

**Figures**

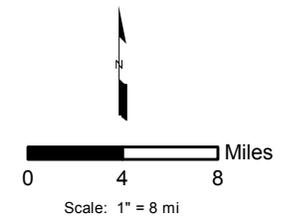


### LEGEND

★ Approximate site location

### NOTES

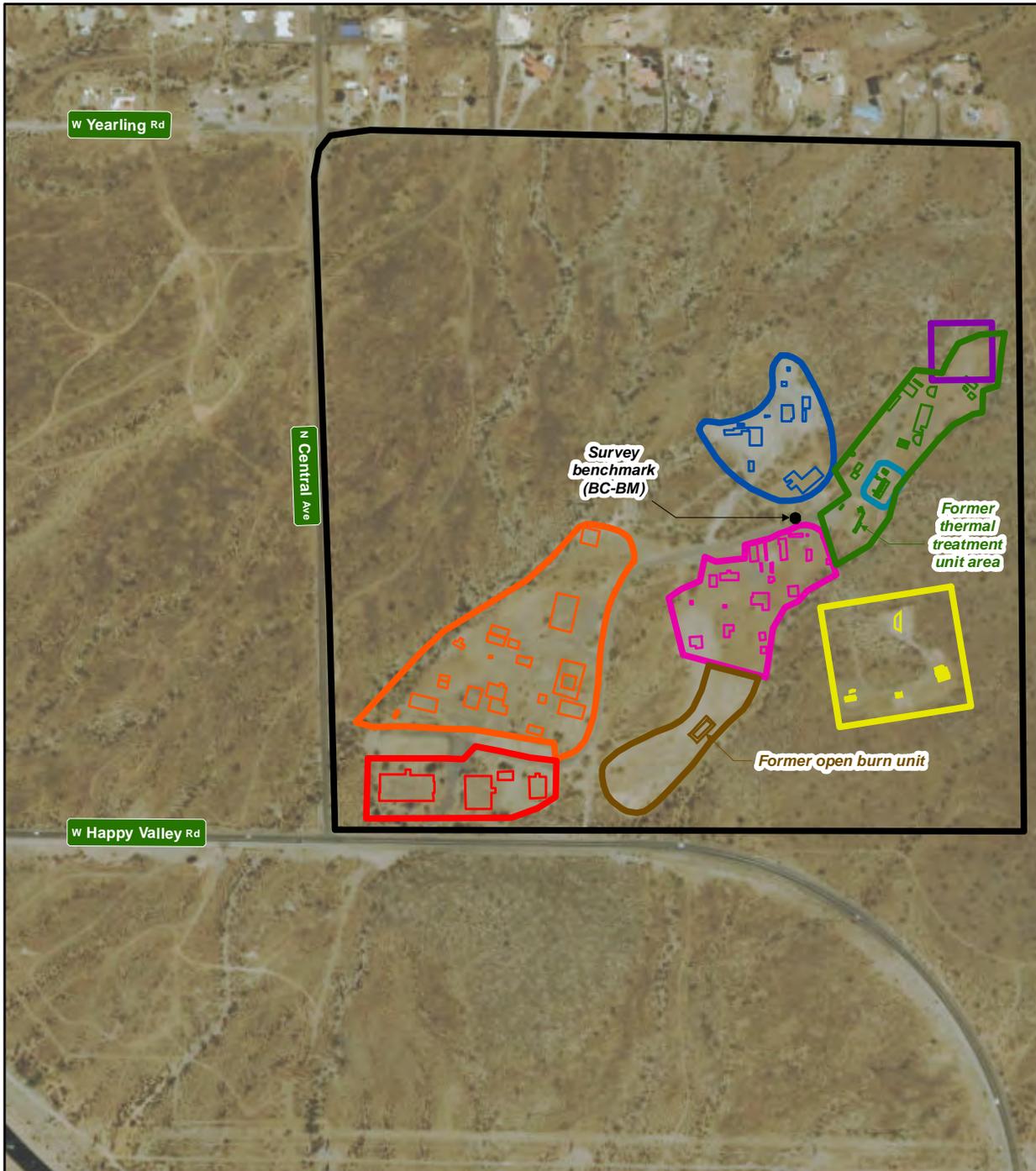
Basemap source: ESRI National Geographic World Map



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

### SITE LOCATION MAP



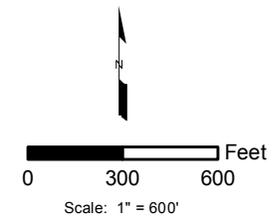


**LEGEND**

-  Lease property boundary
-  A-Complex
-  B-Complex
-  C-Complex
-  D-Complex
-  E-Complex/Storage Magazine Area
-  F-Complex
-  New Burn Area
-  Old Burn Area
-  Waterbore Area

**NOTES**

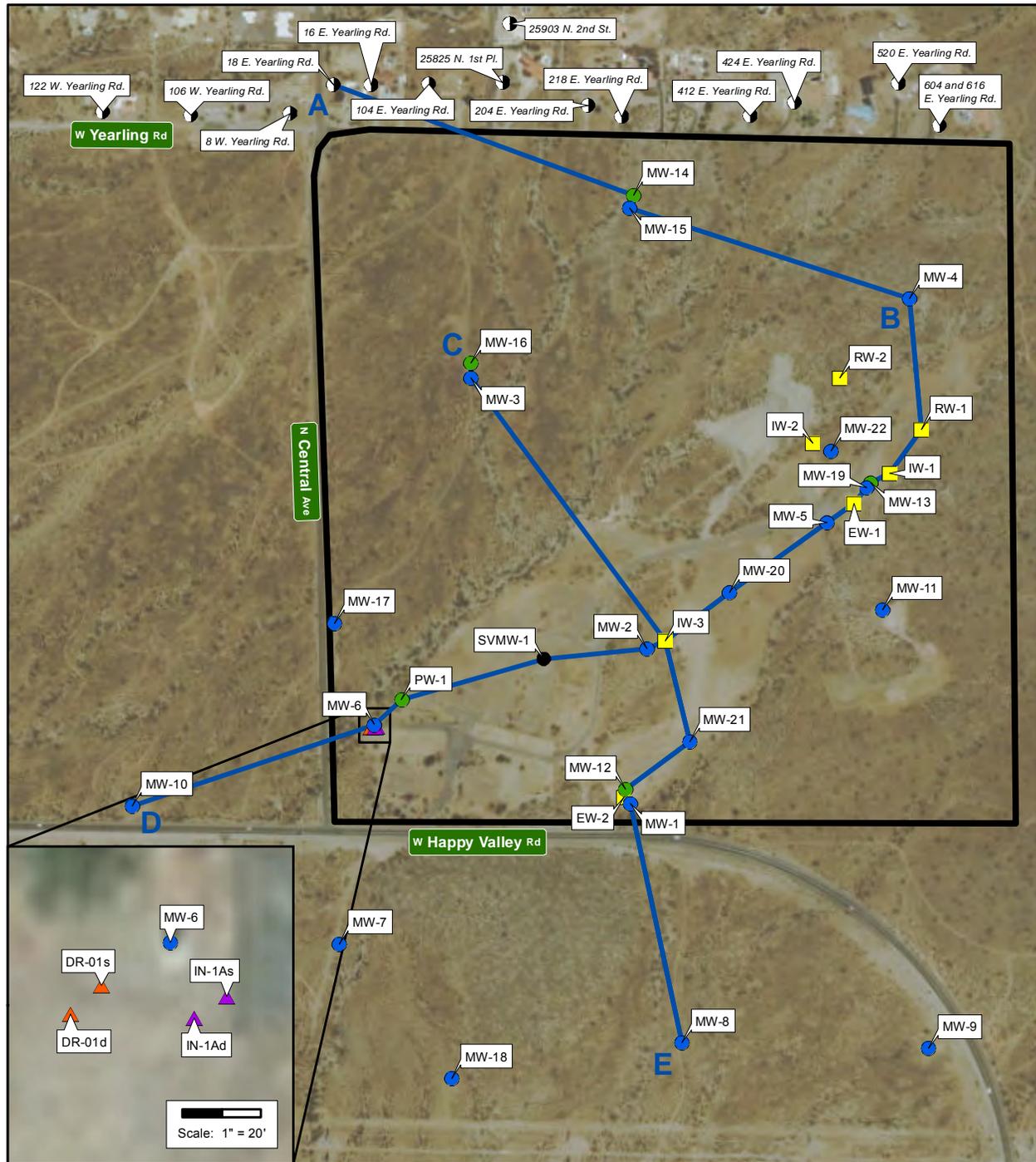
· Aerial photo source: ESRI World Imagery.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**FACILITY OPERATIONAL AREAS**



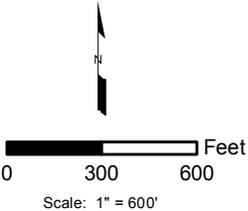


**LEGEND**

- Lease property boundary
- Groundwater monitoring well
- Groundwater monitoring well (deep)
- Planned remediation well
- Soil vapor monitoring well
- Alluvium injection well
- Alluvium dose response well
- Private well
- Cross-section line (see Figures 4 through 7)

**NOTES**

· Aerial photo source: ESRI World Imagery.

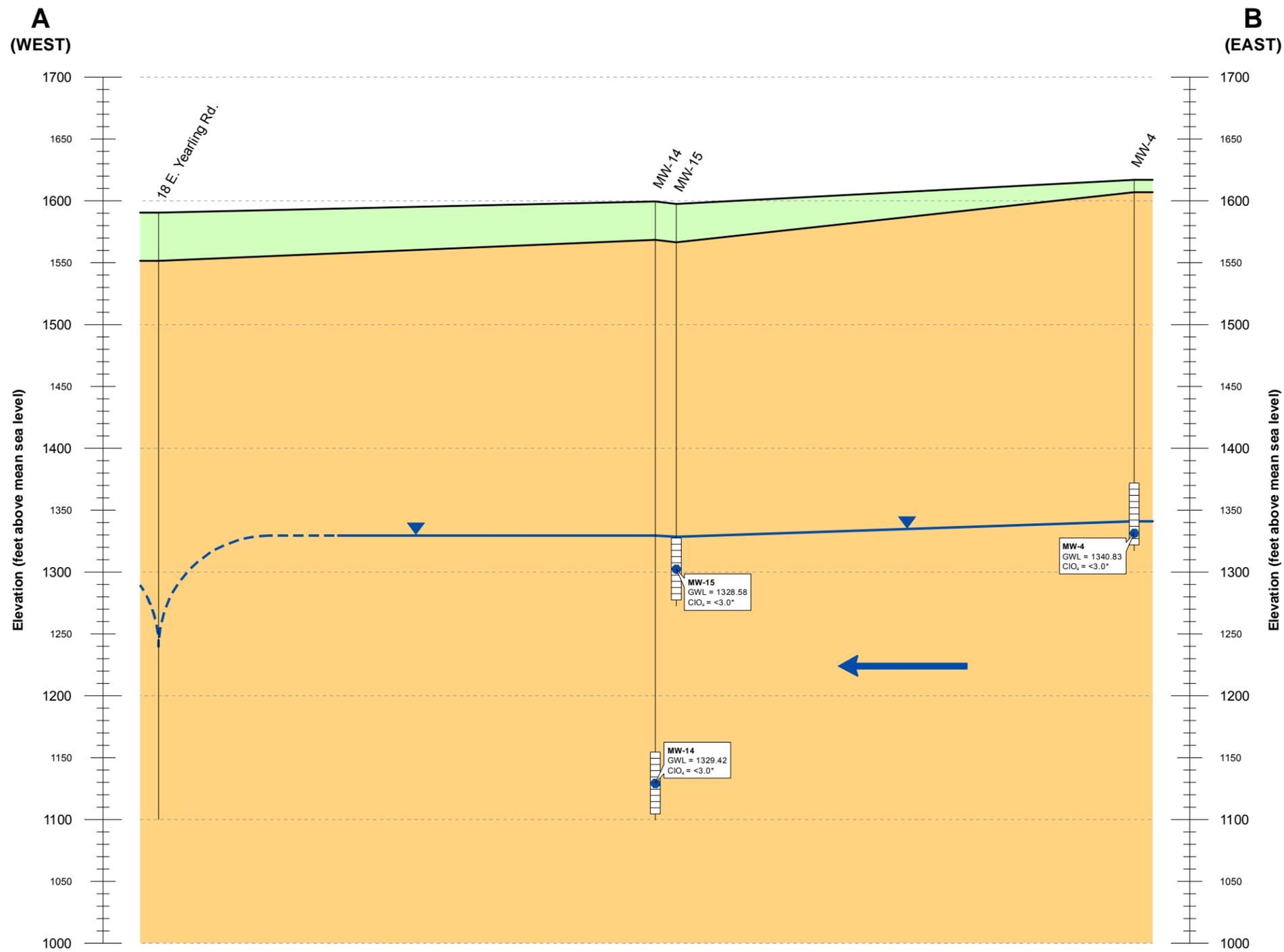


FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**WELL AND CROSS-SECTION LOCATIONS**



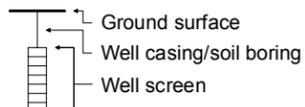
\\scottsdale-AZ\Project\UPCO\GIS\Projects\CMS report 03-2015\Figure 04 cross-section A-B 03-2015.mxd 6/19/2015



**LEGEND**

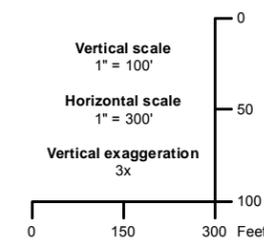
- Sedimentary unit  
(semi-consolidated to consolidated)
- Bedrock unit  
(Proterozoic meta-volcanic, meta-sedimentary, and granitic units)

- Potentiometric surface  
(December 2014; dashed where inferred)
- Direction of groundwater flow  
(approximate)



**NOTES**

- GWL = groundwater elevation in feet above mean sea level (ft amsl).
- ClO<sub>4</sub> = perchlorate concentration in micrograms per liter (µg/L).
- Depths to groundwater were measured on 12/15/2014.
- Wells were sampled for perchlorate from 10/10/2014 through 10/15/2014 unless denoted with an asterisk (\*); these wells were sampled from 7/8/2014 through 7/15/2014.

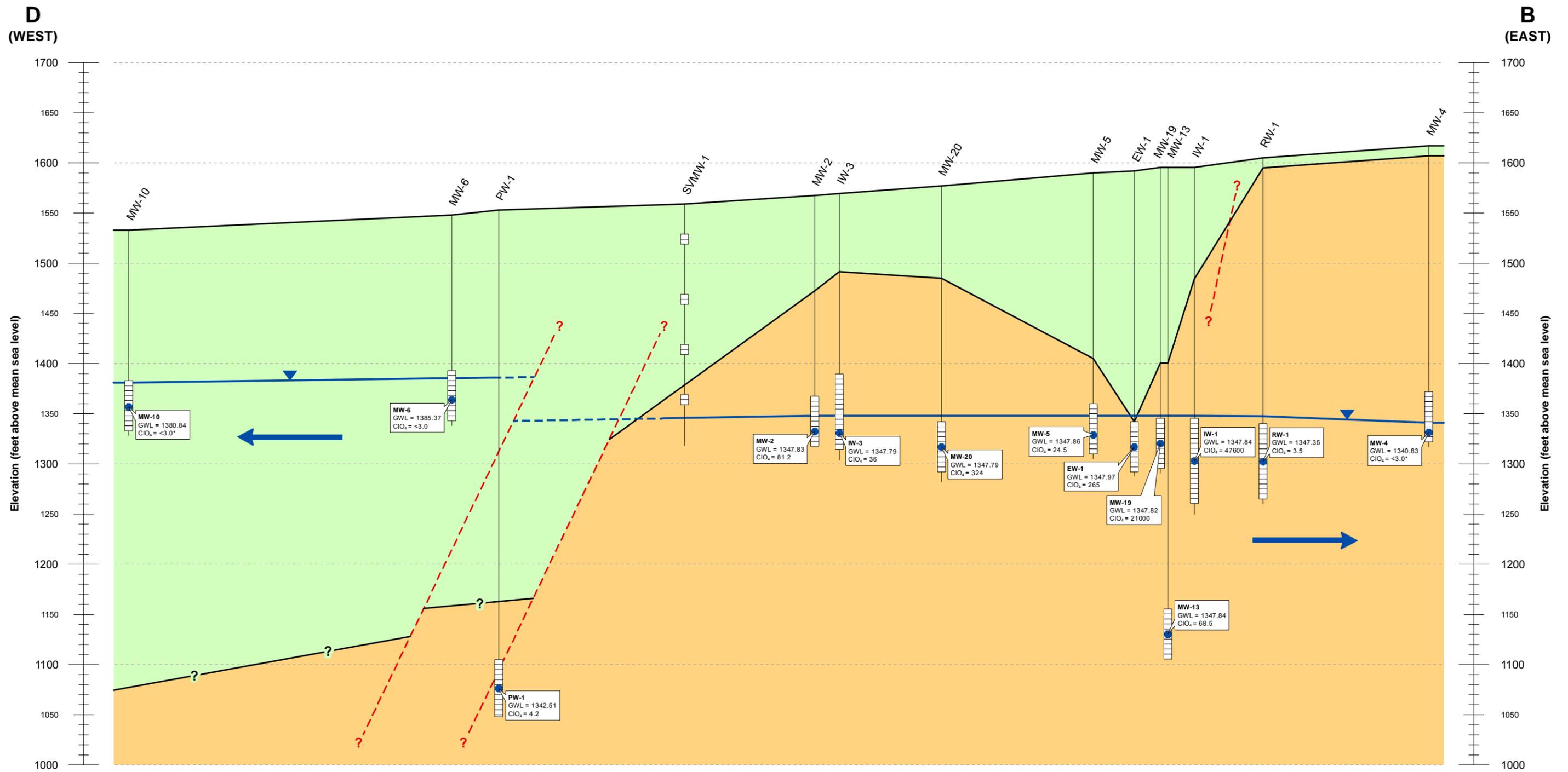


FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**GEOLOGIC CROSS-SECTION A-B**



\\scottsdale-AZ\Project\UPCO\GIS\Projects\CMS report 03-2015\Figure 05 cross-section D-B 03-2015.mxd 6/19/2015

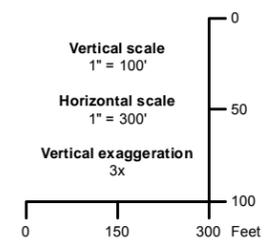


**LEGEND**

- Sedimentary unit  
(semi-consolidated to consolidated)
- Bedrock unit  
(Proterozoic meta-volcanic, meta-sedimentary, and granitic units)
- Fault  
(dashed where inferred)
- Potentiometric surface  
(December 2014; dashed where inferred)
- Direction of groundwater flow  
(approximate)
- Ground surface
- Well casing/soil boring
- Well screen

**NOTES**

- GWL = groundwater elevation in feet above mean sea level (ft amsl).
- ClO<sub>4</sub> = perchlorate concentration in micrograms per liter (µg/L).
- Depths to groundwater were measured on 12/15/2014.
- Wells were sampled for perchlorate from 10/10/2014 through 10/15/2014 unless denoted with an asterisk (\*); these wells were sampled from 7/8/2014 through 7/15/2014.

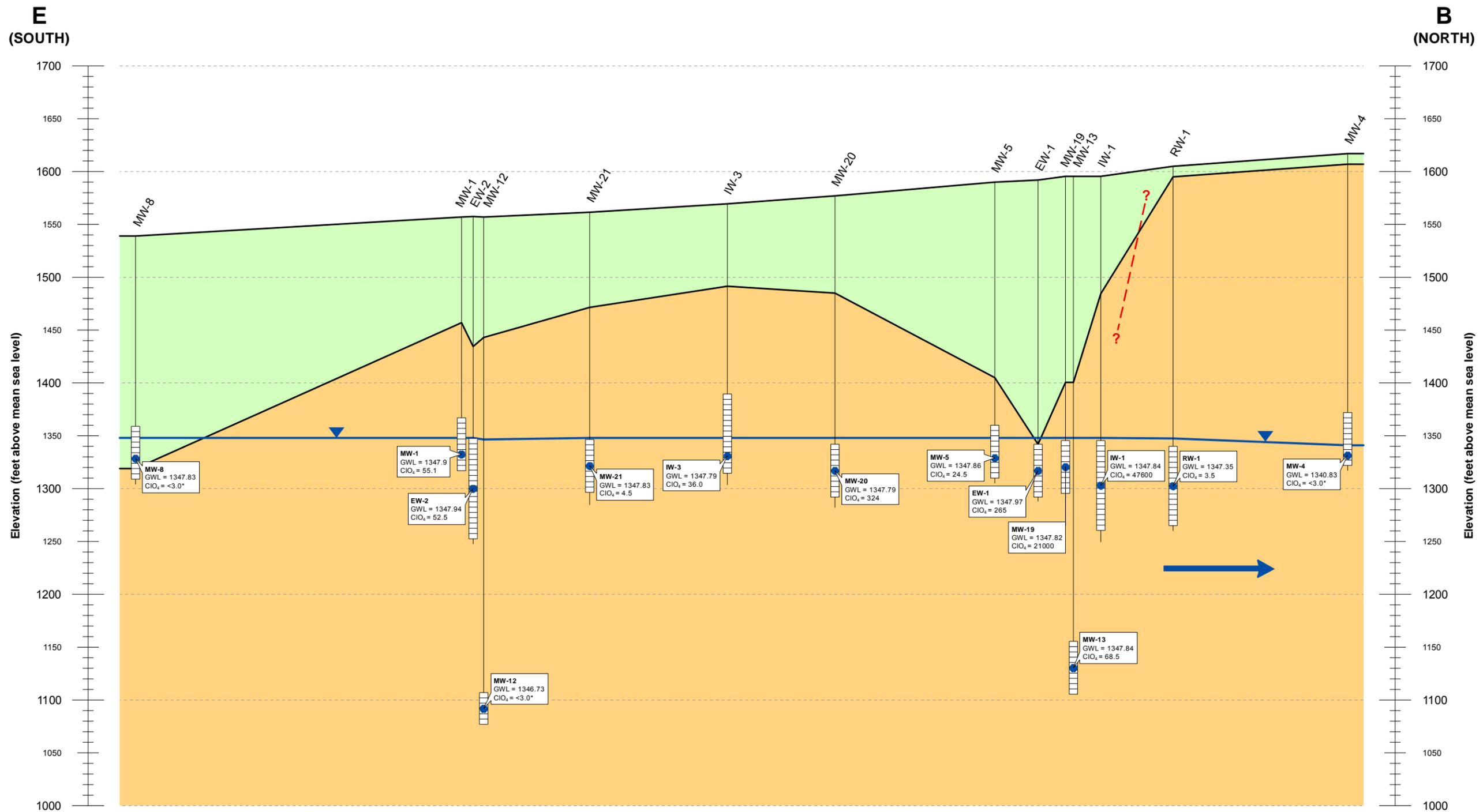


FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**GEOLOGIC CROSS-SECTION D-B**



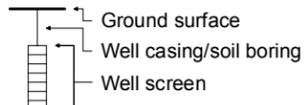
\\scottsdale-AZ\Project\UPCO\GIS\Projects\CMS report 03-2015\Figure 06 cross-section E-B 03-2015.mxd 6/23/2015



**LEGEND**

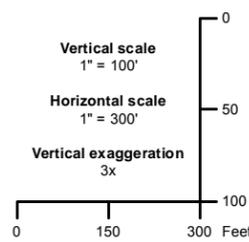
- Sedimentary unit  
(semi-consolidated to consolidated)
- Bedrock unit  
(Proterozoic meta-volcanic, meta-sedimentary, and granitic units)

- Potentiometric surface  
(December 2014; dashed where inferred)
- Direction of groundwater flow  
(approximate)



**NOTES**

- GWL = groundwater elevation in feet above mean sea level (ft amsl).
- ClO<sub>4</sub> = perchlorate concentration in micrograms per liter (µg/L).
- Depths to groundwater were measured on 12/15/2014.
- Wells were sampled for perchlorate from 10/10/2014 through 10/15/2014 unless denoted with an asterisk (\*); these wells were sampled from 7/8/2014 through 7/15/2014.

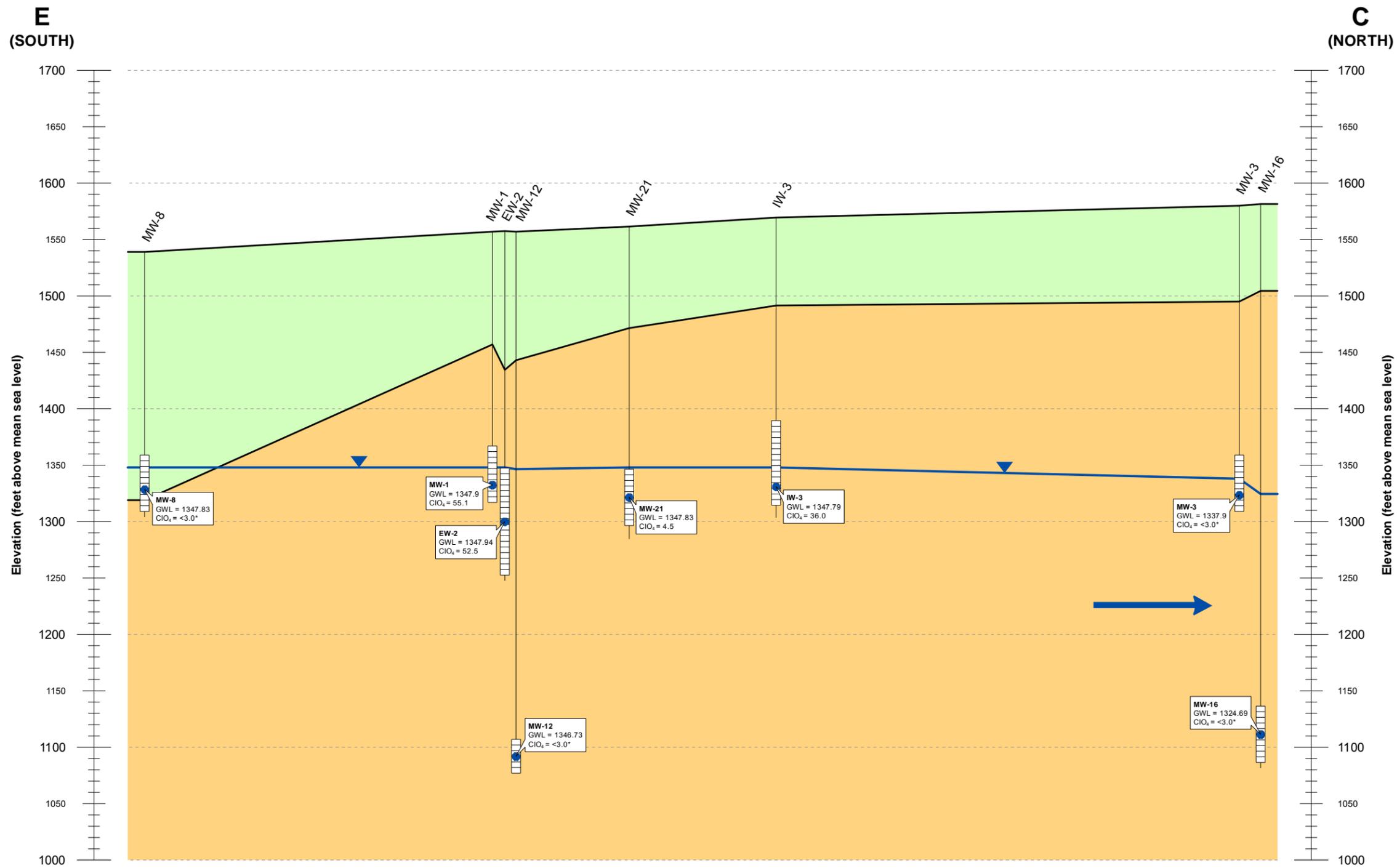


FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**GEOLOGIC CROSS-SECTION E-B**



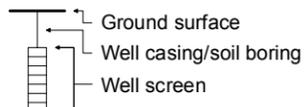
\\scottsdale-AZ\Project\UPCO\GIS\Projects\CMS report 03-2015\Figure 07 cross-section E-C 03-2015.mxd 6/23/2015



**LEGEND**

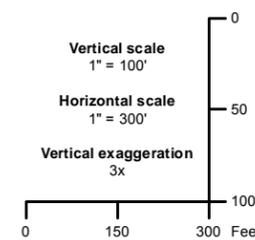
- Sedimentary unit  
(semi-consolidated to consolidated)
- Bedrock unit  
(Proterozoic meta-volcanic, meta-sedimentary, and granitic units)

- Potentiometric surface  
(December 2014; dashed where inferred)
- Direction of groundwater flow  
(approximate)



**NOTES**

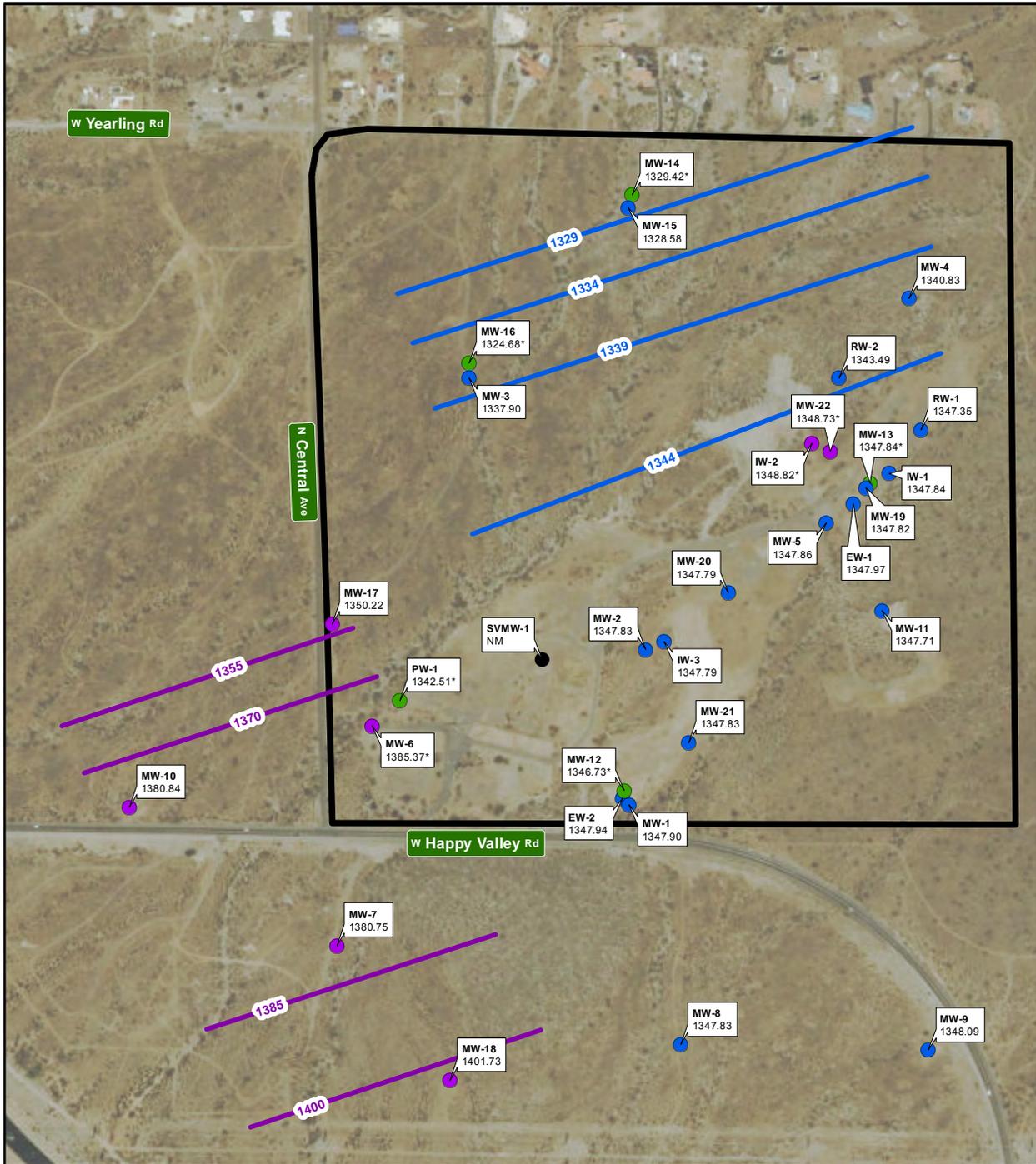
- GWL = groundwater elevation in feet above mean sea level (ft amsl).
- ClO<sub>4</sub> = perchlorate concentration in micrograms per liter (µg/L).
- Depths to groundwater were measured on 12/15/2014.
- Wells were sampled for perchlorate from 10/10/2014 through 10/15/2014 unless denoted with an asterisk (\*); these wells were sampled from 7/8/2014 through 7/15/2014.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**GEOLOGIC CROSS-SECTION E-C**



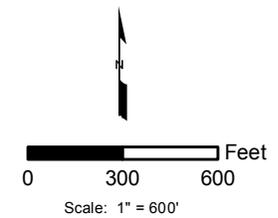


### LEGEND

- Lease property boundary
- Shallow bedrock unit well
- Sedimentary unit well
- Deep well
- Soil vapor monitoring well
- Shallow bedrock unit groundwater elevation contour
- Sedimentary unit groundwater elevation contour

### NOTES

- Aerial photo source: ESRI World Imagery.
- Groundwater elevations are expressed in feet above mean sea level.
- \* = well is not used in contouring.
- NM = not measured.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**GROUNDWATER ELEVATIONS**  
**DECEMBER 15, 2014**



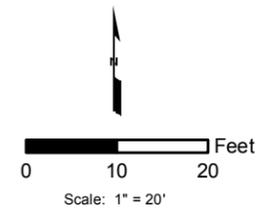


**LEGEND**

- ▲ Soil sampling location; 0 ft, 5 ft, 10 ft, and 20 ft bgs (ARCADIS)
- △ Soil sampling location; 5 ft, 10 ft, and 15 ft bgs (ARCADIS)
- △ Soil sampling location; 1 ft, 3 ft, and 5 ft bgs (ARCADIS)
- Soil sampling location; 0 ft, 5 ft, and 10 ft bgs. (ARCADIS)
- ▲ Waterbore soil sampling location
- Historical soil sampling location (SA&B investigation)
- Confirmation soil sampling location
- ⊕ Groundwater monitoring well
- Vadose zone injection well (screened at 20-60 feet bgs)
- ▭ Former containment pond
- Former water wand
- Inferred extent of perchlorate in soil above cleanup goal
- Ephemeral wash (approximate location)

**NOTES**

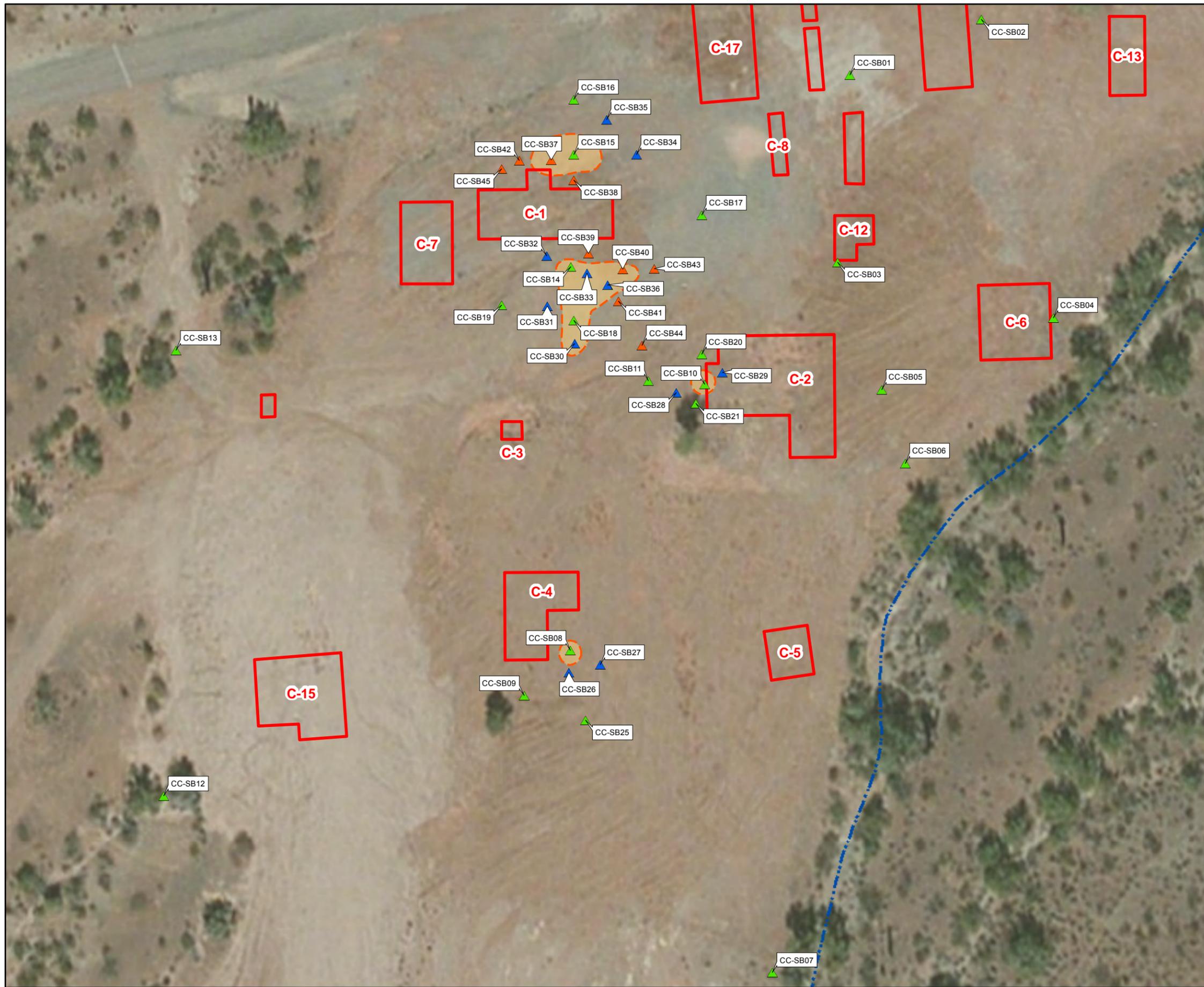
- Aerial photo source: Google Earth Pro.
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- ft bgs = feet below ground surface.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**SOIL SAMPLING LOCATIONS  
WATERBORE AREA**



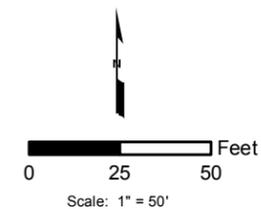


### LEGEND

- ▲ Soil sampling location (ARCADIS, 2015)
- ▲ Soil sampling location (ARCADIS, 2014)
- ▲ C-Complex soil sampling location (2004-2008)
- Former C-Complex site facility
- Inferred extent of perchlorate in soil above cleanup goal
- - - Ephemeral wash (approximate location)

### NOTES

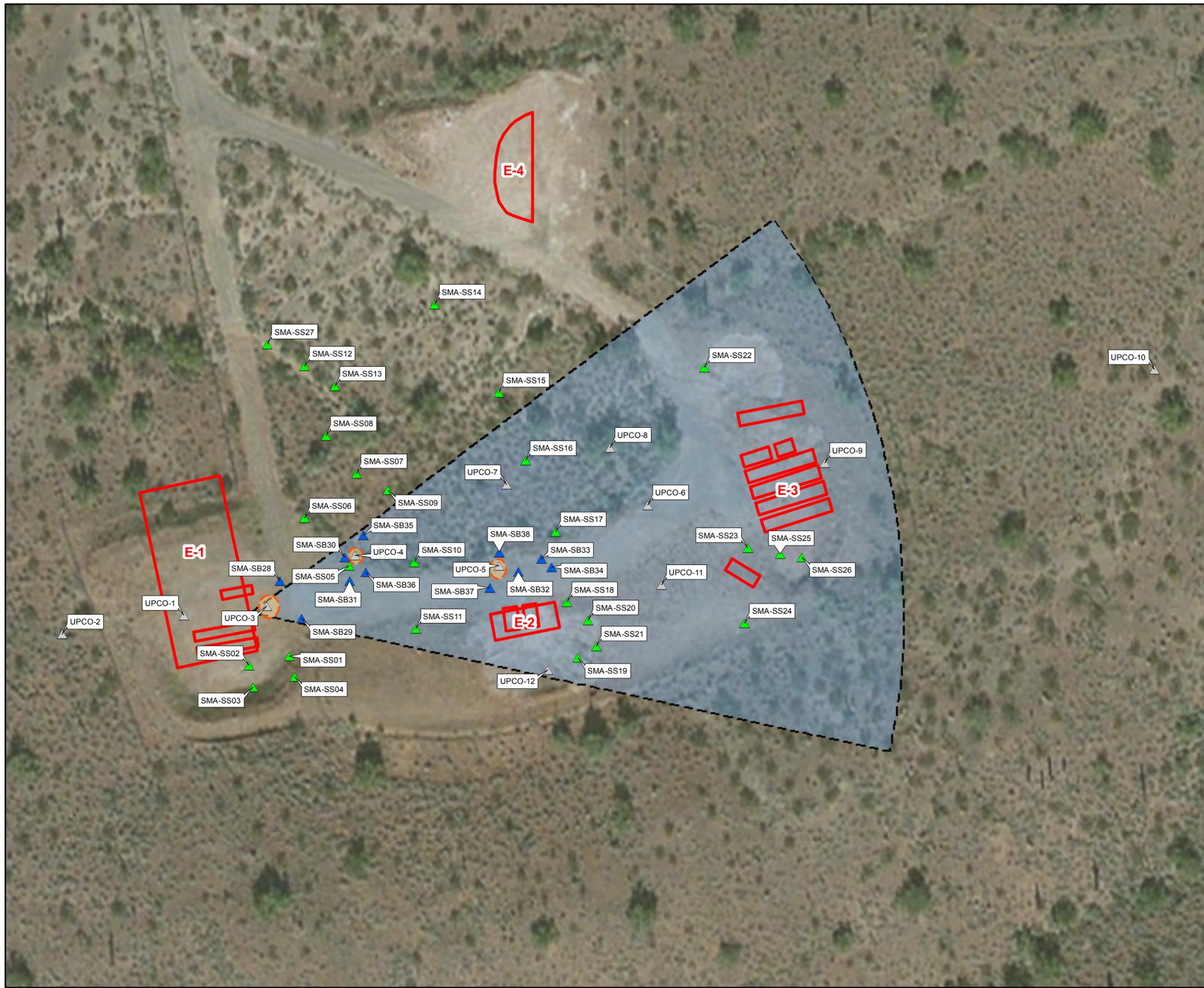
- Aerial photo source: ESRI World Imagery.
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL SAMPLING LOCATIONS  
C-COMPLEX AREA



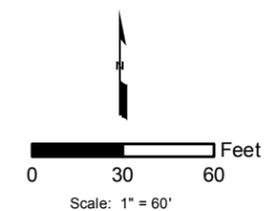


### LEGEND

- ▲ Soil sampling location (ARCADIS, 2014)
- ▲ Storage Magazine Area soil sampling location (2004-2006)
- ▲ Historical soil sampling location (Hargis investigation)
- Former storage magazine
- Inferred extent of perchlorate in soil above cleanup goal
- Approximate incident radius

### NOTES

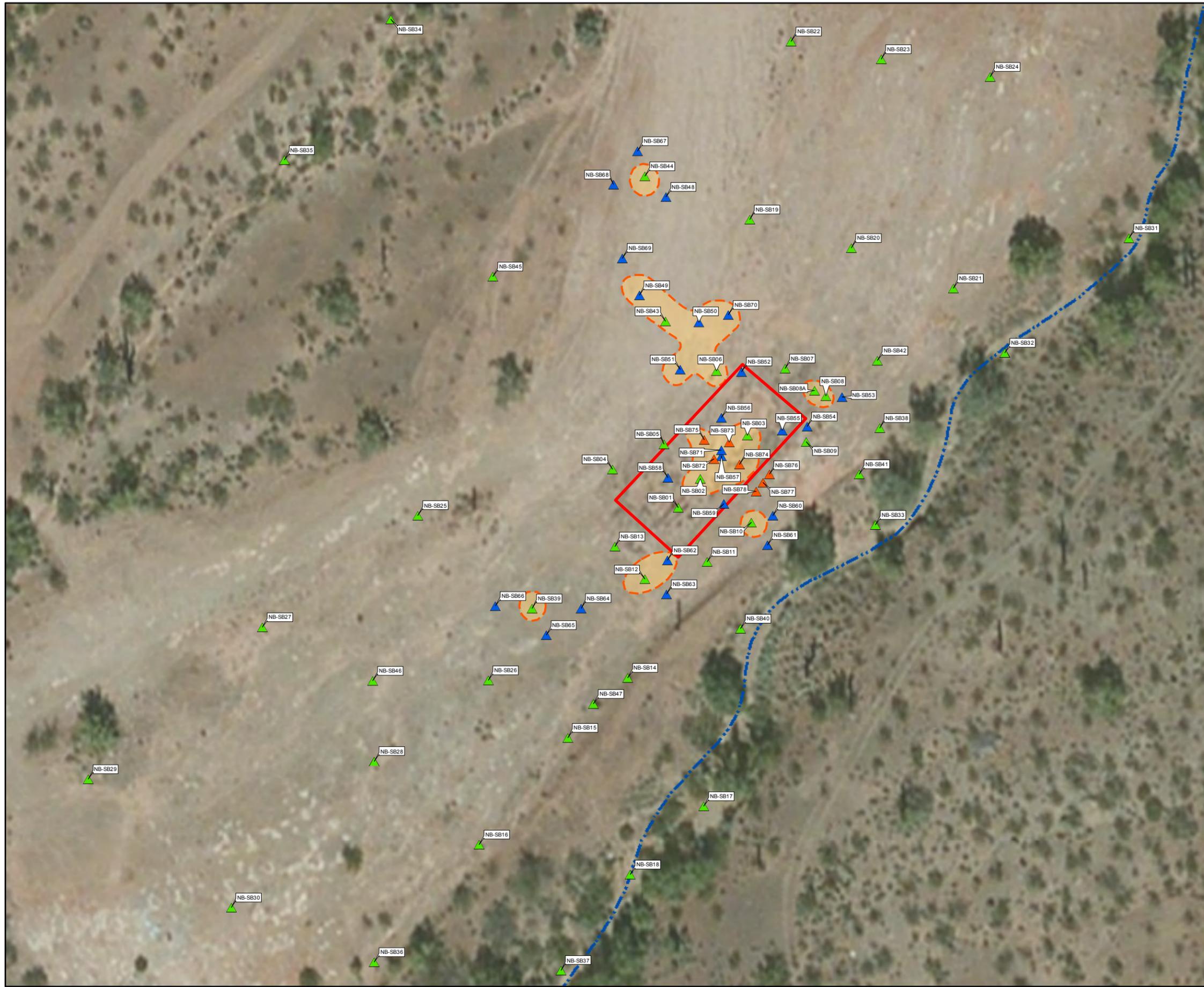
- Aerial photo source: ESRI World Imagery.
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL SAMPLING LOCATIONS  
E-COMPLEX AREA



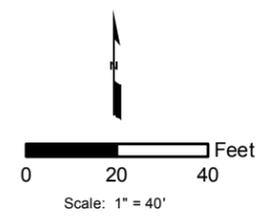


### LEGEND

- ▲ Soil sampling location (ARCADIS, 2015)
- ▲ Soil sampling location (ARCADIS, 2014)
- ▲ New Burn Area soil sampling location (2004-2006)
- Former open burn unit
- Inferred extent of perchlorate in soil above cleanup goal
- Ephemeral wash (approximate location)

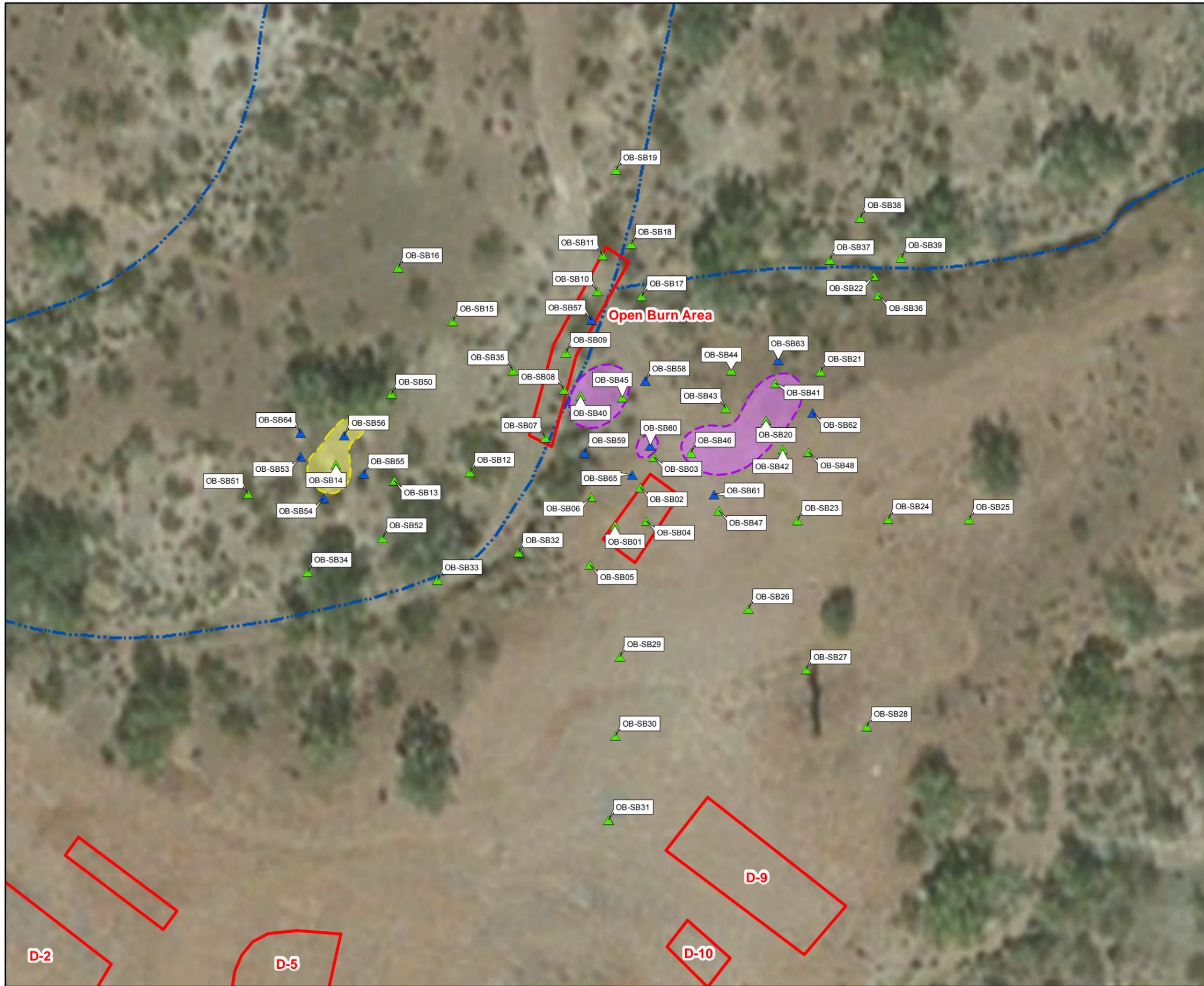
### NOTES

- Aerial photo source: ESRI World Imagery.
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).



FORMER UNIVERSAL PROPELLSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

**SOIL SAMPLING LOCATIONS  
NEW BURN AREA**

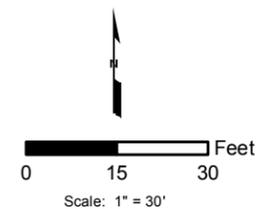


### LEGEND

- ▲ Soil sampling location (ARCADIS, 2014)
- ▲ Old Burn Area soil sampling location (2004-2008)
- Former D-Complex site facility
- Inferred extent of lead in soil above cleanup goal
- Inferred extent of arsenic in soil above cleanup goal
- Ephemeral wash (approximate location)

### NOTES

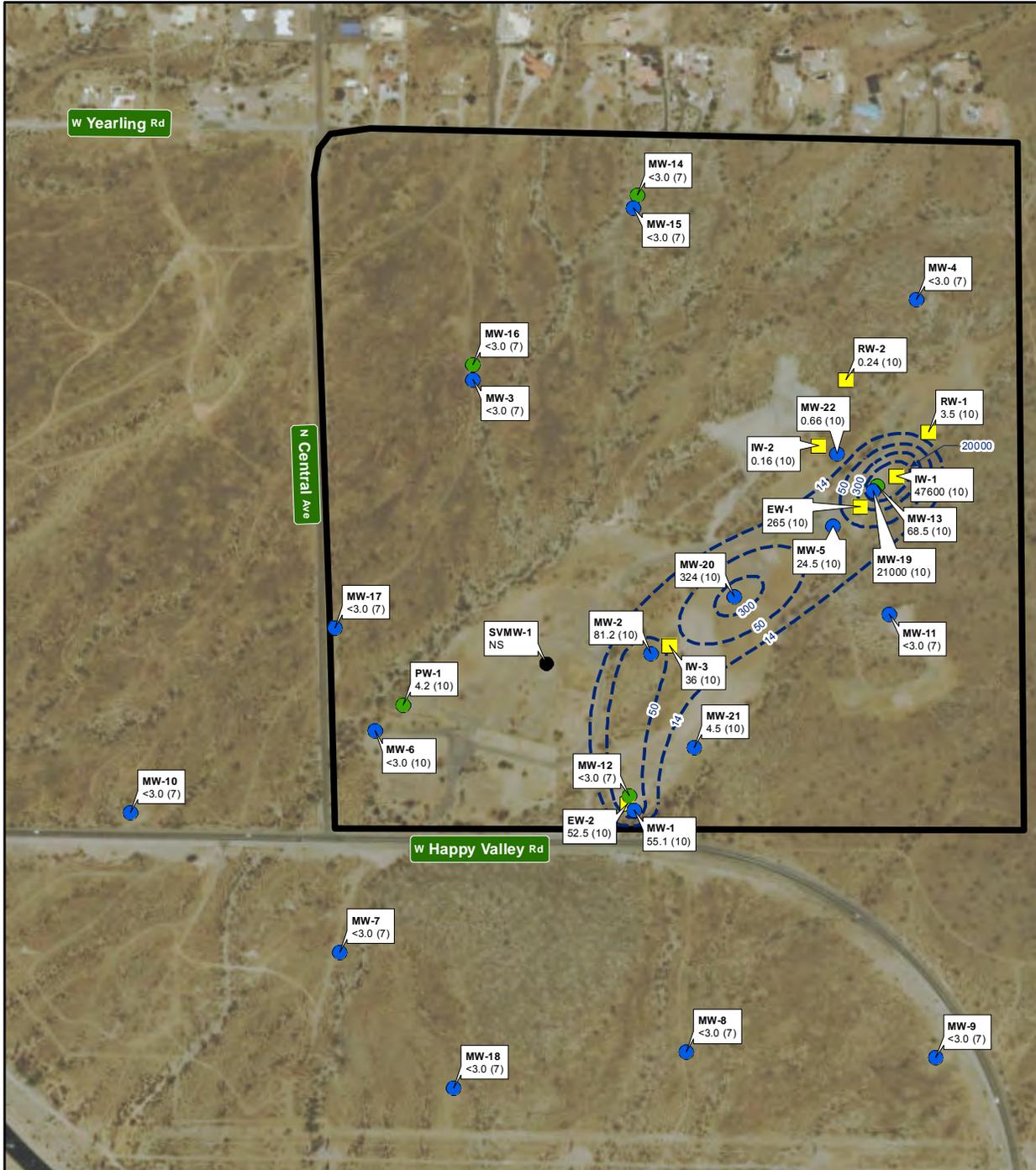
- Aerial photo source: ESRI World Imagery.
- Cleanup goal for lead is 400 milligrams per kilogram (mg/kg).
- Cleanup goal for arsenic is 10 mg/kg.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL SAMPLING LOCATIONS  
OLD BURN AREA



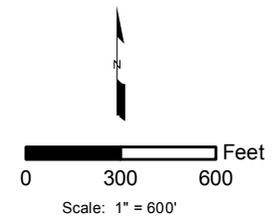


## LEGEND

- Lease property boundary
- Groundwater monitoring well
- Groundwater monitoring well (deep)
- Planned remediation well
- Soil vapor monitoring well
- Perchlorate concentration contour (dashed where inferred)

## NOTES

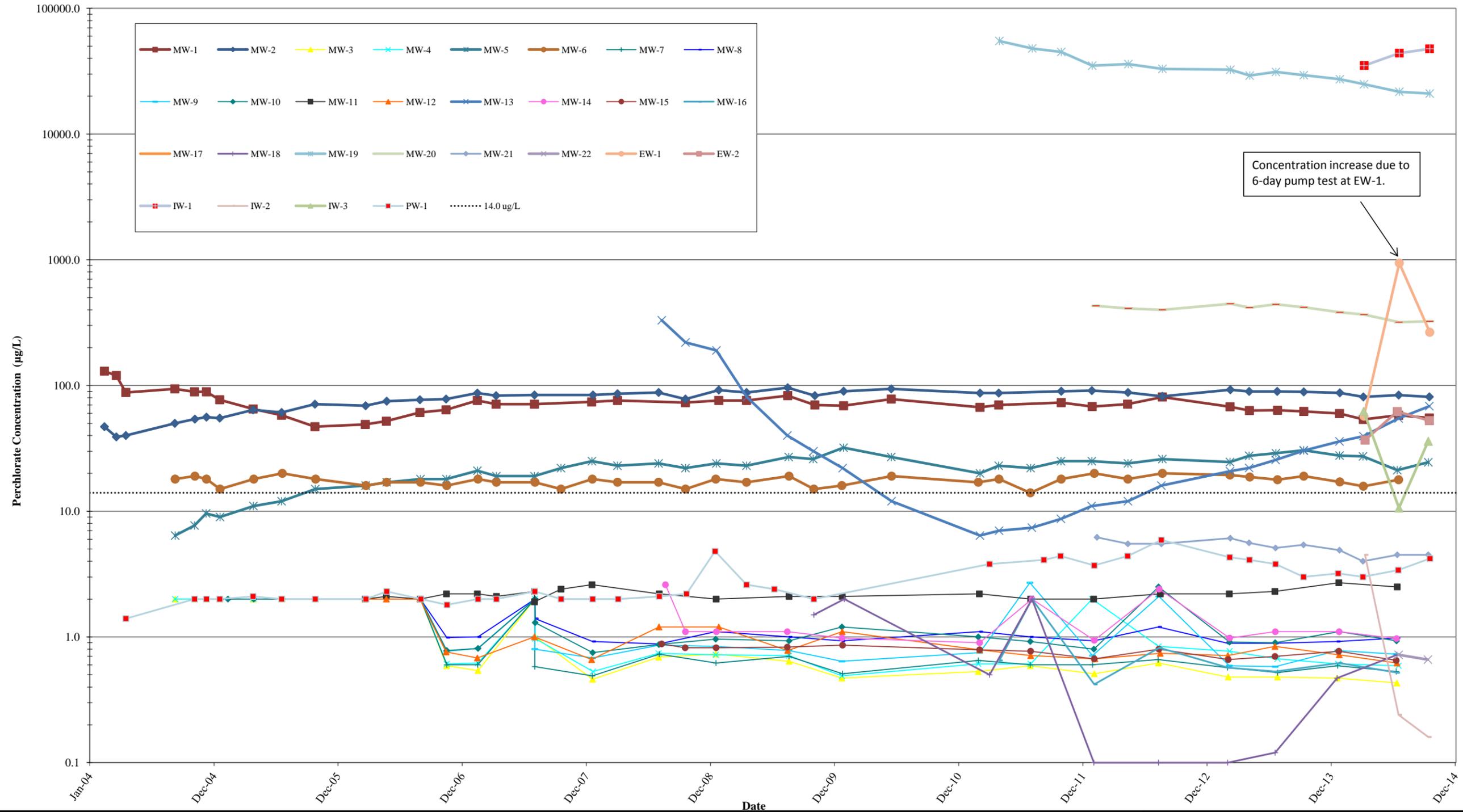
- Aerial photo source: ESRI World Imagery.
- Perchlorate concentrations are expressed in micrograms per liter (µg/L).
- Arizona Health Based Guidance Level (HBGL) for perchlorate (ClO<sub>4</sub>) = 14 µg/L.
- Groundwater monitoring wells with deeper screens, depicted in green, are not used in contouring.
- (7) = concentration is from July 2014.
- (10) = concentration is from October 2014.
- NS = well was not sampled in 2014.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

PERCHLORATE CONCENTRATIONS IN GROUNDWATER  
JULY THROUGH OCTOBER 2014





Concentration increase due to 6-day pump test at EW-1.

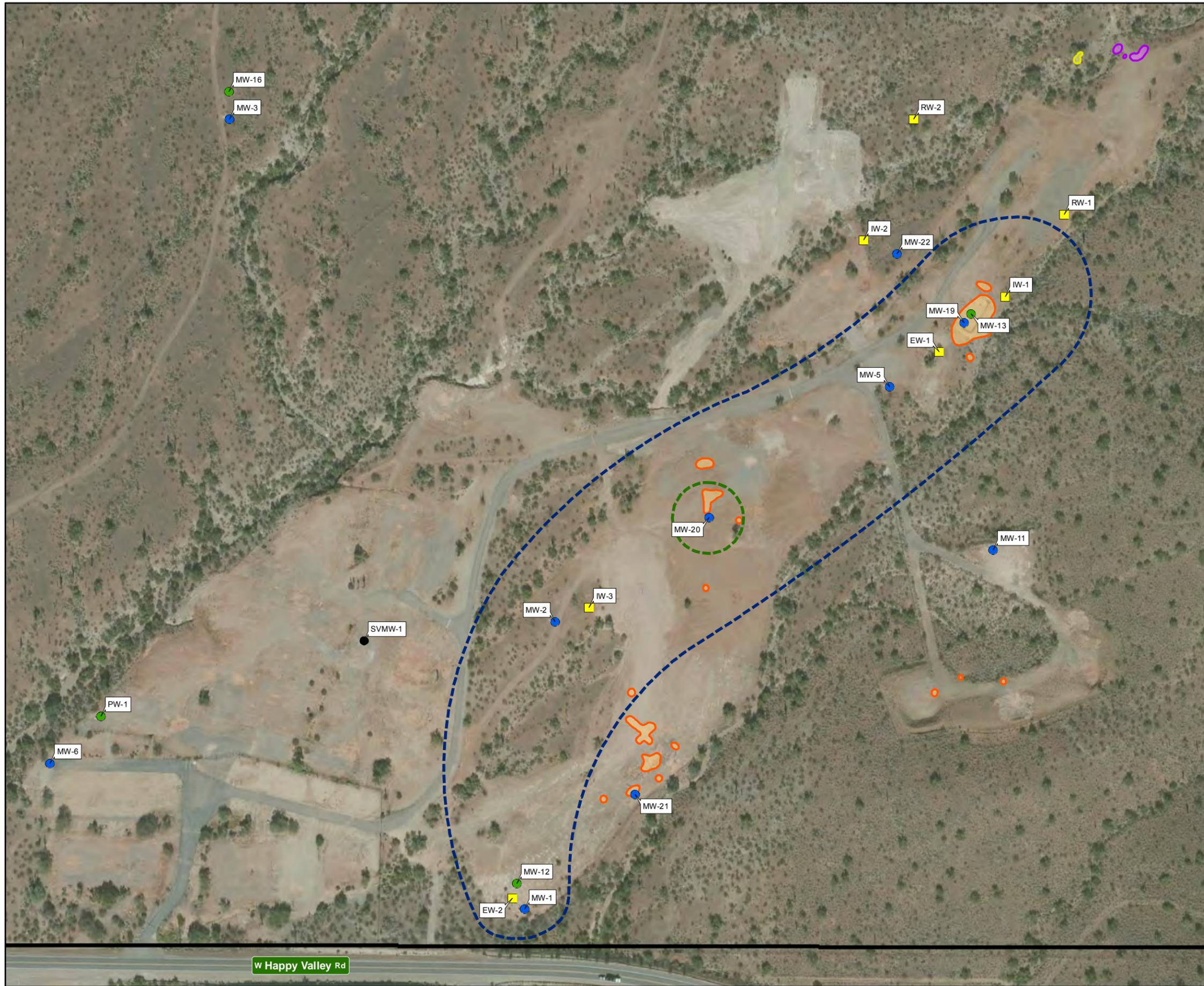
**NOTES**

- Clean-up goal for perchlorate is 14 µg/L.
- Non-detect values are graphed at the listed laboratory detection limit.
- µg/L = micrograms per liter

FORMER UNIVERSAL PROPULSION COMPANY FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY

HISTORICAL PERCHLORATE TRENDS IN GROUNDWATER



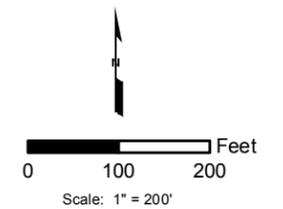


### LEGEND

- Lease property boundary
- Groundwater monitoring well
- Groundwater monitoring well (deep)
- Planned remediation well
- Soil vapor monitoring well
- Inferred extent of perchlorate in soil above cleanup goal
- Inferred extent of lead in soil above cleanup goal
- Inferred extent of arsenic in soil above cleanup goal
- Inferred extent of perchlorate in groundwater
- Inferred extent of 1,4-dioxane in groundwater

### NOTES

- Aerial photo source: ESRI World Imagery.
- Extents of perchlorate and 1,4-dioxane in groundwater reflect data collected in October 2014 and are based on the Arizona Health Based Guidance Level (HBGL) for perchlorate of 14 micrograms per liter (14 µg/L) and the Arizona Department of Environmental Quality (ADEQ)-established cleanup goal for 1,4-dioxane of 3.5 µg/L.
- Cleanup goal for perchlorate in soil is 16 milligrams per kilogram (mg/kg).
- Cleanup goal for lead in soil is 400 mg/kg.
- Cleanup goal for arsenic in soil is 10 mg/kg.

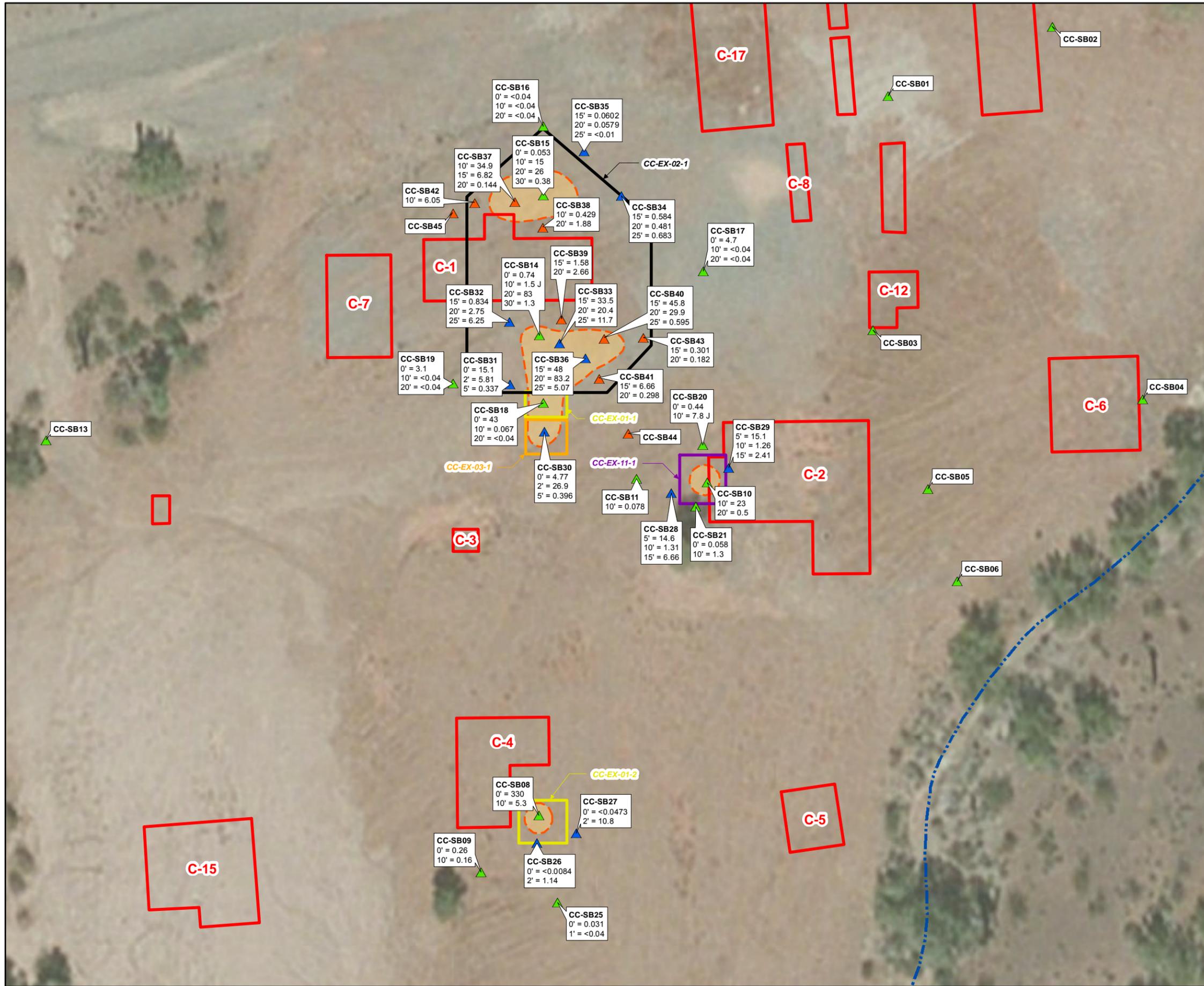


FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

### AREAS EXCEEDING CLEANUP GOALS





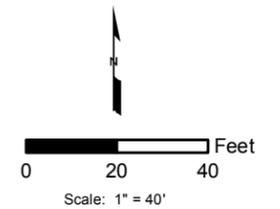


### LEGEND

- ▲ Soil sampling location  
(ARCADIS, 2015; see Appendix D for complete results)
- ▲ Soil sampling location  
(ARCADIS, 2014; see Appendix D for complete results)
- ▲ C-Complex soil sampling location  
(2004-2008; see Appendix D for complete results)
- Former C-Complex site facility
- 1-foot excavation area
- 3-foot excavation area
- 11-foot excavation area
- SA-2 cap area with 2-foot excavation
- Inferred extent of perchlorate in soil above cleanup goal
- - - Ephemeral wash (approximate location)
- CC-SB11  
10' = 0.078 Sample depth/perchlorate concentration (mg/kg)

### NOTES

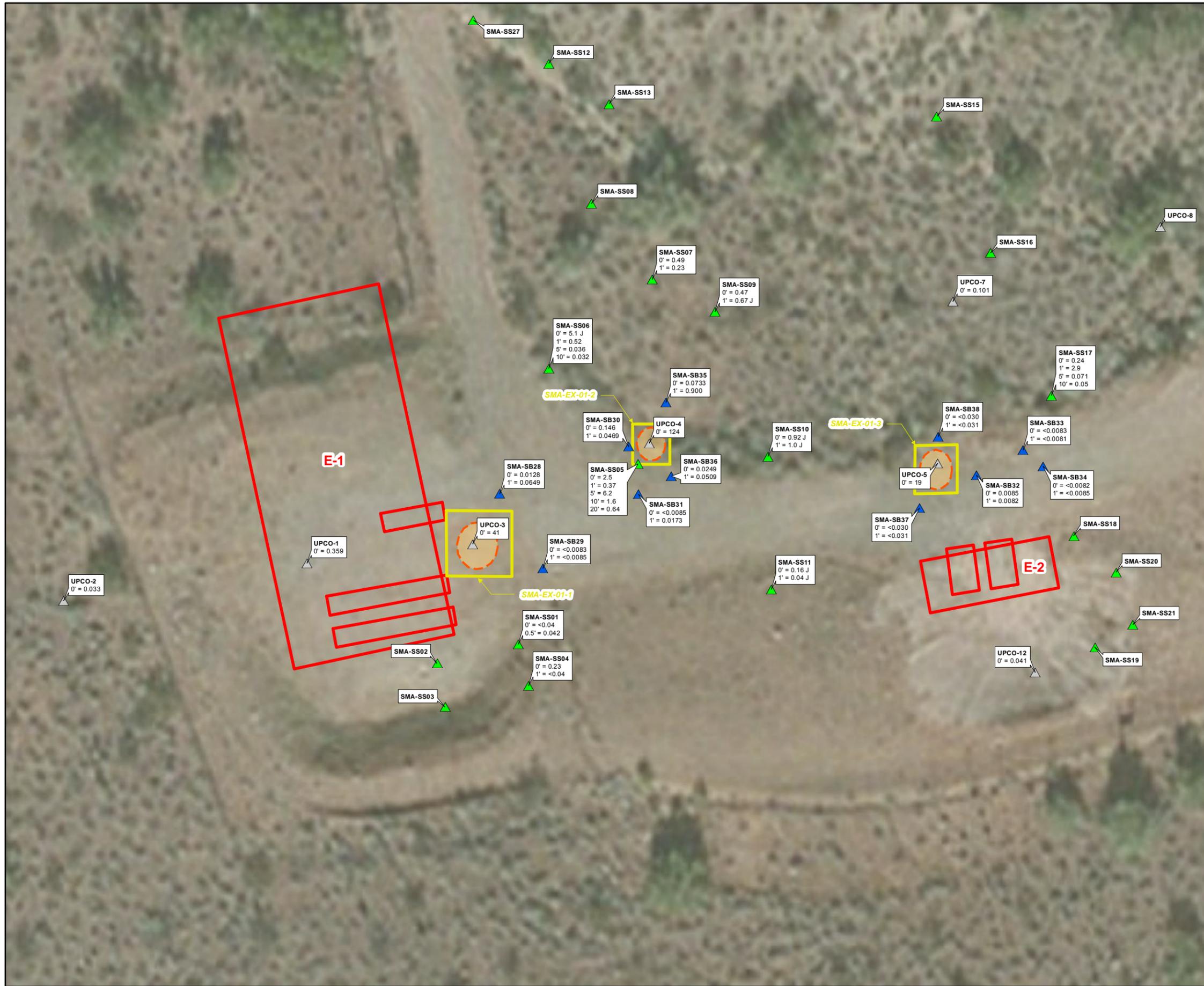
- Aerial photo source: ESRI World Imagery.
- Displayed perchlorate concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- Corresponding data tables are presented in Appendix B.
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVE SA-2  
C-COMPLEX AREA



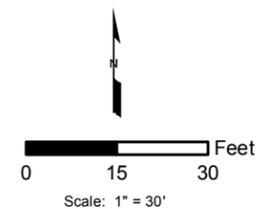


### LEGEND

- ▲ Soil sampling location  
(ARCADIS, 2014; see Appendix D for complete results)
- ▲ Storage Magazine Area soil sampling location  
(2004-2006; see Appendix D for complete results)
- ▲ Historical soil sampling location  
(Hargis investigation)
- Storage magazine
- 1-foot excavation area
- Inferred extent of perchlorate in soil above cleanup goal
- UPCO-2  
0' = 0.033 Sample depth/perchlorate concentration (mg/kg)

### NOTES

- Aerial photo source: ESRI World Imagery.
- Displayed perchlorate concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- Corresponding data tables are presented in Appendix B.
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.

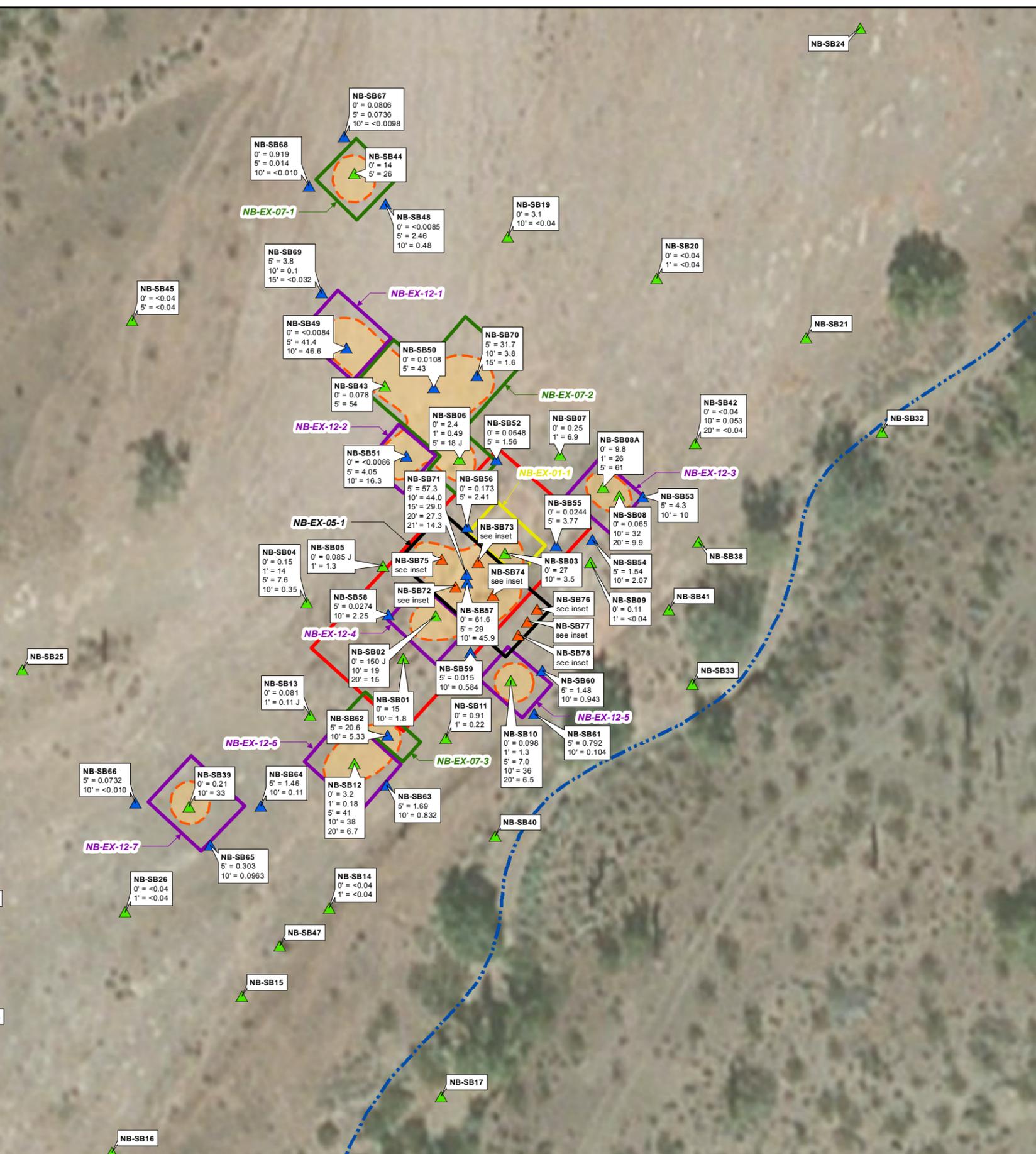


FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVES SA-2 AND SA-3  
E-COMPLEX AREA



ARCADIS 2015 soil borings		
Boring ID	Depth (ft bgs)	Perchlorate (mg/kg)
NB-SB72	5	143
	10	69.1
	15	17.0
	20	8.54
NB-SB73	5	251
	10	136
	15	17.3
	20	10.1
NB-SB74	5	0.141
	10	5.83
	15	21.8
	20	33.5
	30	22.8
NB-SB75	5	3.34
	10	6.41
	15	3.08
	20	17.0
	25	28.1
NB-SB76	15	0.591
	20	5.86
NB-SB77	15	7.16
	20	6.43
NB-SB78	15	4.00
	20	6.43

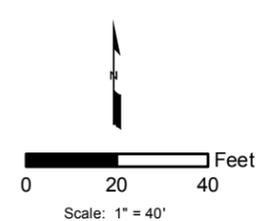


**LEGEND**

- ▲ Soil sampling location (ARCADIS, 2015; see Appendix D for complete results)
- ▲ Soil sampling location (ARCADIS, 2014; see Appendix D for complete results)
- ▲ New Burn Area soil sampling location (2004-2006; see Appendix D for complete results)
- Former open burn unit
- 1-foot excavation area
- 7-foot excavation area
- 12-foot excavation area
- SA-2 cap area
- Inferred extent of perchlorate in soil above cleanup goal
- Ephemeral wash (approximate location)
- NB-SB56  
0' = 0.173  
5' = 2.41 Sample depth/perchlorate concentration (mg/kg)

**NOTES**

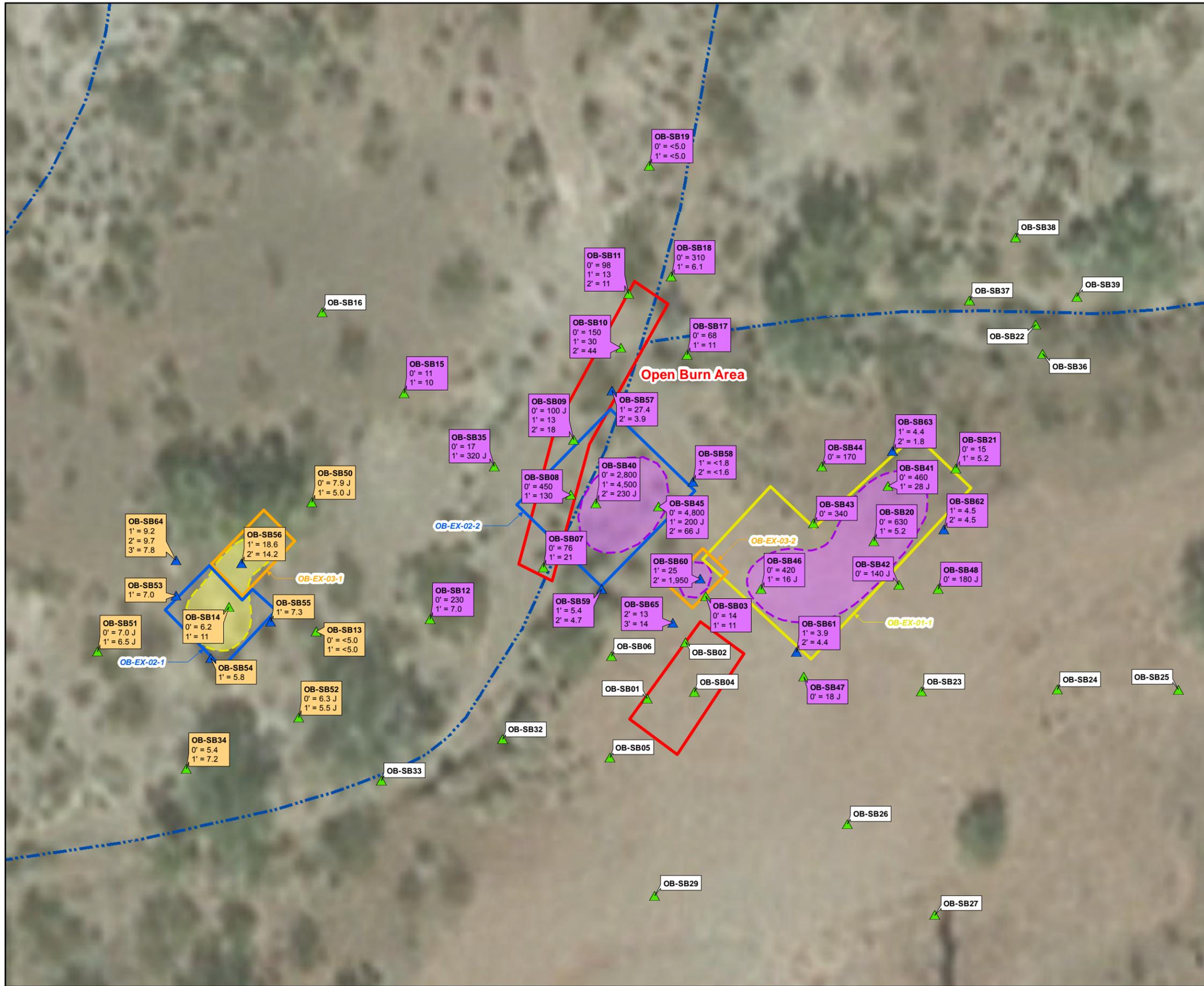
- Aerial photo source: ESRI World Imagery.
- Displayed perchlorate concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- Corresponding data tables are presented in Appendix B.
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVE SA-2  
NEW BURN AREA



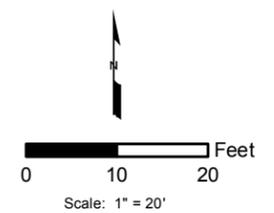


### LEGEND

- ▲ Soil sampling location  
(ARCADIS, 2014; see Appendix D for complete results)
- ▲ Old Burn Area soil sampling location  
(2004-2008; see Appendix D for complete results)
- Former D-Complex site facility
- 1-foot excavation area
- 2-foot excavation area
- 3-foot excavation area
- Inferred extent of lead in soil above cleanup goal
- Inferred extent of arsenic in soil above cleanup goal
- - - Ephemeral wash (approximate location)
- OB-SB55  
0' = 7.3  
1' = 7.3
- OB-SB44  
0' = 170

### NOTES

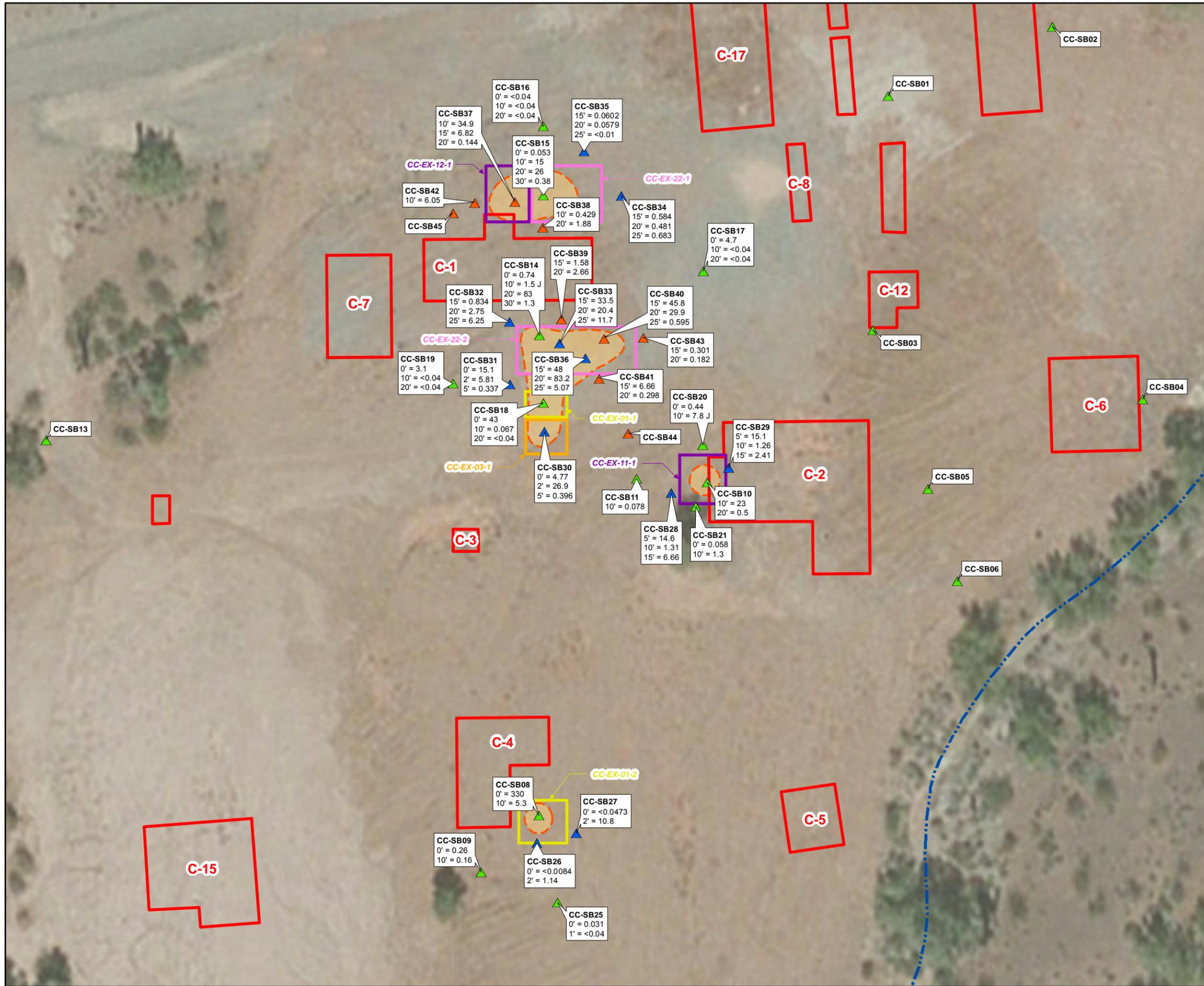
- Aerial photo source: ESRI World Imagery.
- Displayed arsenic and lead concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for lead is 400 milligrams per kilogram (mg/kg).
- Cleanup goal for arsenic is 10 mg/kg.
- Corresponding data tables are presented in Appendix B.
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVES SA-2 AND SA-3  
OLD BURN AREA



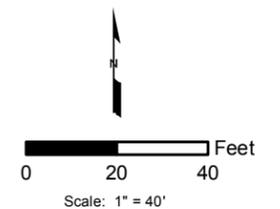


### LEGEND

- ▲ Soil sampling location (ARCADIS, 2015; see Appendix D for complete results)
  - ▲ Soil sampling location (ARCADIS, 2014; see Appendix D for complete results)
  - ▲ C-Complex soil sampling location (2004-2008; see Appendix D for complete results)
  - Former C-Complex site facility
  - 1-foot excavation area
  - 3-foot excavation area
  - 11- or 12-foot excavation area
  - 22-foot excavation area
  - Inferred extent of perchlorate in soil above cleanup goal
  - Ephemeral wash (approximate location)
- CC-SB11  
10' = 0.078 Sample depth/perchlorate concentration (mg/kg)

### NOTES

- Aerial photo source: ESRI World Imagery.
- Displayed perchlorate concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- Corresponding data tables are presented in Appendix B.
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.

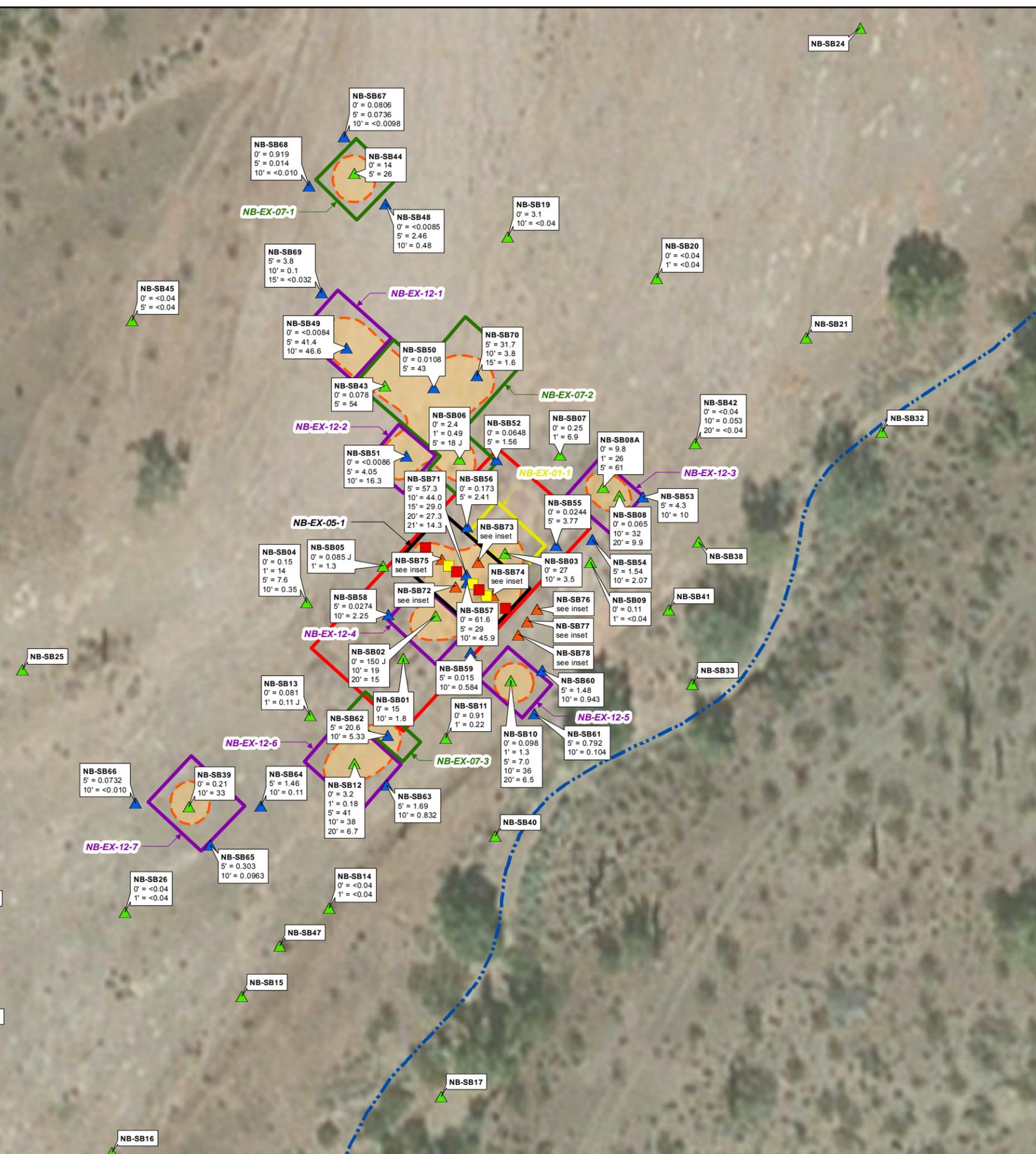


FORMER UNIVERSAL PROPELLSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVE SA-3  
C-COMPLEX AREA



ARCADIS 2015 soil borings		
Boring ID	Depth (ft bgs)	Perchlorate (mg/kg)
NB-SB72	5	143
	10	69.1
	15	17.0
	20	8.54
NB-SB73	5	251
	10	136
	15	17.3
	20	10.1
NB-SB74	5	0.141
	10	5.83
	15	21.8
	20	33.5
	25	22.8
NB-SB75	5	3.34
	10	6.41
	15	3.08
	20	17.0
	25	28.1
NB-SB76	15	0.591
	20	5.86
NB-SB77	15	7.16
	20	6.43
NB-SB78	15	4.00
	20	6.43

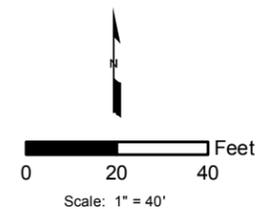


### LEGEND

- ▲ Soil sampling location (ARCADIS, 2015; see Appendix D for complete results)
- ▲ Soil sampling location (ARCADIS, 2014; see Appendix D for complete results)
- ▲ New Burn Area soil sampling location (2004-2006; see Appendix D for complete results)
- Former open burn unit
- 1-foot excavation area
- 7-foot excavation area
- 10-foot excavation area
- 12-foot excavation area
- Proposed vadose zone injection well (screened at 10-40 ft bgs)
- Proposed lysimeter (40 ft bgs)
- Inferred extent of perchlorate in soil above cleanup goal
- Ephemeral wash (approximate location)
- NB-SB56  
0' = 0.173  
5' = 2.41 Sample depth/perchlorate concentration (mg/kg)

### NOTES

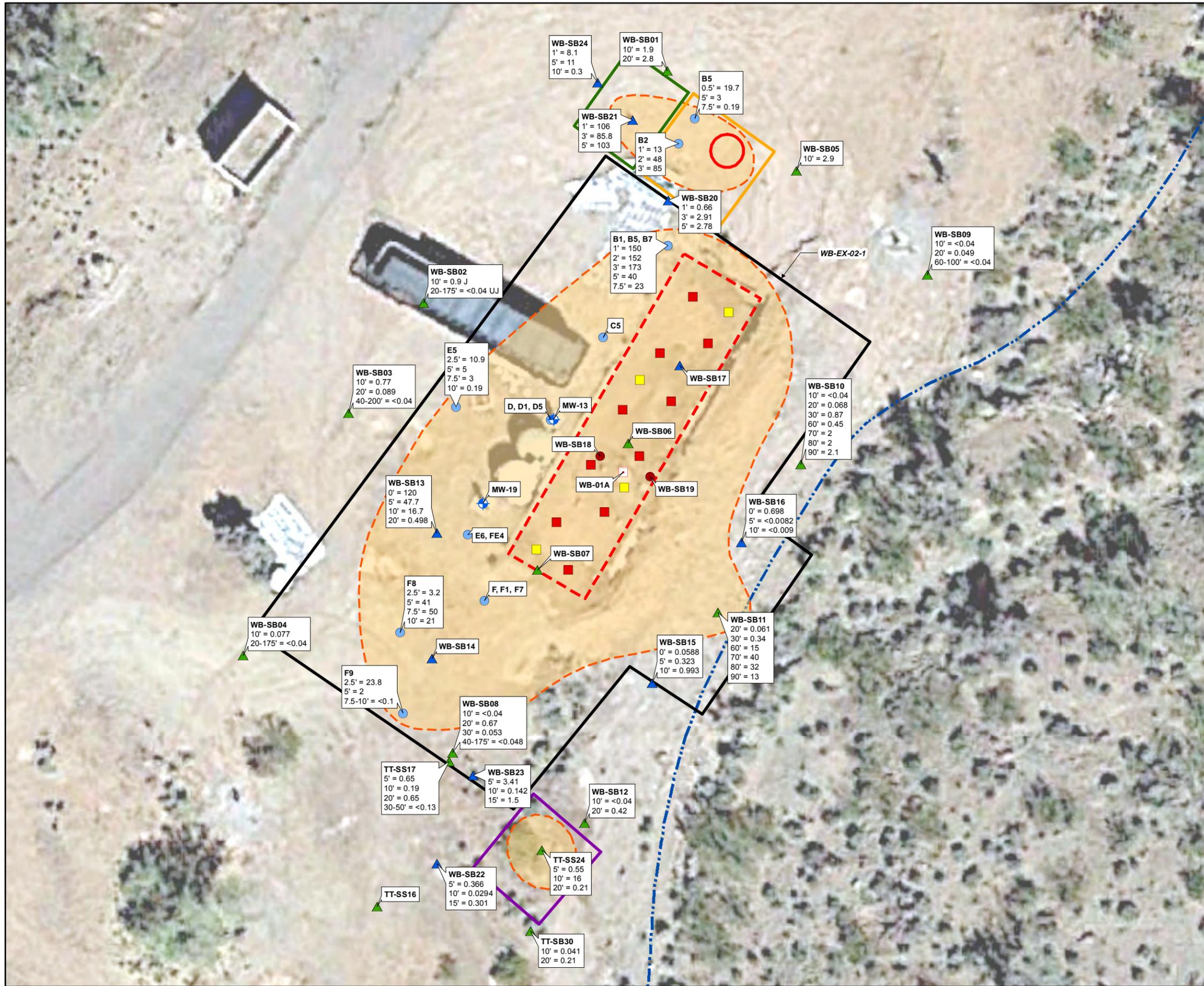
- Aerial photo source: ESRI World Imagery.
- Displayed perchlorate concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- Corresponding data tables are presented in Appendix B.
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVE SA-3  
NEW BURN AREA



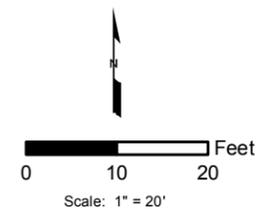


### LEGEND

- ▲ Soil sampling location  
(ARCADIS, 2014; see Appendix D for complete results)
- ▲ Waterbore soil sampling location  
(2004-08; see Appendix D for complete results)
- Historical soil sampling location  
(SA&B investigation)
- Confirmation soil sampling location
- ⊕ Groundwater monitoring well
- ⊕ Vadose zone injection well cluster  
(screened at 20-60 ft bgs)
- Former containment pond
- Former water wand
- 4-foot excavation area
- 7-foot excavation area
- 10-foot excavation area
- 12-foot excavation area
- Proposed vadose zone injection well cluster  
(screened at 10-60, 60-110, and 110-160 ft bgs)
- Proposed lysimeter  
(60, 110, and 160 ft bgs)
- Inferred extent of perchlorate in soil  
above cleanup goal
- ⋯ Ephemeral wash (approximate location)
- WB-SB05  
10' = 2.9 Sample depth/perchlorate concentration (mg/kg)

### NOTES

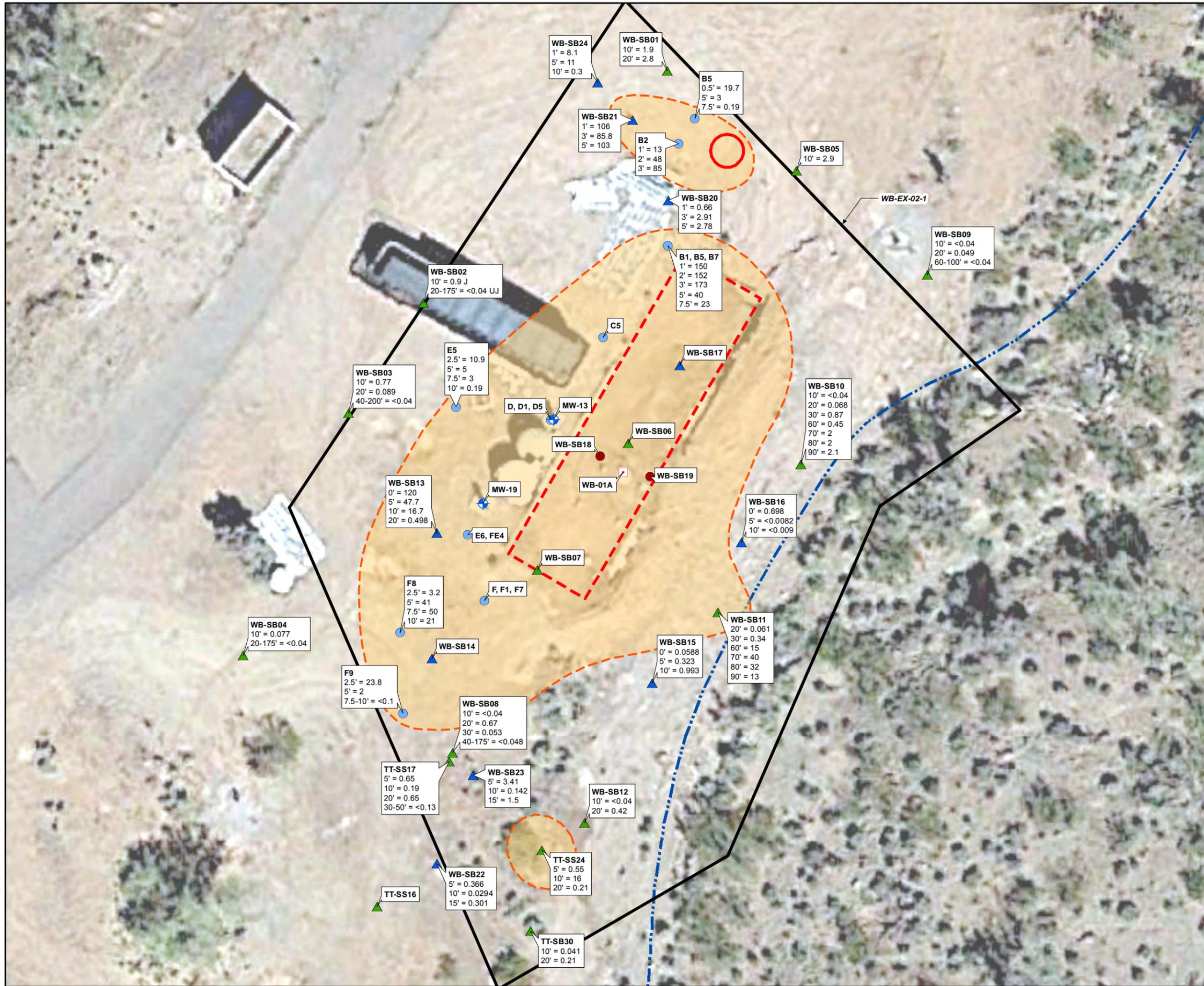
- Aerial photo source: ESRI World Imagery.
- Displayed perchlorate concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.
- UJ = analyte not detected; detection limit is estimated.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVE SA-3  
WATERBORE AREA



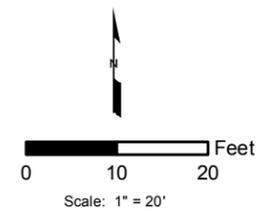


### LEGEND

- ▲ Soil sampling location  
(ARCADIS, 2014; see Appendix D for complete results)
- ▲ Waterbore soil sampling location  
(2004-08; see Appendix D for complete results)
- Historical soil sampling location  
(SA&B investigation; see Appendix D for complete results)
- Confirmation soil sampling location
- ◆ Groundwater monitoring well
- Vadose zone injection well  
(screened at 20-60 ft bgs)
- Former containment pond
- Former water wand
- SA-2 cap area with 20-foot excavation
- Inferred extent of perchlorate in soil above cleanup goal
- Ephemeral wash (approximate location)
- WB-SB05  
10' = 2.9 Sample depth/perchlorate concentration (mg/kg)

### NOTES

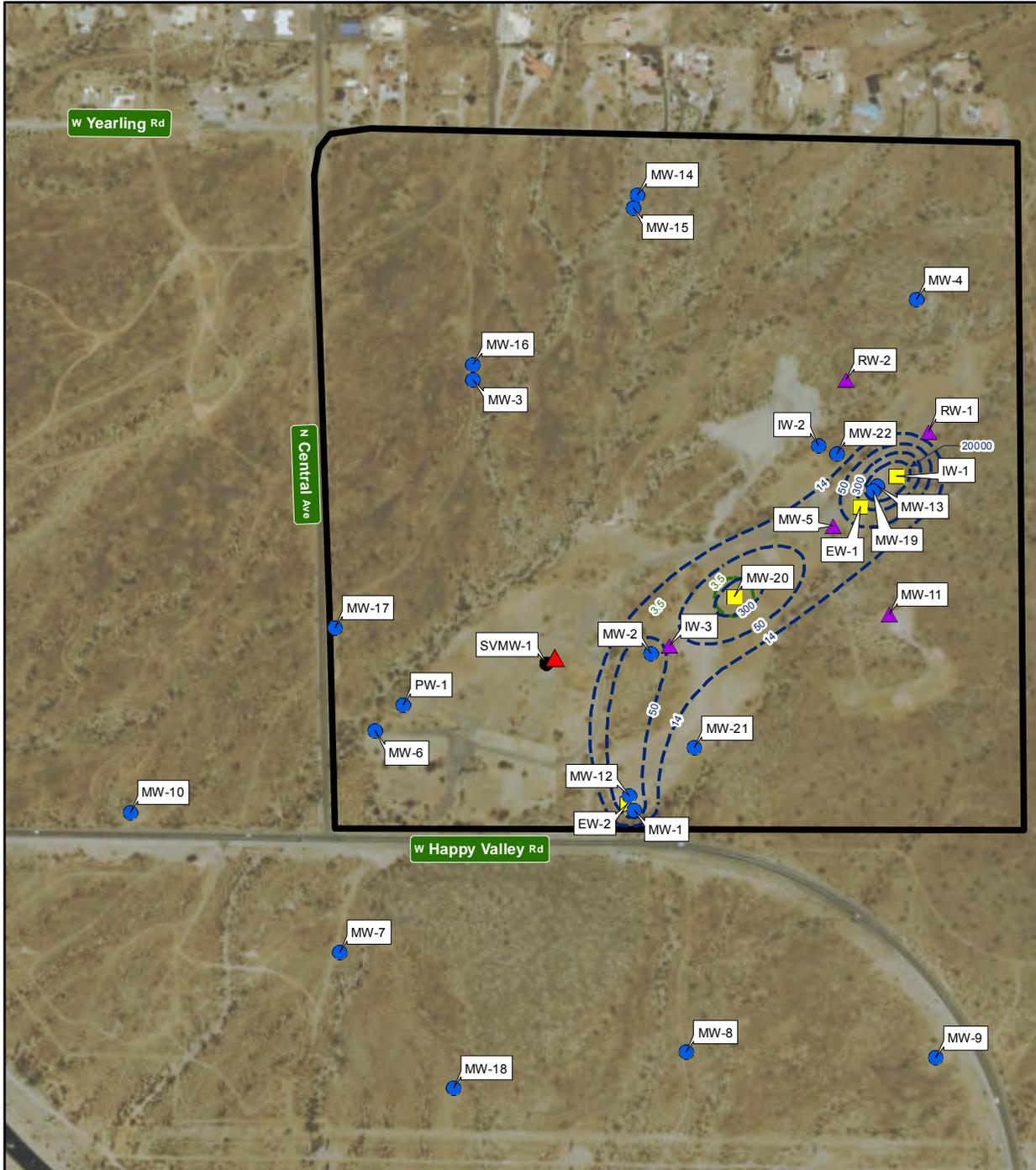
- Aerial photo source: ESRI World Imagery.
- Displayed perchlorate concentrations represent key results used to determine the extent of contamination above the cleanup goal.
- Sample depths are expressed in feet below ground surface (ft bgs).
- Cleanup goal for perchlorate is 16 milligrams per kilogram (mg/kg).
- < = concentration is below indicated reporting limit.
- J = concentration is estimated.
- UJ = analyte not detected; detection limit is estimated.



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

SOIL REMEDIAL ALTERNATIVE SA-4  
WATERBORE AREA



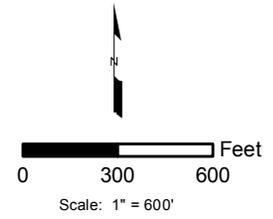


### LEGEND

- Lease property boundary
- Groundwater well
- Groundwater extraction well
- Groundwater injection well
- Groundwater injection well (proposed)
- Soil vapor monitoring well
- Perchlorate concentration contour (2014; dashed where inferred)
- 1,4-dioxane concentration contour (2014; dashed where inferred)

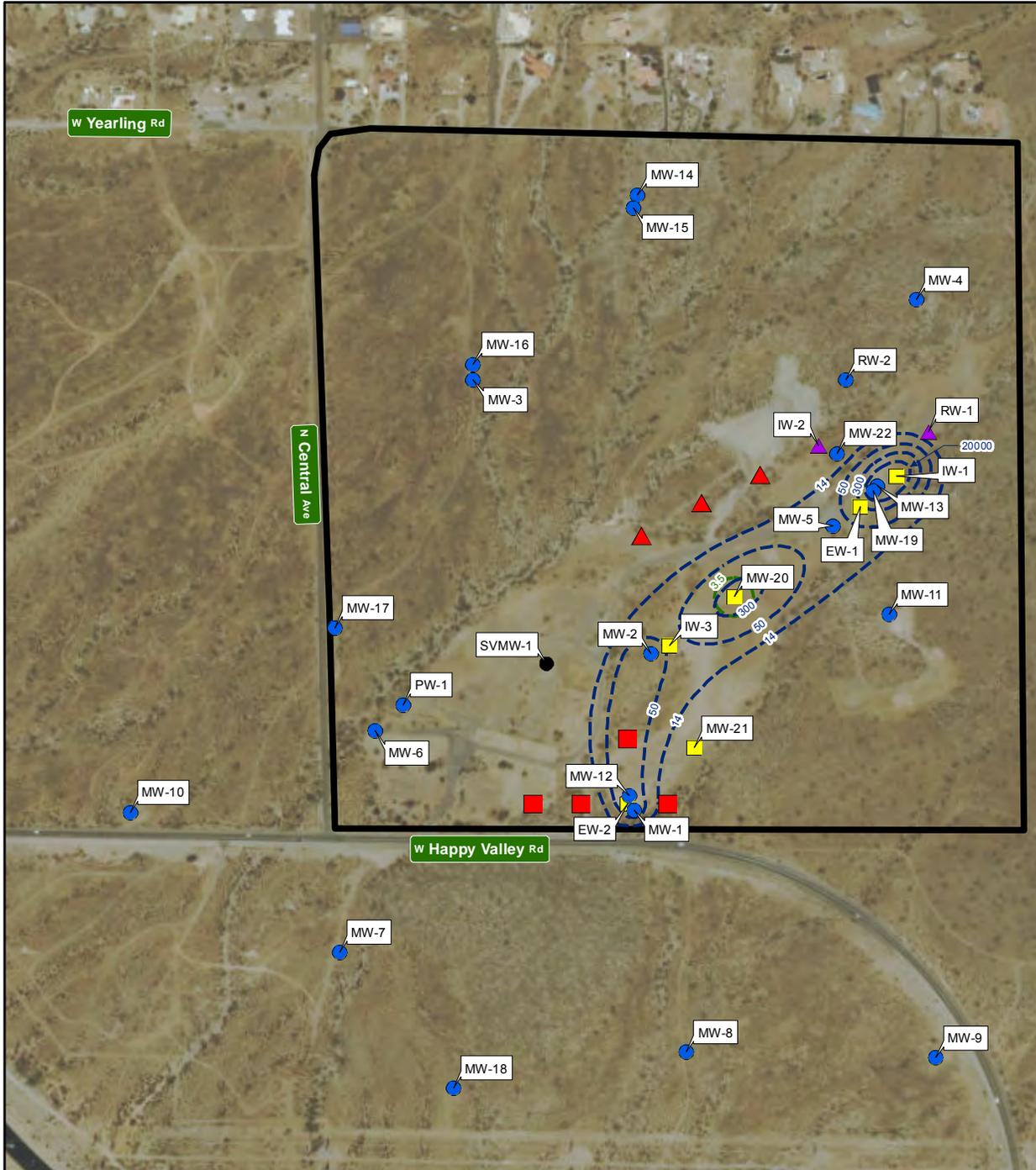
### NOTES

- Aerial photo source: ESRI World Imagery.
- Perchlorate and 1,4-dioxane concentrations are expressed in micrograms per liter ( $\mu\text{g/L}$ ).
- Arizona Health Based Guidance Level (HBGL) for perchlorate ( $\text{ClO}_4$ ) = 14  $\mu\text{g/L}$ .
- Arizona Department of Environmental Quality (ADEQ)-established cleanup goal for 1,4-dioxane (1,4-D) = 3.5  $\mu\text{g/L}$ .



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
 PHOENIX, ARIZONA  
**CORRECTIVE MEASURES STUDY REPORT**

**GROUNDWATER REMEDIAL ALTERNATIVES  
 GW-2 AND GW-3**

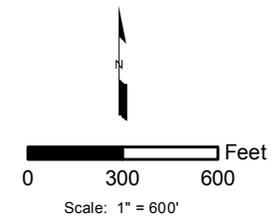


### LEGEND

- Lease property boundary
- Groundwater well
- Groundwater extraction well
- Groundwater extraction well (proposed)
- Groundwater injection well
- Groundwater injection well (proposed)
- Soil vapor monitoring well
- Perchlorate concentration contour (2014; dashed where inferred)
- 1,4-dioxane concentration contour (2014; dashed where inferred)

### NOTES

- Aerial photo source: ESRI World Imagery.
- Perchlorate and 1,4-dioxane concentrations are expressed in micrograms per liter ( $\mu\text{g/L}$ ).
- Arizona Health Based Guidance Level (HBGL) for perchlorate ( $\text{ClO}_4$ ) = 14  $\mu\text{g/L}$ .
- Arizona Department of Environmental Quality (ADEQ)-established cleanup goal for 1,4-dioxane (1,4-D) = 3.5  $\mu\text{g/L}$ .



FORMER UNIVERSAL PROPULSION COMPANY, INC. FACILITY  
PHOENIX, ARIZONA  
CORRECTIVE MEASURES STUDY REPORT

### GROUNDWATER REMEDIAL ALTERNATIVE GW-4

