N:\GIS\Projects\C643_SJWaste_IPC\Production_MXDs\Feasibility_Study\Figure 3-3 TEQ DF in Surface Sediment_8202013.mxd - 8/22/2013 @ 4:37:20 PM

ANCHOR QEA integral consulting inc.

0 800
Feet

USEPA's Preliminary Site Perimeter
Limit of TCRA Cap
Soil Investigation Area 4
Surface Soil/Sediment Sample Location

Notes:
$TEQ_{DF,M}$ = Toxicity equivalent for 2,3,7,8-TCDD calculated for dioxins and furans using mammalian TEFs from van den Berg et al. (2006) (nondetect = 1/2 detection limit)

J = Estimated. One or more congeners used to calculate the $TEQ_{DF,M}$ was not detected.

The soil/sediment Protective Concentration Level for a hypothetical future outdoor commercial worker for $TEQ_{DF,M}$ is 1,300 ng/kg dry weight (May 14, 2013, letter to USEPA).

**Figure 3-3**
$TEQ_{DF,M}$ Concentrations in Surface Soil/Sediment
Compared to Hypothetical Future Outdoor Commercial Worker PCL
Feasibility Study
San Jacinto River Waste Pits Superfund Site

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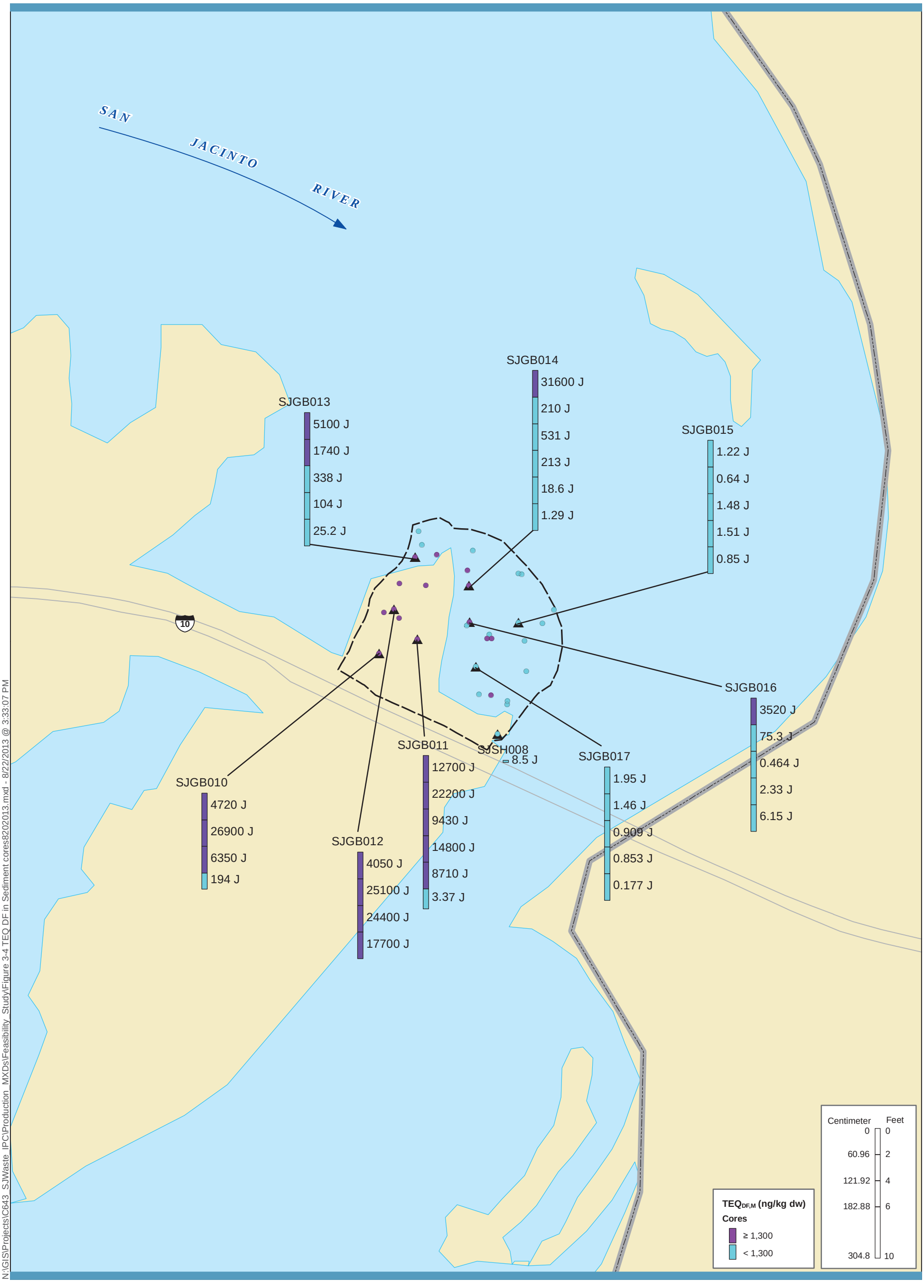


N:\GIS\Projects\C643_SJWaste_IPC\Production_MXDs\Feasibility_Study\Figure 3-4 TEQ DF in Sediment cores8202013.mxd - 8/22/2013 @ 3:33:07 PM

ANCHOR QEA integral consulting inc

USEPA's Preliminary Site Perimeter
Limit of TCRA Cap
Core Location
Surface Soil/Sediment Sample Location

0 800
Scale in Feet

Notes:
$TEQ_{DF,M}$ = Toxicity equivalent for 2,3,7,8-TCDD calculated for dioxins and furans using mammalian TEFs from van den Berg et al. (2006) (nondetect = 1/2 detection limit)

J = Estimated. One or more congeners used to calculate the $TEQ_{DF,M}$ was not detected.

The soil/sediment Protective Concentration Level for a hypothetical future outdoor commercial worker for $TEQ_{DF,M}$ is 1,300 ng/kg dry weight (May 14, 2013, letter to USEPA).

**Figure 3-4**
$TEQ_{DF,M}$ Concentrations in Soil/Sediment Cores
Compared to Hypothetical Future Outdoor Commercial Worker PCL
Feasibility Study
San Jacinto River Waste Pits Superfund Site

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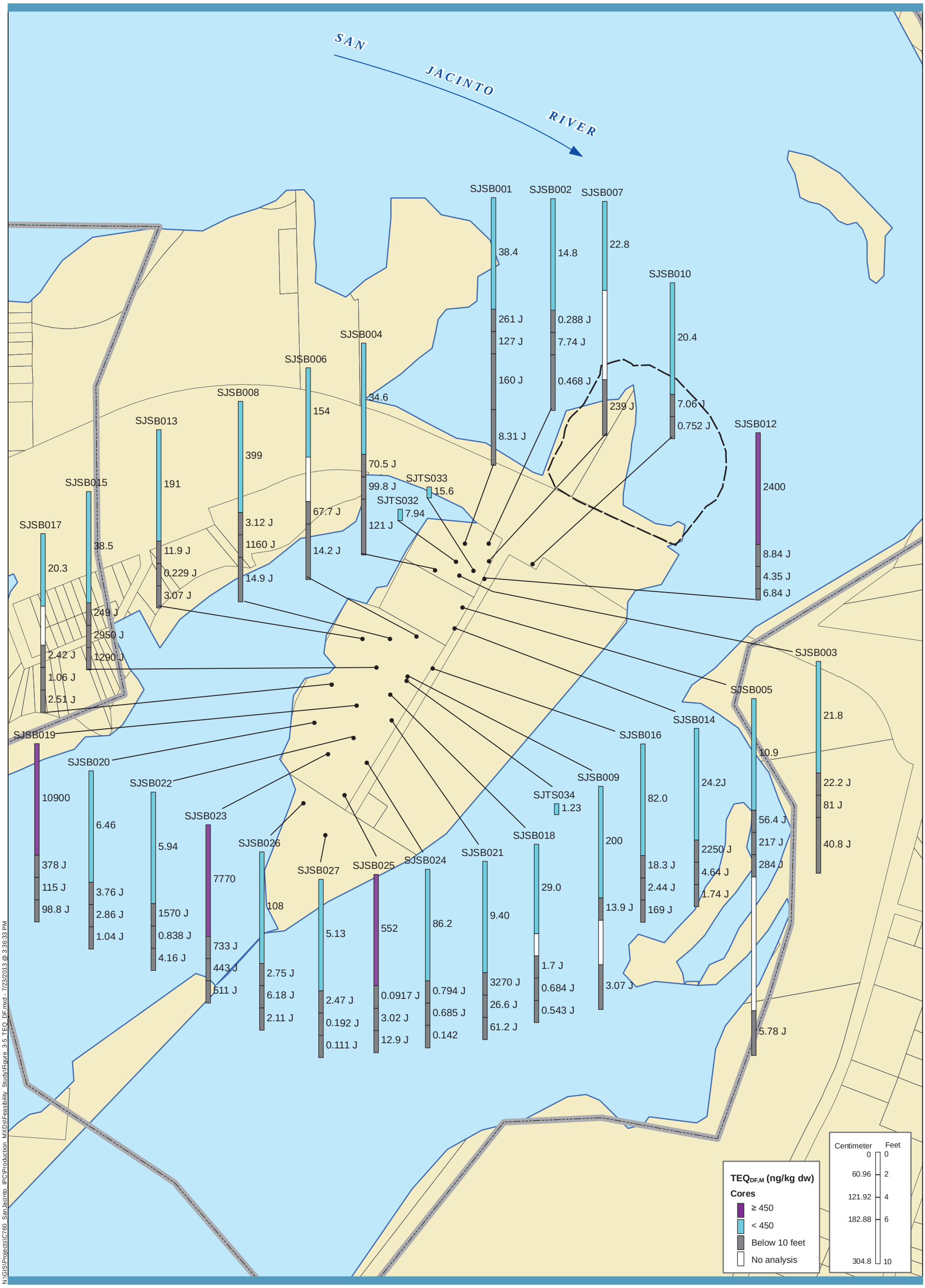


USEPA's Preliminary Site Perimeter

Limit of TCRA Cap

Soil Boring Location

0 400 Feet

Notes:
$TEQ_{DF,M}$ = Toxicity equivalent for dioxins and furans using mammalian TEFs from van den Berg et al. (2006) (nondetect =1/2 detection limit)

J = Estimated, One or more congeners used to calculate the $TEQ_{DF,M}$ was not detected.

The soil Protective Concentration Level for a hypothetical future construction worker for $TEQ_{DF,M}$ is 450 ng/kg dry weight. Concentrations are averaged in the top 10 feet, consistent with risk assessment assumption.

FEATURE SOURCES:
Parcel Boundaries: Harris County Appraisal District
Hydrology: Harris County Flood Control District

**Figure 3-5**
$TEQ_{DF,M}$ Concentrations in Soil
Compared to Hypothetical Future Construction Worker PCL
Feasibility Study
San Jacinto River Waste Pits Superfund Site

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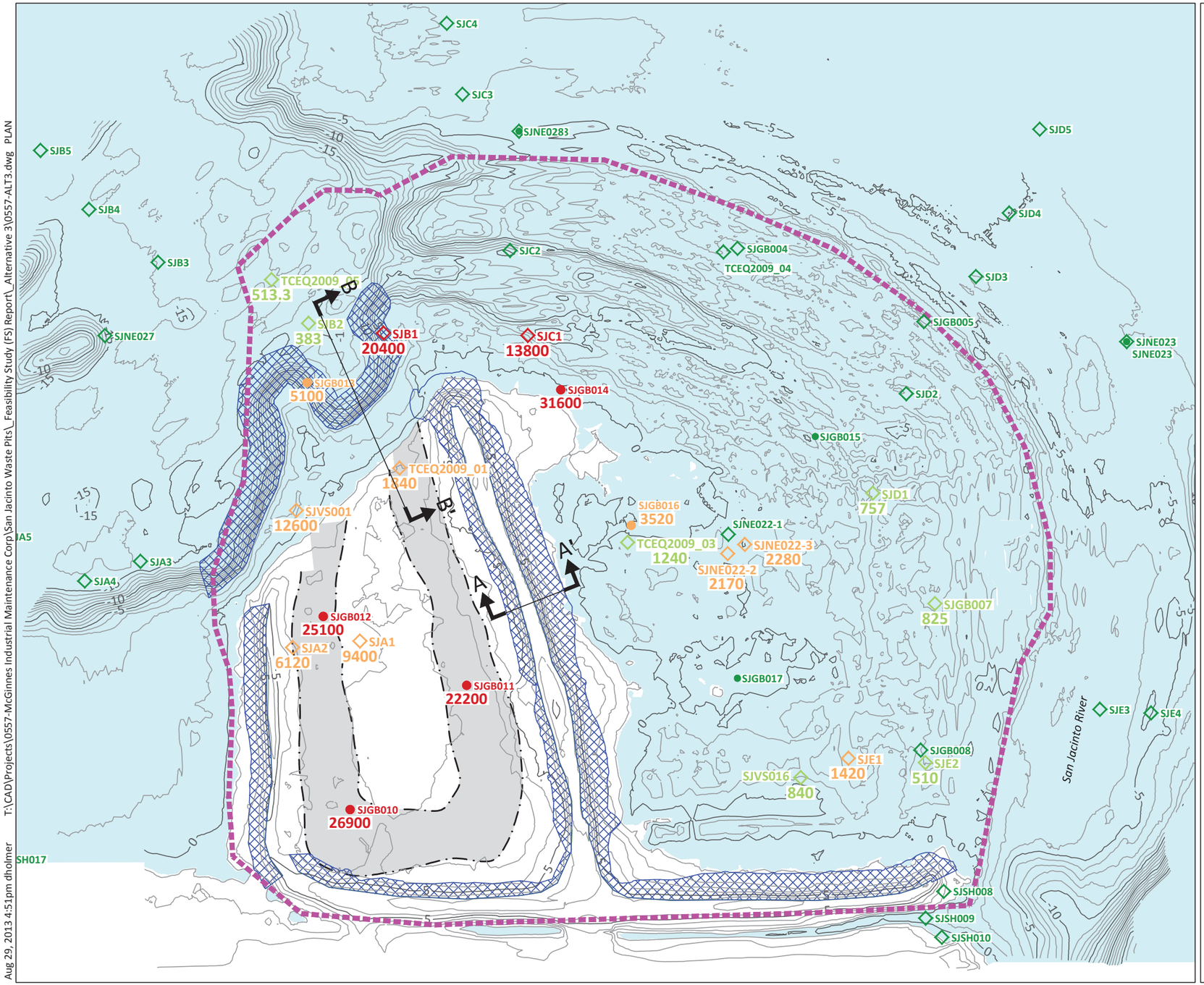


LEGEND:

- Existing Contour (1 Foot Interval)
- TCRA Cap Limit
- Area of Additional Rock Placement for Flattening Slopes to 5H:1V on berms and 3H:1V in the Northwest Area
- Area Below Mean Tide Level (0.83 Feet NAVD88)
- TCRA Footprint of Stabilization
- SJGB014 ● Core location: TEQ ≥ 13,000 ng/kg
- SJGB013 ● Core location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJGB016 ● Core location: 220 ≤ TEQ < 1,300 ng/kg
- SJGB017 ● Core location: TEQ < 220 ng/kg
- SJB1 ◇ Grab location: TEQ ≥ 13,000 ng/kg
- SJA1 ◇ Grab location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJB2 ◇ Grab location: 220 ≤ TEQ < 1,300 ng/kg
- SJC3 ◇ Grab location: TEQ < 220 ng/kg
- 825 Concentration $TEQ_{DF}$ (ng/kg dw) (See Note 1)
- A A' Cross Section Location (See Figure 4-2)

**NOTE**:
1. Concentration shown at each sample location represents the highest concentration calculated at any depth interval at that location.

**SOURCE**: Drawing prepared from surveys provided by Hydrographic Consultants dated October 2012 and January/February 2013.
**HORIZONTAL DATUM**: Texas State Plane South Central, NAD83, U.S. Feet.
**VERTICAL DATUM**: NAVD 88.

0 120
Scale in Feet

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**Figure 4-1**
Plan View - Alternative 3, Permanent Cap
Feasibility Study
San Jacinto River Waste Pits Superfund Site

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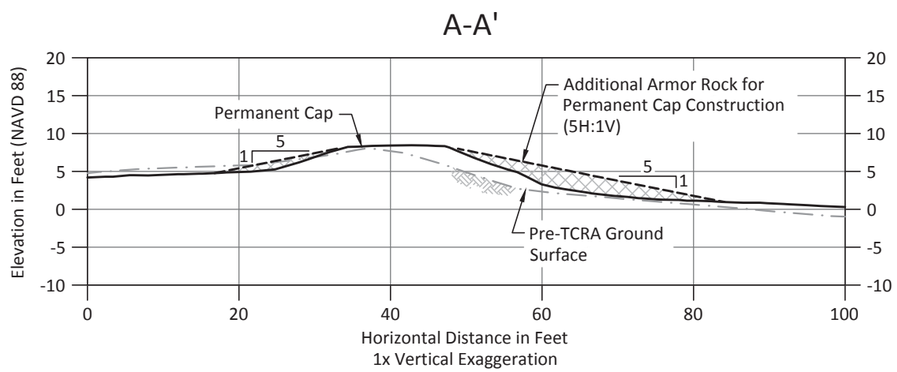


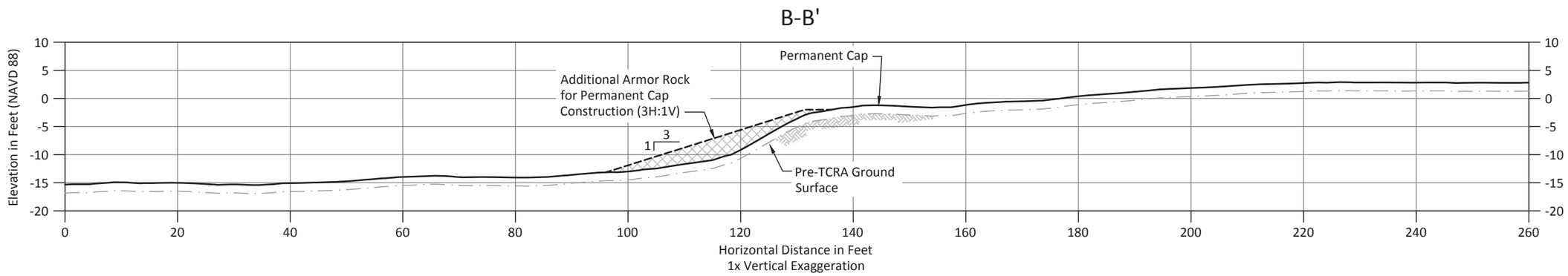


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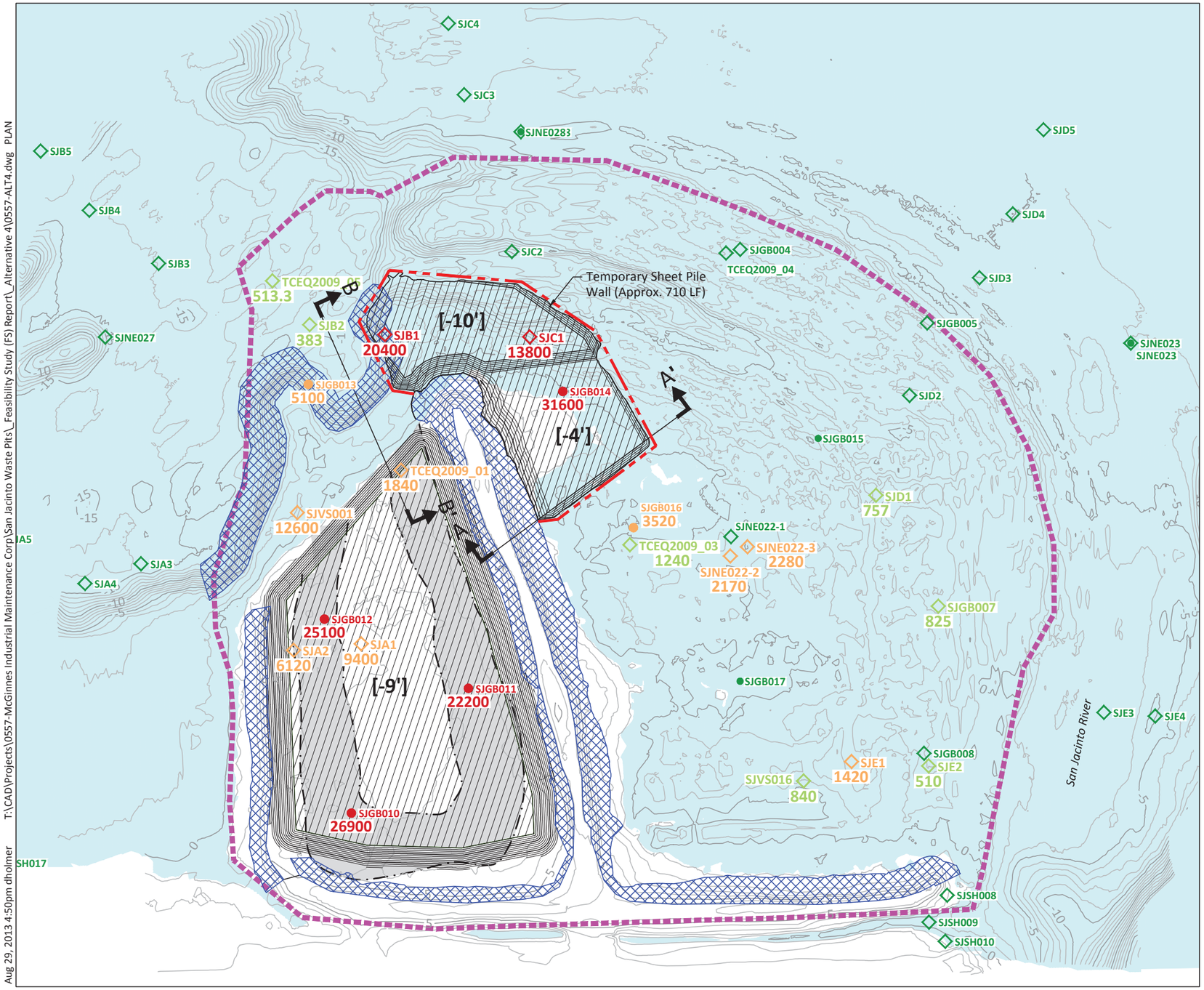
**Figure 4-2**
Cross Section A-A' - Alternative 3, Permanent Cap
Feasibility Study
San Jacinto River Waste Pits Superfund Site




LEGEND:

- Existing Contour (1 Foot Interval)
- [-4'] Target Solidification Elevation (NAVD 88)
- Solidification Area
- Temporary Sheet Pile Wall
- TCRA Cap Limit
- Area of Additional Rock Placement for Flattening Slopes to 5H:1V on berms and 3H:1V in the Northwest Area
- Area Below Mean Tide Level (0.83 Feet NAVD88)
- TCRA Footprint of Stabilization
- SJGB014● Core location: TEQ ≥ 13,000 ng/kg
- SJGB013● Core location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJGB016● Core location: 220 ≤ TEQ < 1,300 ng/kg
- SJGB017● Core location: TEQ < 220 ng/kg
- SJB1◇ Grab location: TEQ ≥ 13,000 ng/kg
- SJA1◇ Grab location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJB2◇ Grab location: 220 ≤ TEQ < 1,300 ng/kg
- SJC3◇ Grab location: TEQ < 220 ng/kg
- 825 Concentration $TEQ^{DF}$ (ng/kg dw) (See Note 1)
- A A' Cross Section Location (See Figure 4-4)

**NOTE**:
1. Concentration shown at each sample location represents the highest concentration calculated at any depth interval at that location.

**SOURCE**: Drawing prepared from surveys provided by Hydrographic Consultants dated October 2012 and January/February 2013.
**HORIZONTAL DATUM**: Texas State Plane South Central, NAD83, U.S. Feet.
**VERTICAL DATUM**: NAVD 88.

0 120
Scale in Feet

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**Figure 4-3**
Plan View - Alternative 4, Partial Solidification
Feasibility Study
San Jacinto River Waste Pits Superfund Site

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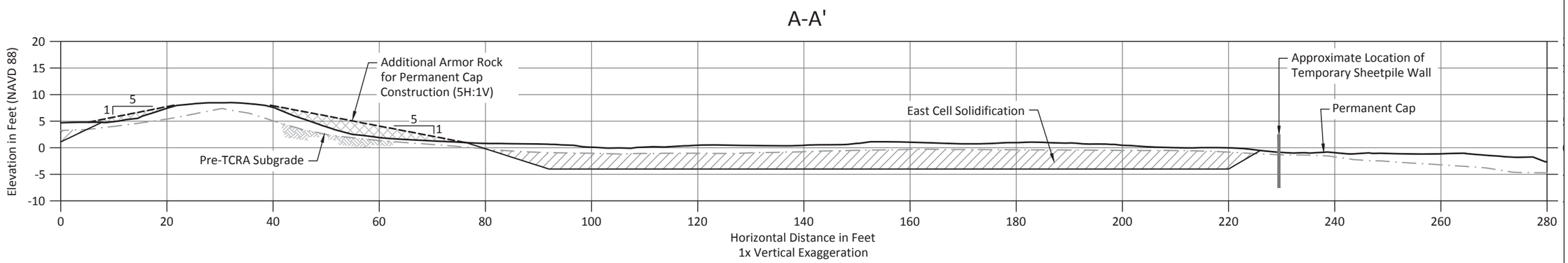


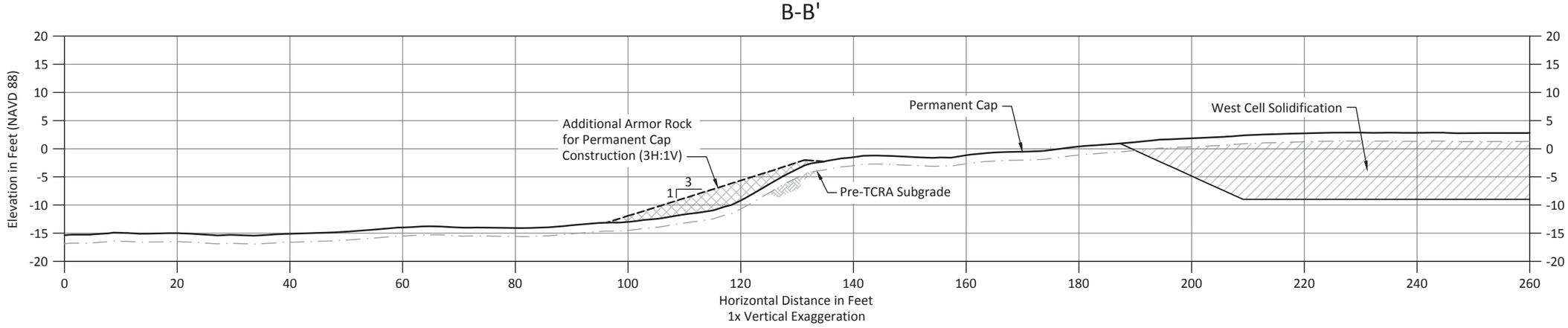


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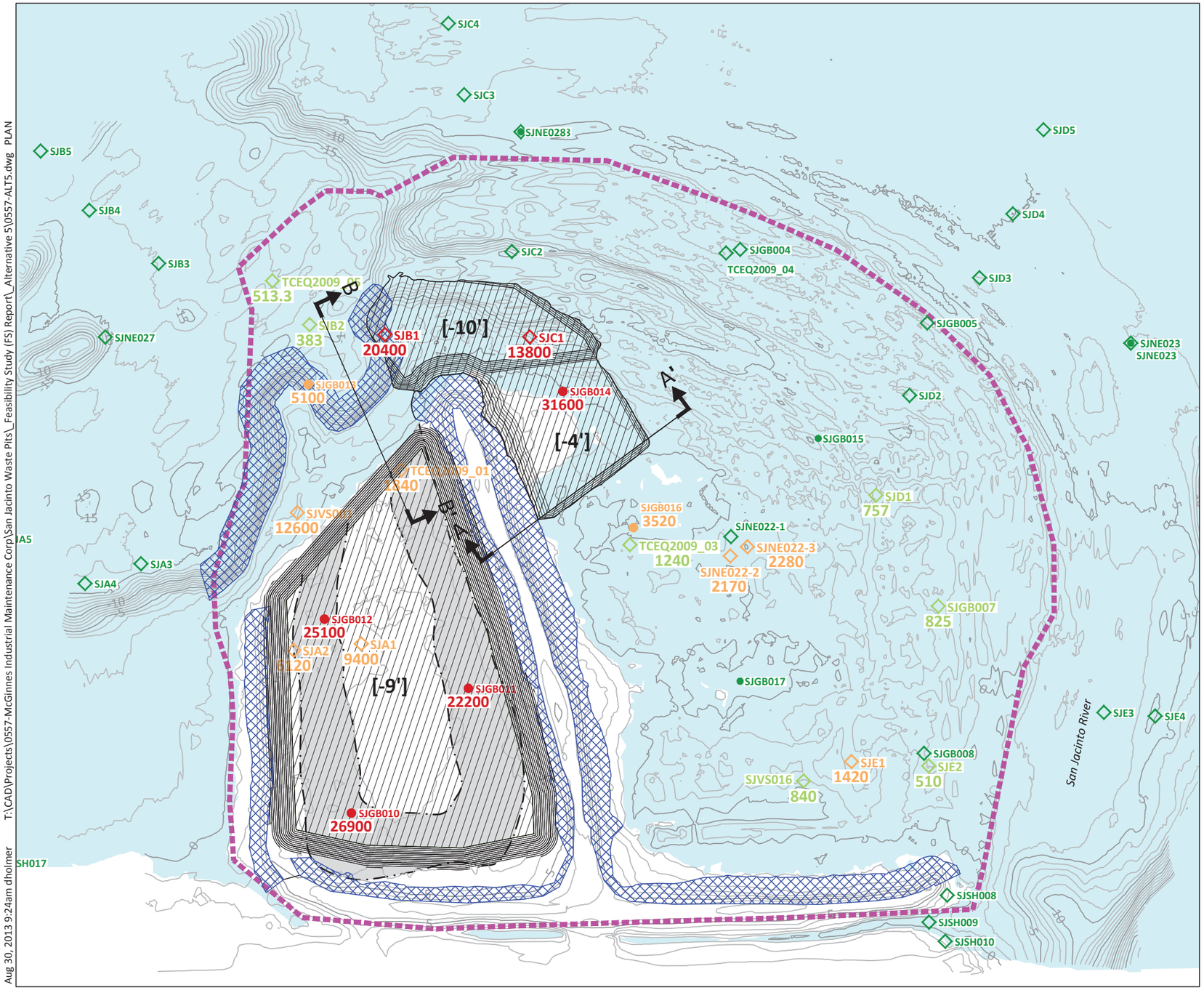
**Figure 4-4**
Cross Sections A-A' and B-B' - Alternative 4, Partial Solidification
Feasibility Study
San Jacinto River Waste Pits Superfund Site




LEGEND:

- Existing Contour (1 Foot Interval)
- [-4'] Target Cut Elevation (NAVD 88)
- Removal Area
- TCRA Cap Limit
- Area of Additional Rock Placement for Flattening Slopes to 5H:1V on berms and 3H:1V in the Northwest Area
- Area Below Mean Tide Level (0.83 Feet NAVD88)
- TCRA Footprint of Stabilization
- SJGB014 Core location: TEQ ≥ 13,000 ng/kg
- SJGB013 Core location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJGB016 Core location: 220 ≤ TEQ < 1,300 ng/kg
- SJGB017 Core location: TEQ < 220 ng/kg
- SJB1 Grab location: TEQ ≥ 13,000 ng/kg
- SJA1 Grab location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJB2 Grab location: 220 ≤ TEQ < 1,300 ng/kg
- SJC3 Grab location: TEQ < 220 ng/kg
- 825 Concentration TEQ$_{DF}$ (ng/kg dw) (See Note 1)
- A A' Cross Section Location (See Figure 4-6)

**NOTE**:
1. Concentration shown at each sample location represents the highest concentration calculated at any depth interval at that location.

**SOURCE**: Drawing prepared from surveys provided by Hydrographic Consultants dated October 2012 and January/February 2013.
**HORIZONTAL DATUM**: Texas State Plane South Central, NAD83, U.S. Feet.
**VERTICAL DATUM**: NAVD 88.

0 120
Scale in Feet

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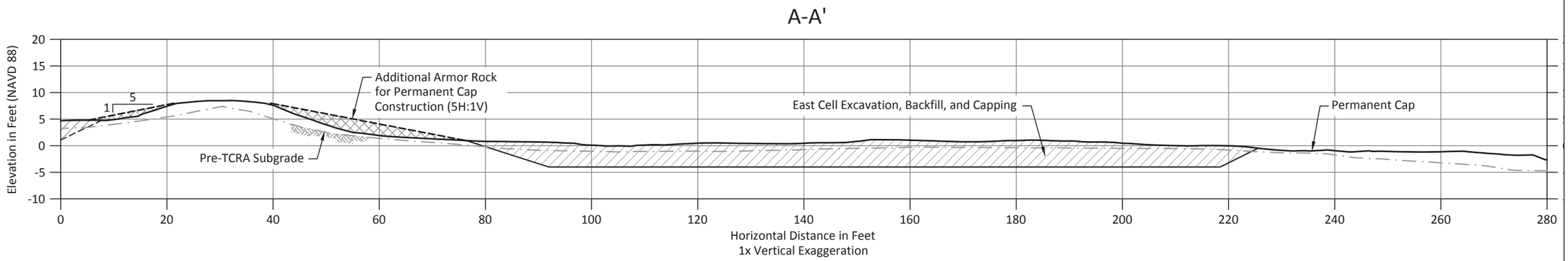
**Figure 4-5**
Plan View - Alternative 5, Partial Removal
Feasibility Study
San Jacinto River Waste Pits Superfund Site



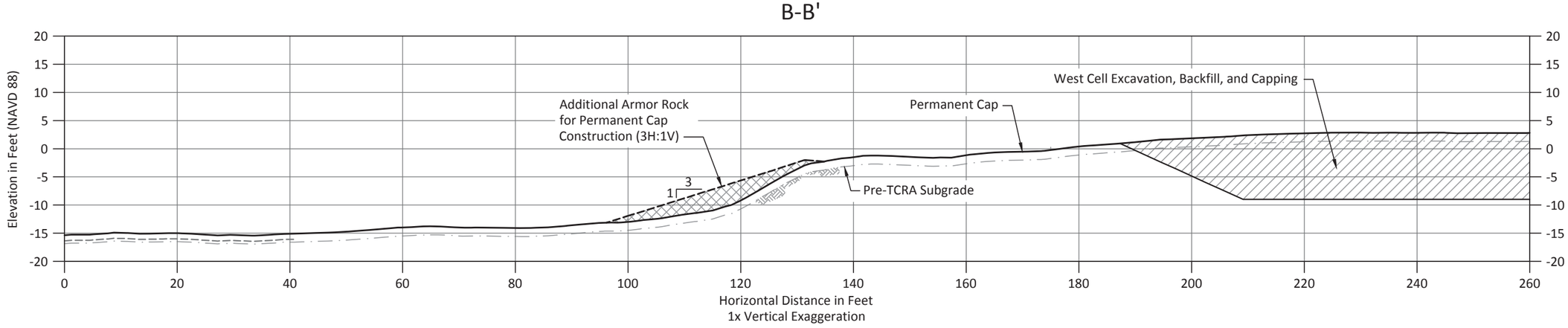




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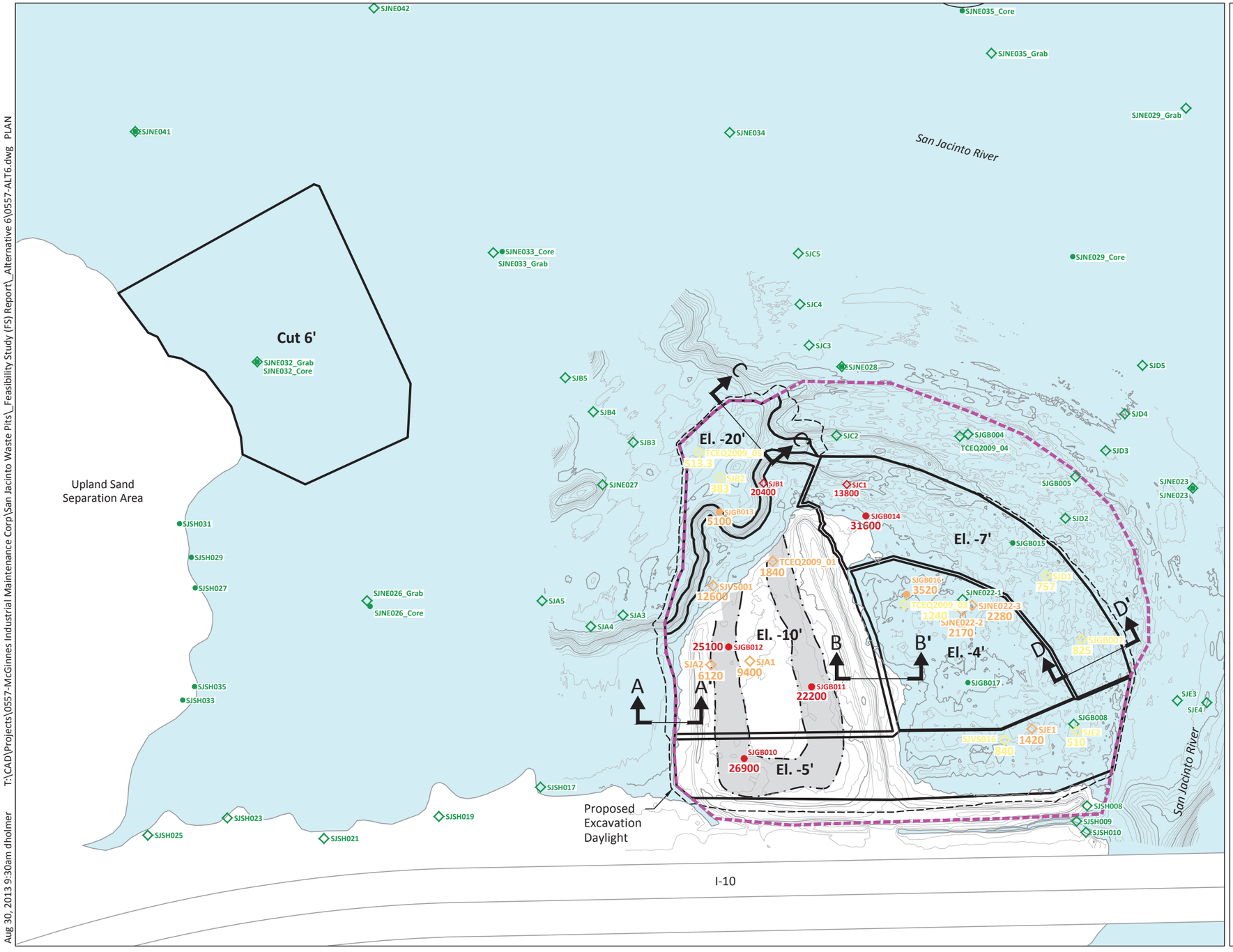
**Figure 4-6**
Cross Sections A-A' and B-B' - Alternative 5, Partial Removal
Feasibility Study
San Jacinto River Waste Pits Superfund Site




LEGEND:

- Existing Contour (1 Foot Interval)
- El. -10 — Target Cut Elevation (NAVD 88)
- TCRA Cap Limit
- TCRA Footprint of Stabilization
- Area Below Mean Tide Level (0.83 Feet NAVD88)
- SJGB014 — Core location: TEQ ≥ 13,000 ng/kg
- SJGB013 — Core location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJGB016 — Core location: 220 ≤ TEQ < 1,300 ng/kg
- SJGB017 — Core location: TEQ < 220 ng/kg
- SJB1 — Grab location: TEQ ≥ 13,000 ng/kg
- SJA1 — Grab location: 1,300 ≤ TEQ < 13,000 ng/kg
- SJB2 — Grab location: 220 ≤ TEQ < 1,300 ng/kg
- SJC3 — Grab location: TEQ < 220 ng/kg
- 825 — Concentration $TEQ^{DF}$ (ng/kg dw) (See Note 1)
- A A' — Cross Section Location (See Figure 4-8)

**NOTE**:
1. Concentration shown at each sample location represents the highest concentration calculated at any depth interval at that location.

**SOURCE**: Drawing prepared from surveys provided by Hydrographic Consultants dated October 2012 and January/February 2013.
**HORIZONTAL DATUM**: Texas State Plane South Central, NAD83, U.S. Feet.
**VERTICAL DATUM**: NAVD 88.

0 200
Scale in Feet

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**Figure 4-7**
Plan View - Alternative 6, Full Removal
Feasibility Study
San Jacinto River Waste Pits Superfund Site

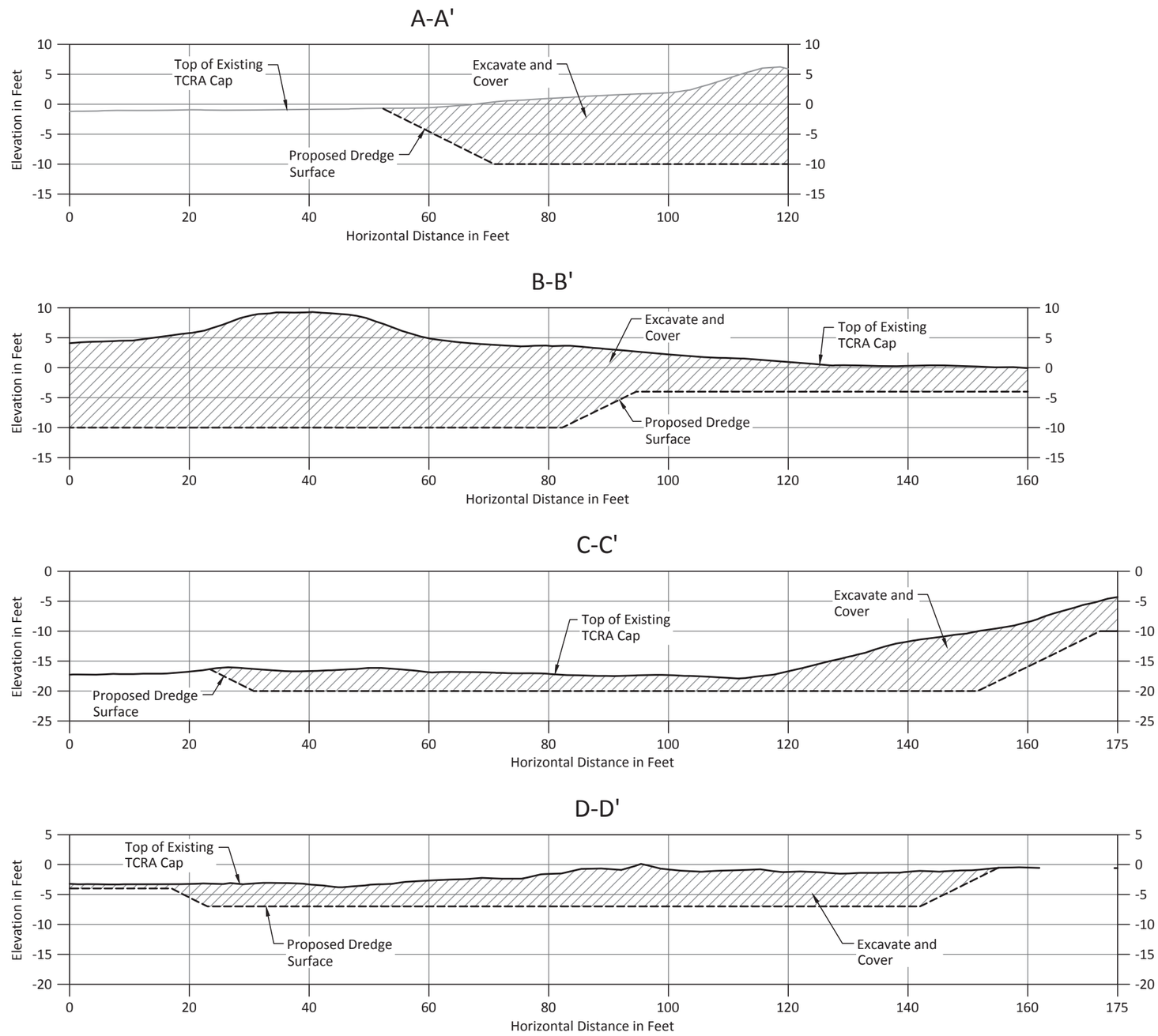


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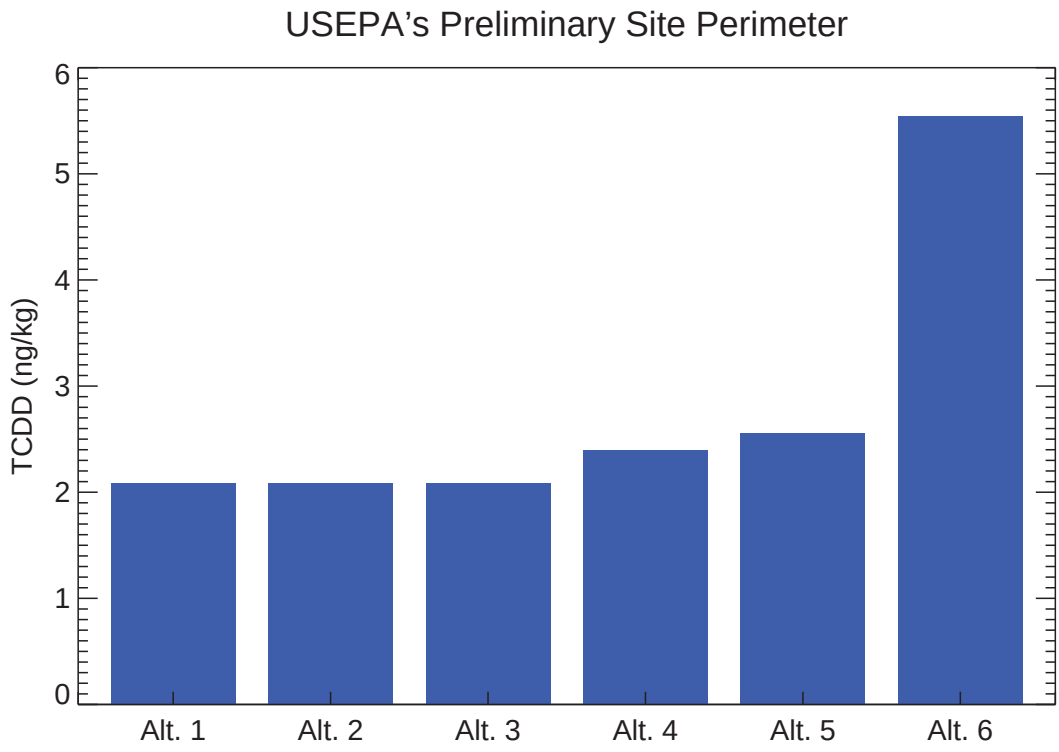
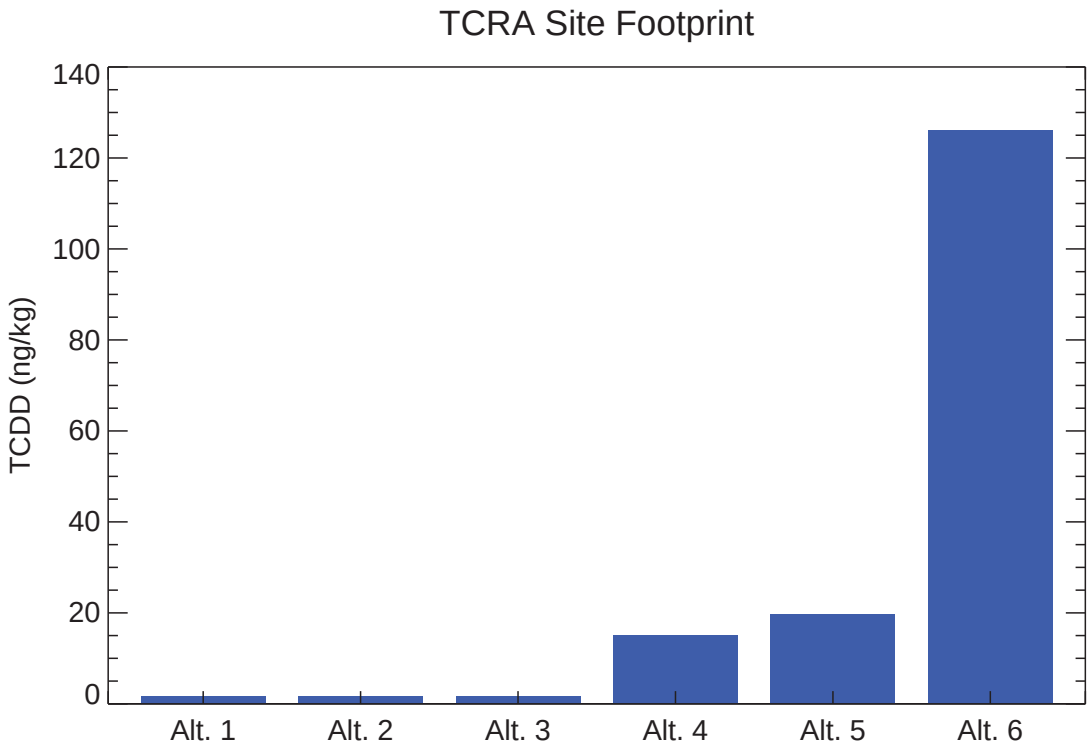
**Figure 4-8**
Cross Sections A-A', B-B', C-C', and D-D' - Alternative 6, Full Removal
Feasibility Study
San Jacinto River Waste Pits Superfund Site




Model Run: SJR_PROJ2_BC_TCDD_1301-06, SJR_PROJ2_BC_TCDD_1301-06, SJR_PROJ2_BC_TCDD_1301-06, SJR_PROJ3_BC_TCDD_1307-01, SJR_PROJ3_BC_TCDD_1307-02, SJR_PROJ3_BC_TCDD_1307-03

**Figure 6-1a**

Comparison of Model-Predicted Surface Sediment (top 6 inches) TCDD Concentrations in Year 21, Averaged over USEPA's Preliminary Site Perimeter and TCRA Site Footprint

Feasibility Study

San Jacinto River Waste Pits Superfund Site

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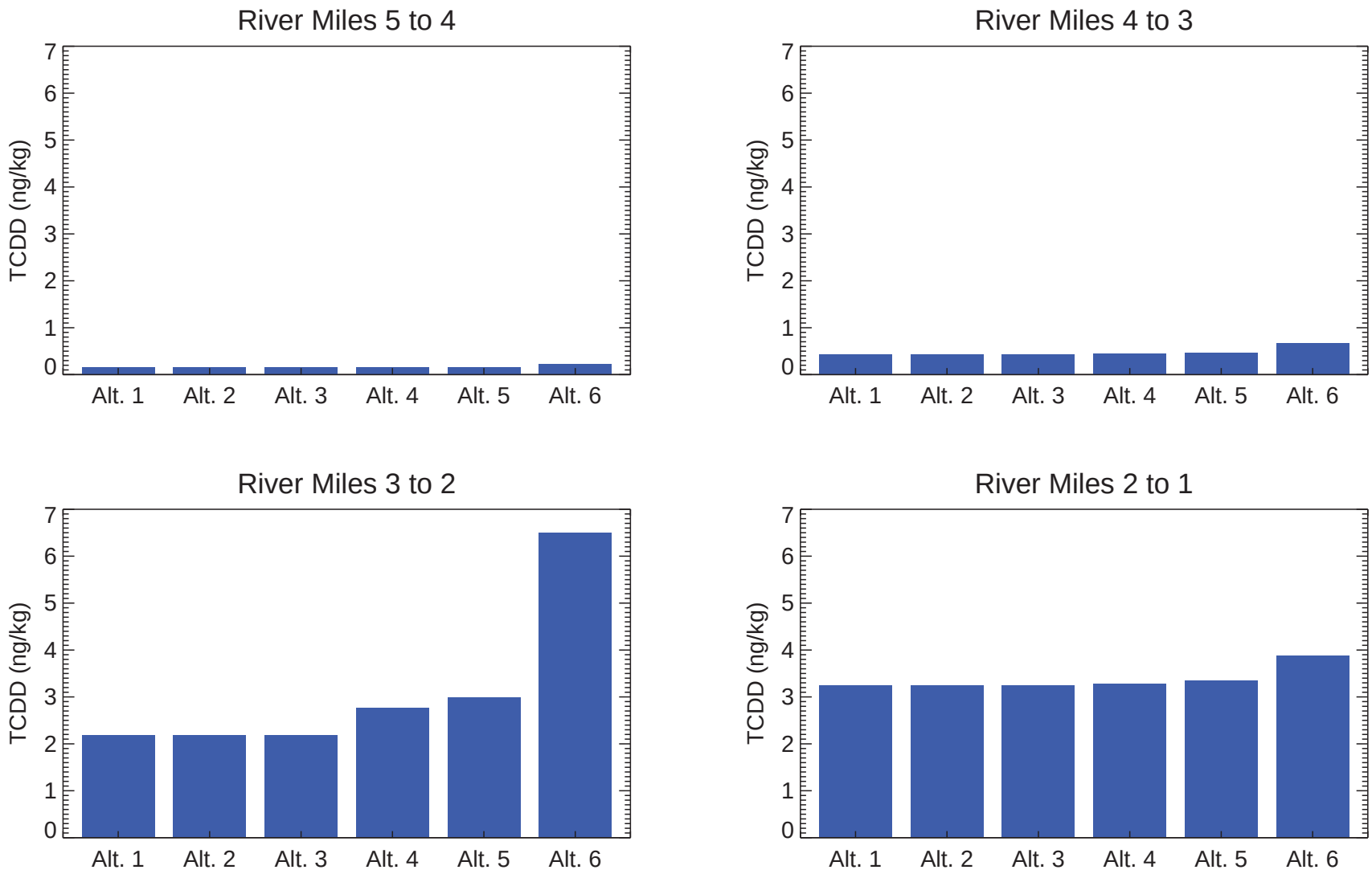


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**Figure 6-1b**

Comparison of Model-Predicted Surface Sediment (top 6 inches) TCDD Concentrations in Year 21, Averaged by River Mile
Feasibility Study
San Jacinto River Waste Pits Superfund Site

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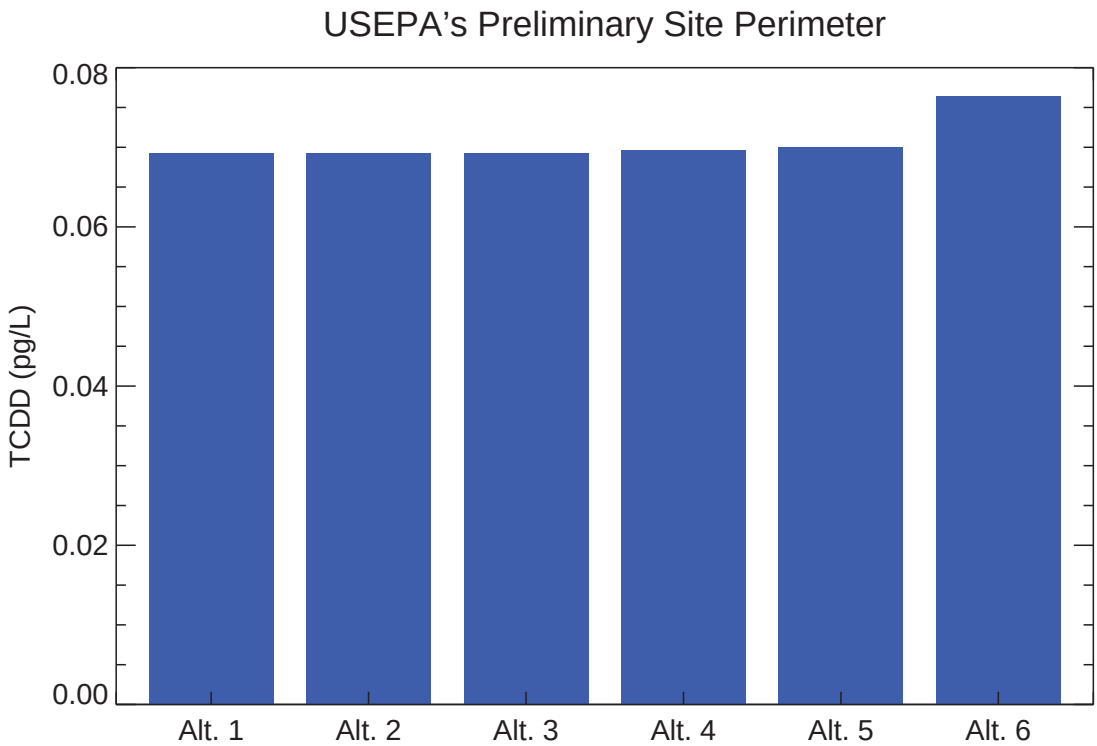


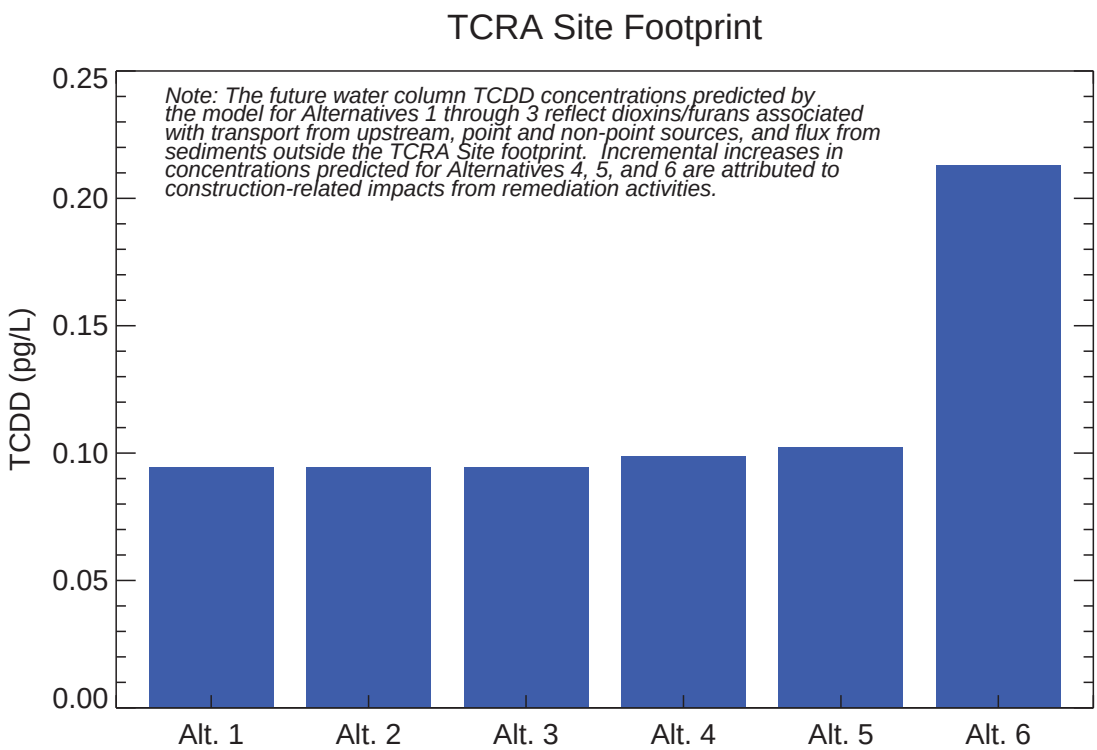


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**Figure 6-2**

Comparison of Model-Predicted Annual Average Water Column TCDD Concentrations (Year 21) over USEPA's Preliminary Site Perimeter and TCRA Site Footprint

Feasibility Study

San Jacinto River Waste Pits Superfund Site

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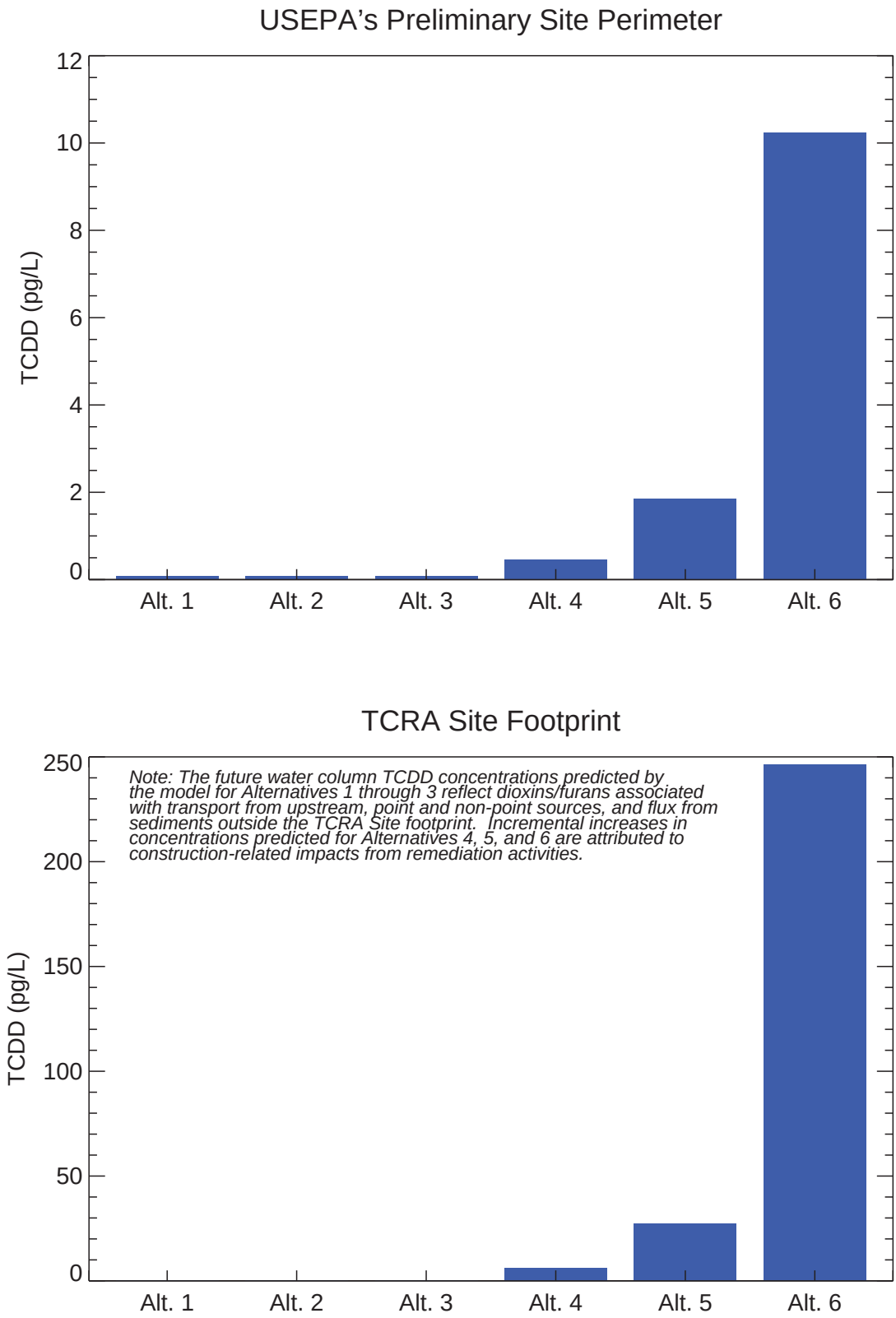


Model Run: SJR_PROJ2_BC_TCDD_1301-06, SJR_PROJ2_BC_TCDD_1301-06, SJR_PROJ2_BC_TCDD_1301-06, SJR_PROJ3_BC_TCDD_1307-01, SJR_PROJ3_BC_TCDD_1307-02, SJR_PROJ3_BC_TCDD_1307-03

**Figure 6-3**

Comparison of Model-Predicted Annual Average Water Column TCDD Concentrations (Year 1) over USEPA's Preliminary Site Perimeter and TCRA Site Footprint

Feasibility Study

San Jacinto River Waste Pits Superfund Site

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