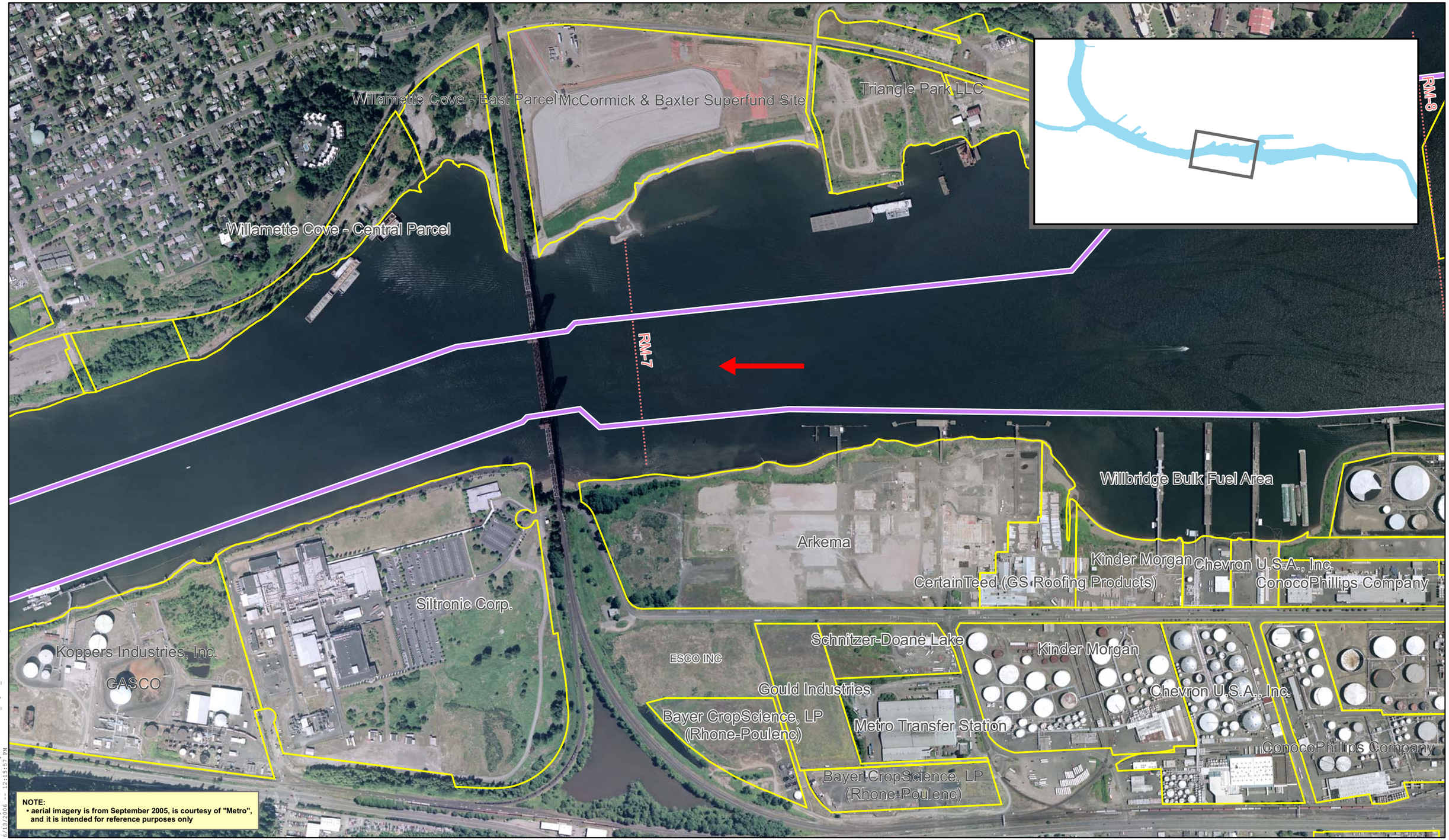


integral consulting inc

0 205 410 820 1,230 Feet

Navigation Channel

Sites

River Mile Line

Direction of River Flow

DRAFT

Figure 1-1
Arkema EE/CA
Aerial Photograph and Adjacent Properties

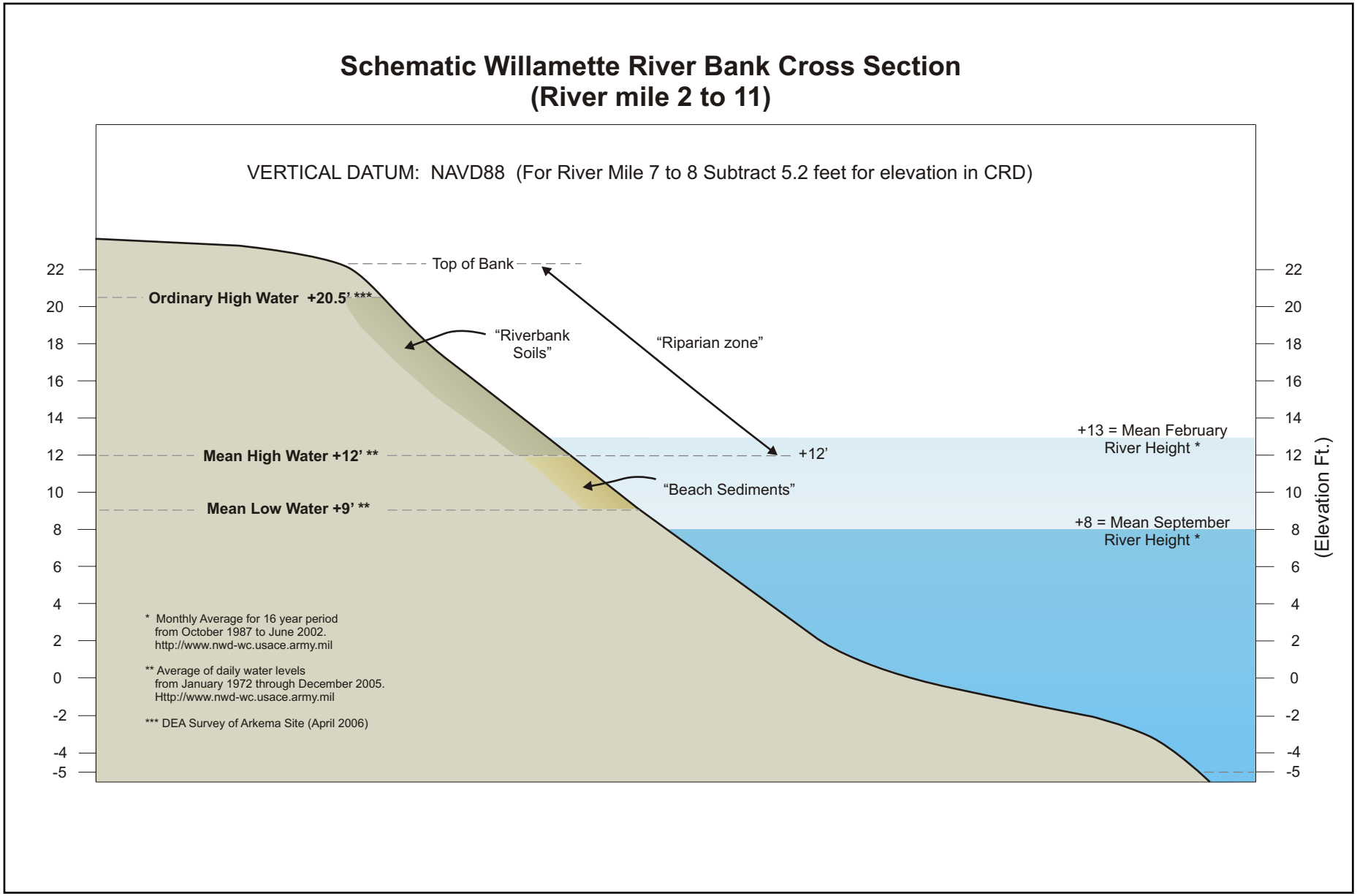


Figure 2-1. Schematic Willamette Riverbank Cross-section (River Mile 2 to 11)

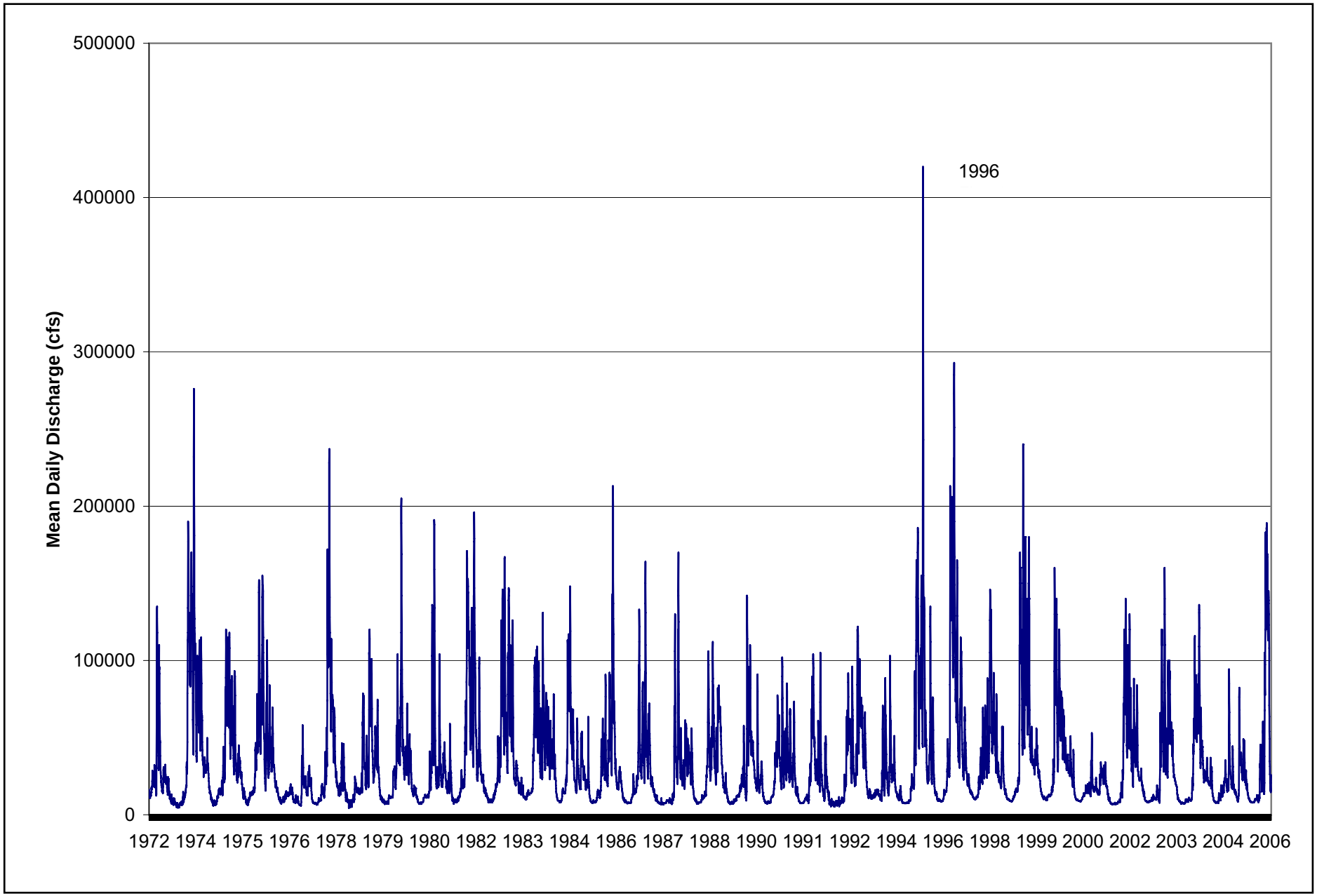
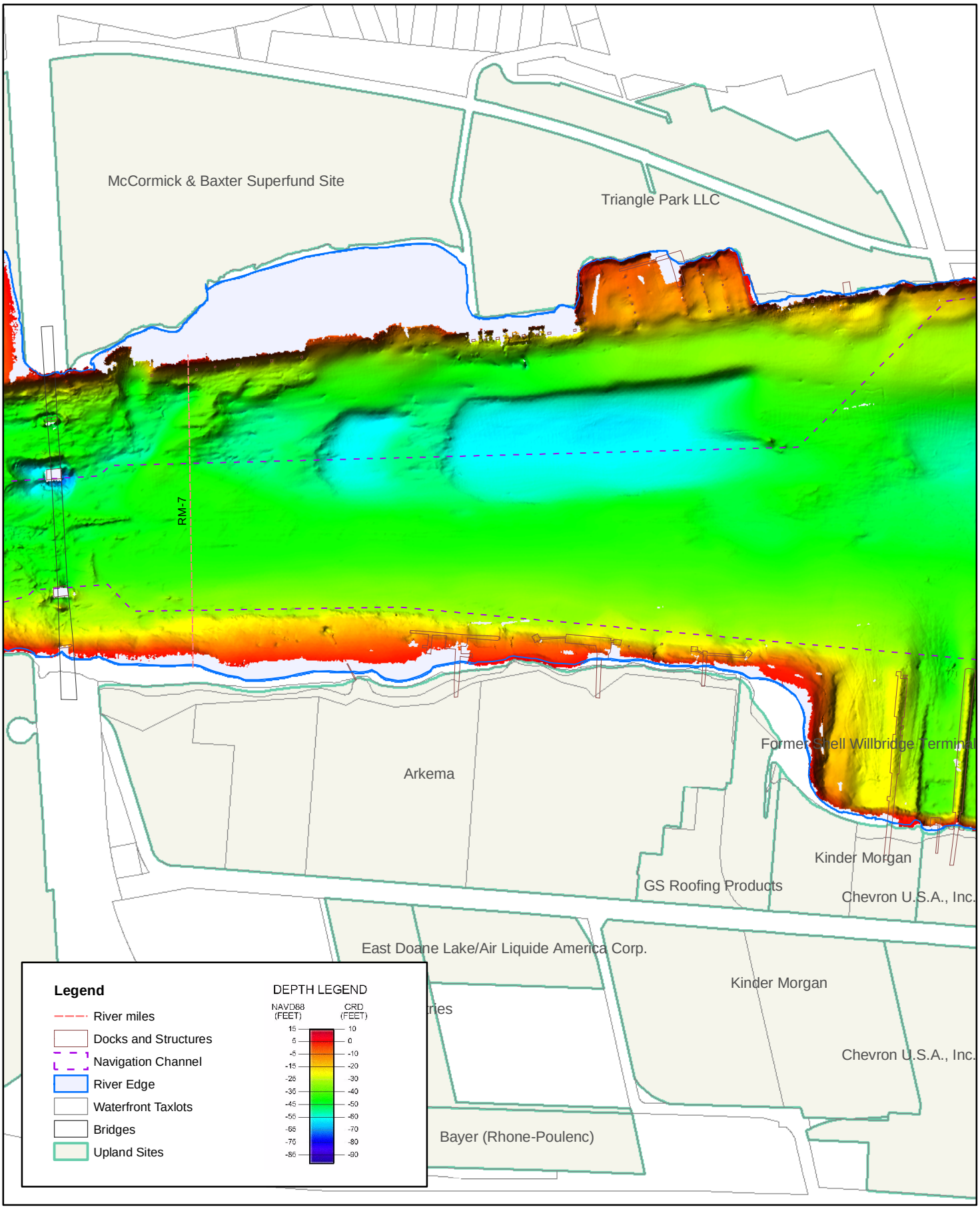


Figure 2-2. Historical Daily Mean Flows Recorded from the USGS Gauge Located on the Morrison Bridge



Map Document: (O:\Projects\Arkema-Oly\MXDs\A-size_2004Bathy.mxd)
6/8/2006 -- 11:53:08 AM

integral consulting inc.

Bathymetric Data: Multibeam bathymetric surveys conducted by David Evans and Associates, Inc. March 2004.

N

0 300 600 Feet

1" = 600'

Figure 2-3
Arkema Area Bathymetry
2004 HIllshade Grid

Estimated Acid Plant Area RiverBank Fill

Proposed 1977, 1984, and 1993 dredge areas

Approximate location of former DDT pond and trench

Estimated location of 1956 dredging activities

Dock #2

Dock #1

Salt Dock

Estimated fill area from the 1956 dredging activities

Ordinary Highwater Line Based On Elevation of 20.46' NAVD88.

Acid Plant Area

Outfall 004

Outfall 003

Outfall 002

Outfall 001

RHONE POULENC

Railroad Bridge

CB-001-01

Approximate Location of Former Process Discharge Pipe

CB-003-01

Old Caustic Tank Farm

Former Salt Storage Area

CB-001-02

Warehouse No. 2

CB-003-02

CITY OF PORTLAND

RHONE POULENC

Approximate Top of Bank

Former Ammonia Plant Area

Former Chlorate Plant Barge Loading Overhead Pipeline

CB-002-01

CB-002-02

CB-003-03

Acid Plant Area

Former brine mud pile and pond area

Former location of asbestos trenches

Lot 2

Lot 1

CB-004-01

Lot 3

Warehouse No. 1

Boiler Room

CB-001-04

CB-003-06

CB-003-05

New Caustic Tank Farm

Chlorate Plant Area

Saltzman Creek

CB-001-05

Former Asbestos Ponds

Lot 4

Former DDT Process Building

CB-003-07

CB-004-02

CB-004-03

CB-001-06

CB-001-07

BPA Substation Annex

BPA Main Substation

Old Chlorine cell room (1946-1971)

New Chlorine Cell room (1962-2001)

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Map Document: (O:\Projects\Arkema-Oly\MXDs\Arkema_Fig2-1_20060615.mxd) 6/13/2006 -- 11:11:00 AM

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200 100 0 200 Feet

Ordinary High Water

Top of Bank

E-Sewer-L

Storm Drain

Overhead Pipeline

12ft_Contour

Navigation Channel

Bridges

Property Lines

Outfalls

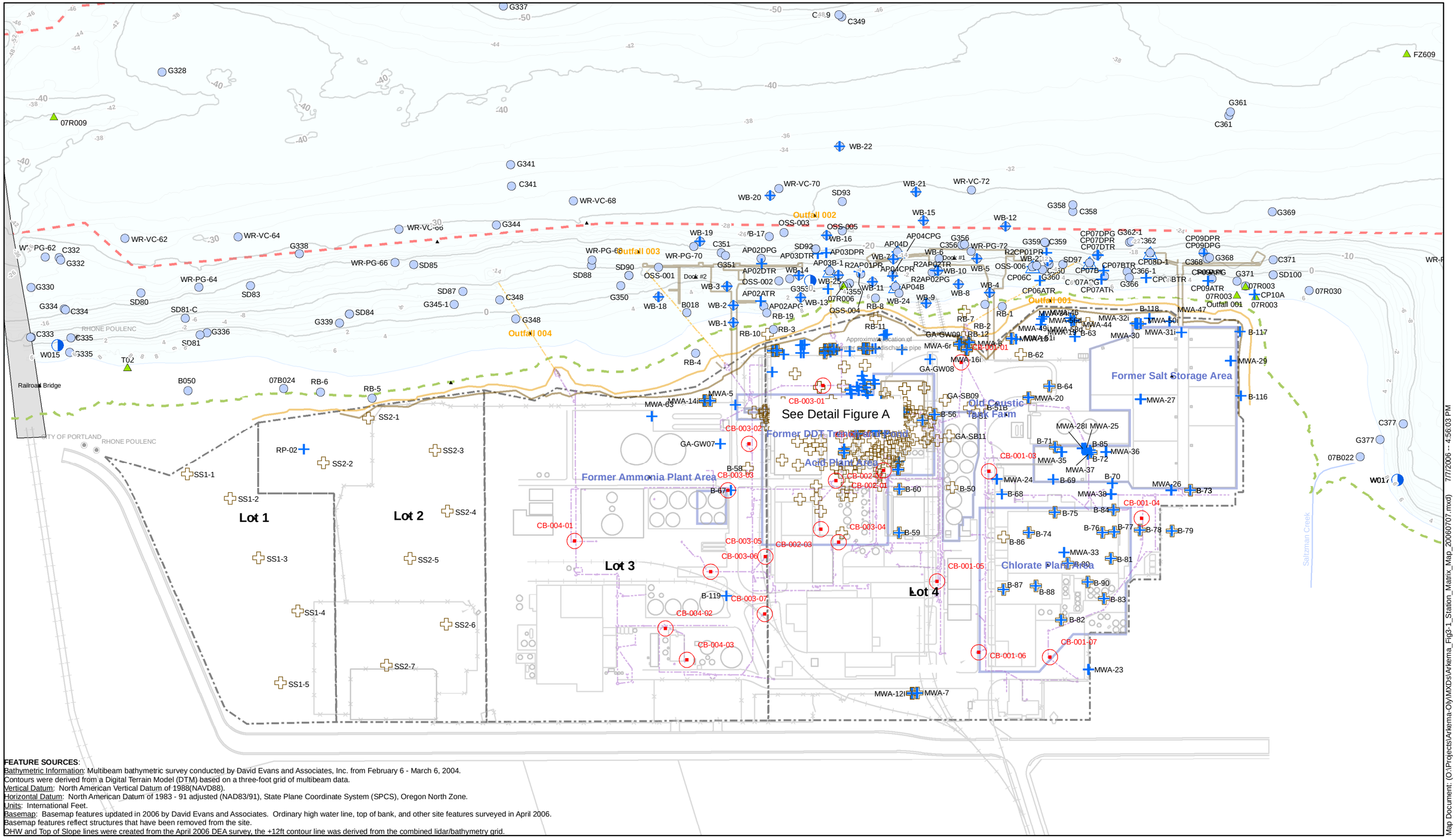
Catch Basins

Estimated Fill Area

Proposed 1977, 1984, and 1993 dredge areas

Estimated Dredged Area

Figure 2-4
Arkema EE/CA
Dredge & Fill and Historical Uses of Site



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200 100 0 200 Feet

1 inch equals 233.333333 feet

Tissue
Sediment
Soil
Pore Water
Surface Water
Groundwater
Catch Basins
River
Navigation Channel
Bridges
12ft_Contour

Bathymetry (2, 10 ft)
Index Contour
2' contour

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain

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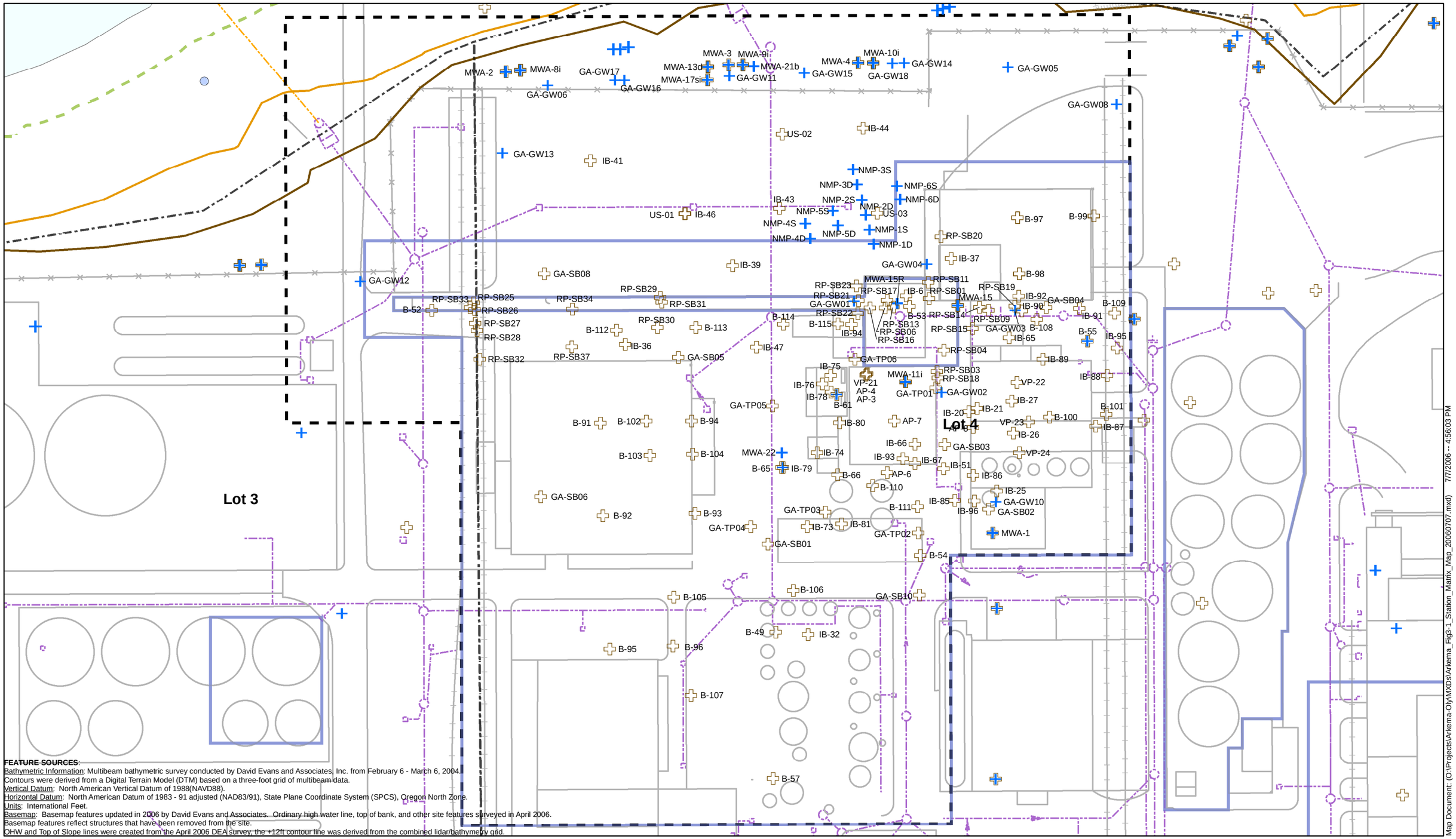
Figure 3-1a
Arkema EE/CA
Historical Station Locations
(All Samples)



FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988(NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006.
Basemap features reflect structures that have been removed from the site.
OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.

Map Document: (O:\Projects\Arkema-Oly\MXDs\Arkema_Fig3-1_Station_Matrix_Map_20060707.mxd) 7/7/2006 -- 4:56:03 PM

integral consulting inc.

0 50 100 Feet

1 inch equals 60 feet

Tissue
Sediment
Soil
Pore Water
Surface Water
Groundwater
Catch Basins
River
Navigation Channel
Bridges
12ft_Contour

Bathymetry (2, 10 ft)
Index Contour
2' contour

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain

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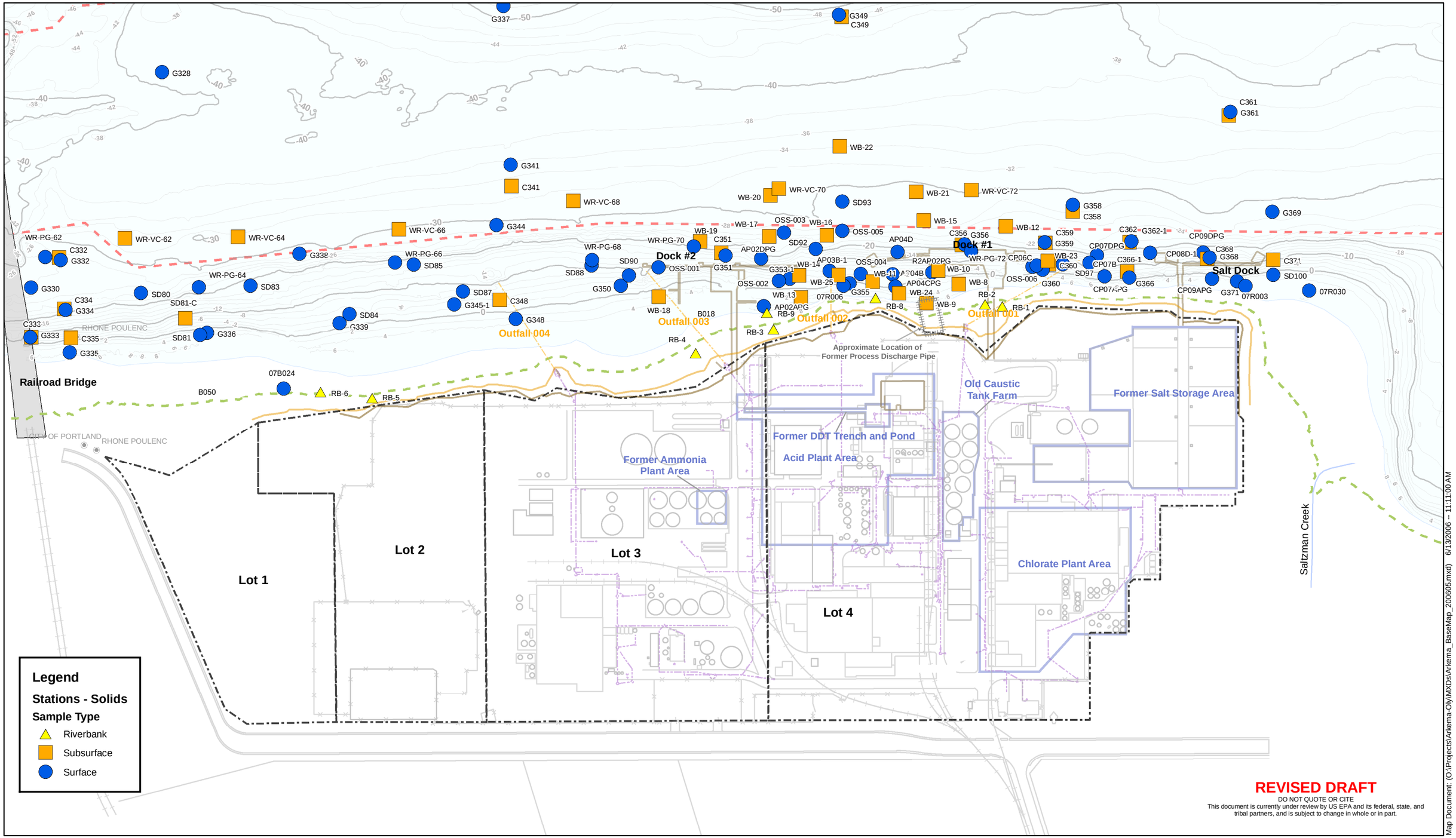
Figure 3-1b
Arkema EE/CA
Sample Station Detail for Upland Locations



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200 100 0 200 Feet

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
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Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
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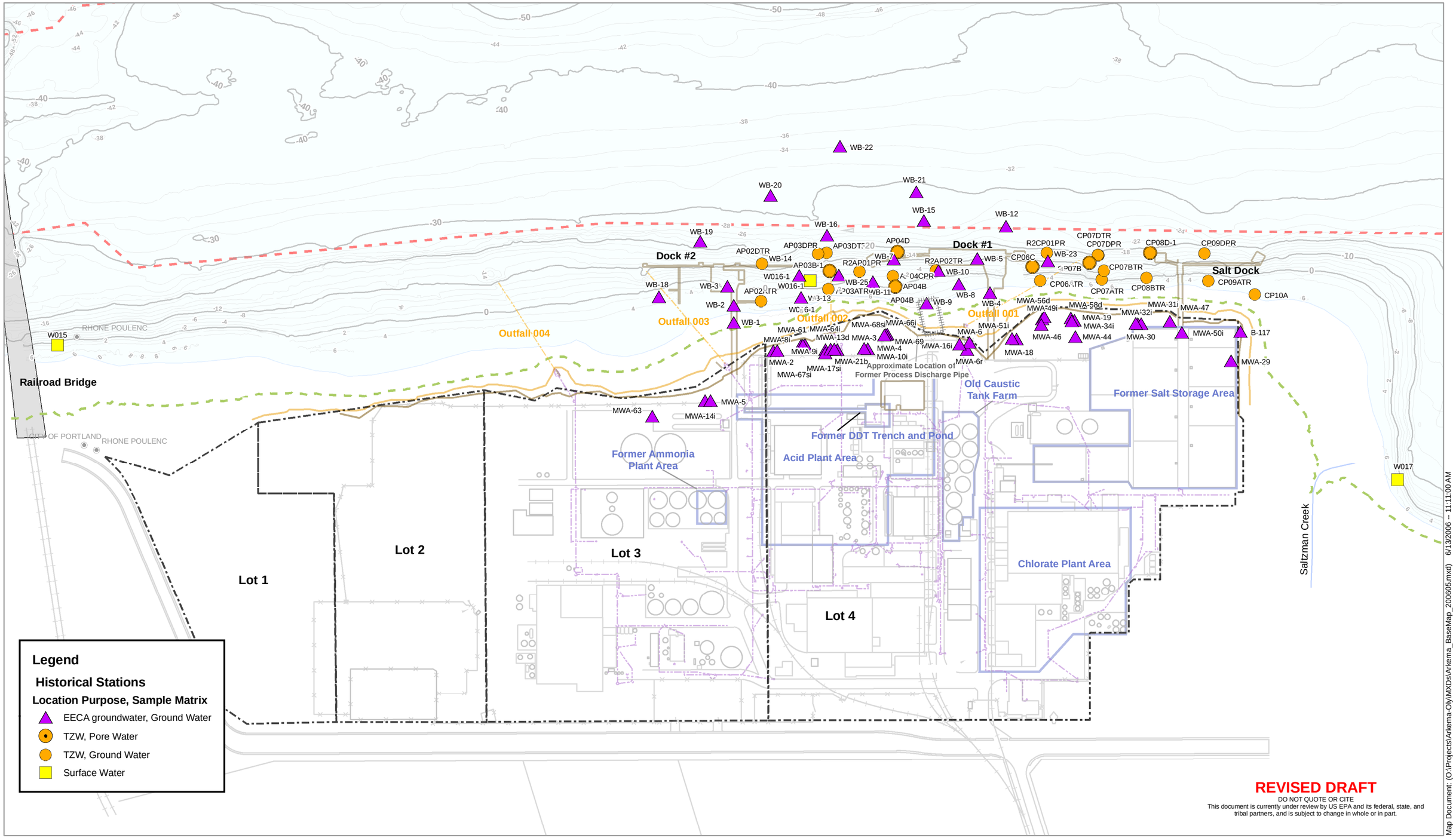
Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Navigation Channel
Property Lines
Bridges
River
Outfalls

Figure 3-2
Arkema Site
Historical Sample Locations
(Sediment and Riverbank Soil Samples)



integral consulting inc.

200 100 0 200 Feet

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988(NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
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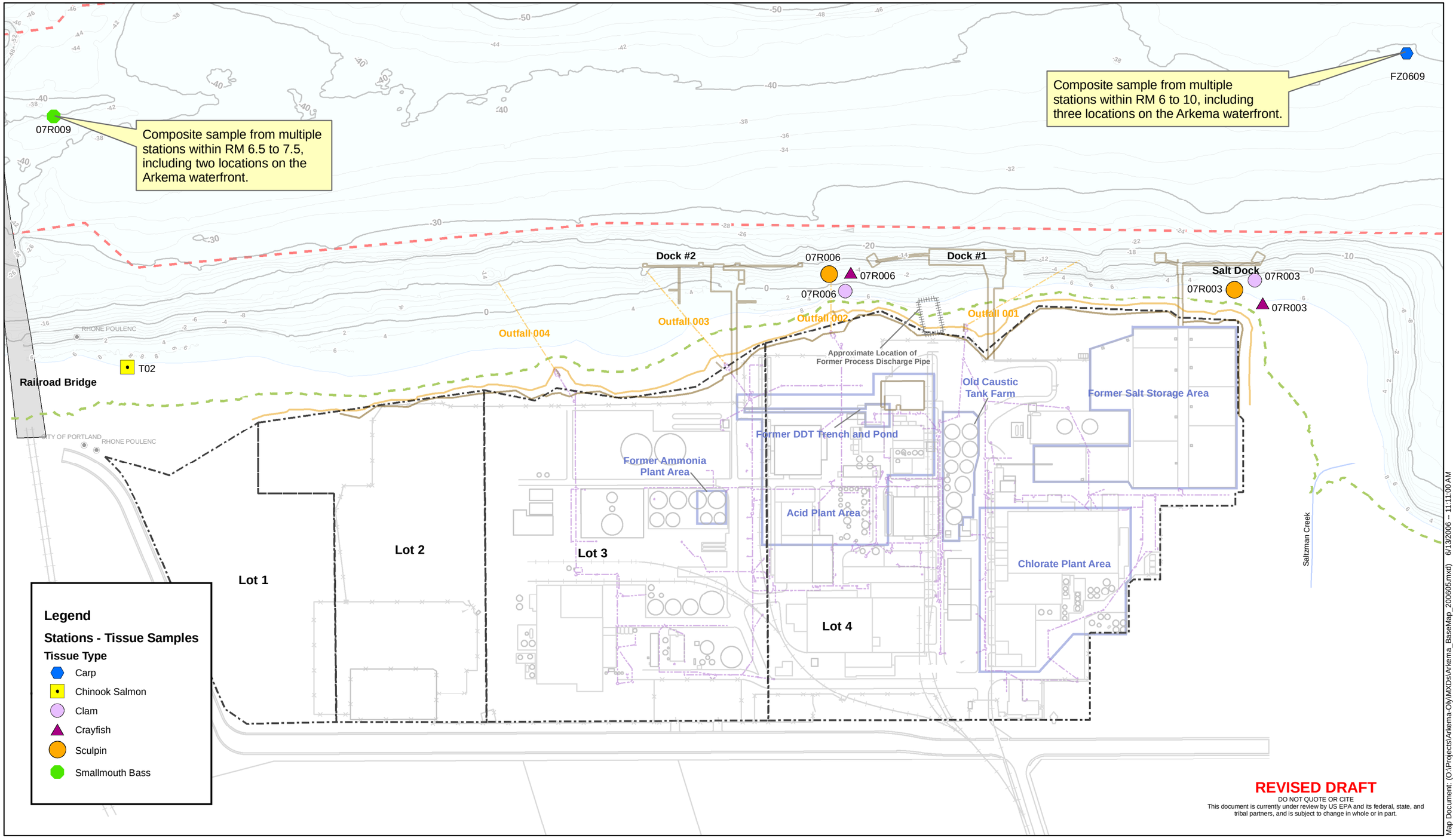
Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Navigation Channel
Property Lines
Bridges
River
Outfalls

Figure 3-3
Arkema Site
Historical Station Locations
(Water Samples)



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200 100 0 200 Feet

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988(NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006.
Most buildings and structures on the Arkema site have been demolished or removed.
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Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Bridges
Navigation Channel
River
Property Lines
Outfalls

Figure 3-4
Arkema Site
Historical Station Locations (Tissue Samples)

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988(NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006.
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OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

G334
RHONE POULENC
G336
G335
Railroad Bridge
G339
G348
Outfall 004
Outfall 003
G350
Dock #2
G351
Outfall 002
G355
Dock #1
G360
G359
Outfall 001
G366
G368
Salt Dock
G371
Approximate Location of Former Process Discharge Pipe
Old Caustic Tank Farm
Former Salt Storage Area
Former DDT Pond and Trench
Former Ammonia Plant Area
Acid Plant Area
Chlorate Plant Area
G377
Saltzman Creek
CITY OF PORTLAND
RHONE POULENC
Lot 1
Lot 2
Lot 3
Lot 4

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200 100 0 200 Feet

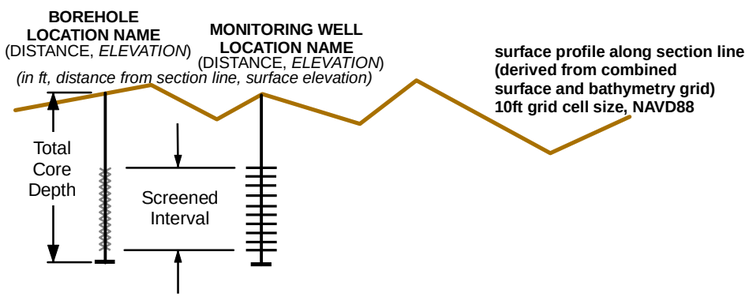
Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Bridges
Navigation Channel
River
Outfalls
Property Lines

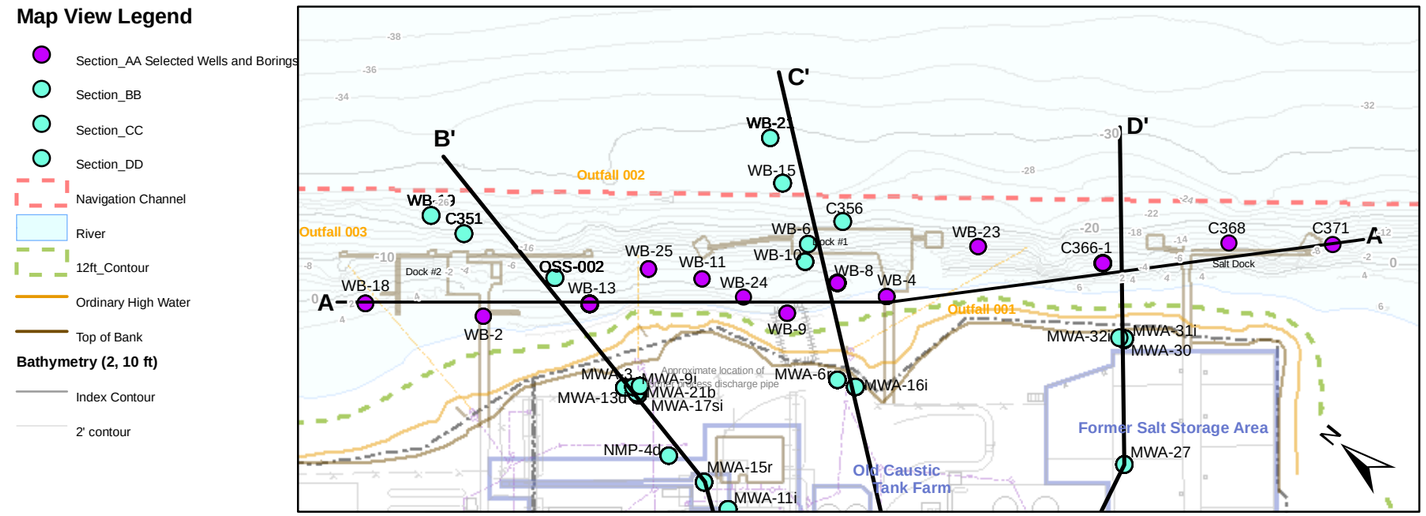
Bioassay Sample
No Data

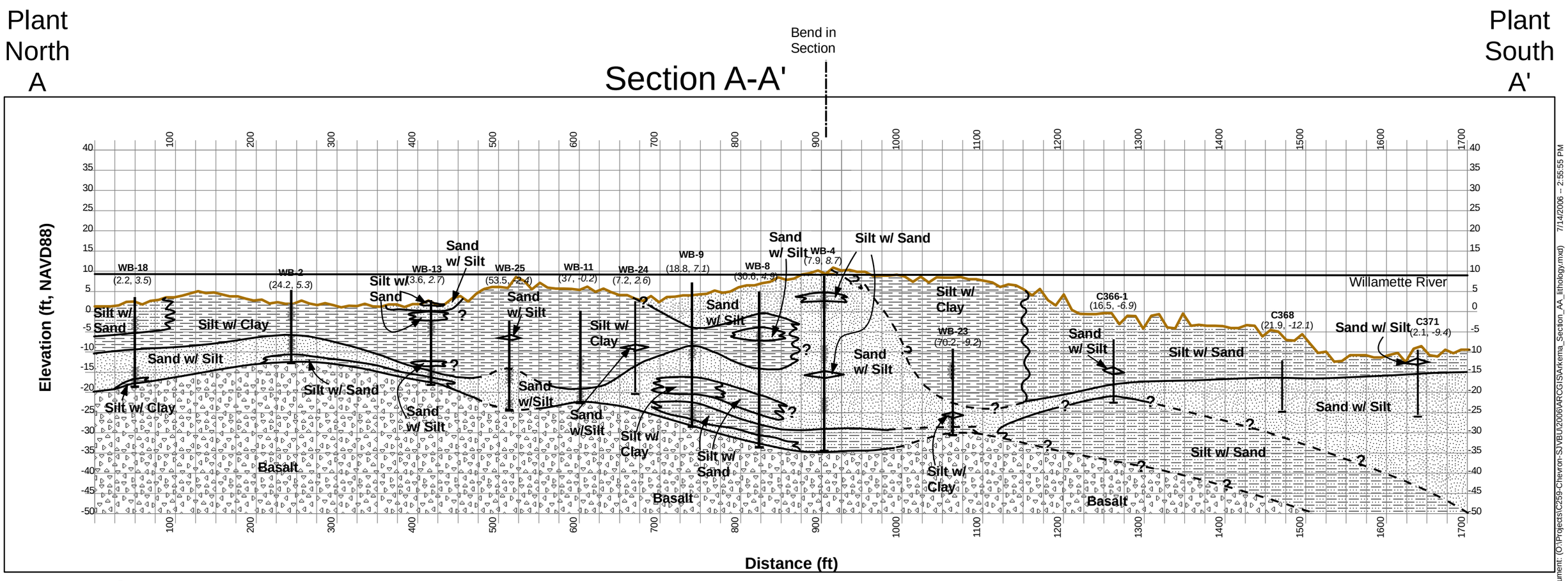
Chironomid Mean % Mortality (Mt-Mc) CT_MnPc_Mt	Hyalella Mean % Mortality (Mt-Mc) HY_MnPc_Mt	Chironomid Mean Weight (Wt/Wc) CT_Mn_Wt	Hyalella Mean Weight (Wt/Wc) HY_Mn_Wt
≤ 10 %	≤ 10%	≥ 0.8	≥ 0.75
> 10% and ≤ 25%	> 10% and ≤ 25%	< 0.8 and ≥ 0.7	< 0.75 and ≥ 0.6
≥ 25%	> 25%	< 0.7	< 0.6

Figure 3-5
Arkema EE/CA
Portland Harbor Stage 2
Bioassay Testing Results

Notes:
1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment







Section View: Vertical Exaggeration: 5X

Fill
Sand with varying amounts of silt
Silt with varying amounts of fine sand
Silt with some clay and fine sand
Basalt
Inferred soil or geologic contact (queried where uncertain)
Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

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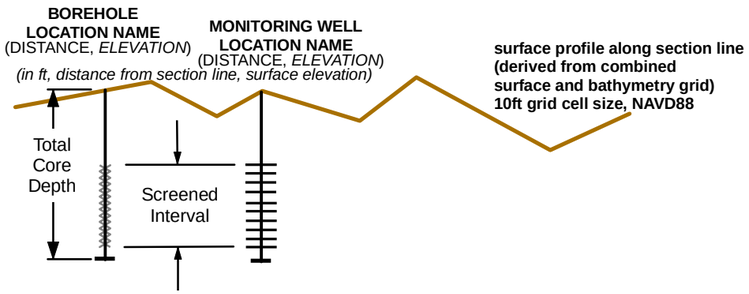
0 50 100 200 Feet

Figure 3-6
Cross-Section A-A'

Map Document: (O:\Projects\C259-Chevron-SJVBU\2006\ARCG\SA\Arkema_Section_AA_lithology.mxd) 7/14/2006 -- 2:55:55 PM

Notes:
1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment

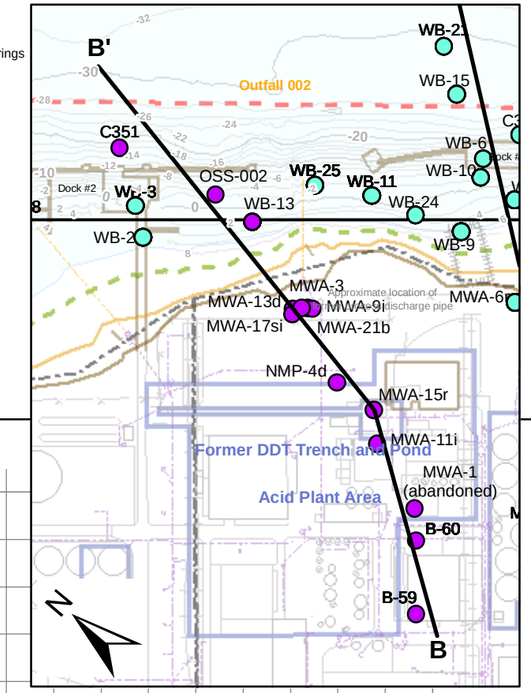


Map View Legend

- Section_BB Selected Wells and Borings
- Section_AA
- Section_CC
- Section_DD
- Navigation Channel
- River
- 12ft_Contour
- Ordinary High Water
- Top of Bank

Bathymetry (2, 10 ft)

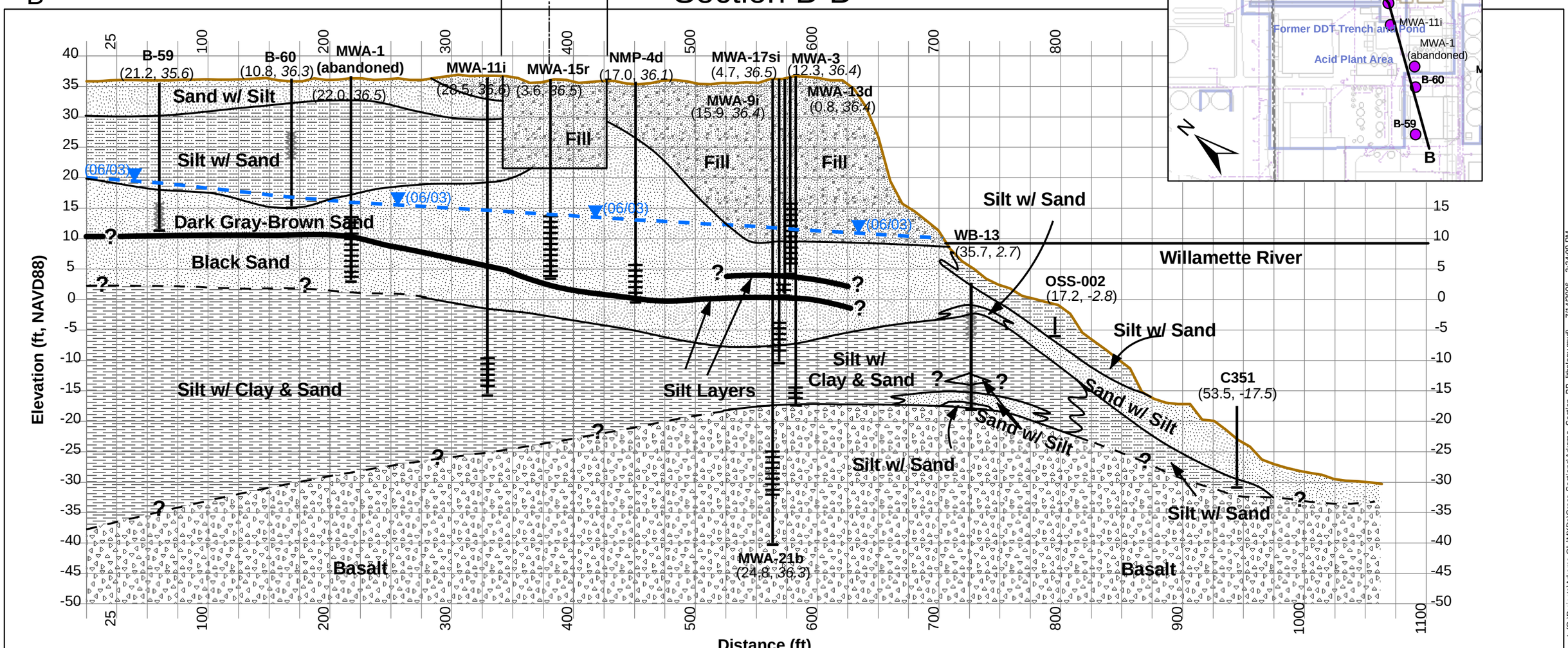
- Index Contour
- 2' contour



Plant West B

Plant East B'

Section B-B'



Section View: Vertical Exaggeration: 5X

- Fill
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.
- Inferred soil or geologic contact (queried where uncertain)
- Silt Layer

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0 50 100 200 Feet

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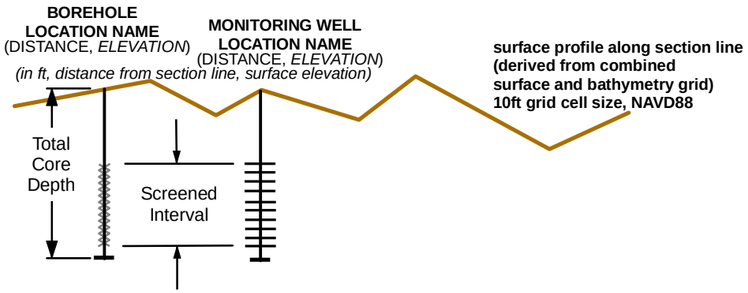
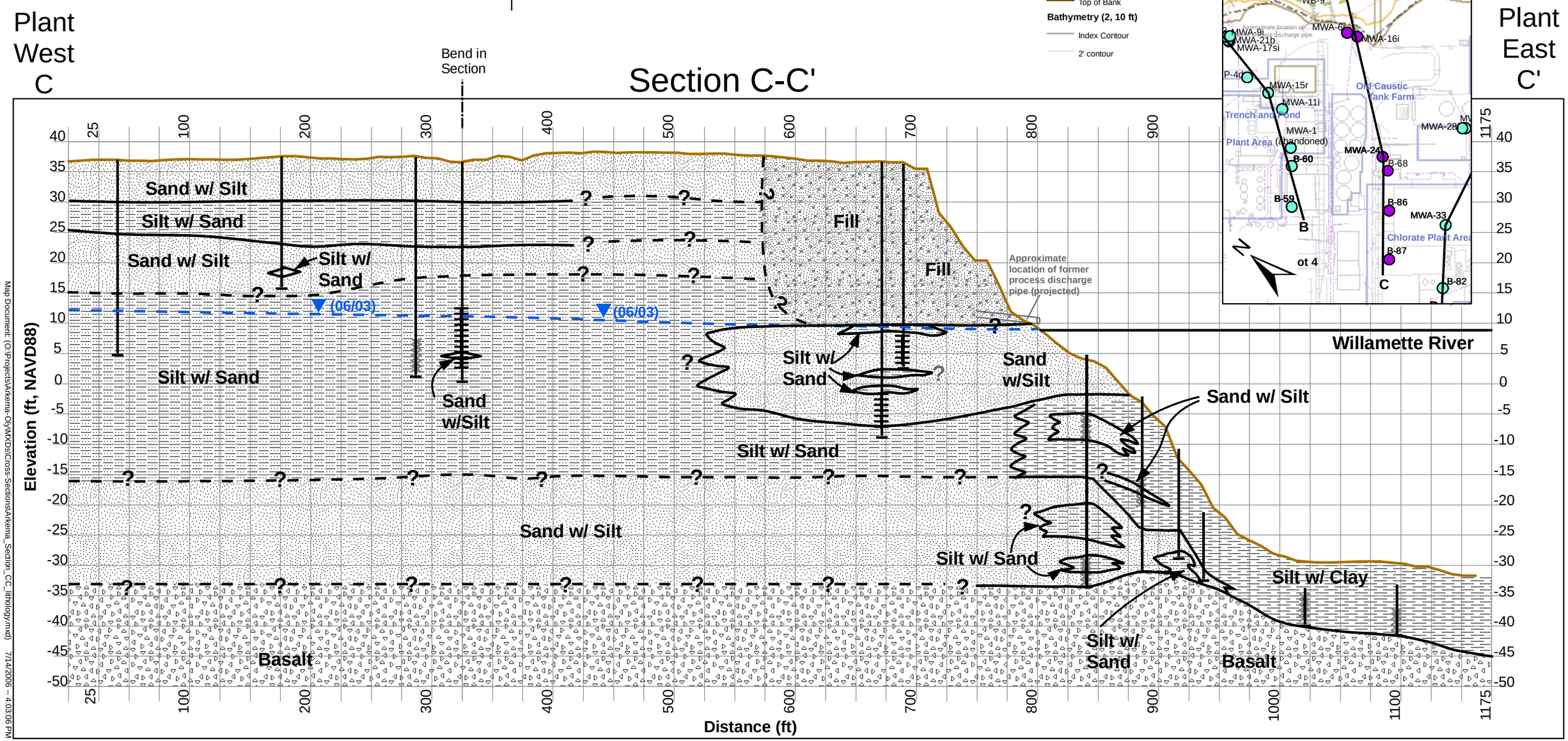
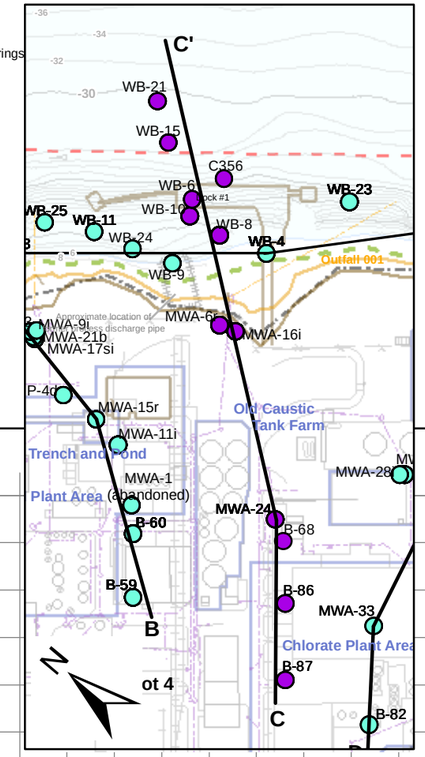
Figure 3-7
Cross-Section B-B'

Map Document: (O:\Projects\Arkema-Oly\MXDs\Cross-Sections\Arkema_Section_BB_lithology.mxd) 7/14/2006 -- 3:34:09 PM

Notes:
1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment







Map Document: (O:\Projects\Akzena-Oly\MXDs\Cross-Sections\Akzena_Section_CC_lithology.mxd) 7/14/2006 -- 4:03:06 PM

integral consulting inc.

Section View: Vertical Exaggeration: 5X

Fill
Sand with varying amounts of silt
Silt with varying amounts of fine sand
Silt with some clay and fine sand
Basalt
Inferred soil or geologic contact (queried where uncertain)
Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

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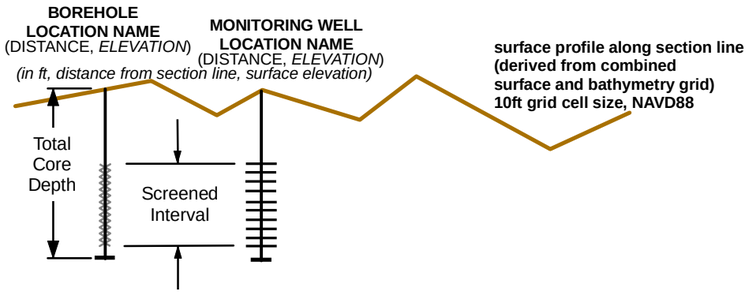
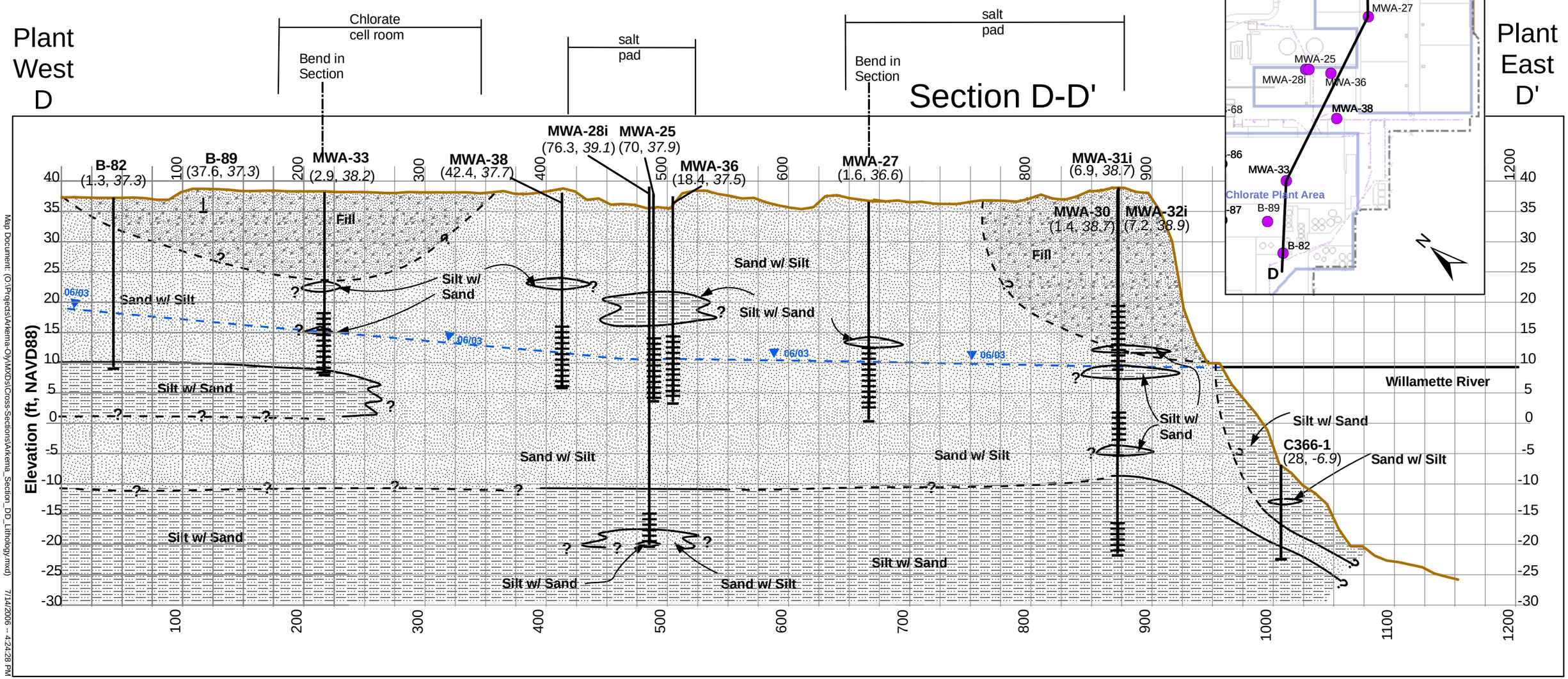
0 50 100 200 Feet

Figure 3-8
Cross-Section C-C'

Notes:
1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment





Section View: Vertical Exaggeration: 5X

Fill
Sand with varying amounts of silt
Silt with varying amounts of fine sand
Silt with some clay and fine sand
Basalt
Inferred soil or geologic contact (queried where uncertain)
Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

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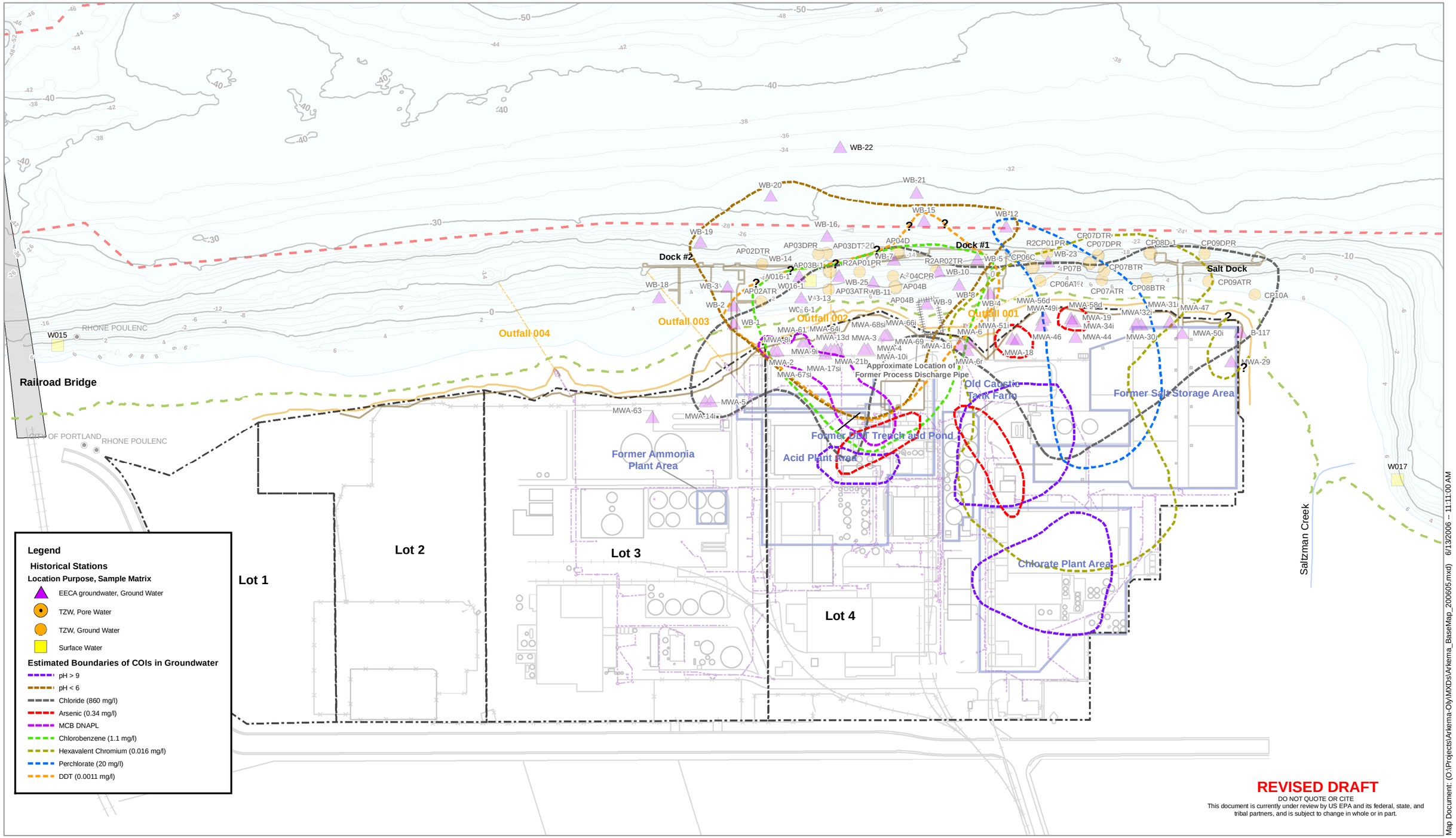
0 50 100 200 Feet

Figure 3-9
Cross-Section D-D'

Map Document: (O:\Projects\Arkema-Oly\MXDs\Cross-Sections\Arkema_Section_DD_Lithology.mxd) 7/14/2006 -- 4:24:28 PM



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200 100 0 200 Feet

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
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Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
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Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Navigation Channel
Property Lines
Bridges
River
Outfalls

Figure 4-3
Arkema Site
Estimated Boundaries of COIs in Groundwater

472,000 ft 2

Dock #2

Dock #1

Salt Dock

Railroad Bridge

Outfall 003

Outfall 004

Outfall 002

Outfall 001

Acid Plant Area

See Detail Figure A

Former Salt Storage Area

Chlorate Plant Area

Lot 1

Lot 2

Lot 3

Lot 4

Saltzman Creek

RHONE POULENC

CITY OF PORTLAND

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988(NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
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OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.

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Map Document: (O:\Projects\Arkema-Oly\MXDs\Arkema_BaseMap_200605.mxd)
5/26/2006 -- 5:33:27 PM

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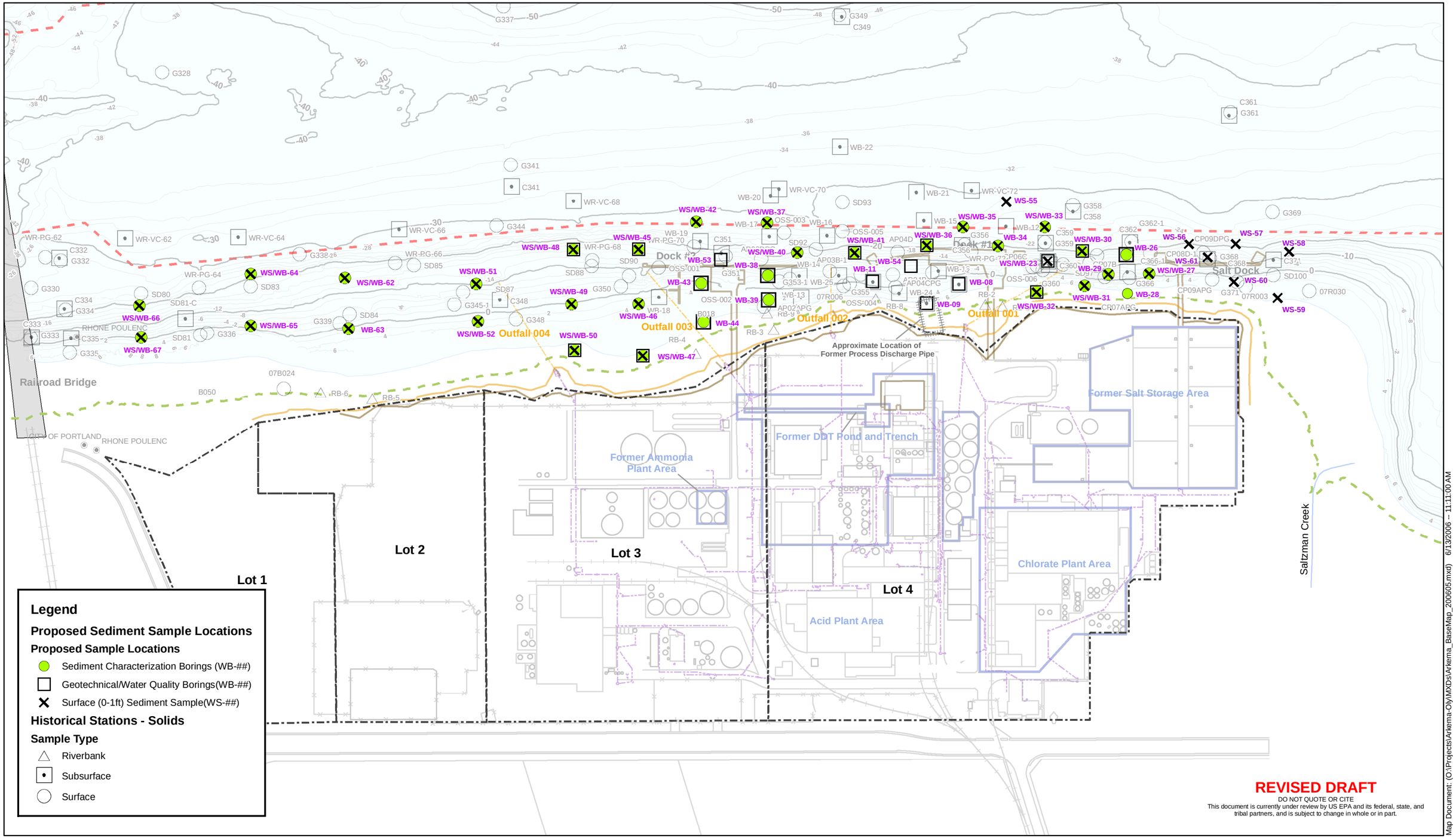
200 100 0 200 Feet

1 inch equals 233.333333 feet

Tissue
Sediment
Soil
Pore Water
Surface Water
Groundwater
12ft_Contour
Bridges
Preliminary RAA Boundary
Navigation Channel
River
Ordinary High Water
Top of Bank
Sewer
Storm Drain
Outfalls

Figure 6-1
Arkema
Preliminary RAA



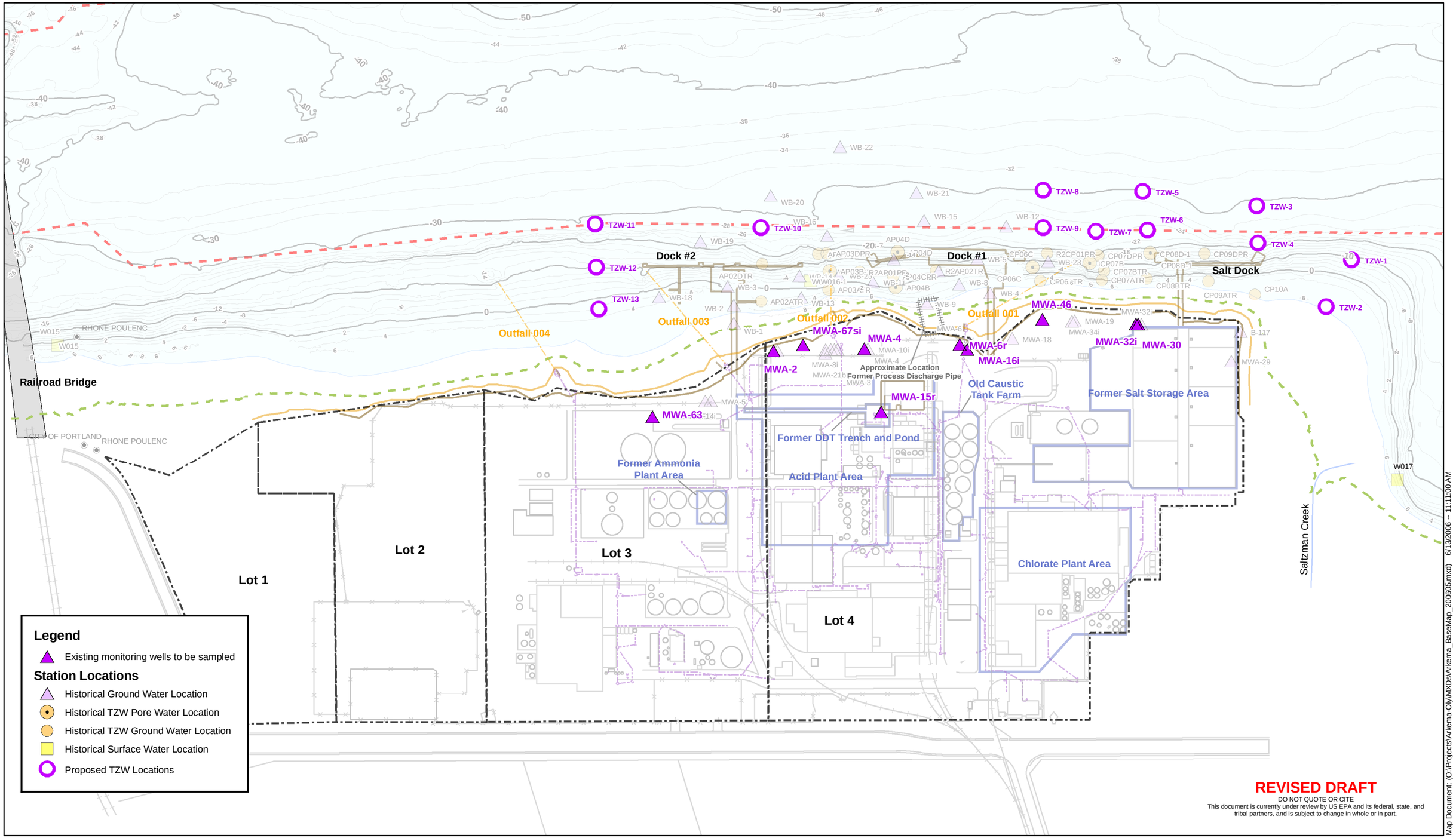
integral consulting inc.

200 100 0 200 Feet

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988(NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006.
Most buildings and structures on the Arkema site have been demolished or removed.
OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Bridges
Navigation Channel
River
Property Lines
Outfalls

Figure 8-1
Arkema Site
Proposed Sediment Sampling Locations



integral consulting inc.

200 100 0 200 Feet

FEATURE SOURCES:
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Vertical Datum: North American Vertical Datum of 1988(NAVD88).
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Most buildings and structures on the Arkema site have been demolished or removed.
OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Bridges
Navigation Channel
River
Property Lines
Outfalls

Figure 8-2
Arkema Site
Proposed Water Sampling Locations

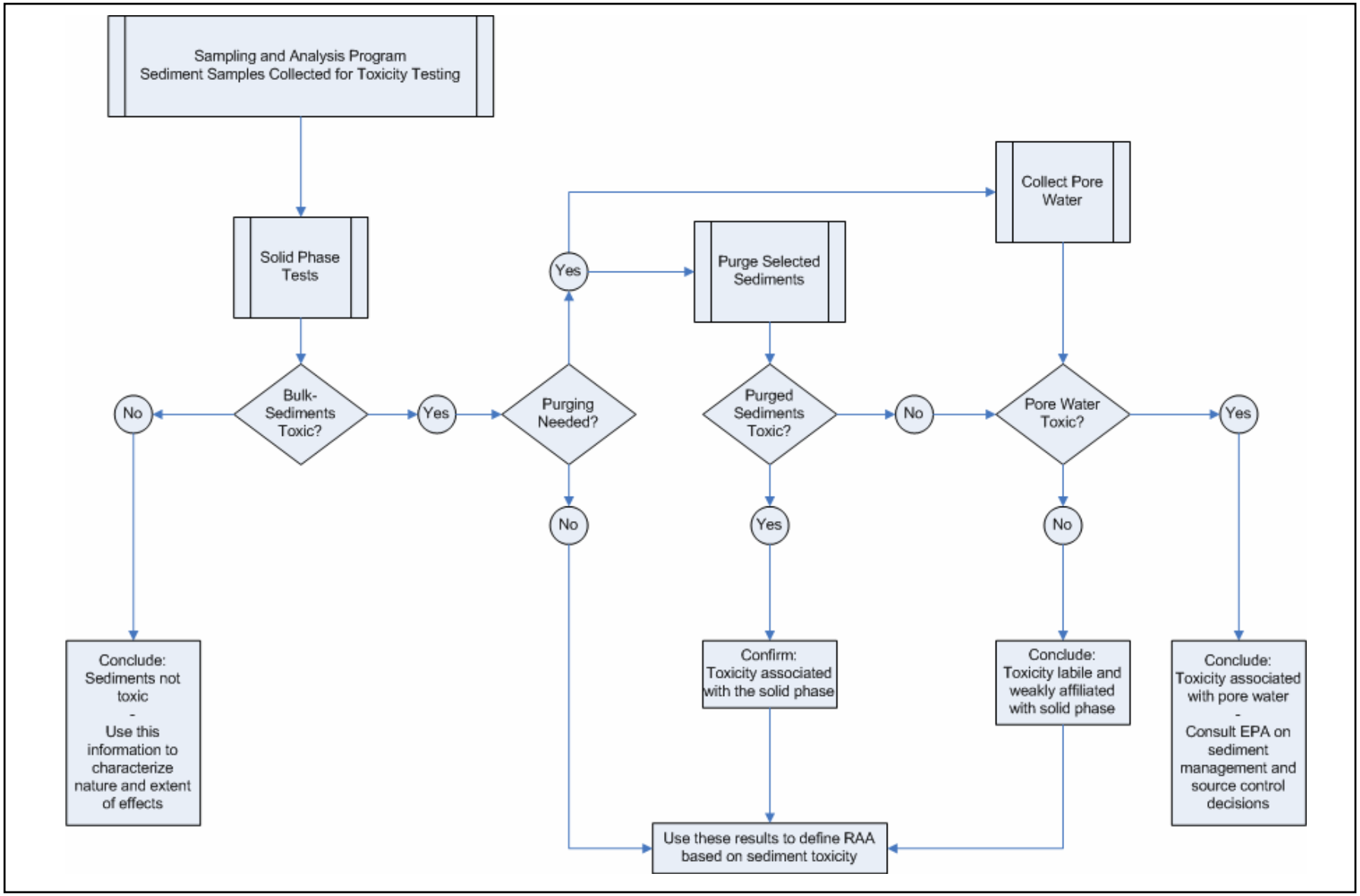
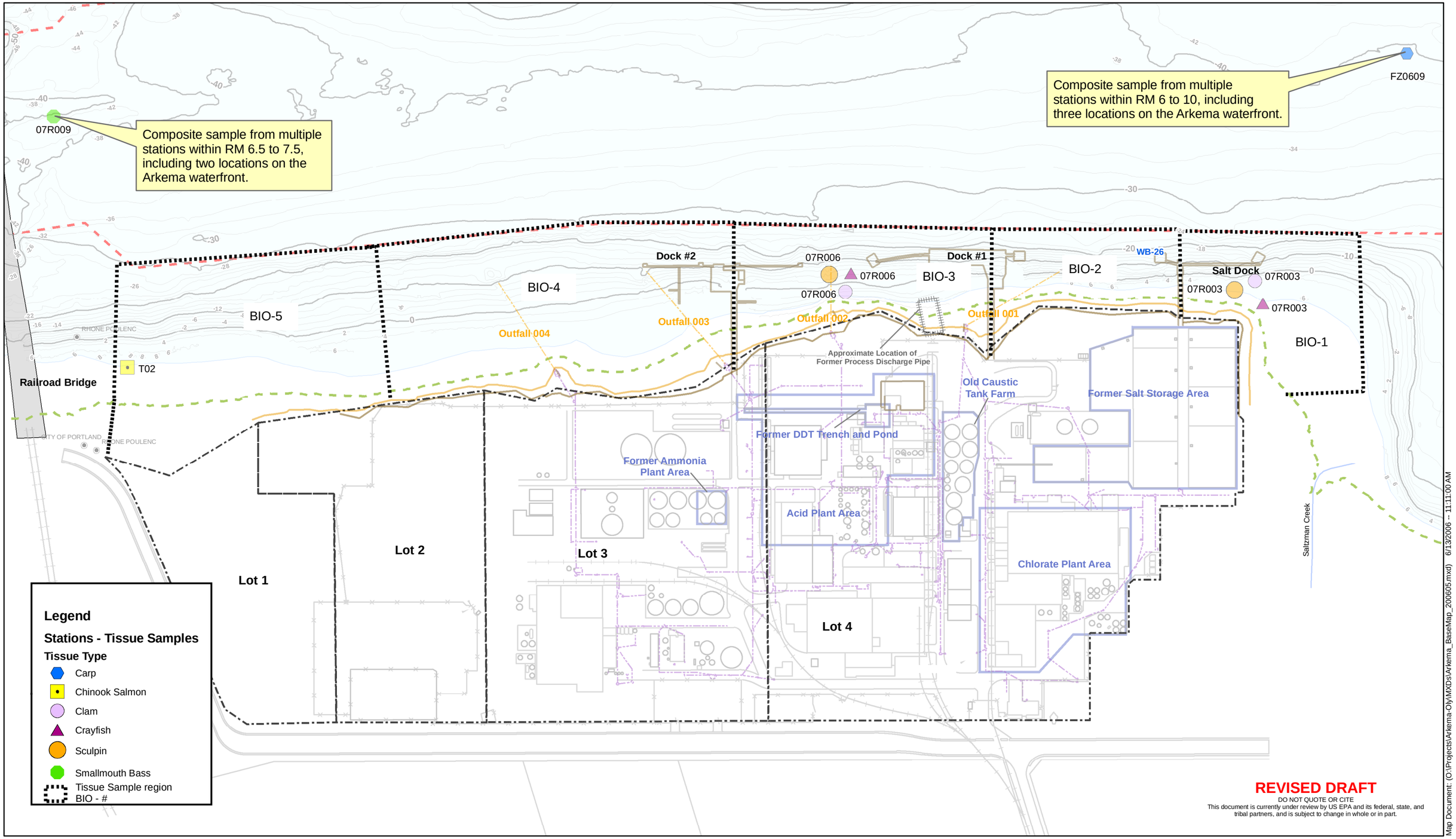


Figure 8-3. General Framework[a] for Sediment Toxicity Testing Using a Combination of Bulk-sediment, Purged Sediment, and Pore-water Tests to Characterize the Nature and Extent of Contamination and Define the Remedial Action Area.

[a]Specific tests and methods are provided in the FSP and QAPP.



integral consulting inc.

200 100 0 200 Feet

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Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006.
Most buildings and structures on the Arkema site have been demolished or removed.
OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

Ordinary High Water
Top of Bank
E-Sewer-L
Storm Drain
12ft_Contour
Bridges
Navigation Channel
River
Property Lines
Outfalls

Figure 8-4
Arkema Site
Proposed Tissue Sampling Locations

5/18/2006 Revision

DRAFT SCHEDULE

ID	Task Name	Duration	Start	Finish
1	**EFFECTIVE DATE OF AOC**	1 day	Mon 6/27/05	Mon 6/27/05
2	**EE/CA WORK PLAN**	**489 days**	**Tue 6/28/05**	**Sun 10/29/06**
3	Draft EE/CA Work Plan	91 days	Tue 6/28/05	Mon 9/26/05
4	Agency Review EE/CA Work Plan	36 days	Tue 9/27/05	Tue 11/1/05
5	Agency Comments and Dispute Resolution	129 days	Wed 11/2/05	Fri 3/10/06
6	Revised Work Plan and Interim Deliverables	112 days	Sat 3/11/06	Fri 6/30/06
7	Agency Review EE/CA Work Plan	31 days	Sat 7/1/06	Mon 7/31/06
8	Final Revised Work Plan, SAP, QAPP, HSP	60 days	Tue 8/1/06	Fri 9/29/06
9	EPA Review and Approval of EE/CA Work Plan	30 days	Sat 9/30/06	Sun 10/29/06
10	**ADDITIONAL SITE CHARACTERIZATION**	**140 days**	**Mon 10/30/06**	**Sun 3/18/07**
11	Field Mobilization	20 days	Mon 10/30/06	Sat 11/18/06
12	Field Sampling	60 days	Sun 11/19/06	Wed 1/17/07
13	Laboratory Analysis and Validation	120 days	Sun 11/19/06	Sun 3/18/07
14	**REMOVAL ACTION CHARACTERIZATION REPORT**	**243 days**	**Mon 10/30/06**	**Fri 6/29/07**
15	Draft Removal Action Characterization Report	152 days	Mon 10/30/06	Fri 3/30/07
16	Agency Review of Removal Action Characterization Report	30 days	Sat 3/31/07	Sun 4/29/07
17	Final Removal Action Characterization Report	30 days	Mon 4/30/07	Tue 5/29/07
18	EPA Approval of Removal Action Characterization Report	31 days	Wed 5/30/07	Fri 6/29/07
19	**EE/CA REPORT**	**331 days**	**Sat 6/30/07**	**Sun 5/25/08**
20	Technical Briefing on Proposed Remedial Alternatives	30 days	Sat 6/30/07	Sun 7/29/07
21	First Draft EE/CA	90 days	Mon 7/30/07	Sat 10/27/07
22	Agency Review of Draft EE/CA	30 days	Sun 10/28/07	Mon 11/26/07
23	Second Draft (Public Review) EE/CA	60 days	Tue 11/27/07	Fri 1/25/08
24	Public Review of Second Draft EE/CA	30 days	Sat 1/26/08	Sun 2/24/08
25	Final EE/CA	61 days	Mon 2/25/08	Fri 4/25/08
26	EPA Approval of EE/CA	30 days	Sat 4/26/08	Sun 5/25/08
27	**BIOLOGICAL ASSESSMENT AND 404 MEMORANDUM**	**392 days**	**Mon 7/30/07**	**Sun 8/24/08**
36	**EPA ISSUANCE OF THE ACTION MEMORANDUM**	61 days	Mon 8/25/08	Fri 10/24/08
37	**PROJECT DESIGN DOCUMENTS**	**315 days**	**Sat 10/25/08**	**Fri 9/4/09**
44	**SELECTION OF CONTRACTOR(S)**	**88 days**	**Sat 9/5/09**	**Tue 12/1/09**
50	**REMOVAL ACTION WORK PLAN**	**136 days**	**Wed 12/2/09**	**Fri 4/16/10**
55	**IMPLEMENTATION OF REMOVAL ACTION**	**152 days**	**Sat 4/17/10**	**Wed 9/15/10**
56	Notification of Removal Action Start	30 days	Sat 4/17/10	Sun 5/16/10
57	Removal Action	122 days	Mon 5/17/10	Wed 9/15/10
58	Removal Action Completion	0 days	Wed 9/15/10	Wed 9/15/10
59	**UPLAND SOURCE CONTROL AND EVALUATION**	**1651 days**	**Sun 5/1/05**	**Fri 11/6/09**
60	Upland Source Control Evaluation	855 days	Sun 5/1/05	Sun 9/2/07
61	Upland Source Control Evaluation Report I	1 day	Mon 9/3/07	Mon 9/3/07
62	Supplemental IRMs (as needed), Monitoring, and Reporting	735 days	Tue 9/4/07	Mon 9/7/09
63	Upland Source Control Evaluation Report II	60 days	Tue 9/8/09	Fri 11/6/09
64	**HEXAVALENT CHROMIUM IRM**	**580 days**	**Sun 7/3/05**	**Fri 2/2/07**
65	Rounds 1 & 2 Injections, Monitoring and Evaluation	273 days	Sun 7/3/05	Sat 4/1/06
66	Round 3 Injections, Monitoring, Evaluation, and Reporting	233 days	Thu 6/15/06	Fri 2/2/07
67	**AIR SPARGE/SOIL VAPOR EXTRACTION (MCB)**	**625 days**	**Tue 2/15/05**	**Wed 11/1/06**
68	Operation and maintenance	486 days	Tue 2/15/05	Thu 6/15/06
69	Performance Monitoring	542 days	Wed 3/23/05	Fri 9/15/06
70	Reporting	48 days	Fri 9/15/06	Wed 11/1/06
71	**PERSULFATE OXIDATION IRM (DDT/MCB)**	**1228 days**	**Sun 7/3/05**	**Tue 11/11/08**
72	Round 1 injections, Monitoring, and Evaluation	227 days	Sun 7/3/05	Tue 2/14/06
73	DNAPL Isolation Engineering Evaluation	30 days	Fri 6/30/06	Sat 7/29/06
74	DEQ Review and Approval of Engineering Evaluation	30 days	Sun 7/30/06	Mon 8/28/06
75	DNAPL Isolation and Treatment Work Plan	30 days	Tue 8/29/06	Wed 9/27/06
76	DEQ Review and Approval of Work Plan	45 days	Thu 9/28/06	Sat 11/11/06
77	Additional injections	671 days	Thu 1/11/07	Tue 11/11/08
78	**PERCHLORATE PILOT STUDY/IRM**	**1179 days**	**Wed 11/30/05**	**Fri 2/20/09**
79	Bench-Scale Treatability Study Technical Memorandum and Pilot Study Work Plan	101 days	Wed 11/30/05	Fri 3/10/06
80	DEQ Review of Pilot Study Work Plan (Field Work)	27 days	Sat 3/11/06	Thu 4/6/06
81	Response to DEQ Comments	6 days	Fri 4/7/06	Wed 4/12/06
82	DEQ Approval of Aquifer Tests/Field Work	5 days	Thu 4/13/06	Mon 4/17/06
83	Pre-Design Field Work & Evaluation	90 days	Tue 4/4/06	Sun 7/2/06
84	Pilot Study Work Plan	5 days	Mon 7/3/06	Fri 7/7/06

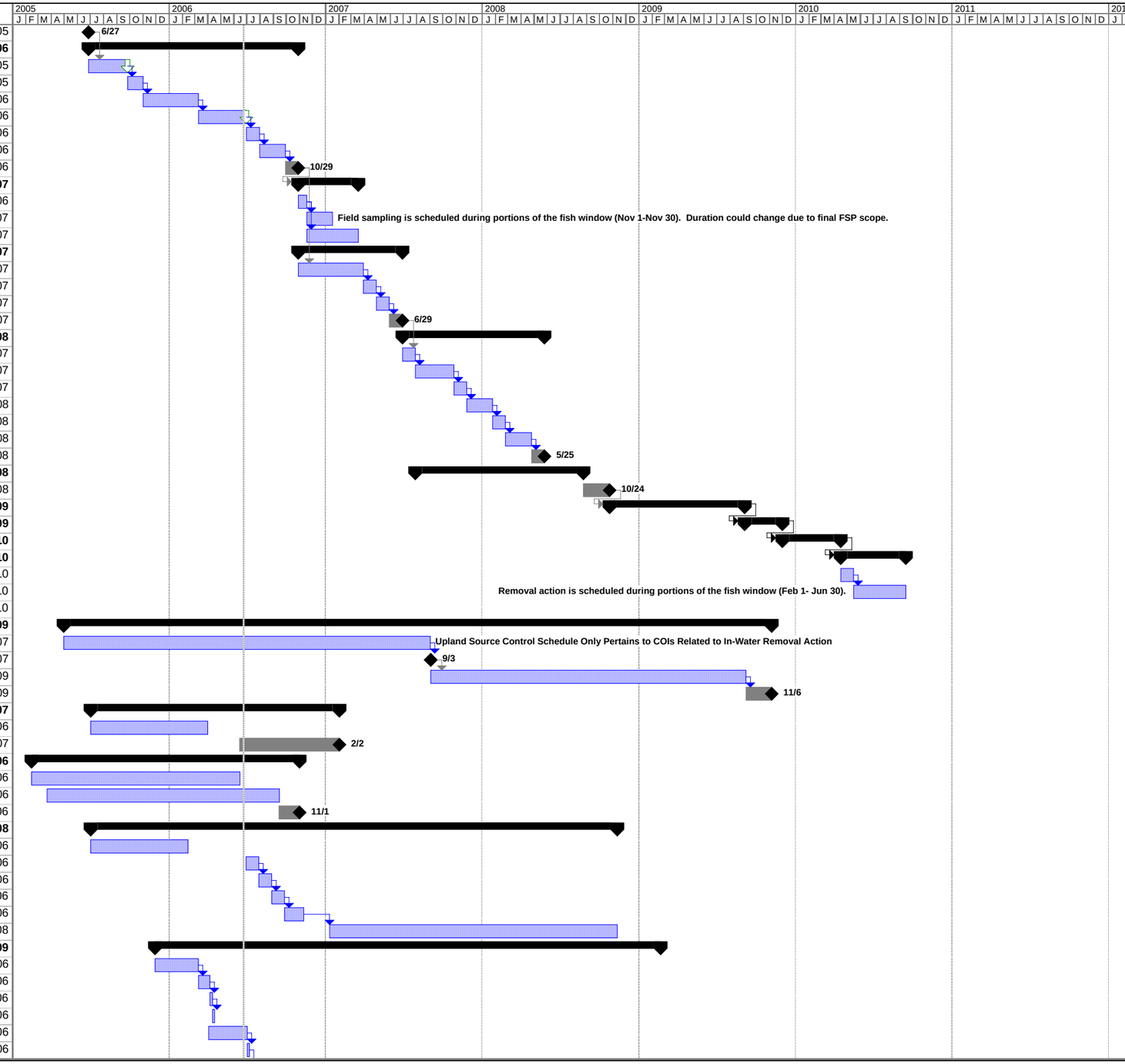

Figure 9-1 Project Schedule

Task | Split | Milestone | Summary | Deadline

Note: Dates and duration of tasks shaded in gray are dependent on timing of agency review.

Arkema Proposed Schedule Upland & In Water_rev051806.mpp

5/18/2006 Revision

DRAFT SCHEDULE

ID	Task Name	Duration	Start	Finish
85	DEQ Review and Approval	30 days	Sat 7/8/06	Sun 8/6/06
86	Pilot Study Planning	60 days	Mon 8/7/06	Thu 10/5/06
87	Field Pilot Study	366 days	Fri 10/6/06	Sat 10/6/07
88	Midpoint Perchlorate Evaluation Tech Memo	30 days	Wed 4/4/07	Thu 5/3/07
89	Pilot Study Report and IRM Work Plan and Design	60 days	Sun 10/7/07	Wed 12/5/07
90	DEQ Review and Approval of IRM Design	30 days	Thu 12/6/07	Fri 1/4/08
91	Perchlorate IRM	368 days	Sat 1/5/08	Tue 1/6/09
92	Reporting	45 days	Wed 1/7/09	Fri 2/20/09
93	**STORMWATER IRM**	**537 days**	**Tue 11/15/05**	**Sat 5/5/07**
94	Investigation Work Plan	170 days	Tue 11/15/05	Wed 5/3/06
95	DEQ Review and Approval of Work Plan	30 days	Thu 5/4/06	Fri 6/2/06
96	Field Sampling	60 days	Sat 6/3/06	Tue 8/1/06
97	Reporting	60 days	Wed 8/2/06	Sat 9/30/06
98	Stormwater FFS/IRM Design	60 days	Sun 10/1/06	Wed 11/29/06
99	DEQ Review and Approval of IRM Design	30 days	Thu 11/30/06	Fri 12/29/06
100	Stormwater IRM	67 days	Sat 12/30/06	Tue 3/6/07
101	Reporting	60 days	Wed 3/7/07	Sat 5/5/07
102	**RI REPORT**	**242 days**	**Thu 12/1/05**	**Sun 7/30/06**
103	Submit Revised RI	1 day	Thu 12/1/05	Thu 12/1/05
104	DEQ Review of Revised RI	181 days	Fri 12/2/05	Wed 5/31/06
105	Finalize and Submit RI Report	60 days	Thu 6/1/06	Sun 7/30/06
106	**LOT NOS. 1 AND 2 REPORT**	**59 days**	**Wed 11/30/05**	**Fri 1/27/06**
107	Submit Report	59 days	Wed 11/30/05	Fri 1/27/06
108	**HOT SPOT EVALUATION**	**688 days**	**Thu 12/15/05**	**Fri 11/2/07**
109	Preliminary Hot Spot Evaluation and Submittal	135 days	Thu 12/15/05	Fri 4/28/06
110	DEQ Review and Comment	60 days	Sat 4/29/06	Tue 6/27/06
111	Site-Specific Hot Spot Evaluation (Submitted with Risk Assessment)	30 days	Wed 7/19/06	Thu 8/17/06
112	DEQ Review and Comment	60 days	Fri 8/18/06	Mon 10/16/06
113	Final Hot Spot Evaluation (Submitted with Feasibility Study)	30 days	Sun 8/5/07	Mon 9/3/07
114	DEQ Review and Approval	60 days	Tue 9/4/07	Fri 11/2/07
115	**RISK ASSESSMENT/SCREENING**	**335 days**	**Tue 11/1/05**	**Sun 10/1/06**
116	Joint Source Control Screening	179 days	Tue 11/1/05	Fri 4/28/06
117	DEQ Review of JSCS	45 days	Sat 4/29/06	Mon 6/12/06
118	Human Health Risk Assessment First Phase of Evaluation	139 days	Thu 12/1/05	Tue 4/18/06
119	Meeting with DEQ and Arkema to Present CSM, HHRA Progress	1 day	Wed 4/19/06	Wed 4/19/06
120	Supplemental Sampling, Analysis, Validation	75 days	Thu 4/20/06	Mon 7/3/06
121	Complete and Submit HHRA	45 days	Tue 7/4/06	Thu 8/17/06
122	DEQ Review of HHRA	45 days	Fri 8/18/06	Sun 10/1/06
123	Level II Ecological Risk Assessment First Phase of Evaluation	139 days	Thu 12/1/05	Tue 4/18/06
124	Meeting with DEQ and Arkema to Present CSM, Level II ERA Progress	1 day	Wed 4/19/06	Wed 4/19/06
125	Supplemental Sampling, Analysis, Validation	75 days	Thu 4/20/06	Mon 7/3/06
126	Complete and Submit Level II ERA	45 days	Tue 7/4/06	Thu 8/17/06
127	DEQ Review of Level II ERA	45 days	Fri 8/18/06	Sun 10/1/06
128	**SOIL REMEDIATION IRM (DDT)**	**669 days**	**Tue 4/17/07**	**Fri 2/13/09**
129	Soil Remediation FFS/Design/Sampling	120 days	Tue 4/17/07	Tue 8/14/07
130	DEQ Review and Approval of Design	60 days	Wed 8/15/07	Sat 10/13/07
131	IRM Work	429 days	Sun 10/14/07	Mon 12/15/08
132	Reporting	60 days	Tue 12/16/08	Fri 2/13/09
133	**FEASIBILITY STUDY (With Contingencies)**	**493 days**	**Wed 6/28/06**	**Fri 11/2/07**
134	Work Plan for FS Data Gaps	60 days	Wed 6/28/06	Sat 8/26/06
135	DEQ Review and Approval of Work Plan	30 days	Sun 8/27/06	Mon 9/25/06
136	FS Data Gap Field Investigation	90 days	Tue 9/26/06	Sun 12/24/06
137	Reporting	60 days	Mon 12/25/06	Thu 2/22/07
138	DEQ Review and Approval of FS Data Gap Report	30 days	Fri 2/23/07	Sat 3/24/07
139	Assessment of Residual Risk Technical Memorandum	60 days	Sun 3/25/07	Wed 5/23/07
140	DEQ Review and Approval of Residual Risk Tech Memo	30 days	Thu 5/24/07	Fri 6/22/07
141	Draft FS	250 days	Thu 12/28/06	Mon 9/3/07
142	DEQ Review and Approval of Draft FS	60 days	Tue 9/4/07	Fri 11/2/07
143	**RECORD OF DECISION (With Contingencies)**	90 days	Sat 11/3/07	Thu 1/31/08
144	**IMPLEMENT FINAL REMEDY**	836 days	Fri 2/1/08	Sun 5/16/10

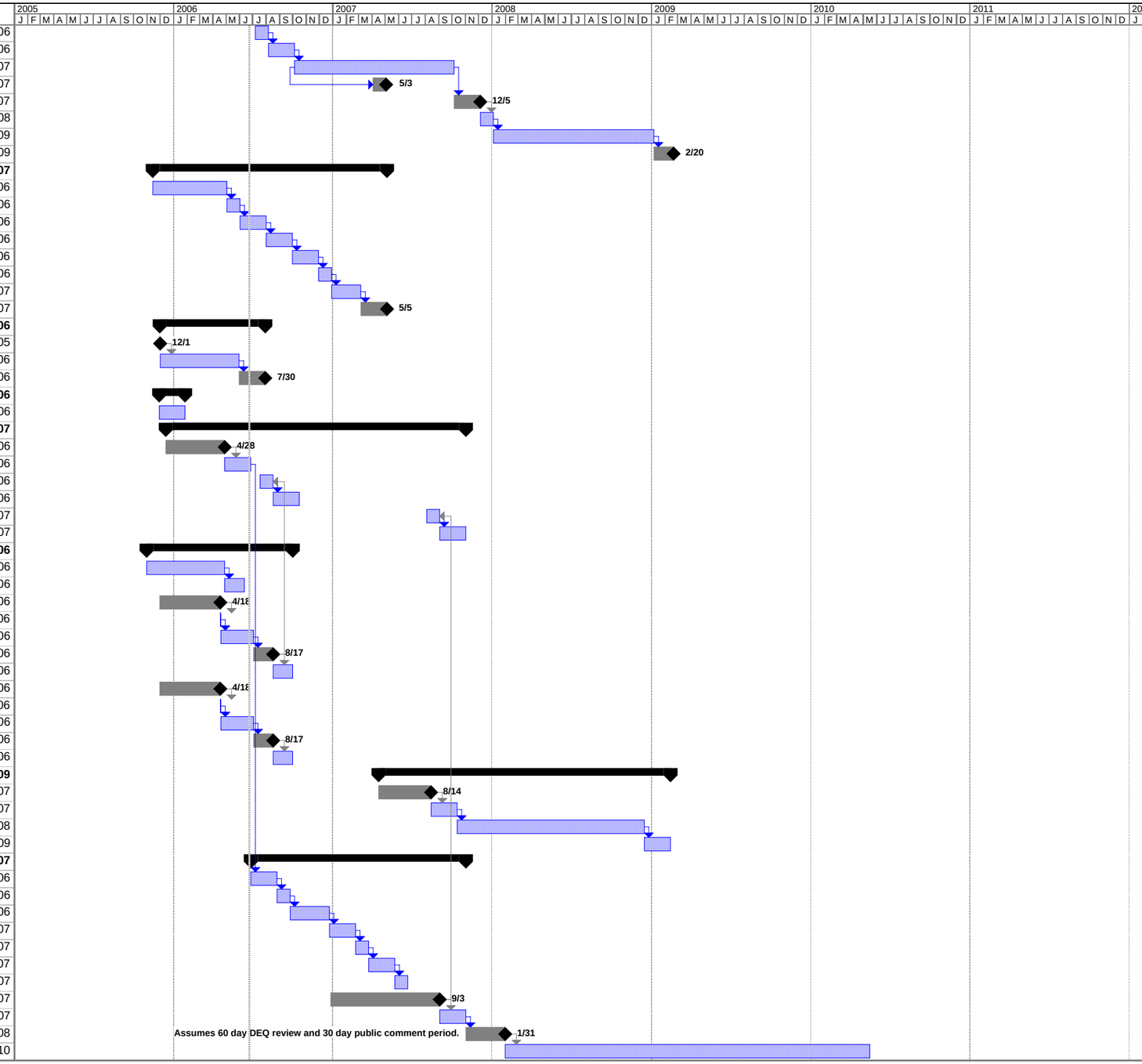

Figure 9-1 Project Schedule

Task | Split | Milestone | Summary | Deadline

Note: Dates and duration of tasks shaded in gray are dependent on timing of agency review.

Arkema Proposed Schedule Upland & In Water_rev051806.mpp

DRAFT SCHEDULE

12 Field Sampling
Field sampling is scheduled during portions of the fish window (Nov 1-Nov 30). Duration could change due to final FSP scope.

57 Removal Action
Removal action is scheduled during portions of the fish window (Feb 1- Jun 30).

60 Upland Source Control Evaluation
Upland Source Control Schedule Only Pertains to COIs Related to In-Water Removal Action

109 Preliminary Hot Spot Evaluation and Submittal
Comparison to Pre-Calculated, Highly Concentrated Hot Spot Values.

143 RECORD OF DECISION (With Contingencies)
Assumes 60 day DEQ review and 30 day public comment period.

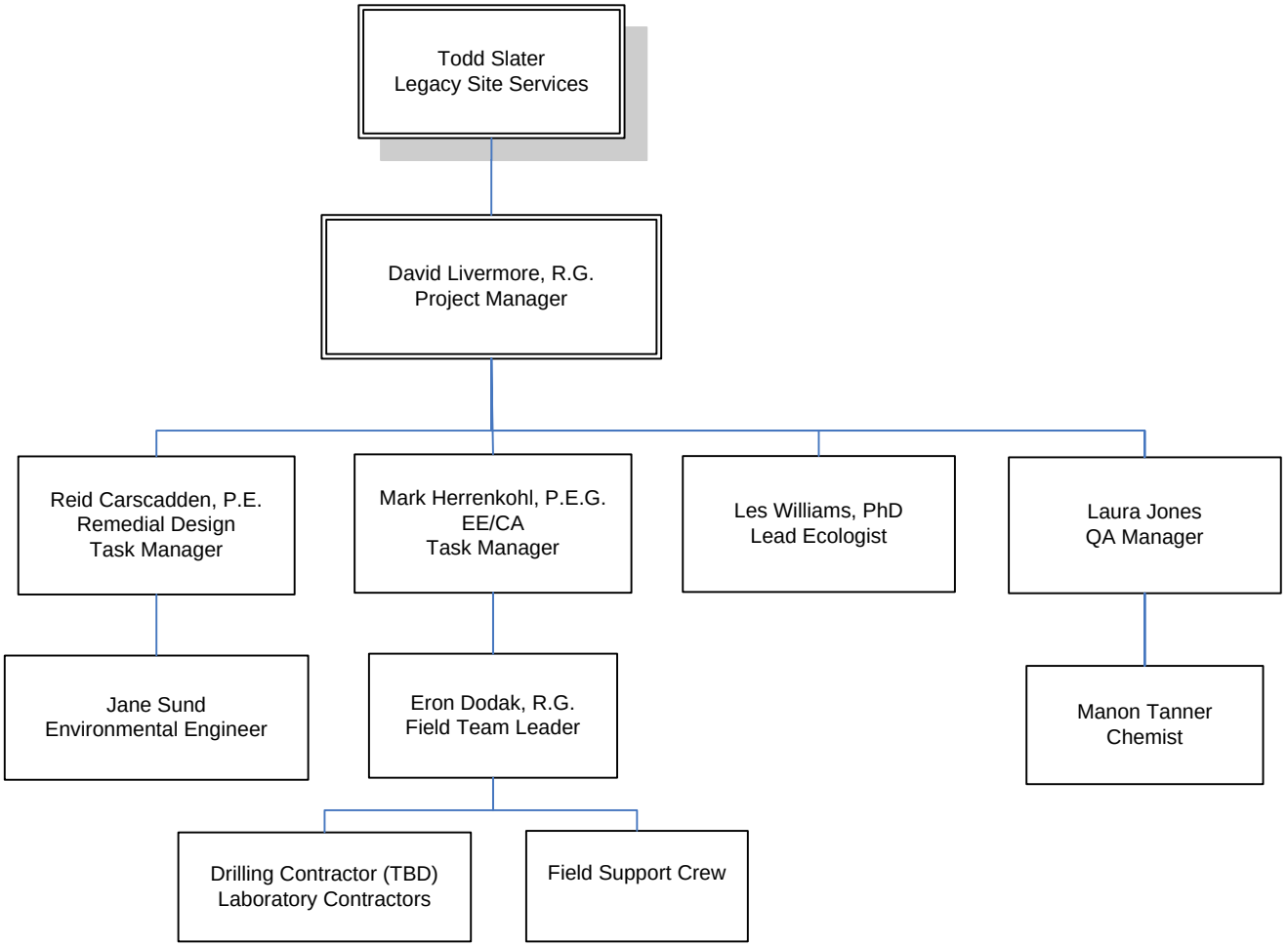

Figure 10-1. Arkema EE/CA Project Team

DRAFT