
- Faults (Approximate)
- Estimated Contact Line

File:/yap/rock/maps/figures/zn900908, Task 101

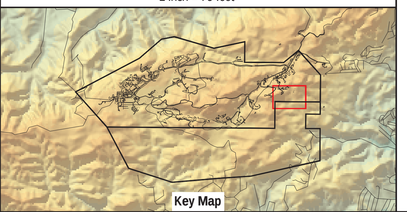
Date: 06/13/03

N

FEET

0 35 70 140 210 280

1 inch = 70 feet



Key Map

Santa Susana Field Laboratory

FIGURE 7

MWH

PERCHLORATE SURFACE WATER SAMPLING RESULTS
BUILDING 359 AREA AND
NORTHERN HAPPY VALLEY RFI SITES

LEGEND

▼	SURFACE WATER SAMPLE LOCATION
■	SURFACE WATER SAMPLE (DTSC & MWH)
→	SURFACE WATER FLOW (FROM SITES OF INTEREST FOR THIS REPORT)
	SURFACE WATER DIVIDE (APPROXIMATE)
HVSW26	Sample Location ID (Ogden ID)
S01,S02,etc	Sample Number
D01,D02,etc	Duplicate Number
D##.#	Depth In Feet
R####	Laboratory Reporting Code (EPA ID)
ug/l	Micrograms Per Liter (ppb)
J	Analyte Positively Identified; Associated Numerical Value Is Considered Estimated
U	Analyte Not Detected; Associated Numerical Value Is The Detection Limit
UJ	Analyte Not Detected; Associated Numerical Value Is Considered Estimated
*	Data Validation Not Performed

Notes:
1. Where data boxes show more than one perchlorate result for the same date, field split or field duplicate samples were collected and analyzed, or multiple aloquots were obtained from each sample and analyzed.
2. BSSW13 - BSSW18 collected following rain event from puddles or storm water filled depressions in or adjacent to building foundation.
3. The position of the surface water divide east of the Building 359 boundary is approximate based on currently mapped topographic elevations. Additional topographic surveying to define this and other surface water flow features for this site is planned.

Base Map Legend

- Existing Building or Structure
- Removed Building or Structure
- Solvent Tanks, R Indicates Removed
- Petroleum Fuel/Oil Tanks, R Indicates Removed
- Hydrazine (MMH,UDMH,HZ) Tanks, R Indicates Removed
- Other Tanks, R Indicates Removed
- Awnings
- SWMU Boundary (if available)
- RS-2 Monitoring Well
- Administrative Area Boundary
- Ground Elevation Contours
- A/C Curbing
- Dirt Road
- Possible Ponds (approx. location)
- Ponds
- Creeks
- Shale Units
- Faults
- Faults (Approximate)
- Estimated Contact Line

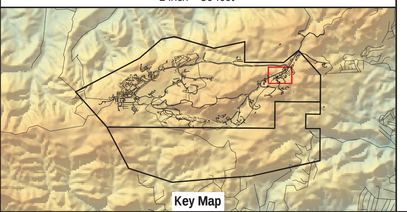
File:/yap/rock/maps/figures/zn900904, Task 101

Date: 06/16/03

N

FEET 0 25 50 100 150 200

1 inch = 50 feet



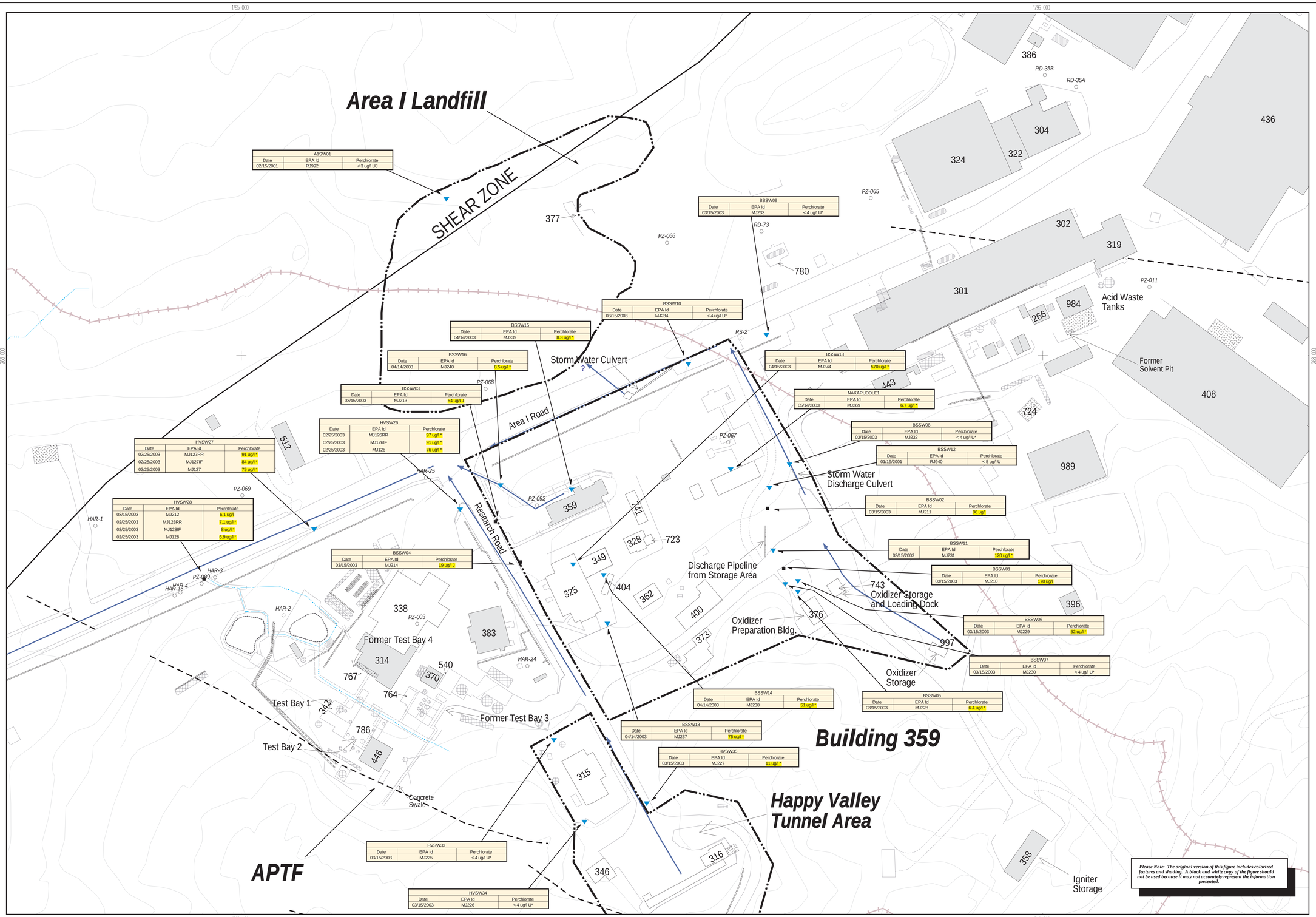


FIGURE 8

Santa Susana Field Laboratory

MWH

PERCHLORATE SOIL/SOIL LEACHATE RESULTS
BUILDING 359 AREA AND
NORTHERN HAPPY VALLEY RFI SITES

LEGEND

- RFI SOIL MATRIX SAMPLE LOCATION
- RFI CONTAINED UNIT SEDIMENT SAMPLE LOCATION
- RFI CONTAINED UNIT SUMP SAMPLE LOCATION
- RFI VERTICAL SOIL LEACHATE
- RFI LATERAL COMPOSITE SOIL LEACHATE SAMPLE AREA
- SURFACE WATER FLOW (FROM SITES OF INTEREST FOR THIS REPORT)
- SURFACE WATER DIVIDE (APPROXIMATE)

HVLS24	Sample Location ID
S01,S02,etc	Sample Number
D01,D02,etc	Duplicate Number
D##.#	Depth In Feet
R####	Laboratory Reporting Code (EPA ID)
ug/l ug/kg	Micrograms Per Liter (ppb) Micrograms Per Kilogram (ppb)
J	Analyte Positively Identified; Associated Numerical Value Is Considered Estimated
U	Analyte Not Detected; Associated Numerical Value Is The Detection Limit
UJ	Analyte Not Detected; Associated Numerical Value Is Considered Estimated

Notes:
1. Where data boxes show more than one perchlorate result for the same date, field split or field duplicate samples were collected and analyzed, or multiple aloquots were obtained from each sample and analyzed.

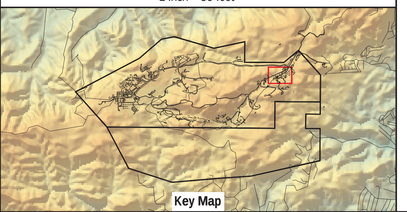
Base Map Legend

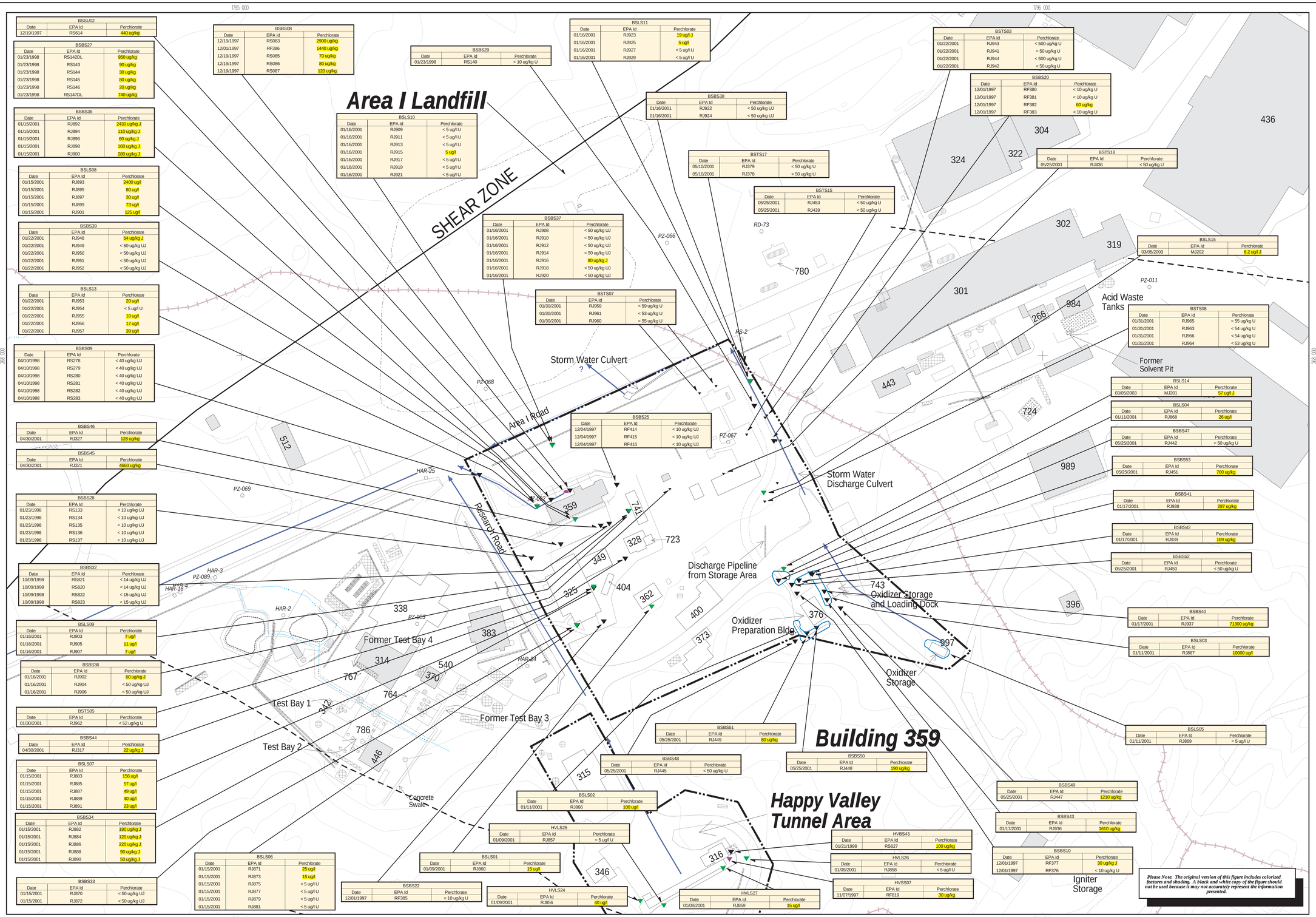
- Existing Building or Structure
- Removed Building or Structure
- Solvent Tanks, R Indicates Removed
- Petroleum Fuel/Oil Tanks, R Indicates Removed
- Hydrazine (MMH,UDMH,HZ) Tanks, R Indicates Removed
- Other Tanks, R Indicates Removed
- Awnings
- SWMU Boundary (if available)
- Monitoring Well
- Administrative Area Boundary
- Ground Elevation Contours
- A/C Curbing
- Dirt Road
- Possible Ponds (approx. location)
- Ponds
- Creeks
- Shale Units
- Faults
- Faults (Approximate)
- Estimated Contact Line

Date: 06/16/03

File:/yap/rock/maps/figures/zn900906, Task 101

FEET
0 25 50 100 150 200
1 inch = 50 feet





BSSU02		
Date	EPA Id	Perchlorate
12/19/1997	RS614	440 ug/kg

BSBS27		
Date	EPA Id	Perchlorate
01/23/1998	RS142DL	950 ug/kg
01/23/1998	RS143	90 ug/kg
01/23/1998	RS144	30 ug/kg
01/23/1998	RS145	80 ug/kg
01/23/1998	RS146	20 ug/kg
01/23/1998	RS147DL	740 ug/kg

BSBS35		
Date	EPA Id	Perchlorate
01/15/2001	RJ892	2430 ug/kg J
01/15/2001	RJ894	110 ug/kg J
01/15/2001	RJ896	60 ug/kg J
01/15/2001	RJ898	160 ug/kg J
01/15/2001	RJ900	280 ug/kg J

BSLS08		
Date	EPA Id	Perchlorate
01/15/2001	RJ893	2400 ug/l
01/15/2001	RJ895	80 ug/l
01/15/2001	RJ897	30 ug/l
01/15/2001	RJ899	73 ug/l
01/15/2001	RJ901	125 ug/l

BSBS39		
Date	EPA Id	Perchlorate
01/22/2001	RJ948	54 ug/kg J
01/22/2001	RJ949	< 50 ug/kg UJ
01/22/2001	RJ950	< 50 ug/kg UJ
01/22/2001	RJ951	< 50 ug/kg UJ
01/22/2001	RJ952	< 50 ug/kg UJ

BSLS13		
Date	EPA Id	Perchlorate
01/22/2001	RJ953	20 ug/l
01/22/2001	RJ954	< 5 ug/l U
01/22/2001	RJ955	10 ug/l
01/22/2001	RJ956	17 ug/l
01/22/2001	RJ957	39 ug/l

BSBS09		
Date	EPA Id	Perchlorate
04/10/1998	RS278	< 40 ug/kg UJ
04/10/1998	RS279	< 40 ug/kg UJ
04/10/1998	RS280	< 40 ug/kg UJ
04/10/1998	RS281	< 40 ug/kg UJ
04/10/1998	RS282	< 40 ug/kg UJ
04/10/1998	RS283	< 40 ug/kg UJ

BSBS46		
Date	EPA Id	Perchlorate
04/30/2001	RJ327	128 ug/kg

BSBS45		
Date	EPA Id	Perchlorate
04/30/2001	RJ321	4660 ug/kg

BSBS28		
Date	EPA Id	Perchlorate
01/23/1998	RS133	< 10 ug/kg UJ
01/23/1998	RS134	< 10 ug/kg UJ
01/23/1998	RS135	< 10 ug/kg UJ
01/23/1998	RS136	< 10 ug/kg UJ
01/23/1998	RS137	< 10 ug/kg UJ

BSBS32		
Date	EPA Id	Perchlorate
10/09/1998	RS821	< 14 ug/kg UJ
10/09/1998	RS820	< 14 ug/kg UJ
10/09/1998	RS822	< 15 ug/kg UJ
10/09/1998	RS823	< 15 ug/kg UJ

BSLS09		
Date	EPA Id	Perchlorate
01/16/2001	RJ903	7 ug/l
01/16/2001	RJ905	11 ug/l
01/16/2001	RJ907	7 ug/l

BSBS36		
Date	EPA Id	Perchlorate
01/16/2001	RJ902	60 ug/kg J
01/16/2001	RJ904	< 50 ug/kg UJ
01/16/2001	RJ906	< 50 ug/kg UJ

BSTS05		
Date	EPA Id	Perchlorate
01/30/2001	RJ962	< 52 ug/kg U

BSBS44		
Date	EPA Id	Perchlorate
04/30/2001	RJ317	22 ug/kg J

BSLS07		
Date	EPA Id	Perchlorate
01/15/2001	RJ883	156 ug/l
01/15/2001	RJ885	57 ug/l
01/15/2001	RJ887	49 ug/l
01/15/2001	RJ889	40 ug/l
01/15/2001	RJ891	23 ug/l

BSBS34		
Date	EPA Id	Perchlorate
01/15/2001	RJ882	190 ug/kg J
01/15/2001	RJ884	120 ug/kg J
01/15/2001	RJ886	220 ug/kg J
01/15/2001	RJ888	90 ug/kg J
01/15/2001	RJ890	50 ug/kg J

BSBS33		
Date	EPA Id	Perchlorate
01/15/2001	RJ870	< 50 ug/kg UJ
01/15/2001	RJ872	< 50 ug/kg UJ

BSBS08		
Date	EPA Id	Perchlorate
12/19/1997	RS083	2900 ug/kg
12/01/1997	RF386	1440 ug/kg
12/19/1997	RS085	70 ug/kg
12/19/1997	RS086	80 ug/kg
12/19/1997	RS087	120 ug/kg

BSBS29		
Date	EPA Id	Perchlorate
01/23/1998	RS140	< 10 ug/kg U

BSLS10		
Date	EPA Id	Perchlorate
01/16/2001	RJ909	< 5 ug/l U
01/16/2001	RJ911	< 5 ug/l U
01/16/2001	RJ913	< 5 ug/l U
01/16/2001	RJ915	5 ug/l
01/16/2001	RJ917	< 5 ug/l U
01/16/2001	RJ919	< 5 ug/l U
01/16/2001	RJ921	< 5 ug/l U

BSBS37		
Date	EPA Id	Perchlorate
01/16/2001	RJ908	< 50 ug/kg UJ
01/16/2001	RJ910	< 50 ug/kg UJ
01/16/2001	RJ912	< 50 ug/kg UJ
01/16/2001	RJ914	< 50 ug/kg UJ
01/16/2001	RJ916	80 ug/kg J
01/16/2001	RJ918	< 50 ug/kg UJ
01/16/2001	RJ920	< 50 ug/kg UJ

BSTS07		
Date	EPA Id	Perchlorate
01/30/2001	RJ959	< 59 ug/kg U
01/30/2001	RJ961	< 53 ug/kg U
01/30/2001	RJ960	< 55 ug/kg U

BSBS25		
Date	EPA Id	Perchlorate
12/04/1997	RF414	< 10 ug/kg UJ
12/04/1997	RF415	< 10 ug/kg UJ
12/04/1997	RF416	< 10 ug/kg UJ

BSLS11		
Date	EPA Id	Perchlorate
01/16/2001	RJ923	19 ug/l J
01/16/2001	RJ925	5 ug/l
01/16/2001	RJ927	< 5 ug/l U
01/16/2001	RJ929	< 5 ug/l U

BSBS38		
Date	EPA Id	Perchlorate
01/16/2001	RJ922	< 50 ug/kg UJ
01/16/2001	RJ924	< 50 ug/kg UJ

BSTS17		
Date	EPA Id	Perchlorate
05/10/2001	RJ379	< 50 ug/kg U
05/10/2001	RJ378	< 50 ug/kg U

BSTS15		
Date	EPA Id	Perchlorate
05/25/2001	RJ453	< 50 ug/kg U
05/25/2001	RJ439	< 50 ug/kg U

BSTS03		
Date	EPA Id	Perchlorate
01/22/2001	RJ943	< 500 ug/kg U
01/22/2001	RJ941	< 50 ug/kg U
01/22/2001	RJ944	< 500 ug/kg U
01/22/2001	RJ942	< 50 ug/kg U

BSBS20		
Date	EPA Id	Perchlorate
12/01/1997	RF380	< 10 ug/kg U
12/01/1997	RF381	< 10 ug/kg U
12/01/1997	RF382	60 ug/kg
12/01/1997	RF383	< 10 ug/kg U

BSTS18		
Date	EPA Id	Perchlorate
05/25/2001	RJ436	< 50 ug/kg U

BSLS15		
Date	EPA Id	Perchlorate
03/05/2003	MJ202	6.2 ug/l J

BSTS08		
Date	EPA Id	Perchlorate
01/31/2001	RJ965	< 55 ug/kg U
01/31/2001	RJ963	< 54 ug/kg U
01/31/2001	RJ966	< 54 ug/kg U
01/31/2001	RJ964	< 53 ug/kg U

BSLS14		
Date	EPA Id	Perchlorate
03/05/2003	MJ201	57 ug/l J

BSLS04		
Date	EPA Id	Perchlorate
01/11/2001	RJ868	26 ug/l

BSBS47		
Date	EPA Id	Perchlorate
05/25/2001	RJ442	< 50 ug/kg U

BSBS53		
Date	EPA Id	Perchlorate
05/25/2001	RJ451	700 ug/kg

BSBS41		
Date	EPA Id	Perchlorate
01/17/2001	RJ938	287 ug/kg

BSBS42		
Date	EPA Id	Perchlorate
01/17/2001	RJ939	169 ug/kg

BSBS52		
Date	EPA Id	Perchlorate
05/25/2001	RJ450	< 50 ug/kg U

BSBS40		
Date	EPA Id	Perchlorate
01/17/2001	RJ937	71300 ug/kg

BSLS03		
Date	EPA Id	Perchlorate
01/11/2001	RJ867	10000 ug/l

BSLS05		
Date	EPA Id	Perchlorate
01/11/2001	RJ869	< 5 ug/l U

BSBS51		
Date	EPA Id	Perchlorate
05/25/2001	RJ449	80 ug/kg

BSBS48		
Date	EPA Id	Perchlorate
05/25/2001	RJ445	< 50 ug/kg U

BSBS50		
Date	EPA Id	Perchlorate
05/25/2001	RJ448	190 ug/kg

BSBS49		
Date	EPA Id	Perchlorate
05/25/2001	RJ447	1210 ug/kg

BSBS43		
Date	EPA Id	Perchlorate
01/17/2001	RJ936	1610 ug/kg

BSBS10		
Date	EPA Id	Perchlorate
12/01/1997	RF377	30 ug/kg J
12/01/1997	RF376	< 10 ug/kg U

BSLS02		
Date	EPA Id	Perchlorate
01/11/2001	RJ866	100 ug/l

HVLS25		
Date	EPA Id	Perchlorate
01/09/2001	RJ857	< 5 ug/l U

BSLS01		
Date	EPA Id	Perchlorate
01/09/2001	RJ860	15 ug/l

BSBS22		
Date	EPA Id	Perchlorate
12/01/1997	RF385	< 10 ug/kg U

HVLS24		
Date	EPA Id	Perchlorate
01/09/2001	RJ856	40 ug/l

HVLS27		
Date	EPA Id	Perchlorate
01/09/2001	RJ859	15 ug/l

HVBS43		
Date	EPA Id	Perchlorate
01/21/1998	RS627	100 ug/kg

HVLS26		
Date	EPA Id	Perchlorate
01/09/2001	RJ858	< 5 ug/l U

HVSS07		
Date	EPA Id	Perchlorate
11/07/1997	RF819	30 ug/kg

BSLS06		
Date	EPA Id	Perchlorate
01/15/2001	RJ871	25 ug/l
01/15/2001	RJ873	15 ug/l
01/15/2001	RJ875	< 5 ug/l U
01/15/2001	RJ877	< 5 ug/l U
01/15/2001	RJ879	< 5 ug/l U
01/15/2001	RJ881	< 5 ug/l U

Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

PERCHLORATE SOURCE AREAS

BUILDING 359 AREA AND
HAPPY VALLEY RFI SITES

Legend

- SURFACE WATER FLOW
- SURFACE WATER DIVIDE
- FORMER INTERIM MEASURE EXCAVATION AREA
- PERCHLORATE SOURCE AREAS

Base Map Legend

- Existing Building or Structure
- Removed Building or Structure
- SMWU Boundary (if available)
- Administrative Area Boundary
- Ground Elevation Contours
- A/C Curbing
- RD-1 Monitoring Well
- Dirt Roads
- Ponds
- Possible Ponds (approx. location)
- Creeks
- Shale Beds
- Faults
- Faults (Approximate)
- Estimated Contact Line

MAP COORDINATES IN STATEPLANE, NAD 27, ZONE V

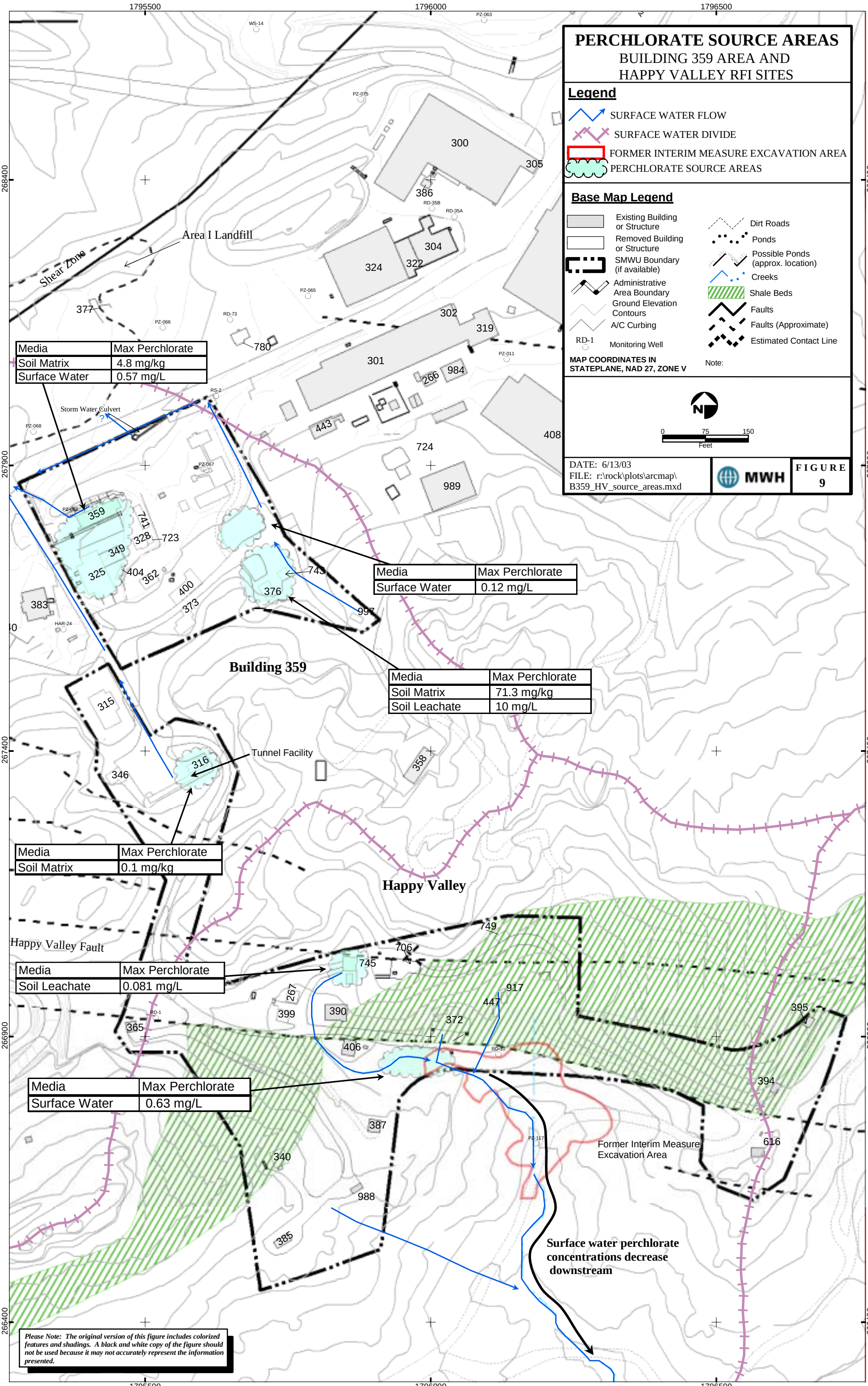
Note:

0 75 150
Feet

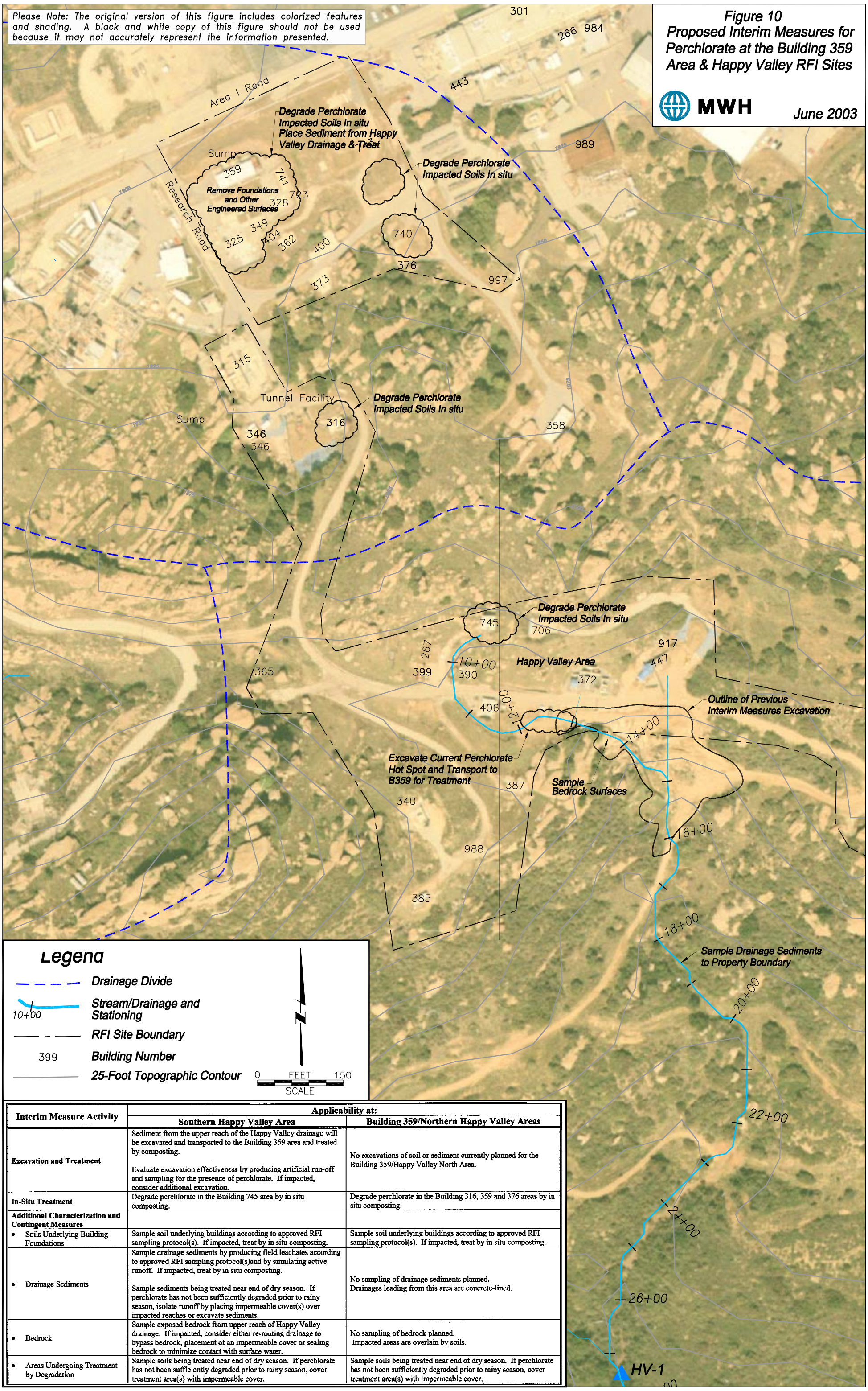
DATE: 6/13/03
FILE: r:\rock\plots\arcmap\B359_HV_source_areas.mxd

MWH

FIGURE 9



Please Note: The original version of this figure includes colorized features and shadings. A black and white copy of the figure should not be used because it may not accurately represent the information presented.



Interim Measure Activity	Applicability at:	
	Southern Happy Valley Area	Building 359/Northern Happy Valley Areas
Excavation and Treatment	Sediment from the upper reach of the Happy Valley drainage will be excavated and transported to the Building 359 area and treated by composting. Evaluate excavation effectiveness by producing artificial run-off and sampling for the presence of perchlorate. If impacted, consider additional excavation.	No excavations of soil or sediment currently planned for the Building 359/Happy Valley North Area.
In-Situ Treatment	Degrade perchlorate in the Building 745 area by in situ composting.	Degrade perchlorate in the Building 316, 359 and 376 areas by in situ composting.
Additional Characterization and Contingent Measures		
• Soils Underlying Building Foundations	Sample soil underlying buildings according to approved RFI sampling protocol(s). If impacted, treat by in situ composting.	Sample soil underlying buildings according to approved RFI sampling protocol(s). If impacted, treat by in situ composting.
• Drainage Sediments	Sample drainage sediments by producing field leachates according to approved RFI sampling protocol(s)and by simulating active runoff. If impacted, treat by in situ composting. Sample sediments being treated near end of dry season. If perchlorate has not been sufficiently degraded prior to rainy season, isolate runoff by placing impermeable cover(s) over impacted reaches or excavate sediments.	No sampling of drainage sediments planned. Drainages leading from this area are concrete-lined.
• Bedrock	Sample exposed bedrock from upper reach of Happy Valley drainage. If impacted, consider either re-routing drainage to bypass bedrock, placement of an impermeable cover or sealing bedrock to minimize contact with surface water.	No sampling of bedrock planned. Impacted areas are overlain by soils.
• Areas Undergoing Treatment by Degradation	Sample soils being treated near end of dry season. If perchlorate has not been sufficiently degraded prior to rainy season, cover treatment area(s) with impermeable cover.	Sample soils being treated near end of dry season. If perchlorate has not been sufficiently degraded prior to rainy season, cover treatment area(s) with impermeable cover.