Legend

- Road
- Parcel Boundary
- Approximate Parcel Subdivision for Sampling

Parcel Zones

- Category 1
- Category 2

N
W E
S

0 200 400 800 Feet

Aerial Source: Environmental Protection Agency, 2004.

FIGURE 3-1
RESIDENTIAL SOIL SAMPLING ZONES, CATEGORIES, AND PARCEL BOUNDARIES
HAYDEN, ARIZONA
ASARCO, LLC Hayden Plant Site
Hayden, Arizona
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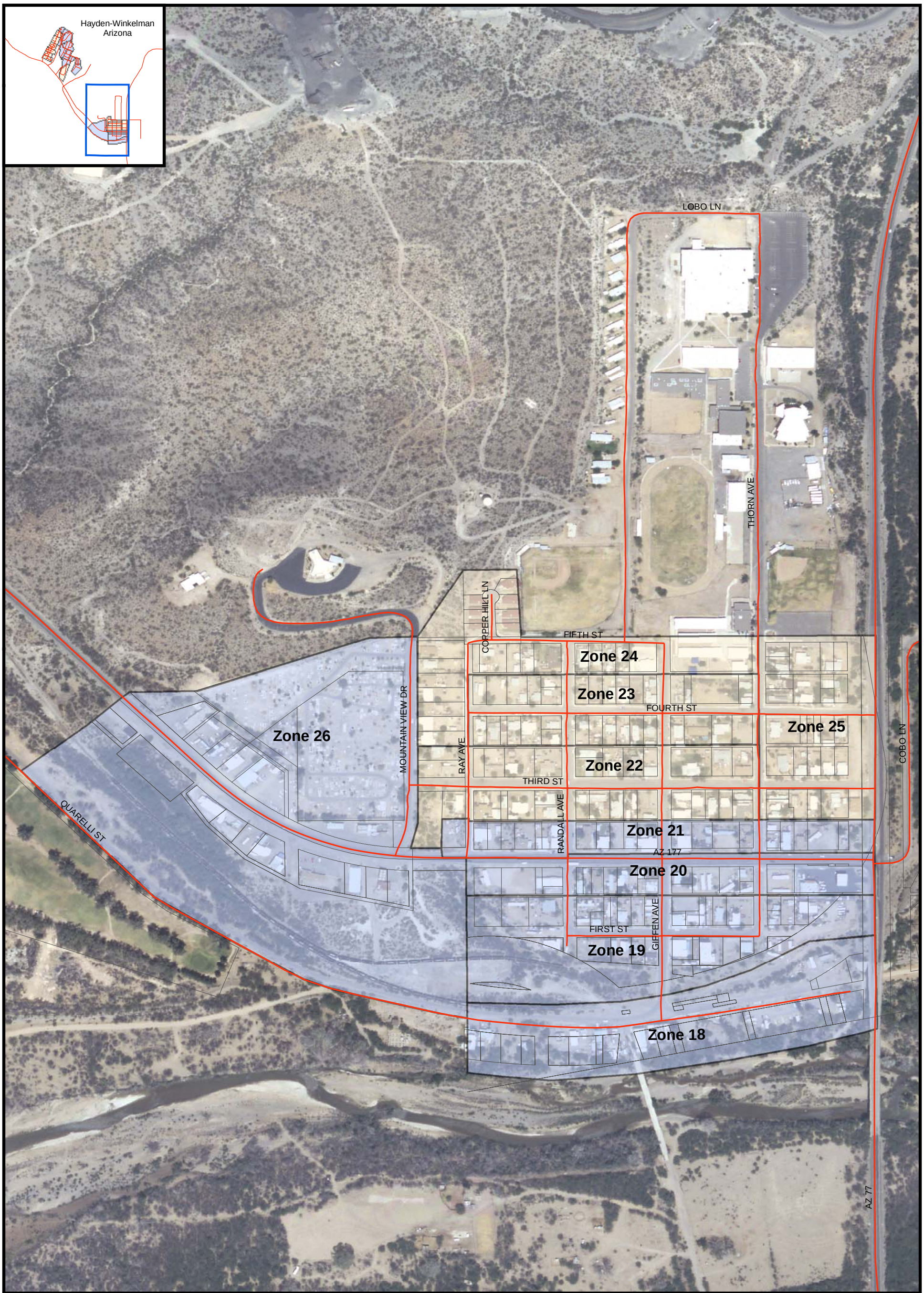
\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\HHRA_PRE-FINAL\FIG3-1_RES_SOIL_SAMPLING_ZONES_HAYDEN.MXD TJW 6/18/2008 17:42:15



Legend

Road

Parcel Boundary

Parcel Zones

Category 1

Category 2

N W E S

0 200 400 800 Feet

Aerial Source: Environmental Protection Agency, 2004.

FIGURE 3-2
RESIDENTIAL SOIL SAMPLING ZONES, CATEGORIES, AND PARCEL BOUNDARIES
WINKELMAN, ARIZONA

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

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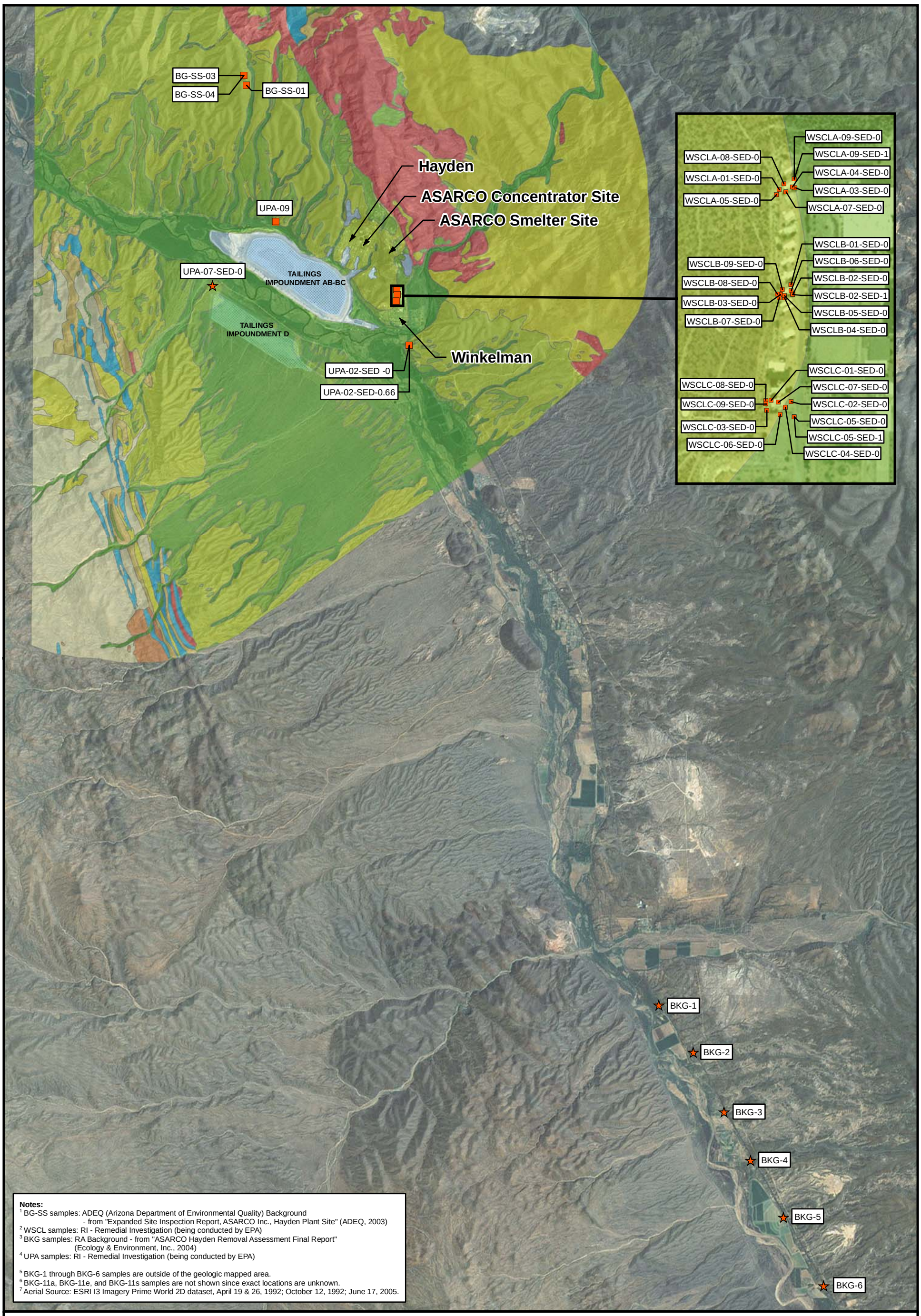
\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\HHRA_PRE-FINAL\FIG3-2_RES_SOIL_SAMPLING_ZONES_WINKELMAN.MXD TJW 6/18/2008 18:20:27



Legend

- Tertiary Sediment Sample (Ts)
- Older Quaternary Deposit Sample (Qo)
- Active Tailings Impoundment

Geology Formation

- Younger Precambrian Diabase
- Fill Material
- Quaternary Alluvium
- Older Quaternary Deposits (Qo)
- Tertiary Sediments and Airfall Deposits (Ts)
- Cretzceous/Tertiary Intrusive and Volcanic
- Older Precambrian Intrusives
- Older Precambian Pinal Schist
- Younger Precambrian Sedimentary & Volcanic Sequence
- Paleozoic Sediments and Metasediments

N W E S

0 0.75 1.5 3 Miles

FIGURE 3-3
STUDY AREA MAP WITH BACKGROUND SOIL SAMPLE LOCATIONS

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

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\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\HHRA_PRE-FINAL\FIG3-3_BACKGROUND_SAMPLES_GEOLOGIC.MXD TJW 6/18/2008 11:56:53

Legend

- EPA (Environmental Protection Agency) PM_{10} Air Quality and Meteorological Monitoring Station
- Road

N
W E
S

0 625 1,250 2,500 Feet

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

FIGURE 3-4
LOCATION OF AIR MONITORING STATIONS

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

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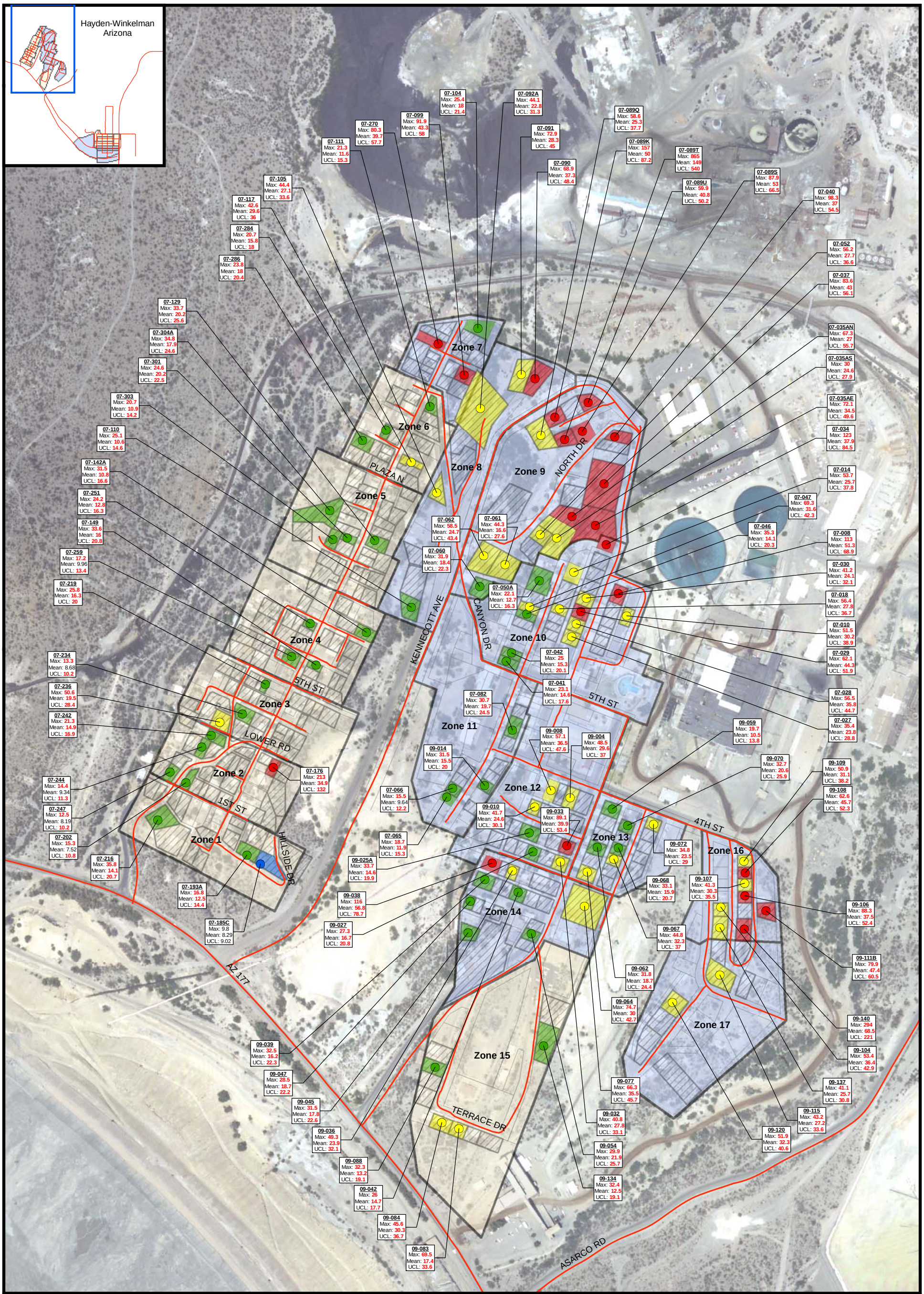
\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\HHRA_PRE-FINAL\FIG3-4_AIR_MONITORING_STATIONS.MXD TJW 6/18/2008 18:20:48



Legend

Sample Location/ Concentration Range Color Key

- 1 - 10 mg/kg
- 10.1 - 25.9 mg/kg
- 26 - 47.9 mg/kg
- > 48 mg/kg

Shape Key

- Residential Sample

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

Parcel Zones

- Category 1
- Category 2

Notes:

[1] 09-084 = Parcel ID
[2] All Parcel IDs consist of a '101-' prefix
[3] Max = Maximum Concentration
[4] Mean = Arithmetic Mean Concentration
[5] UCL = 95% Upper Confidence Limit
[6] 95% UCL was used for color key designation
[7] As = Arsenic
[8] J = Estimated value
[9] J- = Estimated value, biased low
[10] J+ = Estimated value, biased high
[11] mg/kg = milligrams per kilogram
[12] R-SRL = Residential Soil Remediation Levels
[13] All concentrations are in mg/kg
[14] Soil concentrations in **RED** exceed Arizona-R-SRLs
[15] Arizona R-SRL for As = 10 mg/kg
[16] If a duplicate sample was collected, the higher concentration of the two is posted.
[17] For Arithmetic Mean and 95% UCL, values based on 9 samples per parcel.
[18] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 212.5 425 850 Feet

FIGURE 3-5
RESIDENTIAL SURFACE SOIL LABORATORY RESULTS FOR ARSENIC
HAYDEN, ARIZONA

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

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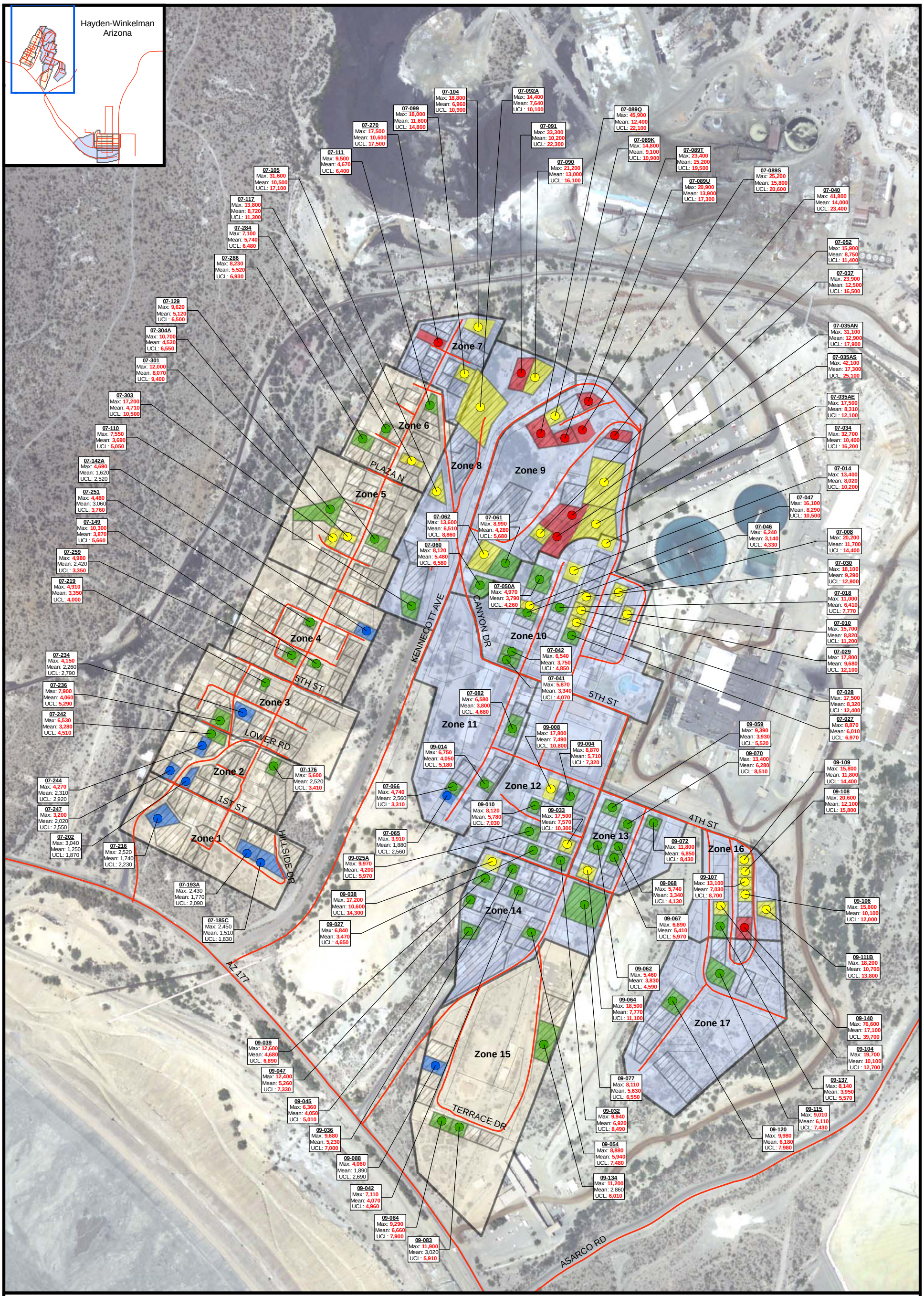
\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\HHRA_PRE-FINAL\FIG3-5_RES_SURFACESOILLABRESULTS_HAYDEN_ARSENIC_NONRES.MXD TJW 6/18/2008 13:25:41



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

- Residential Sample

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

Parcel Zones

- Category 1
- Category 2

Notes:

[1] 09-084 = Parcel ID
[2] All Parcel IDs consist of a '101-' prefix
[3] Max = Maximum Concentration
[4] Mean = Arithmetic Mean Concentration
[5] UCL = 95% Upper Confidence Limit
[6] 95% UCL was used for color key designation
[7] Cu = Copper
[8] J- = Estimated value, biased low
[9] mg/kg = milligrams per kilogram
[10] R-SRL = Residential Soil Remediation Levels
[11] All concentrations are in mg/kg
[12] Soil concentrations in **RED** exceed Arizona-R-SRLs
[13] Arizona R-SRL for Cu = 3,100 mg/kg
[14] If a duplicate sample was collected, the higher concentration of the two is posted.
[15] For Arithmetic Mean and 95% UCL, values based on 9 samples per parcel.
[16] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 212.5 425 850 Feet

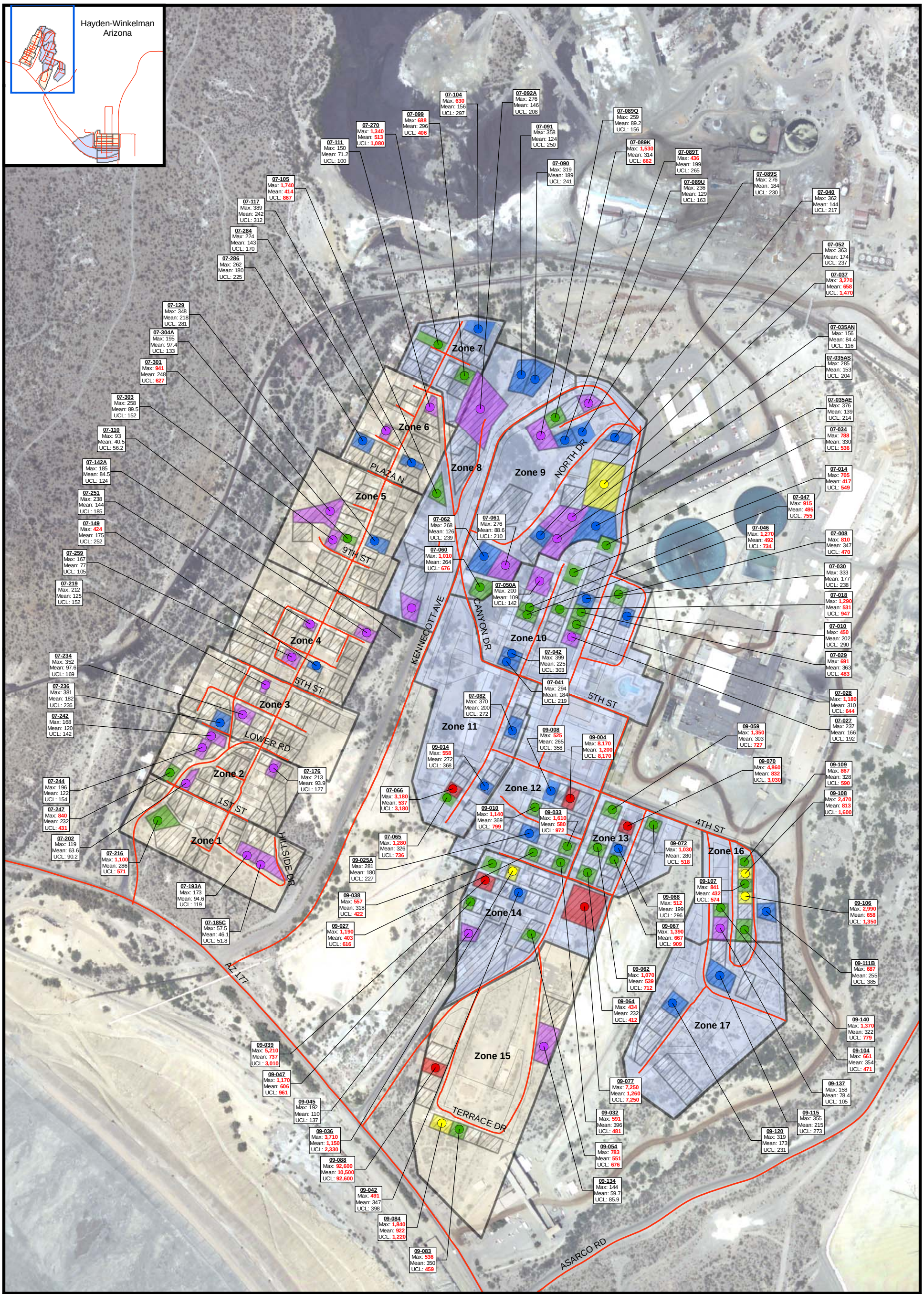
FIGURE 3-6
RESIDENTIAL SURFACE SOIL LABORATORY RESULTS FOR COPPER
HAYDEN, ARIZONA

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\HHRA_PRE-FINAL\FIG3-6_RES_SURFACESOILLABRESULTS_HAYDEN_COPPER_NONRES.MXD TJW 6/18/2008 13:37:48



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

- Residential Sample

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

Parcel Zones

- Category 1
- Category 2

Notes:

[1] 09-084 = Parcel ID
[2] All Parcel IDs consist of a '101-' prefix
[3] Max = Maximum Concentration
[4] Mean = Arithmetic Mean Concentration
[5] UCL = 95% Upper Confidence Limit
[6] 95% UCL was used for color keyl designation
[7] Pb = Lead
[8] J = Estimated value
[9] J- = Estimated value, biased low
[10] mg/kg = milligrams per kilogram
[11] R-SRL = Residential Soil Remediation Levels
[12] All concentrations are in mg/kg
[13] Soil concentrations in **RED** exceed Arizona-R-SRLs
[14] Arizona R-SRL for Pb = 400 mg/kg
[15] If a duplicate sample was collected, the higher concentration of the two is posted.
[16] For Arithmetic Mean and 95% UCL, values based on 9 samples per parcel.
[17] Aerial Source: Environmental Protection Agency, 2004.

N W E S

0 212.5 425 850 Feet

FIGURE 3-7
RESIDENTIAL SURFACE SOIL LABORATORY RESULTS FOR LEAD
HAYDEN, ARIZONA

ASARCO, LLC Hayden Plant Site
Hayden, Arizona

DRAFT

CH2MHILL

\\MADISON\GROUPS\EMS\GIS_LIBRARY\ASARCO\MAPFILES\02_PRE-FINAL\RISK_ASSESSMENT\HHRA_PRE-FINAL\FIG3-7_RES_SURFACESOILLABRESULTS_HAYDEN_LEAD_NONRES.MXD TJW 6/18/2008 13:43:42