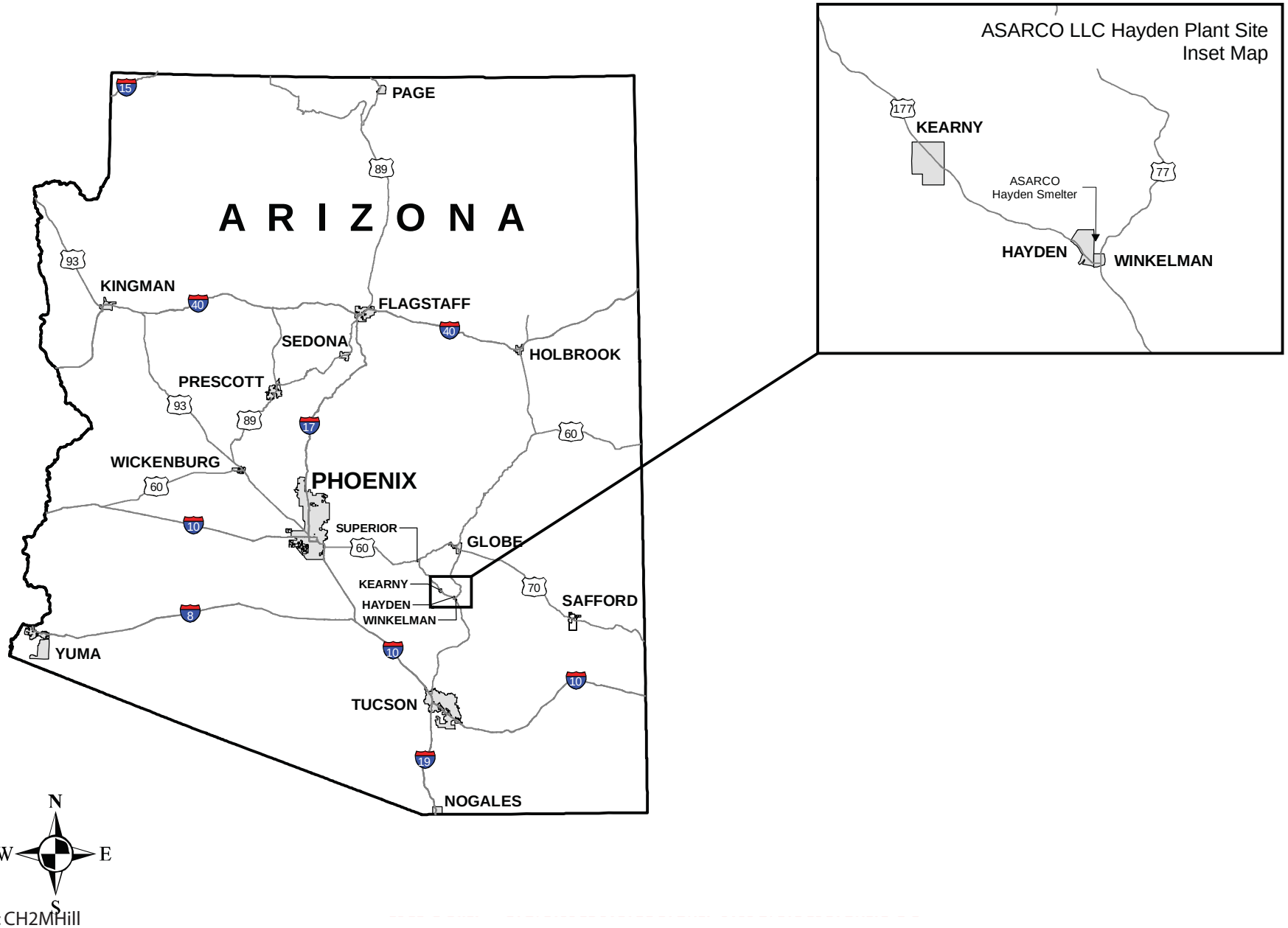

Source: CH2MHill

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-1
ASARCO Vicinity Map

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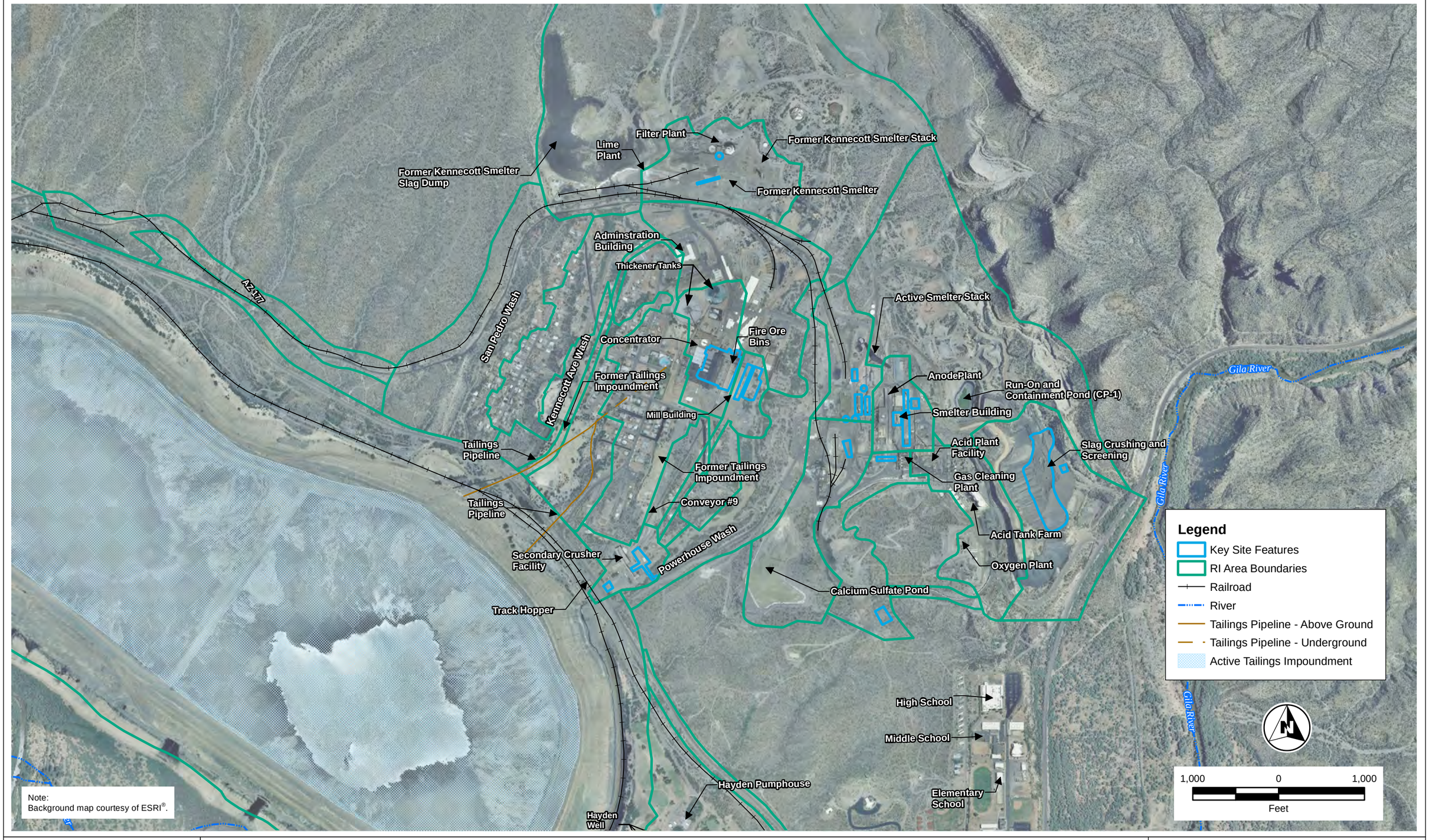
ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-2
Study Area Map

G:\ArcGIS\EPA\ASARCO\PROJECTS\EnforcementConfidential\RIFS_non-air_study_area.mxd 3/22/2012 [15:38 PM] LWEBER, ITSI



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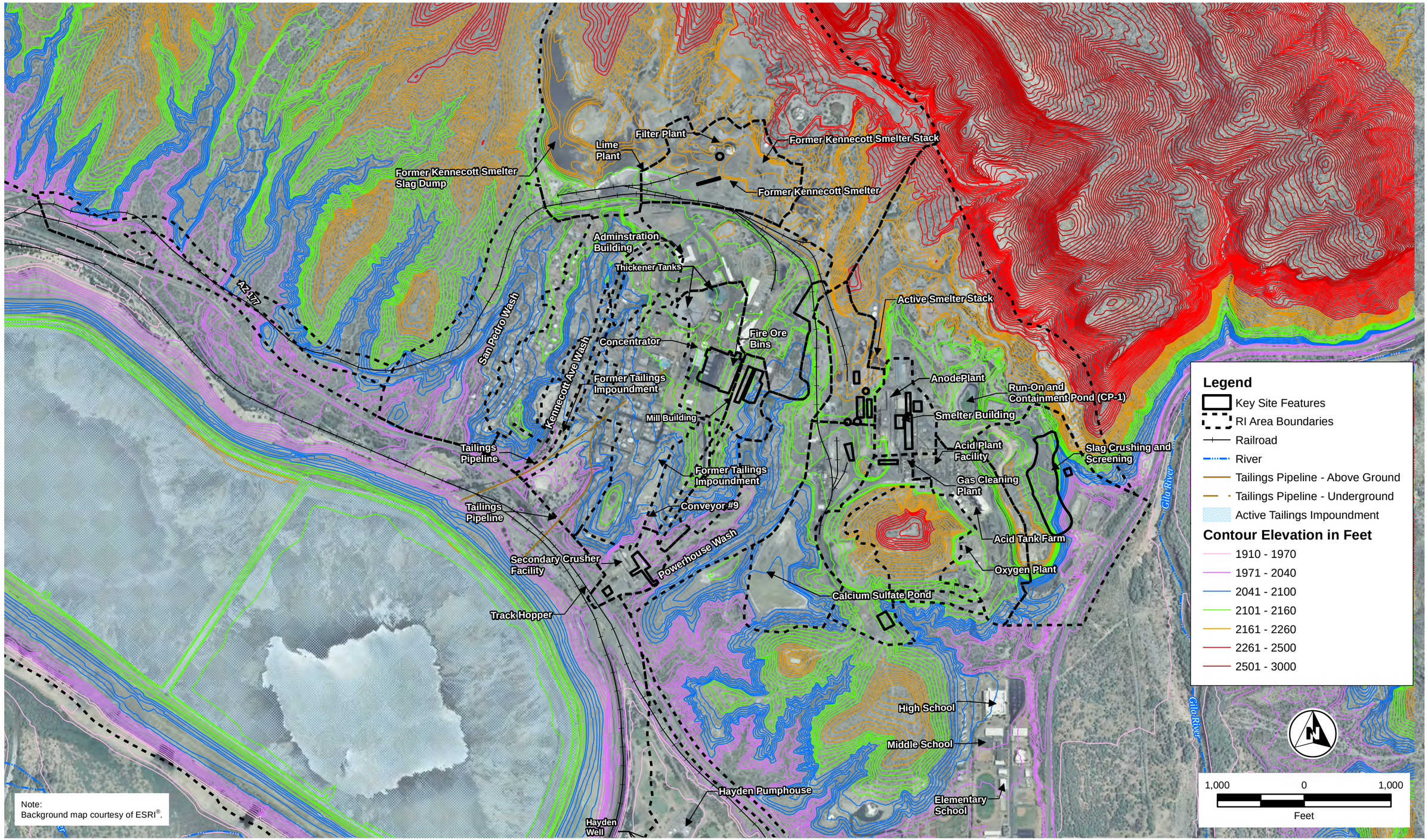
ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-3
Key Features of Study Area

G:\ArcGIS\EPA\ASARCO\PROJECTS\EnforcementConfidential\RIFS_SiteOverview.mxd 3/22/2012 [15:42 PM] LWEBER, ITSI



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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-4
Key Features of Study Area
with Topographic Contours

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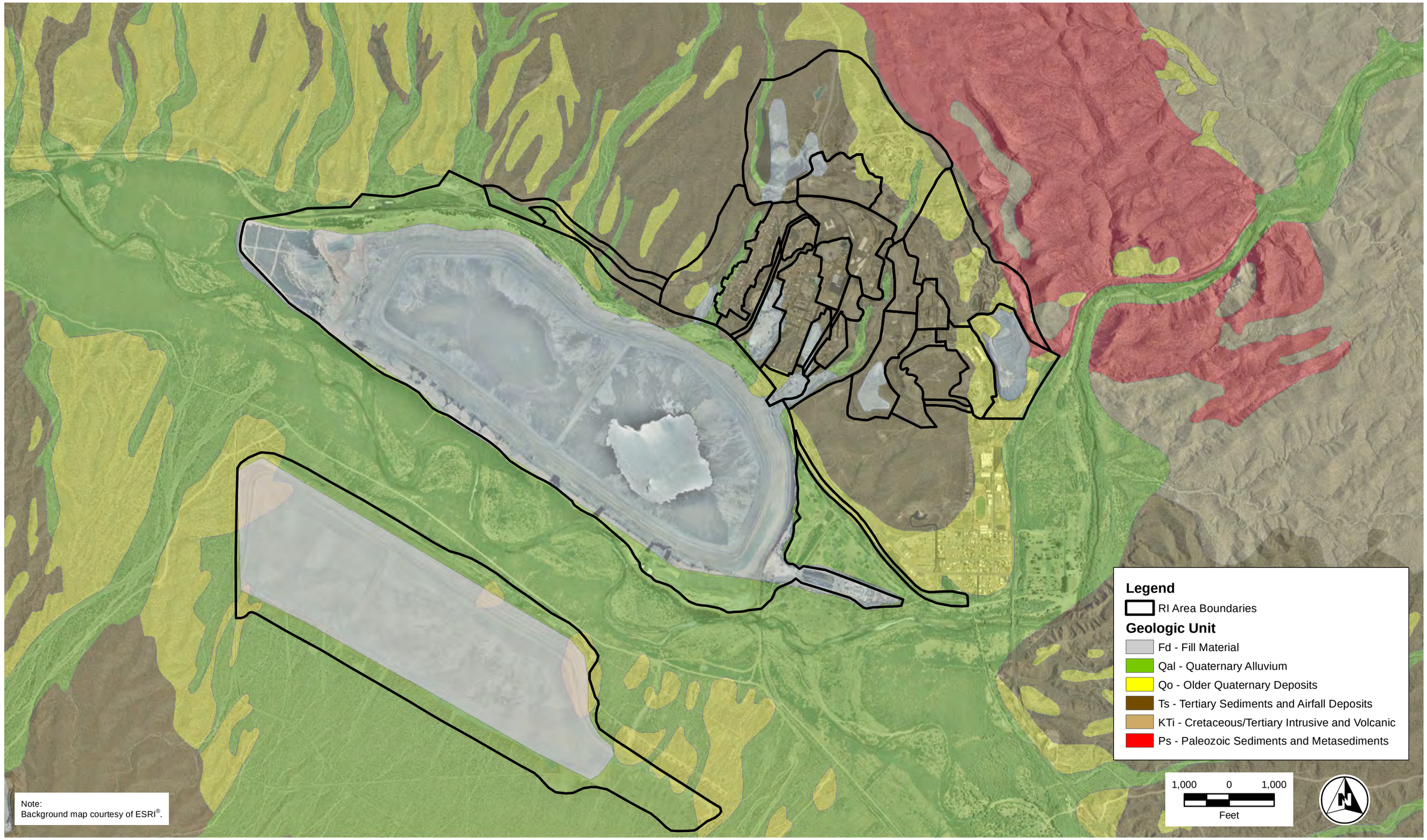

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 or 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-5
Surficial Geologic Map

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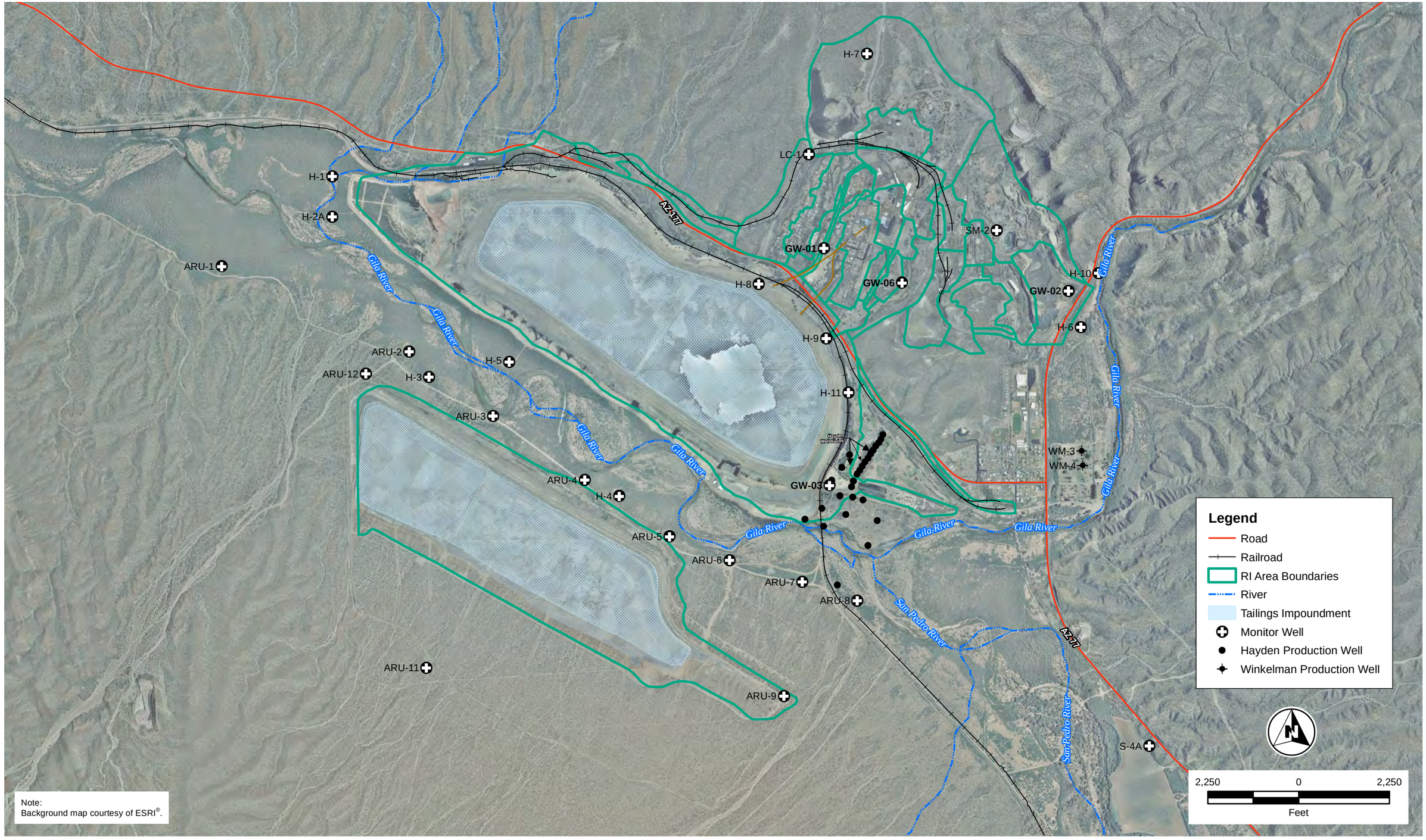

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, Sediment)
Hayden, Arizona

Figure 2-6
Existing Monitor Well and Production Well Locations

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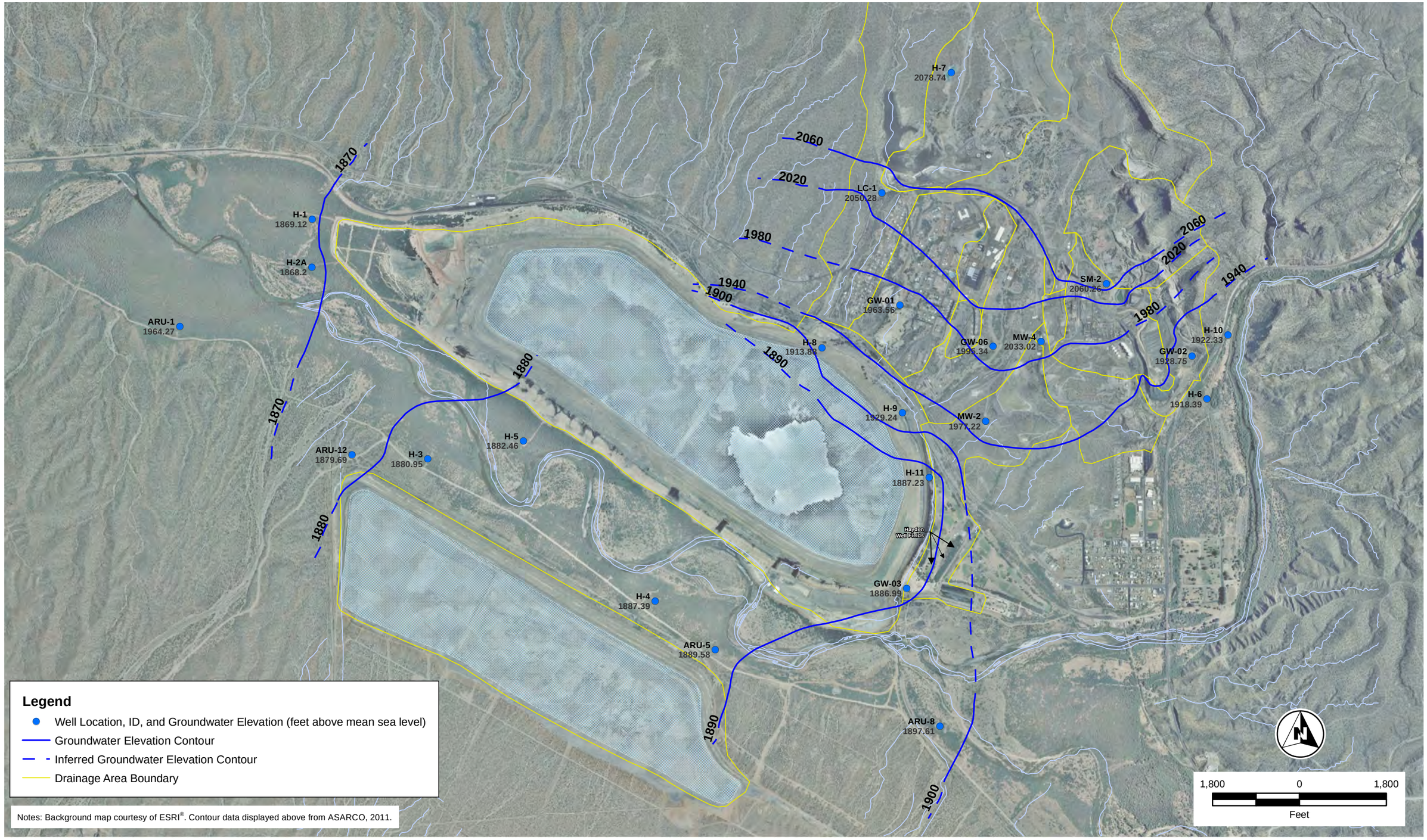

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-7
Groundwater Elevation Contour Map
February 2006

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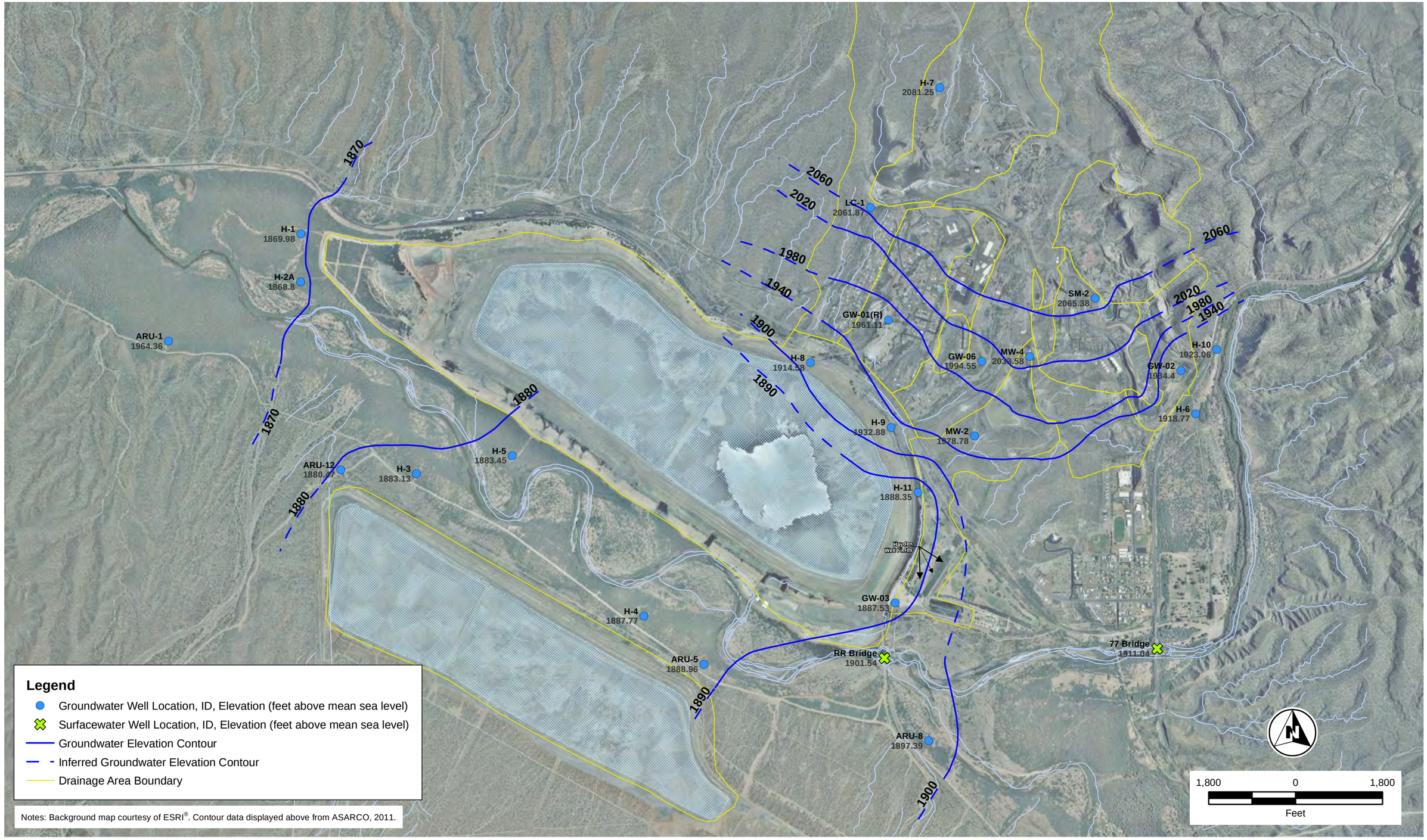

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-8
Groundwater Elevation Contour Map
October 2006

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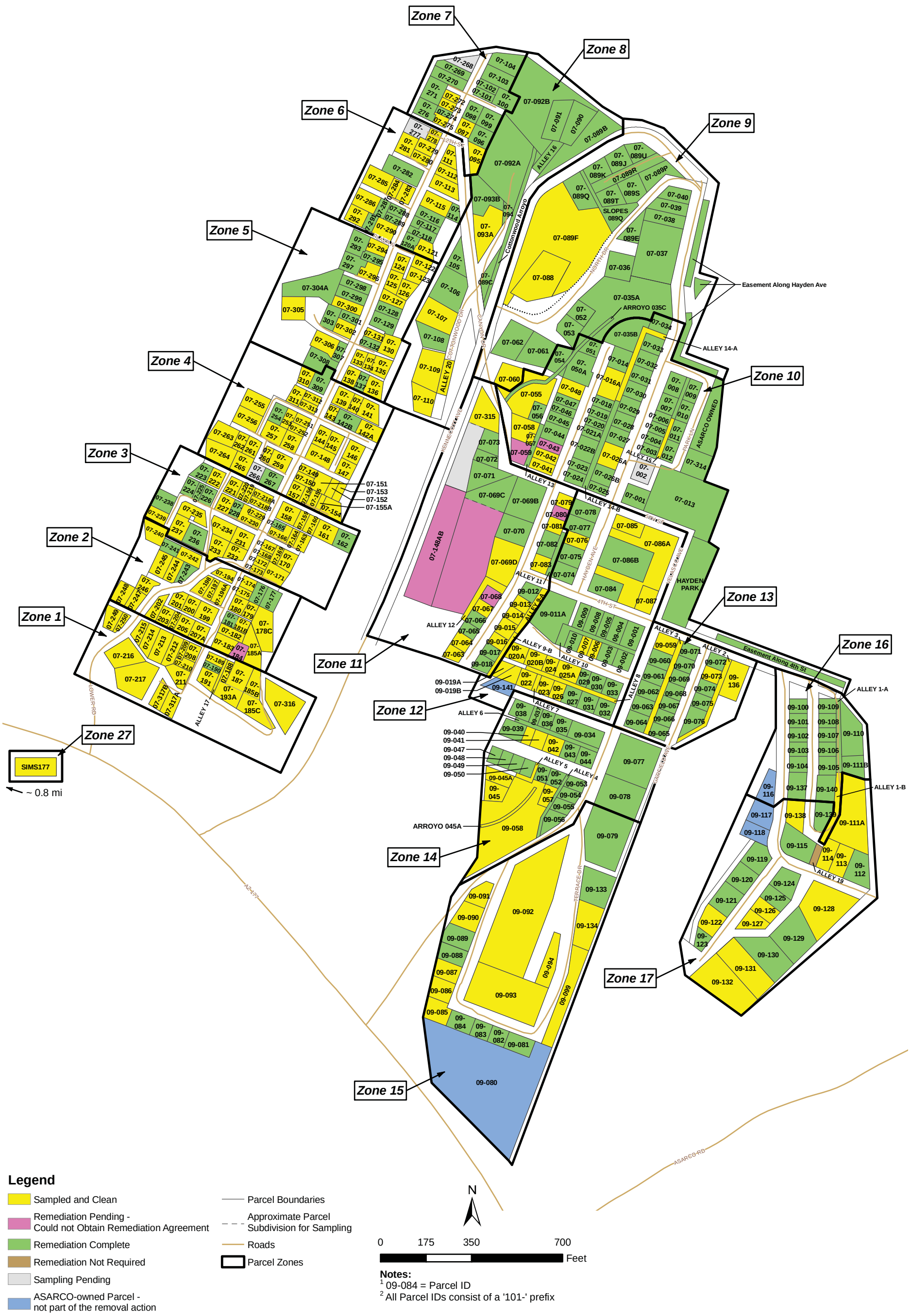

Notes:
[1] 09-084 = Parcel ID
[2] All Parcel IDs consist of a '101-' prefix

Copied verbatim from CH2MHill Draft Residential Removal Action, Hayden, Arizona, Projected Final Status, 1/19/2010

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-9
Hayden Residential Removal Action

Notes:
[1] 12-031 = Parcel ID
[2] All Parcel IDs consist of a '101-' prefix

Copied verbatim from CH2MHill Draft Residential Removal Action, Winkelman, Arizona, Status as of 10/5/2009

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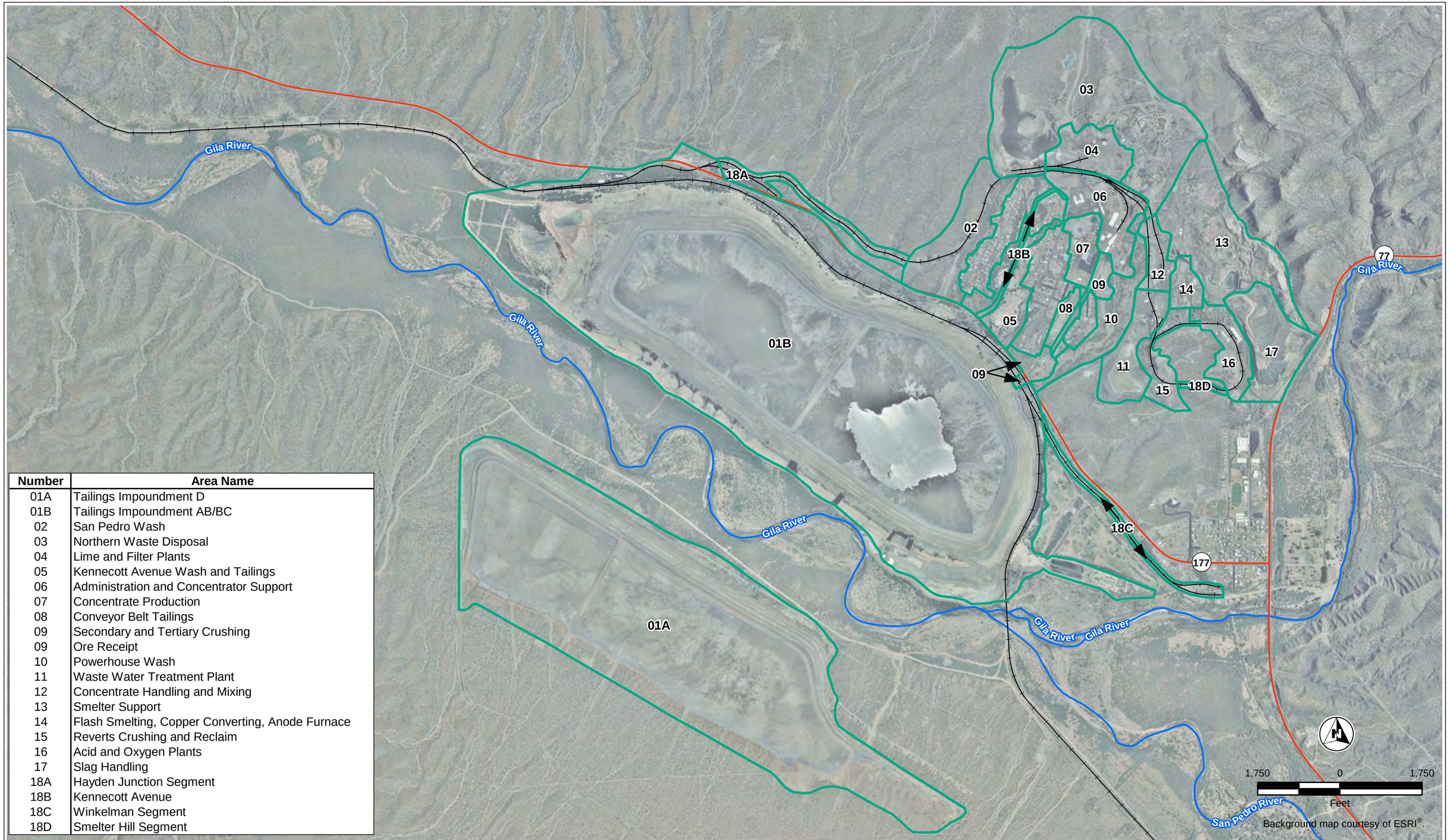
ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-10
Winkelman Residential Removal Action



Number	Area Name
01A	Tailings Impoundment D
01B	Tailings Impoundment AB/BC
02	San Pedro Wash
03	Northern Waste Disposal
04	Lime and Filter Plants
05	Kennecott Avenue Wash and Tailings
06	Administration and Concentrator Support
07	Concentrate Production
08	Conveyor Belt Tailings
09	Secondary and Tertiary Crushing
09	Ore Receipt
10	Powerhouse Wash
11	Waste Water Treatment Plant
12	Concentrate Handling and Mixing
13	Smelter Support
14	Flash Smelting, Copper Converting, Anode Furnace
15	Reverts Crushing and Reclaim
16	Acid and Oxygen Plants
17	Slag Handling
18A	Hayden Junction Segment
18B	Kennecott Avenue
18C	Winkelman Segment
18D	Smelter Hill Segment

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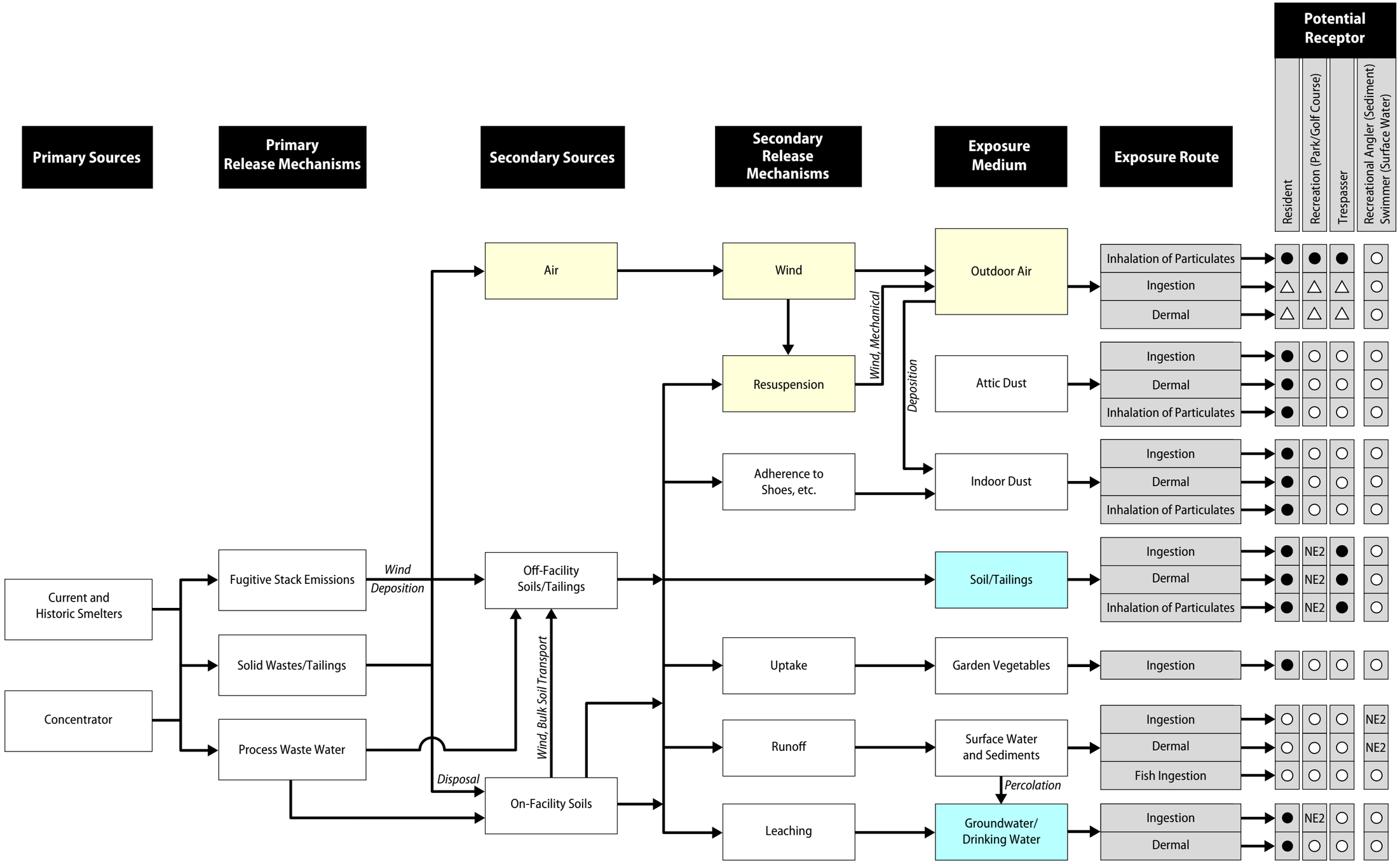
ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 2-11
Overview of RI Areas

G:\ArcGIS\EPA\ASARCO\PROJECTS\EnforcementConfidential\2012_Prop_Samples\Overview.mxd 3/22/2012 [12:34 PM] LWEBER, ITSI



● Potentially complete pathway.

○ Incomplete pathway.

△ Potentially complete, but judged to be a minor contributor. Will not be quantitatively evaluated.

Addressed Under Work Plan, Part 1 of 2 (Air)

Addressed Under Work Plan, Part 2 of 2 (Soil, Water, and Sediment)

NE2 = Not Evaluated. Baseline human health risks are within EPA risk management range.

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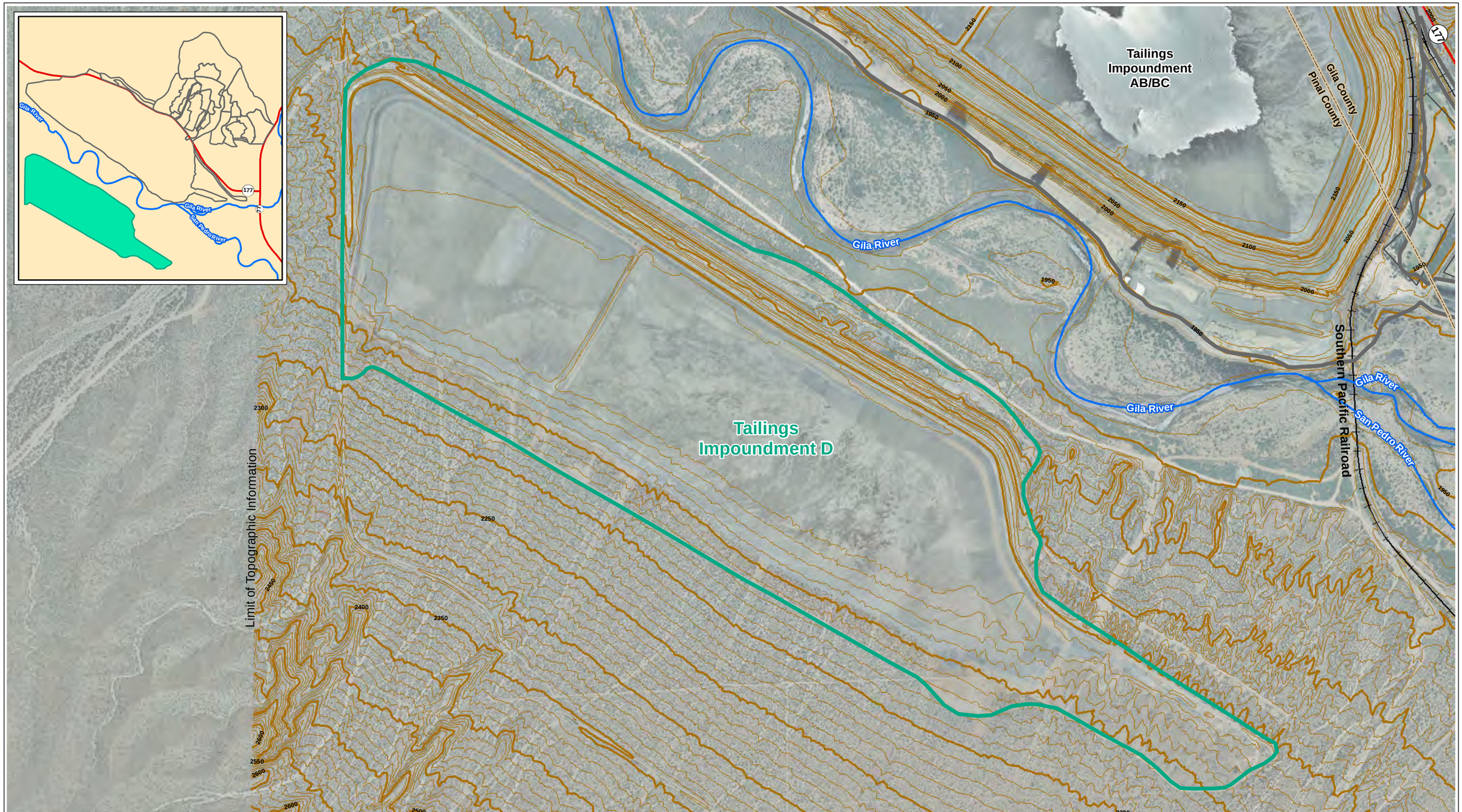
Figure 4-1
Conceptual Site Model Diagram for Human Exposures
ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Z:\0020 TO 19 RS - ASARCO Hayden\18.0 GIS-Graphics\HumanHealth_Exposures_Pathway.ai



Other RI Area Boundaries
Area #1A, Tailings Impoundment D
Features
River
Railroads
Road
County Boundary

1,000 0 1,000
Feet

Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009. Topography from CH2M Hill (2008).

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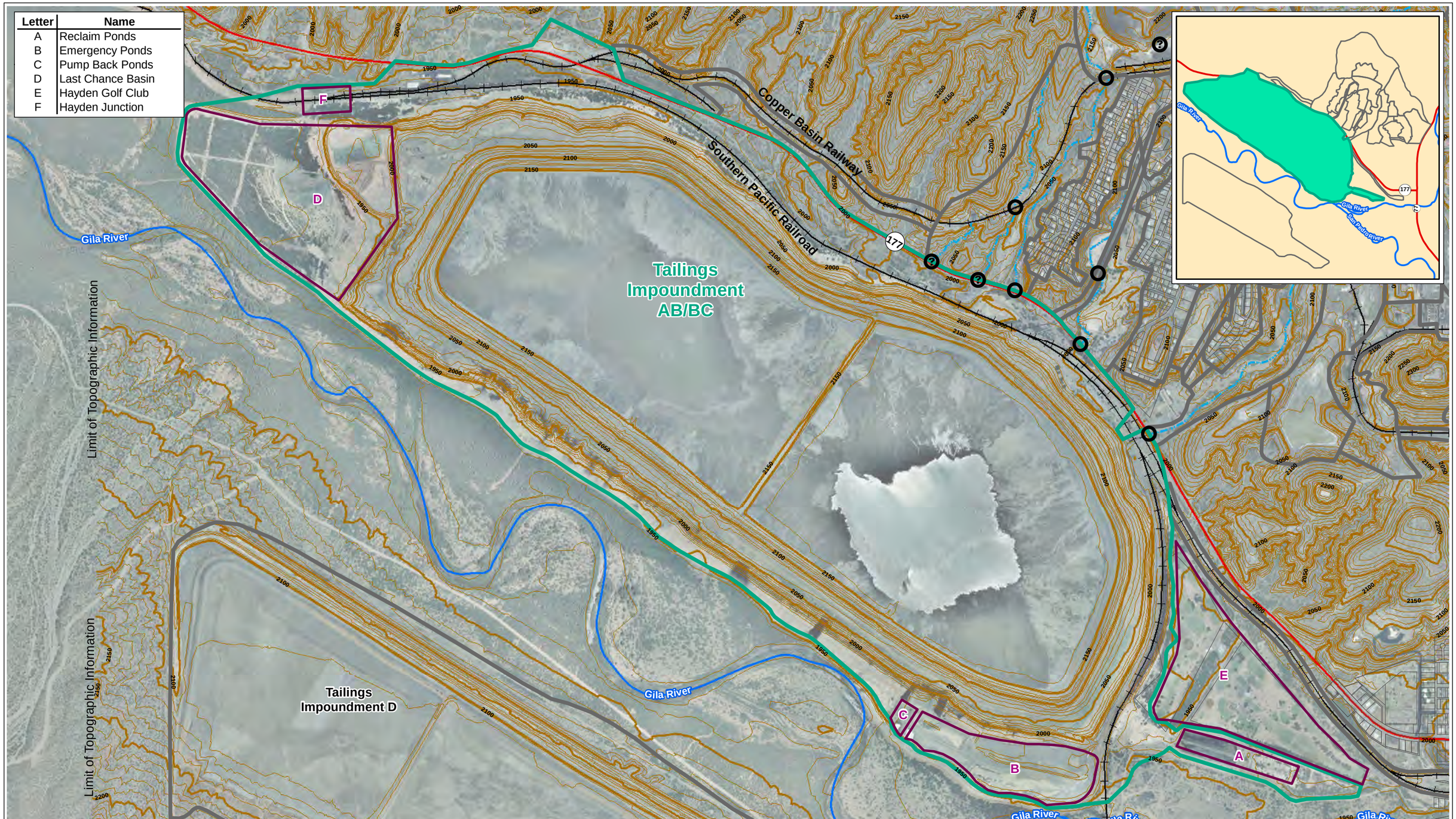
Figure 4-2A
Features of Area #1A, Tailings Impoundment D
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

G:\ArcGIS\EPA\ASARCO\PROJECTS\EnforcementConfidential\2012_Prop_Samples\Summary_Area_01A_TailingsImpound_D.mxd 3/21/2012 [20:30 PM] LWEBER, ITSI



Other RI Area Boundaries
Area #1B, Tailings Impoundment AB/BC
Features
Drainage Underpass (Unknown)
Drainage Underpass
River
Thalweg (Approximate)
Road
Railroads

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

1,000 0 1,000
Feet
Contour interval = 10 feet

Figure 4-2B
Features of Area #1B, Tailings Impoundment AB/BC
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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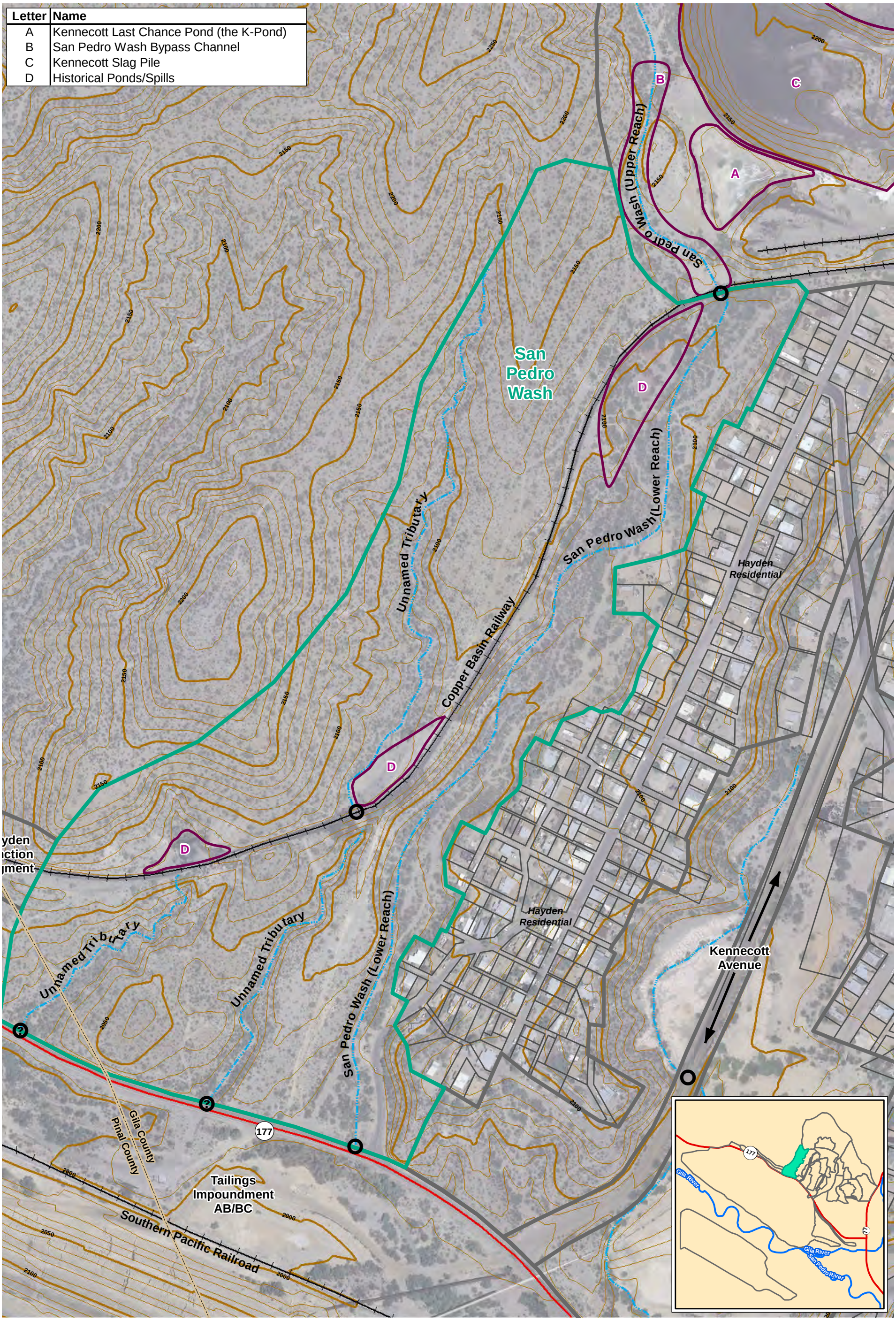

Other RI Area Boundaries
Area #2, San Pedro Wash
Features
Thalweg (Approximate)
Drainage Underpass (Unknown)
Drainage Underpass
County Boundary
Railroads
Road

250 0 250
Feet
Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-3
Features of Area #2, San Pedro Wash
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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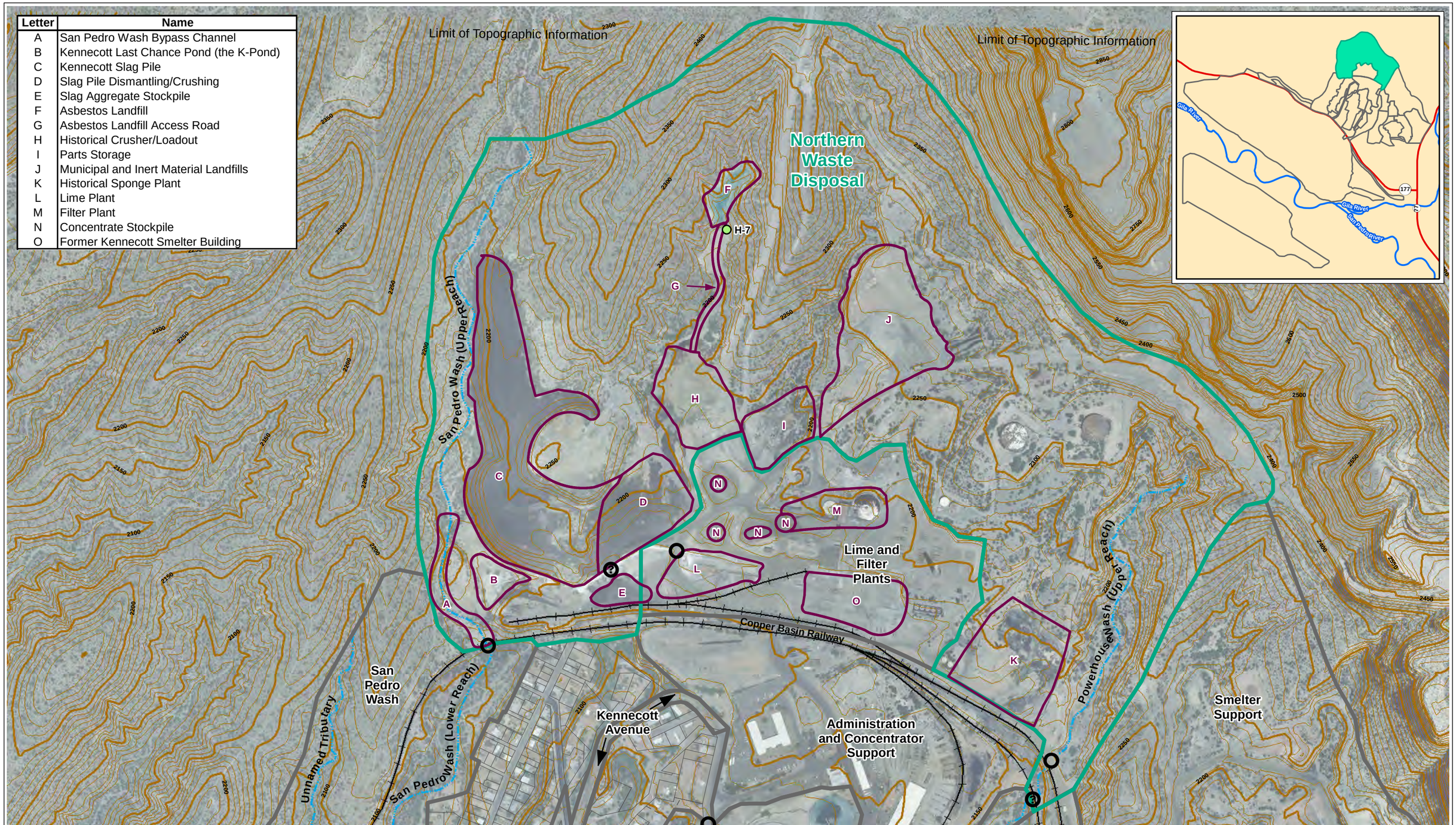

Letter	Name
A	San Pedro Wash Bypass Channel
B	Kennecott Last Chance Pond (the K-Pond)
C	Kennecott Slag Pile
D	Slag Pile Dismantling/Crushing
E	Slag Aggregate Stockpile
F	Asbestos Landfill
G	Asbestos Landfill Access Road
H	Historical Crusher/Loadout
I	Parts Storage
J	Municipal and Inert Material Landfills
K	Historical Sponge Plant
L	Lime Plant
M	Filter Plant
N	Concentrate Stockpile
O	Former Kennecott Smelter Building

Other RI Area Boundaries
Area #3, Northern Waste Disposal
Features

Drainage Underpass (Unknown)
Drainage Underpass
Existing Well

Thalweg (Approximate)
Railroads

Aerial photography courtesy of ESRI®, dated May 1, 2009. Topography from CH2M Hill (2008).

500 0 500
Feet

Contour interval = 10 feet

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Figure 4-4
Features of Area #3, Northern Waste Disposal
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site, Hayden, Arizona

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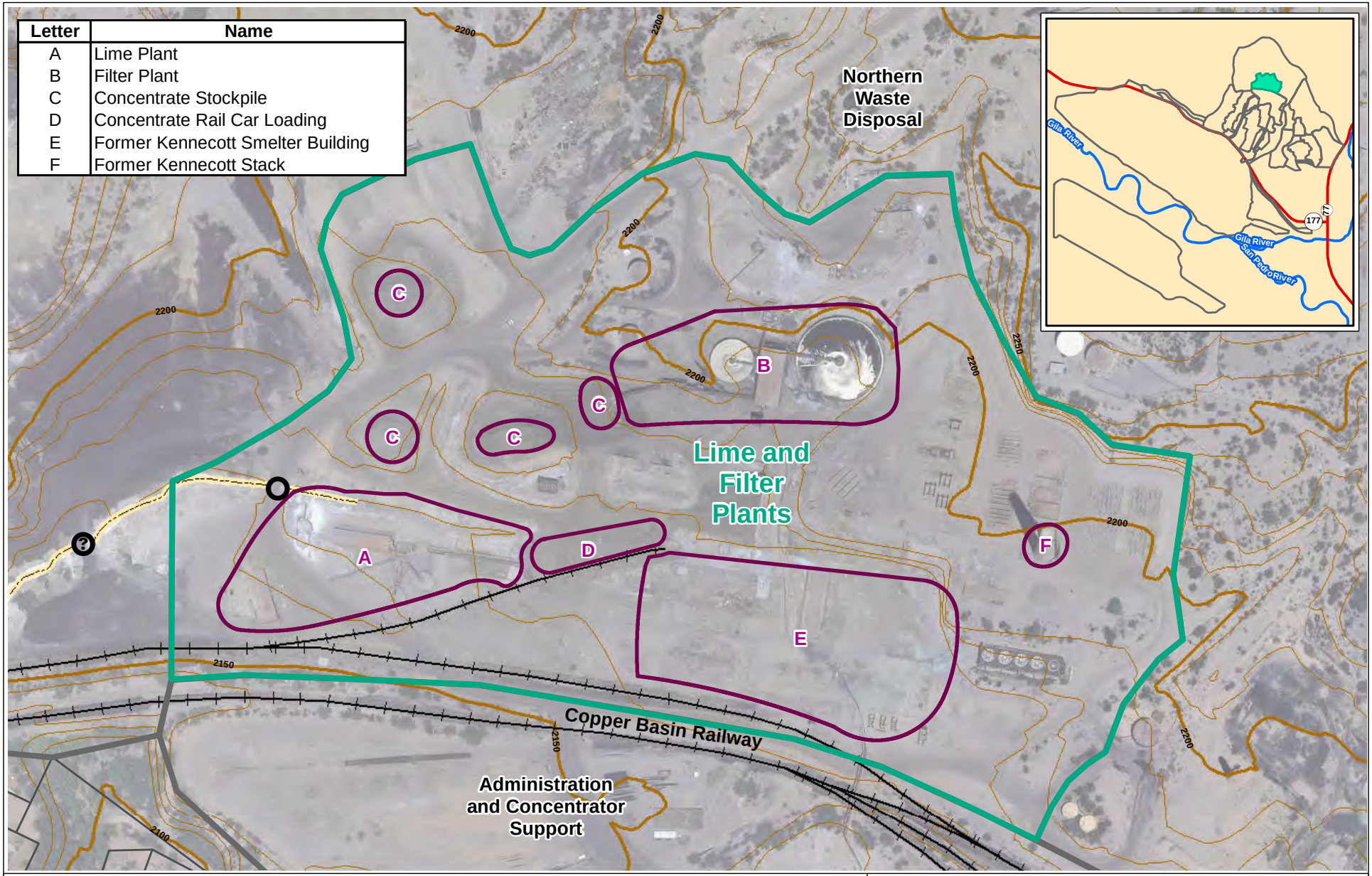

Letter	Name
A	Lime Plant
B	Filter Plant
C	Concentrate Stockpile
D	Concentrate Rail Car Loading
E	Former Kennecott Smelter Building
F	Former Kennecott Stack

Other RI Area Boundaries
Area #4, Lime and Filter Plants
Features
Process Water Discharge
Railroads

Drainage Underpass (Unknown)
Drainage Underpass

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

250 0 250
Feet
Contour interval = 10 feet

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Figure 4-5
Features of Area #4, Lime and Filter Plants
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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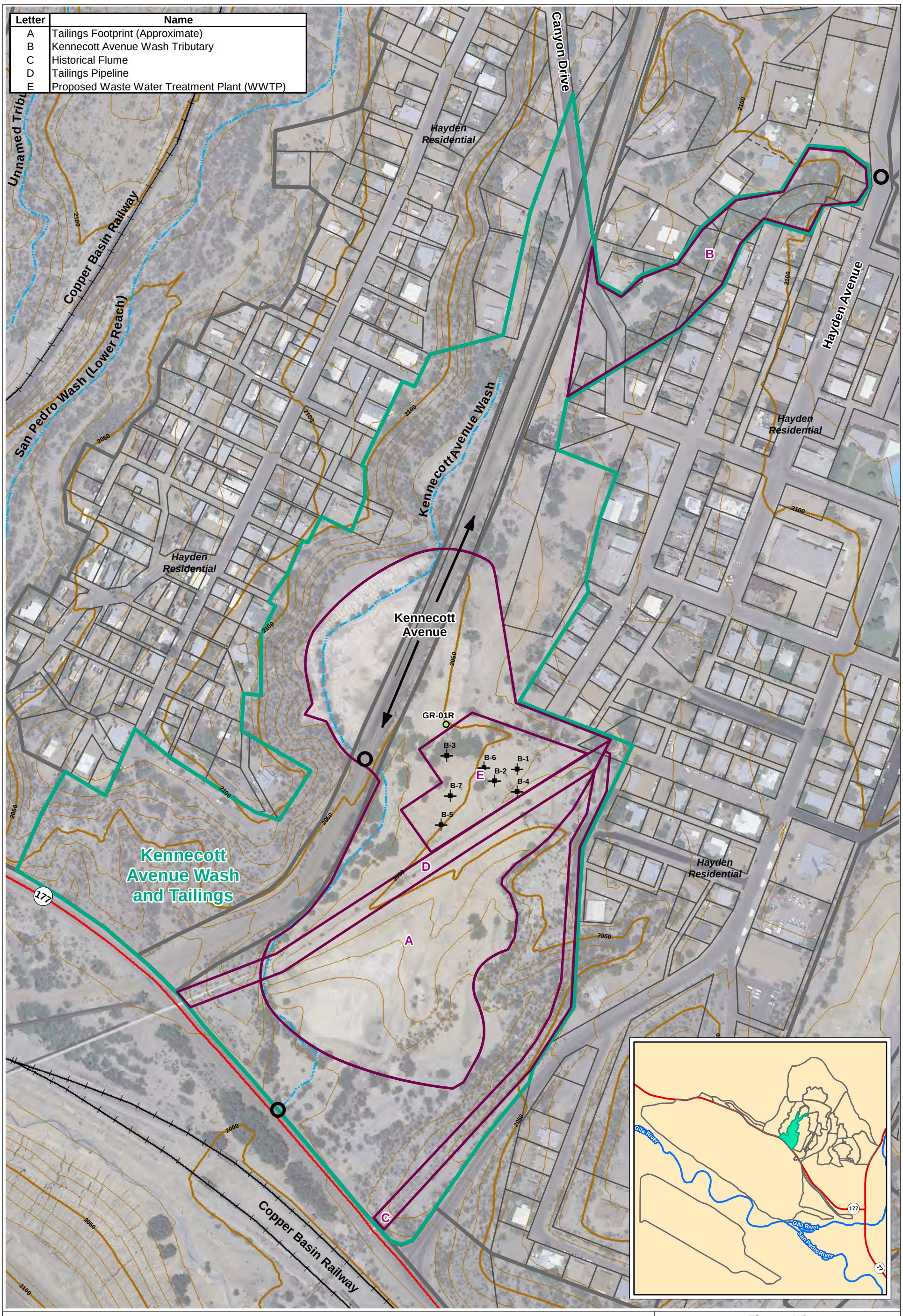

Other RI Area Boundaries
Area #5, Kennecott Avenue Wash and Tailings
Features
Thalweg (Approximate)
Railroads
Drainage Underpass (Unknown)
Drainage Underpass
WWTP Borings and Surface Samples
Existing Well

250 0 250
Feet
Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009. Topography from CH2M Hill (2008).

Figure 4-6
Features of Area #5, Kennecott Avenue Wash and Tailings
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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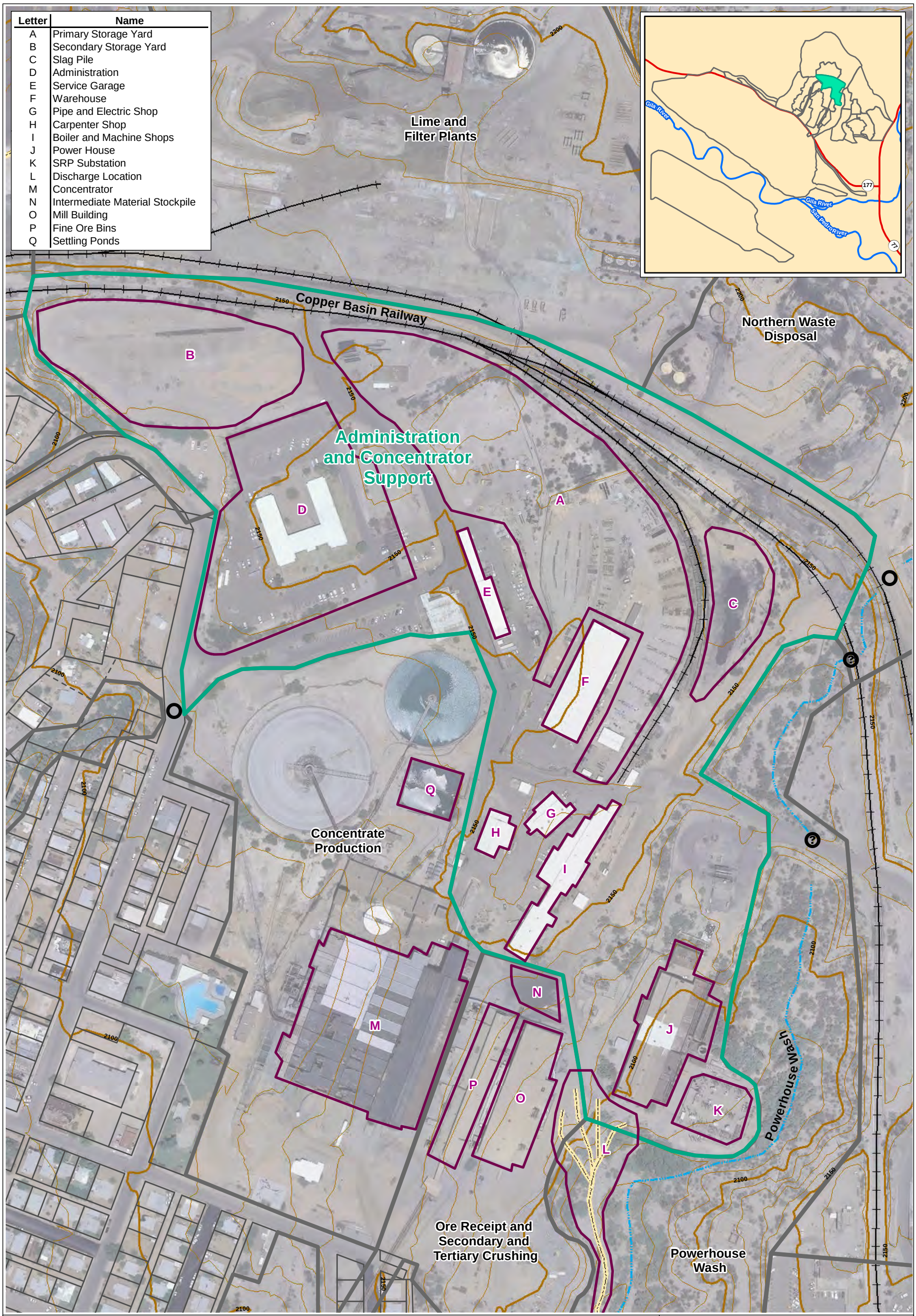

Letter	Name
A	Primary Storage Yard
B	Secondary Storage Yard
C	Slag Pile
D	Administration
E	Service Garage
F	Warehouse
G	Pipe and Electric Shop
H	Carpenter Shop
I	Boiler and Machine Shops
J	Power House
K	SRP Substation
L	Discharge Location
M	Concentrator
N	Intermediate Material Stockpile
O	Mill Building
P	Fine Ore Bins
Q	Settling Ponds

Other RI Area Boundaries
Area #6, Administration and Concentrator Support
Features
Drainage Underpass (Unknown)
Drainage Underpass
Discharge
Thalweg (Approximate)
Railroads

250 0 250
Feet
Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-7
Features of Area #6, Administration and Concentrator Support
ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

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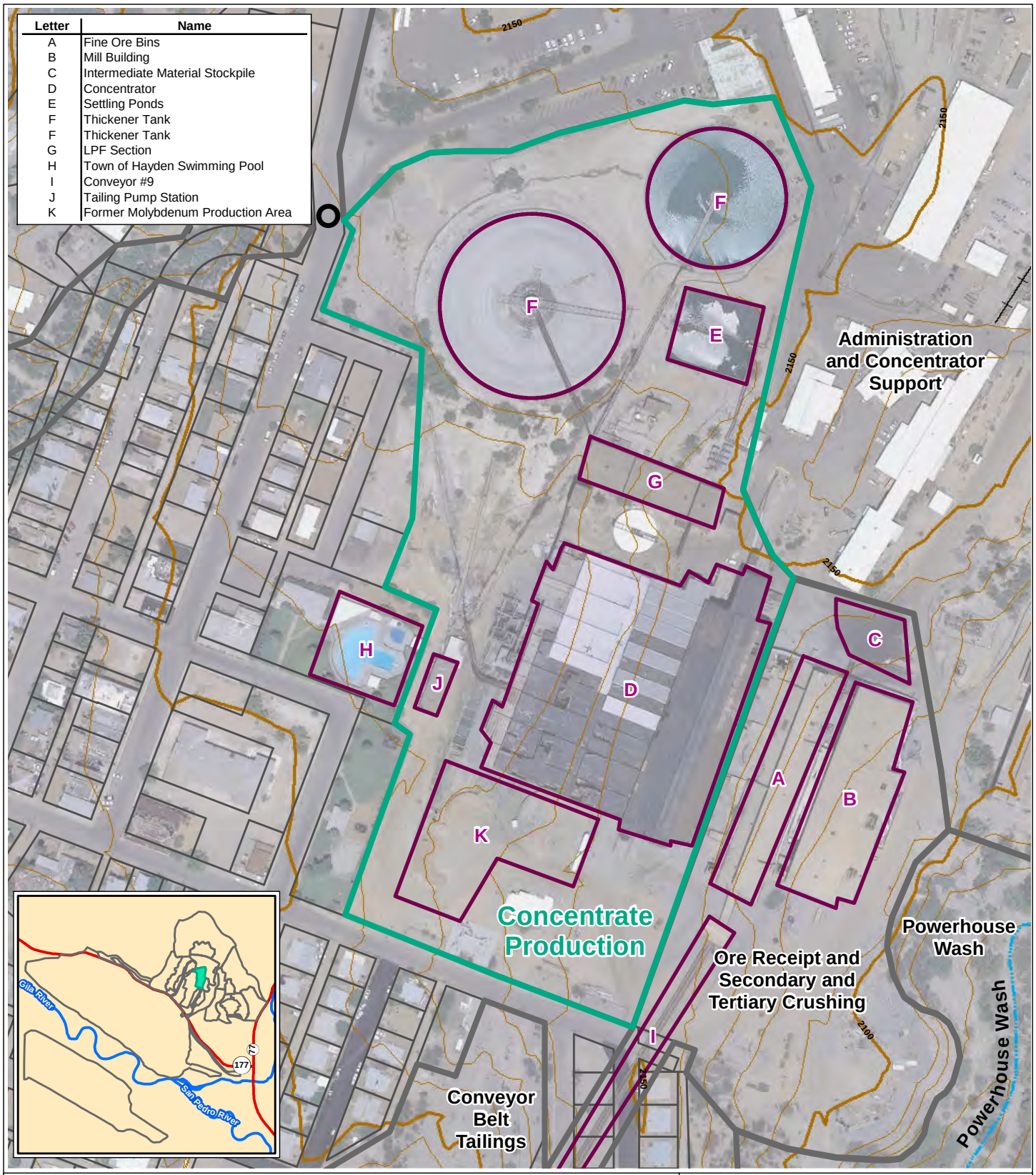

Other RI Area Boundaries

Area #7, Concentrate Production

Features

Drainage Underpass (Unknown)

Drainage Underpass

Thalweg (Approximate)

200 0 200

Feet

Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-8
Area #7, Concentrate Production
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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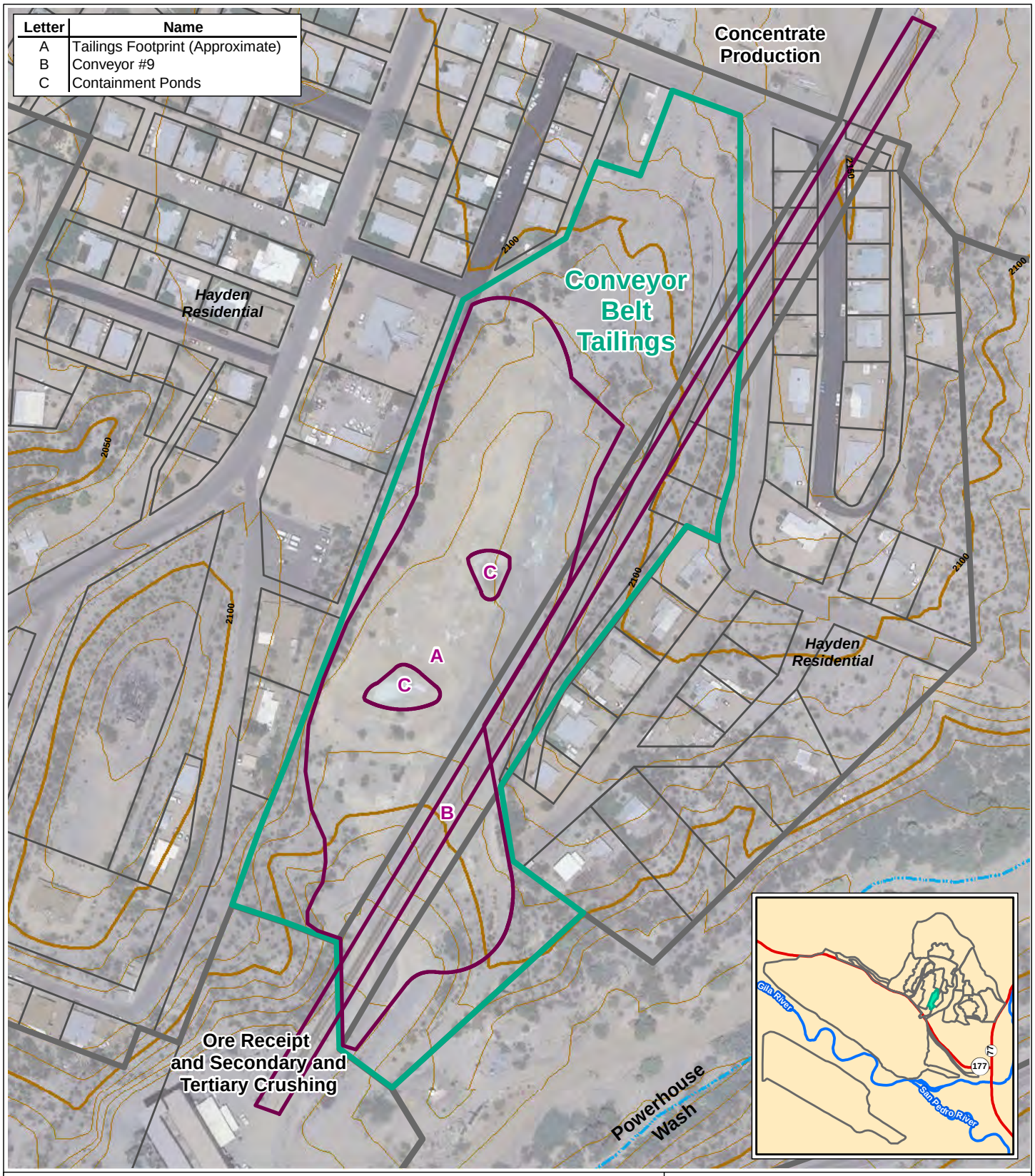

Other RI Area Boundaries

Area #8, Conveyor Belt Tailings

Features

Thalweg (Approximate)

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

200 0 200

Feet

Contour interval = 10 feet

Figure 4-9
Features of Area #8, Conveyor Belt Tailings
Final Phase II RI/FS Work Plan
(Part 2 or 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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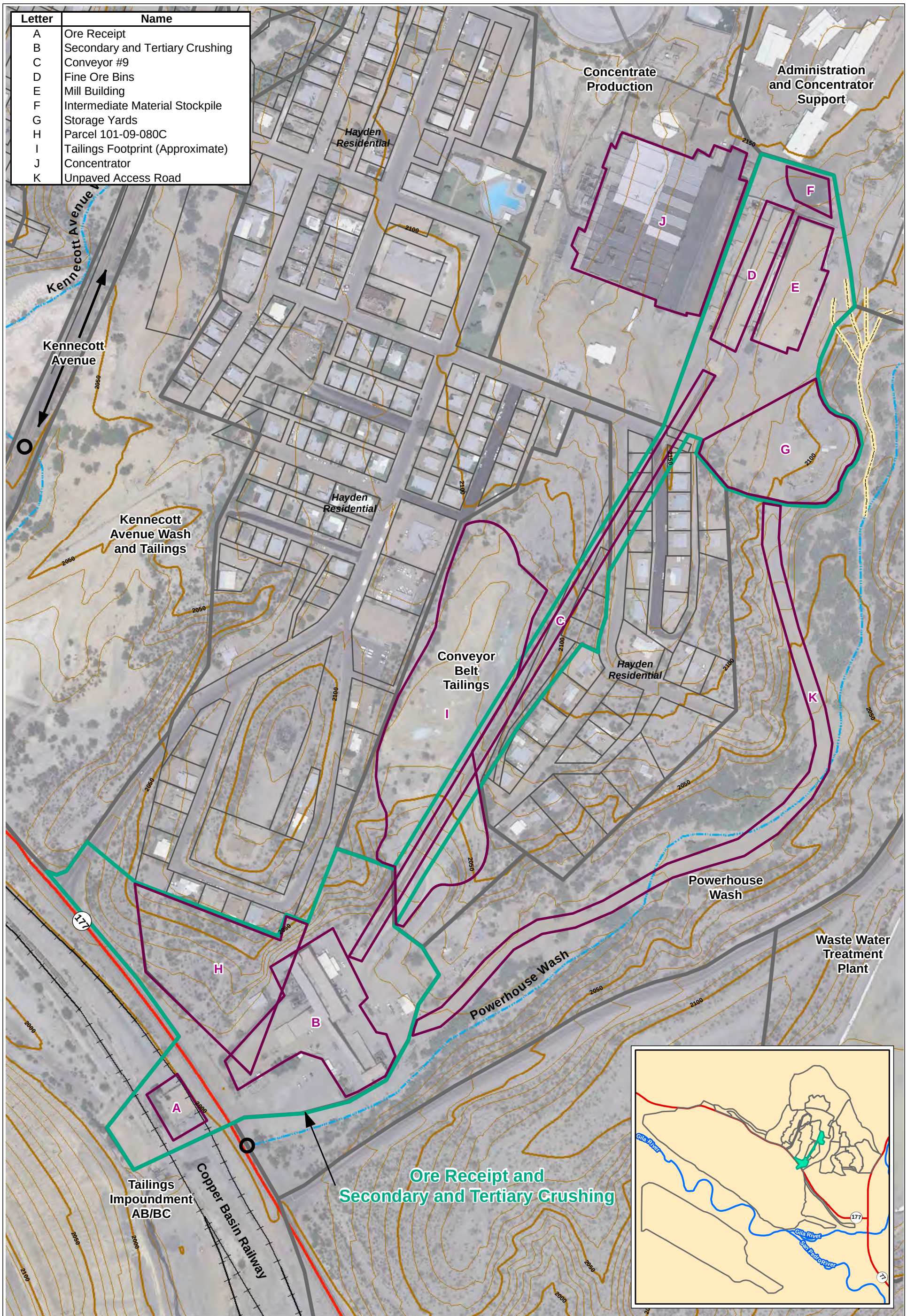

Other RI Area Boundaries
Area #9, Ore Receipt and Secondary and Tertiary Crushing
Features
Drainage Underpass (Unknown)
Drainage Underpass
Thalweg (Approximate)
Railroads
Road

250 0 250
Feet

Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-10
Features of Area #9, Ore Receipt and Secondary and Tertiary Crushing
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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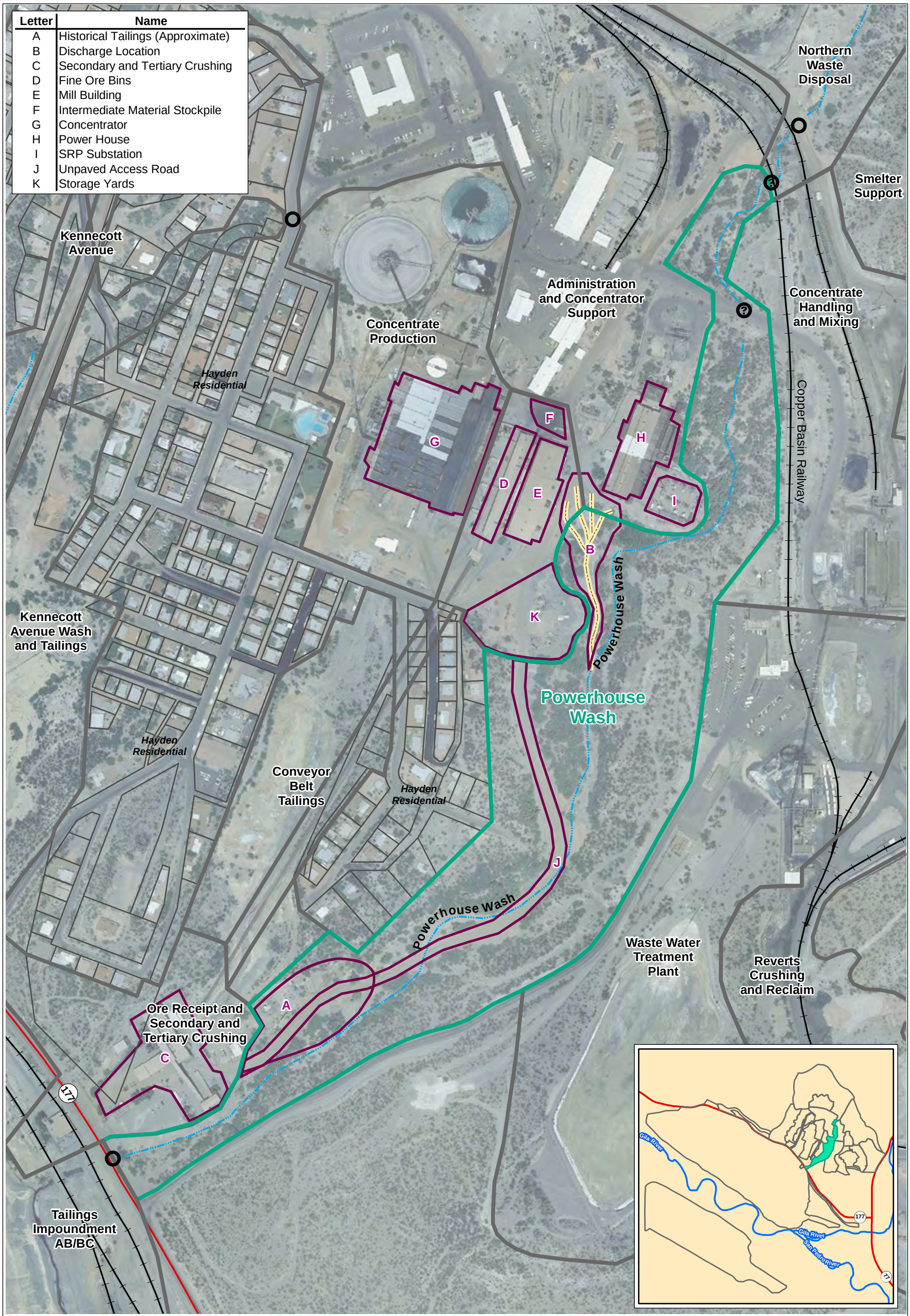

Other RI Area Boundaries
Area #10, Powerhouse Wash
Features
Drainage Underpass (Unknown)
Drainage Underpass
Discharge
Thalweg (Approximate)
Railroads
Road

250 0 250
Feet
Contour interval = 10 feet

Figure 4-11
Features of Area #10, Powerhouse Wash
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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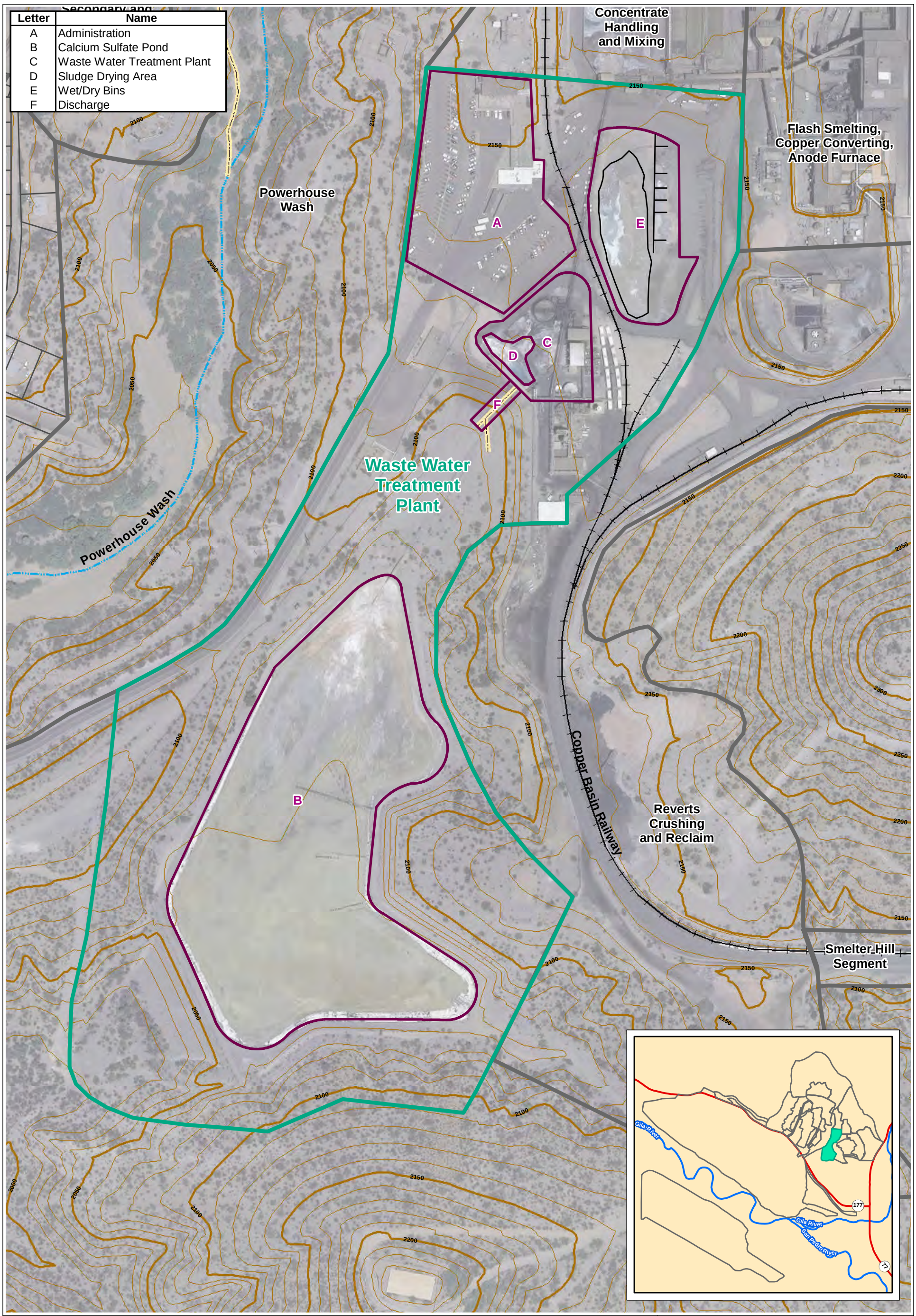

Other RI Area Boundaries
Area #11, Waste Water Treatment Plant
Features
Discharge of Process Water
Thalweg (Approximate)
Railroads

200 0 200
Feet

Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-12
Features of Area #11, Waste Water Treatment Plant
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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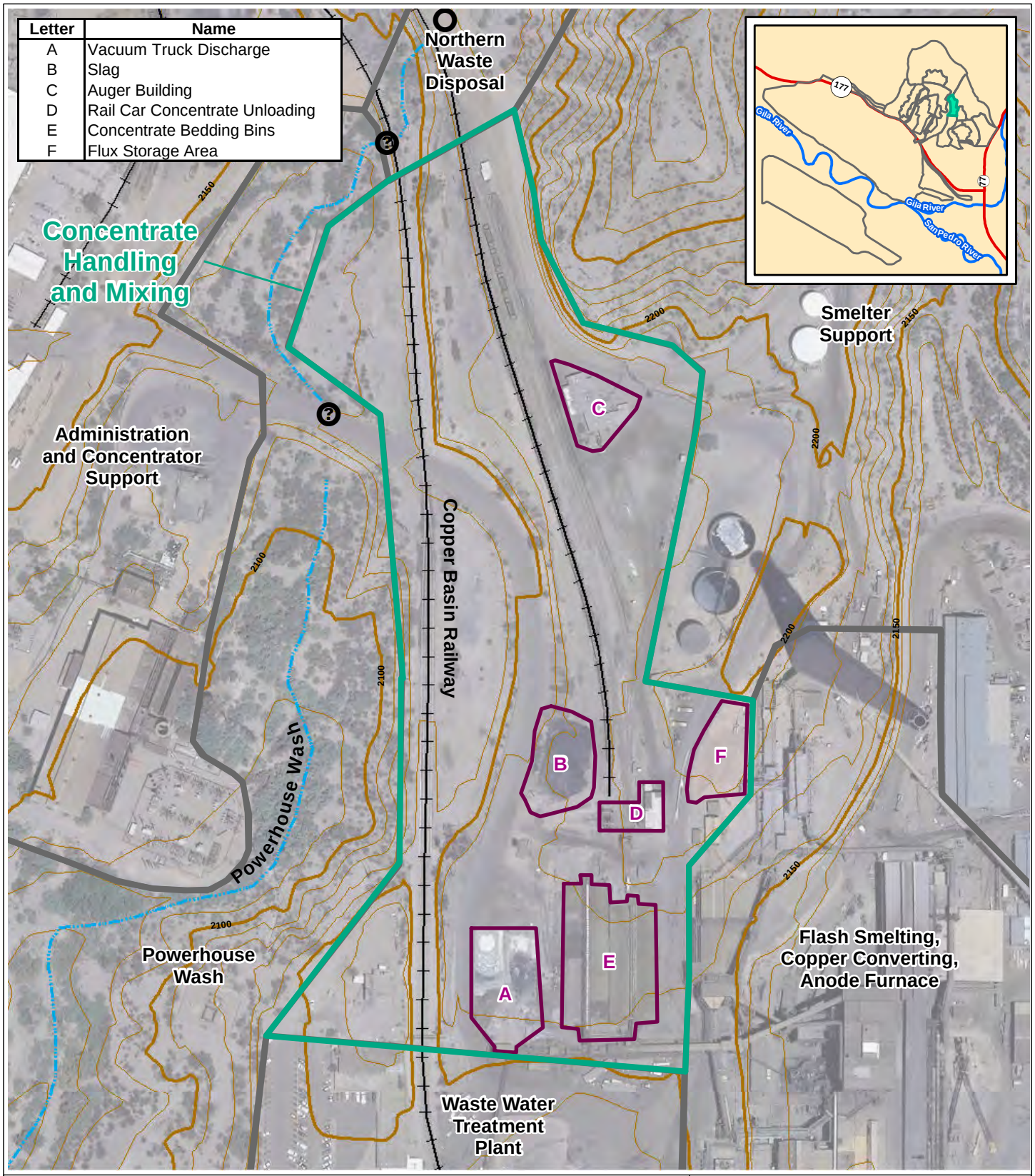

Other RI Area Boundaries
Area #12, Concentrate Handling and Mixing
Features
Drainage Underpass (Unknown)
Drainage Underpass
Thalweg (Approximate)
Railroads

150 0 150
Feet

Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009. Topography from CH2M Hill (2008).

Figure 4-13
Features of Area #12, Concentrate Handling and Mixing
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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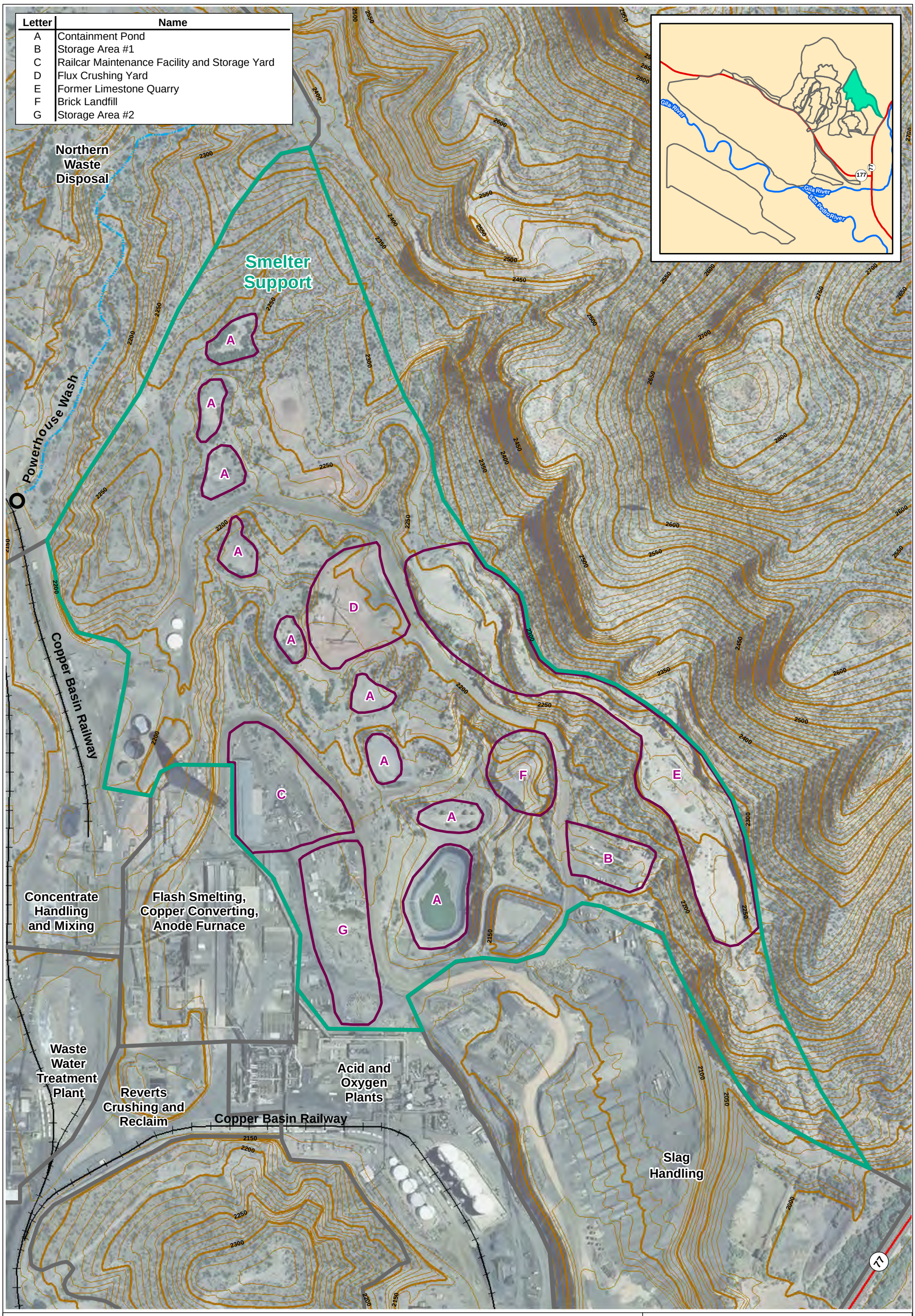

Other RI Area Boundaries
Area #13, Smelter Support
Features
Thalweg (Approximate)
Railroads
Drainage Underpass (Unknown)
Drainage Underpass

350 0 350
Feet

Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-14
Features of Area #13, Smelter Support
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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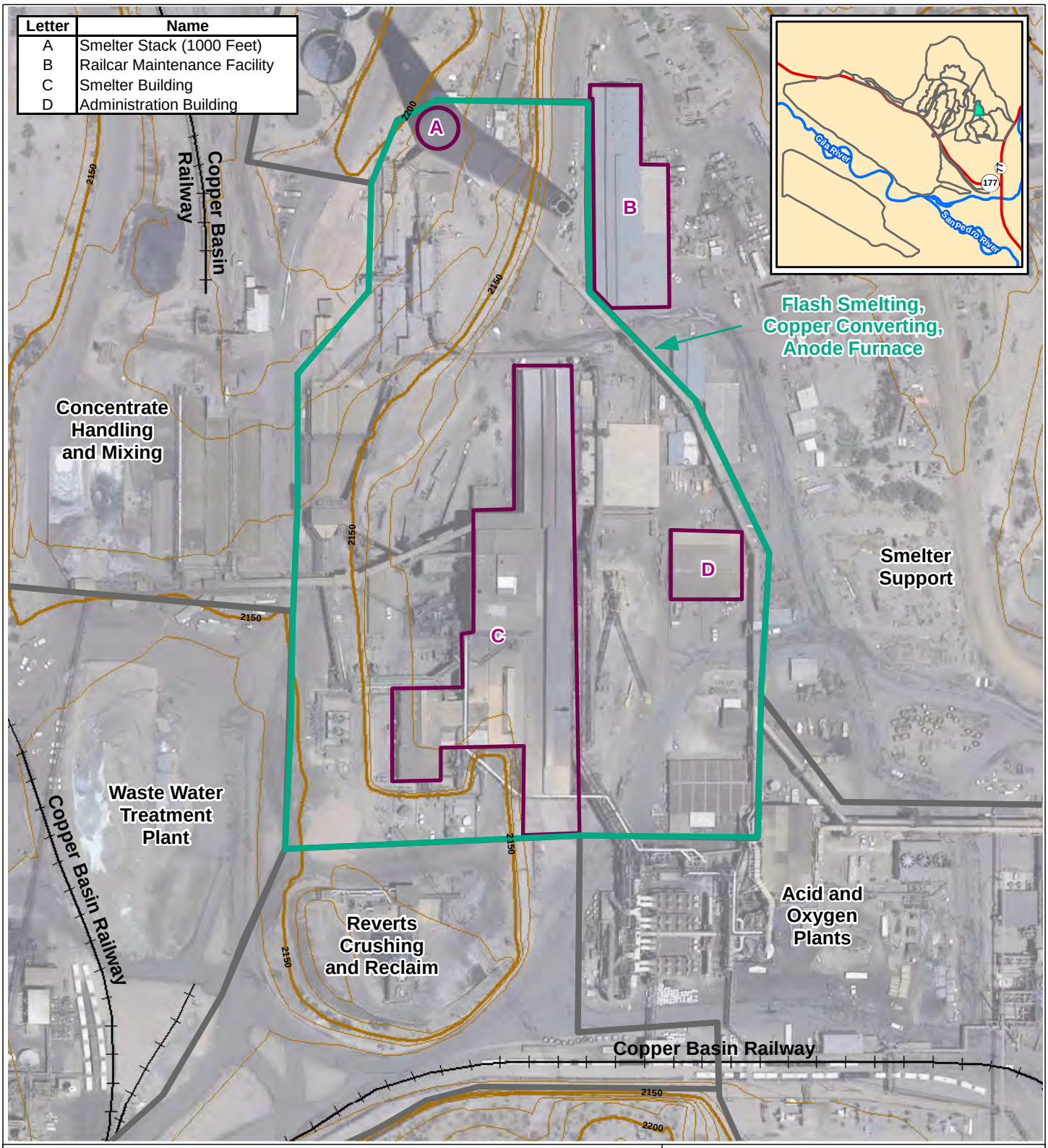

Other RI Area Boundaries

Area #14, Flash Smelting, Copper Converting, Anode Furnace

Features

Railroads

150 0 150

Feet

Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-15
Features of Area #14, Flash Smelting, Copper Converting, Anode Furnace
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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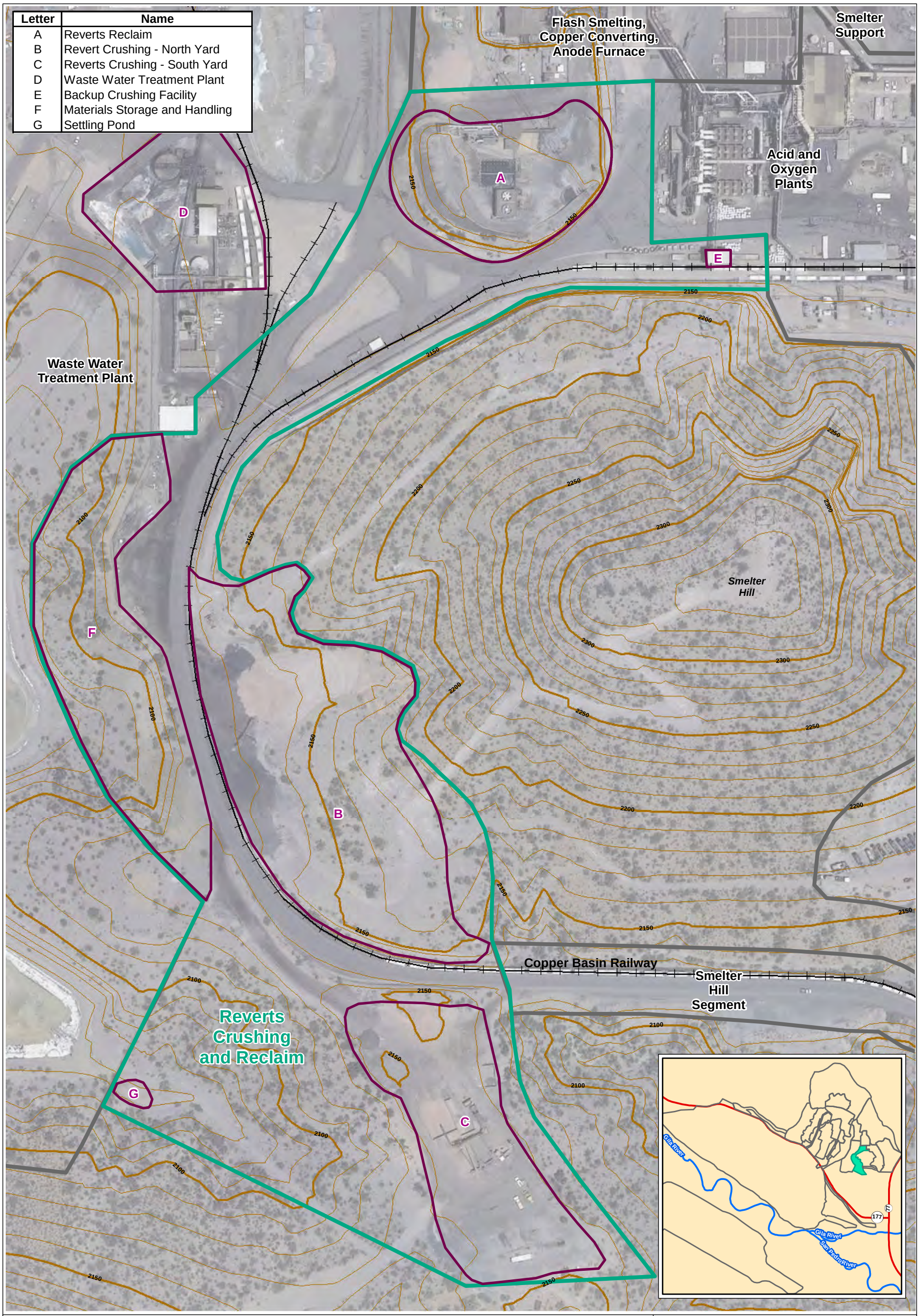

Other RI Area Boundaries
Area #15, Reverts Crushing and Reclaim
Features
Railroads

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

150 0 150
Feet
Contour interval = 10 feet

Figure 4-16
Features of Area #15,
Reverts Crushing and Reclaim
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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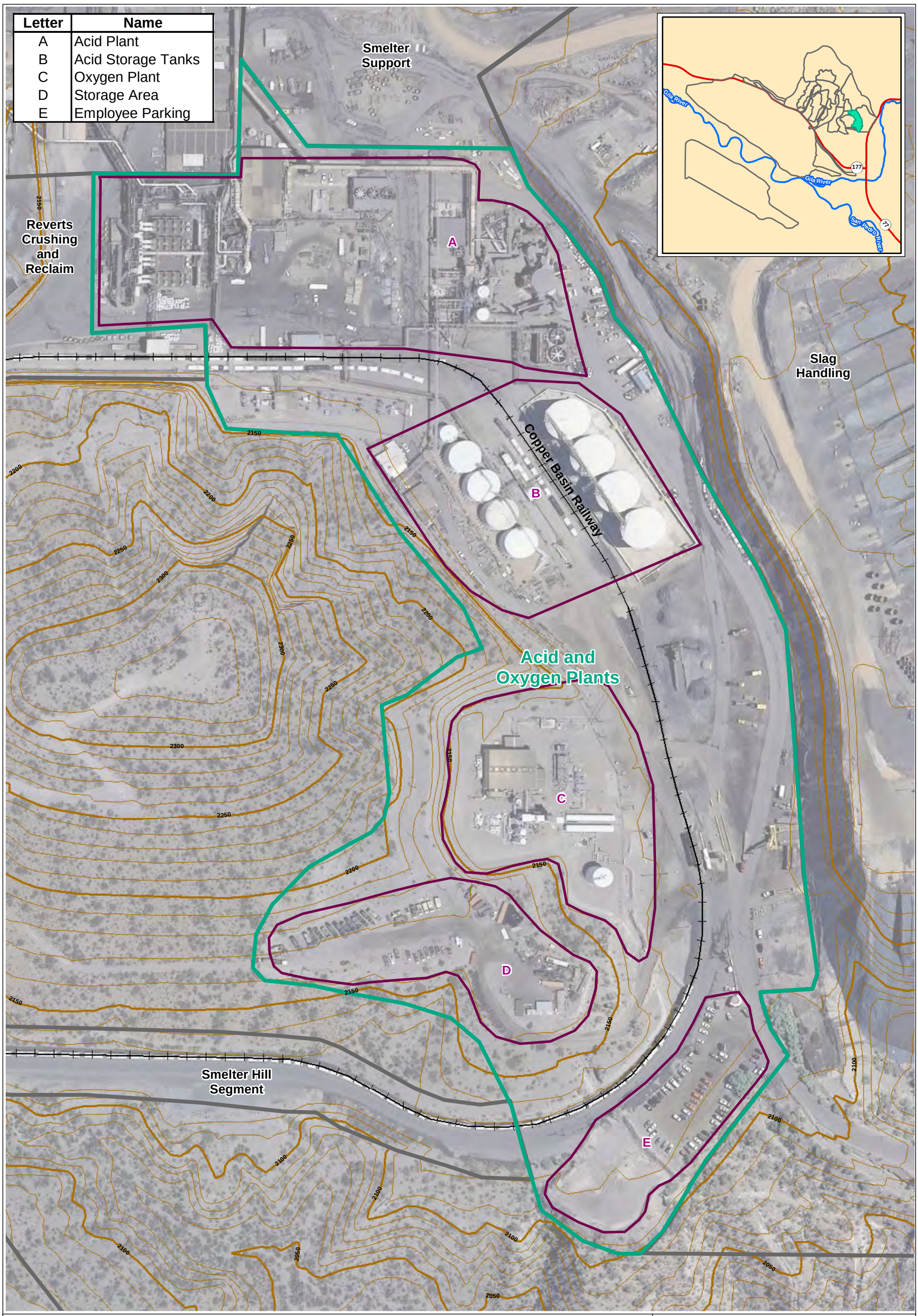

Other RI Area Boundaries
Area #16, Acid and Oxygen Plants
Features
Railroads

150 0 150
Feet
Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-17
Features of Area #16,
Acid and Oxygen Plants
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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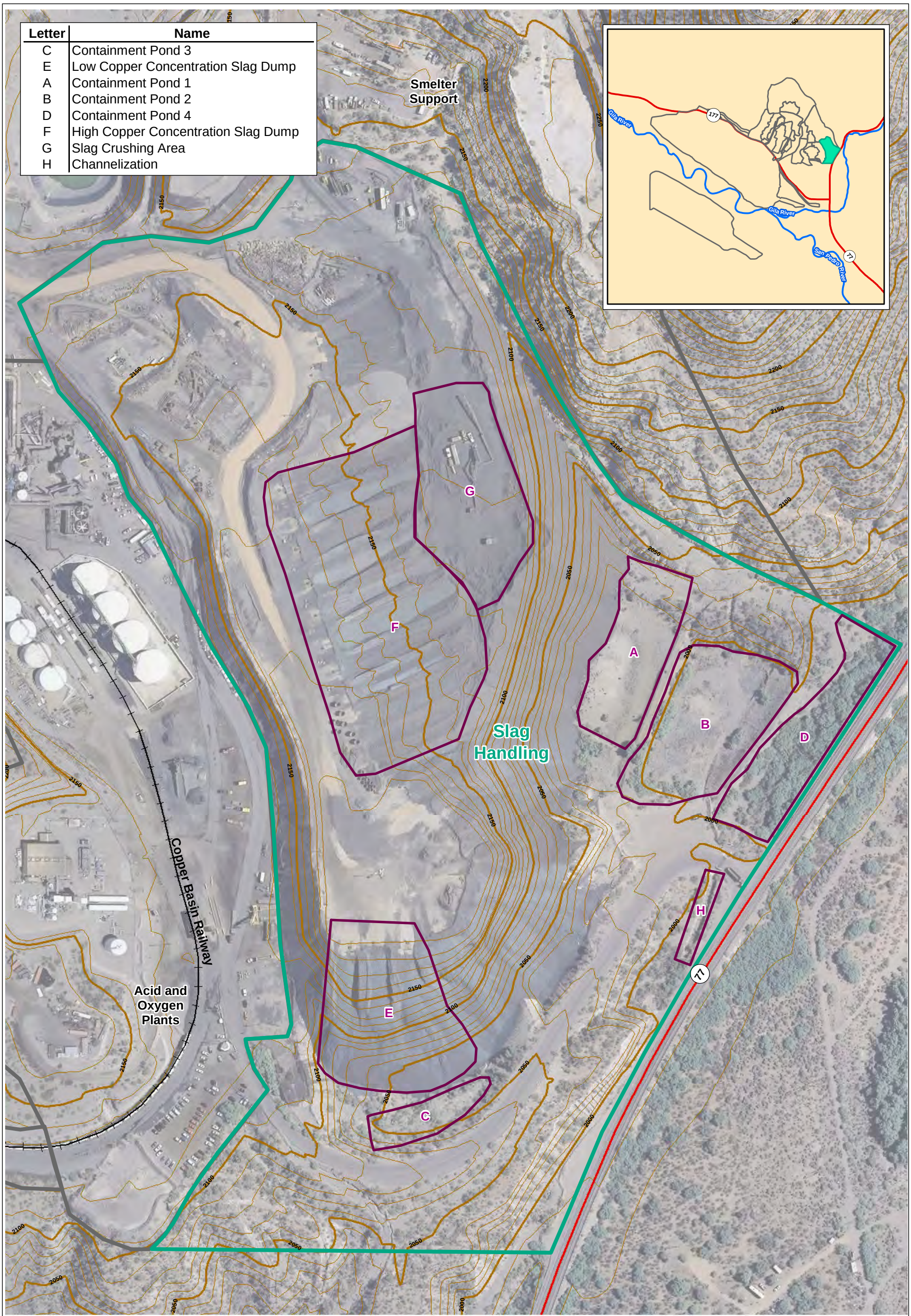

Other RI Area Boundaries
Area #17, Slag Handling
Features
Railroad
Road

200 0 200
Feet
Contour interval = 10 feet

Aerial photography courtesy of ESRI®, dated May 1, 2009.
Topography from CH2M Hill (2008).

Figure 4-18
Features of Area #17, Slag Handling
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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Other RI Area Boundaries
Area #18A Hayden Junction Segment and Area #18B Hayden Junction Segment
Drainage Underpass (Unknown)
Drainage Underpass
Thalweg (Approximate)
Railroads
Road

Aerial photography courtesy of ESRI®, dated May 1, 2009. Topography from CH2M Hill (2008).

500 0 500
Feet
Contour interval = 10 feet

Figure 4-19AB
Features of Area #18A and Area #18B
Kennecott Avenue and Hayden Junction Railroad Segment
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site, Hayden, Arizona

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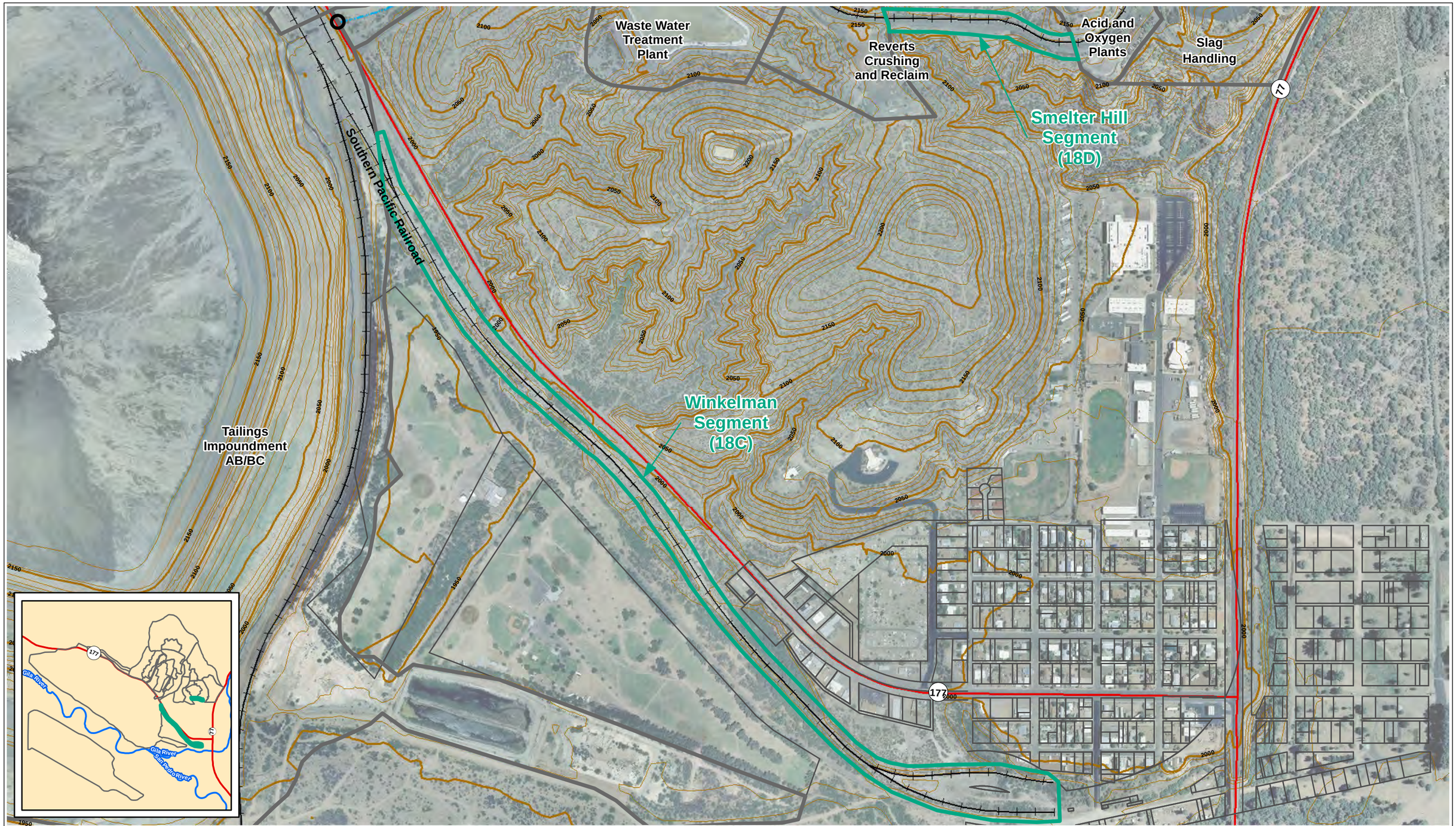

Other RI Area Boundaries
Area #18C, Smelter Hill Segment and Area #18D, Winkelman Segment
Drainage Underpass (Unknown)
Drainage Underpass
Thalweg (Approximate)
Railroads
Road

Aerial photography courtesy of ESRI®, dated May 1, 2009. Topography from CH2M Hill (2008).

500 0 500
Feet

Contour interval = 10 feet

Figure 4-19CD
Features of Area #18C and Area #18D, Smelter Hill and Winkelman Railroad Segments
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site, Hayden, Arizona

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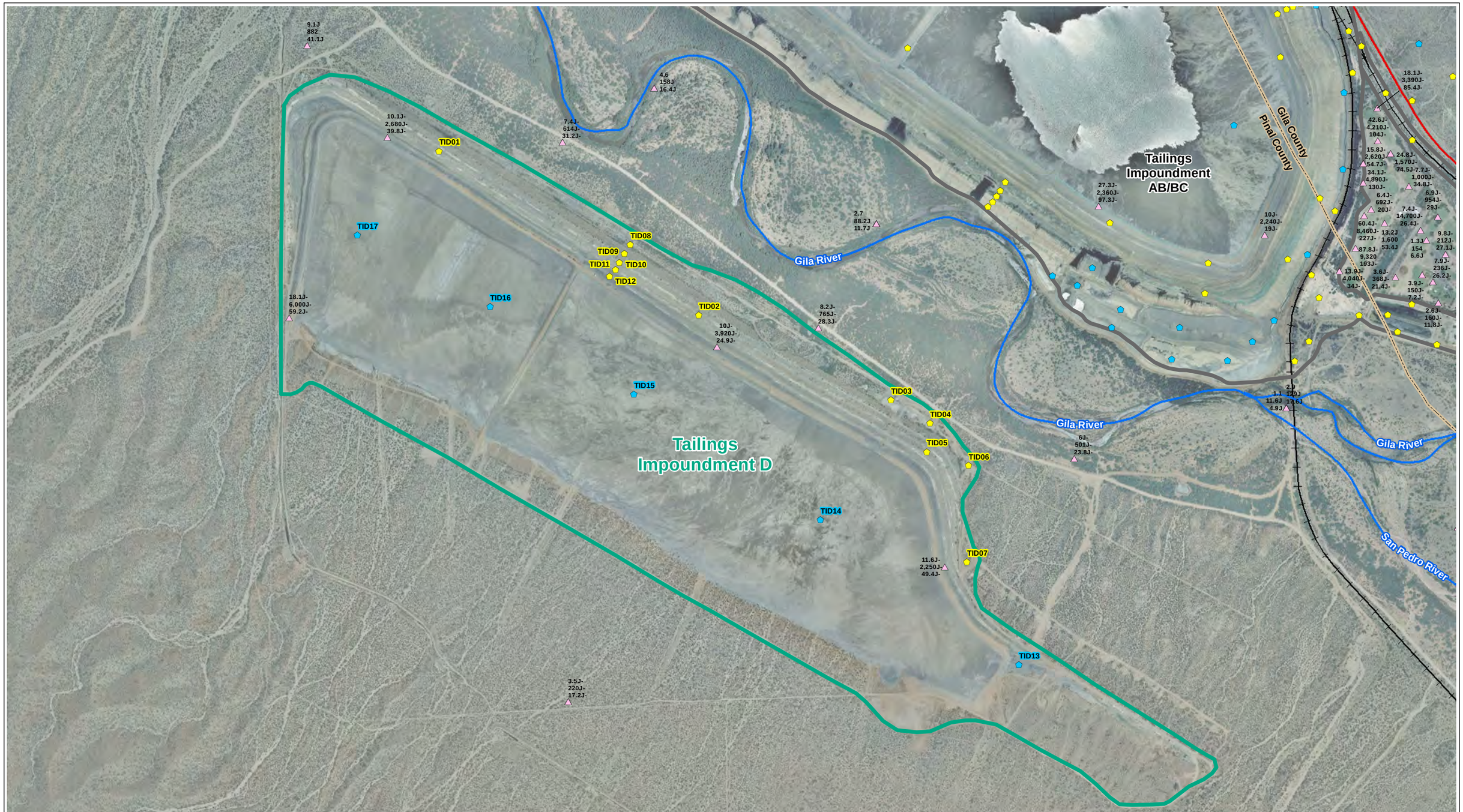

Other RI Area Boundaries
Area #1A, Tailings Impoundment D
County Boundary
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Railroads
River
Roads

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) , from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low). Aerial photography courtesy of ESRI®, dated May 1, 2009.

1,000 0 1,000
Feet

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Figure 7-1A
Area #1A,Tailings Impoundment D
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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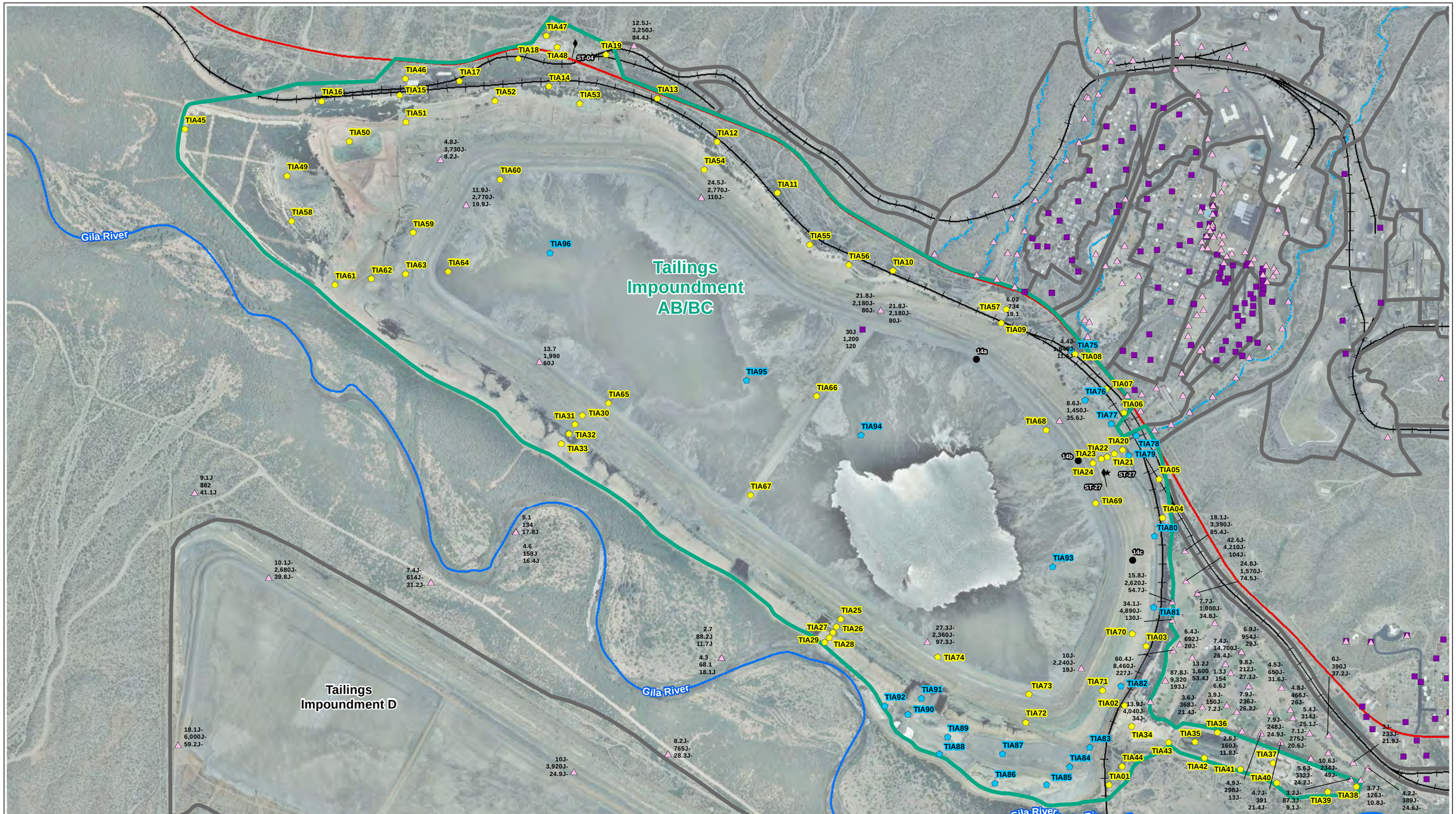

Other RI Area Boundaries
Area #1B, Tailings Impoundment AB/BC
Thalweg (Approximate)
Tailings Impoundment AB/BC
Tailings Impoundment AB/BC
Railroads
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Roads
Air Related Soil Sampling Location
Air Monitoring Location
Source Monitoring Location
River

1,000 0 1,000
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) , from top to bottom: arsenic, copper, and lead
(J = Estimated Value, J+ = Biased High, J- = Biased Low). Aerial photography courtesy of ESRI®, dated May 1, 2009.

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Figure 7-1B
Area #1B, Tailings Impoundment AB/BC
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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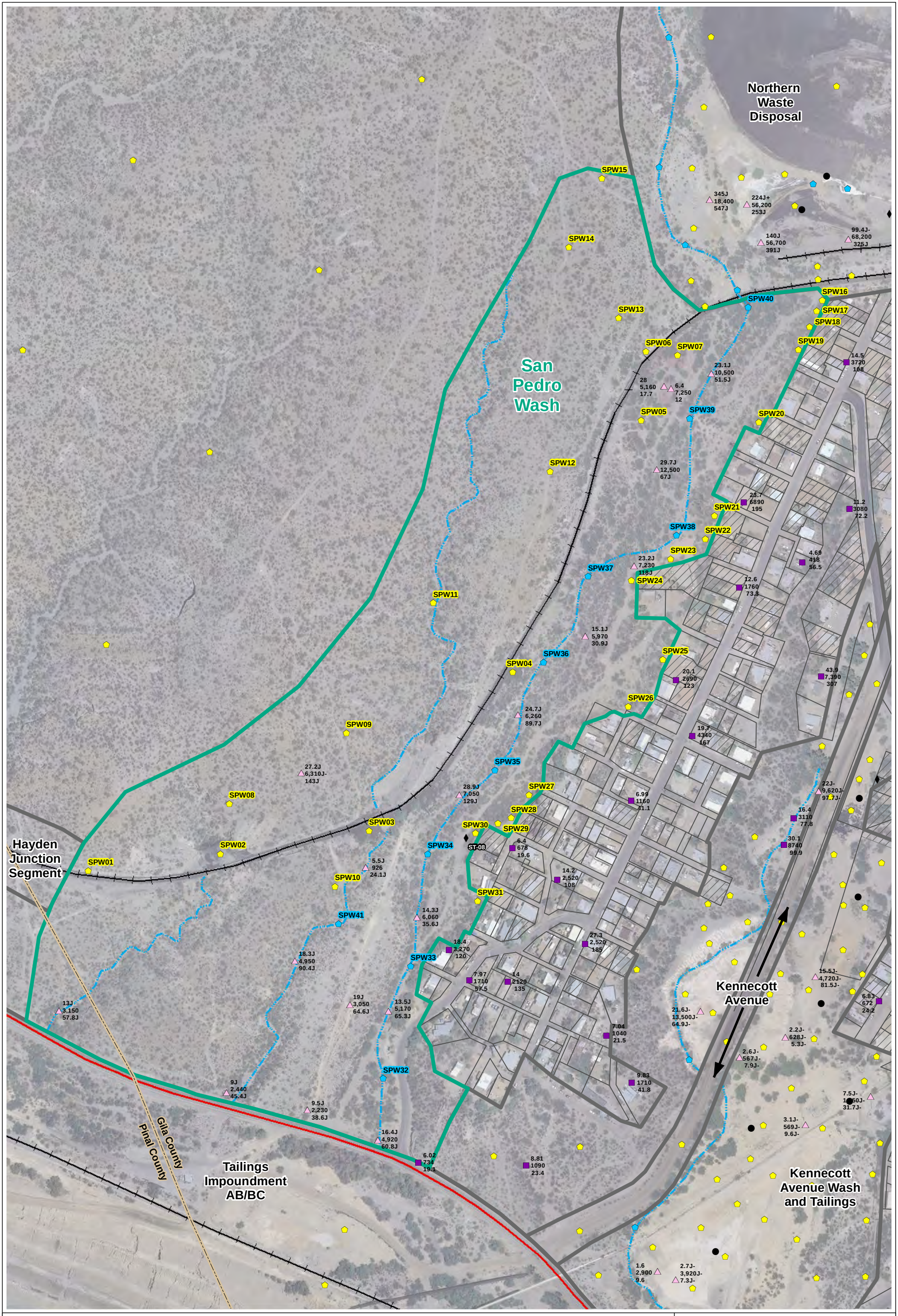

Other RI Area Boundaries
Area #2, San Pedro Wash
Previously Remediated Parcel
Air Related Soil Sampling Location
Air Monitoring Location
Proposed Soil Sample
Proposed Sediment Sample
Pre CH2M Hill Soil Sample (2000-2004)
CH2M Hill Soil Sample (2008)
Thalweg (Approximate)
Railroads
Road
County Boundary

150 0 150
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low). Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-2
Area #2, San Pedro Wash
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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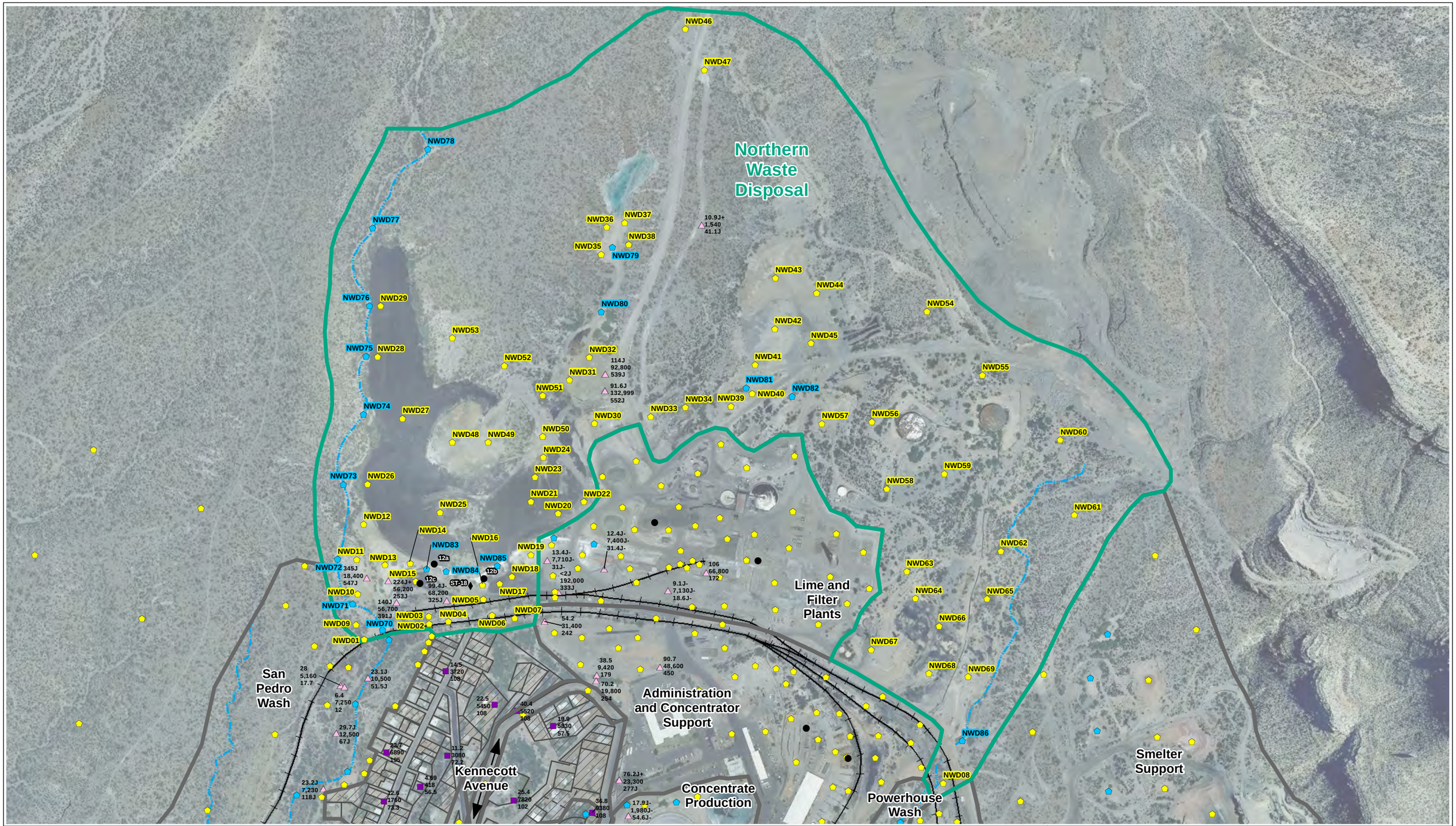

Other RI Area Boundaries
Area #3, Northern Waste Disposal
Thalweg (Approximate)
Proposed Soil Sample
Proposed Sediment Sample
Railroads
CH2M Hill Soil Sample (2008)
Pre-CH2M Hill Soil Sample (2000-2004)
Air Related Soil Sampling Location
Air Monitoring Location
Previously Remediated Parcel

500 0 500
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

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Figure 7-3
Area #3, Northern Waste Disposal
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site, Hayden, Arizona

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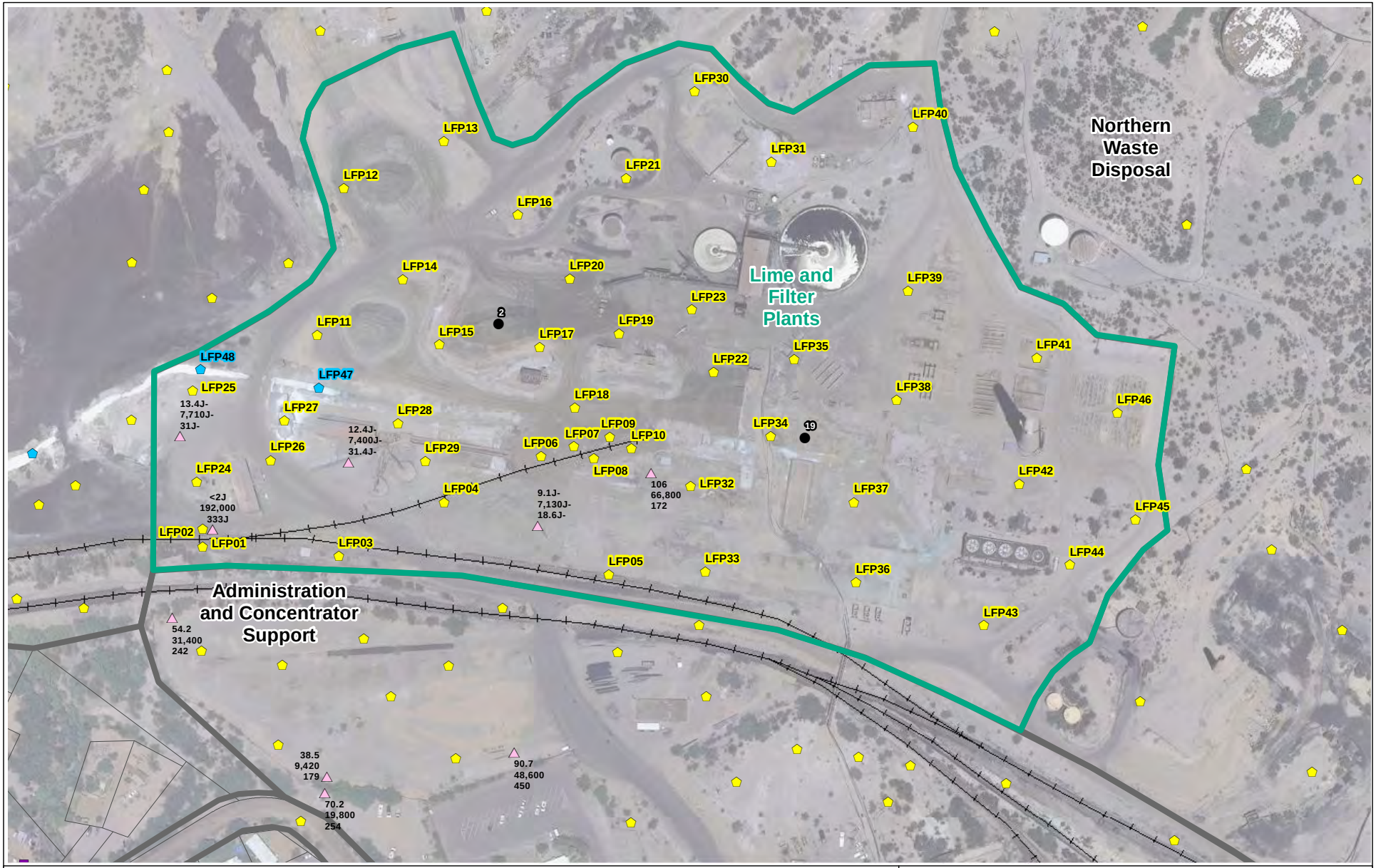

Other RI Area Boundaries
Area #4, Lime and Filter Plants
Railroads
Proposed Soil Sample
Proposed Sediment Sample
Air Related Soil Sampling Location
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg)
from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

200 0 200
Feet

Figure 7-4
Area #4, Lime and Filter Plants
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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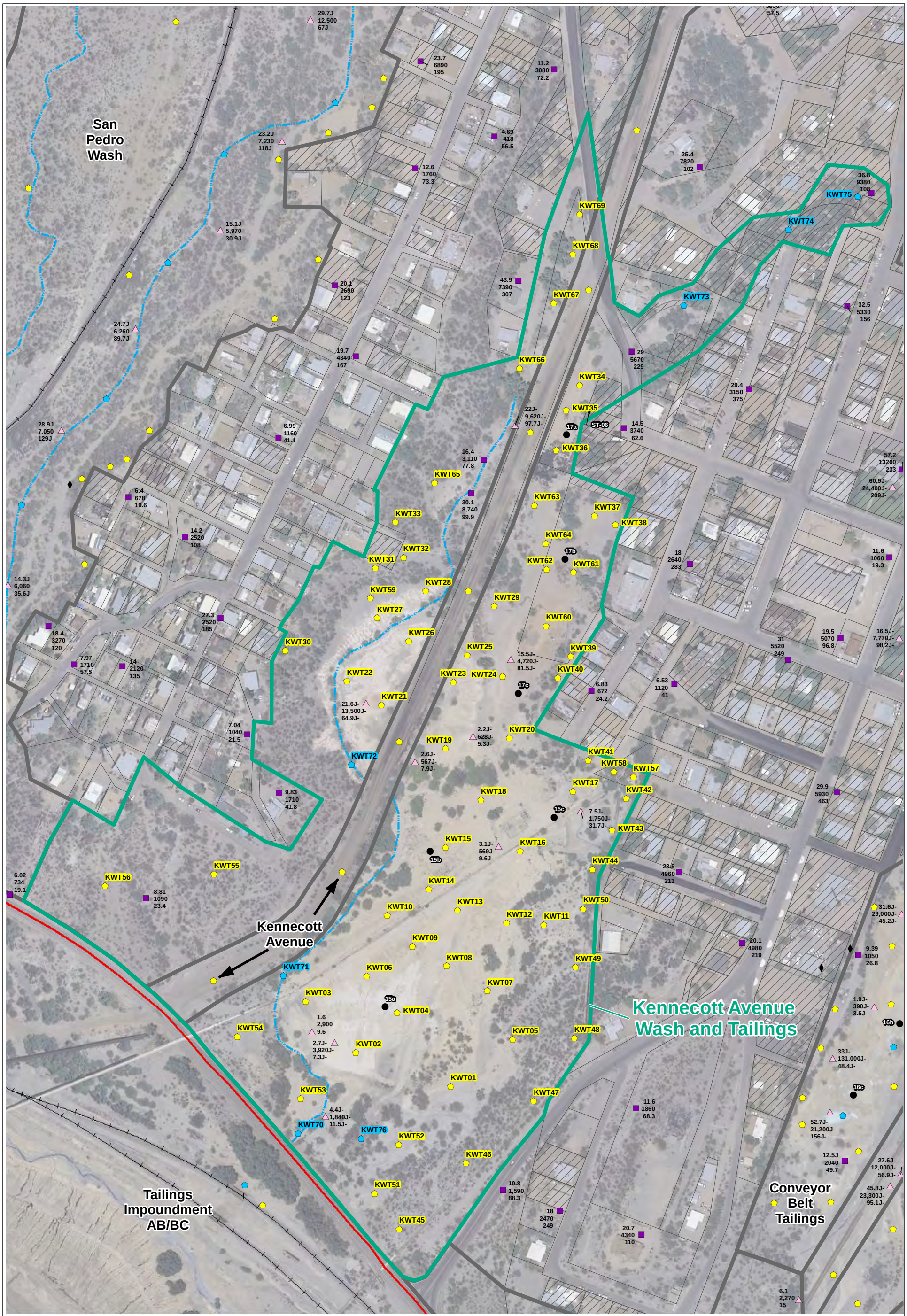

Other RI Area Boundaries
Area #5, Kennecott Avenue Wash and Tailings
Thalweg (Approximate)
Railroads
Roads
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Previously Remediated Parcel
Air Related Soil Sampling Location
Air Monitoring Location

150 0 150
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-5
Area #5, Kennecott Avenue Wash and Tailings
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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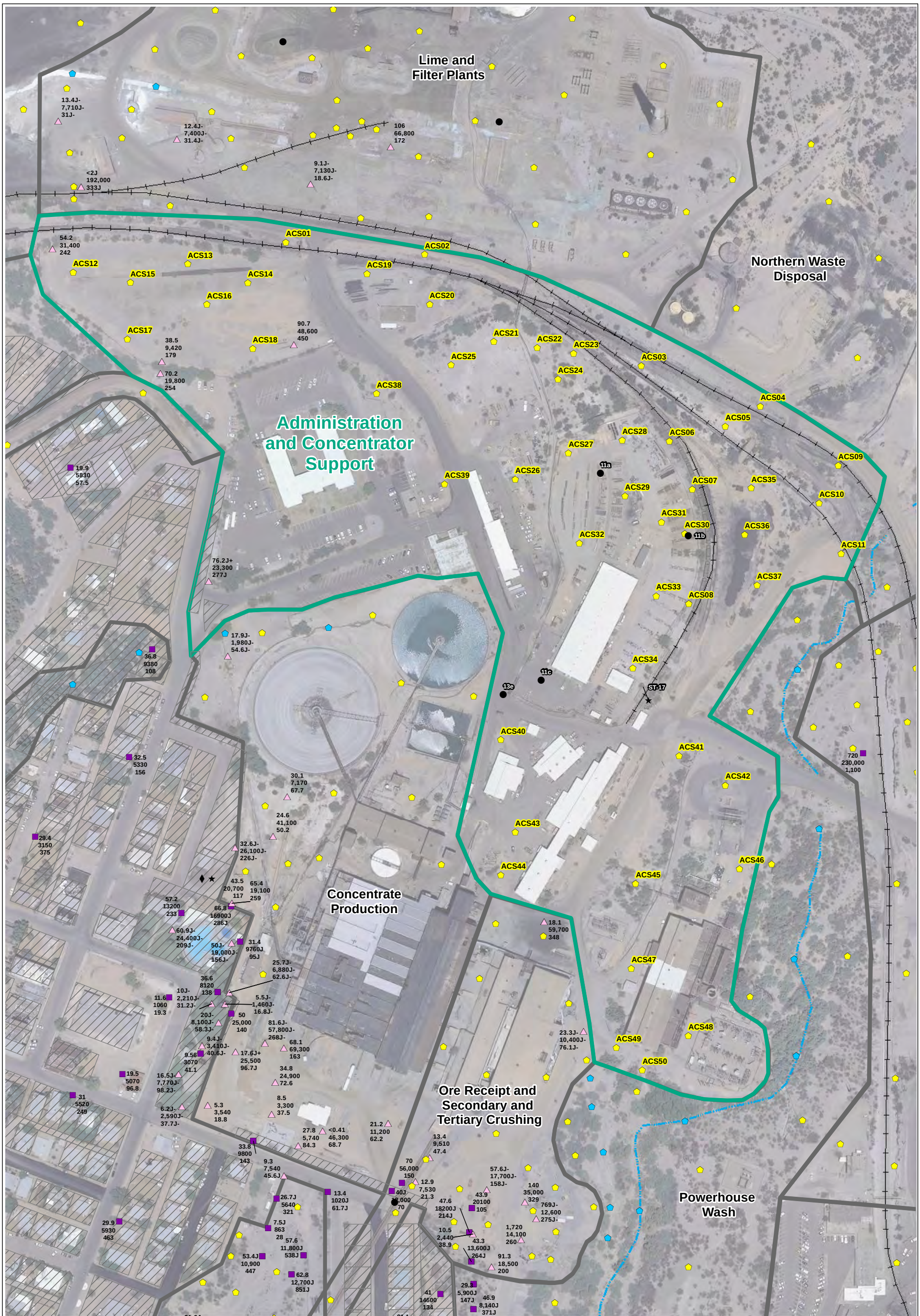

Other RI Area Boundaries
Area #6, Administration and Concentrator Support
Previously Remediated Parcel
Thalweg (Approximate)
Railroads

Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)

Air Related Soil Sampling Location
Air Monitoring Location
Source Monitoring Location

200 0 200
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg)
from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-6
Area #6, Administration and Concentrator Support
Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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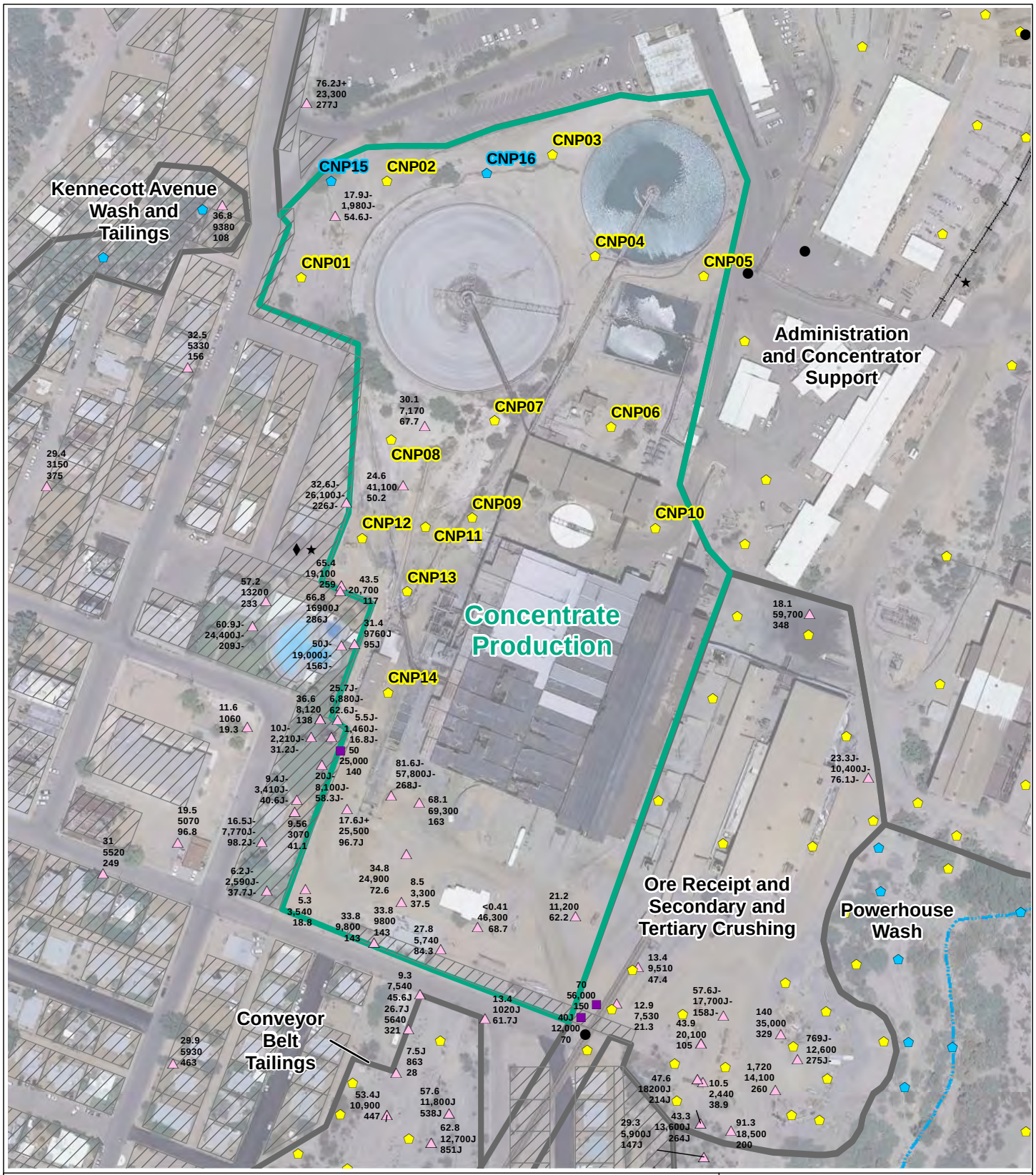

Other RI Area Boundaries
Area #7, Concentrate Production
Thalweg (Approximate)
Railroads
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Air Related Soil Sampling Location
Air Monitoring Location
Source Monitoring Location
Previously Remediated Parcel

150 0 150
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low). Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-7
Area #7, Concentrate Production
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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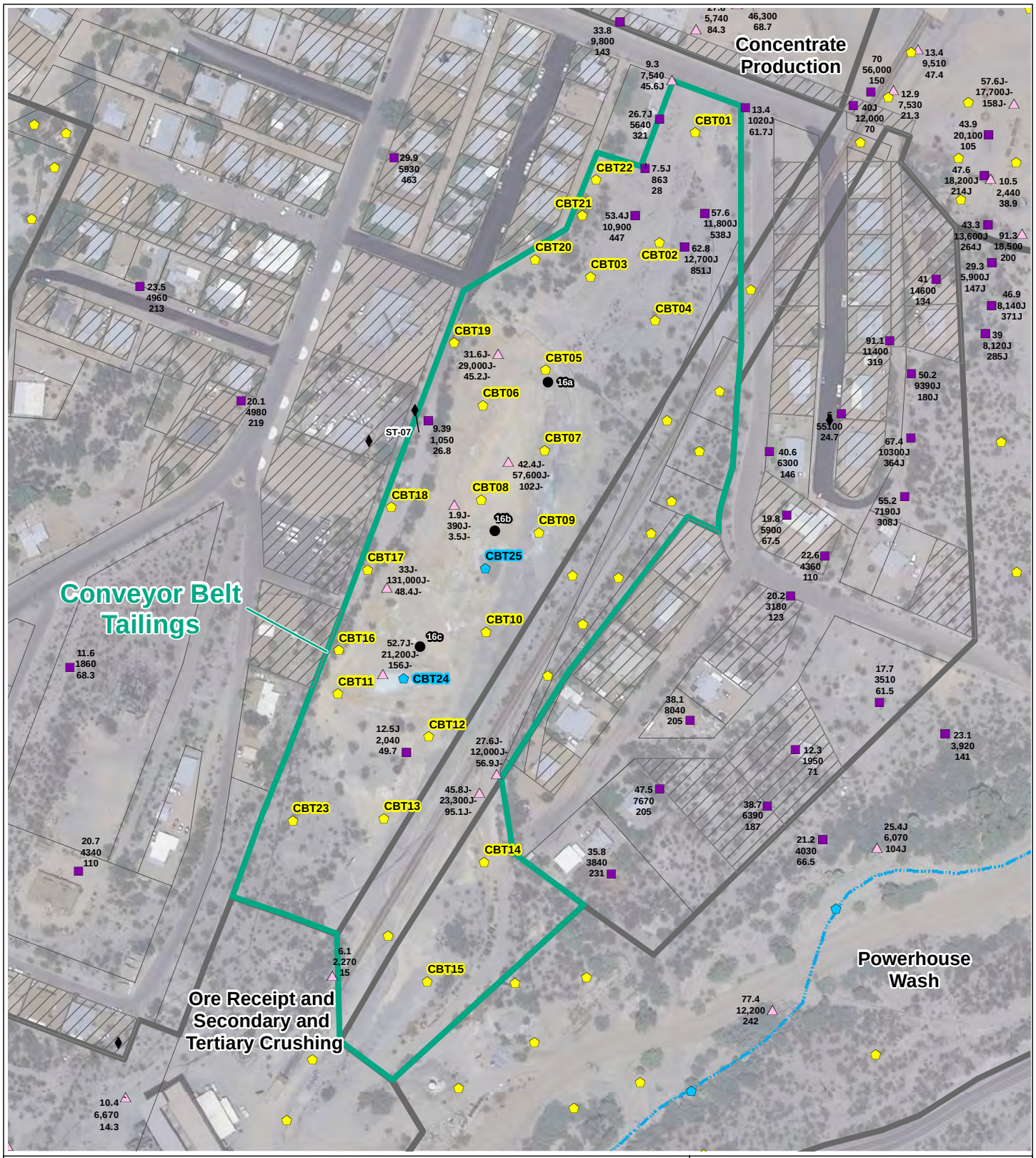

Other RI Area Boundaries
Area #8, Conveyor Belt Tailings
Thalweg (Approximate)
Previously Remediated Parcel
Air Monitoring Location
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Air Release Soil Sampling Location

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg)
from top to bottom: arsenic, copper, and lead
(J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

150 0 150
Feet

Figure 7-8
Area #8, Conveyor Belt Tailings
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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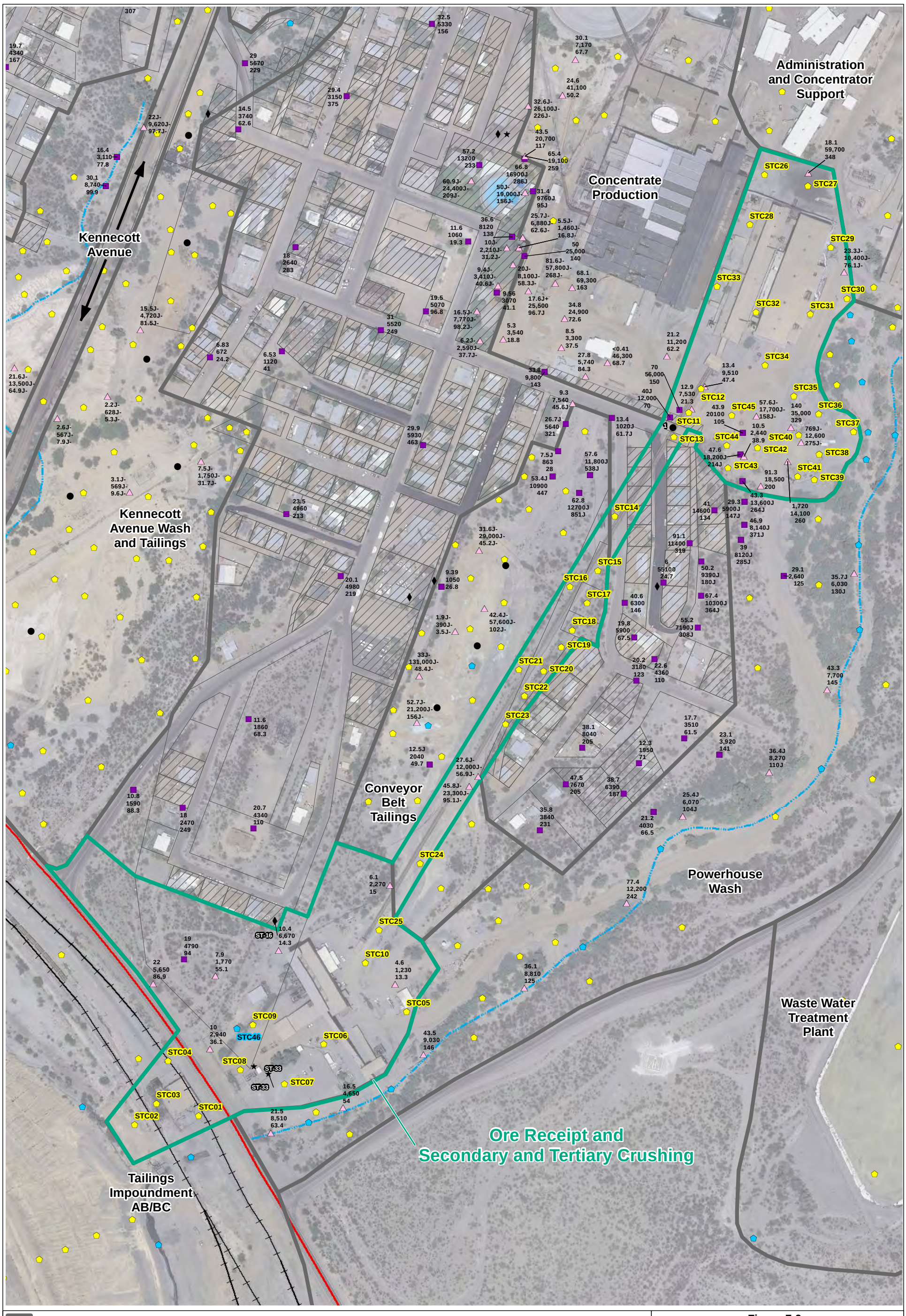

Other RI Area Boundaries
Area #9, Ore Receipt and Secondary and Tertiary Crushing
Thalweg (Approximate)
Railroads
Proposed Soil Sample
all other
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Previously Remediated Parcel
Air Monitoring Location
Source Monitoring Location
Air Related Soil Sampling Location
Road

250 0 250
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-9
Area #9, Ore Receipt and Secondary and Tertiary Crushing
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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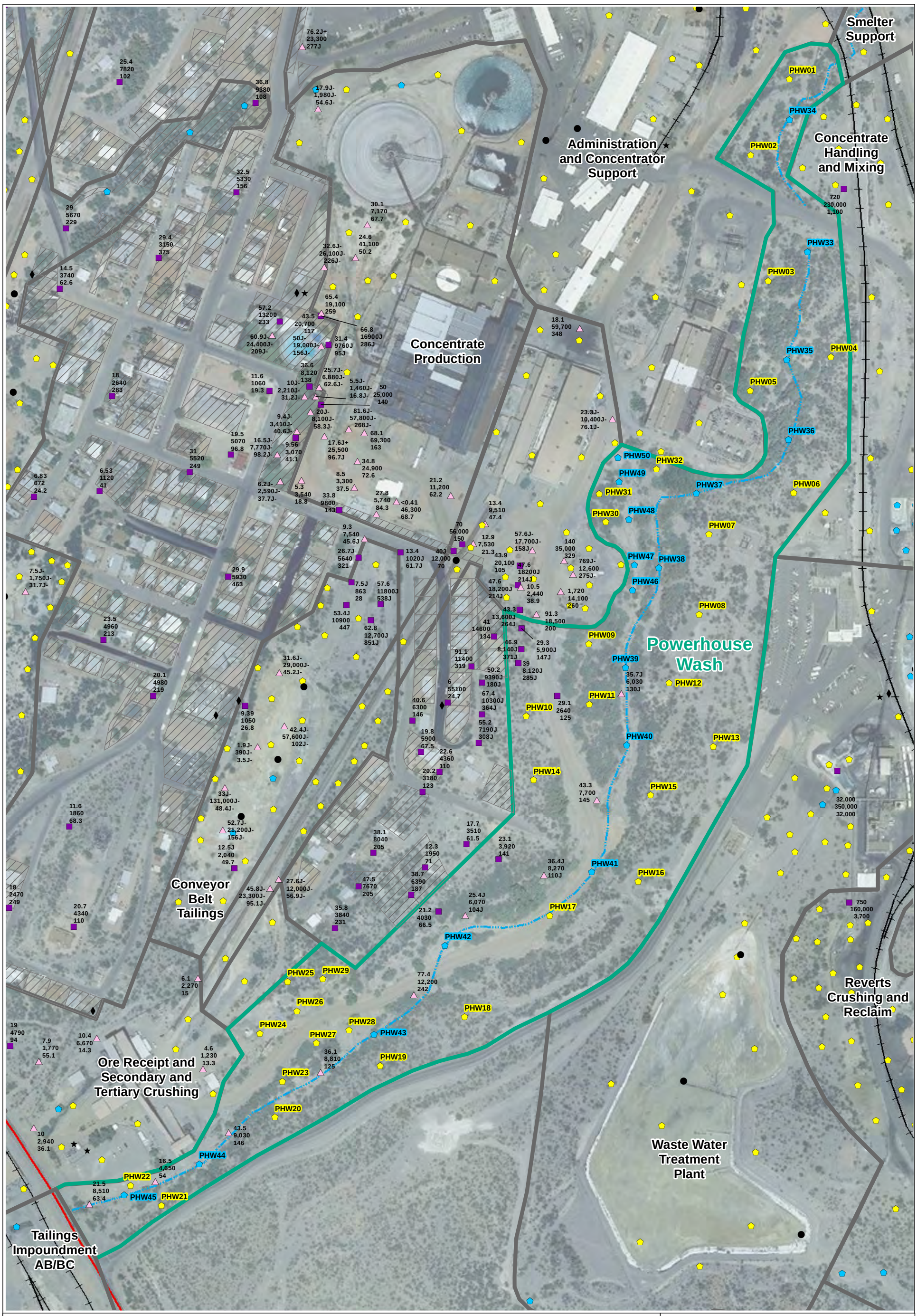

Other RI Area Boundaries
Area #10, Powerhouse Wash
Previously Remediated Parcel
Thalweg (Approximate)
Railroads

Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)

Air Monitoring Location
Source Monitoring Location; Source
Air Related Soil Sampling Location

150 0 150
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg)
from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-10
Area #10, Powerhouse Wash
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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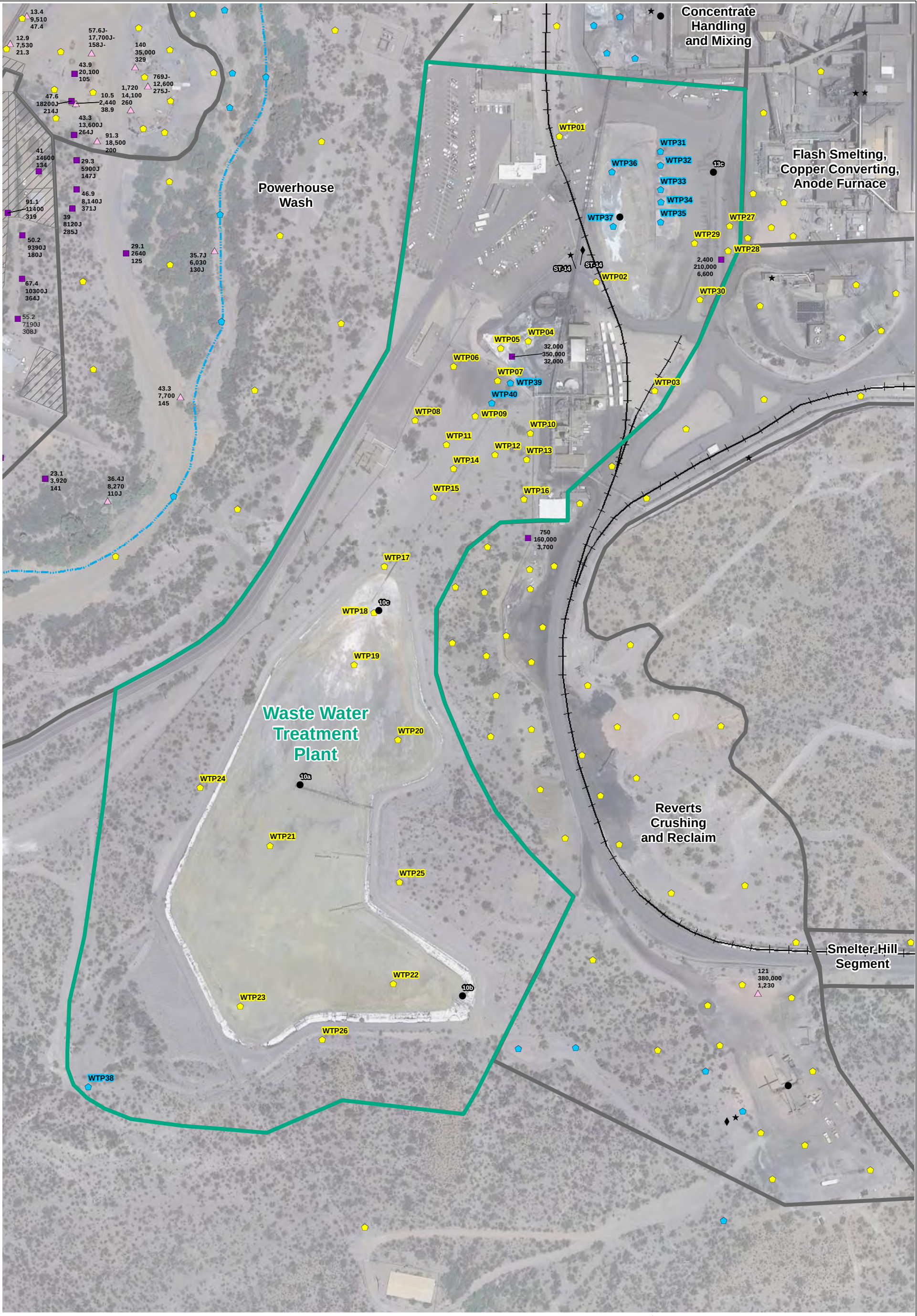

Other RI Area Boundaries
Area #11, Waste Water Treatment Plant
Previously Remediated Parcel
Thalweg (Approximate)
Railroads

Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)

Air Monitoring Location
Source Monitoring Location
Air Related Soil Sampling Location

N

150 0 150
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low). Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-11
Area #11, Waste Water Treatment Plant
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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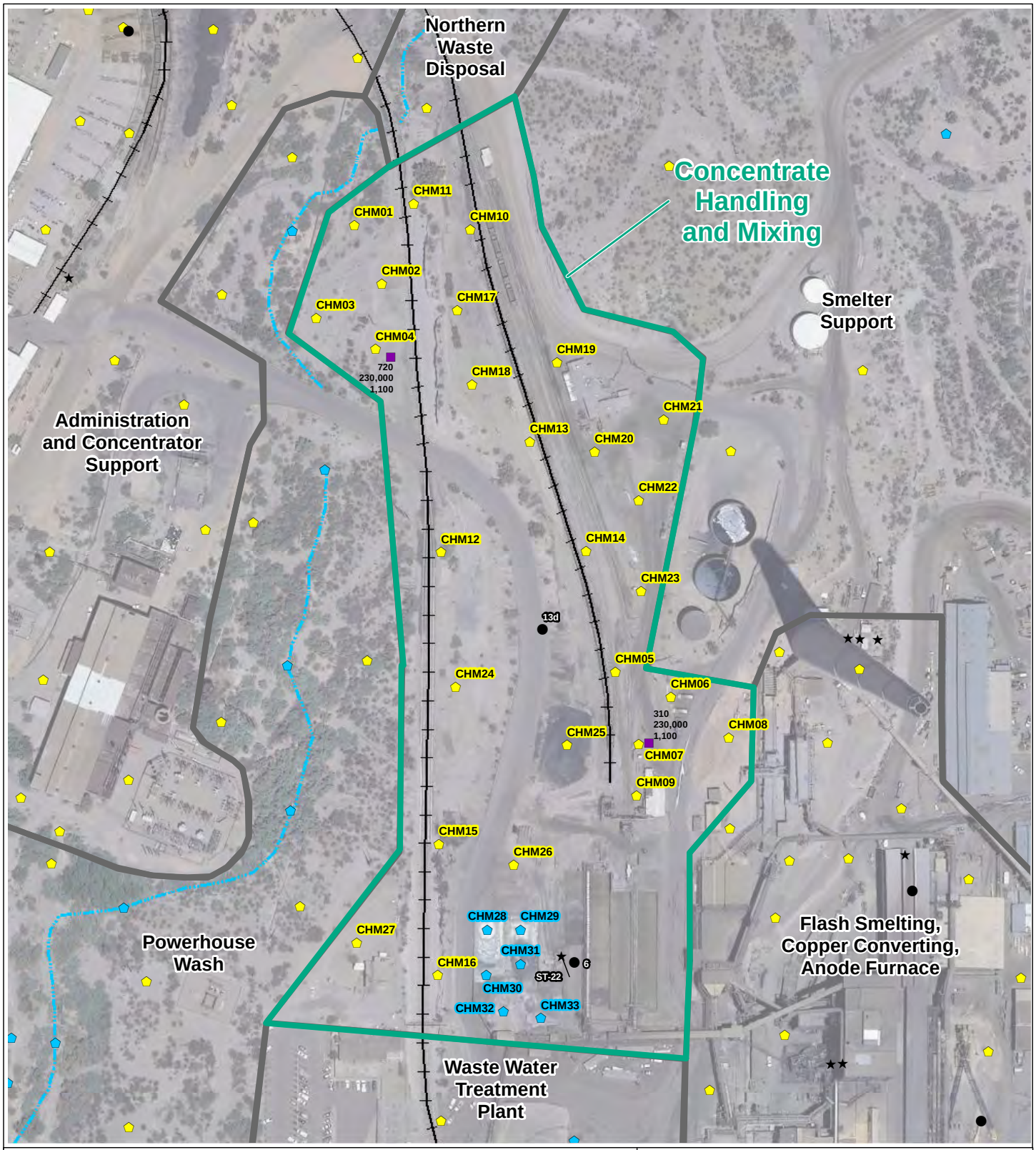

Other RI Area Boundaries
Area #12, Concentrate Handling and Mixing
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Source Monitor Location
Air Release Soil Sample Location
Thalweg (Approximate)
Railroads

200 0 200
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-12
Area #12, Concentrate Handling and Mixing
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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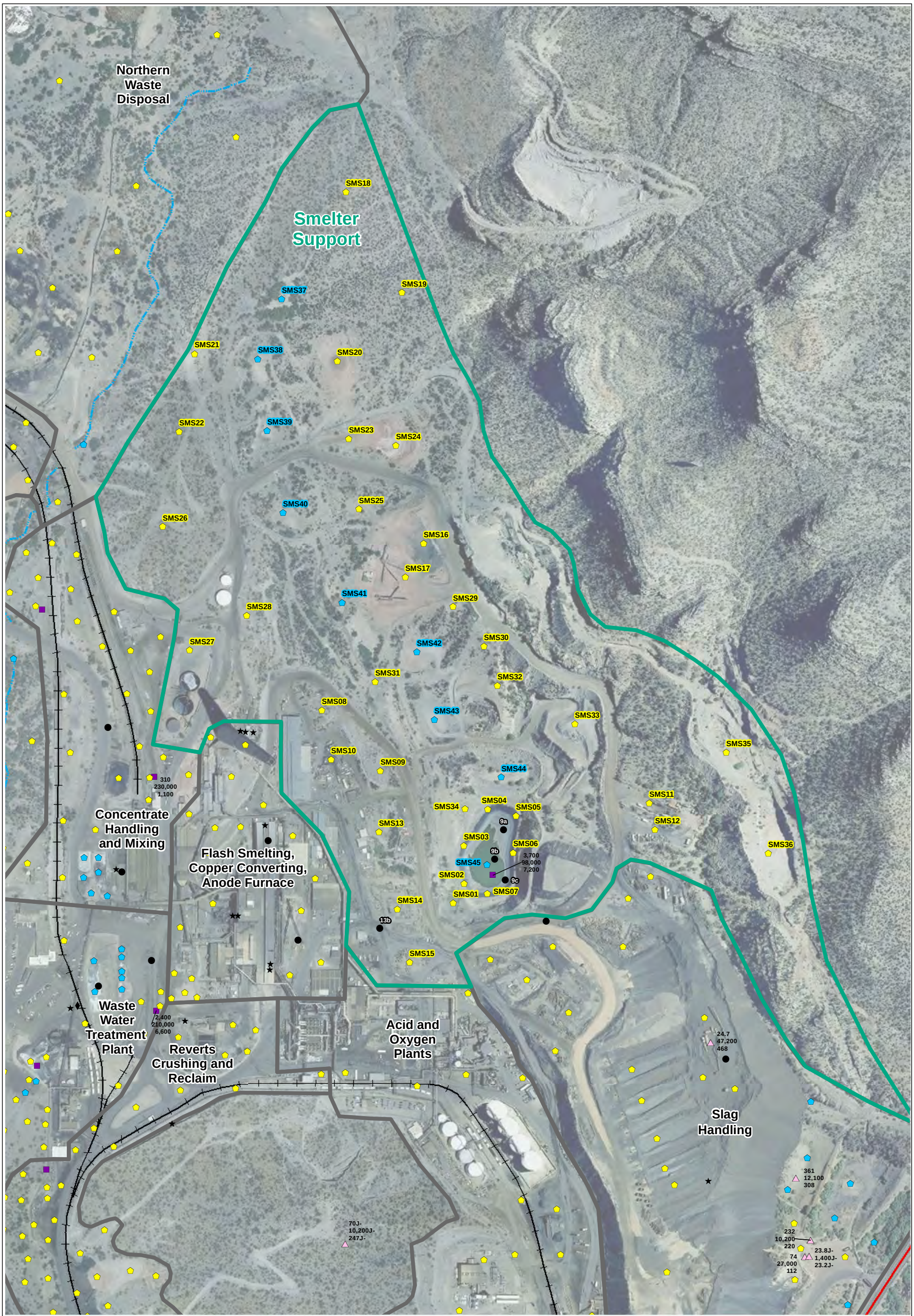

Other RI Area Boundaries
Area #13, Smelter Support
Thalweg (Approximate)
Railroads
Roads
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Air Related Soil Sampling Location
Ambient Air Monitoring Location
Source

350 0 350
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-13
Area #13, Smelter Support
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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Other RI Area Boundaries
Area #14, Flash Smelting, Copper Converting, Anode Furnace
Railroads
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Air Related Soil Sampling Location
Air Monitoring Location
Source Monitoring Location

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg)
from top to bottom: arsenic, copper, and lead
(J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

150 0 150
Feet

Figure 7-14
Area #14, Flash Smelting, Copper Converting, Anode Furnace
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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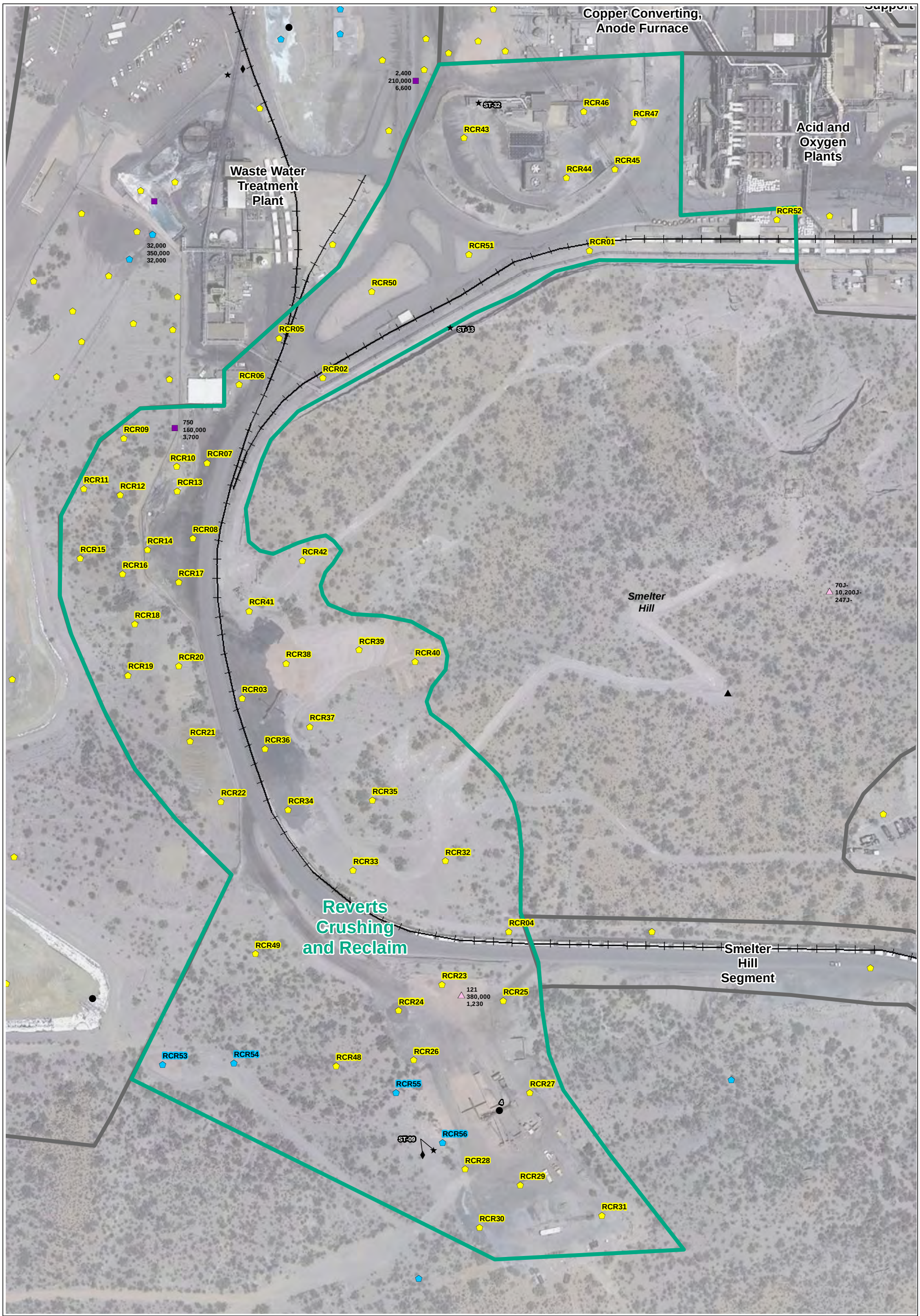

Other RI Area Boundaries
Area #15, Reverts Crushing and Reclaim
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Air Monitoring Location
Meteorological Monitoring Location
Source Monitoring Location
Air Related Soil Sampling Location
Railroads

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

150 0 150
Feet

Figure 7-15
Area #15, Reverts Crushing and Reclaim
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

ITSI Innovative Technical Solutions, Inc. A Gilbane Company

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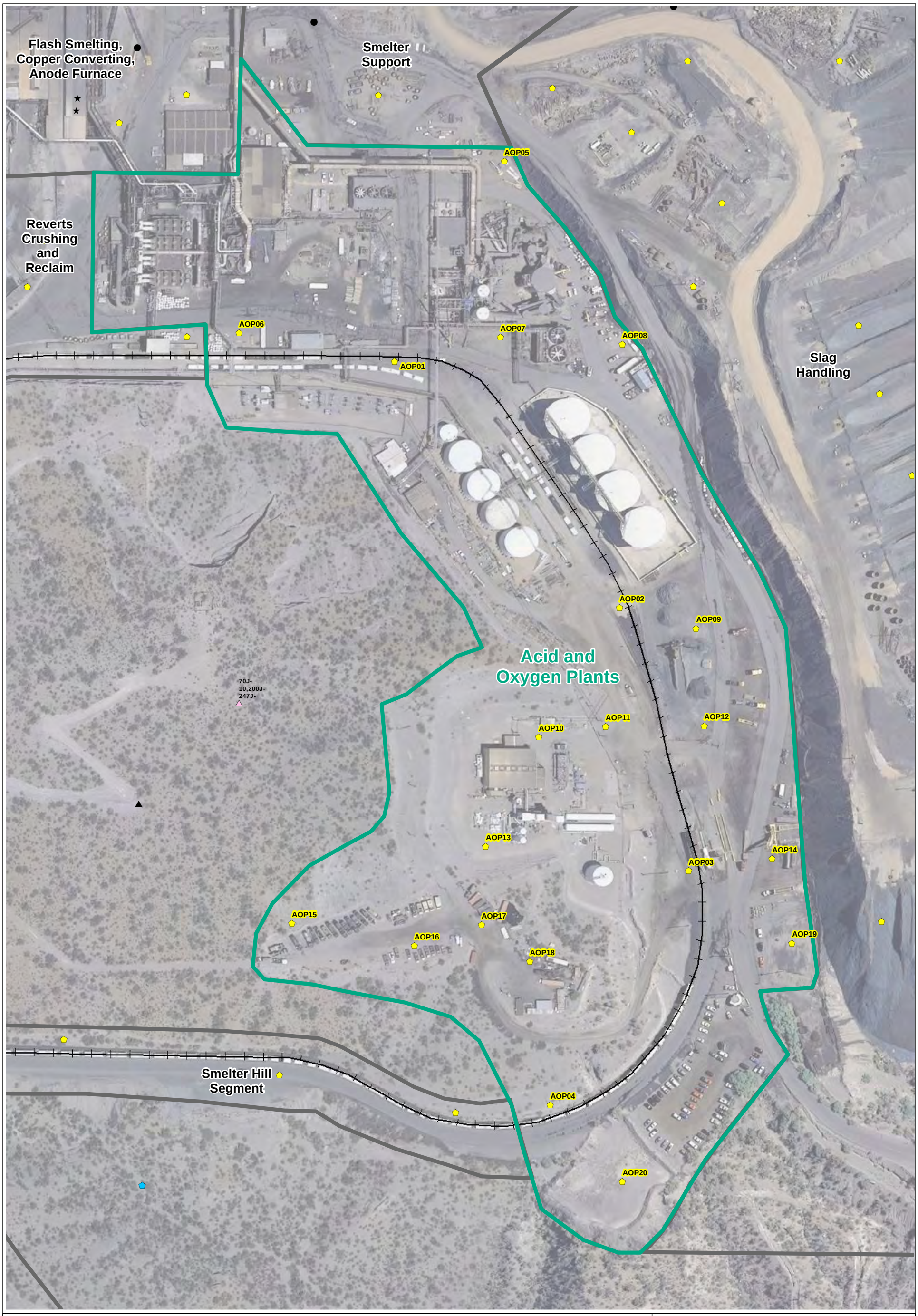

Other RI Area Boundaries
Area #16, Acid and Oxygen Plants
Railroads
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Air Related Soil Sampling Location
Meteorological Monitoring Location
Source Monitoring Location

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

150 0 150
Feet

Figure 7-16
Area #16, Acid and Oxygen Plants
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

ITSI Innovative Technical Solutions, Inc. A Gilbane Company

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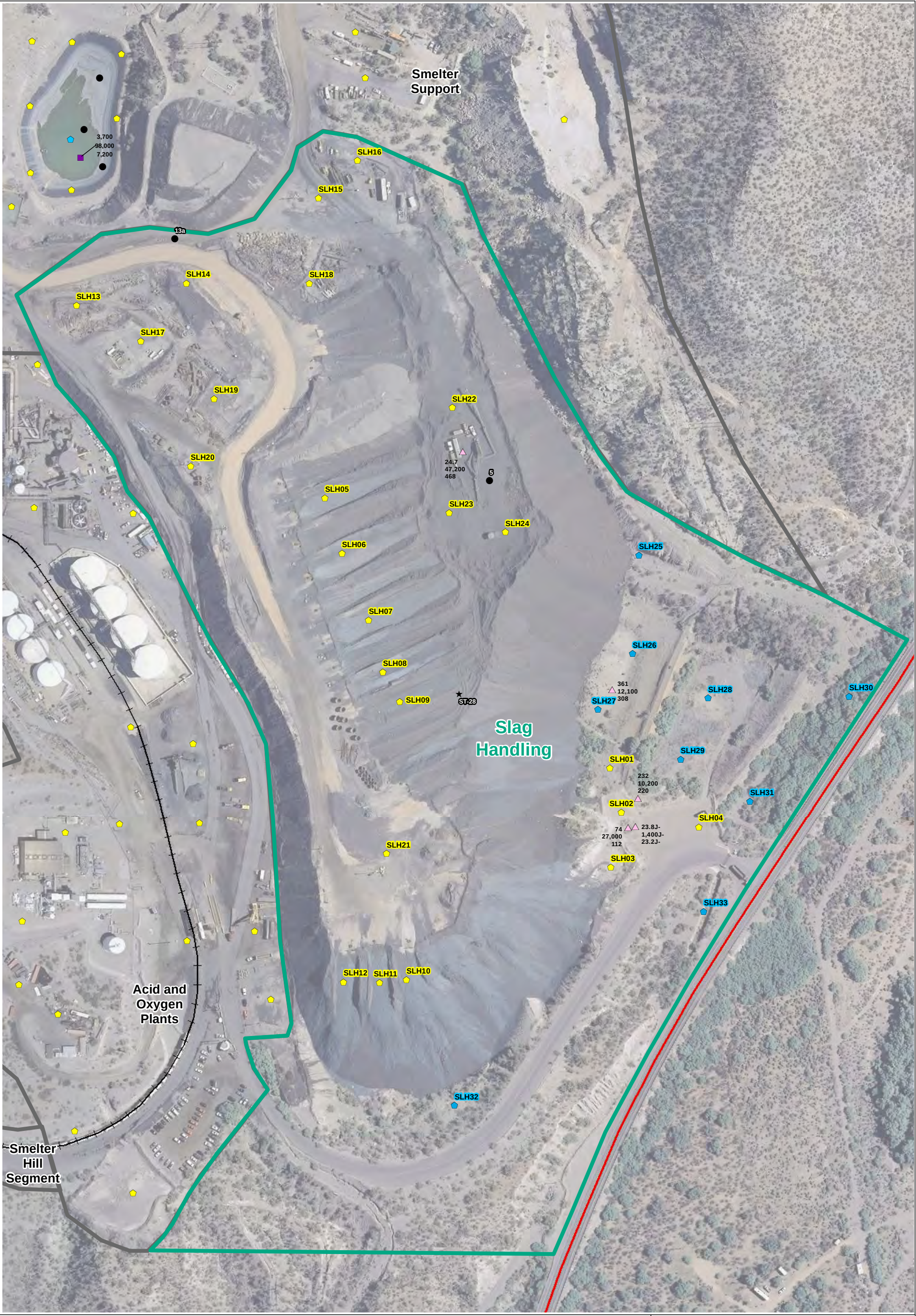

Other RI Area Boundaries
Area #17, Slag Handling
Railroads
Road
Proposed Soil Sample
Proposed Sediment Sample
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Air Related Soil Sampling Location
Source Monitoring Location

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

200 0 200
Feet

Figure 7-17
Area #17, Slag Handling
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan
(Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site
Hayden, Arizona

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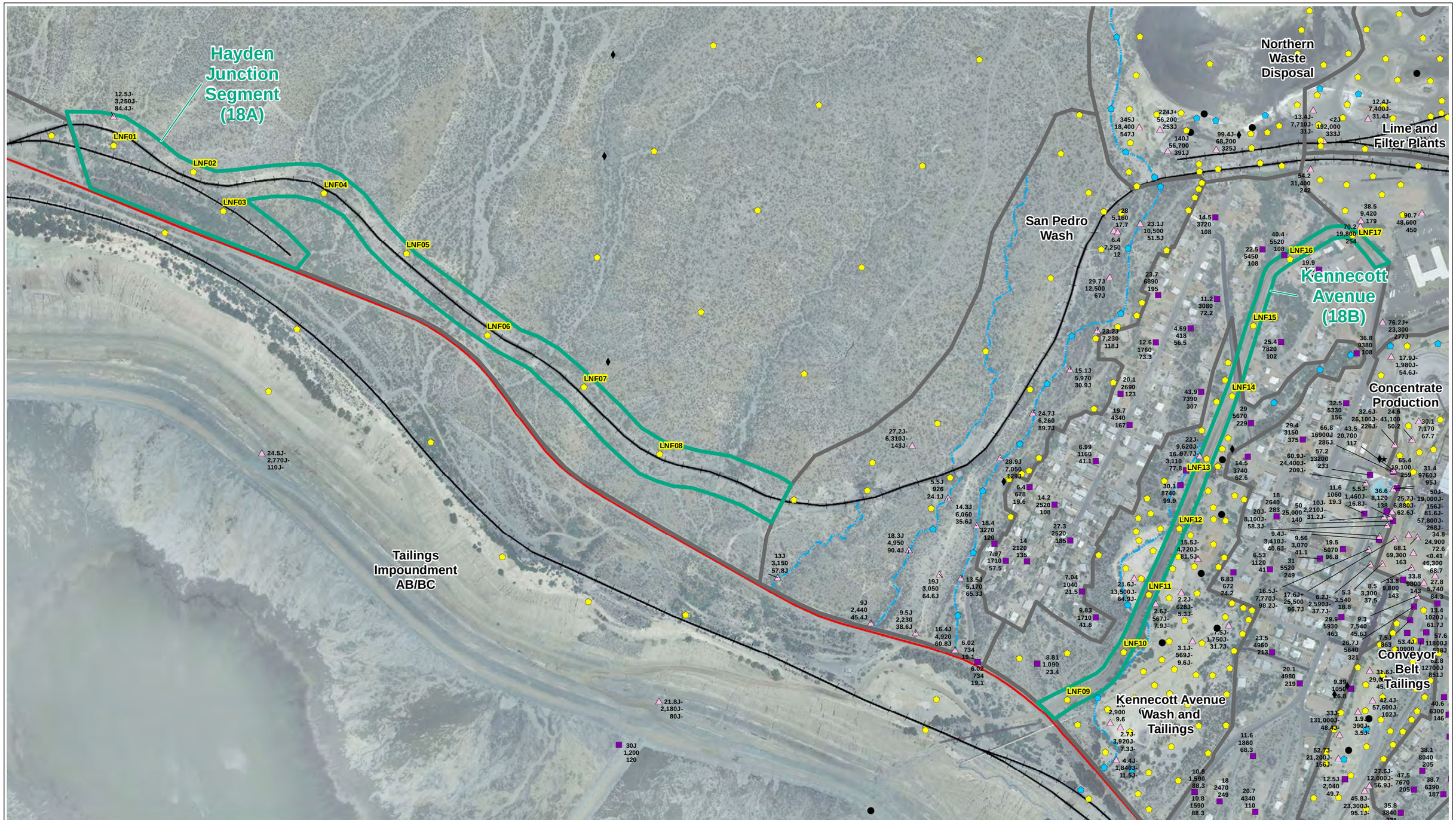

Other RI Area Boundaries
Areas #18A/B, Kennecott Avenue and Hayden Junction Railroad Segments
Proposed Soil Sample
Proposed Sediment Sample
Railroads
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Thalweg (Approximate)
Air Monitoring Location
Source Monitoring Location
Air Related Soil Sampling Location
Roads

250 0 250
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) , from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-18AB
Area #18A and #18B, Kennecott Avenue and Hayden Junction Railroad Segment
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site, Hayden, Arizona

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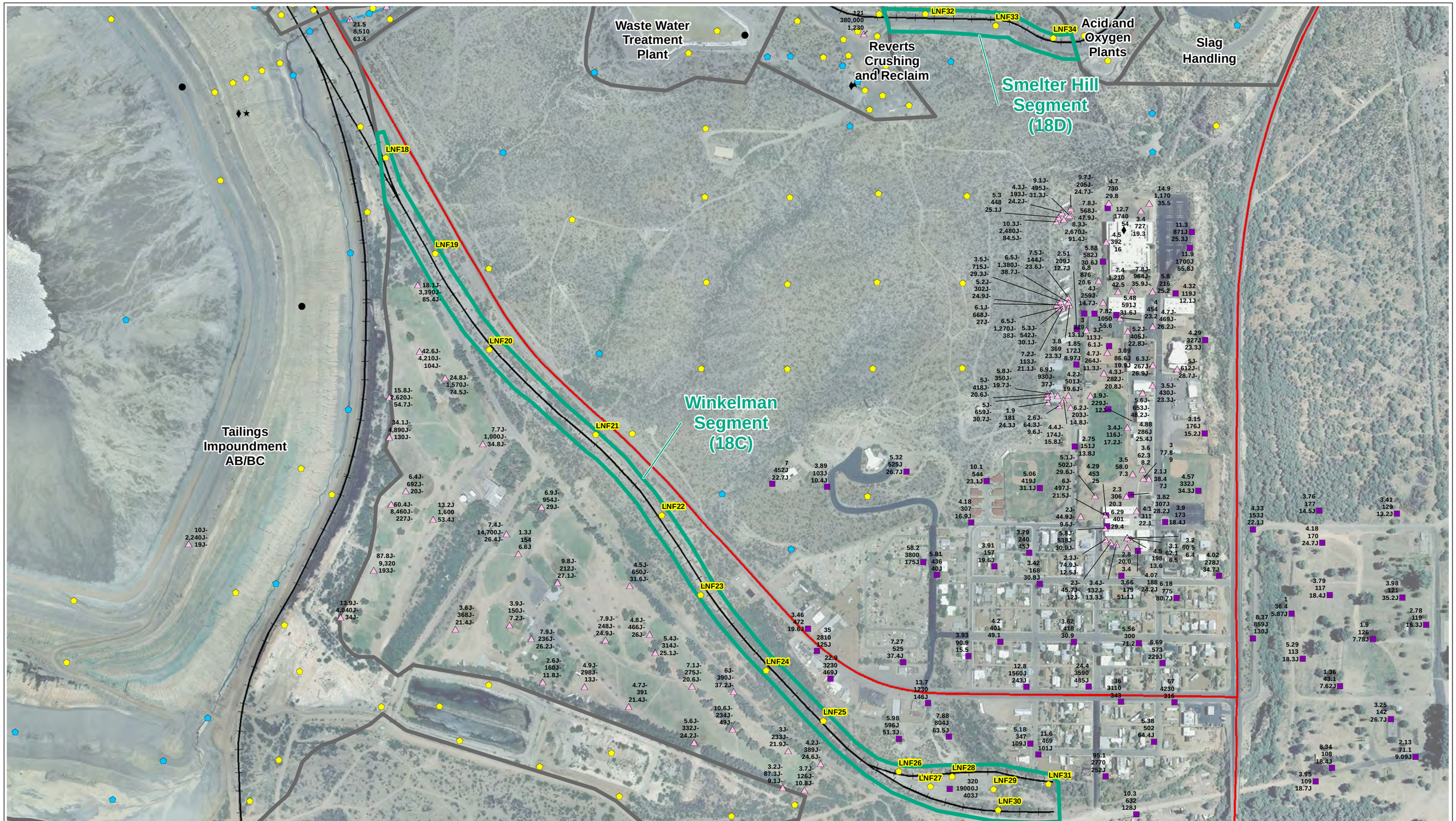

Other RI Area Boundaries
Areas #18C/D, Smelter Hill and Winkelman Railroad Segments
Railroads
Proposed Soil Sample
Proposed Sediment Sample
Thalweg (Approximate)
CH2M Hill Soil Sample (2008)
Pre CH2M Hill Soil Sample (2000-2004)
Roads
Air Related Soil Sampling Location
Air Monitoring Location
Source Monitoring Location

250 0 250
Feet

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) , from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low).
Aerial photography courtesy of ESRI®, dated May 1, 2009.

Figure 7-18CD
Area #18C and #18D, Smelter Hill and Winkelman Railroad Segments
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site, Hayden, Arizona

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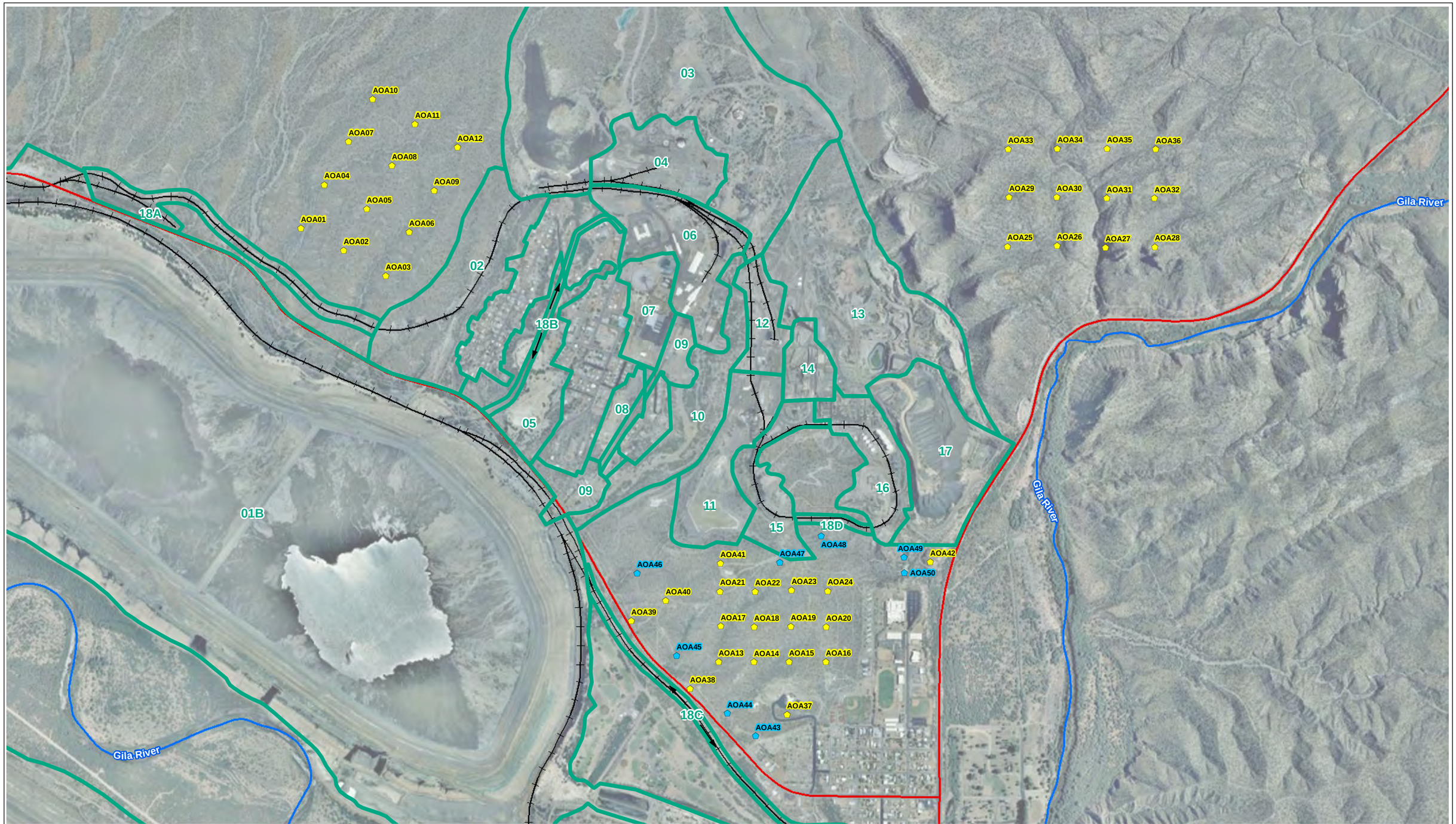

RI Area Boundaries
Proposed Soil Sample
Area Outside of Areas 1-18
River
Highways
Railroads

Notes: Displayed historical analytical results in milligrams per kilogram (mg/kg) , from top to bottom: arsenic, copper, and lead (J = Estimated Value, J+ = Biased High, J- = Biased Low). Aerial photography courtesy of ESRI®, dated May 1, 2009.

1,100 0 1,100
Feet

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Figure 7-19
Area #19, Area Outside of Areas 1-18
Proposed Soil and Sediment Samples
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
ASARCO Hayden Plant Site, Hayden, Arizona

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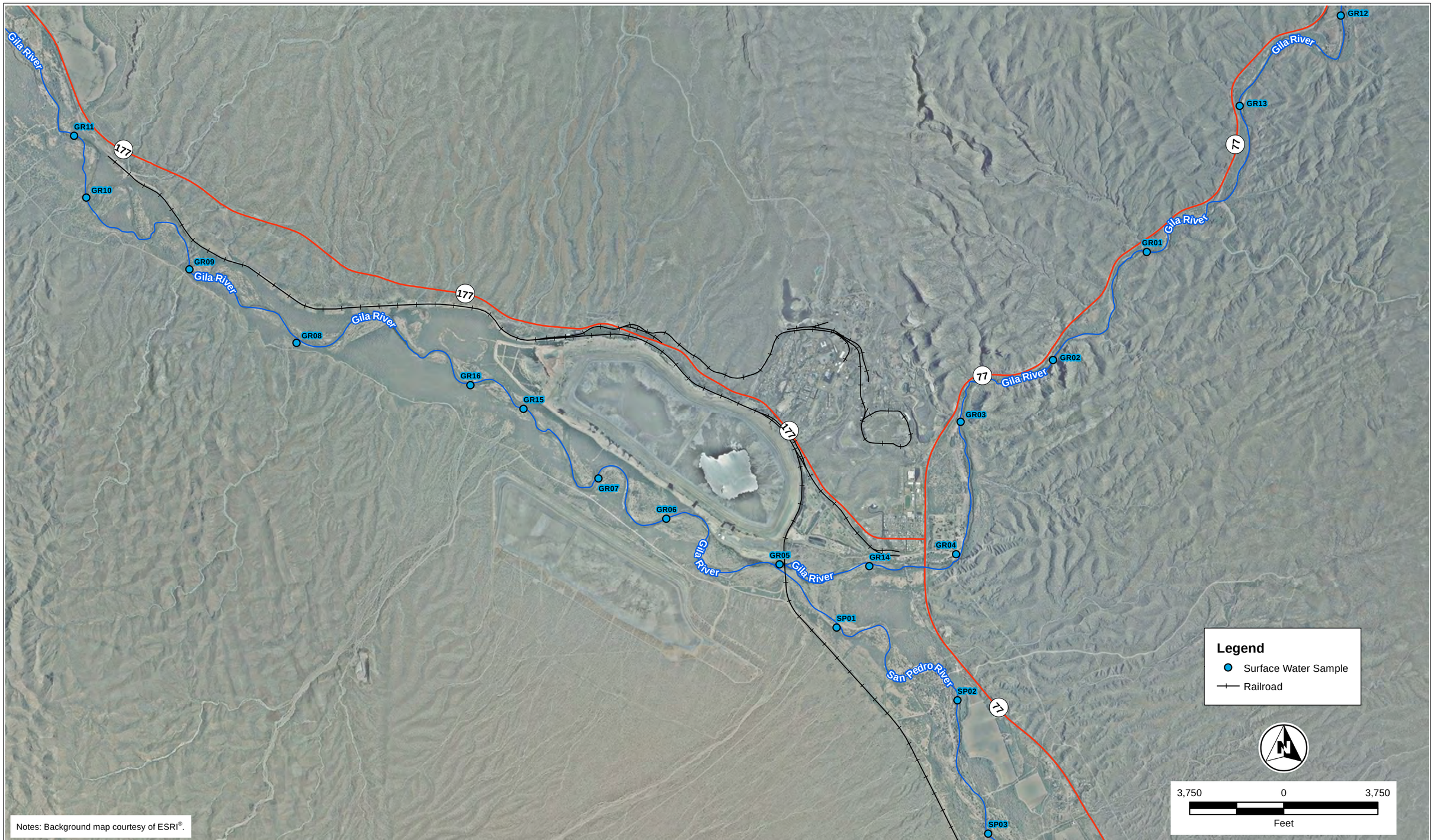

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 7-20
Proposed Surface Water Sampling Locations

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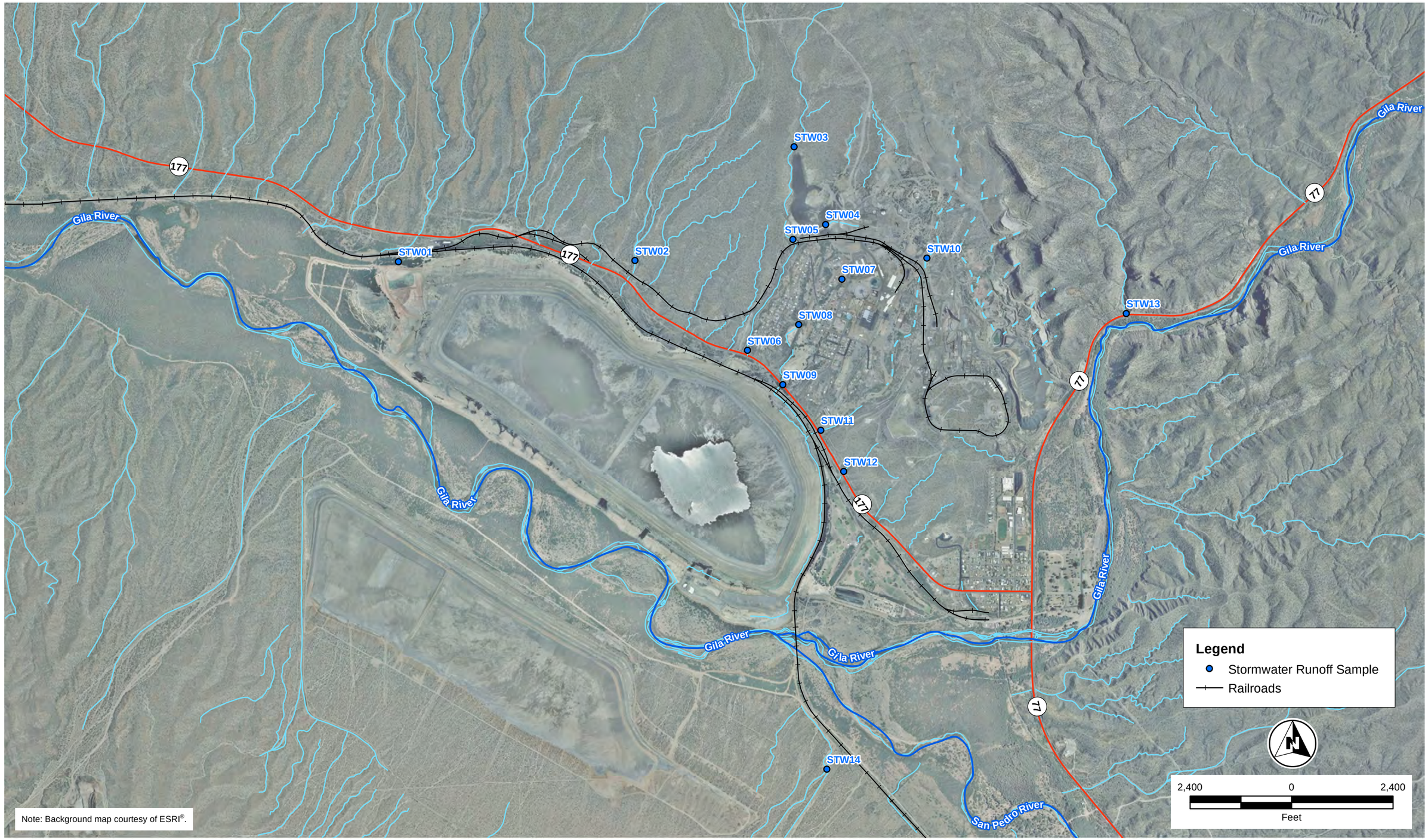

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 7-21
Proposed Stormwater Runoff Sampling Locations

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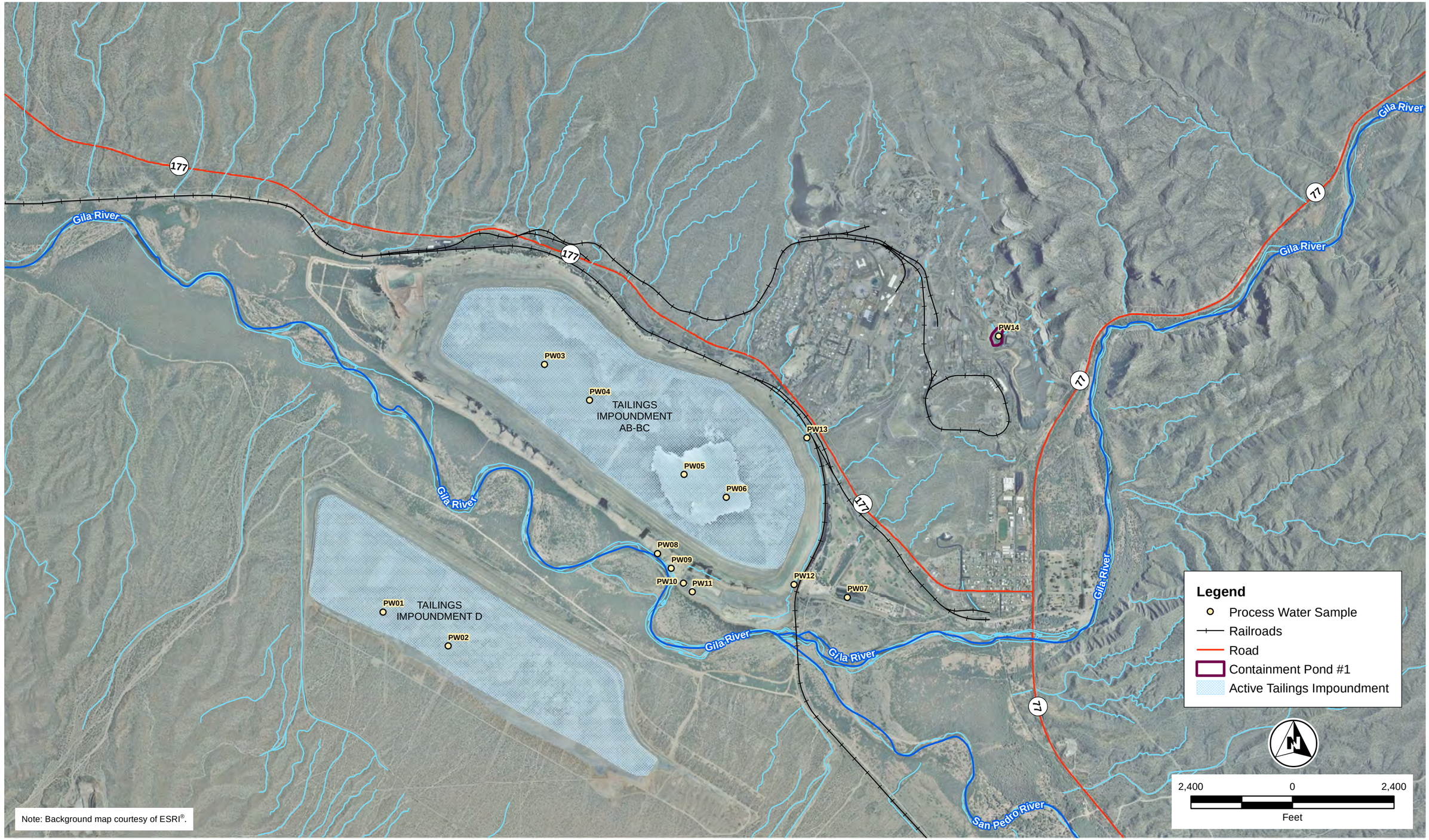

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 7-22
Process Water Sampling Locations

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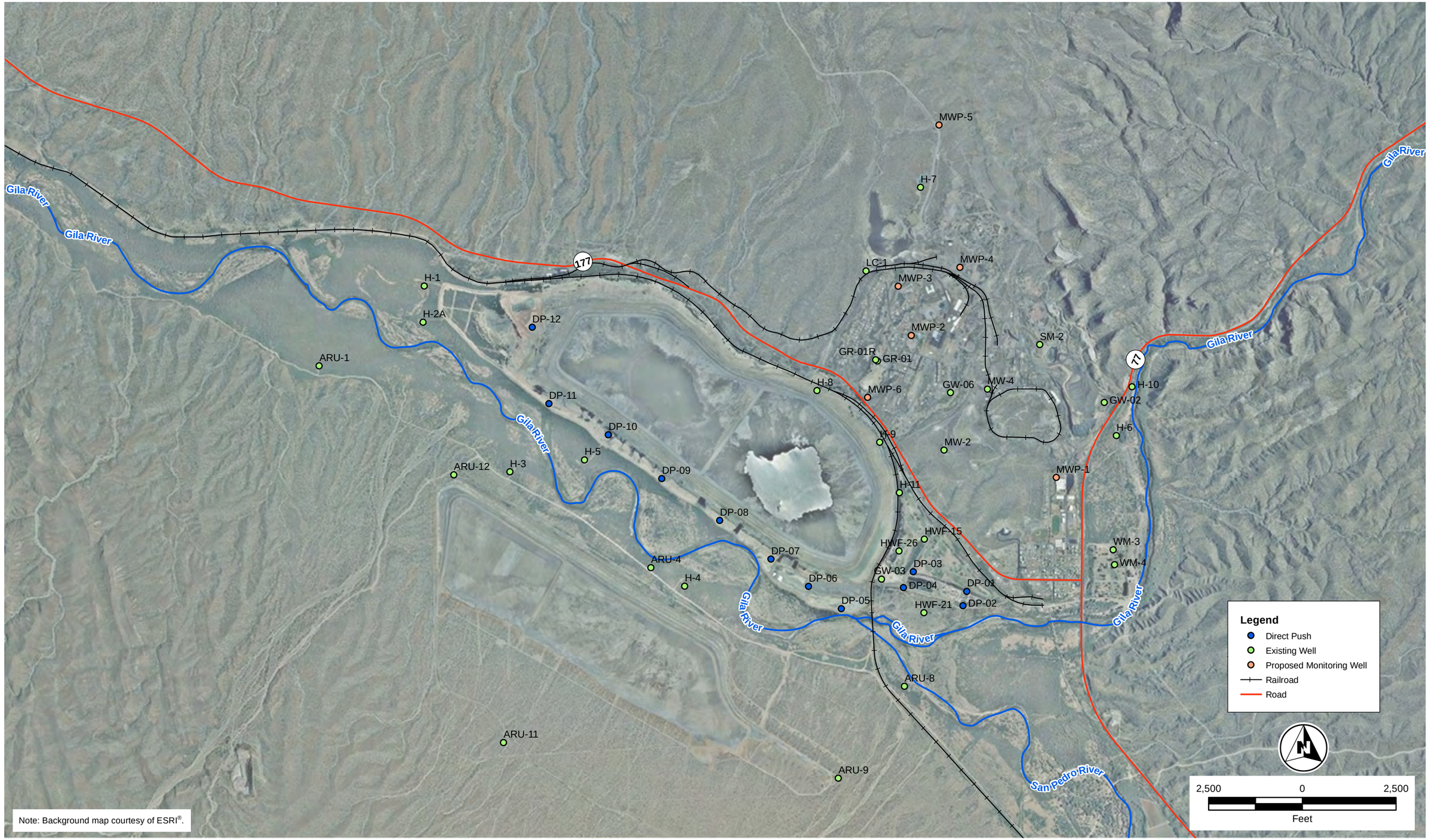

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ASARCO Hayden Plant Site
Final Phase II RI/FS Work Plan (Part 2 of 2 - Soil, Water, and Sediment)
Hayden, Arizona

Figure 7-23
Proposed Groundwater Sampling Locations

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