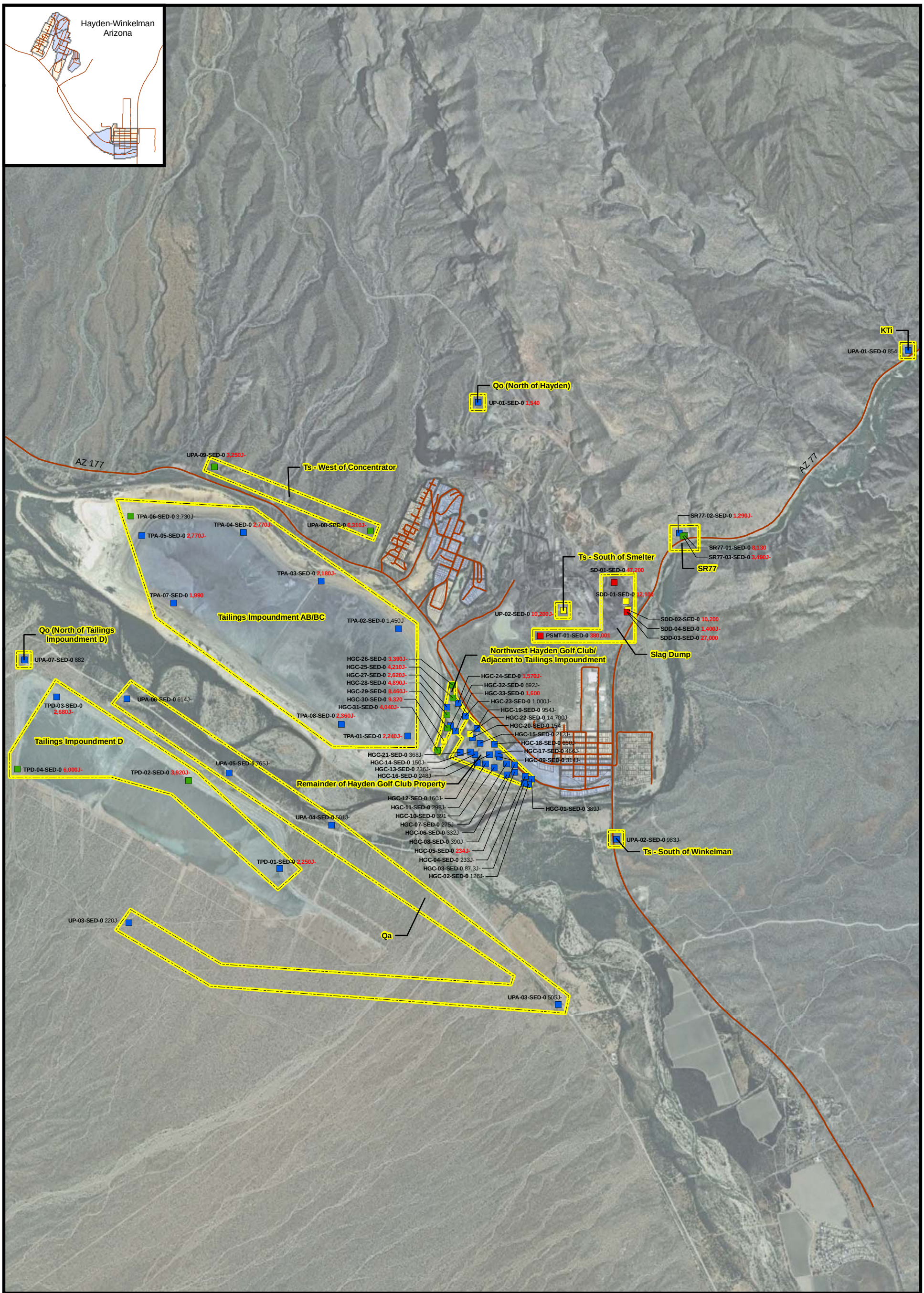


Legend

Sample Location/ Concentration Range Color Key

- 0 - 3,100 mg/kg
- 3,101 - 8,699 mg/kg
- 8,700 - 17,100 mg/kg
- > 17,100 mg/kg

Shape Key

- Nonresidential Sample

- Nonresidential Grouping
- Parcel Boundary
- Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] Cu = Copper
[2] J = Estimated value
[3] J- = Estimated value, biased low
[4] J+ = Estimated value, biased high
[5] mg/kg = milligrams per kilogram
[6] R-SRL = Residential Soil Remediation Level

[7] All concentrations are in mg/kg
[8] Soil concentrations in **RED** exceed Arizona-R-SRLs
[9] Arizona R-SRL for Cu = 3,100 mg/kg
[10] If a duplicate sample was collected, the higher concentration of the two is posted.

[11] Aerial Source: ESRI I3 Imagery Prime World 2D dataset, April 26, 1992; October 12, 1992; June 17, 2005.

N W E S

0 0.25 0.5 1 Miles

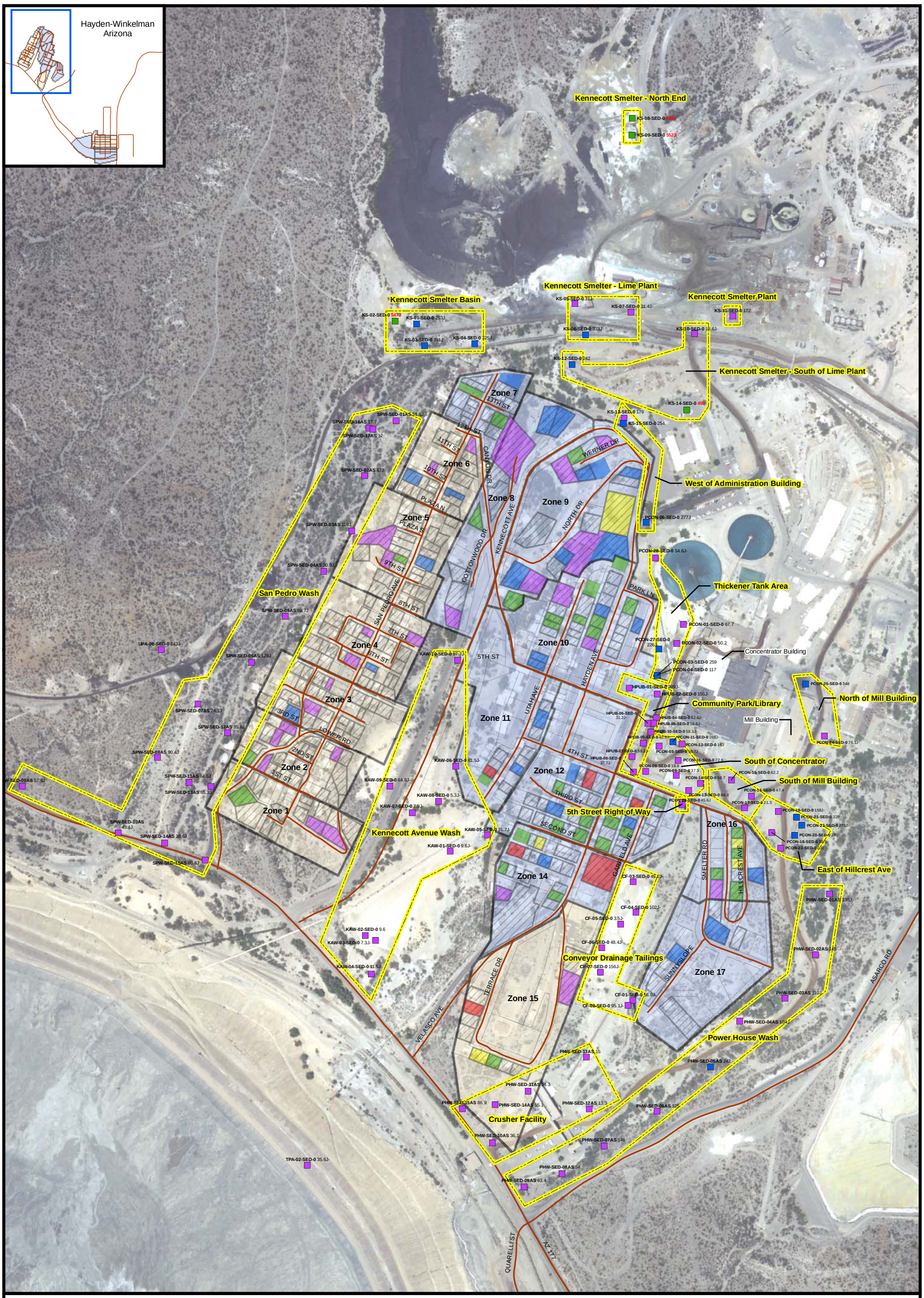
FIGURE 3-16
NONRESIDENTIAL SOIL SAMPLING RESULTS FOR COPPER HAYDEN AND WINKELMAN OUTLYING AREAS

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\GROUPINGS\INTERNAL_GROUPINGS_FIGURES\FIG3-16_NONRES_SOILSSAMPLELOCATIONS_COPPER_OUTLYING.MXD TJW 6/4/2008 15:13:40



Legend

Sample Location/ Concentration Range Color Key

- 0 - 212 mg/kg
- 213 - 400 mg/kg
- 401 - 1,199 mg/kg
- 1,200 - 2,400 mg/kg
- > 2,400 mg/kg

Shape Key

- Nonresidential Sample

- Nonresidential Grouping
- Parcel with Habitable Housing
- Parcel Boundary
- Approximate Parcel Subdivision for Sampling
- Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] Pb = Lead
[2] J = Estimated value
[3] J- = Estimated value, biased low
[4] J+ = Estimated value, biased high
[5] mg/kg = milligrams per kilogram
[6] R-SRL = Residential Soil Remediation Level

[7] All concentrations are in mg/kg
[8] Soil concentrations in **RED** exceed Arizona-R-SRLs
[9] Arizona R-SRL for Pb = 400 mg/kg
[10] If a duplicate sample was collected, the higher concentration of the two is posted.

[11] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 250 500 1,000 Feet

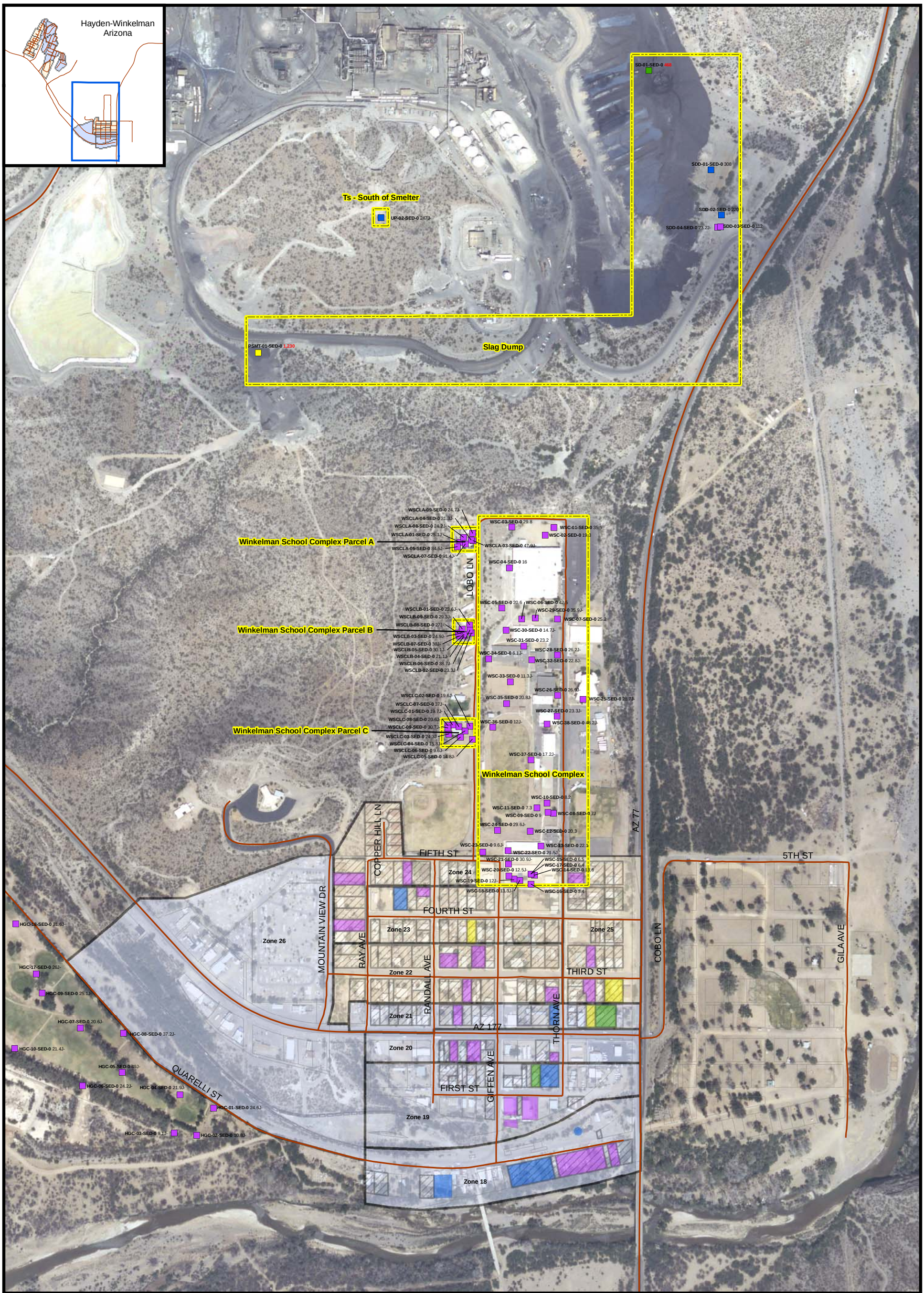
FIGURE 3-17
NONRESIDENTIAL SOIL SAMPLING RESULTS FOR LEAD
HAYDEN AND ASARCO PROPERTIES

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\GROUPINGS\INTERNAL_GROUPINGS_FIGURES\FIG3-17_NONRES_SOILSSAMPLELOCATIONS_LEAD_HAYDEN.MXD TJW 6/4/2008 11:18:01



Legend

Sample Location/ Concentration Range Color Key

- 0 - 212 mg/kg
- 213 - 400 mg/kg
- 401 - 1,199 mg/kg
- 1,200 - 2,400 mg/kg
- > 2,400 mg/kg

Shape Key

- Nonresidential Sample

- Nonresidential Grouping
- Parcel with Habitable Housing
- Parcel Boundary
- Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] Pb = Lead
[2] J = Estimated value
[3] J- = Estimated value, biased low
[4] J+ = Estimated value, biased high
[5] mg/kg = milligrams per kilogram
[6] R-SRL = Residential Soil Remediation Level

[7] All concentrations are in mg/kg
[8] Soil concentrations in **RED** exceed Arizona-R-SRLs
[9] Arizona R-SRL for Pb = 400 mg/kg
[10] If a duplicate sample was collected, the higher concentration of the two is posted.

[11] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 250 500 1,000 Feet

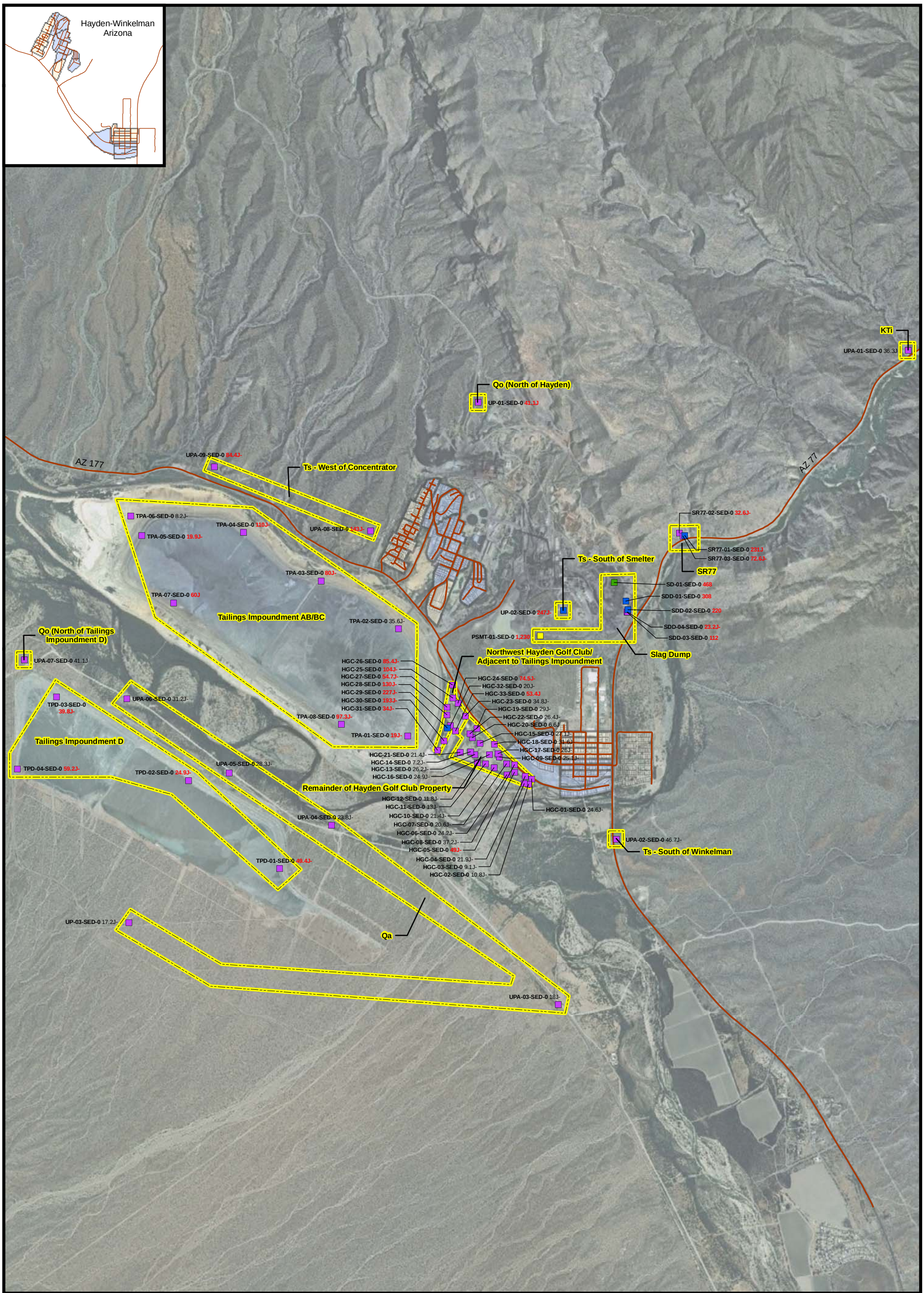
FIGURE 3-18
NONRESIDENTIAL SOIL SAMPLING RESULTS FOR LEAD
WINKELMAN, AZ

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\GROUPINGS\INTERNAL_GROUPINGS_FIGURES\FIG3-18_NONRES_SOILSSAMPLELOCATIONS_LEAD_WINKELMAN.MXD TJW 6/4/2008 11:42:51



Legend

Sample Location/ Concentration Range Color Key

- 0 - 212 mg/kg
- 213 - 400 mg/kg
- 401 - 1,199 mg/kg
- 1,200 - 2,400 mg/kg
- > 2,400 mg/kg

Shape Key

- Nonresidential Sample

- Nonresidential Grouping
- Parcel Boundary
- Road

Parcel Zones

- Category 1
- Category 2

Notes:

[1] Pb = Lead
[2] J = Estimated value
[3] J- = Estimated value, biased low
[4] J+ = Estimated value, biased high
[5] mg/kg = milligrams per kilogram
[6] R-SRL = Residential Soil Remediation Level

[7] All concentrations are in mg/kg
[8] Soil concentrations in **RED** exceed Arizona-R-SRLs
[9] Arizona R-SRL for Pb = 400 mg/kg
[10] If a duplicate sample was collected, the higher concentration of the two is posted.

[11] Aerial Source: ESRI I3 Imagery Prime World 2D dataset, April 26, 1992; October 12, 1992; June 17, 2005.

N W E S

0 0.25 0.5 1 Miles

FIGURE 3-19
NONRESIDENTIAL SOIL SAMPLING RESULTS FOR LEAD
HAYDEN AND WINKELMAN OUTLYING AREAS

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\GROUPINGS\INTERNAL_GROUPINGS_FIGURES\FIG3-19_NONRES_SOILSSAMPLELOCATIONS_LEAD_OUTLYING.MXD TJW 6/4/2008 15:13:40

Legend

- Installed Well for RI Investigation
- Monitor Well
- Hayden Production Well
- Winkelman Production Well

Groundwater Grouping Color Key

- Drinking Water Aquifer Monitor Wells
- Municipal Supply Well & Manifold Samples
- Non-Drinking Water Aquifer Monitor Wells
- Tap Water Samples

N W E S

0 1,000 2,000 4,000 Feet

Aerial Source: ESRI I3 Imagery Prime World 2D dataset, April 26, 1992; October 12, 1992; June 17, 2005.

FIGURE 3-20
GROUNDWATER SAMPLING LOCATION GROUPINGS
ASARCO, LLC Hayden Plant Site
Hayden, Arizona
DRAFT
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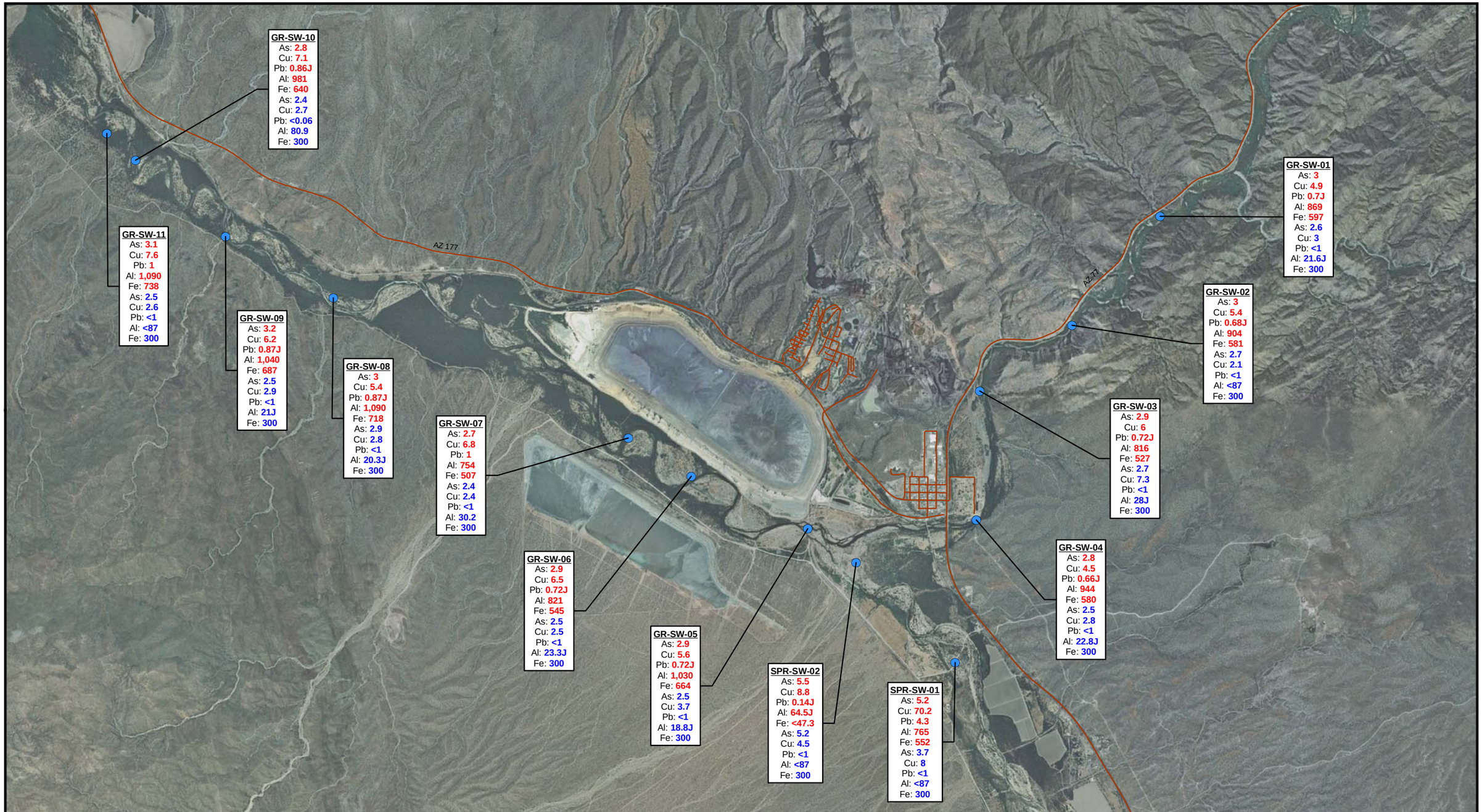
\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\GROUPINGS\INTERNAL_GROUPINGS_FIGURES\FIG3-20_GROUNDWATER_SAMPLING_GROUPINGS.MXD TJW 6/10/2008 18:13:22



Legend

- Surface Water Sample Location
- Road

Notes:

[1] GR-SW-01 = Location ID
[2] As = Arsenic
[3] Cu = Copper
[4] Pb = Lead
[5] Al = Aluminum
[6] Fe = Iron
[7] J = Estimated value
[8] < = Less than Limit of Detection (LOD)
[9] Concentrations of total metals are indicated in **RED**
[10] Concentrations of dissolved metals are indicated in **BLUE**

[11] Total metal and dissolved metal concentrations are in micrograms per liter (µg/L).
[12] Aerial Source: ESRI I3 Imagery Prime World 2D dataset, April 26, 1992; October 12, 1992; June 17, 2005

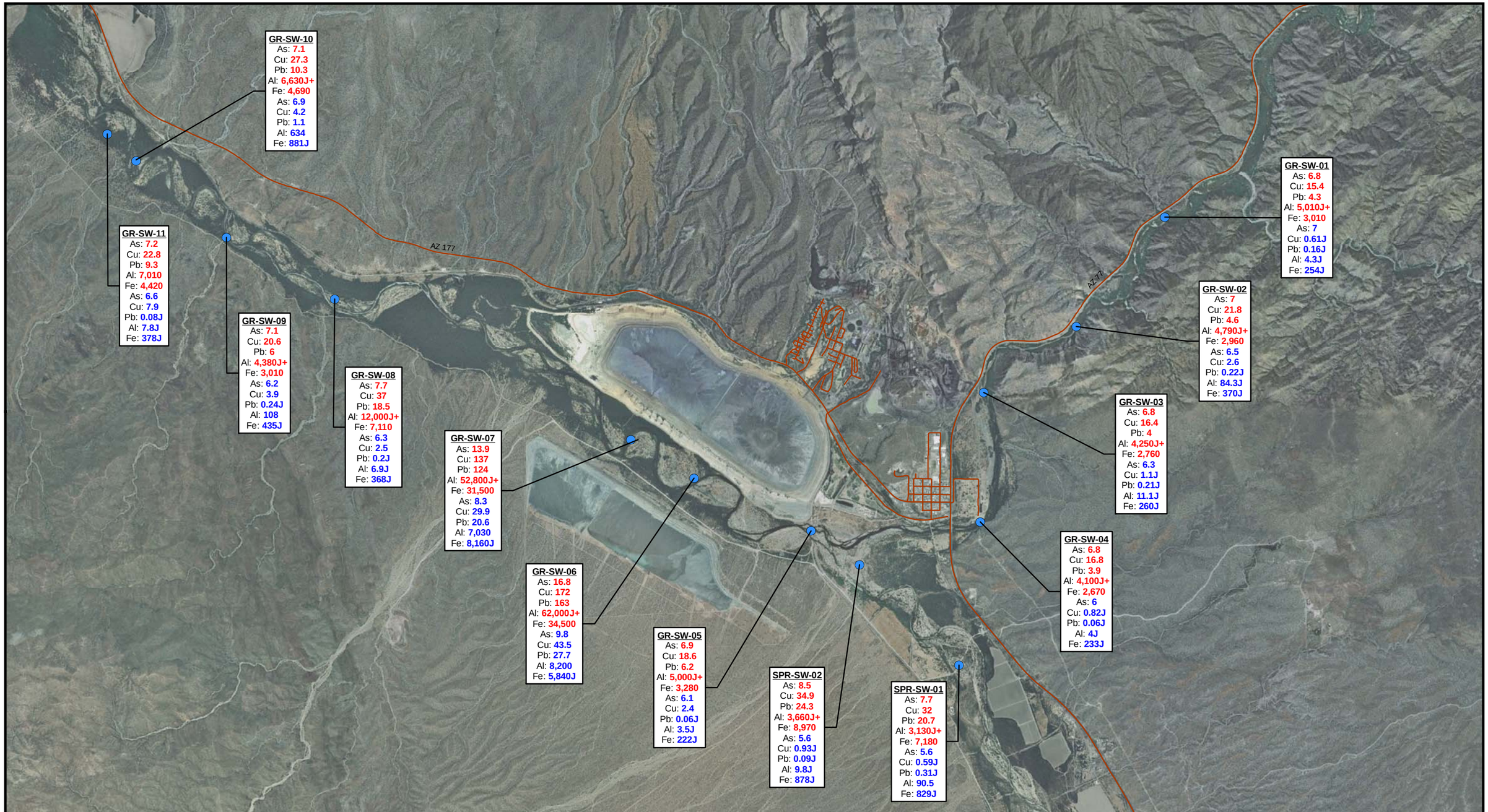
N
W E
S

0 1,900 3,800 7,600 Feet

FIGURE 3-21
SURFACE WATER SAMPLING RESULTS FOR SELECTED METALS, WINTER 2006
ASARCO, LLC Hayden Plant Site
Hayden, Arizona
DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\FIG3-21_SURFACE_WATER_SAMPLE_WINTER2006.MXD TJW 6/5/2008



Legend

- Surface Water Sample Location
- Road

Notes:

[1] GR-SW-01 = Location ID
[2] As = Arsenic
[3] Cu = Copper
[4] Pb = Lead
[5] Al = Aluminum
[6] Fe = Iron
[7] J = Estimated value
[8] J+ = Estimated value, biased high
[9] < = Less than Limit of Detection (LOD)
[10] Concentrations of total metals are indicated in **RED**
[11] Concentrations of dissolved metals are indicated in **BLUE**

[12] Total metal and dissolved metal concentrations are in micrograms per liter (µg/L).
[13] Aerial Source: ESRI I3 Imagery Prime World 2D dataset, April 26, 1992; October 12, 1992; June 17, 2005

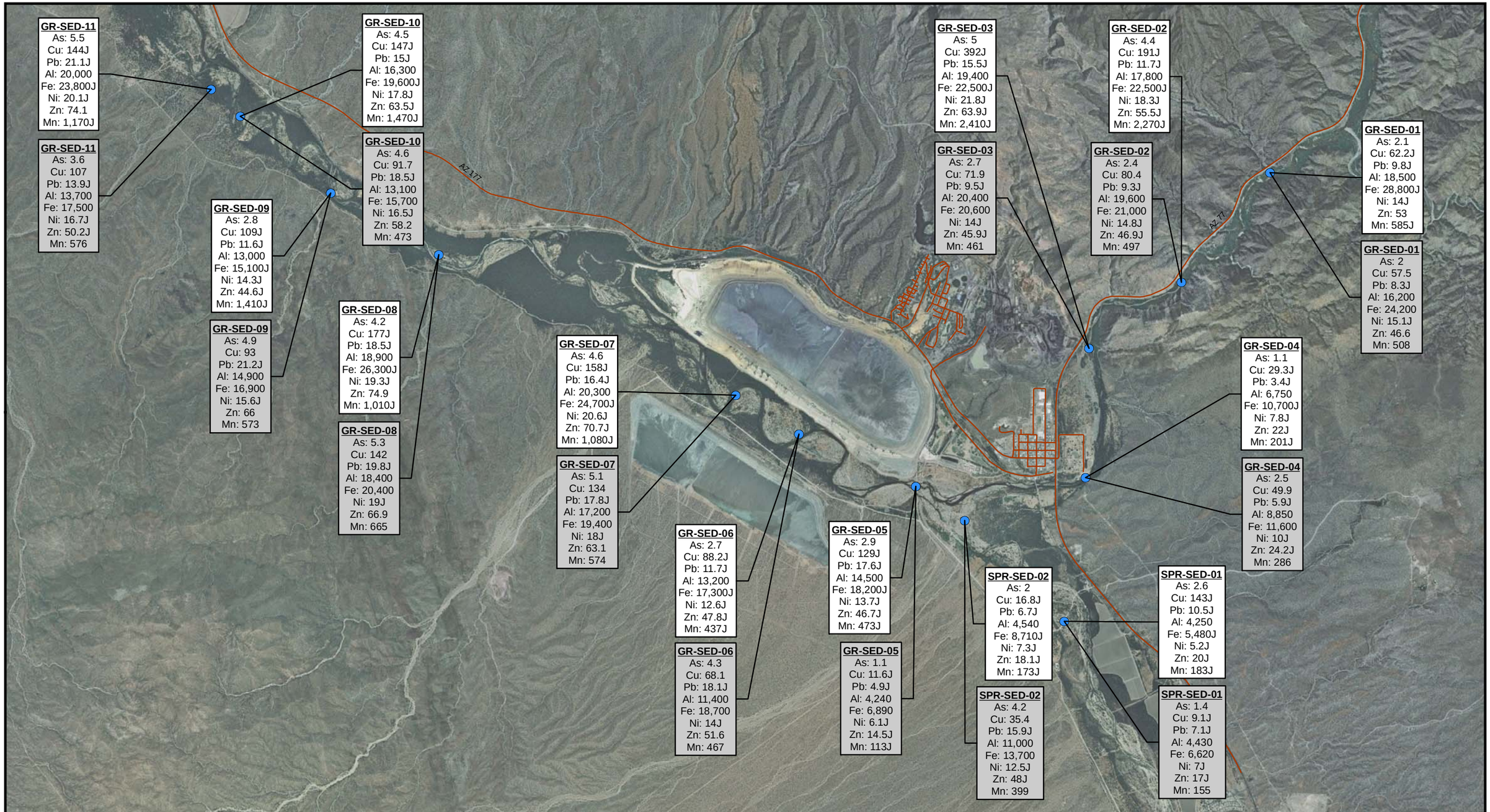
N
W E
S

0 1,900 3,800 7,600 Feet

FIGURE 3-22
SURFACE WATER SAMPLING RESULTS FOR SELECTED METALS, SUMMER 2006
ASARCO, LLC Hayden Plant Site
Hayden, Arizona
DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\FIG3-22_SURFACE_WATER_SAMPLE_SUMMER2006.MXD TJW 6/5/2008



Legend

- Sediment Sample Location
- Road

Data Collection Months

- Collected in March 2006
- Collected in August 2006

Notes:

[1] GR-SED-06 = Location ID
[2] As = Arsenic
[3] Cu = Copper
[4] Pb = Lead
[5] Al = Aluminuim
[6] Fe = Iron
[7] Ni = Nickel
[8] Zn = Zinc
[9] Mn = Manganese
[10] J = Estimated value
[11] All concentrations are in milligrams per kilogram (mg/kg).
[12] Aerial Source: ESRI I3 Imagery Prime World 2D dataset, April 26, 1992; October 12, 1992; June 17, 2005

N W E S

0 1,900 3,800 7,600 Feet

FIGURE 3-23
IN-STREAM SEDIMENT SAMPLING RESULTS FOR SELECTED METALS, WINTER AND SUMMER 2006
ASARCO, LLC Hayden Plant Site
Hayden, Arizona
DRAFT
CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\FIG3-23_SEDIMENT_SAMPLE_WINTER&SUMMER2006.MXD TJW 6/5/2008